RCRA PART B RENEWAL APPLICATION
COMPLIANCE PLAN ATTACHMENT XI.D

RESPONSE ACTION PLAN – Revision No. 5

UNION PACIFIC RAILROAD
HOUSTON WOOD PRESERVING WORKS
HOUSTON, TEXAS
SWR NO. 31547 / IHW NO. 50343

AUGUST 31, 2020

Prepared for:

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TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
Response Action Plan

Cover Page

Regulatory ID number (Solid waste registration number, VCP ID number, etc.) SWR No. 31547
check one: ___Initial submittal for this on-site property X Subsequent submittal for this on-site property
Report date: August 31, 2020 – Rev 5 TCEQ Region No.: 12

TCEQ Program (check one)

- [X] Corrective Action (Mail Code 127)
- [ ] Voluntary Cleanup Program (Mail Code 221)
- [ ] RPR Section (Mail Code 137)
- [ ] Superfund PRP Lead (Mail Code 143)
- [ ] Municipal Solid Waste Permits (Mail Code 124)

On-Site Property Information

On-Site Property Name: Union Pacific Railroad Houston Wood Preserving Works Site
Street no. 4910 Pre dir: Street name Liberty Street type: Road Post dir:
City: Houston County: Harris County Code: 101 Zip: 77007
Nearest street intersection or location description: Site is located south of Liberty Rd. between Kashmere St. and Lockwood St, and north of Lee St.
Latitude: Decimal Degrees (circle one) North 29.787413
Longitude: Decimal Degrees (circle one) West 95.321062

Off-Site Affected Property Information

Off-Site Affected Property Name: See Attachment 1A-2 and 1A-3 for Off-Site Affected Property information
Physical Address: NA
Street no. Pre dir: Street name Street type: Post dir:
City: County: County Code: Zip:

[ ] Check if no off-site properties affected

Contact Person Information and Acknowledgement

Person (or company) Name: Union Pacific Railroad
Contact Person: Kevin Peterburs Title: Manager, Site Remediation
Mailing Address: 4823 N 119th Street
City: Milwaukee State: WI Zip: 53225 E-mail address kjpeterb@up.com
Phone: 414-267-4164 Fax:

By my signature below, I acknowledge the requirement of §350.2(a) that no person shall submit information to the executive director or to parties who are required to be provided information under this chapter which they know or reasonably should have known to be false or intentionally misleading, or fail to submit available information which is critical to the understanding of the matter at hand or to the basis of critical decisions which reasonably would have been influenced by that information. Violation of this rule may subject a person to the imposition of civil, criminal, or administrative penalties.

Signature of Person Kevin Peterburs Name, print: Kevin Peterburs Date: 8/26/2020

RAP Executive Summary	ID No.: SWR No. 31547
	Report Date: August 31, 2020 – Rev 5

Use this worksheet to summarize the report. Be sure to complete and submit the Checklist for Report Completeness. **Attach a chronology of activities associated with the affected property.**

Briefly describe the affected property and PCLE zones, the conclusions from the assessment activities, identify any affected or threatened receptors, and describe any other major considerations taken into account when developing this response action plan. If any portion of the response action is necessitated due to an aesthetic or nuisance condition, identify the nature of that condition and identify that portion of the response action proposed to address it. If any media that contains a PCLE zone is not addressed in this RAP, provide justification.

Property Location, Land Use, and Operations

The Union Pacific Railroad (UPRR) Houston Wood Preserving Works (HWPW) Facility at 4910 Liberty Road, Houston, Harris County, Texas (the Site) is located within industrial land and includes the former HWPW facility and Englewood Intermodal Yard, which is to the south of the former HWPW facilities. The Englewood Intermodal Yard is used for the transfer of box containers from rail cars to truck trailers and vice-versa. UPRR mainline rail and siding rails separate the former HWPW and the Englewood Intermodal Yard areas. The Site will remain commercial/industrial for the foreseeable future. The Site was first developed for creosoting operations in 1899 and operated until 1984 when operations ceased. The facility was dismantled in the early 1990s. The history and previous operations at the Site have been discussed in detail in the previously submitted Affected Property Assessment Report (APAR) (ERM, 2000) and Revised APAR (ERM, 2004), as well as the RCRA Facility Assessment (RFA) Report (PRC, 1993).

The surrounding properties within a 500-foot radius of the Site, including the Englewood Intermodal Yard, consist of residential areas to the northwest, north, southeast, and south. The UPRR Englewood Yard, a railroad switching yard (commercial/industrial property) is located to the east of the Site. An area of undeveloped land and a few residential properties are located west of the Site. The 500-foot radius field survey did not identify any current potential groundwater receptors within the residential neighborhood. No water wells, water tanks, cisterns, or windmills, or surface water bodies were observed during the field survey. The nearest surface water body is Buffalo Bayou, located approximately 1.6 miles southwest of the Site. The potential for lateral migration of groundwater from the Site to the southwest approximately 1.6 miles to Buffalo Bayou is not likely.

Assessment Results

The initial APAR prepared for the Site was submitted to the Texas Commission on Environmental Quality (TCEQ) dated June 10, 2000 (ERM, 2000). A revised APAR was submitted to the TCEQ dated June 10, 2004. Pastor, Behling & Wheeler, LLC (PBW) prepared an APAR Addendum dated July 2009 (PBW, 2009). Following comments from the TCEQ, PBW submitted an Updated APAR Addendum dated October 15, 2010, with response to TCEQ comments dated March 29, 2011. The TCEQ approved the APAR in a letter dated April 13, 2011.

As detailed in the APARs and subsequent submittals, the Affected Property consists of surface soils, subsurface soils, and groundwater affected by chemicals of concern (COC) at the Site. The soil and groundwater exposure pathways were evaluated as part of the Site assessments.

The generalized interpreted site stratigraphy from the ground surface to a depth of approximately 135 feet is as follows: Fill Material (0 to 5 feet thick), A-Cohesive Zone (A-CZ) (8 to 15 feet thick); A-Transmissive Zone (A-TZ) (4 to 21 feet thick); B-Cohesive Zone (B-CZ) (6 to 19 feet thick); B-Transmissive Zone (B-TZ) (discontinuous, where present, 3 to 10 feet thick); C-Cohesive Zone (C-CZ) (8 to 20 feet thick); C-Transmissive Zone (C-TZ) (10 to 13 feet thick); D-Cohesive Zone (D-CZ) (17 to 36 feet thick); and D-Transmissive Zone (D-TZ). It should be noted that these units and depths should be considered as only a general summary for the purposes of describing the overarching conceptual site model (CSM) and that much more complete and comprehensive lithologic characterizations, including specific hydrogeologic cross-sections and detailed discussions relative to individual investigative locations, are provided in the APARs and are supplemented in Attachment 1A of this

RAP.

As detailed in the Updated APAR Addendum (PBW, 2010) and subsequent submittals, target COCs in soil and groundwater media were evaluated using TCEQ TRRP Residential Protective Concentration Levels (PCLs), or Residential Assessment Levels (RALs) to establish the extent of the Affected Property. Surface and subsurface soil data collected from 1997 through June 2010, with subsequent sampling in 2013, 2014 and 2020, were evaluated to assess the Affected Property and PCL Exceedance (PCLE) Zone in surface and subsurface soils. Groundwater data from the most recent comprehensive sampling event (January 2020) were evaluated to assess COC exceedances in groundwater.

In response to the TCEQ Technical Notice of Deficiency (TNOD) dated April 11, 2019 on the RCRA Permit Renewal with Major Amendments (including the Response Action Plan (RAP)), UPRR conducted pre-design investigations in 2019 and 2020 to supplement the CSM for development of response actions at the Site that were detailed in Worksheet 2.0 of the Conceptual Response Action Plan – Revision No. 4 dated July 9, 2019. Results from additional pre-design assessments were submitted to the TCEQ in multiple reports including the following:

- Pentachlorophenol Soil Assessment Interim Report dated March 30, 2020
- Updated Pentachlorophenol Soil Assessment Interim Report dated July 14, 2020
- Soil Vapor Intrusion Assessment Interim Report dated March 31, 2020
- Updated Soil Vapor Intrusion Assessment Interim Report dated August 4, 2020
- Interim Groundwater Monitoring Report (2019-2020) dated April 30, 2020
- Interim Non-Aqueous Phase Liquid (NAPL) and Total Petroleum Hydrocarbon (TPH)-NAPL Assessment Report dated May 29, 2020

The above interim reports are included in Appendix 3 of the RAP.

PCLE Zones

Soils

The soil critical PCLs (cPCLs) were established for the Site by using the lower of the commercial/industrial PCLs for on-site soils and residential PCLs for off-site soils for the following pathways:

- $^{Tot}Soil_{Comb}$ (Tier 1);
- $^{Air}Soil_{Inh\text{-}V}$ (Tier 1); and
- $^{GW}Soil_{Ing}$ (Tier 1 or 2, based on COC).

Although the former wood preserving works portion of the Site is partially covered with crushed gravel and soil, the $^{Tot}Soil_{Comb}$ pathway was evaluated as complete since potential future construction activities could occur at the Site. Most of the Englewood Intermodal Yard has a concrete pavement cover, and the rail area between the HWPW and the Englewood Intermodal Yard is covered with railroad ballast, which prevents direct exposure to surface and subsurface soils in the area.

As detailed in the APARs, comparing the surface and subsurface soil analytical data to the appropriate critical PCLs, concentrations of 16 COCs exceeded their respective critical PCLs:

Surface Soils

- 1,2-Diphenylhydrazine
- 2,4-Dinitrotoluene
- 2-Methylnaphthalene
- Benzene
- Benzo(a)anthracene
- Benzo(a)pyrene
- Dibenzofuran

Subsurface Soils

- 2-Methylnaphthalene
- Benzene
- Naphthalene
- Pentachlorophenol

- Naphthalene
- Pentachlorophenol
- Arsenic
- Lead
- TPH

The surface soil PCLE zone extends from the northeast portion of the Site including the Original Process Area (SWMU 5) and Recent Process Area (SWMU 4), to the southwest along the South Drainage Ditch (SDD) (SWMU 2), and across the Former Inactive Wastewater Lagoon (AOC 6) (prior to conducting the soil consolidation as part of the soil response action). The PCLE zone was primarily defined by the concentrations of benzo(a)anthracene, benzo(a)pyrene, naphthalene, and pentachlorophenol in surface soils. Additional soil sampling conducted in 2013 indicates that the surface soil PCLE Zone extends south into the Englewood Intermodal Yard where a former lagoon and large above-ground storage tanks were located (added as a new AOC). Additional soil sampling in 2014 indicated that the surface soil PCLE Zone (benzo(a)pyrene and pentachlorophenol) extended north beyond the northern Site fence to the edge of Liberty Road but was delineated along the northeast side of the Site. Arsenic and lead were detected at concentrations greater than cPCLs in surface soil in the Englewood Intermodal Yard. For subsurface soils, the PCLE zones for 2-methylnaphthalene, naphthalene, and pentachlorophenol were extrapolated using available subsurface soil data and conservatively projecting the surface PCLE zone for 2-methylnaphthalene and naphthalene to the subsurface. By using the surface PCLE zone, this projection assumes the PCLE zone extends from the ground surface to the top of the uppermost GWBU (i.e. A-TZ). The subsurface PCLE zone is limited to the area around the Original and Recent Process Areas (SWMUs 4 and 5), with a small naphthalene subsoil PCLE Zone in the Englewood Intermodal Yard area. The surface and subsurface soil PCLE Zones were addressed through soil consolidation and capping, as detailed in the Response Action Completion Report (RACR) dated July 18, 2016 (PBW, 2016). No soil PCLE Zones were identified off-site on the residential properties.

As part of the overall discussions related to the TCEQ TNOD dated April 11, 2019, additional soil sampling was requested by the TCEQ during a meeting on June 12, 2019, with additional samples requested in a September 6, 2019 TCEQ letter to UPRR. The purpose for these additional samples was to evaluate PCP concentrations in surface soils along the western and northern boundary of the former Tie Storage Area (Solid Waste Management Unit (SWMU) No 12) near soil samples previously collected (Appendix 3, Figure 1 in the Pentachlorophenol Soil Assessment Interim Report dated March 30, 2020). A PCP soil assessment interim report dated March 30, 2020 and updated report dated July 14, 2020 were submitted to the TCEQ and are provided in Appendix 3. PCP concentrations in soil samples collected off-site and on-site were below applicable $^{Tot}Soil_{Comb}$ and Tier 3 $^{GW}Soil_{Ing}$ PCLs, and delineation of PCP in soils in the area was achieved and approved by the TCEQ in a letter dated August 5, 2020.

The TCEQ also requested an evaluation of total petroleum hydrocarbons (TPH) and non-aqueous phase liquid (NAPL) in the Englewood Intermodal Yard area as part of the April 2019 TNOD. The surface soil and subsurface soil PCLE Zones for TPH were evaluated following additional sampling conducted as part of the TPH-NAPL assessment. Details of the assessment were submitted to the TCEQ in the Interim NAPL and TPH-NAPL Assessment Report dated May 29, 2020, which is included in Appendix 3. The soil TPH TX1005 results were delineated to concentrations less than the Tier 1 $Soil_{Res}$ PCL to the north, south, east, and west. Calculated Tier 1 TPH Mixture PCLs were used as critical PCLs to evaluate the total TPH by TX1005 Method soil sample concentration data. None of the soil samples had total TPH concentrations greater than the calculated commercial/industrial Tier 1 TPH Mixture critical PCLs, and therefore a Total TPH PCLE Zone was not indicated for soils at the Site. However, one on-site soil sample near the northern perimeter of the Site had total TPH concentrations that exceeded the calculated residential assessment level (RAL). Additional sampling closer to the property boundary north of the sampling location is proposed to evaluate the lateral extent of the total TPH concentrations exceeding the RAL Tier 1 TPH Mixture critical PCL in the soils on-Site.

Groundwater
As of August 2020, a total of 129 groundwater monitoring wells are located on-site and off-site in the GWBUs A-TZ, B-CZ/B-TZ, C-TZ, and D-TZ. Groundwater in A-TZ generally flows to the northeast; groundwater in B-CZ/B-TZ generally flows across the Site to the east-northeast; groundwater in the C-TZ flows to southwest, and groundwater in the D-TZ appears to flow to the northwest.

Site-wide groundwater monitoring data from July 2019 through March 2020 were submitted to the TCEQ in an Interim Groundwater Monitoring (2019-2020) Report dated April 30, 2020 (Golder, 2020c), which is included in Appendix 3. Based on the groundwater analytical data from the January-March 2020 groundwater sampling events, concentrations of 18 target COCs (plus arsenic) exceeded their respective RALs.

The location and extent of the groundwater PCLE zones were identified as areas where COCs are present in groundwater at concentrations that exceed the critical PCL ($^{GW}GW_{ing}$) using the most recent groundwater data (January-March 2020). Groundwater PCLE Zones were mapped for the three upper GWBUs: A-TZ, B-CZ/B-TZ, and C-TZ. Trend analysis results for the most common COCs (2-methylnaphthalene, 2,4-dimethylphenol, benzene, dibenzofuran, and naphthalene) in groundwater are included in Appendix 7.

Based on groundwater data collected in 2018 through 2020, arsenic concentrations have been detected above the residential PCL in some of the monitoring wells at the Site but have varied between sampling events. As stated in the IGMR, arsenic concentrations in the A-TZ wells do not appear to correlate with the elevated concentrations of the primary COCs. Many wells with arsenic concentrations exceeding the applicable TRRP PCL do not have concentrations of creosote-related COCs exceeding method detection limits (MDL) and/or RALs, especially on the northwest area on-site and north off-site in the A-Transmissive Zone (A-TZ). As detailed in a response letter to the TCEQ dated August 5, 2020, the presence of arsenic in groundwater is believed to be associated with naturally-occurring arsenate species within the groundwater matrix that are converted to the more soluble arsenite species due to reducing conditions resulting from the degradation of petroleum hydrocarbons (i.e. creosote-related COCs) from the Site. To obtain a better understanding of the redox conditions and potential arsenic dissolution/attenuation processes in the A-TZ and B-CZ/B-TZ, geochemical parameters will be added to the sampling plan during the next two semi-annual sampling events. The evaluation of the geochemical parameters will be provided in the annual groundwater monitoring report summarizing the sampling activities to be conducted in 2021.

Regarding human exposure to COC concentrations in the off-site groundwater PCLE Zones, there is no potential for exposures to the off-site groundwater PCLE Zones. Drinking water in the area is provided by a municipal water supply (City of Houston) and groundwater supply wells are not located in the affected area. In addition, the shallow GWBUs (A-TZ, B-CZ/B-TZ, C-TZ and D-TZ) do not have a reasonably anticipated future beneficial use in the area (as defined in TRRP (30 TAC §350.37(l)(3)(C))).

Dense Non-Aqueous Phase Liquids (DNAPL)
Creosote DNAPL has been detected in the GWBUs A-TZ, B-CZ, B-TZ, and C-TZ as noted in soil borings and monitoring wells. The sources of DNAPL are likely from former wood treating operations. The wood treating facility was shut down and dismantled in the early 1990s; thus, the DNAPL sources were removed over 20 years ago. Over the past 25 years, UPRR has conducted numerous DNAPL investigations at the Site, including cone-penetrometer testing (CPT) with rapid optical screening tool (ROST) borings and DNAPL recoverability testing. In response to the TCEQ April 2019 TNOD, UPRR conducted an additional NAPL assessment using the Tar-specific Green Optical Screening Tool (TarGOST®), which was developed to target heavier end petroleum hydrocarbons including creosote and coal tar. For the off-site assessment, there was no evidence of off-site NAPL present within the vadose zone or the A-TZ. For the B-CZ/B-TZ, elevated TarGOST® signals off-site generally corresponded with observations of NAPL in existing wells, boring logs, and previously collected data.

Based on the additional NAPL assessment activities, the extent of NAPL in the B-CZ/B-TZ off-site is within generally discontinuous, isolated zones of thin carbonate seams and sand-lined fractures in the B-CZ occurring at depths of 24 feet or more below the ground surface. These zones have been delineated laterally to occur within approximately 500 feet north of the Site. Elevated TarGOST® signals were observed on-site along the northern perimeter of the Site, and within the Englewood Intermodal Yard, indicating NAPL within the A-CZ, A-TZ, and B-CZ/B-TZ on-site. The NAPL impacts were delineated to the west, south, and east within the Site (delineated to the north off-site). A description of the additional assessment activities and an evaluation of the data collected were submitted to the TCEQ in the Interim NAPL and TPH-NAPL Assessment Report dated May 29, 2020 (Golder, 2020d), which is included in Appendix 3.

Response Action Plan

The objective of this RAP is to develop response objectives and actions in accordance with TRRP to address the PCLE Zones at the Site. The primary response objective is to address potential exposure pathways to the PCLE Zones in surface soil, subsurface soil, and groundwater. Complete exposure pathways of onsite soil have been addressed through previous remedial actions. No complete exposure pathways for the off-site receptors exist (off-site residents) for groundwater and soil (except for the City of Houston ROW that was addressed with the concrete cap discussed below), and therefore there are no unacceptable risks to the off-site properties.

Below are the following response actions that are either proposed or have been completed at the Site to achieve the response objective:

- Surface/subsurface soil – The surface/subsurface soil PCLE Zones at the Site have been addressed as follows:
    1) Former HWPW Area: Remedy Standard B closure through consolidating impacted soils within the Area of Contamination (AOC) and implementing Physical Control through an engineered soil cap and asphalt roadway. This response was completed in 2016 as detailed in the Response Action Completion Report (RACR) dated July 2016 (PBW, 2016) and Revised RACR dated June 2017 (PBW, 2017). Pursuant to the post-closure care detailed in the RAP, quarterly inspections and maintenance of the cap and roadway have been implemented;
    2) Englewood Intermodal Yard: Remedy Standard B closure by implementing Physical Control using the existing concrete pavement as a cap as detailed in the RACR dated July 2016 (PBW, 2016) and Revised RACR dated June 2017 (PBW, 2017). In 2019, a NAPL Collection System was constructed as part of an interim response action consisting of two shallow collection trenches to address tar-like NAPL seeps identified in the Englewood Intermodal Yard. Details of the construction activities were provided in the Interim RACR dated March 29, 2019 (Golder, 2019b). The NAPL Collection System is being evaluated and additional response action activities will be proposed following additional assessment activities (i.e., test pits conducted in July 2020, potentially impacted underground utilities). As summarized in the Interim NAPL and TPH-NAPL Assessment Report (Appendix 3; Golder, 2020d), there is no Total TPH PCLE zone for soils at the Site, but the NAPL response action objectives are applicable for the NAPL found in the vadose zone at the Englewood Intermodal Yard. Pursuant to the post-closure care detailed in the RAP, quarterly inspections and maintenance of the cap have been implemented;
    3) Railroad mainlines and siding tracks: The response action for the operational area between the Former HWPW area and the Englewood Intermodal Yard has followed a Remedy Standard B closure using the existing railroad ballast as a protective barrier as detailed in the RACR dated July 2016 (PBW, 2016) and Revised RACR dated June 2017 (PBW, 2017). Quarterly inspections and maintenance of the ballast area have been implemented;
    4) City of Houston ROW along Liberty Road: Remedy Standard B closure through limited excavation of surface soils, consolidating impacted soils within the AOC, and implementing Physical Control through an engineered concrete sidewalk as detailed

in the RACR dated July 2016 (PBW, 2016) and Revised RACR dated June 2017 (PBW, 2017). Quarterly inspections and maintenance of the cap and roadway have been implemented.

As detailed in the RACRs (PBW, 2016; PBW, 2017; Golder, 2019b), the surface and subsurface PCLE Zones have been addressed through the various caps constructed or implemented at the Site and are inspected as part of the post-response action completion requirements.

- Groundwater – The response objectives for the on-site groundwater PCLE Zone and portion of the off-site groundwater PCLE Zone within the City of Houston right-of-way (COH ROW) will be addressed under Remedy Standard B (physical control) and modified Remedy Standard B PMZ through control measures and institutional controls.

  To address the PCLE Zone in groundwater on-site and within a portion of the COH ROW will be through Remedy Standard B control using the following response actions:
  - A modified groundwater response objective through a plume management zone (PMZ);
  - Installation of a physical control through a slurry wall.

  The proposed cumulative PMZ (for all three GWBUs) consists of the following:

  1) On-Site PMZ – The On-Site PMZ will include the cumulative groundwater PCLE Zone within the UPRR-owned property consisting of the center to the east portion of the Site and western portion of the Site (includes the On-Site PMZ (West) area for the B-CZ/B-TZ GWBU). The proposed PMZ includes the groundwater PCLE Zones for the creosote-related COCs and arsenic.

  2) Off-Site PMZ (COH ROW) - The off-site PMZ includes the cumulative groundwater PCLE Zone that extends off-site to the north, east, and west of the Site within the City of Houston ROW.

  A physical control consisting of a slurry wall barrier is proposed to be installed at the Site. The slurry wall will be constructed to impede groundwater flow from portions of the Site and establish a subsurface barrier separating the on-site contamination from the off-site areas to the north and east. This will reduce the risk of potential future migration of groundwater COC concentrations above the critical PCLs from the Site, and similarly reduce the potential for migration of mobile NAPL at the Site. However, creosote NAPL is present off-site beyond where the proposed slurry wall is to be constructed and this NAPL represents potential source mass for the off-site groundwater PCLE Zones.

  For the off-site groundwater PCLE Zones that extend off-site outside of the proposed PMZs, the response action objective is groundwater decontamination as defined in TRRP to the applicable critical PCLs under Remedy Standard B (Remedy Standard A equivalent). Pursuant to TRRP-32 guidance for NAPL Management, the off-site groundwater PCLE Zone where NAPL is in contact with B-CZ/B-TZ groundwater the NAPL response endpoint is to *recover soluble NAPL fraction sufficient to eliminate source contributions to the groundwater PCLE zone*. Two major aspects, which are functions of the generally low mobility physical properties of creosote and its components, and the significant and unfavorable hydrogeologic complexity of the Site, greatly hinder recoverability of the soluble DNAPL fraction from the subsurface. Therefore, the response actions related to this objective will be conducted in a phased approach as described below.

  First, the construction of the slurry wall on-site will impede groundwater flow from areas where NAPL has been observed in monitoring wells on Site, thereby separating the on-site

contamination from the off-site areas. Next, the mobile NAPL within the saturated soil matrix in certain areas of off-site hydrostratigraphic units will be addressed. The proposed remedial action objectives (functional objectives) for this NAPL as part of the effort to meet the absolute objective of decontamination for the off-site groundwater PCLE Zone will be to:

- Reduce the apparent thickness of in-well DNAPL in existing and proposed recovery wells over a reasonable time frame; and
- Reduce the occurrence of DNAPL (i.e. the number of wells exhibiting measurable DNAPL) in those wells over a reasonable time frame.

UPRR proposes to implement multi-phase extraction (MPE) events to recover DNAPL from existing and proposed wells as the response action to address the functional objectives listed above. Additional Corrective Action System Wells in the A-TZ, B-CZ/B-TZ, and C-TZ will be installed off-site to increase the potential for DNAPL recovery with the absolute objective of recovering the soluble NAPL fraction sufficient to eliminate source contributions to groundwater PCLE zone.

Given the inherent complex and unfavorable site geologic conditions and generally limited mobility characteristics of creosote DNAPL, it is anticipated that achieving the response objective of reducing COCs in groundwater to the applicable critical PCLs off-site within a reasonable timeframe will be challenging based on the physical characteristics and complex geology at the Site. In fact, it has been shown at numerous creosote DNAPL sites that complete removal of creosote DNAPL is not technically practicable. However, regular physical NAPL removal through MPE events will aid in advancing toward the response objective. Once the MPE achieves the functional objectives, passive remedial options such as monitored natural attenuation (MNA) will be evaluated for addressing the residual off-site groundwater PCLE Zones.

In terms of unprotective conditions for receptors during the remedial period, there are no potential or unprotected exposures to impacted groundwater for the off-site residents since none of the properties in the area use groundwater for drinking or any other purposes; and the properties are provided drinking water by the City of Houston. No groundwater drinking wells have been identified in the area and anticipated future use of the shallow groundwater as a resource is unlikely. In addition, soil gas assessments in conjunction with groundwater monitoring have indicated through multiple lines of evidence that the vapor intrusion pathway is not complete for the off-site properties.

What is the selected remedy standard for this affected property? ___ A **X** B

List all media that contains a PCLE zone and specify the proposed response action for each media. Indicate the type of removal, decontamination, physical control and/or institutional control action that is proposed.

Media	COCs[1]	Removal	Decontamination	Control			
				Physical Control	Modified Groundwater Response Objective[2]		
					PMZ	WCU	TI
Surface Soil	**Benzene, SVOCs, metals**			**X**			

[1] Specify either a specific COC or, if the response action is the same for all COCs in one type, specify the type of COC (for example, VOCs, SVOCs, metals).
[2] If a modified groundwater response objective is proposed, check the type(s) of proposed modifications.

Subsurface Soil	**SVOCs**			**X**			
Groundwater (within PMZ)	**Benzene, SVOCs**				**X**		
Groundwater (within PMZ)	**Arsenic**				**X**		
Groundwater (outside PMZ)	**Benzene, SVOCs**		**X**				
Groundwater (outside PMZ)	**Arsenic**		**X**				

Is there a media that contains a PCLE zone that is not addressed in this RAP? ____ yes **X** no
If yes, provide justification for not addressing the PCLE zone in this RAP.

On-site land use: [ ] Residential [X] Commercial/Industrial
Off-site land use: [X] Residential [X] Commercial/Industrial (check all that apply)

Is this a re-submittal or revision of a previous RAP? **X** Yes ___ No
If yes, explain why the RAP is being revised or resubmitted.

This revised RAP is being submitted with revisions based on the TCEQ 4th TNOD dated April 11, 2019 on the UPRR Houston Wood Preserving Works Permit Renewal/Compliance Plan with Major Amendment, Permit/Compliance Number 50343, ISWR 31547 and Additional Comments to UPRR's July 10, 2019 Response to 4th Technical Notice of Deficiency Letter dated April 11, 2019 Permit Renewal Application. Additional assessments were conducted at the Site as described in the Conceptual RAP dated July 10, 2019 and are incorporated into the response action design.

Were all the appropriate notifications made in accordance with §350.55? **X** Yes ___ No
If no, explain why notifications were not made:

CHRONOLOGY

Below is a summary of the site investigation and regulatory chronology at the UPRR Former Houston Wood Preserving Works facility (listed in reverse order).

Date	Description
July 2020	Union Pacific Railroad (UPRR) submits Updated Pentachlorophenol Soil Assessment Interim Report dated July 14, 2020 and Updated Soil Vapor Intrusion Assessment Interim Report dated August 4, 2020 to the Texas Commission on Environmental Quality (TCEQ); Golder Associates Inc (Golder), on behalf of UPRR, conducts 2020 second semi-annual groundwater monitoring event for the SWMU No. 1 and site-wide groundwater sampling event.
June 2020	UPRR installs additional soil gas probes and collects additional soil samples for PCP assessment; UPRR submits the Post-Response Action Completion Report (PRACR) Monthly Update to the TCEQ (June 2, 2020); UPRR submits the 1st Quarter 2020 Dense Non-Aqueous Phase Liquid (DNAPL) Recovery Activities Quarterly Report to the TCEQ;
May 2020	UPRR submits the non-aqueous phase liquid (NAPL) and total petroleum hydrocarbon (TPH)-NAPL interim report dated May 29, 2020 to TCEQ; UPRR submits Bimonthly Status Update of Sampling Activities to TCEQ (May 15, 2020) and the Post-Response Action Completion Report (PRACR) Monthly Update to the TCEQ (May 8, 2020); UPRR submits Response to TCEQ Approval with Comments Letter Dated April 23, 2020 on Soil Vapor Intrusion Assessment Report (May 1, 2020) and Response to TCEQ Approval with Comments Letter Dated April 23, 2020 on Pentachlorophenol (PCP) Soil Assessment Report (May 8, 2020); Golder, on behalf of UPRR, conducts second sampling event of monitoring wells installed in 2020.
April 2020	UPRR submits Interim Groundwater Monitoring Report (2019-2020) to TCEQ (April 30, 2020); UPRR submits the Post-Response Action Completion Report (PRACR) Monthly Update to the TCEQ (April 3, 2020); TCEQ issues Approval with Comments Letters dated April 23, 2020 on Soil Vapor Intrusion Assessment Interim Report dated March 31, 2020 and Pentachlorophenol Soil Assessment Interim Report dated March 30, 2020.
March 2020	UPRR completes monitoring well installation activities and sampling of newly installed wells after development; UPRR submits Soil Vapor Intrusion Assessment Interim Report dated March 31, 2020 to TCEQ; UPRR submits Pentachlorophenol Soil Assessment Interim Report dated March 30, 2020 to TCEQ; UPRR submits the 4th Quarter 2019 DNAPL Recovery Activities Quarterly Report to the TCEQ; UPRR submits the Post-Response Action Completion Report (PRACR) Monthly Update to the TCEQ (March 5, 2020).
February 2020	UPRR continues TPH/NAPL assessment activities and vapor intrusion assessment activities; UPRR begins monitoring well installation activities; UPRR conducts soil sampling for pentachlorophenol analysis; UPRR submits extension request letter dated February 7, 2020 to TCEQ; TCEQ grants extension request in letter dated February 21, 2020; UPRR submits Bi-monthly status update of sampling activities to the TCEQ (February 28, 2020); UPRR submits the Post-Response Action Completion Report (PRACR) Monthly Update to the TCEQ (February 5, 2020).

Date	Description
January 2020	UPRR continues TPH/NAPL assessment activities and begins vapor intrusion assessment activities; UPRR submits revised vapor intrusion work plan dated January 2, 2020 to the TCEQ which is approved by the TCEQ in a letter dated January 3, 2020; UPRR submits additional revisions to the vapor intrusion work plan on January 31, 2020; UPRR submits the Post-Response Action Completion Report (PRACR) Monthly Update to the TCEQ (January 12, 2020). UPRR submits to the TCEQ the Corrective Action Monitoring Report: 2019 Second Semi-Annual Event dated January 17, 2020; Golder, on behalf of UPRR, conducts 2020 first semi-annual groundwater monitoring event for the SWMU No. 1 and site-wide groundwater sampling event.
December 2019	UPRR begins pre-design NAPL and TPH assessment activities; TCEQ issues letter dated December 13, 2019 requesting a meeting to discuss assessment activities; Meeting with UPRR, Golder, and TCEQ to discuss vapor intrusion work plan on December 19, 2019; UPRR submits the Post-Response Action Completion Report (PRACR) Monthly Update to the TCEQ (December 5, 2019).
November 2019	UPRR submits the 3rd Quarter 2019 DNAPL Recovery Activities Quarterly Report to the TCEQ; UPRR submits the Post-Response Action Completion Report (PRACR) Monthly Update to the TCEQ (November 4, 2019).
October 2019	UPRR submits Response to Additional Comments Letter dated October 23, 2019 to the TCEQ; UPRR submits the Post-Response Action Completion Report (PRACR) Monthly Update to the TCEQ (October 1, 2019).
September 2019	TCEQ issues letter dated September 6, 2019 with additional comments to UPRR's July 10, 2019 Response to 4th Technical NOD; Meeting with UPRR, Golder, and TCEQ to discuss additional comments on September 23, 2019; UPRR submits the Post-Response Action Completion Report (PRACR) Monthly Update to the TCEQ (September 3, 2019).
August 2019	UPRR submits the 2nd Quarter 2019 DNAPL Recovery Activities Quarterly Report to the TCEQ
July 2019	UPRR submits response to 4th Technical Notice of Deficiency (NOD) Letter dated April 11, 2019 to TCEQ; UPRR submits the PRACR Monthly Update to the TCEQ (July 31, 2019). UPRR submits to the TCEQ the Corrective Action Monitoring Report: 2019 First Semi-Annual Event dated July 1, 2019; Golder, on behalf of UPRR, conducts 2019 second semi-annual groundwater monitoring event for the SWMU No. 1 and site-wide groundwater sampling event.
June 2019	UPRR receives letter granting extension to July 10, 2019 for submittal of response to 4th Technical Notice of Deficiency (NOD) Letter dated April 11, 2019 from the Texas Commission on Environmental Quality (TCEQ); Meeting with UPRR, Golder, and TCEQ to discuss 4th Technical NOD on June 12, 2019; UPRR submits the 1st Quarter 2019 DNAPL Recovery Activities Quarterly Report to the TCEQ; and UPRR submits the PRACR Monthly Update to the TCEQ (June 28, 2019).
May 2019	UPRR submits an Extension Request for response to 4th Technical NOD Letter dated April 11, 2019 to TCEQ; UPRR installs additional well as requested in 4th Technical NOD letter and submits the PRACR Monthly Update to the TCEQ (May 31, 2019).

Date	Description
April 2019	UPRR receives 4th Technical NOD; Meeting with UPRR, Golder (formerly Pastor, Behling & Wheeler, LLC (PBW)), and TCEQ to discuss 4th Technical NOD on April 24, 2019; and UPRR submits the PRACR Monthly Update to the TCEQ (April 30, 2019).
March 2019	UPRR submits Response Action Completion Report (RACR) summarizing the NAPL Collection System installation in the Englewood Intermodal Yard with the HWPW Site; and Golder submits the PRACR Monthly Update to the TCEQ (March 29, 2019).
February 2019	TCEQ issues a comment letter dated February 6, 2019 on the Response to Comments dated January 9, 2019; Golder, on behalf of UPRR, completes the interim remedial activities by installing the non-aqueous phase liquid (NAPL) collection system; and Golder submits the PRACR Monthly Update to the TCEQ (February 28, 2019) that includes a response to TCEQ comment letter dated February 6, 2019. The response includes details on the proposed additional total petroleum hydrocarbon (TPH) assessment in soils at the Englewood Intermodal Yard.
January 2019	Golder, on behalf of UPRR, begins the interim remedial excavation activities for the installation of the NAPL collection system at the Englewood Intermodal Yard; UPRR submits to the TCEQ the response to comments dated January 9, 2019 responding to TCEQ comment letter dated December 6, 2018 on the October 2018 PRACR Monthly Update; and UPRR submits the PRACR Monthly Update to the TCEQ (February 4, 2019). UPRR submits to the TCEQ the Corrective Action Monitoring Report: 2018 Second Semi-Annual Event dated January 4, 2019; Golder conducts 2019 first semi-annual groundwater monitoring event for the SWMU No. 1 and site-wide groundwater sampling event.
December 2018	TCEQ issues a comment letter dated December 6, 2018 on the October 2018 PRACR Monthly Update; and Golder submits the PRACR Monthly Update to the TCEQ (December 31, 2018).
November 2018	UPRR submits the PRACR Monthly Update to the TCEQ (November 30, 2018).
October 2018	UPRR conducts test pits in the Englewood Intermodal Yard to evaluate the NAPL seeps observed in the primary area (slots B100-B109) and other areas (parking slots B13 and B54). Golder submits the PRACR Monthly Update to the TCEQ (October 31, 2018) detailing the results of a test pit evaluation at the Englewood Intermodal Yard.
September 2018	UPRR submits the PRACR Monthly Update to the TCEQ (September 28, 2018).
August 2018	UPRR submits the response to TCEQ comment and request for groundwater information letter dated November 29, 2017 – UPRR Groundwater Monitoring Data (included groundwater data from the three site-wide sampling events conducted from January – July 2018) , August 13, 2018; TCEQ issues a comment letter dated August 22, 2018 on the June 2018 PRACR Monthly Update; and UPPR submits the PRACR Monthly Update to the TCEQ (August 31, 2018), including a response to the TCEQ August 22, 2018 comment letter. Response includes preliminary design for the NAPL collection system.

Date	Description
July 2018	Golder, on behalf of UPRR, installs two additional wells to evaluate the lateral extent of chemicals of concern (COCs). UPRR submits to the TCEQ the Corrective Action Monitoring Report: 2018 First Semi-Annual Event dated July 20, 2018; Golder, on behalf of UPRR, conducts 2018 second semi-annual groundwater monitoring event for the SWMU No. 1; UPRR submits the PRACR Monthly Update to the TCEQ (July 20, 2018).
June 2018	Golder, on behalf of UPRR, conducts repairs to the soil cap and submits PRACR Monthly Update to the TCEQ.
May 2018	Golder, on behalf of UPRR, conducts site-wide groundwater sampling event (through June 2018). Golder submits PRACR Monthly Update to the TCEQ (May 21, 2018).
April 2018	Pastor, Behling & Wheeler, LLC (PBW) , on behalf of UPRR, submits the PRACR Monthly Update to the TCEQ (April 20, 2018).
March 2018	TCEQ issues comment letter on the Updated PRACR requesting monthly updates on the soil and concrete cap repairs (March 20, 2018). PBW, on behalf of UPRR, conducts site-wide groundwater sampling event (through April 2018).
January 2018	UPRR submits to the TCEQ the Corrective Action Monitoring Report: 2017 Second Semi-Annual Event dated January 18, 2018; PBW, on behalf of UPRR, conducts 2018 first semi-annual groundwater monitoring event for the SWMU No. 1. PBW, on behalf of UPRR, also submits the Updated PRACR (post-Hurricane Harvey) and response to TCEQ comment letter dated October 20, 2017 on January 17, 2018. PBW, on behalf of UPRR, installed the additional alternate point of exposure (APOE) wells and monitoring/replacement wells (MW-22AR, MW-22BR, MW-82B, MW-83B, MW-83C, MW-84B, MW-85C, MW-86C, MW-87C, and MW-88C) as requested November 28, 2017. The site-wide groundwater sampling event was also conducted (through February 2018).
November 2017	Meeting with UPRR, PBW, Baker-Wotring and the TCEQ (Corrective Action and Law Division) at the TCEQ offices in Austin on November 29, 2017. TCEQ issues letter dated November 28, 2017 requesting UPRR to install additional APOE wells and conduct additional groundwater sampling of the site-wide wells.
October 2017	TCEQ issues a comment letter dated October 20, 2017 on the post- Hurricane Harvey assessment of the capped areas PRACR.
July 2017	UPRR submits to the TCEQ the Corrective Action Monitoring Report: 2017 First Semi-Annual Event dated July 7, 2017; PBW, on behalf of UPRR, conducts 2017 second semi-annual groundwater monitoring event for the SWMU No. 1.
June 2017	UPRR submits the RCRA Part A and B Permit Renewal Application (Revision No. 4) with Response Action Plan (RAP) (Revision No. 3) to the TCEQ dated June 2017 in response to the 3rd Technical Notice of Deficiency (NOD) Letter dated April 10, 2017. This includes submitting the Response Action Completion Report (RACR) (Revision No.1), June 24, 2017.

Date	Description
May 2017	Meeting with UPRR, PBW, Baker-Wotring and the TCEQ (Corrective Action and Law Division) on May 31, 2017 discussing the 3rd Technical NOD Letter dated April 10, 2017 on the RCRA Part A and B Permit Renewal Application and Response Action Plan (RAP), specifically for issues regarding the restrictive covenants/deed notices for the off-site properties.
April 2017	UPRR receives the 3rd Technical NOD Letter dated April 10, 2017 on the RCRA Part A and B Permit Renewal Application (Revision No. 3) and RAP (Revision 2) from the TCEQ.
February 2017	Meeting with UPRR, PBW, Baker-Wotring and the TCEQ (Corrective Action and Law Division) on February 16, 2017 discussing the draft comments on the RAP (Revision No. 2) and restrictive covenants for the off-site properties.
January 2017	UPRR submits to the TCEQ the Corrective Action Monitoring Report: 2016 Second Semi-Annual Event dated January 17, 2017; PBW, on behalf of UPRR, conducts 2017 first semi-annual groundwater monitoring event for the SWMU No. 1
July 2016	UPRR submits the RCRA Part A and B Permit Renewal Application (Revision No. 3) with RAP (Revision No. 2) to the TCEQ dated July 2016 in response to the Technical NOD Letter dated June 2, 2016. This includes submitting a Response Action Completion Report (RACR). PBW, on behalf of UPRR, submits to the TCEQ the Corrective Action Monitoring Report: 2016 First Semi-Annual Event dated July 12, 2016; PBW, on behalf of UPRR, conducts 2016 second semi-annual groundwater monitoring event for the SWMU No. 1
June 2016	UPRR receives Technical NOD Letter dated June 2, 2016 on the RCRA Part A and B Permit Renewal Application and Response Action Plan from the TCEQ.
May 2016	UPRR completes the response actions authorized under the Area of Contamination to address the surface and subsurface soil Protective Concentration Level Exceedance (PCLE) Zones as detailed in the updated RAP (Revision No. 1) dated December 7, 2015.
February 2016	TCEQ approves the request to extend the termination date for the Area of Contamination from February 15, 2016 to March 7, 2016 in a letter dated February 22, 2016
January 2016	Begin response actions (excavation/placement and cap constriction) activities to address surface soil PCLE Zones. PBW, on behalf of UPRR, conducts 2016 first semi-annual groundwater monitoring event for the Solid Waste Management Unit (SWMU) 1. PBW, on behalf of UPRR, submits on behalf of UPRR a request to extend the termination date from February 15, 2015 to March 7, 2016 for the Area of Contamination set by the TCEQ.
December 2015	UPRR submits the RCRA Part A and B Permit Renewal Application (Revision No. 2) with Response Action Plan (RAP) (Revision No. 1) to the TCEQ dated December 7, 2015. Remediation contractor begins site preparation for response actions under the Area of Contamination.
November 2015	UPRR receives the TCEQ letter dated November 5, 2015 detailing the agency's review of the September 18, 2015 submittal titled Additional Information for Clean Closure Equivalence Demonstration. The TCEQ Industrial and Hazardous

Date	Description
	Waste (I&HW) Permits Section was unable to accept the request for discontinuing post-closure care of the former surface impoundment, Solid Waste Management Unit (SWMU) 1.
November 2015	Meeting with UPRR, PBW, and the TCEQ on November 4, 2015 discussing the October 23, 2015 technical comment letter from the TCEQ.
October 2015	UPRR receives additional technical comments from the TCEQ in a letter dated October 23, 2015 on the Response Action Plan (RAP) regarding the Plume Management Zones and Technical Impracticability Demonstration provided in the Response Action Plan.
September 2015	UPRR submits to the TCEQ the Additional Information for Clean Closure Equivalence Demonstration dated September 18, 2015 that included historical data and letters from 1983, 1984, and 1991 to demonstrate clean closure of the soils under the former surface impoundment (SWMU 1). The letter also included a request to cease the post-closure care for SWMU 1.
August 2015	UPRR receives Technical Notice of Deficiency (NOD) Letter dated August 5, 2015 on the RCRA Part A and B Permit Renewal Application and Response Action Plan from the TCEQ.
July 2015	UPRR submits to the TCEQ the Corrective Action Monitoring Report: 2015 First Semi-Annual Event dated July 16, 2015; PBW, on behalf of UPRR, conducts 2015 second semi-annual groundwater monitoring event for the SWMU No. 1.
April 2015	PBW, on behalf of UPRR, submits to the TCEQ newspaper tear sheets and affidavits that public notice was published in English and Spanish in the *Houston Chronicle* on April 2 and *La Subasta* on March 31, respectively as required once the RCRA Permit Renewal/Compliance Plan with Major Amendment was administratively complete.
March 2015	TCEQ issues a letter dated March 13, 2015 declaring the RCRA Permit Renewal/Compliance Plan with Major Amendment was administratively complete on March 13, 2015.
February 2015	PBW, on behalf of UPRR, submits a response letter to the TCEQ dated February 13, 2015 for the TCEQ Administrative NOD on the RCRA Part A and B Permit Renewal Application.
January 2015	PBW, on behalf of UPRR, submits to the TCEQ the Corrective Action Monitoring Report: 2014 Second Semi-Annual Event dated January 15, 2015; PBW, on behalf of UPRR, conducts 2015 first semi-annual groundwater monitoring event for the SWMU No. 1.
December 2014	UPRR submits the RCRA Part A and B Permit Renewal Application with Response Action Plan (RAP) to the TCEQ dated December 10, 2014. UPRR receives the TCEQ Administrative NOD Letter dated December 17, 2014.
November 2014	RCRA Permit Pre-Application Meeting with UPRR, PBW, and TCEQ dated November 6, 2014.

Date	Description
September 2014	UPRR holds public meeting with residents near the Site to detail institutional controls for off-site groundwater Plume Management Zone (PMZ).
July/August 2014	PBW, on behalf of UPRR, conducts site-wide groundwater sampling event.
May 2014	PBW, on behalf of UPRR, oversees installation of seven new monitoring wells (MW-51C, MW-76C, MW-77A, MW-78A, MW-79A, MW-80B, and MW-81B) in the Englewood Intermodal Yard to evaluate DNAPL extent and extent of chemicals of concern (COCs) in the B-CZ unit to the southeast, and one replacement well MW-34CR to replace MW-34C. Soil samples also collected from City of Houston right of way (ROW) along north perimeter of the Site.
January 2014	PBW, on behalf of UPRR, conducts site-wide groundwater sampling event.
July 2013	PBW, on behalf of UPRR, conducts site-wide groundwater sampling event.
February/March 2013	PBW, on behalf of UPRR, conducts cone penetrometer testing (CPT)/rapid optical screening tool (ROST) and soil investigation at the Englewood Intermodal Yard adjacent to the UPRR Houston Wood Preserving Works (HWPW) site.
January/February 2013	PBW, on behalf of UPRR, conducts site-wide groundwater sampling event (95 wells), submits Proposed DNAPL Recovery Pilot Test letter to TCEQ dated February 5, 2013, and initiates monthly DNAPL recovery from on-site and off-site wells (10-12 wells) (planned for 24 months).
November 2012	Meet with TCEQ regarding proposed CPT/ROST investigation of Englewood Intermodal Yard based on DNAPL detected from the December 2011 investigation.
July 2012	PBW, on behalf of UPRR, conducts site-wide groundwater sampling event.
January 2012	PBW, on behalf of UPRR, conducts site-wide groundwater sampling event.
July 2012	PBW, on behalf of UPRR, conducts site-wide groundwater sampling event.
December 2011	PBW, on behalf of UPRR, installs additional monitoring wells in the cohesive zone B-CZ to evaluate extent of DNAPL in the B-CZ.
July 2011	PBW, on behalf of UPRR, conducts site-wide groundwater sampling event.
April 2011	TCEQ approves the Affected Property Assessment Report (APAR) (including updates and addendums).
March 2011	PBW, on behalf of UPRR, submits the Revised Updated APAR Addendum to the TCEQ. UPRR repairs fence around site.
January 2011	PBW, on behalf of UPRR, conducts site-wide groundwater sampling event.

Date	Description
December 2010/ January 2011	UPRR (PBW on behalf of UPRR) submits Off-Site Notification Letters to off-site properties indicating Notice of Information Availability for the site, as required with the submittal of the Updated APAR Addendum (Oct 2012).
October 22, 2010	PBW, on behalf of UPRR, submits the Updated APAR Addendum to the TCEQ.
June/July 2010	PBW, on behalf of UPRR, conducts additional soil (along northeast portion of Site) and groundwater investigation (A-TZ, B-CZ, C-TZ and D-TZ wells); including site-wide groundwater monitoring event.
February 16, 2010	UPRR Response to TCEQ Comment Letter dated November 18, 2009.
January 2010	PBW conducts site-wide groundwater sampling event; selected wells are analyzed for Volatile Organic Compounds (VOCs) by EPA Method 8620.
November 18, 2009	TCEQ Comment Letter on Revised APAR.
July 2009	PBW, on behalf of UPRR, submits APAR Addendum to TCEQ.
January 2009	PBW, on behalf of UPRR, conducts additional soil and groundwater investigation.
July 2008	PBW, on behalf of UPRR, conducts additional CPT-ROST and groundwater investigation
January 2007	PBW, on behalf of UPRR, conducts additional soil and groundwater investigation
August 2006	ERM-Southwest, Inc. (ERM) , on behalf of UPRR, conducts additional soil and groundwater investigation
April 2006	ERM, on behalf of UPRR, conducts additional soil and groundwater investigation
September 6, 2005	UPRR Response to TCEQ Response Letter dated August 1, 2005
August 2005	TCEQ Response to UPRR Response Letter dated June 9, 2005
June 9, 2005	UPRR Response to TCEQ Letter dated April 15, 2005
April 15, 2005	TCEQ Response to UPRR Response Letter dated November 19, 2004
November 19, 2004	UPRR Response to October 8, 2004 TCEQ Letter
October 8, 2004	TCEQ Comment Letter on Revised APAR
June 10, 2004	Revised APAR submitted to the TCEQ by ERM, Inc. on behalf of UPRR
November 7, 2001	Texas Natural Resources Conservation Commission (TNRCC) provides comments to July 5, 2001 response letter.
July 5, 2001	Follow-up response to November 6, 2000 TNRCC comment letter on the On-Site APAR submitted to TNRCC on behalf of UPRR.
January 9, 2001	Initial response to November 6, 2000 TNRCC comments.
November 6, 2000	TNRCC provides comments to On-Site APAR.
July 10, 2000	Affected Property Assessment Report for On-Site Property (On-Site APAR) submitted to TNRCC on behalf of UPRR by ERM.
February 20, 2000	Letter submitted to the TNRCC regarding proposed Phase 2-C investigation for further delineation of off-site areas
September 10, 1999	Phase 2-B RFI/EOC Investigation Report submitted to TNRCC on behalf of UPRR by ERM
April 27, 1998	Interim Stabilization Measures Report – Southern Drainage Ditch, submitted to TNRCC on behalf of UPRR by ERM.
February 13, 1998	Phase 2-A RFI/EOC Investigation Report submitted to TNRCC on behalf of UPRR by ERM.
January 13, 1997	RFI portion of the Phase 1 RFI/EOC Investigation Report approved by TNRCC
November 26, 1996	EOC portion of the Phase 1 RFI/EOC Investigation Report approved by TNRCC

Date	Description
May 23, 1996	Phase 1 RFI/EOC Report submitted on behalf of Southern Pacific Transportation Company (SPTCo) by Terranext
October 16, 1995	RFI Work Plan approved by TNRCC
September 29, 1995	EOC Work Plan approved by TNRCC
January 10, 1995	Operation and Maintenance Plan approved by TNRCC
November 3, 1994	Revised Compliance Schedule approved by TNRCC
October 14, 1994	RCRA Facility Investigation (RFI) Work Plan submitted on behalf of SPTCo
September 16, 1994	Extent of Contamination (EOC) Work Plan submitted on behalf of SPTCo
September 7, 1994	Revised Compliance Schedule submitted on behalf of SPTCo
August 19, 1994	Operation and Maintenance Plan and Compliance Schedule submitted on behalf of SPTCo
June 20, 1994	Permit No. HW-50343-000 and Compliance Plan CP-50343-000 issued by TNRCC.
October 1993	RCRA Facility Assessment completed on behalf of U.S. EPA by PRC Environmental Management, Inc.
May 13, 1991	RCRA Permit Application submitted by SPTCo

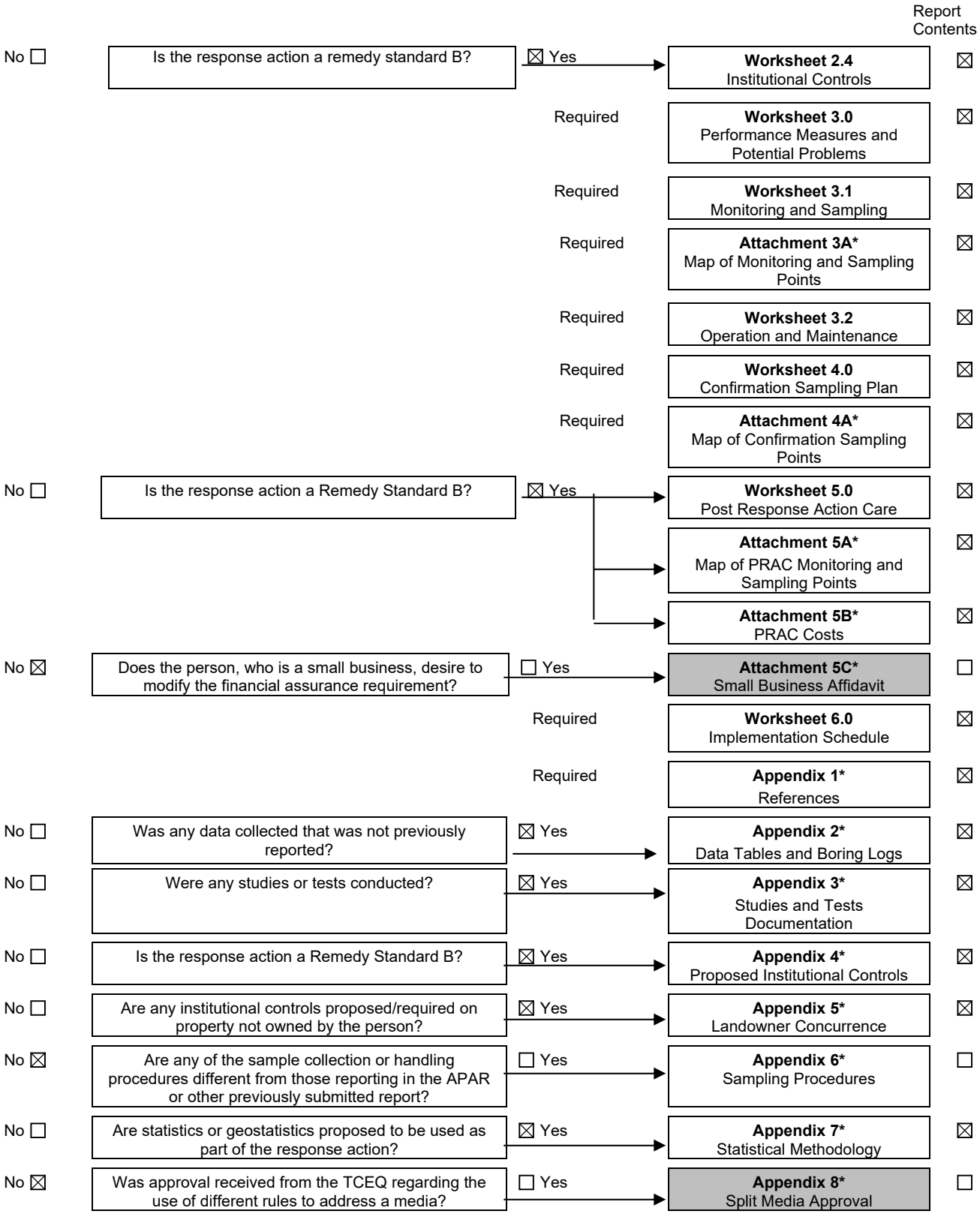
Note: Not all groundwater sampling events are listed in the chronology.

Checklist for Report Completeness	ID No.: SWR ID 31547
	Report Date: August 31, 2020 – Rev 5

Use this checklist to determine the portions of the form that must be submitted for this report. Answer all questions by checking Yes or No. If the answer is Yes include that portion of the report. If the answer is No, do not complete or submit that portion of the report. All form contents that are marked "Required" must be submitted. Form contents marked with an asterisk (*) are not included in the blank form and are to be provided by the person.

				Report Contents
		Required	**Cover Page**	☒
		Required	**Executive Summary**	☒
		Required	**Checklist for Report Completeness**	☒
		Required	**Worksheet 1.0** Response Action Objectives	☒
No ☐	Have new data been collected that was not previously submitted?	☒ Yes	**Attachment 1A*** Maps and Cross Sections	☒
			Attachment 1B* Graphs of Concentration versus Time	☒
		Required	**Worksheet 2.0** Response Action Design	☒
		Required	**Attachment 2A*** Response Action Diagrams and Component/Equipment Descriptions	☒
		Required	**Attachment 2B*** Proposed Well Design	☒
No ☒	Is an ecological services analysis or compensatory restoration plan part of the proposed response action?	☐ Yes	**Attachment 2C*** ESA and Compensatory Restoration Plan	☐
No ☐	Is a plume management zone proposed as part of the response action?	☒ Yes	**Worksheet 2.1** Plume Management Zone	☒
			Attachment 2D* Plume Management Zone Map	☒
			Attachment 2E* Attenuation Action Levels Determination	☐
No ☒	Is a waste control unit proposed as part of the response action?	☐ Yes	**Worksheet 2.2** Waste Control Unit	☐
			Attachment 2F* Map of Waste Control Unit	☐
No ☒	Is a technical impracticability area proposed as part of the response action?	☐ Yes	**Worksheet 2.3** Technical Impracticability	☐
			Attachment 2G* Map of Technical Impracticability Area	☐

Checklist for Report Completeness	ID No.: SWR ID 31547
	Report Date: August 31, 2020 – Rev 5



Form contents marked with an asterisk (*) are not included in the blank form.

Use this worksheet to describe the objectives for the response action in each media.

Response Action Objectives

List the environmental media to which this applies **Surface Soils (0 – 5 feet bgs)/Subsurface Soils (>5 feet bgs)**

Repeat this section for each medium that has a different response action objective.

State the property-specific response objectives for the PCLE zone in each media in the context of the response objectives set forth in §350.32 or §350.33 as applicable. Explain how the response action is appropriate based on the hydrogeologic characteristics, COC characteristics, and potential unprotective conditions that could continue or result during the remedial period.

The Response Action Objectives (RAOs) for the surface and subsurface soil PCLE Zones are to control potential exposure through physical barriers and institutional controls under Remedy Standard B such that commercial/industrial workers will not be exposed to concentrations of COCs in excess of the critical human health PCLs (§350.33(a)(1)). This section also details the NAPL Response Objectives established in the updated Risk-Based NAPL Management Assessment (Appendix 3) that are applicable to surface/subsurface soil pathway.

The following approaches were implemented to address the RAOs for surface and subsurface soils as detailed in the Response Action Completion Report (RACR) dated July 18, 2016 (PBW, 2016), Revised RACR dated June 2017 (PBW, 2017), Interim RACR dated March 2019 (Golder, 2019b), and Post-Response Action Completion Report (PRACR) Monthly Updates for the Englewood IM Yard (shown on Attachment 1A-1):

- Former HWPW area: RAOs were achieved through remedial actions consisting of soil relocation and soil capping that were completed in 2016 following approval from the TCEQ to address the surface and subsurface soil PCLE zones at the former Houston Wood Preserving Works facility (HWPW) area. As detailed in the Response Action Completion Report (RACR) (PBW, 2016), surface soils with cPCL exceedances in the Inactive Wastewater Lagoon (AOC 6), and areas north of the AST Area (SWMU No. 8) were consolidated in the area of SWMUs 4, 5, and 8 using the Area of Contamination (AOC) approach. The Soil Cap area was then covered with a vapor barrier with geotextile fabric and an engineered soil cap (12 inches of clayey soil and 6 inches of topsoil) to reduce the potential for human exposure to the impacted soils above cPCLs. The surface soil PCLE zone along the Southern Drainage Ditch (SDD) (SWMU No. 2), including the oil/water separator (SWMU 11) east of the former AST Area (SWMU 8), were capped in place using asphalt cover (2.5-in thick over gravel road base) as part of a roadway improvement to protect the commercial/industrial exposure pathway (PBW, 2016).

- Englewood Intermodal (IM) Yard area: Most of the Englewood IM Yard, which is an active, secured facility used by UPRR for the temporary parking and storage of trailer-mounted intermodal container boxes, has a concrete and/or asphalt pavement cover that serves as a physical barrier to prevent exposure of the commercial/industrial pathway to the surface and subsurface soil PCLE Zones as discussed in the initial RAP (PBW, 2014). As part of the post-response action care presented in this Response Action Plan (RAP), the concrete/asphalt pavement within the surface and subsurface soil PCLE Zones is inspected quarterly to ensure continued on-site worker protection from impacted surface and subsurface soils. Since this area is owned and controlled by UPRR, UPRR has implemented a health and safety program to restrict any construction activity that would encounter surface or subsurface soils within the Englewood IM Yard. In the event construction activities are necessary, a health and safety plan and soil management plan will be implemented to ensure worker protection from COCs

and proper management of impacted soils as part of the construction activities.

- UPRR Main Lines Ballast Area: The area between the former wood treating works area and the Englewood IM Yard (approximately 100 feet width) is covered with railroad ballast, ties, and rail. As proposed in the initial RAP (PBW, 2014), UPRR will continue to use the existing railroad ballast as an engineering control for preventing potential on-site worker exposure to impacted surface soils in this area. Since this area is owned and controlled by UPRR, UPRR has implemented a health and safety program to restrict any construction activity in the area of the railroad lines. In the event construction activities are necessary, a health and safety plan and soil management plan will be implemented to ensure worker protection from COCs in the surface soils.

To address potential exposure to the surface soil PCLE Zone off-Site, the following was implemented to protect the public from potential exposure to COCs in surface and subsurface soils:

- City of Houston Right of Way (ROW) – Liberty Road: The area immediately north of the AST Area (SWMU No. 8) within the City of Houston right of way (ROW) between the UPRR property boundary and Liberty Road (approximately 6 feet wide and 550 feet long) was addressed through a combination of soil excavation (placed within the soil capped area) and construction of a concrete sidewalk to reduce exposure to the surface soil PCLE zone.

The Affected Property (including the entire Site (HWPW and Englewood IM Yard)) will be deed restricted for commercial-industrial land use, for the use of physical controls on surface and subsurface soil as specified in this RAP, and restrictions on soil excavation within the surface and subsurface soil PCLE Zone in accordance with §350.31(g). UPRR has posted signs at the Site indicating restrictions on soil excavation at the Site.

The NAPL Response Objectives established in the updated Risk-Based NAPL Management Assessment (Appendix 3) that are applicable to surface/subsurface soil pathway include the following based on the NAPL Triggers (TRRP-32; TCEQ, 2013):

1) Migrating NAPL Zone:
    a. Abate NAPL Zone migration (Site Condition: NAPL discharge to ground surface in the Englewood IM Yard area).
2) Mobile NAPL Zone:
    a. Prevent mobile NAPL impact to shallow vadose zone receptors (mobile NAPL threat to subsurface utility or structure site condition in the Englewood IM Yard area); and
    b. Prevent potential exposure to mobile NAPL (mobile NAPL in vadose zone at depths ≤ 15 feet in secured/restricted facility in the Englewood IM Yard area).

Englewood Intermodal Yard Area:

Migrating NAPL - During the July 2017 quarterly inspection of the capped areas, a tar-like NAPL was observed surfacing through the joints and cracks in the concrete and asphalt surfaces within the Englewood IM Yard (in the area of parking slots B100 to B109). The interim response action implemented to address the tar-like NAPL seeps was to install a NAPL Collection System by removing a section of asphalt or concrete cover, excavating the underlying soils creating a trench, backfilling with high permeability fill, installing a slotted vertical pipe to allow the accumulation and recovery of NAPL, and backfilling the remaining few feet with compacted selected fill and reinforced concrete to re-establish the concrete parking area. The Interim RACR dated March 26, 2019 (Golder, 2019b) and submitted to the TCEQ detailed the construction of the NAPL Collection System. Small NAPL surface seeps are also observed in other areas in the Englewood IM Yard. UPRR conducts weekly inspections of the area as part of the operation and maintenance of the NAPL Collection System, which includes removal of any tar-like material that has surfaced.

Mobile NAPL - In January 2020 as part of the pre-design assessment activities, UPRR conducted the Non-Aqueous Phase Liquid (NAPL)-Total Petroleum Hydrocarbon (TPH)-NAPL assessment (NAPL Assessment) within the HWPW and Englewood IM Yard areas. Details of the assessment were submitted to the TCEQ in the Interim NAPL and TPH-NAPL Assessment Report dated May 29, 2020 (Golder, 2020d), which is also included in Appendix 3. The NAPL assessment within the Englewood IM Yard indicated total TPH TX1005 concentrations in eight soil samples exceeded the Tier 1 $Soil_{Res}$ PCL of 10,000 mg/kg, located within the former AST area and general area of the former lagoons. At each of these soil boring locations, either NAPL was visually observed or strong hydrocarbon odors were noted on the soil boring logs for the vadose zone. The Tier 1 $Soil_{Res}$ PCL exceedance in conjunction with NAPL observations in the soil cores indicate the potential for mobile NAPL in the vadose zone, as detailed in the Risk-Based NAPL Management Assessment provided in Appendix 3. The presence of NAPL in the vadose zone within 5 feet of ground surface in this specific on-site area creates a potential for mobile NAPL threat to subsurface utilities or structures. Additional investigations need to be conducted to evaluate this NAPL site condition, as discussed in Worksheet 2.0.

In July 2020, test pits were constructed where tar NAPL seeps and black water seeps have been observed. Details of the additional investigation activities will be presented in the Englewood IM Yard Test Pit Evaluation Report.

Explain how the COCs will be handled, treated, disposed, or transferred to another media and document that the response action will not result in any additional potential exposure conditions due to response action activities.

As detailed in the RACR dated July 18, 2016 (PBW, 2016) and Revised RACR dated June 2017 (PBW, 2017), impacted soils were consolidated within the surface soil Affected Property. Storm water protection (i.e., Storm Water Pollution Prevention Plan (SWPPP) development, silt fencing installation/maintenance) activities were conducted during remediation activities to ensure the activities did not result in additional exposure conditions. During excavation and stockpiling activities within the Soil Cap area, impacted soils were covered with plastic to limit exposure to storm water during rainfall events. Dust suppression activities (with subsequent air monitoring and sampling activities) were implemented to control the potential migration of dust from the Site. As supported by the air monitoring and sampling, the dust suppression activities during the remediation activities did not result in any additional exposure conditions (PBW, 2016).

UPRR proposes to place restrictions through institutional controls on soil excavation activities within the surface soil PCLE Zone on the UPRR-owned property. UPRR has posted signs at the Site indicating restrictions on soil excavation at the Site.

State the proposed “reasonable time frame” and provide the justification for that time frame in the context of any potential for unprotective exposures to exist or develop, COC characteristics, hydrogeologic and affected property characteristics. If the reasonable time frame is different for the different affected media or for particular tracts of land, be sure to discuss that. Provide how the proposed response action will meet the objectives in a reasonable timeframe.

The response actions to address potential exposures to surface and subsurface soil PCLE Zones have been completed in the Former HWPW Operational Areas and City of Houston ROW, as well as establishing the existing concrete cover (Englewood IM Yard) and railroad ballast area.

Interim response actions at the Englewood Intermodal Yard will continue to be evaluated. UPRR installed the NAPL Collection System to address the TRRP-32 guidance migrating and mobile NAPL triggers for

the vadose zone, which addressed the NAPL surface seeps in that immediate area. UPRR continues to conduct weekly inspections of the area, which include removal of any tar-like NAPL material and seasonal seep water that surfaces through joints and cracks of the pavement to prevent potential for unprotected exposures.

For the entire Affected Property, deed restriction of the Site to commercial-industrial use will also be implemented to prevent future exposure risk. The deed notice will be filed with the Harris County Clerk upon approval of the RAP. In accordance with the TCEQ regulatory guidance document Institutional Controls Under TRRP (RG-366/TRRP-16), proof of filing would be submitted to the TCEQ within 120 days of approval of the RAP (TCEQ, 2010b). An example deed notice for the UPRR property is included in Appendix 4.

List the environmental media to which this applies **Groundwater**

Repeat this section for each medium that has a different response action objective.

State the property-specific response objectives for the PCLE zone in each media in the context of the response objectives set forth in §350.32 or §350.33 as applicable. Explain how the response action is appropriate based on the hydrogeologic characteristics, COC characteristics, and potential unprotective conditions that could continue or result during the remedial period.

The response objectives for the on-site groundwater PCLE Zone and portion of the off-site groundwater PCLE Zone within the City of Houston right-of-way (COH ROW) will be addressed under Remedy Standard B (physical control) and modified Remedy Standard B (PMZ) through control measures. As stated in TRRP Guidance Document Application of Remedy Standards A and B (RG-366/TRRP-28) (TRRP-28 Guidance) (TCEQ, 2008), "if a control measure is used to address the on-site portion of a PCLE zone at an affected property, but removal is used to address an off-site portion of the same PCLE zone, then Remedy Standard B is what has been applied to the affected property even though the off-site portion is remediated to a Remedy Standard A equivalent." Therefore, the RAO for the off-site groundwater PCLE Zone outside of the COH ROW will be addressed under Remedy Standard B under removal through decontamination measures (Remedy Standard A equivalent). In addition, due to the presence of DNAPL in certain defined and limited areas both on-site and off-site, NAPL response objectives were developed following TRRP-32 Risk-Based NAPL Management Guidance Document (TRRP-32, TCEQ, 2013) for those on-site and off-site areas relative to groundwater response objectives.

As part of the development of the response action objectives for the Site, UPRR proposes to utilize the Interstate Technology Regulatory Council (ITRC) Integrated DNAPL Site Strategy (IDSS) Technical/Regulatory Guidance Document dated November 2011 (ITRC, 2011) as a guide for developing the framework for response actions to achieve the response objectives. As detailed in the IDSS Document, establishing realistic remedial objectives (functional objectives) that are specific, measurable, attainable, relevant, and time-bound ('SMART' acronym) are key in achieving those objectives. The ITRC document defines functional objectives as "*steps or activities that are taken to achieve absolute objectives.*" Therefore, the proposed response actions are evaluated using those metrics.

I. On-Site Groundwater PCLE Zone/ City of Houston Right-of-Way (COH ROW) Groundwater PCLE Zone

The RAO to address the PCLE Zone in groundwater on-site and within a portion of the COH ROW will be through Remedy Standard B control using the following response actions:

- A modified groundwater response objective through a plume management zone (PMZ);
- Installation of a physical control through a slurry wall.

In accordance with 30 TAC §350.33, a PMZ is proposed for the Site for the three GWBUs: A-TZ, B-CZ/B-TZ, and C-TZ, with a physical control (i.e., slurry wall), and NAPL recovery as part of the groundwater response actions to meet PCLs at alternate points of exposure (POEs) for all three GWBUs. The CSM with generalized response actions are presented on Attachment 1A-4 and Attachment 1A-5.

PMZ -

The proposed cumulative PMZ (for all three GWBUs) consists of the following:

1. On-Site PMZ – The On-Site PMZ will include the cumulative groundwater PCLE Zone within the UPRR-owned property consisting of the center to the east portion of the Site and western

portion of the Site (includes the On-Site PMZ (West) area for the B-CZ/B-TZ GWBU). The proposed PMZ includes the groundwater PCLE Zones for the creosote-related COCs and arsenic.

2. Off-Site PMZ (COH ROW) - The off-site PMZ includes the cumulative groundwater PCLE Zone that extends off-site to the north, east, and west of the Site within the City of Houston ROW.

The cumulative On-Site PMZ, including the former HWPW and Englewood IM Yard, will be deed restricted to commercial-industrial land use and to restrict future use of groundwater on-site. For the Off-Site PMZ within the COH ROW, the City of Houston has provided a signed restrictive covenant for the Off-Site PMZ City of Houston ROW (Appendix 5). The proposed PMZs are appropriate response actions based on hydrogeologic characteristics and COC characteristics as described in previous submittals including the Interim Groundwater Monitoring Report dated April 30, 2020 (Golder, 2020c). By restricting groundwater use within the PMZs, potential for exposure to concentrations of COCs in excess of applicable PCLs in groundwater is addressed.

On-Site PMZ Functional Objective: **Establish a PMZ to Restrict Exposure to Groundwater PCLE Zone/NAPL**:

- Specific: Yes, institutional control to reduce potential for exposure to groundwater PCLE and NAPL.
- Measurable: Yes, alternate point of exposure (APOE) wells and corrective action observation wells will be monitored.
- Attainable: Yes, signed restrictive covenant for COH ROW has been provided, and Site will be deed restricted.
- Relevant: The objective is relevant to remove any potential for unprotective conditions.
- Time Bound: Once the PMZ is established, potential for exposure to groundwater PCLE and NAPL is addressed.

Slurry Wall

A slurry wall serving as a physical control as a final remedy under Remedy Standard B is proposed to be installed on-site along the northern perimeter of the HWPW and along the eastern perimeter of the Englewood IM Yard. The slurry wall barrier will be constructed to impede groundwater flow from portions of the Site and establish a subsurface barrier separating the on-site contamination from the off-site areas to the north and east. This will reduce the risk of potential future migration of groundwater COC concentrations above the critical PCLs from the Site, and similarly reduce the potential for migration of mobile NAPL from the Site. The CSM based on the additional NAPL data from the Interim NAPL Assessment (Golder, 2020d) indicated that NAPL mass predominately resides within certain parts of the HWPW and Englewood IM Yard area, with some NAPL residing within the secondary porosity of the carbonate seams and clay fractures in the B-CZ and within the C-TZ off-site. The slurry wall will be constructed to a depth of approximately 75 feet bgs to below the C-TZ GWBU along the northern perimeter of the HWPW and to a depth of approximately 50 feet bgs below the B-CZ where the NAPL and PCLE Zone resides along the eastern perimeter of the Englewood IM Yard. Final depths and the specific path of the slurry wall will be determined following the pre-design investigations.

Slurry Wall Functional Objective: **Reduce the potential for future off-site migration of groundwater COCs and NAPL**:

- Specific: Yes, physical control (slurry wall) to restrict the future potential for off-site migration of groundwater COC concentrations above critical PCLs from the Site.
- Measurable: Yes, groundwater elevations and gradients will indicate if functional objective is

being met.

- Attainable: Yes, the functional objective is feasible with the installation of a slurry wall. Construction and implementation means and methods will be evaluated during the design phase.
- Relevant: Yes, this objective directly supports the achievement of the absolute objective.
- Time Bound: Once installed, the slurry wall will reduce the potential for off-site migration of groundwater COCs and NAPL.

NAPL Response Objectives

As stated in TRRP-32 Guidance for addressing NAPL within a PMZ, (30 TAC §350.33(f)(4)(E), "the person shall reduce NAPLs which contain COCs in excess of PCLs within a PMZ to the extent practicable." To evaluate that response objective in accordance with the TRRP-32 Guidance (TCEQ, 2013), an updated Risk-Based NAPL Management evaluation is provided in Appendix 3 of this Revised RAP that incorporates the NAPL Assessment conducted in 2019-2020 (Golder, 2020d; Appendix 3). For the On-Site PMZ/Off-Site COH ROW PMZ, the following groundwater-related NAPL triggers and response action objectives (as defined in the TRRP-32 Guidance) apply:

NAPL Trigger	Site Condition	NAPL Response Objective
Mobile NAPL Zone (HWPW and Englewood IM Yard Areas)	NAPL overlies groundwater NAPL zone in PMZ	Prevent NAPL migration to groundwater
	NAPL contact with groundwater	Prevent disturbance of mobile NAPL that could induce migration
NAPL in Contact with Groundwater (HWPW and Englewood IM Yard Areas)	NAPL contact with Class 2/Class 3 groundwater, in PMZ (on-Site and City of Houston ROW)	Prevent exposure to NAPL zone via institutional control and compliance with PMZ performance criteria (recover readily recoverable NAPL).

For both the HWPW and Englewood IM Yard areas, the two NAPL triggers of *mobile NAPL zone* and *NAPL in contact with groundwater* were evaluated as part of this Revised RAP. The current endpoint being used in both areas for the mobile NAPL response objective is the Control Endpoint (as defined by TRRP-32 Guidance)– 1) NAPL zone migration control by physical or natural methods and institutional controls and 2) preventing the disturbance of mobile NAPL zone through physical and institutional controls by restricting excavation activities in both areas. The surface and subsurface soil PCLE zone and NAPL zone in the HWPW area are currently covered with soil cap (sloped to drain) or asphalt cap, reducing rainfall infiltration in the area. The surface and subsurface soil PCLE zone and NAPL zone in the Englewood IM Yard area are currently covered with a physical barrier (concrete pavement), preventing contact with NAPL for on-site workers, and provides a cover limiting rainfall infiltration. Even though NAPL has been detected in the vadose zone, the Interim NAPL Assessment (Golder, 2020d) indicated that there is evidence of areas of NAPL saturation from the shallow vadose zone vertically downward to the uppermost GWBU (A-TZ), demonstrating that NAPL migration to groundwater had historically already occurred and effectively obviating the response objective of preventing NAPL migration to groundwater. Based on the NAPL Assessment (Appendix 3), continued migration from the vadose zone does not appear to be occurring in the A-TZ.

With the proposed PMZ to be established on-site, including the Englewood IM Yard area, and the off-site COH ROW area, the response objective for NAPL in contact with groundwater will include

compliance with PMZ performance criteria at the NAPL zone and control through institutional controls on groundwater use to protect exposure to NAPL in the GWBUs. The TCEQ TRRP-32 Guidance only allows the recovery endpoint of *recover readily recoverable NAPL* (unless a TI has been established). As part of the evaluation for compliance with PMZ performance criteria, the on-going DNAPL recovery activities will include the more aggressive recovery method of multi-phase extraction (MPE) to assess if the DNAPL in the GWBUs on-site and off-site is considered readily recoverable and if other conventional or alternative NAPL recovery technologies should be considered. As proposed in this Revised RAP, a combination of MPE for recovery wells on the east side of the HWPW and Englewood IM Yard areas and the C-TZ wells within the COH ROW (included in the Off-Site PMZ), and current DNAPL recovery methods for other Site wells are proposed for the areas within the proposed PMZs to meet the NAPL recovery endpoint of NAPL recovered to extent practicable per §350.33(f)(4)(E) and prevent disturbance of mobile NAPL that could induce migration.

II. Off-Site Groundwater PCLE Zone

As discussed previously under TRRP-28 Guidance, the groundwater PCLE Zones that extend off-site outside of the proposed PMZs will be addressed with the RAO of groundwater decontamination under Remedy Standard B to applicable groundwater PCLs (Remedy Standard A equivalent). The general human health response objectives for Remedy Standard B include the following (taken from TRRP-29 Guidance):

- *30 TAC §350.33(a)(1)/ §350.33(b)(2)/ §350.37 - Persons must, within a reasonable time frame given the particular circumstances of an affected property, remove, decontaminate, and/or control the surface soil, subsurface soil and/or groundwater human health PCLE zones, other environmental media, and hazardous and non-hazardous waste in accordance with the provisions of this section such that humans will not be exposed to concentrations of COCs in the exposure media in excess of the residential or commercial/industrial critical human health PCLs, as applicable at the prescribed, or any approved alternate human points of exposure (POEs) established for environmental media in accordance with §350.37.*

A discussion on "reasonable time frame" to decontaminate the off-site groundwater PCLE Zone is provided later in this worksheet. Regarding human exposure to COC concentrations in the off-site groundwater PCLE Zones, there is no appreciable potential for unprotective exposures for the off-site residents to the off-site groundwater PCLE Zone. The two pathways of potential concern for human exposure is groundwater ingestion ($^{GW}GW_{Ing}$ PCL) and inhalation of vapors via vapor intrusion. The off-site properties in the area are provided drinking water by the City of Houston and no groundwater drinking wells have been identified in the area, thereby there is not a complete groundwater ingestion pathway. As detailed in the Updated VI Assessment Report (Golder, 2020f) (Appendix 3), the VI pathway has been thoroughly evaluated and demonstrated to be incomplete.

In terms of potential future exposures to the off-site groundwater PCLE Zones, the Site and surrounding area is within the jurisdiction of the Harris-Galveston Subsidence District (HGSD), which restricts groundwater use in the area and requires a permit application prior to drilling a groundwater supply well. There are permitting exemptions, but only in areas that do not have an alternative water supply as detailed in the HGSD rules (HGSD, 2013). The HGSD rules are not a complete prohibition on the use of groundwater in the area, but rather the fees associated with the rules are "intended to operate as an economic disincentive to groundwater withdrawal" (HGSD, 2013). Therefore, with the City of Houston providing water for the area, and financial disincentives placed on shallow groundwater use by the HGSD (which the Texas Supreme Court ruled in favor of the HGSD in 1977 to protect public welfare by limiting harmful pumping, which was causing ground subsidence of the land resulting in flooding (*Beckendorff v. Harris-Galveston Coastal Subsidence District* (1977)), use of the shallow GWBUs (A-TZ, B-CZ/B-TZ, C-TZ and D-TZ) are not currently or expected to have a reasonably anticipated future beneficial use in the area. The TCEQ stated in an Interoffice Memorandum (IOM)

dated December 13, 2016 (TCEQ, 2016) that it agreed "*with the conclusion of no foreseeable future use of the A, B and C transmissive zones on the basis of the municipal supply available to all properties, lack of groundwater use out of the 3 transmissive zones, and the permitting process of the Harris Galveston Subsidence District (HGSD) for installation of water wells as detailed in HGSD Rule 5.2, 5.6 and 5.8.*"

Based on these lines of evidence, it can be concluded that there is neither a current potential for human health exposure nor an anticipated future exposure for the off-site residents to the off-site groundwater PCLE Zones. However, since UPRR has not obtained written consent from all off-site affected property owners to file a restrictive covenant (RC) prohibiting the use of groundwater on their property and as a result the TCEQ will not approve a modified Remedy Standard B PMZ response action, the default response action objective will be to restore the Class 2 or 3 groundwater PCLE Zone to the critical PCLs until that response goal is reached or a PMZ or technical impracticability has been approved.

The primary response action for groundwater at the Site is the proposed construction of the slurry wall that will address the on-Site groundwater PCLE Zone. The objectives of that response are to restrict potential future migration of groundwater COC concentrations above the critical PCLs from the Site, and similarly reduce the potential for migration of mobile NAPL from the Site. The slurry wall will be constructed to impede groundwater flow from portions of the Site and establish a subsurface barrier separating the on-site contamination from the off-site areas to the north and east. However, as documented in the Interim NAPL Report (Golder, 2020d) and quarterly DNAPL Reports, DNAPL is present in certain off-site areas outside of the projected slurry wall path. As a result, DNAPL in those areas has the potential to serve as source mass for the off-site groundwater PCLE Zones.

For the off-site groundwater PCLE Zone where NAPL is present, the NAPL trigger and response objective per TRRP-32 Guidance consists of the following:

NAPL Trigger	Site Condition	NAPL Response Objective
NAPL in Contact with Groundwater (HWPW and Englewood IM Yard areas)	NAPL contact with Class 2/Class 3 groundwater, not in PMZ (off-Site)	Groundwater Restoration

As detailed in the Interim NAPL Report (Golder, 2020d), the shallowest indication of NAPL off-site to the north of the Site is in the B-TZ/B-CZ, generally at a depth of 24 feet or more below ground surface (bgs). The extent of NAPL in the B-TZ/B-CZ in this area is limited to an approximate distance of 500 feet or less to the north from the Site boundary. There has been no DNAPL observed in off-site A-TZ or C-TZ wells outside of the proposed Off-Site PMZ (City of Houston ROW). DNAPL is present in fractures and discontinuous seams in the B-CZ (i.e., is not continuous and has not collected as a reservoir in a shallow subsurface depression). For the off-site groundwater PCLE Zone where NAPL is present, the current NAPL response endpoint is to recover the soluble NAPL fraction from the B-CZ/B-TZ GWBU sufficient to eliminate source contributions to the groundwater PCLE zone.

Two major aspects, which are inherent consequences of the physical properties of creosote and its components, and the unfavorable hydrogeologic complexity of the Site, greatly hinder recoverability of the soluble DNAPL fraction from the subsurface. It is not feasible to recover all the mobile and residual DNAPL off-Site based on the following considerations:

1. Residual saturation in the GWBU matrix and confining clays: Most monitoring wells where DNAPL was noted in the boring logs do not have measurable, or recoverable, DNAPL present

in the wells. This indicates that in many areas within the Affected Property, including off-site, the creosote resides in the GWBUs as residual NAPL trapped in the pore spaces of the geologic matrix and is no longer mobile under natural conditions, but can enter a monitoring well completed across the interval and has the potential to continue to add dissolved contaminant mass to the GWBU as limited by the generally low solubilities of the creosote components; and

2. Creosote DNAPL in the low permeable clays: DNAPL noted in the boring logs for the B-CZ wells was typically observed within the B-CZ interbedded zone where the carbonate gravel seams were located. The hydraulic conductivities for these B-CZ wells screened across the carbonate seams had a geometric mean of 1.1×10^{-7} cm/sec (PBW, 2016), which does not meet the definition of a GWBU per 30 TAC §350.4(a)(40) and would qualify as saturated soils per TRRP-8 (TCEQ, 2010). Therefore, the mobility of fluids (both NAPL and water) through the B-CZ is very limited.

It has long been recognized that there are significant challenges in achieving a response objective of groundwater restoration in geologic settings similar to the off-site PCLE Zone where DNAPL is present within clayey saturated soils such as the B-CZ unit. As stated in the EPA document (EPA, 2003 – The DNAPL Remediation Challenge: Is There a Case for Source Depletion, EPA/600/R-03/143, December 2003), if the RAO is groundwater restoration where DNAPL is present, "*it is unlikely that any of the technologies currently available will be successful, except in situations involving small spills of DNAPL in relatively homogeneous saturated zones.*" Even partial source removal may not achieve the RAOs. As detailed in the Interstate Technology Regulatory Council (ITRC) Integrated DNAPL Site Strategy (IDSS) Guidance (ITRC, 2011), partial source removal of the NAPL does not typically result in meeting groundwater restoration remedial goals. Case studies suggest that removing up to 80%–90% of the DNAPL source material will only lead to limited reductions of dissolved-phase contaminants downgradient of the NAPL (ITRC, 2011). Even in cases of complete NAPL removal, "contaminant diffusion into low-permeability zones can be a continuing source leading to dissolved-phase contaminant concentration reductions of only 1–3 orders of magnitude (OoMs)" (Chapman and Parker, 2005).

As indicated from the above discussions from the regulatory and technical literature, unless both the mobile and residual DNAPL can be completely removed from the soil matrix and GWBUs such that zero residual DNAPL remains, groundwater response actions will not be able to attain the NAPL response objective of groundwater restoration within the PCLE Zones in a reasonable time frame.

Using the terminology from the ITRC IDSS, the response action objective of restoring the off-site Class 2 or 3 groundwater PCLE Zone to critical PCLs is considered an absolute objective. However, for similar DNAPL sites, achieving this response objective *"is often technically and/or economically impracticable within reasonable time frames. However, it is possible to develop remedies that address the most critical risks, foster partial cleanups, and address community concerns over time frames of a few years while continuing progress toward more complete restoration in the long term. Implementing such remedies requires careful development of reasonable functional objectives for actions that may not meet the concentration-based criteria established in regulations but that will reduce risks, enable development and use of sites, or allow transitions to relatively passive remedial options such as MNA.*" (ITRC IDSS Doc, 2011).

Therefore, the proposed functional objectives as part of the steps to meet the absolute objective for the off-site groundwater PCLE Zone will be to:

- **Reduce the apparent thickness of in-well DNAPL in existing wells as well as proposed recovery wells (discussed below) over an initial three-year period (consistent with the TRRP requirement to submit a Response Action Effectiveness Report (RAER) every three years following the date of approval of the RAP); and**
- **Reduce the occurrence of DNAPL (i.e. the number of wells exhibiting measurable DNAPL) in those wells over a three-year period.**

- Specific: Yes, there are currently 9 recovery wells (MW-12B, MW-41B, MW-32B, MW-49B, MW-68B, MW-70B, MW-78A, MW-23C, and MW-45C) that have DNAPL present in the wells, and additional 16 recovery wells are proposed to aid in recovery efforts. The response objective will be to aggressively recovery DNAPL using MPE to show reducing apparent thicknesses in the wells with DNAPL occurrence and reduce the occurrence of DNAPL in the recovery wells
- Measured: Yes, in-well DNAPL thickness is easily measured and the performance metrics can be evaluated.
- Attainable: Yes, the functional objectives are realistic and the less aggressive manual pumping of DNAPL showed the functional objective is attainable (Quarterly DNAPL Reports).
- Relevant: Yes, with DNAPL present in wells off-site and the NAPL response objective of recovering the soluble NAPL fraction sufficient to eliminate source contributions to the groundwater PCLE zone, these functional objectives are applicable. Also, other remedial alternatives to address the off-site NAPL recovery had numerous disadvantages that allowed this approach to be the most relevant. Also, there will be less disturbance for the off-site residents.
- Time Bound: Yes, setting an initial three-year period establishes accountability to determine if the functional objectives are met or in the process of being met. Recovery efforts will continue after the initial three-year period.

UPRR proposes to implement mobile MPE events for the current off-site wells used for DNAPL recovery as the response action to address the functional objectives listed above. Additional Corrective Action System Wells in the A-TZ, B-CZ.B-TZ, and C-TZ will also be installed off-site (detailed in Worksheet 2.0) to increase the potential for DNAPL recovery with the absolute objective of recovering soluble NAPL fraction sufficient to eliminate source contributions to the groundwater PCLE zone. Once the MPE achieves the functional objective, remedial options such as MNA or natural source zone depletion (NSZD) will be evaluated for addressing the residual off-site groundwater PCLE Zones.

In terms of unprotective conditions for the off-site residents during the remedial period, there are no potential or unprotected exposures at the Site for groundwater since none of the properties in the area use groundwater for drinking or any other purposes, and the properties are provided drinking water by the City of Houston. None of the City of Houston groundwater supply wells are in the area of the Site. No groundwater drinking wells have been identified in the area and anticipated future use of the shallow groundwater as resource is unlikely. In addition, soil gas assessments in conjunction with groundwater monitoring have indicated through multiple lines of evidence that the vapor intrusion pathway is not complete for the off-site properties.

Explain how the COCs will be handled, treated, disposed, or transferred to another media and document that the response action will not result in any additional potential exposure conditions due to response action activities.

Recovered creosote DNAPL and COC-containing groundwater from the Corrective Action System Wells will be managed at the Site in containers (i.e. drums or similar containers) within the Container Storage Area (CSA) (Unit 007 on the NOR). Recovered DNAPL and groundwater will be profiled, transported, and disposed of in accordance with state and federal requirements within the required timeframes. Vapors recovered during the MPE events will be treated prior to discharge. Extracted vapors will be monitored and recorded with a flame ionization detector (FID). Vapors will be treated with thermal oxidation or granular activated carbon (GAC) prior to discharge and the discharged vapor will also be monitored and recorded with an FID.

Purge water from sampling events will be drummed for proper disposal (waste stream currently on the Notice of Registration (NOR)), stored within the CSA, and disposed of in accordance with state and federal regulations and requirements.

Any wastes generated during response action activities will also be managed in containers (ex. drums, roll-off boxes) within the CSA, and disposed of in accordance with state and federal regulations and requirements.

State the proposed "reasonable time frame" and provide the justification for that time frame in the context of any potential for unprotective exposures to exist or develop, COC characteristics, hydrogeologic and affected property characteristics. If the reasonable time frame is different for the different affected media or for particular tracts of land, be sure to discuss that. Provide how the proposed response action will meet the objectives in a reasonable timeframe.

As previously discussed, there is no potential exposures for the off-site residents since the properties in the area are provided drinking water by the City of Houston, no groundwater drinking wells have been identified in the area, and the vapor intrusion pathway is not complete for the off-site properties.

For the on-site and off-site groundwater being addressed via institutional control (PMZ areas) under Remedy Standard B, the response action will be implemented once the final PMZ boundaries are established and approved by TCEQ, and institutional controls are in place. Institutional controls through deed recordation (UPRR-owned property – On-Site PMZs) and restrictive covenants/deed notices (Off-Site PMZ City of Houston ROW) within the PMZ and restricting the use of groundwater will be used at the Site to prevent potential future exposure risk. The deed notice for the UPRR-owned property and restrictive covenants for off-site City of Houston ROW will be filed with the Harris County Clerk upon approval of the RAP. The signed deed restriction and restrictive covenants are included in Appendix 5. In accordance with the TCEQ regulatory guidance document *Institutional Controls Under TRRP* (RG-366/TRRP-16), proof of filing for the On-Site PMZ will be submitted to the TCEQ within 120 days of approval of the RAP.

To achieve the reasonable functional objective of reducing the risk of potential future migration of groundwater COC concentrations above the critical PCLs from the Site, a slurry wall will be installed. The slurry wall will be constructed to impede groundwater flow from portions of the Site and establish a subsurface barrier separating the on-site contamination from the off-site areas to the north and east. Construction of the slurry wall will be conducted within a reasonable time frame following approval of the RAP by the TCEQ.

The MPE events will be evaluated after the first three years of operation to assess the effectiveness of the technology is achieving the functional objectives previously discussed.

In terms of reasonable time frame to meeting the response objectives for the off-site groundwater, as detailed previously, it is not possible to remove all the creosote DNAPL in the subsurface off-site as would be necessary for achieving groundwater cleanup criteria within a reasonable timeframe regardless of the remedy standard. As detailed in the Attachment 2G (RAP Revision No. 2, July 2016), groundwater models prepared for similar creosote sites were reviewed, and a groundwater model specific to the HWPW site was developed to evaluate the fate and transport of significant COCs associated with creosote DNAPL. As an example of one site similar to UPRR HWPW, both in terms of COCs, NAPL and hydrogeologic complexity is the North Cavalcade Superfund Site located approximately 2 miles to the northwest of the UPRR HWPW site. As detailed in the document titled "Subsurface Contaminant Transport Modeling for the North Cavalcade Superfund Site, Houston, Texas" (Idaho National Laboratory, 2006), a groundwater modeling study indicated that the COC concentrations in groundwater at that site would be "still above the health advisory level after 100 years" (Idaho National Laboratory, 2006). Using

this information as a guide for the Site, achieving groundwater cleanup criteria within a reasonable timeframe will not be practicable.

Soil Response Action Objectives

When using removal and/or decontamination with controls or controls only, demonstrate how that physical control or combination of measures will reliably contain COCs within and/or derived from the surface soil and subsurface soil PCLE zone materials over time.

As previously discussed, the RAOs for surface and subsurface soil PCLE Zones are to control exposure through Remedy Standard B using physical barriers that have been installed as detailed in the RACR (PBW, 2016) such that on-site commercial/industrial and off-site residential receptors will not be exposed to concentrations of COCs in excess of the critical human health PCLs (§350.33(a)(1)). Physical controls (various caps) in conjunction with an institutional control (deed notice/restrictive covenant) contain the COCs in the surface and subsurface soils. The Soil Cap, Asphalt Cap, Concrete Sidewalk Cap, and Englewood IM Yard Concrete Cap contain the COCs by addressing pathways such as dermal contact/ingestion of soils, inhalation hazards (dust), and minimizing leaching of COCs to storm water or groundwater. The UPRR Main Line Railroad Ballast Cap Area also contains the COCs by addressing pathways such as dermal contact/ingestion of soils, and inhalation hazards (dust). Storm water will likely infiltrate the soils underlying the ballast material and could potentially leach COCs into the shallow groundwater; however, with the proposed on-site PMZ, such infiltration would not be expected to result in appreciable expansion or migration of the groundwater PCLE Zone in the A-TZ GWBU.

The caps reduce the potential for erosion of the impacted soils from the Site to nearby drainage(s). The institutional control will be in place to prohibit disturbance of the caps. The combination of these measures, along with long-term maintenance of the caps as detailed in the post-closure care will contain the COCs over time. For each of these areas, signs are posted with language stating restrictions on construction activity within the capped areas. In the event construction activities are necessary within a capped area, development of a health and safety plan to ensure worker protection from COCs in the underlying surface soils will be required and a development of a soil management plan will be required if soils are excavated as part of the construction activities.

Explain how the removal or decontamination action will reduce the concentration of COCs to the critical surface soil and subsurface soil PCL throughout the soil PCLE zone and prevent COC concentrations above the critical soil PCLs from migrating beyond the existing boundary of the soil PCLE zone.

In the areas where surface soils were excavated and backfilled with clean imported fill, surface soils with COC concentrations above cPCLs were effectively reduced below cPCLs in these areas under a Remedy Standard A response objective as demonstrated through confirmation sampling, with the only control necessary for those on-site areas excavated being an institutional control limiting current and future land use to commercial/industrial. Confirmation samples were collected to confirm that the COC concentrations in the remaining soils were below critical soil PCLs. Excavated surface soils were consolidated under the Area of Contamination policy, and an engineered soil cap was constructed to cover the area to prevent exposure to and migration of COCs beyond the soil PCLE Zone.

Groundwater Response Action Objectives

Name of groundwater-bearing unit to which this information applies	**On-Site Groundwater PCLE Zone and Off-Site COH ROW groundwater PCLE Zone: A-TZ, B-TZ/B-CZ, C-TZ – Uppermost Groundwater-Bearing Units**

Repeat this section for each groundwater-bearing unit for which a different response action is proposed.

Groundwater classification 1 ____ **X** A-TZ, B-TZ, C-TZ 2 ____ **X** B-CZ 3 ____

Is a modified groundwater response action being proposed for any part of the groundwater PCLE zone (§350.33(f)(2), (3), or (4))? **X** Yes ___ No

If yes, does the affected property meet the qualifying criteria for a modified groundwater response action using a waste control unit, plume management zone, or technical impracticability? **X** Yes ___ No

If yes, complete the appropriate portions of this report.

If no to either question, complete the following:

Explain how the removal or decontamination action will reduce the concentration of COCs to the critical groundwater PCL throughout the groundwater PCLE zone and prevent COC concentrations above the critical groundwater PCL from migrating beyond the existing boundary of the groundwater PCLE zone.

For the On-Site and COH ROW groundwater PCLE zones, a modified Remedy Standard B groundwater RAO is proposed through control using a PMZ in conjunction with a physical control on-site. Under this proposed PMZ/physical control response, the following are required per TRRP for the remedy:

- *30 TAC §350.33(f)(4)(F)(iii)(I) - Persons must remove, decontaminate, and/or control the groundwater PCLE zone to the extent necessary so that the critical groundwater PCLs will not be exceeded at the POE and so that the critical PCLs for other environmental media will not be exceeded at their applicable POEs:*

  The proposed response of a physical control using a slurry wall to reduce the risk of potential future migration of groundwater COCs and NAPL from the Site with NAPL recovery activities both on-site and off-site will eventually satisfy this requirement of meeting the critical groundwater PCL at the alternate points of exposure (APOE) locations in the PMZ outside of the slurry wall.

- *30 TAC §350.33(f)(4)(F)(iii)(II) - Persons must use physical controls (for example, slurry walls, sheet piling, interceptor trenches, or hydraulic control wells) which are capable of reliably containing and preventing the expansion over time of the groundwater source area.*

  As detailed in Section 2.0, the proposed on-site slurry wall upon installation will immediately impede groundwater flow from portions of the Site and establish a subsurface barrier separating the on-site contamination from the off-site areas to the north and east. The slurry wall will minimize the potential for future groundwater migration from the source areas on-site to the off-site properties.

- *30 TAC §350.33(f)(4)(F)(iii)(III) - Persons must attain the attenuation action levels at the attenuation monitoring points for any portion of a groundwater PCLE zone outside of a physical control.*

  As discussed in Section 2.1, APOE wells will be used at the perimeter of the Off-Site COH PMZ. Even with the installation of the proposed slurry wall and aggressive DNAPL recovery activities, meeting the critical PCLs at the APOEs will not likely be achieved within a reasonable time frame.

- *30 TAC §350.33(f)(4)(F)(iii)(IV) - Persons must fulfill any post-response action care obligation described in approved RAP.*

  See Worksheet 5.0 for the proposed post-response action care activities.

- *30 TAC §350.33(f)(4)(F)(iii)(V) -Persons must provide financial assurance for post-response action care in accordance with §350.33(l) and (m)*

See Worksheet 5.0 for the financial assurance estimate to the post-response action care.

For areas within the proposed PMZ, the NAPL response action objective using TCEQ Guidance TRRP-32 (Risk-Based NAPL Management) will be to "ensure compliance of NAPL zone in the PMZ" to address the NAPL within the A-TZ, B-CZ/B-TZ, and C-TZ. Methods to meet the response action objective for the creosote DNAPL will include recovery (recover readily recoverable creosote DNAPL from wells with DNAPL present) at the NAPL source zone so that the dissolved-phase groundwater PCLE zone is stable (or shrinking) and the PCLE performance objectives for the PMZ can be met, including no cPCL exceedances at alternate POE wells (see Worksheet 2.1 for details). UPRR proposes to implement a combination of dedicated pneumatic DNAPL pumps (for the DNAPL area on the west side of the Site) and mobile MPE as a more aggressive method of DNAPL recovery from the on-site areas (source area and Englewood IM Yard). DNAPL recovery activities are discussed in Worksheet 2.0.

Explain how the response action will prevent COCs from migrating to air at concentrations above the PCLs for air if the groundwater-to-air PCLs ($^{Air}GW_{Inh-V}$) is exceeded.

The groundwater-to-air PCLs ($^{Air}GW_{Inh-V}$) were not exceeded in any representative groundwater samples collected in the A-TZ at the Site. Groundwater samples from wells with DNAPL present have had naphthalene concentrations detected at concentrations greater than the $^{Air}GW_{Inh-V}$ PCL (41 mg/L (concentration greater than the solubility limit of 31 mg/L)); however, the samples were collected in the deeper GWBUs (i.e., B-TZ/B-CZ) where the overlying groundwater in the A-TZ had naphthalene concentrations below the $^{Air}GW_{Inh-V}$ PCL as well as the $^{GW}GW_{Ing}$ PCL. Therefore, potential for vapor migration from groundwater in these deeper GWBUs is minimal. In addition, the Soil Cap area was constructed with a vapor barrier, and the surface covers of concrete for the Englewood IM Yard and off-site concrete sidewalk cap areas and asphalt cap areas serve to mitigate potential vapors from groundwater.

Explain how the response action will prevent COCs from migrating to surface water at concentrations above the PCLs for groundwater discharges to surface water if surface water is a factor.

Groundwater discharges to surface water are not a concern at the Site and no further action is required. Additionally, the installation of the slurry wall will impede groundwater flow from portions of the Site.

Explain how the response action will prevent human and ecological receptor exposure to the groundwater PCLE zone.

As discussed previously, there are no potential or unprotected human health exposures at the Site or the COH ROW area associated with the groundwater pathway since these areas do not use groundwater for drinking or other purposes. The UPRR operation at the Englewood IM Yard is provided drinking water by the City of Houston. The proposed response action of implementing the PMZ and associated application of institutional controls will limit future use of shallow groundwater found within the PMZ (on-site and COH ROW).

As detailed in the APAR, there are no complete or potentially complete ecological receptor pathways at the Site.

Groundwater Response Action Objectives

Name of groundwater-bearing unit to which this information applies: **Off-Site Groundwater PCLE Zone: A-TZ, B-TZ/B-CZ, C-TZ – Uppermost Groundwater-Bearing Units**

Repeat this section for each groundwater-bearing unit for which a different response action is proposed.

Groundwater classification 1 ____ **X** (A-TZ, B-TZ, C-TZ) 2 ____ **X** (B-CZ) 3 ____

Is a modified groundwater response action being proposed for any part of the groundwater PCLE zone (§350.33(f)(2), (3), or (4))? ___ Yes **X** No

If yes, does the affected property meet the qualifying criteria for a modified groundwater response action using a waste control unit, plume management zone, or technical impracticability? ___ Yes ___ No

If yes, complete the appropriate portions of this report.
If no to either question, complete the following:

Explain how the removal or decontamination action will reduce the concentration of COCs to the critical groundwater PCL throughout the groundwater PCLE zone and prevent COC concentrations above the critical groundwater PCL from migrating beyond the existing boundary of the groundwater PCLE zone.

For the Off-Site groundwater PCLE zones, a Remedy Standard B groundwater RAO is proposed through decontamination (Remedy Standard A equivalent) without modified Remedy Standard B or physical controls since landowner consent could not be obtained for all properties within the off-site groundwater PCLE Zone.

As previously discussed, the response objective of reducing COC concentrations to the critical groundwater PCLs throughout the off-site groundwater PCLE Zone is considered an absolute objective for the Site. Given the off-site groundwater PCLE Zone is predominantly associated with creosote DNAPL present in the B-CZ/B-TZ off-site (see Interim NAPL Report, Appendix 3), the reality of achieving this absolute objective for the off-site groundwater PCLE Zones is not possible within the TRRP definition of a reasonable time frame.

Nevertheless, UPRR proposes to address the off-site groundwater PCLE Zone in a phased approach. The first phase will be the construction of the proposed slurry wall on-site reducing the risk of potential future migration of groundwater COC concentrations above the critical PCLs from the Site, and similarly reduce the potential for migration of mobile NAPL from the Site. The next phase will be to focus efforts on recovering DNAPL (source of dissolved phase plume) off-site. With DNAPL observed in contact with groundwater off-Site in the Class 3 B-CZ and Class 2 B-TZ GWBUs, UPRR has developed a response action to more aggressively recover NAPL by installing additional recovery wells in the GWBUs and using MPE in the off-site areas within the groundwater PCLE Zones, as detailed in Worksheet 2.0. The functional objectives of the DNAPL response actions will be to:

- Reduce the occurrence of DNAPL (i.e. the number of wells exhibiting measurable DNAPL) in existing wells as well as proposed recovery wells;
- Reduce the apparent thickness of in-well DNAPL within those wells; and
- Reduce the COC concentrations in the off-site GWBUs

UPRR proposes to implement mobile MPE events for the current off-site wells used for DNAPL recovery as the response action to address the functional objectives listed above. Additional Corrective Action System Wells (i.e., recovery wells) in the A-TZ, B-CZ.B-TZ, and C-TZ will also be installed off-site (detailed in Worksheet 2.0) to increase the potential for DNAPL recovery with the absolute objective of

recovering soluble NAPL fraction sufficient to reduce source contributions to groundwater PCLE zone. Once the MPE achieves the functional objective, passive remedial options such as MNA will be evaluated for addressing the residual off-site groundwater PCLE Zones. The combination of reduction of DNAPL mass through recovery and natural attenuation of the groundwater PCLE Zone outside of the DNAPL areas should prevent COC concentrations above the critical groundwater PCL from migrating beyond the existing boundary of the groundwater PCLE zone as supported by the recent groundwater data.

Explain how the response action will prevent COCs from migrating to air at concentrations above the PCLs for air if the groundwater-to-air PCLs ($^{Air}GW_{Inh-V}$) is exceeded.

The groundwater-to-air PCLs ($^{Air}GW_{Inh-V}$) were not exceeded in any representative groundwater samples collected in the A-TZ at the Site. Groundwater samples from wells with DNAPL present have had naphthalene concentrations detected at concentrations greater than the $^{Air}GW_{Inh-V}$ PCL (41 mg/L (concentration greater than the solubility limit of 31 mg/L)); however, the samples were collected in the deeper GWBUs (i.e., B-TZ/B-CZ) where the overlying groundwater in the A-TZ had naphthalene concentrations below the $^{Air}GW_{Inh-V}$ PCL. Therefore, potential for vapor migration from groundwater in these deeper GWBUs is minimal.

In addition, UPRR conducted an extensive soil gas assessment north of the Site as part of the VI evaluation that was detailed in the Updated Soil Vapor Intrusion Assessment Interim Report (VI Interim Report) dated August 4, 2020 and submitted to the TCEQ. A copy of the VI Interim Report is provided in Appendix 3. Below is a summary of the investigation and findings:

- Twenty-eight (28) soil gas probes were installed off-site, north of the HWPW area. Soil gas samples were collected from 15 of the 28 probes. It was not possible to collect soil gas samples from 13 of the locations because water had infiltrated those probes. COC concentrations in the collected soil gas samples were orders of magnitude less than their respective target soil gas assessment levels.

- Soil samples were collected from the 0.5 to 1 feet bgs depth interval and the 5.5 to 6 feet bgs depth interval at each soil gas probe location. Concentrations in the soil samples collected during the soil gas probe installation were generally not detected and in all cases were below applicable Residential Assessment Levels (RALs). These data support a conclusion that the vertical separation distance between potential receptors at the ground surface and the potential source of contamination (groundwater) is greater than 6 feet.

- The U.S. Environmental Protection Agency's (EPA's) vapor intrusion screening level (VISL) calculator (EPA, 2015; EPA, 2019) was used to calculate conservative, non-site specific, risk-based potential VI screening values for the identified COCs in groundwater. Groundwater COC concentrations from the July 2019 and January-March 2020 off-site A-TZ wells were below the conservative EPA VISL-calculated screening levels by orders of magnitude, further indicating that the VI pathway from the shallow groundwater is incomplete (Golder, 2020f).

- Based on the multiple lines of evidence including vertical separation distance, COC concentrations in groundwater in off-site A-TZ wells, and COC concentrations in soil gas samples collected for this evaluation, the vapor intrusion pathway off-site is incomplete.

Explain how the response action will prevent COCs from migrating to surface water at concentrations above the PCLs for groundwater discharges to surface water if surface water is a factor.

Groundwater discharges to surface water are not a concern at the Site and no further action is required. Additionally, the installation of the slurry wall will impede groundwater flow from portions of the Site.

Explain how the response action will prevent human and ecological receptor exposure to the groundwater PCLE zone.

No potential or unprotective human health exposures at the Site from groundwater ingestion have been identified since none of the properties in the area use groundwater for drinking. Potential VI from the A-TZ groundwater bearing unit was evaluated and it was concluded that the vapor intrusion pathway is incomplete (Interim Report in Appendix 3).

Since landowner concurrence for institutional controls restricting groundwater use on the off-Site properties could not be obtained for all of the off-Site properties within the affected property, there currently is not an institutional control to prevent future development of the groundwater use in the area. However, there are no potential or unprotected exposures to impacted groundwater for the off-site residents since none of the properties in the area use groundwater for drinking or any other purposes; and the properties are provided drinking water by the City of Houston. No groundwater drinking wells have been identified in the area and anticipated future use of the shallow groundwater as a resource is unlikely. In addition, soil gas assessments in conjunction with groundwater monitoring have indicated through multiple lines of evidence that the vapor intrusion pathway is not complete for the off-site properties

Regarding ecological receptors, groundwater does not discharge to surface water. Therefore, there is no complete or potentially complete pathway for ecological receptors.

ATTACHMENT 1A

MAPS AND CROSS SECTIONS

Figure 1A-1 – Affected Property Map

Figure 1A-2 – Off-Site Affected Property (North)

Figure 1A-3 – Off-Site Affected Property (West)

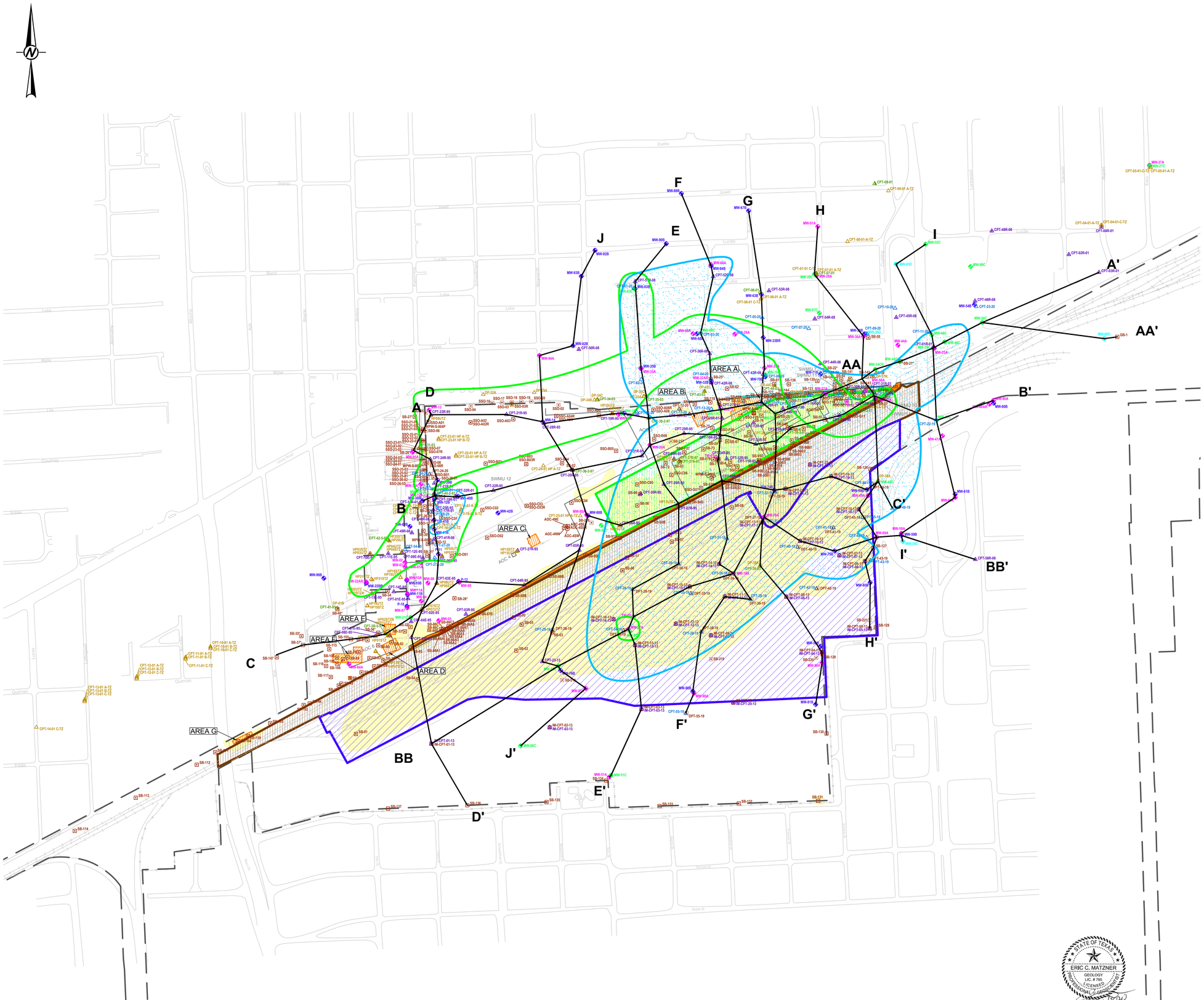
Figure 1A-4 – Conceptual Site Model (South-North)

Figure 1A-5 – Conceptual Site Model (Southwest-Northeast)

Figure 4C-1 through 4C-6 – Cross-Sections

See Appendix 3C for COC Concentration Maps and Groundwater Gradient Maps

See Attachment 1A RAP Revision 0 and Revision 1 for Soil COC Concentration Maps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Quitman
Quitman
Quitman
Courtney
Courtney
Courtney
Lewis Road
Lewis Road
Lewis Road
Nicholls Dr
Nicholls Dr
Nicholls Dr

MAP ID	PARCEL ADDRESS
1	4705 Liberty Rd
2	4713 Liberty Rd
3	2902 Wipprecht St # 18
4	2909 Lavender St
5	2922 Solo St
6	2925 Lavender St
7	2930 Solo St
8	2934 Solo St
9	2938 Solo St
10	2937 Lavender St
11	2941 Lavender St
12	4910 Lucille St
13	5002 Lucille St
14	5004 Lucille St
15	2943 Lavender St
16	5006 Lucille St
17	5008 Lucille St
18	2942 Lavender St
19	2938 Lavender St
20	2934 Lavender St
21	2926 Lavender St
22	2924 Lavender St
23	2922 Lavender St
24	2910 Lavender St
25	2906 Lavender St
26	2904 Lavender St
27	5005 Liberty
28	0 Wylie St
29	5006 Wylie St
30	5010 Wylie St
31	5005 Wylie St
32	5007 Wylie St
33	5011 Wylie St
34	2901 Clementine St
35	5002 Lelia St
36	0 Lelia St
37	5014 Lelia St
38	2921 1/2 Clementine
39	2921 Clementine St
40	0 Lelia St
41	5009 Lelia St
42	0 Lelia
43	5015 Lelia St
44	5012 Lucille
45	5014 Lucille St
46	5016 Lucille St
47	0 Lucille
48	5005 Lucille St
49	5005 Lucille St
50	5007 Lucille St
51	5009 Lucille St
52	0 Lucille St
53	0 Lelia
54	705 Lucille
55	0 Leila St
56	2918 Clementine St
57	5116 Lelia St
58	5112 Lelia St
59	5118 Lelia St
60	5107 Wylie St
61	5107 Wylie St
62	5111 Wylie St
63	2913 Fontinot St
64	5119 Wylie St
65	2820 Clementine St
66	2813 Fontinot St
67	5101 Liberty Rd
68	5105 Liberty Rd
69	5109 Liberty Rd
70	5113 Liberty Rd
71	5117 Liberty Rd
72	5201 Liberty Rd
73	5201 Liberty Rd
74	2809 Erastus St # 1
75	5201 Wylie St
76	2809 Erastus St
77	5201 Wylie St
78	5202 Lelia St
79	5301 Liberty Rd
80	5311 Liberty Rd
81	2806 Erastus St
82	5304 Wylie St
83	5304 1/2 Wylie St
84	5308 Wylie St
85	0 Liberty Rd
86	5311 Liberty Rd
87	3300 E Lockwood Dr
88	3300 E Lockwood
97	3101 Erastus St
98	5303 Lucille St
99	5302 Lucille St
100	3009 Erastus St
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103	4900 Lucille St
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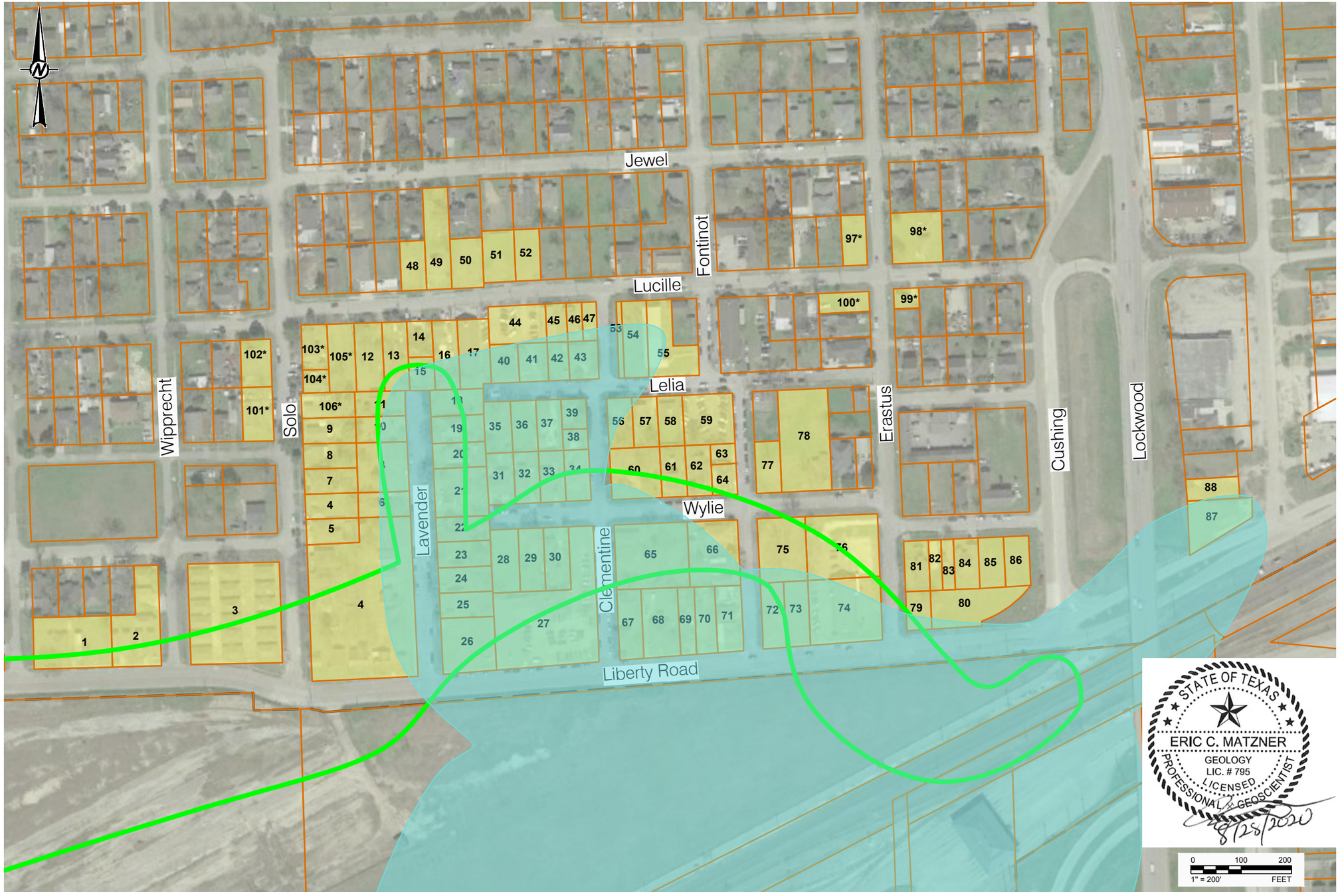
105	4902 Lucille St
106	2940 Solo St



STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
8/28/2020

LEGEND

GROUNDWATER PCLE ZONES (JAN-MAR 2020) (A-TZ, B-CZ/B-TZ AND C-TZ)

GROUNDWATER PCLE ZONE - ARSENIC (JAN-MAR 2020) (A-TZ AND B-TZ)

REFERENCE(S)

AERIAL PHOTO FROM GOOGLE EARTH, IMAGERY DATED 2/23/19, AND PROPERTY INFORMATION FROM HARRIS COUNTY APPRAISAL DISTRICT (HCAD), 2018.

NOTE(S)

1. ALL PROPERTIES ARE IN HOUSTON, HARRIS COUNTY, COUNTY CODE 101, 77026
2. * - INCLUDED DUE TO ARSENIC DETECTED AT CONCENTRATIONS ABOVE THE PROTECTIVE CONCENTRATION LEVELS (PCL) IN GROUNDWATER SAMPLES COLLECTED IN MAY/JUNE 2020 FROM MONITORING WELLS INSTALLED IN 2020. OTHER SITE-SPECIFIC COCs HAVE NOT BEEN DETECTED ABOVE PCLs IN THE NEW WELLS IN THESE AREAS.

CLIENT
UNION PACIFIC RAILROAD CO.

CONSULTANT
GOLDER

YYYY-MM-DD	2020-08-26
DESIGNED	AJD
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

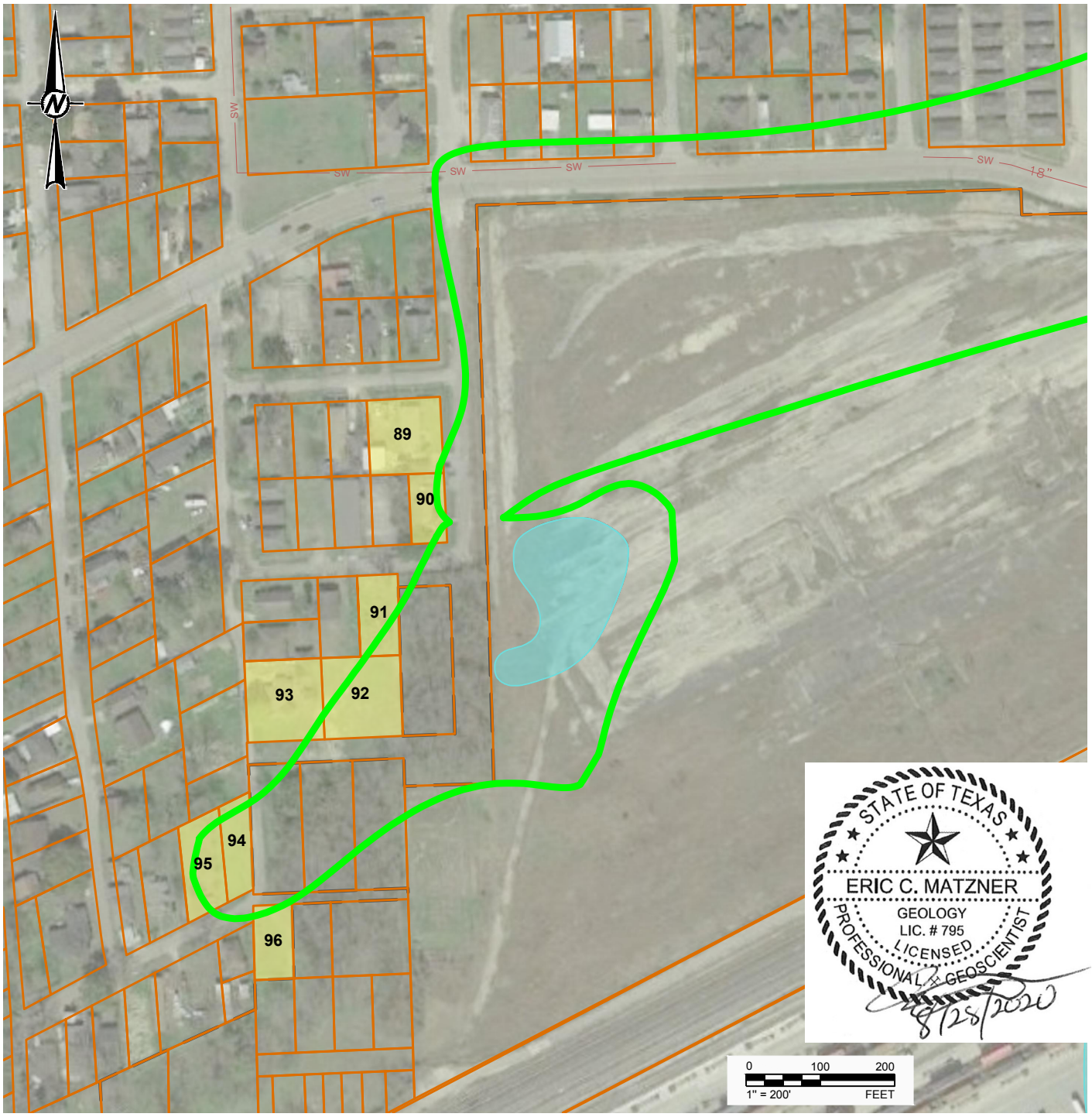
PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
OFF-SITE AFFECTED PROPERTIES (NORTH)

PROJECT NO.	REV.	FIGURE
19119232	0	1A-2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\Projects - Round Rock_2019\19119232 - HWPW\2020-8 RAP Revision\ | File Name: FIG 1A-2 - Off-Site Affected Properties (North).dwg | Last Edited By: rsalazar Date: 2020-08-28 Time:11:31:31 AM | Printed By: RSalazar Date: 2020-08-28 Time:1:14:54 PM



MAP ID	PARCEL ADDRESS
89	4518 Courtney St
90	2803 Kashmere St
91	4508 Eddie St
92	0 Ranch St
93	2604 Amboy St
94	0 Quitman St
95	4425 Quitman St
96	0 1St St

LEGEND

GROUNDWATER PCLE ZONES (JAN-MAR 2020)
(A-TZ, B-CZ/B-TZ AND C-TZ)

GROUNDWATER PCLE ZONE - ARSENIC (JAN-MAR 2020)
(A-TZ AND B-TZ)

NOTE(S)

1. ALL PROPERTIES ARE IN HOUSTON, HARRIS COUNTY, COUNTY CODE 101, 77026

REFERENCE(S)

AERIAL PHOTO FROM GOOGLE EARTH, IMAGERY DATED 2/23/19, AND PROPERTY INFORMATION FROM HARRIS COUNTY APPRAISAL DISTRICT (HCAD), 2018.

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
OFF-SITE AFFECTED PROPERTIES (WEST)

CONSULTANT
GOLDER

YYYY-MM-DD	2020-08-26
DESIGNED	AJD
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 1A-3

Last Edited By: rsalazar Date: 2020-08-28 Time:11:32:03 AM | Printed By: RSalazar Date: 2020-08-28 Time:1:16:16 PM
Path: \\texarkana\data\Projects - Round Rock_2019\19119232 - HWPW\2020-8 RAP Revision\ | File Name: FIG 1A-3 - Off-Site Affected Properties (West).dwg
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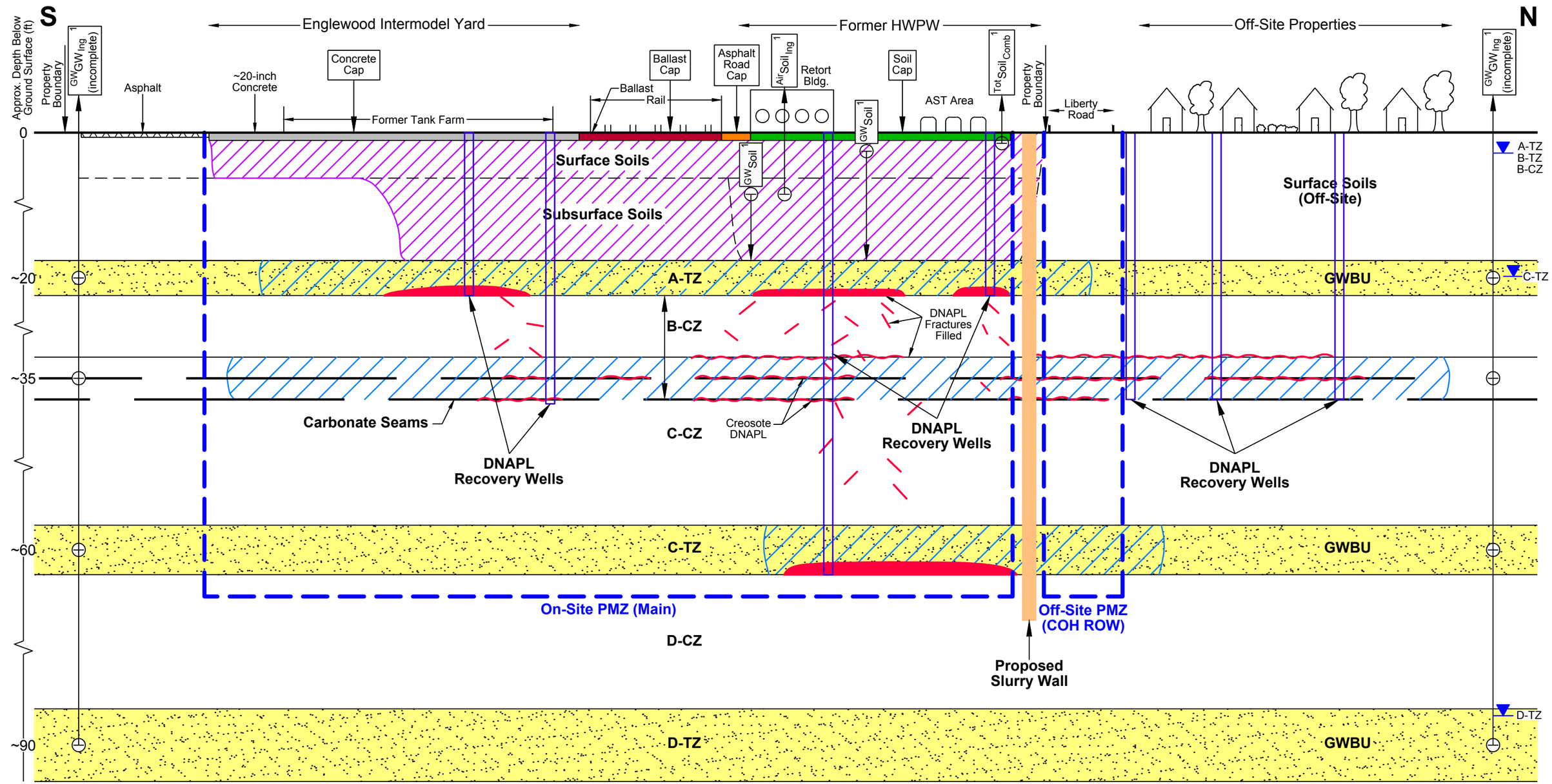


LEGEND

- SOIL AFFECTED PROPERTY
- GROUNDWATER AFFECTED PROPERTY
- PMZ
- PROPOSED SLURRY WALL

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
8/28/2020

NOTE(S)

1. PROTECTIVE CONCENTRATION LEVEL (PCL) NOMENCLATURE FOR DEFAULT EXPOSURE PATHWAYS.
2. ALL LOCATIONS, BOUNDARIES AND DEPTHS SHOWN HAVE BEEN GENERALIZED FOR CSM PURPOSES AND ARE APPROXIMATE.

CLIENT
UNION PACIFIC RAILROAD CO.

CONSULTANT
GOLDER

YYYY-MM-DD	2020-08-26
DESIGNED	AJD
PREPARED	AJD
REVIEWED	ECM
APPROVED	ECM

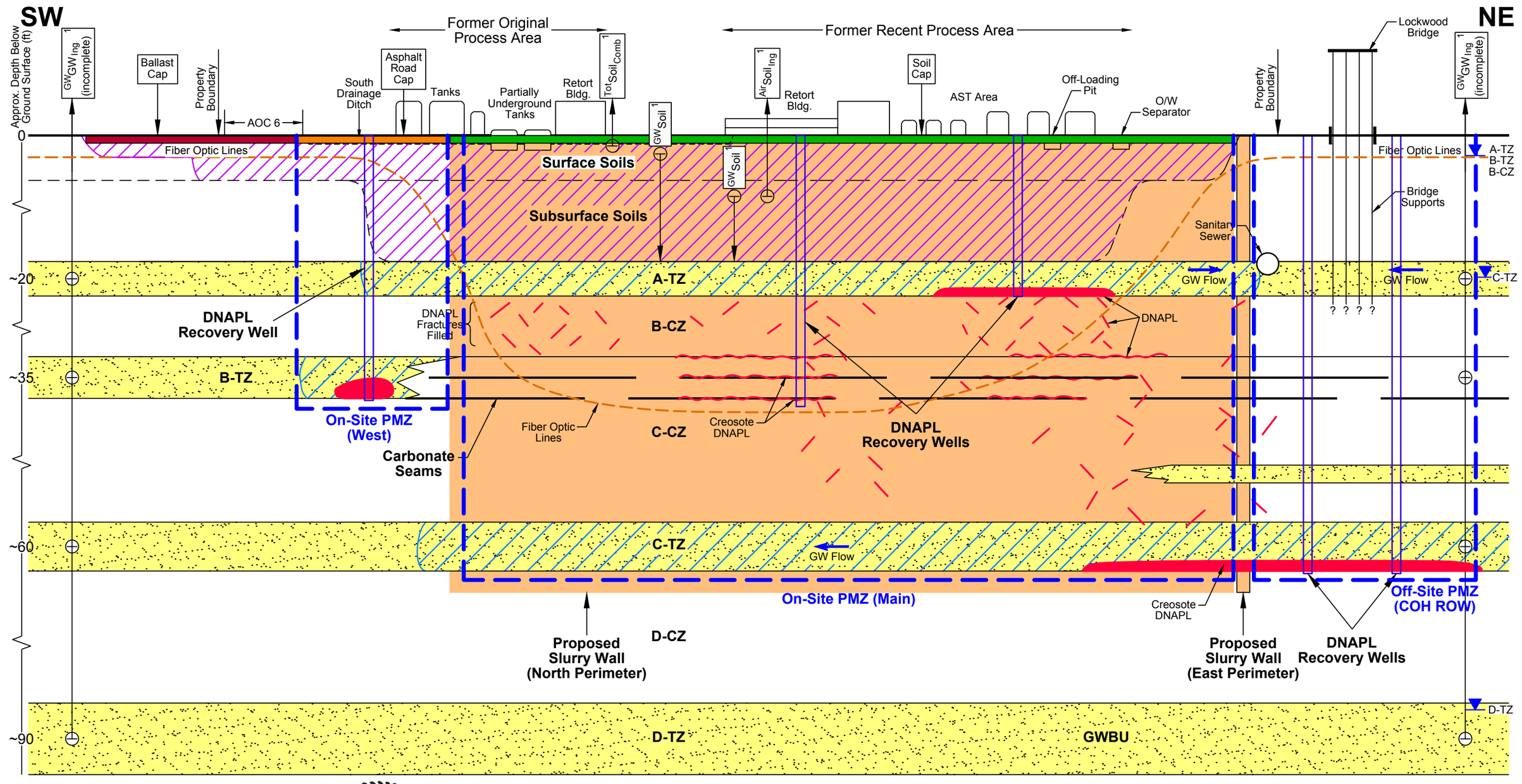
PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
CONCEPTUAL SITE MODEL (SOUTH-NORTH)

PROJECT NO.	REV.	FIGURE
19119232	0	1A-4

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\Projects - Round Rock_2019\19119232 - HWPW\2020-8 RAP Revision\ | File Name: FIG 1A-4 - Conceptual Site Model S-N.dwg | Last Edited By: adiamond Date: 2020-08-29 Time:3:20:05 PM | Printed By: adiamond Date: 2020-08-29 Time:3:20:46 PM



LEGEND

- SOIL AFFECTED PROPERTY
- GROUNDWATER AFFECTED PROPERTY
- PMZ
- PROPOSED SLURRY WALL

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
8/25/2020

NOTE(S)

1. PROTECTIVE CONCENTRATION LEVEL (PCL) NOMENCLATURE FOR DEFAULT EXPOSURE PATHWAYS.
2. ALL LOCATIONS, BOUNDARIES AND DEPTHS SHOWN HAVE BEEN GENERALIZED FOR CSM PURPOSES AND ARE APPROXIMATE.

CLIENT
UNION PACIFIC RAILROAD CO.

CONSULTANT
GOLDER

YYYY-MM-DD	2020-08-26
DESIGNED	AJD
PREPARED	AJD
REVIEWED	ECM
APPROVED	ECM

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
CONCEPTUAL SITE MODEL (SOUTHWEST-NORTHEAST)

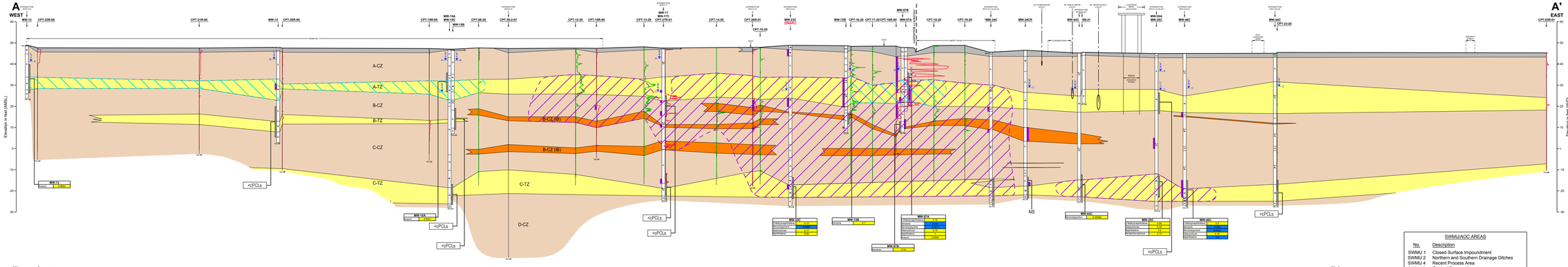
PROJECT NO.	REV.	FIGURE
19119232	0	1A-5

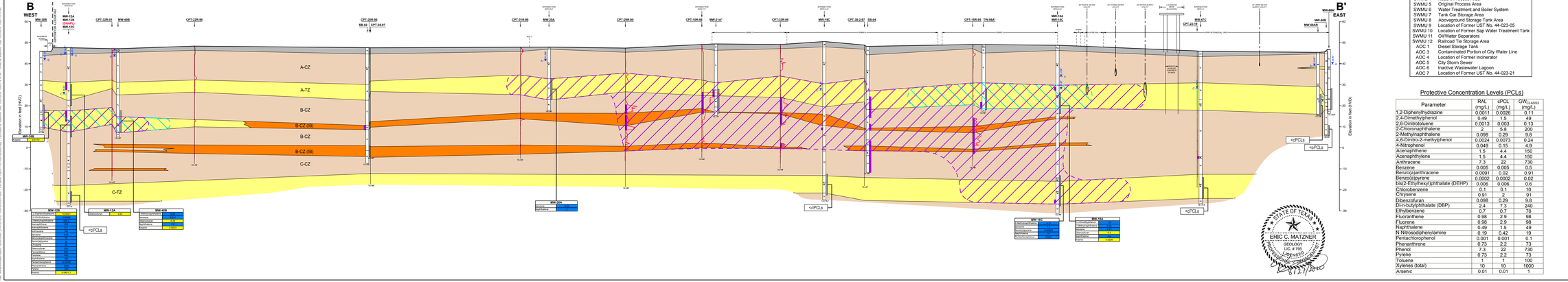
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

1 in

0

Path: \\texarkana\data\Projects - Round Rock_2019\19119232 - HWPW\2020-8 RAP Revision\ | File Name: FIG 1A-5 - Conceptual Site Model SW-NE.dwg | Last Edited By: rsalazar Date: 2020-08-28 Time:11:45:45 AM | Printed By: adiamond Date: 2020-08-29 Time:3:22:46 PM



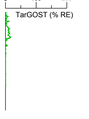


EXPLANATION

- Fill: Sand, Silt, Clay & Gravel, wood fragments, bricks, scrap metal
- Transmissive Zone (TZ): Sand & Silty Sand
- Cohesive Zone (CZ): Clay, Silty Clay & Silt
- B-CZ Interbedded Zone B-CZ (IB): Interbedded Carbonate Seams and Calcareous Nodules with Clay & Silty Clay, within the B-CZ
- NAPL or Sheen/Staining Noted in Soils for Boring Log, or for CPT/ROST Location ROST Result >25% RE
- (DNAPL) DNAPL was noted in well in January 2020.
- Groundwater Affected Property/PCLE Zone (Creosote-COCs) (dashed where inferred)
- Groundwater Affected Property/PCLE Zone (Arsenic) (dashed where inferred)

MONITORING WELL CONSTRUCTION

TarGOST LOGS



ROST LOGS

SWMU/AOC AREAS

No.	Description
SWMU 1	Closed Surface Impoundment
SWMU 2	Northern and Southern Drainage Ditches
SWMU 4	Recent Process Area
SWMU 5	Original Process Area
SWMU 6	Water Treatment and Boiler System
SWMU 7	Tank Car Storage Area
SWMU 8	Aboveground Storage Tank Area
SWMU 9	Location of Former UST No. 44-023-05
SWMU 10	Location of Former Sap Water Treatment Tank
SWMU 11	Oil/Water Separators
SWMU 12	Railroad Tie Storage Area
AOC 1	Diesel Storage Tank
AOC 3	Contaminated Portion of City Water Line
AOC 4	Location of Former Incinerator
AOC 5	City Storm Sewer
AOC 6	Inactive Wastewater Lagoon
AOC 7	Location of Former UST No. 44-023-21

Protective Concentration Levels (PCLs)

Parameter	RAL (mg/L)	cPCL (mg/L)	GW_{CLASS3} (mg/L)
1,2-Diphenylhydrazine	0.0011	0.0026	0.11
2,4-Dimethylphenol	0.49	1.5	49
2,6-Dinitrotoluene	0.0013	0.003	0.13
2-Chloronaphthalene	2	5.8	200
2-Methylnaphthalene	0.098	0.29	9.8
4,6-Dinitro-2-methylphenol	0.0024	0.0073	0.24
4-Nitrophenol	0.049	0.15	4.9
Acenaphthene	1.5	4.4	150
Acenaphthylene	1.5	4.4	150
Anthracene	7.3	22	730
Benzene	0.005	0.005	0.5
Benzo(a)anthracene	0.0091	0.02	0.91
Benzo(a)pyrene	0.0002	0.0002	0.02
bis(2-Ethylhexyl)phthalate (DEHP)	0.006	0.006	0.6
Chlorobenzene	0.1	0.1	10
Chrysene	0.91	2	91
Dibenzofuran	0.098	0.29	9.8
Di-n-butylphthalate (DBP)	2.4	7.3	240
Ethylbenzene	0.7	0.7	70
Fluoranthene	0.98	2.9	98
Fluorene	0.98	2.9	98
Naphthalene	0.49	1.5	49
N-Nitrosodiphenylamine	0.19	0.42	19
Pentachlorophenol	0.001	0.001	0.1
Phenanthrene	0.73	2.2	73
Phenol	7.3	22	730
Pyrene	0.73	2.2	73
Toluene	1	1	100
Xylenes (total)	10	10	1000
Arsenic	0.01	0.01	1

Notes:
1. Topography is estimated.
2. See Figure 1A-1 for cross section location.
3. Concentration are in mg/L.
4. Blue highlighted concentrations exceed C/I and Yellow highlighted concentrations exceed RAL.
5. Utility locations area approximate and based on drawings provided by the City of Houston Department of Public Works & Engineering.
6. Vertical datum based on City of Houston Monument System (HVD), Ft HVD.
7. Monitoring wells that have been plugged & abandoned, are denoted with an asterisk.
8. Concentrations listed from January-March 2020 sampling event. NS = Not Sampled

Vertical Exaggeration 5X

100 0 100 200

scale in feet

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED PROFESSIONAL GEOLOGIST

CLIENT
UNION PACIFIC RAILROAD CO.

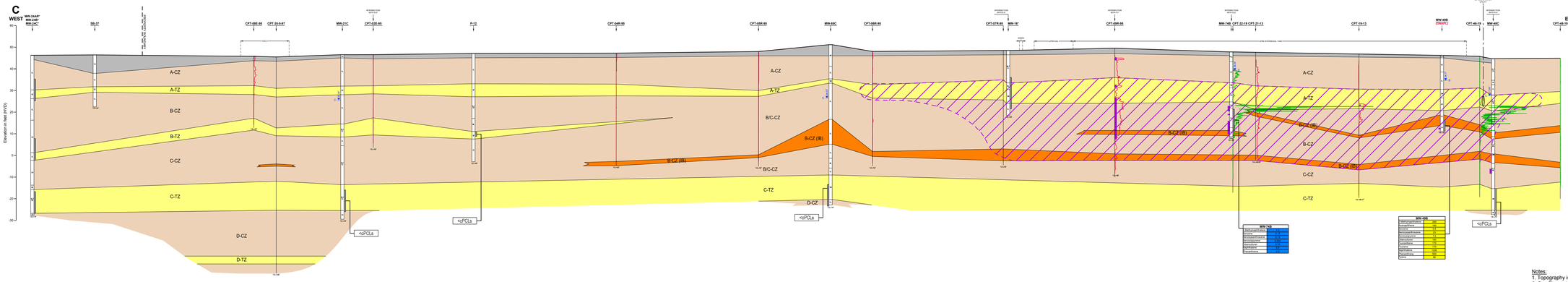
PROJECT
HOUSTON WOOD PRESERVING WORKS

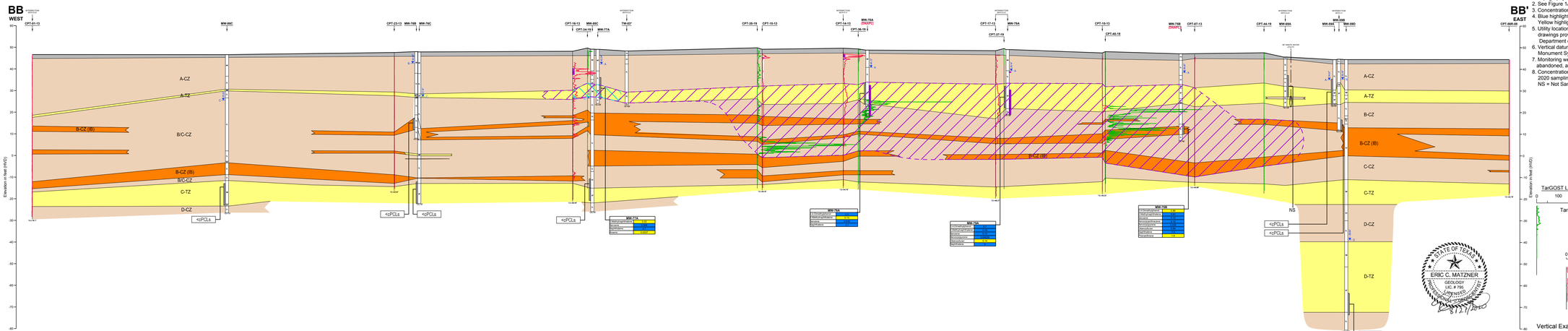
TITLE
CROSS SECTIONS A-A' AND B-B'

CONSULTANT
GOLDEN
GOLDER ASSOCIATES (TEXAS), INC.
TEXAS ENGINEERING FIRM NO. 2578

	YYYY-MM-DD	2020-08-27
DESIGNED		AJD/RS
PREPARED		AJD/RS
REVIEWED		MH
APPROVED		ECM

PROJECT NO. 19119232 REV. 0 FIGURE 4C-1





EXPLANATION

Fill: Sand, Silt, Clay & Gravel, wood fragments, bricks, scrap metal

Transmissive Zone (TZ): Sand & Silty Sand

Cohesive Zone (CZ): Clay, Silty Clay & Silt

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NAPL or Sheen/Staining Noted in Soils for Boring Log, or for CPT/ROST Location ROST Result >25% RE

(DNAPL) DNAPL was noted in well in January 2020.

Groundwater Affected Property/PCLE Zone (Creosote-COCs) (dashed where inferred)

Groundwater Affected Property/PCLE Zone (Arsenic) (dashed where inferred)

SWMU/AOC AREAS

No.	Description
SWMU 1	Closed Surface Impoundment
SWMU 2	Northern and Southern Drainage Ditches
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SWMU 5	Original Process Area
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SWMU 7	Tank Car Storage Area
SWMU 8	Aboveground Storage Tank Area
SWMU 9	Location of Former UST No. 44-023-05
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SWMU 12	Railroad Tie Storage Area
AOC 1	Diesel Storage Tank
AOC 3	Contaminated Portion of City Water Line
AOC 4	Location of Former Incinerator
AOC 5	City Storm Sewer
AOC 6	Inactive Wastewater Lagoon
AOC 7	Location of Former UST No. 44-023-21

MW-74S

2-Methylnaphthalene	0.098
Acenaphthene	1.5
Acenaphthylene	1.5
Anthracene	7.3
Benzo(a)anthracene	0.0091
Benzo(a)pyrene	0.0002
bis(2-Ethylhexyl)phthalate	0.006
Chrysene	0.91
Dibenzofuran	0.098
Fluoranthene	0.98
Fluorene	0.98
Naphthalene	0.49
Pyrene	0.73

MW-49B

2,4-Dimethylphenol	0.49
2,6-Dinitrotoluene	0.0013
2-Chloronaphthalene	2
2-Methylnaphthalene	0.098
4,6-Dinitro-2-methylphenol	0.0024
4-Nitrophenol	0.049
Acenaphthene	1.5
Acenaphthylene	1.5
Anthracene	7.3
Benzene	0.005
Benzo(a)anthracene	0.0091
Benzo(a)pyrene	0.0002
bis(2-Ethylhexyl)phthalate (DEHP)	0.006
Chlorobenzene	0.1
Chrysene	0.91
Dibenzofuran	0.098
Di-n-butylphthalate (DBP)	2.4
Ethylbenzene	0.7
Fluoranthene	0.98
Fluorene	0.98
Naphthalene	0.49
N-Nitrosodiphenylamine	0.19
Pentachlorophenol	0.001
Phenanthrene	0.73
Phenol	7.3
Pyrene	0.73
Toluene	1
Xylenes (total)	10
Arsenic	0.01

MW-77A

Acenaphthene	1.5
Acenaphthylene	1.5
Anthracene	7.3
Fluorene	0.98
Naphthalene	0.49

MW-78A

2-Methylnaphthalene	0.098
Acenaphthene	1.5
Acenaphthylene	1.5
Anthracene	7.3
Fluorene	0.98
Naphthalene	0.49

MW-79A

2-Methylnaphthalene	0.098
Acenaphthene	1.5
Acenaphthylene	1.5
Anthracene	7.3
Fluorene	0.98
Naphthalene	0.49

MW-79B

2-Methylnaphthalene	0.098
Acenaphthene	1.5
Acenaphthylene	1.5
Anthracene	7.3
Fluorene	0.98
Naphthalene	0.49

Notes:
1. Topography is estimated.
2. See Figure 1A-1 for cross section location.
3. Concentration are in mg/L.
4. Blue highlighted concentrations exceed C/I and Yellow highlighted concentrations exceed RAL.
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NS = Not Sampled

Protective Concentration Levels (PCLs)

Parameter	RAL (mg/L)	cPCL (mg/L)	GW_{CLASS3} (mg/L)
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Chlorobenzene	0.1	0.1	10
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Ethylbenzene	0.7	0.7	70
Fluoranthene	0.98	2.9	98
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Naphthalene	0.49	1.5	49
N-Nitrosodiphenylamine	0.19	0.42	19
Pentachlorophenol	0.001	0.001	0.1
Phenanthrene	0.73	2.2	73
Phenol	7.3	22	730
Pyrene	0.73	2.2	73
Toluene	1	1	100
Xylenes (total)	10	10	1000
Arsenic	0.01	0.01	1

MONITORING WELL CONSTRUCTION

TarGOST LOGS
0 100 200
TarGOST (% RE)

Boring
Water Level (F1 HVD)
Measured January - March 2020
(A=ATZ, B=B-CZ/B-TZ, C=C-TZ)
Well Screen
Well Sump

ROST LOGS
0 50 100
ROST (% RE)

Vertical Exaggeration 5X
100 0 100 200
scale in feet

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC # 795
LICENSED PROFESSIONAL GEOSCIENTIST
8/12/2020

CLIENT
UNION PACIFIC RAILROAD CO.

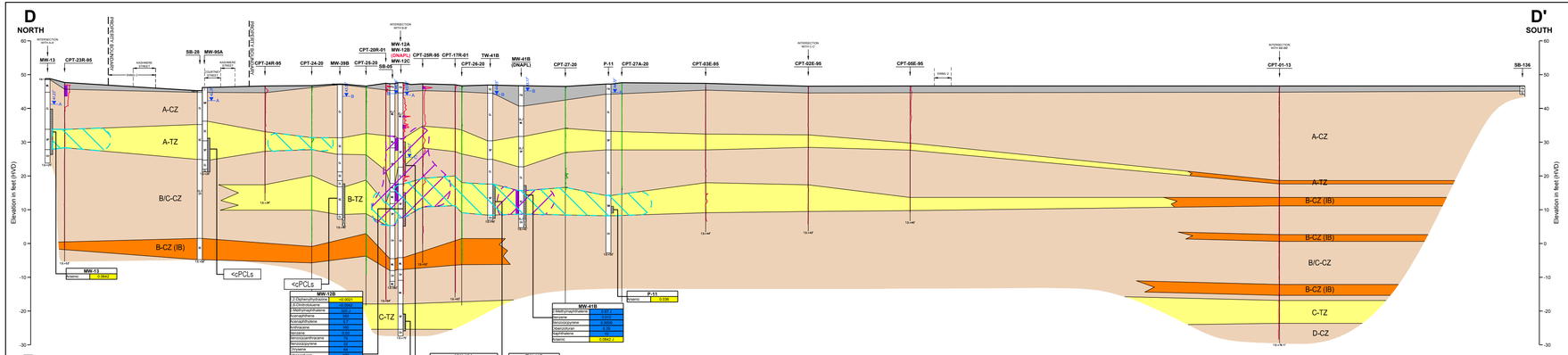
PROJECT
HOUSTON WOOD PRESERVING WORKS

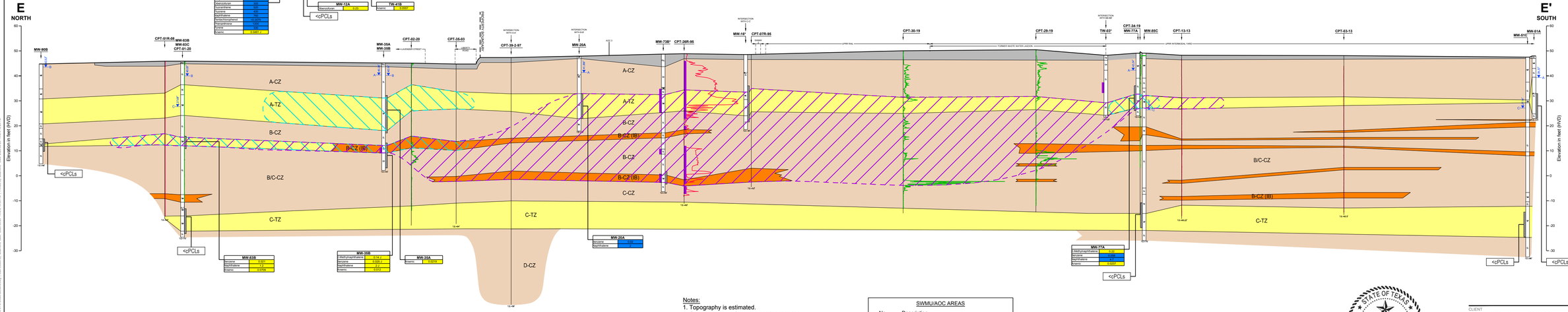
TITLE
CROSS SECTIONS C-C' AND BB-BB'

CONSULTANT
GOLDER
GOLDER ASSOCIATES (TEXAS), INC.
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-08-27
DESIGNED	AJD/RS
PREPARED	AJD/RS
REVIEWED	MH
APPROVED	EDM

PROJECT NO.: 19119232
REV.: 0
FIGURE: 4C-2





Protective Concentration Levels (PCLs)

Parameter	RAL (mg/L)	cPCL (mg/L)	GW_{CLASS3} (mg/L)
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Naphthalene	0.49	1.5	49
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Pentachlorophenol	0.001	0.001	0.1
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Phenol	7.3	22	730
Pyrene	0.73	2.2	73
Toluene	1	1	100
Xylenes (total)	10	10	1000
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EXPLANATION

- Fill: Sand, Silt, Clay & Gravel, wood fragments, bricks, scrap metal
- Transmissive Zone (TZ): Sand & Silty Sand
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Notes:
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6. Vertical datum based on City of Houston Monument System (HVD), Ft HVD.
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SWMU/AOC AREAS

No.	Description
SWMU 1	Closed Surface Impoundment
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SWMU 4	Recent Process Area
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SWMU 8	Aboveground Storage Tank Area
SWMU 9	Location of Former UST No. 44-023-05
SWMU 10	Location of Former Sap Water Treatment Tank
SWMU 11	Oil/Water Separators
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AOC 1	Diesel Storage Tank
AOC 3	Contaminated Portion of City Water Line
AOC 4	Location of Former Incinerator
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AOC 6	Inactive Wastewater Lagoon
AOC 7	Location of Former UST No. 44-023-21

MONITORING WELL CONSTRUCTION

Boring
Water Level (Ft HVD)
Measured January - March 2020
(A=ATZ, B=B-CZ/B-TZ, C=C-TZ)
Well Screen
Well Sump

ROST LOGS
0 50 100
ROST (% RE)

TarGOST LOGS
0 100 200
TarGOST (% RE)

Vertical Exaggeration 5X
100 0 100 200
scale in feet

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED PROFESSIONAL GEOSCIENTIST
8/12/20

CLIENT
UNION PACIFIC RAILROAD CO.

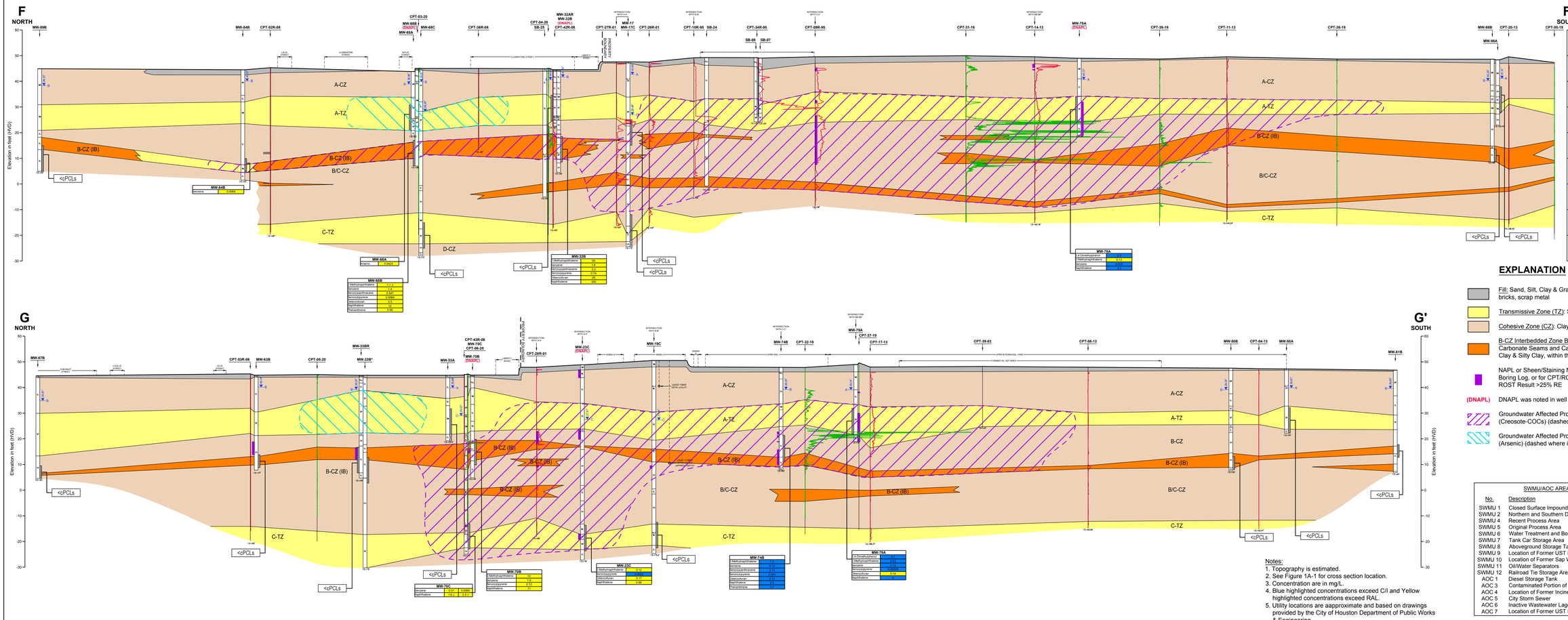
PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
CROSS SECTIONS D-D' AND E-E'

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50355
TEXAS ENGINEERING FIRM NO. 3776

YYYY-MM-DD	2020-08-27
DESIGNED	AJD/RS
PREPARED	AJD/RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232
REV. 0
FIGURE 4C-3



EXPLANATION

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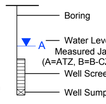
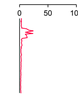
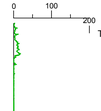
MONITORING WELL CONSTRUCTION



ROST LOGS



TarGOST LOGS



Protective Concentration Levels (PCLs)

Parameter	RAL (mg/L)	cPCL (mg/L)	GW_{CLASS3} (mg/L)
1,2-Diphenylhydrazine	0.0011	0.0026	0.11
2,4-Dimethylphenol	0.49	1.5	49
2,6-Dinitrotoluene	0.0013	0.003	0.13
2-Chloronaphthalene	2	5.8	200
2-Methylnaphthalene	0.098	0.29	9.8
4,6-Dinitro-2-methylphenol	0.0024	0.0073	0.24
4-Nitrophenol	0.049	0.15	4.9
Acenaphthene	1.5	4.4	150
Acenaphthylene	1.5	4.4	150
Anthracene	7.3	22	730
Benzene	0.005	0.005	0.5
Benzo(a)anthracene	0.0091	0.02	0.91
Benzo(a)pyrene	0.0002	0.0002	0.02
bis(2-Ethylhexyl)phthalate (DEHP)	0.006	0.006	0.6
Chlorobenzene	0.1	0.1	10
Chrysene	0.91	2	91
Dibenzofuran	0.098	0.29	9.8
Di-n-butylphthalate (DBP)	2.4	7.3	240
Ethylbenzene	0.7	0.7	70
Fluoranthene	0.98	2.9	98
Fluorene	0.98	2.9	98
Naphthalene	0.49	1.5	49
N-Nitrosodiphenylamine	0.19	0.42	19
Pentachlorophenol	0.001	0.001	0.1
Phenanthrene	0.73	2.2	73
Phenol	7.3	22	730
Pyrene	0.73	2.2	73
Toluene	1	1	100
Xylenes (total)	10	10	1000
Arsenic	0.01	0.01	1

Vertical Exaggeration 5X

100 0 100 200

scale in feet

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
CROSS SECTIONS F-F', G-G' AND H-H'

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-08-27
DESIGNED	AJD/RS
PREPARED	AJD/RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 REV. 0 FIGURE 4C-4

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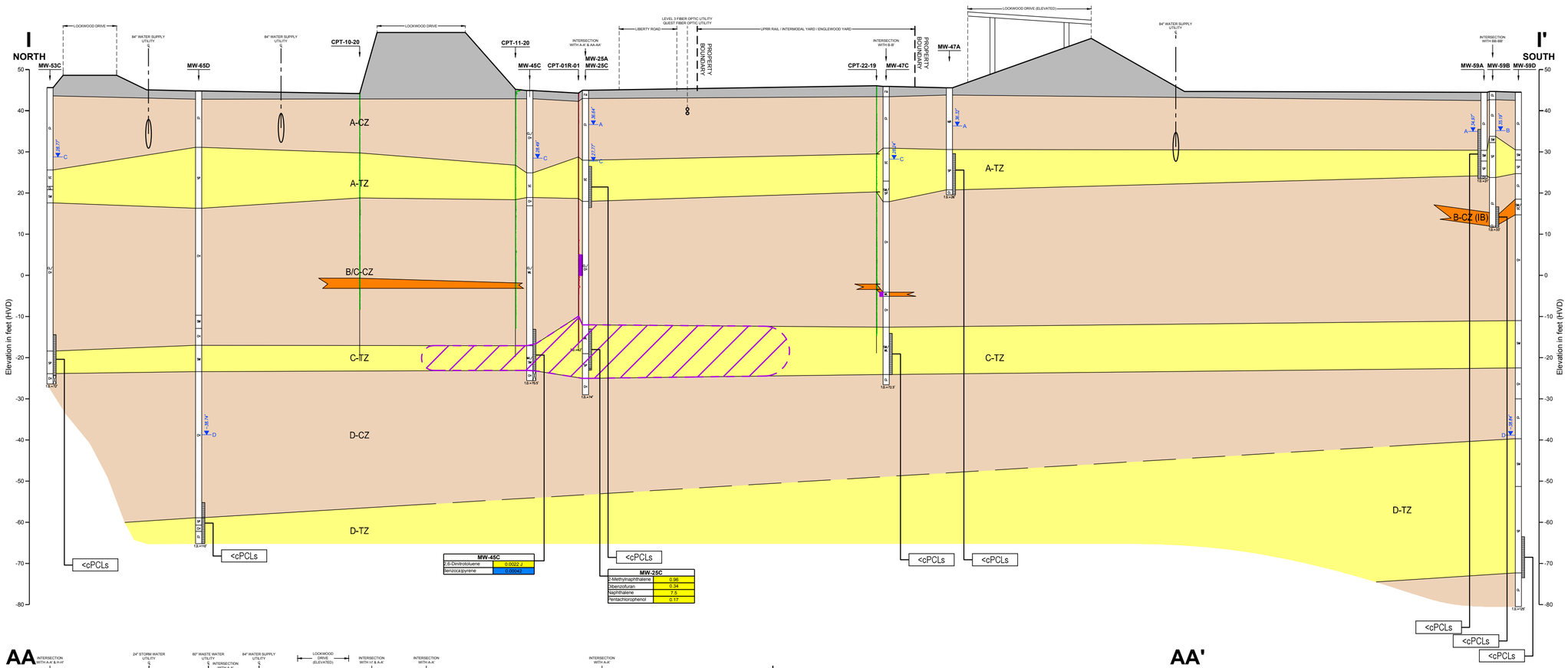
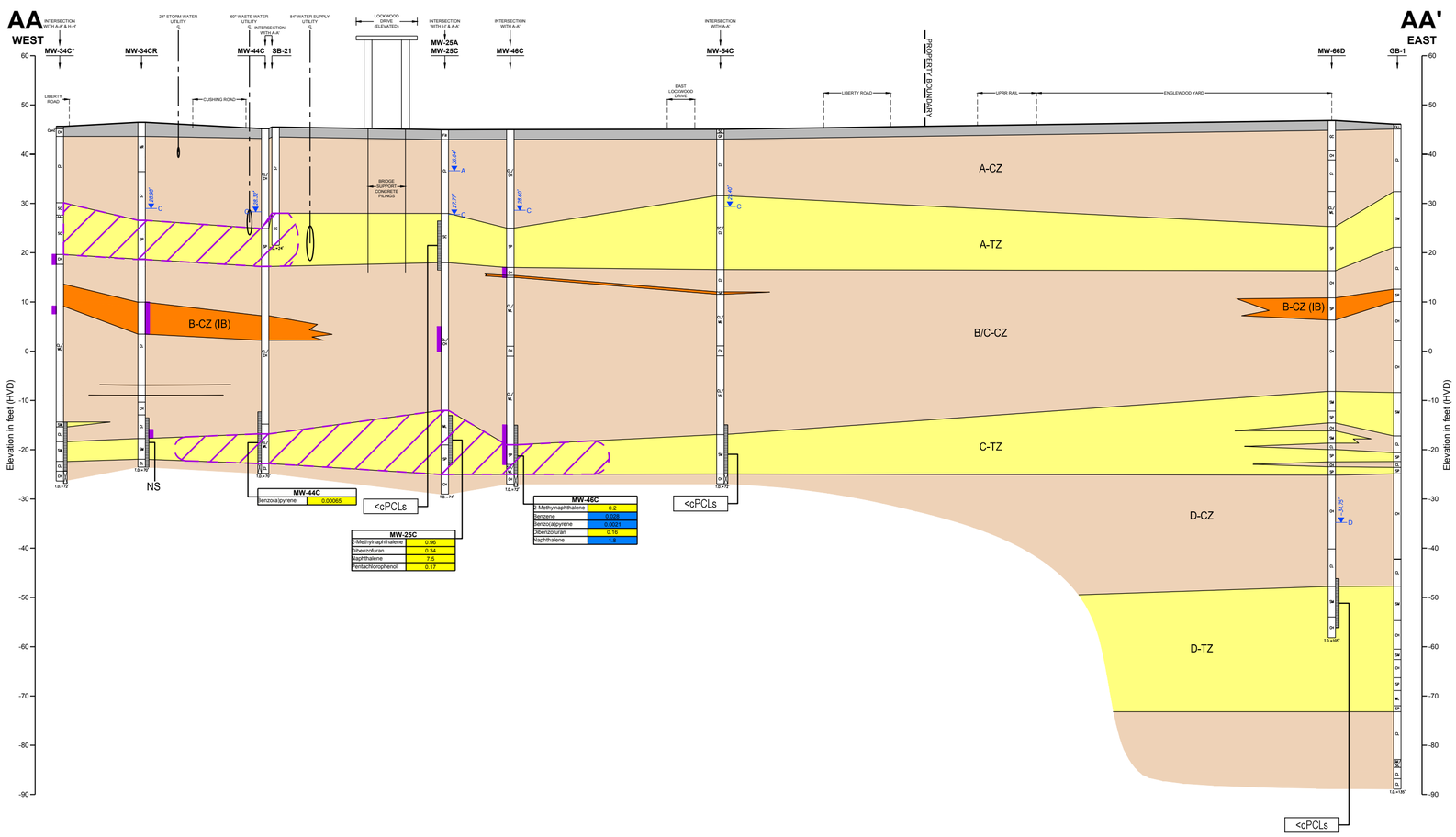




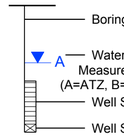
EXPLANATION

- Fill: Sand, Silt, Clay & Gravel, wood fragments, bricks, scrap metal
- Transmissive Zone (TZ): Sand & Silty Sand
- Cohesive Zone (CZ): Clay, Silty Clay & Silt
- B-CZ Interbedded Zone B-CZ (IB): Interbedded Carbonate Seams and Calcareous Nodules with Clay & Silty Clay, within the B-CZ
- NAPL or Sheen/Staining Noted in Soils for Boring Log, or for CPT/ROST Location ROST Result >25% RE
- (DNAPL) DNAPL was noted in well in January 2020.
- Groundwater Affected Property/PCLE Zone (Creosote-COCs) (dashed where inferred)
- Groundwater Affected Property/PCLE Zone (Arsenic) (dashed where inferred)

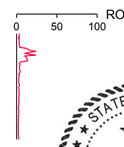
SWMU/AOC AREAS

No.	Description
SWMU 1	Closed Surface Impoundment
SWMU 2	Northern and Southern Drainage Ditches
SWMU 4	Recent Process Area
SWMU 5	Original Process Area
SWMU 6	Water Treatment and Boiler System
SWMU 7	Tank Car Storage Area
SWMU 8	Aboveground Storage Tank Area
SWMU 9	Location of Former UST No. 44-023-05
SWMU 10	Location of Former Sap Water Treatment Tank
SWMU 11	Oil/Water Separators
SWMU 12	Railroad Tie Storage Area
AOC 1	Diesel Storage Tank
AOC 3	Contaminated Portion of City Water Line
AOC 4	Location of Former Incinerator
AOC 5	City Storm Sewer
AOC 6	Inactive Wastewater Lagoon
AOC 7	Location of Former UST No. 44-023-21

MONITORING WELL CONSTRUCTION



ROST LOGS



Notes:
1. Topography is estimated.
2. See Figure 1A-1 for cross section location.
3. Concentration are in mg/L.
4. Blue highlighted concentrations exceed C/I and Yellow highlighted concentrations exceed RAL.
5. Utility locations are approximate and based on drawings provided by the City of Houston Department of Public Works & Engineering.
6. Vertical datum based on City of Houston Monument System (HVD), Ft HVD.
7. Monitoring wells that have been plugged & abandoned, are denoted with an asterisk.
8. Concentrations listed from January-March 2020 sampling event. NS = Not Sampled

TarGOST LOGS

Protective Concentration Levels (PCLs)

Parameter	RAL (mg/L)	cPCL (mg/L)	GW_{CLASS3} (mg/L)
1,2-Diphenylhydrazine	0.0011	0.0026	0.11
2,4-Dimethylphenol	0.49	1.5	49
2,6-Dinitrotoluene	0.0013	0.003	0.13
2-Chloronaphthalene	2	5.8	200
2-Methylnaphthalene	0.098	0.29	9.8
4,6-Dinitro-2-methylphenol	0.0024	0.0073	0.24
4-Nitrophenol	0.049	0.15	4.9
Acenaphthene	1.5	4.4	150
Acenaphthylene	1.5	4.4	150
Anthracene	7.3	22	730
Benzene	0.005	0.005	0.5
Benzo(a)anthracene	0.0091	0.02	0.91
Benzo(a)pyrene	0.0002	0.0002	0.02
bis(2-Ethylhexyl)phthalate (DEHP)	0.006	0.006	0.6
Chlorobenzene	0.1	0.1	10
Chrysene	0.91	2	91
Dibenzofuran	0.098	0.29	9.8
Di-n-butylphthalate (DBP)	2.4	7.3	240
Ethylbenzene	0.7	0.7	70
Fluoranthene	0.98	2.9	98
Fluorene	0.98	2.9	98
Naphthalene	0.49	1.5	49
N-Nitrosodiphenylamine	0.19	0.42	19
Pentachlorophenol	0.001	0.001	0.1
Phenanthrene	0.73	2.2	73
Phenol	7.3	22	730
Pyrene	0.73	2.2	73
Toluene	1	1	100
Xylenes (total)	10	10	1000
Arsenic	0.01	0.01	1

Vertical Exaggeration 5X

100 0 100 200

scale in feet

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
CROSS SECTIONS I-I' AND AA-AA'

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-08-27
DESIGNED	AJD/RS
PREPARED	AJD/RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 REV. 0 FIGURE 4C-5

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET HAS BEEN MODIFIED FROM ANSI B

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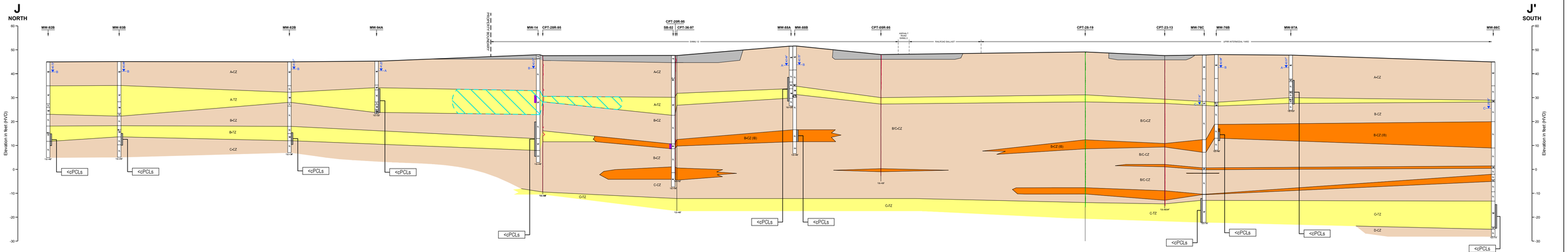


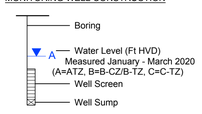
SWMU/AOC AREAS

No.	Description
SWMU 1	Closed Surface Impoundment
SWMU 2	Northern and Southern Drainage Ditches
SWMU 4	Recent Process Area
SWMU 5	Original Process Area
SWMU 6	Water Treatment and Boiler System
SWMU 7	Tank Car Storage Area
SWMU 8	Aboveground Storage Tank Area
SWMU 9	Location of Former UST No. 44-023-05
SWMU 10	Location of Former Sap Water Treatment Tank
SWMU 11	Oil/Water Separators
SWMU 12	Railroad Tie Storage Area
AOC 1	Diesel Storage Tank
AOC 3	Contaminated Portion of City Water Line
AOC 4	Location of Former Incinerator
AOC 5	City Storm Sewer
AOC 6	Inactive Wastewater Lagoon
AOC 7	Location of Former UST No. 44-023-21

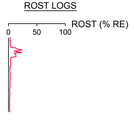
Protective Concentration Levels (PCLs)

Parameter	RAL (mg/L)	cPCL (mg/L)	$GW_{(TCEQ)}$ (mg/L)
1,2-Diphenylhydrazine	0.0011	0.0026	0.11
2,4-Dimethylphenol	0.49	1.5	49
2,6-Dinitrotoluene	0.0013	0.003	0.13
2-Chloronaphthalene	2	5.8	200
2-Methylnaphthalene	0.098	0.29	9.8
4,6-Dinitro-2-methylphenol	0.0024	0.0073	0.24
4-Nitrophenol	0.049	0.15	4.9
Acenaphthene	1.5	4.4	150
Acenaphthylene	1.5	4.4	150
Anthracene	7.3	22	730
Benzene	0.005	0.005	0.5
Benzo(a)anthracene	0.0091	0.02	0.91
Benzo(a)pyrene	0.0002	0.0002	0.02
bis(2-Ethylhexyl)phthalate (DEHP)	0.006	0.006	0.6
Chlorobenzene	0.1	0.1	10
Chrysene	0.91	2	91
Dibenzofuran	0.098	0.29	9.8
Di-n-butylphthalate (DBP)	2.4	7.3	240
Ethylbenzene	0.7	0.7	70
Fluoranthene	0.98	2.9	98
Fluorene	0.98	2.9	98
Naphthalene	0.49	1.5	49
N-Nitrosodiphenylamine	0.19	0.42	19
Pentachlorophenol	0.001	0.001	0.1
Phenanthrene	0.73	2.2	73
Phenol	7.3	22	730
Pyrene	0.73	2.2	73
Toluene	1	1	100
Xylenes (total)	10	10	1000
Arsenic	0.01	0.01	1

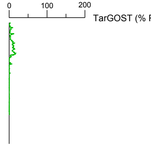
MONITORING WELL CONSTRUCTION



ROST LOGS



TarGOST LOGS



Notes:
1. Topography is estimated.
2. See Figure 1A-1 for cross section location.
3. Concentration are in mg/L.
4. Blue highlighted concentrations exceed C/I and Yellow highlighted concentrations exceed RAL.
5. Utility locations are approximate and based on drawings provided by the City of Houston Department of Public Works & Engineering.
6. Vertical datum based on City of Houston Monument System (HVD), Ft HVD.
7. Monitoring wells that have been plugged & abandoned, are denoted with an asterisk.
8. Concentrations listed from January-March 2020 sampling event. NS = Not Sampled

EXPLANATION

- Fill: Sand, Silt, Clay & Gravel, wood fragments, bricks, scrap metal
- Transmissive Zone (TZ): Sand & Silty Sand
- Cohesive Zone (CZ): Clay, Silty Clay & Silt
- B-CZ Interbedded Zone B-CZ (IB): Interbedded Carbonate Seams and Calcareous Nodules with Clay & Silty Clay, within the B-CZ
- NAPL or Sheen/Staining Noted in Soils for Boring Log, or for CPT/ROST Location ROST Result >25% RE
- (DNAPL) DNAPL was noted in well in January 2020.
- Groundwater Affected Property/PCLE Zone (Creosote-COCs) (dashed where inferred)
- Groundwater Affected Property/PCLE Zone (Arsenic) (dashed where inferred)

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
8/27/2020

Vertical Exaggeration 5X

100 0 100 200

scale in feet

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
CROSS SECTION
J-J'

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50355
TEXAS ENGINEERING FIRM NO. 3791

YYYY-MM-DD	2020-08-27
DESIGNED	AJD/RS
PREPARED	AJD/RS
REVIEWED	MH
APPROVED	ECM

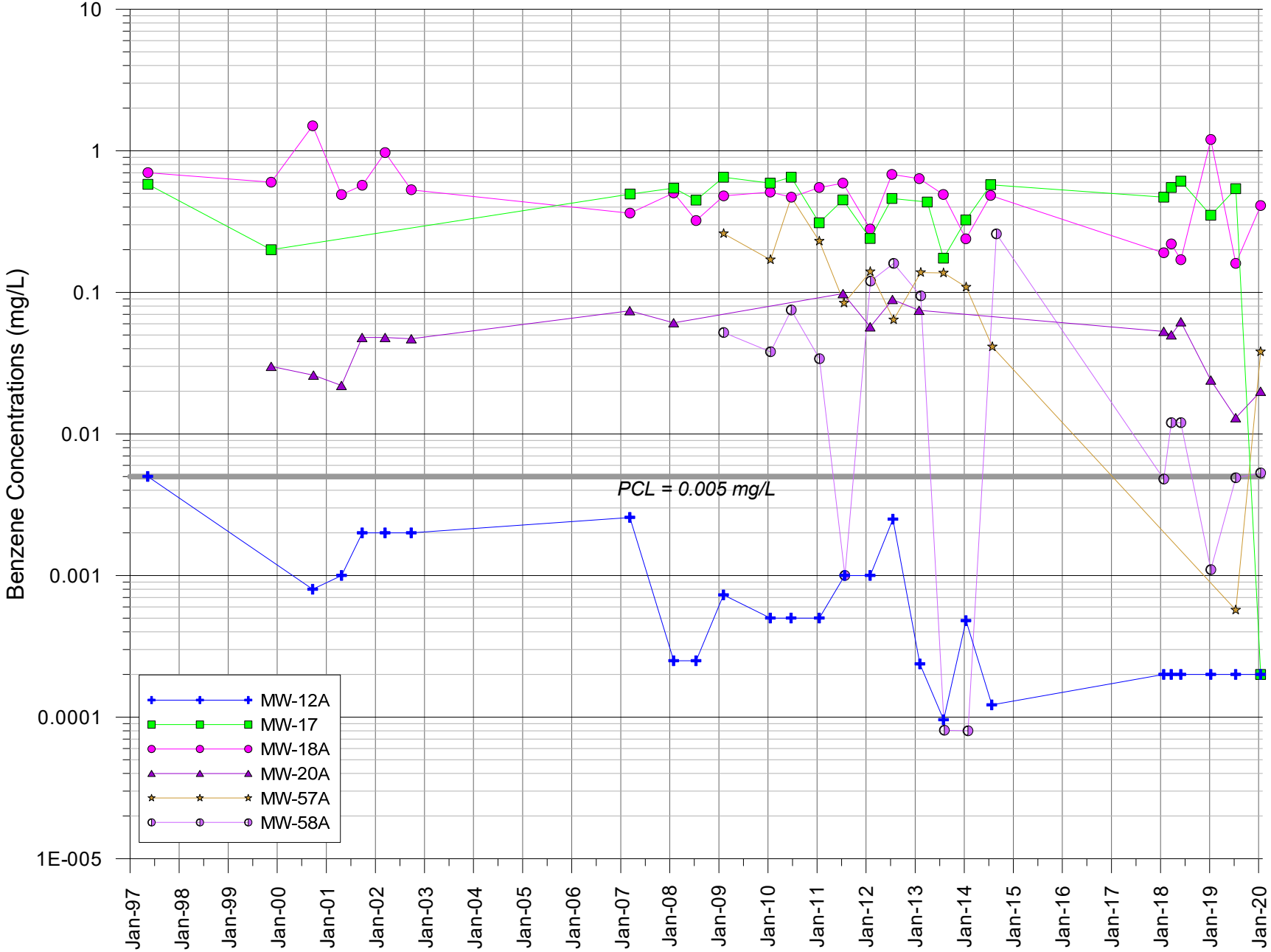
PROJECT NO. 19119232
REV. 0
FIGURE 4C-6

ATTACHMENT 1B

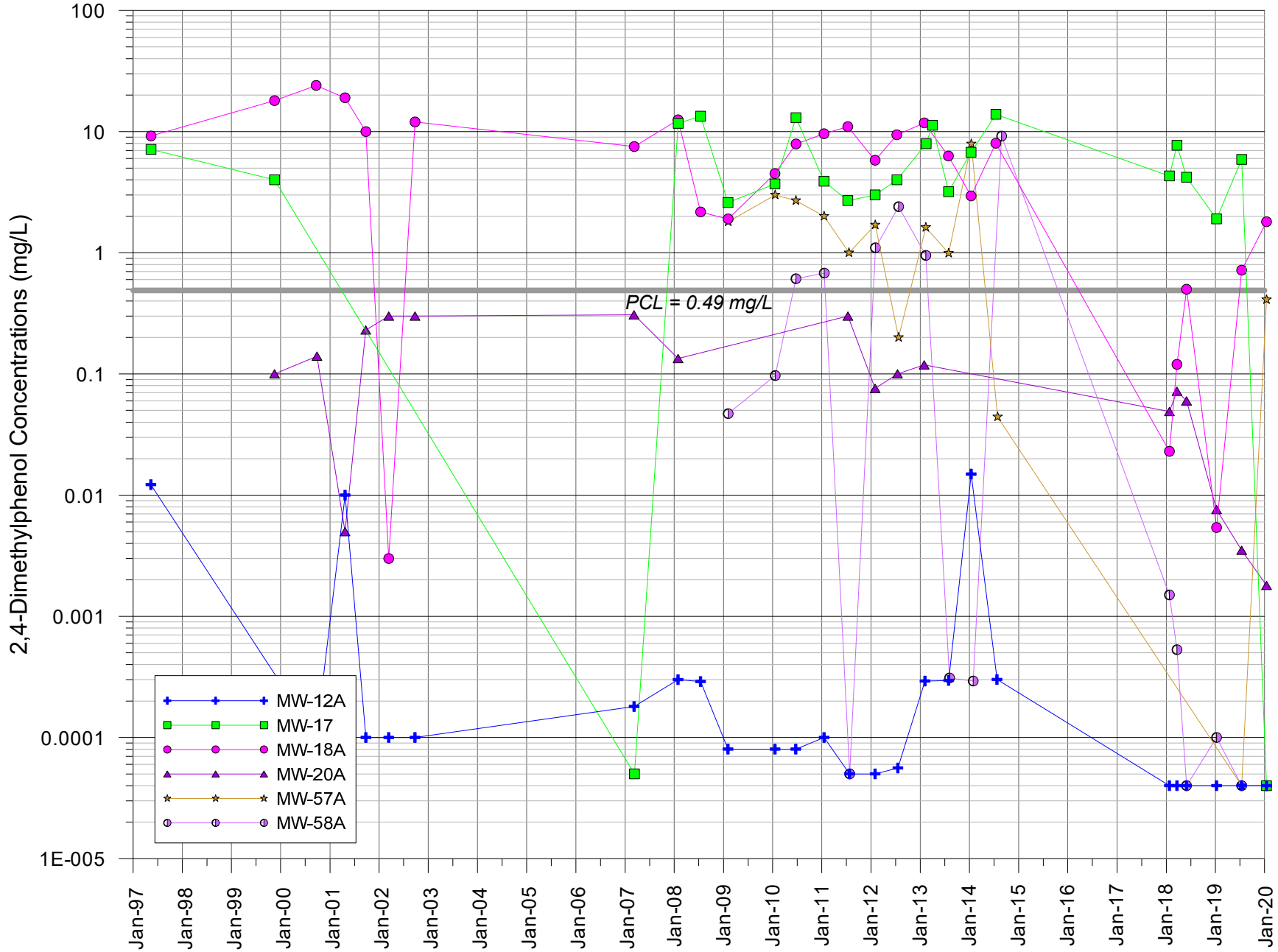
GRAPHS OF CONCENTRATION VERSUS TIME

Attachment 1B-1 – 1B-45

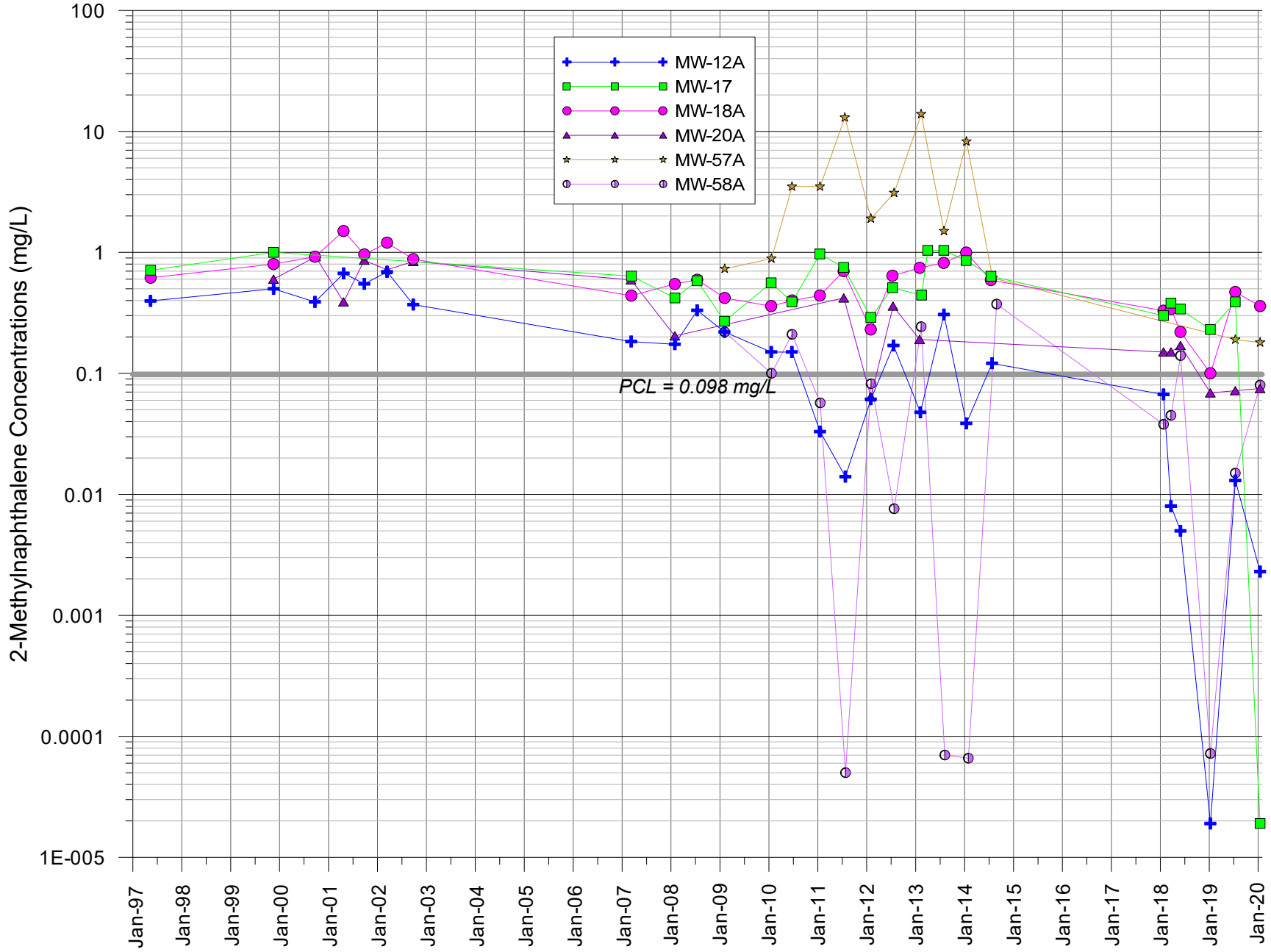
ATTACHMENT 1B-1
Benzene Concentrations at Source Area Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



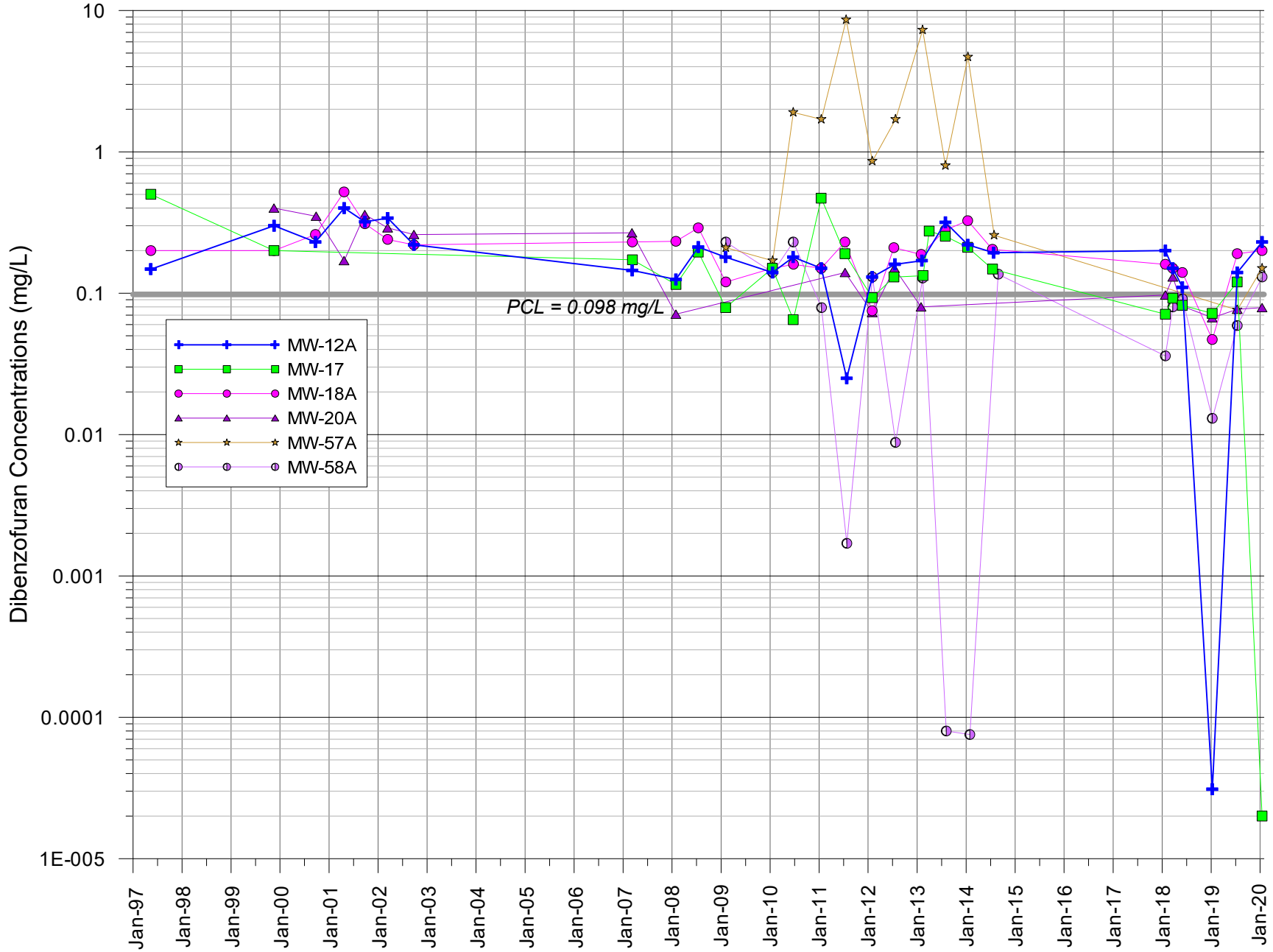
ATTACHMENT 1B-2
2,4-Dimethylphenol Concentrations at Source Area Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



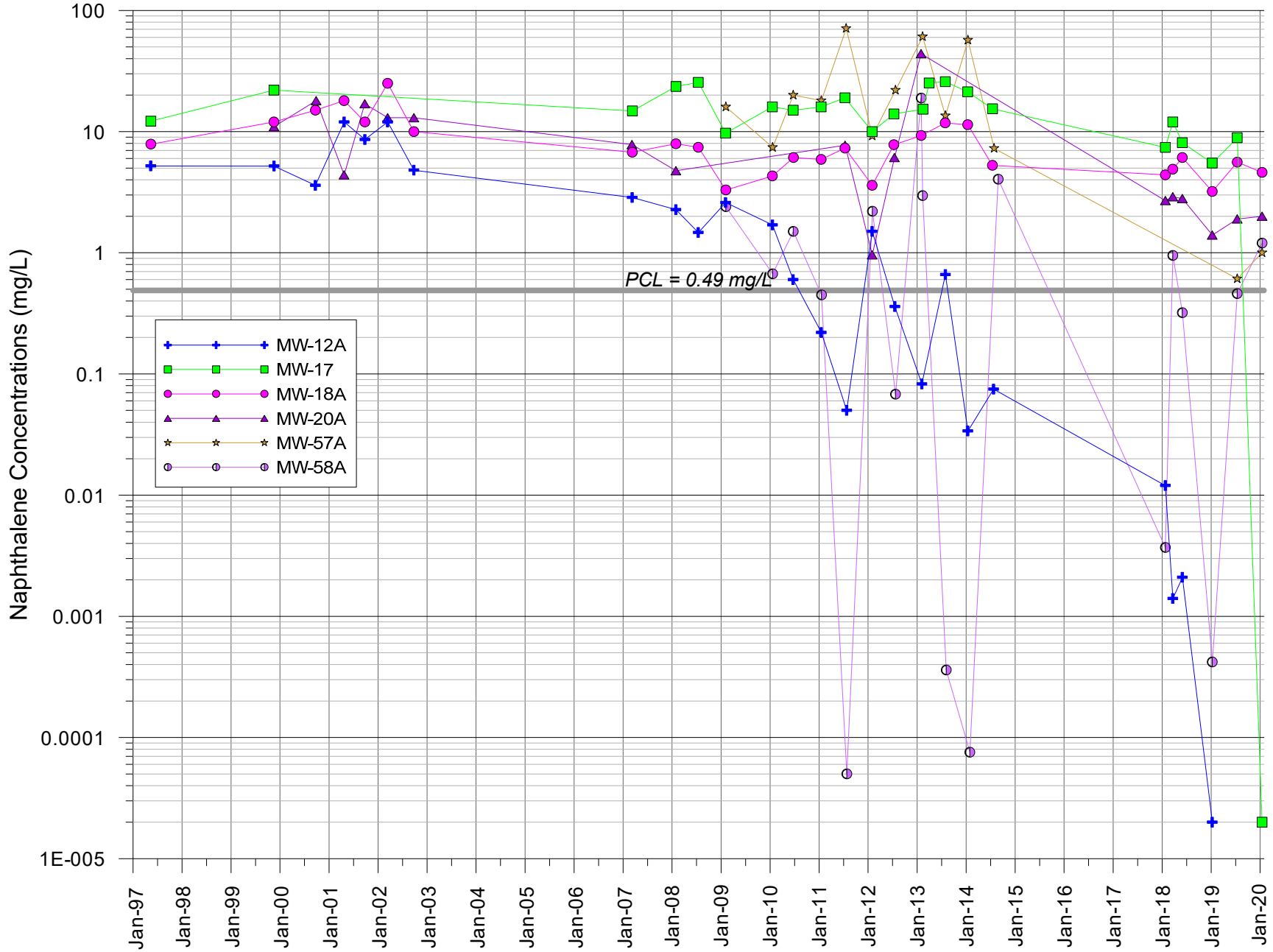
ATTACHMENT 1B-3
2-Methylnaphthalene Concentrations at Source Area Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



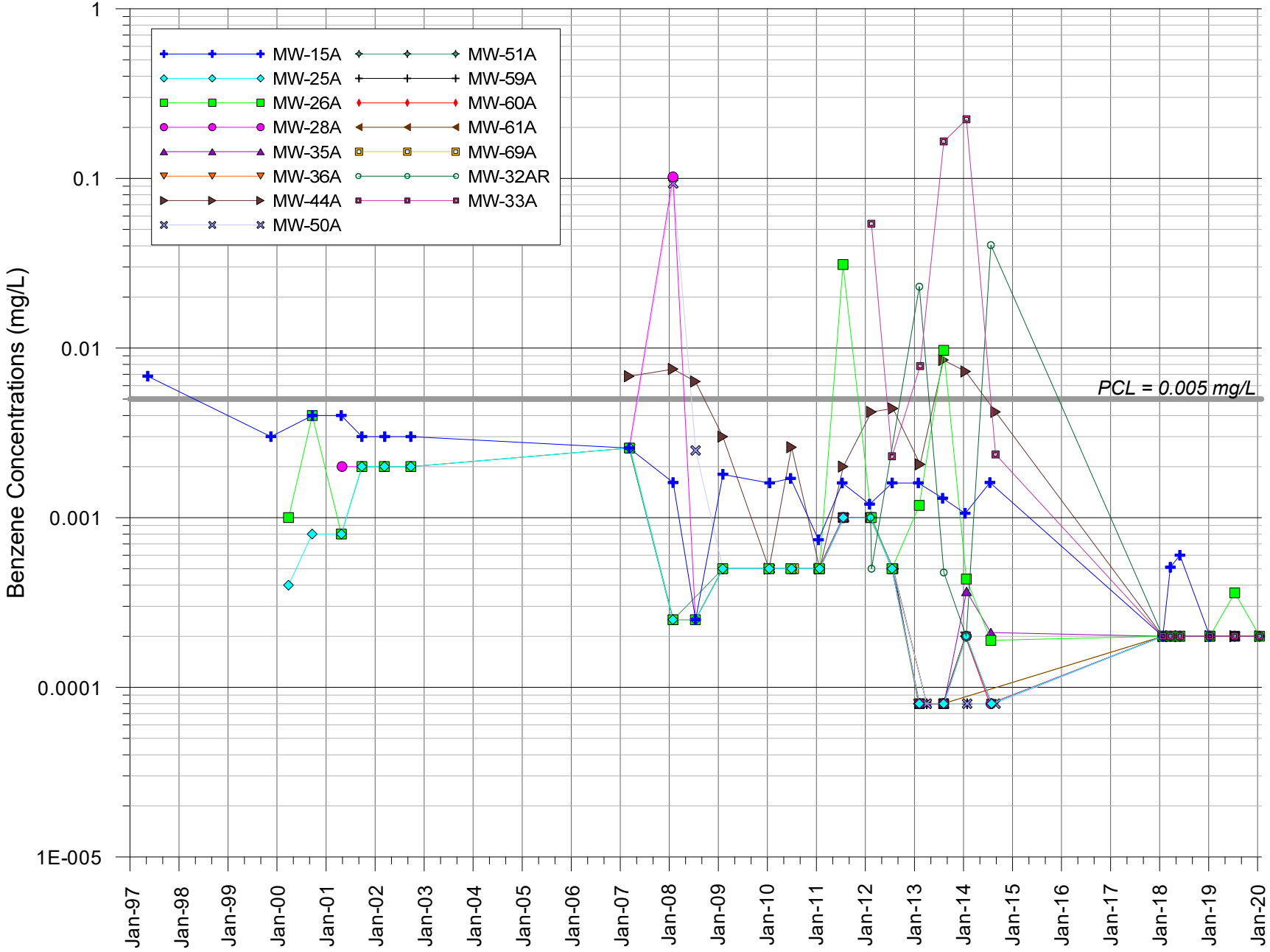
ATTACHMENT 1B-4
Dibenzofuran Concentrations at Source Area Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



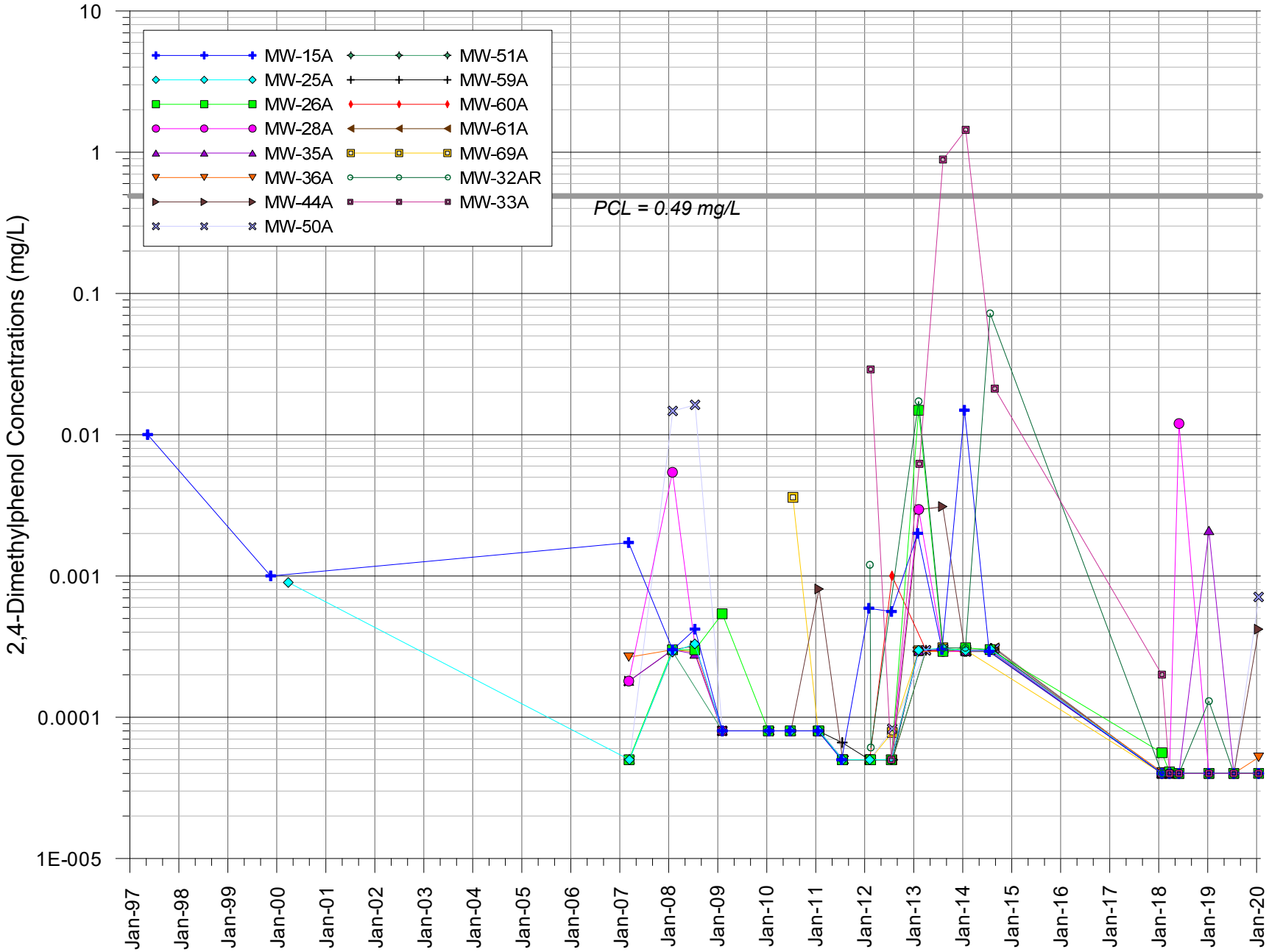
ATTACHMENT 1B-5
Naphthalene Concentrations at Source Area Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



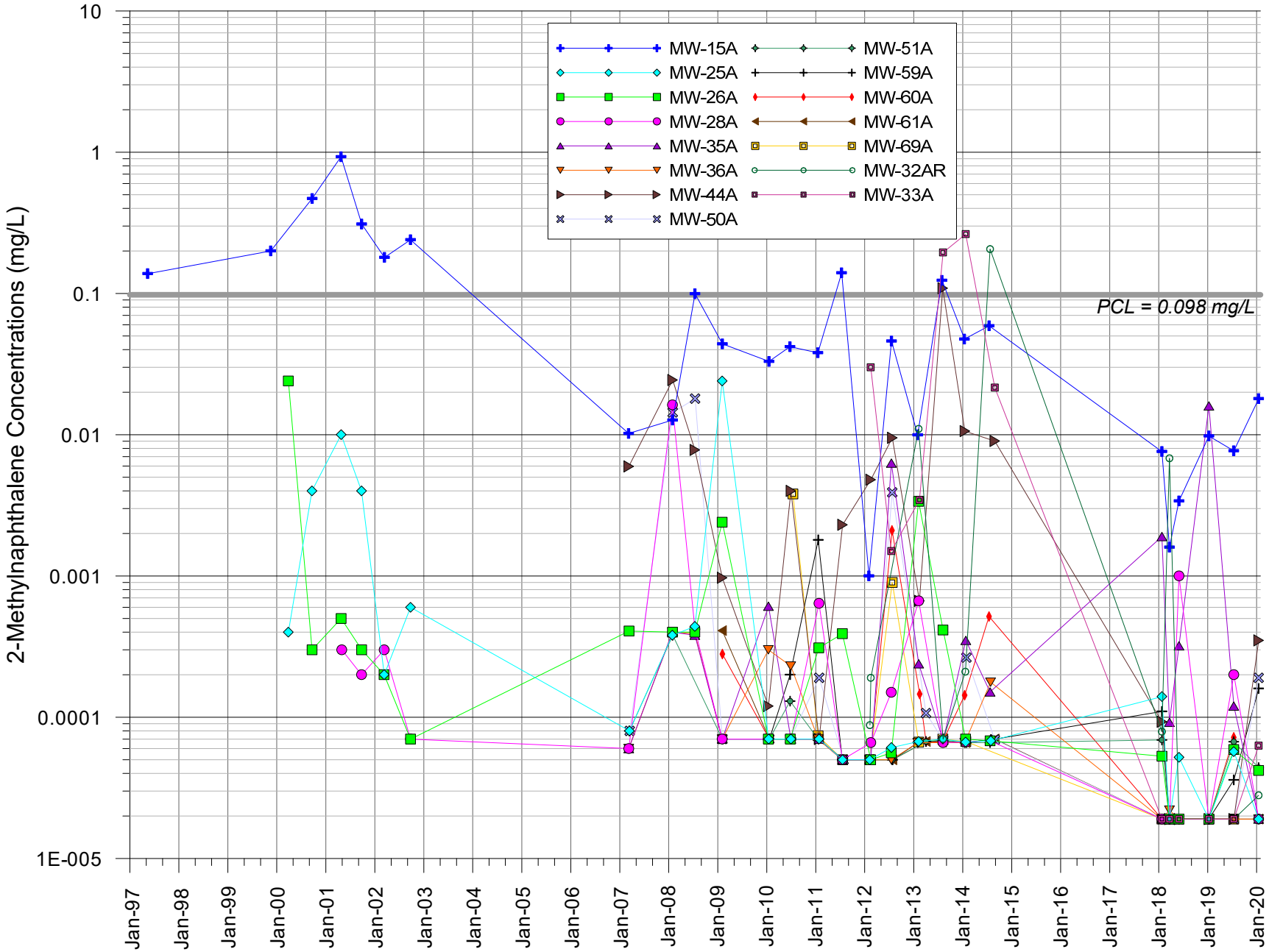
ATTACHMENT 1B-6
Benzene Concentrations at Perimeter Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



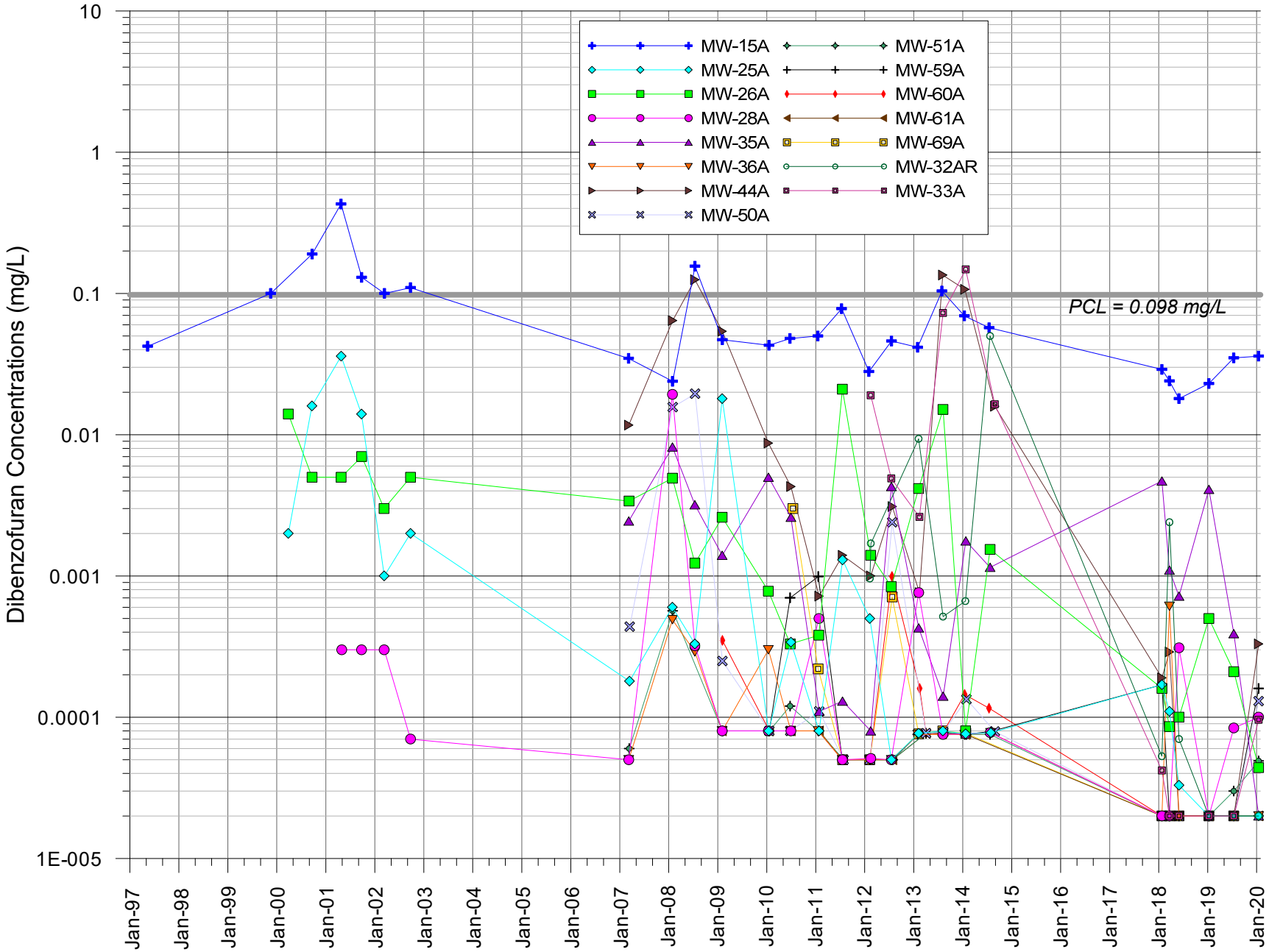
ATTACHMENT 1B-7
2,4-Dimethylphenol Concentrations at Perimeter Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



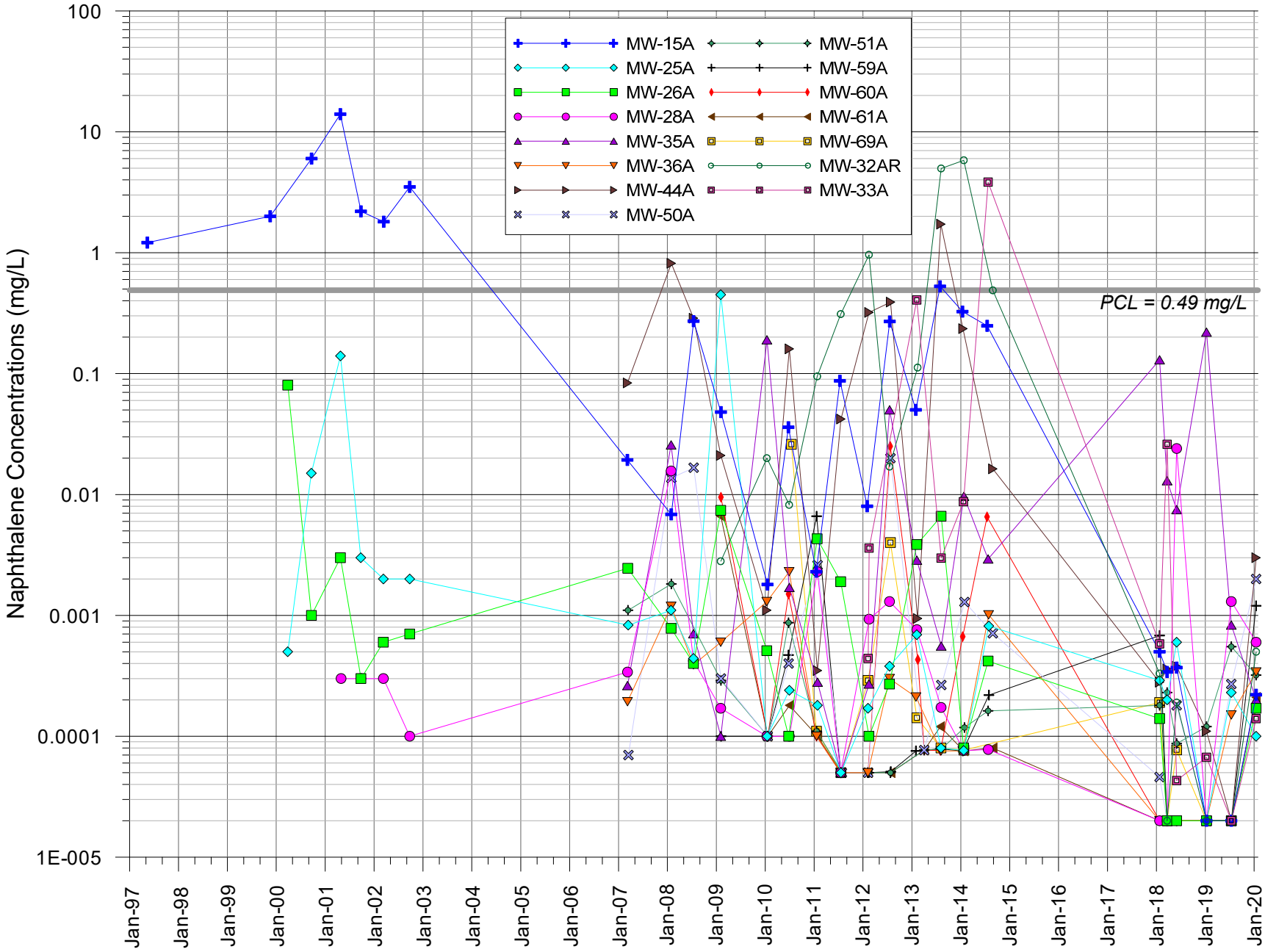
ATTACHMENT 1B-8
2-Methylnapthalene Concentrations at Perimeter Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



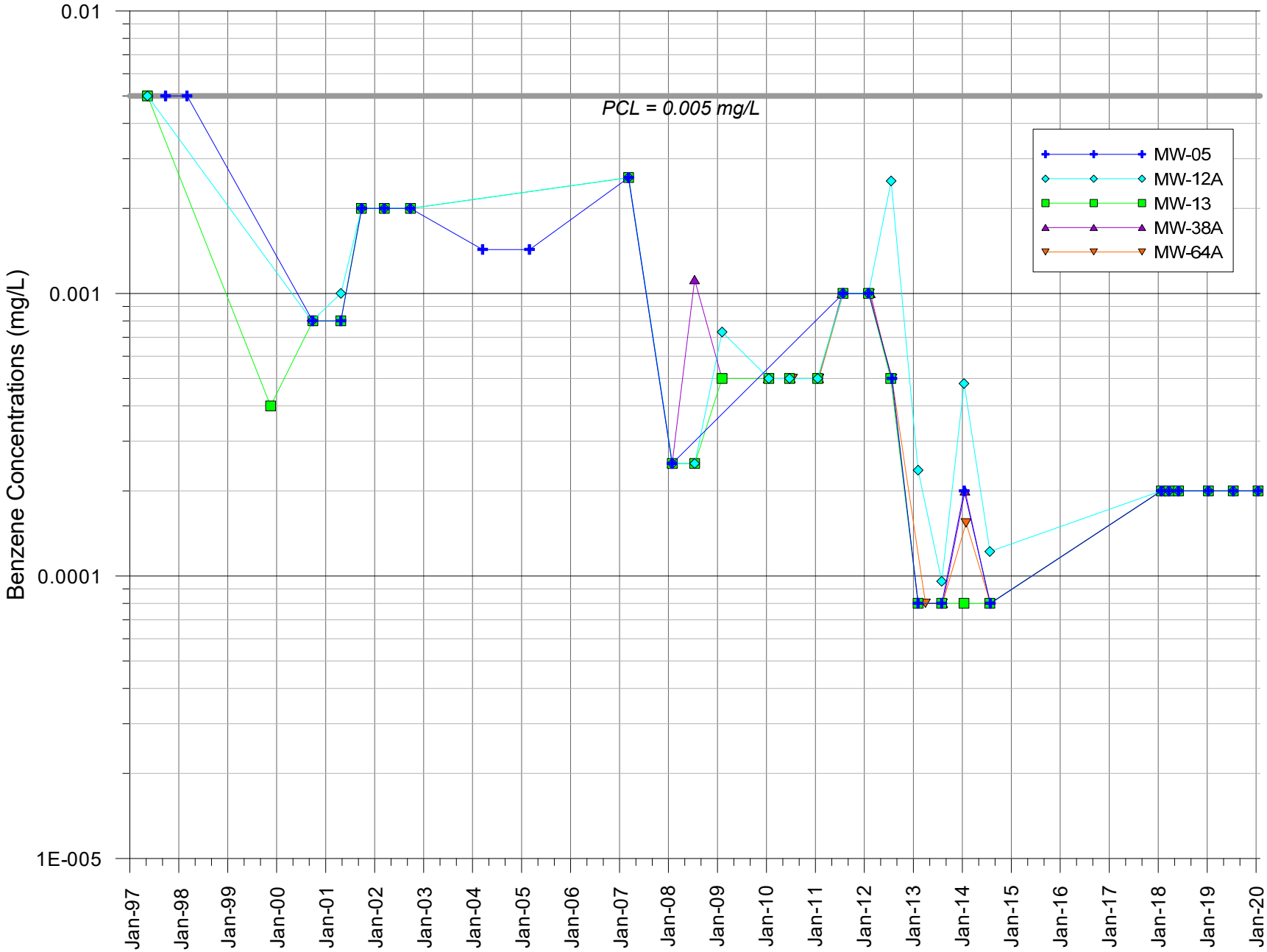
ATTACHMENT 1B-9
Dibenzofuran Concentrations at Perimeter Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



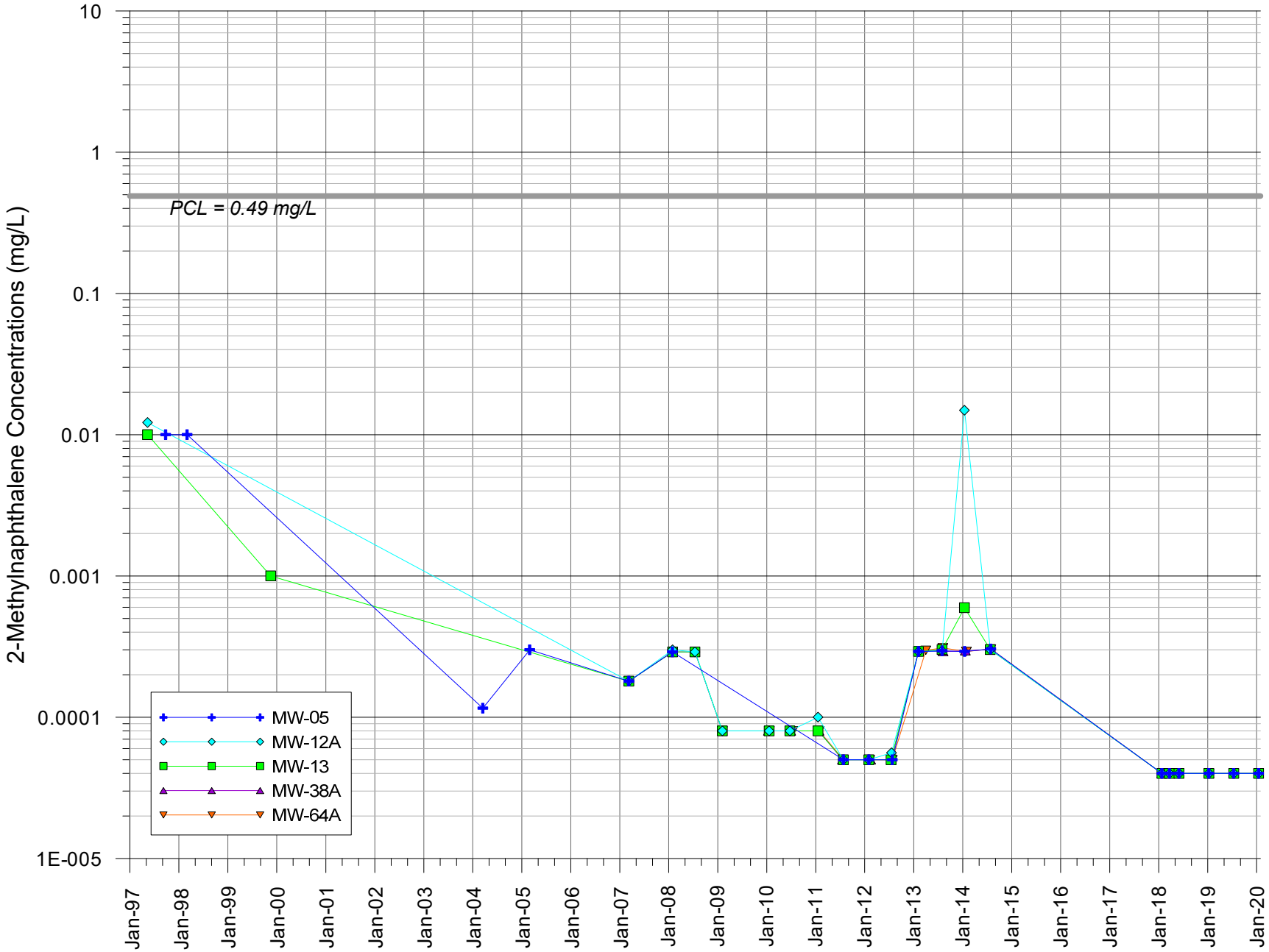
ATTACHMENT 1B-10
Naphthalene Concentrations at Perimeter Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



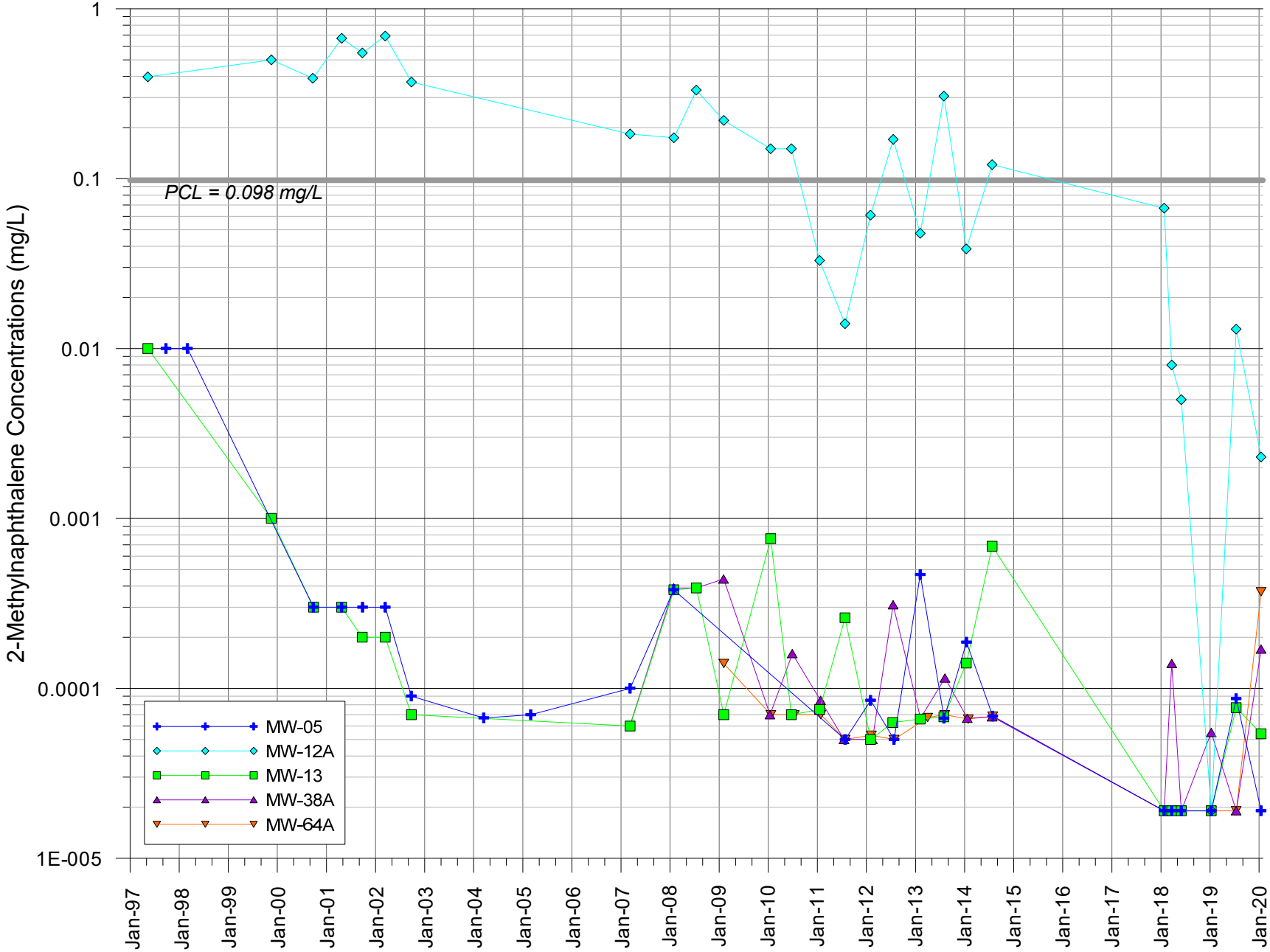
ATTACHMENT 1B-11
Benzene Concentrations at West End Area Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



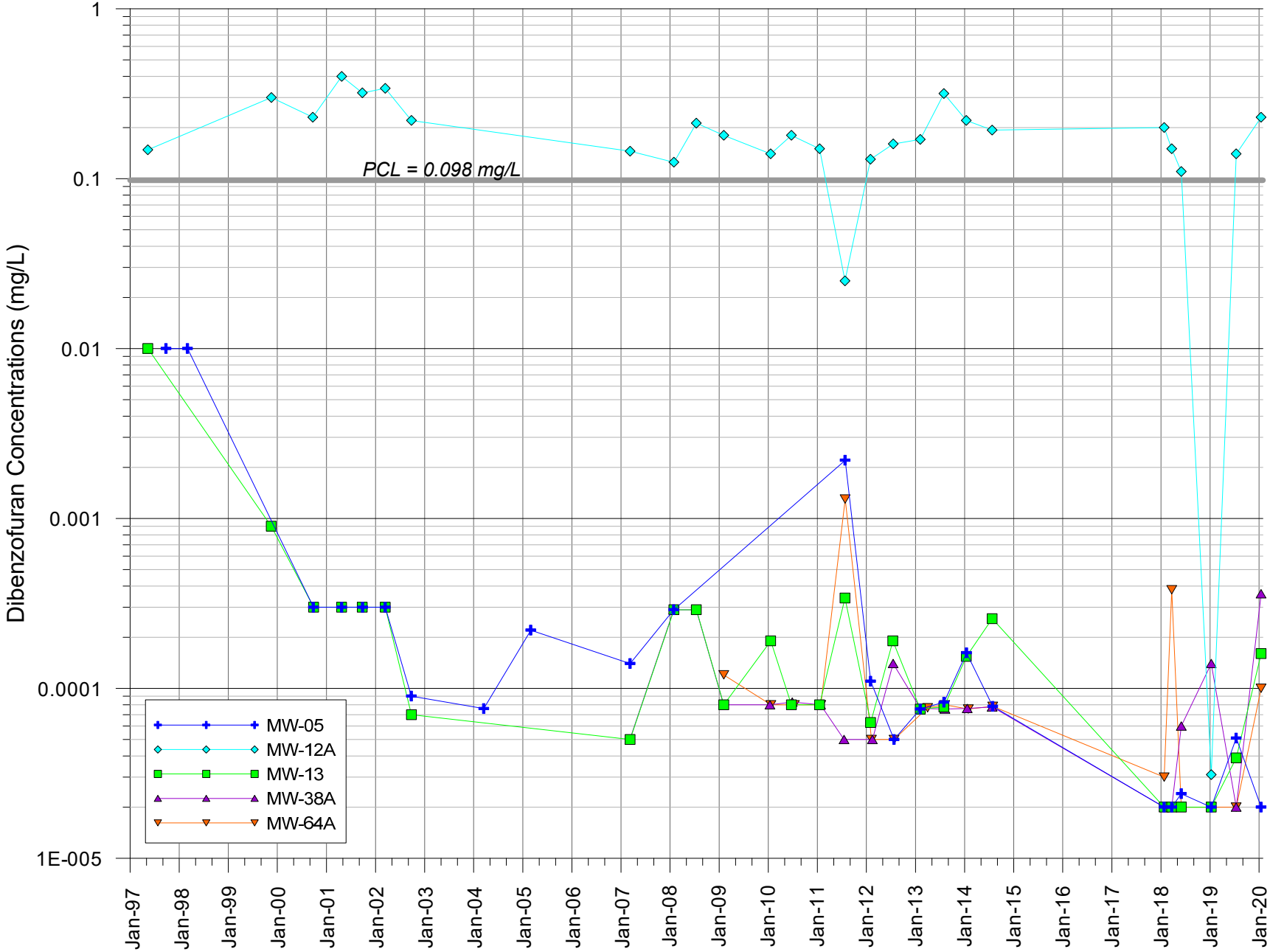
ATTACHMENT 1B-12
2,4-Dimethylphenol Concentrations at West End Area Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



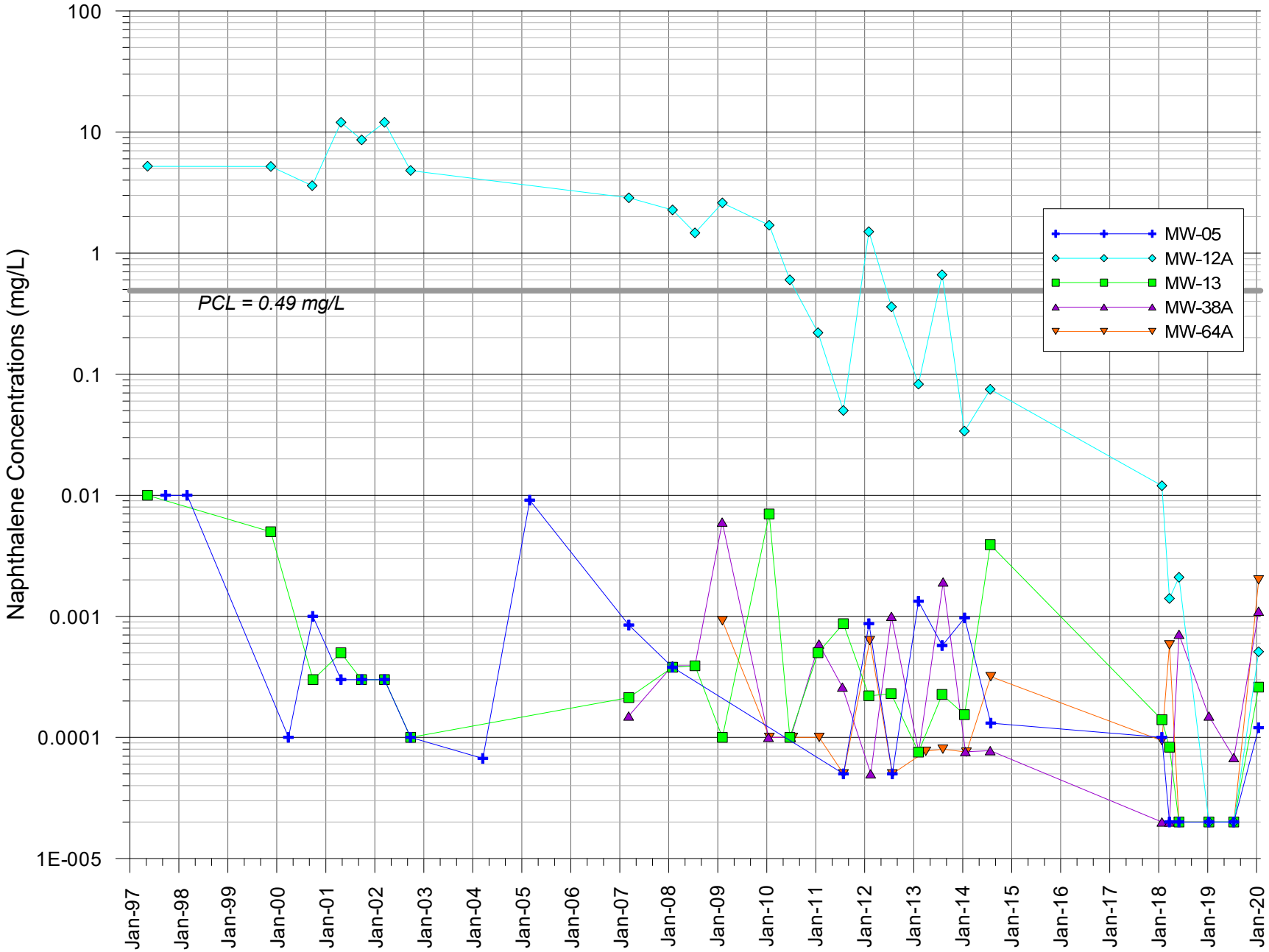
ATTACHMENT 1B-13
2-Methylnaphthalene Concentrations at West End Area Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



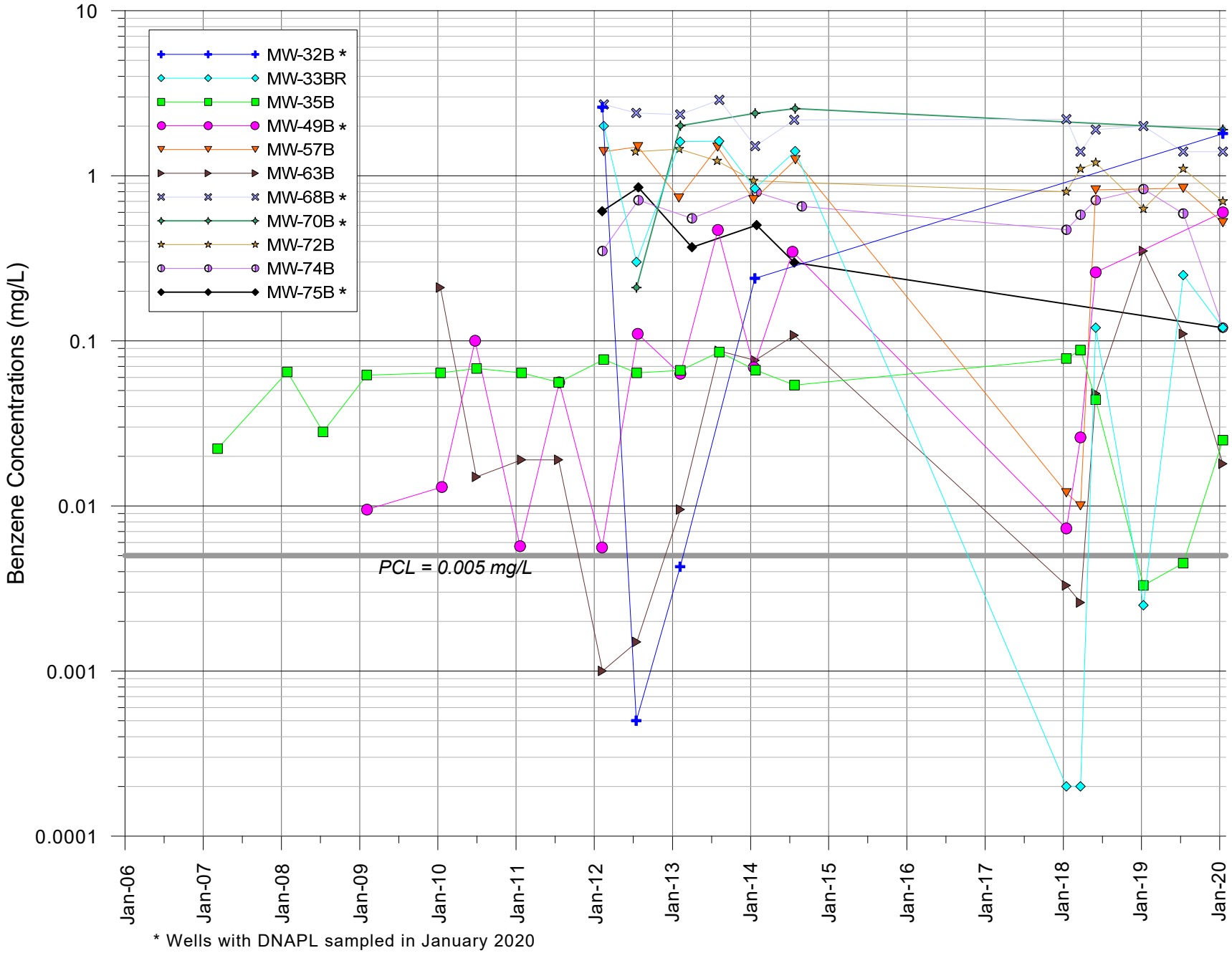
ATTACHMENT 1B-14
Dibenzofuran Concentrations at West End Area Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



ATTACHMENT 1B-15
Naphthalene Concentrations at West End Area Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas

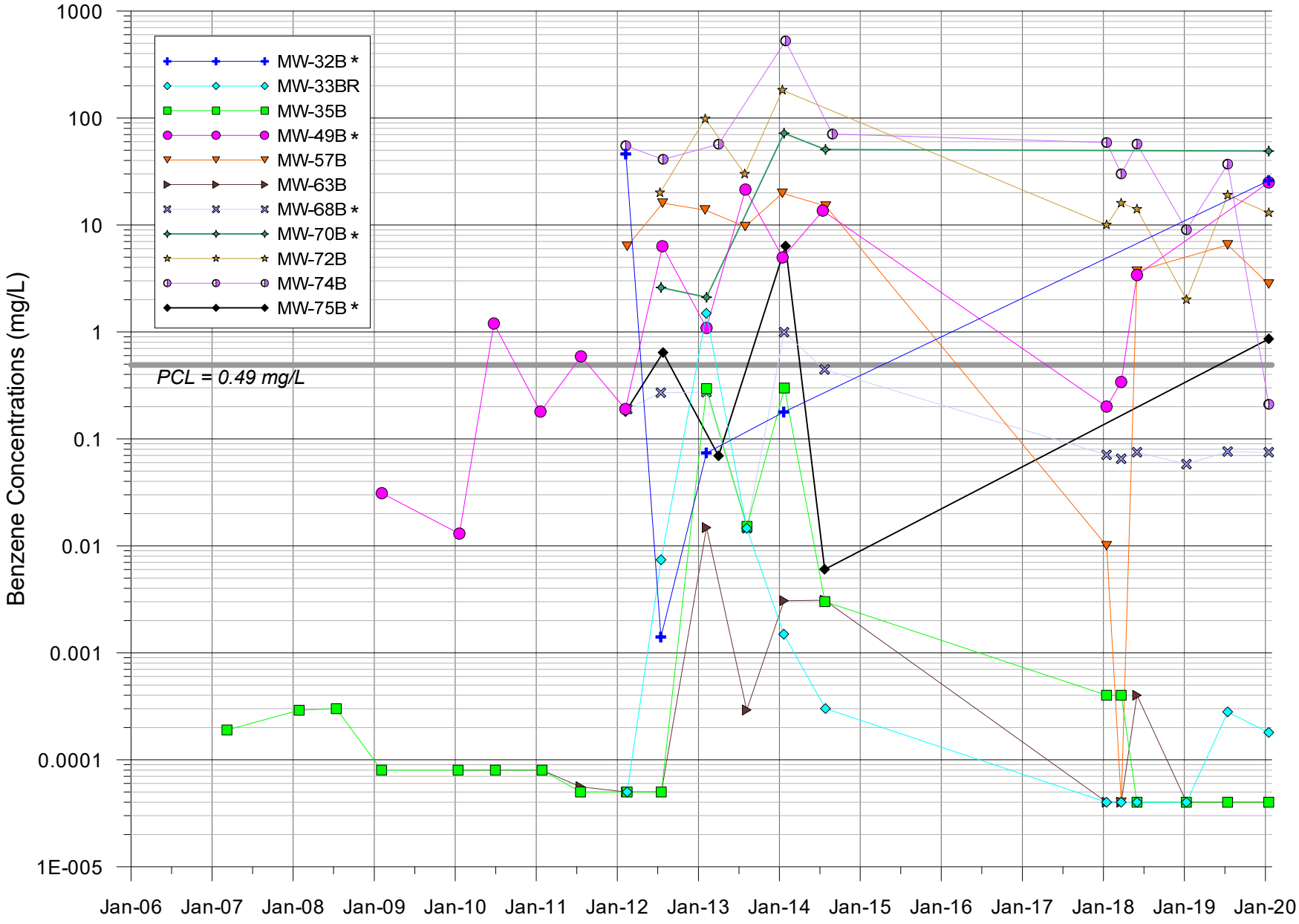


ATTACHMENT 1B-16
Benzene Concentrations at Source Area Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



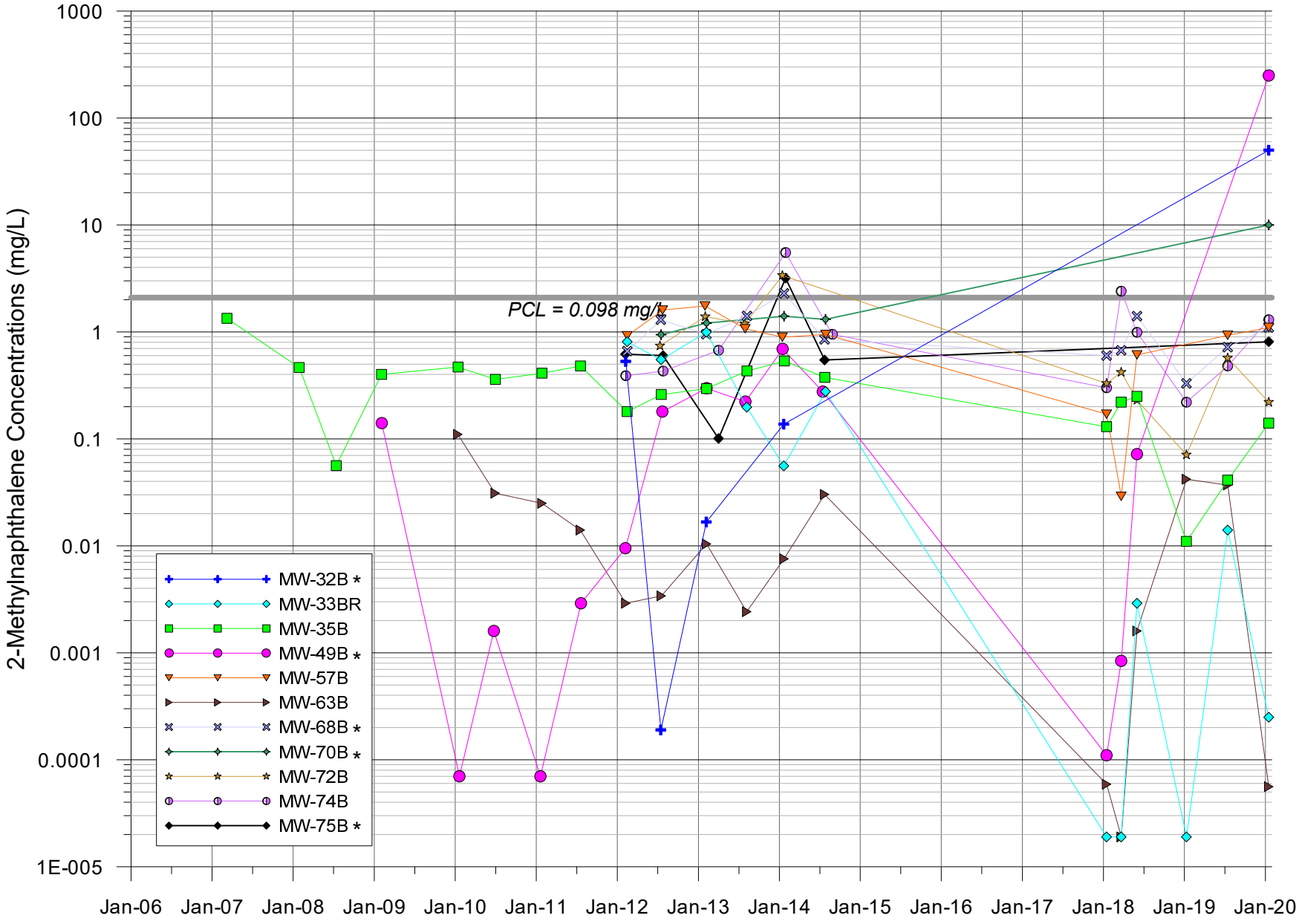
* Wells with DNAPL sampled in January 2020

ATTACHMENT 1B-17
2,4-Dimethylphenol Concentrations at Source Area Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



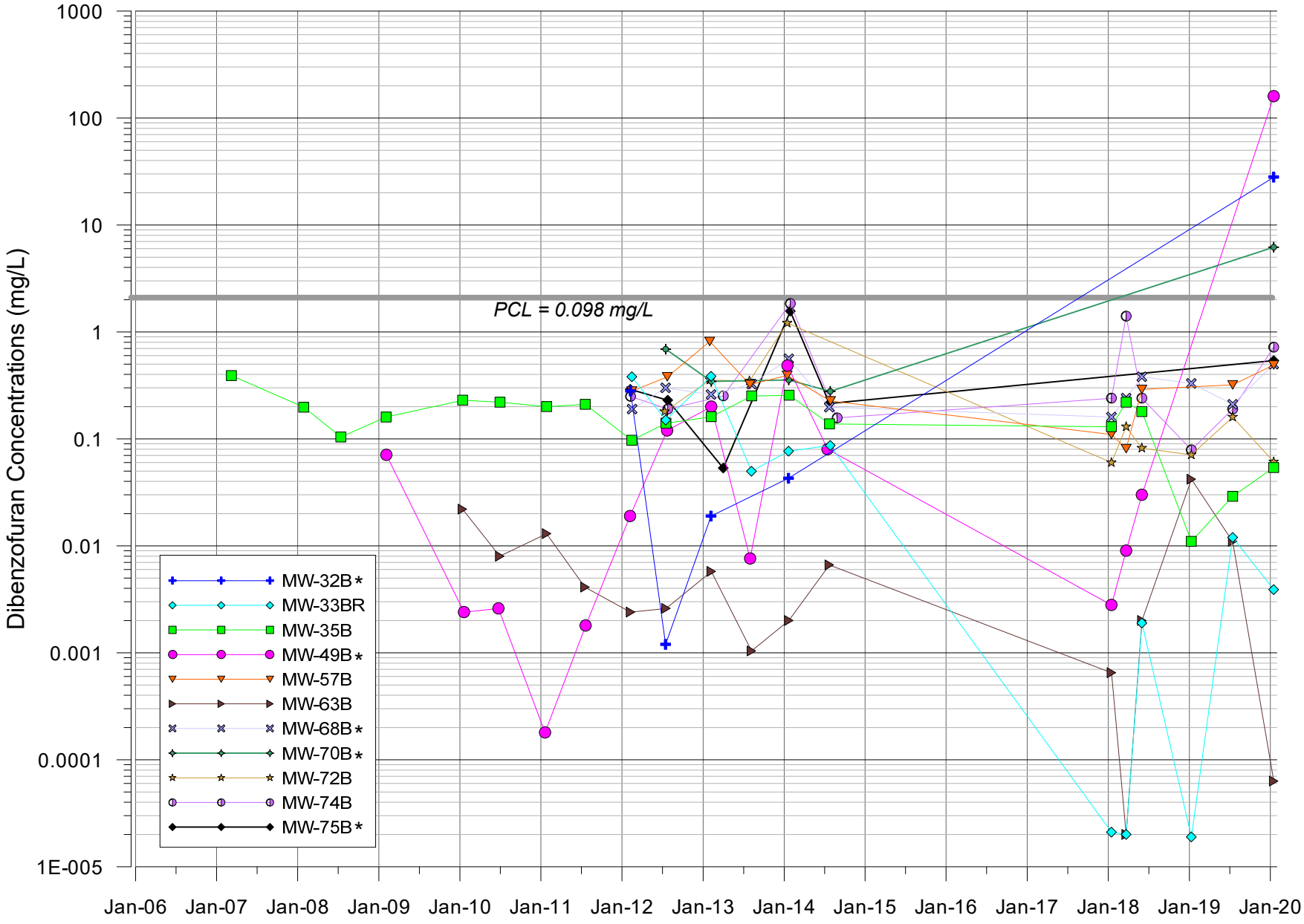
* Wells with DNAPL sampled in January 2020

ATTACHMENT 1B-18
2-Methylnaphthalene Concentrations at Source Area Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



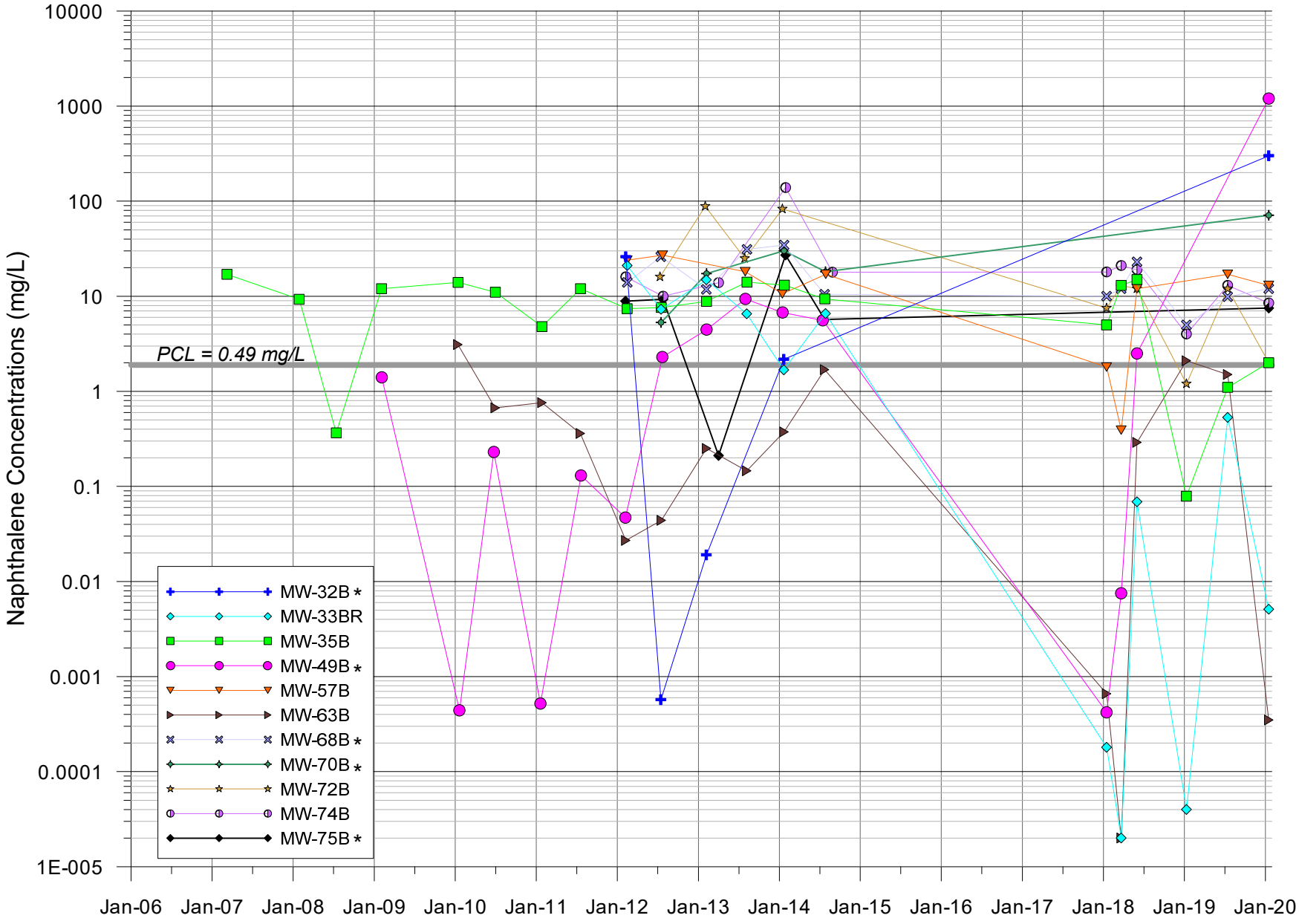
* Wells with DNAPL sampled in January 2020l

ATTACHMENT 1B-19
Dibenzofuran Concentrations at Source Area Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



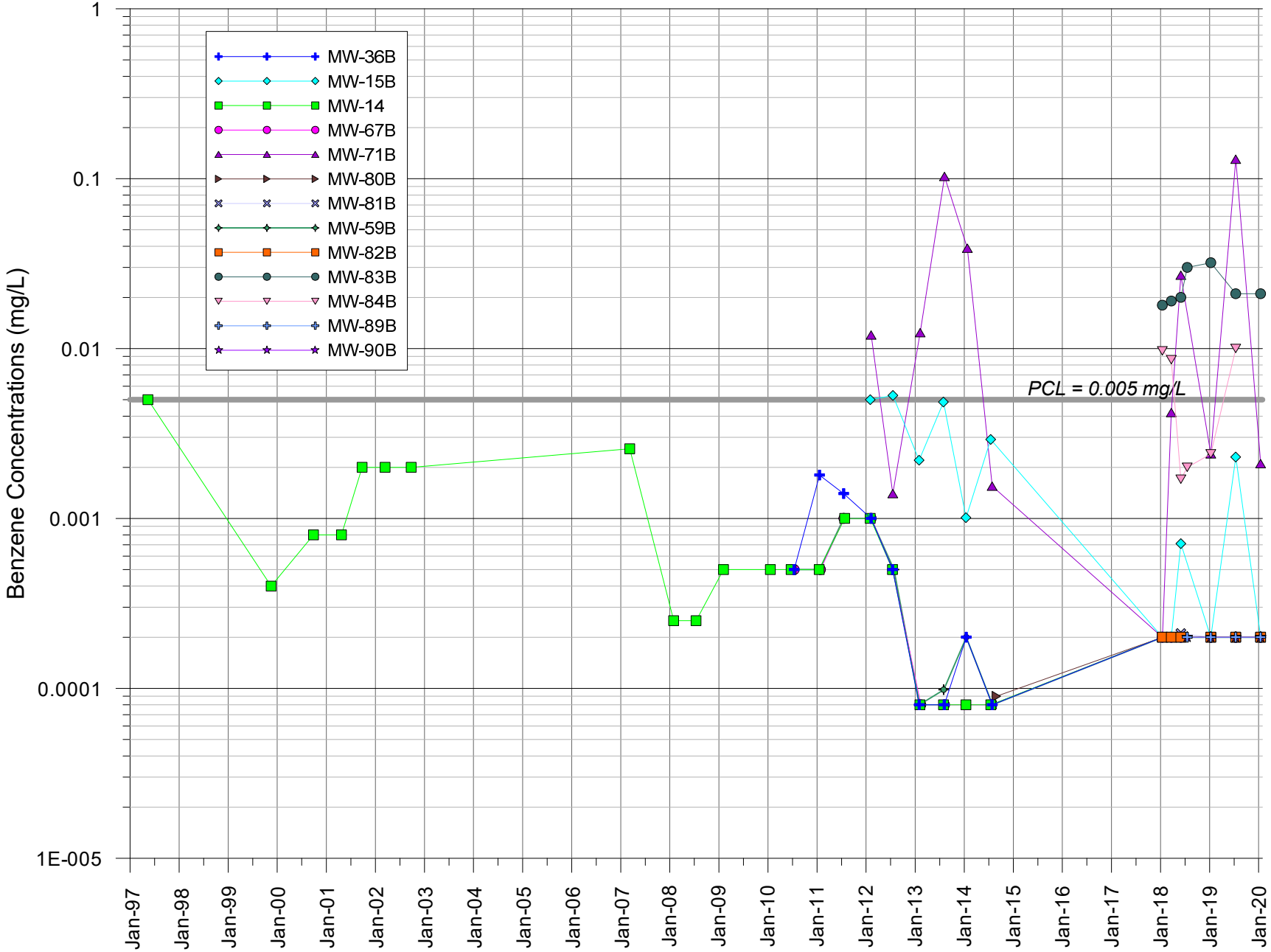
* Wells with DNAPL sampled in January 2020

ATTACHMENT 1B-20
Naphthalene Concentrations at Source Area Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas

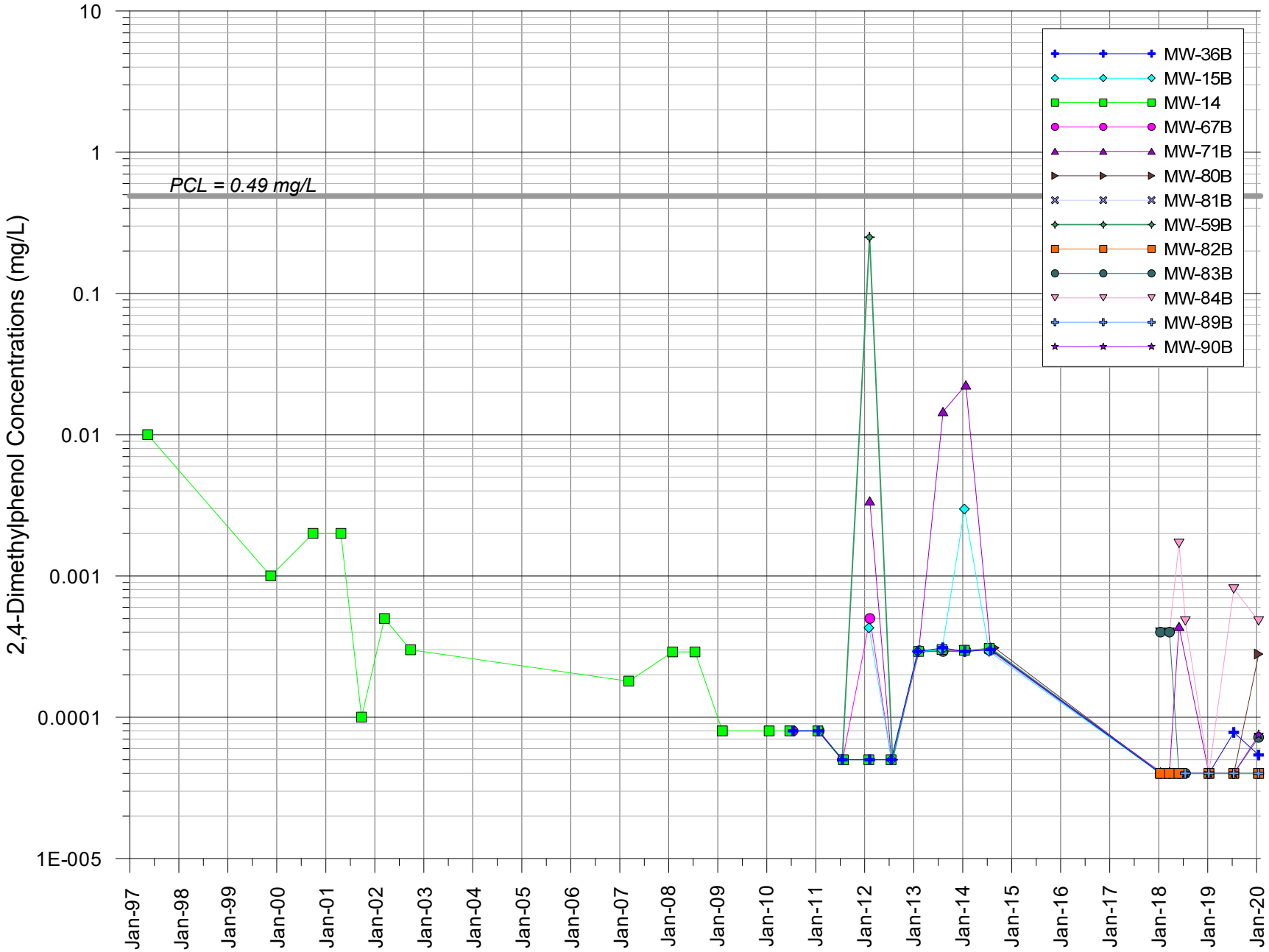


* Wells with DNAPL sampled in January 2020

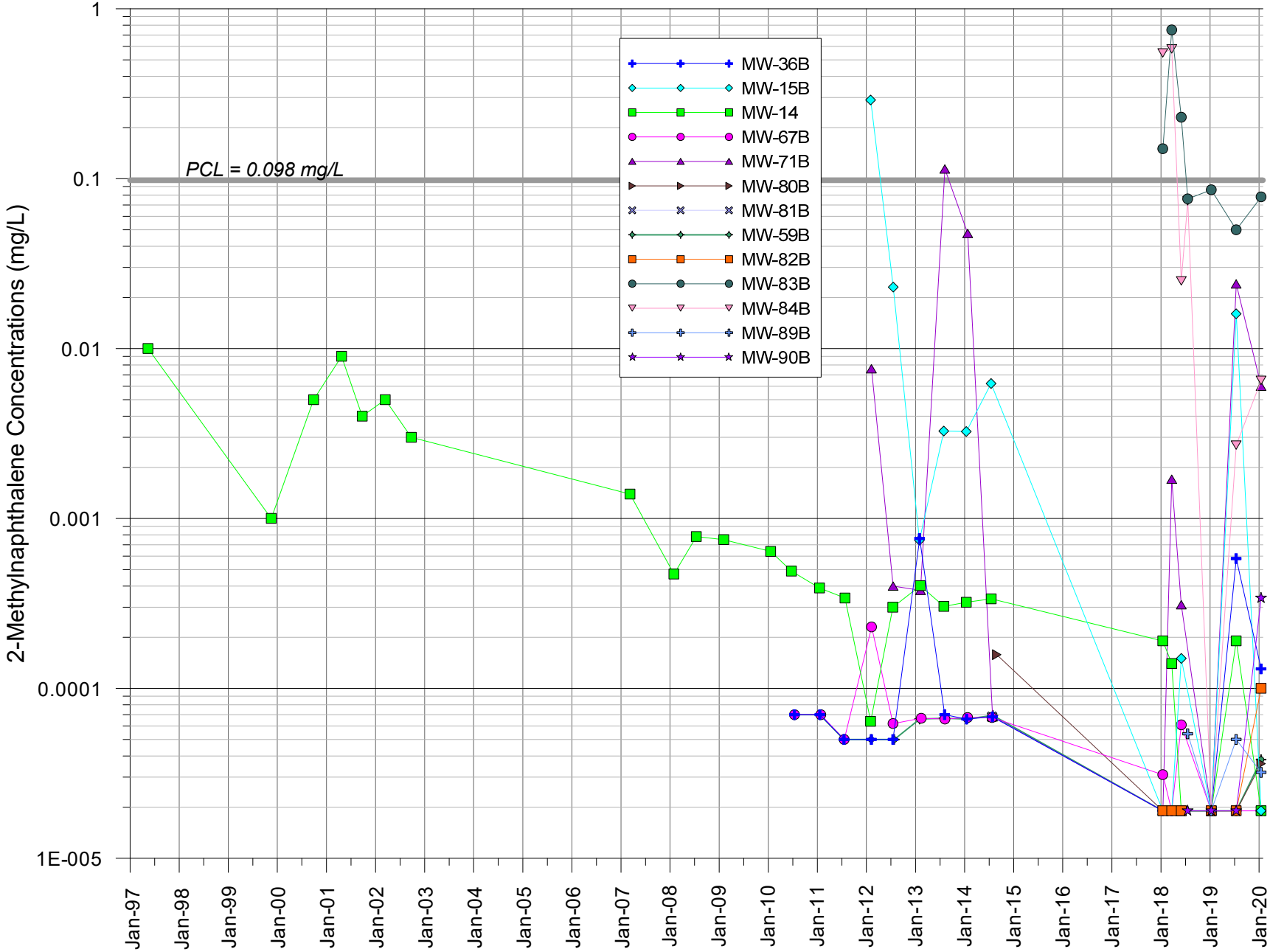
ATTACHMENT 1B-21
Benzene Concentrations at Perimeter Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



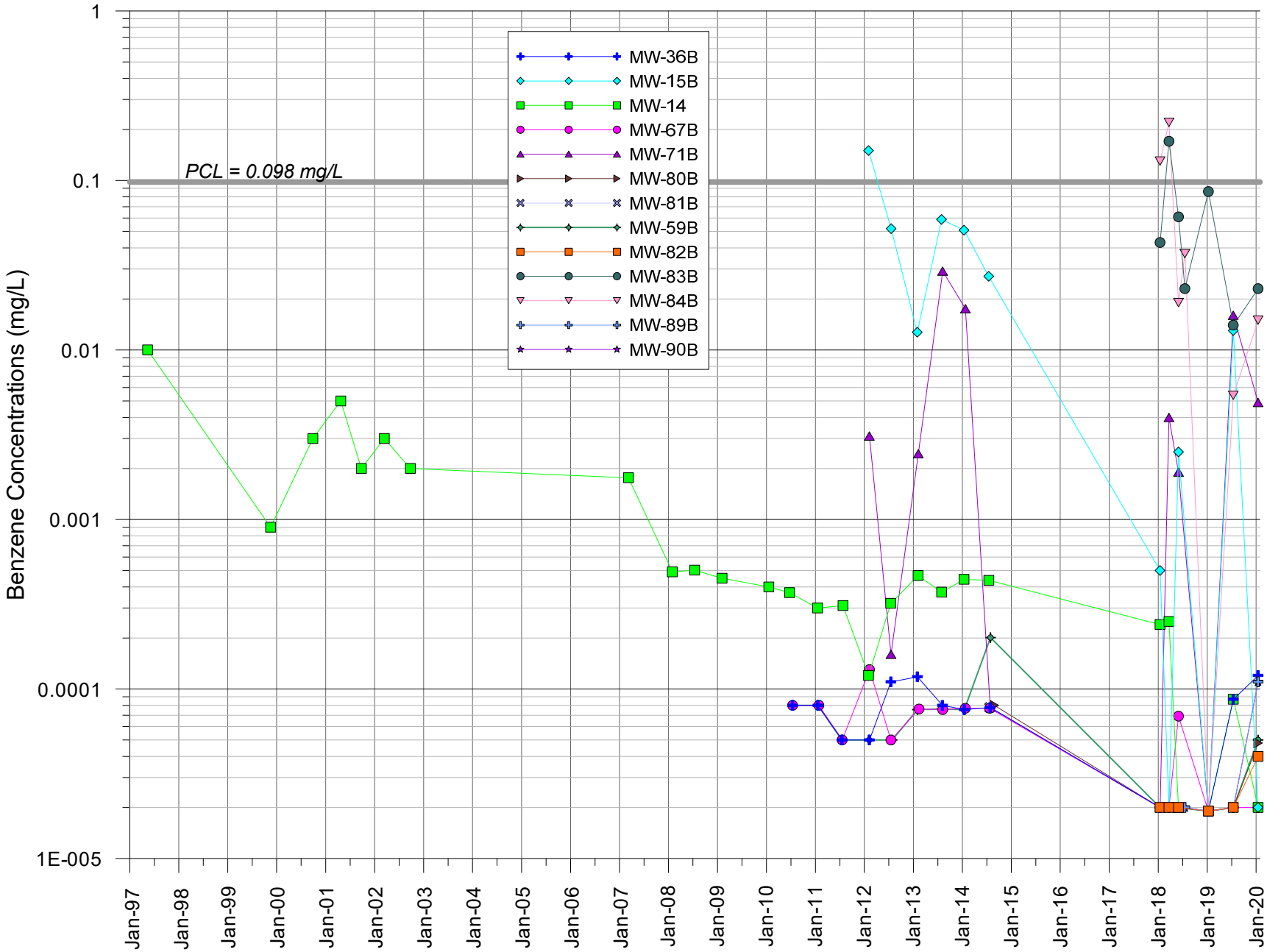
ATTACHMENT 1B-22
2,4-Dimethylphenol Concentrations at Perimeter Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



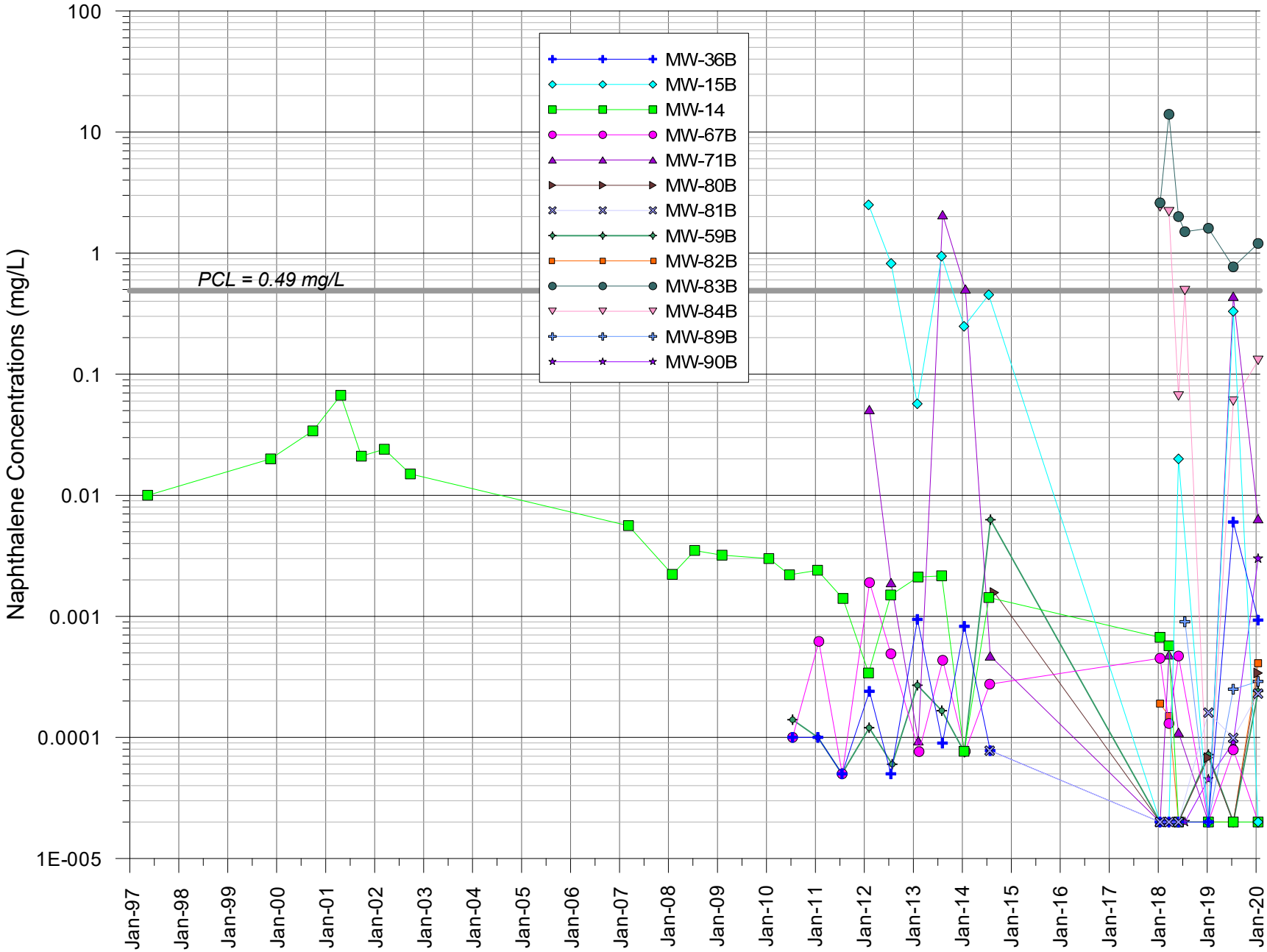
ATTACHMENT 1B-23
2-Methylnaphthalene Concentrations at Perimeter Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



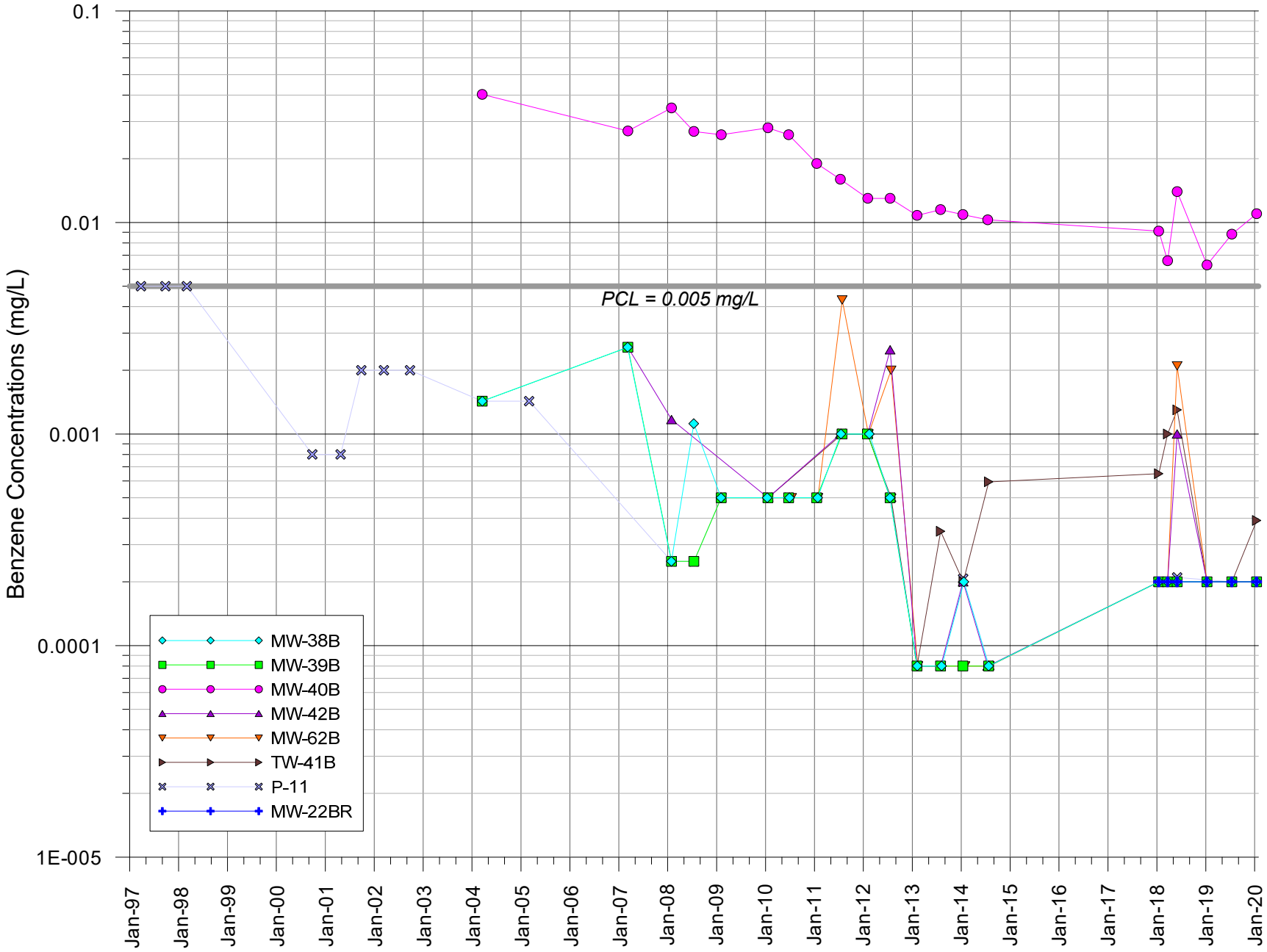
ATTACHMENT 1B-24
Dibenzofuran Concentrations at Perimeter Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



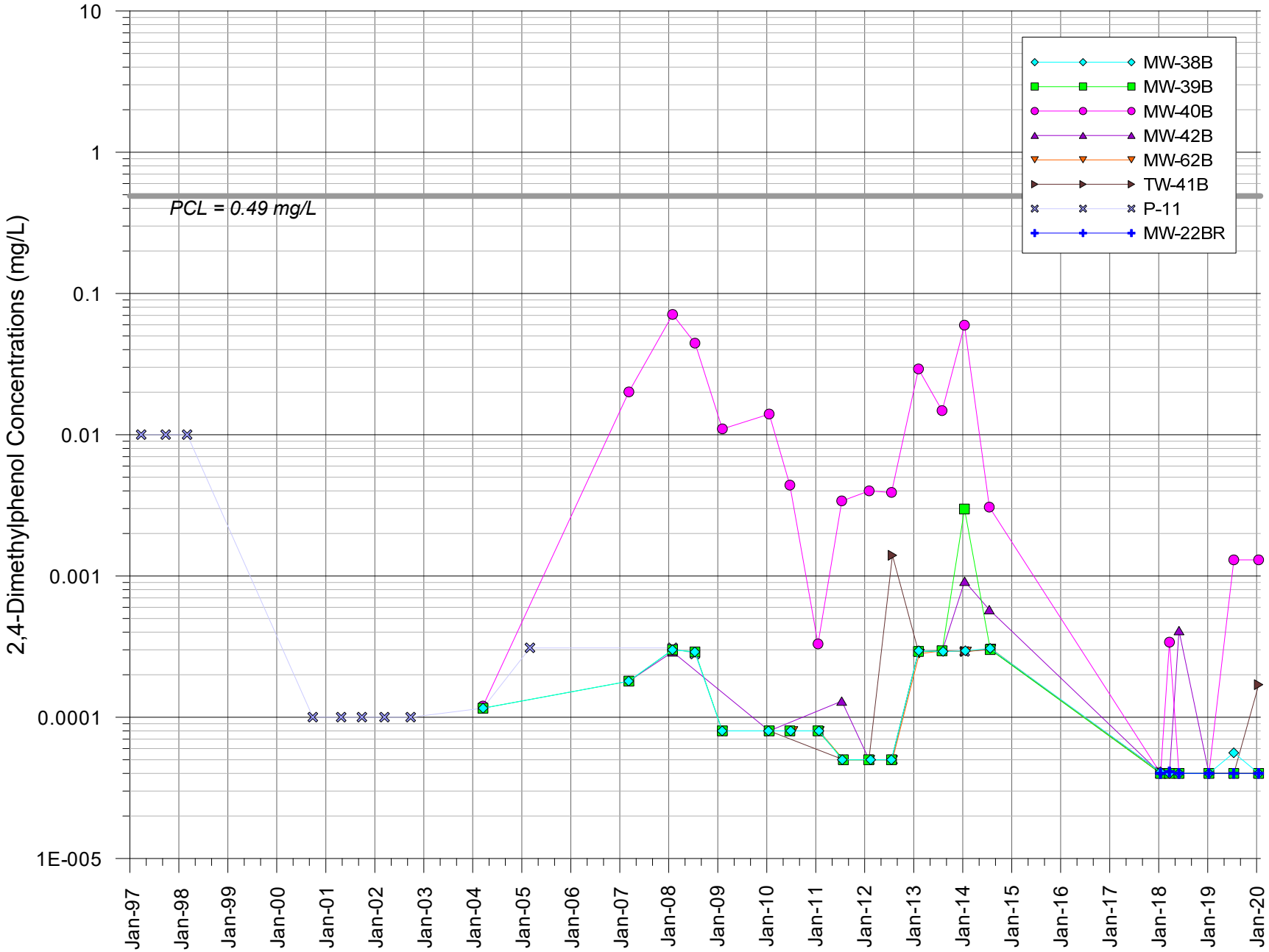
ATTACHMENT 1B-25
Naphthalene Concentrations at Perimeter Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



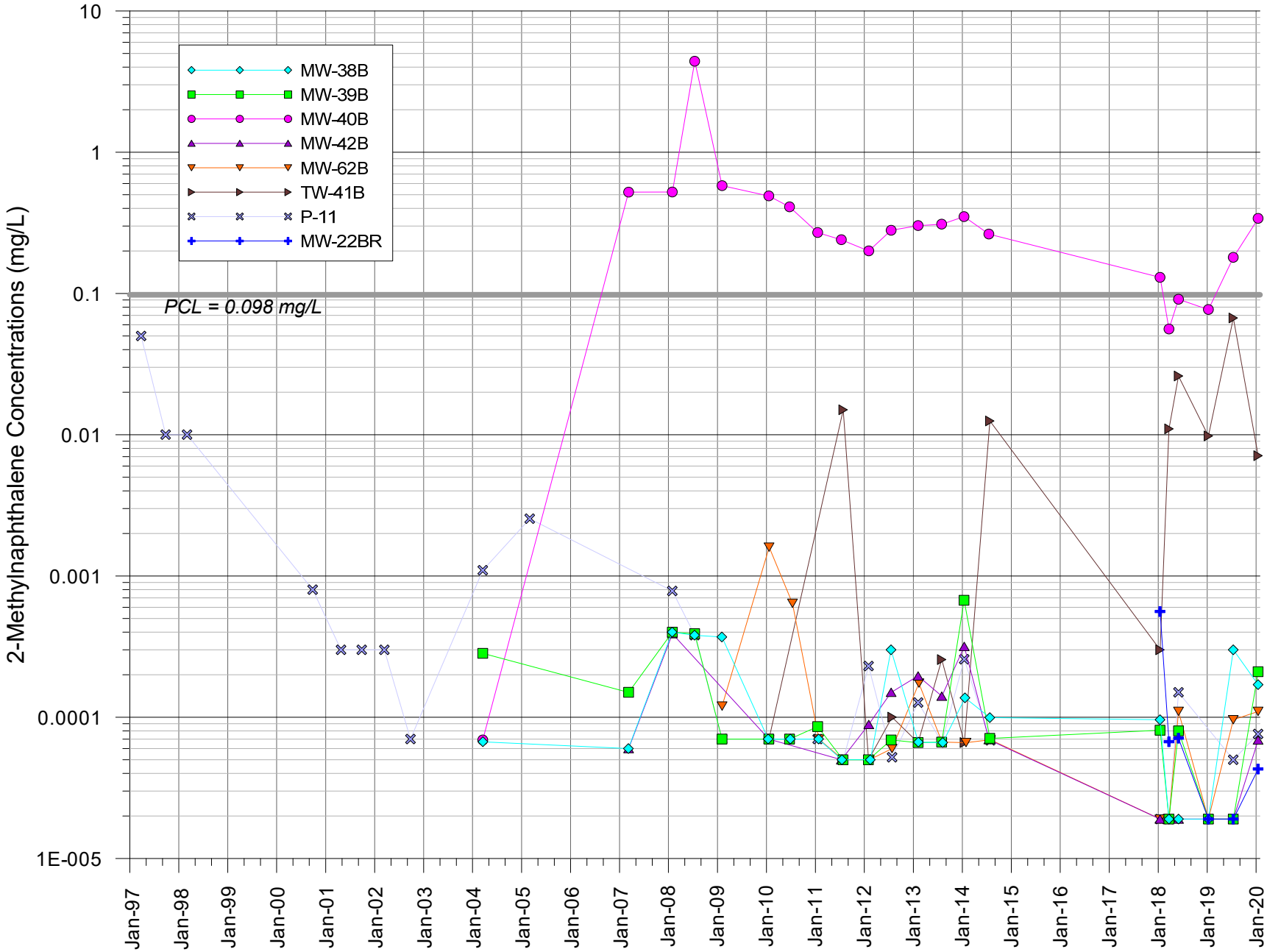
ATTACHMENT 1B-26
Benzene Concentrations at West End Area Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



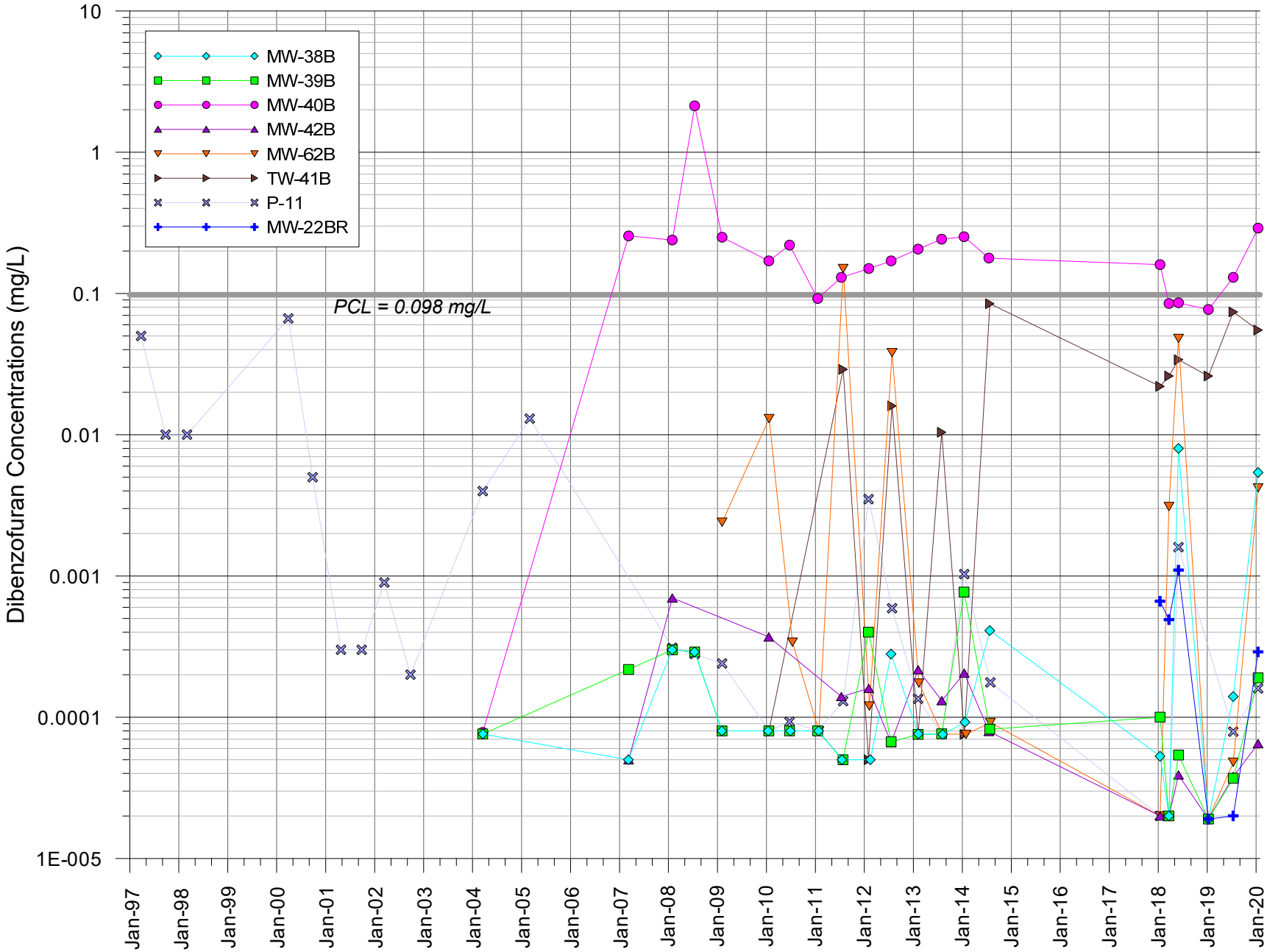
ATTACHMENT 1B-27
2,4-Dimethylphenol Concentrations at West End Area Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



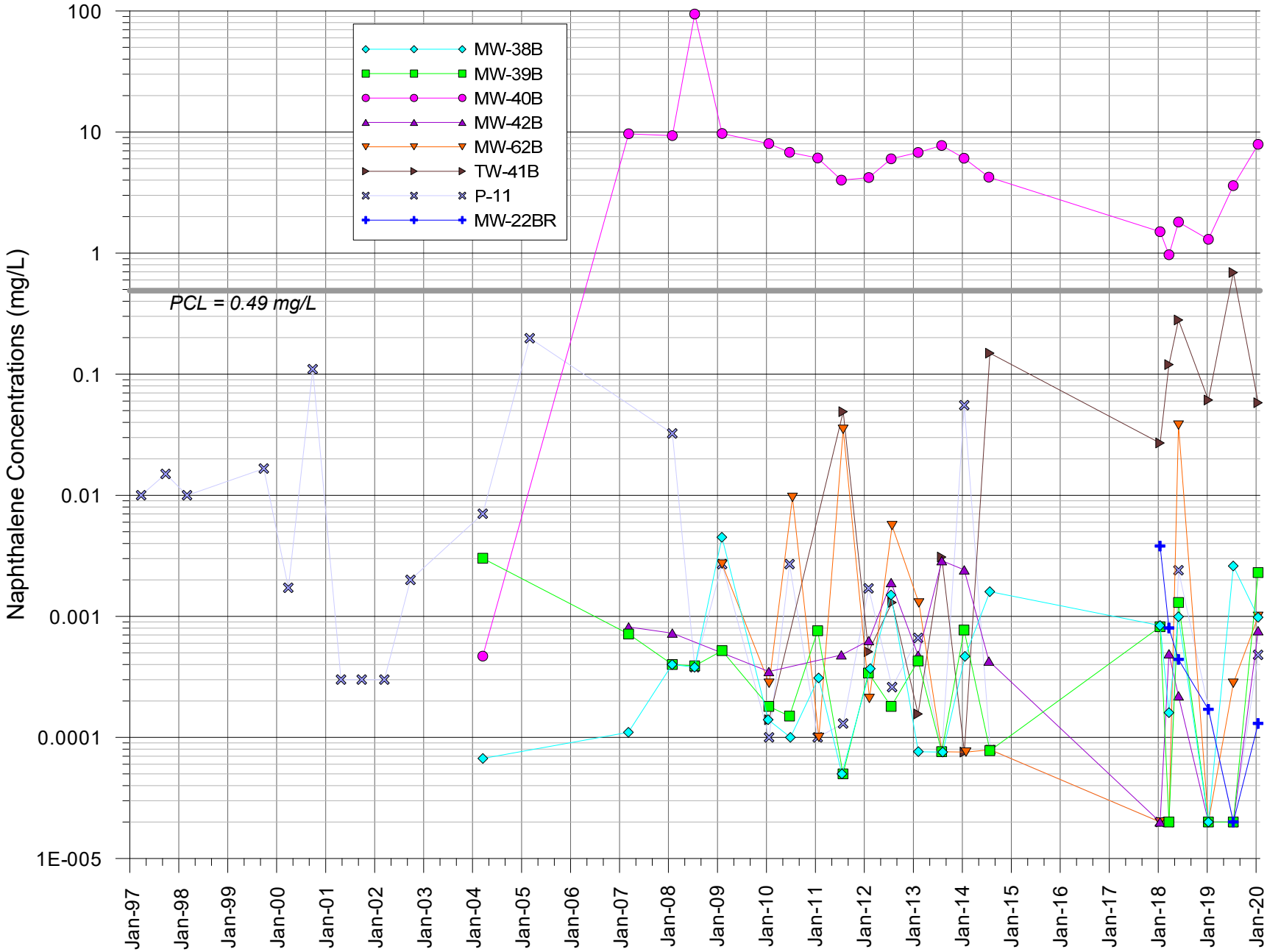
ATTACHMENT 1B-28
2-Methylnaphthalene Concentrations at West End Area Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



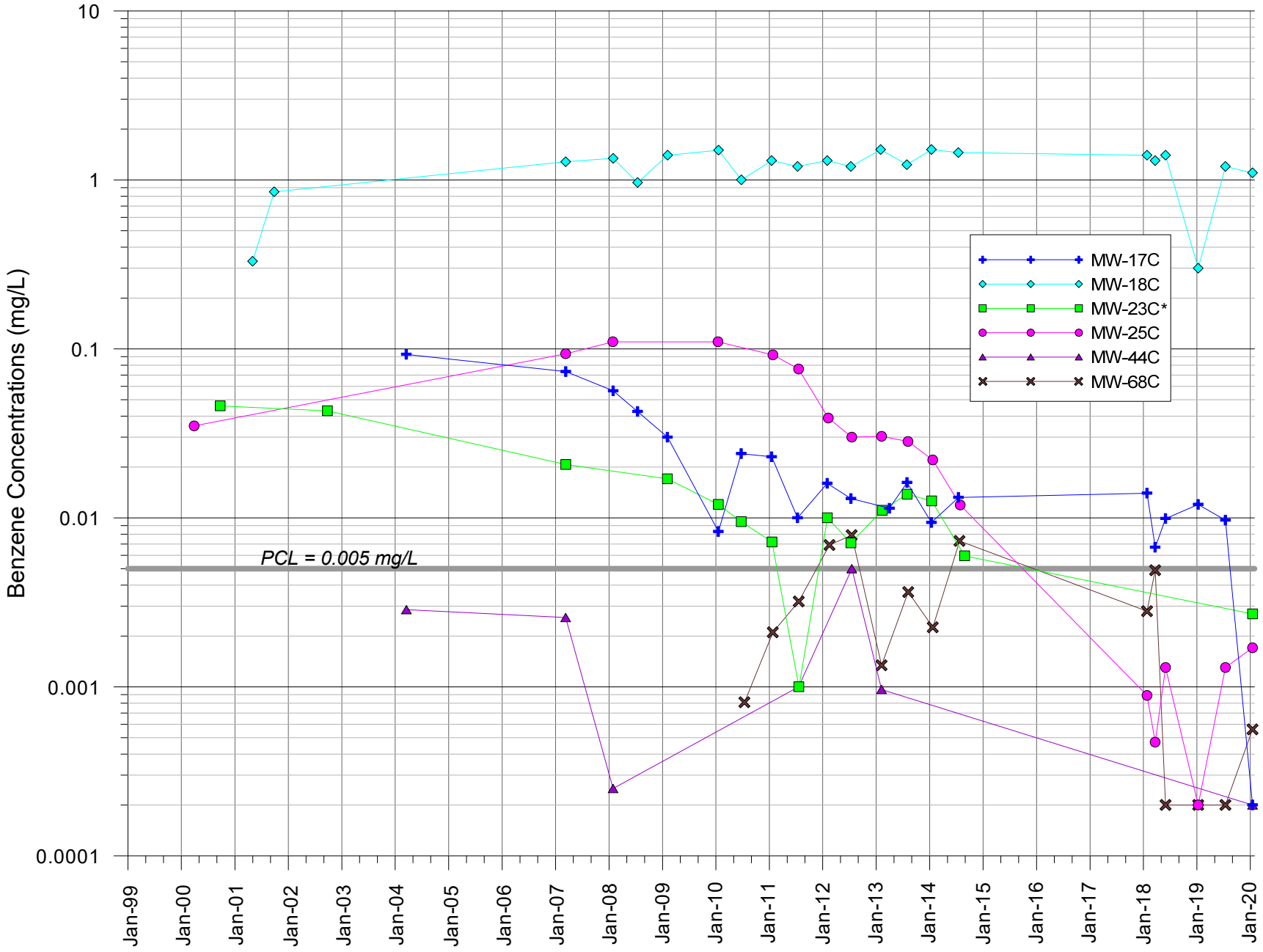
ATTACHMENT 1B-29
Dibenzofuran Concentrations at West End Area Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



ATTACHMENT 1B-30
Naphthalene Concentrations at West End Area Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas

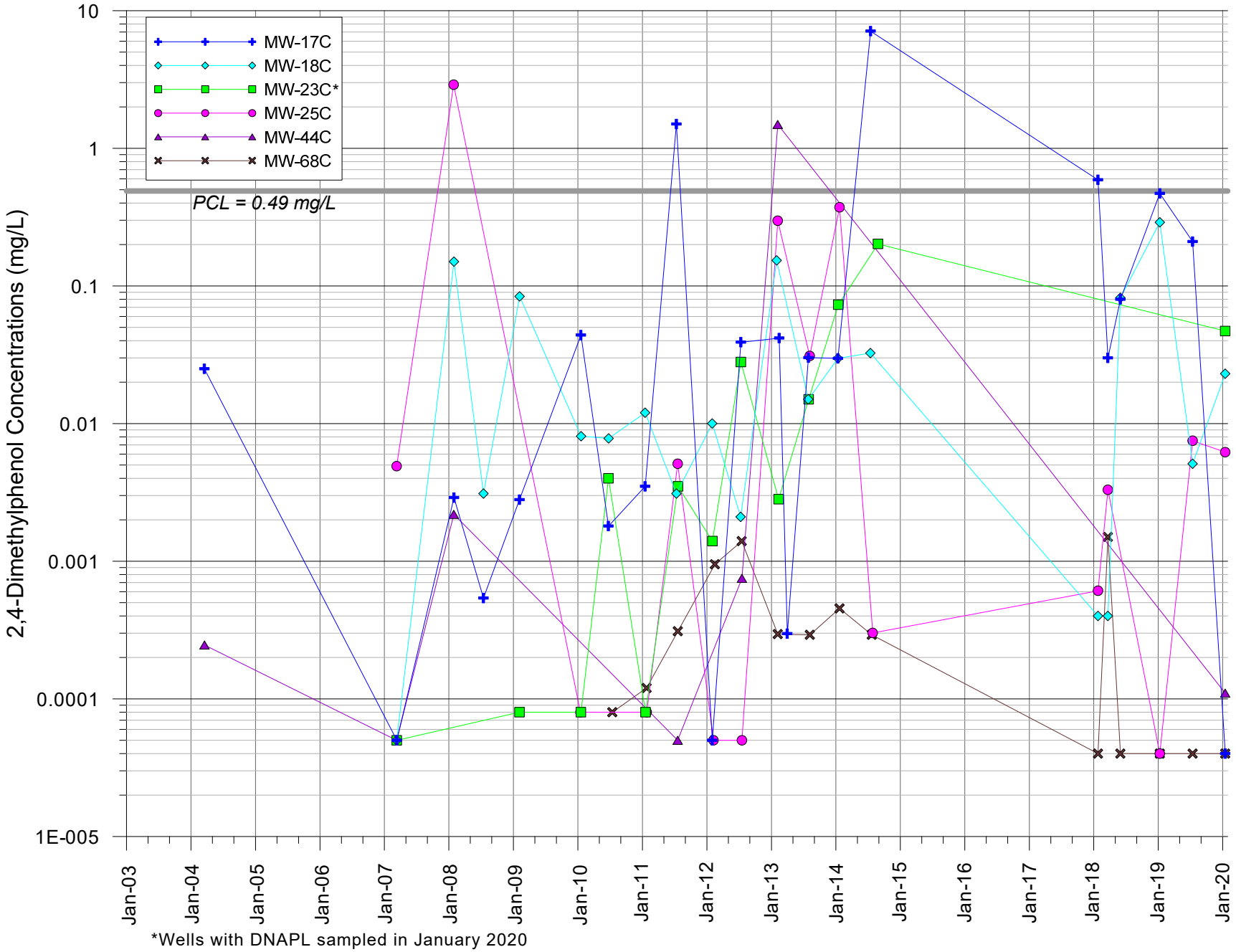


ATTACHMENT 1B-31
Benzene Concentrations at Source Area Wells - C-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



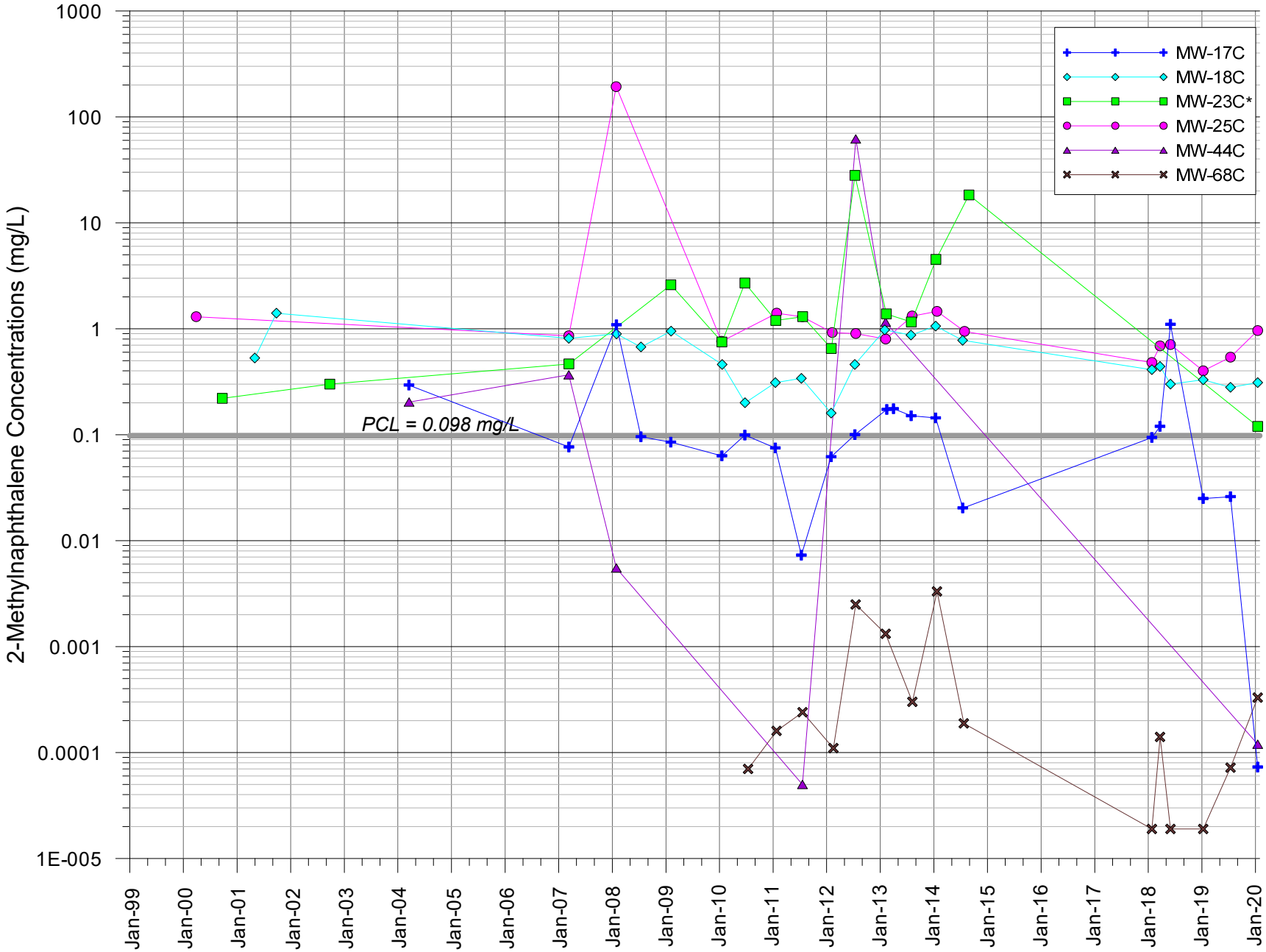
*Wells with DNAPL sampled in January 2020

ATTACHMENT 1B-32
2,4-Dimethylphenol Concentrations at Source Area Wells - C-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



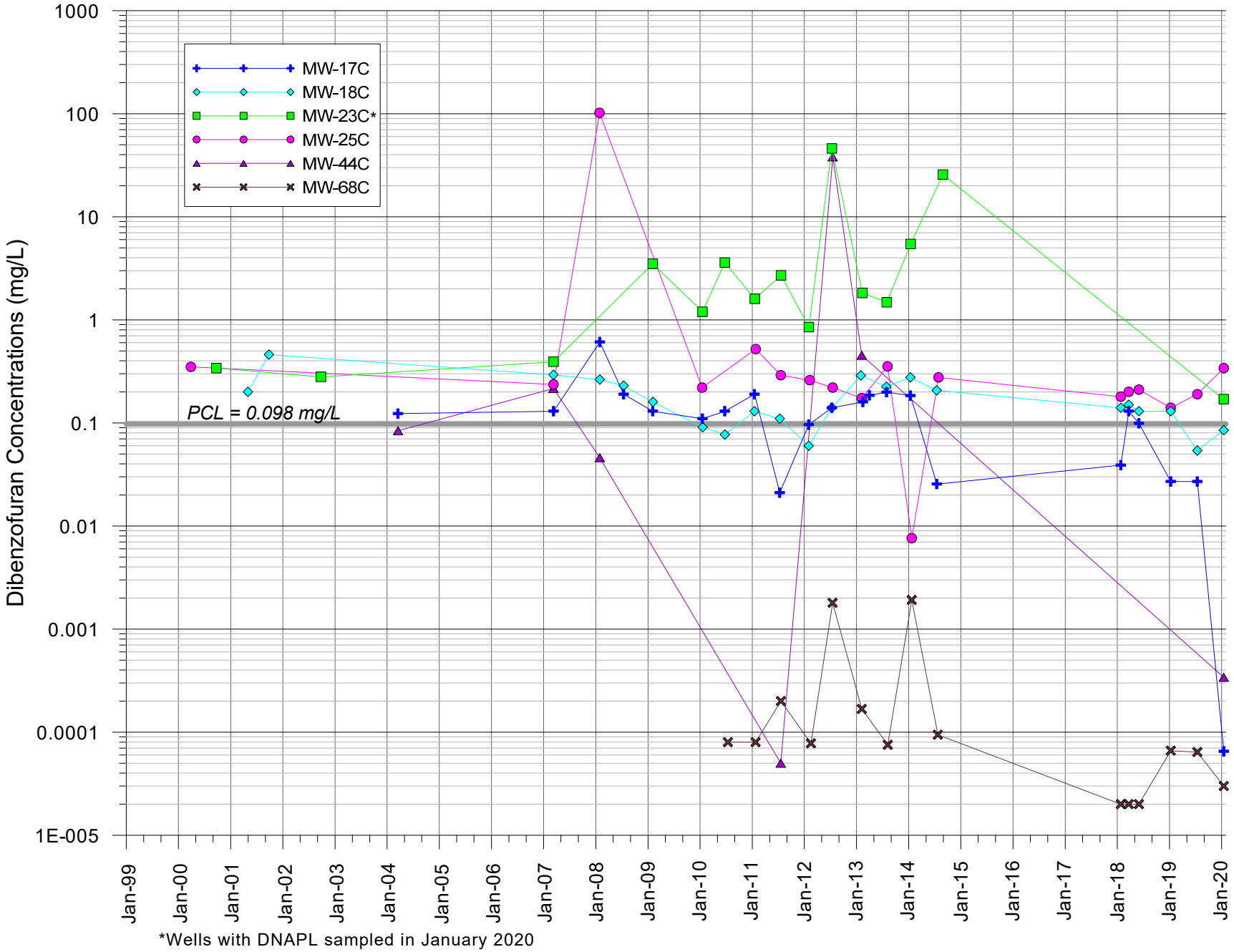
*Wells with DNAPL sampled in January 2020

ATTACHMENT 1B-33
2-Methylnaphthalene Concentrations at Source Area Wells - C-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



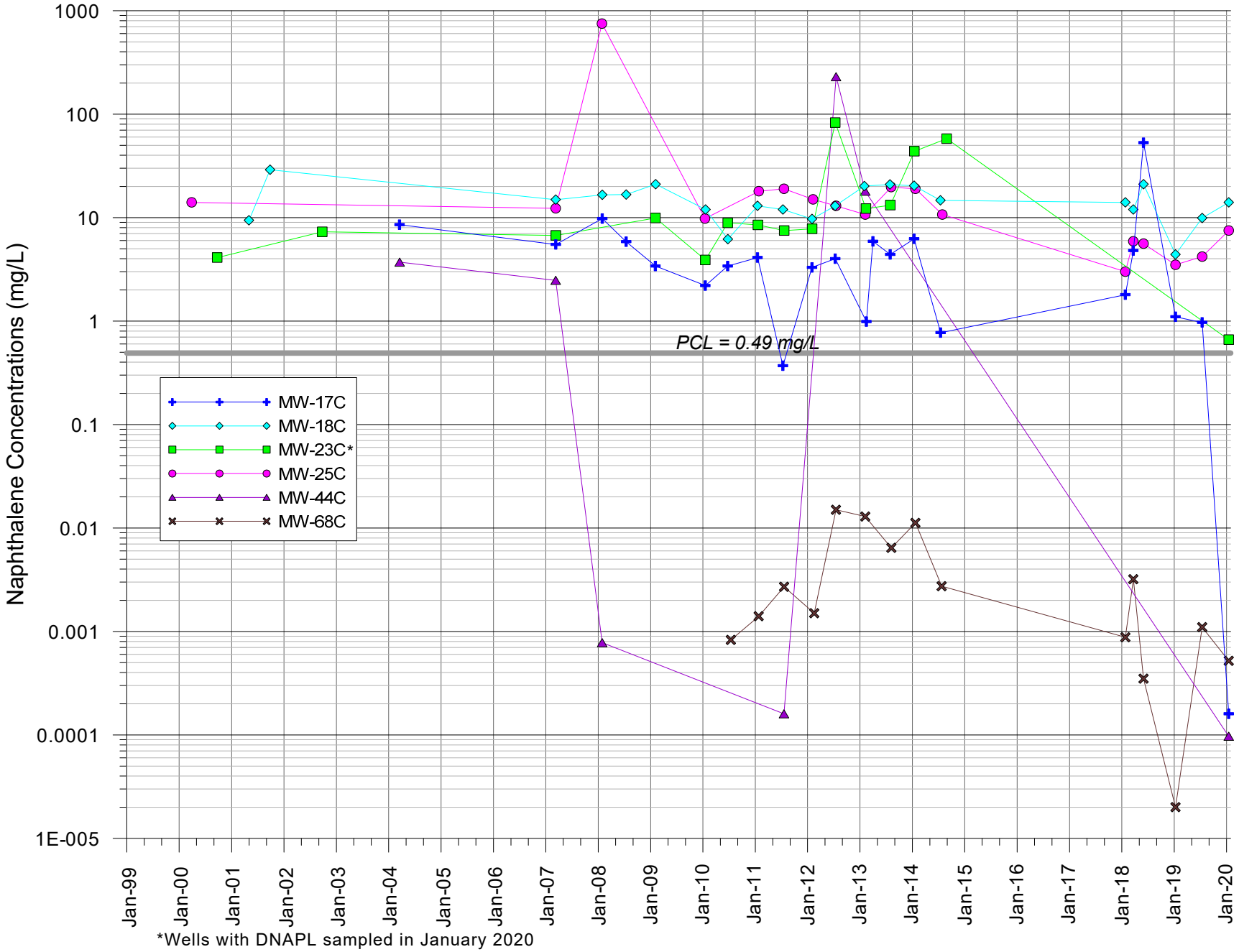
*Wells with DNAPL sampled in January 2020

ATTACHMENT 1B-34
Dibenzofuran Concentrations at Source Area Wells - C-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



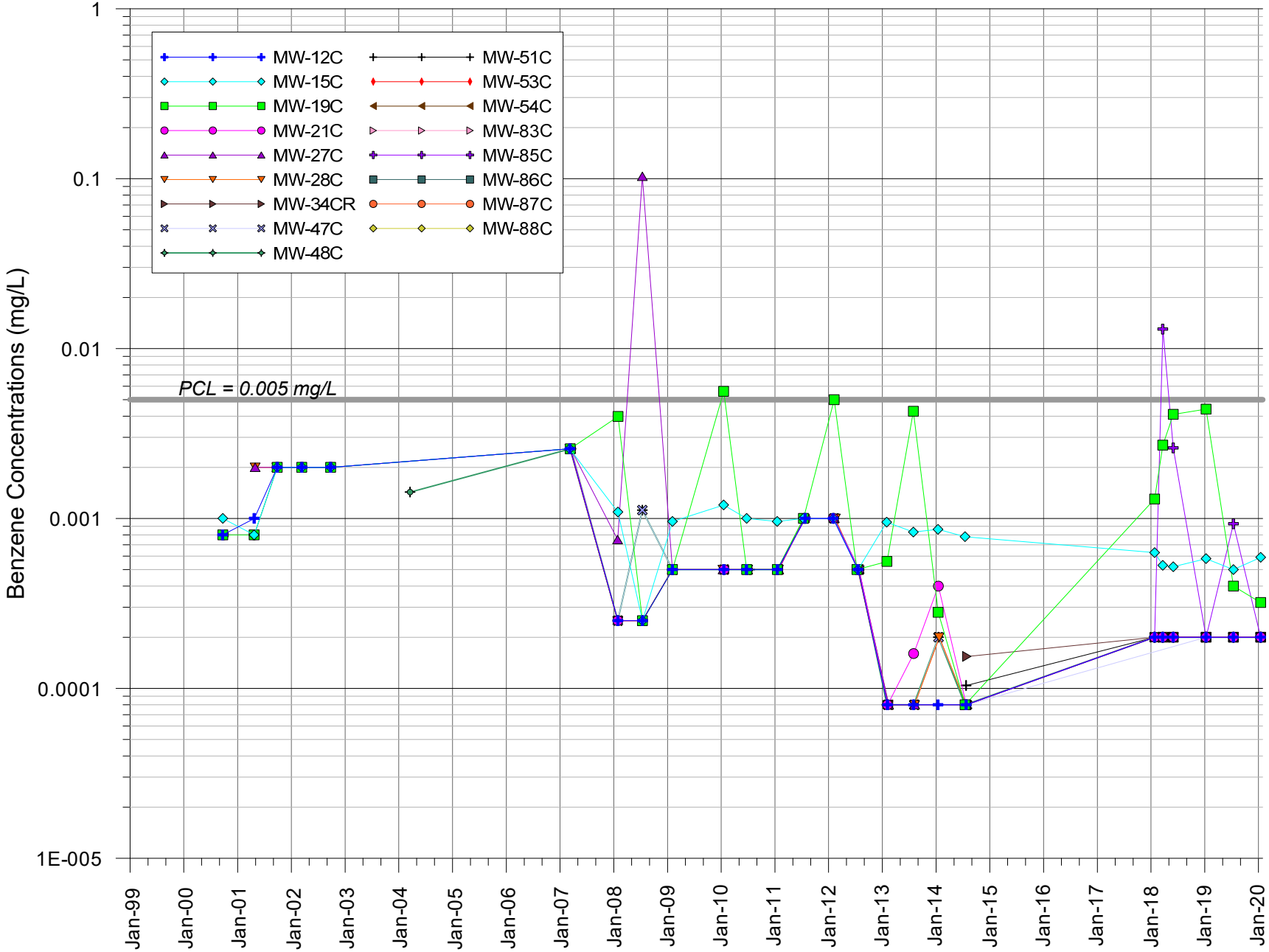
*Wells with DNAPL sampled in January 2020

ATTACHMENT 1B-35
Naphthalene Concentrations at Source Area Wells - C-TZ
UPRR Houston Wood Preserving Works, Houston, Texas

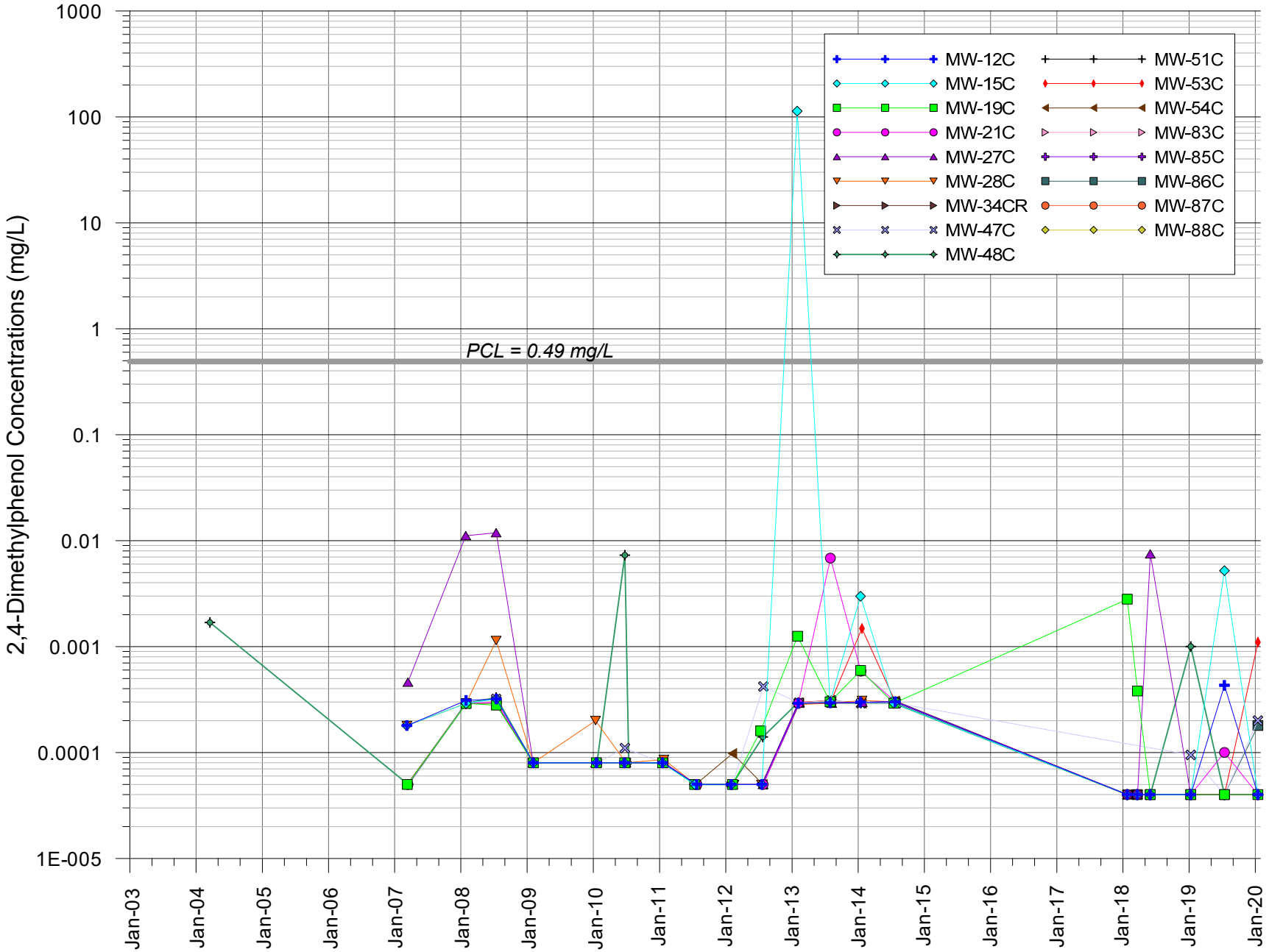


*Wells with DNAPL sampled in January 2020

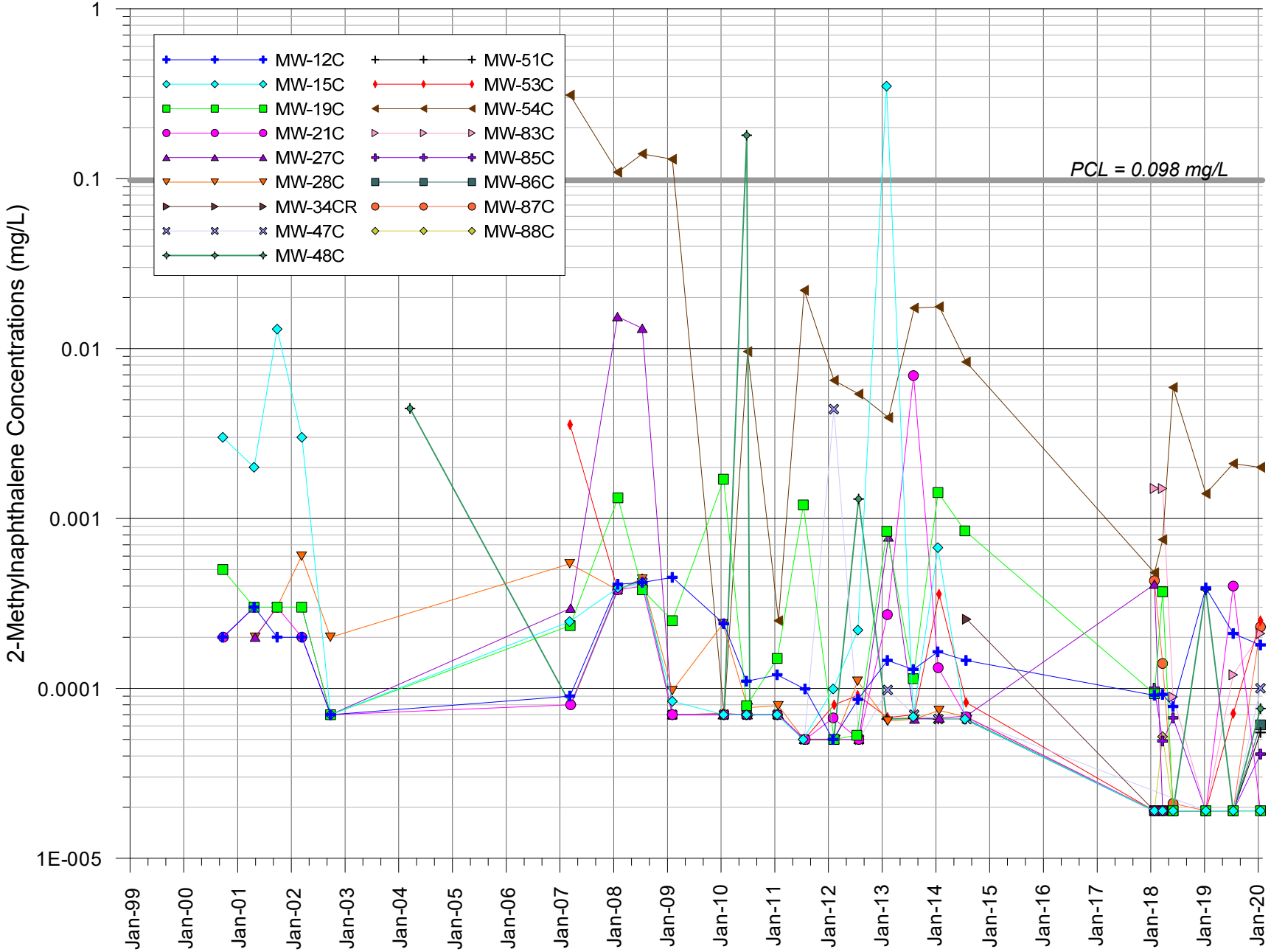
ATTACHMENT 1B-36
Benzene Concentrations at Perimeter Wells - C-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



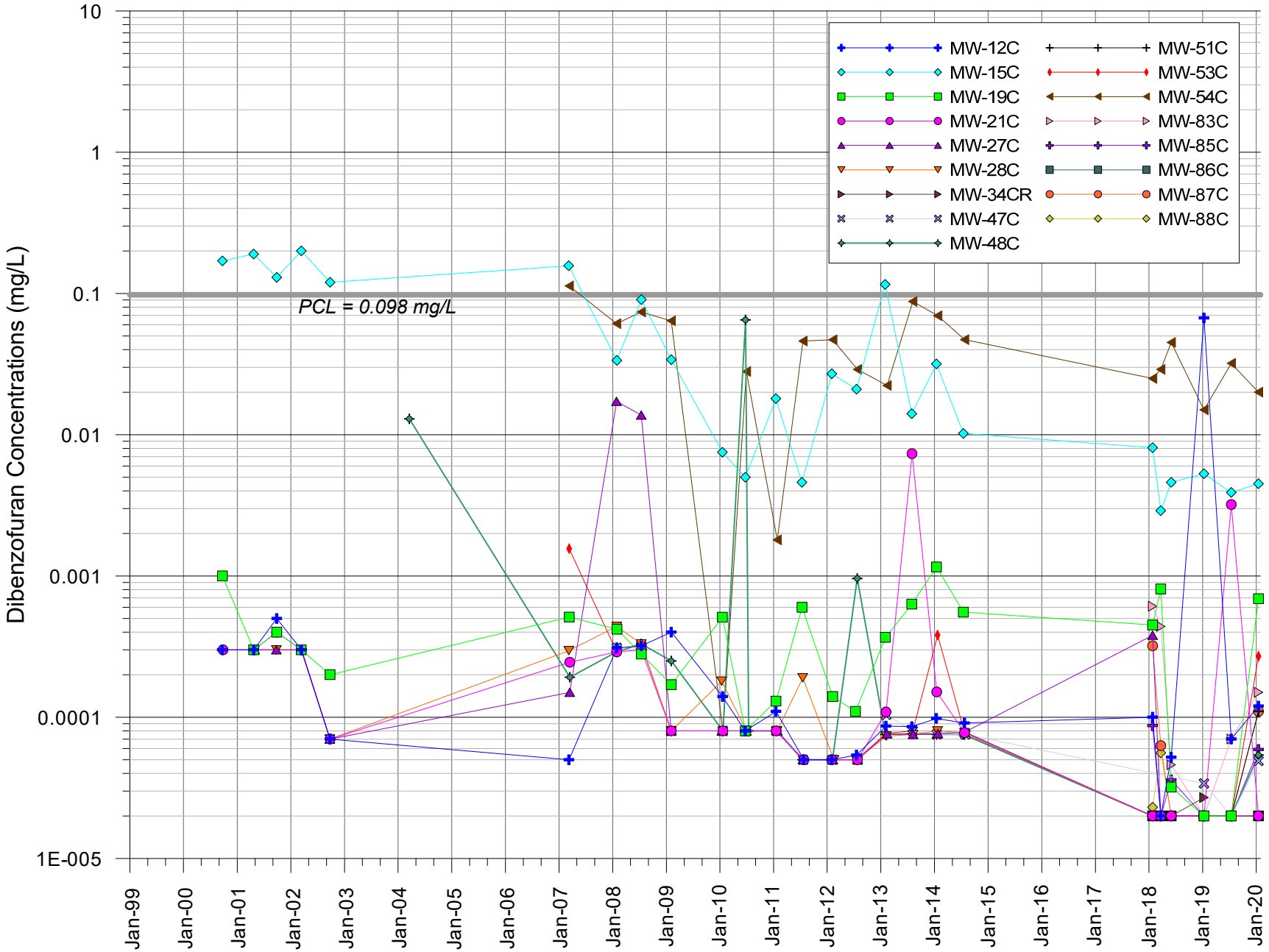
ATTACHMENT 1B-37
2,4-Dimethylphenol Concentrations at Perimeter Wells - C-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



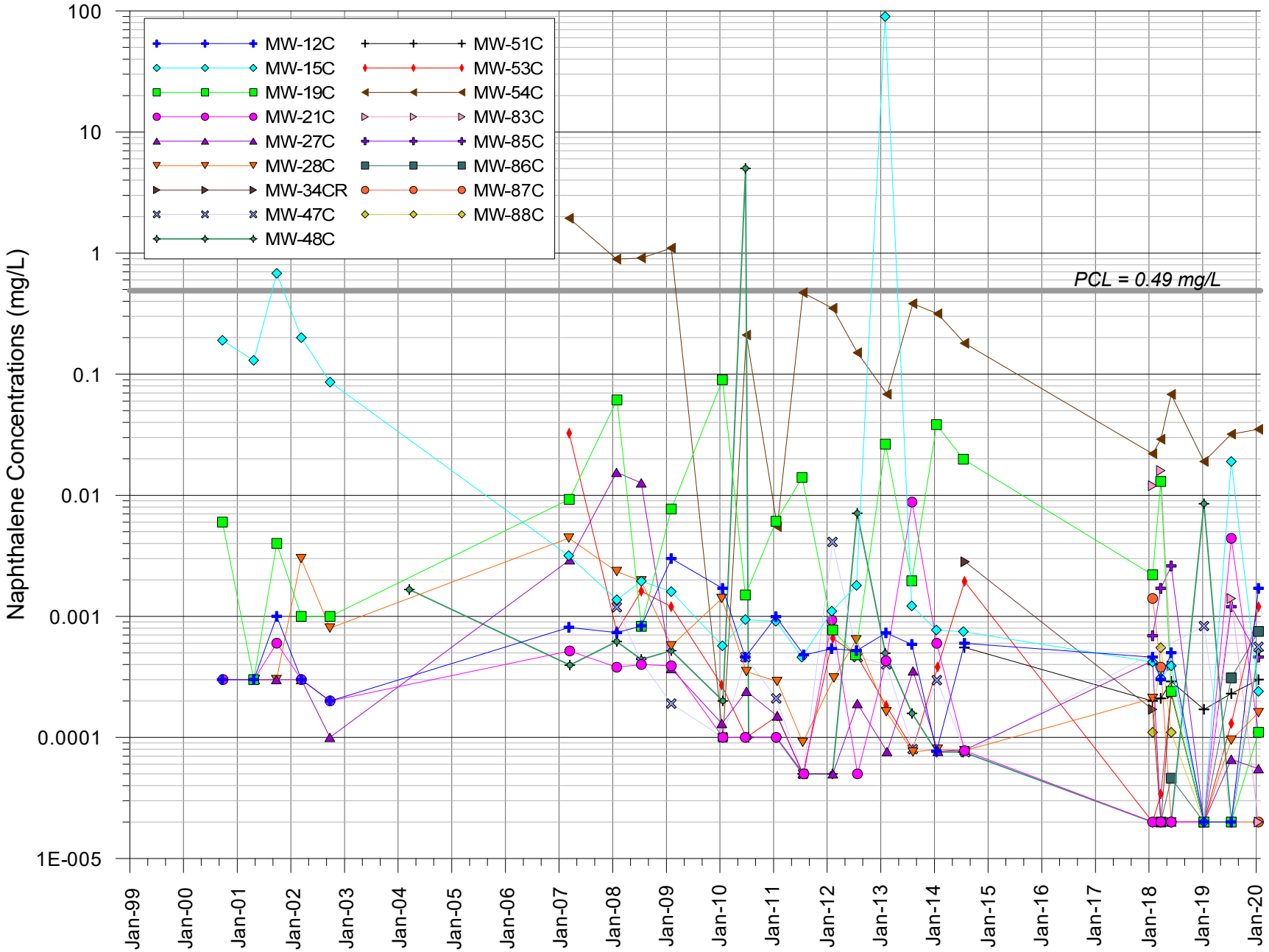
ATTACHMENT 1B-38
2-Methylnaphthalene Concentrations at Perimeter Wells - C-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



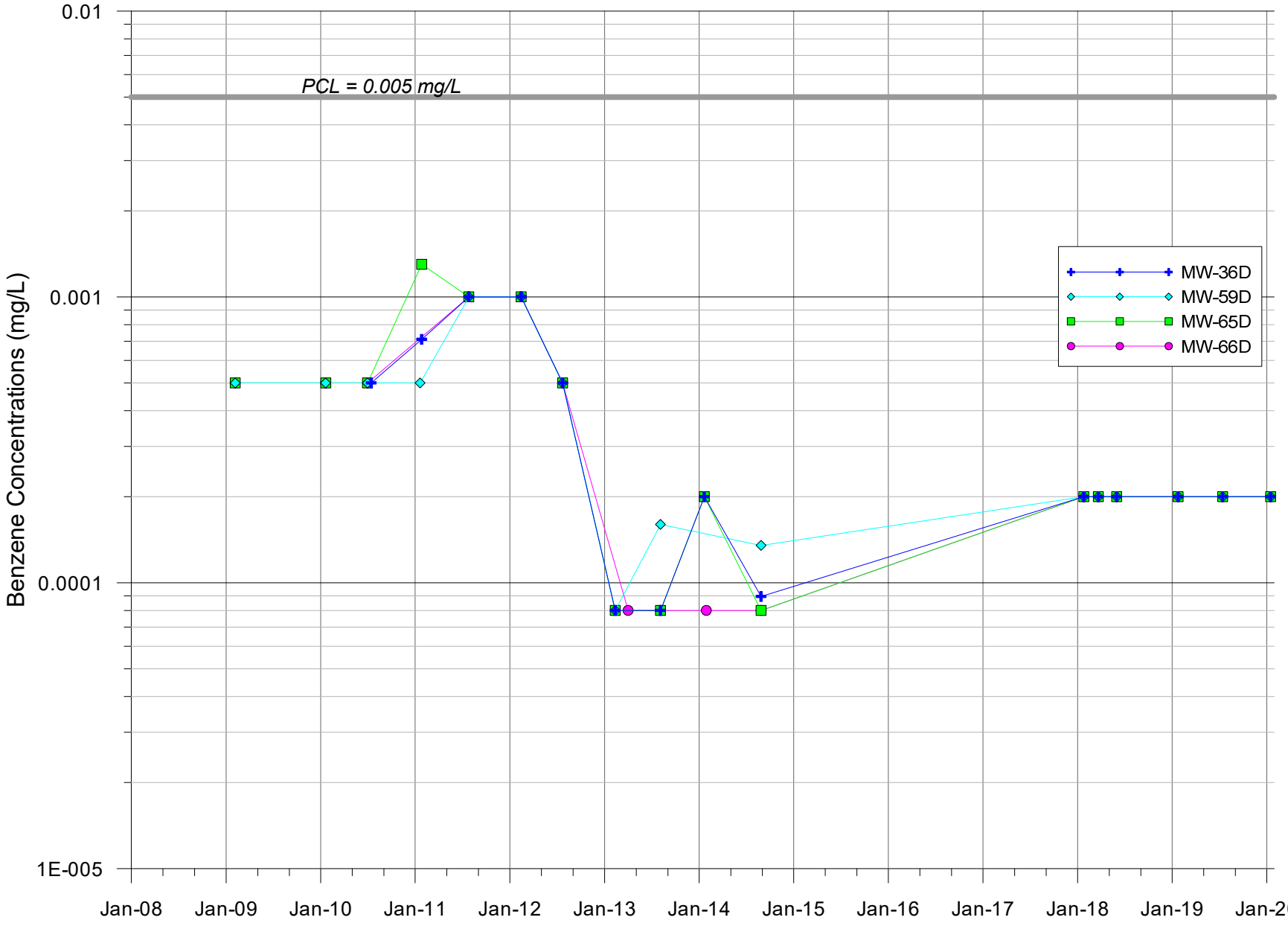
ATTACHMENT 1B-39
Dibenzofuran Concentrations at Perimeter Wells - C-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



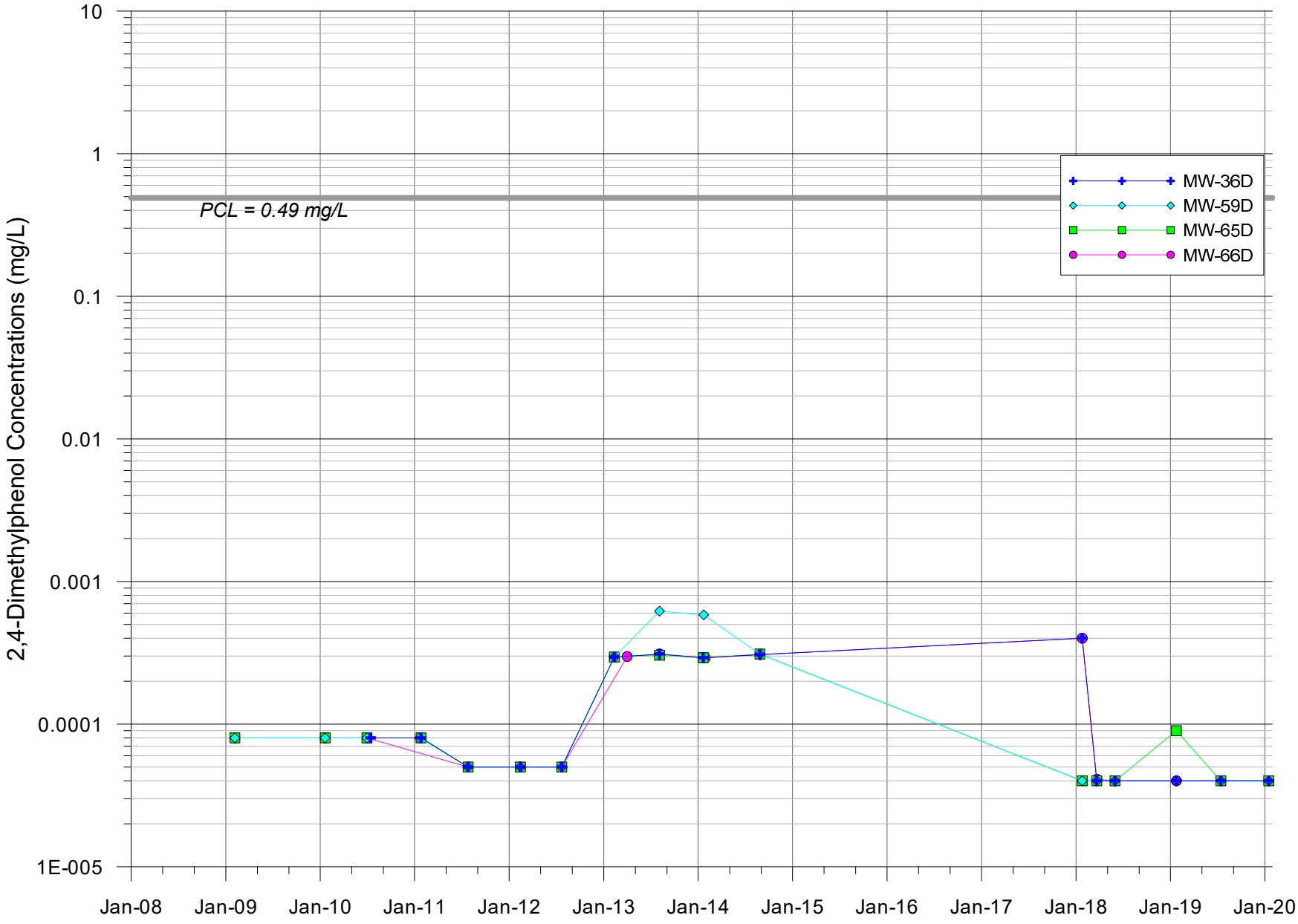
ATTACHMENT 1B-40
Naphthalene Concentrations at Perimeter Wells - C-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



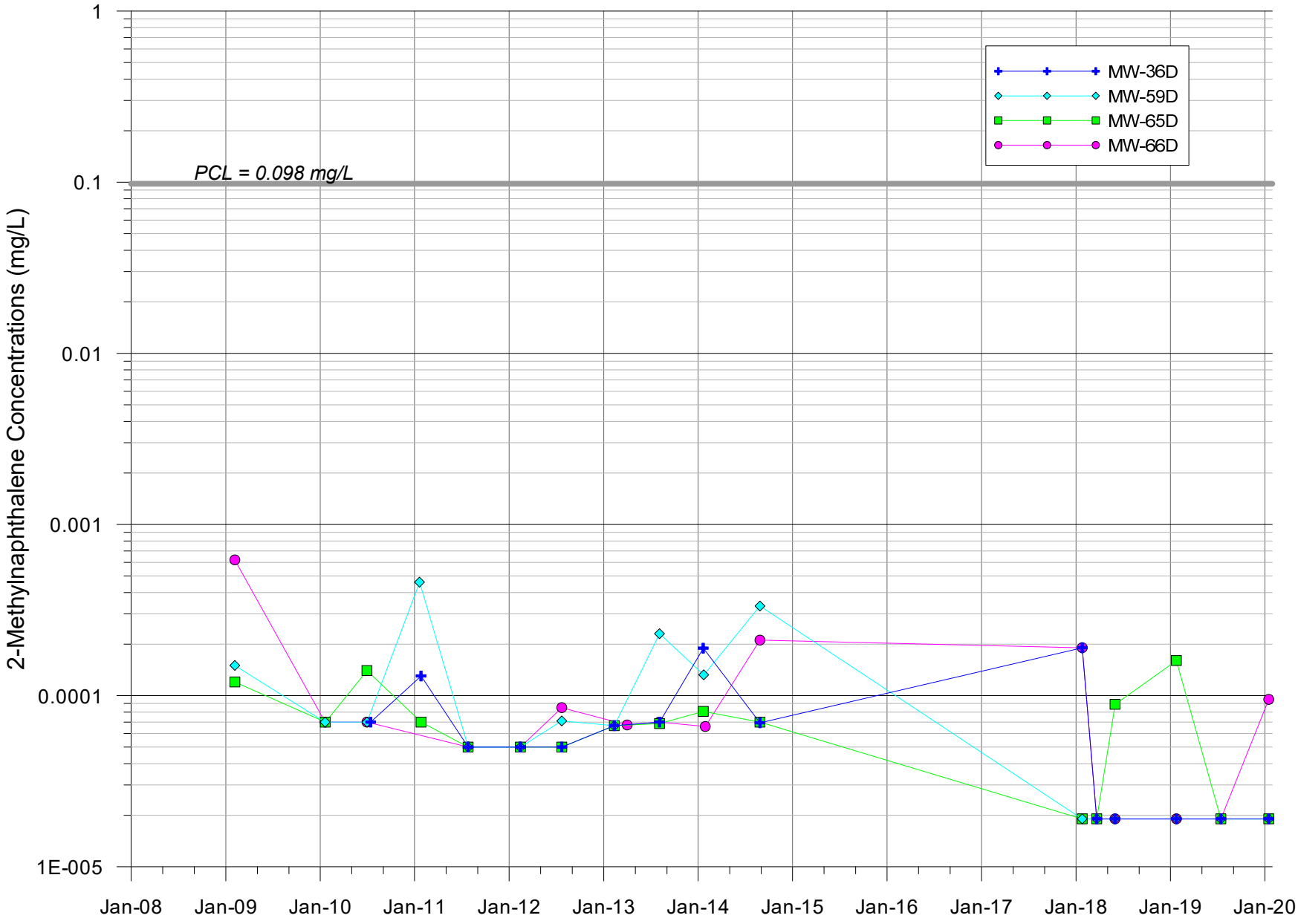
ATTACHMENT 1B-41
Benzene Concentrations at Source Area Wells - D-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



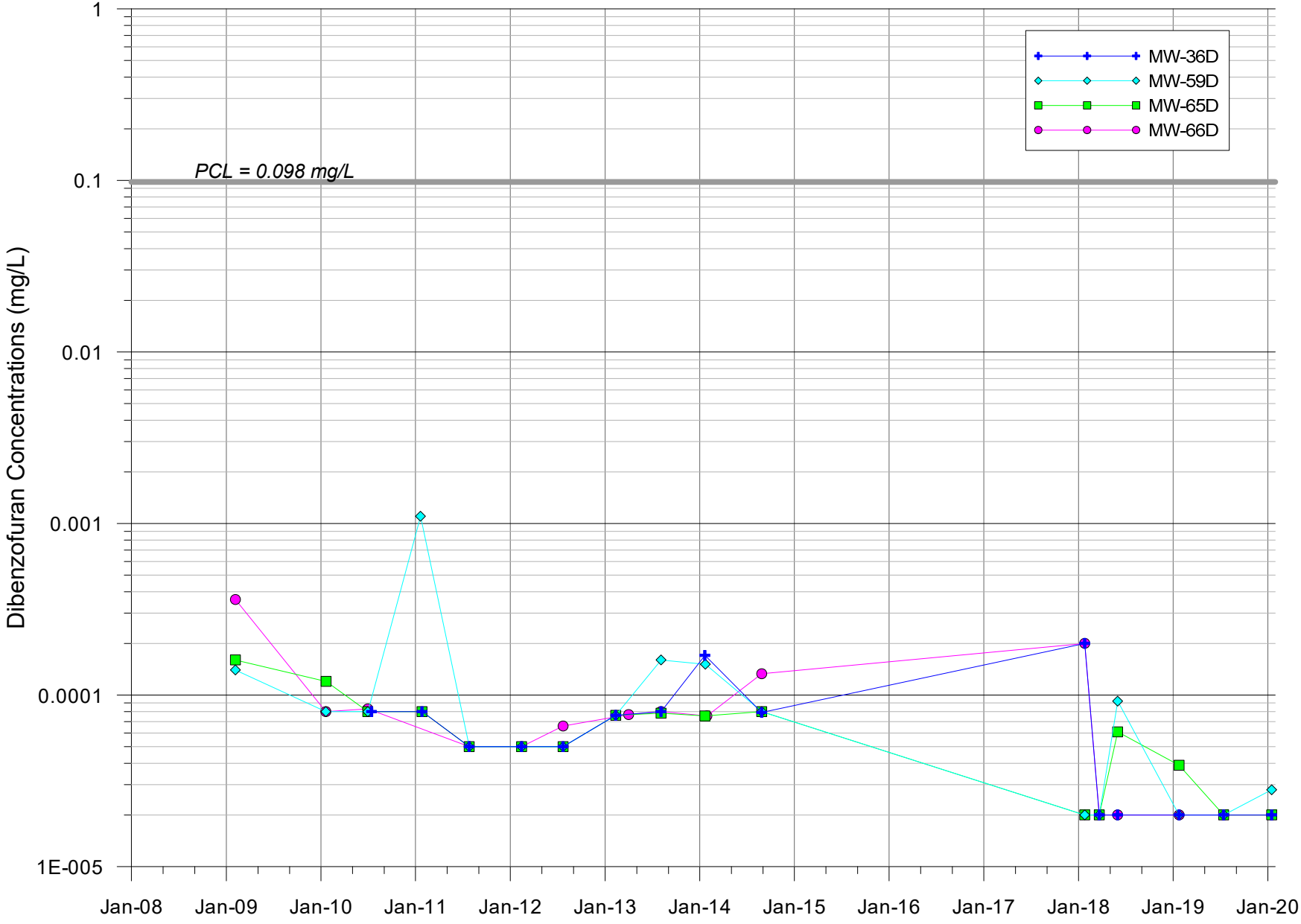
ATTACHMENT 1B-42
2,4-Dimethylphenol Concentrations at Source Area Wells - D-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



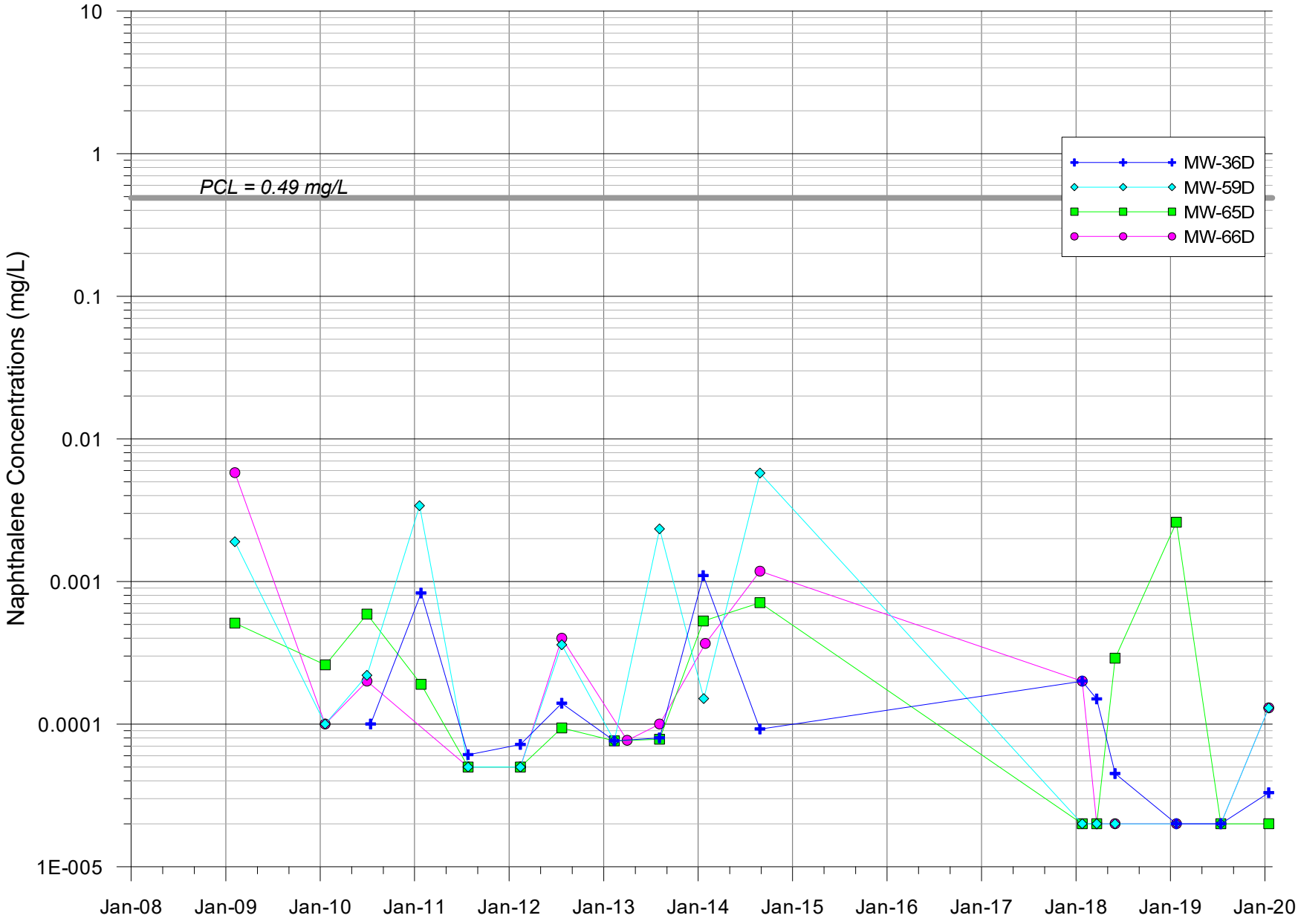
ATTACHMENT 1B-43
2-Methylnaphthatlene Concentrations at Source Area Wells - D-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



ATTACHMENT 1B-44
Dibenzofuran Concentrations at Source Area Wells - D-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



ATTACHMENT 1B-45
Naphthalene Concentrations at Source Area Wells - D-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



Response Action Design

Use this worksheet to provide detailed descriptions of the response action. Attach design and layout drawings and equipment specifications in Attachment 2A.

Media: **Surface Soil/ Subsurface Soils**
List all media to which this information applies. If the response action is different for another media, complete a separate worksheet.

Provide a detailed description of the response action. Describe the removal action, decontamination, treatment system(s), and/or physical or institutional control actions that are proposed for each media and discuss the reasons for choosing the response action(s). Identify and describe any ecological services analysis and compensatory restoration plan that will be utilized (if so, include the complete ESA and compensatory restoration plan in Attachment 2C).

Soil response actions have been completed in the Former HWPW area (including the Englewood IM Yard area), the City of Houston ROW north of the Site, and the UPRR Main Lines Ballast Area. The approaches and actions were detailed in the Response Action Completion Report (RACR) dated July 18, 2016 (PBW, 2016), Revised RACR dated June 2017 (PBW, 2017), and Interim RACR dated March 2019 (Golder, 2019b). The response action areas for surface soil/subsurface soil are shown on Attachment 2A-1a. Below is a summary of the response actions completed to address the surface and subsurface soil PCLE Zones, with the proposed institutional controls for the commercial/industrial land use, physical controls, and on-Site PMZ provided in Appendix 4.

Former Houston Wood Preserving Works (HWPW) Operational Areas: In 2016, surface soils with cPCL exceedances from the following Areas of Concern (AOCs) and Solid Waste Management Units (SWMUs) were excavated and consolidated within the Recent Process Area (SWMU 4), Original Process Area (SWMU 5) and AST Area (SWMU 8) under the Area of Contamination policy (RACR, PBW, 2016):

- Inactive Wastewater Lagoon (AOC 6),
- Location of the Former Incinerator (AOC 4),
- Surrounding the Tank Car Storage Area (SWMU 7),
- Oil/Water Separator (SWMU 11),
- Areas north of the Recent Process Area (SWMU 4),
- Areas north of the Original Process Area (SWMU 5) and
- Areas north of the AST Area (SWMU 8)

Confirmation samples collected along the walls and base of the excavations verified that surface soil PCLE Zones were removed to cPCLs assuming commercial/industrial land use. In these areas where surface soils were excavated, the base of excavation confirmation samples also confirmed that the subsurface soils do not appear to be impacted above cPCLs. The areas excavated were backfilled with clean fill.

Two Remedy Standard B physical controls were constructed within the Former HWPW operational areas: 1) a Soil Cap and 2) an Asphalt Cap (roadway improvement). The Soil Cap construction includes installation of a vapor barrier, with geotextile fabric and placement of an engineered soil cap (12 inches of clayey soil and 6 inches of topsoil) to cover the consolidated soil and remaining surface soil PCLE zone on the former operational areas. The Soil Cap is vegetated and sloped to minimize infiltration to control potential leachate migration from the surface and subsurface soils to the GWBUs. The Soil Cap serves to contain and prevent exposure to COCs above cPCLs within the surface and subsurface soil PCLE Zones at the Site.

The surface soil PCLE zone along the Southern Drainage Ditch (SDD) (SWMU No. 2), including the

oil/water separator (SWMU 11) east of the former AST Area (SWMU 8), was capped in place using an asphalt cover (2.5-in thick over gravel road base) as part of a roadway improvement. The Soil Cap and Asphalt Cap will be maintained under the post-response action care period (Attachment 2A-1a).

Englewood Intermodal Yard area: The surface soil PCLE zone in the Intermodal Yard area is currently covered with a physical barrier (concrete pavement), preventing contact with the soil PCLE Zone and infiltration. During a quarterly inspection of the capped areas in July 2017, a tar-like substance was observed surfacing through the joints and cracks in the concrete and asphalt surfaces in the area of parking slots B100 to B109. The NAPL Collection System (see Attachment 2A-1c) was installed in January 2019 as an interim response action to address the tar-like material seeps and to recover NAPL sufficiently to eliminate NAPL discharge. The installation included removing a section of asphalt or concrete cover, excavating the underlying soils, backfilling with high permeability fill, installing slotted pipe to allow the accumulation of NAPL and backfilling the remaining few feet with compacted selected fill and reinforced concrete. The RACR for the NAPL Collection System dated March 26, 2019 (Golder, 2019) describes the response actions that were completed. Impacted soils and NAPL excavated as part of the construction were placed in roll-off bins or drums and properly disposed of in accordance with state and federal regulations. The NAPL and recovered fluids from the NAPL Collection System are and will continue to be disposed of in accordance with state and federal regulations and requirements. UPRR is continuing to assess the effectiveness of the NAPL Collection System. Weekly inspections of the NAPL Collection System are being conducted and monthly updates are submitted to the TCEQ.

As detailed in the monthly updates submitted to the TCEQ for the NAPL Collection System inspections, additional tar-like NAPL surface seeps and water seeps with dark brown to black water have been identified within the Englewood IM Yard. UPRR is in the process of developing responses for those areas to address the NAPL Trigger of migrating NAPL (NAPL discharging to ground surface). Currently, the NAPL that surfaces is scraped up on a weekly basis (as necessary (typically NAPL seeps decrease or cease during the cooler months)) and properly disposed of in accordance with state and federal regulations and requirements. As detailed later in this worksheet, test pits (shown on Attachment 2A-1c) were excavated in July 2020 where tar NAPL seeps and seasonal black water seeps have been observed to evaluate the presence of NAPL and COCs in soil in those areas. An evaluation of the proposed remedial approach following the test pit construction will be submitted to the TCEQ as part of the monthly updates for the NAPL Collection System. Impacted soils and NAPL excavated as part of the pilot test construction were placed in roll-off bins or drums and properly disposed of in accordance with state and federal regulations. The NAPL and recovered fluids will be disposed of in accordance with state and federal regulations and requirements. Following the Interim NAPL Assessment (Golder, 2020d) and test pit evaluation conducted in July 2020, additional investigations are necessary to evaluate potential impacts to the underground utilities within the Englewood IM Yard area. Details of the additional investigation activities will be presented in the Englewood IM Yard Test Pit Evaluation Report.

UPRR Main Lines Ballast Area: The area between the former HWPW operational areas and the Englewood Intermodal Yard (approximately 100 feet width) is covered with railroad ballast, ties, and rail. The existing railroad ballast serves as an engineering control for addressing potential onsite worker exposure to impacted surface soils in this area.

City of Houston Right-of-Way (ROW): The area immediately north of the Recent Process Area (SWMU 4), Original Process Area (SWMU 5), and AST Area (SWMU No. 8) within the City of Houston right of way (ROW) between the UPRR property boundary and Liberty Road (approximately 8 feet wide and 550 feet long) was addressed through a combination of soil excavation of the top 9-inches (consolidated within the on-site soil-capped area) and construction of a physical barrier (concrete sidewalk) addressing the potential for contact with remaining surface soils and limiting infiltration. After the soils were excavated, UPRR constructed a concrete sidewalk approximately 8 feet wide and 690 feet long serving as the physical barrier covering the remaining surface soil PCLE zone within the City of Houston ROW. As part of the post-response action care, the concrete sidewalk is inspected to ensure the physical

barrier provides protection for residential receptors against exposure to the COCs above cPCLs in surface soils in this area.

Describe all major treatment system components and equipment of the response action. Illustrate the response action design and provide equipment specifications in Attachment 2A.

For surface and subsurface soils, there is no active treatment system proposed. The as-built engineering drawings for the soil cap and roadway improvements were provided in the 2016 RACR (PBW, 2016) and as-builts for the NAPL Collection System were provided in the 2019 RACR (Golder, 2019b) for the interim action.

List permits or registrations needed to construct or implement the response action, including permits or registrations needed to conduct studies or tests. For VCP sites, list the permits that would be required if the site was not in the VCP (required by the VCP).

Permitting/Registration Authority	Type of permit/registration	Permit or registration number if already issued	Anticipated application date

Identify and discuss the results of any studies or tests, such as pilot studies, feasibility studies, technical impracticability studies, treatability studies, and/or toxicity studies conducted or proposed to be conducted at the affected property. Discuss the reason for the study or test and how it verifies the effectiveness and appropriateness of the chosen response action or documents that a particular response action is not appropriate for the affected property. Describe how the results of completed studies or tests determined the design or choice of response action. Attach any separate reports and supporting documentation in Appendix 3.

Pentachlorophenol (PCP) Soil Assessment

Additional soil sampling was requested by the TCEQ during a meeting on June 12, 2019, with additional samples requested in a September 6, 2019 TCEQ letter to UPRR, to evaluate PCP concentrations in surface soils along the western and northern boundary of the Tie Storage Area (Solid Waste Management Unit (SWMU) No 12)) near soil samples previously collected. The soil concentrations for PCP were less than the method detection limits (MDLs) in some of the surface soil samples collected in the northern and western portions of the Site during previous investigations (Phase 2A Report (ERM, 1997), Phase 2B Report, (ERM, 1999)); however, the MDLs were greater than the critical protective concentration level (PCL). The PCP Soil Assessment Interim Report dated March 30, 2020 and updated PCP Soil Assessment Interim Report dated July 14, 2020 (Updated PCP Report) were submitted to the TCEQ and are provided in Appendix 3. PCP concentrations in soils both on-site and off-site are considered protective of the shallow groundwater pursuant to 30 TAC §350.75(i)(7)(C) (which states *the person may not be required to establish a soil leachate-to-groundwater PCL…when a demonstration can be made with appropriate soil and groundwater monitoring data that the soils will attain the soil response objectives for groundwater protection*) and so a soil leachate-to-groundwater PCL for PCP is not required for the Site. PCP concentrations in soil samples collected on-site and off-site to the north and to the west of the UPRR property boundary were below applicable $^{Tot}Soil_{Comb}$ PCLs, delineation of PCP in soils was achieved, and no further investigation or development of a response for the PCP concentrations in soil north and west of the Site is necessary. TCEQ approved the Updated PCP Report in a letter dated August 5, 2020.

Englewood IM Yard NAPL and Water Seep Evaluation Pilot Studies

An investigation and pilot study to identify the most appropriate remedial approach for the tar-like NAPL

surface seeps at the Englewood IM Yard outside the NAPL Collection System was conducted in July 2020. Seven test pits were conducted to evaluate the presence of NAPL and COCs in soil in areas where tar NAPL seeps and water seeps have been observed, and to evaluate isolated, excavation approaches to address the NAPL surface seeps at those locations. The objective of the pilot test was to excavate the NAPL found in the shallow soils, backfill and replace the concrete surface, and inspect the locations weekly for six months to assess if the NAPL surface seep returned in that time period.

The pilot test is on-going and UPRR will submit an Englewood IM Yard NAPL and Water Seep Evaluation Report following the pilot test period (January 2021). Summaries of the monthly inspections of the test pits will be submitted to the TCEQ as part of the monthly updates for the NAPL Collection System.

In addition to the test pit assessment, the storm water utilities within the Englewood IM Yard area will be assessed to evaluate if any of the NAPL observed in the shallow soils may be potentially impacting the underground utility. Details of the additional investigation activities will be presented in the Englewood IM Yard Test Pit Evaluation Report.

Total Petroleum Hydrocarbon (TPH) Assessment

In 2020, UPRR conducted a Total Petroleum Hydrocarbon (TPH)-Non-Aqueous Phase Liquid (NAPL) assessment consisting of 56 soil samples from 28 soil borings to evaluate the horizontal and vertical extent of TPH concentrations in soils and identify possible source characteristics for TPH in soils at the Site. Details of the assessment were submitted to the TCEQ in the Interim NAPL and TPH-NAPL Assessment Report dated May 29, 2020, which is included in Appendix 3. The NAPL assessment within the Englewood Intermodal Yard indicated total TPH TX1005 concentrations in eight soil samples exceeded the Tier 1 $Soil_{Res}$ PCL of 10,000 mg/kg, located within the former AST area and general area of the former lagoons within the Englewood IM Yard. At each of these soil boring locations, either NAPL was visually observed or strong hydrocarbon odors were noted on the soil boring logs. The soil TPH TX1005 results are delineated to less than the Tier 1 $Soil_{Res}$ PCL to the north, south, east, and west. Calculated Tier 1 TPH Mixture PCLs were used as critical PCLs to evaluate the total TPH by TX1005 Method soil sample concentration data. None of the soil samples had total TPH concentrations greater than the calculated commercial/industrial Tier 1 TPH Mixture critical PCLs, and therefore there is no Total TPH PCLE Zone for soils at the Site. However, one soil sample (DPT-12-20 (8-9)) collected near the northern perimeter of the Site had total TPH concentrations that exceeded the calculated residential critical PCL. Additional sampling closer to the property boundary north of the sampling location is proposed to evaluate the lateral extent of the total TPH concentrations exceeding the residential Tier 1 TPH Mixture critical PCL in the surface soils. The proposed sample locations are presented on Attachment 2A-1b but may be adjusted based on field conditions and underground utilities. Soil borings will be drilled to the top of the uppermost GWBU (A-TZ). Soil samples will be collected continuously for the total depth of each boring and logged by field personnel and field screened using an organic vapor meter (OVM). At each boring location, up to two soil samples will be submitted for laboratory analyses for TPH by Method TX1005. Soil samples will be collected from the following intervals:

- A soil sample from the 0 to 5-foot interval (Surface Soil) where the highest OVM reading or visual hydrocarbon staining is observed; or, if no OVM readings or staining observed, a sample from the 2 to 5-foot interval will be collected (below the existing asphalt/concrete); and
- A soil sample from a depth below 5 feet to the top of the A-TZ (Subsurface Soil) where the highest OVM reading or visual hydrocarbon staining is observed; or, if no OVM readings or staining observed, a sample from the top of A-TZ will be collected.

The sampling activities and analytical data will be submitted to the TCEQ in a separate report.

Response Action Design

Use this worksheet to provide detailed descriptions of the response action. Attach design and layout drawings and equipment specifications in Attachment 2A.

Media: **On-Site and Off-Site COH ROW Groundwater PCLE Zones: A-TZ, B-TZ/B-CZ, C-TZ – Uppermost Groundwater-Bearing Units**

List all media to which this information applies. If the response action is different for another media, complete a separate worksheet.

Provide a detailed description of the response action. Describe the removal action, decontamination, treatment system(s), and/or physical or institutional control actions that are proposed for each media and discuss the reasons for choosing the response action(s). Identify and describe any ecological services analysis and compensatory restoration plan that will be utilized (if so, include the complete ESA and compensatory restoration plan in Attachment 2C).

As previously discussed, the remedial objectives for the on-site and off-site COH ROW PCLE Zones in groundwater will be addressed through a combination of the following remedial actions:

1. Modified Remedy Standard B PMZ - The response action design for the groundwater PCLE Zones will be to implement the modified Remedy Standard B groundwater response action by establishing PMZs (On-Site and Off-Site City of Houston ROW) for the groundwater PCLE Zones in the A-TZ, B-CZ, B-TZ, and C-TZ.

2. Remedy Standard B Physical Control - A slurry wall barrier around the SWMUs and AOCs on the northeast portion of the HWPW and the former lagoons and fueling ASTs within the Englewood IM Yard area on the eastern portion of the Site is proposed to reduce the risk of potential future migration of NAPL and dissolved-phase groundwater COC concentrations greater than critical PCLs north and east of the Site.

3. NAPL Response Endpoint – Recovery Only (within a PMZ) – An aggressive NAPL recovery technique using MPE recovery methods in on-site recovery wells and traditional total fluid pumps (West Side PMZ) is proposed to address the NAPL recovery objective.

Details of the three approaches are provided below.

Modified Remedy Standard B - PMZs

UPRR proposes the following two cumulative PMZ areas (shown on Attachment 2A-2a):

- On-Site PMZ - The On-Site PMZ will include the cumulative groundwater PCLE Zones within the UPRR-owned property consisting of the center to the east portion of the Site and western portion of the Site (includes the On-Site PMZ (West) area for the B-CZ/B-TZ GWBU). The proposed PMZ includes the groundwater PCLE Zones for the creosote-related COCs and arsenic concentrations related to the degradation of the petroleum hydrocarbons.
- Off-Site PMZ (COH ROW) - The off-site PMZ includes the cumulative groundwater PCLE Zone that extends off-site to the north, east, and west of the Site within the City of Houston ROW.

The On-Site PMZs (A-TZ, B-CZ/B-TZ, and C-TZ (including the former HWPW, Englewood Intermodal Yard, and West (B-TZ)) will be deed recorded for commercial/industrial land use and to restrict future use of groundwater on-site and soil excavation activities within the surface soil PCLE Zone on the

UPRR-owned property. The Off-Site PMZ City of Houston ROW will be deed restricted to restrict future use of groundwater on-site, as well as restrictions on soil excavation activities within the surface soil PCLE Zone along a portion of the City of Houston ROW (concrete sidewalk cap area) along the northern boundary of the Site.

Remedy Standard B Physical Control

To address response action objectives, remedial technologies suitable for treatment of creosote-related DNAPL and groundwater PCLE Zones were reviewed to evaluate their feasibility for addressing the specific remedial objectives of the Site. The following criteria based on the U.S. EPA Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (OSWER Directive No. 9355.3-01) (EPA, 1988) were considered:

- Overall protection of human health and the environment - Evaluation of the overall protectiveness of an alternative;
- Compliance with applicable TRRP critical PCLs for the media affected;
- Long-term effectiveness and permanence – Magnitude of residual risks and adequacy and reliability of controls (operation and maintenance (O&M) for each technology and local conditions that may enhance or reduce effectiveness);
- Reduction of toxicity, mobility, or volume (TMV) through treatment - addresses the remedial actions that use treatment technologies to permanently and significantly reduce toxicity, mobility, or volume of the hazardous substances;
- Short-term effectiveness - Short-term impacts based on the remedial alternative during implementation or construction phase until remedial response objectives are met;
- Implementability - including site conditions and nearby infrastructure that may facilitate implementation or obstructions that may inhibit successful implementation; applicability to the Site including site specific conditions which may enhance or reduce effectiveness;
- Cost - encompasses all engineering, construction, and O&M costs incurred over the life of the project.

As detailed in Worksheet 1.0, each proposed response was also evaluated using the ITRC SMART metrics. Based on the feasibility evaluation conducted, the following response actions are proposed:

Slurry Cut-Off Wall Physical Control
UPRR proposes to install a vertical barrier in the form of a slurry cut-off wall along the northern and eastern property boundaries to reduce the risk of potential future migration of NAPL and groundwater with COC concentrations greater than the critical PCLs from the Site (Attachment 2A-2a). The proposed slurry cut-off wall consists of a vertical trench excavated along the proposed alignment (northern and eastern boundaries) and then backfilled with a slurry of native soil and low permeability material such as bentonite. Soil bentonite slurry walls are commonly used, and other amendments such as cement may be added in cases where a binder is advantageous to increase the cured strength of the slurry or other additives may be used to enhance the geochemical stability of the bentonite slurry. During the installation of a typical cutoff wall, the upper 3 to 5 feet of the alignment is generally used as an equipment and slurry 'lead-in trench'. In situations where the low-permeability wall is needed to extend to ground surface for successful hydraulic isolation, the lead-in trench can be backfilled with a similar slurry and may include additional binder for increased strength at the top.

Depending on site-specific hydrology, mounding of shallow groundwater on the upgradient side of a slurry wall can occur. If mounding occurs and creates surface wetting over-topping the slurry wall or induces groundwater flow around the slurry wall, modest upgradient groundwater extraction can be used. In either case, installation of a hydraulic cut off wall eliminates migration of impacted groundwater and DNAPL at the wall location and requires little or no maintenance. The design depth, final location and length of the cutoff wall will be determined in the final design and would be established primarily to

mitigate DNAPL migration given the limited solubility of creosote DNAPL. The initial phase of design of the slurry wall will require additional assessment which is described in the additional studies and tests section of Worksheet 2.0.

NAPL Response Endpoint – NAPL Recovery Only (within a PMZ)

Per §350.33(f)(4)(E), compliance with applicable PMZ performance criteria must be maintained at the NAPL zone. Readily removable NAPL will be recovered from recovery wells with DNAPL present within the PMZ to the extent practicable. UPRR is currently conducting bi-monthly (twice a month) DNAPL recovery activities from wells with sufficient volumes of DNAPL that can be recovered. Details of these DNAPL recovery activities are provided to the TCEQ in quarterly reports. The 2020 2nd Quarterly Report is included in Appendix 3. Monthly to bimonthly DNAPL recovery in on-site and off-site wells has been generally effective at removing DNAPL and reducing in-well DNAPL thickness over time. However, UPRR proposes a more aggressive method of DNAPL recovery via mobile MPE and installation of additional recovery wells. MPE exhibits the following potential advantages over the current DNAPL-only recovery method:

- Increased DNAPL recovery volumes by inducing DNAPL flow to the well via vacuum enhancement;
- Ability to remove DNAPL beyond just the well casing (i.e., increased radius of influence);
- Recovery of groundwater containing elevated dissolved phase concentrations in the vicinity of the recovery well; and,
- Recovery of volatile and semi-volatile COCs in the vapor phase.

Mobile MPE units offer the advantage of being able to be positioned at the target well, conducting the MPE event for a specified amount of time, then mobilizing to the next well location. Extracted fluids (groundwater and DNAPL) will be stored in a tank on the mobile unit (typically up to 1,500 gallons) or on a separate vehicle/tanker, transferred to storage tanks on-site at the Container Storage Area (CSA), and then transported off-site to a permitted facility for disposal or treatment. Extracted vapors from the MPE events will be monitored and recorded with a flame ionization detector (FID). Vapors will be treated with thermal oxidation or granular activated carbon (GAC) prior to discharge and the discharged vapor will also be monitored and recorded with an FID. Mobile MPE events will be conducted to maintain flexibility with occurrence of DNAPL over time. The proposed schedule for the MPE event is to operate a three-year pilot test period where MPE events are conducted monthly for the first 12 months, then conducted quarterly for the next two years. At the end of the three-year period, UPRR will evaluate the effectiveness of the approach to meet the functional objectives (reduce the in-well thickness and occurrence of NAPL).

To expand the potential NAPL recovery efforts, UPRR proposes to install additional recovery wells off-site within the proposed Off-Site COH ROW PMZ (Attachment 2A-2b):

- A-TZ – two recovery wells are proposed along the northern perimeter of the Site outside of the proposed slurry wall alignment. Through the extensive NAPL assessments conducted at the Site, no NAPL has been observed in the A-TZ off-site. However, since NAPL has been detected along the northern perimeter within the Site (MW-57A), the proposed off-site wells will be used to evaluate the presence of NAPL and recoverability if present in the A-TZ within the COH ROW.
- B-CZ/B-TZ – Three recovery wells are proposed to be installed off-site within the Off-Site COH ROW PMZ area.
- C-TZ – Two recovery wells are proposed to be installed within the Off-Site COH ROW PMZ area northeast of the Site.

The recovery wells will be installed with at least 4-in diameter well casing and screen, coarse-grained filter pack, and well sump to allow more efficient recovery of the DNAPL.

For the groundwater PCLE Zone and related DNAPL observed in the B-TZ on the west side of the Site,

no physical control is proposed for that area within the Site. DNAPL has been consistently present in and recovered from two wells completed in the B-TZ, MW-12B and MW-41B, in the western area. As indicated in the Interim NAPL and TPH-NAPL Assessment Report (Golder, 2020d; Appendix 3), minimal CPT/ROST™ and TarGOST® responses were observed in this western portion of the Site. As described in the Interim Groundwater Monitoring Report (Golder, 2020c; Appendix 3), the extent of the west groundwater PCLE Zone is limited and it does not appear that off-site migration of dissolved phase COCs is occurring to the west off Site. The NAPL assessment results coupled with dissolved phase concentrations below applicable PCLs in the area and the absence of measurable DNAPL in other B-TZ wells proximal to MW-12B and MW-41B (including TW-41B that was installed as a recovery well in 2009), suggest very localized DNAPL presence in the western portion of the HWPW Site. No DNAPL has been observed in wells installed off-site to the west of this area. COC concentrations in wells installed to the west are also below PCLs indicating the isolated nature of the groundwater PCLE in this area. Therefore, within the installation of the dedicated total fluids pneumatic pumps that were installed in late March 2020, UPRR proposes to continue the NAPL recovery on a bi-weekly basis using the dedicated pumps.

Describe all major treatment system components and equipment of the response action. Illustrate the response action design and provide equipment specifications in Attachment 2A.

A preliminary description of the proposed slurry wall is described below. The slurry wall design will be developed following the completion of the required pre-design investigations.

General Layout Dimensions and Alignment

The primary objective of the hydraulic barrier wall is to impede groundwater flow from portions of the Site and establish a subsurface barrier separating the on-site contamination from the off-site areas to the north and east. This will reduce the risk of potential future migration of groundwater COC concentrations above the critical PCLs from the Site, and similarly reduce the potential for migration of mobile NAPL from the Site. Based on the groundwater modeling results presented in Appendix 3, the proposed length of the barrier wall is approximately 3,400 linear feet (LF). The proposed slurry wall alignment extends parallel to the Liberty Road ROW and includes an extension from the western terminus southwest towards the main line rail, as well as an extension from the eastern terminus south along the eastern boundary of the Englewood Intermodal Yard (see Attachment 2A-2a). This alignment was optimized using the groundwater flow model (Appendix 3) to provide the desired isolation of groundwater flow while minimizing groundwater mounding inside the slurry wall area and potential migration of impacted groundwater around the wall. Based on the simulation results, limited mounding of groundwater is anticipated on the southern side of the wall but with no indication of surfacing. While the cut-off wall addresses advective flow across the northern Site boundary where the wall is placed, the mounding affects create a small area of reverse flow at the edges of the cut-off wall (flow around the edges). However, the proposed alignment provides enhanced control of DNAPL and dissolved phase COCs, and reduces the potential for offsite migration along the northern and eastern property boundaries without the need for additional remediation measures at the wall edges. The final alignment along the northeast portion may be adjusted pending utility and railroad operations review.

The portion of the slurry wall parallel to the Liberty Road ROW and the western extension is projected to extend an average of 75 feet below ground surface, keying into the low permeability D-CZ, which underlies the C-TZ (Attachment 2A-2c). The low permeability and thickness (10-25 feet) of the D-CZ layer constitute a basal aquiclude. Typical key-in depths range from 2-3 feet into the basal low-permeability unit and final depths along the alignment will be determined during the design process.

The portion of the slurry wall extending north-south along the eastern property boundary is projected to extend an average of 50 feet below ground surface, within the C-CZ. Groundwater monitoring, as well as historic and recent NAPL investigations have indicated that a wall extending to this average depth will be sufficient to cut off paths of potential contaminant transport and the C-CZ inhibits vertical migration in this

portion of the Site. The proposed preliminary slurry wall alignment with the proposed depths is presented on Attachment 2A-2a.

During the initial stage of design, soil borings will be installed along the alignment at regular intervals to inform the design team of the required barrier wall depth (Attachment 2A-3).

Slurry Mix Design

In general, hydraulic barrier walls are comprised of some combination of native soil, bentonite, and other binder materials (e.g., slag, Portland cement, cement kiln dust, fly ash, etc.). The mix design is determined through a laboratory mix trial and the components of the slurry will depend on the following:

- Nature of the native materials (grain size distribution and layer thicknesses;
- Desired permeability, typically on the order of 1 x 10^{-6} or 1 x 10^{-8} cm/sec at a wall thickness of 30 to 36 inches;
- Desired cured minimum strength, typically ranging from 100 PSI to 800 PSI, depending on the use of the land over the barrier wall;
- Chemical compatibility between bentonite and the native groundwater and DNAPL, noting that degradation of bentonite is possible under certain geochemical conditions and additives can be included in the mix design to overcome most chemical incompatibilities; and
- Availability for potential binder materials.

The initial phase of design will include collection of bulk native soil samples and groundwater along the barrier alignment and those samples will be used in the mix trials. Availability for binder options will also be evaluated prior to selection of mix trial components. Details of the pre-design studies for the slurry wall construction are discussed later in this worksheet.

Construction Methods

Several construction methods are common for hydraulic barrier walls. Given the deepest projected target depth of approximately 75 feet, a thickness of 30-36 inches and the relatively straight alignment of the longer sections of the proposed barrier wall, a summary of the viability of common techniques is presented below, generally in order of increasing cost:

- The most common and least expensive construction technique is use of a conventional excavator (or long-reach) with a 30 to 36-inch bucket. This system is relatively inexpensive to mobilize and nimble in terms of mobility and maneuverability for complex alignments, varying depths, and frequent obstructions. However, this technique is limited to depths of approximately 40-45 feet below grade.
- Trench and Remixing Deep (TRD) soil mixed walls are installed using a rigid vertical cutter that is fitted to the target depth of installation. This method is relatively quick and cost effective in terms of installation; however the efficiency of the equipment and construction technique is significantly reduced by variable target depths and deflections (or hard turns) in the wall alignment. It is not uncommon for a TRD wall to be thinner (18 to 24 inches) with a lower target permeability (as an equivalent barrier).
- Overlapping circular elements can be installed using various equipment such as a paddle soil mixer, secant pile rig, and triple auger deep soil mixing. Each of these techniques has strengths, and the most suitable often depends on the consistency and grain size distribution of the native materials, total depth, panel overlap requirement and the control of deflection of the equipment with depth (quality control requirements).
- The cutter soil mixing (CSM) technique provides a rectangular panel with high energy and high quality mixing, strong control of verticality to minimize deflection and robust quality control to verify wall panel placement and mix quality. This technique can be used to depths of approximately 100 feet below grade. While this technique provides the most uniform mixing and highest quality control of the techniques listed here, the equipment is less common in the marketplace and the cost per vertical square foot (VSF) of completed barrier wall tends to be higher than the previously described methods.

The initial phase of design will include a review of installation techniques and development of performance-based specifications that permit bidding using a variety of techniques to accomplish the barrier wall performance goals.

List permits or registrations needed to construct or implement the response action, including permits or registrations needed to conduct studies or tests. For VCP sites, list the permits that would be required if the site was not in the VCP (required by the VCP).

Permitting/Registration Authority	Type of permit/registration	Permit or registration number if already issued	Anticipated application date
TCEQ	Construction permits (TPDES/SWPPP)		Within 120 days of RAP approval
City of Houston	Monitoring Well Permits		Within 120 days of RAP approval
Harris County Clerk	Deed restriction of property to commercial-industrial use and groundwater use restriction (On-Site PMZs and Off-Site PMZ (including City of Houston ROW))	NA	Within 120 days of RAP approval
TCEQ	TCEQ Hazardous Waste (HW) Permit/Compliance Plan	SWR 31547 HW Permit: 50343 Expires June 10, 2015	HW Permit Renewal/Revision submitted December 10, 2014

Identify and discuss the results of any studies or tests, such as pilot studies, feasibility studies, technical impracticability studies, treatability studies, and/or toxicity studies conducted or proposed to be conducted at the affected property. Discuss the reason for the study or test and how it verifies the effectiveness and appropriateness of the chosen response action or documents that a particular response action is not appropriate for the affected property. Describe how the results of completed studies or tests determined the design or choice of response action. Attach any separate reports and supporting documentation in Appendix 3.

The following pre-design studies were conducted at the Site to address specific deficiencies raised by the TCEQ in the TCEQ 4th TNOD dated April 11, 2019:

1. Soil Vapor Intrusion Assessment Interim Report dated March 31, 2020 and Updated Soil Vapor Intrusion Assessment Interim Report dated August 4, 2020
2. Pentachlorophenol Soil Assessment Interim Report dated March 30, 2020 and Updated Pentachlorophenol Soil Assessment Interim Report dated July 14, 2020
3. Interim Groundwater Monitoring Report (2019-2020) dated April 30, 2020 (IGMR)
4. Interim Non-Aqueous Phase Liquid (NAPL) and Total Petroleum Hydrocarbon (TPH)-NAPL Assessment Report dated May 29, 2020

Copies of the reports listed above detailing these pre-design studies are included in Appendix 3. A correction was made to the monitoring well boring logs installed in February and March 2020 that were submitted in the IGMR. The vertical datum used for the initial survey for the monitoring wells was incorrect. The wells were resurveyed in May 2020 to the datum used for the previous wells site wide.

Revised Groundwater Gradient Maps (Figure 5A-1b through 5A-3b of the IGMR) and revised boring logs are included under Appendix 2 (Boring Logs) and Appendix 3 (Addendum to IGMR).

As part of the development of the proposed response action, the following technical memorandums were prepared and included in Appendix 3:

1. 3-D Visualization Model Technical Memorandum dated August 18, 2020;
2. Groundwater Flow Model Report dated August 18, 2020;
3. Mass Flux Technical Memorandum dated August 18, 2020.

3-D Visualization Model Technical Memorandum

Environmental investigations since the mid-1990s have yielded significant information regarding Site conditions (ERM, 2004; PBW, 2009; PBW, 2011; PBW, 2014; Golder, 2020d). As such, Site hydrogeologic, high resolution site characterization information, and groundwater analytical data were incorporated into a three-dimensional (3-D) visualization model using Earth Volumetric Studio (EVS) Version 2019.9.0 software by C-Tech Development. In addition to consolidation of Site information, the 3-D visualization serves to better drive response action decision making. A technical memorandum describing the 3-D visualization development methods and assumptions is attached in Appendix 3.

Groundwater Flow Model Report

A groundwater flow model was developed for the areas of concern and general vicinity to provide reasonable simulations of DNAPL migration mitigation technologies. The numerical groundwater flow model MODFLOW-2005 (Harbaugh et al, 2017) was selected due to the reliability of the base model code, the general industry acceptance of the validated model code, and the availability of robust pre- and post-processors. In this modeling program, Groundwater Vistas Version 7 (ESI, 2020) was selected as the pre- and post-processor. The modeling investigation included the following process:

- Incorporation of the Conceptual Site Model (CSM) and EVS Visualization output files to establish the hydrostratigraphy for the model domain and to facilitate layer and grid assignments;
- Incorporation of site-specific data, local and regional climatology data, and regional hydrogeology data to establish boundary conditions;
- Use of groundwater elevations recorded during semi-annual monitoring events to develop a calibrated steady state model for the site. This included selection of optimal data sets based on the completeness of the data (i.e., number and distribution of wells measured) and relative stability of climactic conditions (i.e., avoiding excessively wet or dry seasonal conditions);
- Use of the steady state model as base conditions, and incorporation of various cutoff wall alignments to optimize the elimination of DNAPL migration while minimizing shallow groundwater mounding;
- Use of the steady state model as base conditions and incorporation of various groundwater extraction scenarios to optimize hydraulic containment in the area if interest on the northern boundary.

A technical memorandum summarizing the groundwater model development and results is included in Appendix 3.

Mass Flux Technical Memorandum

An evaluation of mass flux was conducted to better understand conditions for potential groundwater COC migration along the northern property boundary of the HWPW Site. A transect of wells at or near the northern property boundary from each applicable lithologic zone was evaluated. The evaluation concluded that mass flux using the available monitoring wells along the northern HWPW property boundary indicate the bulk of the mass flux in the A-TZ is east of MW-15A extending to MW-18A. In addition, COC concentrations within the B-TZ/B-CZ also indicate the bulk of the mass flux is east of MW-14. Based on the mass flux calculations for the transect along the northern boundary, the mass flux calculated for the A-TZ was several orders of magnitude higher than mass flux calculated for the B-TZ/B-CZ PCLE zones. However, the groundwater PCLE Zone maps presented in the IGMR (Golder, 2020a)

indicate that the A-TZ groundwater PCLE Zone only extends into the City of Houston Liberty Road ROW, whereas the B-CZ/B-TZ groundwater PCLE Zone extends further north onto the off-site properties. This is primarily due to the groundwater flow conditions where the A-TZ has a northeasterly flow direction on the west side of the transect and becomes more easterly on the east side of the transect. Also, the actual COC concentrations observed in the B-TZ/B-CZ are higher to the north than the mass flux calculations suggest. Based on the results of groundwater monitoring, DNAPL and/or elevated COCs indicating potential NAPL are present within off-site wells MW-35B (B-TZ), MW-68B (B-TZ; DNAPL), MW-32B (B-CZ; DNAPL), and MW-70B (B-CZ/ DNAPL). These wells, located beyond the transect, indicate that the DNAPL mass predominately found in the secondary porosity (i.e., thin carbonate seams and fractures in the clay) off-site in the B-CZ/B-TZ is providing a source for the dissolved phase in the B-CZ/B-TZ groundwater off-site rather than a significant mass flux from the Site. A technical memorandum summarizing the mass flux evaluation and results is included in Appendix 3.

Proposed Pilot Studies/Pre-Design Investigations

The following pilot studies are proposed to verify the effectiveness and appropriateness of the chosen response actions.

Multi-Phase Extraction (MPE) Pilot Test

Mobile MPE is proposed as a more aggressive method of DNAPL recovery than current manual recovery methods. In addition to DNAPL recovery, MPE also removes aqueous and vapor phase chemicals of concern if present. A mobile MPE pilot test is proposed to accomplish the following objectives:

- Assess the ability of the mobile MPE unit to access each well location;
- Evaluate total fluids flow rates and the volume of recovered DNAPL compared to historic DNAPL recovery efforts;
- Evaluate contaminant mass removed in the vapor phase;
- Estimate the likely target duration of MPE for each well location during future events; and,
- Assess the need for engineered recovery wells.

A 12-month pilot study to evaluate DNAPL recovery using MPE at the Site will be initiated following the installation of proposed large diameter (4-in) recovery wells off-Site. The frequency of mobile MPE events will be adjusted based on changes in DNAPL recoverability, but initially will be conducted monthly for the pilot study. As part of the remediation decision process, UPRR will regularly monitor the performance of the MPE approach during the pilot study through assessing NAPL levels in the recovery wells. Quarterly reports will be submitted to the TCEQ following the initiation of MPE events.

Confirmation Soil Boring Plan

During the initial phase of the slurry wall design, soil borings will be installed along the proposed barrier wall alignment at spacing of approximately 100 feet to a minimum depth of 5 feet into the D-CZ layer, and samples will be collected for the following:

- Geotechnical Standard Penetration Tests (SPT) at intervals of no more than 5 vertical feet,
- Grain size samples at each significant change in lithology.
- Bulk samples representing each lithologic interval from selected boreholes for mix trials
- Groundwater samples from representative (existing) monitoring wells for geochemical parameters and COCs, including sufficient quantity for use in mix trials.
- Depth to the target key-in unit (D-CZ), and collection of intact shelby tube samples at representative boreholes for permeability testing.

Proposed locations are depicted in Attachment 2A-3 and are subject to change during the design process.

Barrier Wall Mix Design

The final design will include performance specifications for the barrier wall, and the remediation contractor will be responsible for completing their laboratory mix design and field verification trials prior to

commencement of barrier wall production. However, a preliminary mix design will be performed during the barrier wall design process to identify viable binders and mix ratios that will assist bidders in estimating costs for materials associated with the barrier installation. The preliminary mix design will incorporate bulk soil samples, NAPL samples, and groundwater samples along the alignment into a series of mix ratios for laboratory testing. Laboratory testing will include thorough mixing of the native materials with prescribed ratios of bentonite and (potentially) binders, and the resulting materials will be appropriately cured and tested for permeability. The results of the preliminary mix design will be summarized in a technical memorandum that will be included in the bid package for remediation contractors. The successful contractor will then be directed to perform their own final sampling, mix trials, and field verification testing prior to full scale construction of the barrier wall to meet the designed performance specification.

Response Action Design

Use this worksheet to provide detailed descriptions of the response action. Attach design and layout drawings and equipment specifications in Attachment 2A.

Media: **Off-Site Groundwater PCLE Zone: A-TZ, B-TZ/B-CZ, C-TZ – Uppermost Groundwater-Bearing Units**

List all media to which this information applies. If the response action is different for another media, complete a separate worksheet.

Provide a detailed description of the response action. Describe the removal action, decontamination, treatment system(s), and/or physical or institutional control actions that are proposed for each media and discuss the reasons for choosing the response action(s). Identify and describe any ecological services analysis and compensatory restoration plan that will be utilized (if so, include the complete ESA and compensatory restoration plan in Attachment 2C).

The remedial objectives for the off-site groundwater PCLE Zones will be addressed through a Remedy Standard B (Remedy Standard A equivalent) - decontaminate the groundwater with the goal of reducing COC concentrations to the critical groundwater PCLs throughout the off-site groundwater PCLE Zone. As previously discussed, the response objective of reducing COC concentrations to the critical groundwater PCLs throughout the off-site groundwater PCLE Zone is considered an absolute objective for the Site. However, as a result of the site conditions (existing buildings, City of Houston utility infrastructure, limited physical access, as well as the unfavorable and complex Site geologic conditions and the inherent physical characteristics of the creosote DNAPL), that remedial objective with current remedial technologies is not possible to achieve within a reasonable time frame. As a result, a proposed functional objective for the off-site area is to **recover creosote DNAPL to reduce the extent of DNAPL and related groundwater PCLE Zone off-site**.

To address response action objectives for the off-site areas, remedial technologies suitable for treatment of creosote-related DNAPL and dissolved phase constituents in the context of the CSM were reviewed to evaluate their feasibility for addressing the functional objective for the off-site area. The following criteria based on the EPA Guidance (EPA, 1988) were considered:

- Overall protection of human health and the environment - Evaluation of the overall protectiveness of an alternative;
- Compliance with applicable TRRP critical PCLs for the media affected;
- Long-term effectiveness and permanence – Magnitude of residual risks and adequacy and reliability of controls (operation and maintenance (O&M) for each technology and local conditions that may enhance or reduce effectiveness);
- Reduction of toxicity, mobility, or volume (TMV) through treatment - addresses the remedial actions that use treatment technologies to permanently and significantly reduce toxicity, mobility, or volume of the hazardous substances;
- Short-term effectiveness - Short-term impacts based on the remedial alternative during implementation or construction phase until remedial response objectives are met;
- Implementability - including site conditions and nearby infrastructure that may facilitate implementation or obstructions that may inhibit successful implementation; applicability to the Site including site specific conditions which may enhance or reduce effectiveness;
- Cost - encompasses all engineering, construction, and O&M costs incurred over the life of the project.

Based on the feasibility evaluation conducted and to attain this reasonable functional objective, mobile

MPE was selected as the preferred response primarily based on hydrogeologic setting considerations. The majority of the groundwater PCLE Zone that extends off-site resides in the B-CZ/B-TZ. As detailed in the RAP Revision No. 0 (PBW, 2014), based on the presence of NAPL within the calcareous unit within the B-CZ, the carbonate seams appear to be the primary location of DNAPL within this unit along within discrete clay fractures in the B-CZ. However, the slug test results indicate very low hydraulic conductivity (geometric mean of the hydraulic conductivity at $1.2x10^{-7}$ cm/sec) and transmissivity, despite the test wells purposefully being screened across the calcareous nodule layers, where hydraulic conductivity within B-CZ is expected to be the highest. This extremely low hydraulic conductivity (essentially the same as what is required for a RCRA landfill clay liner) supports the classification of B-CZ as saturated soils rather than a groundwater unit, and the expectation that NAPL recovery through active pumping from the nodule layers or fractures would not be effective. Further, even though calcareous seams are believed to be the mechanism for the presence of NAPL in some off-site locations, the potential for future migration of NAPL is addressed by the installation of the proposed slurry wall on-site essentially establishing a subsurface barrier separating the on-site contamination where areas of NAPL mass were observed in the subsurface through the CPT/TarGOST assessment from the off-site areas to the north and east. The mobile MPE technology was selected based on the technology's ability to remove NAPL, groundwater, and vapors, if present, and perform that on an episodic basis since the B-CZ formation cannot sustain fluid flow to justify a permanent system based on the hydraulic testing conducted in wells completed in the B-CZ discussed above.

Mobile MPE units offer the advantage of being able to position at the target well within the City of Houston ROW, conducting the MPE event for a specified amount of time, then mobilizing to the next well location. Extracted fluids (groundwater and DNAPL) will be stored in a tank on the mobile unit (typically up to 1,500 gallons) or on a separate vehicle/tanker during the extraction events, transferred to storage tanks on-site at the Container Storage Area (CSA), and then transported off-site to a permitted facility for final disposal. Extracted vapors from the MPE events will be monitored and recorded with a flame ionization detector (FID). Vapors will be treated with thermal oxidation or granular activated carbon (GAC) prior to discharge and the discharged vapor will also be monitored and recorded with an FID. One of the advantages of conducting mobile MPE events includes maintaining flexibility of adding or reducing the number of recovery wells with the occurrence of DNAPL over time, and to limit disruption to the off-site residential areas as part of the remedial action.

Therefore, UPRR proposes to address the off-site groundwater PCLE Zone in the following phased approach:

1. Install up to nine DNAPL recovery wells north of the Site within the City of Houston ROW (but outside the proposed Off-Site COH ROW PMZ) to be included with the proposed recovery wells of the Off-Site COH ROW PMZ area (proposed locations shown on Attachment 2A-2b);
2. Once the recovery wells have been installed, MPE will be implemented at the existing DNAPL recovery wells (see 2nd Quarter 2020 DNAPL Report for list of current existing wells, Appendix 3) and proposed recovery wells to enhance DNAPL recovery off-site;
3. The MPE events will be conducted monthly for the first year, then quarterly for two more years;
4. After three years of operation, the response action objectives will be evaluated following the ITRC IDSS approach; and
5. Concurrently with the more active DNAPL recovery activities, MNA, which is currently occurring at the Site as discussed in more detail below, will be implemented as one part of the overall groundwater response along with the installation of the slurry wall on-site to reduce potential migration from the Site to off-site areas.

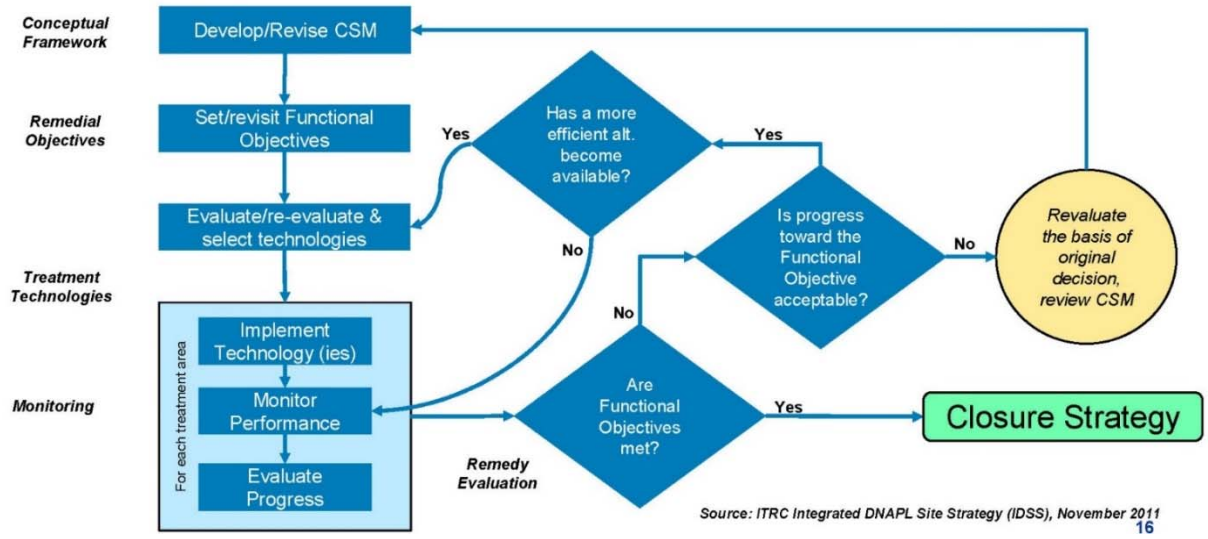
The additional DNAPL recovery wells will be designed (i.e., larger diameters and screen slot sizes, with sumps) and installed to enhance DNAPL recovery from the target GWBUs. The proposed well design is described in Attachment 2B. The recovery well construction will be based on a combination of soil borings and CPT/TarGOST information detailed in the NAPL Assessment Report (Golder, 2020d). The recovery method of MPE involves the simultaneous extraction of soil vapor, groundwater, and DNAPL

by applying a vacuum to a sealed well. Liquid flow rates are increased due to the increased pressure gradient applied on the system. As previously discussed, the more aggressive method of DNAPL recovery via MPE has the following potential advantages:

- Increased DNAPL recovery volumes by inducing DNAPL flow to the well via vacuum enhancement;
- Ability to remove DNAPL beyond just the well casing (i.e., increased radius of influence);
- Recovery of groundwater containing elevated dissolved phase concentrations; and,
- Remediation of volatile and semi-volatile chemicals of concern in the vapor phase.

A mobile MPE pilot test is recommended to evaluate the proposed response. The duration of the MPE events will be informed by pilot testing; however, it is anticipated that MPE will be conducted for 1-4 hours per well during each event. The frequency of mobile MPE events will be adjusted based on changes in DNAPL recoverability, but initially the proposed recovery frequency will be conducted monthly for the first year of operation, then quarterly thereafter for two years.

As part of the remediation decision process, UPRR will regularly monitor the performance of the MPE approach through assessing NAPL levels in the recovery wells and evaluate the groundwater COC concentrations in the groundwater PCLE Zone. During the monitoring phase and after the initial three years of operation, UPRR will evaluate if the mobile MPE technology is resulting in progress of achieving the functional objective and will evaluate if more efficient alternative technologies have become available. Following the initial three-year period, the remedy alternative will be evaluated relative to progress being made toward achieving the functional objective. If the progress toward meeting that functional objective is not acceptable, the CSM will be reviewed, and remedial objectives will be re-evaluated as MPE recovery activities continue until an alternative is selected and approved. This process flow for the remediation decision process, as taken from ITR IDSS (ITRC, 2011) guidance, is presented below.



This response action will support the attempt to achieve the TRRP-32 NAPL response endpoint of recovering the soluble NAPL fraction sufficient to eliminate source contributions to groundwater PCLE zone.

In addition to the MPE, natural attenuation is currently on-going at the Site. Creosote DNAPL does not create large, extensive dissolved-phase plumes outside of where the creosote DNAPL is found to be

present in the subsurface. Studies have shown that the dissolved COC plumes from creosote sources tend to have concentrations three to 50 times lower about 150 feet downgradient of the source compared to source concentrations (Kiilerich, 1996). This is supported at the Site by the limited migration distance of the dissolved-phase plume from the areas where DNAPL is observed, indicating a primary line of evidence (PLOE) that natural attenuation is occurring and controlling large-scale expansion of groundwater with COCs above cPCLs from migrating beyond the current PCLE Zones. As described above and in the Mass Flux Evaluation Technical Memorandum provided in Appendix 3, DNAPL is present within the B-TZ/B-CZ off-Site, which is likely the main contributing source to the groundwater PCLE zone off-Site. Furthermore, groundwater analytical data from the three upper GWBUs indicate that the COC concentrations in a majority of wells do not exhibit increasing trends. Preliminary trend analysis was discussed in the IGMR (Golder, 2020c).

A more extensive statistical evaluation and revised trend test results for the most common COCs (2-methylnaphthalene, 2,4-dimethylphenol, benzene, dibenzofuran, and naphthalene) are included in Appendix 7. In the revised trend analysis evaluating groundwater data from 2009 to 2020, non-detects were set to a common value lower than any detections (see Appendix 7) to account for variation in laboratory dilutions and to prevent false trends based on non-detects. Concentrations of at least one COC exhibited an increasing or probably increasing trend in the following wells:

- B-CZ/B-TZ Wells: MW-33BR, MW-35B, MW-38B, MW-49B, MW-70B, MW-83B, MW-90B, TW-41B, and
- C-TZ Wells: MW-12C, MW-19C, MW-21C, and MW-25C

The increasing trends for the wells can be explained as follows:

- DNAPL is present in wells MW-49B and MW-70B.
- Wells TW-41B and MW-25C are within 100 feet of wells in which DNAPL has been observed.
- Concentrations of COCs that exhibit increasing or probably increasing trends in MW-33BR, MW-35B, MW-38B, MW-90B, MW-12C, MW-19C, and MW-21C are multiple orders of magnitude lower than RALs with a majority of the datasets comprising of non-detects or estimates (J-flagged).
- Since installation in 2018, benzene concentrations in MW-83B have been above the RAL and has ranged from 0.018 mg/L to 0.032 mg/L with a standard deviation of 0.006 mg/L with the highest concentration detected in January 2019 at 0.032 mg/L. However, since then, benzene concentrations have decreased to 0.021 mg/L in July 2019 and January 2020.

Geochemical parameters, including dissolved iron and manganese, sulfate, nitrate, alkalinity, and total organic carbon, will be analyzed in groundwater during the next two semi-annual sampling events to evaluate the geochemical setting in the GWBUs for additional lines of evidence for natural attenuation processes. Groundwater geochemical indicator data will be evaluated following the TRRP guidance *Monitored Natural Attenuation Demonstrations under TRRP* (TRRP-33) and summarized in the annual groundwater monitoring reports.

Describe all major treatment system components and equipment of the response action. Illustrate the response action design and provide equipment specifications in Attachment 2A.

The mobile vacuum enhanced MPE can be implemented in different ways, but it is anticipated that a dual pump configuration will be used given the depths of the wells typically exhibiting DNAPL off-site. A dual pump configuration utilizes a separate submersible pump for groundwater and DNAPL recovery in conjunction with a separate vacuum applied at the sealed well head. Unlike other methods that use a drop tube, a hydraulic gradient is induced with the in-well pump that provides a deep enough depression to overcome the groundwater rising effect as a result of the induced vacuum. Designed well manifolds are used during the events to allow pump, discharge, and instrumentation lines to enter the well without loss of induced vacuum. Pressure transducers or level controls are often used to prevent the vacuum from causing the pump to lose positive suction head and cavitate. Extracted fluids (groundwater and

DNAPL) will be stored in a tank on the mobile unit (typically up to 1,500 gallons) or on a separate vehicle/tanker, transferred to storage tanks on-site at the Container Storage Area (CSA), and then transported off-site to a permitted facility for disposal or treatment. Extracted vapors from the MPE events will be monitored and recorded with an FID. Vapors will be treated with thermal oxidation or GAC prior to discharge and the discharged vapor will also be monitored and recorded with an FID.

List permits or registrations needed to construct or implement the response action, including permits or registrations needed to conduct studies or tests. For VCP sites, list the permits that would be required if the site was not in the VCP (required by the VCP).

Permitting/Registration Authority	Type of permit/registration	Permit or registration number if already issued	Anticipated application date
City of Houston	Monitoring Well Permits		Within 30 days or receiving approval of the Revised RAP.
Harris County Clerk	Deed restriction of property to commercial-industrial use and groundwater use restriction (On-Site PMZs and Off-Site PMZ (including City of Houston ROW))	NA	Within 120 days of RAP approval
TCEQ	TCEQ Hazardous Waste (HW) Permit/Compliance Plan	SWR 31547 HW Permit: 50343 Expires June 10, 2015	HW Permit Renewal/Revision submitted December 10, 2014
TCEQ	Permit-by Rule (PBR)	TBD	Within 90 days or receiving approval of the Revised RAP.

Identify and discuss the results of any studies or tests, such as pilot studies, feasibility studies, technical impracticability studies, treatability studies, and/or toxicity studies conducted or proposed to be conducted at the affected property. Discuss the reason for the study or test and how it verifies the effectiveness and appropriateness of the chosen response action or documents that a particular response action is not appropriate for the affected property. Describe how the results of completed studies or tests determined the design or choice of response action. Attach any separate reports and supporting documentation in Appendix 3.

As previously indicated, the following pre-design studies were conducted at the Site to address specific deficiencies raised by the TCEQ in the TCEQ 4th TNOD dated April 11, 2019, that includes the off-site areas:

1. Interim Groundwater Monitoring Report (2019-2020) dated April 30, 2020
2. Interim Non-Aqueous Phase Liquid (NAPL) and Total Petroleum Hydrocarbon (TPH)-NAPL Assessment Report dated May 29, 2020

Reports are included in Appendix 3.

Proposed Pilot Studies

The following pilot studies are proposed to verify the effectiveness and appropriateness of the chosen

response actions.

Mobile MPE Pilot Test

Mobile MPE is proposed as a more aggressive method of DNAPL recovery than current methods. In addition to DNAPL recovery, MPE also removes aqueous and vapor phase chemicals of concern if present. A mobile MPE pilot test is proposed to accomplish the following objectives:

- Assess the ability of the mobile MPE unit to access each well location;
- Evaluate total fluids flow rates and the volume of recovered DNAPL compared to historic DNAPL recovery efforts;
- Evaluate contaminant mass removed in the vapor phase; and
- Estimate the likely target duration of MPE for each well location during future events.

Recovery wells will be installed as detailed in previous sections of Worksheet 2.0 and in Attachment 3. A 12-month pilot study to evaluate DNAPL recovery using MPE at the Site will be initiated following the installation of proposed recovery wells. The frequency of mobile MPE events will be adjusted based on changes in DNAPL recoverability, but initially will be conducted monthly for the pilot study. As part of the remediation decision process, UPRR will regularly monitor the performance of the MPE approach during the pilot study through assessing NAPL levels in the recovery wells. Quarterly reports will be submitted to the TCEQ following the initiation of MPE events.

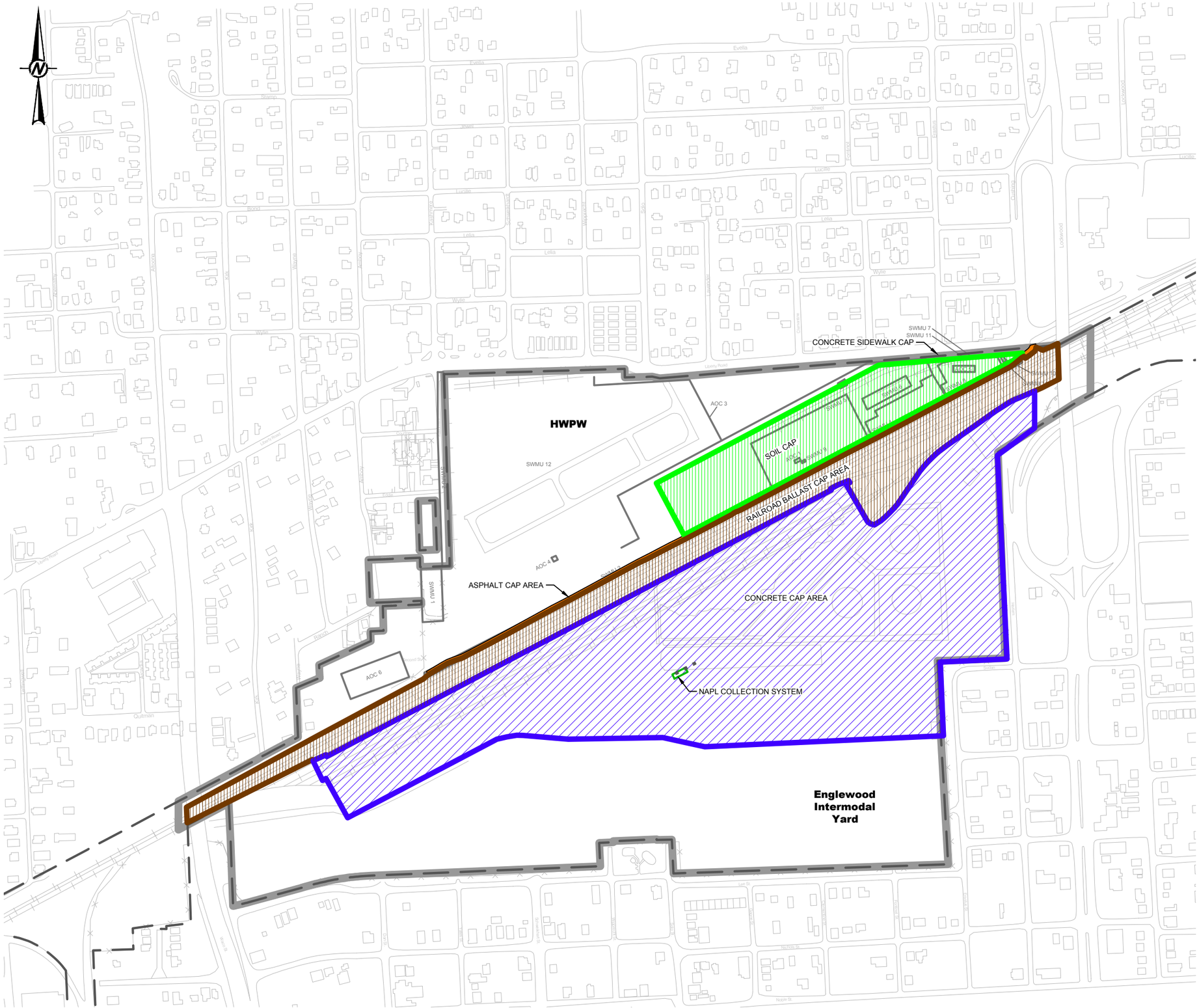
Monitored Natural Attenuation (MNA)

During the MPE study, geochemical parameters, including dissolved iron and manganese, sulfate, nitrate, alkalinity, and total organic carbon, will be analyzed in groundwater. Groundwater geochemical indicator data will be evaluated and summarized in the annual groundwater monitoring reports following the TRRP guidance *Monitored Natural Attenuation Demonstrations under TRRP* (TRRP-33) (TCEQ, 2010c) as part of the MNA Demonstration for the Site.

ATTACHMENT 2A

RESPONSE ACTION DIAGRAMS AND COMPONENT/EQUIPMENT DESCRIPTIONS

Attachment 2A-1a – Response Action – Soil – Capped Areas and NAPL Collection System
Attachment 2A-1b – Response Action – Soil – Additional TPH Sampling
Attachment 2A-1c – Response Action – Soil – Englewood Intermodal Yard – NAPL Collection System and Seep Areas
Attachment 2A-1d – NAPL Collection System Design
Attachment 2A-2a – Response Action Design – Groundwater
Attachment 2A-2b – Response Action Design – Groundwater – Off-Site
Attachment 2A-2c – Response Action Design – Groundwater – Proposed Slurry Wall
Attachment 2A-3 – Response Action Design – Slurry Wall – Confirmation Soil Boring Locations



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- HISTORIC STRUCTURE AND FEATURE
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA
- NAPL COLLECTION SYSTEM SUMP
- EXISTING NAPL COLLECTION SYSTEM (CONSTRUCTED FEB. 2019)

REFERENCE(S)

BASE MAP FROM ERM-SOUTHEAST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
RESPONSE ACTION - SOIL
CAPPED AREAS AND NAPL COLLECTION SYSTEM

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-08-17
DESIGNED	AJD
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 2A-1a

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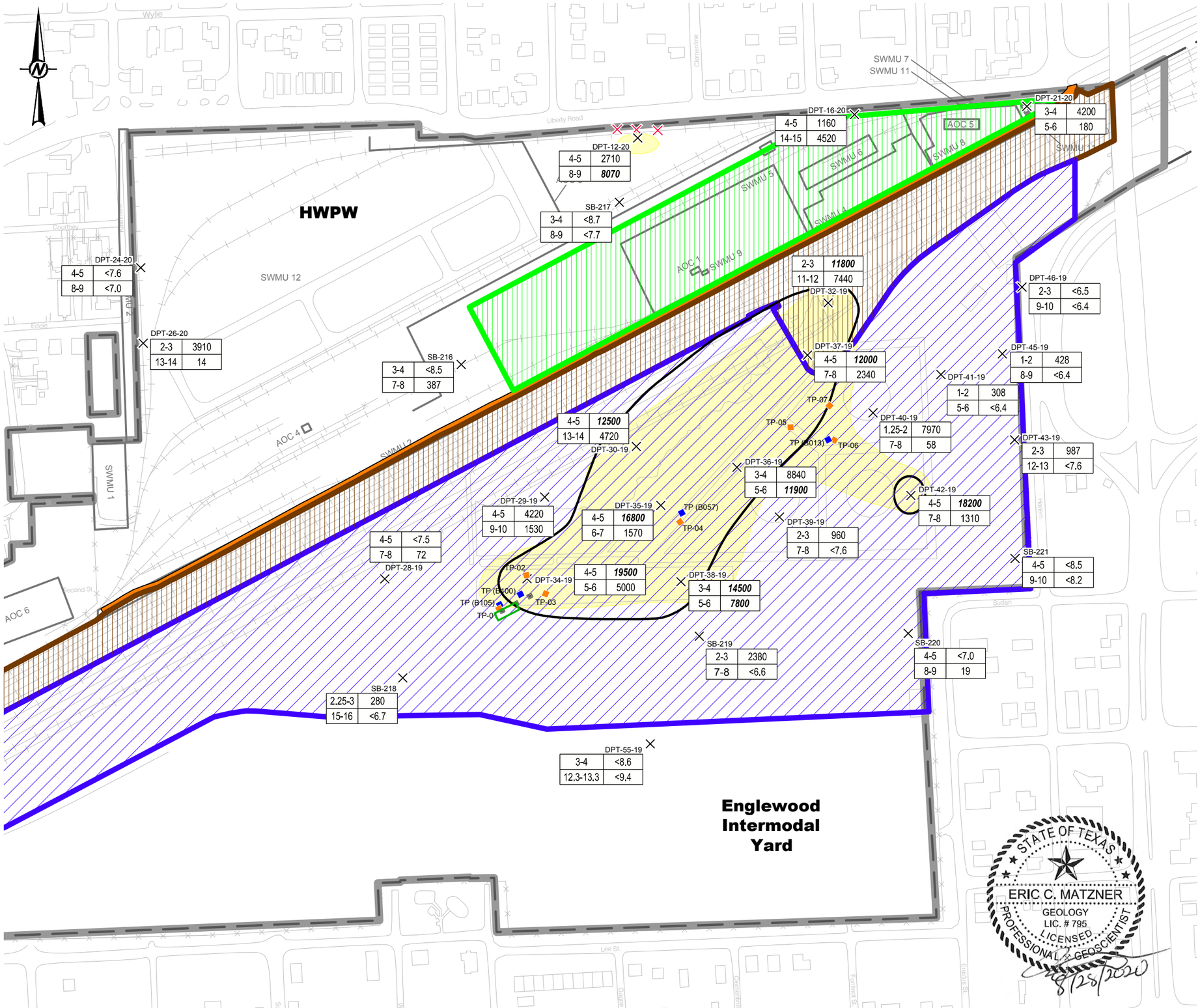
Path: \\texarkana\data\Projects - Round Rock_2019\19119232 - HWPW\2020-8 RAP Revision\ | File Name: FIG 2A-1a - Response Action Design-Soil (Capped Areas and NAPLE Collection System).dwg | Last Edited By: rsalazar Date: 2020-08-12 Time:2:20:04 PM | Printed By: ajdiamond Date: 2020-08-17 Time:5:38:07 PM



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- HISTORIC STRUCTURE AND FEATURE
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA
- EXISTING NAPL COLLECTION SYSTEM (CONSTRUCTED FEB. 2019)
- NAPL COLLECTION SYSTEM SUMP
- TEST PIT LOCATION (2019)
- TEST PIT LOCATION (2020)
- TPH SOIL SAMPLE LOCATION (2019-2020)
- TPH AFFECTED PROPERTY/PCLE ZONE
- PROPOSED TPH SOIL SAMPLE LOCATION
- TOTAL TPH THEORETICAL RESIDUAL SOIL SATURATION LIMIT (10,000 mg/kg)

NOTE(S)

1. SAMPLE INTERVAL IN FEET BELOW GROUND SURFACE (BGS).
2. BOLD AND ITALICIZED RESULTS EXCEEDS APPLICABLE RESIDENTIAL PCL FOR TPH, AS CALCULATED IN THE INTERIM NON-AQUEOUS PHASE LIQUID (NAPL) AND TOTAL PETROLEUM HYDROCARBON-NAPL REPORT DATED MAY 29, 2020.
3. TEST PITS CONDUCTED IN 2020 CURRENTLY UNDER ASSESSMENT.

Sample Interval (BGS)	TPH005 (C_6-C_{35}) Concentration (mg/kg)

REFERENCE(S)

BASE MAP FROM ERM-SOUTHEAST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

0 125 250
1" = 250' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
RESPONSE ACTION - SOIL ADDITIONAL SAMPLING

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
8/25/2020

YYYY-MM-DD	2020-08-17
DESIGNED	AJD
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 REV. 0 FIGURE 2A-1b

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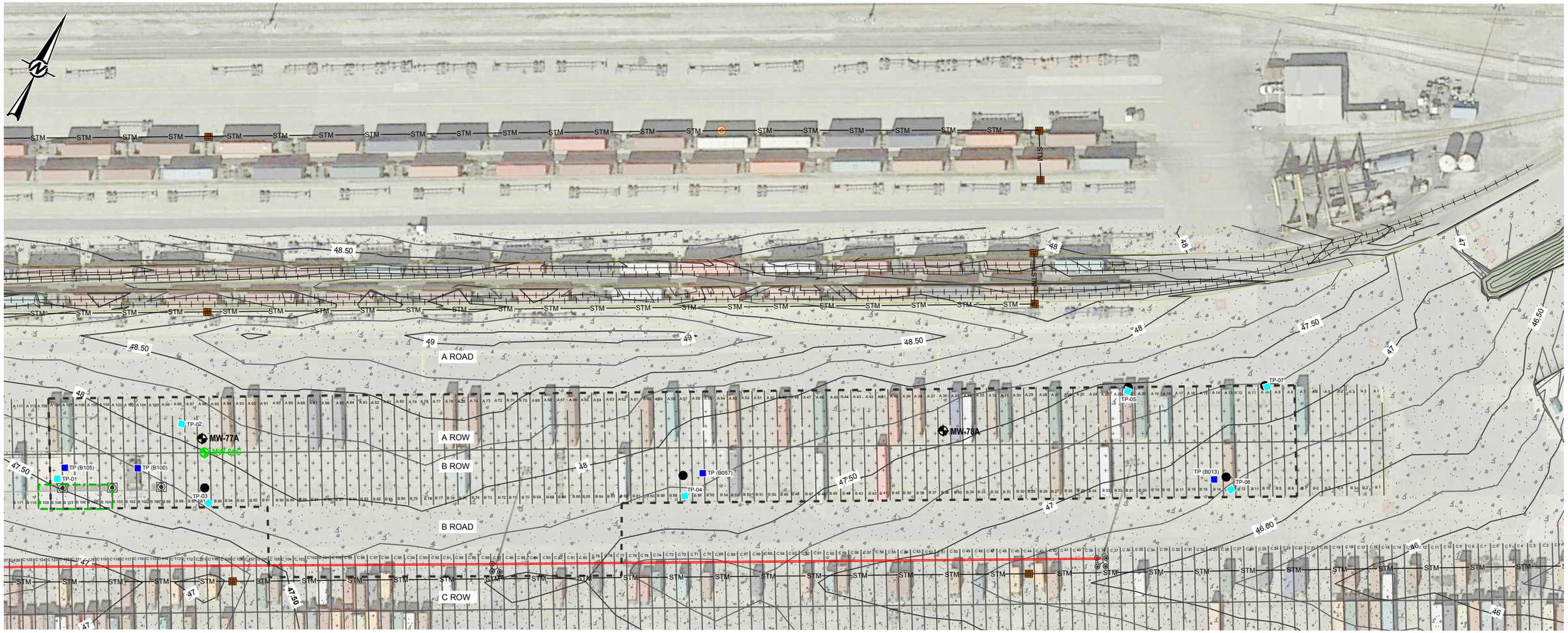

LEGEND

- EXISTING CONCRETE
- EXISTING ASPHALT
- 47 — EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- STM STM — EXISTING STORMWATER DRAIN LINE
- EXISTING RAIL SPURS
- EXISTING PARKING STALL STRIPE
- B100 — EXISTING PARKING STALL LABELS
- EXISTING 2 in ELECTRICAL CONDUIT (PVC SCH 80 OR HDPE OF EQUVALENT THICKNESS)
- EXISTING LIGHT POLE
- EXISTING BOLLARD
- EXISTING STORMWATER INLET
- EXISTING NAPL COLLECTION SUMP
- A-TZ MONITORING WELL LOCATION
- C-TZ MONITORING WELL LOCATION
- EXISTING NAPL COLLECTION SYSTEM (CONSTRUCTED FEB. 2019)
- APPROXIMATE AREA OF SEASONAL BROWN WATER SEEPS
- HISTORICAL NAPL SEEP LOCATION
- TEST PIT LOCATION (2019)
- TEST PIT LOCATION (JULY 2020)

REFERENCE(S)

BASE MAP TAKEN FROM GOOGLE EARTH, DATED 02-23-2019
SURVEY BY: SURVEYING AND MAPPING, LLC (SAM)
1019 CENTRAL PARKWAY NORTH SUITE 104
SAN ANTONIO, TEXAS 78232

NOTE(S)

1. THE SURVEYED INFORMATION DEPICTED HEREON IS BASED ON TEXAS SOUTH CENTRAL USING TEXAS COORDINATE SYSTEM, NAD27 TEXAS STATE PLANE, SOUTH CENTRAL ZONE. ALL DISTANCES ARE REPRESENTED IN GRID VALUES, MEASURED IN U.S. SURVEY FEET, AND ARE BASED ON SAID HORIZONTAL DATUM.
2. ELEVATIONS SHOWN HEREON ARE PURSUANT TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) (GEOID 128).
3. UNDERGROUND UTILITIES SHOW HEREON ARE APPROXIMATE BASED ON A RIGHT-OF-WAY AND TRACK MAP PROVIDED FOR INFORMATION. ALWAYS CALL 811 BEFORE YOU DIG.

0 40 80
1" = 80' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS
ENGLEWOOD INTERMODAL YARD

TITLE
RESPONSE ACTION - SOIL
ENGLEWOOD IINTERMODAL YARD - NAPL COLLECTION SYSTEM AND SEEP AREAS

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-08-28
DESIGNED	AJD
PREPARED	AJD
REVIEWED	BS
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 2A-1c

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

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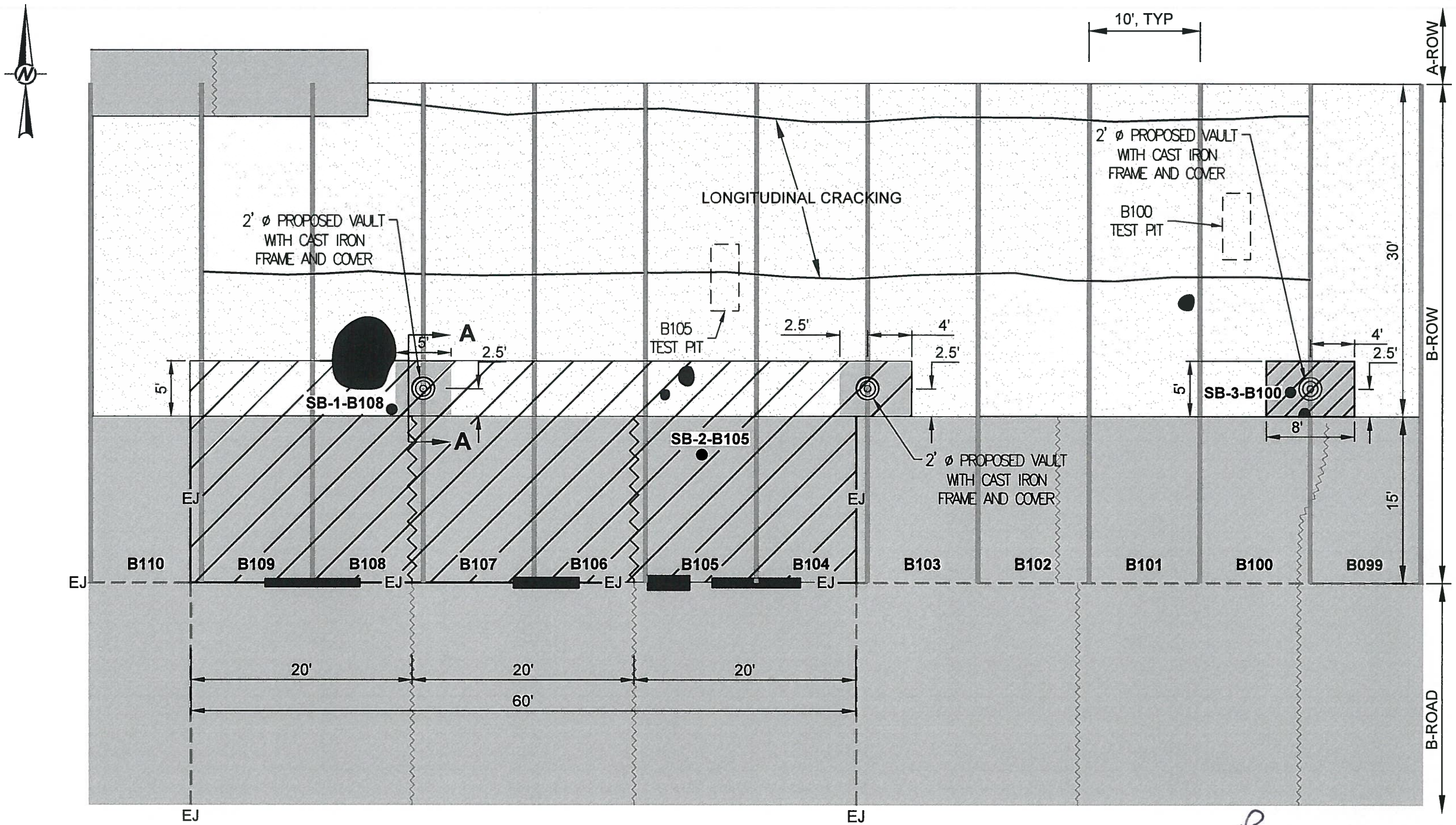
Time:1:09:56 PM | Printed By: RSalazar Date: 2020-08-28 Time:1:09:56 PM

Attachment 2A-1d



AS-BUILT

0 5 10
1" = 10' FEET

LEGEND

- REINFORCED CONCRETE PAVEMENT
- EXISTING ASPHALT PAVEMENT/ROAD BASE
- PARKING STALL YELLOW LINE (4" WIDE)
- EXISTING SEEP LOCATION
- PROPOSED AREA OF EXCAVATION
- == EJ == EXISTING EXPANSION JOINT
- ═ EJ ═ PROPOSED EXPANSION JOINT
- EXISTING CONTROL JOINT
- PROPOSED CONTROL JOINT
- PROPOSED NAPL COLLECTION VAULT (2' Ø)
- SOIL BORING LOCATION
- TEST PIT (6' L x 2.5' W x 5' D)

R Bryan Luper 3-25-19

STATE OF TEXAS
R. BRYAN LUPER
83983
LICENSED
PROFESSIONAL ENGINEER

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
ENGLEWOOD INTERMODAL YARD - NAPL SEEP REMEDIATION

TITLE
PROPOSED REMEDIAL EXCAVATION

CONSULTANT
GOLDER

YYYY-MM-DD	2019-03-25
DESIGNED	BZH
PREPARED	AJD
REVIEWED	RBL/ECM
APPROVED	RBL/ECM

PROJECT NO 30401358-640 REV 0 FIGURE 2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

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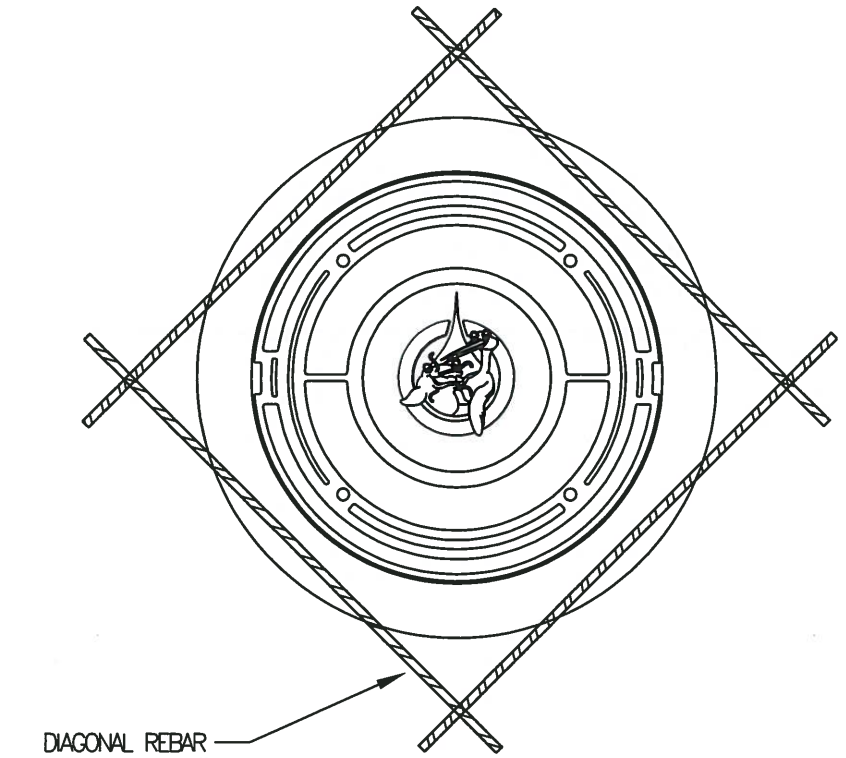
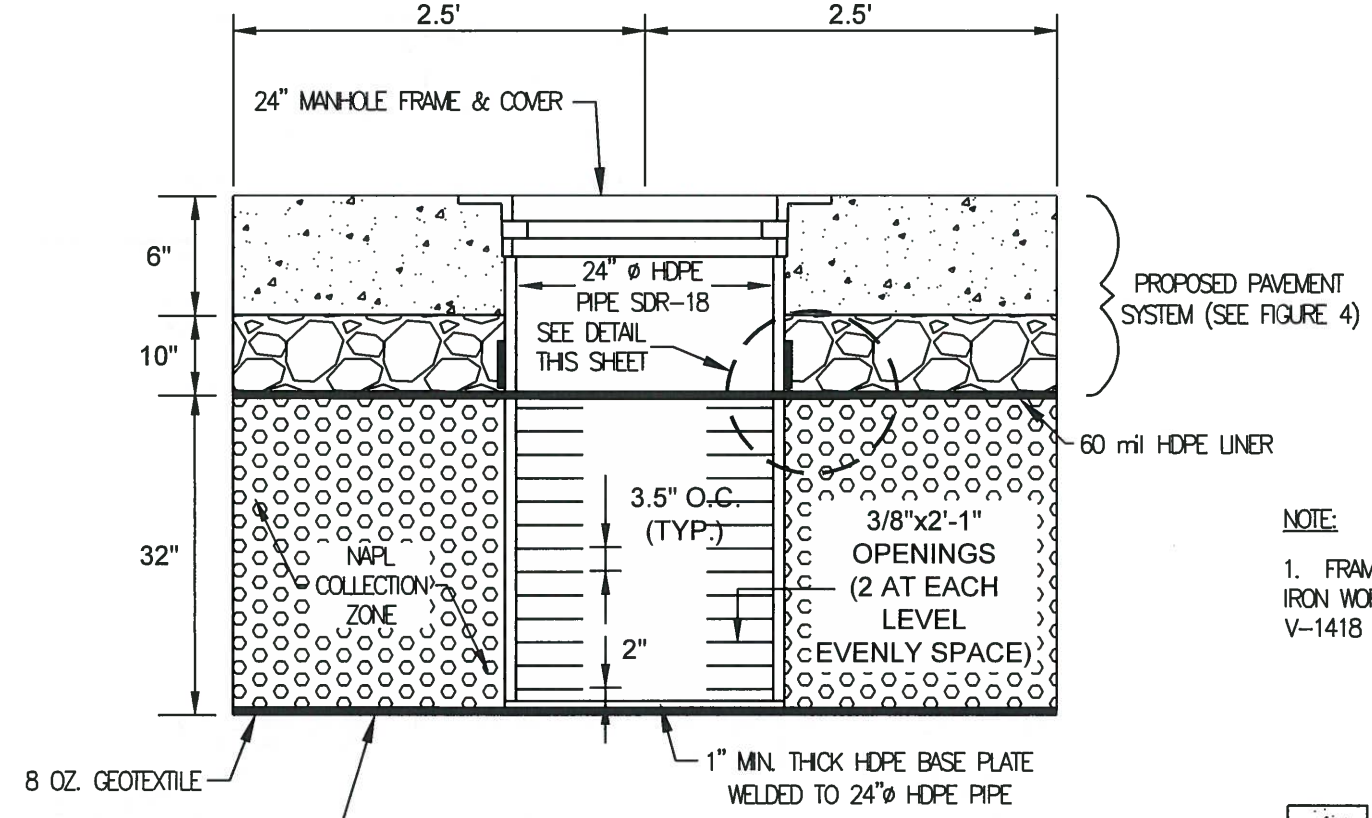


COVER AND FRAME PLAN VIEW



SECTION A-A
N.T.S.

NOTE:

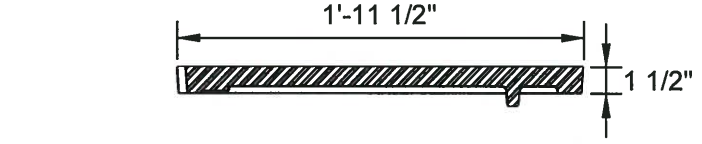
1. FRAME AND COVER SHALL BE EAST JORDAN IRON WORKS MODEL V-1814 FRAME AND V-1418 COVER OR APPROVED EQUAL

REINFORCED CONCRETE

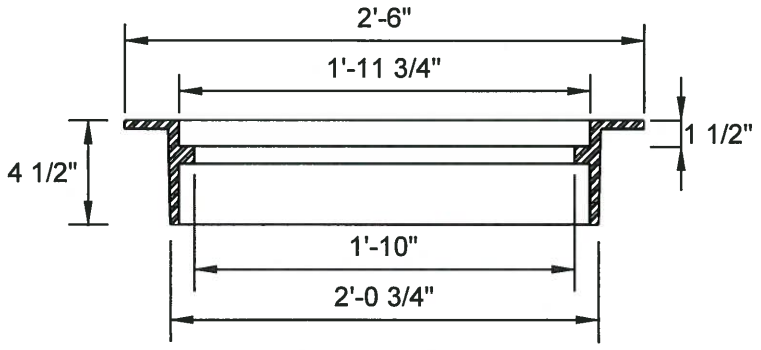
COMPACTED BASE MATERIAL
(TXDOT GRADE 1 AGGREGATE)

COMPACTED SELECT FILL

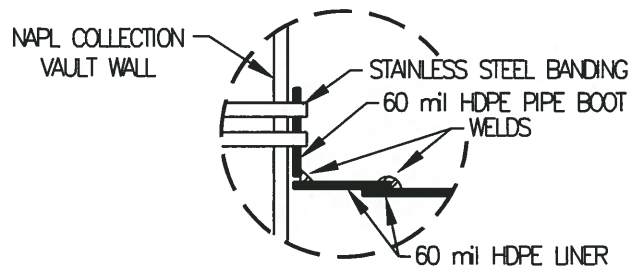
COMPACTED HIGH PERMEABILITY FILL
2" BUNKER ROCK FROM GULFCOAST MATERIAL, INC.
(PRODUCT 122002-2 INCH BUNKER)



COVER SECTION A-A



FRAME SECTION A-A



LINER/VAULT TIE-IN
N.T.S.

R Bryan Luper
3-25-19

STATE OF TEXAS
R. BRYAN LUPER
83963
LICENSED
PROFESSIONAL ENGINEER

AS-BUILT

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
ENGLEWOOD INTERMODAL YARD - NAPL SEEP REMEDIATION

TITLE
PROPOSED NAPL COLLECTION SYSTEM

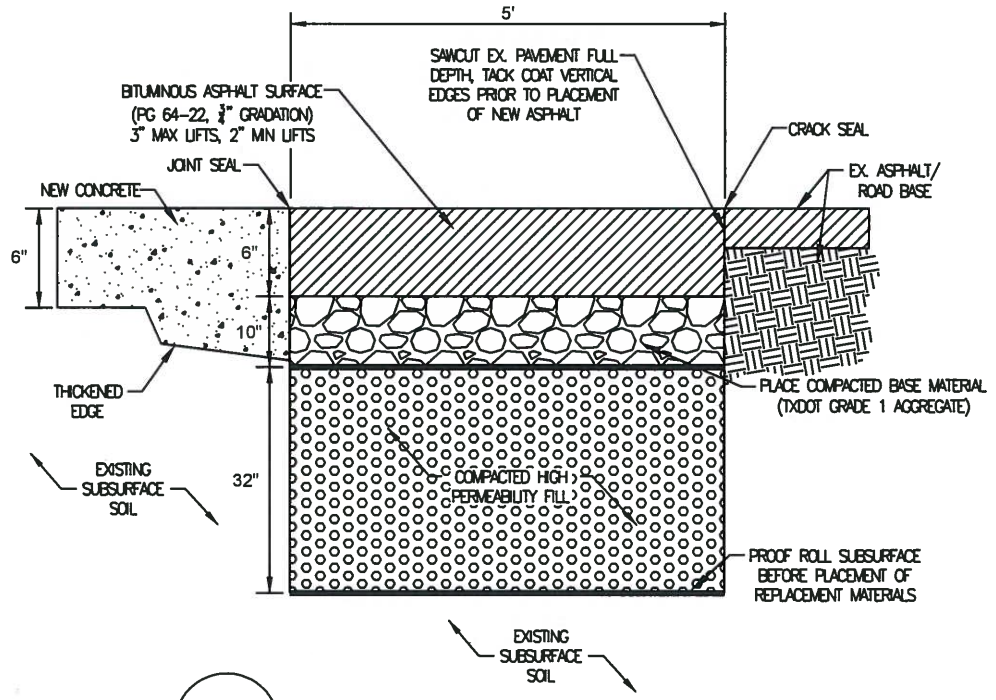
CONSULTANT
GOLDER

YYYY-MM-DD	2019-03-25
DESIGNED	BZH
PREPARED	AJD
REVIEWED	RBL/ECM
APPROVED	RBL/ECM

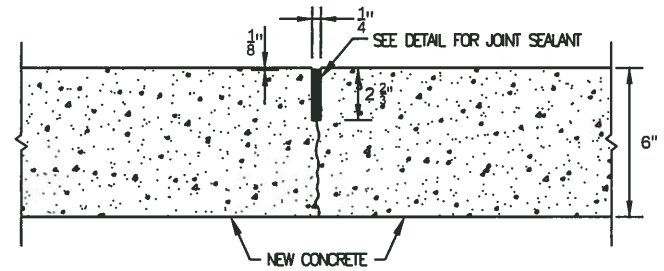
PROJECT NO. 30401358-640 | REV. 0 | FIGURE 3

© THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B

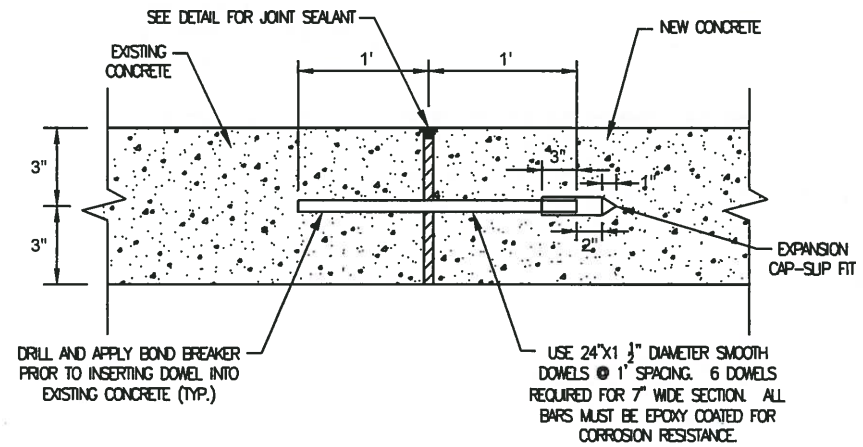
Path: \\golder.ca\data\Projects - Round Rock\1358-UPRR Wood Preservng\Work\1358-FIG\2019\3.March\ - File Name: FIG 2,3,4,5.dwg | Last Edited By: ajdiamond Date: 2019-03-25 Time: 2:30:15 PM | Printed By: ajdiamond Date: 2019-03-25 Time: 2:30:37 PM



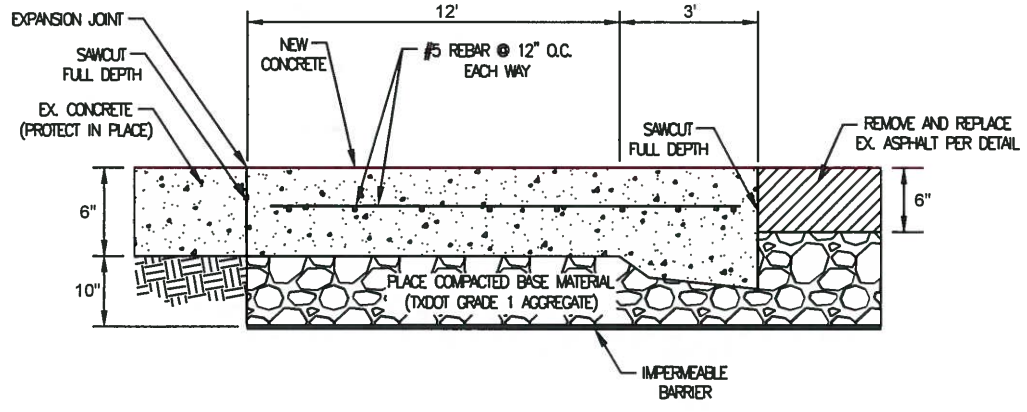
A **ASPHALT PAVEMENT CROSS SECTION**
N.T.S.



C **CONTROL JOINT DETAIL**
N.T.S.

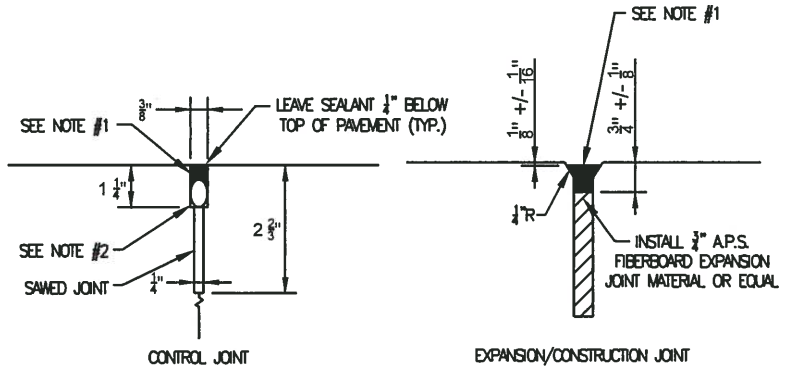


D **EXPANSION JOINT DETAIL**
N.T.S.



NOTES:
1. See joint spacing plan in Figure 2.
2. Min. 3 day compression strength = 4,500 psi (high early strength).
3. Dowel into existing concrete pavement per Expansion/Construction joint detail.
4. Thickened edge to be used on all outer edges of new concrete pavement except where doweled into existing concrete pavement (minimum 14" thick).

B **CONCRETE PAVEMENT CROSS SECTION**
N.T.S.



NOTES:
1. Use DOW Corning 890-SL Silicone Sealant or equal.
2. Round closed cell polyethylene backer rod. Use backer rod sized ¼" greater than joint width.
3. Sawcut and clean out existing joints before applying joint seal.

E **TYPICAL JOINT SEALING DETAIL**
N.T.S.

R Bryan Luper 3-25-19

STATE OF TEXAS
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CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
ENGLEWOOD INTERMODAL YARD - NAPL SEEP REMEDIATION

TITLE
PAVEMENT DETAILS

CONSULTANT
GOLDER

YYYY-MM-DD	2019-03-25
DESIGNED	BZH
PREPARED	AJD
REVIEWED	RBL/ECM
APPROVED	RBL/ECM

PROJECT NO 30401358-640 | REV 0 | FIGURE 4

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI D

Path: \\texarkana\data\Projects - Round Rock\1356 UPRR Wood Preserving Works\1355-640-2019-3 March\ | File Name: FIG 2 3 4 5.dwg | Last Edited By: adiamond Date: 2019-03-25 Time: 2:33:18 PM Printed By: adiamond Date: 2019-03-25 Time: 2:33:33 PM

SCOPE OF WORK:

1. THE CONTRACTOR SHALL REMOVE AT LEAST THE TOP 4' OF THE EXISTING REINFORCED CONCRETE PAVEMENT, ASPHALT, ROAD BASE AND SUBGRADE MATERIAL UNDER THE AREAS OF EXCAVATION SHOWN IN FIGURE 2. THE OWNER OR HIS ON-SITE REPRESENTATIVE SHALL BE GIVEN ADEQUATE NOTICE BEFORE THE CONTRACTOR REACHES THE EXTENTS OF THE REQUIRED EXCAVATION TO ALLOW FOR ADEQUATE INSPECTION BY THE OWNER. THE CONTRACTOR SHALL CONTINUE TO CONDUCT ADDITIONAL SAW CUTTING, DEMOLITION AND EXCAVATION AS REQUIRED BY THE OWNER, BEFORE BEGINNING REFILLING OPERATIONS.
2. EXCAVATED REINFORCED CONCRETE AND ASPHALT PAVEMENT MATERIAL SHALL BE ASSUMED TO BE CLEAN AND APPROPRIATE FOR OFF-SITE RECYCLING OR DISPOSAL. BEFORE OFF-SITE DISPOSAL, THE CONTRACTOR SHALL ALLOW THE OWNER TO INSPECT THE MATERIAL TO CONFIRM THIS ASSUMPTION.
3. EXCAVATED ROAD BASE AND SUBGRADE MATERIAL SHALL BE ASSUMED TO BE NON-HAZARDOUS CLASS I INDUSTRIAL MATERIAL AND SHALL BE TRANSPORTED AND DISPOSED OF OFF-SITE IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS.
4. AS EXCAVATION ACTIVITIES ARE ON-GOING, THERE IS A SIGNIFICANT POSSIBLITY THAT POOLS OR SEEPS OF LNAPL AND/OR LNAPL IMPACTED WATER WILL BE ENCOUNTERED. THE LIQUIDS ENTERING THE EXCAVATIONS MUST BE CAPTURED AND COLLECTED BY THE CONTRACTOR. THE COLLECTED LIQUIDS SHALL BE PLACED INTO APPROPRIATE CONTAINERS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANALYZING, CHARACTERIZING AND PROFILING THE MATERIAL FOR PROPER OFF-SITE TRANSPORTATION AND DISPOSAL.
5. AFTER THE COMPLETION OF EXCAVATION OPERATIONS, THE CONTRACTOR SHALL INSTALL THE SUBSURFACE NAPL COLLECTION SYSTEM DESCRIBED IN FIGURE 3 AND THEN REPLACE THE PAVEMENT AND MARKING SYSTEM IN ACCORDANCE WITH THE DETAILS SHOWN IN FIGURE 2 AND FIGURE 4.

GENERAL NOTES:

THE CONTRACTOR SHALL CAREFULLY READ ALL OF THESE NOTES AND SPECIFICATIONS. THE CONTRACTOR SHALL BE SATISFIED AS TO THEIR MEANING AND INTENT AND SHALL BE RESPONSIBLE FOR COMPLYING WITH EACH.

1. THE CONTRACTOR SHALL INSPECT THE SITE OF THE WORK PRIOR TO BIDDING TO SATISFY THEMSELVES BY PERSONAL EXAMINATION OR BY SUCH OTHER MEANS AS THEY MAY PREFER, OF THE LOCATION OF THE PROPOSED WORK, AND OF THE ACTUAL CONDITIONS OF THE PROJECT SITE. IF, DURING THE COURSE OF THEIR EXAMINATION, A BIDDER FINDS CONDITIONS WHICH APPEAR TO BE IN CONFLICT WITH THE PROJECT PLANS AND SPECIFICATIONS, THEY SHALL CONTACT THE ENGINEER AND/OR OWNER FOR ADDITIONAL INFORMATION AND EXPLANATION BEFORE SUBMITTING THEIR BID. ANY OBSERVABLE CONDITIONS IN CONFLICT WITH PLANS AND SPECIFICATIONS THAT ARE NOT REPORTED IN BID WILL NOT RESULT IN A CHANGE ORDER.
2. THE CONTRACTOR IS RESPONSIBLE TO NOTIFY THE ENGINEER AND FACILITY MANAGER WITH AT LEAST 2 WEEKS NOTICE PRIOR TO MOBILIZATION. CONTRACTOR IS OBLIGATED TO FACILITATE FACILITY SCHEDULES AND BUSINESS OPERATIONS.
3. CONTRACTOR SHALL COORDINATE ALL WORK SCHEDULES AND CONSTRUCTION LIMITS WITH THE FACILITY OPERATIONS MANAGER AND ENGINEER PRIOR TO COMMENCING ANY WORK.
4. THE CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE, COUNTY, AND CITY LAWS AND ORDINANCES AND OF ALL REGULATIONS, OF THE DEPARTMENT OF INDUSTRIAL RELATIONS, OSHA, NPDES, AND INDUSTRIAL ACCIDENT COMMISSION RELATED TO THE SAFETY AND CHARACTER OF THE WORK, EQUIPMENT, AND LABOR PERSONNEL.
5. ALL CONSTRUCTION SHALL CONFORM WITH LOCAL DEPARTMENT OF TRANSPORTATION SPECIFICATIONS UNLESS OTHERWISE NOTED.
6. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS, BONDS, INSURANCE, ETC. AND PAYING ALL FEES AND FOR OTHERWISE COMPLYING WITH ALL REGULATIONS GOVERNING THE WORK.
7. CONTRACTOR SHALL COORDINATE WORK HOURS TO THE TIMES PERMITTED BY FIELD MANAGER. TWENTY-FOUR HOUR WORK IS PERMISSIBLE, CONTINGENT UPON APPROVAL BY THE FACILITY MANAGER.
8. THE CONTRACTOR SHALL PROVIDE ALL LIGHTS, BARRICADES, SIGNS, FLAGMEN OR OTHER DEVICES NECESSARY FOR PUBLIC SAFETY AND AS REQUIRED BY UPRR. CONTRACTOR SHALL COORDINATE WITH UPRR FOR SCHEDULING FLAGGERS. CONTRACTOR SHALL COMPLY WITH THE ACCOMPANYING REQUIREMENTS FOR FLAGGING, INSURANCE, AND SAFETY.
9. THESE PLANS DO NOT GUARANTEE THE EXISTENCE OR NONEXISTENCE, SIZE, TYPE, DEPTH, MATERIAL OR LOCATION OF ANY UNDERGROUND UTILITIES, CONTRACTOR SHALL VERIFY ALL UTILITIES VIA POTHOLING OR OTHER MEANS PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY UPRR FIBER OPTICS HOTLINE 1-800-336-9193, 48 HOURS PRIOR TO ANY EXCAVATION.
10. THE CONTRACTOR SHALL BE SKILLED AND REGULARLY ENGAGED IN THE GENERAL CLASS AND TYPE OF WORK CALLED FOR IN THE PROJECT PLANS AND SPECIFICATIONS. THEREFORE, THE OWNER IS RELYING UPON THE EXPERIENCE AND EXPERTISE OF THE CONTRACTOR. IT SHALL BE EXPECTED THAT PRICES PROVIDED WITHIN THE CONTRACT DOCUMENTS SHALL INCLUDE ALL LABOR AND MATERIALS NECESSARY FOR THE WORK TO BE COMPLETED IN ACCORDANCE WITH PROJECT PLANS AND SPECIFICATIONS.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PERMITS AND LICENSES REQUIRED FOR THE CONSTRUCTION AND COMPLETION OF THE PROJECT AND SHALL PERFORM ALL WORK IN ACCORDANCE WITH THE REQUIREMENTS SET FORTH IN THE SAID PERMITS AND LICENSES. THE CONTRACTOR SHALL ENSURE THAT THE NECESSARY RIGHTS-OF-WAY, EASEMENTS, AND/OR PERMITS ARE SECURED PRIOR TO CONSTRUCTION WHERE NECESSARY.
12. THE CONTRACTOR SHALL BE LICENSED IN THE STATE WHERE THIS PROJECT IS LOCATED AND SHALL BE BONDABLE FOR AN AMOUNT EQUAL TO OR GREATER THAN THE BID AMOUNT.
13. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE ALL WATER, POWER, SANITARY FACILITIES AND TELPHONE SERVICES AS REQUIRED FOR THE CONTRACTOR'S USE DURING CONSTRUCTION.
14. THE CONTRACTOR SHALL PROVIDE AND PAY FOR AND/OR OBTAIN ALL ELECTRIC POWER NECESSARY TO ACCOMPLISH THE WORK.
15. THE CONTRACTOR SHALL PROVIDE AND PAY FOR AN ADEQUATE SUPPLY OF WATER AS REQUIRED TO PROPERLY CARRY OUT THE WORK AND AN ADEQUATE SUPPLY OF UNCONTAMINATED WATER AS REQUIRED FOR DOMESTIC CONSUMPTION AND SHALL INSTALL AND MAINTAIN NECESSARY SUPPLY CONNECTIONS AND PIPING FOR SUCH WATER SUPPLY, BUT ONLY AT SUCH LOCATIONS AND IN SUCH MANNER AS MAY BE APPROVED BY THE UPRR REPRESENTATIVE.
16. NO FIELD CHANGES WILL BE PERMITTED WITHOUT DIRECT WRITTEN AUTHORIZATION FROM THE OWNER, ENGINEER, AND UPRR ENGINEER OR HIS REPRESENTATIVE.
17. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY FIELD CHANGES MADE WITHOUT PRIOR WRITTEN AUTHORIZATION FROM THE OWNER.
18. ANY EXISTING CONDITIONS FOUND TO BE A VARIANCE WITH THESE DRAWINGS MUST BE IMMEDIATELY REPORTED TO THE ENGINEER.
19. THE CONTRACTOR SHALL GUARANTEE ALL WORK UNDER THIS AGREEMENT FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE BY THE RAILROAD, UNLESS OTHERWISE INDICATED. CONTRACTOR SHALL LEAVE THE WORK IN PERFECT ORDER AT COMPLETION, AND THE FINAL CERTIFICATE OF PAYMENT SHALL NOT RELIEVE HIM OF THE RESPONSIBILITY FOR NEGLIGENCE, FAULTY MATERIALS, OR WORKMANSHIP. UPON WRITTEN NOTICE, HE SHALL REMEDY ANY DEFECTS OR WORKMANSHIP THAT MAY APPEAR DURING THE TIME HEREINBEFORE MENTIONED AND PAY ALL EXPENSES DUE THERE FROM TO THE ENTIRE SATISFACTION OF THE UPRR REPRESENTATIVE.
20. THE CONTRACTOR AGREES THAT:

    A) THEY SHALL BE RESPONSIBLE TO MAINTAIN THE SITE IN A NEAT, SAFE AND ORDERLY MANNER AT ALL TIMES.

    B) THEY SHALL BE RESPONSIBLE TO CLEAN THE JOB SITE AT THE END OF EACH PHASE OF WORK.

    C) THEY SHALL BE RESPONSIBLE TO REMOVE AND DISPOSE OF ALL TRASH, SCRAP AND UNUSED MATERIAL AT THEIR OWN EXPENSE IN A TIMELY MANNER.

    D) THEY SHALL BE RESPONSIBLE TO KEEP MATERIALS, EQUIPMENT, AND TRASH OUT OF THE WAY OF OPERATIONS SO AS NOT TO DELAY THEIR WORK. FAILURE TO DO SO WILL RESULT IN A DEDUCTION FOR THE COST OF CLEAN UP FROM THE FINAL PAYMENT.

    E) THEY SHALL BE RESPONSIBLE FOR THEIR OWN SAFETY, TRAFFIC CONTROL, PERMITS, RETESTING AND REINSPECTIONS AT THEIR OWN EXPENSE.
21. UPON COMPLETIONS OF THE WORK INVOLVED, THE CONTRACTOR SHALL CLEAN THE LOCATION OF THE WORK AND SHALL REMOVE ALL RUBBISH, EXCESS MATERIALS, FALSEWORK, TEMPORARY STRUCTURES, AND EQUIPMENT, LEAVING THE LOCATION OF THE WORK CLEANED TO THE SASTISFACTION OF THE UPRR REPRESENTATIVE.
22. THE CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOBSITE CONDITIONS FOR THE DURATION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.
23. THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER AND ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR THE ENGINEER.
24. DUST CONTROL SHALL BE PROVIDED AT ALL TIMES, AT THE CONTRACTOR'S EXPENSE, TO MINIMIZE ANY DUST NUISANCE. SPILLAGE OF EARTH, DUSTY MATERIALS, BOULDERS AND MUD ON ROADS LOCATED ON THE RAILROAD'S PROPERTY WILL NOT BE PERMITTED. IF SPILLAGE CANNOT BE PREVENTED, THE CONTRACTOR SHALL PROVIDE AN HOURLY PATROL, OR MORE FREQUENTLY IF NEEDED, TO POLICE AND SWEEP SUCH AREAS THROUGHOUT THE WORK DAY, AND AT THE CONCLUSION OF EACH WORK DAY. ANY PAVEMENT LOCATED ON THE RAILROAD'S PROPERTY WHICH HAVE BEEN USED BY THE CONTRACTOR SHALL BE BROOM CLEANED AND LEFT TO THE SATISFACTION OF THE UPRR REPRESENTATIVE. ANY EXPENSE INCURRED IN THE USE OF RAILROAD ACCESS ROADS SHALL BE BORNE BY THE CONTRACTOR.
25. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATELY SCHEDULING REQUIRED INSPECTION AND TESTING OF ALL FACILITES CONSTRUCTED UNDER THIS CONTRACT.
26. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING EXISTING FEATURES FROM DAMAGE. THERE WILL BE NO EXTRA PAYMENT TO THE CONTRACTOR FOR REPLACING EXISTING FEATURES NOT SPECIFICALLY STATED ON THE PLANS.
27. IF ANY EXISTING STRUCTURES OR UTILITIES TO REMAIN ARE DAMAGED DURING CONSTRUCTION, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR AND/OR REPLACE THE EXISTING STRUCTURE OR UTILITIES AS NECESSARY TO RETURN THEM TO EXISTING CONDITIONS OR BETTER, AS APPROVED BY THE OWNER.
28. CONTRACTOR SHALL CHECK THE LEAD TIMES OF ALL MATERIAL AND ENSURE THAT ALL MATERIALS ARE ON HAND IN SUFFICIENT TIME SO AS TO NOT DELAY CONSTRUCTION ACTIVITIES OR CAUSE DELAY TO PROJECT SCHEDULE.
29. THE CONTRACTOR IS TO OBEY FACILITY SPEED LIMITS AND ALL OTHER FACILITY SAFETY REGULATIONS.
30. ANY UNDERGROUND STRUCTURES SUCH AS CESSPOOLS, CISTERNS, MINING SHAFTS, TUNNELS, SEPTICE TANKS, WELLS, AND PIPELINES NOT LOCATED PRIOR TO CONSTRUCTION SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR DETERMINATION OF APPROPRIATE ACTIONS SUCH AS REMOVAL OR TREATMENT IN A MANNER JUDGED SUITABLE TO THE ENGINEER.
31. THE CONTRACTOR SHALL PROVIDE ERECT AND MAINTAIN ADEQUATE TEMPORARY FENCES AND BARRICADES TO PREVENT DAMAGE AND/OR TRESPASSING UPON THE RIGHT-OF-WAY, DAMAGE OF ADJOINING PROPERTY, AND REASONS OF SAFETY.
32. THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL OF ALL TEMPRARY PAVEMENT MARKINGS THAT ARE IN CONFLICT WITH THE PROPOSED WORK.
33. THE CONTRACTOR SHALL ENSURE ALL ROADS, WHETHER PAVEMENT OR GRAVEL, USED DURING CONSTRUCTION ARE MAINTAINED AND LEFT IN PRE-CONSTRUCTION CONDITION WHEN PROJECT IS COMPLETE. THE CONTRACTOR IS RESPONSIBLE FOR ALL BONDS REQUIRED BY LOCAL OR STATE AGENCIES TO ENSURE PUBLIC ROADS ARE MAINTAINED OR REPAIRED. ANY TEMPORARY BARRICADES OR TRAFFIC CONTROL, IF NOT INCLUDED AS A BID ITEM, ARE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE INCIDENTAL.
34. IF UNSUITABLE SUBGRADE MATERIALS ARE ENCOUNTERED, THEY MUST BE REMOVED AND REPLACED WITH SUITABLE MATERIALS TO COMPLY WITH UPRR SPECIFICATIONS.
35. THE CONTRACTOR IS TO STAGE CONSTRUCTION ACTIVITIES SO THAT UPRR IS STILL 100% OPERATIONAL. A PLAN PRIOR TO COMMENCING WORK SHALL BE PRESENTED TO AND APPROVED BY UPRR TO ASSURE CONTINUED OPERATION OF THE FACILITY DURING CONSTRUCTION.
36. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE DOCUMENTATION ESTABLISHING THAT ALL ONSITE EMPLOYEES ARE OSHA HAZWOPER TRAINED TO HANDLE HAZARDOUS MATERIALS. ONLY CONTRACTORS WITH PROPER OSHA HAZWOPER TRAINING SHALL BE CONSIDERED.

DESIGN CRITERIA:

1. ALL MATERIALS AND WORK SHALL CONFORM TO THE ATTACHED SPECIFICATIONS AND TEXAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS, AND BRIDGES NOVEMBER 1, 2014.
2. AREAS TO BE FILLED SHOULD BE RAISED TO THE DESIRED ELEVATION WITH CONTROLLED EARTH FILL. CONTROLLED EARTH FILL AND REWORKED SUBGRADE SOILS SHALL BE COMPACTED TO 95% OF MODIFIED PROCTOR AT A MOISTURE CONTENT OF +/-2% OF OPTIMUM.
3. ALL MANHOLE RIMS, VALVES, MONUMENT BOXES, ETC. SHALL BE ADJUSTED TO FINISH GRADE AFTER PAVING, UNLESS OTHERWISE NOTED. COST FOR THIS WORK SHALL BE IN THE UNIT PRICES FOR SID PAVEMENT.
4. ALL PAVEMENT TO BE REMOVED AND REPLACED SHALL BE SAWCUT FULL DEPTH PRIOR TO REMOVAL.
5. WHERE NEW IMPROVEMENTS ABUT EXISTING FEATURES, THE CONTRACTOR SHALL BE RESPONSIBLE FOR MATCHING THE ELEVATIONS OF THE EXISTING FEATURES.

WASTE MANAGEMENT:

1. THE ANALYTICAL RESULTS FOR THE IMPACTED SOILS TO BE EXCAVATED ARE INCLUDED WITH THESE BID DOCUMENTS AS ATTACHMENT B. EXCAVATED SOILS WILL BE RESTRICTED TO DISPOSAL AT AN AUTHORIZED PERMITTED LANDFILL. OFF-SITE REUSE OF THESE SOILS IS NOT PERMITTED. IT IS ANTICIPATED THAT APPROXIMATELY 117 CY (IN-PLACE) WILL BE EXCAVATED.
2. THE LANDFILL SELECTED FOR DISPOSAL SHALL BE APPROVED BY UPRR PRIOR TO CONSTRUCTION. LANDFILLS IN THE AREA INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
   a. REPUBLIC SERVICES-MCCARTY ROAD LANDFILL, HOUSTON, TEXAS
   b. WASTE MANAGEMENT-COASTAL PLAINS SECURITY LANDFILL, ALVIN, TEXAS.
3. CONTRACTOR SHALL COMPLY WITH OFF-SITE WASTE SHIPMENT REQUIREMENTS INCLUDING, U.S. DEPARTMENT OF TRANSPORTATION (DOT) REGULATIONS CONTAINED IN 49 C.F.R. 173, AND 179 AND PLACARDED REGULATIONS IN 49 C.F.R. AND SHALL USE ONLY PERMITTED WASTE HAULERS, AS APPLICABLE. IF CONTRACTOR IS NOT TCEQ APPROVED, THE BELOW COMPANIES ARE UPRR APPROVED REMEDIATION CONTRACTORS THAT CAN ASSIST IN HANDLING THE SOILS:
   a. STERICYCLE ENVIRONMENTAL SOLUTIONS (713) 672-6100
   b. UNITED PROFESSIONAL SERVICE (817) 306-7892
   c. OIL MOP (281) 470-2016
4. CONTRACTOR SHALL PROVIDE ALL RECORDS DOCUMENTING THE WASTE CHARACTERISTICS, CLASSIFICATIONS, QUANTITIES, AND FINAL MANAGEMENT LOCATION TO UPRR REPRESENTATIVES.
   a. AS OF AUGUST 2016, UPRR HAS IMPLEMENTED A WASTE MANAGEMENT PROGRAM FOR TRACKING WASTE DOCUMENTATION. PRIOR TO WASTE PROFILING, A WASTE DETERMINATION FORM (WDF) MUST BE COMPLETED AND SUBMITTED TO OBTAIN THE WASTE REQUEST NUMBER REQUIRED FOR PROFILING, TRANSPORTATION, AND DISPOSAL. RESOURCES (CONTRACTED BY UPRR) ARE AVAILABLE FOR ASSISTANCE WITH THE WASTE MANAGEMENT PROGRAM:
      i. GHD - UPRR-WM@ghd.com
      ii. GOLDER - Robert Luper@golder.com (IF EPro SUPPORT IS REQUESTED BY UPRR).
   b. THE CONTRACTOR SHALL PROVIDE THE ENGINEER HAUL TICKETS FOR ALL SOIL HAULED OFF THE RAILROAD RIGHT OF WAY. COSTS FOR TRANSPORTATION AND DISPOSAL OF SOILS FROM THE PROJECT AREA AT THE APPROVED DEPOSIT SITE, INCLUDING SOIL TESTING, HANDLING DOCUMENTATION, AND FEES CHARGED BY THE DEPOSIT SITE SHALL BE PAID WITH THE FOLLOWING BID ITEMS:
      i. BID ITEM 12-OFF-SITE TRANSPORT AND DISPOSAL OF EXCAVATED MATERIAL - NON-HAZARDOUS CLASS 1 INDUSTRIAL WASTE - TONS

R Bryan Luper 3-25-19

STATE OF TEXAS
R. BRYAN LUPER
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PROJECT CONTACTS:

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R. BRYAN LUPER	(832) 930-9955 (979) 665-8182	BRYAN.LUPER@PBWLLC.COM	CIVIL ENGINEER PASTOR, BEHLING & WHEELER 11231 RICHMOND, SUITE D104 HOUSTON, TX 77082
DAN RIALS SCOTT GREEN	(713) 678-5297 (214) 621-8841	DTRIALS@UP.COM SGREEN@UP.COM	ENGLEWOOD FACILITY OPERATIONS MANAGER
UPRR FIBER OPTICS	(800) 336-9193		UPRR FIBER OPTICS HOTLINE
UPRR RMCC	(888) 877-7267		UPRR RESPONSE MANAGEMENT COMMUNICATIONS CENTER
(800) DIG-TESS	(800) 344-8377		TEXAS EXCAVATION SAFETY SYSTEM (TESS)
TEXAS ONE CALL	(800) 245-4545		CALL BEFORE YOU DIG - 811
LSNC	(800) 669-8344		LONE STAR NOTIFICATION CENTER
JEREMY LEVINE	(281) 763-4802		ITS TECHNOLOGIES & LOGISTICS
			ENGLEWOOD FACILITY SITE CONTACT

AS-BUILT

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
ENGLEWOOD INTERMODAL YARD - NAPL SEEP REMEDIATION

TITLE
PROJECT NOTES

CONSULTANT
GOLDER

YYYY-MM-DD	2019-03-25
DESIGNED	BZH
PREPARED	AJD
REVIEWED	RBL/ECM
APPROVED	RBL/ECM

PROJECT NO. 30401358-640 | REV. 0 | FIGURE 5

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET HAS BEEN MODIFIED FROM ANSI D

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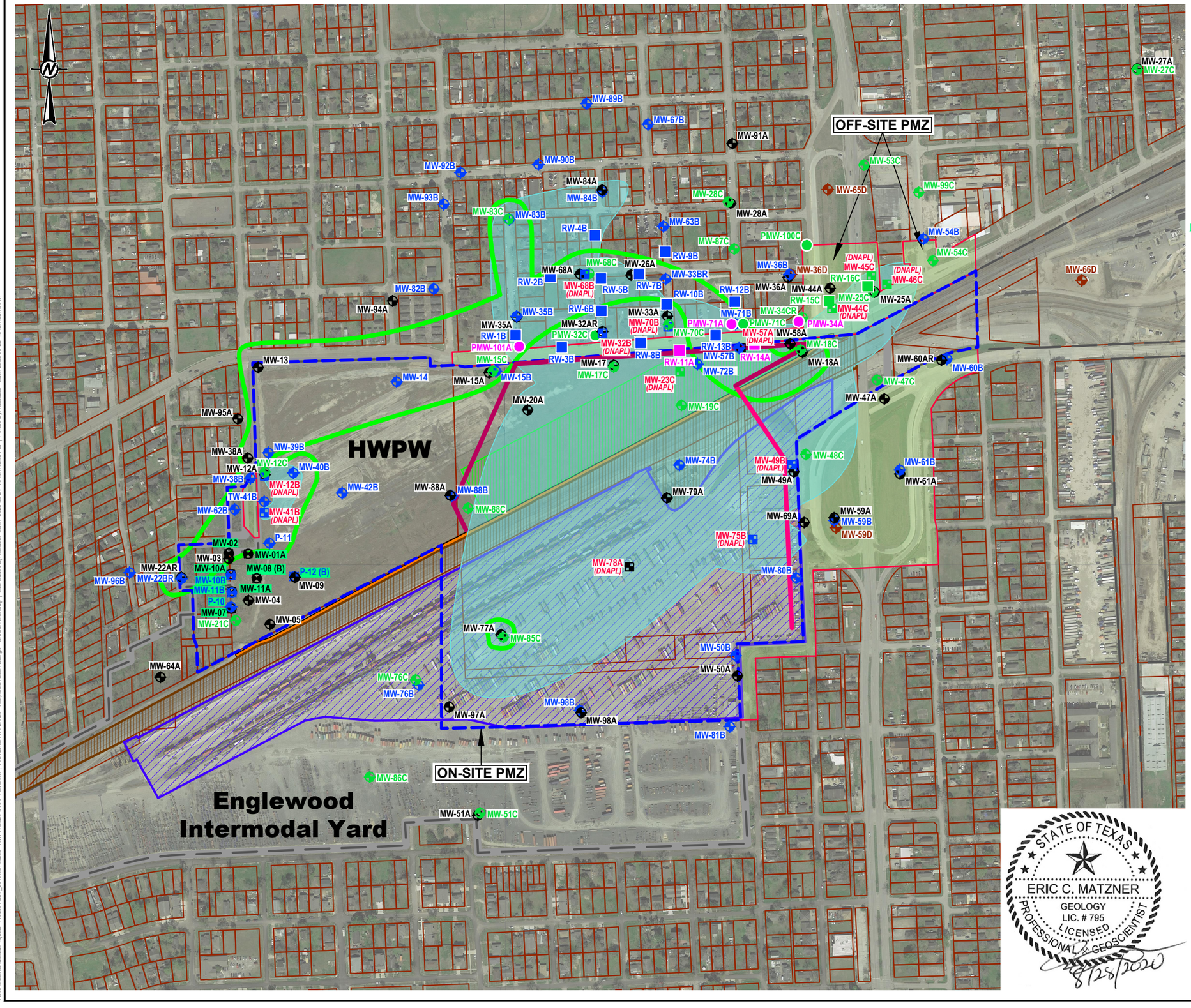


LEGEND

- UPRR PROPERTY BOUNDARY
- PROPERTY BOUNDARY (GIMS)
- A-TZ MONITORING WELL LOCATION
- B-CZ/B-TZ MONITORING WELL LOCATION
- C-TZ MONITORING WELL LOCATION
- D-TZ MONITORING WELL LOCATION
- CORRECTIVE ACTION SYSTEM WELL (DNAPL RECOVERY)
- GROUNDWATER PCLE ZONES (JAN-MAR 2020) (A-TZ, B-CZ/B-TZ AND C-TZ)
- GROUNDWATER PCLE ZONE - ARSENIC (JAN-MAR 2020) (A-TZ AND B-TZ)
- MW-10A RCRA UNIT NO. 1 POINT OF COMPLIANCE (POC) WELL

PROPOSED CUMULATIVE PMZ (A-TZ, B-CZ/B-TZ, AND C-TZ)

- PROPOSED ON-SITE PMZ
- PROPOSED OFF-SITE PMZ - CITY OF HOUSTON ROW
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA
- PROPOSED SLURRY WALL (APPROX. 75 FT BGS)
- PROPOSED SLURRY WALL (APPROX. 50 FT BGS)
- PROPOSED A-TZ MONITORING WELL LOCATION
- PROPOSED C-TZ MONITORING WELL LOCATION
- PROPOSED CORRECTIVE ACTION WELL LOCATION (A-TZ DNAPL RECOVERY WELL)
- PROPOSED CORRECTIVE ACTION WELL LOCATION (B-CZ/B-TZ DNAPL RECOVERY WELL)
- PROPOSED CORRECTIVE ACTION WELL LOCATION (C-TZ DNAPL RECOVERY WELL)

NOTE(S)

1. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2020).
2. (B) - BACKGROUND WELL.

REFERENCE(S)

PARCEL BOUNDARIES: CITY OF HOUSTON GEOGRAPHIC INFORMATION & MANAGEMENT SYSTEMS (GIMS).
AERIAL: GOOGLE EARTH, IMAGERY DATED 2/23/19.

0 200 400
1" = 400' FEET

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
8/25/2020

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
RESPONSE ACTION - GROUNDWATER

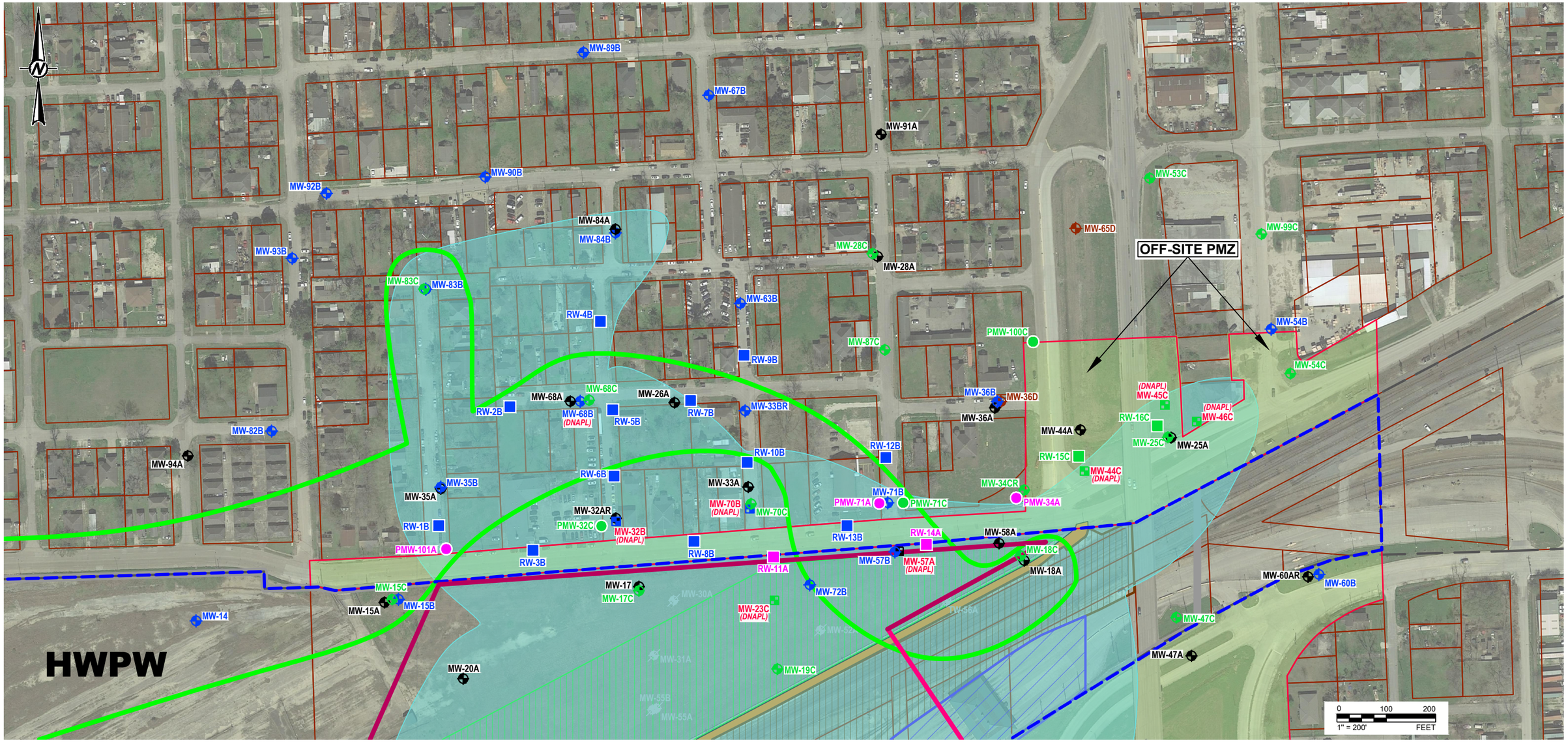
CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-08-24
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 REV. 0 FIGURE 2A-2a

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texar\kanda\data\Projects - Round Rock_2019\19119232 - HWPW\2020-8 RAP Revision\ | File Name: ATT 2A-2a - Response Action Design - Groundwater.dwg | Last Edited By: rsalazar Date: 2020-08-24 Time:1:40:16 PM | Printed By: RSalazar Date: 2020-08-28 Time:1:25:18 PM



LEGEND

- UPRR PROPERTY BOUNDARY
- PROPERTY BOUNDARY (GIMS)
- A-TZ MONITORING WELL LOCATION
- B-CZ/B-TZ MONITORING WELL LOCATION
- C-TZ MONITORING WELL LOCATION
- D-TZ MONITORING WELL LOCATION
- CORRECTIVE ACTION SYSTEM WELL (DNAPL RECOVERY)
- PLUGGED AND ABANDONED
- GROUNDWATER PCLE ZONES (A-TZ AND B-CZ/B-TZ)
- GROUNDWATER PCLE ZONE - ARSENIC (A-TZ, B-CZ/B-TZ AND C-TZ)
- MW-10A RCRA UNIT NO. 1 POINT OF COMPLIANCE (POC) WELL

PROPOSED CUMULATIVE PMZ (A-TZ, B-CZ/B-TZ, AND C-TZ)

- PROPOSED ON-SITE PMZ
- PROPOSED OFF-SITE PMZ - CITY OF HOUSTON ROW
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA
- PROPOSED SLURRY WALL (TO 75 FT BGS)
- PROPOSED SLURRY WALL (TO 50 FT BGS)

- PROPOSED A-TZ MONITORING WELL LOCATION
- PROPOSED C-TZ MONITORING WELL LOCATION
- PROPOSED CORRECTIVE ACTION WELL LOCATION (A-TZ DNAPL RECOVERY WELL)
- PROPOSED CORRECTIVE ACTION WELL LOCATION (B-CZ/B-TZ DNAPL RECOVERY WELL)
- PROPOSED CORRECTIVE ACTION WELL LOCATION (C-TZ DNAPL RECOVERY WELL)

NOTE(S)

1. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2020).

REFERENCE(S)

PARCEL BOUNDARIES: CITY OF HOUSTON GEOGRAPHIC INFORMATION & MANAGEMENT SYSTEMS (GIMS).
AERIAL: GOOGLE EARTH, IMAGERY DATED 2/23/19.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
8/28/2020

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
RESPONSE ACTION - GROUNDWATER OFF-SITE

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-08-28
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 2A-2b

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

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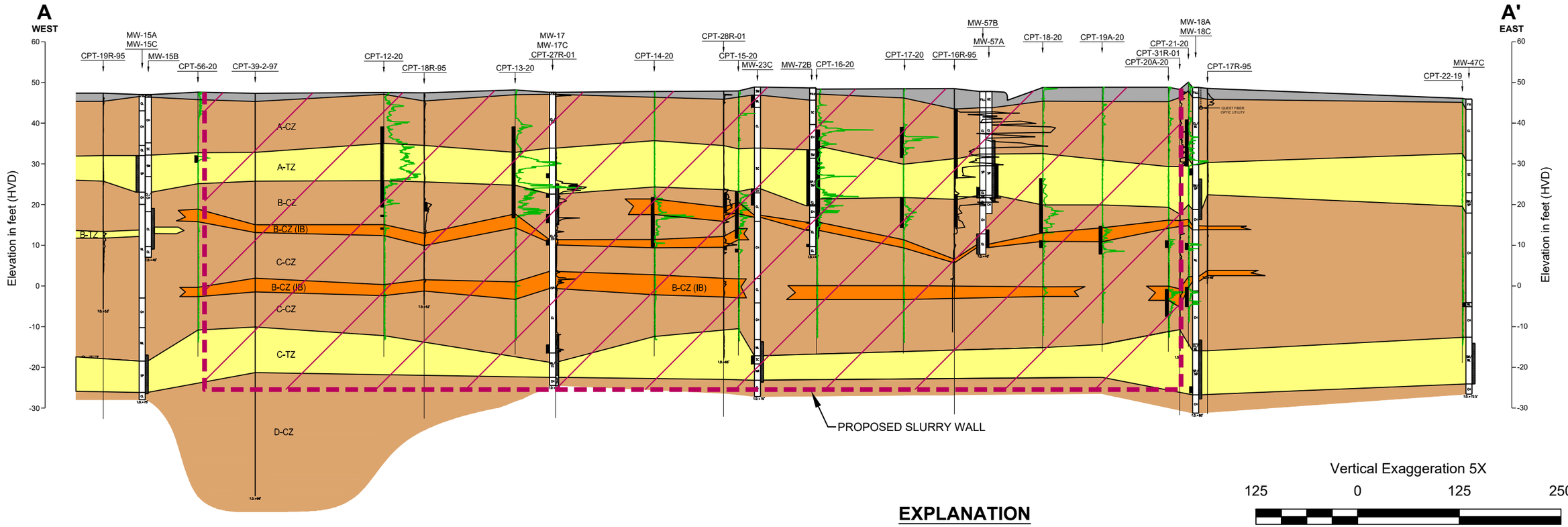


Vertical Exaggeration 5X

125 0 125 250

scale in feet

EXPLANATION

Fill: Sand, Silt, Clay & Gravel, wood fragments, bricks, scrap metal

Transmissive Zone (TZ): Sand & Silty Sand

Cohesive Zone (CZ): Clay, Silty Clay & Silt

B-CZ Interbedded Zone B-CZ (IB): Interbedded Carbonate Seams and Calcareous Nodules with Clay & Silty Clay, within the B-CZ

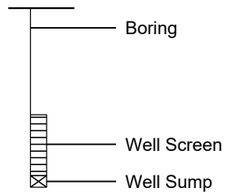
NAPL or Sheen/Staining Noted in Soils for Boring Log, for CPT/ROST Location ROST Result >25% RE, and for CPT/TarGOST Locations TarGOST result >5%RE.[2]

PROPOSED SLURRY WALL (APPROX. 75 FT BGS)

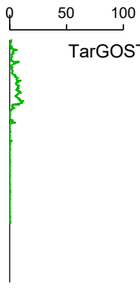
PROPOSED SLURRY WALL (APPROX. 50 FT BGS)

PROPOSED SLURRY WALL

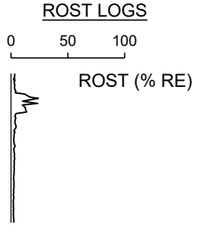
MONITORING WELL CONSTRUCTION



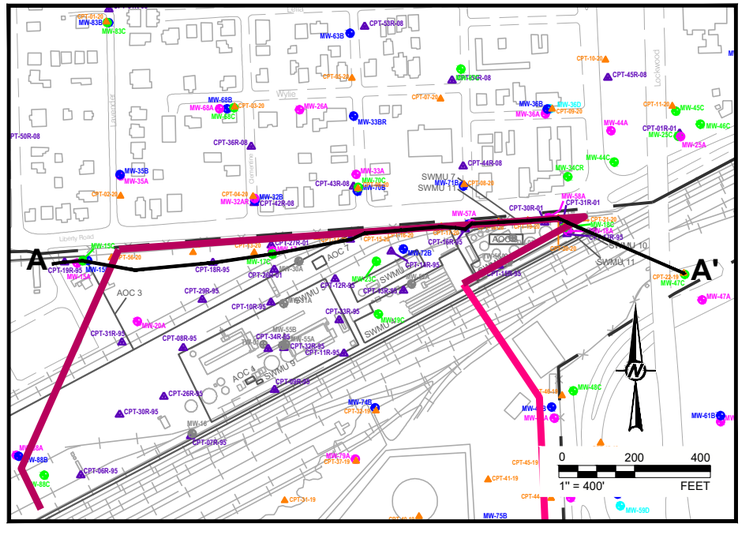
TarGOST LOGS



ROST LOGS



CROSS SECTION LOCATION MAP



Note(s):

1. Topography is estimated.
2. CPT/TarGOST® locations were pre-cleared to 10 feet below ground surface for utilities and backfilled with sand, TarGOST® data collected in the pre-cleared interval are considered unreliable and are not evaluated.
3. Vertical datum based on City of Houston Vertical Datum (HVD)

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
8/28/2020

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
RESPONSE ACTION - GROUNDWATER
PROPOSED SLURRY WALL

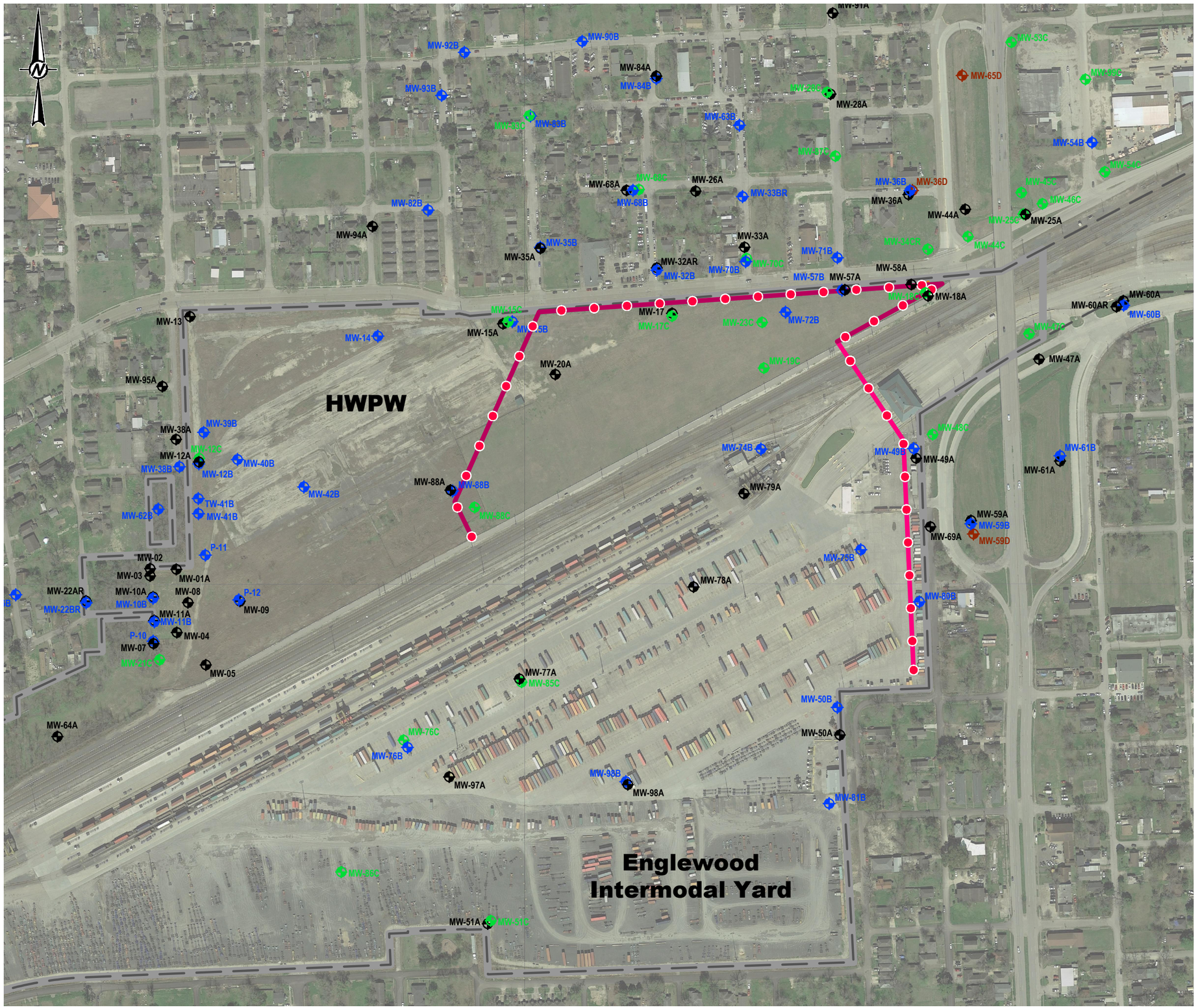
CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-08-17
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 2A-2c

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\Projects - Round Rock_2019\19119232 - HWPW\2020-8 RAP Revision\ | File Name: FIG 2A-2c - Cross Section A-A (Slurry Wall).dwg | Last Edited By: rsalazar Date: 2020-08-12 Time:3:51:04 PM | Printed By: adiamond Date: 2020-08-17 Time:5:35:51 PM



LEGEND

- UPRR PROPERTY BOUNDARY
- A-TZ MONITORING WELL LOCATION
- B-CZ/B-TZ MONITORING WELL LOCATION
- C-TZ MONITORING WELL LOCATION
- D-TZ MONITORING WELL LOCATION
- PROPOSED SLURRY WALL (TO 75 FT BGS)
- PROPOSED SLURRY WALL (TO 50 FT BGS)
- PROPOSED PRE-DESIGN SOIL BORING LOCATION (APPROX. LOCATION)

NOTE(S)

REFERENCE(S)

AERIAL: GOOGLE EARTH, IMAGERY DATED 2/23/19.

0 150 300

1" = 300' FEET

CLIENT

UNION PACIFIC RAILROAD CO.

PROJECT

HOUSTON WOOD PRESERVING WORKS

TITLE

SLURRY WALL - CONFIRMATION SOIL BORING LOCATIONS

CONSULTANT

GOLDER

TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-08-12
DESIGNED	AJD
PREPARED	RS
REVIEWED	LB
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | ATTACHMENT 2A-3

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\Projects - Round Rock_2019\19119232 - HWPW\2020-8 RAP Revision\ | File Name: ATT 2A-3 - Slurry Wall - Confirmation Soil Boring Locations.dwg | Last Edited By: rsalazar Date: 2020-08-12 Time:11:47:38 AM | Printed By: RSalazar Date: 2020-08-12 Time:12:10:51 PM

ATTACHMENT 2B

PROPOSED WELL DESIGN

Attachment 2B-1 – Proposed Monitoring and Recovery Well Location Map
Attachment 2B-2 – Typical Recovery Well Construction
Attachment 2B-3 – Typical Monitoring Well Construction

ATTACHMENT 2B

PROPOSED WELL DESIGN

Introduction

As detailed in RAP Worksheet 2.0, the following recovery wells are proposed to be installed:

1. A-TZ: RW-11A, RW-14A
2. B-TZ/B-CZ: RW-1B, RW-2B, RW-3B, RW-4B, RW-5B. RW-6B, RW-7B, RW-8B, RW-9B, RW-10B, RW-12B, RW-13B
3. C-TZ: RW-15C, RW-16C

The following monitoring wells are proposed (designated with a "P") to be installed:

1. A-TZ: PMW-34A, PMW-101A, PMW-71A
2. C-TZ: PMW-32C, PMW-71C, PMW-100C

The proposed new wells are shown on Attachment 2B-1. Details of the well installation are discussed below.

Permanent Monitoring Well and Recovery Well Installation

Soil borings for recovery wells will be advanced using hollow stem auger, mud rotary, or sonic drilling methods. Soil samples will be collected continuously from each boring and will be logged in the field for lithology and sedimentary structure. Soil headspace samples will be collected every two feet and screened in the field for total organic vapor concentrations. In addition, soil core samples will be visually inspected for contamination and non-aqueous phase liquid (NAPL) presence.

Soil borings that will be used for recovery well installation will be advanced as necessary to identify the top and base of the targeted groundwater bearing-unit (GWBU) (i.e., A-TZ, B-TZ, C-TZ). Based on the boring logs for previous monitoring wells drilled at the Site, it is anticipated that these borings will be advanced to the following maximum depths (subject to field conditions):

- A-TZ: approximately 25 feet below ground surface (bgs)
- B-TZ/B-CZ: approximately 34 feet to 44 feet bgs
- C-TZ: approximately 70 feet bgs.

Surface or isolation casing (permanent isolation casing or temporary isolation casing using sonic drilling techniques) will be installed prior to penetration of any low permeability confining unit.

Permanent monitoring wells and recovery wells will be constructed after the total depth of the borehole is reached. Monitoring wells will be constructed using 2-inch or larger diameter, flush-joint-threaded Schedule 40 PVC casing and 0.010-inch slotted PVC screen. Other well casing and screen materials (i.e., stainless steel) may be used instead of PVC depending on the potential for exposure to NAPL. Permanent recovery wells will be constructed using 4-inch or larger diameter, flush-joint-threaded Schedule 40 stainless steel casing and 0.020-inch slotted steel screen. The specific well design will be determined in the field based on the observed lithology with the goal of screening the well at the base of the targeted GWBU. It is anticipated that each monitoring well screen will be approximately 10 feet in length. For the recovery wells, each well screen will likely be approximately 10 feet in length, but varying screen intervals may be installed to best capture the NAPL zone. A 5- to 10-foot sump will be installed to allow for the accumulation of NAPL within the recovery wells and will vary based on field conditions. After the boring is completed to the total depth, the casing and screen will be lowered into the borehole through the augers or sonic isolation casing.

Once the casing and screen are in place, the remaining well materials (filter sand, bentonite pellets, and cement/bentonite grout) will be added to the hole as the augers/sonic casings are slowly removed. Depths to the top of the annular materials will be measured with a weighted, calibrated tape and recorded on the Well Completion Log. A bentonite seal layer will be installed on top of the filter sand and will be a minimum of 2 feet in thickness. The remainder of the borehole annulus will be filled with a

Portland/bentonite grout (or bentonite pellets). Each well will be completed with either a flush-grade surface completion with a 2-foot by 2-foot pad or above grade within a protective casing on a 4-foot-by-4-foot concrete pad. If an above grade completion is constructed, bollards or bumper guards should be installed around the surface completion. Typical recovery well completion details are shown on Attachment 2B-2. Typical monitoring well completion details are shown on Attachment 2B-3. After construction, the position and elevation of each monitoring well will be surveyed by a licensed, professional surveyor relative to Texas State Plane Coordinates and mean sea level.

Monitoring Well and Recovery Well Development

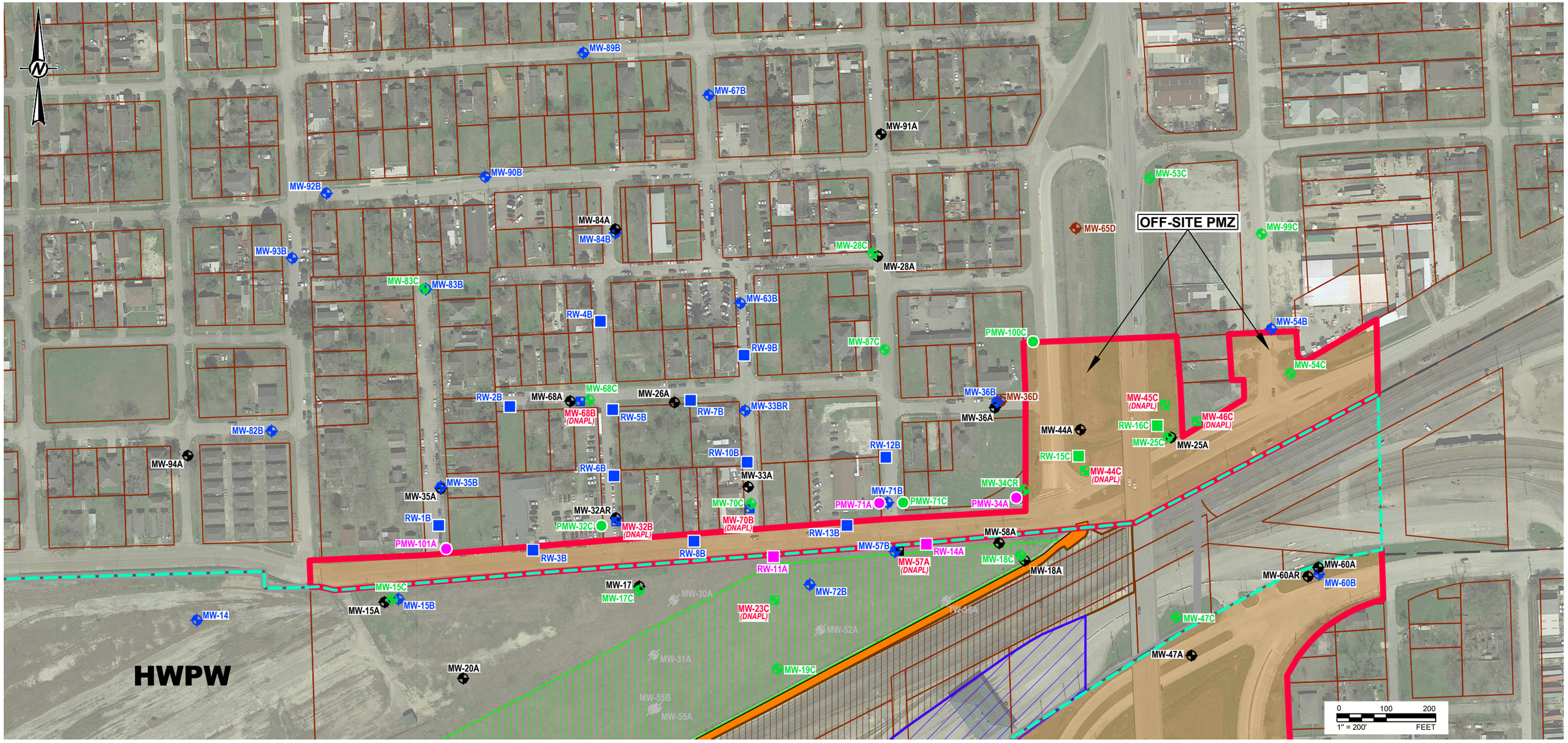
A minimum of 24 hours shall elapse after well construction and before well development to allow for bentonite hydration and grout set. Development will consist initially of surging and bailing or pumping; however, the specific development method will ultimately be decided by the field personnel based on the specific conditions encountered. Temperature, pH, specific conductivity, and turbidity will be monitored during purging. Development will continue until the well produces water with stable field parameter readings (i.e., temperature, pH, conductivity) and turbidity is below 10 NTU. At least five casing volumes of water will be removed from the well during development unless the well pumps dry. If the turbidity is not below 10 NTU after 10 casing volumes of water are removed from the well, then the final turbidity will be recorded and more aggressive development procedures such as air lifting may be considered.

Monitoring Well and Recovery Well Documentation

Documentation of well installation and development will include field boring logs, monitoring well installation forms, well development forms, and any photographs. For wells installed within the City of Houston right of way (ROW), city permits will be required prior to installing the wells. Investigation-derived wastes (IDW), such as soil cuttings, decontamination fluids, or development water, generated from the drilling activities will be stored and disposed of in accordance with state and federal requirements. Documentation of the wastes disposed of as part of the well installation will be maintained.

Following installation, a certification report will be submitted to the Texas Commission on Environmental Quality (TCEQ) detailing the well installation and related documentation.

FIGURES



LEGEND

- UPRR PROPERTY BOUNDARY
- PROPERTY BOUNDARY (GIMS)
- A-TZ MONITORING WELL LOCATION
- B-CZ/B-TZ MONITORING WELL LOCATION
- C-TZ MONITORING WELL LOCATION
- D-TZ MONITORING WELL LOCATION
- CORRECTIVE ACTION SYSTEM WELL (DNAPL RECOVERY)
- PLUGGED AND ABANDONED

PROPOSED CUMULATIVE PMZ (A-TZ, B-CZ/B-TZ, AND C-TZ)

- PROPOSED ON-SITE PMZ
- PROPOSED OFF-SITE PMZ - CITY OF HOUSTON ROW
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA

- PROPOSED A-TZ MONITORING WELL LOCATION
- PROPOSED C-TZ MONITORING WELL LOCATION
- PROPOSED CORRECTIVE ACTION WELL LOCATION (A-TZ DNAPL RECOVERY WELL)
- PROPOSED CORRECTIVE ACTION WELL LOCATION (B-CZ/B-TZ DNAPL RECOVERY WELL)
- PROPOSED CORRECTIVE ACTION WELL LOCATION (C-TZ DNAPL RECOVERY WELL)

NOTE(S)

1. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2020).

REFERENCE(S)

PARCEL BOUNDARIES: CITY OF HOUSTON GEOGRAPHIC INFORMATION & MANAGEMENT SYSTEMS (GIMS).
AERIAL: GOOGLE EARTH, IMAGERY DATED 2/23/19.

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
PROPOSED MONITORING AND RECOVERY WELL LOCATION MAP

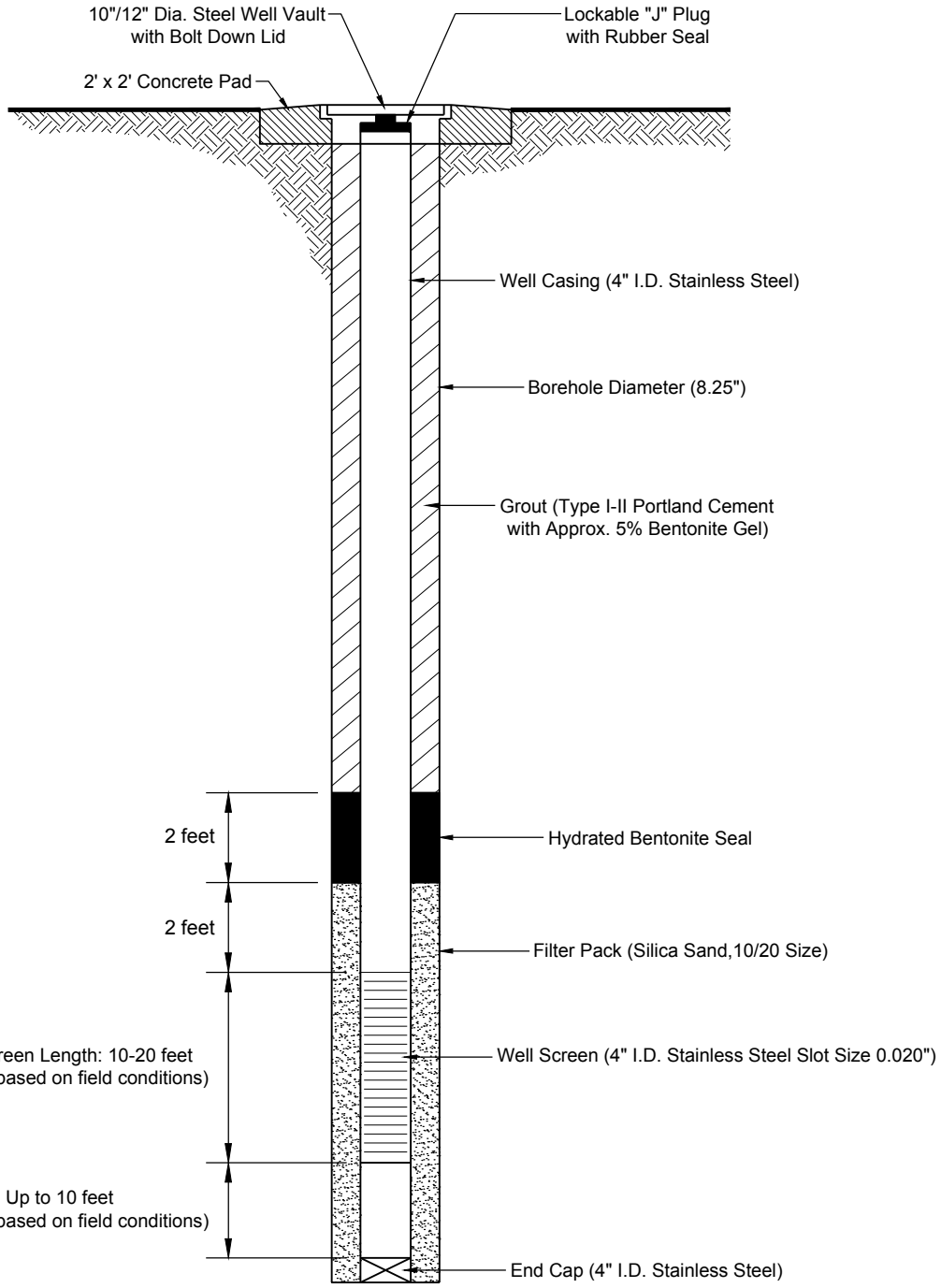
CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-08-06
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 2B-1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\Projects - Round Rock_2019\19119232 - HWPW\2020-8 RAP Revision\ | File Name: FIG 2B-1 - Proposed Monitoring & Recovery Well Location Map (North Area).dwg | Last Edited By: rsalazar Date: 2020-08-12 Time:1:20:48 PM | Printed By: RSalazar Date: 2020-08-28 Time:4:52:00 PM



NOT TO SCALE

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
TYPICAL RECOVERY WELL CONSTRUCTION

CONSULTANT
GOLDER

YYYY-MM-DD	2020-08-07
DESIGNED	AJD
PREPARED	AJD
REVIEWED	ECM
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | ATTACHMENT 2B-2

Last Edited By: adiamond Date: 2020-07-17 Time:11:46:40 AM | Printed By: RSalazar Date: 2020-08-07 Time:4:34:09 PM
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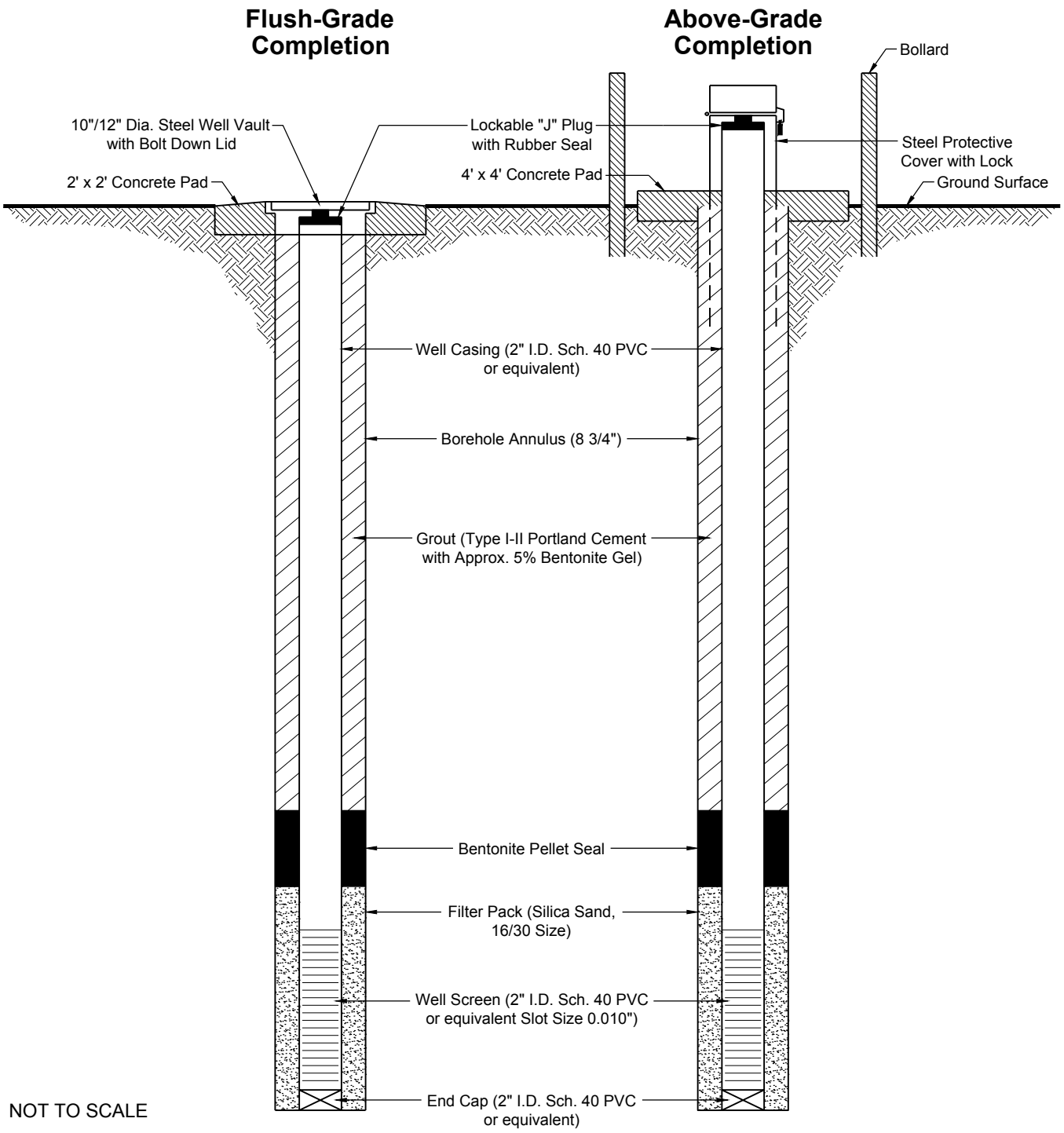

NOT TO SCALE

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
TYPICAL MONITORING WELL CONSTRUCTION

CONSULTANT
GOLDER

YYYY-MM-DD	2020-08-07
DESIGNED	AJD
PREPARED	AJD
REVIEWED	ECM
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | ATTACHMENT 2B-3

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A

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Path: \\texarkana\data\Projects - Round Rock_2019\19119232 - HWPW\2020-7 July\ | File Name: ATT 2B-3 - Typical Monitoring Well Construction.dwg

Plume Management Zone	RAP Worksheet 2.1 Page 1 of 17	
Associated Information: Attachments 2D, 2E	ID No.: 31547	Report Date: August 31, 2020 – Rev 5

Complete this worksheet when a PMZ is proposed as part of the response action. Include in Attachment 2D a map of the proposed PMZ with alternate POE(s) and attenuation monitoring points identified and the current groundwater PCLE zone. If a PMZ is not proposed, do not submit this worksheet.

Groundwater-bearing unit **A-TZ: On-Site and Off-Site COH ROW**

Repeat this worksheet for each groundwater-bearing unit for which a PMZ is proposed.

Groundwater classification **X** 2 _____ 3

Provide justification as to why the PMZ is appropriate in accordance with §350.33(f)(4)(A). Include supporting documentation in Attachment 2E.

The proposed on-Site PMZ and off-Site COH ROW PMZ as a response action for the A-TZ PCLE Zone (Attachment 2D-1) addresses the potential risk to human health or the environment within the proposed PMZs. The groundwater PCLE Zones outside of the PMZs (i.e., arsenic PCLE Zone) are addressed under Remedy Standard B (Remedy Standard A equivalent – groundwater decontamination objective). Since the On-Site PMZ for the creosote-related COCs will be bounded by the proposed slurry wall (except the arsenic PCLE Zone on the west side of the Site), the off-site PMZ will include APOEs to monitor the effectiveness of the remedial approach.

PMZs are appropriate for this PCLE zone based on a relatively low groundwater velocity (approximately 0.004 to 0.03 ft/day), the proposed slurry wall on the northern and eastern perimeter of the Site, proposed institutional controls (deed recordation (on-Site PMZs) and restrictive covenants/deed notices (off-Site PMZs)) on use of groundwater within the PCLE Zone, and the absence of any existing water supply wells within ½-mile of the Site. The City of Houston provides municipal water services for all properties within the Affected Property, and the VI pathway has been proved to be incomplete (VI Assessment Report (Appendix 3), Golder, 2020f), so there is no complete human health pathway associated with these GWBUs. The Site is also within the jurisdiction of the Harris-Galveston Subsidence District (HGSD), which restricts groundwater use in the area and requires a permit application prior to drilling a groundwater well. There are permitting exemptions, but only in areas that do not have an alternative water supply. As described previously, the HGSD rules are not a complete prohibition on the use of groundwater in the area, but rather the fees associated with the rules are "intended to operate as an economic disincentive to groundwater withdrawal" (HGSD, 2013). Therefore, with the City of Houston providing water for the area, and financial disincentives placed on shallow groundwater use by the HGSD (which the Texas Supreme Court ruled in favor of the HGSD in 1977 to protect public welfare by limiting harmful pumping, which was causing ground subsidence of the land resulting in flooding (*Beckendorff v. Harris-Galveston Coastal Subsidence District (1977)*), the shallow GWBUs (A-TZ, B-CZ/B-TZ, C-TZ and D-TZ) do not have a reasonably anticipated future beneficial use in the area.

The proposed on-site slurry wall will reduce the risk of potential future migration of groundwater containing COC concentrations above critical PCLs from the Site, thereby effectively establishing a stable PCLE Zone within the area surrounded by the physical barrier. The off-site COH ROW PMZ will be established with APOE wells at or near the downgradient PMZ boundary to monitor the groundwater. Creosote-related COC groundwater data from the A-TZ suggest the PCLE Zone extends to the northern side of Liberty Road, just inside the proposed off-site COH ROW PMZ boundary. The arsenic groundwater PCLE Zone will continue to be evaluated, as detailed in a comment response letter dated August 4, 2020 from UPRR to the TCEQ. Beyond the off-site COH ROW PMZ, the groundwater response objective is to reduce COC concentrations to the critical groundwater PCLs throughout the off-site groundwater PCLE Zone. Except for the arsenic groundwater PCLE Zone, the other groundwater COC concentrations are below their respective PCLs within the proposed off-site COH ROW PMZ based on the recent groundwater data (Jan-Mar 2020, IGMR, Golder, 2020c).

The proposed on-Site and off-Site COH ROW PMZs proposed for the A-TZ PCLE zones consists of two components: 1) filing of institutional controls including deed recordation (UPRR-Owned properties) and

restrictive covenants/deed notices (City of Houston ROW) prohibiting the use of groundwater within the PMZs; and 2) performance of on-going groundwater monitoring. The proposed deed recordation and restrictive covenants that have been signed by the landowners will be filed in the Harris County deed records once executed by the TCEQ (Appendix 5).

The proposed PMZs were established using the January-March 2020 groundwater data (Appendix 2) collected from the Site. An evaluation of the January-March 2020 groundwater data, including groundwater PCLE zones and preliminary trend analysis of COC concentrations, was provided to the TCEQ in the Interim Groundwater Monitoring Report (2019-2020) dated April 30, 2020 and is also included in Appendix 3. A more extensive statistical evaluation and revised trend test results are included in Appendix 7.

In the 4th TNOD (Specific comment T35(4), T42(4), T43(3), T44(4), T45(4), and T48(3)), TCEQ requested that UPRR defer proposed MNA as a remedy component and designating new attenuation monitoring point (AMP) wells and attenuation action levels (AALs) until the plume completely reaches steady-state conditions and readily recoverable DNAPL removal is completed. Following the response actions proposed in this RAP, AMP wells and AALs will be established. To meet the NAPL Trigger response endpoints, Corrective Action System (CAS) wells will be established for the A-TZ. Based on that, the following wells have been designated APOE, Corrective Action Observation (CAO), or CAS wells:

On-site PMZ:

- APOE wells: MW-12A, MW-13, MW-15A, MW-50A, MW-69A, MW-88A, MW-97A, and MW-98A.
- Corrective Action Observation (CAO) wells: MW-17, MW-18A, MW-20A, MW-38A, MW-49A, MW-77A, MW-79A, MW-95A.
- CAS Wells (DNAPL recovery): MW-57A, MW-58A, and MW-78A
- Background well: MW-51A.

Off-site COH ROW PMZ:

- Off-Site APOE wells: MW-25A, MW-32AR, MW-33A, proposed well MW-34A, MW-36A, MW-47A, MW-59A, MW-61A, proposed well MW-71A, proposed well MW-101A.
- Off-site CAO wells: MW-26A, MW-28A, MW-35A, MW-44A, MW-68A, MW-84A, MW-91A, and MW-94A.
- Off-Site CAS Wells: Two proposed recovery wells along northern perimeter, RW-11A and RW-14A.
- Background well: MW-27A.

In accordance with §350.33(f)(4)(A), the ATZ on-site and off-site COH ROW PMZs for the A-TZ Unit will be actively monitored (semi-annually).

Is the alternate POE proposed to be beyond the current limits of the PCLE zone? **X** Yes ___ No
If yes, how far? Approximately 500 feet (Off-Site COH ROW PMZ) (§350.37(l) or (m) as applicable)
Is it to be off-site? **X** Yes ___ No
On an off-site property that currently does not contain a residential-based groundwater PCLE zone?
___ Yes **X** No

If yes and this is a Class 2 groundwater, provide the basis for concluding that this groundwater does not have a reasonably anticipated future beneficial use (§350.37(l)(3)).

Is NAPL present? **X** Yes _____ No

If so, describe how the response action will achieve the performance criteria in §350.33(f)(4)(E).

§350.33(f)(4)(E) The person is required to reduce NAPLs which contain COCs in excess of PCLs within a plume management zone to the extent practicable. In the determination of adequate NAPL reduction, the executive director may consider conformance with the following criteria and other relevant factors:

(i) readily recoverable NAPLs have been recovered;

(ii) the NAPLs will not generate explosive conditions as defined in §350.31(c) of this title (relating to General Requirements for Remedy Standards);

(iii) the NAPLs will not discharge to the ground surface, to surface waters, to structures, or to other groundwater-bearing units;

(iv) the vertical and lateral extent of NAPLs will not increase under natural conditions, or sufficient NAPLs have been recovered such that an active recovery system can be demonstrated to effectively control or contain migration of NAPLs (i.e., no increased NAPL extent); and

(v) the NAPLs will not result in the critical groundwater PCLs being exceeded at the downgradient boundary of the plume management zone or in the critical PCLs for other environmental media being exceeded at the applicable POE.

For the PMZ area, the NAPL response action objective will be to "ensure compliance of NAPL zone in the PMZ" to address the NAPL within the PMZs for each GWBU (see Risk-Based NAPL Assessment in Appendix 3). The TCEQ TRRP-32 Guidance provides only one NAPL response endpoint: Recovery Endpoint – Recover readily recoverable NAPL fraction.

The response objectives will include compliance with PMZ performance criteria at the NAPL zone and control through institutional controls on groundwater use to protect exposure to residual NAPL in the GWBUs. As part of the evaluation for compliance with PMZ performance criteria, the on-going DNAPL recovery activities in addition to the proposed mobile MPE recovery activities will be used to assess if the DNAPL in the GWBUs is considered readily recoverable and if other conventional or alternative NAPL recovery technologies should be considered. Methods to meet the response action objective for the creosote DNAPL will include recovery (recover readily recoverable creosote DNAPL from wells with DNAPL present) at the NAPL source zone so that the dissolved-phase groundwater PCLE zone is stable (or shrinking) and the PCLE performance objectives for the PMZ can be met, including the goal of no cPCL exceedances at the alternate POE wells.

Previous monthly and bi-monthly DNAPL recovery in on-Site and off-Site wells has been generally effective at removing DNAPL and reducing in-well DNAPL thickness over time. As described in previous sections, UPRR proposes a more aggressive method of DNAPL recovery via mobile MPE for the on-site and off-site wells. MPE provides the following potential advantages over the current DNAPL pumping-only recovery method:

- Increased DNAPL recovery volumes by inducing DNAPL flow to the well via vacuum enhancement;
- Ability to remove DNAPL beyond just the well casing (i.e., increased radius of influence);
- Recovery of groundwater containing elevated dissolved phase concentrations; and,
- Remediation of volatile and semi-volatile chemicals of concern in the vapor phase (if present).

Based on the historical occurrence of DNAPL and results from the Interim NAPL Report, the following recovery wells (existing and proposed) in the A-TZ will be considered CAS wells for NAPL recovery efforts:

- On-Site CAS Wells (DNAPL recovery): MW-57A, MW-58A, and MW-78A
- Off-Site CAS Wells (COH ROW): Two New A-TZ Recovery Wells, RW-11A and RW-14A, along northern perimeter.

If this is a Class 2 groundwater, explain how the response action will ensure that leachate from the surface soil and subsurface soil PCLE zones will not increase concentration of COCs greater than the current measured concentrations (at time of RAP submittal). (§350.33(a)(2))

Groundwater monitoring has been on-going at the Site since 1997. Current and historical groundwater data from the A-TZ source areas (SWMU 4, 5, 8), especially wells with data going back to 1997, suggest that the COC concentrations in the A-TZ groundwater plume were historically higher compared to present day data (COC concentration graphs, Attachment 1B). In light of these trends, the current CSM concludes that the COCs in the vadose zone (surface and subsurface soil) have reached a point where the mass loading to the A-TZ has reached a state of equilibrium and continued leachate migration to groundwater from surface or subsurface soil will not cause expansion of the groundwater PCLE Zone for the A-TZ. Concentrations of COCs in A-TZ wells in the source area on-Site do not exhibit increasing trends (Golder, 2020c; Appendix 3; Appendix 7). With the proposed PMZ for the A-TZ on-Site, groundwater monitoring as part of the PMZ will be used to confirm that any potential leachate in the surface and subsurface soils will not cause an increase in COC concentrations in groundwater at the A-TZ POE wells in excess of the groundwater PCL.

In addition, the constructed engineered soil cap and asphalt cap within the PMZ footprints will limit infiltration within the soil and subsoil PCLE Zone. Even though the cap is not designed for hydraulic control, the cap was constructed with compacted clay and vegetation and sloped to drain storm water. The design of the cap (sloped and vegetated) minimizes infiltration across the surface soil PCLE Zone and reduces leachate migration from the vadose zone to the A-TZ. Also, the proposed slurry walls will reduce lateral movement of leachate from migrating from the on-site areas to the off-site areas.

Provide the basis that the COCs will not migrate beyond the downgradient boundary of the PMZ at concentrations above the critical PCL. Include supporting documentation in Attachment 2E.

UPRR proposes to install a slurry cutoff wall on-site within the UPRR property boundary to impede groundwater flow from portions of the Site and establish a subsurface barrier separating the on-site contamination from the off-site areas to the north and east. This will reduce the risk of potential future migration of groundwater COC concentrations above the critical PCLs from the Site, and similarly reduce the potential for migration of mobile NAPL from the Site.

Because the off-site COH ROW area is narrow (~60 feet, width of Liberty Road along the northern boundary) no attenuation monitoring points (AMPs) are proposed but APOE wells will be used or installed in the vicinity of the downgradient/cross-gradient PMZ boundary to evaluate compliance with the PMZ.

The A-TZ PCLE Zone for the creosote-related COCs (site-specific VOC and SVOCs) from the January 2020 sampling event is similar to the A-TZ PCLE Zones presented in previous submittals (PBW, 2010; PBW, 2014; Golder, 2018). The A-TZ PCLE Zone has been relatively stable over time and concentrations of COCs in A-TZ wells do not exhibit increasing trends (Golder, 2020c; Appendix 3; Appendix 7). The VOC and SVOC concentrations in A-TZ monitoring wells off-site just north of Liberty Road have not exceeded applicable PCLs since 2014.

The source of the arsenic PCLE Zone is believed to be related to the natural degradation of the creosote-related petroleum hydrocarbons, as detailed in the response letter dated August 5, 2020. Many wells with arsenic concentrations exceeding the applicable TRRP PCL do not have concentrations of creosote-related COCs exceeding MDLs and/or RALs, especially in the northwest area on-site and north off-site downgradient of the PMZ boundary in the A-TZ. Due to the lack of correlation between arsenic concentrations and creosote-related COCs in the shallow groundwater bearing units (GWBUs), the presence of arsenic in groundwater is believed to be associated with naturally-occurring arsenate species within the groundwater matrix that are converted to the more soluble arsenite species due to reducing conditions resulting from the degradation of petroleum hydrocarbons (i.e. creosote-related COCs) (API, 2011) from the Site. To obtain a better understanding of the redox conditions and potential arsenic dissolution/ attenuation processes in the shallow GWBUs, select geochemical parameters will be added to the sampling plan during the next two semi-annual events. The evaluation of the geochemical

parameters will be provided in the annual groundwater monitoring report summarizing the sampling activities to be conducted in 2021.

Describe the methods used to determine that there are no artificial penetrations which can allow COCs to migrate from the groundwater PCLE zone to currently unaffected groundwater-bearing units. Include supporting documentation in Attachment 2E.

An on-site field survey and water-well data search was conducted and did not indicate any potential vertical artificial penetrations that would act as a conduit for migration of shallow groundwater into the underlying groundwater formation. However, as discussed in the APAR Addendum and shown on Figure 3A of the APAR (PBW, 2009), two sets of fiber optic lines, Level 3 Communications and Qwest, run along the north side of the rail main lines across the entire length of the Site. Based on conversations with both Level 3 Communications and Qwest representatives, the fiber lines run underneath SWMUs 2, 5, 4, 8, and 10/11. The fiber lines run directly underneath the drainage ditch southwest of the Site and under the SDD about 3 to 5 feet bgs. The Level 3 Communications line reportedly was directionally bored to a depth of 40 to 45 feet bgs underneath the Original and Recent Process Areas (SWMU Nos. 5 and 4, respectively) and under the AST Area (SWMU No. 8). The Qwest fiber line reportedly runs 10 to 15 feet northwest and parallel of the main rail line and is about 5 to 10 feet bgs through the Site. Just east of SWMU No. 8, both fiber lines return to approximately 4 to 6 feet below grade and continue running northeast parallel to the rail main line. The Level 3 Communications line may act as an artificial penetration since the reported depths of the line go through both the A-TZ and into the B-CZ immediately below the primary source areas. Given the depth of the fiber optic line is below the A-TZ and likely below the B-TZ (or carbonate seams within the B-CZ), monitoring well MW-19C will continue to be monitored to evaluate if the directional bored fiber optic lines may be creating a preferential pathway for COCs to migrate to the C-TZ GWBU. However, the underground utilities will be evaluated for potential relocation as part of the slurry wall pre-design evaluation.

In addition to the fiber lines, three City of Houston utilities were identified in the previous APAR (PBW, 2009) that cut across the Site oriented north-south just west of the Lockwood Street Bridge: 1) 60-in wastewater line, 2) 84-in water line, and 3) a 42-in storm sewer line (PBW, 2009). Through a review of the utility drawing files obtained from the City of Houston Public Works Survey Department, two of the underground utility lines (the 60-in sanitary sewer line and the 84-in water line) appear to be at depths that potentially intersect the uppermost GWBU A-TZ. The estimated depths of the utilities based on the city drawings are shown on the updated Geologic Cross Sections A-A', B-B', and C-C' in Attachment 1A (C-1 and C-2). The estimated base depth of the 60-in wastewater line and the 84-in water line where Cross Section B-B' crosses the utility lines is approximately 23 feet bgs (approximate elevation of 26 feet HVD). It is highly unlikely that A-TZ groundwater is seeping into the 84-in water line, given the line is under pressure (flow is south to north), constructed with welded steel pipe, and is relatively new (constructed in 2000). As discussed in the Updated APAR Addendum (PBW, 2010), the 60-in wastewater line runs north to south just west of the Lockwood Bridge. Groundwater flow in the A-TZ flows to the east on the west side of the wastewater line and flows to the west on the east side of the wastewater line.

List the attenuation action level determined for each attenuation monitoring point. Illustrate the proposed attenuation monitoring points and the groundwater PCLE zone on the map in Attachment 2D. Include all calculations and other methods of determining the attenuation action levels in Attachment 2E.

COC	Attenuation Monitoring Point (well number)	Attenuation Action Level (mg/L)	Attenuation Action Level limited by $^{Air}GW_{Inh-V}$ or existing COC concentration? Y/N
Benzene	TBD	TBD	TBD
2,4-Dimethylphenol	TBD	TBD	TBD
2 Methylnaphthalene	TBD	TBD	TBD
Dibenzofuran	TBD	TBD	TBD
Naphthalene	TBD	TBD	TBD
Other COCs TBD			

Note: TBD – to be determined following demonstrated stable plume pursuant to TCEQ direction as provided in the 4th TNOD (Specific comment T35(4), T42(4), T43(3), T44(4), T45(4), and T48(3))

Complete this worksheet when a PMZ is proposed as part of the response action. Include in Attachment 2D a map of the proposed PMZ with alternate POE(s) and attenuation monitoring points identified and the current groundwater PCLE zone. If a PMZ is not proposed, do not submit this worksheet.

Groundwater-bearing unit **B-CZ/B-TZ: On-Site and Off-Site COH ROW**
Repeat this worksheet for each groundwater-bearing unit for which a PMZ is proposed.
Groundwater classification **X (B-TZ)** 2 **X (B-CZ)** 3

Provide justification as to why the PMZ is appropriate in accordance with §350.33(f)(4)(A). Include supporting documentation in Attachment 2E.

Since there are two distinct groundwater PCLE Zones further than 500 feet apart within the B-CZ and B-TZ, two separate on-site PMZs for the B-CZ/B-TZ GWBU were established within the larger cumulative PMZ (Attachment 2D-2):

1. On-Site PMZ (Main)
2. On-Site PMZ (West)

The On-site and Off-Site COH ROW PMZs are proposed (Attachment 2D-2) as a response action for the B-CZ/B-TZ groundwater PCLE zone to address the potential risk to human health or the environment within the proposed PMZs. For the B-CZ/B-TZ groundwater PCLE Zones outside of the On-Site PMZ (Main and West) and the off-site COH ROW PMZ to the north, where a PMZ cannot be established, the groundwater response objective in that area is to reduce COC concentrations to the critical groundwater PCLs throughout the off-site groundwater PCLE Zone under Remedy Standard B (Remedy Standard A equivalent – groundwater decontamination objective) (see details for the response actions for those off-site areas in Worksheet 2.0).

Both the on-site and off-site PMZs are appropriate for this PCLE zone based on a relatively low groundwater velocity (hydraulic conductivities are indicative of saturated soils ($<10^{-5}$ cm/sec) in the B-CZ), the proposed slurry wall on the northern and eastern perimeter of the Site, proposed institutional controls (deed recordation (on-Site PMZs) and restrictive covenants/deed notices (off-Site PMZs)) on use of groundwater within the PCLE Zone, and the absence of any existing water supply wells within ½-mile of the Site. The B-TZ (Class 2 groundwater) is only present on the west portion of the Off-Site COH ROW PMZ with the B-CZ present across the rest of the Off-Site COH ROW PMZ (shown on Attachment 2D-2). As detailed in RAP Revision 0 Attachment 1A (PBW, 2014), wells completed in the B-CZ unit have an average hydraulic conductivity of 2×10^{-7} cm/sec, which is considerably less than the 1×10^{-5} cm/sec threshold for saturated soils. This finding, which is supported by the well yield test results, indicates B-CZ should be classified as saturated soils rather than a GWBU. The TCEQ agreed that the B-CZ groundwater classification can be considered a Class 3 groundwater per the TCEQ April 10, 2017 Technical Notice of Deficiency (NOD) letter. With the low yield found in the B-CZ, groundwater in this unit would not have a reasonably anticipated future beneficial use.

In addition, there are no surface water bodies at the Site or near the proposed PMZs; therefore, there is no potential for groundwater impacts to surface waters that would be hydraulically connected to the B-CZ/B-TZ groundwater. The City of Houston provides municipal water services for all properties within the Affected Property, so there is no complete human health pathway associated with this GWBU.

The proposed on-site slurry wall will be constructed to impede groundwater flow from portions of the Site and establish a subsurface barrier separating the on-site contamination from the off-site areas to the north and east. This will reduce the risk of potential future migration of groundwater COC concentrations above the critical PCLs from the Site, and similarly reduce the potential for migration of mobile NAPL from the Site. Upon installation, the proposed on-site slurry wall will also effectively establish a stable PCLE Zone within the area surrounded by the physical barrier. The Off-Site COH ROW PMZ will be established with APOE wells at or near the downgradient PMZ boundary to monitor the groundwater. However, creosote-related COC groundwater data from the B-CZ/B-TZ and the presence of DNAPL in the B-CZ wells along the north boundary of the proposed Off-Site COH ROW PMZ indicate that the off-site

groundwater PCLE Zone extends beyond the northern side of the proposed off-site COH ROW PMZ boundary by approximately 650 feet (Attachment 2D-2). The arsenic groundwater PCLE Zone will continue to be evaluated, as detailed in the response letter dated August 4, 2020.

For the B-CZ/B-TZ On-Site PMZ (West), the creosote-related groundwater PCLE Zone is within the UPRR property boundary. The arsenic PCLE Zone on the west side extends to the southwest and beyond the proposed PMZ boundary off-site to the west (Attachment 2D-2).

The proposed on-Site and off-Site COH ROW PMZs for the B-CZ/B-TZ PCLE zones consists of two components: 1) filing of institutional controls including deed recordation (UPRR-Owned properties) and restrictive covenants/deed notices (City of Houston ROW) prohibiting the use of groundwater within the PMZs; and 2) performance of on-going groundwater monitoring. The proposed deed recordation and restrictive covenants that have been signed by the landowners will be filed in the Harris County deed records once executed by the TCEQ (Appendix 5).

The proposed PMZs were established using the January-March 2020 groundwater data (Appendix 2) collected from the Site. An evaluation of the January-March 2020 groundwater data, including groundwater PCLE zones and preliminary trend analysis of COC concentrations, was provided to the TCEQ in the Interim Groundwater Monitoring Report (2019-2020) dated April 30, 2020 and is also included in Appendix 3. A more extensive statistical evaluation and revised trend test results are included in Appendix 7.

In the 4th TNOD (Specific comment T35(4), T42(4), T43(3), T44(4), T45(4), and T48(3)), TCEQ requested that UPRR defer proposed MNA and designating new attenuation monitoring point (AMP) wells and attenuation action levels (AALs) until the plume completely reaches steady-state conditions and readily recoverable DNAPL removal is completed. Following the response actions proposed in this RAP, AMP wells and AALs will be established. To meet the NAPL Trigger response endpoints, CAS wells will be established for the B-CZ/B-TZ. Based on the PMZ and NAPL response requirements, the following wells have been designated APOE, CAO, or CAS wells:

On-site PMZ (Main and West):

- APOE wells (Main): MW-14, MW-15B, MW-50B, MW-80B, MW-88B, MW-98B.
- APOE wells (West): MW-22BR, MW-38B, MW-39B, MW-42B, MW-62B, P-10, P-12
- CAO wells (Main): MW-57B, MW-72B, MW-74B, MW-76B, MW-81B.
- CAO wells (West): MW-40B, TW-41B, P-11
- CAS wells (Main): DNAPL recovery - MW-49B, MW-75B
- CAS wells (West): DNAPL recovery - MW-12B, MW-41B

Off-site COH ROW PMZ:

- Off-Site APOE wells: New recovery well RW-1B, MW-32B, MW-36B, MW-61B, MW-70B, MW-71B.
- Off-site CAO wells (outside of the off-site COH ROW PMZ): MW-33BR, MW-35B, MW-59B, MW-63B, MW-67B, MW-82B, MW-83B, MW-84B, MW-89B, MW-90B, MW-92B, MW-93B, MW-96B.
- Off-Site CAS Wells: MW-32B, MW-68B, and MW-70B and proposed recovery wells (within and outside of the proposed PMZ) RW-2B, RW-3B, RW-4B, RW-5B, RW-6B, RW-7B, RW-8B, RW-9B, RW-10B, RW-12B, and RW-13B.

In accordance with §350.33(f)(4)(A), the B-CZ/B-TZ on-site and off-site COH ROW PMZs for the B-CZ/B-TZ Unit will be actively monitored (semi-annually).

Is the alternate POE proposed to be beyond the current limits of the PCLE zone? X Yes ___ No
If yes, how far? Approximately 300 feet (east perimeter of the Off-Site COH ROW PMZ) (§350.37(l) or (m) as applicable)

Is it to be off-site? **X** Yes _____ No
On an off-site property that currently does not contain a residential-based groundwater PCLE zone?
_____ Yes X No

If yes and this is a Class 2 groundwater, provide the basis for concluding that this groundwater does not have a reasonably anticipated future beneficial use (§350.37(l)(3)).

Not applicable.

Is NAPL present? **X** Yes _____ No
If so, describe how the response action will achieve the performance criteria in §350.33(f)(4)(E).

For the B-CZ/B-TZ, evidence of DNAPL was noted for most of the central and western area within the proposed Off-Site PMZ (see Interim NAPL Report (Golder, 2020d)). With the PMZ established, the TCEQ TRRP-32 Guidance provides only one NAPL response endpoint under this site condition: **Recovery Endpoint – Recover readily recoverable NAPL fraction**. The response objectives will include compliance with PMZ performance criteria at the NAPL zone and control through institutional controls on groundwater use to protect exposure to residual NAPL in the GWBUs. As part of the evaluation for compliance with PMZ performance criteria, the on-going DNAPL recovery activities in addition to the proposed mobile MPE recovery activities will be used to assess if the DNAPL in the GWBUs is considered readily recoverable and if other conventional or alternative NAPL recovery technologies should be considered. For the NAPL areas outside of the Off-Site COH ROW PMZ boundary, the preliminary NAPL response objective in accordance with TCEQ TRRP-32 Guidance for these limited areas is groundwater restoration with the NAPL recovery endpoint of **Recover soluble NAPL fraction sufficient to eliminate source contributions to groundwater PCLE zone.** See Worksheet 2.0 for details on the NAPL response action objectives for the off-site areas.

Previous monthly and bi-monthly DNAPL recovery in on-Site and off-Site wells has been generally effective at removing DNAPL and reducing in-well DNAPL thickness over time. As described in previous sections, UPRR proposes a more aggressive method of DNAPL recovery via mobile MPE for the on-site and off-site wells, except for the DNAPL recovery wells on the west side of the Site (B-CZ/B-TZ On-Site PMZ (West)) in which pneumatic total fluid pumps have been installed and operating (since the end of March 2020). MPE provides the following potential advantages over the current DNAPL pumping-only recovery method:

- Increased DNAPL recovery volumes by inducing DNAPL flow to the well via vacuum enhancement;
- Ability to remove DNAPL beyond just the well casing (i.e., increased radius of influence);
- Recovery of groundwater containing elevated dissolved phase concentrations; and,
- Remediation of volatile and semi-volatile chemicals of concern in the vapor phase.

Based on the historical occurrence of DNAPL and results from the Interim NAPL Report, the following recovery wells (existing and proposed) in the B-CZ/B-TZ will be considered CAS wells for NAPL recovery efforts:

- On-Site CAS Wells (DNAPL recovery): MW-49B and MW-75B
- Off-Site CAS Wells (COH ROW): Three New B-CZ/B-TZ Recovery Wells, RW-3B, RW-8B, and RW-13B, along northern perimeter, with existing wells MW-32B and MW-70B.

Methods to meet the response action objective for the creosote DNAPL within the proposed PMZs will include recovery (recover readily recoverable creosote DNAPL from wells with DNAPL present) at the NAPL source zone so that the dissolved-phase groundwater PCLE zone is stable (or shrinking) and the PCLE performance objectives for the PMZs can be met, with the goal of no cPCL exceedances at the alternate POE wells. However, as detailed in RAP Revision 1 Attachment 2G (PBW, 2015), feasible means of creosote DNAPL recovery will not achieve groundwater protection standards in a reasonable timeframe because of the unfavorable and complex hydrogeologic conditions (B-CZ, being a Class 3 groundwater unit, consists of thin carbonate seams with average hydraulic conductivity of approximately 2×10^{-7} cm/sec) and the inherent physical characteristics of creosote.

Wells with measurable creosote DNAPL are found within the On-Site PMZs (wells MW-12B and MW-41B within the On-Site PMZ (West), and MW-49B and MW-75B within the On-Site PMZ (Main)) and Off-Site PMZ (wells MW-32B and MW-70B (Attachment 2D-2)). Since the B-CZ wells (MW-32B and MW-70B) with DNAPL off-site located at the boundary of the Off-Site COH ROW PMZ and near the properties that are currently not included in the PMZ, the NAPL response endpoint for these wells will be the same as for the areas outside the proposed PMZ (**Recover soluble NAPL fraction sufficient to eliminate source contributions to groundwater PCLE zone)**. As detailed in Worksheet 2.0, additional DNAPL recovery wells are proposed for the areas north of the Off-Site COH ROW PMZ in an effort to achieve the NAPL response objective endpoint. Readily recoverable NAPL within the On-Site PMZ (Main) will be recovered from wells as detailed in Worksheet 2.0. In addition, institutional controls on groundwater use within the PMZs will be implemented to protect exposure to residual NAPL in the GWBUs.

DNAPL recovered as part of the corrective action will be stored on-site in DOT approved drums within the CSA (Unit 4), and then disposed of in accordance with all applicable laws and regulations within the applicable timeframes.

If this is a Class 2 groundwater, explain how the response action will ensure that leachate from the surface soil and subsurface soil PCLE zones will not increase concentration of COCs greater than the current measured concentrations (at time of RAP submittal). (§350.33(a)(2))

With the B-CZ/B-TZ underlying the A-TZ, see response to this question for the A-TZ unit.

Provide the basis that the COCs will not migrate beyond the downgradient boundary of the PMZ at concentrations above the critical PCL. Include supporting documentation in Attachment 2E.

As discussed for the A-TZ PMZs, UPRR proposes to install a slurry cutoff wall on-site within the UPRR property boundary to impede groundwater flow from portions of the Site and establish a subsurface barrier separating the on-site contamination from the off-site areas to the north and east. This will reduce the risk of potential future migration of groundwater COC concentrations above the critical PCLs from the Site, and similarly reduce the potential for migration of mobile NAPL from the Site.

Because the off-site COH ROW area is narrow (~60 feet, width of Liberty Road along the northern boundary) no attenuation monitoring points (AMPs) are proposed for the Off-Site COH ROW PMZ but APOE wells will be used or installed in the vicinity of the downgradient/cross-gradient PMZ boundary to evaluate compliance with the PMZ.

As previously discussed, UPRR is aware that there is and will be a groundwater PCLE zone in the B-CZ/B-TZ that extends beyond the proposed Off-Site COH ROW PMZ boundary. Recovery wells MW-32B and MW-70B, which are designated as CAS wells for DNAPL recovery, are located along the northern boundary of the Off-Site COH ROW PMZ. The groundwater response objective in those areas is to attempt to reduce COC concentrations to the critical groundwater PCLs throughout the off-site groundwater PCLE Zone under Remedy Standard B (Remedy Standard A equivalent – groundwater decontamination objective). Details for the response actions for those off-site areas are discussed in Worksheet 2.0.

Describe the methods used to determine that there are no artificial penetrations which can allow COCs to migrate from the groundwater PCLE zone to currently unaffected groundwater-bearing units. Include supporting documentation in Attachment 2E.

The site-related contaminants and DNAPL have been detected in the B-CZ/B-TZ, and underlying C-TZ. PMZs are also proposed for the other GWBUs at the Site. Groundwater wells were installed in the underlying D-TZ and based on the groundwater data provided in the 2020 IGMR (Golder, 2020c), Site-related COC concentrations have been below RALs in those wells.

An on-site field survey and water-well data search was conducted, indicating no potential artificial vertical penetrations that would act as a conduit for migration of shallow groundwater into the underlying groundwater formation. A discussion on underground utilities for A-TZ and possible communication with the B-CZ and deeper C-TZ is provided under the A-TZ summary (see RAP Worksheet 2.1, Page 5).

List the attenuation action level determined for each attenuation monitoring point. Illustrate the proposed attenuation monitoring points and the groundwater PCLE zone on the map in Attachment 2D. Include all calculations and other methods of determining the attenuation action levels in Attachment 2E.

COC	Attenuation Monitoring Point (well number)	Attenuation Action Level (mg/L)	Attenuation Action Level limited by $^{Air}GW_{Inh\text{-}V}$ or existing COC concentration? Y/N
Benzene	TBD	TBD	TBD
2,4-Dimethylphenol	TBD	TBD	TBD
2 Methylnaphthalene	TBD	TBD	TBD
Dibenzofuran	TBD	TBD	TBD
Naphthalene	TBD	TBD	TBD
Other COCs TBD			

Note: TBD – to be determined following demonstrated stable plume pursuant to TCEQ direction as provided in the 4th TNOD (Specific comment T35(4), T42(4), T43(3), T44(4), T45(4), and T48(3))

Complete this worksheet when a PMZ is proposed as part of the response action. Include in Attachment 2D a map of the proposed PMZ with alternate POE(s) and attenuation monitoring points identified and the current groundwater PCLE zone. If a PMZ is not proposed, do not submit this worksheet.

Groundwater-bearing unit **C-TZ: On-Site and Off-Site COH ROW**
Repeat this worksheet for each groundwater-bearing unit for which a PMZ is proposed.
Groundwater classification **X** 2 ____ 3

Provide justification as to why the PMZ is appropriate in accordance with §350.33(f)(4)(A). Include supporting documentation in Attachment 2E.

The proposed on-Site PMZ and off-Site COH ROW PMZ as a response action for the C-TZ PCLE Zone (Attachment 2D-3) addresses the potential risk to human health or the environment within the proposed PMZs. The groundwater PCLE Zones outside of the PMZs are addressed under Remedy Standard B (Remedy Standard A equivalent – groundwater decontamination objective). Since the On-Site PMZ will be bounded by the proposed slurry wall, the off-site PMZ will include APOEs to monitor the effectiveness of the remedial approach.

PMZs are appropriate for this PCLE zone based on a relatively low groundwater velocity (approximately 0.003 ft/day), the proposed slurry wall on the northern and eastern perimeter of the Site, proposed institutional controls (deed recordation (on-Site PMZs) and restrictive covenants/deed notices (off-Site COH ROW PMZ)) on use of groundwater within the PCLE Zone, and the absence of any existing water supply wells within ½-mile of the Site. The City of Houston provides municipal water services for all properties within the Affected Property, so there is no human health complete pathway associated with these GWBUs. The Site is also within the jurisdiction of the Harris-Galveston Subsidence District (HGSD), which restricts groundwater use in the area and requires a permit application prior to drilling a groundwater well. There are permitting exemptions, but only in areas that do not have an alternative water supply. The HGSD rules are not a complete prohibition on the use of groundwater in the area, but rather the fees associated with the rules are “intended to operate as an economic disincentive to groundwater withdrawal” (HGSD, 2013). Therefore, with the City of Houston providing water for the area, and financial disincentives placed on shallow groundwater use by the HGSD (which the Texas Supreme Court ruled in favor of the HGSD in 1977 to protect public welfare by limiting harmful pumping, which was causing ground subsidence of the land resulting in flooding (*Beckendorff v. Harris-Galveston Coastal Subsidence District (1977)*), the shallow GWBUs (A-TZ, B-CZ/B-TZ, C-TZ and D-TZ) do not have a reasonably anticipated future beneficial use in the area.

The proposed on-site slurry wall will impede groundwater flow from portions of the Site and reduce the risk of potential future migration of groundwater containing COC concentrations in the C-TZ above critical PCLs from the Site. The groundwater flow is from the northeast to southwest. Groundwater concentrations have shown stable or decreasing trends in the monitoring wells downgradient of the source area (MW-15C, MW-76C, MW-85C, and MW-88C), further supporting that the groundwater PCLE Zone will not migrate beyond the proposed PMZ boundary (Appendix 3). The off-site COH ROW PMZ will be established with APOE wells at the upgradient and cross-gradient PMZ boundary to monitor the groundwater. Creosote-related COC groundwater data from the C-TZ indicate that the PCLE Zone extends to the north and northeast of Liberty Road, just outside the proposed off-site COH ROW PMZ boundary. Beyond the off-site COH ROW PMZ, the groundwater response objective is to reduce COC concentrations to the critical groundwater PCLs throughout the off-site groundwater PCLE Zone. No arsenic PCLE Zone was identified in the C-TZ during the January-March 2020 sampling event.

The proposed On-Site PMZ and Off-Site COH ROW PMZs proposed for the C-TZ PCLE zones consists of two components: 1) filing of institutional controls including deed recordation (UPRR-Owned properties) and restrictive covenants/deed notices (City of Houston ROW) prohibiting the use of groundwater within the PMZs; and 2) performance of on-going groundwater monitoring. The proposed deed recordation and restrictive covenants that have been signed by the landowners will be filed in the Harris County deed records once executed by the TCEQ (Appendix 5).

The proposed PMZs were established using the January-March 2020 groundwater data (Appendix 2) collected from the Site. An evaluation of the January-March 2020 groundwater data, including groundwater PCLE zones and preliminary trend analysis of COC concentrations, was provided to the TCEQ in the Interim Groundwater Monitoring Report (2019-2020) dated April 30, 2020 and is also included in Appendix 3. A more extensive statistical evaluation and revised trend test results are included in Appendix 7.

In the 4th TNOD (Specific comment T35(4), T42(4), T43(3), T44(4), T45(4), and T48(3)), TCEQ requested that UPRR defer proposed MNA and designating new attenuation monitoring point (AMP) wells and attenuation action levels (AALs) until the plume completely reaches steady-state conditions and readily recoverable DNAPL removal is completed. Following the response actions proposed in this RAP, AMP wells and AALs will be established. To meet the NAPL Trigger response endpoints, CAS wells will be established for the C-TZ. Based on that, the following wells have been designated APOE, CAO, or CAS wells (see Attachment 2D-3):

On-site PMZ:

- APOE wells: MW-15C, MW-19C, MW-47C, and MW-88C.
- CAO wells: MW-12C, MW-17C, MW-18C, MW-76C, MW-85C, and MW-86C.
- CAS Wells (DNAPL recovery): MW-23C
- Background well: MW-27C

Off-site COH ROW PMZ:

- APOE wells: Proposed well MW-32C, proposed well MW-71C, MW-34CR, MW-48C, MW-54C, MW-70C
- CAO wells: MW-25C, MW-68C, MW-87C, and MW-99C.
- CAS wells: MW-44C, MW-45C, MW-46C, proposed recovery wells RW-15C and RW-16C.
- Background well: MW-27C.

In accordance with §350.33(f)(4)(A), the C-TZ on-site and off-site COH ROW PMZs for the C-TZ Unit will be actively monitored (semi-annually).

Is the alternate POE proposed to be beyond the current limits of the PCLE zone? **X** Yes ___ No
If yes, how far? Approximately 700 feet (southwest) (§350.37(l) or (m) as applicable)
Is it to be off-site? ___ Yes X No
On an off-site property that currently does not contain a residential-based groundwater PCLE zone?
___ Yes **X** No

If yes and this is a Class 2 groundwater, provide the basis for concluding that this groundwater does not have a reasonably anticipated future beneficial use (§350.37(l)(3)).

Not applicable.

Is NAPL present? **X** Yes ___ No
If so, describe how the response action will achieve the performance criteria in §350.33(f)(4)(E).

With the On-Site and Off-Site COH ROW PMZs established, the TCEQ TRRP-32 Guidance provides only one NAPL response endpoint under this site condition of NAPL in contact with groundwater: **Recovery Endpoint – Recover readily recoverable NAPL fraction**. The response objectives will include compliance with PMZ performance criteria at the NAPL zone and control through institutional controls (Appendix 4) on groundwater use to protect exposure to residual NAPL in the GWBUs. As part of the evaluation for compliance with PMZ performance criteria, the on-going DNAPL recovery activities in addition to the proposed mobile MPE recovery activities will be used to assess if the DNAPL in the

GWBUs is considered readily recoverable and if other conventional or alternative NAPL recovery technologies should be considered

Wells with measurable creosote DNAPL are found within the On-Site PMZ (well MW-23C) and Off-Site COH ROW PMZ (wells MW-44C, MW45C, and MW-46C (Attachment 2D-3)). Readily recoverable NAPL will be recovered from wells using the approaches detailed on Worksheet 2.0 to control potential migration from the PMZ.

DNAPL recovered as part of the corrective action will be stored on-site in DOT approved drums within the CSA (Unit 4), and then disposed of in accordance with all applicable laws and regulations within the applicable timeframes.

If this is a Class 2 groundwater, explain how the response action will ensure that leachate from the surface soil and subsurface soil PCLE zones will not increase concentration of COCs greater than the current measured concentrations (at time of RAP submittal). (§350.33(a)(2))

With the C-TZ underlying the A-TZ and the B-CZ/B-TZ, please see response to this question for the A-TZ unit (RAP Worksheet 2.1, page 4).

Provide the basis that the COCs will not migrate beyond the downgradient boundary of the PMZ at concentrations above the critical PCL. Include supporting documentation in Attachment 2E.

As discussed for the A-TZ and BCZ/B-TZ PMZs, UPRR proposes to install a slurry cutoff wall on-site to impede groundwater flow from portions of the Site and establish a subsurface barrier separating the on-site contamination from the off-site areas to the north and east. This will reduce the risk of potential future migration of groundwater COC concentrations above the critical PCLs from the Site, and similarly reduce the potential for migration of mobile NAPL from the Site.

Proposed on-site and off-site APOE wells MW-15C, MW-47C, MW-48C, and MW-54C show either predominantly no detections of the COCs, decreasing, or relatively stable COC concentrations below RALs (Attachment 1B-36 through 1B-40). With groundwater concentrations below cPCLs in the wells (MW-19C and MW-54C) in close proximity of the wells with DNAPL, it appears that dissolved COC migration is limited in the area. Therefore, it is not anticipated that the C-TZ groundwater PCLE zone will migrate beyond the proposed C-TZ on-site and off-site PMZ boundary.

UPRR is aware that the groundwater PCLE zone in the C-TZ extends beyond the proposed Off-Site COH ROW PMZ boundary near monitoring well MW-70C and near MW-45C and MW-46C. Two additional monitoring wells will be installed (one east and one west of MW-70C) to evaluate the PCLE Zone along the northern boundary of the Off-Site COH ROW PMZ. The groundwater response objective in those areas is to reduce COC concentrations to the critical groundwater PCLs throughout the off-site groundwater PCLE Zone under Remedy Standard B (Remedy Standard A equivalent – groundwater decontamination objective). Details for the response actions for those off-site areas are discussed in Worksheet 2.0.

Describe the methods used to determine that there are no artificial penetrations which can allow COCs to migrate from the groundwater PCLE zone to currently unaffected groundwater-bearing units. Include supporting documentation in Attachment 2E.

An on-site field survey and water-well data search was conducted, indicating no potential artificial penetrations that would act as a conduit for migration of shallow groundwater into the underlying groundwater formation.

A discussion on underground utilities for A-TZ and possible communication with the C-TZ was provided

under the A-TZ summary. Given the depths of the fiber optic line (reportedly as deep as 45 feet bgs) to just above the C-TZ unit, monitoring well MW-19C will be monitored as an APOE Well to evaluate if the directional bored fiber optic lines are creating a preferential pathway for COCs to migrate to the deep GWBUs.

List the attenuation action level determined for each attenuation monitoring point. Illustrate the proposed attenuation monitoring points and the groundwater PCLE zone on the map in Attachment 2D. Include all calculations and other methods of determining the attenuation action levels in Attachment 2E.

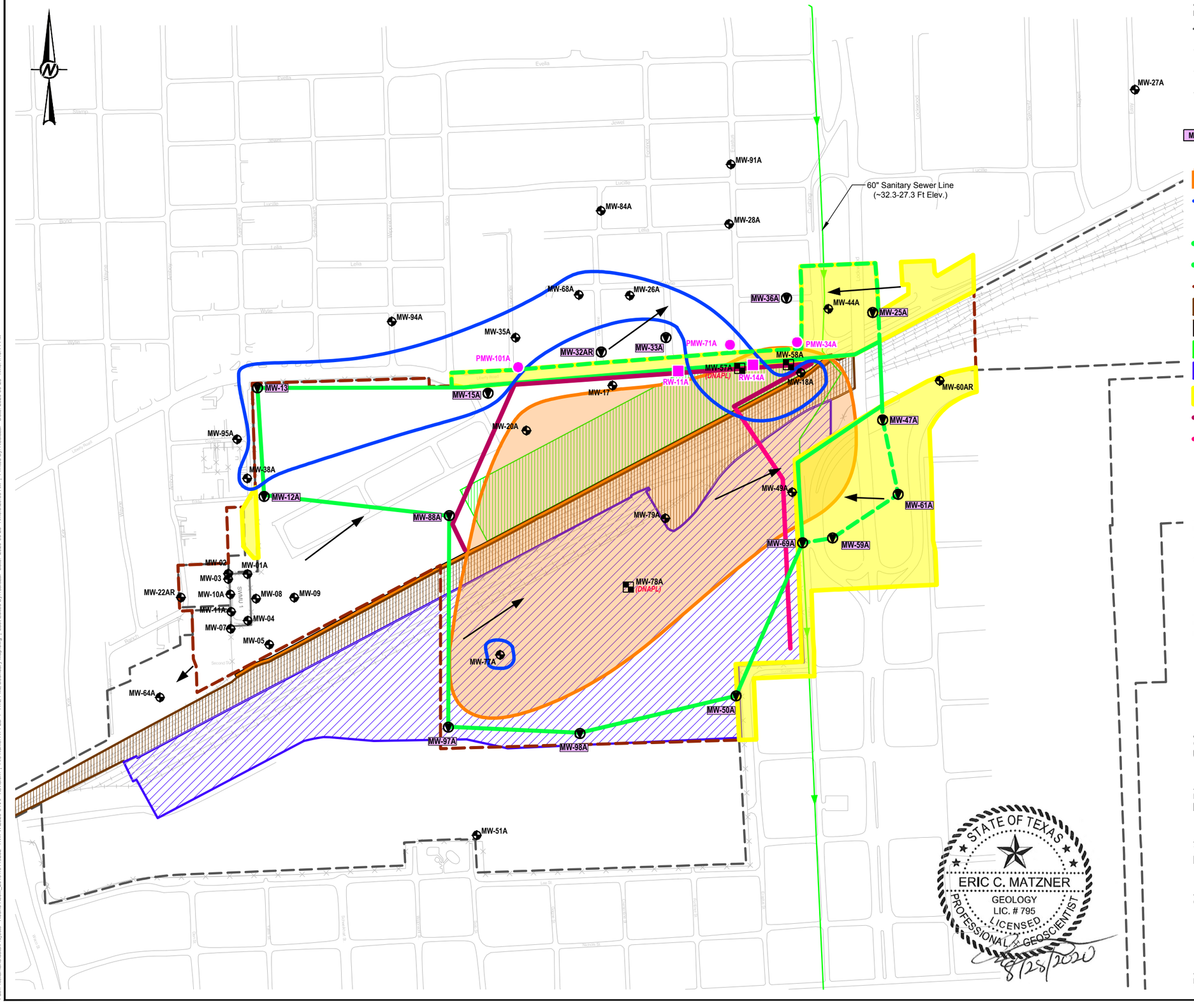
COC	Attenuation Monitoring Point (well number)	Attenuation Action Level (mg/L)	Attenuation Action Level limited by $^{Air}GW_{Inh\text{-}V}$ or existing COC concentration? Y/N
Benzene	TBD	TBD	TBD
2,4-Dimethylphenol	TBD	TBD	TBD
2 Methylnaphthalene	TBD	TBD	TBD
Dibenzofuran	TBD	TBD	TBD
Naphthalene	TBD	TBD	TBD
Other COCs TBD			

Note: TBD – to be determined following demonstrated stable plume pursuant to TCEQ direction as provided in the 4th TNOD (Specific comment T35(4), T42(4), T43(3), T44(4), T45(4), and T48(3))

ATTACHMENT 2D

PLUME MANAGEMENT ZONE MAPS

Attachment 2D-1 – PMZ Boundary Map – A-TZ
Attachment 2D-2 – PMZ Boundary Map – B-CZ/B-TZ
Attachment 2D-3 – PMZ Boundary Map – C-TZ



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARLING LOT, SIDEWALK
- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION
- MW-15A — ALTERNATE POINT OF EXPOSURE (APOE)
- A-TZ CORRECTIVE ACTION SYSTEM WELLS (CAS) (DNAPL RECOVERY)
- PCLE ZONE
- ARSENIC PCLE ZONE
- INFERRED GROUNDWATER FLOW DIRECTION
- PROPOSED A-TZ PMZ BOUNDARY
- PROPOSED A-TZ OFF-SITE PMZ BOUNDARY
- CUMULATIVE PROPOSED ON-SITE PMZ
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA
- PROPOSED OFF-SITE PMZ - CITY OF HOUSTON ROW
- PROPOSED SLURRY WALL (TO 75 FT BGS)
- PROPOSED SLURRY WALL (TO 50 FT BGS)
- PROPOSED A-TZ APOE MONITORING WELL LOCATION
- PROPOSED CORRECTIVE ACTION WELL LOCATION (A-TZ DNAPL RECOVERY WELL)

NOTE(S)

1. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2020).
2. PCLE ZONE ESTABLISHED BASED ON JANUARY 2020 DATA.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1. DATED JUNE 2004.

0 200 400
1" = 400' FEET

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
8/28/2020

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
PMZ BOUNDARY MAP - A-TZ

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-08-28
DESIGNED	AJD
PREPARED	AJD/RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 REV. 0 ATTACHMENT 2D-1

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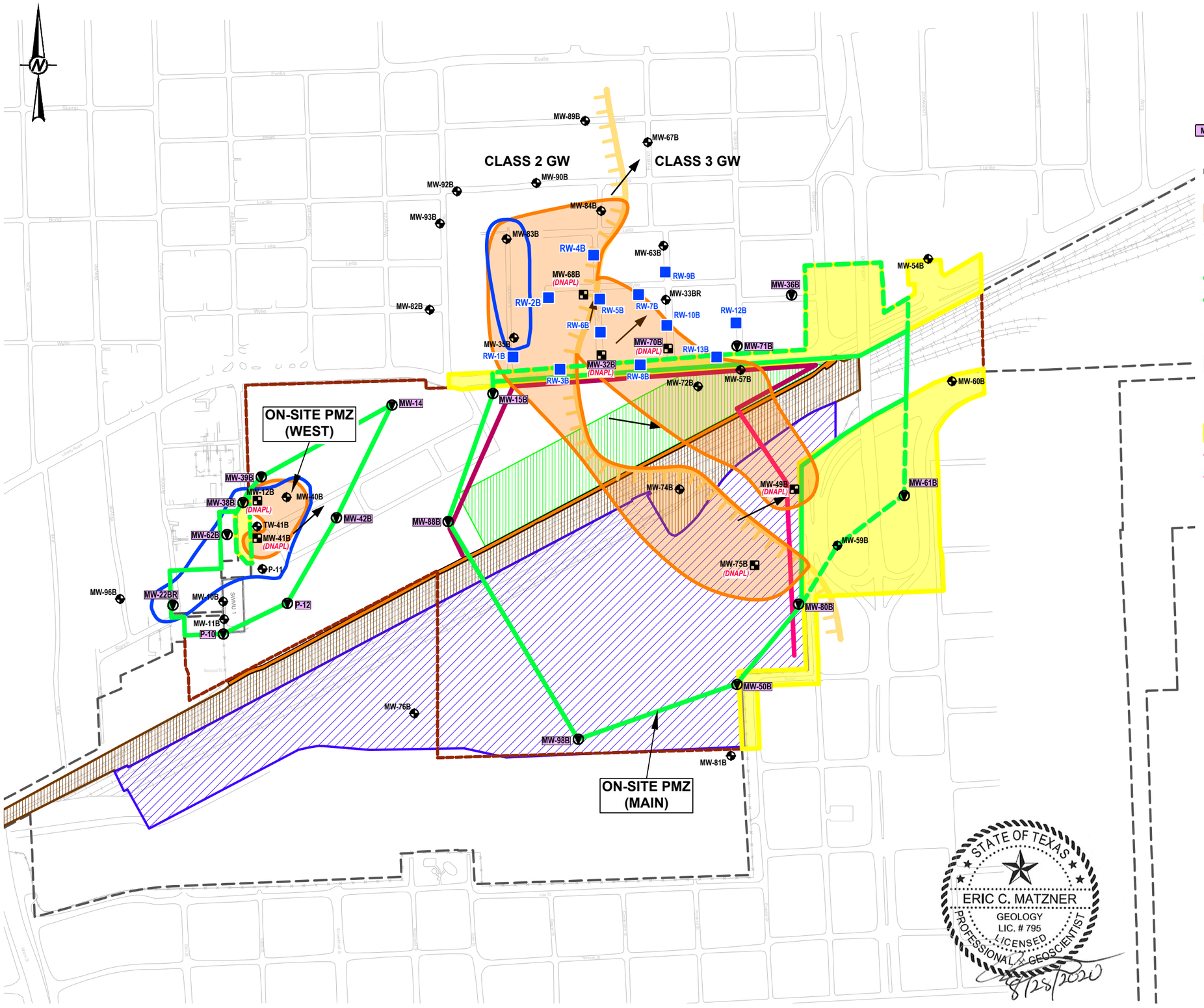

LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- B-TZ MONITORING WELL LOCATION
- MW-15B — ALTERNATE POINT OF EXPOSURE (APOE)
- B UNIT CORRECTIVE ACTION SYSTEM WELLS (CAS) (DNAPL RECOVERY)
- B-CZ (CLASS 3 GW) / B-TZ (CLASS 2 GW) — B-TZ/B-CZ BOUNDARY
- PCLE ZONE
- ARSENIC PCLE ZONE
- INFERRED GROUNDWATER FLOW DIRECTION
- PROPOSED B-TZ/B-CZ PMZ BOUNDARY
- PROPOSED B-TZ/B-CZ OFF-SITE PMZ BOUNDARY
- CUMULATIVE PROPOSED ON-SITE PMZ
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA
- PROPOSED OFF-SITE PMZ - CITY OF HOUSTON ROW
- PROPOSED SLURRY WALL (TO 75 FT BGS)
- PROPOSED SLURRY WALL (TO 50 FT BGS)
- PROPOSED CORRECTIVE ACTION WELL LOCATION (B-CZ/B-TZ DNAPL RECOVERY WELL)

NOTE(S)

1. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2020).
2. PCLE ZONE ESTABLISHED BASED ON JANUARY 2020 DATA.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1. DATED JUNE 2004.

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
PMZ BOUNDARY MAP - B-CZ/B-TZ

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
8/28/2020

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-08-28
DESIGNED	AJD
PREPARED	AJD/RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | ATTACHMENT 2D-2

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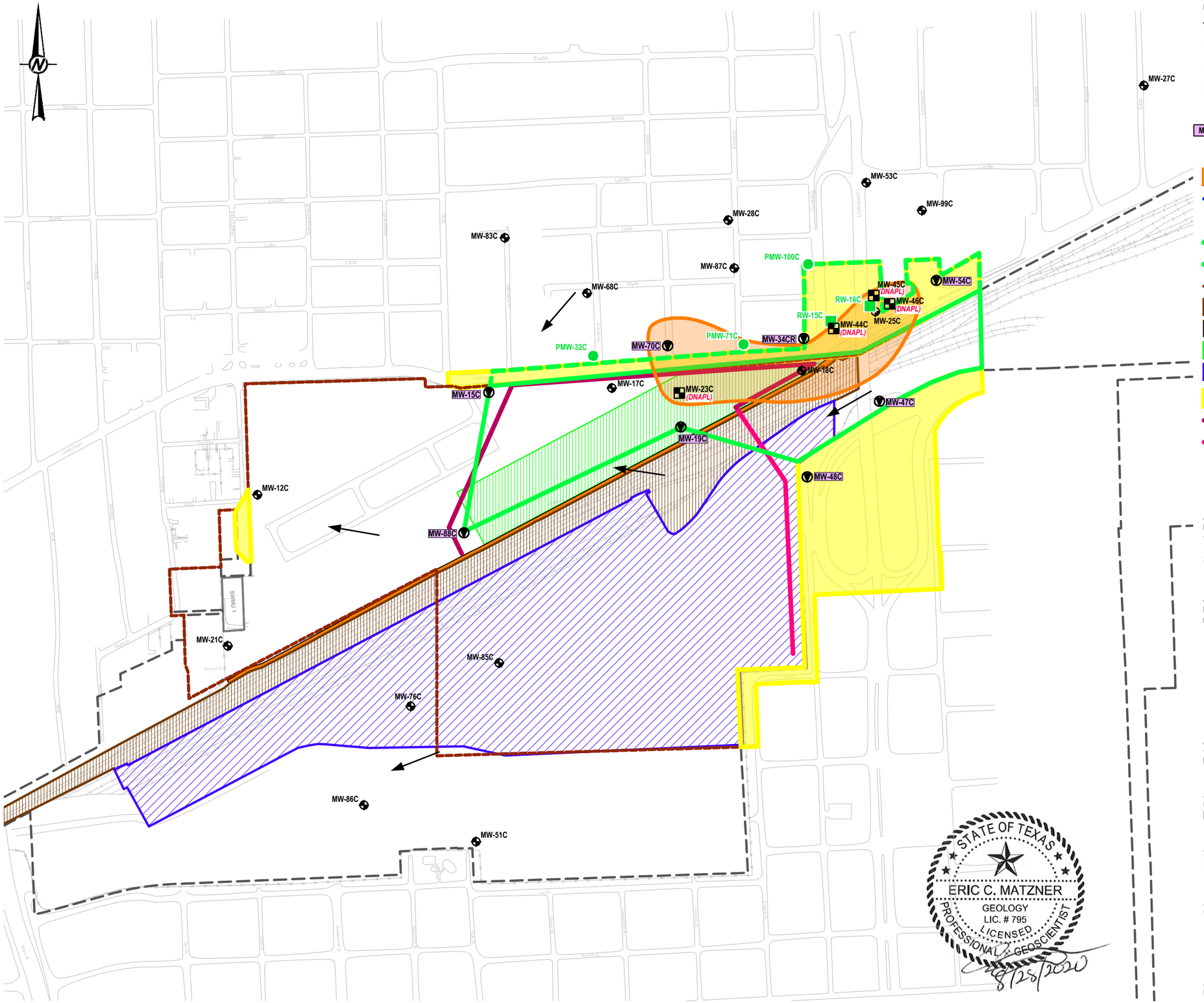

LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- C-TZ MONITORING WELL LOCATION
- ALTERNATE POINT OF EXPOSURE (APOE) (MW-15C)
- C-TZ CORRECTIVE ACTION SYSTEM WELLS (CAS) (DNAPL RECOVERY)
- PCLE ZONE
- ARSENIC PCLE ZONE
- INFERRED GROUNDWATER FLOW DIRECTION
- PROPOSED C-TZ PMZ BOUNDARY
- PROPOSED C-TZ OFF-SITE PMZ BOUNDARY
- CUMULATIVE PROPOSED ON-SITE PMZ
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA
- PROPOSED OFF-SITE PMZ - CITY OF HOUSTON ROW
- PROPOSED SLURRY WALL (TO 75 FT BGS)
- PROPOSED SLURRY WALL (TO 50 FT BGS)
- PROPOSED C-TZ APOE MONITORING WELL LOCATION
- PROPOSED CORRECTIVE ACTION WELL LOCATION (C-TZ DNAPL RECOVERY WELL)

NOTE(S)

1. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2020).
2. PCLE ZONE ESTABLISHED BASED ON JANUARY 2020 DATA.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1. DATED JUNE 2004.

0 200 400
1" = 400' FEET

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
8/28/2020

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
PMZ BOUNDARY MAP - C-TZ

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-08-28
DESIGNED	AJD
PREPARED	AJD/RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 2D-3

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Institutional Control	RAP Worksheet 2.4 Page 1 of 2	
Associated Information: Appendices 4, 5	ID No.: SWR ID 31547	Report Date: August 31, 2020 – Rev 5

Complete this worksheet if an institutional control will be used as part of the response action. Include a draft of the proposed institutional controls in Appendix 4. Provide a list of landowners from whom landowner concurrence will be requested, as necessary, in Appendix 5.
Specify the property for which this applies. **Union Pacific (on-site Deed Notice) within the proposed PMZ**
Repeat this worksheet for each different property for which an institutional control will be used.

Institutional Control	Type of Institutional Control[1]				Property Ownership		Anticipated Filing Date[2]
	Deed Notice	Restrictive Covenant	VCP Certificate of Completion	Equivalent zoning or governmental ordinance	Check if pertinent tract of land is owned by the person	Check if the pertinent tract of land is owned by an innocent owner or operator	
Document use of commercial/industrial land use (§350.31(g))	X				X		**Within 120 days of RAP/RACR approval**
Document use of physical or institutional control under Remedy Standard B §350.31(g))	X				X		**Within 120 days of RAP/RACR approval**
Document notice of on-going long-term response action (§350.31(h))							
Document use of occupational inhalation criteria as RBELs (§350.74(b)(1))							
Document variance from the default exposure factors (§350.74(j)(2)(L))							
Document the use of a non-default soil exposure area (§350.51(l)(3)&(4))							
Document WCU exclusion area (§350.33(f)(2))							
Document establishing a PMZ (§350.33(f)(4)(C)(I))	X				X		**Within 120 days of RAP/RACR approval**
Document the demonstration of technical impracticability (§350.33(f)(3)(F))							
Relocation of soils containing COCs for reuse (§350.36(b)(4) and (c)(4))							

[1] Check the appropriate box(es) to indicate the type of institutional control required for the proposed response action.
[2] Specify date or amount of time after RAP approval.

Institutional Control	RAP Worksheet 2.4 Page 2 of 2	
Associated Information: Appendices 4, 5	ID No.: SWR ID 31547	Report Date: August 31, 2020 – Rev 5

Complete this worksheet if an institutional control will be used as part of the response action. Include a draft of the proposed institutional controls in Appendix 4. Provide a list of landowners from whom landowner concurrence will be requested, as necessary, in Appendix 5.
Specify the property for which this applies. **City of Houston right of way (Restrictive Covenant) falling within the proposed off-Site PMZ**
Repeat this worksheet for each different property for which an institutional control will be used.

Institutional Control	Type of Institutional Control[1]				Property Ownership		Anticipated Filing Date[2]
	Deed Notice	Restrictive Covenant	VCP Certificate of Completion	Equivalent zoning or governmental ordinance	Check if pertinent tract of land is owned by the person	Check if the pertinent tract of land is owned by an innocent owner or operator	
Document use of commercial/industrial land use (§350.31(g))		**X**				**X**	**Within 120 days of RAP/RACR approval**
Document use of physical or institutional control under Remedy Standard B §350.31(g))		**X**				**X**	**Within 120 days of RAP/RACR approval**
Document notice of on-going long-term response action (§350.31(h))							
Document use of occupational inhalation criteria as RBELs (§350.74(b)(1))							
Document variance from the default exposure factors (§350.74(j)(2)(L))							
Document the use of a non-default soil exposure area (§350.51(l)(3)&(4))							
Document WCU exclusion area (§350.33(f)(2))							
Document establishing a PMZ (§350.33(f)(4)(C)(l))		**X**				**X**	**Within 120 days of RAP/RACR approval (off-site PMZ)**
Document the demonstration of technical impracticability (§350.33(f)(3)(F))							
Relocation of soils containing COCs for reuse (§350.36(b)(4) and (c)(4))							

[1] Check the appropriate box(es) to indicate the type of institutional control required for the proposed response action.
[2] Specify date or amount of time after RAP approval.

Performance Measures

List and describe the performance measures for each environmental medium containing a PCLE zone that will be used to determine if reasonable progress is being made by the response action in a timely manner. Use these measures to document effectiveness of the response action in the RAER.

The following performance measures will be used to assess the effectiveness of the response actions.

Cut-Off Slurry Wall

Performance monitoring for the slurry wall will focus on evaluating if the containment system meets the design objective of reducing the risk of potential future migration of the on-site groundwater PCLE Zone and NAPL from the Site. The primary performance measure is to evaluate if the slurry wall has established cutoff of outflow from the source area. Therefore, the proposed performance monitoring will measure the following:

- Groundwater quality in the three transmissive zones to evaluate groundwater COC concentrations inside and outside of the slurry wall area, and
- Hydraulic head in monitoring wells to evaluate water levels or piezometric readings inside and/or outside the barrier.

It is anticipated that the groundwater COC concentrations in the wells downgradient of the slurry wall will eventually show decreasing concentrations over time. However, many of the areas, especially in the B-CZ/B-TZ and C-TZ GWMUs, creosote DNAPL is present in areas off-site outside of the proposed containment. Therefore, decreasing COC concentrations in those areas will be more contingent on NAPL removal in those areas (further detailed below). Groundwater monitoring results will be included in the RAER.

Based on the groundwater model (Appendix 3) that was conducted for the proposed slurry wall, no active groundwater pumping systems are required inside the slurry wall. However, hydraulic head monitoring will be conducted to confirm the flow conditions post-construction of the slurry wall.

The overall groundwater monitoring plan that includes the monitoring requirements for the slurry wall is detailed in the GWSAP provided in the RCRA Permit Section XI (Compliance Plan) Attachment C.

DNAPL

The performance measures for addressing the NAPL Triggers at the Site are dependent on the areas where the NAPL site conditions are present, as detailed in the Risk-Based NAPL Management Assessment (Appendix 3). The performance measures for each area are detailed below.

Englewood IM Yard

As discussed in Worksheet 2.0, UPRR has implemented the following two responses in the Englewood IM Yard to address the migrating NAPL Trigger NAPL Response Endpoints (based on NAPL in vadose zone ≤ 15 ft below ground surface/ NAPL discharge to ground surface) from the tar-like NAPL that has been observed in the top 5 feet bgs with NAPL surface seeps noted in the Englewood IM Yard:

1. Installation of the NAPL Collection System as an interim response (detailed in the RACR dated March 2019 (Golder, 2019b)); and
2. Conducting weekly site inspections of the tar-like NAPL seep areas and recovering any NAPL that has seeped to the ground surface.

The primary performance measure for the NAPL Collection System in the Englewood IM Yard is the reduction of NAPL surface seeps within the area of the collection trench. To date, the system is operating as intended, however, a limited amount of NAPL is flowing into the collection trench. For the areas where NAPL seeps have been observed outside of the NAPL Collection System addressed through the weekly inspections, UPRR recently (July 2020) conducted test pits to conduct limited NAPL removal activities to eliminate NAPL discharge per achieve the NAPL response endpoint (TRRP-32 Guidance). During test pit construction, NAPL mass was removed from the area of where the NAPL

seeps have been observed, and the test pits were backfilled, and the concrete pavement replaced. The plan is to monitor the test pit areas to assess if the NAPL seep areas return. Details of the additional investigation activities will be presented in the Englewood IM Yard Test Pit Evaluation and Report.

Monitoring and inspections to verify long-term NAPL zone stability in the Englewood IM Yard area will be incorporated into the Remedy Standard B post-response action care requirements until the NAPL recovery can be demonstrated to have achieved residual saturation concentrations and eliminated NAPL discharge. Performance measures to ensure achieving the NAPL response endpoints in the Englewood IM Yard for the mobile NAPL triggers for each of the NAPL response objectives are discussed below.

- *Prevent mobile NAPL impact to shallow vadose zone receptors*
  Recovery of the tar-like NAPL has been on-going with the installation of the NAPL Collection System and weekly site inspections and NAPL recovery of surface seeps. Following the test pit evaluation conducted in July 2020, additional investigations will be conducted to assess the storm water drainage system in the Englewood IM yard area to assess if any of the shallow NAPL observed in the vadose zone is located near the drainage pipes. Details of the additional investigation activities will be presented in the Englewood IM Yard Test Pit Evaluation Report.

- *Prevent potential exposure to mobile NAPL*
  The preferred response endpoint is through the Control Endpoint (exposure to NAPL zone prevented via institutional control). The existing concrete pavement within the Englewood IM Yard serves as a Remedy Standard B Control or cap to address potential on-site commercial/industrial receptors exposure to the shallow soils containing COCs at concentrations greater than the critical PCLs and the mobile NAPL in the top 5 feet bgs. As required in the RAP, warning signs are posted in the area warning of excavation and encountering contaminated material and an institutional control will also be implemented. As a result, risk of contact during construction and excavation activities are safeguarded by controlled property access and implementing soil management plans for proposed construction activities. The institutional control as detailed in Worksheet 2.4 follows the TRRP Guidance that discusses provisions that warns of the potential mobile NAPL, prohibits groundwater pumping in the affected GWBU and drilling/excavation into or through the mobile NAPL zone, and requires any NAPL removed during future subsurface activities to be properly handled and managed in accordance with all applicable state and federal rules and regulations (control endpoint). Weekly inspections of the concrete cap area will be conducted to ensure the performance of the remedy.

- *Prevent NAPL migration to groundwater*
  The current endpoint being used in the Englewood IM Yard for this response objective is the Control Endpoint – NAPL zone migration control by physical or natural methods and institutional controls. The surface and subsurface soil PCLE zone and NAPL zone in the Englewood IM Yard area are currently covered with a physical barrier (concrete pavement), preventing contact with NAPL for on-site workers, and provides a cover limiting rainfall infiltration. Even though NAPL has been detected in the vadose zone, the Interim NAPL Assessment (Golder, 2020d) indicated that there is evidence of areas of NAPL saturation from the shallow vadose zone vertically downward to the uppermost GWBU (A-TZ), demonstrating that NAPL migration to groundwater had historically already occurred and effectively obviating the response objective of preventing NAPL migration to groundwater.

- *Prevent disturbance of mobile NAPL that could induce migration*
  Similar to the approach for the prevent NAPL migration to groundwater, UPRR proposes to address this site condition through the Control Endpoint – preventing the disturbance of mobile NAPL zone through institutional controls. The institutional control will include language prohibiting groundwater pumping in the area and prohibiting drilling and excavation activities in the Englewood IM Yard where mobile NAPL is present unless mitigating actions are

implemented to prevent disturbance and potential migration on the NAPL into the underlying GWBUs. In addition, on-going NAPL recovery activities from NAPL Collection System and on-Site wells will continue. Weekly inspections of the concrete cap area will be conducted to ensure the performance of the remedy.

HWPW/Englewood IM Yard Area
For the on-site areas where NAPL has been documented within the UPRR property boundary or within the City of Houston ROW, the resulting impacted GWBUs will be included within the proposed cumulative On-Site PMZ and off-site COH ROW PMZ as detailed in Worksheet 2.1. Therefore, the TCEQ TRRP-32 Guidance provides two NAPL response endpoints under this site condition within the PMZ:

1. Recovery Endpoint – **NAPL recovery sufficient to arrest NAPL migration**; and
2. Control Endpoint – **NAPL zone migration arrested with physical control or natural methods.**

UPRR is proposing to address both NAPL Response Endpoints through DNAPL recovery from recovery wells on Site and installing a physical control (i.e. slurry wall) along the north and east sides of the Site as a Control Endpoint. The proposed response actions are aimed at establishing a subsurface barrier separating the on-site contamination from the off-site areas to the north and east and removing readily recoverable DNAPL on- and off-Site by MPE and total fluid pumps (On-Site PMZ (West)). Performance metrics to evaluate if reasonable progress is being made include the following:

- Reduction in the occurrence of DNAPL (i.e. the number of wells exhibiting measurable DNAPL) in existing wells as well as proposed recovery wells; and,
- Reduction in the apparent thickness of in-well DNAPL within those wells.
- Reduction in COC concentrations (source removal)

Measurements of depth-to-water, depth-to-product, and total well depth over time will be conducted using an oil-water interface probe. The volume of recovered DNAPL will be recorded during each recovery event and is expected to become asymptotic over time as readily recoverable NAPL is depleted. Data including recovered volumes and associated graphs will be provided in quarterly reports as required by TCEQ.

Off-Site Groundwater PCLE Zone
With NAPL observed in contact with groundwater off-Site in the Class 3 B-CZ and Class 2 B-TZ GWBU outside the PMZs, the current NAPL response endpoint is Recovery Only – Recover soluble NAPL fraction sufficient to eliminate source contributions to groundwater PCLE zone. UPRR has developed a response action to more aggressively recover NAPL by installing additional recovery wells and using MPE in the off-site areas within the groundwater PCLE Zones, as detailed in Worksheet 2.0. Performance metrics to evaluate if reasonable progress is being made include the following:

- Reduction in the occurrence of DNAPL (i.e. the number of wells exhibiting measurable DNAPL) in existing wells as well as proposed recovery wells; and,
- Reduction in the apparent thickness of in-well DNAPL within those wells.

Measurements of depth-to-water, depth-to-product, and total well depth over time will be conducted using an oil-water interface probe. The volume of recovered DNAPL will be recorded during each recovery event and is expected to become asymptotic over time as readily recoverable NAPL is depleted. Data including recovered volumes and associated graphs will be provided in quarterly reports as required by TCEQ.

Groundwater
On-Site PMZ and Off-Site COH ROW PMZ

Groundwater monitoring will be performed in conjunction with the PMZ (Remedy Standard B) response action proposed for the groundwater PCLE zones on-site and off-site in the COH ROW. The groundwater data will be evaluated to assess if COC concentrations in the PCLE Zones show stable or decreasing concentrations at the downgradient boundaries of the On-Site and Off-Site COH ROW PMZs by comparing concentrations of these COCs to the cPCLs at each APOE well as specified in Worksheet 2.1. However, as previously discussed, the groundwater PCLE Zone currently extends beyond the proposed off-Site COH ROW PMZ boundaries and is anticipated to remain in this area until the DNAPL is fully recovered from the GWBUs outside the PMZs. It is anticipated that the groundwater COC concentrations in the wells downgradient of the slurry wall within the Off-Site COH ROW PMZ area will eventually show decreasing concentrations over time. However, in many of the areas, especially in the B-CZ/B-TZ and C-TZ GWMUs, creosote DNAPL is present in areas off-site outside of the proposed containment. Therefore, decreasing COC concentrations in those areas will be more contingent on NAPL removal in those areas. Groundwater monitoring results will be included in the RAER.

Off-Site (not within a PMZ)
The proposed slurry cutoff wall is designed to impede groundwater flow from portions of the Site and reduce the risk of potential future migration of groundwater COC concentrations above the critical PCLs from the Site, and similarly reduce the potential for migration of mobile NAPL from the Site. These response actions are expected to enhance natural attenuation of dissolved phase COCs off-site. However, as detailed in Worksheet 1.0, there are significant challenges to achieve the NAPL response objective of groundwater restoration with the presence of DNAPL within the GWBUs. As a result, unless both the mobile and residual DNAPL can be completely removed from the soil and GWBUs, groundwater response actions will not be able to attain the NAPL response objective of groundwater restoration within the PCLE Zones in a reasonable time frame. Therefore, the performance measures for the off-site groundwater PCLE Zones will be closely tied to the functional objective of **recovering creosote DNAPL to reduce the extent of DNAPL and related groundwater PCLE Zone off-site.**

For both on-site and off-site areas, routine groundwater monitoring, combined with graphical and statistical analysis, will be used to evaluate the effectiveness of the proposed response actions to address the COC concentrations in groundwater.

Potential Problems

Complete the table for the response action. When the response action consists of several components or multiple actions, complete one table for each major component or action.

Response Action Name/Designation: **Slurry Cutoff Wall (Northern and Eastern Boundaries)**

List the potential problems that might be reasonably anticipated for the response action, describe the impact of each problem, and the response to the problem.

Description of the Potential Problem	Impact	Will this cause a response action failure?		Corrective Response
		Yes	No	
Underground utilities/railroad infrastructure	Unable to relocate underground utilities, install slurry wall under railroad infrastructure	X		• Work closely with utility companies to evaluate alternative locations/relocation of utilities. • Develop engineering approaches to address concerns in area of railroad infrastructure.
Unanticipated groundwater mounding upgradient of slurry wall	Water table rise into A-CZ (vadose zone), groundwater flow around wall, and potentially surface seepage.		X	• Install sump(s) upgradient of wall for episodic or periodic groundwater removal. • Removed groundwater to be pre-treated prior to discharge to POTW.
NAPL migration around wall perimeter	Potential for DNAPL migration off-site to north/east and increased dissolved phase COC concentrations		X	• Update the analytical groundwater model based on actual field conditions. • Assess risk to off-site properties. • Consider modification of partial slurry cutoff wall geometry or installation of groundwater extraction points to maintain hydraulic control.

Response Action Name/Designation: **Mobile MPE (off-Site and on-Site)**

List the potential problems that might be reasonably anticipated for the response action, describe the impact of each problem, and the response to the problem.

Description of the Potential Problem	Impact	Will this cause a response action failure?	Corrective Response

		Yes	No	
Access to well obstructed.	DNAPL recovery not possible during event.		X	• Request removal of obstruction (such as vehicle parked over well) or note and prioritize well for next event.
Reduced NAPL recovery efficiency.	Reduced amount of source material entering recovery wells during events (not attributed to mass removed).		X	• Redevelop well via jetting, scrubbing, and pumping. Dose well with acid or biocide if applicable. • Replace well if necessary. • Consider installation of engineered recovery well.
Damage to well.	DNAPL recovery not possible during event.		X	• Abandon well and replace in proximal location.
Failure of mobile HVR unit vapor treatment equipment.	Organic vapors measured in exhaust; noxious odors released during event.		X	• Immediately cease event and repair vapor treatment equipment on-Site possible. Else, reschedule event when unit repaired.
Leaks from mobile HVR unit.	Release of hydraulic oil or contaminated groundwater to surface.		X	• Shut down HVR unit and apply spill kit to release. • Repair issue and continue, else reschedule event when repaired.

Response Action Name/Designation: **Singe Well Pneumatic Pumping (West PCLE Zone)**

List the potential problems that might be reasonably anticipated for the response action, describe the impact of each problem, and the response to the problem.

Description of the Potential Problem	Impact	Will this cause a response action failure?		Corrective Response
		Yes	No	
Pump/pump system failure.	DNAPL recovery temporarily halted; DNAPL accumulation in well.		X	• Repair or replace pneumatic pump and/or system components.
Well screen occlusion.	DNAPL recovery reduced.		X	• Redevelop well via jetting, scrubbing, and pumping. Dose well with acid or biocide if applicable. • Replace well if necessary.

Response Action Name/Designation: **Englewood Intermodal NAPL Collection System**

List the potential problems that might be reasonably anticipated for the response action, describe the impact of each problem, and the response to the problem.

Description of the Potential Problem	Impact	Will this cause a response action failure?		Corrective Response
		Yes	No	
Tar-NAPL &/or brown water seeps occur outside of the target area.	Increased risk of worker exposure and chemical of concern migration via stormwater runoff.	X		• Investigate areas of 'new' seeps. • Evaluate hot spot removal through test pits of seep areas. • Consider design/installation of interceptor trench with treatment system and permitted discharge to POTW.
Cracking or deterioration of new concrete surface.	Potential for tar-NAPL &/or brown water seeps due to new preferential pathways.		X	• Repair damaged section of cap with concrete.

Response Action Name/Designation: **On-Site PMZ/Off-Site COH ROW PMZ**

List the potential problems that might be reasonably anticipated for the response action, describe the impact of each problem, and the response to the problem.

Description of the Potential Problem	Impact	Will this cause a response action failure?		Corrective Response
		Yes	No	
Increasing concentration trend at the PMZ APOE wells	Possible indication of potential migration of groundwater PCLE Zone beyond on-site and off-site PMZ	X		Re-evaluate the groundwater concentrations to determine if the PCLE is migrating beyond the PCLE Zone. If migration confirmed, UPRR will evaluate response actions to prevent or mitigate the PCLE Zone outside of the on-site and off-site PMZs. The boundaries of the PMZs will also be evaluated.
DNAPL migration to wells that had no previous indication of DNAPL (in-well or soil boring observation)	Possible indication of potential migration of NAPL/groundwater PCLE Zone (if NAPL not observed in soil core - for monitoring well)	X		• Re-evaluate DNAPL recovery options to address lateral or vertical migration.

Monitoring and Sampling Associated Information: Attachment 3A	RAP Worksheet 3.1 Page 1 of 3	
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List the monitoring and sampling of COC concentrations or other parameters that will be conducted during the response action. Illustrate the monitoring or sampling locations in Attachment 3A. If statistics or geostatistics will be used, provide details in Appendix 7. If monitoring or observation wells will be constructed for the response action, provide well construction details in Attachment 2B if not previously provided.

Monitored Media	COC[1]	Other parameter (specify)	Sampling Method[2]	Sampling points or locations[3]	Depth/Height[4] (ft.)	Analytical or Field Screening Method	Sampling or Monitoring Frequency[5]
Surface Soil	TPH		Bulk sampling	TPH – see Attachment 2A-1b	See Worksheet 2.0	TX1005, TX1006	One time
Subsurface Soil	TPH		Bulk sampling	TPH – see Attachment 2A-1b	See Worksheet 2.0	TX1005, TX1006	One time
Groundwater	Site-Specific VOCs		Same as APAR (low-flow sampling)	See Attachment 3A-1 for well locations	Middle of screened interval of monitoring well	US EPA 8260	Semi-Annual
	Site-Specific SVOCs		Same as APAR (low-flow sampling)	See Attachment 3A-1 for well locations	Middle of screened interval of monitoring well	US EPA 8270	Semi-Annual
	Arsenic		Same as APAR (low-flow sampling)	See Attachment 3A-1 for well locations	Middle of screened interval of monitoring well	US EPA 6010/6020	Semi-Annual.
	Monitored Natural Attenuation Parameters		Same as APAR (low-flow sampling)	See Attachment 3A-1 for well locations	Middle of screened interval of monitoring well	Various	Semi-Annual in 2021, then once every three years

[1] Specify the COCs to be monitored in this media. List either type of COC (such as VOCs, metals) if all the COCs of that type will be monitored the same way.
[2] Describe the sampling or monitoring methods and QC procedures in Appendix 1 unless the proposed sampling or monitoring procedure is the same as the sampling or monitoring procedure described in the APAR.
[3] Specify the sampling or monitoring point, such as the specific monitor well or general sampling or monitoring location.
[4] Specify the depth or height of the sampling or monitoring points.
[5] Specify the frequency at which this monitoring or sampling will occur.

Monitored Media	COC[1]	Other parameter (specify)	Sampling Method[2]	Sampling points or locations[3]	Depth/Height[4] (ft.)	Analytical or Field Screening Method	Sampling or Monitoring Frequency[5]
Slurry Wall Design Soil Sampling Plan		• Geotechnical Standard Penetration Tests (SPT) at intervals of no more than 5 vertical feet, • Grain size samples at each significant change in lithology • Bulk samples representing each lithologic interval from selected boreholes for mix trials • Depth to the target key-in unit (D-CZ), and collection of intact shelby tube samples at representative boreholes for permeability testing		See Attachment 3A			
MPE Effluent		Extracted vapors from the MPE events will be monitored and recorded with an FID. Vapors will be treated with thermal oxidation or granular activated carbon (GAC) prior to discharge and the discharged vapor will also be monitored and recorded with an FID.	Field Methods: FID	MPE effluent			

Explain the reasons for the above-listed monitoring and sampling plan.

UPRR will conduct semi-annual monitoring of the site-wide groundwater monitoring wells to continue to evaluate the groundwater PCLE zones and PMZ areas.

The monitoring and sampling plan for the groundwater PCLE zone was developed in accordance with PMZ monitoring procedures provided in §350.33(f)(4)(D). APOE and selected monitoring wells (i.e., corrective action observation (CAO) wells) will continue to be monitored to evaluate potential migration of the PCLE Zone at the upgradient, cross-gradient, and downgradient POEs. Monitoring wells (including wells proposed to be APOE wells) within the Off-Site PMZ that is currently pending will be sampled along with the corrective action observation wells until the Off-Site PMZ is established. The four D-TZ monitoring wells will also be sampled to confirm that COCs have not migrated to the underlying water-bearing zone. Semi-annual monitoring of the wells is proposed based on the stability of the PCLE zone and absence of potential receptors in the area.

Additional APOE and recovery wells are proposed to be installed in the A-TZ, B-CZ/B-TZ, and in the C-TZ. Details of the proposed well locations and well construction are provided in Attachment 2B.

As recommended in the Interim NAPL Assessment Report dated May 29, 2020 (Appendix 3) (Golder, 2020d), UPRR will sample surface soil closer to the property boundary north of DPT-12-20 to evaluate the lateral extent of total TPH concentrations. Proposed sample locations are shown on Attachment 2A-1b.

Slurry Wall Design Soil Sampling Plan
Soil borings will be installed along the proposed barrier wall alignment at spacing of approximately 100 feet to a minimum depth of 5 feet into the D-CZ layer, and samples will be collected for the list of parameters listed above to aid in the design of the slurry wall. Proposed soil boring locations are depicted on Attachment 2A-3.

ATTACHMENT 3A

MAP OF MONITORING AND SAMPLING POINTS

Table 3A-1 – Proposed Groundwater Monitoring Network
Attachment 3A-1 – PMZ Groundwater Monitoring Network
Attachment 3A-2 – PMZ Groundwater Monitoring Network – Off-Site Area
Attachment 3A-3 – Proposed Soil Sampling Locations

ATTACHMENT 3A - TABLE 1

PROPOSED PLUME MANAGMENT ZONE (PMZ) MONITORING WELL NETWORK
UPRR HOUSTON WOOD PRESERVING WORKS, HOUSTON, TEXAS

WELL NO.	On-Site or Off-Site	WELL DESIGNATION	DATE INSTALLED	NORTHING	EASTING	TOP OF CASING ELEVATION (FT HVD)	TOTAL DEPTH (FT BGS)	Top Screen Interval (FT BGS)	Bottom Screen Interval (FT BGS)	Zone
A-TZ MONITORING WELLS										
MW-12A	On-Site	APOE	2/27/1997	728,333	3,166,004	49.96	30.00	17.5	27.5	A-TZ
MW-13	On-Site	APOE	2/25/1997	728,777	3,165,977	50.65	25.00	9	22.5	A-TZ
MW-15A	On-Site	APOE	2/25/1997	728,755	3,166,931	50.41	30.00	12	26.1	A-TZ
MW-50A	On-Site	APOE	3/1/2007	727,501	3,167,958	46.96	25.00	15	25	A-TZ
MW-69A	On-Site	APOE	6/23/2010	728,136	3,168,234	45.71	18.50	8.5	18.5	A-TZ
MW-88A	On-Site	APOE	2/22/2020	728,247	3,166,771	51.49	24.00	13	23	A-TZ
MW-97A	On-Site	APOE	2/13/2020	727,373	3,166,767	47.87	21.00	10.5	20.5	A-TZ
MW-98A	On-Site	APOE	2/10/2020	727,350	3,167,312	48.35	21.00	10.5	20.5	A-TZ
MW-51A	On-Site	Background	2/28/2007	726,925	3,166,885	47.80	25.00	15	25	A-TZ
MW-17	On-Site	CAO	3/25/1997	728,787	3,167,447	50.92	35.00	18	32.5	A-TZ
MW-18A	On-Site	CAO	2/26/1997	728,839	3,168,227	51.57	35.00	18	32.5	A-TZ
MW-20A	On-Site	CAO	9/28/1998	728,600	3,167,091	50.43	30.00	15	25	A-TZ
MW-49A	On-Site	CAO	2/28/2007	728,345	3,168,191	46.18	30.00	20	30	A-TZ
MW-77A	On-Site	CAO	5/7/2014	727,672	3,166,981	49.05	25.00	13	23	A-TZ
MW-79A	On-Site	CAO	5/7/2014	728,237	3,167,666	48.95	30.00	17	27	A-TZ
MW-57A	On-Site	CAS	1/22/2009	728,859	3,167,973	50.89*	27.00	12	27	A-TZ
MW-58A	On-Site	CAS	1/23/2009	728,875	3,168,176	47.76	29.00	14	29	A-TZ
MW-78A	On-Site	CAS	5/6/2014	727,953	3,167,512	48.68	30.00	15	25	A-TZ
MW-25A	Off-Site	APOE	3/7/2000	729,089	3,168,524	44.65	29.00	18.5	28.5	A-TZ
MW-32AR	Off-Site	APOE	12/15/2011	728,925	3,167,400	44.74	22.00	10	20	A-TZ
MW-33A	Off-Site	APOE	12/30/2003	728,989	3,167,668	44.25	25.00	13	23	A-TZ
MW-36A	Off-Site	APOE	2/22/2007	729,148	3,168,167	44.53	28.00	18	28	A-TZ
MW-47A	Off-Site	APOE	3/17/2020	728,644	3,168,558	45.58	26.00	16	26	A-TZ
MW-59A	Off-Site	APOE	1/28/2009	728,155	3,168,358	44.18	21.00	11	21	A-TZ
MW-61A	Off-Site	APOE	1/26/2009	728,336	3,168,630	44.67	22.00	12	22	A-TZ
PMW-34A	Off-Site	APOE	Proposed							A-TZ
PMW-71A	Off-Site	APOE	Proposed							A-TZ
PMW-101A	Off-Site	APOE	Proposed							A-TZ
MW-27A	Off-Site	Background	3/26/2001	730,002	3,169,610	44.90	30.00	17	27	A-TZ
MW-26A	Off-Site	CAO	3/7/2000	729,159	3,167,519	44.62	26.00	14.5	24.5	A-TZ
MW-28A	Off-Site	CAO	3/26/2001	729,462	3,167,926	43.86	28.00	16	26	A-TZ
MW-35A	Off-Site	CAO	2/21/2007	728,985	3,167,045	44.75	28.00	13	28	A-TZ
MW-38A	Off-Site	CAO	2/21/2007	728,402	3,165,934	46.39	22.00	12	22	A-TZ
MW-44A	Off-Site	CAO	2/22/2007	729,021	3,168,349	45.11	28.00	18	28	A-TZ
MW-68A	Off-Site	CAO	5/21/2019	729,160	3,167,324	43.24	23.40	13	23	A-TZ
MW-84A	Off-Site	CAO	2/19/2020	729,510	3,167,399	44.67	24.00	13.5	23.5	A-TZ
MW-91A	Off-Site	CAO	2/19/2020	729,702	3,167,937	44.02	25.00	14.5	24.5	A-TZ
MW-94A	Off-Site	CAO	2/18/2020	729,052	3,166,533	45.21	22.00	11.5	21.5	A-TZ
MW-95A	Off-Site	CAO	2/19/2020	728,564	3,165,893	46.19	21.00	15	25	A-TZ
RW-11A	Off-Site	CAS	Proposed							A-TZ
RW-14A	Off-Site	CAS	Proposed							A-TZ
B-CZ/B-TZ MONITORING WELLS										
MW-14	On-Site (Main)	APOE	2/27/1997	728,718	3,166,550	50.66	45.00	28	42.5	B-TZ
MW-15B	On-Site (Main)	APOE	12/19/2011	728,761	3,166,960	47.05	40.00	28	38	B-TZ
MW-50B	On-Site (Main)	APOE	2/7/2020	727,585	3,167,950	47.55	40.00	34.5	39.5	B-TZ
MW-80B	On-Site (Main)	APOE	5/8/2014	727,907	3,168,201	47.11	35.00	29	34	B-TZ
MW-88B	On-Site (Main)	APOE	2/19/2020	728,245	3,166,778	51.57	24.00	35	40	B-TZ
MW-98B	On-Site (Main)	APOE	2/11/2020	727,359	3,167,306	48.59	40.50	35	40	B-TZ
MW-57B	On-Site (Main)	CAO	12/21/2011	728,857	3,167,965	47.93	40.00	34	39	B-TZ
MW-72B	On-Site (Main)	CAO	12/21/2011	728,790	3,167,792	48.69	41.00	32	37	B-TZ
MW-74B	On-Site (Main)	CAO	12/20/2011	728,373	3,167,718	47.83	40.00	26.5	36.5	B-TZ
MW-76B	On-Site (Main)	CAO	2/12/2020	727,463	3,166,640	47.98	40.00	31	36	B-TZ
MW-81B	On-Site (Main)	CAO	5/11/2014	727,292	3,167,926	46.77	40.00	29	34	B-TZ
MW-49B	On-Site (Main)	CAS	1/24/2009	728,375	3,168,184	46.43	35.00	30	35	B-CZ
MW-75B	On-Site (Main)	CAS	12/20/2011	728,066	3,168,022	47.18	40.00	32.2	37.2	B-TZ
MW-22BR	On-Site (West)	APOE	1/24/2018	727,904	3,165,660	45.71	39.00	27.6	37.6	B-TZ
MW-38B	On-Site (West)	APOE	12/31/2003	728,319	3,165,945	45.51	37.00	25.5	35.5	B-TZ
MW-39B	On-Site (West)	APOE	12/16/2003	728,424	3,166,019	49.58	40.00	29.5	39.5	B-TZ
MW-42B	On-Site (West)	APOE	8/24/2006	728,257	3,166,324	50.52	42.00	30	40	B-TZ
MW-62B	On-Site (West)	APOE	1/21/2009	728,190	3,165,880	48.16	35.00	25	35	B-TZ
P-10	On-Site (West)	APOE	3/26/1991	727,786	3,165,866	47.71	50.00	36.2	38.2	B-TZ
P-12	On-Site (West)	APOE	3/27/1991	727,912	3,166,127	48.76	50.00	36.3	38.3	B-TZ
MW-40B	On-Site (West)	CAO	12/15/2004	728,341	3,166,122	49.59	40.00	29.5	39.5	B-TZ
P-11	On-Site (West)	CAO	3/25/1991	728,049	3,166,025	48.98	50.00	36.2	38.2	B-TZ
TW-41B	On-Site (West)	CAO	1/22/2009	728,222	3,166,002	49.67	40.00	30	40	B-TZ
MW-12B	On-Site (West)	CAS	2/27/1997	728,328	3,166,004	50.02	45.00	32.5	42.5	B-TZ
MW-41B	On-Site (West)	CAS	1/7/2003	728,176	3,166,003	49.37	40.00	29.5	39.5	B-TZ
MW-36B	Off-Site	APOE	6/24/2010	729,161	3,168,172	44.07	43.00	38	43	B-CZ
MW-61B	Off-Site	APOE	2/23/2020	728,352	3,168,630	45.09	40.00	28	33	B-CZ
MW-71B	Off-Site	APOE	12/13/2011	728,956	3,167,951	45.06	40.00	32	37	B-TZ
MW-32B	Off-Site	APOE/CAS	12/15/2011	728,918	3,167,400	44.73	40.00	26	36	B-TZ
MW-70B	Off-Site	APOE/CAS	12/14/2011	728,944	3,167,671	45.02	40.00	25	35	B-CZ
RW-1B	Off-Site	APOE/CAS	Proposed							
MW-33BR	Off-Site	CAO	12/19/2011	729,142	3,167,662	44.86	40.00	28	38	B-CZ

ATTACHMENT 3A - TABLE 1

PROPOSED PLUME MANAGMENT ZONE (PMZ) MONITORING WELL NETWORK
UPRR HOUSTON WOOD PRESERVING WORKS, HOUSTON, TEXAS

WELL NO.	On-Site or Off-Site	WELL DESIGNATION	DATE INSTALLED	NORTHING	EASTING	TOP OF CASING ELEVATION (FT HVD)	TOTAL DEPTH (FT BGS)	Top Screen Interval (FT BGS)	Bottom Screen Interval (FT BGS)	Zone
MW-35B	Off-Site	CAO	2/26/2007	728,988	3,167,045	44.83	42.00	32	42	B-CZ
MW-59B	Off-Site	CAO	6/26/2010	728,145	3,168,358	44.36	33.00	28	33	B-CZ
MW-63B	Off-Site	CAO	1/28/2009	729,361	3,167,652	44.48	36.00	31	36	B-CZ
MW-67B	Off-Site	CAO	6/26/2010	729,782	3,167,588	43.93	40.00	35	40	B-CZ
MW-82B	Off-Site	CAO	1/22/2018	729,102	3,166,703	44.64	38.00	29.6	34.6	B-TZ
MW-83B	Off-Site	CAO	1/30/2018	729,389	3,167,015	45.33	37.00	29.6	34.6	B-TZ
MW-84B	Off-Site	CAO	1/23/2018	729,503	3,167,399	44.50	43.00	34.6	39.6	B-TZ
MW-89B	Off-Site	CAO	7/12/2018	729,869	3,167,249	44.57	40.40	30	40	B-TZ
MW-90B	Off-Site	CAO	7/13/2018	729,616	3,167,173	44.39	35.40	30	35	B-TZ
MW-92B	Off-Site	CAO	2/20/2020	729,583	3,166,814	44.91	35.50	30	35	B-TZ
MW-93B	Off-Site	CAO	2/26/2020	729,451	3,166,744	45.05	35.50	30	35	B-TZ
MW-96B	Off-Site	CAO	2/24/2020	727,929	3,165,446	47.02	22.00	27	37	B-TZ
MW-68B	Off-Site	CAS	12/15/2011	729,162	3,167,328	44.93	40.00	28	38	B-TZ
RW-2B	Off-Site	CAS	Proposed							
RW-3B	Off-Site	CAS	Proposed							
RW-4B	Off-Site	CAS	Proposed							
RW-5B	Off-Site	CAS	Proposed							
RW-6B	Off-Site	CAS	Proposed							
RW-7B	Off-Site	CAS	Proposed							
RW-8B	Off-Site	CAS	Proposed							
RW-9B	Off-Site	CAS	Proposed							
RW-10B	Off-Site	CAS	Proposed							
RW-12B	Off-Site	CAS	Proposed							
RW-13B	Off-Site	CAS	Proposed							
C-TZ MONITORING WELLS										
MW-15C	On-Site	APOE	4/25/1997	728,761	3,166,947	50.01	75	64	73.5	C-TZ
MW-19C	On-Site	APOE	10/15/1998	728,620	3,167,727	53.05	73	63	73	C-TZ
MW-47C	On-Site	APOE	3/16/2007	728,725	3,168,535	45.52	71	61	71	C-TZ
MW-88C	On-Site	APOE	1/21/2018	728,195	3,166,845	51.17	75	64.6	74.6	C-TZ
MW-12C	On-Site	CAO	4/21/1997	728,345	3,166,005	50.14	75.3	69	73.5	C-TZ
MW-17C	On-Site	CAO	12/10/2003	728,779	3,167,446	50.17	70	59.5	69.5	C-TZ
MW-18C	On-Site	CAO	4/25/1997	728,849	3,168,219	51.47	80.2	62	76.5	C-TZ
MW-76C	On-Site	CAO	5/7/2014	727,485	3,166,628	47.84	70	60	70	C-TZ
MW-85C	On-Site	CAO	1/20/2018	727,661	3,166,988	49.10	75	59.9	69.9	C-TZ
MW-86C	On-Site	CAO	1/18/2018	727,083	3,166,438	46.61	70	59.6	69.6	C-TZ
MW-23C	On-Site	CAS	10/14/1998	728,759	3,167,722	54.16*	72.5	62.5	72.5	C-TZ
MW-34CR	Off-Site	APOE	5/9/2014	728,982	3,168,227	46.47	70	60	70	C-TZ
MW-48C	Off-Site	APOE	2/2/2004	728,417	3,168,241	44.68	72	60	70	C-TZ
MW-54C	Off-Site	APOE	8/15/2006	729,218	3,168,766	44.99	72	60	70	C-TZ
MW-70C	Off-Site	APOE	2/21/2020	728,954	3,167,674	45.07	70	58	68	C-TZ
PMW-32C	Off-Site	APOE	Proposed							
PMW-71C	Off-Site	APOE	Proposed							
MW-27C	Off-Site	Background	4/16/2001	730,009	3,169,610	45.04	73.5	60.5	70.5	C-TZ
MW-25C	Off-Site	CAO	3/7/2000	729,089	3,168,518	44.49	74	58	68	C-TZ
MW-68C	Off-Site	CAO	6/25/2010	729,164	3,167,346	44.80	70	60	70	C-TZ
MW-87C	Off-Site	CAO	1/31/2018	729,266	3,167,944	44.26	70	57.6	67.6	C-TZ
MW-99C	Off-Site	CAO	2/23/2020	729,500	3,168,707	45.33	70	59.5	69.5	C-TZ
MW-44C	Off-Site	CAS	1/16/2004	729,021	3,168,349	45.13	70	57.5	67.5	C-TZ
MW-45C	Off-Site	CAS	1/20/2004	729,155	3,168,512	44.73	70	58	68	C-TZ
MW-46C	Off-Site	CAS	1/9/2004	729,121	3,168,576	44.94	72	60	70	C-TZ
RW-15C	Off-Site	CAS	Proposed							
RW-16C	Off-Site	CAS	Proposed							
D-TZ MONITORING WELLS										
MW-36D	Off-Site	CAO	6/23/2010	729,162	3,168,180	44.33	110	100	110	D-TZ
MW-59D	Off-Site	CAO	1/27/2009	728,114	3,168,365	44.22	118	108	118	D-TZ
MW-65D	Off-Site	CAO	1/17/2009	729,512	3,168,331	44.55	110	100	110	D-TZ
MW-66D	Off-Site	CAO	1/20/2009	729,137	3,169,381	46.51	103	93	103	D-TZ

Notes:

APOE - Alternate Point of Exposure Wells

CAO - Corrective Action Observation Well

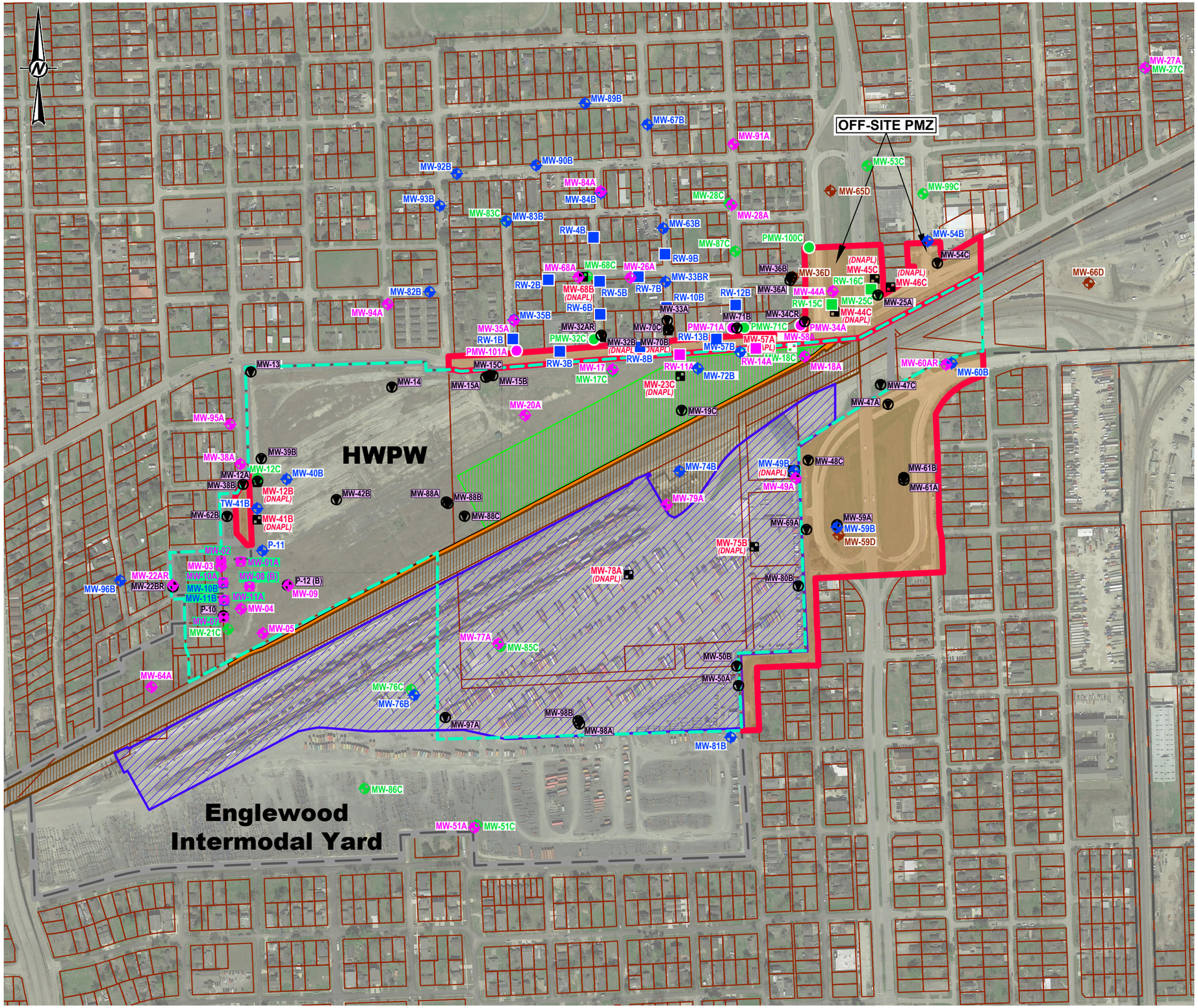
CAS - Corrective Action System Well (NAPL Recovery Well, CAS only wells not sampled)

BGS=Below Ground Surface

HVD = Elevations relative to Houston Vertical Datum, Houston Monument System

Northing/Easting = Coordinates based on NAD 1927 Texas State Plane, South Central Zone, US Survey Feet

* Wells were resurveyed after casings were modified from above ground to flush grade during soil cap construction (2016).



LEGEND

- UPRR PROPERTY BOUNDARY
- PROPERTY BOUNDARY (GIMS)
- A-TZ MONITORING WELL LOCATION
- B-CZ/B-TZ MONITORING WELL LOCATION
- C-TZ MONITORING WELL LOCATION
- D-TZ MONITORING WELL LOCATION
- CORRECTIVE ACTION SYSTEM WELL (CAS) (DNAPL RECOVERY)
- MW-12A RCRA UNIT NO. 1 POINT OF COMPLIANCE (POC) WELL
- MW-15A ALTERNATE POINT OF EXPOSURE (APOE)

PROPOSED CUMULATIVE PMZ (A-TZ, B-CZ/B-TZ, AND C-TZ)

- PROPOSED ON-SITE PMZ
- PROPOSED OFF-SITE PMZ - CITY OF HOUSTON ROW
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA
- PROPOSED A-TZ APOE MONITORING WELL LOCATION
- PROPOSED C-TZ APOE MONITORING WELL LOCATION
- PROPOSED CORRECTIVE ACTION WELL LOCATION (A-TZ DNAPL RECOVERY WELL)
- PROPOSED CORRECTIVE ACTION WELL LOCATION (B-CZ/B-TZ DNAPL RECOVERY WELL)
- PROPOSED CORRECTIVE ACTION WELL LOCATION (C-TZ DNAPL RECOVERY WELL)

NOTE(S)

1. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2020).
2. (B) - BACKGROUND WELL.

REFERENCE(S)

PARCEL BOUNDARIES: CITY OF HOUSTON GEOGRAPHIC INFORMATION & MANAGEMENT SYSTEMS (GIMS).
AERIAL: GOOGLE EARTH, IMAGERY DATED 2/23/19.

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
PMZ GROUNDWATER MONITORING NETWORK

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-08-28
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 REV. 0 ATTACHMENT 3A-1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

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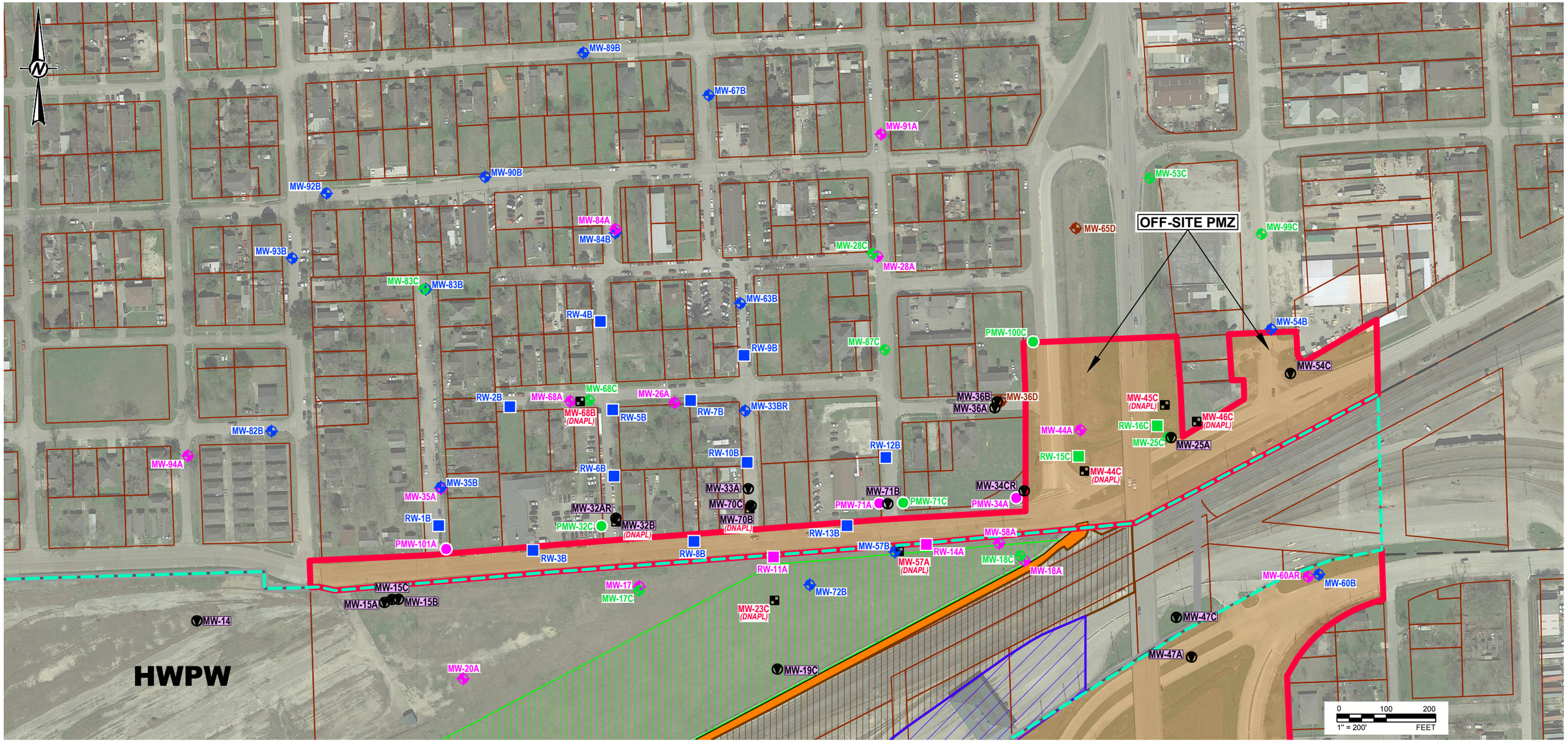

LEGEND

- UPRR PROPERTY BOUNDARY
- PROPERTY BOUNDARY (GIMS)
- A-TZ MONITORING WELL LOCATION
- B-CZ/B-TZ MONITORING WELL LOCATION
- C-TZ MONITORING WELL LOCATION
- D-TZ MONITORING WELL LOCATION
- CORRECTIVE ACTION SYSTEM WELL (CAS) (DNAPL RECOVERY)
- MW-15A ALTERNATE POINT OF EXPOSURE (APOE)

PROPOSED CUMULATIVE PMZ (A-TZ, B-CZ/B-TZ, AND C-TZ)

- PROPOSED ON-SITE PMZ
- PROPOSED OFF-SITE PMZ - CITY OF HOUSTON ROW
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA

- PROPOSED A-TZ APOE MONITORING WELL LOCATION
- PROPOSED C-TZ APOE MONITORING WELL LOCATION
- PROPOSED CORRECTIVE ACTION WELL LOCATION (A-TZ DNAPL RECOVERY WELL)
- PROPOSED CORRECTIVE ACTION WELL LOCATION (B-CZ/B-TZ DNAPL RECOVERY WELL)
- PROPOSED CORRECTIVE ACTION WELL LOCATION (C-TZ DNAPL RECOVERY WELL)

NOTE(S)

1. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2020).

REFERENCE(S)

PARCEL BOUNDARIES: CITY OF HOUSTON GEOGRAPHIC INFORMATION & MANAGEMENT SYSTEMS (GIMS).
AERIAL: GOOGLE EARTH, IMAGERY DATED 2/23/19.

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
PMZ GROUNDWATER MONITORING NETWORK - OFF-SITE AREA

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-08-28
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | ATTACHMENT 3A-2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

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HWPW

Englewood Intermodal Yard

LEGEND

- UPRR PROPERTY BOUNDARY
- A-TZ MONITORING WELL LOCATION
- B-CZ/B-TZ MONITORING WELL LOCATION
- C-TZ MONITORING WELL LOCATION
- D-TZ MONITORING WELL LOCATION
- PROPOSED SLURRY WALL (TO 75 FT BGS)
- PROPOSED SLURRY WALL (TO 50 FT BGS)
- PROPOSED PRE-DESIGN SOIL BORING LOCATION
- PROPOSED TPH SOIL BORING LOCATION

NOTE(S)

PROPOSED PRE-DESIGN SOIL BORING AND PROPOSED TPH SOIL BORING LOCATIONS ARE APPROXIMATE.

REFERENCE(S)

AERIAL: GOOGLE EARTH, IMAGERY DATED 2/23/19.

0 150 300
1" = 300' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
PROPOSED SOIL SAMPLING LOCATIONS

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-08-17
DESIGNED	AJD
PREPARED	RS
REVIEWED	LB
APPROVED	ECM

PROJECT NO. 19119232 REV. 0 ATTACHMENT 3A-3

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

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Use this worksheet to describe the operation and maintenance (O&M) activities for each response action. In situations where the response action consists of more than one major component, for clarity one worksheet can be completed for each major component.

Response Action Name/Designation: **Remedy Std. B – Soil/Concrete Cap, Railroad Ballast, and Asphalt Roadway Cap**

List all portions of the response action to which this information applies.

Describe the O&M and inspection activities that will be required to operate and maintain response action components.

An inspection and maintenance program has been implemented for the soil cap and associated features of the soil cap within the former HWPW area, asphalt roadway cap within the former HWPW area, for the concrete sidewalk off-site along the City of Houston ROW immediately north of the Site, and the concrete pavement area within the Englewood Intermodal Yard. Inspections of the railroad ballast area between the former HWPW and Englewood Intermodal Yard are conducted to confirm the ballast is continuing to serve as a physical barrier. This will include inspecting the areas where the slurry construction occurred within the capped areas.

Groundwater monitoring will be conducted within the PCLE zone, PMZ and adjacent areas. Regular sampling of the wells will occur on a semi-annual basis depending on the wells. Annually the monitoring wells will be inspected for signs of damage, including well pads, casing, locks, and protective covers. The total depth of wells will also be measured annually.

The inspection and maintenance program for the capped areas is described on RAP Worksheet 5.0.

The groundwater monitoring program is provided on RAP Worksheet 3.1.

List and discuss the key operating parameters for a properly functioning response action. Address how changes in these parameters will result in operating changes, providing sufficient detail to explain how the operator will know the component is functioning properly.

Not applicable.

List the routine tasks required to operate the response action.

Not applicable.

List the routine tasks required to maintain the response action, including scheduled inspections, maintenance, and component replacement.

Routine tasks to be performed as part of the proposed response actions include the following:

1. Quarterly soil cap (HWPW), asphalt roadway, concrete sidewalk and cap, and railroad ballast inspections;
2. Inspect fencing surrounding the Site, make repairs as necessary
3. Semi-annual groundwater sampling and analysis, evaluation of monitoring data, and monitoring well inspection and repair (if needed).
4. DNAPL recovery from selected wells.

Response Action Name/Designation: Slurry Cut-off Wall

List all portions of the response action to which this information applies.

Describe the O&M and inspection activities that will be required to operate and maintain response action components.

The proposed slurry cutoff wall installed along the northern and eastern property boundaries does not require O&M after installation. Within the Englewood Intermodal Yard, the slurry wall will be capped with asphalt and/or concrete (the portion of the slurry wall beneath the railroad will be capped with railroad ballast). A low permeability soil cap will be installed above the slurry wall within the HWPW where installed outside of existing caps and will be graded to promote positive drainage. The surface of the slurry wall soil cap will be vegetated to prevent erosion. Visual inspections of the slurry wall soil cap will be conducted on a quarterly basis and after major storms in conjunction with the cap inspection (see Worksheet 5.0). Locations where deficiencies are found shall be marked and repaired as soon as practicable.

Groundwater monitoring will be conducted as part of the proposed semi-annual monitoring events to evaluate the effectiveness of the slurry wall to reduce the risk of potential future migration of groundwater COC concentrations above the critical PCLs from the Site and monitor for potential groundwater mounding inside the slurry wall.

List and discuss the key operating parameters for a properly functioning response action. Address how changes in these parameters will result in operating changes, providing sufficient detail to explain how the operator will know the component is functioning properly.

Not applicable.

List the routine tasks required to operate the response action.

Not applicable. Groundwater monitoring.

List the routine tasks required to maintain the response action, including scheduled inspections, maintenance, and component replacement.

See previous response in this Worksheet for capped areas.

Use this worksheet to describe the operation and maintenance (O&M) activities for each response action. In situations where the response action consists of more than one major component, for clarity one worksheet can be completed for each major component.

Response Action Name/Designation: **DNAPL Recovery - Mobile Multi-Phase Extraction (MPE)**
List all portions of the response action to which this information applies.

Describe the O&M and inspection activities that will be required to operate and maintain response action components.

Visual inspections will be performed before and after each recovery event. The inspections will focus on the following major issues:

- Integrity of well surface completion, casing, and locking cap.
- Erosion or vegetation deterioration in areas used by the mobile MPE unit.

Locations where deficiencies are found shall be marked and repaired as soon as practicable.

Operations and maintenance (O&M) of the mobile MPE unit will be conducted by the selected subcontractor and records will be provided. In addition, the mobile MPE unit will be inspected prior to initiation and after each recovery event. Any leaks or other deficiencies will be corrected prior to operation.

The following actions will be conducted during the recovery event as part of necessary O&M and inspection activities:

- Influent and effluent vapor concentrations will be monitored throughout the duration of the recovery events utilizing a properly calibrated flame ionization detector (FID). Effluent vapor concentrations must not exceed the limits set under the TCEQ Remediation Air permit-by-rule (PBR) designation.
- Ambient air monitoring will be conducted throughout the recovery events and readings/locations will be recorded as required under the TCEQ Air PBR.
- Locking well caps and well covers must be properly secured prior to leaving each recovery location.

List and discuss the key operating parameters for a properly functioning response action. Address how changes in these parameters will result in operating changes, providing sufficient detail to explain how the operator will know the component is functioning properly.

The key operating parameter for a properly functioning response action is the successful recovery of DNAPL by monitoring pump flow rate and vacuum pressure as necessary to maintain flow into the well and groundwater/DNAPL recovery. In addition, encountering significant vapors is not anticipated given the contaminant; however, tracking of the influent/effluent vapor readings with calibrated flame ionization detector (FID) during the MPE event will also be an indication the system is operating as intended, and is required under the TCEQ Air PRB.

The operator will know the component is functioning properly when DNAPL of a sufficient thickness is measured in the well and recovered. If DNAPL levels in wells change, the frequency of the recovery events will be adjusted accordingly.

List the routine tasks required to operate the response action.

- Wells must be accessible and free from obstruction to facilitate the mobile MPE events;
- Prior to initiation of the mobile MPE event, measure the depth-to-groundwater, depth-to-groundwater/DNAPL interface;
- Place submersible pump within bottom portion of the monitoring well and place any pressure transducers or level controls at appropriate depths;
- Ensure well manifold secured to well without loss of induced vacuum;
- Monitor and record ambient air quality conditions prior to initiation of MPE;
- Initiate MPE event. Adjust submersible pump flow rate and vacuum pressure as necessary to maintain flow into the well and groundwater/DNAPL recovery;
- Conduct MPE event for duration determined during proposed pilot study;
- Record influent/effluent vapor readings with calibrated flame ionization detector (FID) every 15 minutes during the MPE event;
- At conclusion of MPE event, determine volume of groundwater and DNAPL removed;
- Remove well manifold and submersible pump from well. Secure well locking cap and surface cover; and
- Mobilize to next monitoring well and complete MPE event.

List the routine tasks required to maintain the response action, including scheduled inspections, maintenance, and component replacement.

MPE Equipment – will be inspected prior to and after each recovery event to ensure the components are operating as designed/intended.

Use this worksheet to describe the operation and maintenance (O&M) activities for each response action. In situations where the response action consists of more than one major component, for clarity one worksheet can be completed for each major component.

Response Action Name/Designation: DNAPL Recovery (Pneumatic pumps / peristaltic pump)
List all portions of the response action to which this information applies.

Describe the O&M and inspection activities that will be required to operate and maintain response action components.

Operations and maintenance activities required for the single well pneumatic pumps operated in the West PCLE Zone at MW-12B and MW-41B include the following:

- Removal of the pneumatic pump for inspection and cleaning.
- Repair/replacement of pneumatic pumps and/or associated appurtenances as needed.
- Well head inspection
- Ensure fluid collection vessels are free from leaks, corrosion, or other issues that could lead to releases to the environment.
- Ensure extracted fluids are properly disposed in a timely manner.

List and discuss the key operating parameters for a properly functioning response action. Address how changes in these parameters will result in operating changes, providing sufficient detail to explain how the operator will know the component is functioning properly.

The key operating parameter for a properly functioning response action is the successful recovery of DNAPL. The operator will know the component is functioning properly when DNAPL of a sufficient thickness is measured in the well and recovered. If DNAPL levels in wells change, the frequency of the recovery events will be adjusted accordingly.

List the routine tasks required to operate the response action.

The DNAPL recovery activities in West PCLE Zone wells MW-12B and MW-41B will consist of measuring the depth to groundwater surface, the depth to groundwater/DNAPL interface, and the total depth of the well relative to the top of casing prior to pumping. DNAPL will be pumped from the bottom of each well until groundwater returns in the pump discharge. The volume of recovered DNAPL will be estimated from each well based on the volume pumped, and the well will be gauged to measure the total depth of the well and the depth to remaining DNAPL following pumping. Recovered DNAPL will be consolidated into 55-gallon drums and temporarily stored at the Containment Storage Area, pending disposal at the permitted facilities.

List the routine tasks required to maintain the response action, including scheduled inspections, maintenance, and component replacement.

Inspections of pumps will be conducted during each recovery event. If pumps do not recover DNAPL when DNAPL is present, they will be repaired or replaced as soon as practicable.

Response Action Name/Designation: **NAPL Collection System (Englewood IM Yard)**
List all portions of the response action to which this information applies.

Describe the O&M and inspection activities that will be required to operate and maintain response action components.

The inspection and maintenance program for the NAPL Collection System will be incorporated into the overall concrete capped area operation and maintenance as described within the RAP Worksheet 5.0. Specifically, for the NAPL Collection System, UPRR will conduct weekly site inspections for the first six months after construction to monitor the performance of the NAPL collection system, and then evaluate the inspection frequency after that point. If NAPL accumulates in the sumps, the NAPL will be recovered and disposed of at a permitted facility. Details of the NAPL recovery and proposed changes to inspection frequency will be provided in subsequent PRACRs.

List and discuss the key operating parameters for a properly functioning response action. Address how changes in these parameters will result in operating changes, providing sufficient detail to explain how the operator will know the component is functioning properly.

Since the NAPL Collection System is a passive system, there are no operating parameters that would affect the operation of the system.

List the routine tasks required to operate the response action.

List the routine tasks required to maintain the response action, including scheduled inspections, maintenance, and component replacement.

Confirmation Sampling Plan Associated Information: Attachment 4A	RAP Worksheet 4.0 Page _1 of _1_ ID No.: 31547 | Report Date: August 31, 2020 – Rev 5

List the COCs and other parameters that will be sampled to confirm completion of the response action. Illustrate the monitoring or sampling locations in Attachment 4A. If monitoring or observation wells will be constructed for the response action, provide well construction details in Attachment 2B if not previously provided. If needed, describe the sample collection and handling methods, if not previously provided, in Appendix 6.

Media	COC[1]	Other parameter (specify)	Sampling Method	Sampling points[2]	Depth/height (ft.)	Analytical Method	Sampling Frequency
Surface Soil	None						
Subsurface Soil	None						
Groundwater	Site-Specific VOCs		Same as APAR (low-flow sampling)	See Attachment 3A for list of wells	Middle of screened interval of well	US EPA 8260	Semi-Annual
	Site-Specific SVOCs					US EPA 8270	Semi-Annual
	Arsenic					US EPA 6010/6020	Semi-Annual
Surface water	Not Applicable						
Sediment	Not Applicable						
Air							
Other media (specify)							

Explain the reasons for the above-listed sampling plan. Discuss statistical or geostatistical methodology(ies) which will be applied, if any, in the data collection process. Discuss any assumptions made in the statistical/geostatistical assessment, and how they will be met.

See explanation previously provided in Worksheet 3.1.

[1] Specify either a specific COC or type of COC (such as VOCs, metals).
[2] Specify the sampling point to the degree it is known, (for example, MW-1, or near former boring #2).

Complete this worksheet only if Remedy Standard B will be used.

What is the proposed initial post-response action care period? (default 30 yr.) **30** years

If the proposed initial post-response action care period is less than 30 years, provide a technical justification in accordance with §350.33(h).

Soil Response Action

The initial post-response action care period for the clay cap (HWPW), asphalt roadway (HWPW), concrete sidewalk (off-site City of Houston ROW), concrete pavement (Englewood Intermodal Yard), and railroad ballast area is 30 years. Inspections and maintenance of the caps will be performed for an initial period of 30 years.

Groundwater Response Action

The post-response action care period for groundwater monitoring will be 30 years. A shorter post-response action care period will be proposed if the following conditions are met:

- Off-site DNAPL is no longer recoverable;
- Off-site groundwater concentrations decrease to levels below cPCLs or groundwater COC trends confirm stable or decreasing dissolved plume mass;
- DNAPL recovery within the western portion of the Site has reached asymptotic conditions.

What is the foreseeable land use during the post-response action care period? **Commercial/Industrial and Residential (off-site City of Houston ROW)**

Describe how the future use of the property will not compromise the integrity of the physical controls, will not interfere with the function of the monitoring systems, will not pose a threat to human health or the environment, and will be in accordance with any institutional controls.

The four soil response areas within the Site will require post-response action care:
(1) the former HWPW area is inactive and UPRR restricts access to the HWPW soil capped area to those performing inspections, monitoring or maintenance. Access to the HWPW area is limited by fencing. The asphalt roadway is intended to only be used by UPRR employees and contractors for the servicing of rail and signal communications in the area. Signs are posted stating that digging is prohibited on the capped area and asphalt roadway.

(2) For the concrete cap area within the Englewood Intermodal Yard, this area will continue to be used for the commercial/industrial intermodal operations. The Englewood Intermodal Yard is secured by fencing and security guards that limit access to the area to UPRR employees, contractors, and vendors to the yard. The concrete pavement that makes up the cap was designed for its current use (i.e., allow loading, unloading, transportation, and storage of container boxes). UPRR recently constructed the NAPL Collection System in the areas where the tar-like material was seeping. UPRR will continue to monitor the conditions at the Englewood Intermodal Yard as part of the operation and maintenance of the concrete cap and NAPL Collection System.

(3) The railroad ballast area will continue to be used for railroad operations and will be maintained for those operations. UPRR Engineering Standards for Roadbase Section for Wood Tie Track Construction (UPRR, 2006) indicates that the recommended minimum ballast thickness is 15 inches, which will serve as the protective barrier for on-site workers from exposure to surface soils.

(4) For the proposed concrete sidewalk within the City of Houston ROW to address the surface soil PCL zone, the concrete cap will protect the occasional trespasser that may walk along the sidewalk. The addition of the sidewalk in the area provides additional benefit of allowing all access to mass-transportation bus stop. Signs will be posted stating that digging is prohibited within the concrete capped

area.

Institutional controls will be placed on the proposed PMZ areas to prohibit installation of groundwater wells and use of the shallow groundwater. This extends from the UPRR property (will be deed recorded commercial/industrial use only) to the off-site City of Houston right of ways (ROWs) (Attachment 5A).

Briefly describe the proposed post-response action care activities. Describe the type of monitoring and/or inspections to be performed. Discuss the rationale for not including COC(s) analyzed during the response action, monitoring or sampling point location, frequency of monitoring and/or inspections, and the duration of the monitoring program.

The cap inspection and maintenance program will be developed to ensure the integrity of the cap and vegetative cover (where present). The maintenance program will consist of the following:

I. Soil Cap Area / Slurry Wall - HWPW

VISUAL INSPECTIONS
Inspections will be performed on a quarterly basis and after major storms. The inspections will focus on the following major issues:

1) Erosion of the cap (gullies, rills, or other erosional features on the cap surface or in drainages)
2) Sideslope sloughing (slippage)
3) Settling/subsidence
4) Vegetation deterioration (inspect for deep rooted vegetation on top of slurry wall)
5) Damage from animals (i.e., rodents)
6) Groundwater monitoring equipment (wells) (semi-annual basis)

Locations where deficiencies are found shall be marked and repaired as soon as practicable.

MAINTAINING THE COVER AND VEGETATION
The cover and vegetation will be maintained by:

1) Preventing ponding
2) Maintaining design slopes and grades
3) Fertilizing, as necessary
4) Mowing, as necessary
5) Replanting, as necessary
6) Controlling animals (rodents, hogs) and insects

Routine repairs of the cover and maintenance of the slopes and grades will be performed to prevent ponding and drainage problems. Vegetation may require periodic application of fertilizer, mulch, or seed. Vegetation will target pollinator seed mixes to attract pollinator species. Mowing will be performed as needed but less frequently than a grass covered cap and only periodically to promote the growth of desired vegetation and to block the growth of trees or shrubs which could penetrate the cover soil with their roots.

EROSION CONTROL
Maintenance of the drainage and diversion portions of the cap will be performed. Erosion of soil by water and/or wind will be repaired as soon as practicable.

II. Asphalt Roadway Area – HWPW

VISUAL INSPECTIONS
Inspections will be performed on a quarterly basis. The inspections will focus on the following major

issues:
1) Erosion of the asphalt roadway (potholes, exposed soils)
2) Settling/subsidence
3) Cracks in asphalt roadway

Locations where deficiencies are found shall be marked and repaired as soon as practicable.

MAINTAINING THE ASPHALT ROADWAY

The asphalt cover will be maintained by:
1) Crack repair/sealing;
2) Pothole patching; and
3) Controlling vegetation.

III. Concrete Sidewalk – City of Houston ROW along Liberty Road (Off-Site)

VISUAL INSPECTIONS

Inspections will be performed on a quarterly basis. The inspections will focus on the following major issues:
1) Step separation in the concrete;
2) Settling/subsidence;
3) Cracks in the concrete; and
4) Openings in the sidewalk.

Locations where deficiencies are found shall be marked and repaired as soon as practicable.

MAINTAINING THE CONCRETE SIDEWALK/PAVEMENT

The concrete sidewalk will be maintained by:
1) Crack repair/sealing;
2) Replacing panels as needed; and
3) Controlling vegetation growing through cracks/along edges of sidewalk.

IV. Concrete Pavement – Englewood Intermodal Yard (On-Site)/NAPL Collection System

VISUAL INSPECTIONS

Inspections will be performed on a quarterly basis. The inspections will focus on the following major issues:
1) Step separation in the concrete;
2) Settling/subsidence;
3) Cracks in the concrete; and
4) Seeps in the concrete/asphalt pavement.

Locations where deficiencies are found shall be marked and repaired as soon as practicable.

MAINTAINING THE CONCRETE PAVEMENT

The concrete pavement will be maintained by:
1) Crack repair/sealing when underlying soils are exposed;
2) Replacing broken concrete as needed; and
3) Controlling vegetation growing through cracks/along edges of pavement.

The following inspections and maintenance will be conducted for the NAPL Collection System constructed within the Englewood Intermodal Yard:

OPERATION/MAINTENANCE OF THE NAPL COLLECTION SYSTEM (INTERIM RESPONSE)

1. Inspections will be conducted as needed to monitor the performance of the NAPL Collection System. The inspections will focus on the following major issues:
   - Tar-like material seeps in the vicinity of the NAPL Collection System;
   - Inspecting the NAPL collection sumps for NAPL accumulation;

- Settling/subsidence;
- Cracks in the concrete;
- Locations where deficiencies are found shall be marked and repaired as soon as practicable.

2. If NAPL or fluids accumulate in the sumps, the NAPL and fluids will be recovered and disposed of at a permitted facility.

V. Railroad Ballast Area – (HWPW/Englewood Intermodal Yard)

VISUAL INSPECTIONS

Inspections will be performed on a quarterly basis. The inspections will focus on the following major issues:

1) Ballast removed with exposed soil.

Locations where deficiencies are found shall be marked and repaired as soon as practicable.

MAINTAINING THE RAILROAD BALLAST

The railroad ballast will be maintained by:

1) Adding railroad ballast where areas of soil are exposed;
2) Controlling vegetation.

The ballast areas will be maintained in accordance with UPRR Engineering Standards for Roadbase Section for Wood Tie Track Construction (UPRR, 2006).

GROUNDWATER MONITORING

Groundwater monitoring will be conducted per the Groundwater Monitoring Plan. The results of groundwater monitoring will be submitted annual in the PRACR. Groundwater monitoring will be performed as described in Worksheets 2.1, 3.0, and 4.0.

Will PRAC sampling procedures be the same as those as previously documented for monitoring and/ or confirmation sampling? X Yes ___ No

If no, provide in Appendix 6 a description of the monitoring or sampling collection procedures to be conducted during the post-response action care period.

Cost Estimate

Complete this portion of the form only if a physical control is proposed (installed hydraulic control system, slurry wall, cap, etc.). Provide in Attachment 5B a detailed cost estimate for a third party to operate and maintain the physical control during the PRAC period, based on current dollar amount.

Specify the physical control to which this information applies: HWPW Vegetated Clay Cap, Asphalt Roadway, City of Houston ROW Sidewalk, Englewood Intermodal Yard Concrete Pavement, and Railroad Ballast (shown on Attachment 5A), Groundwater Monitoring and MPE NAPL Recovery

Complete this worksheet for each physical control that will be used as part of the response action.

What is the total estimated annual cost of O&M for the PRAC period? ***$325,240***

What is the total estimated cost for a third party to perform PRAC activities? ***$9,757,200 (30-yr)***

Identify the type of financial assurance mechanism to be used, and the contact person managing fiduciary responsibility, if known.

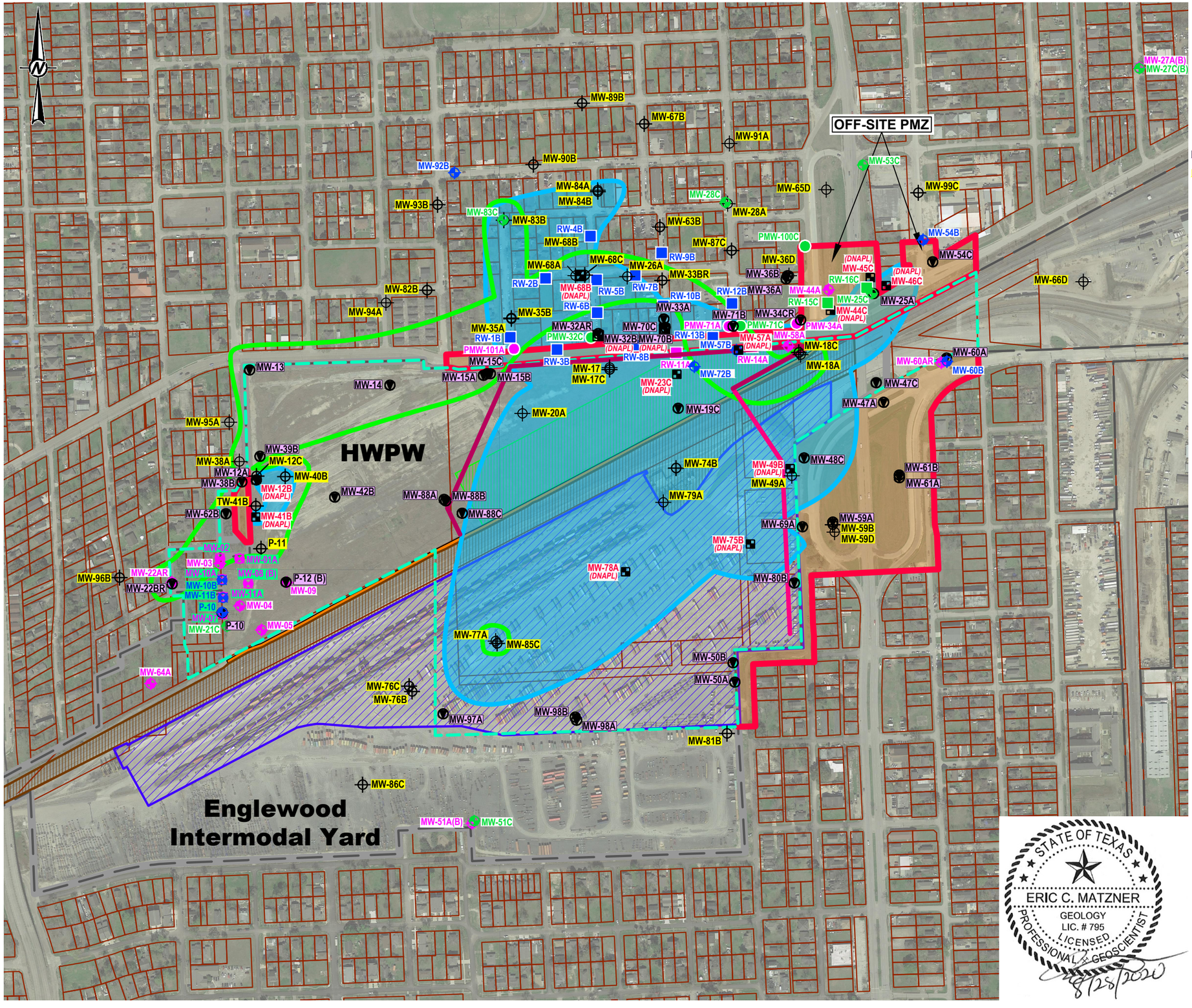
UPRR will submit an appropriate financial assurance mechanism to TCEQ within 90 days of the Revised RAP approval.

Does the person meet the criteria and definition of a small business? (see §350.33(n)) ___ Yes **X** No

If yes and the person desires to pursue the reduced amount of financial assurance, provide a legally binding affidavit as Attachment 5C. Include in the affidavit the information requested in 30 TAC §350.33(l), (m), and (n). An example affidavit is attached in the instructions.

ATTACHMENT 5A

MAP OF POST RESPONSE ACTION CARE MONITORING AND SAMPLING POINTS



LEGEND

- UPRR PROPERTY BOUNDARY
- PROPERTY BOUNDARY (GIMS)
- A-TZ MONITORING WELL LOCATION
- B-CZ/B-TZ MONITORING WELL LOCATION
- C-TZ MONITORING WELL LOCATION
- D-TZ MONITORING WELL LOCATION
- CORRECTIVE ACTION SYSTEM WELL (CAS) (DNAPL RECOVERY)
- MW-10A — RCRA UNIT NO. 1 POINT OF COMPLIANCE (POC) WELL
- MW-15A — ALTERNATE POINT OF EXPOSURE (APOE)
- MW-18A — CORRECTIVE ACTION OBSERVATION WELLS (CAO)
- GROUNDWATER PCLE ZONES (A-TZ, B-CZ/B-TZ AND C-TZ)
- GROUNDWATER PCLE ZONE - ARSENIC (A-TZ AND B-TZ)
- PROPOSED SLURRY WALL (TO 75 FT BGS)
- PROPOSED SLURRY WALL (TO 50 FT BGS)

PROPOSED CUMULATIVE PMZ (A-TZ, B-CZ/B-TZ, AND C-TZ)

- PROPOSED ON-SITE PMZ
- PROPOSED OFF-SITE PMZ - CITY OF HOUSTON ROW
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA
- PROPOSED A-TZ APOE MONITORING WELL LOCATION
- PROPOSED C-TZ APOE MONITORING WELL LOCATION
- PROPOSED CORRECTIVE ACTION WELL LOCATION (A-TZ DNAPL RECOVERY WELL)
- PROPOSED CORRECTIVE ACTION WELL LOCATION (B-CZ/B-TZ DNAPL RECOVERY WELL)
- PROPOSED CORRECTIVE ACTION WELL LOCATION (C-TZ DNAPL RECOVERY WELL)

NOTE(S)

1. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2020)
2. (B) - BACKGROUND WELL.

REFERENCE(S)

PARCEL BOUNDARIES: CITY OF HOUSTON GEOGRAPHIC INFORMATION & MANAGEMENT SYSTEMS (GIMS).
AERIAL: GOOGLE EARTH, IMAGERY DATED 2/23/19.

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
POST-RESPONSE ACTION CARE MONITORING MAP

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
8/25/2020

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-08-28
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | ATTACHMENT 5A

Path: \\texarkana\data\Projects - Round Rock_2019\19119232 - HWPW\2020-8 RAP Revision\ | File Name: ATT 5A - Post-Response Action Care Monitoring Map.dwg | Last Edited By: rsalazar Date: 2020-08-28 Time:2:50:57 PM | Printed By: RSalazar Date: 2020-08-28 Time:4:18:52 PM
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B
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ATTACHMENT 5B

POST-RESPONSE ACTION CARE COSTS

ATTACHMENT 5B
TABLE 1 - POST-RESPONSE ACTION CARE COST ESTIMATE
HWPW - DNAPL RECOVERY AND CAP INSPECTIONS

1.	**Pumping Capacity Per Year:**		
A.	Daily average system pumping rate		gal/day
B.	Annual groundwater volume recovered **(est. purge water plus recovered creosote DNAPL)**	4000	gal/yr
2.	**Off-Site Liquid Treatment / Disposal Cost:**		
A.	Volume of treated contaminated water to be disposed of off-site yearly	4000	gal/yr
B.	Transportation of liquid waste disposed of off-site yearly		
	(1) Transportation cost per gallon		$/gal
	(2) Gallons of contaminated water shipped per year		gal/yr
	(3) Annual cost of transportation (1 x 2)	$ 3,400.00	$/yr
C.	On-site yearly storage cost prior to off-site disposal		$/yr
D.	Off-site yearly treatment cost of liquid waste		
	(1) Treatment charge per gallon		$/gal
	(2) Total volume to be treated per year		gal/yr
	(3) Annual treatment cost (1 x 2)		$/yr
E.	Off-site disposal cost of liquid waste per year		
	(1) Disposal charge per gallon	$ 10.00	$/gal
	(2) Total volume to be disposed per year	3400	gal/yr
	(3) Annual disposal cost (1 x 2)	$ 34,000	$/yr
***Annual Off-Site Liquid Treatment / Disposal Cost (2B3 + 2C +2D3 + 2E3)**		$ 37,400	**$**

3. On-site Waste Water Treatment System Cost and On-site Treatment / Disposal Cost:

Submit a cost estimate for a treatment system specifically designed and used exclusively for the groundwater corrective action program and operational after some start up maintenance. Estimates to clean out the system should also be included in the following cost.

A.	Initial capital expenditure for treatment system including start up maintenance		$
***On-Site Waste Water Treatment System Capital Cost (3A)**		$ -	**$**
B.	Gallons of contaminated water to be treated on-site per year		gal/yr
C.	Cost of on-site treatment per gallon		$/gal
D.	Cost of sludge, or solids disposal per year		$/yr
E.	Cost per year of maintenance on treatment system and recovery system, along with any additional equipment and repairs needed for the systems		$/yr
F.	Cost of on-site disposal per year		$/yr
***Annual On-Site Treatment / Disposal Cost [(3B x 3C) + 3D + 3E + 3F]**		$ -	**$**

4. Inspections, Maintenance and Operation Cost for the Corrective Action Program: (Soil Cap, Asphalt Roadway, Concrete Sidewalk, Concrete Cap, and Railroad Ballast Inspections)

A.	Operator's time on-site for inspections and maintenance per year	40	hour/yr
B.	Charge of salary per hour	$ 100.00	$/hr
C.	Annual cost of labor (4A x 4B)	$ 4,000	$/yr
D.	Replacement of parts and equipment per year (includes mowing and repairs)	$ 43,000	$/yr
E.	Electricity cost per year		$/yr
***Annual Inspections / Maintenance / Operation Cost for the Corrective Action Program (4C + 4D + 4E)**		$ 47,000	**$**

ATTACHMENT 5B
TABLE 1 - POST-RESPONSE ACTION CARE COST ESTIMATE
GROUNDWATER MONITORING COST ESTIMATE

1. Annual Sampling and Analysis Cost:		
A. Background Wells		
(1) Number of wells	2	
(2) Sample analysis cost per well	$ 150.00	$/well
(3) Number of sampling events per year	2	/yr
(4) Sampling cost (1 x 2 x 3)	$ 600.00	$
B. Point of Compliance Wells (SWMU 1 Wells only)		
(1) Number of wells	8	
(2) Sample analysis cost per well	$ 150.00	$/well
(3) Number of sampling events per year	2	/yr
(4) Sampling cost (1 x 2 x 3)	$ 2,400.00	$
C. Recovery Wells		
(1) Number of wells		
(2) Sample analysis cost per well		$/well
(3) Number of sampling events per year		/yr
(4) Sampling cost (1 x 2 x 3)	$ -	$
D. Corrective Action Observation Wells		
(1) Number of wells	51	
(2) Sample analysis cost per well	$ 250.00	$/well
(3) Number of sampling events per year	2	/yr
(4) Sampling cost (1 x 2 x 3)	$ 25,500	$
E. Point of Exposure Wells		
(1) Number of wells	47	
(2) Sample analysis cost per well	$ 250.00	$/well
(3) Number of sampling events per year	2	/yr
(4) Sampling cost (1 x 2 x 3)	$ 23,500	$
F. Supplemental Wells		
(1) Number of wells	3	
(2) Sample analysis cost per well	$ 250.00	$/well
(3) Number of sampling events per year	2	/yr
(4) Sampling cost (1 x 2 x 3)	$ 1,500	$

ATTACHMENT 5B
TABLE 1 - POST-RESPONSE ACTION CARE COST ESTIMATE
GROUNDWATER MONITORING COST ESTIMATE

G. Field Quality Control Sampling		
(1) Number of wells	5	
(2) Sample analysis cost per well	$ 250.00	$/well
(3) Number of sampling events per year	2	/yr
(4) Sampling cost (1 x 2 x 3)	$ 2,500.00	$
2. Sampling Labor Cost:		
A. Hours of sampling per well	2	hrs/well
B. Number of sampling technicians per well	1	
C. Charge per hour	$ 95.00	$/hr
D. Total number of wells to be sampled annually		Wells
E. Total number of wells sampled semi-annually	116	Wells
F. Total number of wells sampled quarterly		Wells
G. Total number of wells sampled monthly		Wells
H. Total number of wells sampled per year (2D) + (2E x 2) + (2F x 4) + (2G x 12)	232	total wells sampled/yr
I. Sampling Labor Cost (2A x 2B x 2C x 2H)	$ 44,080	$
***Annual Groundwater Monitoring Cost**	$ 97,580	**$**
3. Well Installation (typical cost):		
A. Monitor well installation cost per well	$ 15,000	$/well
B. Number of monitor wells to be installed	6	Wells
C. Cost of monitor well system (A x B)	$ 90,000	$
D. Recovery well installation cost per well	$ 16,700	$/well
E. Number of Recovery Wells to be installed	18	Wells
F. Cost of Recovery well system (D x E)	$ 300,600	$
***Total Well Installation Cost (3C + 3F)**	$ 390,600	**$**
4. Administrative Cost:		
A. Annual cost for record-keeping and report preparation	$ 27,650	$
***Annual Administrative Cost (4A)**	$ 27,650	**$**
5. Inspection and Maintenance Cost for the Monitoring Program:		
A. Operator's time (hours) on-site for inspections and maintenance per year	20	hour/yr
B. Charge or salary per hour	$ 90.00	$/hr
C. Annual cost of labor (5A x 4B)	$ 1,800	$/yr
D. Replacement of parts and equipment per year	$ 7,700.00	$/yr
***Annual Inspections / Maintenance Cost for the Groundwater Monitoring Program (5C + 5D)**	$ 9,500	**$**

ATTACHMENT 5B
TABLE 1 - POST-RESPONSE ACTION CARE COST ESTIMATE

Annual Off-Site Liquid Treatment / Disposal Cost	**$**	**37,400**
Annual On-Site Treatment / Disposal Cost		
Annual Inspection / Maintenance / Operation Cost For The Corrective Action Program	**$**	**47,000**
Annual Groundwater Monitoring Cost	**$**	**97,580**
Annual Administrative Cost	**$**	**27,650**
Annual Inspection And Maintenance Cost For The Groundwater Monitoring Program	**$**	**9,500**
Annual DNAPL Recovery Costs (MPE)	**$**	**106,110**
Annual Sub Total	**$**	**325,240**
Total Years Used For Calculating PRAC	**$**	**30** Yrs
PRAC Costs (Annual Sub Total x Total Years Used)	**$**	**9,757,200**

Grand Total Cost (nearest $1000)	**$**	**9,757,200**

Implementation Schedule	RAP Worksheet 6.0 Page 1 of 3	
	ID No.: SWR ID 31547	Report Date: August 31, 2020 – Rev 5

Document the proposed schedule for implementing the response action. Include all major response action activities through the life of the project, including all removal, decontamination, and control actions, component installations, O&M, monitoring, and post-response action care activities.

Implementation of Response Action (specify component or action)	Start	Finish	Duration
Filing of deed recordation for UPRR-owned properties requiring commercial/industrial land use and prohibiting groundwater use. Deed recordation will also restrict excavation activities over capped areas.	Upon Revised RAP approval	Within 120 days from RAP approval	120 days
Filing of restrictive covenants prohibiting groundwater use for off-site PMZ. Filing of deed recordation for City of Houston ROW for prohibiting groundwater use and restriction of excavation where concrete sidewalk will be installed.	Upon Revised RAP approval	Within 120 days from RAP approval	120 days
Plugging of monitoring wells within the capped area, installation of additional monitoring wells at the POEs	Completed	Completed	Completed
Excavation of Surface Soil PCLE Zone, relocation under the AOC Policy, and construction of the soil cap, asphalt roadway, and concrete sidewalk	Completed	Completed	Completed
Installation of the NAPL Collection System in the Englewood I Yard (Interim Corrective Action)	Completed	Completed	Completed
NAPL Collection System in the Englewood IM Yard (Interim Corrective Action) Weekly Inspections	Ongoing	Uncertain – to be evaluated annually	Uncertain – to be evaluated annually
Quarterly cap inspections (soil cap, asphalt roadway, Englewo IM Yard concrete cap, and concrete sidewalk)	Ongoing	30 years	30 yr O&M
Semi-annual groundwater monitoring (submitted to TCEQ under the Post-Response Action Care Reports (PRACR)/Ann Groundwater Monitoring Report)	Ongoing	Submitted by March 31 of the following year	30 yr O&M – sample freq. and wells to be evaluated annually
DNAPL Recovery Activities (pneumatic pumps and MPE Events) (with annual evaluation of effectiveness), quarterly status reports to be submitted to the TCEQ.	Ongoing/ Start MPE Events within 60 days of Mobile MPE Pilot Study completion	Uncertain – to be evaluated annually	Uncertain – to be evaluated annually
Physical Barrier (Cap/Sidewalk/Pavement/Ballast) Inspection and Maintenance	Ongoing	30 years	30 yr O&M
Slurry Wall Construction and Installation	Within 120 days of completing pre-design assessment	Within 300 days of completing pre-design assessment	180 days
Mobile MPE Well Install and Implementation (MPE Events monthly for the first 12 months, then quarterly for the next three years, evaluate frequency an annual basis and continuation of response action)	Within 90 days of completing the Mobile MPE Pilot Study	Uncertain – to be evaluated annually	Uncertain – to be evaluated annually

Annual Groundwater Corrective Action Monitoring Report, documenting all remediation and post-response action activities at the Site including the PRACR	See the following Submittal table	See the following Submittal table	See the following Submittal table
Pre-Design Assessments/Schedule			
Slurry Wall Pre-Design Assessment	Within 60 days of RAP Approval	Within 150 days of RAP Approval	90 Days
Mobile MPE Pilot Study: Installation of recovery wells	Within 60 days of RAP Approval	Within 120 days of RAP Approval	60 Days
Englewood IM Yard Test Pit Evaluation Report	Within 60 days of RAP Approval	Within 120 days of RAP Approval	60 Days

List the proposed schedule for report submittals. Add additional lines if more reports than listed will be needed to complete the response action.

Reports	Submittal date
Response Action Effectiveness Report (RAER)	
RAER submittal number 1	March 31, 2024 (submitted within the PRACR)
RAER submittal number 2	March 31, 2027 (submitted within the PRACR)
RAER submittal number 3	March 31, 2030 (submitted within the PRACR)
Subsequent RAER submittals	Every three years
Response Action Completion Report (RACR) (Following installation of the slurry wall)	Within 90 days completing the slurry wall construction
Post-Response Action Care Report (PRACR) (to be submitted with the Annual Groundwater Monitoring Report as an attachment:	
PRACR submittal number 1	March 31, 2021
PRACR submittal number 2	March 31, 2022
PRACR submittal number 3	March 31, 2023
PRACR submittal number 4	March 31, 2024
PRACR submittal number 5	March 31, 2025
PRACR submittal number 6	March 31, 2026
PRACR submittal number 7	March 31, 2027
PRACR submittal number 8	March 31, 2028
PRACR submittal number 9	March 31, 2029
PRACR submittal number 10	March 31, 2030
PRACR submittal number 11	March 31, 2031
PRACR submittal number 12	March 31, 2032
PRACR submittal number 13	March 31, 2033
PRACR submittal number 14	March 31, 2034
PRACR submittal number 15	March 31, 2035
PRACR submittal number 16	March 31, 2036
PRACR submittal number 17	March 31, 2037
PRACR submittal number 18	March 31, 2038
PRACR submittal number 19	March 31, 2039
PRACR submittal number 20	March 31, 2040
PRACR submittal number 21	March 31, 2041
PRACR submittal number 22	March 31, 2042

PRACR submittal number 23	March 31, 2043
PRACR submittal number 24	March 31, 2044
PRACR submittal number 25	March 31, 2045
PRACR submittal number 26	March 31, 2046
PRACR submittal number 27	March 31, 2047
PRACR submittal number 28	March 31, 2048
PRACR submittal number 29	March 31, 2049
PRACR submittal number 30	March 31, 2050

***This schedule assumes RAP approval by December 31, 2020 and PMZ implementation (i.e., filing of required restrictive covenants) by March 31, 2021.**

LIST OF APPENDICES

APPENDIX **TITLE**

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Boring Logs and Monitor Well Completions from 2018 and 2020

3 STUDIES AND TESTS DOCUMENTATION

3A. Pentachlorophenol Soil Assessment Interim Report dated March 30, 2020 and Updated Pentachlorophenol Soil Assessment Interim Report dated July 14, 2020
3B. Soil Vapor Intrusion Assessment Interim Report dated March 31, 2020 and Updated Soil Vapor Intrusion Assessment Interim Report dated August 4, 2020
3C. Interim Groundwater Monitoring Report (2019-2020) dated April 30, 2020
    a. Addendum 1: Revised Groundwater Gradient Maps Figure 5A-1b through 5A-3b (January-March 2020)
    b. Addendum 2: Data Usability Summary and Laboratory Report - May/June 2020 Groundwater Sampling of New Wells
3D. Interim Non-Aqueous Phase Liquid (NAPL) and Total Petroleum Hydrocarbon (TPH)-NAPL Assessment Report dated May 29, 2020
3E. Risk-Based NAPL Management Technical Memorandum dated August 20, 2020
3F. 3-D Visualization Model Technical Memorandum dated August 18, 2020
3G. Groundwater Flow Model Technical Memorandum dated August 18, 2020
3H. Mass Flux Technical Memorandum dated August 18, 2020
3I. DNAPL Recovery Activities Report – 2nd Quarter 2020

4 PROPOSED INSTITUTIONAL CONTROLS

5 LANDOWNER CONCURRENCE

6 SAMPLING PROCEDURES

7 STATISTICAL METHODOLOGY

APPENDIX 1

REFERENCES

References

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APPENDIX 2

DATA TABLES AND BORING LOGS

Table 1 – Groundwater Measurements
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Boring Logs and Monitor Well Completions from 2018 and 2020

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-01A	47.92	9/2/1993	6.96			40.99
	47.92	12/21/1993	3.28			44.67
	47.92	3/24/1994	3.95			44
	47.92	6/22/1994	5.30			42.65
	47.92	9/28/1994	7.10			40.85
	47.92	10/13/1994	7.26			40.69
	47.92	1/24/1995	2.63			45.32
	47.92	4/11/1995	2.61			45.34
	47.92	7/11/1995	4.78			43.17
	47.92	1/23/1996	5.67			42.28
	47.92	7/19/1996	7.84			40.11
	47.92	9/17/1996	8.33			39.62
	47.92	10/31/1996	6.90			41.05
	47.92	11/22/1996	8.63			39.32
	47.92	12/27/1996	5.50			42.45
	47.92	1/22/1997	3.41			44.54
	47.92	2/21/1997	2.68			45.27
	47.92	3/25/1997	2.96			44.99
	47.92	4/23/1997	4.27			43.68
	47.92	4/24/1997	4.47			43.48
	47.92	5/13/1997	2.91			45.04
	47.92	6/20/1997	4.88			43.07
	47.92	6/25/1997	2.59			45.36
	47.92	7/1/1997	4.04			43.91
	47.92	7/24/1997	6.80			41.15
	47.92	8/16/1997	7.84			40.11
	47.92	8/22/1997	9.52			38.43
	47.92	9/25/1997	6.02			41.93
	47.92	10/22/1997	4.89			43.06
	47.92	11/25/1997	4.88			43.07
	47.92	12/19/1997	4.26			43.69
	47.92	1/20/1998	3.10			44.85
	47.92	3/3/1998	2.87			45.08
	47.92	3/18/1998	2.68			45.27
	47.92	4/24/1998	6.73			41.22
	47.92	5/21/1998	6.89			41.06
	47.92	7/30/1998	7.96			39.99
	47.92	8/25/1998	6.87			41.08
	47.92	9/21/1998	4.70			43.25
	47.92	10/26/1998	5.98			41.97
	47.92	11/23/1998	4.11			43.84
	47.92	1/29/1999	3.01			44.94
	47.92	2/26/1999	3.20			44.75
	47.92	3/16/1999	3.71			44.24
	47.92	4/29/1999	3.93			44.02
	47.92	6/1/1999	3.98			43.97
	47.92	7/30/1999	4.31			43.64
	47.92	8/27/1999	4.11			43.84
	47.92	9/27/1999	9.67			38.28
	47.92	10/29/1999	10.67			37.28
	47.92	12/29/1999	10.00			37.95
	47.92	2/4/2000	12.71			35.24
	47.92	2/25/2000	9.10			38.85
	47.92	3/27/2000	7.38			40.57
	47.92	4/7/2000	7.00			40.95
	47.92	5/31/2000	7.15			40.8
	47.92	6/1/2000	7.00			40.95
	47.92	7/28/2000	7.11			40.84
	47.92	8/30/2000	10.33			37.62
	47.92	9/19/2000	11.56			36.39
	47.92	10/27/2000	9.01			38.94
	47.92	11/21/2000	8.49			39.46
	47.92	5/1/2001	6.60			41.35
	47.92	10/1/2001	6.85			41.1
	47.92	3/11/2002	3.31			44.64
	47.92	9/23/2002	3.23			44.72
	47.92	3/10/2003	2.48			45.44
	47.92	9/23/2003	4.29			43.63

Table 1
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Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-01A	47.92	3/15/2004	3.49			44.43
	47.92	9/13/2004	8.26			39.66
	47.92	7/18/2005	3.73			44.19
	47.92	1/4/2006	8.54			39.38
	47.92	7/27/2006	3.10			44.82
	47.92	1/23/2007	2.26			45.66
	47.92	3/7/2007	2.36			45.56
	47.92	7/27/2007	4.05			43.87
	47.92	1/28/2008	2.51			45.41
	47.92	7/16/2008	7.21			40.71
	47.92	1/22/2009	6.21			41.71
	47.92	7/22/2009	6.96			40.96
	47.92	1/8/2010	3.07			44.85
	47.92	7/12/2010	3.87			44.05
	47.88	1/12/2011	3.63			44.25
	47.88	7/13/2011	9.94			37.94
	47.88	1/27/2012	3.19			44.69
	47.88	7/10/2013	9.96			37.92
	47.88	1/8/2014	5.21			42.67
	47.88	7/2/2014	6.81			41.07
	47.88	1/7/2015	2.36			45.52
	47.88	8/10/2015	4.11			43.77
	47.90	1/12/2016	2.49			45.41
	47.90	7/7/2016	5.42			42.48
	47.90	1/12/2017	4.29			43.61
	47.90	7/12/2017	6.19			41.71
	47.90	1/3/2018	6.47			41.43
	47.90	7/18/2018	5.88			42.02
	47.90	1/3/2019	5.96			41.94
	47.90	7/1/2019	2.85			45.05
	47.90	1/14/2020	2.71			45.19
MW-02	47.97	9/2/1993	7.45			40.58
	47.97	12/21/1993	2.58			45.45
	47.97	3/24/1994	4.08			43.95
	47.97	6/22/1994	5.85			42.18
	47.97	9/28/1994	7.05			40.98
	47.97	10/13/1994	7.69			40.34
	47.97	1/24/1995	2.12			45.91
	47.97	4/11/1995	2.53			45.5
	47.97	7/11/1995	5.34			42.69
	47.97	1/23/1996	5.69			42.34
	47.97	7/19/1996	8.28			39.75
	47.97	9/17/1996	8.84			39.19
	47.97	10/31/1996	7.11			40.92
	47.97	11/22/1996	8.99			39.04
	47.97	12/27/1996	5.42			42.61
	47.97	1/22/1997	3.08			44.95
	47.97	2/21/1997	2.60			45.43
	47.97	3/25/1997	2.98			45.05
	47.97	4/23/1997	4.60			43.43
	47.97	4/24/1997	4.78			43.25
	47.97	5/13/1997	2.89			45.14
	47.97	6/20/1997	5.45			42.58
	47.97	6/25/1997	2.59			45.44
	47.97	7/1/1997	4.48			43.55
	47.97	7/24/1997	7.42			40.61
	47.97	8/16/1997	8.42			39.61
	47.97	8/22/1997	9.20			38.83
	47.97	9/25/1997	4.53			43.5
	47.97	10/22/1997	4.95			43.08
	47.97	11/25/1997	4.97			43.06
	47.97	12/19/1997	4.33			43.7
	47.97	1/20/1998	3.05			44.98
	47.97	3/3/1998	2.88			45.15
	47.97	3/18/1998	2.66			45.37
	47.97	4/24/1998	7.09			40.94
	47.97	5/21/1998	7.00			41.03
	47.97	7/30/1998	8.11			39.92

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-02	47.97	8/25/1998	7.33			40.7
	47.97	9/21/1998	4.18			43.85
	47.97	10/26/1998	6.85			41.18
	47.97	11/23/1998	4.63			43.4
	47.97	1/29/1999	3.51			44.52
	47.97	2/26/1999	3.61			44.42
	47.97	3/16/1999	3.55			44.48
	47.97	4/29/1999	3.76			44.27
	47.97	6/1/1999	3.76			44.27
	47.97	7/30/1999	4.61			43.42
	47.97	8/27/1999	3.96			44.07
	47.97	9/27/1999	10.12			37.91
	47.97	10/29/1999	11.33			36.7
	47.97	12/29/1999	10.66			37.37
	47.97	2/4/2000	13.19			34.84
	47.97	2/25/2000	9.57			38.46
	47.97	3/27/2000	7.73			40.3
	47.97	4/7/2000	7.30			40.73
	47.97	5/31/2000	7.33			40.7
	47.97	6/1/2000	7.31			40.72
	47.97	7/28/2000	7.35			40.68
	47.97	8/30/2000	10.55			37.48
	47.97	9/19/2000	11.93			36.1
	47.97	10/27/2000	9.04			38.99
	47.97	11/21/2000	8.66			39.37
	47.97	5/1/2001	6.91			41.12
	47.97	10/1/2001	8.22			39.81
	47.97	3/11/2002	3.33			44.7
	47.97	9/23/2002	3.16			44.87
	47.97	3/10/2003	2.54			45.43
	47.97	9/23/2003	3.29			44.68
	47.97	3/15/2004	2.87			45.1
	47.97	9/13/2004	8.71			39.26
	47.97	7/18/2005	2.98			44.99
	47.97	1/4/2006	8.77			39.2
	47.97	7/27/2006	2.87			45.1
	47.97	1/23/2007	2.34			45.63
	47.97	3/7/2007	2.23			45.74
	47.97	7/27/2007	4.40			43.57
	47.97	1/28/2008	2.42			45.55
	47.97	7/16/2008	7.72			40.25
	47.97	1/22/2009	6.31			41.66
	47.97	7/22/2009	7.56			40.41
	47.97	1/8/2010	3.91			44.06
	47.97	7/12/2010	4.37			43.6
	48.00	1/12/2011	3.63			44.37
	48.00	7/13/2011	10.28			37.72
	48.00	1/27/2012	2.67			45.33
	48.00	7/10/2013	10.58			37.42
	48.00	1/8/2014	5.47			42.53
	48.00	7/2/2014	7.51			40.49
	48.00	1/7/2015	2.41			45.59
	48.00	8/10/2015	4.96			43.04
	47.89	1/12/2016	2.91			44.98
	47.89	7/7/2016	6.12			41.77
	47.89	1/12/2017	4.62			43.27
	47.89	7/12/2017	6.82			41.07
	47.89	1/3/2018	6.87			41.02
	47.89	7/18/2018	6.62			
	47.89	1/3/2019	6.31			41.58
	47.89	7/1/2019	3.09			
	47.89	1/14/2020	2.42			45.47
MW-03	48.34	9/2/1993	8.17			40.17
	48.34	12/21/1993	3.81			44.53
	48.34	3/24/1994	4.74			43.6
	48.34	6/22/1994	6.35			41.99
	48.34	9/28/1994	7.56			40.78
	48.34	10/13/1994	8.21			40.13

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GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-03	48.34	1/24/1995	3.18			45.16
	48.34	4/11/1995	3.22			45.12
	48.34	7/11/1995	7.90			40.44
	48.34	1/23/1996	6.27			42.07
	48.34	7/19/1996	8.77			39.57
	48.34	9/17/1996	9.31			39.03
	48.34	10/31/1996	7.61			40.73
	48.34	11/22/1996	9.48			38.86
	48.34	12/27/1996	6.14			42.2
	48.34	1/22/1997	5.68			42.66
	48.34	2/21/1997	3.13			45.21
	48.34	3/25/1997	3.48			44.86
	48.34	4/23/1997	5.17			43.17
	48.34	4/24/1997	5.25			43.09
	48.34	5/13/1997	3.41			44.93
	48.34	6/20/1997	5.91			42.43
	48.34	6/25/1997	3.11			45.23
	48.34	7/1/1997	4.91			43.43
	48.34	7/24/1997	7.90			40.44
	48.34	8/16/1997	8.91			39.43
	48.34	8/22/1997	9.65			38.69
	48.34	9/25/1997	6.96			41.38
	48.34	10/22/1997	5.50			42.84
	48.34	11/25/1997	5.55			42.79
	48.34	12/19/1997	5.10			43.24
	48.34	1/20/1998	3.58			44.76
	48.34	3/3/1998	3.37			44.97
	48.34	3/18/1998	3.16			45.18
	48.34	4/24/1998	7.54			40.8
	48.34	5/21/1998	7.50			40.84
	48.34	7/30/1998	8.44			39.9
	48.34	8/25/1998	7.56			40.78
	48.34	9/21/1998	5.28			43.06
	48.34	10/26/1998	6.96			41.38
	48.34	11/23/1998	5.11			43.23
	48.34	1/29/1999	4.21			44.13
	48.34	2/26/1999	4.32			44.02
	48.34	3/16/1999	4.16			44.18
	48.34	4/29/1999	4.33			44.01
	48.34	6/1/1999	4.39			43.95
	48.34	7/30/1999	5.88			42.46
	48.34	8/27/1999	4.57			43.77
	48.34	9/27/1999	10.48			37.86
	48.34	10/29/1999	11.61			36.73
	48.34	12/29/1999	10.11			38.23
	48.34	2/4/2000	13.22			35.12
	48.34	2/25/2000	9.14			39.2
	48.34	3/27/2000	8.06			40.28
	48.34	4/7/2000	7.64			40.7
	48.34	5/31/2000	7.70			40.64
	48.34	6/1/2000	7.66			40.68
	48.34	7/28/2000	7.71			40.63
	48.34	8/30/2000	10.59			37.75
	48.34	9/19/2000	12.29			36.05
	48.34	10/27/2000	9.09			39.25
	48.34	11/21/2000	9.11			39.23
	48.34	5/1/2001	7.26			41.08
	48.34	10/1/2001	7.57			40.77
	48.34	3/11/2002	7.40			40.94
	48.34	9/23/2002	4.60			43.74
	48.34	3/10/2003	2.89			45.45
	48.34	9/23/2003	3.74			44.6
	48.34	3/15/2004	3.27			45.07
	48.34	9/13/2004	9.03			39.31
	48.34	7/18/2005	3.94			44.4
	48.34	1/4/2006	9.13			39.21
	48.34	7/27/2006	3.30			45.04
	48.34	3/7/2007	2.62			45.72

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-03	48.34	7/27/2007	3.74			44.6
	48.34	1/30/2008	2.85			45.49
	48.34	7/16/2008	7.96			40.38
	48.34	2/4/2009	7.18			41.16
	48.34	7/24/2009	7.63			40.71
	48.34	1/8/2010	5.06			43.28
	48.34	7/12/2010	3.86			44.48
	48.34	1/12/2011	3.71			44.63
	48.34	7/12/2011	6.42			41.92
	48.34	1/26/2012	--			
	48.34	7/9/2012	4.06			44.28
	48.34	1/7/2013	5.09			43.25
	48.34	7/22/2013	8.24			40.1
	48.34	1/7/2014	8.09			40.25
	48.34	7/15/2014	8.78			39.56
	48.34	1/5/2015	7.06			41.28
	48.34	2/11/2018	5.29			43.05
	48.34	3/11/2018	5.72			42.62
	48.34	5/14/2018	5.61			42.73
	48.34	7/2/2018	5.93			42.41
	48.34	1/3/2019	5.03			43.31
	48.34	7/9/2019	5.57			42.77
	48.34	1/8/2020	3.06			45.28
MW-04	49.85	9/2/1993	8.57			41.28
	49.85	12/21/1993	5.42			44.43
	49.85	3/24/1994	5.85			44
	49.85	6/22/1994	6.77			43.08
	49.85	9/28/1994	8.18			41.67
	49.85	10/13/1994	8.93			40.92
	49.85	1/24/1995	4.72			45.13
	49.85	4/11/1995	4.57			45.28
	49.85	7/11/1995	6.47			43.38
	49.85	1/23/1996	7.85			42
	49.85	7/19/1996	9.62			40.23
	49.85	9/17/1996	10.09			39.76
	49.85	10/31/1996	7.93			41.92
	49.85	11/22/1996	10.62			39.23
	49.85	12/27/1996	8.06			41.79
	49.85	1/22/1997	6.07			43.78
	49.85	2/21/1997	4.86			44.99
	49.85	3/25/1997	5.16			44.69
	49.85	4/23/1997	6.25			43.6
	49.85	4/24/1997	6.45			43.4
	49.85	5/13/1997	5.07			44.78
	49.85	6/20/1997	6.69			43.16
	49.85	6/25/1997	4.68			45.17
	49.85	7/1/1997	5.91			43.94
	49.85	7/24/1997	8.61			41.24
	49.85	8/16/1997	9.62			40.23
	49.85	8/22/1997	10.35			39.5
	49.85	9/25/1997	8.13			41.72
	49.85	10/22/1997	7.23			42.62
	49.85	11/25/1997	7.25			42.6
	49.85	12/19/1997	6.76			43.09
	49.85	1/20/1998	5.40			44.45
	49.85	3/3/1998	5.00			44.85
	49.85	3/18/1998	4.82			45.03
	49.85	4/24/1998	8.63			41.22
	49.85	5/21/1998	9.30			40.55
	49.85	7/30/1998	10.19			39.66
	49.85	8/25/1998	9.05			40.8
	49.85	9/21/1998	7.05			42.8
	49.85	10/26/1998	8.12			41.73
	49.85	11/23/1998	6.01			43.84
	49.85	1/29/1999	5.19			44.66
	49.85	2/26/1999	5.22			44.63
	49.85	3/16/1999	6.21			43.64
	49.85	4/29/1999	6.33			43.52

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-04	49.85	6/1/1999	6.39			43.46
	49.85	7/30/1999	7.79			42.06
	49.85	8/27/1999	6.51			43.34
	49.85	9/27/1999	11.32			38.53
	49.85	10/29/1999	12.21			37.64
	49.85	12/29/1999	11.52			38.33
	49.85	2/4/2000	14.33			35.52
	49.85	2/25/2000	10.63			39.22
	49.85	3/27/2000	9.38			40.47
	49.85	4/7/2000	9.09			40.76
	49.85	5/31/2000	9.13			40.72
	49.85	6/1/2000	9.10			40.75
	49.85	7/28/2000	9.18			40.67
	49.85	8/30/2000	12.17			37.68
	49.85	9/19/2000	13.39			36.46
	49.85	10/27/2000	10.69			39.16
	49.85	11/21/2000	9.61			40.24
	49.85	5/1/2001	8.41			41.44
	49.85	10/1/2001	8.68			41.17
	49.85	3/11/2002	5.41			44.44
	49.85	9/23/2002	5.29			44.56
	49.85	3/10/2003	4.36			45.49
	49.85	9/23/2003	5.28			44.57
	49.85	3/15/2004	4.80			45.05
	49.85	9/13/2004	9.80			40.05
	49.85	7/18/2005	5.84			44.01
	49.85	1/4/2006	10.48			39.37
	49.85	7/27/2006	5.30			44.55
	49.85	3/7/2007	4.10			45.75
	49.85	7/27/2007	5.36			44.49
	49.85	1/29/2008	4.18			45.67
	49.85	7/16/2008	8.66			41.19
	49.85	2/4/2009	8.93			40.92
	49.85	7/24/2009	9.27			40.58
	49.85	1/8/2010	6.34			43.51
	49.85	7/12/2010	5.02			44.83
	49.85	1/12/2011	5.26			44.59
	49.85	7/12/2011	8.06			41.79
	49.85	1/26/2012	--			
	49.85	7/9/2012	3.74			46.11
	49.85	1/7/2013	4.62			45.23
	49.85	7/22/2013	7.59			42.26
	49.85	1/7/2014	7.16			42.69
	49.85	7/15/2014	7.62			42.23
	49.85	1/5/2015	6.12			43.73
	49.85	8/10/2015	4.26			45.59
	49.85	1/13/2016	3.92			45.93
	49.85	7/6/2016	4.31			45.54
	49.85	1/12/2017	4.67			45.18
	49.85	7/6/2017	5.12			44.73
	49.85	9/5/2017	5.01			44.84
	49.85	2/11/2018	5.12			44.73
	49.85	3/11/2018	5.67			44.18
	49.85	5/14/2018	6.06			43.79
	49.85	7/2/2018	6.42			43.43
	49.85	1/3/2019	5.52			44.33
	49.85	7/9/2019	6.02			43.83
	49.85	1/8/2020	4.64			45.21
MW-05	49.24	9/2/1993	4.90			44.34
	49.24	12/21/1993	2.21			47.03
	49.24	3/24/1994	2.30			46.94
	49.24	6/22/1994	2.80			46.44
	49.24	9/28/1994	3.90			45.34
	49.24	10/13/1994	5.05			44.19
	49.24	1/24/1995	1.36			47.88
	49.24	4/11/1995	3.90			45.34
	49.24	7/11/1995	5.33			43.91
	49.24	1/23/1996	7.42			41.82

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-05	49.24	7/19/1996	8.61			40.63
	49.24	9/17/1996	9.01			40.23
	49.24	10/31/1996	7.84			41.4
	49.24	11/22/1996	9.68			39.56
	49.24	12/27/1996	7.66			41.58
	49.24	1/22/1997	5.89			43.35
	49.24	2/21/1997	4.45			44.79
	49.24	3/25/1997	4.65			44.59
	49.24	4/23/1997	5.53			43.71
	49.24	4/24/1997	5.68			43.56
	49.24	5/13/1997	4.39			44.85
	49.24	6/20/1997	5.67			43.57
	49.24	6/25/1997	3.97			45.27
	49.24	7/1/1997	5.06			44.18
	49.24	7/24/1997	7.46			41.78
	49.24	8/16/1997	8.57			40.67
	49.24	8/22/1997	9.20			40.04
	49.24	9/25/1997	7.28			41.96
	49.24	10/22/1997	6.70			42.54
	49.24	11/25/1997	6.70			42.54
	49.24	12/19/1997	6.26			42.98
	49.24	1/20/1998	5.05			44.19
	49.24	3/4/1998	4.54			44.7
	49.24	3/18/1998	4.36			44.88
	49.24	4/24/1998	7.67			41.57
	49.24	5/21/1998	8.80			40.44
	49.24	7/30/1998	9.90			39.34
	49.24	8/25/1998	8.86			40.38
	49.24	9/21/1998	6.59			42.65
	49.24	10/26/1998	7.77			41.47
	49.24	11/23/1998	5.79			43.45
	49.24	1/29/1999	4.88			44.36
	49.24	2/26/1999	4.96			44.28
	49.24	3/16/1999	5.81			43.43
	49.24	4/29/1999	5.91			43.33
	49.24	6/1/1999	5.99			43.25
	49.24	7/30/1999	7.00			42.24
	49.24	8/27/1999	6.13			43.11
	49.24	9/27/1999	10.17			39.07
	49.24	10/29/1999	11.65			37.59
	49.24	12/29/1999	10.90			38.34
	49.24	2/4/2000	13.77			35.47
	49.24	2/25/2000	9.46			39.78
	49.24	3/27/2000	8.62			40.62
	49.24	4/7/2000	8.20			41.04
	49.24	5/31/2000	8.26			40.98
	49.24	6/1/2000	8.21			41.03
	49.24	7/28/2000	8.26			40.98
	49.24	8/30/2000	11.33			37.91
	49.24	9/19/2000	12.33			36.91
	49.24	10/27/2000	9.94			39.3
	49.24	11/21/2000	9.21			40.03
	49.24	5/1/2001	7.47			41.77
	49.24	10/1/2001	7.79			41.45
	49.24	3/11/2002	4.92			44.32
	49.24	9/23/2002	4.76			44.48
	49.24	3/10/2003	3.77			45.47
	49.24	9/23/2003	4.61			44.63
	49.24	3/15/2004	4.22			45.02
	49.24	9/13/2004	8.58			40.66
	49.24	7/18/2005	5.61			43.63
	49.24	1/4/2006	9.76			39.48
	49.24	7/27/2006	4.85			44.39
	49.24	3/7/2007	5.94			43.3
	49.24	7/27/2007	4.53			44.71
	49.24	1/29/2008	3.71			45.53
	49.24	7/15/2008	7.77			41.47
	49.24	2/4/2009	8.33			40.91

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-05	49.24	7/24/2009	8.67			40.57
	49.24	1/8/2010	6.06			43.18
	49.24	7/12/2010	4.86			44.38
	49.24	1/12/2011	5.06			44.18
	49.24	7/12/2011	10.96			38.28
	49.24	2/2/2012	4.9			44.34
	49.24	7/9/2012	4.61			44.63
	49.24	1/7/2013	7.58			41.66
	49.24	7/22/2013	10.44			38.8
	49.24	1/7/2014	6.92			42.32
	49.24	7/16/2014	8.46			40.78
	49.24	1/5/2015	5.96			43.28
	49.24	8/10/2015	4.13			45.11
	49.24	1/13/2016	3.76			45.48
	49.24	7/7/2016	3.94			45.30
	49.24	1/12/2017	4.31			44.93
	49.24	7/6/2017	4.84			44.40
	49.24	9/5/2017	4.71			44.53
	49.24	2/11/2018	5.56			43.68
	49.24	3/11/2018	5.98			43.26
	49.24	5/14/2018	6.57			42.67
	49.24	7/2/2018	6.83			42.41
	49.24	1/3/2019	6.07			43.17
	49.24	7/9/2019	6.56			42.68
	49.24	1/7/2020	4.69			44.55
MW-07	48.86	9/2/1993	8.09			40.77
	48.86	12/21/1993	4.60			44.26
	48.86	3/24/1994	5.06			43.8
	48.86	6/22/1994	6.03			42.83
	48.86	9/28/1994	7.52			41.34
	48.86	10/13/1994	8.13			40.73
	48.86	1/24/1995	3.81			45.05
	48.86	4/11/1995	3.41			45.45
	48.86	7/11/1995	5.74			43.12
	48.86	1/23/1996	6.99			41.87
	48.86	7/19/1996	8.89			39.97
	48.86	9/17/1996	9.41			39.45
	48.86	10/31/1996	8.04			40.82
	48.86	11/22/1996	9.94			38.92
	48.86	12/27/1996	7.30			41.56
	48.86	1/22/1997	5.25			43.61
	48.86	2/21/1997	4.00			44.86
	48.86	3/25/1997	4.32			44.54
	48.86	4/23/1997	5.51			43.35
	48.86	4/24/1997	5.67			43.19
	48.86	5/13/1997	4.26			44.6
	48.86	6/20/1997	6.00			42.86
	48.86	6/25/1997	3.86			45
	48.86	7/1/1997	5.21			43.65
	48.86	7/24/1997	7.99			40.87
	48.86	8/16/1997	8.92			39.94
	48.86	8/22/1997	9.72			39.14
	48.86	9/25/1997	7.50			41.36
	48.86	10/22/1997	6.48			42.38
	48.86	11/25/1997	6.50			42.36
	48.86	12/19/1997	6.12			42.74
	48.86	1/20/1998	4.52			44.34
	48.86	3/4/1998	4.14			44.72
	48.86	3/18/1998	3.94			44.92
	48.86	4/24/1998	7.85			41.01
	48.86	5/21/1998	8.61			40.25
	48.86	7/30/1998	9.54			39.32
	48.86	8/25/1998	8.63			40.23
	48.86	9/21/1998	6.34			42.52
	48.86	10/26/1998	7.56			41.3
	48.86	11/23/1998	5.91			42.95
	48.86	1/29/1999	4.71			44.15
	48.86	2/26/1999	4.76			44.1

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-07	48.86	3/16/1999	5.32			43.54
	48.86	4/29/1999	5.41			43.45
	48.86	6/1/1999	5.49			43.37
	48.86	7/30/1999	6.98			41.88
	48.86	8/27/1999	5.61			43.25
	48.86	9/27/1999	10.64			38.22
	48.86	10/29/1999	11.56			37.3
	48.86	12/29/1999	9.90			38.96
	48.86	2/4/2000	14.21			34.65
	48.86	2/25/2000	8.86			40
	48.86	3/27/2000	8.62			40.24
	48.86	4/7/2000	8.15			40.71
	48.86	5/31/2000	8.21			40.65
	48.86	6/1/2000	8.22			40.64
	48.86	7/28/2000	8.29			40.57
	48.86	8/30/2000	11.55			37.31
	48.86	9/19/2000	12.65			36.21
	48.86	10/27/2000	10.00			38.86
	48.86	11/21/2000	9.46			39.4
	48.86	5/1/2001	7.64			41.22
	48.86	10/1/2001	8.00			40.86
	48.86	3/11/2002	4.56			44.3
	48.86	9/23/2002	4.69			44.17
	48.86	3/10/2003	3.52			45.34
	48.86	9/23/2003	4.70			44.16
	48.86	3/15/2004	3.89			44.97
	48.86	9/13/2004	9.04			39.82
	48.86	7/18/2005	5.27			43.59
	48.86	1/4/2006	9.91			38.95
	48.86	7/27/2006	4.60			44.26
	48.86	1/23/2007	3.46			45.4
	48.86	3/7/2007	3.82			45.04
	48.86	7/27/2007	4.94			43.92
	48.86	1/29/2008	3.39			45.47
	48.86	7/16/2008	7.94			40.92
	48.86	1/22/2009	7.49			41.37
	48.86	7/24/2009	NM			
	48.86	1/8/2010	4.02			44.84
	48.86	7/12/2010	4.72			44.14
	48.92	1/12/2011	4.56			44.36
	48.92	7/12/2011	10.91			38.01
	48.92	1/27/2012	3.86			45.06
	48.92	7/10/2013	10.62			38.30
	48.92	1/8/2014	6.42			42.50
	48.92	7/3/2014	7.61			41.31
	48.92	1/7/2015	3.46			45.46
	48.92	8/10/2015	5.01			43.91
	48.91	1/12/2016	3.09			45.82
	48.91	7/7/2016	6.72			42.19
	48.91	1/12/2017	5.81			43.10
	48.91	7/12/2017	7.71			41.20
	48.91	1/3/2018	7.87			41.04
	48.91	7/19/2018	6.93			41.98
	48.91	1/3/2019	7.32			41.59
	48.91	7/1/2019	3.93			44.98
	48.91	1/13/2020	4.29			44.62
MW-08	49.33	9/2/1993	8.18			41.19
	49.33	12/21/1993	5.02			44.35
	49.33	3/24/1994	5.53			43.84
	49.33	6/22/1994	6.38			42.99
	49.33	9/28/1994	7.72			41.65
	49.33	10/13/1994	8.43			40.94
	49.33	1/24/1995	4.15			45.22
	49.33	4/11/1995	4.02			45.35
	49.33	7/11/1995	5.95			43.42
	49.33	1/23/1996	7.20			42.17
	49.33	7/19/1996	9.06			40.31
	49.33	9/17/1996	9.51			39.86

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-08	49.33	10/31/1996	7.99			41.38
	49.33	11/22/1996	9.98			39.39
	49.33	12/27/1996	7.24			42.13
	49.33	1/22/1997	5.25			44.12
	49.33	2/21/1997	4.21			45.16
	49.33	3/25/1997	4.48			44.89
	49.33	4/23/1997	5.61			43.76
	49.33	4/24/1997	5.76			43.61
	49.33	5/13/1997	4.45			44.92
	49.33	6/20/1997	6.09			43.28
	49.33	6/25/1997	4.56			44.81
	49.33	7/1/1997	5.06			44.31
	49.33	7/24/1997	7.97			41.4
	49.33	8/16/1997	8.05			41.32
	49.33	8/22/1997	9.73			39.64
	49.33	9/25/1997	7.57			41.8
	49.33	10/22/1997	6.43			42.94
	49.33	11/25/1997	6.48			42.89
	49.33	12/19/1997	5.22			44.15
	49.33	1/20/1998	4.70			44.67
	49.33	3/4/1998	4.38			44.99
	49.33	3/18/1998	4.18			45.19
	49.33	4/24/1998	8.00			41.37
	49.33	5/21/1998	8.45			40.92
	49.33	7/30/1998	9.33			40.04
	49.33	8/25/1998	8.46			40.91
	49.33	9/21/1998	6.31			43.06
	49.33	10/26/1998	7.66			41.71
	49.33	11/23/1998	5.96			43.41
	49.33	1/29/1999	4.80			44.57
	49.33	2/26/1999	4.89			44.48
	49.33	3/16/1999	5.45			43.92
	49.33	4/29/1999	5.66			43.71
	49.33	6/1/1999	5.66			43.71
	49.33	7/30/1999	7.20			42.17
	49.33	8/27/1999	5.85			43.52
	49.33	9/27/1999	10.78			38.59
	49.33	10/29/1999	11.76			37.61
	49.33	12/29/1999	11.03			38.34
	49.33	2/4/2000	14.66			34.71
	49.33	2/25/2000	10.33			39.04
	49.33	3/27/2000	8.75			40.62
	49.33	4/7/2000	8.37			41
	49.33	5/31/2000	8.40			40.97
	49.33	6/1/2000	8.36			41.01
	49.33	7/28/2000	8.40			40.97
	49.33	8/30/2000	11.29			38.08
	49.33	9/19/2000	12.82			36.55
	49.33	10/27/2000	12.63			36.74
	49.33	11/21/2000	9.64			39.73
	49.33	5/1/2001	7.83			41.54
	49.33	10/1/2001	8.05			41.32
	49.33	3/11/2002	4.75			44.62
	49.33	9/23/2002	4.69			44.68
	49.33	3/10/2003	3.84			45.49
	49.33	9/23/2003	4.73			44.6
	49.33	3/15/2004	4.31			45.02
	49.33	9/13/2004	9.31			40.02
	49.33	7/18/2005	5.32			44.01
	49.33	1/4/2006	10.63			38.7
	49.33	7/27/2006	4.79			44.54
	49.33	1/22/2007	3.81			45.52
	49.33	3/7/2007	3.96			45.37
	49.33	7/27/2007	5.06			44.27
	49.33	1/29/2008	3.71			45.62
	49.33	7/16/2008	8.32			41.01
	49.33	1/22/2009	7.71			41.62
	49.33	7/24/2009	NM			

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-08	49.33	1/8/2010	4.17			45.16
	49.33	7/12/2010	4.96			44.37
	49.33	1/12/2011	5.32			44.01
	49.33	7/12/2011	11.24			38.09
	49.33	1/27/2012	4.68			44.65
	49.33	7/10/2013	11.07			38.26
	49.33	1/8/2014	6.87			42.46
	49.33	7/3/2014	8.16			41.17
	49.33	1/7/2015	3.82			45.51
	49.33	8/10/2015	5.06			44.27
	49.33	1/12/2016	3.87			45.46
	49.33	7/7/2016	6.44			42.89
	49.33	1/12/2017	5.82			43.51
	49.33	7/12/2017	7.92			41.41
	49.33	1/3/2018	8.02			41.31
	49.33	7/19/2018	7.22			42.11
	49.33	1/3/2019	7.52			41.81
	49.33	7/1/2019	3.98			45.35
	49.33	1/13/2020	4.45			44.88
MW-09	49.26	9/2/1993	7.43			41.86
	49.26	12/21/1993	4.89			44.4
	49.26	3/24/1994	4.92			44.37
	49.26	6/22/1994	5.51			43.78
	49.26	9/28/1994	6.90			42.39
	49.26	10/13/1994	7.66			41.63
	49.26	1/24/1995	4.10			45.19
	49.26	4/11/1995	3.74			45.55
	49.26	7/11/1995	5.08			44.21
	49.26	1/23/1996	7.09			42.2
	49.26	7/19/1996	8.27			41.02
	49.26	9/17/1996	8.58			40.71
	49.26	10/31/1996	7.27			42.02
	49.26	11/22/1996	9.17			40.12
	49.26	12/27/1996	7.05			42.24
	49.26	1/22/1997	5.42			43.87
	49.26	2/21/1997	4.09			45.2
	49.26	3/25/1997	4.17			45.12
	49.26	4/23/1997	5.05			44.24
	49.26	4/24/1997	5.21			44.08
	49.26	5/13/1997	4.16			45.13
	49.26	6/20/1997	5.32			43.97
	49.26	6/25/1997	3.80			45.49
	49.26	7/1/1997	4.57			44.72
	49.26	7/24/1997	7.03			42.26
	49.26	8/16/1997	8.26			41.03
	49.26	8/22/1997	8.67			40.62
	49.26	9/25/1997	6.99			42.3
	49.26	10/22/1997	6.10			43.19
	49.26	11/25/1997	6.12			43.17
	49.26	12/19/1997	5.62			43.67
	49.26	1/20/1998	4.60			44.69
	49.26	3/4/1998	4.15			45.14
	49.26	3/18/1998	4.02			45.27
	49.26	4/24/1998	7.32			41.97
	49.26	5/21/1998	8.10			41.19
	49.26	7/30/1998	9.12			40.17
	49.26	8/25/1998	8.41			40.88
	49.26	9/21/1998	6.11			43.18
	49.26	10/26/1998	7.61			41.68
	49.26	11/23/1998	5.43			43.86
	49.26	1/29/1999	4.60			44.69
	49.26	2/26/1999	4.68			44.61
	49.26	3/16/1999	5.46			43.83
	49.26	4/29/1999	5.66			43.63
	49.26	6/1/1999	5.66			43.63
	49.26	7/30/1999	7.11			42.18
	49.26	8/27/1999	5.86			43.43
	49.26	9/27/1999	9.81			39.48

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-09	49.26	10/29/1999	10.63			38.66
	49.26	12/29/1999	9.99			39.3
	49.26	2/4/2000	12.44			36.85
	49.26	2/25/2000	8.88			40.41
	49.26	3/27/2000	8.22			41.07
	49.26	4/7/2000	8.10			41.19
	49.26	5/31/2000	8.15			41.14
	49.26	6/1/2000	8.00			41.29
	49.26	7/28/2000	8.11			41.18
	49.26	8/30/2000	11.10			38.19
	49.26	9/19/2000	11.91			37.38
	49.26	10/27/2000	9.84			39.45
	49.26	11/21/2000	8.89			40.4
	49.26	5/1/2001	7.16			42.13
	49.26	10/1/2001	7.39			41.9
	49.26	3/11/2002	4.61			44.68
	49.26	9/23/2002	4.45			44.84
	49.26	3/10/2003	3.59			45.67
	49.26	9/23/2003	4.31			44.95
	49.26	3/15/2004	4.18			45.08
	49.26	9/13/2004	8.39			40.87
	49.26	7/18/2005	5.53			43.73
	49.26	1/4/2006	9.46			39.8
	49.26	7/27/2006	4.85			44.41
	49.26	3/7/2007	5.58			43.68
	49.26	7/27/2007	3.78			45.48
	49.26	1/29/2008	3.52			45.74
	49.26	7/15/2008	7.04			42.22
	49.26	2/4/2009	8.01			41.25
	49.26	7/24/2009	8.34			40.92
	49.26	1/8/2010	5.89			43.37
	49.26	7/12/2010	4.32			44.94
	49.26	1/12/2011	4.61			44.65
	49.26	7/12/2011	10.71			38.55
	49.26	1/26/2012	4.73			44.53
	49.26	7/9/2012	4.23			45.03
	49.26	1/7/2013	6.73			42.53
	49.26	7/22/2013	9.16			40.1
	49.26	1/7/2014	8.72			40.54
	49.26	7/16/2014	8.17			41.09
	49.26	1/5/2015	8.01			41.25
	49.26	8/10/2015	6.17			43.09
	49.26	1/13/2016	5.81			43.45
	49.26	7/6/2016	6.14			43.12
	49.26	1/12/2017	6.71			42.55
	49.26	7/6/2017	7.09			42.17
	49.26	9/5/2017	7.06			42.20
	49.26	2/11/2018	5.16			44.10
	49.26	3/11/2018	6.01			43.25
	49.26	5/14/2018	6.21			43.05
	49.26	7/2/2018	6.67			42.59
	49.26	1/3/2019	5.61			43.65
	49.26	7/9/2019	6.21			43.05
	49.26	1/7/2020	4.11			45.15
MW-10A	49.86	9/28/1994	8.69			41.21
	49.86	10/13/1994	9.36			40.54
	49.86	1/24/1995	4.62			45.28
	49.86	4/11/1995	4.60			45.3
	49.86	7/11/1995	7.00			42.9
	49.86	1/23/1996	7.74			42.16
	49.86	7/19/1996	9.98			39.92
	49.86	9/17/1996	10.54			39.36
	49.86	10/31/1996	7.94			41.96
	49.86	11/22/1996	10.82			39.08
	49.86	12/27/1996	7.81			42.09
	49.86	1/22/1997	5.45			44.45
	49.86	2/21/1997	4.63			45.27
	49.86	3/25/1997	5.01			44.89

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-10A	49.86	4/23/1997	6.39			43.51
	49.86	4/24/1997	6.58			43.32
	49.86	5/13/1997	4.93			44.97
	49.86	6/20/1997	7.08			42.82
	49.86	6/25/1997	4.58			45.32
	49.86	7/1/1997	6.13			43.77
	49.86	7/24/1997	9.11			40.79
	49.86	8/16/1997	10.10			39.8
	49.86	8/22/1997	10.81			39.09
	49.86	9/25/1997	8.47			41.43
	49.86	10/22/1997	7.02			42.88
	49.86	11/25/1997	7.05			42.85
	49.86	12/19/1997	6.89			43.01
	49.86	1/20/1998	5.10			44.8
	49.86	3/3/1998	4.87			45.03
	49.86	3/18/1998	4.65			45.25
	49.86	4/24/1998	8.84			41.06
	49.86	5/21/1998	9.10			40.8
	49.86	7/30/1998	10.23			39.67
	49.86	8/25/1998	9.11			40.79
	49.86	9/21/1998	6.82			43.08
	49.86	10/26/1998	8.19			41.71
	49.86	11/23/1998	6.12			43.78
	49.86	1/29/1999	5.61			44.29
	49.86	2/26/1999	5.69			44.21
	49.86	3/16/1999	5.91			43.99
	49.86	4/29/1999	6.11			43.79
	49.86	6/1/1999	6.10			43.8
	49.86	7/30/1999	7.70			42.2
	49.86	8/27/1999	6.31			43.59
	49.86	9/27/1999	11.73			38.17
	49.86	10/29/1999	12.69			37.21
	49.86	12/29/1999	12.00			37.9
	49.86	2/4/2000	14.30			35.6
	49.86	2/25/2000	11.44			38.46
	49.86	3/27/2000	9.57			40.33
	49.86	4/7/2000	9.27			40.63
	49.86	5/31/2000	9.31			40.59
	49.86	6/1/2000	9.10			40.8
	49.86	7/28/2000	9.30			40.6
	49.86	8/30/2000	12.09			37.81
	49.86	9/19/2000	13.70			36.2
	49.86	10/27/2000	10.69			39.21
	49.86	11/21/2000	10.49			39.41
	49.86	5/1/2001	8.64			41.26
	49.86	10/1/2001	8.93			40.97
	49.86	3/11/2002	5.30			44.6
	49.86	9/23/2002	5.19			44.71
	49.86	3/10/2003	4.43			45.43
	49.86	9/23/2003	5.31			44.55
	49.86	3/15/2004	4.69			45.17
	49.86	9/13/2004	10.30			39.56
	49.86	7/18/2005	5.57			44.29
	49.86	1/4/2006	9.68			40.18
	49.86	7/27/2006	5.01			44.85
	49.86	1/23/2007	4.29			45.57
	49.86	3/7/2007	4.13			45.73
	49.86	7/27/2007	6.03			43.83
	49.86	1/28/2008	4.22			45.64
	49.86	7/16/2008	9.31			40.55
	49.86	1/22/2009	8.27			41.59
	49.86	7/24/2009	NM			
	49.86	1/8/2010	4.64			45.22
	49.86	7/12/2010	5.23			44.63
	49.82	1/12/2011	5.72			44.10
	49.82	7/12/2011	12.07			37.75
	49.82	7/13/2011	11.96			37.86
	49.82	1/27/2012	4.88			44.94

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-10A	49.82	7/10/2013	12.07			37.75
	49.82	1/8/2014	7.33			42.49
	49.82	7/2/2014	8.92			40.90
	49.82	1/7/2015	4.26			45.56
	49.82	8/10/2015	6.02			43.80
	49.83	1/12/2016	4.41			45.42
	49.83	7/7/2016	7.36			42.47
	49.83	1/12/2017	6.69			43.14
	49.83	7/12/2017	8.23			41.60
	49.83	1/3/2018	8.63			41.20
	49.83	7/18/2018	7.97			41.86
	49.83	1/3/2019	8.09			41.74
	49.83	7/1/2019	4.69			45.14
	49.83	1/14/2020	4.68			45.15
MW-10B	49.94	9/28/1994	8.77			41.2
	49.94	10/13/1994	9.45			40.52
	49.94	1/24/1995	4.72			45.25
	49.94	4/11/1995	4.72			45.25
	49.94	7/11/1995	7.13			42.84
	49.94	1/23/1996	7.84			42.13
	49.94	7/19/1996	10.27			39.7
	49.94	9/17/1996	10.64			39.33
	49.94	10/31/1996	8.01			41.96
	49.94	11/22/1996	10.93			39.04
	49.94	12/27/1996	7.99			41.98
	49.94	1/22/1997	5.72			44.25
	49.94	2/21/1997	4.78			45.19
	49.94	3/25/1997	5.13			44.84
	49.94	4/23/1997	6.52			43.45
	49.94	4/24/1997	6.71			43.26
	49.94	5/13/1997	5.09			44.88
	49.94	6/20/1997	7.21			42.76
	49.94	6/25/1997	4.71			45.26
	49.94	7/1/1997	6.27			43.7
	49.94	7/24/1997	9.15			40.82
	49.94	8/16/1997	10.19			39.78
	49.94	8/22/1997	10.92			39.05
	49.94	9/25/1997	8.69			41.28
	49.94	10/22/1997	7.18			42.79
	49.94	11/25/1997	7.21			42.76
	49.94	12/19/1997	6.56			43.41
	49.94	1/20/1998	5.25			44.72
	49.94	3/3/1998	5.00			44.97
	49.94	3/18/1998	4.79			45.18
	49.94	4/24/1998	8.95			41.02
	49.94	5/21/1998	9.30			40.67
	49.94	7/30/1998	10.30			39.67
	49.94	8/25/1998	9.20			40.77
	49.94	9/21/1998	7.06			42.91
	49.94	10/26/1998	8.31			41.66
	49.94	11/23/1998	6.25			43.72
	49.94	1/29/1999	5.71			44.26
	49.94	2/26/1999	5.76			44.21
	49.94	3/16/1999	6.05			43.92
	49.94	4/29/1999	6.10			43.87
	49.94	6/1/1999	6.10			43.87
	49.94	7/30/1999	7.61			42.36
	49.94	8/27/1999	6.33			43.64
	49.94	9/27/1999	11.90			38.07
	49.94	10/29/1999	12.60			37.37
	49.94	12/29/1999	12.10			37.87
	49.94	2/4/2000	14.29			35.68
	49.94	2/25/2000	11.15			38.82
	49.94	3/27/2000	9.67			40.3
	49.94	4/7/2000	9.32			40.65
	49.94	5/31/2000	9.38			40.59
	49.94	6/1/2000	9.21			40.76
	49.94	7/28/2000	9.33			40.64

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-10B	49.94	8/30/2000	12.11			37.86
	49.94	9/19/2000	13.77			36.2
	49.94	10/27/2000	10.63			39.34
	49.94	11/21/2000	10.64			39.33
	49.94	5/1/2001	8.75			41.22
	49.94	10/1/2001	9.12			40.85
	49.94	3/11/2002	5.47			44.5
	49.94	9/23/2002	5.40			44.57
	49.94	3/10/2003	4.59			45.35
	49.94	9/23/2003	5.58			44.36
	49.94	3/15/2004	5.78			44.16
	49.94	9/13/2004	10.41			39.53
	49.94	7/18/2005	5.97			43.97
	49.94	1/4/2006	10.75			39.19
	49.94	7/27/2006	5.73			44.21
	49.94	1/23/2007	4.45			45.49
	49.94	3/7/2007	4.61			45.33
	49.94	7/27/2007	6.15			43.79
	49.94	1/28/2008	4.44			45.5
	49.94	7/16/2008	9.42			40.52
	49.94	1/22/2009	8.39			41.55
	49.94	7/24/2009	NM			
	49.94	1/8/2010	4.91			45.03
	49.94	7/12/2010	5.33			44.61
	49.95	1/12/2011	5.96			43.99
	49.95	7/13/2011	12.07			37.88
	49.95	1/27/2012	5.02			44.93
	49.95	7/10/2013	12.18			37.77
	49.95	1/8/2014	7.46			42.49
	49.95	7/2/2014	8.96			40.99
	49.95	1/7/2015	4.46			45.49
	49.95	8/10/2015	6.14			43.81
	49.96	1/12/2016	4.64			45.32
	49.96	7/7/2016	7.62			42.34
	49.96	1/12/2017	6.57			43.39
	49.96	7/12/2017	8.33			41.63
	49.96	1/3/2018	8.71			41.25
	49.96	7/18/2018	8.04			41.92
	49.96	1/3/2019	8.16			41.80
	49.96	7/1/2019	4.82			45.14
	49.96	1/14/2020	4.92			45.04
MW-11A	50.05	9/28/1994	8.66			41.38
	50.05	10/13/1994	9.35			40.69
	50.05	1/24/1995	4.88			45.16
	50.05	4/11/1995	4.81			45.23
	50.05	7/11/1995	6.67			43.37
	50.05	1/23/1996	8.01			42.03
	50.05	7/19/1996	10.09			39.95
	50.05	9/17/1996	10.56			39.48
	50.05	10/31/1996	8.16			41.88
	50.05	11/22/1996	10.98			39.06
	50.05	12/27/1996	8.21			41.83
	50.05	1/22/1997	6.06			43.98
	50.05	2/21/1997	4.98			45.06
	50.05	3/25/1997	5.32			44.72
	50.05	4/23/1997	6.59			43.45
	50.05	4/24/1997	6.77			43.27
	50.05	5/13/1997	5.31			44.73
	50.05	6/20/1997	7.15			42.89
	50.05	6/25/1997	4.88			45.16
	50.05	7/1/1997	6.29			43.75
	50.05	7/24/1997	9.12			40.92
	50.05	8/16/1997	10.11			39.93
	50.05	8/22/1997	10.82			39.22
	50.05	9/25/1997	8.70			41.34
	50.05	10/22/1997	7.40			42.64
	50.05	11/25/1997	7.41			42.63
	50.05	12/19/1997	6.10			43.94

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-11A	50.05	1/20/1998	5.49			44.55
	50.05	3/3/1998	5.16			44.88
	50.05	3/18/1998	4.96			45.08
	50.05	4/24/1998	8.98			41.06
	50.05	5/21/1998	9.40			40.64
	50.05	7/30/1998	10.56			39.48
	50.05	8/25/1998	9.32			40.72
	50.05	9/21/1998	7.28			42.76
	50.05	10/26/1998	8.43			41.61
	50.05	11/23/1998	6.41			43.63
	50.05	1/29/1999	5.31			44.73
	50.05	2/26/1999	5.39			44.65
	50.05	3/16/1999	6.32			43.72
	50.05	4/29/1999	6.51			43.53
	50.05	6/1/1999	6.57			43.47
	50.05	7/30/1999	8.00			42.04
	50.05	8/27/1999	6.79			43.25
	50.05	9/27/1999	11.73			38.31
	50.05	10/29/1999	12.81			37.23
	50.05	12/29/1999	12.11			37.93
	50.05	2/4/2000	14.33			35.71
	50.05	2/25/2000	11.10			38.94
	50.05	3/27/2000	9.66			40.38
	50.05	4/7/2000	9.40			40.64
	50.05	5/31/2000	9.50			40.54
	50.05	6/1/2000	9.30			40.74
	50.05	7/28/2000	9.47			40.57
	50.05	8/30/2000	12.44			37.6
	50.05	9/19/2000	13.74			36.3
	50.05	10/27/2000	11.01			39.03
	50.05	11/21/2000	10.69			39.35
	50.05	5/1/2001	8.78			41.26
	50.05	10/1/2001	9.12			40.93
	50.05	3/11/2002	5.59			44.45
	50.05	9/23/2002	5.60			44.44
	50.05	3/10/2003	4.66			45.39
	50.05	9/23/2003	5.73			44.32
	50.05	3/15/2004	4.99			45.06
	50.05	9/13/2004	10.28			39.77
	50.05	7/18/2005	6.66			43.39
	50.05	1/5/2006	10.85			39.2
	50.05	7/27/2006	5.02			45.03
	50.05	1/23/2007	4.54			45.51
	50.05	3/7/2007	4.26			45.79
	50.05	7/27/2007	6.09			43.96
	50.05	1/28/2008	4.46			45.59
	50.05	7/16/2008	9.25			40.8
	50.05	1/22/2009	8.57			41.48
	50.05	7/24/2009	NM			
	50.05	1/8/2010	4.97			45.08
	50.05	7/12/2010	5.51			44.54
	50.07	1/12/2011	6.21			43.86
	50.07	7/12/2011	12.02			38.05
	50.07	1/27/2012	5.31			44.76
	50.07	7/10/2013	12.01			38.06
	50.07	1/8/2014	7.46			42.61
	50.07	7/2/2014	9.02			41.05
	50.07	1/7/2015	4.58			45.49
	50.07	8/10/2015	6.11			43.96
	50.16	1/12/2016	4.71			45.45
	50.16	7/7/2016	7.61			42.55
	50.16	1/12/2017	8.47			41.69
	50.16	7/12/2017	8.46			41.70
	50.16	1/3/2018	8.94			41.22
	50.16	7/18/2018	8.09			42.07
	50.16	1/3/2019	8.48			41.68
	50.16	7/1/2019	5.06			45.10
	50.16	1/14/2020	5.11			45.05

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-11B	50.18	9/28/1994	8.92			41.27
	50.18	10/13/1994	9.59			40.6
	50.18	1/24/1995	5.04			45.15
	50.18	4/11/1995	5.01			45.18
	50.18	7/11/1995	7.23			42.96
	50.18	1/23/1996	8.20			41.99
	50.18	7/19/1996	8.92			41.27
	50.18	9/17/1996	10.83			39.36
	50.18	10/31/1996	9.34			40.85
	50.18	11/22/1996	11.23			38.96
	50.18	12/27/1996	8.45			41.74
	50.18	1/22/1997	6.28			43.91
	50.18	2/21/1997	5.16			45.03
	50.18	3/25/1997	5.51			44.68
	50.18	4/23/1997	6.81			43.38
	50.18	4/24/1997	6.99			43.2
	50.18	5/13/1997	5.46			44.73
	50.18	6/20/1997	7.40			42.79
	50.18	6/25/1997	5.06			45.13
	50.18	7/1/1997	6.52			43.67
	50.18	7/24/1997	9.36			40.83
	50.18	8/16/1997	10.36			39.83
	50.18	8/22/1997	11.11			39.08
	50.18	9/25/1997	8.96			41.23
	50.18	10/22/1997	7.61			42.58
	50.18	11/25/1997	7.63			42.56
	50.18	12/19/1997	7.11			43.08
	50.18	1/20/1998	5.70			44.49
	50.18	3/3/1998	5.35			44.84
	50.18	3/18/1998	5.14			45.05
	50.18	4/24/1998	9.19			41
	50.18	5/21/1998	9.61			40.58
	50.18	7/30/1998	10.72			39.47
	50.18	8/25/1998	9.48			40.71
	50.18	9/21/1998	7.49			42.7
	50.18	10/26/1998	8.57			41.62
	50.18	11/23/1998	6.32			43.87
	50.18	2/26/1999	5.32			44.87
	50.18	3/16/1999	6.49			43.7
	50.18	4/29/1999	6.66			43.53
	50.18	6/1/1999	6.66			43.53
	50.18	7/30/1999	8.12			42.07
	50.18	8/27/1999	6.88			43.31
	50.18	9/27/1999	12.04			38.15
	50.18	10/29/1999	13.00			37.19
	50.18	12/29/1999	12.33			37.86
	50.18	2/4/2000	15.61			34.58
	50.18	2/25/2000	11.49			38.7
	50.18	3/27/2000	9.93			40.26
	50.18	4/7/2000	9.54			40.65
	50.18	5/31/2000	9.61			40.58
	50.18	6/1/2000	9.51			40.68
	50.18	7/28/2000	9.60			40.59
	50.18	8/30/2000	12.76			37.43
	50.18	9/19/2000	13.97			36.22
	50.18	10/27/2000	11.23			38.96
	50.18	11/21/2000	10.88			39.31
	50.18	5/1/2001	5.97			44.22
	50.18	10/1/2001	9.33			40.86
	50.18	3/11/2002	5.80			44.39
	50.18	9/23/2002	5.79			44.4
	50.18	3/10/2003	4.85			45.33
	50.18	9/23/2003	5.95			44.23
	50.18	3/15/2004	5.16			45.02
	50.18	9/13/2004	10.53			39.65
	50.18	7/18/2005	5.45			44.73
	50.18	1/4/2006	11.01			39.17
	50.18	7/27/2006	5.26			44.92

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-11B	50.18	1/23/2007	4.13			46.05
	50.18	3/7/2007	4.42			45.76
	50.18	7/27/2007	6.29			43.89
	50.18	1/28/2008	4.69			45.49
	50.18	7/16/2008	9.49			40.69
	50.18	1/22/2009	8.72			41.46
	50.18	7/24/2009	NM			
	50.18	1/8/2010	5.15			45.03
	50.18	7/12/2010	5.67			44.51
	50.23	1/12/2011	6.37			43.86
	50.23	7/12/2011	12.23			38.00
	50.23	1/27/2012	5.38			44.85
	50.23	7/10/2013	12.22			38.01
	50.23	1/8/2014	7.82			42.41
	50.23	7/2/2014	9.14			41.09
	50.23	1/7/2015	4.79			45.44
	50.23	8/10/2015	6.27			43.96
	50.24	1/12/2016	4.99			45.25
	50.24	7/7/2016	7.59			42.65
	50.24	1/12/2017	8.54			41.70
	50.24	7/12/2017	8.49			41.75
	50.24	1/3/2018	9.04			41.20
	50.24	7/18/2018	8.24			42.00
	50.24	1/3/2019	8.57			41.67
	50.24	7/1/2019	5.21			45.03
	50.24	1/14/2020	5.3			44.94
MW-12A	49.96	3/25/1997	5.52			44.44
	49.96	4/23/1997	6.51			43.45
	49.96	4/24/1997	6.66			43.3
	49.96	5/13/1997	5.47			44.49
	49.96	6/20/1997	6.81			43.15
	49.96	9/25/1997	8.08			41.88
	49.96	10/22/1997	7.10			42.86
	49.96	11/25/1997	7.12			42.84
	49.96	12/19/1997	6.96			43
	49.96	1/20/1998	5.69			44.27
	49.96	3/4/1998	4.52			45.44
	49.96	3/18/1998	5.28			44.68
	49.96	4/24/1998	8.70			41.26
	49.96	5/21/1998	9.10			40.86
	49.96	8/25/1998	10.05			39.91
	49.96	9/21/1998	7.11			42.85
	49.96	10/26/1998	9.11			40.85
	49.96	11/23/1998	6.01			43.95
	49.96	1/29/1999	5.44			44.52
	49.96	2/26/1999	5.52			44.44
	49.96	3/16/1999	6.21			43.75
	49.96	4/29/1999	6.38			43.58
	49.96	6/1/1999	6.31			43.65
	49.96	7/30/1999	7.88			42.08
	49.96	8/27/1999	6.56			43.4
	49.96	9/27/1999	11.61			38.35
	49.96	10/29/1999	12.79			37.17
	49.96	11/18/1999	13.18			36.78
	49.96	12/29/1999	12.03			37.93
	49.96	2/4/2000	15.43			34.53
	49.96	2/25/2000	11.34			38.62
	49.96	3/27/2000	9.22			40.74
	49.96	4/7/2000	8.80			41.16
	49.96	5/31/2000	8.84			41.12
	49.96	6/1/2000	8.81			41.15
	49.96	7/28/2000	8.87			41.09
	49.96	8/30/2000	11.76			38.2
	49.96	9/19/2000	13.22			36.74
	49.96	10/27/2000	10.54			39.42
	49.96	11/21/2000	10.16			39.8
	49.96	5/1/2001	8.60			41.36
	49.96	10/1/2001	8.73			41.23

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-12A	49.96	3/11/2002	6.01			43.95
	49.96	9/23/2002	5.87			44.09
	49.96	3/10/2003	5.37			44.59
	49.96	9/23/2003	5.96			44
	49.96	3/15/2004	5.54			44.42
	49.96	9/13/2004	10.30			39.66
	49.96	7/18/2005	7.01			42.95
	49.96	1/4/2006	10.57			39.39
	49.96	7/27/2006	6.60			43.36
	49.96	3/7/2007	6.94			43.02
	49.96	7/27/2007	5.79			44.17
	49.96	1/30/2008	5.29			44.67
	49.96	7/15/2008	9.19			40.77
	49.96	2/4/2009	8.81			41.15
	49.96	7/24/2009	9.13			40.83
	49.96	1/8/2010	5.47			44.49
	49.96	7/12/2010	9.72			40.24
	49.96	1/12/2011	5.59			44.37
	49.96	7/12/2011	12.46			37.5
	49.96	1/26/2012	5.78			44.18
	49.96	7/9/2012	5.96			44
	49.96	1/7/2013	9.04			40.92
	49.96	7/22/2013	11.64			38.32
	49.96	1/7/2014	7.38			42.58
	49.96	7/16/2014	9.82			40.14
	49.96	1/5/2015	6.46			43.50
	49.96	8/10/2015	5.26			44.70
	49.96	1/13/2016	4.67			45.29
	49.96	7/6/2016	4.96			45.00
	49.96	1/12/2017	5.67			44.29
	49.96	7/6/2017	6.03			43.93
	49.96	9/5/2017	5.86			44.10
	49.96	2/11/2018	6.48			43.48
	49.96	3/11/2018	7.12			42.84
	49.96	5/14/2018	8.92			41.04
	49.96	1/3/2019	8.37			41.59
	49.96	7/9/2019	8.02			41.94
	49.96	1/7/2020	6.04			43.92
MW-12B	50.02	3/25/1997	5.60			44.42
	50.02	4/23/1997	6.64			43.38
	50.02	4/24/1997	6.74			43.28
	50.02	5/13/1997	5.55			44.47
	50.02	6/20/1997	7.01			43.01
	50.02	9/25/1997	8.32			41.7
	50.02	10/22/1997	7.25			42.77
	50.02	11/25/1997	7.29			42.73
	50.02	12/19/1997	6.86			43.16
	50.02	1/20/1998	5.88			44.14
	50.02	3/4/1998	5.64	44.08	1.72	44.38
	50.02	3/18/1998	5.38	44.07	1.73	44.64
	50.02	4/9/1998	7.87		0.98	42.15
	50.02	4/16/1998	8.31		1.35	41.71
	50.02	4/24/1998	8.72	43.82	1.98	41.3
	50.02	5/8/1998	NM		0.50	
	50.02	5/12/1998	NM		0.50	
	50.02	5/21/1998	10.48			39.54
	50.02	5/25/1998	NM		1.00	
	50.02	6/9/1998	NM		1.00	
	50.02	6/16/1998	NM		1.20	
	50.02	6/26/1998	NM		1.50	
	50.02	7/2/1998	NM		1.50	
	50.02	7/10/1998	NM		2.00	
	50.02	7/14/1998	NM		2.00	
	50.02	7/23/1998	NM		2.00	
	50.02	8/5/1998	NM		2.00	
	50.02	8/13/1998	NM		2.00	
	50.02	8/18/1998	NM		2.00	
	50.02	8/25/1998	10.22			39.8

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-12B	50.02	9/15/1998	NM		2.00	
	50.02	9/21/1998	7.73			42.29
	50.02	9/30/1998	NM		4.00	
	50.02	10/8/1998	NM		4.00	
	50.02	10/16/1998	NM		4.00	
	50.02	10/26/1998	8.88			41.14
	50.02	11/6/1998	NM		4.00	
	50.02	11/13/1998	NM		1.49	
	50.02	11/19/1998	NM		4.00	
	50.02	11/23/1998	6.11			43.91
	50.02	12/16/1998	NM		4.00	
	50.02	1/7/1999	NM		4.00	
	50.02	1/15/1999	NM		4.00	
	50.02	1/22/1999	NM		4.00	
	50.02	1/26/1999	NM		4.00	
	50.02	1/29/1999	5.70			44.32
	50.02	2/4/1999	NM		4.00	
	50.02	2/9/1999	NM		3.00	
	50.02	2/26/1999	5.83	39.95	5.85	44.19
	50.02	3/16/1999	6.30	43.60	2.20	43.72
	50.02	4/29/1999	6.44	38.90	6.90	43.58
	50.02	5/21/1999	7.40	36.90	8.90	42.62
	50.02	5/27/1999	7.38	36.90	8.90	42.64
	50.02	6/1/1999	6.40	37.90	7.90	43.62
	50.02	6/10/1999	7.36	36.90	8.90	42.66
	50.02	7/30/1999	7.98			42.04
	50.02	8/27/1999	6.61	38.90	6.90	43.41
	50.02	9/27/1999	11.71	42.34	3.46	38.31
	50.02	10/29/1999	12.76	41.84	3.96	37.26
	50.02	11/18/1999	13.22			36.8
	50.02	12/29/1999	12.01	41.84	3.96	38.01
	50.02	2/4/2000	13.22	41.84	3.96	36.8
	50.02	2/25/2000	11.44	41.84	3.96	38.58
	50.02	3/27/2000	NM			
	50.02	4/7/2000	8.73	41.81	3.99	41.29
	50.02	5/31/2000	8.77	41.81	3.99	41.25
	50.02	6/1/2000	8.73	41.81	3.99	41.29
	50.02	7/28/2000	8.77	41.89	3.91	41.25
	50.02	8/30/2000	11.66	41.82	3.98	38.36
	50.02	9/19/2000	13.33	40.89	4.91	36.69
	50.02	10/27/2000	11.75	41.80	4.00	38.27
	50.02	11/21/2000	10.64	43.48	2.32	39.38
	50.02	5/1/2001	8.71	43.46	2.34	41.31
	50.02	10/1/2001	8.37		15.00	41.65
	50.02	3/14/2002	6.37	36.99	8.81	43.65
	50.02	9/23/2002	6.10	40.03	5.77	43.92
	50.02	3/10/2003	5.45			44.57
	50.02	9/24/2003	6.29	39.85	5.95	43.73
	50.02	3/15/2004	5.63			44.39
	50.02	9/13/2004	10.44	38.72	7.08	39.58
	50.02	7/18/2005	7.14	38.40	7.40	42.88
	50.02	1/4/2006	10.75	35.98	9.82	39.27
	50.02	7/27/2006	6.07	35.74	10.06	43.95
	50.02	3/7/2007	6.96	34.60	11.20	43.06
	50.02	7/27/2007	5.36	33.45	12.35	44.66
	50.02	1/31/2008	5.75	33.34	12.46	44.27
	50.02	7/15/2008	9.38	38.88	6.92	40.64
	50.02	2/4/2009	8.89	38.14	7.66	41.13
	50.02	7/24/2009	9.18	38.51	7.29	40.84
	50.02	1/8/2010	6.81	37.46	8.34	43.21
	50.02	5/27/2010	7.29	39.5	6.30	42.73
	50.02	6/28/2010	7.39	44.1	1.70	42.63
	50.02	7/12/2010	7.47	44.25	1.55	42.55
	50.02	8/31/2010	7.26	45.42	0.38	42.76
	50.02	1/12/2011	7.01	45.39	0.41	43.01
	50.02	7/12/2011	10.09	45.39	0.41	39.93
	50.02	3/8/2012	6.87	40.2	5.60	43.15
	50.02	7/9/2012	7.16	40.1	5.70	42.86

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-12B	50.02	1/7/2013	9.17	39.86	5.94	40.85
	50.02	7/22/2013	11.16	39.04	6.76	38.86
	50.02	1/7/2014	11.34	45.12	0.68	38.68
	50.02	7/15/2014	10.59	44.89	0.91	39.43
	50.02	1/5/2015	10.06	44.91	1.29	39.96
	50.02	8/10/2015	7.39	46.1	0.10	42.63
	50.02	1/13/2016	6.06	45.79	0.41	43.96
	50.02	7/6/2016	6.29	45.72	0.48	43.73
	50.02	1/12/2017	7.02	45.81	0.39	43.00
	50.02	7/6/2017	7.01	45.71	1.89	43.01
	50.02	9/5/2017	7.03	45.6	2.00	42.99
	50.02	2/7/2018	7.13	45.87	0.33	42.89
	50.02	3/11/2018	7.42	45.96	0.24	42.6
	50.02	5/14/2018	8.59	45.91	0.29	41.43
	50.02	1/3/2019	7.96	45.87	0.33	42.06
	50.02	7/9/2019	6.67	45.06	1.14	43.35
	50.02	1/8/2020	5.66	27.12	19.08	44.36
MW-12C	50.14	5/13/1997	39.34			10.8
	50.14	6/20/1997	38.94			11.2
	50.14	9/25/1997	36.70			13.44
	50.14	10/22/1997	36.09			14.05
	50.14	11/25/1997	36.13			14.01
	50.14	12/19/1997	35.34			14.8
	50.14	1/20/1998	32.60			17.54
	50.14	3/4/1998	31.56			18.58
	50.14	3/18/1998	31.64			18.5
	50.14	4/24/1998	31.06			19.08
	50.14	5/21/1998	38.20			11.94
	50.14	8/25/1998	31.00			19.14
	50.14	9/21/1998	29.86			20.28
	50.14	10/26/1998	30.12			20.02
	50.14	11/23/1998	28.38			21.76
	50.14	1/29/1999	27.61			22.53
	50.14	2/26/1999	27.69			22.45
	50.14	3/16/1999	28.00			22.14
	50.14	4/29/1999	28.21			21.93
	50.14	6/1/1999	28.20			21.94
	50.14	7/30/1999	29.80			20.34
	50.14	8/27/1999	28.41			21.73
	50.14	9/27/1999	29.20			20.94
	50.14	10/29/1999	29.78			20.36
	50.14	11/18/1999	30.17			19.97
	50.14	12/29/1999	29.09			21.05
	50.14	2/4/2000	29.66			20.48
	50.14	2/25/2000	30.32			19.82
	50.14	3/27/2000	28.91			21.23
	50.14	4/7/2000	27.40			22.74
	50.14	5/31/2000	27.44			22.7
	50.14	6/1/2000	27.43			22.71
	50.14	7/28/2000	27.45			22.69
	50.14	8/30/2000	33.61			16.53
	50.14	9/19/2000	30.03			20.11
	50.14	10/27/2000	33.94			16.2
	50.14	11/21/2000	29.12			21.02
	50.14	5/1/2001	26.85			23.29
	50.14	10/1/2001	26.85			23.29
	50.14	3/11/2002	25.59			24.55
	50.14	9/23/2002	26.57			23.57
	50.14	3/10/2003	24.85			25.29
	50.14	9/23/2003	26.06			24.08
	50.14	3/15/2004	24.31			25.83
	50.14	9/13/2004	26.15			23.99
	50.14	7/18/2005	26.23			23.91
	50.14	1/4/2006	22.26			27.88
	50.14	7/27/2006	25.28			24.86
	50.14	3/7/2007	23.78			26.36
	50.14	7/27/2007	22.05			28.09
	50.14	1/30/2008	22.69			27.45

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-12C	50.14	7/15/2008	24.41			25.73
	50.14	2/4/2009	24.59			25.55
	50.14	7/24/2009	24.91			25.23
	50.14	1/8/2010	23.03			27.11
	50.14	7/12/2010	23.91			26.23
	50.14	1/12/2011	23.76			26.38
	50.14	7/12/2011	25.98			24.16
	50.14	1/26/2012	25.76			24.38
	50.14	7/9/2012	24.59			25.55
	50.14	1/7/2013	26.04			24.1
	50.14	7/22/2013	27.09			23.05
	50.14	1/7/2014	26.52			23.62
	50.14	7/16/2014	25.15			24.99
	50.14	1/5/2015	26.01			24.13
	50.14	8/10/2015	24.26			25.88
	50.14	1/13/2016	23.83			26.31
	50.14	7/6/2016	24.13			26.01
	50.14	1/12/2017	24.49			25.65
	50.14	7/6/2017	24.88			25.26
	50.14	9/5/2017	24.84			25.30
	50.14	2/11/2018	25.13			25.01
	50.14	3/11/2018	24.04			26.1
	50.14	4/14/2018	25.96			24.18
	50.14	1/3/2019	25.34			24.8
	50.14	7/9/2019	23.73			26.41
	50.14	1/7/2020	24.61			25.53
MW-13	50.65	3/25/1997	9.43			41.22
	50.65	4/23/1997	9.87			40.78
	50.65	4/24/1997	9.92			40.73
	50.65	5/13/1997	9.30			41.35
	50.65	6/20/1997	10.11			40.54
	50.65	9/25/1997	10.75			39.9
	50.65	10/22/1997	10.09			40.56
	50.65	11/25/1997	10.11			40.54
	50.65	12/19/1997	10.01			40.64
	50.65	1/20/1998	9.32			41.33
	50.65	3/4/1998	9.23			41.42
	50.65	3/18/1998	8.90			41.75
	50.65	4/24/1998	10.74			39.82
	50.65	5/21/1998	12.11			38.54
	50.65	8/25/1998	12.00			38.56
	50.65	9/21/1998	10.13			40.43
	50.65	10/26/1998	11.15			39.41
	50.65	11/23/1998	9.22			41.34
	50.65	1/29/1999	8.00			42.65
	50.65	2/26/1999	8.11			42.54
	50.65	3/16/1999	9.51			41.14
	50.65	4/29/1999	9.79			40.86
	50.65	6/1/1999	9.70			40.95
	50.65	7/30/1999	11.01			39.64
	50.65	8/27/1999	9.96			40.69
	50.65	9/27/1999	12.84			37.81
	50.65	10/29/1999	13.88			36.77
	50.65	11/17/1999	14.00			36.65
	50.65	12/29/1999	13.08			37.57
	50.65	2/4/2000	15.61			35.04
	50.65	2/25/2000	12.17			38.48
	50.65	3/27/2000	10.95			39.7
	50.65	4/7/2000	10.51			40.14
	50.65	5/31/2000	10.57			40.08
	50.65	6/1/2000	10.51			40.14
	50.65	7/28/2000	10.54			40.11
	50.65	8/30/2000	13.63			37.02
	50.65	9/19/2000	14.57			36.08
	50.65	10/27/2000	11.11			39.54
	50.65	11/21/2000	11.44			39.21
	50.65	5/1/2001	10.70			39.95
	50.65	10/1/2001	10.31			40.34

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-13	50.65	3/11/2002	9.62			41.03
	50.65	9/23/2002	9.17			41.48
	50.65	3/10/2003	9.17			41.48
	50.65	9/23/2003	9.14			41.51
	50.65	3/15/2004	9.30			41.35
	50.65	9/13/2004	11.98			38.67
	50.65	7/18/2005	10.25			40.4
	50.65	1/4/2006	12.03			38.62
	50.65	7/27/2006	8.82			41.83
	50.65	3/7/2007	9.95			40.7
	50.65	7/27/2007	8.90			41.75
	50.65	1/30/2008	8.85			41.8
	50.65	7/15/2008	10.89			39.76
	50.65	2/4/2009	10.59			40.06
	50.65	7/23/2009	11.07			39.58
	50.65	1/8/2010	9.22			41.43
	50.65	7/12/2010	11.12			39.53
	50.65	1/12/2011	8.89			41.76
	50.65	7/12/2011	12.96			37.69
	50.65	1/26/2012	9.31			41.34
	50.65	7/9/2012	9.14			41.51
	50.65	1/7/2013	10.68			39.97
	50.65	7/22/2013	12.13			38.52
	50.65	1/7/2014	10.13			40.52
	50.65	7/16/2014	11.04			39.61
	50.65	1/5/2015	9.34			41.31
	50.65	8/10/2015	7.67			42.98
	50.65	1/13/2016	7.01			43.64
	50.65	7/6/2016	7.39			43.26
	50.65	1/12/2017	7.81			42.84
	50.65	7/6/2017	7.96			42.69
	50.65	9/5/2017	9.01			41.64
	50.65	2/11/2018	9.58			41.07
	50.65	3/11/2018	10.09			40.56
	50.65	5/14/2018	10.96			39.69
	50.65	1/3/2019	10.52			40.13
	50.65	7/9/2019	10.63			40.02
	50.65	1/7/2020	9.42			41.23
MW-14	50.66	3/25/1997	7.71			42.95
	50.66	4/23/1997	8.31			42.35
	50.66	4/24/1997	8.34			42.32
	50.66	5/13/1997	7.83			42.83
	50.66	6/20/1997	8.64			42.02
	50.66	9/25/1997	9.95			40.71
	50.66	10/22/1997	8.89			41.77
	50.66	11/25/1997	8.86			41.8
	50.66	12/19/1997	8.62			42.04
	50.66	1/20/1998	8.08			42.58
	50.66	3/4/1998	7.72			42.94
	50.66	3/18/1998	7.66			43
	50.66	4/24/1998	9.75			40.91
	50.66	5/21/1998	11.00			39.66
	50.66	8/25/1998	12.00			38.66
	50.66	9/21/1998	9.41			41.25
	50.66	10/26/1998	11.10			39.56
	50.66	11/23/1998	8.08			42.58
	50.66	1/29/1999	7.10			43.56
	50.66	2/26/1999	7.21			43.45
	50.66	3/16/1999	8.74			41.92
	50.66	4/29/1999	8.93			41.73
	50.66	6/1/1999	8.92			41.74
	50.66	7/30/1999	10.44			40.22
	50.66	8/27/1999	9.21			41.45
	50.66	9/27/1999	12.56			38.1
	50.66	10/29/1999	13.56			37.1
	50.66	11/17/1999	13.63			37.03
	50.66	12/29/1999	12.88			37.78
	50.66	2/4/2000	14.22			36.44

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-14	50.66	2/25/2000	11.73			38.93
	50.66	3/27/2000	10.54			40.12
	50.66	4/7/2000	10.14			40.52
	50.66	5/31/2000	10.17			40.49
	50.66	6/1/2000	10.13			40.53
	50.66	7/28/2000	10.17			40.49
	50.66	8/30/2000	13.22			37.44
	50.66	9/19/2000	14.27			36.39
	50.66	10/27/2000	11.56			39.1
	50.66	11/21/2000	11.17			39.49
	50.66	5/1/2001	9.71			40.95
	50.66	10/1/2001	10.64			40.02
	50.66	3/11/2002	8.45			42.21
	50.66	9/23/2002	7.90			42.76
	50.66	3/10/2003	8.59			42.07
	50.66	9/23/2003	7.70			42.96
	50.66	3/15/2004	7.96			42.7
	50.66	9/13/2004	11.05			39.61
	50.66	7/18/2005	9.55			41.11
	50.66	1/4/2006	11.83			38.83
	50.66	7/27/2006	7.80			42.86
	50.66	3/7/2007	8.96			41.7
	50.66	7/27/2007	8.01			42.65
	50.66	1/30/2008	7.66			43
	50.66	7/15/2008	10.41			40.25
	50.66	2/4/2009	10.27			40.39
	50.66	7/23/2009	10.67			39.99
	50.66	1/8/2010	8.24			42.42
	50.66	7/12/2010	10.54			40.12
	50.66	1/12/2011	18.09			32.57
	50.66	7/12/2011	12.93			37.73
	50.66	1/26/2012	8.57			42.09
	50.66	7/9/2012	8.61			42.05
	50.66	1/7/2013	10.46			40.2
	50.66	7/22/2013	11.91			38.75
	50.66	1/7/2014	9.39			41.27
	50.66	7/16/2014	10.58			40.08
	50.66	1/5/2015	8.79			41.87
	50.66	8/10/2015	6.34			44.32
	50.66	1/13/2016	5.79			44.87
	50.66	7/6/2016	6.06			44.60
	50.66	1/12/2017	6.59			44.07
	50.66	7/6/2017	6.92			43.74
	50.66	9/5/2017	6.83			43.83
	50.66	2/11/2018	8.66			42.00
	50.66	3/11/2018	8.99			41.67
	50.66	5/14/2018	10.09			40.57
	50.66	1/3/2019	9.37			41.29
	50.66	7/9/2019	9.57			41.09
	50.66	1/7/2020	8.39			42.27
MW-15A	50.41	3/25/1997	8.22			42.19
	50.41	4/23/1997	8.28			42.13
	50.41	4/24/1997	8.51			41.9
	50.41	5/13/1997	8.06			42.35
	50.41	6/20/1997	8.64			41.77
	50.41	9/25/1997	9.75			40.66
	50.41	10/22/1997	9.09			41.32
	50.41	11/25/1997	9.13			41.28
	50.41	12/19/1997	8.89			41.52
	50.41	1/20/1998	8.35			42.06
	50.41	3/4/1998	8.09			42.32
	50.41	3/18/1998	7.98			42.43
	50.41	4/24/1998	9.57			40.84
	50.41	5/21/1998	11.10			39.31
	50.41	8/25/1998	11.78			38.63
	50.41	9/21/1998	9.59			40.82
	50.41	10/26/1998	10.69			39.72
	50.41	11/23/1998	8.46			41.95

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-15A	50.41	1/29/1999	7.11			43.3
	50.41	2/26/1999	7.23			43.18
	50.41	3/16/1999	9.17			41.24
	50.41	4/29/1999	9.29			41.12
	50.41	6/1/1999	9.29			41.12
	50.41	7/30/1999	10.83			39.58
	50.41	8/27/1999	9.39			41.02
	50.41	9/27/1999	12.02			38.39
	50.41	10/29/1999	13.11			37.3
	50.41	11/17/1999	13.44			36.97
	50.41	12/29/1999	12.49			37.92
	50.41	2/4/2000	15.71			34.7
	50.41	2/25/2000	11.34			39.07
	50.41	3/27/2000	10.66			39.75
	50.41	4/7/2000	10.20			40.21
	50.41	5/31/2000	10.23			40.18
	50.41	6/1/2000	10.22			40.19
	50.41	7/28/2000	10.23			40.18
	50.41	8/30/2000	13.34			37.07
	50.41	9/19/2000	14.01			36.4
	50.41	10/27/2000	11.77			38.64
	50.41	11/21/2000	11.09			39.32
	50.41	5/1/2001	9.85			40.56
	50.41	10/1/2001	9.73			40.68
	50.41	3/11/2002	8.81			41.6
	50.41	9/23/2002	8.21			42.2
	50.41	3/10/2003	7.76			42.65
	50.41	9/23/2003	7.87			42.54
	50.41	3/15/2004	7.94			42.47
	50.41	9/13/2004	10.72			39.69
	50.41	7/18/2005	9.33			41.08
	50.41	1/4/2006	11.66			38.75
	50.41	7/27/2006	7.92			42.49
	50.41	3/7/2007	9.19			41.22
	50.41	7/27/2007	7.88			42.53
	50.41	1/30/2008	8.02			42.39
	50.41	7/15/2008	10.26			40.15
	50.41	2/4/2009	10.59			39.82
	50.41	7/23/2009	11.01			39.4
	50.41	1/8/2010	8.64			41.77
	50.41	7/12/2010	10.81			39.6
	50.41	1/12/2011	8.77			41.64
	50.41	7/12/2011	12.78			37.63
	50.41	1/26/2012	9.29			41.12
	50.41	7/9/2012	5.92			44.49
	50.41	1/7/2013	10.77			39.64
	50.41	7/22/2013	12.21			38.2
	50.41	1/7/2014	9.85			40.56
	50.41	7/16/2014	10.65			39.76
	50.41	1/5/2015	9.07			41.34
	50.41	8/10/2015	6.49			43.92
	50.41	1/13/2016	5.79			44.62
	50.41	7/6/2016	6.21			44.20
	50.41	1/12/2017	6.82			43.59
	50.41	7/6/2017	7.47			42.94
	50.41	9/5/2017	7.43			42.98
	50.41	2/11/2018	8.89			41.52
	50.41	3/11/2018	9.23			41.18
	50.41	5/14/2018	10.18			40.23
	50.41	1/3/2019	9.41			41
	50.41	7/9/2019	9.03			41.38
	50.41	1/7/2020	8.57			41.84
MW-15B	50.20	1/26/2012	10.13			40.07
	50.20	7/9/2012	8.32			41.88
	50.20	1/7/2013	10.71			39.49
	50.20	7/22/2013	11.97			38.23
	50.20	1/7/2014	9.81			40.39
	50.20	7/15/2014	10.36			39.84

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-15B	50.20	1/5/2015	9.26			40.94
	50.20	8/10/2015	7.29			42.91
	50.20	1/13/2016	6.81			43.39
	50.20	7/6/2016	7.56			42.64
	50.20	1/12/2017	8.09			42.11
	50.20	7/6/2017	8.61			41.59
	50.20	9/5/2017	8.56			41.64
	50.20	2/11/2018	8.74			41.46
	50.20	3/11/2018	9.09			41.11
	50.20	5/14/2018	9.91			40.29
	50.20	1/3/2019	9.4			40.8
	50.20	7/9/2019	9.23			40.97
	50.20	1/7/2020	8.39			41.81
MW-15C	50.01	5/13/1997	33.46			16.55
	50.01	6/20/1997	34.18			15.83
	50.01	9/25/1997	33.77			16.24
	50.01	10/22/1997	32.89			17.12
	50.01	11/25/1997	32.95			17.06
	50.01	12/19/1997	32.01			18
	50.01	1/20/1998	29.90			20.11
	50.01	3/4/1998	28.56			21.45
	50.01	3/18/1998	28.53			21.48
	50.01	4/24/1998	28.46			21.55
	50.01	5/21/1998	35.00			15.01
	50.01	8/25/1998	29.30			20.71
	50.01	9/21/1998	28.15			21.86
	50.01	10/26/1998	28.11			21.9
	50.01	11/23/1998	26.50			23.51
	50.01	1/29/1999	25.44			24.57
	50.01	2/26/1999	25.51			24.5
	50.01	3/16/1999	26.11			23.9
	50.01	4/29/1999	26.33			23.68
	50.01	6/1/1999	26.39			23.62
	50.01	7/30/1999	27.99			22.02
	50.01	8/27/1999	26.51			23.5
	50.01	9/27/1999	27.46			22.55
	50.01	10/29/1999	28.26			21.75
	50.01	11/17/1999	28.55			21.46
	50.01	12/29/1999	27.61			22.4
	50.01	2/4/2000	28.11			21.9
	50.01	2/25/2000	28.23			21.78
	50.01	3/27/2000	27.45			22.56
	50.01	4/7/2000	26.11			23.9
	50.01	5/31/2000	26.13			23.88
	50.01	6/1/2000	26.03			23.98
	50.01	7/28/2000	26.14			23.87
	50.01	8/30/2000	29.11			20.9
	50.01	9/19/2000	28.67			21.34
	50.01	10/27/2000	27.64			22.37
	50.01	11/21/2000	27.56			22.45
	50.01	5/1/2001	25.24			24.77
	50.01	10/1/2001	25.40			24.61
	50.01	3/11/2002	24.17			25.84
	50.01	9/23/2002	25.35			24.66
	50.01	3/10/2003	23.52			26.49
	50.01	9/23/2003	24.88			25.13
	50.01	3/15/2004	22.97			27.04
	50.01	9/13/2004	24.80			25.21
	50.01	7/18/2005	25.17			24.84
	50.01	1/4/2006	26.23			23.78
	50.01	7/27/2006	24.31			25.7
	50.01	3/7/2007	22.76			27.25
	50.01	7/27/2007	21.03			28.98
	50.01	1/30/2008	21.80			28.21
	50.01	7/15/2008	23.63			26.38
	50.01	2/4/2009	23.73			26.28
	50.01	7/23/2009	23.96			26.05
	50.01	1/8/2010	21.88			28.13

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-15C	50.01	7/12/2010	23.08			26.93
	50.01	1/12/2011	23.04			26.97
	50.01	7/12/2011	25.09			24.92
	50.01	1/26/2012	24.37			25.64
	50.01	7/9/2012	24.41			25.6
	50.01	1/7/2013	25.21			24.8
	50.01	7/22/2013	26.10			23.91
	50.01	1/7/2014	25.26			24.75
	50.01	7/16/2014	24.15			25.86
	50.01	1/5/2015	25.34			24.67
	50.01	8/10/2015	22.74			27.27
	50.01	1/13/2016	21.92			28.09
	50.01	7/6/2016	22.26			27.75
	50.01	1/12/2017	22.69			27.32
	50.01	7/6/2017	23.31			26.70
	50.01	9/5/2017	23.29			26.72
	50.01	2/11/2018	23.63			26.38
	50.01	3/11/2018	22.47			27.54
	50.01	5/14/2018	23.33			26.68
	50.01	1/3/2019	23.87			26.14
	50.01	7/9/2019	22.38			27.63
	50.01	1/7/2020	23.12			26.89
MW-16	51.51	3/25/1997	7.41			44.1
	51.51	4/23/1997	8.44			43.07
	51.51	4/24/1997	8.52			42.99
	51.51	5/13/1997	8.29			43.22
	51.51	6/20/1997	8.41			43.1
	51.51	9/25/1997	10.71			40.8
	51.51	10/22/1997	9.53			41.98
	51.51	11/25/1997	9.55			41.96
	51.51	12/19/1997	9.10			42.41
	51.51	1/20/1998	8.60			42.91
	51.51	3/4/1998	8.13			43.38
	51.51	3/18/1998	8.59			42.92
	51.51	4/24/1998	9.96			41.55
	51.51	5/21/1998	11.43			40.08
	51.51	7/30/1998	12.56			38.95
	51.51	8/25/1998	11.53			39.98
	51.51	9/21/1998	9.81			41.7
	51.51	10/26/1998	10.44			41.07
	51.51	11/23/1998	8.98			42.53
	51.51	1/29/1999	7.12			44.39
	51.51	2/26/1999	7.23			44.28
	51.51	3/16/1999	10.06			41.45
	51.51	4/29/1999	10.16			41.35
	51.51	6/1/1999	10.16			41.35
	51.51	7/30/1999	11.76			39.75
	51.51	8/27/1999	10.33			41.18
	51.51	9/27/1999	11.79			39.72
	51.51	10/29/1999	12.93			38.58
	51.51	11/17/1999	13.71			37.8
	51.51	12/29/1999	12.20			39.31
	51.51	2/4/2000	15.11			36.4
	51.51	2/25/2000	11.10			40.41
	51.51	3/27/2000	11.48			40.03
	51.51	4/7/2000	11.09			40.42
	51.51	5/31/2000	11.11			40.4
	51.51	6/1/2000	11.00			40.51
	51.51	7/28/2000	11.11			40.4
	51.51	8/30/2000	13.10			38.41
	51.51	9/19/2000	14.83			36.68
	51.51	10/27/2000	11.66			39.85
	51.51	11/21/2000	11.29			40.22
	51.51	5/1/2001	9.92			41.59
	51.51	10/1/2001	9.93			41.58
	51.51	3/11/2002	9.12			42.39
	51.51	9/23/2002	8.65			42.86
	51.51	3/10/2003	7.74			43.77

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-16	51.51	9/23/2003	8.48			43.03
	51.51	3/15/2004	8.09			43.42
	51.51	9/13/2004	10.38			41.13
	51.51	7/18/2005	10.42			41.09
	51.51	1/4/2006	12.48			39.03
	51.51	7/27/2006	9.37			42.14
	51.51	3/7/2007	9.66			41.85
	51.51	7/27/2007	7.85			43.66
	51.51	1/31/2008	8.42	25.40	3.40	43.09
	51.51	7/15/2008	10.16			41.35
	51.51	2/5/2009	11.93			39.58
	51.51	7/23/2009	12.67			38.84
	51.51	1/8/2010	8.66			42.85
	51.51	7/12/2010	10.31			41.2
	51.51	1/12/2011	9.89			41.62
	51.51	7/12/2011	12.98			38.53
	51.51	1/26/2012	9.92			41.59
	51.51	7/9/2012	9.68			41.83
	51.51	1/7/2013	11.41			40.1
	51.51	7/22/2013	12.39			39.12
	51.51	1/7/2014	12.02			39.49
	51.51	7/15/2014	9.69			41.82
	51.51	1/5/2015	11.07			40.44
	51.51	8/10/2015	9.42			42.09
MW-17	50.92	3/25/1997	9.97			40.95
	50.92	4/23/1997	10.41			40.51
	50.92	4/24/1997	10.51			40.41
	50.92	5/13/1997	10.32			40.6
	50.92	6/20/1997	11.07			39.85
	50.92	9/25/1997	12.39			38.53
	50.92	10/22/1997	11.19			39.73
	50.92	11/25/1997	11.21			39.71
	50.92	12/19/1997	11.01			39.91
	50.92	1/20/1998	10.25			40.67
	50.92	3/4/1998	9.93			40.99
	50.92	3/18/1998	9.94			40.98
	50.92	4/9/1998	11.32			39.6
	50.92	4/16/1998	11.52			39.4
	50.92	4/24/1998	11.80			39.12
	50.92	5/8/1998	NM			
	50.92	5/12/1998	NM			
	50.92	5/21/1998	13.30			37.62
	50.92	5/25/1998	NM			
	50.92	6/9/1998	NM			
	50.92	6/16/1998	NM			
	50.92	6/26/1998	NM			
	50.92	7/2/1998	NM			
	50.92	7/10/1998	NM			
	50.92	7/14/1998	NM			
	50.92	7/23/1998	NM			
	50.92	8/5/1998	NM			
	50.92	8/13/1998	NM			
	50.92	8/25/1998	13.78			37.14
	50.92	9/15/1998	NM			
	50.92	9/21/1998	11.49			39.43
	50.92	9/30/1998	NM			
	50.92	10/8/1998	NM			
	50.92	10/16/1998	NM			
	50.92	10/26/1998	12.22			38.7
	50.92	11/6/1998	NM			
	50.92	11/13/1998	NM			
	50.92	11/19/1998	NM			
	50.92	11/23/1998	10.21			40.71
	50.92	12/16/1998	NM			
	50.92	1/7/1999	NM			
	50.92	1/15/1999	NM			
	50.92	1/22/1999	NM			
	50.92	1/26/1999	NM			

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-17	50.92	1/29/1999	10.88			40.04
	50.92	2/4/1999	NM			
	50.92	2/9/1999	NM			
	50.92	2/26/1999	10.93			39.99
	50.92	3/16/1999	11.18			39.74
	50.92	4/29/1999	11.00			39.92
	50.92	5/21/1999	11.25			39.67
	50.92	5/27/1999	11.31			39.61
	50.92	6/1/1999	11.07			39.85
	50.92	6/10/1999	11.28			39.64
	50.92	7/30/1999	12.67			38.25
	50.92	8/27/1999	11.27			39.65
	50.92	9/27/1999	14.67			36.25
	50.92	10/29/1999	15.11			35.81
	50.92	11/17/1999	16.08			34.84
	50.92	12/29/1999	14.43			36.49
	50.92	2/4/2000	17.21			33.71
	50.92	2/25/2000	13.63			37.29
	50.92	3/27/2000	13.08	32.60	0.70	37.84
	50.92	4/7/2000	12.63	32.30	1.00	38.29
	50.92	5/31/2000	12.67	32.30	1.00	38.25
	50.92	6/1/2000	12.61	32.30	1.00	38.31
	50.92	7/28/2000	12.69	32.30	1.00	38.23
	50.92	8/30/2000	15.56			35.36
	50.92	9/19/2000	16.24	32.20	1.10	34.68
	50.92	10/27/2000	14.10			36.82
	50.92	11/21/2000	13.12			37.8
	50.92	5/1/2001	11.82	32.44	0.86	39.1
	50.92	10/1/2001	12.55	32.30	1.00	38.37
	50.92	3/14/2002	10.91	31.79	1.51	40.01
	50.92	9/23/2002	10.48			40.44
	50.92	3/10/2003	9.76			41.16
	50.92	9/24/2003	10.59	32.85	0.45	40.33
	50.92	3/15/2004	10.15			40.77
	50.92	9/13/2004	13.09			37.83
	50.92	7/18/2005	12.06	32.90	0.40	38.86
	50.92	1/4/2006	13.90	32.90	0.40	37.02
	50.92	7/27/2006	10.71	33.28	0.02	40.21
	50.92	3/7/2007	10.91	33.00	0.30	40.01
	50.92	7/27/2007	9.33	33.02	0.28	41.59
	50.92	1/31/2008	10.00	31.17	2.13	40.92
	50.92	7/15/2008	12.95	33.08	0.23	37.97
	50.92	2/4/2009	12.64	Trace	Trace	38.28
	50.92	1/8/2010	10.62			40.3
	50.92	7/12/2010	12.96			37.96
	50.92	7/12/2010	12.96			37.96
	50.92	1/12/2011	11.06			39.86
	50.92	7/12/2011	14.93			35.99
	50.92	1/26/2012	11.2			39.72
	50.92	7/9/2012	11.02			39.9
	50.92	1/7/2013	13.14			37.78
	50.92	7/22/2013	14.62			36.3
	50.92	1/7/2014	12.36			38.56
	50.92	7/15/2014	12.54			38.38
	50.92	1/5/2015	11.71			39.21
	50.92	8/10/2015	9.61			41.31
	50.92	1/13/2016	9.02			41.90
	50.92	7/6/2016	9.47			41.45
	50.92	1/12/2017	10.06			40.86
	50.92	7/6/2017	10.62			40.30
	50.92	9/5/2017	10.51			40.41
	50.92	2/11/2018	10.76			40.16
	50.92	3/11/2018	11.21			39.71
	50.92	5/14/2018	12.21			38.71
	50.92	1/3/2019	11.72			39.2
	50.92	7/9/2019	11.66			39.26
	50.92	1/7/2020	8.23			42.69
MW-17C	50.17	3/15/2004	22.75			27.42

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-17C	50.17	9/13/2004	24.56			25.61
	50.17	7/18/2005	25.02			25.15
	50.17	1/4/2006	26.07			24.1
	50.17	7/27/2006	24.15			26.02
	50.17	3/7/2007	22.51			27.66
	50.17	7/27/2007	20.93			29.24
	50.17	1/30/2008	21.74			28.43
	50.17	7/15/2008	23.65			26.52
	50.17	2/4/2009	23.72			26.45
	50.17	7/23/2009	24.08			26.09
	50.17	1/8/2010	21.98			28.19
	50.17	7/12/2010	23.03			27.14
	50.17	1/12/2011	23.16			27.01
	50.17	7/12/2011	25.11			25.06
	50.17	1/26/2012	24.27			25.9
	50.17	7/9/2012	24.32			25.85
	50.17	1/7/2013	24.76			25.41
	50.17	7/22/2013	25.89			24.28
	50.17	1/7/2014	25.06			25.11
	50.17	7/15/2014	23.98			26.19
	50.17	1/5/2015	24.62			25.55
	50.17	8/10/2015	22.47			27.70
	50.17	1/13/2016	21.81			28.36
	50.17	7/6/2016	22.16			28.01
	50.17	1/12/2017	22.67			27.50
	50.17	7/6/2017	23.09			27.08
	50.17	9/5/2017	23.01			27.16
	50.17	2/11/2018	23.11			27.06
	50.17	3/11/2018	22.21			27.96
	50.17	5/14/2018	23.02			27.15
	50.17	1/3/2019	22.71			27.46
	50.17	7/9/2019	22.14			28.03
	50.17	1/7/2020	23.21			26.96
MW-18A	51.57	3/25/1997	15.41			36.16
	51.57	4/23/1997	15.80			35.77
	51.57	5/13/1997	14.92			36.65
	51.57	6/20/1997	16.02			35.55
	51.57	9/25/1997	15.15			36.42
	51.57	10/22/1997	16.38			35.19
	51.57	11/25/1997	16.37			35.2
	51.57	12/19/1997	16.11			35.46
	51.57	1/20/1998	15.49			36.08
	51.57	3/4/1998	15.19			36.38
	51.57	3/18/1998	14.28			37.29
	51.57	4/24/1998	17.53			34.04
	51.57	5/21/1998	18.41			33.16
	51.57	7/30/1998	18.59			32.98
	51.57	8/25/1998	16.95			34.62
	51.57	9/21/1998	16.39			35.18
	51.57	10/26/1998	15.77			35.8
	51.57	11/23/1998	16.26			35.31
	51.57	1/29/1999	17.02			34.55
	51.57	2/26/1999	17.11			34.46
	51.57	4/29/1999	16.01			35.56
	51.57	6/1/1999	16.11			35.46
	51.57	7/30/1999	17.55			34.02
	51.57	8/27/1999	16.39			35.18
	51.57	9/27/1999	19.13			32.44
	51.57	10/29/1999	20.50			31.07
	51.57	11/17/1999	21.63			29.94
	51.57	12/29/1999	19.83			31.74
	51.57	2/4/2000	23.71			27.86
	51.57	2/25/2000	18.80			32.77
	51.57	3/27/2000	17.98			33.59
	51.57	4/7/2000	17.61			33.96
	51.57	5/31/2000	17.65			33.92
	51.57	6/1/2000	17.60			33.97
	51.57	7/28/2000	17.67			33.9

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-18A	51.57	8/30/2000	20.30			31.27
	51.57	9/19/2000	19.54			32.03
	51.57	10/27/2000	18.75			32.82
	51.57	11/21/2000	16.52			35.05
	51.57	5/1/2001	17.91	27.85	7.94	33.66
	51.57	10/1/2001	17.47			34.1
	51.57	3/11/2002	16.68			34.89
	51.57	9/23/2002	15.30			36.27
	51.57	3/10/2003	15.77			35.8
	51.57	9/23/2003	25.08			26.49
	51.57	3/15/2004	15.58			35.99
	51.57	9/13/2004	18.32			33.25
	51.57	7/18/2005	14.88			36.69
	51.57	1/4/2006	17.96			33.61
	51.57	7/27/2006	14.15			37.42
	51.57	3/7/2007	17.32			34.25
	51.57	7/27/2007	15.22			36.35
	51.57	1/30/2008	15.63			35.94
	51.57	7/15/2008	17.43			34.14
	51.57	2/5/2009	18.67			32.9
	51.57	7/23/2009	19.03			32.54
	51.57	1/8/2010	16.51			35.06
	51.57	7/12/2010	18.11			33.46
	51.57	1/12/2011	15.82			35.75
	51.57	7/12/2011	19.02			32.55
	51.57	1/26/2012	16.9			34.67
	51.57	7/9/2012	15.06			36.51
	51.57	1/7/2013	18.39			33.18
	51.57	7/22/2013	18.74			32.83
	51.57	1/7/2014	18.06			33.51
	51.57	7/16/2014	18.14			33.43
	51.57	1/5/2015	17.39			34.18
	51.57	8/10/2015	15.02			36.55
	51.57	1/13/2016	14.36			37.21
	51.57	7/6/2016	14.71			36.86
	51.57	1/12/2017	15.09			36.48
	51.57	7/6/2017	15.59			35.98
	51.57	9/5/2017	15.49			36.08
	51.57	2/11/2018	16.62			34.95
	51.57	3/11/2018	17.12			34.45
	51.57	5/14/2018	17.71			33.86
	51.57	1/3/2019	17.52			34.05
	51.57	7/9/2019	17.51			34.06
	51.57	1/7/2020	17.71			33.86
MW-18C	51.47	5/13/1997	29.45			22.02
	51.47	6/20/1997	30.37			21.1
	51.47	9/25/1997	31.53			19.94
	51.47	10/22/1997	30.71			20.76
	51.47	11/25/1997	30.75			20.72
	51.47	12/19/1997	30.10			21.37
	51.47	1/20/1998	28.30			23.17
	51.47	3/4/1998	27.03			24.44
	51.47	3/18/1998	26.81			24.66
	51.47	4/9/1998	27.04			24.43
	51.47	4/16/1998	27.03			24.44
	51.47	4/24/1998	27.25			24.22
	51.47	5/8/1998	NM			
	51.47	5/12/1998	NM			
	51.47	5/21/1998	27.68			23.79
	51.47	5/25/1998	NM			
	51.47	6/9/1998	NM			
	51.47	6/16/1998	NM			
	51.47	6/26/1998	NM			
	51.47	7/2/1998	NM			
	51.47	7/10/1998	NM			
	51.47	7/14/1998	NM			
	51.47	7/23/1998	NM			
	51.47	7/30/1998	28.40			23.07

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-18C	51.47	8/5/1998	NM			
	51.47	8/13/1998	NM			
	51.47	8/25/1998	28.88			22.59
	51.47	9/15/1998	NM			
	51.47	9/21/1998	27.94			23.53
	51.47	9/30/1998	NM			
	51.47	10/8/1998	NM			
	51.47	10/16/1998	NM			
	51.47	10/26/1998	27.62			23.85
	51.47	11/6/1998	NM			
	51.47	11/11/1998	26.85		0.67	24.62
	51.47	11/19/1998	NM			
	51.47	11/23/1998	26.21			25.26
	51.47	12/16/1998	NM			
	51.47	1/7/1999	NM			
	51.47	1/15/1999	NM			
	51.47	1/22/1999	NM			
	51.47	1/26/1999	NM			
	51.47	1/29/1999	25.36			26.11
	51.47	2/4/1999	NM			
	51.47	2/9/1999	NM			
	51.47	2/26/1999	25.41			26.06
	51.47	4/29/1999	26.33			25.14
	51.47	5/21/1999	25.75			25.72
	51.47	5/27/1999	25.76			25.71
	51.47	6/1/1999	26.38			25.09
	51.47	6/10/1999	25.68			25.79
	51.47	7/30/1999	25.61			25.86
	51.47	8/27/1999	26.51			24.96
	51.47	9/27/1999	27.28			24.19
	51.47	10/29/1999	27.95			23.52
	51.47	11/17/1999	28.42			23.05
	51.47	12/29/1999	27.26			24.21
	51.47	2/4/2000	27.84			23.63
	51.47	2/25/2000	27.83			23.64
	51.47	3/27/2000	27.48			23.99
	51.47	4/7/2000	25.80			25.67
	51.47	5/31/2000	25.83			25.64
	51.47	6/1/2000	25.81			25.66
	51.47	7/28/2000	25.86			25.61
	51.47	8/30/2000	28.42			23.05
	51.47	9/19/2000	28.77	80.44	0.97	22.7
	51.47	10/27/2000	28.69			22.78
	51.47	11/21/2000	27.67			23.8
	51.47	5/1/2001	25.20			26.27
	51.47	10/1/2001	25.59			25.8
	51.47	3/14/2002	24.35			27.12
	51.47	9/25/2002	25.45			26.02
	51.47	3/10/2003	23.60			27.87
	51.47	9/24/2003	25.15			26.32
	51.47	3/15/2004	24.23			27.24
	51.47	9/13/2004	25.12	78.22	1.70	26.35
	51.47	7/18/2005	25.50	66.20	0.30	25.97
	51.47	1/4/2006	26.71			24.76
	51.47	7/27/2006	24.80			26.67
	51.47	3/7/2007	23.11			28.36
	51.47	7/27/2007	24.80			26.67
	51.47	1/30/2008	22.64			28.83
	51.47	7/15/2008	24.43			27.04
	51.47	2/5/2009	24.34			27.13
	51.47	7/23/2009	24.61			26.86
	51.47	1/8/2010	22.56			28.91
	51.47	7/12/2010	23.77			27.7
	51.47	1/12/2011	24.03			27.44
	51.47	7/12/2011	25.87			25.6
	51.47	1/26/2012	26.82			24.65
	51.47	7/9/2012	24.82			26.65
	51.47	1/7/2013	25.61			25.86

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-18C	51.47	7/22/2013	26.76			24.71
	51.47	1/7/2014	25.68			25.79
	51.47	7/16/2014	24.60			26.87
	51.47	1/5/2015	25.02			26.45
	51.47	8/10/2015	23.41			28.06
	51.47	1/13/2016	22.76			28.71
	51.47	7/6/2016	23.12			28.35
	51.47	1/12/2017	23.73			27.74
	51.47	7/6/2017	24.13			27.34
	51.47	9/5/2017	24.08			27.39
	51.47	2/11/2018	23.7			27.77
	51.47	3/11/2018	22.88			28.59
	51.47	5/14/2018	23.47			28.00
	51.47	1/3/2019	23.01			28.46
	51.47	7/9/2019	23.08			28.39
	51.47	1/7/2020	23.54			27.93
MW-19C	53.05	11/23/1998	28.84			24.21
	53.05	1/29/1999	28.21			24.84
	53.05	2/26/1999	28.28			24.77
	53.05	3/16/1999	28.31			24.74
	53.05	4/29/1999	28.56			24.49
	53.05	6/1/1999	28.48			24.57
	53.05	7/30/1999	30.00			23.05
	53.05	8/27/1999	28.61			24.44
	53.05	9/27/1999	29.72			23.33
	53.05	10/29/1999	30.46			22.59
	53.05	11/17/1999	30.76			22.29
	53.05	12/29/1999	29.44			23.61
	53.05	2/4/2000	30.22			22.83
	53.05	2/25/2000	29.93			23.12
	53.05	3/27/2000	29.80			23.25
	53.05	4/7/2000	28.40			24.65
	53.05	5/31/2000	28.44			24.61
	53.05	6/1/2000	28.33			24.72
	53.05	7/28/2000	28.37			24.68
	53.05	8/30/2000	29.99			23.06
	53.05	9/19/2000	30.97			22.08
	53.05	10/27/2000	28.49			24.56
	53.05	11/21/2000	29.88			23.17
	53.05	5/1/2001	27.61	71.55	3.56	25.44
	53.05	10/1/2001	27.84			25.21
	53.05	3/11/2002	26.68			26.37
	53.05	9/23/2002	27.66			25.39
	53.05	3/10/2003	25.77			27.28
	53.05	9/23/2003	27.21			25.84
	53.05	3/15/2004	25.36			27.69
	53.05	9/13/2004	27.20			25.85
	53.05	7/18/2005	27.71			25.34
	53.05	1/4/2006	28.78			24.27
	53.05	7/27/2006	26.91			26.14
	53.05	3/7/2007	25.22			27.83
	53.05	7/27/2007	23.71			29.34
	53.05	1/31/2008	24.57			28.48
	53.05	7/15/2008	26.38			26.67
	53.05	2/4/2009	26.44			26.61
	53.05	7/23/2009	26.81			26.24
	53.05	1/9/2010	24.47			28.58
	53.05	7/12/2010	25.67			27.38
	53.05	1/12/2011	25.86			27.19
	53.05	7/12/2011	27.81			25.24
	53.05	1/26/2012	26.74			26.31
	53.05	7/9/2012	27.26			25.79
	53.05	1/7/2013	27.73			25.32
	53.05	7/22/2013	28.58			24.47
	53.05	1/7/2014	27.71			25.34
	53.05	7/15/2014	26.65			26.40
	53.05	1/5/2015	27.34			25.71
	53.05	8/10/2015	25.21			27.84

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-19C	53.05	1/13/2016	24.68			28.37
	53.05	7/6/2016	NM			
	53.05	2/11/2018	21.74			31.31
	53.05	3/11/2018	24.74			28.31
	53.05	5/14/2018	25.72			27.33
	53.05	1/3/2019	25.03			28.02
	53.05	7/9/2019	24.58			28.47
	53.05	1/8/2020	25.71			27.34
MW-20A	50.43	11/23/1998	8.31			42.116
	50.43	1/29/1999	8.70			41.726
	50.43	2/26/1999	8.81			41.616
	50.43	3/16/1999	9.26			41.166
	50.43	4/29/1999	9.33			41.096
	50.43	6/1/1999	9.30			41.126
	50.43	7/30/1999	10.91			39.516
	50.43	8/27/1999	9.56			40.866
	50.43	9/27/1999	10.79			39.636
	50.43	10/29/1999	11.96			38.466
	50.43	11/17/1999	13.06			37.366
	50.43	12/29/1999	11.11			39.316
	50.43	2/4/2000	14.89			35.536
	50.43	2/25/2000	10.33			40.096
	50.43	3/27/2000	10.79			39.636
	50.43	4/7/2000	10.41			40.016
	50.43	5/31/2000	10.46			39.966
	50.43	6/1/2000	10.41			40.016
	50.43	7/28/2000	10.47			39.956
	50.43	8/30/2000	12.56			37.866
	50.43	9/19/2000	13.68			36.746
	50.43	10/27/2000	11.01			39.416
	50.43	11/21/2000	10.64			39.786
	50.43	5/1/2001	9.40			41.03
	50.43	10/1/2001	10.42			40.01
	50.43	3/11/2002	8.59			41.836
	50.43	9/23/2002	8.51			41.916
	50.43	3/10/2003	7.42			43.006
	50.43	9/23/2003	7.95			42.476
	50.43	3/15/2004	7.72			42.706
	50.43	9/13/2004	10.22			40.206
	50.43	7/18/2005	9.88			40.546
	50.43	1/4/2006	11.72			38.706
	50.43	7/27/2006	8.59			41.836
	50.43	3/7/2007	8.91			41.516
	50.43	7/27/2007	7.63			42.796
	50.43	1/30/2008	7.91			42.516
	50.43	7/15/2008	10.05			40.376
	50.43	2/4/2009	10.18			40.246
	50.43	7/23/2009	10.47			39.956
	50.43	1/9/2010	8.23			42.196
	50.43	7/12/2010	10.62			39.806
	50.43	1/12/2011	8.76			41.666
	50.43	7/12/2011	12.53			37.896
	50.43	1/26/2012	11.61			38.816
	50.43	7/9/2012	9.18			41.246
	50.43	1/7/2013	10.66			39.766
	50.43	7/22/2013	12.17			38.256
	50.43	1/7/2014	11.62			38.806
	50.43	7/15/2014	9.83			40.60
	50.43	1/5/2015	11.09			39.34
	50.43	8/10/2015	9.34			41.09
	50.43	7/6/2017	8.12			42.31
	50.43	9/6/2017	8.06			42.37
	50.43	2/11/2018	9.22			41.21
	50.43	3/11/2018	9.03			41.396
	50.43	5/14/2018	9.89			40.536
	50.43	1/3/2019	9.26			41.17
	50.43	7/9/2019	9.04			41.386
	50.43	1/7/2020	9.06			41.366

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-20A	50.43					50.426
	50.43					50.426
	50.43					50.426
MW-21C	49.05	11/23/1998	27.83			21.223
	49.05	1/29/1999	27.11			21.943
	49.05	2/26/1999	27.26			21.793
	49.05	3/16/1999	27.42			21.633
	49.05	4/29/1999	27.99			21.063
	49.05	6/1/1999	27.80			21.253
	49.05	7/30/1999	29.00			20.053
	49.05	8/27/1999	27.99			21.063
	49.05	9/27/1999	28.43			20.623
	49.05	10/29/1999	29.12			19.933
	49.05	11/18/1999	29.25			19.803
	49.05	12/29/1999	10.89			38.163
	49.05	2/4/2000	28.94			20.113
	49.05	2/25/2000	11.43			37.623
	49.05	3/27/2000	28.13			20.923
	49.05	4/7/2000	26.79			22.263
	49.05	5/31/2000	26.83			22.223
	49.05	6/1/2000	26.83			22.223
	49.05	7/28/2000	26.88			22.173
	49.05	8/30/2000	29.91			19.143
	49.05	9/19/2000	29.15			19.903
	49.05	10/27/2000	30.21			18.843
	49.05	11/21/2000	28.33			20.723
	49.05	5/1/2001	26.01			23.04
	49.05	10/1/2001	26.05			23
	49.05	3/11/2002	24.80			24.253
	49.05	9/23/2002	25.50			23.553
	49.05	3/10/2003	23.82			25.233
	49.05	9/23/2003	25.08			23.973
	49.05	3/15/2004	23.48			25.573
	49.05	9/13/2004	25.44			23.613
	49.05	7/18/2005	25.33			23.723
	49.05	1/4/2006	26.44			22.613
	49.05	7/27/2006	24.55			24.503
	49.05	3/7/2007	22.91			26.143
	49.05	7/27/2007	21.29			27.763
	49.05	1/29/2008	22.09			26.963
	49.05	7/15/2008	23.31			25.743
	49.05	2/4/2009	24.03			25.023
	49.05	7/24/2009	24.29			24.763
	49.05	1/9/2010	21.89			27.163
	49.05	7/12/2010	23.01			26.043
	49.05	1/12/2011	23.21			25.843
	49.05	7/12/2011	25.09			23.963
	49.05	1/26/2012	24.48			24.573
	49.05	7/9/2012	23.39			25.663
	49.05	1/7/2013	25.17			23.883
	49.05	7/22/2013	26.49			22.563
	49.05	1/7/2014	25.94			23.113
	49.05	7/15/2014	24.61			24.44
	49.05	1/5/2015	25.31			23.74
	49.05	8/10/2015	23.37			25.68
	49.05	1/13/2016	22.71			26.34
	49.05	7/6/2016	23.04			26.01
	49.05	1/12/2017	23.59			25.46
	49.05	7/6/2017	24.02			25.03
	49.05	9/5/2017	23.96			25.09
	49.05	2/11/2018	24.08			24.97
	49.05	3/11/2018	23.07			25.98
	49.05	5/14/2018	23.97			25.08
	49.05	1/3/2019	23.17			25.88
	49.05	7/9/2019	23.11			25.943
	49.05	1/7/2020	23.46			25.59
MW-22A	46.07	11/23/1998	NM			
	46.07	1/29/1999	2.10			43.969

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-22A	46.07	2/26/1999	2.21			43.859
	46.07	3/16/1999	2.65			43.419
	46.07	4/29/1999	2.71			43.359
	46.07	6/1/1999	2.68			43.389
	46.07	7/30/1999	4.12			41.949
	46.07	8/27/1999	2.81			43.259
	46.07	9/27/1999	8.53			37.539
	46.07	10/29/1999	10.23			35.839
	46.07	11/18/1999	9.92			36.149
	46.07	12/29/1999	9.56			36.509
	46.07	2/4/2000	12.31			33.759
	46.07	2/25/2000	8.72			37.349
	46.07	3/27/2000	6.30			39.769
	46.07	4/7/2000	6.03			40.039
	46.07	5/31/2000	6.12			39.949
	46.07	6/1/2000	6.00			40.069
	46.07	7/28/2000	6.13			39.939
	46.07	8/30/2000	9.09			36.979
	46.07	9/19/2000	10.12			35.949
	46.07	10/27/2000	8.64			37.429
	46.07	11/21/2000	7.69			38.379
	46.07	5/1/2001	5.15			40.92
	46.07	10/1/2001	5.49			40.58
	46.07	3/11/2002	2.34			43.729
	46.07	9/23/2002	2.11			43.959
	46.07	3/10/2003	1.68			44.389
	46.07	9/23/2003	2.30			43.769
	46.07	3/15/2004	2.05			44.019
	46.07	9/14/2004	6.89			39.179
	46.07	7/18/2005	3.65			42.419
	46.07	1/6/2006	7.29			38.779
	46.07	7/27/2006	1.65			44.419
	46.07	3/7/2007	NM			
	46.07	7/27/2007	2.84			43.229
	46.07	1/29/2008	1.05			45.019
	46.07	7/14/2008	5.33			40.739
	46.07	2/3/2009	5.24			40.829
	46.07	7/23/2009	5.91			40.159
	46.07	1/9/2010	1.32			44.749
	46.07	7/12/2010	6.52			39.549
	46.07	1/12/2011	3.21			42.859
	46.07	7/11/2011	8.39			37.679
	46.07	1/27/2012	0.98			45.089
	46.07	7/10/2012	1.74			44.326
	46.07	1/8/2013	3.09			42.979
	46.07	7/22/2013	NM			
	46.07	1/7/2014	3.81			42.26
	46.07	7/15/2014	3.22			42.85
	46.07	1/5/2015	NM			
	46.07	8/10/2015	NM			
	46.07	1/13/2016	NM			
	46.07	7/6/2016	NM			
	46.07	1/12/2017	NM			
	46.07	7/6/2017	NM			
	46.07	9/5/2017	NM	REPLACED		
MW-22AR	45.56	2/11/2018	3.43			42.13
	45.56	3/11/2018	2.24			43.32
	45.56	5/14/2018	4.41			41.15
	45.56	7/2/2018	4.48			41.08
	45.56	1/3/2019	3.67			41.89
	45.56	7/9/2019	3.96			41.60
	45.56	2/10/2020	1.55			44.01
MW-22B	45.86	11/23/1998	2.25			43.606
	45.86	1/29/1999	2.28			43.576
	45.86	2/26/1999	2.34			43.516
	45.86	3/16/1999	2.42			43.436
	45.86	4/29/1999	2.56			43.296

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-22B	45.86	6/1/1999	2.60			43.256
	45.86	7/30/1999	4.31			41.546
	45.86	8/27/1999	2.83			43.026
	45.86	9/27/1999	8.45			37.406
	45.86	10/29/1999	10.11			35.746
	45.86	11/18/1999	9.75			36.106
	45.86	12/29/1999	9.43			36.426
	45.86	2/4/2000	12.56			33.296
	45.86	2/25/2000	8.63			37.226
	45.86	3/27/2000	6.00			39.856
	45.86	4/7/2000	5.64			40.216
	45.86	5/31/2000	5.69			40.166
	45.86	6/1/2000	5.61			40.246
	45.86	7/28/2000	5.67			40.186
	45.86	8/30/2000	8.57			37.286
	45.86	9/19/2000	9.94			35.916
	45.86	10/27/2000	7.03			38.826
	45.86	11/21/2000	7.63			38.226
	45.86	5/1/2001	4.93			40.93
	45.86	10/1/2001	5.40			40.46
	45.86	3/11/2002	1.75			44.106
	45.86	9/23/2002	2.11			43.746
	45.86	3/10/2003	1.02			44.836
	45.86	9/23/2003	2.99			42.866
	45.86	3/15/2004	1.20			44.656
	45.86	9/14/2004	NM			
	45.86	7/18/2005	NM			
	45.86	1/6/2006	7.05			38.806
	45.86	7/27/2006	1.58			44.276
	45.86	3/7/2007	NM			
	45.86	7/27/2007	2.85			43.006
	45.86	1/29/2008	0.85			45.006
	45.86	7/14/2008	5.45			40.406
	45.86	2/3/2009	4.78			41.076
	45.86	7/23/2009	5.39			40.466
	45.86	1/9/2010	3.27			42.586
	45.86	7/12/2010	6.21			39.646
	45.86	1/12/2011	0.37			45.486
	45.86	7/11/2011	8.32			37.536
	45.86	1/27/2012	0.06			45.796
	45.86	7/10/2012	1.27			44.586
	45.86	1/8/2013	NM			
	45.86	7/22/2013	NM			
	45.86	1/7/2014	4.14			41.716
	45.86	7/15/2014	3.79			42.07
	45.86	1/5/2015	3.87			41.99
	45.86	8/10/2015	2.62			43.24
	45.86	1/13/2016	2.09			43.77
	45.86	7/6/2016	NM			
	45.86	1/12/2017	NM			
	45.86	7/6/2017	NM			
	45.86	9/5/2017	NM	REPLACED		
MW-22BR	45.71	2/11/2018	4.14			41.57
	45.71	3/12/2018	3.29			42.42
	45.71	5/14/2018	5.27			40.44
	45.71	7/2/2018	5.39			40.32
	45.71	1/3/2019	4.29			41.42
	45.71	7/9/2019	4.41			41.3
	45.71	2/10/2020	1.44			44.27
MW-23C	51.91	11/23/1998	27.41			24.504
	51.91	1/29/1999	26.80			25.114
	51.91	2/26/1999	26.88			25.034
	51.91	3/16/1999	26.93			24.984
	51.91	4/29/1999	27.09			24.824
	51.91	6/1/1999	27.00			24.914
	51.91	7/30/1999	29.55			22.364
	51.91	8/27/1999	27.29			24.624

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-23C	51.91	9/27/1999	28.40			23.514
	51.91	10/29/1999	29.11			22.804
	51.91	11/17/1999	29.49			22.424
	51.91	12/29/1999	28.46			23.454
	51.91	2/4/2000	28.96			22.954
	51.91	2/25/2000	28.96			22.954
	51.91	3/27/2000	28.61			23.304
	51.91	4/7/2000	27.10			24.814
	51.91	5/31/2000	27.15			24.764
	51.91	6/1/2000	27.11			24.804
	51.91	7/28/2000	27.15			24.764
	51.91	8/30/2000	29.96			21.954
	51.91	9/19/2000	29.77			22.144
	51.91	10/27/2000	28.44			23.474
	51.91	11/21/2000	28.61			23.304
	51.91	5/1/2001	26.26			25.65
	51.91	10/1/2001	26.50		0.60	25.41
	51.91	3/11/2002	25.33			26.584
	51.91	9/23/2002	26.43			25.484
	51.91	3/10/2003	24.53			27.384
	51.91	9/23/2003	25.95			25.964
	51.91	3/15/2004	24.15			27.764
	51.91	9/13/2004	25.97			25.944
	51.91	7/18/2005	26.46			25.454
	51.91	1/4/2006	27.53			24.384
	51.91	3/7/2007	23.96			27.954
	51.91	7/27/2007	22.41			29.504
	51.91	1/31/2008	23.22	75.98	1.71	28.694
	48.89[1]	2/4/2009	22.11	72.05	1.47	26.78
	48.89[1]	7/23/2009	22.93	73.01	0.51	25.961
	48.89[1]	1/9/2010	20.29	71.8	1.72	28.601
	48.89[1]	5/27/2010	22.81	71.5	2.02	26.081
	48.89[1]	6/28/2010	22.93	72.15	1.37	25.961
	48.89[1]	7/12/2010	21.41	72.4	1.12	27.481
	48.89[1]	8/31/2010	21.61	72.65	0.87	27.281
	48.89[1]	1/12/2011	21.7	71.25	1.45	27.191
	48.89	7/12/2011	23.11	70.65	2.05	25.782
	48.89	1/26/2012	22.81	71.57	1.13	26.082
	48.89	7/9/2012	22.31	71.45	1.25	26.582
	48.89	1/7/2013	23.32	71.06	1.64	25.572
	48.89	7/22/2013	24.38			24.512
	48.89	1/7/2014	23.51	70.8	2.30	25.38
	48.89	7/15/2014	24.06	70.96	2.14	24.83
	48.89	1/5/2015	22.47	71.72	1.08	26.42
	48.89	8/10/2015	19.34	72.17	0.63	29.55
	48.89	1/13/2016	23.16	71.91	0.89	25.73
	48.89	7/6/2016	23.09	71.56	1.24	25.80
	48.89	1/12/2017	23.74	71.81	0.99	25.15
	54.16	7/6/2017	23.61	77.27	0.53	30.55
	54.16	9/5/2017	23.67	77.29	0.51	30.49
	54.16	2/7/2018	23.86	77.46	0.34	30.30
	54.16	3/11/2018	23.99	77.41	0.39	30.17
	54.16	5/14/2018	25.02	77.49	0.31	29.14
	54.16	1/3/2019	24.29	77.31	0.49	29.87
	54.16	7/9/2019	24.42	76.99	0.81	29.74
	54.16	1/9/2020	26.59	75.3	1.50	27.57
MW-24A	45.79	3/27/2000	7.87			37.92
	45.79	4/7/2000	7.63			38.16
	45.79	5/31/2000	7.65			38.14
	45.79	6/1/2000	7.43			38.36
	45.79	7/28/2000	7.60			38.19
	45.79	8/30/2000	10.44			35.35
	45.79	9/19/2000	10.57			35.22
	45.79	10/27/2000	NM			NM
	45.79	11/21/2000	7.09			38.7
	45.79	5/1/2001	6.72			39.07
	45.79	10/1/2001	7.81			37.98
	45.79	3/11/2002	3.91			41.88

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-24A	45.79	9/23/2002	5.04			40.75
	45.79	3/10/2003	2.76			43.03
	45.79	9/23/2003	4.66			41.13
	45.79	3/15/2004	3.10			42.69
	45.79	9/14/2004	8.24			37.55
	45.79	7/18/2005	6.03			39.76
	45.79	1/6/2006	8.93			36.86
	45.79	7/27/2006	4.21			41.58
	45.79	3/7/2007	3.86			41.93
	45.79	1/30/2008	NM			NM
MW-24AR	45.65	2/5/2009	5.18			40.47
	45.65	7/23/2009	7.36			38.29
	45.65	1/9/2010	3.72			41.93
	45.65	7/12/2010	4.29			41.36
	45.65	1/13/2011	3.58			42.07
	45.65	7/11/2011	6.38			39.27
	45.65	1/27/2012	4.59			41.06
	45.65	7/10/2012	4.38			41.27
	45.65	1/8/2013	5.59			40.06
	45.65	7/23/2013	10.14	71.06		35.51
	45.65	1/8/2014	7.11			38.54
	45.65	1/5/2015	NM			NM
	45.65	7/6/2016	NM			NM
MW-24B	46.06	3/27/2000	11.91			34.15
	46.06	4/7/2000	11.60			34.46
	46.06	5/31/2000	11.63			34.43
	46.06	6/1/2000	11.51			34.55
	46.06	7/28/2000	11.69			34.37
	46.06	8/30/2000	13.91			32.15
	46.06	9/19/2000	14.72			31.34
	46.06	10/27/2000	12.44			33.62
	46.06	11/21/2000	11.38			34.68
	46.06	5/1/2001	10.71			35.35
	46.06	10/1/2001	11.75			34.31
	46.06	3/11/2002	9.01			37.05
	46.06	9/23/2002	9.69			36.37
	46.06	3/10/2003	7.83			38.23
	46.06	9/23/2003	8.98			37.08
	46.06	3/15/2004	7.33			38.73
	46.06	9/14/2004	9.24			36.82
	46.06	7/18/2005	9.54			36.52
	46.06	1/6/2006	11.86			34.2
	46.06	7/27/2006	10.50			35.56
	46.06	3/7/2007	8.88			37.18
	46.06	7/27/2007	9.85			36.21
	46.06	1/28/2008	7.37			38.69
	46.06	7/14/2008	11.41			34.65
	46.06	2/3/2009	11.18			34.88
	46.06	7/23/2009	12.26			33.8
	46.06	1/9/2010	9.89			36.17
	46.06	7/12/2010	12.82			33.24
	46.06	1/13/2011	11.1			34.96
	46.06	7/11/2011	14.09			31.97
	46.06	1/27/2012	11.36			34.7
	46.06	7/10/2012	10.49			35.57
	46.06	1/8/2013	12.96			33.1
	46.06	7/23/2013	8.49			37.57
	46.06	1/5/2015	NM			NM
MW-24C	46.05	3/27/2000	25.77			20.28
	46.05	4/7/2000	24.27			21.78
	46.05	5/31/2000	24.30			21.75
	46.05	6/1/2000	24.22			21.83
	46.05	7/28/2000	24.26			21.79
	46.05	8/30/2000	27.34			18.71
	46.05	9/19/2000	26.59			19.46
	46.05	10/27/2000	27.64			18.41
	46.05	11/21/2000	25.43			20.62
	46.05	5/1/2001	23.90			22.15

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-24C	46.05	10/1/2001	23.71			22.34
	46.05	3/11/2002	22.40			23.65
	46.05	9/23/2002	23.04			23.01
	46.05	3/10/2003	21.71			24.34
	46.05	9/23/2003	23.04			23.01
	46.05	3/15/2004	21.45			24.6
	46.05	9/14/2004	22.45			23.6
	46.05	7/18/2005	22.19			23.86
	46.05	1/6/2006	23.57			22.48
	46.05	7/27/2006	22.61			23.44
	46.05	3/7/2007	21.07			24.98
	46.05	7/27/2007	19.62			26.43
	46.05	1/28/2008	19.43			26.62
	46.05	7/14/2008	20.63			25.42
	46.05	2/3/2009	21.68			24.37
	46.05	7/23/2009	23.07			22.98
	46.05	1/9/2010	20.46			25.59
	46.05	7/12/2010	20.44			25.61
	46.05	1/13/2011	20.26			25.79
	46.05	7/11/2011	21.59			24.46
	46.05	1/27/2012	21.23			24.82
	46.05	7/10/2012	20.81			25.24
	46.05	1/8/2013	22.42			23.63
	46.05	7/23/2013	23.81			22.24
	46.05	1/5/2015	NM			
MW-25A	44.65	3/27/2000	9.15			35.5
	44.65	4/7/2000	8.79			35.86
	44.65	5/31/2000	8.81			35.84
	44.65	6/1/2000	8.86			35.79
	44.65	7/28/2000	8.84			35.81
	44.65	8/30/2000	11.43			33.22
	44.65	9/19/2000	11.12			33.53
	44.65	10/27/2000	10.09			34.56
	44.65	11/21/2000	8.10			36.55
	44.65	5/1/2001	8.94			35.71
	44.65	10/1/2001	8.81			35.84
	44.65	3/11/2002	7.23			37.42
	44.65	9/23/2002	5.65			39
	44.65	3/10/2003	5.84			38.81
	44.65	9/23/2003	5.35			39.3
	44.65	3/15/2004	5.75			38.9
	44.65	9/14/2004	7.00			37.65
	44.65	7/18/2005	6.42			38.23
	44.65	1/6/2006	9.29			35.36
	44.65	7/27/2006	5.10			39.55
	44.65	3/7/2007	4.76			39.89
	44.65	7/27/2007	4.22			40.43
	44.65	1/28/2008	4.25			40.4
	44.65	7/14/2008	8.59			36.06
	44.65	2/3/2009	8.90			35.75
	44.65	7/23/2009	8.71			35.94
	44.65	1/9/2010	6.84			37.81
	44.65	7/12/2010	7.78			36.87
	44.65	1/12/2011	6.26			38.39
	44.65	7/11/2011	10.22			34.43
	44.65	1/27/2012	5.24			39.41
	44.65	7/10/2012	4.56			40.09
	44.65	1/8/2013	8.62			36.03
	44.65	7/23/2013	9.37			35.28
	44.65	1/8/2014	8.92			35.73
	44.65	7/16/2014	8.61			36.04
	44.65	1/5/2015	8.71			35.94
	44.65	8/10/2015	6.94			37.71
	44.65	1/13/2016	6.07			38.58
	44.65	7/6/2016	6.62			38.03
	44.65	1/12/2017	6.98			37.67
	44.65	7/6/2017	7.31			37.34
	44.65	9/5/2017	7.16			37.49

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-25A	44.65	2/11/2018	5.71			38.94
	44.65	3/12/2018	6.06			38.59
	44.65	5/14/2018	7.49			37.16
	44.65	1/3/2019	6.84			37.81
	44.65	7/9/2019	6.77			37.88
	44.65	1/7/2020	8.01			36.64
MW-25C	44.49	3/27/2000	19.92			24.57
	44.49	4/7/2000	19.50			24.99
	44.49	5/31/2000	19.56			24.93
	44.49	6/1/2000	19.51			24.98
	44.49	7/28/2000	19.54			24.95
	44.49	8/30/2000	22.14			22.35
	44.49	9/19/2000	21.30	66.73	0.90	23.19
	44.49	10/27/2000	20.63			23.86
	44.49	11/21/2000	27.63			16.86
	44.49	5/1/2001	18.14			26.35
	44.49	10/1/2001	18.29		0.40	26.2
	44.49	3/14/2002	17.39	64.32	4.13	27.1
	44.49	9/23/2002	17.81	61.41	6.00	26.68
	44.49	3/10/2003	16.73			27.76
	44.49	9/23/2003	22.35			22.14
	44.49	3/15/2004	16.15			28.34
	44.49	9/14/2004	17.00	60.14	2.56	27.49
	44.49	7/18/2005	15.57			28.92
	44.49	1/6/2006	18.49			26
	44.49	7/27/2006	15.32	60.64	2.03	29.17
	44.49	3/7/2007	15.87	59.82	2.18	28.62
	44.49	7/27/2007	14.25	60.61	1.04	30.24
	44.49	1/28/2008	14.91	60.88	0.67	29.58
	44.49	7/14/2008	17.24	60.95	0.60	27.25
	44.49	2/3/2009	15.97	TRACE	TRACE	28.52
	44.49	7/23/2009	16.39			28.1
	44.49	1/9/2010	13.68	61.45	0.65	30.81
	44.49	5/27/2010	16.09			28.4
	44.49	6/28/2010	16.26			28.23
	44.49	7/12/2010	16.05			28.44
	44.49	8/31/2010	16.21			28.28
	44.49	1/12/2011	16.29			28.2
	44.49	7/11/2011	18.81			25.68
	44.49	1/27/2012	17.29			27.2
	44.49	7/10/2012	16.53			27.96
	44.49	1/8/2013	18.34			26.15
	44.49	7/23/2013	18.74			25.75
	44.49	1/8/2014	18.23			26.26
	44.49	7/16/2014	18.66			25.83
	44.49	1/5/2015	17.81			26.68
	44.49	8/10/2015	16.09			28.40
	44.49	1/13/2016	15.61			28.88
	44.49	7/6/2016	16.02			28.47
	44.49	1/12/2017	16.64			27.85
	44.49	7/5/2017	16.84			27.65
	44.49	9/5/2017	16.81			27.68
	44.49	2/11/2018	15.27			29.22
	44.49	3/12/2018	15.63			28.86
	44.49	5/14/2018	16.02			28.47
	44.49	1/3/2019	15.29			29.2
	44.49	7/9/2019	15.86			28.63
	44.49	1/7/2020	16.72			27.77
MW-26A	44.62	3/27/2000	7.40			37.22
	44.62	4/7/2000	6.99			37.63
	44.62	5/31/2000	7.10			37.52
	44.62	6/1/2000	7.00			37.62
	44.62	7/28/2000	7.11			37.51
	44.62	8/30/2000	9.69			34.93
	44.62	9/19/2000	11.43			33.19
	44.62	10/27/2000	8.11			36.51
	44.62	11/21/2000	8.24			36.38
	44.62	5/1/2001	6.01			38.61

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-26A	44.62	10/1/2001	6.34			38.28
	44.62	3/11/2002	4.05			40.57
	44.62	9/23/2002	4.29			40.33
	44.62	3/10/2003	2.84			41.78
	44.62	9/23/2003	4.84			39.78
	44.62	3/15/2004	3.30			41.32
	44.62	9/14/2004	6.80			37.82
	44.62	7/18/2005	6.72			37.9
	44.62	1/6/2006	9.34			35.28
	44.62	7/27/2006	4.42			40.2
	44.62	3/7/2007	4.70			39.92
	44.62	7/27/2007	3.98			40.64
	44.62	1/29/2008	2.37			42.25
	44.62	7/14/2008	7.87			36.75
	44.62	2/3/2009	6.89			37.73
	44.62	7/23/2009	7.88			36.74
	44.62	1/9/2010	4.31			40.31
	44.62	7/12/2010	8.12			36.5
	44.62	1/13/2011	2.38			42.24
	44.62	7/11/2011	10.27			34.35
	44.62	1/27/2012	3.09			41.53
	44.62	7/10/2012	2.77			41.85
	44.62	1/8/2013	7.27			37.35
	44.62	7/23/2013	9.72			34.9
	44.62	1/8/2014	6.33			38.29
	44.62	7/16/2014	7.64			36.98
	44.62	1/5/2015	5.74			38.88
	44.62	8/10/2015	4.03			40.59
	44.62	1/13/2016	3.41			41.21
	44.62	7/6/2016	3.72			40.90
	44.62	1/12/2017	4.92			39.70
	44.62	7/5/2017	5.34			39.28
	44.62	9/5/2017	5.27			39.35
	44.62	2/11/2018	4.43			40.19
	44.62	3/12/2018	4.77			39.85
	44.62	5/14/2018	6.61			38.01
	44.62	1/3/2019	6.06			38.56
	44.62	7/9/2019	6.31			38.31
	44.62	1/7/2020	4.78			39.84
MW-27A	44.90	5/1/2001	6.41			38.49
	44.90	10/1/2001	5.31			39.59
	44.90	3/11/2002	4.21			40.69
	44.90	9/23/2002	3.31			41.59
	44.90	3/10/2003	4.05			40.85
	44.90	9/23/2003	3.24			41.66
	44.90	3/15/2004	2.99			41.91
	44.90	9/14/2004	5.09			39.81
	44.90	7/18/2005	4.45			40.45
	44.90	1/6/2006	4.55			40.35
	44.90	7/27/2006	4.26			40.64
	44.90	3/7/2007	3.01			41.89
	44.90	7/27/2007	2.12			42.92
	44.90	1/28/2008	1.88			43.16
	44.90	7/14/2008	4.57			40.47
	44.90	2/3/2009	4.27			40.77
	44.90	7/23/2009	4.36			40.68
	44.90	1/9/2010	3.69			41.35
	44.90	7/12/2010	5.31			39.73
	44.90	1/12/2011	3.76			41.28
	44.90	7/12/2011	6.72			38.32
	44.90	1/26/2012				NM
	44.90	7/10/2012	well covered			NM
	44.90	1/7/2013	well covered			NM
	44.90	7/23/2013	NM			NM
	44.90	8/10/2015	NM			NM
	44.90	2/11/2018	4.21			40.69
	44.90	3/12/2018	4.59			40.31
	44.90	5/14/2018	5.06			39.84

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-27A	44.90	1/3/2019	NM			NM
	44.90	7/9/2019	7.21			37.69
	44.90	1/8/2020	7.22			37.68
MW-27C	45.04	5/1/2001	17.82			27.22
	45.04	10/1/2001	17.82			27.22
	45.04	3/11/2002	16.36			28.68
	45.04	9/23/2002	16.49			28.55
	45.04	3/10/2003	18.68			26.36
	45.04	9/23/2003	16.89			28.15
	45.04	3/15/2004	14.35			30.69
	45.04	9/14/2004	14.49			30.55
	45.04	7/18/2005	16.12			28.92
	45.04	1/6/2006	18.07			26.97
	45.04	7/27/2006	17.13			27.91
	45.04	3/7/2007	15.47			29.57
	44.90	7/27/2007	14.85			30.05
	45.04	1/28/2008	14.31			30.73
	45.04	7/14/2008	17.51			27.53
	45.04	2/3/2009	15.76			29.28
	45.04	7/23/2009	16.38			28.66
	45.04	1/9/2010	14.82			30.22
	45.04	7/12/2010	16.12			28.92
	45.04	1/12/2011	15.84			29.2
	45.04	7/11/2011	18.17			26.87
	45.04	1/27/2012	17.14			27.9
	45.04	7/10/2012	16.56			28.48
	45.04	1/8/2013	17.04			28
	45.04	7/23/2013	18.61			26.43
	45.04	1/8/2014	18.12			26.92
	45.04	7/16/2014	16.94			28.10
	45.04	1/5/2015	17.74			27.30
	45.04	8/10/2015	15.71			29.33
	45.04	1/13/2016	15.04			30.00
	45.04	7/6/2016	15.32			29.72
	45.04	1/12/2017	15.91			29.13
	45.04	7/5/2017	16.39			28.65
	45.04	9/5/2017	16.36			28.68
	45.04	2/11/2018	16.59			28.45
	45.04	3/12/2018	16.97			28.07
	45.04	5/14/2018	15.89			29.15
	45.04	1/3/2019	14.32			30.72
	45.04	7/9/2019	15.61			29.43
	45.04	1/8/2020	16.93			28.11
MW-28A	43.86	5/1/2001	7.45			36.41
	43.86	10/1/2001	8.26			35.6
	43.86	3/11/2002	4.90			38.96
	43.86	9/23/2002	5.71			38.15
	43.86	3/10/2003	3.11			40.75
	43.86	9/23/2003	5.81			38.05
	43.86	9/14/2004	9.34			34.52
	43.86	7/18/2005	7.52			36.34
	43.86	1/6/2006	9.32			34.54
	43.86	7/27/2006	5.54			38.32
	43.86	3/7/2007	5.06			38.8
	43.86	7/27/2007	2.86			41
	43.86	1/29/2008	2.61			41.25
	43.86	7/14/2008	8.74			35.12
	43.86	2/3/2009	8.36			35.5
	43.86	7/23/2009	8.94			34.92
	43.86	1/9/2010	4.54			39.32
	43.86	7/12/2010	8.66			35.2
	43.86	1/12/2011	3.87			39.99
	43.86	7/11/2011	11.43			32.43
	43.86	1/27/2012	2.66			41.2
	43.86	7/10/2012	4.52			39.34

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-28A	43.86	1/8/2013	8.11			35.75
	43.86	7/23/2013	10.78			33.08
	43.86	1/8/2014	7.71			36.15
	43.86	7/16/2014	8.19			35.67
	43.86	1/5/2015	7.21			36.65
	43.86	8/10/2015	5.72			38.14
	43.86	1/13/2016	5.09			38.77
	43.86	7/6/2016	5.42			38.44
	43.86	1/12/2017	5.89			37.97
	43.86	7/5/2017	6.13			37.73
	43.86	9/5/2017	6.06			37.80
	43.86	2/11/2018	5.31			38.55
	43.86	3/12/2018	5.61			38.25
	43.86	5/14/2018	6.02			37.84
	43.86	1/3/2019	5.41			38.45
	43.86	7/9/2019	6.52			37.34
	43.86	1/7/2020	6.68			37.18
MW-28C	43.96	5/1/2001	17.14			26.82
	43.96	10/1/2001	17.51			26.45
	43.96	3/11/2002	16.29			27.67
	43.96	9/23/2002	17.75			26.21
	43.96	3/10/2003	15.84			28.12
	43.96	9/23/2003	17.48			26.48
	43.96	3/15/2004	15.56			28.4
	43.96	9/14/2004	17.20			26.76
	43.96	7/18/2005	16.60			27.36
	43.96	1/6/2006	17.61			26.35
	43.96	7/27/2006	17.73			26.23
	43.96	3/7/2007	15.59			28.37
	43.96	7/27/2007	12.90			31.06
	43.96	1/29/2008	14.35			29.61
	43.96	7/14/2008	16.26			27.7
	43.96	2/3/2009	16.03			27.93
	43.96	7/23/2009	16.53			27.43
	43.96	1/9/2010	14.89			29.07
	43.96	7/12/2010	15.89			28.07
	43.96	1/12/2011	18.37			25.59
	43.96	7/11/2011	18.16			25.8
	43.96	1/27/2012	16.12			27.84
	43.96	7/10/2012	16.79			27.17
	43.96	1/8/2013	17.62			26.34
	43.96	7/23/2013	18.87			25.09
	43.96	1/8/2014	17.59			26.37
	43.96	7/16/2014	16.98			26.98
	43.96	1/5/2015	16.84			27.12
	43.96	8/10/2015	14.39			29.57
	43.96	1/13/2016	13.72			30.24
	43.96	7/6/2016	14.03			29.93
	43.96	1/12/2017	14.64			29.32
	43.96	7/5/2017	14.88			29.08
	43.96	9/5/2017	14.89			29.07
	43.96	2/11/2018	17.33			26.63
	43.96	3/12/2018	14.73			29.23
	43.96	5/14/2018	16.59			27.37
	43.96	1/3/2019	15.88			28.08
	43.96	7/9/2019	15.03			28.93
	43.96	1/7/2020	15.56			28.4
MW-29A	46.59	5/1/2001	5.01			41.58
	46.59	10/1/2001	5.38			41.21
	46.59	3/11/2002	1.51			45.08
	46.59	9/23/2002	1.65			44.94
	46.59	3/10/2003	1.42			45.17
	46.59	9/23/2003	1.50			45.09
	46.59	3/15/2004	1.85			44.74
	46.59	9/14/2004	6.35			40.24
	46.59	7/18/2005	3.12			43.47
	46.59	1/6/2006	6.57			40.02

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-29A	46.59	7/27/2006	1.44			45.15
	46.59	3/7/2007	1.95			44.64
	46.59	7/27/2007	2.49			44.1
	46.59	1/28/2008	1.28			45.31
	46.59	7/14/2008	4.14			42.45
	46.59	2/3/2009	3.50			43.09
	46.59	7/23/2009	4.09			42.5
	46.59	1/9/2010	1.76			44.83
	46.59	7/12/2010	3.62			42.97
	46.59	1/13/2011	3.07			43.52
	46.59	7/11/2011	7.14			39.45
	46.59	7/10/2012	4.17			42.42
	46.59	1/8/2013	4.91			41.68
	46.59	7/23/2013	--			--
	Plugged					NM
MW-29B	46.26	5/1/2001	19.01			27.25
	46.26	10/1/2001	19.41			26.85
	46.26	3/11/2002	18.04			28.22
	46.26	9/23/2002	18.82			27.44
	46.26	3/10/2003	17.21			29.05
	46.26	9/23/2003	18.09			28.17
	46.26	3/15/2004	17.10			29.16
	46.26	9/14/2004	17.76			28.5
	46.26	7/18/2005	18.11			28.15
	46.26	1/6/2006	18.83			27.43
	46.26	7/27/2006	18.41			27.85
	46.26	3/7/2007	17.21			29.05
	46.26	7/27/2007	15.49			30.77
	46.26	1/28/2008	15.32			30.94
	46.26	7/14/2008	18.23			28.03
	46.26	2/3/2009	17.72			28.54
	46.26	7/23/2009	16.19			30.07
	46.26	1/9/2010	16.02			30.24
	46.26	7/12/2010	19.29			26.97
	46.26	1/13/2011	17.73			28.53
	46.26	7/11/2011	20.06			26.2
	46.26	7/10/2012	9.71			36.55
	46.26	1/8/2013	9.92			36.34
	Plugged					
MW-29C	46.46	5/1/2001	25.51			20.95
	46.46	10/1/2001	25.04			21.42
	46.46	3/11/2002	23.51			22.95
	46.46	9/23/2002	24.10			22.36
	46.46	3/10/2003	22.71			23.75
	46.46	9/23/2003	23.48			22.98
	46.46	3/15/2004	22.24			24.22
	46.46	9/14/2004	24.12			22.34
	46.46	7/18/2005	23.75			22.71
	46.46	1/6/2006	25.12			21.34
	46.46	7/27/2006	23.35			23.11
	46.46	3/7/2007	22.38			24.08
	46.46	7/27/2007	20.42			26.04
	46.46	1/28/2008	21.08			25.38
	46.46	7/14/2008	22.38			24.08
	46.46	2/3/2009	22.86			23.6
	46.46	7/23/2009	22.81			23.65
	46.46	1/9/2010	20.71			25.75
	46.46	7/12/2010	21.32			25.14
	46.46	1/13/2011	20.39			26.07
	46.46	7/11/2011	23.17			23.29
	46.46	7/10/2012	20.69			25.77
	46.46	1/8/2013	21.27			25.19
	46.46	7/23/2013	--			--
	Plugged					
MW-30A	50.45	3/15/2004	9.71			40.74
	50.45	9/13/2004	12.76			37.69
	50.45	7/18/2005	11.80			38.65
	50.45	1/4/2006	13.52			36.93

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-30A	50.45	7/27/2006	10.45			40
	50.45	3/7/2007	10.98			39.47
	50.45	7/27/2007	9.49			40.96
	50.45	1/30/2008	9.62			40.83
	50.45	7/15/2008	12.52			37.93
	50.45	2/4/2009	13.01			37.44
	50.45	7/23/2009	13.71			36.74
	50.45	1/9/2010	10.87			39.58
	50.45	7/12/2010	12.61			37.84
	50.45	1/12/2011	10.06			40.39
	50.45	7/12/2011	14.76			35.69
	50.45	1/26/2012	10.78			39.67
	50.45	7/9/2012	11.13			39.32
	50.45	1/8/2013	12.91			37.54
	50.45	7/23/2013	14.16			36.29
	50.45	1/8/2014	13.81			36.64
	50.45	7/15/2014	12.10			38.35
	50.45	1/5/2015	13.22			37.23
	50.45	8/10/2015	12.16	Plugged and Abandoned		38.29
MW-31A	52.08	3/15/2004	10.97			41.11
	52.08	9/13/2004	13.00			39.08
	52.08	7/18/2005	13.05			39.03
	52.08	1/4/2006	14.77			37.31
	52.08	7/27/2006	11.83			40.25
	52.08	3/7/2007	12.43			39.65
	52.08	7/27/2007	10.83			41.25
	52.08	1/31/2008	10.99			41.09
	52.08	7/15/2008	13.68			38.4
	52.08	2/4/2009	14.23			37.85
	52.08	7/23/2009	14.73			37.35
	52.08	1/9/2010	12.31			39.77
	52.08	7/12/2010	14.06			38.02
	52.08	1/12/2011	11.62			40.46
	52.08	7/12/2011	15.92			36.16
	52.08	1/26/2012	12.24			39.84
	52.08	7/9/2012	12.79			39.29
	52.08	1/8/2013	14.14			37.94
	52.08	7/23/2013	16.24			35.84
	52.08	1/8/2014	15.96			36.12
	52.08	7/15/2014	13.19			38.89
	52.08	1/5/2015	15.16			36.92
	52.08	8/10/2015	12.76	Plugged and Abandoned		39.32
MW-32A	43.77	3/15/2004	1.00			42.77
	43.77	9/14/2004	6.03	29.00	3.48	37.74
	43.77	7/18/2005	5.82	26.56	5.92	37.95
	43.77	1/6/2006	6.93	24.92	7.57	36.84
	43.77	7/27/2006	12.96	25.71	6.74	30.81
	43.77	3/7/2007	4.03	25.26	7.19	39.74
	43.77	7/27/2007	1.95	30.76	1.70	41.82
	43.77	1/28/2008	2.18			41.59
	43.77	7/14/2008	6.14	26.25	6.20	37.63
	43.77	2/3/2009	5.71	26.29	6.16	38.06
	43.77	7/23/2009	6.29	26.51	5.94	37.48
	43.77	1/9/2010	3.55	25.41	7.04	40.22
	43.77	5/27/2010	5.86	26.2	6.25	37.91
	43.77	6/28/2010	6.02	29.1	3.35	37.75
	43.77	7/12/2010	6.12	29.45	3.00	37.65
	43.77	8/31/2010	5.43	30.67	1.78	38.34
	43.77	1/13/2011	2.63	29.15	3.30	41.14
	43.77	7/11/2011	5.92	28.82	3.63	37.85
	Plugged					37.85
MW-32AR	44.56	1/27/2012	3.22			41.34
	44.56	7/10/2012	3.73			40.83
	44.56	1/8/2013	6.64			37.92
	44.56	7/23/2013	9.42			35.14
	44.56	1/8/2014	5.64			38.92
	44.56	7/16/2014	6.74			37.82
	44.56	1/5/2015				

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-32AR	44.56	8/10/2015	3.18			41.38
	44.56	1/13/2016	2.66			41.90
	44.56	7/6/2016	3.14			41.42
	44.56	1/12/2017	3.67			40.89
	44.56	7/5/2017	4.16			40.40
	44.56	9/6/2017	4.03			40.53
	44.56	2/11/2018	4.06			40.50
	44.56	3/12/2018	5.02			39.54
	44.56	5/14/2018	5.91			38.65
	44.56	1/3/2019	5.42			39.14
	44.56	7/9/2019	6.41			38.15
	44.56	1/8/2020	3.88			40.68
MW-32B	44.41	1/27/2012	3.11	30.52	5.77	41.3
	44.41	7/10/2012	3.81	30.16	6.13	40.6
	44.41	1/8/2013	6.34	30.02	6.38	38.07
	44.41	7/23/2013	7.14			37.27
	44.41	1/8/2014	6.72	34.82	1.58	37.69
	44.41	7/16/2014	6.72	34.29	2.11	37.69
	44.41	1/5/2015	6.02	35.77	0.63	38.39
	44.41	8/10/2015	4.41	36.09	0.31	40.00
	44.41	1/13/2016	3.61	36.07	0.33	40.80
	44.41	7/6/2016	3.91	35.96	0.44	40.50
	44.41	1/12/2017	4.83	36.02	0.38	39.58
	44.41	7/5/2017	4.86	36.13	0.27	39.55
	44.41	9/6/2017	4.78	36.24	3.67	39.63
	44.41	2/7/2018	5.16	36.21	0.19	39.25
	44.41	3/12/2018	5.41	36.13	0.27	39.00
	44.41	5/15/2018	6.47	36.21	0.19	37.94
	44.41	1/3/2019	6.09	36.29	0.11	38.32
	44.41	7/9/2019	5.61	35.89	0.51	38.8
	44.41	1/8/2020	2.71			41.7
MW-33A	44.25	3/15/2004	3.90			40.35
	44.25	9/14/2004	7.85			36.4
	44.25	7/18/2005	6.35			37.9
	44.25	1/6/2006	8.00			36.25
	44.25	7/27/2006	4.73			39.52
	44.25	3/7/2007	5.22			39.03
	44.25	7/27/2007	3.48			40.77
	44.25	1/29/2008	3.34			40.91
	44.25	7/14/2008	7.42	25.19	0.03	36.83
	44.25	2/3/2009	7.28			36.97
	44.25	7/23/2009	7.63			36.62
	44.25	1/9/2010	4.79			39.46
	44.25	7/12/2010	7.61			36.64
	44.25	1/13/2011	3.19			41.06
	44.25	7/11/2011	9.87			34.38
	44.25	1/27/2012	2.69			41.56
	44.25	7/10/2012	3.86			40.39
	44.25	1/8/2013	6.76			37.49
	44.25	7/23/2013	9.83			34.42
	44.25	1/8/2014	6.71			37.54
	44.25	7/16/2014	7.09			37.16
	44.25	1/5/2015	5.02			39.23
	44.25	8/10/2015	4.09			40.16
	44.25	1/13/2016	3.51			40.74
	44.25	7/6/2016	3.89			40.36
	44.25	1/12/2017	5.01			39.24
	44.25	7/5/2017	5.59			38.66
	44.25	9/6/2017	5.51			38.74
	44.25	2/11/2018	4.38			39.87
	44.25	3/12/2018	4.86			39.39
	44.25	5/14/2018	6.42			37.83
	44.25	1/3/2019	5.77			38.48
	44.25	7/9/2019	5.09			39.16
	44.25	1/20/2020	4.41			39.84
MW-33B	44.35	3/7/2007	4.21			40.04
	44.35	7/27/2007	3.72			40.53
	44.35	1/29/2008	2.37	39.12	3.37	41.88

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-33B	44.35	7/14/2008	5.74	37.44	5.05	38.51
	44.35	2/3/2009	9.28	36.91	5.58	34.97
	44.35	7/23/2009	NM			NM
	44.35	1/9/2010	4.61	35.21	7.28	39.74
	44.35	5/27/2010	6.82			37.53
	44.35	6/28/2010	6.91			37.44
	44.35	7/12/2010	7.02			37.33
	44.35	8/31/2010	7.22			37.13
	44.35	1/13/2011	3.11	29.7	0.30	41.24
	44.35	7/11/2011	10.19	29.75	0.25	34.16
	44.35	1/5/2015	NM			NM
MW-33BR	44.35	1/27/2012	4.07			40.28
	44.35	7/10/2012	2.59			41.76
	44.35	1/8/2013	3.86			40.49
	44.35	7/23/2013	9.68			34.67
	44.35	1/8/2014	7.41			36.94
	44.35	7/16/2014	6.72			37.63
	44.35	1/5/2015	5.22			39.13
	44.35	8/10/2015	3.96			40.39
	44.35	1/13/2016	3.22			41.13
	44.35	7/6/2016	3.71			40.64
	44.35	1/12/2017	4.74			39.61
	44.35	7/5/2017	5.19			39.16
	44.35	9/6/2017	4.99			39.36
	44.35	2/11/2018	4.74			39.61
	44.35	3/12/2018	5.19			39.16
	44.35	5/14/2018	6.03			38.32
	44.35	1/3/2019	5.18			39.17
	44.35	7/9/2019	5.92			38.43
	44.35	1/8/2020	5.06			39.29
MW-34C	45.31	3/15/2004	17.40			27.91
	45.31	9/14/2004	18.82			26.49
	45.31	7/18/2005	19.41	65.29	7.19	25.9
	45.31	1/6/2006	20.54	65.27	8.38	24.77
	45.31	7/27/2006	18.55	63.84	8.61	26.76
	45.31	4/9/2007	16.34	62.06	10.39	28.97
	45.31	7/27/2007	NM			
	45.31	1/29/2008	16.32			28.99
	45.31	7/15/2008	18.13	43.49	29.01	27.18
	45.31	2/5/2009	18.08	61.79	10.71	27.23
	45.31	7/23/2009	NM			
	45.31	1/9/2010	16.41	69.20	3.30	28.9
	45.31	7/12/2010	NM			
	45.31	1/12/2011	16.41	64.90		28.9
	45.31	7/11/2011	19.08	65.26		26.23
	45.31	2/8/2012	18.41			26.9
	45.31	7/10/2012	NM			
	45.31	1/8/2013	NM			
	45.31	7/23/2013	NM			
MW-34CR	46.47	7/16/2014	19.17			27.30
	46.47	1/5/2015	19.01			27.46
	46.47	8/10/2015	17.39			29.08
	46.47	1/13/2016	15.99			30.48
	46.47	7/6/2016	16.06			30.41
	46.47	1/12/2017	16.94			29.53
	46.47	7/5/2017	17.01			29.46
	46.47	9/6/2017	17.11			29.36
	46.47	2/11/2018	18.19			28.28
	46.47	3/12/2018	18.52			27.95
	46.47	5/14/2018	18.26			28.21
	46.47	1/3/2019	18.26			28.21
	46.47	7/9/2019	NM			damaged
	46.47	3/31/2020	17.49			28.98
MW-35A	44.75	3/7/2007	3.49			41.82
	44.75	7/27/2007	3.05			42.26
	44.75	1/29/2008	1.82			43.49
	44.75	7/14/2008	6.21			39.1
	44.75	2/3/2009	5.54			39.77

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-35A	44.75	7/23/2009	5.76			39.55
	44.75	1/9/2010	4.14			41.17
	44.75	7/12/2010	6.04			39.27
	44.75	1/13/2011	2.46			42.85
	44.75	7/11/2011	8.44			36.87
	44.75	1/27/2012	1.35			43.96
	44.75	7/10/2012	2.33			42.98
	44.75	1/8/2013	5.37			39.94
	44.75	7/23/2013	9.18			36.13
	44.75	1/8/2014	5.06			40.25
	44.75	7/15/2014	6.51			38.24
	44.75	1/5/2015	4.22			40.53
	44.75	8/10/2015	3.68			41.07
	44.75	1/13/2016	3.08			41.67
	44.75	7/6/2016	3.34			41.41
	44.75	1/12/2017	3.87			40.88
	44.75	7/5/2017	4.41			40.34
	44.75	9/6/2017	NM			
	44.75	2/11/2018	3.69			41.06
	44.75	3/11/2018	4.06			40.69
	44.75	5/14/2018	8.71			36.04
	44.75	1/3/2019	8.06			36.69
	44.75	7/9/2019	7.92			36.83
	44.75	1/8/2020	4.41			40.34
MW-35B	44.83	3/7/2007	3.31			41.52
	44.83	7/27/2007	3.29			41.54
	44.83	1/29/2008	1.95			42.88
	44.83	7/14/2008	6.40			38.43
	44.83	2/3/2009	5.79			39.04
	44.83	7/23/2009	6.42			38.41
	44.83	1/9/2010	3.51			41.32
	44.83	7/12/2010	6.39			38.44
	44.83	1/13/2011	2.96			41.87
	44.83	7/11/2011	8.67			36.16
	44.83	1/27/2012	1.59			43.24
	44.83	7/10/2012	2.74			42.09
	44.83	1/8/2013	6.09			38.74
	44.83	7/23/2013	9.22			35.61
	44.83	1/8/2014	5.31			39.52
	44.83	7/15/2014	6.75			38.08
	44.83	1/5/2015	4.81			40.02
	44.83	8/10/2015	3.97			40.86
	44.83	1/13/2016	3.26			41.57
	44.83	7/6/2016	3.57			41.26
	44.83	1/12/2017	4.06			40.77
	44.83	7/5/2017	4.66			40.17
	44.83	9/6/2017	NM			
	44.83	2/11/2018	4.06			40.77
	44.83	3/11/2018	4.31			40.52
	44.83	5/14/2018	6.11			38.72
	44.83	1/3/2019	5.33			39.5
	44.83	7/9/2019	5.62			39.21
	44.83	1/8/2020	4.67			40.16
MW-36A	44.53	3/7/2007	8.71			35.82
	44.53	7/27/2007	6.54			37.99
	44.53	1/29/2008	5.59			38.94
	44.53	7/14/2008	9.33			35.2
	44.53	2/3/2009	10.69			33.84
	44.53	7/23/2009	12.03			32.5
	44.53	1/9/2010	9.23			35.3
	44.53	7/12/2010	9.14			35.39
	44.53	1/13/2011	8.62			35.91
	44.53	7/11/2011	12.16			32.37
	44.53	1/27/2012	6.82			37.71
	44.53	7/10/2012	6.68			37.85
	44.53	1/8/2013	7.61			36.92
	44.53	7/23/2013	11.36			33.17
	44.53	1/8/2014	9.23			35.3

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-36A	44.53	7/16/2014	8.62			35.91
	44.53	1/5/2015	8.67			35.86
	44.53	8/10/2015	6.47			38.06
	44.53	1/13/2016	5.79			38.74
	44.53	7/6/2016	6.13			38.40
	44.53	1/12/2017	6.58			37.95
	44.53	7/5/2017	7.01			37.52
	44.53	9/6/2017	6.92			37.61
	44.53	2/11/2018	7.77			36.76
	44.53	3/11/2018	8.06			36.47
	44.53	5/14/2018	8.92			35.61
	44.53	1/3/2019	8.22			36.31
	44.53	7/9/2019	8.32			36.21
	44.53	1/7/2020	8.83			35.7
MW-36B	44.07	7/12/2010	1.32			42.75
	44.07	1/13/2011	9.71			34.36
	44.07	7/11/2011	11.57			32.5
	44.07	1/27/2012	0.46			43.61
	44.07	7/10/2012	6.64			37.43
	44.07	1/8/2013	6.71			37.36
	44.07	7/23/2013	9.39			34.68
	44.07	1/8/2014	4.09			39.98
	44.07	7/16/2014	3.61			40.46
	44.07	1/5/2015	3.21			40.86
	44.07	8/10/2015	1.46			42.61
	44.07	1/13/2016	1.06			43.01
	44.07	7/6/2016	4.06			40.01
	44.07	1/12/2017	4.59			39.48
	44.07	7/5/2017	4.72			39.35
	44.07	9/6/2017	4.41			39.66
	44.07	2/11/2018	0.32			43.75
	44.07	3/11/2018	1.81			42.26
	44.07	5/14/2018	1.62			42.45
	44.07	1/3/2019	1.09			42.98
	44.07	7/9/2019	1.86			42.21
	44.07	1/7/2020	0.39			43.68
MW-36D	44.33	7/12/2010	85.39			-41.06
	44.33	1/13/2011	85.03			-40.7
	44.33	7/11/2011	85.33			-41
	44.33	1/27/2012	85.62			-41.29
	44.33	7/10/2012	85.17			-40.84
	44.33	1/8/2013	85.37			-41.04
	44.33	7/23/2013	85.93			-41.6
	44.33	1/8/2014	85.32			-40.99
	44.33	7/16/2014	84.77			-40.44
	44.33	1/5/2015	85.01			-40.68
	44.33	8/10/2015	84.67			-40.34
	44.33	1/13/2016	84.29			-39.96
	44.33	7/6/2016	84.42			-40.09
	44.33	1/12/2017	84.73			-40.40
	44.33	7/5/2017	84.89			-40.56
	44.33	9/6/2017	84.86			-40.53
	44.33	2/11/2018	82.59			-38.26
	44.33	3/11/2018	82.77			-38.44
	44.33	5/14/2018	83.09			-38.76
	44.33	1/3/2019	82.51			-38.18
	44.33	7/9/2019	82.91			-38.58
	44.33	1/7/2020	82.06			-37.73
MW-38A	46.39	3/7/2007	3.26			43.13
	46.39	7/27/2007	3.08			43.31
	46.39	1/29/2008	1.85			44.54
	46.39	7/14/2008	5.84			40.55
	46.39	2/3/2009	5.15			41.24
	46.39	7/23/2009	5.06			41.33
	46.39	1/9/2010	2.27			44.12
	46.39	7/12/2010	6.42			39.97
	46.39	1/13/2011	1.76			44.63
	46.39	7/11/2011	8.16			38.23

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-38A	46.39	1/27/2012	1.8			44.59
	46.39	7/10/2012	2.52			43.87
	46.39	1/8/2013	4.62			41.77
	46.39	7/23/2013	8.34			38.05
	46.39	1/8/2014	4.77			41.62
	46.39	7/15/2014	6.20			40.19
	46.39	1/5/2015	4.16			42.23
	46.39	8/10/2015	3.61			42.78
	46.39	1/13/2016	3.02			43.37
	46.39	7/6/2016	3.42			42.97
	46.39	1/12/2017	4.01			42.38
	46.39	7/5/2017	4.21			42.18
	46.39	9/6/2017	4.12			42.27
	46.39	2/11/2018	2.61			43.78
	46.39	3/11/2018	4.12			42.27
	46.39	5/14/2018	5.41			40.98
	46.39	1/3/2019	4.66			41.73
	46.39	7/9/2019	4.13			42.26
	46.39	1/8/2020	1.51			44.88
MW-38B	45.51	3/15/2004	1.07			44.44
	45.51	9/14/2004	6.10			39.41
	45.51	7/18/2005	2.41			43.1
	45.51	1/6/2006	6.33			39.18
	45.51	7/27/2006	1.27			44.24
	45.51	3/7/2007	2.38			43.13
	45.51	7/27/2007	2.25			43.26
	45.51	1/29/2008	0.61			44.9
	45.51	7/14/2008	4.86			40.65
	45.51	2/3/2009	4.33			41.18
	45.51	7/23/2009	4.47			41.04
	45.51	1/9/2010	1.44			44.07
	45.51	7/12/2010	5.72			39.79
	45.51	1/13/2011	0.68			44.83
	45.51	7/11/2011	7.82			37.69
	45.51	1/27/2012	0.85			44.66
	45.51	7/10/2012	0.74			44.77
	45.51	1/8/2013	3.97			41.54
	45.51	7/23/2013	7.51			38
	45.51	1/8/2014	3.47			42.04
	45.51	7/15/2014	5.50			40.01
	45.51	1/5/2015	3.07			42.44
	45.51	8/10/2015	2.17			43.34
	45.51	1/13/2016	2.41			43.10
	45.51	7/6/2016	2.96			42.55
	45.51	1/12/2017	3.81			41.70
	45.51	7/5/2017	4.07			41.44
	45.51	9/6/2017	3.91			41.60
	45.51	2/11/2018	2.02			43.49
	45.51	3/11/2018	3.22			42.29
	45.51	5/14/2018	4.62			40.89
	45.51	1/3/2019	3.79			41.72
	45.51	7/9/2019	3.26			42.25
	45.51	1/8/2020	3.79			41.72
MW-39B	49.58	3/15/2004	5.48			44.1
	49.58	9/13/2004	10.02			39.56
	49.58	7/18/2005	7.21			42.37
	49.58	1/4/2006	10.37			39.21
	49.58	7/27/2006	6.08			43.5
	49.58	3/7/2007	6.91			42.67
	49.58	7/27/2007	5.74			43.84
	49.58	1/30/2008	6.34			43.24
	49.58	7/15/2008	8.96			40.62
	49.58	2/4/2009	8.60			40.98
	49.58	7/24/2009	9.13			40.45
	49.58	1/8/2010	5.61			43.97
	49.58	7/12/2010	9.31			40.27
	49.58	1/12/2011	5.64			43.94
	49.58	7/12/2011	11.97			37.61

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-39B	49.58	1/26/2012	5.84			43.74
	49.58	7/9/2012	5.77			43.81
	49.58	1/7/2013	8.68			40.9
	49.58	7/22/2013	11.17			38.41
	49.58	1/7/2014	7.23			42.35
	49.58	7/16/2014	9.46			40.12
	49.58	1/5/2015	6.71			42.87
	49.58	8/10/2015	4.82			44.76
	49.58	1/13/2016	4.17			45.41
	49.58	7/6/2016	4.26			45.32
	49.58	1/12/2017	5.61			43.97
	49.58	7/5/2017	5.87			43.71
	49.58	9/6/2017	5.66			43.92
	49.58	2/11/2018	6.09			43.49
	49.58	3/11/2018	7.04			42.54
	49.58	5/14/2018	8.73			40.85
	49.58	1/3/2019	7.97			41.61
	49.58	7/9/2019	7.47			42.11
	49.58	1/7/2020	6.02			43.56
MW-40B	49.59	3/15/2004	5.46			44.13
	49.59	9/13/2004	9.72			39.87
	49.59	7/18/2005	7.19			42.4
	49.59	1/4/2006	10.25			39.34
	49.59	7/27/2006	6.18			43.41
	49.59	3/7/2007	6.81			42.78
	49.59	7/27/2007	5.00			44.59
	49.59	1/30/2008	5.23			44.36
	49.59	7/15/2008	8.76			40.83
	49.59	2/4/2009	8.57			41.02
	49.59	7/24/2009	9.06			40.53
	49.59	1/8/2010	5.37			44.22
	49.59	7/12/2010	9.17			40.42
	49.59	1/12/2011	5.81			43.78
	49.59	7/12/2011	11.46			38.13
	49.59	1/26/2012	5.68			43.91
	49.59	7/9/2012	5.74			43.85
	49.59	1/7/2013	8.63			40.96
	49.59	7/22/2013	11.06			38.53
	49.59	1/7/2014	7.24			42.35
	49.59	7/16/2014	9.27			40.32
	49.59	1/5/2015	7.02			42.57
	49.59	8/10/2015	5.02			44.57
	49.59	1/13/2016	4.39			45.20
	49.59	7/6/2016	4.67			44.92
	49.59	1/12/2017	5.22			44.37
	49.59	7/5/2017	5.77			43.82
	49.59	9/6/2017	5.71			43.88
	49.59	2/11/2018	6.21			43.38
	49.59	3/11/2018	6.82			42.77
	49.59	5/14/2018	8.44			41.15
	49.59	1/3/2019	7.91			41.68
	49.59	7/9/2019	7.23			42.36
	49.59	1/7/2020	6.17			43.42
MW-41B	49.37	3/15/2004	4.66			44.71
	49.37	9/13/2004	9.76	35.01	9.80	39.61
	49.37	7/18/2005	5.96	32.23	12.58	43.41
	49.37	1/4/2006	10.03	32.21	12.60	39.34
	49.37	7/27/2006	5.65	29.55	15.26	43.72
	49.37	3/7/2007	4.41	29.13	15.68	44.96
	49.37	7/27/2007	5.27	12.00	32.81	44.1
	49.37	2/22/2008	5.04	25.14	19.67	44.7
	49.37	7/15/2008	8.87	25.09	19.72	40.5
	49.37	2/4/2009	8.93	23.79	21.02	40.44
	49.37	7/24/2009	9.46	23.91	20.90	39.91
	49.37	1/8/2010	5.92	23.65	21.16	43.45
	49.37	5/27/2010	6.13	25.45	19.36	43.24
	49.37	6/28/2010	6.21	38.2	6.61	43.16
	49.37	7/12/2010	6.32	38.45	6.36	43.05

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-41B	49.37	8/31/2010	6.26	39.22	5.59	43.11
	49.37	1/12/2011	6.02	39.6	5.21	43.35
	49.37	7/12/2011	8.86	39.75	5.06	40.51
	49.37	3/8/2012	6.31	20.67	24.14	43.06
	49.37	7/9/2012	8.23			41.14
	49.37	1/7/2013	9.09	41.13	3.68	40.28
	49.37	7/22/2013	10.31	39.29	5.52	39.06
	49.37	1/7/2014	9.06	39.17	5.64	40.31
	49.37	7/15/2014	8.62	37.86	6.95	40.75
	49.37	1/5/2015	8.26	39.02	5.79	41.11
	49.37	8/10/2015	6.01	40.39	4.42	43.36
	49.37	1/13/2016	5.51	39.91	4.90	43.86
	49.37	7/6/2016	5.72	40.01	4.80	43.65
	49.37	1/12/2017	6.39	40.56	4.25	42.98
	49.37	7/6/2017	6.34	40.57	4.24	43.03
	49.37	9/6/2017	6.36	40.62	4.19	43.01
	49.37	2/7/2018	6.97	40.76	4.05	42.40
	49.37	3/11/2018	7.21	40.63	4.18	42.16
	49.37	5/14/2018	8.71	40.82	3.99	40.66
	49.37	7/2/2018	8.97	40.96	3.85	40.4
	49.37	1/3/2019	8.22	40.83	3.98	41.15
	49.37	7/9/2019	7.57	40.86	1.74	41.8
	49.37	8/1/2019	7.46	39.42	5.39	41.91
	49.37	1/8/2020	4.2	40.34	2.26	45.17
MW-42B	50.52	3/7/2007	7.31			43.21
	50.52	7/27/2007	5.74			44.78
	50.52	1/30/2008	6.62			43.9
	50.52	7/15/2008	8.73			41.79
	50.52	2/4/2009	9.32			41.2
	50.52	7/24/2009	9.61			40.91
	50.52	1/8/2010	6.02			44.5
	50.52	7/12/2010	7.13			43.39
	50.52	1/12/2011	6.33			44.19
	50.52	7/12/2011	11.76			38.76
	50.52	1/26/2012	6.62			43.9
	50.52	7/9/2012	6.81			43.71
	50.52	1/7/2013	9.23			41.29
	50.52	7/22/2013	11.08			39.44
	50.52	1/7/2014	8.02			42.5
	50.52	7/15/2014	7.37			43.15
	50.52	1/5/2015	7.31			43.21
	50.52	8/10/2015	5.67			44.85
	50.52	1/13/2016	4.92			45.60
	50.52	7/6/2016	5.36			45.16
	50.52	1/12/2017	5.94			44.58
	50.52	7/6/2017	6.27			44.25
	50.52	9/6/2017	6.39			44.13
	50.52	2/11/2018	6.84			43.68
	50.52	3/11/2018	7.12			43.40
	50.52	5/14/2018	8.76			41.76
	50.52	7/2/2018	8.99			41.53
	50.52	1/3/2019	8.02			42.50
	50.52	7/9/2019	7.42			43.1
	50.52	1/7/2020	6.97			43.55
MW-44A	45.11	3/7/2007	10.86			34.25
	45.11	7/27/2007	7.46			37.65
	45.11	1/30/2008	8.44			36.67
	45.11	7/14/2008	10.75			34.36
	45.11	2/3/2009	12.55			32.56
	45.11	7/23/2009	12.76			32.35
	45.11	1/9/2010	10.23			34.88
	45.11	7/12/2010	11.24			33.87
	45.11	1/12/2011	9.63			35.48
	45.11	7/11/2011	12.59			32.52
	45.11	1/27/2012	9.27			35.84
	45.11	7/10/2012	10.11			35
	45.11	1/8/2013	11.01			34.1
	45.11	7/23/2013	12.24			32.87

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-44A	45.11	1/8/2014	11.91			33.2
	45.11	7/16/2014	11.32			33.79
	45.11	1/5/2015	11.27			33.84
	45.11	8/10/2015	9.71			35.40
	45.11	1/13/2016	9.11			36.00
	45.11	7/6/2016	9.26			35.85
	45.11	1/12/2017	9.71			35.40
	45.11	7/5/2017	10.06			35.05
	45.11	9/6/2017	9.94			35.17
	45.11	2/11/2018	8.79			36.32
	45.11	3/11/2018	9.83			35.28
	45.11	5/14/2018	9.91			35.20
	45.11	1/3/2019	9.23			35.88
	45.11	7/9/2019	8.67			36.44
	45.11	1/8/2020	10.18			34.93
MW-44C	45.03	3/15/2004	17.54			27.49
	45.03	9/14/2004	18.35			26.68
	45.03	7/18/2005	18.90	64.77	5.35	26.13
	45.03	1/6/2006	20.03	66.50	5.37	25
	45.03	7/27/2006	18.47	63.35	6.75	26.56
	45.03	3/7/2007	16.02	62.30	7.75	29.01
	45.03	7/27/2007	14.83	65.45	5.50	30.2
	45.03	1/29/2008	15.95			29.08
	45.03	7/14/2008	17.91	64.95	6.18	27.12
	45.03	2/3/2009	16.72	64.15	6.98	28.31
	45.03	7/23/2009	17.12	64.05	6.75	27.91
	45.03	1/9/2010	15.57	63.81	6.99	29.46
	45.03	5/27/2010	16.67	64.7	6.10	28.36
	45.03	6/28/2010	16.77	67.85	2.95	28.26
	45.03	7/12/2010	16.91	70.35	0.45	28.12
	45.03	8/31/2010	16.89	70.63	0.17	28.14
	45.03	1/12/2011	16.77	70.05	0.75	28.26
	45.03	7/11/2011	19.31	70.05	0.75	25.72
	45.03	1/27/2012	17.91	63.88	6.92	27.12
	45.03	7/10/2012	17.61	63.7	7.10	27.42
	45.03	1/8/2013	19.02	62.94	7.86	26.01
	45.03	7/23/2013	20.36	70.26	0.54	24.67
	45.03	1/8/2014	19.67	70.42	0.38	25.36
	45.03	7/16/2014	18.72	69.31	1.49	26.31
	45.03	1/5/2015	18.67	69.82	0.98	26.36
	45.03	8/10/2015	16.31	70.29	0.51	28.72
	45.03	1/13/2016	16.26	69.93	0.87	28.77
	45.03	7/6/2016	16.47	69.71	1.09	28.56
	45.03	1/12/2017	17.22	70.11	0.69	27.81
	45.03	7/5/2017	17.33	70.34	0.46	27.70
	45.03	9/6/2017	17.36	70.43	-0.87	27.67
	45.03	2/8/2018	17.77	70.34	0.46	27.26
	45.03	5/15/2018	NM			
	45.13	1/4/2019	18.42	70.41	0.39	26.71
	45.13	7/9/2019	18.27			26.86
	45.13	1/8/2020	16.81			28.32
MW-45C	44.73	3/15/2004	17.15			27.58
	44.73	9/14/2004	17.82	61.66	9.02	26.91
	44.73	7/18/2005	18.38	60.76	9.89	26.35
	44.73	1/6/2006	19.51	62.87	8.87	25.22
	44.73	7/27/2006	17.92	61.64	8.94	26.81
	44.73	3/7/2007	15.95	60.81	9.79	28.78
	44.73	7/27/2007	14.38			30.35
	44.73	1/29/2008	14.86	61.39	9.46	29.87
	44.73	7/14/2008	17.22	61.25	9.88	27.51
	44.73	2/3/2009	17.00	61.24	9.61	27.73
	44.73	7/23/2009	17.46	61.30	9.55	27.27
	44.73	1/9/2010	14.98	61.56	9.29	29.75
	44.73	5/27/2010	16.31	61.1	9.75	28.42
	44.73	6/28/2010	16.42	63.45	7.40	28.31
	44.73	7/12/2010	16.61	68.8	2.05	28.12
	44.73	8/31/2010	16.46	69.62	1.23	28.27
	44.73	1/12/2011	16.31	69.1	1.75	28.42

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-45C	44.73	7/11/2011	18.29	69.3	1.55	26.44
	44.73	3/8/2012	16.31	70.6	0.25	28.42
	44.73	7/10/2012	20.69	70.21	0.64	24.04
	44.73	1/8/2013	21.39	69.91	0.69	23.34
	44.73	7/23/2013	22.72	70.39	0.21	22.01
	44.73	1/8/2014	22.13	70.35	0.25	22.6
	44.73	7/16/2014	21.32	69.91	0.69	23.41
	44.73	1/5/2015	20.19	70.55	0.05	24.54
	44.73	8/10/2015	18.61			26.12
	44.73	1/13/2016	17.49			27.24
	44.73	7/6/2016	17.62			27.11
	44.73	1/12/2017	18.22			26.51
	44.73	7/5/2017	17.96			26.77
	44.73	9/6/2017	18.16			26.57
	44.73	2/8/2018	18.62	70.6	0.00	26.11
	44.73	3/11/2018	18.83			25.9
	44.73	5/15/2018	19.61			25.12
	44.73	1/4/2019	19.02			25.71
	44.73	7/9/2019	18.39			26.34
	44.73	1/7/2020	16.24			28.49
MW-46C	44.94	3/15/2004	16.16	ND	ND	28.78
	44.94	9/14/2004	17.97	ND	ND	26.97
	44.94	7/18/2005	18.50	69.05	3.78	26.44
	44.94	1/13/2006	19.66	70.20	3.22	25.28
	44.94	7/27/2006	17.96	68.89	3.90	26.98
	44.94	3/7/2007	16.01	69.32	3.43	28.93
	44.94	7/27/2007	14.54	69.31	3.59	30.4
	44.94	1/30/2008	15.68	70.81	2.00	29.26
	44.94	7/14/2008	17.38	69.97	2.84	27.56
	44.94	2/3/2009	16.78	69.28	3.53	28.16
	44.94	7/23/2009	17.59	69.35	3.55	27.35
	44.94	1/9/2010	14.53	68.74	4.16	30.41
	44.94	5/27/2010	16.26	69.4	3.50	28.68
	44.94	6/28/2010	16.39	70.85	2.05	28.55
	44.94	7/12/2010	16.29	72.25	0.65	28.65
	44.94	8/31/2010	16.13	72.46	0.44	28.81
	44.94	1/12/2011	15.96	71.75	1.15	28.98
	44.94	7/11/2011	18.07	71.65	1.25	26.87
	44.94	1/26/2012	16.54	ND	ND	28.4
	44.94	7/10/2012	20.34	72.8	0.10	24.6
	44.94	1/8/2013	21.18	71.31	1.59	23.76
	44.94	7/23/2013	21.96	72.16	0.74	22.98
	44.94	1/8/2014	21.81	72.55	0.35	23.13
	44.94	7/16/2014	20.86	71.39	1.51	24.08
	44.94	1/5/2015	20.47	72.06	0.84	24.47
	44.94	8/10/2015	18.39	72.42	0.48	26.55
	44.94	1/13/2016	18.24	72.59	0.31	26.70
	44.94	7/6/2016	18.54	72.49	0.41	26.40
	44.94	1/12/2017	19.27	72.46	0.44	25.67
	44.94	7/5/2017	19.12	72.34	0.56	25.82
	44.94	9/6/2017	19.29	72.34	0.56	25.65
	44.94	2/8/2018	19.96	72.46	0.44	24.98
	44.94	3/11/2018	20.04	72.32	0.58	24.90
	44.94	5/15/2018	21.02	72.59	0.31	23.92
	44.94	1/4/2019	20.49	72.46	0.44	24.45
	44.94	7/9/2019	18.72			26.22
	44.94	1/7/2020	16.34			28.6
MW-47A	45.58	3/20/2020	9.26			36.32
	45.58	6/1/2020	8.11			37.47
MW-47C	45.61	7/27/2007	16.62			28.99
	45.61	1/29/2008	16.04			29.57
	45.61	7/14/2008	18.15			27.46
	45.61	2/4/2009	18.39			27.22
	45.61	7/23/2009	18.61			27
	45.61	1/9/2010	16.46			29.15
	45.61	7/12/2010	18.33			27.28
	45.61	1/12/2011	17.86			27.75
	45.61	7/11/2011	19.94			25.67
	45.61	1/26/2012	18.77			26.84

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-47C	45.61	7/9/2012	18.17			27.44
	45.61	1/8/2013	19.47			26.14
	45.61	7/23/2013	20.61			25
	45.61	1/8/2014	19.57			26.04
	45.61	7/16/2014	19.02			26.59
	45.61	1/5/2015	19.07			26.54
	45.61	8/10/2015	17.41			28.20
	45.61	1/13/2016	16.83			28.78
	45.61	7/6/2016	17.01			28.60
	45.61	1/12/2017	17.59			28.02
	45.52	7/5/2017	NM			
	45.52	9/6/2017	NM			
	45.52	1/7/2020	17.28			28.24
MW-48C	44.68	3/15/2004	17.31			27.37
	44.68	9/14/2004	18.60			26.08
	44.68	7/18/2005	19.17			25.51
	44.68	1/6/2006	20.33			24.35
	44.68	7/27/2006	18.73			25.95
	44.68	3/7/2007	16.52			28.16
	44.68	7/27/2007	15.22			29.46
	44.68	1/29/2008	16.32			28.36
	44.68	7/14/2008	17.63			27.05
	44.68	2/4/2009	17.97			26.71
	44.68	7/24/2009	18.39			26.29
	44.68	1/9/2010	15.81			28.87
	44.68	7/12/2010	17.42			27.26
	44.68	1/12/2011	17.52			27.16
	44.68	7/11/2011	19.58			25.1
	44.68	1/26/2012	18.52			26.16
	44.68	7/9/2012	17.12			27.56
	44.68	1/8/2013	18.26			26.42
	44.68	7/23/2013	20.17			24.51
	44.68	1/8/2014	19.19			25.49
	44.68	7/16/2014	18.38			26.30
	44.68	1/5/2015	18.76			25.92
	44.68	8/10/2015	16.34			28.34
	44.68	1/13/2016	15.72			28.96
	44.68	7/6/2016	16.16			28.52
	44.68	1/12/2017	16.71			27.97
	44.68	7/5/2017	17.17			27.51
	44.68	9/6/2017	17.15			27.53
	44.68	2/11/2018	17.36			27.32
	44.68	3/11/2018	16.74			27.94
	44.68	5/14/2018	17.33			27.35
	44.68	1/4/2019	16.67			28.01
	44.68	7/9/2019	18.23			26.45
	44.68	1/7/2020	17.09			27.59
MW-49A	46.18	3/7/2007	12.91			33.27
	46.18	7/27/2007	8.86			37.32
	46.18	1/31/2008	12.02			34.16
	46.18	7/15/2008	12.99			33.19
	46.18	2/4/2009	13.29			32.89
	46.18	7/24/2009	13.71			32.47
	46.18	1/9/2010	11.07			35.11
	46.18	7/12/2010	11.62			34.56
	46.18	1/12/2011	10.82			35.36
	46.18	7/11/2011	12.31			33.87
	46.18	1/26/2012	9.48			36.7
	46.18	7/9/2012	9.79			36.39
	46.18	1/8/2013	11.31			34.87
	46.18	7/23/2013	11.92			34.26
	46.18	1/8/2014	11.56			34.62
	46.18	7/16/2014	10.57			35.61
	46.18	1/5/2015	16.12			30.06
	46.18	8/10/2015	9.61			36.57
	46.18	1/13/2016	9.34			36.84
	46.18	7/6/2016	9.57			36.61
	46.18	1/12/2017	10.03			36.15
	46.18	7/5/2017	10.32			35.86
	46.18	9/6/2017	10.24			35.94
	46.18	2/11/2018	10.29			35.89

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-49A	46.18	3/11/2018	10.56			35.62
	46.18	5/14/2018	12.34			33.84
	46.18	1/4/2019	11.81			34.37
	46.18	7/9/2019	11.21			34.97
	46.18	1/7/2020	11.12			35.06
MW-49B	46.22	2/4/2009	11.65			34.57
	46.22	7/24/2009	11.93			34.29
	46.22	1/9/2010	9.73			36.49
	46.22	7/12/2010	11.36			34.86
	46.22	1/12/2011	8.04			38.18
	46.22	7/11/2011	12.29			33.93
	46.22	1/26/2012	10.74			35.48
	46.22	7/9/2012	7.38			38.84
	46.22	1/8/2013	11.27	33.56	1.19	34.95
	46.22	7/23/2013	11.83	33.91	0.84	34.39
	46.22	1/8/2014	11.24			34.98
	46.22	7/16/2014	9.62			36.60
	46.22	1/5/2015	10.74			35.48
	46.22	8/10/2015	8.17			38.05
	46.22	1/13/2016	7.74			38.48
	46.22	7/6/2016	8.02			38.20
	46.22	1/12/2017	8.46			37.76
	46.22	7/5/2017	8.72			37.50
	46.22	9/6/2017	8.67			37.55
	46.22	2/11/2018	10.03			36.19
	46.22	3/11/2018	10.64			35.58
	46.22	5/14/2018	13.27			32.95
	46.22	1/4/2019	12.59			33.63
	46.22	7/9/2019	12.02	34.62	0.24	34.2
	46.22	1/7/2020	11.51	20.09	12.96	34.71
MW-50A	46.96	3/7/2007	8.16			38.8
	46.96	7/27/2007	4.70			42.26
	46.96	1/31/2008	5.68			41.28
	46.96	7/16/2008	7.99			38.97
	46.96	2/4/2009	9.31			37.65
	46.96	7/24/2009	9.49			37.47
	46.96	1/9/2010	7.02			39.94
	46.96	7/12/2010	8.74			38.22
	46.96	1/12/2011	5.61			41.35
	46.96	7/11/2011	9.86			37.1
	46.96	1/26/2012	7.21			39.75
	46.96	7/9/2012	4.63			42.33
	46.96	1/8/2013	5.91			41.05
	46.96	7/23/2013	7.13			39.83
	46.96	1/8/2014	6.71			40.25
	46.96	7/16/2014	6.29			40.67
	46.96	1/5/2015	6.22			40.74
	46.96	8/10/2015	5.01			41.95
	46.96	1/13/2016	4.06			42.90
	46.96	7/6/2016	4.71			42.25
	46.96	1/12/2017	5.21			41.75
	46.96	7/5/2017	5.63			41.33
	46.96	9/6/2017	5.51			41.45
	46.96	2/11/2018	4.39			42.57
	46.96	3/11/2018	4.81			42.15
	46.96	5/15/2018	5.27			41.69
	46.96	1/3/2019	4.62			42.34
	46.96	7/9/2019	4.21			42.75
	46.96	1/7/2020	7.09			39.87
MW-50B	47.55	3/12/2020	8.37			39.18
	47.55	5/26/2020	8.31			39.24
MW-51A	47.80	3/7/2007	6.96			40.84
	47.80	7/27/2007	5.45			42.35
	47.80	1/31/2008	5.92			41.88
	47.80	7/15/2008	NM			
	47.80	2/4/2009	9.98			37.82
	47.80	7/24/2009	10.34			37.46
	47.80	1/9/2010	7.83			39.97
	47.80	7/12/2010	9.16			38.64
	47.80	1/12/2011	8.56			39.24
	47.80	7/11/2011	12.74			35.06
	47.80	1/26/2012	7.33			40.47

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-51A	47.80	7/9/2012	7.26			40.54
	47.80	1/8/2013	7.62			40.18
	47.80	7/23/2013	10.54			37.26
	47.80	1/8/2014	10.21			37.59
	47.80	7/16/2014	8.51			39.29
	47.80	1/5/2015	9.87			39.29
	47.80	8/10/2015	7.96			39.84
	47.80	1/13/2016	7.13			40.67
	47.80	7/6/2016	7.29			40.51
	47.80	1/12/2017	7.63			40.17
	47.80	7/5/2017	7.74			40.06
	47.80	9/6/2017	7.63			40.17
	47.80	2/11/2018	5.92			41.88
	47.80	3/12/2018	6.41			41.39
	47.80	5/15/2018	7.16			40.64
	47.80	1/4/2019	6.67			41.13
	47.80	7/9/2019	6.29			41.51
	47.80	1/7/2020	8.47			39.33
MW-51C	47.48	7/16/2014	22.21			25.27
	47.48	1/5/2015	NM			
	47.48	8/10/2015	18.79			28.69
	47.48	1/13/2016	18.06			29.42
	47.48	7/6/2016	18.26			29.22
	47.48	1/12/2017	18.68			28.80
	47.48	7/5/2017	19.12			28.36
	47.48	9/6/2017	19.02			28.46
	47.48	2/11/2018	17.63			29.85
	47.48	3/12/2018	18.03			29.45
	47.48	5/15/2018	20.83			26.65
	47.48	1/3/2019	20.17			27.31
	47.48	7/9/2019	20.39			27.09
	47.48	1/7/2020	20.34			27.14
MW-52A	51.91	3/7/2007	13.66			38.25
	51.91	7/27/2007	11.76			40.15
	51.91	1/31/2008	12.60			39.31
	51.91	7/15/2008	14.42			37.49
	51.91	2/5/2009	15.52			36.39
	51.91	7/23/2009	16.39			35.52
	51.91	1/9/2010	12.57			39.34
	51.91	7/12/2010	14.19			37.72
	51.91	1/12/2011	9.06			42.85
	51.91	7/12/2011	16.53			35.38
	51.91	1/26/2012	12.99			38.92
	51.91	7/9/2012	12.43			39.48
	51.91	1/7/2013	14.94			36.97
	51.91	7/22/2013	16.29			35.62
	51.91	1/7/2014	16.01			35.9
	51.91	7/15/2014	15.39			36.52
	51.91	1/5/2015	15.37			36.54
	51.91	8/10/2015	13.61			38.30
	51.91	1/13/2016	12.96			38.95
	51.91	7/6/2016	NM			NM
MW-53C	45.49	3/7/2007	16.12			29.37
	45.49	7/27/2007	14.55			30.94
	45.49	1/29/2008	15.12			30.37
	45.49	7/14/2008	16.86			28.63
	45.49	2/3/2009	16.69			28.8
	45.49	7/23/2009	17.62			27.87
	45.49	1/9/2010	15.19			30.3
	45.49	7/12/2010	15.71			29.78
	45.49	1/12/2011	16.58			28.91
	45.49	7/11/2011	18.61			26.88
	45.49	1/27/2012	17.54			27.95
	45.49	7/10/2012	17.73			27.76
	45.49	1/8/2013	18.14			27.35
	45.49	7/23/2013	19.28			26.21
	45.49	1/8/2014	21.12			24.37
	45.49	7/16/2014	17.37			28.12
	45.49	1/5/2015	20.71			24.78
	45.49	8/10/2015	18.72			26.77
	45.49	1/13/2016	18.06			27.43

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-53C	45.49	7/6/2016	18.42			27.07
	45.49	1/12/2017	18.89			26.60
	45.49	7/5/2017	19.16			26.33
	45.49	9/6/2017	19.13			26.36
	45.49	2/11/2018	16.43			29.06
	45.49	3/11/2018	15.54			29.95
	45.49	5/14/2018	16.56			28.93
	45.49	1/4/2019	15.93			29.56
	45.49	7/9/2019	15.86			29.63
	45.49	1/7/2020	16.72			28.77
MW-54B	45.25	3/11/2020	13.42			31.83
	45.25	5/22/2020	13.70			31.55
MW-54C	44.99	3/7/2007	15.74			29.25
	44.99	7/27/2007	14.63			30.36
	44.99	1/28/2008	15.28			29.71
	44.99	7/14/2008	16.68			28.31
	44.99	2/3/2009	16.87			28.12
	44.99	7/23/2009	17.84			27.15
	44.99	1/9/2010	15.46			29.53
	44.99	7/12/2010	16.49			28.5
	44.99	1/12/2011	16.46			28.53
	44.99	7/11/2011	18.23			26.76
	44.99	1/27/2012	17.42			27.57
	44.99	7/10/2012	17.36			27.63
	44.99	1/8/2013	17.81			27.18
	44.99	7/23/2013	18.89			26.1
	44.99	1/8/2014	18.14			26.85
	44.99	7/16/2014	17.49			27.50
	44.99	1/5/2015	17.86			27.13
	44.99	8/10/2015	16.02			28.97
	44.99	1/13/2016	15.33			29.66
	44.99	7/6/2016	15.66			29.33
	44.99	1/12/2017	16.17			28.82
	44.99	7/5/2017	16.61			28.38
	44.99	9/6/2017	16.59			28.40
	44.99	2/11/2018	15.4			29.59
	44.99	3/11/2018	15.68			29.31
	44.99	5/14/2018	16.31			28.68
	44.99	1/4/2019	15.71			29.28
	44.99	7/9/2019	15.27			29.72
	44.99	1/7/2020	15.59			29.4
MW-55A	52.01	2/4/2009	13.79			38.22
	52.01	7/23/2009	14.06			37.95
	52.01	1/9/2010	10.83			41.18
	52.01	7/12/2010	12.72			39.29
	52.01	1/12/2011	10.13			41.88
	52.01	7/12/2011	15.18			36.83
	52.01	1/26/2012	11.71			40.3
	52.01	7/9/2012	12.29			39.72
	52.01	1/7/2013	13.34			38.67
	52.01	7/22/2013	14.19			37.82
	52.01	1/7/2014	12.73			39.28
	52.01	7/15/2014	11.30			40.71
	52.01	1/5/2015	12.51			39.50
	52.01	8/10/2015	10.79			41.22
MW-55B	52.04	1/26/2012	13.28			38.76
	52.04	7/9/2012	13.93			38.11
	52.04	1/7/2013	13.73			38.31
	52.04	7/22/2013	14.59			37.45
	52.04	1/7/2014	12.89			39.15
	52.04	7/15/2014	12.49			39.55
	52.04	1/5/2015	12.41			39.63
	52.04	8/10/2015	10.19			41.85
MW-57A	47.72	2/5/2009	12.73		0.00	34.99
	47.72	7/23/2009	12.91		0.00	34.81
	47.72	1/9/2010	9.78		0.00	37.94
	47.72	7/12/2010	8.56	24.55	2.55	39.16
	47.72	1/12/2011	9.83	22.76	4.14	37.89
	47.72	7/12/2011	13.88	22.79	4.11	33.84
	47.72	1/26/2012	10.54	22.78	4.12	37.18
	47.72	7/9/2012	9.72	22.65	4.25	38
	47.72	1/7/2013	10.61	22.14	4.76	37.11

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-57A	47.72	7/22/2013	13.21	23.05	3.85	34.51
	47.72	1/7/2014	11.79	26.15	0.75	35.93
	47.72	7/15/2014	10.42	26.09	0.81	37.30
	47.72	1/5/2015	10.13	26.75	0.15	37.59
	47.72	8/10/2015	7.46	26.9	0.00	40.26
	47.72	7/6/2016	7.39			40.33
	47.72	1/12/2017	8.07			39.65
	47.72	7/6/2017	8.41			39.31
	47.72	9/6/2017	8.46			39.26
	47.72	2/7/2018	8.98			38.74
	47.72	3/11/2018	9.24			38.48
	47.72	5/14/2018	9.67			38.05
	47.72	1/4/2019	9.52			38.2
	47.72	7/9/2019	10.11			37.61
	47.72	1/8/2020	14.46			33.26
MW-57B	50.90	1/26/2012	28.83	42.51	0.44	22.07
	50.90	7/9/2012	27.93	42.45	0.50	22.97
	50.90	1/7/2013	28.63	41.36	1.59	22.27
	50.90	7/22/2013	16.34	41.67	1.28	34.56
	50.90	1/7/2014	15.04			35.86
	50.90	7/15/2014	15.71			35.19
	50.90	1/5/2015	14.32			36.58
	50.90	8/10/2015	12.42			38.48
	50.90	7/6/2016	12.44			38.46
	50.90	1/12/2017	13.24			37.66
	50.90	7/6/2017	13.57			37.33
	50.90	9/6/2017	13.79			37.11
	50.90	2/7/2018	12.42			38.48
	50.90	3/11/2018	12.62			38.28
	50.90	5/14/2018	13.29			37.61
	50.90	1/4/2019	13.03			37.87
	50.90	7/9/2019	13.71			37.19
	50.90	1/8/2020	13.73			37.17
MW-58A	47.76	2/5/2009	14.55			33.21
	47.76	7/23/2009	14.04			33.72
	47.76	1/9/2010	12.29			35.47
	47.76	7/12/2010	14.03			33.73
	47.76	1/12/2011	11.88			35.88
	47.76	7/12/2011	16.16			31.6
	47.76	1/26/2012	12.26			35.5
	47.76	7/9/2012	11.62			36.14
	47.76	1/7/2013	11.91			35.85
	47.76	7/22/2013	13.71			34.05
	47.76	1/7/2014	13.26			34.5
	47.76	7/15/2014	13.06			34.70
	47.76	1/5/2015	13.06			34.70
	47.76	8/10/2015	11.29			36.47
	47.76	7/6/2016	7.46			40.30
	47.76	1/12/2017	8.04			39.72
	47.76	7/6/2017	8.39			39.37
	47.76	9/6/2017	8.33			39.43
	47.76	2/11/2018	6.47			41.29
	47.76	3/11/2018	12.71			35.05
	47.76	5/14/2018	12.94			34.82
	47.76	1/4/2019	12.29			35.47
	47.76	7/9/2019	12.29			35.47
	47.76	1/7/2020	13.17			34.59
MW-59A	44.18	2/5/2009	10.71			33.47
	44.18	7/23/2009	9.96			34.22
	44.18	1/9/2010	8.62			35.56
	44.18	7/12/2010	9.97			34.21
	44.18	1/12/2011	8.06			36.12
	44.18	7/11/2011	10.54			33.64
	44.18	1/26/2012	6.36			37.82
	44.18	7/9/2012	7.63			36.55
	44.18	1/8/2013	9.09			35.09
	44.18	7/23/2013	9.76			34.42
	44.18	1/8/2014	9.34			34.84
	44.18	7/16/2014	9.17			35.01
	44.18	1/5/2015	8.71			35.47
	44.18	8/10/2015	5.76			38.42

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-59A	44.18	1/13/2016	5.01			39.17
	44.18	7/6/2016	5.26			38.92
	44.18	1/12/2017	5.81			38.37
	44.18	7/5/2017	6.14			38.04
	44.18	9/6/2017	6.09			38.09
	44.18	2/11/2018	6.26			37.92
	44.18	3/12/2018	9.13			35.05
	44.18	5/14/2018	8.81			35.37
	44.18	1/4/2019	8.12			36.06
	44.18	7/9/2019	8.92			35.26
	44.18	1/8/2020	9.21			34.97
MW-59B	44.36	7/12/2010	7.43			36.93
	44.36	1/12/2011	6.89			37.47
	44.36	7/11/2011	11.03			33.33
	44.36	1/26/2012	4.44			39.92
	44.36	7/9/2012	7.48			36.88
	44.36	1/8/2013	9.36			35
	44.36	7/23/2013	9.94			34.42
	44.36	1/8/2014	9.52			34.84
	44.36	7/16/2014	8.67			35.69
	44.36	1/5/2015	8.92			35.44
	44.36	8/10/2015	5.91			38.45
	44.36	1/13/2016	5.22			39.14
	44.36	7/6/2016	5.39			38.97
	44.36	1/12/2017	5.97			38.39
	44.36	7/5/2017	6.27			38.09
	44.36	9/6/2017	6.06			38.30
	44.36	2/11/2018	7.59			36.77
	44.36	3/12/2018	9.61			34.75
	44.36	5/14/2018	9.09			35.27
	44.36	1/4/2019	8.27			36.09
	44.36	7/9/2019	9.06			35.3
	44.36	1/8/2020	9.17			35.19
MW-59D	44.22	2/5/2009	84.17			-39.95
	44.22	7/23/2009	83.53			-39.31
	44.22	1/9/2010	81.73			-37.51
	44.22	7/12/2010	82.16			-37.94
	44.22	1/12/2011	82.83			-38.61
	44.22	7/11/2011	82.89			-38.67
	44.22	1/26/2012	82.93			-38.71
	44.22	7/9/2012	82.36			-38.14
	44.22	1/8/2013	82.81			-38.59
	44.22	7/23/2013	83.04			-38.82
	44.22	1/8/2014	83.14			-38.92
	44.22	7/16/2014	82.67			-38.45
	44.22	1/5/2015	82.07			-37.85
	44.22	8/10/2015	81.77			-37.55
	44.22	1/13/2016	81.03			-36.81
	44.22	7/6/2016	81.62			-37.40
	44.22	1/12/2017	82.09			-37.87
	44.22	7/5/2017	82.17			-37.95
	44.22	9/6/2017	82.16			-37.94
	44.22	2/11/2018	81.09			-36.87
	44.22	3/12/2018	81.17			-36.95
	44.22	5/14/2018	81.79			-37.57
	44.22	1/4/2019	81.02			-36.8
	44.22	7/9/2019	81.31			-37.09
	44.22	1/8/2020	83.06			-38.84
MW-60A	46.79	2/4/2009	9.56			37.23
	46.79	7/23/2009	9.71			37.08
	46.79	1/9/2010	7.72			39.07
	46.79	7/12/2010	8.61			38.18
	46.79	1/12/2011	5.82			40.97
	46.79	7/11/2011	9.86			36.93
	46.79	1/26/2012	4.34			42.45
	46.79	7/9/2012	5.42			41.37
	46.79	1/8/2013	6.91			39.88
	46.79	7/23/2013	10.42			36.37
	46.79	1/8/2014	8.06			38.73
	46.79	7/16/2014	7.29			39.50
	46.79	1/5/2015	7.39			39.40

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-60A	46.79	8/10/2015	6.32			40.47
	46.79	1/13/2016	5.67			41.12
	46.79	7/6/2016	6.13			40.66
	46.79	1/12/2017	--			
	46.79	9/6/2017	NM			
	46.79	2/11/2018	3.49			43.30
	46.79	3/12/2018	3.71			43.08
	46.79	5/14/2018	5.19			41.60
	46.79	1/4/2019	4.33			42.46
	46.79	7/9/2019	5.52			41.27
MW-60AR	47.09	3/20/2020	8.03			39.06
	47.09	6/1/2020	7.42			39.67
MW-60B	47.04	3/17/2020	24.91			22.13
	47.04	6/1/2020	11.42			35.62
MW-61A	44.67	2/3/2009	8.35			36.32
	44.67	7/23/2009	8.47			36.2
	44.67	1/9/2010	6.49			38.18
	44.67	7/12/2010	8.09			36.58
	44.67	1/12/2011	6.56			38.11
	44.67	7/11/2011	9.67			35
	44.67	1/26/2012	2.48			42.19
	44.67	7/9/2012	4.55			40.12
	44.67	1/8/2013	6.72			37.95
	44.67	7/23/2013	9.16			35.51
	44.67	1/8/2014	7.04			37.63
	44.67	7/16/2014	6.34			38.33
	44.67	1/5/2015	6.52			38.15
	44.67	8/10/2015	4.02			40.65
	44.67	1/13/2016	3.34			41.33
	44.67	7/6/2016	3.97			40.70
	44.67	1/12/2017	4.34			40.33
	44.67	7/5/2017	4.47			40.20
	44.67	9/6/2017	4.39			40.28
	44.67	2/11/2018	5.52			39.15
	44.67	3/12/2018	6.62			38.05
	44.67	5/14/2018	6.27			38.40
	44.67	1/4/2019	5.58			39.09
	44.67	7/9/2019	6.96			37.71
	44.67	1/8/2020	4.87			39.8
MW-61B	45.09	3/17/2020	8.31			36.78
	45.09	6/1/2020	4.67			40.42
MW-62B	48.16	2/4/2009	6.99			41.17
	48.16	7/24/2009	7.39			40.77
	48.16	1/8/2010	5.13			43.03
	48.16	7/12/2010	5.79			42.37
	48.16	1/12/2011	4.21			43.95
	48.16	7/12/2011	11.06			37.1
	48.16	1/26/2012	3.18			44.98
	48.16	7/9/2012	4.87			43.29
	48.16	1/8/2013	5.92			42.24
	48.16	7/23/2013	7.01			41.15
	48.16	1/8/2014	6.52			41.64
	48.16	7/15/2014	6.06			42.10
	48.16	1/5/2015	6.02			42.14
	48.16	8/10/2015	4.16			44.00
	48.16	1/13/2016	3.64			44.52
	48.16	7/6/2016	4.09			44.07
	48.16	1/12/2017	4.71			43.45
	48.16	7/6/2017	5.09			43.07
	48.16	9/6/2017	4.71			43.45
	48.16	2/11/2018	4.12			44.04
	48.16	3/11/2018	5.37			42.79
	48.16	5/14/2018	6.81			41.35
	48.16	7/2/2018	6.92			41.24
	48.16	1/4/2019	6.03			42.13
	48.16	7/9/2019	4.34			43.82
	48.16	1/8/2020	3.09			45.07
MW-63B	44.48	2/5/2009	31.54			12.94
	44.48	7/23/2009	9.52			34.96
	44.48	1/9/2010	1.34			43.14
	44.48	7/12/2010	5.71			38.77
	44.48	1/13/2011	7.13			37.35
	44.48	7/11/2011	4.21			40.27
	44.48	1/27/2012	2.96			41.52

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-63B	44.48	7/10/2012	1.32			43.16
	44.48	1/8/2013	8.54			35.94
	44.48	7/23/2013	9.43			35.05
	44.48	1/8/2014	7.72			36.76
	44.48	7/16/2014	7.03			37.45
	44.48	1/5/2015	7.09			37.39
	44.48	8/10/2015	5.34			39.14
	44.48	1/13/2016	4.69			39.79
	44.48	7/6/2016	5.01			39.47
	44.48	1/12/2017	5.84			38.64
	44.48	7/5/2017	6.19			38.29
	44.48	9/6/2017	6.12			38.36
	44.48	2/11/2018	5.31			39.17
	44.48	3/11/2018	6.39			38.09
	44.48	5/14/2018	7.19			37.29
	44.48	1/4/2019	6.47			38.01
	44.48	7/9/2019	3.96			40.52
	44.48	1/7/2020	4.34			40.14
MW-64A	48.31	2/4/2009	9.02			39.29
	48.31	7/24/2009	9.13			39.18
	48.31	1/9/2010	6.52			41.79
	48.31	7/12/2010	6.82			41.49
	48.31	1/12/2011	4.77			43.54
	48.31	7/12/2011	8.17			40.14
	48.31	1/26/2012	4.81			43.5
	48.31	7/9/2012	5.93			42.38
	48.31	1/7/2013	7.03			41.28
	48.31	7/22/2013	8.79			39.52
	48.31	1/7/2014	8.39			39.92
	48.31	7/15/2014	7.72			40.59
	48.31	1/5/2015	7.79			40.52
	48.31	8/10/2015	5.71			42.60
	48.31	1/13/2016	5.06			43.25
	48.31	7/6/2016	5.67			42.64
	48.31	1/12/2017	6.07			42.24
	48.31	7/6/2017	6.27			42.04
	48.31	9/6/2017	6.16			42.15
	48.31	2/11/2018	5.46			42.85
	48.31	3/12/2018	5.83			42.48
	48.31	5/14/2018	6.39			41.92
	48.31	1/4/2019	5.39			42.92
	44.55	7/9/2019	5.09			39.46
	44.55	1/8/2020	4.91			39.64
MW-65D	44.55	2/5/2009	86.72			-42.17
	44.55	7/23/2009	86.47			-41.92
	44.55	1/9/2010	84.39			-39.84
	44.55	7/12/2010	84.39			-39.84
	44.55	1/12/2011	83.96			-39.41
	44.55	7/11/2011	85.81			-41.26
	44.55	1/27/2012	85.76			-41.21
	44.55	1/8/2013	85.81			-41.26
	44.55	7/23/2013	85.83			-41.28
	44.55	1/8/2014	85.78			-41.23
	44.55	7/16/2014	84.91			-40.36
	44.55	1/5/2015	85.31			-40.76
	44.55	8/10/2015	85.06			-40.51
	44.55	1/13/2016	84.81			-40.26
	44.55	7/6/2016	85.09			-40.54
	44.55	1/12/2017	85.52			-40.97
	44.55	7/5/2017	85.72			-41.17
	44.55	9/6/2017	85.7			-41.15
	44.55	2/11/2018	83.42			-38.87
	44.55	3/12/2018	83.28			-38.73
	44.55	5/14/2018	83.74			-39.19
	44.55	1/4/2019	83.03			-38.48
	44.55	7/9/2019	82.71			-38.16
	44.55	1/8/2020	83.29			-38.74
MW-66D	46.51	2/5/2009	86.18			-39.67
	46.51	7/23/2009	85.82			-39.31
	46.51	1/9/2010	84.02			-37.51
	46.51	7/12/2010	84.86			-38.35

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-66D	46.51	1/12/2011	NM			
	46.51	7/11/2011	84.93			-38.42
	46.51	1/26/2012	84.88			-38.37
	46.51	7/9/2012	85.02			-38.51
	46.51	1/8/2013	86.09			-39.58
	46.51	7/23/2013	86.42			-39.91
	46.51	1/8/2014	86.09			-39.58
	46.51	7/16/2014	85.26			-38.75
	46.51	1/5/2015	85.42			-38.91
	46.51	8/10/2015	85.21			-38.70
	46.51	1/13/2016	84.71			-38.20
	46.51	7/6/2016	84.86			-38.35
	46.51	1/12/2017	85.26			-38.75
	46.51	7/5/2017	85.66			-39.15
	46.51	9/6/2017	85.67			-39.16
	46.51	2/11/2018	83.28			-36.77
	46.51	3/12/2018	83.37			-36.86
	46.51	5/14/2018	84.06			-37.55
	46.51	1/4/2019	83.36			-36.85
	46.51	7/9/2019	82.99			-36.48
	46.51	1/8/2020	81.26			-34.75
MW-67B	43.93	7/12/2010	5.76			38.17
	43.93	1/13/2011	10.62			33.31
	43.93	7/11/2011	17.64			26.29
	43.93	1/27/2012	9.87			34.06
	43.93	7/10/2012	11.19			32.74
	43.93	1/8/2013	11.72			32.21
	43.93	7/23/2013	10.69			33.24
	43.93	1/8/2014	10.64			33.29
	43.93	7/16/2014	11.22			32.71
	43.93	1/5/2015	10.22			33.71
	43.93	1/13/2016	6.17			37.76
	43.93	7/6/2016	6.39			37.54
	43.93	1/12/2017	7.04			36.89
	43.93	7/5/2017	7.14			36.79
	43.93	9/6/2017	6.97			36.96
	43.93	2/11/2018	8.89			35.04
	43.93	3/12/2018	9.13			34.80
	43.93	5/14/2018	10.16			33.77
	43.93	1/4/2019	9.42			34.51
	43.93	7/9/2019	9.09			34.84
	43.93	1/7/2020	9.02			34.91
MW-68A	43.24	05/29/219	5.33			37.91
	43.24	7/9/2019	5.01			38.23
	43.24	1/7/2020	4.28			38.96
MW-68B	44.63	1/27/2012	1.16			43.47
	44.63	7/10/2012	3.82			40.81
	44.63	1/8/2013	6.76			37.87
	44.63	7/23/2013	10.33			34.3
	44.63	1/8/2014	5.82			38.81
	44.63	7/16/2014	7.41			37.22
	44.63	1/5/2015	4.32			40.31
	44.63	8/10/2015	3.56			41.07
	44.63	1/13/2016	2.86			41.77
	44.63	7/6/2016	3.07			41.56
	44.63	1/12/2017	3.86			40.77
	44.63	7/5/2017	3.97			40.66
	44.63	9/6/2017	3.84			40.79
	44.63	2/11/2018	3.07			41.56
	44.63	3/12/2018	4.24			40.39
	44.63	5/14/2018	6.46			38.17
	44.63	1/4/2019	5.82			38.81
	44.63	7/9/2019	5.78			38.85
	44.63	1/7/2020	4.82	34.21	3.24	39.81
MW-68C	44.80	7/12/2010	16.52			28.28
	44.80	1/13/2011	16.92			27.88
	44.80	7/11/2011	19.34			25.46
	44.80	1/27/2012	17.66			27.14
	44.80	7/10/2012	17.96			26.84
	44.80	1/8/2013	19.39			25.41
	44.80	7/23/2013	19.87			24.93

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-68C	44.80	1/8/2014	19.29			25.51
	44.80	7/16/2014	18.39			26.41
	44.80	1/5/2015	18.71			26.09
	44.80	8/10/2015	16.29			28.51
	44.80	1/13/2016	15.74			29.06
	44.80	7/6/2016	15.94			28.86
	44.80	1/12/2017	16.54			28.26
	44.80	7/5/2017	17.02			27.78
	44.80	9/6/2017	17.01			27.79
	44.80	2/11/2018	16.21			28.59
	44.80	3/12/2018	16.88			27.92
	44.80	5/14/2018	17.35			27.45
	44.80	1/4/2019	16.74			28.06
	44.80	7/9/2019	16.39			28.41
	44.80	1/8/2020	16.54			28.26
MW-69A	45.71	7/12/2010	11.81			33.9
	45.71	1/12/2011	11.16			34.55
	45.71	7/11/2011	NM			
	45.71	1/26/2012	10.44			35.27
	45.71	7/9/2012	4.21			41.5
	45.71	1/8/2013	5.31			40.4
	45.71	7/23/2013	7.34			38.37
	45.71	1/8/2014	7.02			38.69
	45.71	7/16/2014	6.34			39.37
	45.71	1/5/2015	6.71			39.00
	45.71	8/10/2015	3.61			42.10
	45.71	1/13/2016	2.91			42.80
	45.71	7/6/2016	3.79			41.92
	45.71	1/12/2017	4.34			41.37
	45.71	7/5/2017	4.59			41.12
	45.71	9/6/2017	4.43			41.28
	45.71	2/11/2018	11.21			34.50
	45.71	3/11/2018	12.58			33.13
	45.71	5/14/2018	11.34			34.37
	45.71	1/4/2019	10.61			35.1
	45.71	7/9/2019	9.71			36
MW-70B	44.86	1/27/2012	6.51	34.26	1.21	38.35
	44.86	7/10/2012	6.06	34.17	1.30	38.8
	44.86	1/8/2013	6.67	34.02	1.68	38.19
	44.86	7/23/2013	8.22	34.07	1.63	36.64
	44.86	1/8/2014	7.89	35.51	0.14	36.97
	44.86	7/16/2014	6.16	34.71	0.94	38.70
	44.86	1/5/2015	7.07	35.26	0.39	37.79
	44.86	8/10/2015	5.26	35.49	0.16	39.60
	44.86	1/13/2016	4.96	35.39	0.26	39.90
	44.86	7/6/2016	5.34	35.31	0.34	39.52
	44.86	1/12/2017	6.17	35.09	0.56	38.69
	44.86	7/5/2017	6.39	35.14	0.51	38.47
	44.86	9/6/2017	6.56	35.34	0.31	38.30
	44.86	2/8/2018	6.42	35.31	0.34	38.44
	44.86	3/12/2018	6.69	35.21	0.44	38.17
	44.86	5/15/2018	7.52	35.39	0.26	37.34
	44.86	1/4/2019	6.96	35.31	0.34	37.9
	44.86	7/9/2019	6.57	35.01	0.64	38.29
MW-70C	45.07	3/12/2020	16.04			29.03
MW-71B	44.59	1/27/2012	7.08			37.51
	44.59	7/10/2012	8.16			36.43
	44.59	1/8/2013	4.09			40.5
	44.59	7/23/2013	8.61			35.98
	44.59	1/8/2014	16.36			28.23
	44.59	7/16/2014	16.02			28.57
	44.59	1/5/2015	15.83			28.76
	44.59	8/10/2015	13.76			30.83
	44.59	1/13/2016	13.09			31.50
	44.59	7/6/2016	13.31			31.28
	44.59	1/12/2017	13.94			30.65
	44.59	7/5/2017	14.34			30.25
	44.59	9/6/2017	14.21			30.38
	44.59	1/25/2018	0.76			43.83
	44.59	3/12/2018	1.61			42.98
	44.59	5/14/2018	2.26			42.33

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-71B	44.59	1/4/2019	1.58			43.01
	44.59	7/9/2019	0.62			43.97
	44.59	1/8/2020	1.12			43.47
MW-72B	51.97	1/26/2012	38.76			13.21
	51.97	7/9/2012	27.27			24.7
	51.97	1/7/2013	20.08			31.89
	51.97	7/22/2013	18.39			33.58
	51.97	1/7/2014	17.31			34.66
	51.97	7/15/2014	16.91			35.06
	51.97	1/5/2015	16.74			35.23
	51.97	8/10/2015	14.59			37.38
	51.97	1/13/2016	13.93			38.04
	51.97	7/6/2016	NM			
	51.97	2/11/2018	12.26			39.71
	51.97	3/12/2018	19.71			32.26
	51.97	5/14/2018	20.92			31.05
	51.97	1/4/2019	20.13			31.84
	51.97	7/9/2019	15.28			36.69
	51.97	1/8/2020	14.81			37.16
MW-73B	51.42	1/26/2012	25.48			25.94
	51.42	7/9/2012	25.03			26.39
	51.42	1/7/2013	26.11			25.31
	51.42	7/22/2013	26.87			24.55
	51.42	1/7/2014	26.19			25.23
	51.42	7/15/2014	25.14			26.28
	51.42	1/5/2015	25.81			25.61
	51.42	8/10/2015	22.46			28.96
			Plugged and Abandoned			
MW-74B	47.58	1/26/2012	7.63			39.95
	47.58	7/9/2012	7.15			40.43
	47.58	1/8/2013	9.62			37.96
	47.58	7/23/2013	11.72			35.86
	47.58	1/8/2014	9.59			37.99
	47.58	7/16/2014	9.01			38.57
	47.58	1/5/2015	9.07			38.51
	47.58	8/10/2015	7.36			40.22
	47.58	1/13/2016	6.86			40.72
	47.58	7/6/2016	7.39			40.19
	47.58	1/12/2017	7.84			39.74
	47.58	7/5/2017	8.17			39.41
	47.58	9/6/2017	8.02			39.56
	47.58	2/11/2018	6.91			40.67
	47.58	3/12/2018	7.22			40.36
	47.58	5/15/2018	8.33			39.25
	47.58	1/4/2019	7.62			39.96
	47.58	7/9/2019	8.59			38.99
	47.58	1/8/2020	8.29			39.29
MW-75B	46.78	1/26/2012	9.07	35.26	1.84	37.71
	46.78	7/9/2012	9.32	35.2	1.90	37.46
	46.78	1/8/2013	10.16	34.13	2.97	36.62
	46.78	7/23/2013	9.74	35.71	1.39	37.04
	46.78	1/8/2014	10.13	36.72	0.43	36.65
	46.78	7/16/2014	11.41	35.71	1.44	35.37
	46.78	1/5/2015	11.33	36.79	0.36	35.45
	46.78	8/10/2015	8.86	37.07	0.08	37.92
	46.78	1/13/2016	7.81	36.84	0.31	38.97
	46.78	7/6/2016	7.8	36.53	0.62	38.98
	46.78	1/12/2017	8.04	36.36	0.79	38.74
	46.78	7/5/2017	8.04	36.36	0.79	38.74
	46.78	9/6/2017	8.22	36.47	3.15	38.56
	46.78	2/8/2018	8.17	36.91	2.71	38.61
	46.78	3/12/2018	8.37	36.94	2.68	38.41
	46.78	5/15/2018	9.22	37.03	2.59	37.56
	46.78	1/4/2019	9.28	36.96	2.66	37.5
	46.78	7/9/2019	8.89			37.89
	46.78	1/8/2020	8.52	33.52	3.73	38.26
MW-76B	47.98	3/12/2020	5.40			42.58
	47.98	5/26/2020	4.94			43.04
MW-76C	47.84	7/16/2014	22.68			25.16
	47.84	1/5/2015	23.41			24.43
	47.84	8/10/2015	21.19			26.65
	47.84	1/13/2016	20.81			27.03

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-76C	47.84	7/6/2016	21.09			26.75
	47.84	1/12/2017	21.67			26.17
	47.84	7/5/2017	21.99			25.85
	47.84	9/6/2017	21.93			25.91
	47.84	2/11/2018	20.74			27.10
	47.84	3/12/2018	21.02			26.82
	47.84	5/15/2018	21.46			26.38
	47.84	1/4/2019	20.67			27.17
	47.84	7/9/2019	20.18			27.66
	47.84	1/7/2020	20.68			27.16
MW-77A	49.05	7/16/2014	6.62			42.43
	49.05	1/5/2015	6.27			42.78
	49.05	8/10/2015	4.34			44.71
	49.05	1/13/2016	3.96			45.09
	49.05	7/6/2016	4.29			44.76
	49.05	1/12/2017	4.73			44.32
	49.05	7/5/2017	4.91			44.14
	49.05	9/6/2017	4.78			44.27
	49.05	2/11/2018	7.62			41.43
	49.05	3/12/2018	8.09			40.96
	49.05	5/15/2018	7.06			41.99
	49.05	1/4/2019	6.34			42.71
	49.05	7/9/2019	6.11			42.94
	49.05	1/7/2020	6.81			42.24
MW-78A	48.68	7/16/2014	8.02	28.72	1.38	40.66
	48.68	1/5/2015	9.17	21.17	8.93	39.51
	48.68	8/10/2015	7.34	23.71	6.39	41.34
	48.68	1/13/2016	6.63	21.77	3.58	42.05
	48.68	7/6/2016	6.71	21.97	3.38	41.97
	48.68	1/12/2017	7.42	22.74	2.61	41.26
	48.68	7/5/2017	7.79	23.59	1.76	40.89
	48.68	9/6/2017	7.81	23.48	6.19	40.87
	48.68	2/11/2018	8.29	23.97	1.38	40.39
	48.68	3/12/2018	8.46	23.91	1.44	40.22
	48.68	5/15/2018	9.28	24.07	1.28	39.4
	48.68	1/4/2019	8.78	24.39	0.96	39.9
	48.68	7/9/2019	9.17	24.67	0.68	39.51
	48.68	1/8/2020	7.96	24.9	0.45	40.72
MW-79A	48.95	7/16/2014	7.26			41.69
	48.95	1/5/2015	5.29			43.66
	48.95	8/10/2015	3.71			45.24
	48.95	1/13/2016	3.06			45.89
	48.95	7/6/2016	3.76			45.19
	48.95	1/12/2017	4.06			44.89
	48.95	7/5/2017	4.31			44.64
	48.95	9/6/2017	4.16			44.79
	48.95	2/11/2018	10.82			38.13
	48.95	3/12/2018	11.26			37.69
	48.95	5/15/2018	9.46			39.49
	48.95	1/4/2019	8.8			40.15
	48.95	7/9/2019	9.68			39.27
	48.95	1/8/2020	9.81			39.14
MW-80B	47.11	7/16/2014	5.29			41.82
	47.11	1/5/2015	6.17			40.94
	47.11	8/10/2015	4.33			42.78
	47.11	1/13/2016	3.96			43.15
	47.11	7/6/2016	4.56			42.55
	47.11	1/12/2017	5.06			42.05
	47.11	7/5/2017	5.34			41.77
	47.11	9/6/2017	5.26			41.85
	47.11	2/11/2018	11.34			35.77
	47.11	3/11/2018	11.77			35.34
	47.11	5/15/2018	11.36			35.75
	47.11	1/4/2019	10.71			36.4
	47.11	7/9/2019	11.02			36.09
	47.11	1/7/2020	10.87			36.24
MW-81B	46.77	7/16/2014	6.47			40.30
	46.77	1/5/2015	7.06			39.71
	46.77	8/10/2015	5.22			41.55
	46.77	1/13/2016	4.77			42.00

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-81B	46.77	7/6/2016	5.16			41.61
	46.77	1/12/2017	5.72			41.05
	46.77	7/5/2017	5.96			40.81
	46.77	9/6/2017	5.71			41.06
	46.77	2/11/2018	7.04			39.73
	46.77	3/11/2018	7.51			39.26
	46.77	5/15/2018	8.23			38.54
	46.77	1/4/2019	7.67			39.1
	46.77	7/9/2019	7.91			38.86
	46.77	1/7/2020	7.12			39.65
MW-82B	44.64	2/11/2018	2.53			42.11
	44.64	3/11/2018	3.44			41.20
	44.64	5/14/2018	5.61			39.03
	44.64	1/4/2019	4.83			39.81
	44.64	7/9/2019	4.03			40.61
	44.64	1/8/2020	2.67			41.97
MW-83B	45.33	2/11/2018	4.06			41.27
	45.33	3/11/2018	4.69			40.64
	45.33	5/14/2018	7.47			37.86
	45.33	7/19/2018	5.87			39.46
	45.33	1/4/2019	6.82			38.51
	45.33	7/9/2019	6.11			39.22
	45.33	1/8/2020	5.33			40
MW-83C	45.42	2/11/2018	17.52			27.90
	45.42	3/11/2018	16.96			28.46
	45.42	5/14/2018	18.11			27.31
	45.42	1/4/2019	17.42			28.00
	45.42	7/9/2019	17.17			28.25
	45.42	1/8/2020	17.74			27.68
MW-84A	44.67	3/12/2020	4.19			40.48
	44.67	5/21/2020	5.83			38.84
MW-84B	44.50	2/11/2018	4.37			40.13
	44.50	3/11/2018	4.93			39.57
	44.50	5/14/2018	7.36			37.14
	44.50	7/19/2018	6.07			38.43
	44.50	1/4/2019	6.71			37.79
	44.50	7/9/2019	7.09			37.41
	44.50	1/7/2020	4.38			40.12
MW-85C	49.10	2/11/2018	22.51			26.59
	49.10	3/11/2018	22.77			26.33
	49.10	5/15/2018	22.61			26.49
	49.10	1/4/2019	21.92			27.18
	49.10	7/9/2019	21.78			27.32
	49.10	1/7/2020	22.70			26.4
MW-86C	46.61	2/11/2018	20.14			26.47
	46.61	3/11/2018	19.91			26.70
	46.61	5/15/2018	20.26			26.35
	46.61	1/4/2019	19.51			27.10
	46.61	7/9/2019	19.73			26.88
	46.61	1/8/2020	21.09			25.52
MW-87C	44.26	2/11/2018	15.86			28.40
	44.26	3/11/2018	16.29			27.97
	44.26	5/14/2018	16.26			28.00
	44.26	1/4/2019	15.52			28.74
	44.26	7/9/2019	15.83			28.43
	44.26	1/8/2020	15.79			28.47
MW-88A	51.49	3/17/2020	8.00			43.49
MW-88A	51.49	5/20/2020	8.59			42.9
MW-88B	51.57	3/17/2020	7.82			43.75
MW-88B	51.57	5/20/2020	8.55			43.02
MW-88C	51.17	2/11/2018	24.7			26.47
	51.17	3/11/2018	23.93			27.24
	51.17	5/14/2018	24.67			26.50
	51.17	1/4/2019	24.01			27.16
	51.17	7/9/2019	24.13			27.04
	51.17	1/7/2020	24.64			26.53
MW-89B	44.57	7/19/2018	6.78			37.79
	44.57	1/4/2019	8.21			36.36
	44.57	7/9/2019	7.74			36.83
	44.57	1/7/2020	6.24			38.33
MW-90B	44.39	7/19/2018	5.63			38.76
	44.39	1/4/2019	7.16			37.23
	44.39	7/9/2019	4.13			40.26
	44.39	1/7/2020	0.86			43.53

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-91A	44.02	3/12/2020	5.21			38.81
MW-92B	44.91	3/12/2020	4.19			40.72
MW-92B	44.91	5/22/2020				44.91
MW-93B	45.05	3/12/2020	4.06			40.99
MW-93B	45.05	5/22/2020	5.91			39.14
MW-94A	45.21	3/12/2020	3.99			41.22
MW-94A	45.21	5/22/2020	4.82			40.39
MW-95A	46.19	3/17/2020	3.88			42.31
MW-95A	46.19	5/22/2020	4.84			41.35
MW-96B	47.02	3/17/2020	4.28			42.74
MW-96B	47.02	5/22/2020	5.54			41.48
MW-97A	47.77	3/12/2020	5.20			42.57
MW-97A	47.77	5/22/2020	5.52			42.25
MW-98A	48.35	3/12/2020	7.19			41.16
MW-98A	48.35	5/22/2020	7.41			40.94
MW-98B	48.59	3/12/2020	8.30			40.29
MW-98B	48.59	5/22/2020	7.72			40.87
MW-99C	45.33	3/11/2020	14.99			30.34
MW-99C	45.33	5/22/2020	16.09			29.24
P-10	47.69	9/2/1993	6.87			40.85
	47.69	12/21/1993	3.32			44.4
	47.69	3/24/1994	3.88			43.84
	47.69	6/22/1994	4.98			42.74
	47.69	9/28/1994	6.38			41.34
	47.69	10/13/1994	7.07			40.65
	47.69	1/24/1995	2.67			45.05
	47.69	4/11/1995	2.59			45.13
	47.69	7/11/1995	4.69			43.03
	47.69	1/23/1996	5.84			41.88
	47.69	7/19/1996	10.04			37.68
	47.69	9/17/1996	8.34			39.38
	47.69	10/31/1996	6.97			40.75
	47.69	11/22/1996	8.84			38.88
	47.69	12/27/1996	6.20			41.52
	47.69	1/22/1997	4.10			43.62
	47.69	2/21/1997	2.86			44.86
	47.69	3/25/1997	3.19			44.53
	47.69	4/23/1997	4.42			43.3
	47.69	4/24/1997	4.57			43.15
	47.69	5/13/1997	3.14			44.58
	47.69	6/20/1997	4.94			42.78
	47.69	6/25/1997	2.74			44.98
	47.69	7/1/1997	4.13			43.59
	47.69	7/24/1997	7.91			39.81
	47.69	8/16/1997	7.86			39.86
	47.69	8/22/1997	8.67			39.05
	47.69	9/25/1997	6.54			41.18
	47.69	10/22/1997	5.36			42.36
	47.69	11/25/1997	5.36			42.36
	47.69	12/19/1997	4.72			43
	47.69	1/20/1998	3.40			44.32
	47.69	1/29/1998	3.11			44.61
	47.69	3/18/1998	2.84			44.88
	47.69	4/24/1998	6.80			40.92
	47.69	5/21/1998	7.35			40.37
	47.69	7/30/1998	8.23			39.49
	47.69	8/25/1998	7.34			40.38
	47.69	9/21/1998	5.25			42.47
	47.69	10/26/1998	6.11			41.61
	47.69	11/23/1998	4.10			43.62
	47.69	2/26/1999	3.21			44.51
	47.69	3/16/1999	4.21			43.51
	47.69	4/29/1999	4.53			43.19
	47.69	6/1/1999	4.53			43.19
	47.69	7/30/1999	6.00			41.72
	47.69	8/27/1999	4.72			43
	47.69	9/27/1999	9.58			38.14
	47.69	10/29/1999	10.61			37.11
	47.69	12/29/1999	11.55			36.17
	47.69	2/4/2000	13.71			34.01
	47.69	2/25/2000	10.44			37.28
	47.69	3/27/2000	7.53			40.19
	47.69	4/7/2000	7.09			40.63
	47.69	5/31/2000	7.14			40.58

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
P-10	47.69	6/1/2000	7.11			40.61
	47.69	7/28/2000	7.15			40.57
	47.69	8/30/2000	10.15			37.57
	47.69	9/19/2000	11.56			36.16
	47.69	10/27/2000	8.66			39.06
	47.69	11/21/2000	9.64			38.08
	47.69	5/1/2001	6.52			41.2
	47.69	10/1/2001	6.85			40.87
	47.69	3/11/2002	3.41			44.31
	47.69	9/23/2002	3.54			44.18
	47.69	3/10/2003	2.43			45.26
	47.69	9/23/2003	1.61			46.08
	47.69	3/15/2004	2.85			44.84
	47.69	9/13/2004	7.99			39.7
	47.69	7/18/2005	4.20			43.49
	47.69	1/4/2006	8.58			39.11
	47.69	7/27/2006	3.46			44.23
	47.69	1/23/2007	2.36			45.33
	47.69	3/7/2007	NM			
	47.69	7/27/2007	3.75			43.94
	47.69	1/29/2008	2.30			45.39
	47.69	7/16/2008	6.91			40.78
	47.69	1/22/2009	6.35			41.34
	47.69	7/23/2009	NM			
	47.69	1/8/2010	4.06			43.63
	47.69	7/12/2010	2.06			45.63
	47.73	1/12/2011	4.13			43.60
	47.73	7/12/2011	9.84			37.89
	47.73	1/27/2012	3.12			44.61
	47.73	7/10/2013	10.79			36.94
	47.73	1/8/2014	5.51			42.22
	47.73	7/2/2014	7.74			39.99
	47.73	1/7/2015	3.96			43.77
	47.73	8/10/2015	5.39			42.34
	47.71	1/12/2016	2.47			45.24
	47.71	7/6/2016	5.18			42.53
	47.71	1/12/2017	4.52			43.19
	47.71	7/12/2017	6.07			41.64
	47.71	1/3/2018	6.71			41.00
	47.71	7/19/2018	5.77			41.94
	47.71	1/3/2019	6.32			41.39
	47.71	7/1/2019	3.12			44.59
	47.71	1/13/2020	3.18			44.53
P-11	48.98	9/2/1993	7.87			41.15
	48.98	12/21/1993	4.57			44.45
	48.98	3/24/1994	5.04			43.98
	48.98	6/22/1994	6.19			42.83
	48.98	9/28/1994	7.40			41.62
	48.98	10/13/1994	8.14			40.88
	48.98	1/24/1995	3.90			45.12
	48.98	4/11/1995	3.77			45.25
	48.98	7/11/1995	5.69			43.33
	48.98	1/23/1996	6.81			42.21
	48.98	7/19/1996	7.81			41.21
	48.98	9/17/1996	9.15			39.87
	48.98	10/31/1996	7.52			41.5
	48.98	11/22/1996	9.46			39.56
	48.98	12/27/1996	6.64			42.38
	48.98	1/22/1997	4.70			44.32
	48.98	2/21/1997	3.88			45.14
	48.98	3/25/1997	4.09			44.93
	48.98	4/23/1997	5.27			43.75
	48.98	4/24/1997	5.41			43.61
	48.98	5/13/1997	4.12			44.9
	48.98	6/20/1997	5.79			43.23
	48.98	6/25/1997	3.83			45.19
	48.98	7/1/1997	5.01			44.01
	48.98	7/24/1997	7.56			41.46
	48.98	8/16/1997	8.74			40.28
	48.98	8/22/1997	9.37			39.65
	48.98	9/25/1997	7.24			41.78
	48.98	10/22/1997	5.98			43.04
	48.98	11/25/1997	6.00			43.02
	48.98	12/19/1997	5.52			43.5

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
P-11	48.98	1/20/1998	4.30			44.72
	48.98	3/4/1998	4.08			44.94
	48.98	3/18/1998	3.92			45.1
	48.98	4/24/1998	7.61			41.41
	48.98	5/21/1998	8.10			40.92
	48.98	7/30/1998	9.21			39.81
	48.98	8/25/1998	8.44			40.58
	48.98	9/21/1998	5.91			43.11
	48.98	10/26/1998	7.59			41.43
	48.98	11/23/1998	5.41			43.61
	48.98	1/29/1999	4.11			44.91
	48.98	2/26/1999	4.22			44.8
	48.98	3/16/1999	4.96			44.06
	48.98	4/29/1999	5.15			43.87
	48.98	6/1/1999	5.15			43.87
	48.98	7/30/1999	6.66			42.36
	48.98	8/27/1999	5.23			43.79
	48.98	9/27/1999	10.49			38.53
	48.98	10/29/1999	11.91			37.11
	48.98	12/29/1999	11.12			37.9
	48.98	2/4/2000	12.13			36.89
	48.98	2/25/2000	10.46			38.56
	48.98	3/27/2000	8.32			40.7
	48.98	4/7/2000	7.91			41.11
	48.98	5/31/2000	7.96			41.06
	48.98	6/1/2000	7.93			41.09
	48.98	7/28/2000	7.97			41.05
	48.98	8/30/2000	10.88			38.14
	48.98	9/19/2000	12.32			36.7
	48.98	10/27/2000	10.94			38.08
	48.98	11/21/2000	9.77			39.25
	48.98	5/1/2001	7.48			41.54
	48.98	10/1/2001	7.74			41.28
	48.98	3/11/2002	4.51			44.51
	48.98	9/23/2002	4.46			44.56
	48.98	3/10/2003	3.69			45.29
	48.98	9/23/2003	4.54			44.44
	48.98	3/15/2004	4.51			44.47
	48.98	9/13/2004	9.14			39.84
	48.98	7/18/2005	5.27			43.71
	48.98	1/4/2006	9.56			39.42
	48.98	7/27/2006	4.54			44.44
	48.98	3/7/2007	NM			
	48.98	7/27/2007	4.61			44.37
	48.98	1/30/2008	2.71			46.27
	48.98	7/15/2008	7.93			41.05
	48.98	2/4/2009	7.82			41.16
	48.98	7/24/2009	7.74			41.24
	48.98	1/8/2010	5.67			43.31
	48.98	7/12/2010	6.78			42.2
	48.98	1/12/2011	4.21			44.77
	48.98	7/12/2011	11.51			37.47
	48.98	1/26/2012	4.25			44.73
	48.98	1/7/2013	7.96			41.02
	48.98	7/22/2013	10.96			38.02
	48.98	1/7/2014	6.52			42.46
	48.98	7/16/2014	8.87			40.11
	48.98	1/5/2015	5.61			43.37
	48.98	8/10/2015	3.86			45.12
	48.98	1/13/2016	3.26			45.72
	48.98	7/6/2016	3.74			45.24
	48.98	1/12/2017	4.36			44.62
	48.98	7/6/2017	4.62			44.36
	48.98	9/6/2017	4.62			44.36
	48.98	2/11/2018	5.09			43.89
	48.98	3/11/2018	5.54			43.44
	48.98	5/14/2018	7.14			41.84
	48.98	7/2/2018	7.28			41.7
	48.98	1/4/2019	6.43			42.55
	48.98	7/9/2019	5.31			43.67
	48.98	1/7/2020	4.26			44.72
P-12	48.78	9/2/1993	7.02			41.8
	48.78	12/21/1993	4.30			44.52
	48.78	3/24/1994	4.45			44.37

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
P-12	48.78	6/22/1994	5.06			43.76
	48.78	9/28/1994	6.46			42.36
	48.78	10/13/1994	7.19			41.63
	48.78	1/24/1995	3.63			45.19
	48.78	4/11/1995	3.25			45.57
	48.78	7/11/1995	4.62			44.2
	48.78	1/23/1996	6.62			42.2
	48.78	7/19/1996	8.64			40.18
	48.78	9/17/1996	8.12			40.7
	48.78	10/31/1996	6.81			42.01
	48.78	11/22/1996	8.70			40.12
	48.78	12/27/1996	6.57			42.25
	48.78	1/22/1997	4.93			43.89
	48.78	2/21/1997	3.61			45.21
	48.78	3/25/1997	3.70			45.12
	48.78	4/23/1997	4.58			44.24
	48.78	4/24/1997	4.74			44.08
	48.78	5/13/1997	3.69			45.13
	48.78	6/20/1997	4.86			43.96
	48.78	6/25/1997	3.35			45.47
	48.78	7/1/1997	4.11			44.71
	48.78	7/24/1997	6.58			42.24
	48.78	8/16/1997	7.80			41.02
	48.78	8/22/1997	8.22			40.6
	48.78	9/25/1997	6.54			42.28
	48.78	10/22/1997	5.66			43.16
	48.78	11/25/1997	5.70			43.12
	48.78	12/19/1997	5.13			43.69
	48.78	1/20/1998	4.15			44.67
	48.78	3/4/1998	3.78			45.04
	48.78	3/18/1998	3.61			45.21
	48.78	4/24/1998	6.90			41.92
	48.78	5/21/1998	7.80			41.02
	48.78	7/30/1998	8.15			40.67
	48.78	8/25/1998	8.31			40.51
	48.78	9/21/1998	5.64			43.18
	48.78	10/26/1998	7.66			41.16
	48.78	11/23/1998	5.65			43.17
	48.78	1/29/1999	4.20			44.62
	48.78	2/26/1999	4.31			44.51
	48.78	3/16/1999	4.99			43.83
	48.78	4/29/1999	5.10			43.72
	48.78	6/1/1999	5.10			43.72
	48.78	7/30/1999	6.75			42.07
	48.78	8/27/1999	5.34			43.48
	48.78	9/27/1999	9.36			39.46
	48.78	10/29/1999	10.11			38.71
	48.78	12/29/1999	9.44			39.38
	48.78	2/4/2000	12.10			36.72
	48.78	2/25/2000	8.63			40.19
	48.78	3/27/2000	7.76			41.06
	48.78	4/7/2000	7.35			41.47
	48.78	5/31/2000	7.39			41.43
	48.78	6/1/2000	7.34			41.48
	48.78	7/28/2000	7.37			41.45
	48.78	8/30/2000	10.66			38.16
	48.78	9/19/2000	11.45			37.37
	48.78	10/27/2000	10.94			37.88
	48.78	11/21/2000	8.93			39.89
	48.78	5/1/2001	6.70			42.12
	48.78	10/1/2001	6.93			41.89
	48.78	3/11/2002	4.15			44.67
	48.78	9/23/2002	3.90			44.92
	48.78	3/10/2003	3.13			45.65
	48.78	9/23/2003	3.86			44.92
	48.78	3/15/2004	NM			
	48.78	9/13/2004	7.93			40.85
	48.78	7/18/2005	5.06			43.72
	48.78	1/4/2006	8.98			39.8
	48.78	7/27/2006	4.35			44.43
	48.78	1/22/2007	3.19			45.59

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
P-12	48.78	3/7/2007	NM			
	48.78	7/27/2007	4.22			44.56
	48.78	1/29/2008	3.03			45.75
	48.78	7/16/2008	6.78			42
	48.78	1/22/2009	6.99			41.79
	48.78	7/24/2009	NM			
	48.78	1/8/2010	4.13			44.65
	48.78	7/12/2010	3.93			44.85
	48.80	1/12/2011	4.83			43.97
	48.80	7/12/2011	10.02			38.78
	48.80	1/27/2012	4.52			44.28
	48.80	7/9/2012	5.15			43.65
	48.80	7/10/2013	9.73			39.07
	48.80	1/8/2014	6.41			42.39
	48.80	7/2/2014	6.46			42.34
	48.80	1/7/2015	3.19			45.61
	48.80	8/10/2015	4.06			44.74
	48.76	1/12/2016	3.26			45.50
	48.76	7/6/2016	5.09			43.67
	48.76	1/12/2017	5.11			43.65
	48.76	7/12/2017	6.39			42.37
	48.76	1/3/2018	7.14			41.62
	48.76	7/19/2018	6.31			42.45
	48.76	1/3/2019	6.69			42.07
	48.76	7/1/2019	3.06			45.70
	48.76	1/14/2020	3.96			44.80
TW-41B	49.67	2/4/2009	8.44			41.23
	49.67	7/24/2009	8.34			41.33
	49.67	1/8/2010	4.86			44.81
	49.67	7/12/2010	6.12			43.55
	49.67	1/12/2011	5.17			44.5
	49.67	7/12/2011	12.02			37.65
	49.67	1/26/2012	5.27			44.4
	49.67	7/9/2012	6.23			43.44
	49.67	1/7/2013	8.54			41.13
	49.67	7/22/2013	11.53			38.14
	49.67	1/7/2014	7.32			42.35
	49.67	7/16/2014	9.65			40.02
	49.67	1/5/2015	NM			
	49.67	8/10/2015	4.96			44.71
	49.67	1/13/2016	4.13			45.54
	49.67	7/6/2016	4.31			45.36
	49.67	1/12/2017	4.93			44.74
	49.67	7/6/2017	5.32			44.35
	49.67	9/6/2017	5.26			44.41
	49.67	2/11/2018	5.86			43.81
	49.67	3/11/2018	6.69			42.98
	49.67	5/14/2018	8.67			41.00
	49.67	7/2/2018	8.87			40.8
	49.67	1/4/2019	7.97			41.7
	49.67	7/9/2019	8.22			41.45
	49.67	1/7/2020	5.52			44.15
TW-55A	49.67	7/9/2012	13.44			36.23
TW-56A	51.89	2/5/2009	17.48			34.41
	51.89	7/23/2009	17.17			34.72
	51.89	1/8/2010	14.53			37.36
	51.89	7/12/2010	15.78			36.11
	51.89	1/12/2011	14.09			37.8
	51.89	7/12/2011	17.89			34
	51.89	1/26/2012	15.06			36.83
	51.89	1/7/2013	16.92			34.97
	51.89	7/22/2013	18.12			33.77
	51.89	1/7/2014	NM			
	51.89	7/15/2014	16.05			35.84
	51.89	1/5/2015	NM			
	51.89	8/10/2015	6.39			45.50

Notes:
1. The surface completion for MW-23C was repaired and resurveyed in January/February 2009.
2. NM = Not Measured

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-01A 01/28/2008	MW-01A 01/28/2008 Duplicate	MW-01A 07/16/2008	MW-01A 07/16/2008 Duplicate	MW-01A 01/22/2009	MW-01A 01/22/2009 Duplicate	MW-01A 07/22/2009	MW-01A 07/22/2009 Duplicate	MW-01A 01/22/2010	MW-01A 01/22/2010 Duplicate	MW-01A 07/14/2010	MW-01A 07/14/2010 Duplicate
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*			<0.00052	<0.00052								
Benzene	*0.005*	*0.005*			<0.00025	<0.00025								
Chlorobenzene	*0.1*	*0.1*			<0.00047	<0.00047								
Ethylbenzene	*0.7*	*0.7*			<0.00025	<0.00025								
Methylene chloride	*0.005*	*0.005*			<0.00054	<0.00054								
Toluene	*1*	*1*			<0.00041	<0.00041								
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*			<0.00127	<0.00127								
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*	<0.00044	0.000563	0.0109	0.00224	0.0069	0.0016 J	0.0017 J	0.0019 J	0.0019 J	0.0018 J	<0.0009	0.0026 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	0.0415	0.0409	0.126	0.119	0.054	0.038	0.085	0.091	0.04	0.039	0.068	0.075
Acenaphthylene	*1.5*	*4.4*	0.00099	0.000933	0.00143	0.00135	<0.0007	<0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Anthracene	*7.3*	*22*	0.00129	0.00137	0.00267	0.00232	0.0012 J	<0.0007	0.0011 J	0.0014 J	<0.0006	<0.0006	0.0017 J	0.0022 J
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00022	0.0008 J	0.00137 J	0.00126 J	<0.0012	0.0015 J	<0.0033	<0.0033	<0.0033	<0.0033	<0.0033	<0.0033
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	0.00129	0.00211	0.00774	0.00163	0.0058	0.0018 J	<0.0007	<0.0007	0.0016 J	0.0014 J	0.0044 J	0.0067
Di-n-butylphthalate (DBP)	*2.4*	*7.3*												
Fluoranthene	*0.98*	*2.9*	0.00234	0.00233	0.00923	0.00836	0.0024 J	0.0013 J	0.0037 J	0.0039 J	0.0017 J	0.0015 J	0.004 J	0.0049 J
Fluorene	*0.98*	*2.9*	0.0162	0.0167	0.0659	0.0551	0.028	0.018	0.04	0.041	0.022	0.019	0.04	0.047
Naphthalene	*0.49*	*1.5*	<0.00044	<0.00038	0.0168	0.00312	<0.0008	<0.0008	0.0029 J	0.0031 J	0.0043 J	0.0036 J	<0.0006	<0.0006
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*	<0.00022	0.00035 J	0.00177	0.000783	0.001 J	<0.0007	<0.0005	<0.0005	<0.0005	<0.0005	0.0011 J	0.0025 J
Phenol	*7.3*	*22*												
Pyrene	*0.73*	*2.2*	0.00107	0.00108	0.00417	0.00375	0.001 J	<0.0009	0.0019 J	0.0021 J	<0.0005	<0.0005	0.0021 J	0.0026 J
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	***C/I Assessment Level***	MW-01A 01/11/2011	MW-01A 07/13/2011	MW-01A 07/13/2011 Duplicate	MW-01A 01/31/2012	MW-01A 01/31/2012 Duplicate	MW-01A 07/11/2012	MW-01A 07/11/2012 Duplicate	MW-01A 01/09/2013	MW-01A 01/09/2013 Duplicate	MW-01A 07/11/2013	MW-01A 07/11/2013 Duplicate	MW-01A 01/08/2014
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*												
Benzene	*0.005*	*0.005*												
Chlorobenzene	*0.1*	*0.1*												
Ethylbenzene	*0.7*	*0.7*												
Methylene chloride	*0.005*	*0.005*												
Toluene	*1*	*1*												
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*												
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*	<0.0009	0.0068	0.0021 J	<0.0005	<0.0005	0.012	0.011	0.00125	0.00128	0.00193 J	0.0386 J	0.00222 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	0.07	0.1	0.092	0.029	0.028	0.084	0.083	0.117	0.119	0.098 J	0.132 J	<0.00037
Acenaphthylene	*1.5*	*4.4*	0.0011 J	0.0011 J	<0.0005	<0.0005	<0.0005	0.0017 J	0.002 J	0.00222	0.00189	0.00122	0.00137	<0.00093
Anthracene	*7.3*	*22*	0.0021 J	0.0029 J	0.0027 J	<0.0005	<0.0005	0.003 J	0.003 J	0.000285 J	0.00373 J	0.0022 J	0.00331 J	<0.003
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0033	0.003 J	0.0012 J	<0.0005	0.0013 J	<0.0005	<0.0005	0.00163	0.00162	<0.000356	<0.000356	0.000838 J
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	<0.0007	0.0054	0.0027 J	0.0045 J	0.0044 J	0.025	0.025	0.0141	0.0134	0.00264 J	0.0235 J	<0.00951
Di-n-butylphthalate (DBP)	*2.4*	*7.3*												
Fluoranthene	*0.98*	*2.9*	0.0025 J	0.0062	0.0059	0.0012 J	0.0012 J	0.0047 J	0.0045 J	0.00602	0.00537	0.00399	0.00456	<0.00257
Fluorene	*0.98*	*2.9*	0.039	0.056	0.051	0.0013 J	0.0013 J	0.041	0.043	0.0564	0.0556	0.0323 J	0.0545 J	<0.0369
Naphthalene	*0.49*	*1.5*	<0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00219	0.00245	0.0169 J	0.441 J	<0.0000741
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*	<0.0005	0.002 J	0.0011 J	<0.0005	<0.0005	0.0033 J	0.0031 J	0.00388 J	0.0012 J	0.00109 J	0.00928 J	<0.00175
Phenol	*7.3*	*22*												
Pyrene	*0.73*	*2.2*	0.0011 J	0.0028 J	0.0027 J	<0.0005	<0.0005	0.0021 J	0.0019 J	0.00261	0.00202	0.00165	0.00192	<0.0013
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-01A 01/08/2014 Duplicate	MW-01A 07/02/2014	MW-01A 07/02/2014 Duplicate	MW-01A 01/07/2015	MW-01A 01/07/2015 Duplicate	MW-01A 07/08/2015	MW-01A 07/08/2015 Duplicate	MW-01A 01/12/2016	MW-01A 01/12/2016 Duplicate	MW-01A 07/07/2016	MW-01A 07/07/2016 Duplicate	MW-01A 01/11/2017
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*												
Benzene	*0.005*	*0.005*												
Chlorobenzene	*0.1*	*0.1*												
Ethylbenzene	*0.7*	*0.7*												
Methylene chloride	*0.005*	*0.005*												
Toluene	*1*	*1*												
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*												
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*	0.0152 J	0.00865 J	0.0000828 J	0.0000693 J	0.000132 J	0.00063 J	0.0041 J	<0.000019	<0.000019	0.000019 J	0.000095 J	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	<0.000741	0.0848 J	0.0228 J	0.0594	0.0607	0.086	0.095	0.048	0.043	0.053	0.053	0.044 J
Acenaphthylene	*1.5*	*4.4*	<0.00144	0.00138 J	0.000638 J	0.00104	0.00102	0.0009	0.00099	0.0019	0.0018	0.00063	0.00069	0.00092
Anthracene	*7.3*	*22*	<0.00371	0.00326 J	0.00124 J	0.00139	0.00139	0.0018	0.0024	0.00052	0.00059	0.00096	0.001	0.00069
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00067 J	<0.000349	<0.000349	0.00533 J	0.00259 J	<0.0002	<0.000037	0.00042	0.0004	0.000083 J	0.0001 J	0.00031
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	<0.0168	0.0132 J	0.00131 J	0.000541	0.000602	0.0032 J	0.009 J	0.00065	0.00054	0.00072	0.00079	0.0011
Di-n-butylphthalate (DBP)	*2.4*	*7.3*		0.00012 J	0.000133 J									
Fluoranthene	*0.98*	*2.9*	<0.00345	0.0043 J	0.00141 J	0.00246	0.00235	0.0034	0.0038	0.0027	0.0034	0.0027	0.003	0.0021 J
Fluorene	*0.98*	*2.9*	<0.0432	0.0369 J	0.0113 J	0.0209	0.0217	0.038	0.045	0.0057	0.0042	0.014	0.014	0.01 J
Naphthalene	*0.49*	*1.5*	0.00172 J	0.074 J	0.00469 J	0.000121 J	0.000313 J	0.00083 J	0.0049 J	<0.00002	<0.00002	0.00002 J	0.00022 J	<0.00002
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*	<0.00451	0.00537 J	0.000426 J	0.000335 J	0.000326 J	0.0012 J	0.0041 J	0.000067 J	0.000075 J	0.000021 J	0.00027 J	0.000064 J
Phenol	*7.3*	*22*		<0.0000377	<0.0000377									
Pyrene	*0.73*	*2.2*	<0.00165	0.00204 J	0.000662 J	0.00105	0.00102	0.0015	0.0016	0.0011	0.0014	0.0011	0.0013	0.00095
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	***C/I Assessment Level***	MW-01A 01/11/2017 Duplicate	MW-01A 07/13/2017	MW-01A 07/13/2017 Duplicate	MW-01A 01/04/2018	MW-01A 01/04/2018 Duplicate	MW-01A 07/18/2018	MW-01A 07/18/2018 Duplicate	MW-01A 01/07/2019	MW-01A 01/07/2019 Duplicate	MW-01A 07/02/2019	MW-01A 07/02/2019 Duplicate	MW-01A 01/14/2020
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*												
Benzene	*0.005*	*0.005*												
Chlorobenzene	*0.1*	*0.1*												
Ethylbenzene	*0.7*	*0.7*												
Methylene chloride	*0.005*	*0.005*												
Toluene	*1*	*1*												
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*												
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	0.00018	0.000096 J	0.00024	0.00021	0.00014	0.00021	<0.000019	0.00074	0.00069	0.00019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	0.061 J	0.043	0.052	0.041	0.039	0.088	0.12	0.027	0.021	0.063	0.053	0.024
Acenaphthylene	*1.5*	*4.4*	0.00098	0.00055	0.00068	0.00086	0.00083	0.00078	0.00086	0.00069	0.00059	0.00071	0.00071	0.00084
Anthracene	*7.3*	*22*	0.00093	0.00076	0.00079	0.0012	0.0011	0.002	0.0023	0.00068	0.00046	0.00097	0.00096	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00026	0.00012 J	0.00029	<0.000072	<0.000085	<0.000037	<0.000037	<0.000037	<0.000037	<0.000037	<0.000079	<0.000037
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	0.001	0.0017	0.0027	0.0016	0.0015	0.01	0.015	0.0019	0.0014	0.0058	0.0054	0.0036
Di-n-butylphthalate (DBP)	*2.4*	*7.3*												
Fluoranthene	*0.98*	*2.9*	0.003 J	0.0025	0.0025	0.0032	0.0029	0.0038	0.0043	0.0018	0.0016	0.0013	0.0012	0.0011
Fluorene	*0.98*	*2.9*	0.015 J	0.014	0.014	0.018	0.017	0.04	0.05	0.0037	0.0027	0.019	0.016	0.0064
Naphthalene	*0.49*	*1.5*	<0.00002	0.00025	0.00053	<0.00002	<0.00002	0.00027	0.00042	<0.00002	<0.00002	0.00034	0.00034	0.00052
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*	0.000021 J	0.00029	0.00045	0.0004	0.00035	0.0021	0.0024	0.00029	<0.000021	0.00076	0.00067	<0.000021
Phenol	*7.3*	*22*												
Pyrene	*0.73*	*2.2*	0.0012	0.0011	0.001	0.0014	0.0014	0.0019	0.0022	0.00086	0.0007	0.00059	0.00055	0.00052
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-01A 01/14/2020 Duplicate	MW-02 01/28/2008	MW-02 07/16/2008	MW-02 01/22/2009	MW-02 07/22/2009	MW-02 01/22/2010	MW-02 07/14/2010	MW-02 01/11/2011	MW-02 07/13/2011	MW-02 01/30/2012	MW-02 07/10/2012	MW-02 01/09/2013
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*			<0.00052									
Benzene	*0.005*	*0.005*			<0.00025									
Chlorobenzene	*0.1*	*0.1*			<0.00047									
Ethylbenzene	*0.7*	*0.7*			<0.00025									
Methylene chloride	*0.005*	*0.005*			<0.00054									
Toluene	*1*	*1*			<0.00041									
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*			<0.00127									
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.00038	<0.00039	<0.0008	0.0025 J	<0.0009	<0.0009	<0.0009	0.0021 J	<0.0005	<0.0005	0.00318
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	0.018	0.017	0.0218	0.014	<0.0009	0.0073	0.018	0.0078	0.026	<0.0005	0.0088	0.0384
Acenaphthylene	*1.5*	*4.4*	0.00066	<0.00028	0.0003 J	<0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00057
Anthracene	*7.3*	*22*	<0.000014	0.000922	0.00042 J	<0.0007	<0.0006	<0.0006	<0.0006	<0.0006	<0.0005	<0.0005	<0.0005	0.00129
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.000074 J	0.00049 J	<0.00019	<0.0012	<0.0033	<0.0033	<0.0033	<0.0033	0.0021 J	<0.0005	<0.0005	0.000874
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	0.0021	0.0106	0.00673	<0.0007	<0.0007	<0.0007	<0.0007	<0.0007	0.0038 J	<0.0005	0.0043 J	0.0178
Di-n-butylphthalate (DBP)	*2.4*	*7.3*												
Fluoranthene	*0.98*	*2.9*	0.0012	0.0015	0.000961	<0.0006	0.0011 J	<0.0005	<0.0005	<0.0005	0.0012 J	<0.0005	<0.0005	0.00147
Fluorene	*0.98*	*2.9*	0.0038	0.0119	0.0103	0.0039 J	<0.0006	0.0037 J	0.011	0.0049 J	0.015	<0.0005	0.0043 J	0.0201
Naphthalene	*0.49*	*1.5*	<0.00002	0.000827	0.00118	<0.0008	0.012	<0.0006	<0.0006	<0.0006	0.0037 J	<0.0005	0.0033 J	0.0211
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*	<0.000021	0.000532	<0.00019	<0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00241
Phenol	*7.3*	*22*												
Pyrene	*0.73*	*2.2*	0.00059	0.000816	0.00045 J	<0.0009	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00087
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	***C/I Assessment Level***	MW-02 07/11/2013	MW-02 01/08/2014	MW-02 07/02/2014	MW-02 01/07/2015	MW-02 07/07/2015	MW-02 01/12/2016	MW-02 07/07/2016	MW-02 01/11/2017	MW-02 07/13/2017	MW-02 01/04/2018	MW-02 07/18/2018	MW-02 01/07/2019
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*												
Benzene	*0.005*	*0.005*												
Chlorobenzene	*0.1*	*0.1*												
Ethylbenzene	*0.7*	*0.7*												
Methylene chloride	*0.005*	*0.005*												
Toluene	*1*	*1*												
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*												
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*	0.000897	<0.0000648	0.000509	0.000105 J	0.00013	0.000033 J	<0.000019	<0.000019	0.00093	0.0051	0.00038	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	0.0179	<0.0000741	0.00452	0.0026	0.001	0.0019	0.00058	0.0035	0.0064	0.015	0.0048	0.0016
Acenaphthylene	*1.5*	*4.4*	0.000335 J	<0.000101	0.0000979 J	0.0000892 J	<0.000015	0.000046 J	0.00019	<0.000015	<0.000015	0.00018	<0.000015	<0.000015
Anthracene	*7.3*	*22*	0.0013	<0.00131	0.000596	0.000153 J	0.000078 J	0.00011	0.000026 J	0.0001	0.00016	0.00036	0.0002	0.00012
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000356	<0.000343	<0.000349	0.000426 J	<0.00013	<0.00019	<0.000037	0.00011 J	<0.000037	<0.00016	<0.000038	<0.000063
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	0.00734	<0.000147	0.00301	0.000377 J	0.00075	0.0013	0.00036	0.0019	0.0023	0.0019	0.0016	0.00046
Di-n-butylphthalate (DBP)	*2.4*	*7.3*			<0.000104									
Fluoranthene	*0.98*	*2.9*	0.00069	<0.000307	0.000368 J	<0.0000693	<0.00001	0.00013	0.000052 J	0.00029	0.00025	0.00071	0.00019	0.00011
Fluorene	*0.98*	*2.9*	0.00986	<0.000255	0.00357	0.000681	0.00067	0.001	0.00032	0.0016	0.0041	0.0099	0.0029	0.00081
Naphthalene	*0.49*	*1.5*	0.00754	<0.0000741	0.00653	0.000472 J	0.0013	0.0002	0.00013	<0.00002	0.00047	0.00015	0.00025	<0.00002
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*	0.000776	<0.000122	0.000594	0.000162 J	0.00011	0.000093 J	0.000066 J	<0.000021	0.0005	0.0011	0.00035	0.000041 J
Phenol	*7.3*	*22*			<0.0000377									
Pyrene	*0.73*	*2.2*	0.000336 J	<0.000175	0.000201 J	<0.000109	<0.000019	0.000076 J	0.00003 J	0.00017	0.00011	0.00032	0.000082 J	0.000057 J
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
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TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-02 07/02/2019	MW-02 01/14/2020	MW-03 01/30/2008	MW-03 01/24/2018	MW-03 03/27/2018	MW-03 05/25/2018	MW-03 01/09/2019	MW-03 07/12/2019	MW-03 01/21/2020	MW-04 01/29/2008	MW-04 01/24/2018	MW-04 03/23/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*			<0.00052	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052	<0.0002	<0.0002
Benzene	*0.005*	*0.005*			<0.00025	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00025	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*			<0.00047	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*			<0.00025	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00025	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*			<0.00054	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00054	<0.001	<0.001
Toluene	*1*	*1*			<0.00041	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00041	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*			<0.00127	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00127	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*			<0.00008	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00008	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*			<0.0003	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00029	<0.000041	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*			<0.0002	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.00019	<0.000059	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*			<0.0002	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.00019	<0.000043	<0.000042
2-Chloronaphthalene	*2*	*5.8*			<0.0004	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00038	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	0.00011	<0.000019	<0.0004	<0.000019	<0.000019	<0.000019	<0.000019	<0.000035	0.000045 J	<0.00038	0.00008 J	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*			<0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*			<0.00025	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00024	<0.000048	<0.000047
Acenaphthene	*1.5*	*4.4*	0.0019	0.003	0.118	<0.000027	<0.000027	0.00021	<0.000027	<0.000027	0.000061 J	<0.00029	0.00013	<0.000027
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.0003	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.00029	<0.000015	<0.000015
Anthracene	*7.3*	*22*	0.000064 J	0.00011	0.00172	<0.000014	<0.000014	<0.000014	<0.000014	0.000055 J	0.000069 J	0.000739	<0.000014	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*			<0.0002	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00019	<0.000051	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*			<0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.000024 J	<0.00019	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*			<0.0004	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00038	<0.000031	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00015	<0.000037	0.001 J	0.000083 J	<0.000037	<0.000037	<0.000037	<0.000037	0.00011 J	0.00029 J	0.00008 J	<0.000037
Chrysene	*0.91*	*2*			<0.0002	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00019	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	0.00041	0.00039	0.00415	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00029	0.000072 J	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*			<0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.000029 J	<0.00019	0.00003 J	<0.00002
Fluoranthene	*0.98*	*2.9*	0.000071 J	0.00024	0.0125	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.000055 J	0.00045 J	<0.00001	<0.00001
Fluorene	*0.98*	*2.9*	0.00097	0.0017	0.058	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00019	0.000075 J	<0.00003
Naphthalene	*0.49*	*1.5*	0.00011	<0.00002	0.000872	<0.00002	<0.00002	<0.00002	<0.00002	<0.00029	<0.00024	<0.00038	0.0013	0.00055
Nitrobenzene	*0.049*	*0.15*			<0.0004	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00038	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*			<0.00025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00024	<0.000026	<0.000025
Pentachlorophenol	*0.001*	*0.001*			<0.0002	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.00019	<0.000081	<0.000079
Phenanthrene	*0.73*	*2.2*	0.000054 J	0.00011	0.000592	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.00037 J	<0.000021	0.000099 J
Phenol	*7.3*	*22*			<0.0002	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.00019	<0.000036	<0.000035
Pyrene	*0.73*	*2.2*	0.000037 J	0.00011	0.00538	<0.000019	<0.000019	<0.000019	<0.000019	0.00002 J	0.000036 J	<0.00019	0.00003 J	<0.000019
Metals														
Arsenic	*0.01*	*0.01*				0.000895 J	0.00242	0.00363	**0.0191**	0.000582 J	0.00207		0.00454	0.00092 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-04 05/25/2018	MW-04 01/09/2019	MW-04 07/12/2019	MW-04 01/21/2020	MW-05 01/29/2008	MW-05 07/27/2011	MW-05 02/02/2012	MW-05 07/25/2012	MW-05 02/05/2013	MW-05 08/01/2013	MW-05 01/15/2014	MW-05 07/29/2014
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.00025	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	<0.00025	<0.0011	<0.0011	<0.0005	<0.000137	<0.00011	<0.00019	<0.00011
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.00054	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	<0.00041	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015
Vinyl chloride	*0.002*	*0.002*									<0.00011			
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.00127	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	<0.00008	<0.00005	<0.00005	<0.00005	<0.000104	<0.000105	<0.000104	<0.000108
2,4-Dimethylphenol	*0.49*	*1.5*	0.00011 J	<0.00004	<0.00004	<0.00004	<0.00029	<0.00005	<0.00005	<0.00005	<0.000292	<0.000295	<0.000292	<0.000304
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000059	<0.000058	<0.000058	<0.000058	<0.00019	<0.00005	<0.00005	<0.00005	<0.000123	<0.000124	<0.000123	<0.000127
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.000042	<0.00019	<0.00006	<0.00006	<0.00006	<0.0000755	<0.0000762	<0.0000755	<0.0000784
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.00038	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000762	<0.0000755	<0.0000784
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	<0.000059	0.00026	<0.00038	<0.00005	0.000085 J	<0.00005	0.000468 J	<0.0000667	0.000187 J	<0.0000686
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019	<0.00008	<0.00008	<0.00008	<0.000783	<0.00079	<0.000783	<0.000814
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.00024	<0.00005	<0.00005	<0.00005	<0.000528	<0.000533	<0.000528	<0.000549
Acenaphthene	*1.5*	*4.4*	0.00031	<0.000027	0.00052	0.00015	0.000545	0.0053	0.00034	<0.00005	<0.0000755	0.000521	0.000194 J	<0.0000784
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.000015	<0.00029	<0.00005	<0.00005	<0.00005	<0.0000566	<0.0000571	<0.0000566	<0.0000588
Anthracene	*7.3*	*22*	0.000054 J	0.000079 J	<0.000014	0.0001	0.000811	<0.00005	<0.00005	<0.00005	0.000621	0.000427 J	0.000411 J	0.000153 J
Benzo(a)anthracene	*0.0091*	*0.02*	<0.000051	<0.00005	<0.00005	<0.00005	<0.00019	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000762	<0.0000755	<0.0000784
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	0.000033 J	<0.00019	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000762	<0.0000755	<0.0000784
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00038	<0.00005	<0.00005	<0.00005	<0.000123	<0.000124	<0.000123	<0.000127
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	<0.000037	<0.000037	0.0018	0.00034 J	0.00047	<0.0001	0.00019 J	<0.000349	<0.000352	<0.000349	<0.000363
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	0.000034 J	<0.00019	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000762	<0.0000755	<0.0000784
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00002	<0.000058	0.000097 J	<0.00029	0.0022	0.00011 J	<0.00005	<0.0000755	0.0000828 J	0.000162 J	<0.0000784
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019	<0.00005	<0.00005	0.000065 J	<0.000104	<0.000105	<0.000104	<0.000108
Fluoranthene	*0.98*	*2.9*	<0.00001	<0.00001	<0.00001	0.00029	0.00047 J	0.00011 J	<0.00005	<0.00005	<0.000066	0.0000761 J	<0.000066	<0.0000686
Fluorene	*0.98*	*2.9*	0.000059 J	<0.00003	0.000053 J	0.000067 J	0.0002 J	0.0012	0.00012 J	<0.00005	<0.000066	0.000166 J	0.000176 J	<0.0000686
Naphthalene	*0.49*	*1.5*	<0.00002	<0.00002	<0.00053	0.0013	<0.00038	<0.00005	0.00087	<0.00005	0.00133	0.000573 J	0.000969 J	<0.000131
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.00038	<0.00005	<0.00005	<0.00005	<0.000104	<0.000105	<0.000104	<0.000108
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.00024	<0.00005	<0.00005	<0.00005	<0.0000943	<0.0000952	<0.0000943	<0.000098
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.000079	<0.000079	<0.000079	<0.00019	<0.00005	<0.00005	<0.00005	<0.000575	<0.000581	<0.000575	<0.000598
Phenanthrene	*0.73*	*2.2*	<0.000021	<0.000021	<0.000021	0.00017	0.00039 J	0.00013 J	<0.00005	<0.00005	0.000143 J	<0.0000571	0.000507	<0.0000588
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.000035	<0.000035	<0.00019	<0.00005	<0.00005	<0.00005	0.000193 J	<0.0000381	<0.0000377	<0.0000392
Pyrene	*0.73*	*2.2*	0.00011	<0.000019	0.00016	0.0002	0.00045 J	0.00014 J	<0.00005	<0.00005	<0.000104	0.000154 J	<0.000104	<0.000108
Metals														
Arsenic	*0.01*	*0.01*	0.00492	0.000963 J	**0.0127**	0.00223								

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-05 01/24/2018	MW-05 03/20/2018	MW-05 05/24/2018	MW-05 01/09/2019	MW-05 07/11/2019	MW-05 01/13/2020	MW-07 01/29/2008	MW-07 07/16/2008	MW-07 01/22/2009	MW-07 07/22/2009	MW-07 01/22/2010	MW-07 07/14/2010
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		<0.00052				
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		<0.00025				
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003		<0.00047				
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003		<0.00025				
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.00054				
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		<0.00041				
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003		<0.00127				
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021						
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00004	<0.00004	<0.000059	<0.00004						
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000059	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058						
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042						
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021						
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	<0.000019	<0.000019	0.000087 J	<0.000019	<0.00038	<0.00039	<0.0008	<0.0009	<0.0009	<0.0009
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002						
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047						
Acenaphthene	*1.5*	*4.4*	<0.000027	<0.000027	0.00023	<0.000027	0.00043	<0.000027	<0.00028	<0.00029	<0.0008	<0.0009	<0.0009	<0.0009
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.00028	0.00044 J	<0.0007	<0.0005	<0.0005	<0.0005
Anthracene	*7.3*	*22*	0.000037 J	<0.000014	0.000045 J	<0.000014	0.000097 J	<0.000014	0.000516	0.000982	<0.0007	<0.0006	<0.0006	<0.0006
Benzo(a)anthracene	*0.0091*	*0.02*	<0.000051	<0.000051	<0.00005	<0.00005	<0.00005	<0.00005						
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002						
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003						
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00011 J	<0.000037	0.00013 J	<0.000037	<0.000037	<0.000037	<0.00019	<0.00019	<0.0012	<0.0033	<0.0033	0.0049 J
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021						
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00002	0.000024 J	<0.00002	0.000051 J	<0.00002	<0.00028	<0.00029	<0.0007	<0.0007	<0.0007	<0.0007
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	0.000033 J	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002						
Fluoranthene	*0.98*	*2.9*	0.000051 J	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00019	<0.00019	<0.0006	<0.0005	<0.0005	<0.0005
Fluorene	*0.98*	*2.9*	<0.00003	<0.00003	0.000039 J	<0.00003	0.000064 J	<0.00003	<0.00019	<0.00019	<0.0008	<0.0006	<0.0006	<0.0006
Naphthalene	*0.49*	*1.5*	0.0001	<0.00002	<0.00002	<0.00002	<0.00071	<0.00012	<0.00038	0.000675	<0.0008	<0.0006	<0.0006	<0.0006
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024						
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025						
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.00008	<0.000079	<0.000079	<0.000079	<0.000079						
Phenanthrene	*0.73*	*2.2*	0.000054 J	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00019	0.00036 J	<0.0007	<0.0005	<0.0005	<0.0005
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035						
Pyrene	*0.73*	*2.2*	0.000047 J	<0.000019	0.00019	<0.000019	0.00019	<0.000019	<0.00019	<0.00019	<0.0009	<0.0005	<0.0005	<0.0005
Metals														
Arsenic	*0.01*	*0.01*	0.00588	0.00255	0.00488	0.00387	**0.0171**	0.00146 J						

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-07 01/12/2011	MW-07 01/12/2011	MW-07 07/12/2011	MW-07 01/31/2012	MW-07 07/11/2012	MW-07 01/10/2013	MW-07 07/11/2013	MW-07 01/09/2014	MW-07 07/03/2014	MW-07 01/07/2015	MW-07 07/08/2015	MW-07 01/12/2016
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*												
Benzene	*0.005*	*0.005*												
Chlorobenzene	*0.1*	*0.1*												
Ethylbenzene	*0.7*	*0.7*												
Methylene chloride	*0.005*	*0.005*												
Toluene	*1*	*1*												
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*												
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*		<0.0009	<0.0005	<0.0005	<0.0005	<0.000066	<0.0000704	**R**	<0.000066	<0.0000693	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*		<0.0009	<0.0005	<0.0005	<0.0005	0.00181	<0.0000804	**R**	<0.0000755	<0.0000792	<0.000027	<0.000027
Acenaphthylene	*1.5*	*4.4*		<0.0005	<0.0005	<0.0005	<0.0005	0.00011 J	<0.0000603	**R**	<0.0000566	<0.0000594	<0.000015	<0.000015
Anthracene	*7.3*	*22*		<0.0006	<0.0005	<0.0005	<0.0005	0.000833	0.000749	**R**	0.000696	0.000271 J	0.00014	0.000085 J
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*		<0.0033	<0.0005	<0.0005	<0.0005	<0.000349	<0.000372	**R**	<0.000349	0.000944	<0.00024	0.00024
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*		<0.0007	<0.0005	<0.0005	<0.0005	<0.0000755	<0.0000804	**R**	<0.0000755	<0.0000792	<0.00002	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*									<0.000104			
Fluoranthene	*0.98*	*2.9*		<0.0005	<0.0005	<0.0005	<0.0005	<0.000066	<0.0000704	**R**	<0.000066	0.000189 J	<0.00001	<0.00001
Fluorene	*0.98*	*2.9*		<0.0006	<0.0005	<0.0005	<0.0005	0.000137 J	<0.0000704	**R**	<0.000066	0.0000792 J	<0.00003	<0.00003
Naphthalene	*0.49*	*1.5*		<0.0006	<0.0005	<0.0005	<0.0005	<0.0000755	0.000111 J	**R**	<0.0000755	<0.0000792	<0.00002	<0.00002
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*		<0.0005	<0.0005	<0.0005	<0.0005	<0.0000566	<0.0000603	**R**	<0.0000566	<0.0000594	<0.000021	<0.000021
Phenol	*7.3*	*22*									<0.0000377			
Pyrene	*0.73*	*2.2*		<0.0005	<0.0005	<0.0005	<0.0005	<0.000104	<0.000111	**R**	<0.000104	0.000142 J	<0.000019	<0.000019
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-07 07/07/2016	MW-07 01/12/2017	MW-07 07/13/2017	MW-07 01/04/2018	MW-07 07/19/2018	MW-07 01/08/2019	MW-07 07/01/2019	MW-07 07/01/2019 Duplicate	MW-07 01/13/2020	MW-08 01/29/2008	MW-08 07/16/2008	MW-08 01/22/2009
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*											<0.00109	
Benzene	*0.005*	*0.005*											<0.00112	
Chlorobenzene	*0.1*	*0.1*											<0.0015	
Ethylbenzene	*0.7*	*0.7*											<0.00142	
Methylene chloride	*0.005*	*0.005*											<0.00122	
Toluene	*1*	*1*											<0.00138	
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*											<0.00302	
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	0.000023 J	0.000066 J	<0.00044	<0.0004	<0.0008
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.00033	<0.0003	<0.0008
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.00033	0.00044 J	<0.0007
Anthracene	*7.3*	*22*	0.000055 J	0.00025	<0.000014	0.00014	0.00036	<0.000014	0.00014	0.00029	<0.000014	0.00031 J	0.000669	<0.0007
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	0.00011 J	<0.000037	<0.000088	<0.000037	<0.000037	<0.000037	<0.000037	<0.000037	<0.00022	<0.0002	<0.0012
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.000057 J	<0.00033	<0.0003	<0.0007
Di-n-butylphthalate (DBP)	*2.4*	*7.3*												
Fluoranthene	*0.98*	*2.9*	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.0001	<0.00022	<0.0002	<0.0006
Fluorene	*0.98*	*2.9*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00022	<0.0002	<0.0008
Naphthalene	*0.49*	*1.5*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00025	0.00017	<0.00044	0.000654	<0.0008
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.00014	<0.00022	0.00036 J	<0.0007
Phenol	*7.3*	*22*												
Pyrene	*0.73*	*2.2*	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.00022	<0.0002	<0.0009
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	***C/I Assessment Level***	MW-08 07/22/2009	MW-08 01/22/2010	MW-08 07/14/2010	MW-08 01/12/2011	MW-08 01/12/2011 Duplicate	MW-08 07/12/2011	MW-08 01/31/2012	MW-08 07/11/2012	MW-08 01/10/2013	MW-08 07/11/2013	MW-08 01/09/2014	MW-08 07/03/2014
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*												
Benzene	*0.005*	*0.005*												
Chlorobenzene	*0.1*	*0.1*												
Ethylbenzene	*0.7*	*0.7*												
Methylene chloride	*0.005*	*0.005*												
Toluene	*1*	*1*												
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*												
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0005	<0.0005	<0.0005	<0.000066	<0.0000686	<0.0000648	<0.000066
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0005	<0.0005	<0.0005	<0.0000755	<0.0000784	<0.0000741	<0.0000755
Acenaphthylene	*1.5*	*4.4*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0000566	<0.0000588	<0.0000556	<0.0000566
Anthracene	*7.3*	*22*	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0005	<0.0005	<0.0005	0.000439 J	0.000101 J	0.000494	<0.0000472
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0033	<0.0033	<0.0033	<0.0033	<0.0033	<0.0005	<0.0005	<0.0005	<0.000349	<0.000363	<0.000343	<0.000349
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	<0.0007	<0.0007	<0.0007	<0.0007	<0.0007	<0.0005	<0.0005	<0.0005	<0.0000755	<0.0000784	<0.0000741	<0.0000755
Di-n-butylphthalate (DBP)	*2.4*	*7.3*												<0.000104
Fluoranthene	*0.98*	*2.9*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.000066	<0.0000686	<0.0000648	<0.000066
Fluorene	*0.98*	*2.9*	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0005	<0.0005	<0.0005	<0.000066	<0.0000686	<0.0000648	<0.000066
Naphthalene	*0.49*	*1.5*	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0005	<0.0005	<0.0005	<0.0000755	<0.0000784	<0.0000741	<0.0000755
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0000566	<0.0000588	0.0000637 J	<0.0000566
Phenol	*7.3*	*22*												<0.0000377
Pyrene	*0.73*	*2.2*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.000104	<0.000108	<0.000102	<0.000104
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-08 01/07/2015	MW-08 07/08/2015	MW-08 01/12/2016	MW-08 07/07/2016	MW-08 01/12/2017	MW-08 07/13/2017	MW-08 01/04/2018	MW-08 07/19/2018	MW-08 01/07/2019	MW-08 07/01/2019	MW-08 01/13/2020	MW-09 01/29/2008
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*												<0.00052
Benzene	*0.005*	*0.005*												<0.00025
Chlorobenzene	*0.1*	*0.1*												<0.00047
Ethylbenzene	*0.7*	*0.7*												<0.00025
Methylene chloride	*0.005*	*0.005*												<0.00054
Toluene	*1*	*1*												<0.00041
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*												<0.00127
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												<0.00008
2,4-Dimethylphenol	*0.49*	*1.5*												<0.00029
2,4-Dinitrotoluene	*0.0013*	*0.003*												<0.00019
2,6-Dinitrotoluene	*0.0013*	*0.003*												<0.00019
2-Chloronaphthalene	*2*	*5.8*												<0.00038
2-Methylnaphthalene	*0.098*	*0.29*	<0.0000693	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.00038
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												<0.00019
4-Nitrophenol	*0.049*	*0.15*												<0.00024
Acenaphthene	*1.5*	*4.4*	<0.0000792	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	0.00067	<0.000027	<0.000027	<0.000027	<0.00029
Acenaphthylene	*1.5*	*4.4*	<0.0000594	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.00029
Anthracene	*7.3*	*22*	0.000056 J	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	0.000045 J	0.000048 J	<0.000014	<0.000014	<0.00019
Benzo(a)anthracene	*0.0091*	*0.02*												<0.00019
Benzo(a)pyrene	*0.0002*	*0.0002*												<0.00019
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												<0.00038
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000366	<0.00013	<0.000037	<0.000037	0.00018 J	<0.000037	<0.000097	<0.000037	<0.000037	<0.000037	0.00021	0.00034 J
Chrysene	*0.91*	*2*												<0.00019
Dibenzofuran	*0.098*	*0.29*	<0.0000792	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00011	<0.00002	<0.00002	<0.00002	<0.00029
Di-n-butylphthalate (DBP)	*2.4*	*7.3*												<0.00019
Fluoranthene	*0.98*	*2.9*	<0.0000693	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.000031 J	<0.00001	<0.00001	<0.00001	0.00045 J
Fluorene	*0.98*	*2.9*	<0.0000693	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	0.00017	<0.00003	<0.00003	<0.00003	<0.00019
Naphthalene	*0.49*	*1.5*	<0.0000792	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00038
Nitrobenzene	*0.049*	*0.15*												<0.00038
N-Nitrosodiphenylamine	*0.19*	*0.42*												<0.00024
Pentachlorophenol	*0.001*	*0.001*												<0.00019
Phenanthrene	*0.73*	*2.2*	<0.0000594	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.000023 J	<0.000021	<0.000021	0.000046 J	0.000541
Phenol	*7.3*	*22*												<0.00019
Pyrene	*0.73*	*2.2*	<0.000109	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.00019
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-09 07/27/2011	MW-09 02/02/2012	MW-09 07/25/2012	MW-09 04/01/2013	MW-09 01/24/2018	MW-09 03/23/2018	MW-09 05/24/2018	MW-09 01/09/2019	MW-09 07/12/2019	MW-09 01/14/2020	MW-10A 01/28/2008	MW-10A 07/16/2008
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.001	<0.001	<0.0005	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		<0.00052
Benzene	*0.005*	*0.005*	<0.001	<0.001	<0.0005	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		<0.00025
Chlorobenzene	*0.1*	*0.1*	<0.001	<0.001	<0.0005	<0.00012	<0.0003	<0.0003	<0.0003	0.0041	<0.0003	<0.0003		<0.00047
Ethylbenzene	*0.7*	*0.7*	<0.0011	<0.0011	<0.0005	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003		<0.00025
Methylene chloride	*0.005*	*0.005*	<0.0013	<0.0013	<0.001	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.00054
Toluene	*1*	*1*	<0.001	<0.001	<0.0005	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		<0.00041
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.0031	<0.0031	<0.0015	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003		<0.00127
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	<0.00005	<0.00005	<0.000106	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021		
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00005	<0.00005	<0.00005	<0.000298	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004		
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	<0.00005	<0.00005	<0.000125	<0.000059	<0.000058	<0.000058	<0.000059	<0.000058	<0.000058		
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	<0.00006	<0.00006	<0.0000769	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042		
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.00005	<0.00005	<0.0000769	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021		
2-Methylnaphthalene	*0.098*	*0.29*	<0.00005	<0.00005	<0.00005	0.000115 J	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.0004	<0.00038
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.000798	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002		
4-Nitrophenol	*0.049*	*0.15*	<0.00005	<0.00005	<0.00005	<0.000538	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047		
Acenaphthene	*1.5*	*4.4*	<0.00005	<0.00005	<0.00005	0.000188 J	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.0003	<0.00029
Acenaphthylene	*1.5*	*4.4*	<0.00005	<0.00005	<0.00005	<0.0000577	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.0003	<0.00029
Anthracene	*7.3*	*22*	0.00036	<0.00005	<0.00005	0.000471 J	<0.000014	0.00013	0.0001	0.000093 J	0.000061 J	<0.000014	<0.0002	<0.00019
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00005	<0.0000769	<0.000051	<0.00005	<0.00005	<0.000051	<0.00005	<0.00005		
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	<0.00005	<0.00005	<0.0000769	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002		
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	<0.00005	<0.00005	<0.000125	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003		
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00018 J	<0.00032	0.00022	<0.000356	0.000082 J	<0.000037	0.00011 J	<0.000037	<0.000037	<0.000037	<0.0002	0.0002 J
Chrysene	*0.91*	*2*	<0.00005	<0.00005	<0.00005	<0.0000769	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021		
Dibenzofuran	*0.098*	*0.29*	<0.00005	<0.00005	<0.00005	0.000126 J	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0003	<0.00029
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00005	<0.00005	0.000074 J	0.000123 J	<0.00002	<0.00002	0.000031 J	<0.00002	<0.00002	<0.00002		
Fluoranthene	*0.98*	*2.9*	<0.00005	<0.00005	<0.00005	<0.0000673	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.0002	<0.00019
Fluorene	*0.98*	*2.9*	<0.00005	<0.00005	<0.00005	<0.0000673	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.0002	<0.00019
Naphthalene	*0.49*	*1.5*	<0.00005	<0.00005	<0.00005	0.00431 J	<0.00002	0.00039	0.00008 J	<0.00002	<0.00015	0.00011	<0.0004	<0.00038
Nitrobenzene	*0.049*	*0.15*	<0.00005	<0.00005	<0.00005	<0.000106	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024		
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.00005	<0.00005	<0.0000962	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025		
Pentachlorophenol	*0.001*	*0.001*	<0.00005	<0.00005	<0.00005	<0.000587	<0.00008	<0.000079	<0.000079	<0.00008	<0.000079	<0.000079		
Phenanthrene	*0.73*	*2.2*	<0.00005	<0.00005	<0.00005	<0.0000577	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0002	<0.00019
Phenol	*7.3*	*22*	<0.00005	<0.000098	<0.00005	<0.0000385	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035		
Pyrene	*0.73*	*2.2*	<0.00005	<0.00005	<0.00005	<0.000106	<0.000019	<0.000019	0.00004 J	<0.000019	<0.000019	<0.000019	<0.0002	<0.00019
Metals														
Arsenic	*0.01*	*0.01*					0.00104 J	0.0012 J	0.00085 J	0.00202	0.000901 J	0.0043		

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	***C/I Assessment Level***	MW-10A 01/22/2009	MW-10A 07/22/2009	MW-10A 01/21/2010	MW-10A 07/13/2010	MW-10A 01/11/2011	MW-10A 07/13/2011	MW-10A 01/30/2012	MW-10A 07/10/2012	MW-10A 01/09/2013	MW-10A 07/11/2013	MW-10A 01/08/2014	MW-10A 07/15/2014
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*												
Benzene	*0.005*	*0.005*												
Chlorobenzene	*0.1*	*0.1*												
Ethylbenzene	*0.7*	*0.7*												
Methylene chloride	*0.005*	*0.005*												
Toluene	*1*	*1*												
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*												
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*	<0.0008	<0.0009	<0.0009	<0.0009	<0.0009	<0.0005	<0.0005	<0.0005	<0.0000667	0.00178	<0.0000648	0.00262 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	<0.0008	<0.0009	<0.0009	<0.0009	0.0017 J	<0.0005	<0.0005	0.0016 J	<0.0000762	0.0306	<0.0000741	0.0306
Acenaphthylene	*1.5*	*4.4*	<0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0000571	0.000385 J	<0.0000556	<0.000566
Anthracene	*7.3*	*22*	<0.0007	<0.0006	<0.0006	<0.0006	<0.0006	<0.0005	<0.0005	<0.0005	0.000468 J	0.00036 J	<0.0000463	<0.000472
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0012	<0.0033	<0.0033	<0.0033	<0.0033	<0.0005	<0.0005	<0.0005	0.00171	<0.000356	<0.000343	<0.00349
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	<0.0007	<0.0007	<0.0007	<0.0007	<0.0007	<0.0005	<0.0005	<0.0005	<0.0000762	0.00866	<0.0000741	0.00862
Di-n-butylphthalate (DBP)	*2.4*	*7.3*												
Fluoranthene	*0.98*	*2.9*	<0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0000667	0.000186 J	<0.0000648	<0.00066
Fluorene	*0.98*	*2.9*	<0.0008	<0.0006	<0.0006	<0.0006	<0.0006	<0.0005	<0.0005	<0.0005	<0.0000667	0.00631	<0.0000648	0.0111
Naphthalene	*0.49*	*1.5*	<0.0008	<0.0006	<0.0006	<0.0006	<0.0006	<0.0005	<0.0005	<0.0005	<0.0000762	0.199	<0.0000741	0.199
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*	<0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0000571	0.00221	<0.0000556	0.00442 J
Phenol	*7.3*	*22*												
Pyrene	*0.73*	*2.2*	<0.0009	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.000105	<0.000106	<0.000102	<0.00104
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	***C/I Assessment Level***	MW-10A 01/07/2015	MW-10A 07/07/2015	MW-10A 01/12/2016	MW-10A 07/07/2016	MW-10A 01/11/2017	MW-10A 07/13/2017	MW-10A 01/04/2018	MW-10A 07/18/2018	MW-10A 01/07/2019	MW-10A 07/02/2019	MW-10A 01/14/2020	MW-10B 01/28/2008
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*												
Benzene	*0.005*	*0.005*												
Chlorobenzene	*0.1*	*0.1*												
Ethylbenzene	*0.7*	*0.7*												
Methylene chloride	*0.005*	*0.005*												
Toluene	*1*	*1*												
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*												
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*	<0.0000693	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	0.00272	<0.000027	<0.000027	<0.000027	<0.000028	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	0.00011	0.0743
Acenaphthylene	*1.5*	*4.4*	0.000126 J	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	0.00122
Anthracene	*7.3*	*22*	0.000191 J	0.000069 J	<0.000014	0.000073 J	0.000057 J	<0.000014	<0.000014	<0.000014	0.000065 J	<0.000014	<0.000014	0.00432
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000366	<0.00088	<0.000096	0.000097 J	0.000088 J	<0.000037	<0.000057	<0.0001	<0.000089	<0.000037	<0.000037	<0.00019
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	0.000349 J	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.0255
Di-n-butylphthalate (DBP)	*2.4*	*7.3*												<0.00019
Fluoranthene	*0.98*	*2.9*	<0.0000693	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00371
Fluorene	*0.98*	*2.9*	0.000694	<0.00003	<0.00003	<0.00003	<0.000031	<0.00003	<0.00003	<0.00003	0.000038 J	<0.00003	<0.00003	0.0374
Naphthalene	*0.49*	*1.5*	0.000322 J	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.000043 J	<0.00002	0.0185
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*	0.000126 J	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	
Phenol	*7.3*	*22*												<0.00019
Pyrene	*0.73*	*2.2*	<0.000109	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	0.00146
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

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3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-10B 07/16/2008	MW-10B 01/22/2009	MW-10B 07/22/2009	MW-10B 01/21/2010	MW-10B 07/13/2010	MW-10B 01/11/2011	MW-10B 07/13/2011	MW-10B 01/30/2012	MW-10B 07/10/2012	MW-10B 01/09/2013	MW-10B 07/11/2013	MW-10B 10/14/2013
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00052											
Benzene	*0.005*	*0.005*	<0.00025											
Chlorobenzene	*0.1*	*0.1*	<0.00047											
Ethylbenzene	*0.7*	*0.7*	<0.00025											
Methylene chloride	*0.005*	*0.005*	<0.00054											
Toluene	*1*	*1*	<0.00041											
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.00127											
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*												
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	0.0975	0.096	<0.0009	0.052	0.069	0.096	0.054	0.1	0.054	0.12	0.977	
Acenaphthylene	*1.5*	*4.4*	0.00113	<0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0011 J	<0.0005	0.00108	0.00986	
Anthracene	*7.3*	*22*	0.00484	0.0043 J	0.0029 J	0.0025 J	0.0038 J	0.0068	0.0033 J	0.0057	0.0032 J	0.00546	0.0391	
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.0002 J	<0.0012	<0.0033	<0.0033	<0.0033	<0.0033	0.0013 J	<0.0005	<0.0005	<0.000349	<0.0037	
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	0.0392	0.035	0.023	0.018	0.025	0.037	0.019	0.038	0.02	0.0401	**0.302**	0.0334
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.0002	<0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.000104	<0.011	
Fluoranthene	*0.98*	*2.9*	0.00397	0.0039 J	0.0022 J	0.0017 J	0.0026 J	0.0054	0.0023 J	0.0046 J	0.0028 J	0.00427	0.0274	
Fluorene	*0.98*	*2.9*	0.0457	0.051	<0.0006	0.031	0.041	0.059	0.032	0.06	0.031	0.0652	0.468	
Naphthalene	*0.49*	*1.5*	0.014	0.0028 J	0.0082	0.0037 J	0.056	0.075	0.0018 J	0.084	0.004 J	0.00399	0.207	
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*												
Phenol	*7.3*	*22*	<0.0002	<0.0015	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0000377	<0.0004	
Pyrene	*0.73*	*2.2*	0.00174	0.002 J	0.0013 J	<0.0005	0.001 J	0.0023 J	0.0011 J	0.002 J	0.0011 J	0.00146	0.0101	
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

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3. Concentrations > C/I AL and non-detects are highlighted dark gray
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5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
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TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-10B 01/08/2014	MW-10B 07/15/2014	MW-10B 01/07/2015	MW-10B 01/29/2015	MW-10B 07/07/2015	MW-10B 01/12/2016	MW-10B 07/07/2016	MW-10B 01/11/2017	MW-10B 07/13/2017	MW-10B 01/04/2018	MW-10B 07/18/2018	MW-10B 01/07/2019
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*												
Benzene	*0.005*	*0.005*												
Chlorobenzene	*0.1*	*0.1*												
Ethylbenzene	*0.7*	*0.7*												
Methylene chloride	*0.005*	*0.005*												
Toluene	*1*	*1*												
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*												
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*												
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	<0.0000741	0.0777	0.166	0.0507	0.084	0.11	0.053	0.12	0.051	0.093	0.056	0.07
Acenaphthylene	*1.5*	*4.4*	<0.000536	<0.000566	0.00104	0.000597	0.00048	0.00054	0.00032	0.00065	0.00033	0.00068	0.00053	0.00059
Anthracene	*7.3*	*22*	<0.00107	0.00352 J	0.00702	0.00179	0.003	0.0057	0.0027	0.0056	0.0023	0.0052	0.0024	0.0041
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.000408 J	<0.00349	<0.000366	<0.000366	<0.00014	<0.000037	0.00025	0.00022	0.00028	<0.000059	<0.000064	0.00035
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	<0.00493	0.0258	0.0727	0.0129	0.032	0.049	0.019	0.052	0.021	0.048	0.021	0.028
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	0.000275 J	<0.00104	<0.000215	<0.000109	<0.000078	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	<0.000117	0.00211 J	0.00711	0.00117	0.0023	0.0045	0.0023	0.0047	0.0022	0.0053	0.0022	0.0038
Fluorene	*0.98*	*2.9*	<0.00429	0.0424	0.0975	0.0202	0.047	0.064	0.029	0.068	0.034	0.06	0.031	0.04
Naphthalene	*0.49*	*1.5*	0.0646	0.125	**0.556**	0.0247	0.077	0.1	0.0054	0.021	0.0033	0.0013	0.00074	0.00056
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*												
Phenol	*7.3*	*22*	<0.000037	<0.000377	<0.0000396	<0.0000396	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	<0.000102	<0.00104	0.00234	0.000392 J	0.00095	0.0024	0.0009	0.0022	0.00087	0.0019	0.00088	0.0018
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-10B 07/02/2019	MW-10B 01/14/2020	MW-11A 01/28/2008	MW-11A 07/16/2008	MW-11A 01/22/2009	MW-11A 07/22/2009	MW-11A 01/21/2010	MW-11A 07/13/2010	MW-11A 01/11/2011	MW-11A 07/12/2011	MW-11A 01/30/2012	MW-11A 07/10/2012
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*				<0.00052								
Benzene	*0.005*	*0.005*				<0.00025								
Chlorobenzene	*0.1*	*0.1*				<0.00047								
Ethylbenzene	*0.7*	*0.7*				<0.00025								
Methylene chloride	*0.005*	*0.005*				<0.00054								
Toluene	*1*	*1*				<0.00041								
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*				<0.00127								
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*			<0.00038	<0.0004	<0.0008	<0.0009	<0.0009	<0.0009	<0.0009	<0.0005	<0.0005	<0.0005
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	0.042	0.069	0.0346	0.02	0.0076	<0.0009	<0.0009	0.0028 J	<0.0009	<0.0005	<0.0005	<0.0005
Acenaphthylene	*1.5*	*4.4*	0.00031	0.00066	<0.00029	<0.0003	<0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Anthracene	*7.3*	*22*	0.0012	0.0028	0.000798	0.00054	<0.0007	<0.0006	<0.0006	<0.0006	<0.0006	<0.0005	<0.0005	<0.0005
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	0.0002	0.00028 J	<0.0002	<0.0012	<0.0033	<0.0033	<0.0033	<0.0033	<0.0005	<0.0005	<0.0005
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	0.013	0.022	0.00276	<0.0003	<0.0007	<0.0007	<0.0007	<0.0007	<0.0007	<0.0005	<0.0005	<0.0005
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002										
Fluoranthene	*0.98*	*2.9*	0.0012	0.0029	0.00338	0.00387	0.0012 J	0.0011 J	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Fluorene	*0.98*	*2.9*	0.018	0.036	0.0069	0.00089	<0.0008	<0.0006	<0.0006	<0.0006	<0.0006	<0.0005	<0.0005	<0.0005
Naphthalene	*0.49*	*1.5*	0.00023	0.0021	<0.00038	<0.0004	<0.0008	<0.0006	<0.0006	<0.0006	<0.0006	<0.0005	<0.0005	<0.0005
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*			0.00036 J	<0.0002	<0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Phenol	*7.3*	*22*	<0.000035	<0.000035										
Pyrene	*0.73*	*2.2*	0.00049	0.0013	0.00191	0.00184	<0.0009	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-11A 01/09/2013	MW-11A 07/11/2013	MW-11A 01/08/2014	MW-11A 07/02/2014	MW-11A 01/07/2015	MW-11A 07/07/2015	MW-11A 01/12/2016	MW-11A 07/07/2016	MW-11A 01/11/2017	MW-11A 07/12/2017	MW-11A 01/03/2018	MW-11A 07/18/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*												
Benzene	*0.005*	*0.005*												
Chlorobenzene	*0.1*	*0.1*												
Ethylbenzene	*0.7*	*0.7*												
Methylene chloride	*0.005*	*0.005*												
Toluene	*1*	*1*												
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*												
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*	<0.000066	<0.0000673	<0.0000648	<0.000066	<0.0000673	<0.000019	<0.000019	<0.000019	<0.00002	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	0.00175	0.000878	<0.0000741	0.00427	0.000471 J	0.00025	<0.000027	0.0001	<0.000028	<0.000027	<0.000027	0.0017
Acenaphthylene	*1.5*	*4.4*	<0.0000566	<0.0000577	<0.0001	0.000185 J	<0.0000577	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	*7.3*	*22*	0.000499	0.00044 J	<0.00125	0.00126	0.000399 J	0.00017	0.0001	0.00026	0.00021	<0.000014	<0.000014	0.00019
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000349	<0.000356	0.00046 J	0.00516	<0.000356	<0.00068	<0.000073	0.00038	0.00025	0.00017 J	<0.000073	0.0007
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	<0.0000755	<0.0000769	<0.0000741	0.000618	<0.0000769	0.00012	<0.00002	<0.00002	<0.000021	<0.00002	<0.00002	0.00027
Di-n-butylphthalate (DBP)	*2.4*	*7.3*				0.000109 J								
Fluoranthene	*0.98*	*2.9*	<0.000066	0.000221 J	<0.0000795	0.00215	<0.0000673	0.00028	<0.00001	0.00065	0.000049 J	0.00015	<0.00001	0.00023
Fluorene	*0.98*	*2.9*	<0.000066	<0.0000673	<0.0000648	0.00149	<0.0000673	0.00011	<0.00003	0.00013	<0.000031	<0.00003	<0.00003	0.00083
Naphthalene	*0.49*	*1.5*	<0.0000755	<0.0000769	<0.0000741	0.000343 J	<0.0000769	<0.00002	<0.00002	<0.00002	<0.000021	<0.00002	<0.00002	0.00012
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*	<0.0000566	<0.0000577	<0.0000556	0.000384 J	<0.0000577	<0.000021	<0.000021	<0.000021	0.000067 J	<0.000021	<0.000021	0.000086 J
Phenol	*7.3*	*22*				<0.0000377								
Pyrene	*0.73*	*2.2*	<0.000104	0.000115 J	<0.000102	0.00194	<0.000106	0.00023	<0.000019	0.00073	<0.00002	<0.000019	<0.000019	0.00022
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	***C/I Assessment Level***	MW-11A 01/07/2019	MW-11A 07/02/2019	MW-11A 01/14/2020	MW-11B 01/28/2008	MW-11B 07/16/2008	MW-11B 01/22/2009	MW-11B 07/22/2009	MW-11B 01/21/2010	MW-11B 07/13/2010	MW-11B 01/11/2011	MW-11B 07/12/2011	MW-11B 01/30/2012
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*					<0.00052							
Benzene	*0.005*	*0.005*					<0.00025							
Chlorobenzene	*0.1*	*0.1*					<0.00047							
Ethylbenzene	*0.7*	*0.7*					<0.00025							
Methylene chloride	*0.005*	*0.005*					<0.00054							
Toluene	*1*	*1*					<0.00041							
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*					<0.00127							
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	<0.000019									
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	<0.000027	0.00025	<0.000027	0.0649	0.12	0.072	0.12	0.048	0.11	0.039	0.084	0.025
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.00028	0.00126	<0.0007	0.0015 J	0.0013 J	<0.0005	0.0012 J	0.0012 J	0.0011 J
Anthracene	*7.3*	*22*	0.00013	0.000097 J	<0.000014	0.00236	0.00472	0.0022 J	0.0043 J	0.0011 J	0.0055	<0.0006	0.0054	<0.0005
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000075	<0.00007	<0.000037	0.00021 J	<0.00021	<0.0012	<0.0033	<0.0033	<0.0033	<0.0033	<0.0005	<0.0005
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00002	<0.00002	0.0273	0.0649	0.031	0.054	0.012	0.048	0.006	0.038	<0.0005
Di-n-butylphthalate (DBP)	*2.4*	*7.3*				<0.00019	<0.00021	<0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Fluoranthene	*0.98*	*2.9*	<0.00001	0.000018 J	<0.00001	0.00175	0.00383	0.0018 J	0.0036 J	0.0014 J	0.0046 J	0.0015 J	0.0046 J	0.0013 J
Fluorene	*0.98*	*2.9*	<0.00003	<0.00003	<0.00003	0.0297	0.0578	0.032	0.053	0.013	0.056	0.0038 J	0.046	<0.0005
Naphthalene	*0.49*	*1.5*	<0.00002	0.000041 J	<0.00002	0.0354	0.0772	<0.0008	0.048	<0.0006	0.0068	<0.0006	0.06	<0.0005
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*	<0.000021	<0.000021	<0.000021									
Phenol	*7.3*	*22*				<0.00019	<0.00021	<0.0015	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Pyrene	*0.73*	*2.2*	<0.000019	0.000031 J	<0.000019	0.000848	0.00163	<0.0009	0.002 J	<0.0005	0.0022 J	<0.0005	0.0024 J	<0.0005
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-11B 07/10/2012	MW-11B 01/09/2013	MW-11B 07/11/2013	MW-11B 01/08/2014	MW-11B 07/02/2014	MW-11B 01/07/2015	MW-11B 07/07/2015	MW-11B 01/12/2016	MW-11B 07/07/2016	MW-11B 01/11/2017	MW-11B 07/12/2017	MW-11B 01/03/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*												
Benzene	*0.005*	*0.005*												
Chlorobenzene	*0.1*	*0.1*												
Ethylbenzene	*0.7*	*0.7*												
Methylene chloride	*0.005*	*0.005*												
Toluene	*1*	*1*												
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*												
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*					0.0131							
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	0.1	0.0631	0.108	<0.00037	0.0953	0.0472	0.057	<0.000027	0.039	<0.000027	0.043	<0.000027
Acenaphthylene	*1.5*	*4.4*	0.0013 J	0.00136	0.00119	<0.00102	0.00166	0.00113	0.00065	<0.000015	0.00031	<0.000015	0.00032	<0.000015
Anthracene	*7.3*	*22*	0.0055	0.000168 J	0.00321	<0.00242	0.00375	0.000945	0.0025	0.00011	0.0018	0.00011	0.0022	0.0001
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0005	0.00195	<0.000356	0.000493 J	<0.000349	<0.000356	<0.00019	<0.00019	0.00018 J	0.00017 J	<0.000037	<0.0001
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	0.04	0.00352	0.0231	<0.0111	0.0199	0.00472	0.014	<0.00002	0.0082	0.000055 J	0.0055	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.0005	<0.000104	<0.000106	0.000317 J	0.000109 J	<0.000106	<0.000044	<0.00002	<0.00002	<0.00002	<0.00002	<0.000045
Fluoranthene	*0.98*	*2.9*	0.0053	0.00307	0.00383	<0.00267	0.00417	0.00201	0.0034	0.00011	0.0025	0.00021	0.0029	<0.00001
Fluorene	*0.98*	*2.9*	0.054	0.00205	0.0388	<0.0195	0.0339	0.00867	0.025	<0.00003	0.019	<0.00003	0.025	<0.00003
Naphthalene	*0.49*	*1.5*	0.004 J	<0.0000755	0.00535	0.000382 J	0.0135	<0.0000769	0.0021	<0.00002	0.0082	<0.00002	0.0019	<0.00002
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*					0.012							
Phenol	*7.3*	*22*	<0.0005	<0.0000377	<0.0000385	<0.000037	<0.0000377	<0.0000385	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	0.0024 J	0.00154	0.00196	<0.00126	0.00213	0.000935	0.0017	0.00032	0.0012	0.00013	0.0015	<0.000019
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-11B 07/18/2018	MW-11B 01/07/2019	MW-11B 07/02/2019	MW-11B 07/30/2019	MW-11B 10/17/2019	MW-11B 01/14/2020	MW-12A 01/30/2008	MW-12A 07/15/2008	MW-12A 02/04/2009	MW-12A 01/19/2010	MW-12A 06/22/2010	MW-12A 01/18/2011
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*							<0.00052	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005
Benzene	*0.005*	*0.005*							<0.00025	<0.00025	0.00073 J	<0.0005	<0.0005	<0.0005
Chlorobenzene	*0.1*	*0.1*							<0.00047	<0.00047	<0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	*0.7*	*0.7*							0.00718	<0.00025	0.0059	0.0029 J	0.00056 J	0.0014 J
Methylene chloride	*0.005*	*0.005*							<0.00054	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005
Toluene	*1*	*1*							<0.00041	<0.00041	0.00079 J	<0.0005	<0.0005	<0.0005
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*							0.0105 J	<0.00127	0.012 J	0.0056 J	0.0026 J	0.0025 J
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*							<0.00008	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*							<0.0003	<0.00029	<0.00008	<0.00008	<0.00008	0.0001 J
2,4-Dinitrotoluene	*0.0013*	*0.003*							<0.0002	<0.00019	<0.00009	<0.00009	<0.00009	<0.00009
2,6-Dinitrotoluene	*0.0013*	*0.003*							<0.0002	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007
2-Chloronaphthalene	*2*	*5.8*							<0.0004	<0.00039	<0.00012	<0.0001	<0.0001	<0.0001
2-Methylnaphthalene	*0.098*	*0.29*							**0.174**	**0.332**	**0.22**	**0.15**	**0.15**	0.033
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*							<0.0002	<0.00049	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*							<0.00025	<0.00024	<0.00007	<0.00007	<0.00007	<0.00007
Acenaphthene	*1.5*	*4.4*	0.074	0.015	0.13			0.033	0.173	0.331	0.25	0.19	0.21	0.19
Acenaphthylene	*1.5*	*4.4*	0.00063	0.00054	0.0013			0.0016	<0.0003	0.00276	0.0036	0.0026	0.0019	0.0016
Anthracene	*7.3*	*22*	0.0037	0.00021	0.0045			<0.000014	0.0103	0.0137	0.0099	0.0093	0.011	0.012
Benzo(a)anthracene	*0.0091*	*0.02*							0.00028 J	0.00026 J	<0.00007	<0.00007	<0.00007	0.00082
Benzo(a)pyrene	*0.0002*	*0.0002*							<0.0002	<0.00019	<0.00008	<0.00008	<0.00008	**0.0003**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*							<0.0004	<0.00039	<0.00009	<0.00009	<0.00009	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	<0.000085	<0.00026			0.000095 J	0.0013 J	0.00033 J	0.00031	0.0006	<0.0002	0.00036
Chrysene	*0.91*	*2*							0.00024 J	0.00021 J	<0.00007	<0.00007	<0.00007	0.00074
Dibenzofuran	*0.098*	*0.29*	0.032	<0.00002	0.051			<0.00002	**0.125**	**0.212**	**0.18**	**0.14**	**0.18**	**0.15**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.00002			<0.00002	<0.0002	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007
Fluoranthene	*0.98*	*2.9*	0.0043	0.0025	0.005			0.0024	0.00693	0.0123	0.0061	0.0059	0.0064	0.0086
Fluorene	*0.98*	*2.9*	0.048	0.00015	0.061			0.00035	0.112	0.475	0.15	0.13	0.16	0.14
Naphthalene	*0.49*	*1.5*	0.34	<0.00002	**0.7**	**1.1**	**0.6**	<0.00002	**2.27**	**1.47**	**2.6**	**1.7**	**0.6**	0.22
Nitrobenzene	*0.049*	*0.15*							<0.0004	<0.00039	<0.00009	<0.00009	<0.00009	<0.00009
N-Nitrosodiphenylamine	*0.19*	*0.42*							<0.00025	<0.00024	<0.00009	<0.00009	<0.00009	<0.00009
Pentachlorophenol	*0.001*	*0.001*							<0.0002	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008
Phenanthrene	*0.73*	*2.2*							0.0833	0.372	0.1	0.087	0.091	0.061
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.000035			<0.000035	<0.0002	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007
Pyrene	*0.73*	*2.2*	0.0023	0.0017	0.0027			0.0023	0.00358	0.00518	0.0025	0.0029	0.0025	0.0044
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-12A 07/26/2011	MW-12A 02/01/2012	MW-12A 07/19/2012	MW-12A 02/05/2013	MW-12A 07/31/2013	MW-12A 01/14/2014	MW-12A 07/25/2014	MW-12A 01/23/2018	MW-12A 03/19/2018	MW-12A 05/16/2018	MW-12A 01/09/2019	MW-12A 07/11/2019
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.001	<0.001	<0.0025	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.001	<0.001	<0.0025	0.000237 J	0.0000957 J	0.00048 J	0.000122 J	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.001	<0.001	<0.0025	<0.00012	<0.00012	<0.00012	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	0.0015 J	0.0042 J	<0.0025	0.000521 J	0.000774 J	0.000257 J	0.000403 J	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.0013	<0.0013	**0.0087 J**	<0.00015	<0.00015	<0.00015	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.001	<0.001	<0.0025	<0.00015	<0.000166	<0.00015	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*				<0.00011			<0.00011					
Xylenes (total)	*10*	*10*	<0.0031	0.0048 J	<0.0075	0.00197 J	0.00217 J	0.00145 J	0.00165 J	0.0023	0.00076 J	0.00076 J	<0.0003	0.0006 J
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	<0.00005	<0.00005	<0.000104	<0.000105	**<0.00529**	<0.000107	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00005	<0.00005	0.000056 J	<0.000292	<0.000295	<0.0149	<0.000301	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	<0.00005	<0.00005	<0.000123	<0.000124	**<0.00625**	<0.000126	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	<0.00006	<0.00006	<0.0000755	<0.0000762	**<0.00385**	<0.0000777	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000762	<0.00385	<0.0000777	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	0.014	0.061	**0.17**	0.0477	**0.306**	0.0386	**0.121**	0.067	0.008	0.005	<0.000019	0.013
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.000783	<0.00079	**<0.0399**	<0.000806	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00005	<0.00005	<0.00005	<0.000528	<0.000533	<0.0269	<0.000544	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	0.038	0.13	0.2	0.253	0.428	0.342	0.292	0.26	0.23	0.17	<0.000027	0.19
Acenaphthylene	*1.5*	*4.4*	<0.00005	0.0015	0.0015	<0.0000566	<0.0000571	<0.00288	0.00225	<0.000015	0.0017	0.0015	<0.000015	0.0013
Anthracene	*7.3*	*22*	0.0017	0.028	0.023	0.0179	0.0222	0.0325	0.0179	0.016	0.019	0.014	<0.000014	0.0087
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	0.00011 J	0.000221 J	0.000226 J	<0.00385	0.000268 J	0.00016	0.00026	0.00011	<0.00005	0.00041
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000762	**<0.00385**	<0.0000777	<0.00002	<0.00002	<0.00002	<0.00002	0.00012
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	<0.00005	<0.00005	<0.000123	<0.000124	**<0.00625**	<0.000126	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00017 J	<0.00027	<0.00012	<0.000349	<0.000352	**<0.0178**	0.000679	<0.00011	0.0002 J	0.00013 J	<0.000037	0.00031
Chrysene	*0.91*	*2*	<0.00005	<0.00005	0.00013 J	0.000186 J	0.000231 J	<0.00385	0.000241 J	0.00015	0.00022	0.00011	<0.000021	0.00034
Dibenzofuran	*0.098*	*0.29*	0.025	**0.13**	**0.16**	**0.17**	**0.317**	**0.22**	**0.193**	**0.2**	**0.15**	**0.11**	0.000031 J	**0.14**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00005	<0.00005	<0.00005	<0.000104	<0.00024	<0.00529	0.000797	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	0.0017	0.0031	0.007	0.0111	0.0181	0.018 J	0.0132	0.013	0.0097	0.0084	<0.00001	0.0097
Fluorene	*0.98*	*2.9*	0.025	0.067	0.15	0.17	0.316	0.245	0.202	0.21	0.17	0.13	<0.00003	0.16
Naphthalene	*0.49*	*1.5*	0.05	**1.5**	0.36	0.0828 J	**0.661**	0.0338 J	0.075	0.012	0.0014	<0.0021	<0.00026	<0.0012
Nitrobenzene	*0.049*	*0.15*	<0.00005	<0.00005	<0.00005	<0.000104	<0.000105	<0.00529	<0.000107	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.00005	<0.00005	<0.0000943	<0.0000952	<0.00481	<0.0000971	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00005	<0.00005	<0.00005	<0.000575	<0.000581	**<0.0293**	<0.000592	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	0.015	0.078	0.12	0.13	0.234	0.192	0.162	0.13	0.13	0.093	<0.000021	0.063
Phenol	*7.3*	*22*	<0.00005	<0.00005	<0.00005	0.000101 J	<0.0000381	<0.00192	<0.0000388	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	0.00068	0.0026	0.0036	0.00515	0.00818	0.00759 J	0.00649	0.0064	0.0049	0.0042	<0.000019	0.0047
Metals														
Arsenic	*0.01*	*0.01*								**0.017**	0.00133 J	0.00093 J	0.00192 J	0.00192 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-12A 01/13/2020	MW-12B 01/31/2008 DNAPL	MW-12B 01/23/2020 DNAPL	MW-12C 01/30/2008	MW-12C 07/15/2008	MW-12C 02/04/2009	MW-12C 01/19/2010	MW-12C 06/22/2010	MW-12C 01/18/2011	MW-12C 07/26/2011	MW-12C 02/01/2012	MW-12C 07/19/2012
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.00052	<0.005	<0.00052	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005
Benzene	*0.005*	*0.005*	<0.0002	0.00344 J	**0.03**	<0.00025	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.00047	<0.0075	<0.00047	<0.00047	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005
Ethylbenzene	*0.7*	*0.7*	<0.0003	0.0125	0.014 J	<0.00025	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005
Methylene chloride	*0.005*	*0.005*	<0.001	<0.00054	**<0.025**	<0.00054	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001
Toluene	*1*	*1*	<0.0002	0.00515	<0.005	<0.00041	<0.00041	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005
Vinyl chloride	*0.002*	*0.002*			**<0.005**									
Xylenes (total)	*10*	*10*	<0.0003	0.0264	<0.0075	<0.00127	<0.00127	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.0008	**<0.0021**	<0.00008	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.0029	<0.004	<0.00031	<0.00032	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	**<0.0019**	**<0.0058**	<0.0002	<0.00021	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	**<0.0019**	**<0.0042**	<0.0002	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.0038	<0.0021	<0.00041	<0.00042	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	0.0023	**0.508**	**320 J**	<0.00041	<0.00042	0.00045	0.00024	0.00011 J	0.00012 J	0.000099 J	<0.00005	0.000086 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.0019	<0.002	<0.0002	<0.00053	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.0024	<0.0047	<0.00026	<0.00026	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Acenaphthene	*1.5*	*4.4*	0.28	0.336	**350**	<0.00031	<0.00032	0.00052	0.00019 J	<0.00009	0.00012 J	<0.00005	<0.00005	0.00011 J
Acenaphthylene	*1.5*	*4.4*	0.0012	0.0127	**5.7**	<0.00031	<0.00032	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Anthracene	*7.3*	*22*	0.0097	0.0267	**160**	<0.0002	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Benzo(a)anthracene	*0.0091*	*0.02*	0.00015	0.00746	**79**	<0.0002	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	**<0.0019**	**22**	<0.0002	**<0.00021**	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	**<0.0038**	**<0.003**	<0.00041	<0.00042	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00011 J	<0.0019	<0.0037	0.00114 J	<0.00021	0.0003	0.00077	<0.00099	<0.0002	0.0004	<0.0001	<0.00011
Chrysene	*0.91*	*2*	0.00015	0.00596	**64**	<0.0002	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Dibenzofuran	*0.098*	*0.29*	**0.23**	**0.204**	**320**	<0.00031	<0.00032	0.0004	0.00014 J	<0.00008	0.00011 J	<0.00005	<0.00005	0.000054 J
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.0019	<0.002	<0.0002	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Fluoranthene	*0.98*	*2.9*	0.0067	0.0508	**520**	<0.0002	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Fluorene	*0.98*	*2.9*	0.28	0.196	**420**	<0.0002	<0.00021	0.00037	0.00014 J	<0.00007	0.000099 J	0.000071 J	0.0001 J	0.000082 J
Naphthalene	*0.49*	*1.5*	<0.00051	**5.55**	**760**	0.000734	0.000833	0.003	0.0017	<0.00046	0.00099	0.00048	<0.00054	0.00052
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.0038	<0.0024	<0.00041	<0.00042	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.0024	<0.0025	<0.00026	<0.00026	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
Pentachlorophenol	*0.001*	*0.001*	<0.000079	**<0.0019**	**<0.0079**	<0.0002	<0.00021	<0.00008	<0.00008	<0.00008	0.00015 J	<0.00005	<0.00005	<0.00005
Phenanthrene	*0.73*	*2.2*	0.082	0.322	**1200**	<0.0002	<0.00021	0.00048	0.00015 J	<0.00007	0.00011 J	<0.00005	<0.00005	0.000059 J
Phenol	*7.3*	*22*	<0.000035	<0.0019	<0.0035	<0.0002	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Pyrene	*0.73*	*2.2*	0.0031	0.033	**330**	<0.0002	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Metals														
Arsenic	*0.01*	*0.01*	0.00134 J		**0.0491 J**									

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-12C 02/05/2013	MW-12C 07/31/2013	MW-12C 01/14/2014	MW-12C 07/25/2014	MW-12C 01/23/2018	MW-12C 03/19/2018	MW-12C 05/16/2018	MW-12C 01/09/2019	MW-12C 07/11/2019	MW-12C 01/13/2020	MW-13 01/30/2008	MW-13 07/15/2008
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052	<0.00052
Benzene	*0.005*	*0.005*	<0.00008	<0.00008	<0.00008	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00025	<0.00025
Chlorobenzene	*0.1*	*0.1*	<0.00012	<0.00012	<0.00012	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047	<0.00047
Ethylbenzene	*0.7*	*0.7*	<0.000145	<0.00011	<0.00011	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00025	<0.00025
Methylene chloride	*0.005*	*0.005*	<0.00015	<0.00015	<0.00015	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00054	<0.00054
Toluene	*1*	*1*	<0.00015	<0.00015	<0.00015	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00041	<0.00041
Vinyl chloride	*0.002*	*0.002*	<0.00011			<0.00011								
Xylenes (total)	*10*	*10*	<0.00026	<0.00026	<0.00026	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00127	<0.00127
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000104	<0.000105	<0.000106	<0.000107	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00008	<0.00008
2,4-Dimethylphenol	*0.49*	*1.5*	<0.000292	<0.000295	<0.000298	<0.000301	<0.00004	<0.00004	<0.00004	<0.00004	0.00043	<0.00004	<0.00029	<0.00029
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000123	<0.000124	<0.000125	<0.000126	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.00019	<0.00019
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0000755	<0.0000762	<0.0000769	**0.209**	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.00019	<0.00019
2-Chloronaphthalene	*2*	*5.8*	<0.0000755	<0.0000762	<0.0000769	<0.0000777	0.000079 J	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00038	<0.00039
2-Methylnaphthalene	*0.098*	*0.29*	0.000146 J	0.000129 J	0.000164 J	<0.000146	0.000091 J	0.000092 J	0.000078 J	0.00039	0.00021	0.00018	<0.00038	<0.00039
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.000783	<0.00079	<0.000798	<0.000806	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019	<0.00049
4-Nitrophenol	*0.049*	*0.15*	<0.000528	<0.000533	<0.000538	<0.000544	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00024	<0.00024
Acenaphthene	*1.5*	*4.4*	<0.0000755	<0.0000762	<0.0000769	<0.000114	0.0002	0.0001	<0.000027	0.093	0.000071 J	0.00015	<0.00029	<0.00029
Acenaphthylene	*1.5*	*4.4*	<0.0000566	<0.0000571	<0.0000577	<0.0000583	<0.000015	0.00064	<0.000015	0.00082	<0.000015	<0.000015	<0.00029	<0.00029
Anthracene	*7.3*	*22*	0.0000745 J	<0.0000476	<0.0000481	<0.0000485	<0.000014	<0.000014	<0.000014	0.0084	0.00003 J	<0.000014	0.000955	0.000642
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0000755	<0.0000762	<0.0000769	<0.0000777	<0.00005	<0.00005	<0.00005	0.00014	<0.00005	<0.00005	<0.00019	<0.00019
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0000755	<0.0000762	<0.0000769	<0.0000777	<0.00002	<0.00002	<0.00002	0.000041 J	<0.00002	<0.00002	<0.00019	<0.00019
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.000123	<0.000124	<0.000125	<0.000126	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00038	<0.00039
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000349	<0.000352	<0.000356	<0.000359	<0.00009	0.00013 J	<0.000037	0.00011 J	<0.000037	<0.000037	0.00051 J	<0.00019
Chrysene	*0.91*	*2*	<0.0000755	<0.0000762	<0.0000769	<0.0000777	<0.000021	<0.000021	<0.000021	0.00013	<0.000021	<0.000021	<0.00019	<0.00019
Dibenzofuran	*0.098*	*0.29*	0.0000865 J	0.0000857 J	0.0000979 J	<0.000091	0.0001	<0.00002	0.000052 J	0.067	0.00007 J	0.00012	<0.00029	<0.00029
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.000104	<0.00011	<0.000106	<0.000107	0.000034 J	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019	<0.00019
Fluoranthene	*0.98*	*2.9*	<0.000066	<0.0000667	<0.0000673	<0.000068	<0.00001	<0.00001	<0.00001	0.0071	<0.00001	0.000091 J	0.00046 J	<0.00019
Fluorene	*0.98*	*2.9*	0.000149 J	0.000102 J	<0.0000673	<0.000068	<0.00003	<0.00003	0.000087 J	0.085	0.000052 J	0.00019	<0.00019	<0.00019
Naphthalene	*0.49*	*1.5*	0.000729	0.000585 J	<0.000853	<0.000598	0.00046	0.0003	<0.00061	<0.00017	<0.0031	0.0017	<0.00038	<0.00039
Nitrobenzene	*0.049*	*0.15*	<0.000104	<0.000105	<0.000106	<0.000107	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00038	<0.00039
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.0000943	<0.0000952	<0.0000962	<0.0000971	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00024	<0.00024
Pentachlorophenol	*0.001*	*0.001*	<0.000575	<0.000581	<0.000587	<0.000592	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.00019	<0.00019
Phenanthrene	*0.73*	*2.2*	<0.0000566	<0.0000571	<0.0000872	<0.0000808	0.000069 J	<0.000021	0.000048 J	0.052	0.000039 J	0.00015	<0.00019	<0.00019
Phenol	*7.3*	*22*	<0.0000377	<0.0000381	<0.0000385	<0.0000388	<0.000035	<0.000035	<0.000035	<0.000035	0.0004	0.00012 J	<0.00019	<0.00019
Pyrene	*0.73*	*2.2*	<0.000104	<0.000105	<0.000106	<0.000107	<0.000019	<0.000019	<0.000019	0.0031	<0.000019	0.000068 J	<0.00019	<0.00019
Metals														
Arsenic	*0.01*	*0.01*					0.0025	0.00184 J	0.0017 J	0.000796 J	0.002	0.00195 J		

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-13 02/04/2009	MW-13 01/19/2010	MW-13 06/22/2010	MW-13 01/18/2011	MW-13 07/26/2011	MW-13 02/02/2012	MW-13 07/16/2012	MW-13 02/05/2013	MW-13 07/31/2013	MW-13 01/14/2014	MW-13 07/25/2014	MW-13 01/23/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002
Benzene	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.00008	<0.00008	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	0.000401 J	<0.00012	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00011	<0.00011	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00015	<0.00015	<0.001
Toluene	*1*	*1*	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00015	<0.00015	<0.0002
Vinyl chloride	*0.002*	*0.002*								<0.00011			<0.00011	
Xylenes (total)	*10*	*10*	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00026	<0.00026	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.000104	<0.000107	<0.000212	<0.000107	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**R**	<0.000301	<0.000596	<0.000301	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000123	<0.000126	<0.00025	<0.000126	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00007	0.00066	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000755	<0.0000777	<0.000154	<0.0000777	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000777	<0.000154	<0.0000777	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	<0.00007	0.00076	<0.00007	0.000075 J	0.00026	<0.00005	0.000063 J	<0.000066	<0.000068	0.000141 J	<0.000687	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	**R**	<0.000806	<0.0016	<0.000806	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	**R**	<0.000544	<0.00108	<0.000544	<0.000047
Acenaphthene	*1.5*	*4.4*	<0.00009	0.00011 J	<0.00009	<0.00009	0.00033	<0.00005	<0.00005	<0.0000755	<0.0000777	<0.000154	<0.000329	<0.000027
Acenaphthylene	*1.5*	*4.4*	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000566	0.0000715 J	<0.000115	<0.0000583	0.00003 J
Anthracene	*7.3*	*22*	0.0002	0.00043	<0.00007	<0.00007	0.00037	0.000068 J	0.00011 J	0.0011	0.000878	<0.00118	<0.000587	0.00047
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00014 J	<0.00005	<0.0000755	<0.0000777	<0.000154	<0.0000777	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	0.000073 J	<0.00005	<0.0000755	<0.0000777	<0.000154	<0.0000777	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000123	<0.000126	<0.00025	<0.000126	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00035	0.0016	<0.00044	<0.0002	0.00027	0.00043 J	<0.0001	<0.000349	<0.000359	<0.000712	<0.000359	<0.00011
Chrysene	*0.91*	*2*	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00017 J	<0.00005	<0.0000755	<0.0000777	<0.000154	<0.0000777	<0.000021
Dibenzofuran	*0.098*	*0.29*	<0.00008	0.00019 J	<0.00008	<0.00008	0.00034	0.000063 J	0.00019 J	<0.0000755	<0.0000777	<0.000154	<0.000257	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00007	<0.00007	0.0001 J	<0.00007	<0.00005	<0.00005	<0.00005	<0.000104	<0.000211	<0.000212	0.000122 J	<0.00002
Fluoranthene	*0.98*	*2.9*	<0.00007	<0.00007	<0.00007	<0.00007	0.000067 J	0.00015 J	0.00013 J	<0.000066	<0.000068	<0.000135	<0.000068	<0.00001
Fluorene	*0.98*	*2.9*	<0.00007	<0.00007	<0.00007	0.000072 J	0.00035	<0.00005	0.00012 J	<0.000066	<0.000068	<0.000135	<0.000188	<0.00003
Naphthalene	*0.49*	*1.5*	<0.0001	0.007	<0.0001	0.0005	0.00087	<0.00022	<0.00023	<0.0000755	<0.000226	<0.00126	0.0039	0.00014
Nitrobenzene	*0.049*	*0.15*	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000104	<0.000107	<0.000212	<0.000107	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000943	<0.0000971	<0.000192	<0.0000971	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**R**	<0.000592	**<0.00117**	<0.000592	<0.000079
Phenanthrene	*0.73*	*2.2*	<0.00007	0.00014 J	0.0002	<0.00007	0.00029	0.00015 J	0.00049	<0.0000566	<0.0000583	<0.000115	<0.000163	<0.000021
Phenol	*7.3*	*22*	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	**R**	<0.0000388	<0.0000769	<0.0000388	<0.000035
Pyrene	*0.73*	*2.2*	<0.00007	<0.00007	<0.00007	<0.00007	0.00011 J	0.0002 J	0.000089 J	<0.000104	<0.000107	<0.000212	<0.000107	<0.000019
Metals														
Arsenic	*0.01*	*0.01*												0.00303

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-13 03/18/2018	MW-13 05/15/2018	MW-13 01/08/2019	MW-13 07/11/2019	MW-13 01/14/2020	MW-14 01/30/2008	MW-14 07/15/2008	MW-14 02/04/2009	MW-14 02/04/2009 Duplicate	MW-14 01/19/2010	MW-14 01/19/2010 Duplicate	MW-14 06/22/2010
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00025	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047	<0.00047	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00025	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00054	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00041	<0.00041	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00127	<0.00127	<0.001	<0.001	<0.001	<0.001	<0.001
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00008	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00004	<0.000063	<0.00004	<0.00029	<0.00029	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.00019	<0.00019	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.00019	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00038	<0.00038	<0.00012	<0.00012	<0.0001	<0.0001	<0.0001
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	<0.000019	0.000077 J	0.000054 J	0.00047 J	0.000782	0.00075	0.00078	0.00064	0.0006	0.00049
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019	<0.00048	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00024	<0.00024	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
Acenaphthene	*1.5*	*4.4*	<0.000027	<0.000027	<0.000027	0.000066 J	0.00022	0.00223	0.000515	0.00047	0.0005	0.00043	0.00043	0.00041
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	0.000033 J	<0.000015	<0.00029	<0.00029	<0.00006	<0.00006	<0.00007	<0.00007	<0.00007
Anthracene	*7.3*	*22*	0.000039 J	0.000085 J	0.00039	0.00047	<0.000014	0.000678	<0.00019	<0.00007	<0.00007	<0.00007	0.00013 J	<0.00007
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00019	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00038	<0.00038	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.000078 J	0.00011 J	<0.000037	0.000054 J	<0.000037	0.0004 J	<0.00019	0.00081	0.0027	0.0054 J	0.00037 J	<0.00077
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00019	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00002	<0.00002	0.000039 J	0.00016	0.000491	0.000502	0.00045	0.00045	0.0004	0.00044	0.00037
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	0.000029 J	<0.00002	<0.00002	<0.00002	<0.00019	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
Fluoranthene	*0.98*	*2.9*	<0.00001	0.000015 J	<0.00001	0.000032 J	<0.00001	0.000506	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
Fluorene	*0.98*	*2.9*	<0.00003	<0.00003	<0.00003	0.000042 J	0.00016	<0.00019	<0.00019	<0.00007	0.00014 J	0.00013 J	0.0001 J	<0.00007
Naphthalene	*0.49*	*1.5*	<0.000083	<0.00002	<0.00022	<0.0011	0.00026	0.00222	0.00349	0.0032	0.0033	0.003	0.0026	0.0022
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00038	<0.00038	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00024	<0.00024	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.00019	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
Phenanthrene	*0.73*	*2.2*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.000599	0.00061	0.00035	0.00039	0.00041	0.00043	0.00044
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.00019	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
Pyrene	*0.73*	*2.2*	<0.000019	0.00002 J	<0.000019	0.000084 J	<0.000019	<0.00019	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
Metals														
Arsenic	*0.01*	*0.01*	0.00984	**0.014**	**0.0602**	**0.0715**	**0.0642**							

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-14 01/17/2011	MW-14 07/26/2011	MW-14 07/26/2011 Duplicate	MW-14 02/02/2012	MW-14 02/02/2012 Duplicate	MW-14 07/16/2012	MW-14 07/16/2012 Duplicate	MW-14 02/05/2013	MW-14 07/31/2013	MW-14 01/14/2014	MW-14 07/18/2014	MW-14 01/23/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002
Benzene	*0.005*	*0.005*	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.00008	<0.00008	<0.00008	<0.00008	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.00012	<0.00012	<0.00012	<0.00012	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0005	<0.0011	<0.0011	<0.0011	<0.0011	<0.0005	<0.0005	<0.00011	0.000123 J	<0.00011	<0.00011	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.0005	<0.0013	<0.0013	<0.0013	<0.0013	<0.001	<0.001	<0.00015	<0.00015	<0.00015	<0.00015	<0.001
Toluene	*1*	*1*	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.00015	<0.00015	<0.00015	<0.00015	<0.0002
Vinyl chloride	*0.002*	*0.002*								<0.00011			<0.00011	
Xylenes (total)	*10*	*10*	<0.001	<0.0031	<0.0031	<0.0031	<0.0031	<0.0015	<0.0015	<0.00026	<0.00026	<0.00026	<0.00026	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000104	<0.000107	<0.000106	<0.000109	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00008	<0.00005	<0.00005	0.00005 J	0.0013 J	<0.00005	<0.00005	<0.000292	<0.000301	<0.000298	<0.000307	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00009	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000123	<0.000126	<0.000125	<0.000129	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00007	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.0000755	<0.0000777	<0.0000769	**0.0788**	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.0001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000777	<0.0000769	<0.0000792	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	0.00039	0.00034	0.00031	0.000064 J	0.00017 J	0.0003	0.00044	0.000402 J	0.000304 J	0.000321 J	0.000336 J	0.00019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.000783	<0.000806	<0.000798	<0.000822	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000528	**R**	<0.000538	<0.000554	<0.000047
Acenaphthene	*1.5*	*4.4*	0.00033	0.00032	0.00028	0.00005 J	0.00015 J	0.0003	0.00035	0.0006	0.000549	0.000943	0.000619	0.00019
Acenaphthylene	*1.5*	*4.4*	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000566	<0.0000583	<0.0000577	<0.0000594	<0.000015
Anthracene	*7.3*	*22*	<0.00007	<0.00005	0.000087 J	<0.00005	<0.00005	0.000069 J	<0.00005	0.000277 J	0.000198 J	<0.000179	0.000139 J	0.000067 J
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000777	<0.0000769	<0.0000792	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000777	<0.0000769	<0.0000792	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00009	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000123	<0.000126	<0.000125	<0.000129	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00029	0.00047	0.00065	<0.0001	<0.00013	0.00011 J	0.00011 J	<0.000349	<0.000359	<0.000356	0.000615	<0.000091
Chrysene	*0.91*	*2*	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000777	<0.0000769	<0.0000792	<0.000021
Dibenzofuran	*0.098*	*0.29*	0.0003	0.00031	0.00027	0.00012 J	0.00015 J	0.00032	0.00034	0.000467 J	0.000372 J	0.000443 J	0.000437 J	0.00024
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000104	<0.000179	<0.000106	<0.000109	<0.00002
Fluoranthene	*0.98*	*2.9*	<0.00007	<0.00005	<0.00005	0.00024	0.00031	0.000055 J	<0.00005	0.0000794 J	0.000274 J	0.0000744 J	<0.0000693	0.000028 J
Fluorene	*0.98*	*2.9*	0.000079 J	<0.00005	0.000065 J	<0.00005	<0.00005	0.000076 J	<0.00005	<0.000066	<0.000068	0.00008 J	0.0000901 J	<0.00003
Naphthalene	*0.49*	*1.5*	0.0024	0.0014	0.0012	0.00034 J	0.0014 J	<0.0015	<0.002	0.00211	0.00216 J	<0.00183	0.00143	0.00067
Nitrobenzene	*0.049*	*0.15*	<0.00009	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00008 J	<0.000104	<0.000107	<0.000106	<0.000109	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00009	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000943	<0.0000971	<0.0000962	<0.000099	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000575	<0.000592	<0.000587	<0.000604	<0.000079
Phenanthrene	*0.73*	*2.2*	0.0003	0.00033	0.00032	0.00011 J	0.00014 J	0.00038	0.00039	0.000484	0.000662	<0.000591	0.000506	0.00035
Phenol	*7.3*	*22*	<0.00007	<0.00005	<0.00005	0.00005 J	0.00075 J	<0.00005	<0.00005	<0.0000377	0.000398 J	<0.0000385	<0.0000396	<0.000035
Pyrene	*0.73*	*2.2*	<0.00007	<0.00005	<0.00005	0.00029	0.00029	<0.00005	<0.00005	<0.000104	0.000164 J	<0.000106	<0.000109	<0.000019
Metals														
Arsenic	*0.01*	*0.01*												<0.0004

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-14 03/18/2018	MW-14 05/15/2018	MW-14 01/08/2019	MW-14 07/11/2019	MW-14 01/14/2020	MW-15A 01/30/2008	MW-15A 07/15/2008	MW-15A 02/04/2009	MW-15A 01/18/2010	MW-15A 06/23/2010	MW-15A 01/17/2011	MW-15A 07/13/2011
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.00161 J	<0.00025	0.0018 J	0.0016 J	0.0017 J	0.00074 J	0.0016 J
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047	<0.00047	<0.0005		<0.0005	<0.0005	<0.001
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.00122 J	<0.00025	0.0019 J	0.0015 J	0.0017 J	<0.0005	0.0019 J
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00054	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00041	<0.00041	<0.0005	<0.0005	0.00055 J	<0.0005	<0.001
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.0056 J	<0.00127	0.0039 J	0.0015 J	0.0047 J	<0.001	0.0038 J
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00008	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00004	<0.00013	<0.00004	<0.0003	0.00042 J	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.0002	<0.0002	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.0002	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0004	<0.00041	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	<0.00014	<0.000019	<0.000019	0.00019	<0.000019	0.0127	**0.0995**	0.044	0.033	0.042	0.038	**0.14**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002	<0.00051	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00025	<0.00026	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005
Acenaphthene	*1.5*	*4.4*	0.00027	<0.000027	<0.000027	0.0001	0.000091 J	0.134	0.442	0.17	0.17	0.16	0.27	0.2
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.0003	<0.00031	0.0017	0.0015	0.00097	0.0011	0.00097
Anthracene	*7.3*	*22*	0.000052 J	<0.000014	0.000052 J	0.000089 J	<0.000014	0.00377	0.00432	0.003	0.0036	0.0049	0.0063	0.0053
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00023 J	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002	<0.0002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.0004	<0.00041	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	0.00014 J	<0.000037	<0.000037	<0.000037	<0.0002	<0.0002	0.0026	<0.00073	<0.00084	0.0016	<0.00012
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0002	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005
Dibenzofuran	*0.098*	*0.29*	<0.00025	<0.00002	<0.00002	0.000087 J	<0.00002	0.0239	**0.156**	0.047	0.043	0.048	0.05	0.078
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	0.000022 J	<0.00002	<0.00002	<0.0002	<0.0002	0.00029	0.00011 J	<0.00007	<0.00007	<0.00005
Fluoranthene	*0.98*	*2.9*	0.000025 J	<0.00001	<0.00001	0.000067 J	0.000064 J	0.00178	0.00183	0.0011	0.0015	0.002	0.0023	0.0021
Fluorene	*0.98*	*2.9*	0.000094 J	<0.00003	<0.00003	0.000069 J	0.000057 J	0.0394	0.18	0.059	0.06	0.062	0.076	0.092
Naphthalene	*0.49*	*1.5*	<0.00057	<0.00002	<0.00002	<0.002	<0.00002	0.00684	0.271	0.048	<0.0018	0.036	0.0023	0.087
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.0004	<0.00041	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00025	<0.00026	<0.00009	<0.00009	<0.00009	<0.00009	0.00055
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.0002	<0.0002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005
Phenanthrene	*0.73*	*2.2*	0.00032	<0.000021	<0.000021	0.000059 J	<0.000021	0.0039	0.0229	0.0095	0.0074	0.012	0.019	0.036
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.000035	0.00019 J	<0.000035	<0.0002	<0.0002	<0.00007	<0.00007	0.0002	<0.00007	<0.00005
Pyrene	*0.73*	*2.2*	<0.000019	<0.000019	<0.000019	0.000032 J	0.00006 J	0.00127	0.000664	0.00042	0.00062	0.00076	0.00095	0.00089
Metals														
Arsenic	*0.01*	*0.01*	<0.0004	<0.0004	0.000752 J	0.00133 J	0.00185 J							

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-15A 02/02/2012	MW-15A 07/19/2012	MW-15A 01/30/2013	MW-15A 07/30/2013	MW-15A 01/14/2014	MW-15A 07/17/2014	MW-15A 01/23/2018	MW-15A 03/18/2018	MW-15A 05/15/2018	MW-15A 01/08/2019	MW-15A 07/10/2019	MW-15A 01/14/2020
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.001	<0.0005	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	0.0012 J	0.0016 J	0.0016	0.0013	0.00106	0.00161	<0.0002	0.00051 J	0.0006 J	<0.0002	0.00074 J	0.00034 J
Chlorobenzene	*0.1*	*0.1*	<0.001	<0.0005	<0.00012	0.000121 J	<0.00012	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	0.0024 J	0.0012 J	0.00066 J	0.000799 J	0.000627 J	0.00101	<0.0003	<0.0003	<0.0003	<0.0003	0.00035 J	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.0013	<0.001	<0.00015	<0.00015	<0.00015	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.001	<0.0005	0.000221 J	0.000199 J	0.00034 J	0.000595 J	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	0.0073 J	0.0097 J	0.00417	0.00527	0.00337	0.00854	0.0018	<0.0003	<0.0003	0.0008 J	0.0026	0.00093 J
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	<0.00005	<0.000104	<0.000107	**<0.00529**	<0.000104	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.00036
2,4-Dimethylphenol	*0.49*	*1.5*	0.00059	0.00056	0.002	<0.000301	<0.0149	<0.000292	<0.00004	<0.00004	<0.00004	<0.00004	<0.00024	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	<0.00005	<0.000123	<0.000126	**<0.00625**	<0.000123	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	<0.00006	<0.0000755	<0.0000777	**<0.00385**	<0.0000755	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.00005	<0.0000755	<0.0000777	<0.00385	<0.0000755	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	0.001	0.046	0.00997	**0.124**	0.0475	0.059	0.0076	0.0016	0.0034	0.0098	0.0077	0.018
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.000783	<0.000806	**<0.0399**	<0.000783	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00005	<0.00005	<0.000528	<0.000544	<0.0269	<0.000528	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	0.13	0.13	0.141	0.332	0.3	0.205	0.13	0.099	0.1	0.1	0.11	0.14
Acenaphthylene	*1.5*	*4.4*	0.00071	0.0012	<0.0000566	<0.0000583	<0.00288	<0.0000566	0.002	0.0007	0.00069	<0.000015	0.00045	0.00066
Anthracene	*7.3*	*22*	0.0028	0.0046	0.00313	0.0085	0.0111 J	0.00642	0.0026	0.0024	0.0032	0.0025	0.0026	0.0048
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.0000755	<0.0000777	<0.00385	<0.0000755	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	<0.00005	<0.0000755	<0.0000777	**<0.00385**	<0.0000755	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	<0.00005	<0.000123	<0.000126	**<0.00625**	<0.000123	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0001	<0.0001	<0.000349	<0.000359	**<0.0178**	<0.000349	<0.000037	<0.000037	**0.0093**	<0.000037	<0.000037	<0.000037
Chrysene	*0.91*	*2*	<0.00005	<0.00005	<0.0000755	<0.0000777	<0.00385	<0.0000755	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	0.028	0.046	0.0416	**0.104**	0.0693	0.0572	0.029	0.024	0.018	0.023	0.035	0.036
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00005	<0.00005	<0.000104	0.000187 J	<0.00529	<0.000104	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	0.00094	0.0015	0.000885	0.00361	<0.00337	0.00257	0.002	0.0012	0.0016	0.0012	0.0018	0.0031
Fluorene	*0.98*	*2.9*	0.043	0.063	0.056	0.139	0.114	0.0822	0.041	0.036	0.029	0.038	0.054	0.065
Naphthalene	*0.49*	*1.5*	0.008	0.27	0.0501 J	**0.526**	0.326	0.248	0.0005	<0.00034	<0.00037	<0.00032	<0.0066	0.00022
Nitrobenzene	*0.049*	*0.15*	<0.00005	<0.00005	<0.000104	<0.000107	<0.00529	<0.000104	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.00005	<0.0000943	<0.0000971	<0.00481	<0.0000943	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00005	<0.00005	<0.000575	<0.000592	**<0.0293**	<0.000575	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	0.0056	0.014	0.00792	0.052	0.0375	0.0203	0.0046	0.0054	0.0074	0.009	0.0095	0.025
Phenol	*7.3*	*22*	<0.00005	<0.00005	<0.0000377	<0.0000388	<0.00192	<0.0000377	<0.000035	<0.000035	<0.000035	<0.000035	0.00039	<0.000035
Pyrene	*0.73*	*2.2*	0.00053	0.00084	0.000496	0.00154	<0.00529	0.00101	0.0009	0.00063	0.00078	0.00051	0.00075	0.0013
Metals														
Arsenic	*0.01*	*0.01*							**0.0264**	**0.0137**	**0.019**	**0.027**	**0.0251**	**0.0441**

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
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CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-15B 02/02/2012	MW-15B 07/19/2012	MW-15B 01/30/2013	MW-15B 07/30/2013	MW-15B 01/14/2014	MW-15B 07/17/2014	MW-15B 01/23/2018	MW-15B 03/18/2018	MW-15B 05/15/2018	MW-15B 01/08/2019	MW-15B 07/10/2019	MW-15B 01/14/2020
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.005	<0.0025	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.005	**0.0053 J**	0.0022	0.00484	0.00101	0.00292	<0.0002	<0.0002	0.00071 J	<0.0002	0.0023	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.005	<0.0025	<0.00012	0.000124 J	<0.00012	0.000136 J	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	0.02 J	0.014 J	0.00159	0.00399	0.00019 J	0.00903	<0.0003	<0.0003	0.001	<0.0003	0.0031	<0.0003
Methylene chloride	*0.005*	*0.005*	**<0.0065**	<0.005	<0.00015	<0.00015	<0.00015	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.005	<0.0025	<0.00015	0.000155 J	<0.00015	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.016	<0.0075	0.000356 J	0.00876	0.000876 J	0.00464	<0.0003	<0.0003	<0.0003	<0.0003	0.0025	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	<0.00005	<0.000104	<0.000107	<0.00106	<0.000104	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00043	<0.00005	<0.000292	<0.000301	<0.00298	<0.000292	<0.00004	<0.00004	<0.00004	<0.00004	<0.00016	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	<0.00005	<0.000123	<0.000126	<0.00125	<0.000123	<0.000059	<0.000058	<0.000059	<0.000059	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	<0.00006	<0.0000755	<0.0000777	<0.000769	<0.0000755	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.00005	<0.0000755	<0.0000777	<0.000769	<0.0000755	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	**0.29**	0.023	<0.000744	0.00327	0.00325 J	0.00622	<0.000019	<0.000019	0.00015	<0.000019	0.016	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.000783	<0.000806	**<0.00798**	<0.000783	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00005	<0.00005	<0.000528	<0.000544	<0.00538	<0.000528	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	0.17	0.075	0.0413	0.114	0.134	0.0653	<0.000027	<0.000027	0.012	0.0026	0.029	0.000073 J
Acenaphthylene	*1.5*	*4.4*	0.0011	0.0008	0.000987	<0.0000583	0.00148 J	<0.0000566	0.000059 J	<0.000015	0.00027	0.00015	0.00034	<0.000015
Anthracene	*7.3*	*22*	0.039	0.0071	0.00179	0.00581	0.00665	0.00517	0.00034	0.00016	0.00058	0.00023	0.0016	0.00011
Benzo(a)anthracene	*0.0091*	*0.02*	0.00016 J	0.00017 J	<0.0000755	0.000218 J	0.000868 J	0.00031 J	0.00017	<0.00005	0.00011	<0.000051	0.00016	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	<0.00005	<0.0000755	<0.0000777	**<0.000769**	<0.0000755	0.00007 J	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	<0.00005	<0.000123	<0.000126	**<0.00125**	<0.000123	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0001	<0.00018	<0.000349	<0.000359	<0.00356	0.000548	<0.00007	<0.000037	0.0001 J	<0.000037	<0.000037	0.000055 J
Chrysene	*0.91*	*2*	0.00019 J	0.00013 J	<0.0000755	0.000167 J	<0.000769	0.000228 J	0.00014	<0.000021	0.000098 J	<0.000021	0.00013	<0.000021
Dibenzofuran	*0.098*	*0.29*	**0.15**	0.052	0.0127	0.0589	0.0509	0.0272	0.0005	<0.00002	0.0025	0.00014	0.013	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00005	<0.00005	<0.000104	0.000187 J	<0.00106	<0.000104	<0.00002	<0.00002	0.000042 J	0.000022 J	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	0.012	0.0062	0.00101	0.00615	0.0131	0.00736	0.0027	<0.00001	0.0031	0.00045	0.0042	0.00011
Fluorene	*0.98*	*2.9*	0.084	0.036	0.011	0.0459	0.0443	0.0231	0.00017	<0.00003	0.0028	0.000055 J	0.01	0.000062 J
Naphthalene	*0.49*	*1.5*	**2.5**	**0.82**	0.0569 J	**0.943**	0.248	0.452	<0.00002	<0.00002	0.02	<0.00002	0.33	<0.00002
Nitrobenzene	*0.049*	*0.15*	<0.00005	<0.00005	<0.000104	<0.000107	<0.00106	<0.000104	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.00005	<0.0000943	<0.0000971	<0.000962	<0.0000943	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00005	<0.00005	<0.000575	<0.000592	**<0.00587**	<0.000575	<0.00008	<0.000079	<0.00008	<0.00008	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	0.08	0.052	0.00199	0.0376	0.0257	0.0204	0.00033	<0.000021	0.00016	<0.000021	0.0065	0.00005 J
Phenol	*7.3*	*22*	<0.00012	<0.00005	<0.0000377	<0.0000388	0.00141 J	0.00112	<0.000035	<0.000035	<0.000035	<0.000035	<0.00019	<0.000035
Pyrene	*0.73*	*2.2*	0.005	0.0031	0.000513	0.00291	0.00569	0.00406	0.0016	<0.000019	0.0017	0.00027	0.0018	0.00006 J
Metals														
Arsenic	*0.01*	*0.01*							0.00895	0.00329	**0.0111**	0.00244	**0.0133**	0.00343

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-15C 01/30/2008	MW-15C 07/15/2008	MW-15C 02/04/2009	MW-15C 01/18/2010	MW-15C 06/23/2010	MW-15C 01/17/2011	MW-15C 07/13/2011	MW-15C 02/02/2012	MW-15C 07/19/2012	MW-15C 01/30/2013	MW-15C 07/30/2013	MW-15C 01/14/2014
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00052	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.00014
Benzene	*0.005*	*0.005*	0.00109 J	<0.00025	0.00096 J	0.0012 J	0.001 J	0.00096 J	<0.001	<0.001	<0.0005	0.000951 J	0.000831 J	0.000863 J
Chlorobenzene	*0.1*	*0.1*	<0.00047	<0.00047	<0.0005		<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00012
Ethylbenzene	*0.7*	*0.7*	0.00135 J	<0.00025	0.00068 J	0.00058 J	<0.0005	<0.0005	<0.0011	0.0017 J	<0.0005	0.000408 J	0.000203 J	0.000275 J
Methylene chloride	*0.005*	*0.005*	<0.00054	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00015
Toluene	*1*	*1*	<0.00041	<0.00041	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	0.000323 J	0.000263 J	0.000305 J
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.00127	<0.00127	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	0.000604 J	0.000839 J	0.000581 J
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00008	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	**<0.0104**	<0.000107	<0.00106
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00029	<0.00032	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**113**	<0.000301	<0.00298
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.0002	<0.00021	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	**<0.0123**	<0.000126	<0.00125
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0002	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	**<0.00755**	<0.0000777	<0.000769
2-Chloronaphthalene	*2*	*5.8*	<0.00039	<0.00042	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00755	<0.0000777	<0.000769
2-Methylnaphthalene	*0.098*	*0.29*	<0.00039	<0.00042	0.000084 J	<0.00007	<0.00007	<0.00007	<0.00005	0.000099 J	0.00022	**0.35**	<0.000068	<0.000673
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.0002	<0.00053	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	**<0.0783**	<0.000806	**<0.00798**
4-Nitrophenol	*0.049*	*0.15*	<0.00024	<0.00026	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	**<0.0528**	<0.000544	<0.00538
Acenaphthene	*1.5*	*4.4*	0.0293	0.103	0.034	0.0097	0.013	0.032	0.016	0.041	0.042	0.13	0.0574	0.0912
Acenaphthylene	*1.5*	*4.4*	<0.00029	0.000651	0.00052	0.00041	0.00062	0.0011	0.0012	0.0013	0.002	<0.00566	0.00268	<0.000577
Anthracene	*7.3*	*22*	<0.0002	0.000731	0.00078	0.00031	<0.00007	<0.00007	<0.00005	0.00021	0.00045	0.0191 J	0.0000945 J	<0.000481
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0002	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00755	<0.0000777	<0.000769
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0002	**<0.00021**	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**<0.00755**	<0.0000777	**<0.000769**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00039	<0.00042	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	**<0.0123**	<0.000126	**<0.00125**
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00044 J	<0.00021	<0.0002	<0.00065	<0.00059	0.00044	<0.00057	<0.0001	<0.00012	**<0.0349**	<0.000359	<0.00356
Chrysene	*0.91*	*2*	<0.0002	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00755	<0.0000777	<0.000769
Dibenzofuran	*0.098*	*0.29*	0.0336	0.0904	0.034	0.0075	0.005	0.018	0.0046	0.027	0.021	**0.116**	0.0141	0.0317
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.0002	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.000059 J	<0.0104	<0.000107	<0.00106
Fluoranthene	*0.98*	*2.9*	0.000607	0.00103	0.0006	0.00029	0.0002 J	0.0003	0.00031	0.0016	0.00079	<0.0066	0.000634	0.00158 J
Fluorene	*0.98*	*2.9*	0.00328	0.00278	0.0027	0.0011	0.00071	0.0017	0.00074	0.0025	0.0014	0.0769	0.00159	0.00224 J
Naphthalene	*0.49*	*1.5*	0.00137	0.00195	0.0016	<0.00057	<0.00094	0.00091	<0.00046	0.0011	0.0018	**89.7**	<0.00122	<0.00182
Nitrobenzene	*0.049*	*0.15*	<0.00039	<0.00042	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0104	<0.000107	<0.00106
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00024	<0.00026	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00943	<0.0000971	<0.000962
Pentachlorophenol	*0.001*	*0.001*	<0.0002	<0.00021	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**<0.0575**	<0.000592	**<0.00587**
Phenanthrene	*0.73*	*2.2*	<0.0002	0.00028 J	<0.00007	0.00014 J	<0.00007	<0.00007	0.00019 J	0.0015	0.00038	0.0868	0.000354 J	<0.000577
Phenol	*7.3*	*22*	<0.0002	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	**61.8**	<0.0000388	<0.000385
Pyrene	*0.73*	*2.2*	0.000542	0.00052	0.00027	0.00012 J	0.00011 J	0.00015 J	0.00018 J	0.00093	0.00046	<0.0104	0.00037 J	<0.00106
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-15C 07/17/2014	MW-15C 01/23/2018	MW-15C 03/18/2018	MW-15C 05/15/2018	MW-15C 01/08/2019	MW-15C 07/10/2019	MW-15C 01/14/2020	MW-16 01/31/2008	MW-16 07/15/2008	MW-16 02/05/2009	MW-16 01/18/2010	MW-16 06/23/2010
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052	<0.00052	<0.0025	<0.0025	<0.0025
Benzene	*0.005*	*0.005*	0.000781 J	0.00063 J	0.00053 J	0.00052 J	0.00058 J	0.0005 J	0.00059 J	**0.0383**	**0.11**	**0.048**	**0.031**	**0.058**
Chlorobenzene	*0.1*	*0.1*	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047	<0.00047	<0.0025		<0.0025
Ethylbenzene	*0.7*	*0.7*	0.000219 J	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.037	0.084	0.034	0.021 J	0.032
Methylene chloride	*0.005*	*0.005*	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00054	<0.00054	<0.0025	<0.0025	**<0.0062**
Toluene	*1*	*1*	0.00019 J	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.00619	0.0382	0.0025 J	0.0034 J	0.01 J
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	0.000392 J	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.052	0.121	0.036 J	0.027 J	0.04 J
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000104	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00008	<0.0004	<0.0001	<0.0001	<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*	<0.000292	<0.00004	<0.00004	<0.00004	<0.00004	0.0052	<0.00004	<0.00029	<0.0016	0.0039	0.0025	0.0054
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000123	<0.000058	<0.000058	<0.000059	<0.000058	<0.000058	<0.000058	<0.00019	<0.0011	<0.00009	<0.00009	<0.00009
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0000755	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.00019	<0.0011	<0.00007	<0.00007	<0.00007
2-Chloronaphthalene	*2*	*5.8*	<0.0000755	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00038	<0.0021	<0.00012	<0.0001	<0.0001
2-Methylnaphthalene	*0.098*	*0.29*	<0.000066	<0.000019	<0.000019	<0.000019	<0.000019	<0.00066	<0.000019	0.0747	**0.175**	**0.13**	0.079	0.04
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.000783	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019	**<0.0026**	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000528	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00024	<0.0013	<0.00007	<0.00007	<0.00007
Acenaphthene	*1.5*	*4.4*	0.0455	0.027	0.021	0.02	0.02	0.017	0.016	0.215	0.939	0.24	0.21	0.18
Acenaphthylene	*1.5*	*4.4*	0.00342	0.0027	0.002	0.0022	0.0014	0.0015	0.00089	<0.00029	0.0067	0.0044	0.0041	0.0031
Anthracene	*7.3*	*22*	0.000315 J	0.00047	0.000095 J	0.000067 J	0.00031	0.00064	0.00057	0.0151	0.0321	0.011	0.0084	0.0076
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0000755	<0.00005	<0.00005	<0.000051	<0.00005	<0.00005	<0.00005	<0.00019	<0.0011	0.00014 J	0.00011 J	<0.00007
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0000755	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019	**<0.0011**	<0.00008	<0.00008	<0.00008
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.000123	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00038	**<0.0021**	<0.00009	<0.00009	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.000526	<0.000067	<0.000037	0.000072 J	<0.000037	<0.000037	<0.000037	<0.00019	<0.0011	0.0005	<0.0012	<0.0014
Chrysene	*0.91*	*2*	<0.0000755	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.00036 J	<0.0011	0.00014 J	0.000088 J	<0.00007
Dibenzofuran	*0.098*	*0.29*	0.0102	0.0081	0.0029	0.0046	0.0053	0.0039	0.0045	**0.112**	**0.253**	**0.14**	**0.12**	0.091
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.000104	<0.00002	<0.00002	0.000037 J	<0.00002	<0.00002	<0.00002	<0.00019	<0.0011	0.00025	<0.00007	<0.00007
Fluoranthene	*0.98*	*2.9*	0.000763	0.00094	0.00054	0.00074	0.00075	0.00086	0.00066	0.00769	0.0142	0.0064	0.0037	0.0049
Fluorene	*0.98*	*2.9*	0.00135	0.001	0.00045	0.00064	0.00056	0.00097	0.00051	0.114	0.222	0.088	0.096	0.086
Naphthalene	*0.49*	*1.5*	<0.000748	0.00042	<0.00031	<0.00039	<0.00032	0.019	0.00024	**1.9**	**18.9**	**4.1**	**1.9**	**1.4**
Nitrobenzene	*0.049*	*0.15*	<0.000104	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00038	<0.0021	<0.00009	<0.00009	<0.00009
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.0000943	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00024	<0.0013	<0.00009	<0.00009	<0.00009
Pentachlorophenol	*0.001*	*0.001*	<0.000575	<0.000079	<0.000079	<0.00008	<0.000079	<0.000079	<0.000079	<0.00019	**<0.0011**	<0.00008	<0.00008	<0.00008
Phenanthrene	*0.73*	*2.2*	<0.0000566	<0.000021	0.00019	0.00041	<0.000021	<0.00039	0.00008 J	0.0421	0.0743	0.04	0.038	0.042
Phenol	*7.3*	*22*	<0.0000377	<0.000035	<0.000035	<0.000035	<0.000035	<0.00026	<0.000035	<0.00019	0.0047	0.00022	0.00013 J	<0.00007
Pyrene	*0.73*	*2.2*	0.00043 J	0.00049	0.00035	0.00043	0.00041	0.00043	0.00038	0.00615	0.0114	0.004	0.0027	0.0025
Metals														
Arsenic	*0.01*	*0.01*		0.000738 J	0.000598 J	0.000777 J	0.000629 J	0.000889 J	0.000773 J					

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-16 01/18/2011	MW-16 07/14/2011	MW-16 02/01/2012	MW-16 07/16/2012	MW-16 01/30/2013	MW-17 01/31/2008	MW-17 07/15/2008	MW-17 02/04/2009	MW-17 01/18/2010	MW-17 06/23/2010	MW-17 01/17/2011	MW-17 07/13/2011
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0025	**<0.01**	**<0.01**	<0.0005	<0.00014	<0.00052	**<0.01**	<0.0005	<0.0025	<0.0025	<0.0025	<0.001
Benzene	*0.005*	*0.005*	**0.025 J**	**0.068**	**0.025 J**	**0.056**	**0.0376**	**0.545**	**0.448**	**0.65**	**0.59**	**0.65**	**0.31**	**0.45**
Chlorobenzene	*0.1*	*0.1*	<0.0025	<0.01	<0.01	<0.0005	0.00051 J	<0.00047	<0.0094	<0.0005		<0.0025	<0.0025	<0.001
Ethylbenzene	*0.7*	*0.7*	0.023 J	0.038 J	0.021 J	0.027	0.0211	0.193	0.142	0.26	0.26	0.2	0.21	0.21
Methylene chloride	*0.005*	*0.005*	<0.0025	**<0.013**	**<0.013**	<0.001	<0.00015	<0.00054	**<0.011**	<0.0005	<0.0025	**<0.0056**	<0.0025	<0.0013
Toluene	*1*	*1*	<0.0025	<0.01	<0.01	0.007	0.00095 J	0.909	0.728	**1.1**	1	0.88	0.97	0.85
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	0.025 J	<0.031	<0.031	0.034	0.0348	0.582	0.44	0.55	0.72	0.61	0.64	0.54
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0001	<0.00005	<0.00005	<0.00005	<0.000104	**<0.002**	**<0.008**	<0.0001	0.001 J	<0.001	<0.0001	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	0.0022 J	0.012	0.00077	0.0054	<0.000292	**11.7**	**13.4**	**2.6**	**3.7**	**13**	**3.9 J**	**2.7**
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00009	<0.00005	<0.00005	<0.00005	<0.000123	**<0.0038**	**<0.021**	<0.00009	0.0009 J	<0.0009	<0.00009	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000755	**<0.0038**	**<0.021**	<0.00007	0.0007 J	<0.0007	<0.00007	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0076	<0.042	<0.00012	0.001 J	<0.001	<0.0001	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	0.038	0.082	0.034	0.045	0.0467 J	**0.42**	**0.582**	**0.27**	**0.56 J**	**0.39**	**0.97**	**0.75**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.00008	<0.000783	**<0.0038**	**<0.053**	<0.00008	0.0008 J	<0.0008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.00007	<0.00005	<0.00005	<0.00005	<0.000528	<0.0048	<0.026	<0.00007	0.0007 J	<0.0007	<0.00007	<0.00005
Acenaphthene	*1.5*	*4.4*	0.21	0.23	0.21	0.28	0.281	0.137	0.241	0.094	0.17 J	0.071	0.52	0.22
Acenaphthylene	*1.5*	*4.4*	0.0035	0.0032	0.0021	0.0028	<0.0000566	<0.0057	<0.032	0.0041	0.0067 J	0.003	0.008	0.0069
Anthracene	*7.3*	*22*	0.012	0.017	0.0034	0.017	0.0182 J	0.0115	0.022	0.0099	0.013 J	0.0075	0.12	0.014
Benzo(a)anthracene	*0.0091*	*0.02*	0.00017 J	0.00022	0.000059 J	0.00013 J	0.000339 J	<0.0038	**<0.021**	0.0004	0.0007 J	<0.0007	**0.033**	0.00047
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000755	**<0.0038**	**<0.021**	0.00014 J	**0.0008 J**	**<0.0008**	**0.0097**	**0.00027**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00009	<0.00005	<0.00005	<0.00005	<0.000123	**<0.0076**	**<0.042**	<0.00009	**0.0009 J**	**<0.0009**	<0.00009	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0002	<0.00025	<0.0002	<0.0001	<0.000349	<0.0038	**<0.021**	<0.0002	0.002 J	<0.002	0.0022	<0.00044
Chrysene	*0.91*	*2*	0.00011 J	0.00019 J	0.000053 J	0.0001 J	0.000225 J	<0.0038	<0.021	0.00032	0.0007 J	<0.0007	0.025	0.00047
Dibenzofuran	*0.098*	*0.29*	**0.13**	**0.13**	0.098	**0.17**	**0.158**	**0.115**	**0.195**	0.079	**0.15 J**	0.065	**0.47**	**0.19**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00007	0.000099 J	<0.00005	<0.00005	<0.000104	<0.0038	<0.021	<0.00007	0.0007 J	<0.0007	<0.00007	<0.00005
Fluoranthene	*0.98*	*2.9*	0.0059	0.006	0.0021	0.0059	0.00836	0.0044	<0.021	0.0035	0.0037 J	0.0022	0.17	0.0039
Fluorene	*0.98*	*2.9*	0.12	0.14	0.085	0.15	0.147	0.0701	0.109	0.047	0.076 J	0.039	0.42	0.12
Naphthalene	*0.49*	*1.5*	**1.2**	**1.8**	**1.8**	**2.1**	**1.81**	**23.6**	**25.5**	**9.7**	**16**	**15**	**16**	**19**
Nitrobenzene	*0.049*	*0.15*	<0.00009	<0.00005	<0.00005	<0.00005	<0.000104	<0.0076	<0.042	<0.00009	0.0009 J	<0.0009	<0.00009	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000943	<0.0048	<0.026	<0.00009	0.0009 J	<0.0009	<0.00009	<0.00005
Pentachlorophenol	*0.001*	*0.001*	<0.00008	0.000061 J	<0.00005	<0.00005	<0.000575	**<0.0038**	**<0.021**	<0.00008	0.0008 J	<0.0008	<0.00008	<0.00005
Phenanthrene	*0.73*	*2.2*	0.045	0.058	0.042	0.07	0.0614	0.0502	0.099	0.038	0.06 J	0.033	**0.91**	0.078
Phenol	*7.3*	*22*	0.000074 J	0.000067 J	0.00015 J	0.000088 J	<0.0000377	**20.2**	**16.5**	5.5	**7.7**	**19**	3.6	3.1
Pyrene	*0.73*	*2.2*	0.0034	0.005	0.0017	0.0034	0.0059	0.0076	<0.021	0.002	0.0021 J	0.0012 J	0.12	0.0019
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-17 02/01/2012	MW-17 07/12/2012	MW-17 02/14/2013	MW-17 02/14/2013 Duplicate	MW-17 04/01/2013	MW-17 04/01/2013 Duplicate	MW-17 07/30/2013	MW-17 01/13/2014	MW-17 07/17/2014	MW-17 01/30/2018	MW-17 03/18/2018	MW-17 05/16/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.005	<0.005			**<0.007**	**<0.007**	**<0.014**	**<0.007**	<0.0028	<0.0002	<0.0002	<0.002
Benzene	*0.005*	*0.005*	**0.24**	**0.46**			**0.435**	**0.41**	**0.174**	**0.324**	**0.576**	**0.47**	**0.55**	**0.61**
Chlorobenzene	*0.1*	*0.1*	<0.005	<0.005			<0.006	<0.006	<0.012	<0.006	<0.0024	<0.0003	<0.0003	<0.003
Ethylbenzene	*0.7*	*0.7*	0.23	0.21			0.217	0.22	0.279	0.251	0.209	0.26	0.19	0.23
Methylene chloride	*0.005*	*0.005*	**<0.0065**	**<0.01**			**<0.0075**	**<0.0075**	**0.115**	**<0.0075**	**0.0187 J**	<0.001	<0.001	**<0.01**
Toluene	*1*	*1*	0.74	0.81			0.878	0.861	0.68	0.931	0.93	0.97	0.83	0.82
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	0.63	0.69			0.702	0.672	0.698	0.724	0.641	0.81	0.47	0.77
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0005	<0.00005	**<0.038**	**<0.038**	**<0.0423**	**<0.0423**	**<0.00534**	**<0.0529**	**<0.00519**	<0.00021	<0.00021	<0.00021
2,4-Dimethylphenol	*0.49*	*1.5*	**3**	**4**	**7.93**	**7.03**	**11.3**	**10.4**	**3.19**	**6.75**	**13.9**	**4.3**	**7.7**	**4.2**
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.0005	<0.00005	**<0.032**	**<0.032**	**<0.05**	**<0.05**	**<0.00631**	**<0.0625**	**<0.00613**	<0.00058	<0.00058	<0.00059
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0006	<0.00006	**<0.029**	**<0.029**	**<0.0308**	**<0.0308**	**<0.00388**	**<0.0385**	**<0.00377**	<0.00042	<0.00042	<0.00042
2-Chloronaphthalene	*2*	*5.8*	<0.0005	<0.00005	<0.019	<0.019	<0.0308	<0.0308	<0.00388	<0.0385	<0.00377	<0.00021	<0.00021	<0.00021
2-Methylnaphthalene	*0.098*	*0.29*	**0.29**	**0.51**	**0.443**	**0.421**	**1.04**	**1.24**	**1.04**	**0.857**	**0.636**	**0.3**	**0.38**	**0.34**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.0008	<0.00008	**<0.016**	**<0.016**	**<0.319**	**<0.319**	**<0.0403**	**<0.399**	**<0.0392**	<0.0002	<0.0002	<0.0002
4-Nitrophenol	*0.049*	*0.15*	<0.0005	<0.00005	<0.033	<0.033	**<0.215**	**<0.215**	<0.0272	**<0.269**	<0.0264	<0.00047	<0.00047	0.0076 J
Acenaphthene	*1.5*	*4.4*	0.13	0.14	0.159	0.155	0.36	0.369	0.353	0.315	0.195	0.084	0.13	0.11
Acenaphthylene	*1.5*	*4.4*	0.0056	0.005	<0.016	<0.016	<0.0231	<0.0231	0.0147 J	<0.0288	<0.00283	0.0029	<0.00015	0.0041
Anthracene	*7.3*	*22*	0.0096	0.014	<0.044	<0.044	0.0192 J	0.0822 J	0.0233 J	0.0278 J	0.0202 J	0.0065	0.011	0.0094
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0005	0.00018 J	**<0.025**	**<0.025**	**<0.0308**	**<0.0308**	<0.00388	**<0.0385**	<0.00377	<0.0005	<0.0005	<0.00051
Benzo(a)pyrene	*0.0002*	*0.0002*	**<0.0005**	<0.00005	**<0.013**	**<0.013**	**<0.0308**	**<0.0308**	**<0.00388**	**<0.0385**	**<0.00377**	<0.0002	<0.0002	<0.0002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.0005	<0.00005	**<0.019**	**<0.019**	**<0.05**	**<0.05**	**<0.00631**	**<0.0625**	**<0.00613**	<0.0003	<0.0003	<0.0003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.001	0.00027	**<0.059**	**<0.059**	**<0.142**	**<0.142**	**<0.018**	**<0.178**	**<0.0175**	<0.00037	<0.00037	<0.00037
Chrysene	*0.91*	*2*	<0.0005	0.00011 J	<0.024	<0.024	<0.0308	<0.0308	<0.00388	<0.0385	<0.00377	<0.00021	<0.00021	<0.00021
Dibenzofuran	*0.098*	*0.29*	0.093	**0.13**	**0.133 J**	**0.128 J**	**0.275**	**0.234**	**0.253**	**0.211 J**	**0.148**	0.071	0.092	0.082
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.0005	<0.00005	<0.187	<0.187	<0.0423	<0.0423	<0.00534	<0.0529	<0.00519	<0.0002	<0.0002	<0.0002
Fluoranthene	*0.98*	*2.9*	0.0026	0.0034	<0.031	<0.031	<0.0269	<0.0269	0.00667 J	<0.0337	0.00429 J	0.0022	0.003	0.0022
Fluorene	*0.98*	*2.9*	0.059	0.082	0.0672 J	0.0489 J	0.146 J	0.0718 J	0.165	0.16 J	0.0943	0.04	0.057	0.051
Naphthalene	*0.49*	*1.5*	**10**	**14**	**15.3**	**13.8**	**25.2**	**25.6**	**25.8**	**21.3**	**15.4**	**7.4**	**12**	**8.1**
Nitrobenzene	*0.049*	*0.15*	<0.0005	<0.00005	<0.02	<0.02	<0.0423	<0.0423	<0.00534	**<0.0529**	<0.00519	<0.00024	<0.00024	<0.00024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.0005	<0.00005	<0.033	<0.033	<0.0385	<0.0385	<0.00485	<0.0481	<0.00472	<0.00025	<0.00025	<0.00025
Pentachlorophenol	*0.001*	*0.001*	<0.0005	<0.00005	**<0.096**	**<0.096**	**<0.235**	**<0.235**	**<0.0296**	**<0.293**	**<0.0288**	<0.00079	<0.00079	<0.0008
Phenanthrene	*0.73*	*2.2*	0.042	0.063	0.0564 J	0.0534 J	0.124 J	0.0231 J	0.123	0.0993 J	0.0725	0.034	0.044	0.044
Phenol	*7.3*	*22*	3.7	6.1	**20.7**	**16.2**	**22.2**	**25.1**	1.54	6.46	**18.1**	7.1	**18**	6.5
Pyrene	*0.73*	*2.2*	0.0018 J	0.0018	<0.033	<0.033	<0.0423	<0.0423	<0.00534	<0.0529	<0.00519	0.0011	0.0015	0.0014
Metals														
Arsenic	*0.01*	*0.01*										**0.0444**	**0.0419**	**0.0415**

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
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CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-17 01/09/2019	MW-17 07/10/2019	MW-17 01/14/2020	MW-17C 01/30/2008	MW-17C 01/30/2008 Duplicate	MW-17C 07/15/2008	MW-17C 02/04/2009	MW-17C 01/18/2010	MW-17C 06/23/2010	MW-17C 01/17/2011	MW-17C 07/13/2011	MW-17C 02/01/2012
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.002	<0.0002	<0.0002	<0.00052	<0.00052	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.005
Benzene	*0.005*	*0.005*	**0.35**	**0.54**	<0.0002	**0.0565**	**0.0517**	**0.0426**	**0.03**	**0.0083**	**0.024**	**0.023**	**0.01**	**0.016 J**
Chlorobenzene	*0.1*	*0.1*	<0.003	<0.0003	<0.0003	<0.00047	<0.00047	<0.00047	<0.0005		<0.0005	<0.0005	<0.001	<0.005
Ethylbenzene	*0.7*	*0.7*	0.21	0.23	<0.0003	0.292	0.312	0.226	0.17	0.053	0.2	0.21	0.021	0.19
Methylene chloride	*0.005*	*0.005*	**<0.01**	<0.001	<0.001	<0.00054	<0.00054	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	**<0.0065**
Toluene	*1*	*1*	0.68	0.83	<0.0002	0.0137	0.014	0.0102	0.008	0.0042 J	0.0071	0.0081	0.0046 J	0.0067 J
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	0.66	0.78	<0.0003	0.485	0.485	0.353	0.25	0.046	0.33	0.42 J	0.029	0.22
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00021	<0.00021	<0.000021	<0.0008	**<0.04**	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	**1.9**	**5.9**	<0.00004	<0.0029	<0.14	0.00054 J	0.0028	0.044	0.0018	0.0035 J	**1.5**	<0.00005
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00058	<0.00058	<0.000058	**<0.0019**	**<0.096**	<0.00021	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00042	<0.00042	<0.000042	**<0.0019**	**<0.096**	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.00021	<0.00021	<0.000021	<0.0038	<0.19	<0.00042	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	**0.23**	**0.39**	<0.000019	**1.09**	**0.418**	0.0954	0.085	0.063	**0.099**	0.075	0.0073	0.062
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.0002	<0.0002	<0.00002	<0.0019	**<0.096**	<0.00053	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.00047	<0.00047	<0.000047	<0.0024	**<0.12**	<0.00026	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Acenaphthene	*1.5*	*4.4*	0.091	0.16	<0.000027	0.726	0.339	0.227	0.14	0.13	0.14	0.18	0.021	0.097
Acenaphthylene	*1.5*	*4.4*	0.0029	0.0042	<0.000015	<0.0029	<0.14	0.00251	0.0012	0.0013	0.0016	0.0017	0.00028	0.0011
Anthracene	*7.3*	*22*	0.0057	0.0092	<0.000014	0.178	<0.096	0.00985	0.0084	0.0057	0.0071	0.015	0.0016	0.0048
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0005	<0.0005	<0.00005	**0.0466**	**<0.096**	<0.00021	0.00018 J	0.00013 J	0.00016 J	0.0012	0.00017 J	0.000091 J
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0002	<0.0002	<0.00002	**0.0128**	**<0.096**	**<0.00021**	<0.00008	<0.00008	<0.00008	**0.00027**	<0.00005	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.0003	<0.0003	<0.00003	**<0.0038**	**<0.19**	<0.00042	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00037	<0.00037	<0.000037	<0.0019	**<0.096**	0.00021 J	<0.0002	<0.0039	<0.0018	0.0015	**<0.012**	<0.001
Chrysene	*0.91*	*2*	<0.00021	<0.00021	<0.000021	0.0428	<0.096	<0.00021	0.00017 J	0.00012 J	0.00017 J	0.001	<0.00005	0.00013 J
Dibenzofuran	*0.098*	*0.29*	0.072	**0.12**	<0.00002	**0.61**	**0.291**	**0.19**	**0.13**	**0.11**	**0.13**	**0.19**	0.021	0.096
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.0002	<0.0002	<0.00002	<0.0019	<0.096	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Fluoranthene	*0.98*	*2.9*	0.0015	0.0039	0.00011	0.322	<0.096	0.00845	0.007	0.0044	0.005	0.019	0.0018	0.002
Fluorene	*0.98*	*2.9*	0.043	0.06	<0.00003	0.422	0.167	0.0799	0.062	0.055	0.069	0.083	0.009	0.054
Naphthalene	*0.49*	*1.5*	**5.5**	**8.9**	<0.00002	**9.8**	**6.35**	**5.84**	**3.4**	**2.2**	**3.4**	**4.1**	0.37	**3.3**
Nitrobenzene	*0.049*	*0.15*	<0.00024	<0.00024	<0.000024	<0.0038	**<0.19**	<0.00042	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00025	<0.00025	<0.000025	<0.0024	<0.12	<0.00026	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
Pentachlorophenol	*0.001*	*0.001*	<0.00079	<0.00079	<0.000079	**<0.0019**	**<0.096**	<0.00021	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005
Phenanthrene	*0.73*	*2.2*	0.028	0.045	<0.000021	**1.09**	0.316	0.104	0.078	0.058	0.08	0.076	0.014	0.0081
Phenol	*7.3*	*22*	2.2	**9.9**	<0.000035	<0.0019	<0.096	0.0349	0.0013	0.14	<0.00007	0.00078	0.025	0.00014 J
Pyrene	*0.73*	*2.2*	0.00081 J	0.0018	0.000066 J	0.19	<0.096	0.00445	0.0033	0.0028	0.0026	0.009	0.00098	0.0025
Metals														
Arsenic	*0.01*	*0.01*	**0.046**	**0.046**	0.00154 J									

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-17C 07/12/2012	MW-17C 02/14/2013	MW-17C 04/01/2013	MW-17C 07/30/2013	MW-17C 01/13/2014	MW-17C 07/17/2014	MW-17C 01/31/2018	MW-17C 03/18/2018	MW-17C 05/16/2018	MW-17C 01/10/2019	MW-17C 07/10/2019	MW-17C 01/15/2020
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005		<0.0014	<0.0014	<0.0007	<0.00014	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	**0.013**		**0.0114**	**0.0162**	**0.00939**	**0.0132**	**0.014**	**0.0067**	**0.0099**	**0.012**	**0.0097**	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0005		<0.0012	<0.0012	<0.0006	<0.00012	<0.0003	<0.0003	<0.0015	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	0.17		0.161	0.225	0.123	0.0374	0.042	0.16	0.12	0.027	0.027	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.001		0.00368 J	**0.00786 J**	<0.00075	<0.00015	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001
Toluene	*1*	*1*	0.0057		0.0049 J	0.00743 J	0.00471 J	0.0073	0.0097	0.0038	0.0069	0.0087	0.0073	<0.0002
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	0.21		0.217	0.27	0.141	0.0482	0.071	0.1	0.094	0.05	0.039	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	**<0.038**	<0.000106	**<0.0107**	**<0.0106**	**<0.00519**	<0.00021	<0.00021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	0.039	0.0418 J	<0.000298	<0.0301	<0.0298	**7.09**	**0.59**	0.03	0.08	0.47	0.21	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	**<0.032**	<0.000125	**<0.0126**	**<0.0125**	**<0.00613**	<0.00058	<0.00058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	**<0.029**	<0.0000769	**<0.00777**	**<0.00769**	**<0.00377**	<0.00042	<0.00042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.019	<0.0000769	<0.00777	<0.00769	<0.00377	<0.00021	<0.00021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	**0.1**	**0.173**	**0.176**	**0.151**	**0.144**	0.0203 J	0.094	**0.12**	**1.1**	0.025	0.026	0.000073 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	**<0.016**	<0.000798	**<0.0806**	**<0.0798**	**<0.0392**	<0.0002	<0.0002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00005	<0.033	0.00502	**<0.0544**	**<0.0538**	<0.0264	0.0035 J	<0.00047	0.0017	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	0.14	0.194	0.216	0.239	0.218	0.0299	0.043	0.15	1.4	0.031	0.035	0.00023
Acenaphthylene	*1.5*	*4.4*	0.0018	<0.016	<0.0000577	<0.00583	<0.00577	<0.00283	0.00076 J	0.002	0.0017	0.00047	0.00037	<0.000015
Anthracene	*7.3*	*22*	0.008	<0.044	0.011	0.0144 J	0.0156 J	<0.00236	0.0017	0.01	0.0088	0.0012	0.0013	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*	0.00022	**<0.025**	0.00016 J	<0.00777	<0.00769	<0.00377	<0.0005	<0.0005	0.00011	0.000062 J	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	**<0.013**	<0.0000769	**<0.00777**	**<0.00769**	**<0.00377**	<0.0002	<0.0002	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	**<0.019**	<0.000125	**<0.0126**	**<0.0125**	**<0.00613**	<0.0003	<0.0003	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.0048	**<0.059**	0.00148	**<0.0359**	**0.0491 J**	**<0.0175**	0.005	0.0053	0.0018	0.00062	0.00056	<0.000037
Chrysene	*0.91*	*2*	0.00016 J	<0.024	0.000167 J	<0.00777	<0.00769	<0.00377	<0.00021	<0.00021	0.00011	0.000059 J	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	**0.14**	**0.16**	**0.185**	**0.199**	**0.184**	0.0255	0.039	**0.13**	**0.099**	0.027	0.027	0.000065 J
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00005	<0.187	<0.000106	<0.0107	<0.0106	<0.00519	<0.0002	<0.0002	0.000058 J	<0.00002	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	0.0048	<0.031	0.00784	0.00795 J	0.00707 J	<0.0033	0.00073 J	0.0056	0.0044	0.00078	0.0009	0.00034
Fluorene	*0.98*	*2.9*	0.066	0.0785 J	0.0989	0.103	0.0907	0.0118 J	0.019	0.066	0.06	0.012	0.014	0.000061 J
Naphthalene	*0.49*	*1.5*	**4**	**0.988**	**5.9**	**4.4**	**6.24**	**0.772**	**1.8**	**4.8**	**53**	**1.1**	**0.97**	0.00016
Nitrobenzene	*0.049*	*0.15*	<0.00005	<0.02	<0.000106	<0.0107	<0.0106	<0.00519	<0.00024	<0.00024	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.033	<0.0000962	<0.00971	<0.00962	<0.00472	<0.00025	<0.00025	<0.000025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00005	**<0.096**	<0.000587	**<0.0592**	**<0.0587**	**<0.0288**	<0.00079	<0.00079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	0.076	0.106 J	0.12	0.12	0.11	0.0122 J	0.014	0.071	0.07	0.01	0.01	<0.000021
Phenol	*7.3*	*22*	<0.0002	0.107 J	<0.0000385	<0.00388	<0.00385	**8.33**	0.0025	0.0036	0.00022	0.033	0.00073	<0.000035
Pyrene	*0.73*	*2.2*	0.0028	<0.033	0.00356	<0.0107	<0.0106	<0.00519	0.00031 J	0.0031	0.0025	0.00045	0.00046	0.00021
Metals														
Arsenic	*0.01*	*0.01*							0.00112 J	0.00688	0.00479	0.0013 J	0.000854 J	0.00184 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-18A 01/30/2008	MW-18A 07/15/2008	MW-18A 02/05/2009	MW-18A 01/18/2010	MW-18A 06/24/2010	MW-18A 01/17/2011	MW-18A 07/13/2011	MW-18A 02/01/2012	MW-18A 07/11/2012	MW-18A 01/31/2013	MW-18A 07/29/2013	MW-18A 01/13/2014
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00052	<0.00052	<0.0025	<0.005	<0.0025	<0.0025	<0.005	<0.005	<0.005	**<0.007**	0.00405 J	**<0.014**
Benzene	*0.005*	*0.005*	**0.503**	**0.321**	**0.48**	**0.51**	**0.47**	**0.55**	**0.59**	**0.28**	**0.68**	**0.636**	**0.491**	**0.239**
Chlorobenzene	*0.1*	*0.1*	0.0167	0.0074	0.017 J	<0.005	<0.0025	<0.0025	<0.005	<0.005	<0.005	<0.006	<0.0012	<0.012
Ethylbenzene	*0.7*	*0.7*	0.555	0.153	0.52	0.48	0.54	0.55	0.39	0.55	0.3	0.316	0.398	0.637
Methylene chloride	*0.005*	*0.005*	<0.00054	<0.00054	<0.0025	<0.005	<0.0025	<0.0025	**<0.0065**	**<0.0065**	**<0.01**	**<0.0075**	**0.00976 J**	**<0.015**
Toluene	*1*	*1*	0.374	0.0718	0.23	0.32	0.45	0.35	0.23	0.21	0.21	0.154	0.239	0.0731 J
Vinyl chloride	*0.002*	*0.002*				**0.059**		**0.07**	**0.028**	**0.047**	**<0.005**	**0.0181 J**	**0.029**	**<0.011**
Xylenes (total)	*10*	*10*	1.13	0.292	0.98	1.2	1.2	1	0.73	1.1	0.51	0.519	0.991	1.27
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	**<0.008**	<0.0008	<0.0001	<0.0001	<0.0005	<0.0001	<0.00005	<0.0005	0.00005 J	<0.00108	**<0.0214**	**<0.0106**
2,4-Dimethylphenol	*0.49*	*1.5*	**12.5**	**2.17**	**1.9**	**4.5**	**7.9**	**9.6 J**	**11**	**5.8**	**9.4 J**	**11.8**	**6.29**	**2.95**
2,4-Dinitrotoluene	*0.0013*	*0.003*	**<0.02**	**<0.002**	<0.00009	<0.00009	<0.00045	<0.00009	<0.00005	<0.0005	0.00005 J	<0.00127	**<0.0252**	**<0.0125**
2,6-Dinitrotoluene	*0.0013*	*0.003*	**<0.02**	**<0.002**	<0.00007	<0.00007	<0.00035	<0.00007	<0.00006	<0.0006	0.00006 J	<0.000784	**<0.0155**	**<0.00769**
2-Chloronaphthalene	*2*	*5.8*	<0.041	<0.004	<0.00012	<0.0001	<0.0005	<0.0001	<0.00005	<0.0005	0.00005 J	<0.000784	<0.0155	<0.00769
2-Methylnaphthalene	*0.098*	*0.29*	**0.548**	**0.594**	**0.42**	**0.36**	**0.4**	**0.44**	**0.7**	**0.23**	**0.64 J**	**0.745**	**0.819**	**0.996**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	**<0.02**	**<0.005**	<0.00008	<0.00008	<0.0004	<0.00008	<0.00008	<0.0008	0.00008 J	**<0.00814**	**<0.161**	**<0.0798**
4-Nitrophenol	*0.049*	*0.15*	<0.026	<0.0025	<0.00007	<0.00007	<0.00035	<0.00007	<0.00005	<0.0005	0.00005 J	<0.00549	**<0.109**	**<0.0538**
Acenaphthene	*1.5*	*4.4*	0.343	0.466	0.19	0.23	0.25	0.24	0.36	0.15	0.3 J	0.464	0.493	0.553
Acenaphthylene	*1.5*	*4.4*	<0.031	0.0131	0.0092	0.0062	0.0095	0.0072	0.015	0.007	0.0067 J	0.0151	<0.0117	<0.00577
Anthracene	*7.3*	*22*	<0.02	0.0114	0.009	0.0069	0.0075	0.0073	0.013	0.0046	0.009 J	0.0204	0.0204 J	0.0226 J
Benzo(a)anthracene	*0.0091*	*0.02*	**<0.02**	<0.002	<0.00007	<0.00007	<0.00035	<0.00007	<0.00005	<0.0005	0.00005 J	<0.000784	**<0.0155**	<0.00769
Benzo(a)pyrene	*0.0002*	*0.0002*	**<0.02**	**<0.002**	<0.00008	<0.00008	**<0.0004**	<0.00008	<0.00005	**<0.0005**	0.00005 J	**<0.000784**	**<0.0155**	**<0.00769**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	**<0.041**	**<0.004**	<0.00009	<0.00009	<0.00045	<0.00009	<0.00005	<0.0005	0.00005 J	**<0.00127**	**<0.0252**	**<0.0125**
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	**<0.02**	<0.002	0.00033	<0.0002	<0.001	<0.0002	<0.0001	<0.0011	0.0001 J	<0.00363	**<0.0718**	**<0.0356**
Chrysene	*0.91*	*2*	<0.02	<0.002	<0.00007	<0.00007	<0.00035	<0.00007	<0.00005	<0.0005	0.00005 J	<0.000784	<0.0155	<0.00769
Dibenzofuran	*0.098*	*0.29*	**0.233**	**0.29**	**0.12**	**0.15**	**0.16**	**0.15**	**0.23**	0.075	**0.21 J**	**0.188**	**0.279**	**0.326**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.02	<0.002	<0.00007	<0.00007	<0.00035	<0.00007	<0.00005	<0.0005	0.00005 J	<0.00108	<0.0214	<0.0106
Fluoranthene	*0.98*	*2.9*	<0.02	0.0021	0.0026	0.0013	0.0013	0.0014	0.0018	0.0013 J	0.0016 J	<0.000686	<0.0136	<0.00673
Fluorene	*0.98*	*2.9*	0.155	0.182	0.089	0.096	0.11	0.094	0.18	0.057	0.14 J	0.136	0.214	0.268
Naphthalene	*0.49*	*1.5*	**7.93**	**7.43**	**3.3**	**4.3**	**6.1**	**5.9**	**7.3**	**3.6**	**7.8 J**	**9.29**	**11.8**	**11.4**
Nitrobenzene	*0.049*	*0.15*	<0.041	<0.004	<0.00009	<0.00009	<0.00045	<0.00009	<0.00005	<0.0005	0.00005 J	<0.00108	<0.0214	<0.0106
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.026	<0.0025	<0.00009	<0.00009	<0.00045	<0.00009	<0.00005	<0.0005	0.00005 J	<0.00098	<0.0194	<0.00962
Pentachlorophenol	*0.001*	*0.001*	**<0.02**	**<0.002**	<0.00008	<0.00008	<0.0004	<0.00008	<0.00005	<0.0005	0.00005 J	**<0.00598**	**<0.118**	**<0.0587**
Phenanthrene	*0.73*	*2.2*	0.118	0.12	0.078	0.067	0.082	0.063	0.098	0.042	0.083 J	0.101	0.144	0.19
Phenol	*7.3*	*22*	0.364	<0.002	0.005	0.043	0.0054	0.02	0.061	0.011	0.12 J	<0.000392	<0.00777	<0.00385
Pyrene	*0.73*	*2.2*	<0.02	<0.002	0.0013	0.00075	0.00063 J	0.00085	0.0011	0.00077 J	0.00081 J	<0.00108	<0.0214	<0.0106
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-18A 07/16/2014	MW-18A 01/25/2018	MW-18A 03/19/2018	MW-18A 05/16/2018	MW-18A 01/10/2019	MW-18A 07/10/2019	MW-18A 01/08/2020	MW-18C 01/30/2008	MW-18C 07/15/2008	MW-18C 02/05/2009	MW-18C 01/19/2010	MW-18C 06/24/2010
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	0.00482 J	<0.0002	<0.0002	<0.0002	<0.005	<0.0002	<0.005	<0.00052	<0.00052	<0.005	<0.005	<0.0025
Benzene	*0.005*	*0.005*	**0.483**	**0.19**	**0.22**	**0.17**	**1.2**	**0.16**	**0.41**	**1.34**	**0.964**	**1.4**	**1.5**	**1**
Chlorobenzene	*0.1*	*0.1*	<0.0024	0.0062	0.006	0.0066	<0.0075	0.0017	<0.0075	<0.00047	<0.00047	<0.005	<0.005	<0.0025
Ethylbenzene	*0.7*	*0.7*	0.692	0.36	0.36	0.43	0.34	0.28	0.32	0.304	0.178	0.26	0.21	0.13
Methylene chloride	*0.005*	*0.005*	**0.0138 J**	<0.001	<0.001	<0.001	**<0.025**	<0.001	**<0.025**	<0.00054	<0.00054	<0.005	<0.005	<0.0025
Toluene	*1*	*1*	0.416	0.074	0.068	0.042	0.92	0.057	0.11	**1.2**	0.691	1	0.96	0.72 J
Vinyl chloride	*0.002*	*0.002*	**0.02 J**	**0.0023**	0.002	**0.0021**	**<0.005**	0.0013	**<0.005**					
Xylenes (total)	*10*	*10*	1.3	0.97	0.79	0.91	1	0.47	0.5	1.1	0.624	1.1	1	1
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	**<0.00519**	<0.00021	<0.00021	<0.00021	<0.00021	<0.000021	<0.000021	**<0.04**	<0.0008	<0.0001	<0.0001	<0.0005
2,4-Dimethylphenol	*0.49*	*1.5*	**8.01**	0.023	0.12	**0.5**	0.0054	**0.72**	**1.8**	<0.15	<0.0031	0.084	0.0081	0.0078 J
2,4-Dinitrotoluene	*0.0013*	*0.003*	**<0.00613**	<0.00058	<0.00058	<0.00058	<0.00058	<0.000058	<0.000058	**<0.098**	**0.00636**	<0.00009	<0.00009	<0.00045
2,6-Dinitrotoluene	*0.0013*	*0.003*	**<0.00377**	<0.00042	<0.00042	<0.00042	<0.00042	<0.000042	<0.000042	**<0.098**	**<0.002**	<0.00007	<0.00007	<0.00035
2-Chloronaphthalene	*2*	*5.8*	<0.00377	<0.00021	<0.00021	<0.00021	<0.00021	<0.000021	<0.000021	<0.2	<0.0041	<0.00012	<0.0001	<0.0005
2-Methylnaphthalene	*0.098*	*0.29*	**0.589**	**0.33**	**0.34**	**0.22**	**0.1**	**0.47**	**0.36**	**0.894**	**0.674**	**0.95**	**0.46**	**0.2**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	**<0.0392**	<0.0002	<0.0002	<0.0002	<0.0002	<0.00002	<0.00002	**<0.098**	**<0.0051**	<0.00008	<0.00008	<0.0004
4-Nitrophenol	*0.049*	*0.15*	<0.0264	<0.00047	<0.00047	<0.00047	<0.00047	<0.000047	0.0042	**<0.12**	<0.0026	<0.00007	<0.00007	<0.00035
Acenaphthene	*1.5*	*4.4*	0.352	0.25	0.23	0.24	0.048	0.3	0.33	0.293	0.251	0.18	0.17	0.082
Acenaphthylene	*1.5*	*4.4*	0.0155 J	0.0074	0.0092	0.009	0.0016	0.0056	0.0081	<0.15	0.00649	0.0036	0.0023	0.0015
Anthracene	*7.3*	*22*	0.0192 J	0.0061	0.0079	0.0077	0.0064	0.0063	0.0082	<0.098	0.0321	0.017	0.014	0.0076 J
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00377	<0.0005	<0.0005	<0.0005	<0.0005	<0.00005	<0.00005	**<0.098**	0.0025	0.00039	<0.00007	<0.00035
Benzo(a)pyrene	*0.0002*	*0.0002*	**<0.00377**	<0.0002	<0.0002	<0.0002	<0.0002	<0.00002	<0.00002	**<0.098**	**<0.002**	0.00013 J	<0.00008	**<0.0004**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	**<0.00613**	<0.0003	<0.0003	<0.0003	<0.0003	<0.00003	<0.00003	**<0.2**	**<0.0041**	<0.00009	<0.00009	<0.00045
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	**<0.0175**	<0.00037	<0.00037	<0.00037	<0.00037	<0.000037	<0.00043	**<0.098**	<0.002	0.00023	<0.0002	<0.001
Chrysene	*0.91*	*2*	<0.00377	<0.00021	<0.00021	<0.00021	<0.00021	<0.000021	<0.000021	<0.098	0.0021	0.00033	<0.00007	<0.00035
Dibenzofuran	*0.098*	*0.29*	**0.204**	**0.16**	**0.15**	**0.14**	0.047	**0.19**	**0.2**	**0.263**	**0.23**	**0.16**	0.091	0.077
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00519	<0.0002	<0.0002	<0.0002	<0.0002	<0.00002	<0.00002	<0.098	<0.002	<0.00007	<0.00007	<0.00035
Fluoranthene	*0.98*	*2.9*	<0.0033	0.0021	0.0023	0.0017	0.002	0.0022	0.0023	<0.098	0.0169	0.0047	0.0035	0.0023
Fluorene	*0.98*	*2.9*	0.163	0.087	0.12	0.098	0.021	0.091	0.16	0.137	0.153	0.081	0.052	0.034
Naphthalene	*0.49*	*1.5*	**5.27**	**4.4**	**4.9**	**6.1**	**3.2**	**5.6**	**4.6**	**16.6**	**16.7**	**21**	**12**	**6.2**
Nitrobenzene	*0.049*	*0.15*	<0.00519	<0.00024	<0.00024	<0.00024	<0.00024	<0.000024	<0.000024	**<0.2**	<0.0041	<0.00009	<0.00009	<0.00045
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00472	<0.00025	<0.00025	<0.00025	<0.00025	<0.000025	<0.000025	<0.12	<0.0026	<0.00009	<0.00009	<0.00045
Pentachlorophenol	*0.001*	*0.001*	**<0.0288**	<0.00079	<0.00079	<0.00079	**0.014**	<0.000079	<0.000079	**<0.098**	**0.134**	**0.026**	**0.041**	**0.02**
Phenanthrene	*0.73*	*2.2*	0.114	0.066	0.08	0.082	0.024	0.075	0.1	0.213	0.177	0.076	0.052	0.032
Phenol	*7.3*	*22*	<0.00189	0.0019 J	<0.00035	<0.00035	0.0032	0.00048	0.0014	<0.098	0.0944	0.031	0.059	0.026
Pyrene	*0.73*	*2.2*	<0.00519	0.0011	0.0012	0.0008 J	0.0012	0.0011	0.0013	<0.098	0.01	0.0025	0.002	0.0012
Metals														
Arsenic	*0.01*	*0.01*		0.0043	**0.0239**	**0.0291**	0.0031	**0.0248**	**0.0236**					

Notes:

1. All values in milligrams per liter (mg/L).
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3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
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TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-18C 01/17/2011	MW-18C 07/13/2011	MW-18C 02/01/2012	MW-18C 07/11/2012	MW-18C 01/31/2013	MW-18C 07/29/2013	MW-18C 01/13/2014	MW-18C 07/16/2014	MW-18C 01/25/2018	MW-18C 03/19/2018	MW-18C 05/16/2018	MW-18C 01/10/2019
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0025	**<0.01**	<0.005	<0.005	**<0.007**	**<0.014**	**<0.007**	<0.0028	<0.0002	<0.0002	<0.002	<0.002
Benzene	*0.005*	*0.005*	**1.3**	**1.2**	**1.3**	**1.2**	**1.51**	**1.23**	**1.51**	**1.45**	**1.4**	**1.3**	**1.4**	**0.3**
Chlorobenzene	*0.1*	*0.1*	<0.0025	<0.01	<0.005	<0.005	<0.006	<0.012	<0.006	<0.0024	<0.0003	0.00052 J	<0.003	<0.003
Ethylbenzene	*0.7*	*0.7*	0.18	0.16	0.19	0.15	0.203	0.22	0.245	0.309	0.35	0.29	0.32	0.41
Methylene chloride	*0.005*	*0.005*	<0.0025	**<0.013**	**<0.0065**	**<0.01**	**<0.0075**	**0.0688 J**	**<0.0075**	**0.0161 J**	<0.001	<0.001	**<0.01**	**<0.01**
Toluene	*1*	*1*	0.83	0.8	0.83	0.72	0.962	0.899	**1.07**	0.986	**1.1**	0.96	0.9	0.03
Vinyl chloride	*0.002*	*0.002*	**<0.0025**	**<0.01**	**<0.005**	**<0.005**	**<0.0055**	**<0.011**	**<0.0055**	**<0.0022**	0.0018	**0.0026**	<0.002	<0.002
Xylenes (total)	*10*	*10*	1	0.9	0.82	0.84	1.01	0.881	1.02	1.36	1	0.93	1.1	0.69
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0001	<0.00005	<0.0005	<0.00005	**<0.0545**	**<0.00534**	**<0.0106**	**<0.00519**	<0.00021	<0.00021	<0.00021	<0.00021
2,4-Dimethylphenol	*0.49*	*1.5*	0.012 J	0.0031	0.01	<0.0021	<0.153	<0.015	<0.0298	0.0325	<0.0004	<0.0004	0.082	0.29
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00009	<0.00005	<0.0005	<0.00005	**<0.0644**	**<0.00631**	**<0.0125**	**<0.00613**	<0.00058	<0.00058	<0.00058	<0.00059
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00007	<0.00006	<0.0006	<0.00006	**<0.0396**	**<0.00388**	**<0.00769**	**<0.00377**	<0.00042	<0.00042	<0.00042	<0.00042
2-Chloronaphthalene	*2*	*5.8*	<0.0001	<0.00005	<0.0005	<0.00005	<0.0396	<0.00388	<0.00769	<0.00377	<0.00021	<0.00021	<0.00021	<0.00021
2-Methylnaphthalene	*0.098*	*0.29*	**0.31**	**0.34**	**0.16**	**0.46**	**0.977**	**0.871**	**1.06**	**0.778**	**0.41**	**0.44**	**0.3**	**0.33**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.0008	<0.00008	**<0.411**	**<0.0403**	**<0.0798**	**<0.0392**	<0.0002	<0.0002	<0.0002	<0.0002
4-Nitrophenol	*0.049*	*0.15*	<0.00007	<0.00005	<0.0005	<0.00005	**<0.277**	<0.0272	**<0.0538**	<0.0264	<0.00047	<0.00047	<0.00047	<0.00047
Acenaphthene	*1.5*	*4.4*	0.14	0.12	0.062	0.13	0.32	0.265	0.317	0.246	0.15	0.16	0.15	0.21
Acenaphthylene	*1.5*	*4.4*	0.0019	0.0023	0.0018 J	0.0019	<0.0297	<0.00291	<0.00577	<0.00283	0.0025	0.0035	0.003	0.0075
Anthracene	*7.3*	*22*	0.015	0.013	0.012	0.008	0.0401 J	0.0284	0.0414 J	0.028	0.017	0.02	0.019	0.007
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00007	<0.00005	<0.0005	0.00014 J	**<0.0396**	<0.00388	<0.00769	<0.00377	0.0013	<0.0005	<0.0005	<0.00051
Benzo(a)pyrene	*0.0002*	*0.0002*	**0.00035**	0.00015 J	**<0.0005**	<0.00005	**<0.0396**	**<0.00388**	**<0.00769**	**<0.00377**	<0.0002	<0.0002	<0.0002	<0.0002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00009	<0.00005	<0.0005	<0.00005	**<0.0644**	**<0.00631**	**<0.0125**	**<0.00613**	<0.0003	<0.0003	<0.0003	<0.0003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0002	<0.0001	<0.001	<0.0001	**<0.183**	**<0.018**	**<0.0356**	**<0.0175**	<0.00037	<0.00037	<0.00037	<0.00037
Chrysene	*0.91*	*2*	<0.00007	<0.00005	<0.0005	0.0001 J	<0.0396	<0.00388	<0.00769	<0.00377	0.0008 J	<0.00021	0.00038 J	<0.00021
Dibenzofuran	*0.098*	*0.29*	**0.13**	**0.11**	0.06	**0.14**	**0.288**	**0.225**	**0.276**	**0.207**	**0.14**	**0.15**	**0.13**	**0.13**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00007	<0.00005	<0.0005	<0.00005	<0.0545	<0.00534	<0.0106	<0.00519	<0.0002	<0.0002	<0.0002	<0.0002
Fluoranthene	*0.98*	*2.9*	0.0059	0.0042	0.0018 J	0.0023	<0.0347	0.00865 J	0.0191 J	0.00957 J	0.0096	0.0071	0.0058	0.0023
Fluorene	*0.98*	*2.9*	0.051	0.052	0.028	0.055	0.132 J	0.114	<0.00673	0.116	0.056	0.073	0.062	0.095
Naphthalene	*0.49*	*1.5*	**13**	**12**	**9.7**	**13**	**20.2 J**	**20.9**	**20.3**	**14.7**	**14**	**12**	**21**	**4.4**
Nitrobenzene	*0.049*	*0.15*	<0.00009	<0.00005	<0.0005	<0.00005	**<0.0545**	<0.00534	<0.0106	<0.00519	<0.00024	<0.00024	<0.00024	<0.00024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00009	<0.00005	<0.0005	<0.00005	<0.0495	<0.00485	<0.00962	<0.00472	<0.00025	<0.00025	<0.00025	<0.00025
Pentachlorophenol	*0.001*	*0.001*	**0.064**	**0.076 J**	**0.085**	**0.075**	**<0.302**	**<0.0296**	**0.188**	**0.164**	**0.024**	**0.041**	**0.037**	<0.0008
Phenanthrene	*0.73*	*2.2*	0.055	0.052	0.027	0.055	0.155 J	0.127	0.177	0.122	0.072	0.086	0.078	0.084
Phenol	*7.3*	*22*	0.043	0.048	0.027	0.075	0.0601 J	0.0205 J	0.0184 J	0.0285	0.0042	0.0067	<0.00035	<0.00035
Pyrene	*0.73*	*2.2*	0.0028	0.0017	0.001 J	0.0011	<0.0545	<0.00534	<0.0106	0.00571 J	0.0055	0.0049	0.0036	0.0012
Metals														
Arsenic	*0.01*	*0.01*									0.00467	0.00327	0.00342	**0.0257**

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-18C 07/10/2019	MW-18C 01/08/2020	MW-19C 01/31/2008	MW-19C 07/15/2008	MW-19C 02/04/2009	MW-19C 01/18/2010	MW-19C 06/23/2010	MW-19C 01/18/2011	MW-19C 01/18/2011 Duplicate	MW-19C 07/14/2011	MW-19C 02/08/2012	MW-19C 07/12/2012
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.002	<0.00052	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005
Benzene	*0.005*	*0.005*	**1.2**	**1.1**	0.00398 J	<0.00025	<0.0005	**0.0056**	<0.0005	<0.0005	<0.0005	<0.001	0.005	<0.0005
Chlorobenzene	*0.1*	*0.1*	0.00052 J	<0.003	<0.00047	<0.00047	<0.0005		<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005
Ethylbenzene	*0.7*	*0.7*	0.32	0.31	<0.00025	<0.00025	<0.0005	0.0018 J	<0.0005	<0.0005	<0.0005	<0.0011	0.0031 J	<0.0005
Methylene chloride	*0.005*	*0.005*	<0.001	**<0.01**	<0.00054	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001
Toluene	*1*	*1*	1	0.97	0.00596	<0.00041	<0.0005	0.0076	<0.0005	<0.0005	<0.0005	<0.001	0.0085	<0.0005
Vinyl chloride	*0.002*	*0.002*	<0.0002	<0.002								<0.001	<0.001	<0.0005
Xylenes (total)	*10*	*10*	1	0.92	<0.00127	<0.00127	<0.001	0.0043 J	<0.001	<0.001	<0.001	<0.0031	0.0063 J	<0.0015
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.00008	0.00023 J	<0.0001	<0.0001	0.00024	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	0.0051	0.023	<0.00029	<0.00028	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	0.00016 J
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.00019	<0.00019	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.00019	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.00038	<0.00038	<0.00012	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	**0.28**	**0.31**	0.00132	<0.00038	0.00025	0.0017	0.000079 J	0.00015 J	0.00022	0.0012	<0.00005	<0.000053
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00019	<0.00047	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.00024	<0.00024	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Acenaphthene	*1.5*	*4.4*	0.058	0.093	0.000562	<0.00028	0.00022	0.001	0.00012 J	0.00015 J	0.0003	0.00067	0.0012	0.00017 J
Acenaphthylene	*1.5*	*4.4*	0.005	0.0026	<0.00029	<0.00028	<0.00006	0.00014 J	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Anthracene	*7.3*	*22*	0.0056	0.02	<0.00019	<0.00019	<0.00007	0.0001 J	<0.00007	<0.00007	<0.00007	0.00015 J	<0.00005	<0.00005
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	0.0025	<0.00019	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	**0.00053**	<0.00019	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00038	<0.00038	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	<0.000037	<0.00019	0.00027 J	<0.0002	<0.0028	<0.00036	0.00026	0.00025	<0.00039	<0.00022	0.00014 J
Chrysene	*0.91*	*2*	<0.000021	0.0027	<0.00019	<0.00019	<0.00007	<0.00007	<0.00007	0.000072 J	0.000084 J	<0.00005	<0.00005	<0.00005
Dibenzofuran	*0.098*	*0.29*	0.054	0.085	0.00042 J	<0.00028	0.00017 J	0.00051	<0.00008	0.00013 J	0.0002 J	<0.0006	0.00014 J	<0.00011
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.00019	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00015 J
Fluoranthene	*0.98*	*2.9*	0.0019	0.013	<0.00019	0.00182	0.00015 J	0.00024	0.0021	0.0026 J	0.00062 J	0.0016	<0.00005	0.0018
Fluorene	*0.98*	*2.9*	0.024	0.043	0.00044 J	<0.00019	<0.00007	0.00032	0.00028	0.00032	0.00022	<0.00066	<0.00005	0.00033
Naphthalene	*0.49*	*1.5*	**9.9**	**14**	0.0613	0.000826	0.0077	0.09	<0.0015	0.0061 J	0.0084 J	0.014	0.00077	<0.00048
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.00038	<0.00038	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.00024	<0.00024	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
Pentachlorophenol	*0.001*	*0.001*	**0.034**	**0.023**	<0.00019	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	0.00028 J	<0.00005	<0.00005
Phenanthrene	*0.73*	*2.2*	0.026	0.065	<0.00019	<0.00019	<0.00007	0.00016 J	<0.00007	<0.00007	0.00014 J	<0.00053	<0.00005	<0.00005
Phenol	*7.3*	*22*	0.005	0.0062	<0.00019	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00024
Pyrene	*0.73*	*2.2*	0.0014	0.0066	0.00036 J	0.00117	<0.00007	0.0002	0.0012	0.0016 J	0.0004 J	0.0014	<0.00005	0.0014
Metals														
Arsenic	*0.01*	*0.01*	0.00358	0.00283										

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-19C 02/01/2013	MW-19C 07/30/2013	MW-19C 01/15/2014	MW-19C 07/17/2014	MW-19C 02/09/2018	MW-19C 03/18/2018	MW-19C 05/16/2018	MW-19C 01/24/2019	MW-19C 07/10/2019	MW-19C 01/09/2020	MW-20A 01/30/2008	MW-20A 07/14/2011
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002	<0.0002	<0.002	<0.0002	<0.0002	<0.0002	<0.00052	<0.005
Benzene	*0.005*	*0.005*	0.000558 J	0.00427	0.00028 J	0.0000801 J	0.0013	0.0027	0.0041 J	0.0044	0.0004 J	0.00032 J	**0.0609**	**0.098**
Chlorobenzene	*0.1*	*0.1*	<0.00012	<0.00012	<0.00012	<0.00012	<0.0003	<0.0003	<0.003	<0.0003	<0.0003	<0.0003	<0.00047	<0.005
Ethylbenzene	*0.7*	*0.7*	0.000793 J	0.0114	0.000966 J	0.000783 J	0.00091 J	0.0025	<0.003	0.004	0.00096 J	0.00064 J	0.0965	0.077
Methylene chloride	*0.005*	*0.005*	<0.00015	<0.00015	<0.00015	<0.00015	<0.001	<0.001	**<0.01**	<0.001	<0.001	<0.001	<0.00054	**<0.0065**
Toluene	*1*	*1*	0.00171	0.0155	0.00136	0.000578 J	<0.0002	0.0018	0.0042 J	0.0057	0.00086 J	<0.0002	0.00716	<0.005
Vinyl chloride	*0.002*	*0.002*	<0.00011	<0.00011	<0.00011	<0.00011	<0.0002	<0.0002	<0.002	<0.0002	<0.0002	<0.0002		
Xylenes (total)	*10*	*10*	0.00151 J	0.0197	0.00207 J	0.00179 J	0.00095 J	0.0044	<0.003	0.0037	0.0022	0.0012	0.113	0.057 J
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00011	<0.000107	<0.000212	<0.000104	<0.000021	0.000099 J	0.000061 J	<0.000021	0.000082 J	0.000078 J	**<0.02**	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	0.00125	<0.000301	<0.000596	<0.000292	0.0028	<0.00038	<0.00004	<0.00032	<0.00056	<0.00004	0.134	0.3
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00013	<0.000126	<0.00025	<0.000123	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	**<0.039**	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00008	<0.0000777	<0.000154	<0.0000755	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	**<0.039**	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.00008	<0.0000777	<0.000154	<0.0000755	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.078	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	0.00084	0.000114 J	0.00142	0.000845	0.000093 J	0.00037	<0.000019	<0.000019	<0.000071	<0.000019	**0.204**	**0.42**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00083	<0.000806	<0.0016	<0.000783	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	**<0.039**	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.00056	<0.000544	<0.00108	<0.000528	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	**0.177**	<0.00005
Acenaphthene	*1.5*	*4.4*	<0.000608	0.00279	<0.000154	0.0007	0.0012	0.001	0.00035	0.00078	0.001	0.00099	0.113	0.2
Acenaphthylene	*1.5*	*4.4*	<0.00006	<0.0000583	<0.000115	<0.0000566	0.000069 J	<0.000015	<0.000015	<0.000015	0.00003 J	0.00005 J	<0.059	0.0017
Anthracene	*7.3*	*22*	0.000115 J	0.000269 J	<0.0000962	<0.0000472	0.000057 J	0.000065 J	<0.000014	0.000057 J	<0.000066	<0.00017	<0.039	0.0058
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00008	0.000111 J	<0.000154	<0.0000755	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00026	**<0.039**	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00008	<0.0000777	<0.000154	<0.0000755	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.0001	**<0.039**	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00013	<0.000126	<0.00025	<0.000123	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	**<0.078**	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00037	0.0012 J	<0.000712	0.000646	0.00019 J	0.0001 J	0.00016 J	0.000096 J	<0.000037	<0.000071	**<0.039**	<0.00033
Chrysene	*0.91*	*2*	<0.00008	<0.0000777	<0.000154	<0.0000755	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.00024	<0.039	<0.00005
Dibenzofuran	*0.098*	*0.29*	0.000367 J	0.000631	0.00116	0.000554	0.00045	0.00081	0.000035 J	<0.00002	<0.00057	0.00069	0.071	**0.14**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00011	0.000164 J	<0.000212	<0.000104	<0.00002	<0.00002	0.000031 J	<0.00002	<0.00002	0.000021 J	<0.039	<0.00005
Fluoranthene	*0.98*	*2.9*	0.00257	0.000309 J	0.00223	0.00169	0.000081 J	0.00064	0.00023	<0.00001	0.00056	0.0011	<0.039	0.0007
Fluorene	*0.98*	*2.9*	0.000605	<0.000068	0.000296 J	0.000485	0.000099 J	0.00037	0.00009 J	<0.00003	<0.00031	0.00047	0.045	0.11
Naphthalene	*0.49*	*1.5*	0.0264 J	<0.00196	0.0383	0.0198	0.0022	0.013	<0.00061	<0.00036	<0.0012	<0.00011	**4.75**	**7.7**
Nitrobenzene	*0.049*	*0.15*	<0.00011	<0.000107	<0.000212	<0.000104	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	**<0.078**	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.0001	<0.0000971	<0.000192	<0.0000943	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.049	<0.00005
Pentachlorophenol	*0.001*	*0.001*	<0.00061	<0.000592	**<0.00117**	<0.000575	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	**<0.039**	<0.00005
Phenanthrene	*0.73*	*2.2*	0.000166 J	0.000201 J	<0.000265	<0.0000566	<0.000021	0.000051 J	<0.000021	<0.000021	<0.00014	<0.00045	<0.039	0.039
Phenol	*7.3*	*22*	0.00023 J	0.024	0.000724 J	0.00033 J	0.00071	0.00072	<0.000035	<0.00013	<0.00015	<0.000035	<0.039	<0.00005
Pyrene	*0.73*	*2.2*	0.00207	0.000233 J	0.00191	0.00178	0.000053 J	0.00076	0.00037	<0.000019	0.00064	0.0014	<0.039	0.0004
Metals														
Arsenic	*0.01*	*0.01*					0.00158 J	0.00107 J	0.00294	0.00149 J	0.00166 J	0.0014 J		

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
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CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-20A 02/01/2012	MW-20A 07/16/2012	MW-20A 01/30/2013	MW-20A 01/23/2018	MW-20A 03/19/2018	MW-20A 05/15/2018	MW-20A 01/08/2019	MW-20A 07/10/2019	MW-20A 01/14/2020	MW-21C 01/29/2008	MW-21C 01/29/2008 Duplicate	MW-21C 07/15/2008
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.005	<0.0005	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052	<0.00052	<0.00052
Benzene	*0.005*	*0.005*	**0.057**	**0.089**	**0.0746**	**0.053**	**0.05**	**0.062**	**0.024**	**0.013**	**0.02**	<0.00025	<0.00025	<0.00025
Chlorobenzene	*0.1*	*0.1*	<0.005	<0.0005	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047	<0.00047	<0.00047
Ethylbenzene	*0.7*	*0.7*	0.046	0.1	0.0619	0.05	0.027	0.045	0.024	0.0079	0.025	<0.00025	<0.00025	<0.00025
Methylene chloride	*0.005*	*0.005*	**<0.0065**	<0.001	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00054	<0.00054	<0.00054
Toluene	*1*	*1*	<0.005	0.022	0.0028	0.0038	<0.0002	0.0055	0.00077 J	0.0011	<0.0002	<0.00041	<0.00041	<0.00041
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	0.028 J	0.088	0.0549	0.05	0.033	0.048	0.022	0.022	0.024	<0.00127	<0.00127	<0.00127
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0005	<0.00005	**<0.00519**	<0.00021	<0.00021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00008	<0.00008	<0.00008
2,4-Dimethylphenol	*0.49*	*1.5*	0.076	0.1	0.119	0.049	0.072	0.06	0.0076	0.0035	0.0018	<0.00029	<0.00029	<0.0003
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.0005	<0.00005	**<0.00613**	<0.00058	<0.00059	<0.000058	<0.000058	<0.000058	<0.000058	<0.00019	<0.00019	<0.0002
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0006	<0.00006	**<0.00377**	<0.00042	<0.00042	<0.000042	<0.000042	<0.000042	<0.000042	<0.00019	<0.00019	<0.0002
2-Chloronaphthalene	*2*	*5.8*	<0.0005	<0.00005	<0.00377	<0.00021	<0.00021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00038	<0.00038	<0.0004
2-Methylnaphthalene	*0.098*	*0.29*	0.064	**0.36**	**0.191**	**0.15**	**0.15**	**0.17**	0.069	0.072	0.075	<0.00038	<0.00038	<0.0004
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.0008	<0.00008	**<0.0392**	<0.0002	<0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019	<0.00019	<0.0005
4-Nitrophenol	*0.049*	*0.15*	<0.0005	<0.00005	<0.0264	<0.00047	<0.00047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00024	<0.00024	<0.00025
Acenaphthene	*1.5*	*4.4*	0.15	0.19	0.12	0.14	0.18	0.15	0.1	0.14	0.11	<0.00029	<0.00029	<0.0003
Acenaphthylene	*1.5*	*4.4*	0.0015 J	0.0015	<0.00283	0.0014	<0.00015	0.0013	0.00057	0.00078	0.00092	<0.00029	<0.00029	<0.0003
Anthracene	*7.3*	*22*	0.0044	0.0042	0.00589 J	0.021	0.022	0.0081	0.0058	0.0062	0.0075	0.000563	0.000562	<0.0002
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0005	<0.00005	<0.00377	<0.0005	<0.00051	<0.00005	<0.00005	<0.00005	<0.00005	<0.00019	<0.00019	<0.0002
Benzo(a)pyrene	*0.0002*	*0.0002*	**<0.0005**	<0.00005	**<0.00377**	<0.0002	<0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019	<0.00019	<0.0002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.0005	<0.00005	**<0.00613**	<0.0003	<0.0003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00038	<0.00038	<0.0004
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.001	<0.0001	**<0.0175**	<0.00037	<0.00037	<0.000037	<0.000037	<0.000037	<0.000037	**0.00888**	0.00052 J	<0.0002
Chrysene	*0.91*	*2*	<0.0005	<0.00005	<0.00377	<0.00021	<0.00021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00019	<0.00019	<0.0002
Dibenzofuran	*0.098*	*0.29*	0.073	**0.15**	0.0799	0.097	**0.13**	0.081	0.067	0.077	0.079	<0.00029	<0.00029	<0.0003
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.0005	<0.00005	<0.00519	<0.0002	<0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019	<0.00019	<0.0002
Fluoranthene	*0.98*	*2.9*	0.00082 J	0.00061	<0.0033	0.00078 J	0.00095 J	0.00074	0.00041	0.00058	0.00067	0.00047 J	0.00046 J	<0.0002
Fluorene	*0.98*	*2.9*	0.06	0.11	0.0661	0.16	0.16	0.076	0.062	0.068	0.08	<0.00019	<0.00019	<0.0002
Naphthalene	*0.49*	*1.5*	**0.96**	**6.1**	**43.9**	**2.7**	**2.9**	**2.8**	**1.4**	**1.9**	**2**	<0.00038	<0.00038	<0.0004
Nitrobenzene	*0.049*	*0.15*	<0.0005	<0.00005	<0.00519	<0.00024	<0.00024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00038	<0.00038	<0.0004
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.0005	<0.00005	<0.00472	<0.00025	<0.00025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00024	<0.00024	<0.00025
Pentachlorophenol	*0.001*	*0.001*	<0.0005	<0.00005	**<0.0288**	<0.00079	<0.0008	<0.000079	<0.000079	<0.000079	<0.000079	<0.00019	<0.00019	<0.0002
Phenanthrene	*0.73*	*2.2*	0.03	0.043	0.0217 J	0.032	0.037	0.034	0.025	0.026	0.028	0.00039 J	0.00039 J	<0.0002
Phenol	*7.3*	*22*	<0.0005	<0.00005	<0.00189	<0.00035	<0.00035	<0.000035	<0.000035	0.00096	<0.000035	<0.00019	<0.00019	<0.0002
Pyrene	*0.73*	*2.2*	0.00056 J	0.0003	<0.00519	<0.00019	0.0005 J	0.00048	0.00025	0.00026	0.0003	0.00039 J	0.00039 J	<0.0002
Metals														
Arsenic	*0.01*	*0.01*				0.0087	0.00568	0.00895	0.00788	0.00574	0.00808			

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-21C 07/15/2008 Duplicate	MW-21C 02/04/2009	MW-21C 02/04/2009 Duplicate	MW-21C 01/21/2010	MW-21C 01/21/2010 Duplicate	MW-21C 06/22/2010	MW-21C 06/22/2010 Duplicate	MW-21C 01/19/2011	MW-21C 07/27/2011	MW-21C 07/27/2011 Duplicate	MW-21C 02/02/2012	MW-21C 02/02/2012 Duplicate
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001
Benzene	*0.005*	*0.005*	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001
Chlorobenzene	*0.1*	*0.1*	<0.00047	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001
Ethylbenzene	*0.7*	*0.7*	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0011	<0.0011
Methylene chloride	*0.005*	*0.005*	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.0013	<0.0013
Toluene	*1*	*1*	<0.00041	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.00127	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0031	<0.0031
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00029	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00019	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.00039	<0.00012	<0.00012	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	<0.00039	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.000067 J	<0.00005
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00049	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.00024	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005
Acenaphthene	*1.5*	*4.4*	0.00269	<0.00009	<0.00009	0.00041	0.00035	<0.00009	<0.00009	0.00034	<0.00005	<0.00005	<0.00005	<0.00005
Acenaphthylene	*1.5*	*4.4*	<0.00029	<0.00006	<0.00006	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005
Anthracene	*7.3*	*22*	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	0.00013 J	<0.00005	<0.00005	<0.00005	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00039	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00019	<0.0002	0.00038	<0.00072	<0.00054	<0.00023	<0.00041	0.00062	0.00062 J	0.00036 J	<0.0001	<0.00022
Chrysene	*0.91*	*2*	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005
Dibenzofuran	*0.098*	*0.29*	<0.00029	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005
Fluoranthene	*0.98*	*2.9*	0.00019 J	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005
Fluorene	*0.98*	*2.9*	0.00098	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005
Naphthalene	*0.49*	*1.5*	<0.00039	0.00039	0.00033	<0.0001	<0.0001	<0.0001	<0.00021	<0.0001	<0.00005	<0.00005	0.00093 J	0.00015 J
Nitrobenzene	*0.049*	*0.15*	<0.00039	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00024	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00005
Pentachlorophenol	*0.001*	*0.001*	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005
Phenanthrene	*0.73*	*2.2*	<0.00019	<0.00007	<0.00007	<0.00007	0.0001 J	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005
Phenol	*7.3*	*22*	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005
Pyrene	*0.73*	*2.2*	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-21C 07/26/2012	MW-21C 07/26/2012 Duplicate	MW-21C 02/05/2013	MW-21C 02/05/2013 Duplicate	MW-21C 08/01/2013	MW-21C 08/01/2013 Duplicate	MW-21C 01/16/2014	MW-21C 01/16/2014 Duplicate	MW-21C 07/25/2014	MW-21C 07/25/2014 Duplicate	MW-21C 01/24/2018	MW-21C 01/24/2018 Duplicate
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.0005	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002	<0.0002	<0.00014	<0.00014	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.0005	<0.0005	<0.00008	<0.00008	<0.00008	<0.00008	<0.0002	<0.0002	<0.00008	<0.00008	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.0005	<0.00012	<0.00012	<0.00012	<0.00012	<0.00018	<0.00018	<0.00012	<0.00012	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0005	<0.0005	<0.000144	<0.00011	<0.00011	<0.00011	<0.00019	<0.00019	<0.00011	<0.00011	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.00015	<0.00015	<0.00015	<0.00015	<0.00022	<0.00022	<0.00015	<0.00015	<0.001	<0.001
Toluene	*1*	*1*	<0.0005	<0.0005	<0.00015	<0.00015	<0.00015	<0.00015	<0.00017	<0.00017	<0.00015	<0.00015	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*			<0.00011	<0.00011					<0.00011	<0.00011		
Xylenes (total)	*10*	*10*	<0.0015	<0.0015	<0.00026	<0.00026	<0.00026	<0.00026	<0.00058	<0.00058	<0.00026	<0.00026	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	<0.00005	<0.000104	<0.000104	0.000105 J	**0.00732 J**	<0.000104	<0.000104	<0.000107	<0.000107	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00005	<0.00005	<0.000292	**R**	<0.000295	<0.00654	<0.000292	<0.000292	<0.000301	<0.000301	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	<0.00005	<0.000123	<0.000123	0.000124 J	**0.00867 J**	<0.000123	<0.000123	<0.000126	<0.000126	<0.000059	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	<0.00006	<0.0000755	<0.0000755	0.0000762 J	**0.00805 J**	<0.0000755	<0.0000755	<0.0000777	<0.0000777	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.00005	<0.0000755	<0.0000755	0.0000762 J	0.00696 J	<0.0000755	<0.0000755	<0.0000777	<0.0000777	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	<0.00005	<0.00005	0.000271 J	<0.000066	0.0000667 J	0.00686 J	<0.000157	<0.000187	<0.000068	<0.000068	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.000783	**R**	0.00079 J	**0.00371 J**	<0.000783	<0.000783	<0.000806	<0.000806	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00005	<0.00005	<0.000528	**R**	0.000533 J	0.00667 J	<0.000528	<0.000528	<0.000544	<0.000544	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	<0.00005	<0.00005	0.000237 J	<0.0000755	0.0000762 J	0.00726 J	0.000254 J	0.000413 J	<0.0000777	<0.0000777	<0.000027	<0.000027
Acenaphthylene	*1.5*	*4.4*	<0.00005	<0.00005	<0.0000566	<0.0000566	0.0000571 J	0.00735 J	<0.0000566	<0.0000566	<0.0000583	<0.0000583	<0.000015	<0.000015
Anthracene	*7.3*	*22*	<0.00005	<0.00005	0.0000527 J	<0.0000472	0.0000476 J	0.00775 J	0.000243 J	0.000518 J	<0.0000485	<0.0000485	<0.000014	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.0000755	<0.0000755	0.0000762 J	0.00807 J	0.000129 J	0.000137 J	<0.0000777	<0.0000777	<0.000051	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	<0.00005	<0.0000755	<0.0000755	0.0000762 J	**0.00775 J**	<0.0000755	<0.0000755	<0.0000777	<0.0000777	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	<0.00005	<0.000123	<0.000123	0.000124 J	**0.00612 J**	<0.000123	<0.000123	<0.000126	<0.000126	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0001	<0.0001	<0.000349	<0.000349	0.000352 J	**0.00875 J**	<0.000349	<0.000349	<0.000359	<0.000359	0.000058 J	0.000072 J
Chrysene	*0.91*	*2*	<0.00005	<0.00005	<0.0000755	<0.0000755	0.0000762 J	0.00794 J	0.0000812 J	0.000132 J	<0.0000777	<0.0000777	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	<0.00005	<0.00005	0.000109 J	<0.0000755	0.0000762 J	0.00726 J	<0.000258	<0.000456	<0.0000777	<0.0000777	<0.00002	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.000072	<0.000051	<0.000104	<0.000104	0.000105 J	0.00955 J	<0.000104	<0.000104	0.000184 J	0.000107 J	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	<0.00005	<0.00005	<0.000066	<0.000066	0.0000667 J	0.00857 J	0.000528 J	0.000866 J	<0.000068	<0.000068	<0.00001	<0.00001
Fluorene	*0.98*	*2.9*	<0.00005	<0.00005	<0.000066	<0.000066	0.0000667 J	0.00746 J	0.000291 J	0.000705 J	<0.000068	<0.000068	<0.00003	<0.00003
Naphthalene	*0.49*	*1.5*	<0.00005	<0.00005	0.000429 J	<0.0000755	<0.0021	0.00669 J	0.000523 J	<0.000421	<0.0000777	<0.0000777	<0.00002	<0.00002
Nitrobenzene	*0.049*	*0.15*	<0.00005	<0.00005	<0.000104	<0.000104	0.000105 J	0.00628 J	<0.000104	<0.000104	<0.000107	<0.000107	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.00005	<0.0000943	<0.0000943	0.0000952 J	0.00846 J	<0.0000943	<0.0000943	<0.0000971	<0.0000971	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00005	<0.00005	<0.000575	**R**	0.000581 J	**0.0126 J**	<0.000575	<0.000575	<0.000592	<0.000592	<0.00008	<0.000079
Phenanthrene	*0.73*	*2.2*	<0.00005	<0.00005	0.000184 J	<0.0000566	0.0000775 J	0.00777 J	0.00128 J	0.00242 J	<0.000087	<0.0000613	<0.000021	<0.000021
Phenol	*7.3*	*22*	<0.00005	<0.00005	<0.0000377	**R**	0.0000381 J	0.00217 J	<0.0000377	<0.0000377	<0.0000388	<0.0000388	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	<0.00005	<0.00005	<0.000104	<0.000104	0.000105 J	0.00813 J	0.000355 J	0.000508 J	<0.000107	<0.000107	<0.000019	<0.000019
Metals														
Arsenic	*0.01*	*0.01*											0.00128 J	0.00128 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-21C 03/20/2018	MW-21C 03/20/2018 Duplicate	MW-21C 05/17/2018	MW-21C 05/17/2018 Duplicate	MW-21C 01/09/2019	MW-21C 01/09/2019 Duplicate	MW-21C 07/16/2019	MW-21C 07/16/2019 Duplicate	MW-21C 01/14/2020	MW-21C 01/14/2020 Duplicate	MW-22A 01/29/2008	MW-22A 07/14/2008
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052	<0.00109
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00025	<0.00112
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047	<0.0015
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00025	<0.00142
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00054	<0.00122
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00041	<0.00138
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00127	<0.00302
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00008	<0.00008
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	0.0001 J	<0.00004	<0.00004	<0.00004	<0.00029	<0.00028
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000059	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.0002	<0.00019
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	**0.023 J**	0.000042 J	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	**0.003 J**	<0.0002	<0.00019
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00039	<0.00038
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	0.000019 J	0.00012 J	<0.000019	<0.000019	0.0004 J	0.00005 J	<0.000019	<0.000019	<0.00039	<0.00038
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002	<0.00019
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00024	<0.00024
Acenaphthene	*1.5*	*4.4*	<0.000027	<0.000027	0.00013	0.00018	<0.000027	<0.000027	0.0057 J	0.00081 J	<0.000027	0.0002	<0.00029	<0.00028
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	0.000074 J	<0.000015	<0.000015	<0.000015	<0.00029	<0.00028
Anthracene	*7.3*	*22*	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	0.00044 J	0.00005 J	<0.000014	<0.000014	<0.0002	<0.00019
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.000051	<0.000051	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0002	<0.00019
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002	<0.00019
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00039	<0.00038
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	<0.000037	0.000048 J	<0.000037	<0.000037	<0.000037	<0.00004	<0.000037	0.00035	0.000065 J	**0.0104**	<0.00019
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0002	<0.00019
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00002	<0.00002	0.000052 J	<0.00002	<0.00002	0.0032 J	0.0004 J	<0.00002	0.00017	<0.00029	<0.00028
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002	<0.00019
Fluoranthene	*0.98*	*2.9*	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00081 J	0.000087 J	<0.00001	<0.00001	<0.0002	<0.00019
Fluorene	*0.98*	*2.9*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	0.0019 J	0.00025 J	<0.00003	0.00018	<0.0002	<0.00019
Naphthalene	*0.49*	*1.5*	<0.00002	<0.00002	0.00002 J	0.0014 J	<0.00002	<0.00002	0.0044 J	0.0008 J	0.00011	0.00013	<0.00039	<0.00038
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00039	<0.00038
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00024	<0.00024
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.00008	<0.00008	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.0002	<0.00019
Phenanthrene	*0.73*	*2.2*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.00087 J	0.00011 J	<0.000021	0.000061 J	<0.0002	<0.00019
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	0.00018 J	0.00081 J	<0.000035	<0.000035	<0.0002	<0.00019
Pyrene	*0.73*	*2.2*	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	0.00039 J	0.000033 J	<0.000019	<0.000019	<0.0002	<0.00019
Metals														
Arsenic	*0.01*	*0.01*	0.00109 J	0.00113 J	0.00116 J	0.00108 J	0.00187 J	0.00178 J	0.0013 J	0.00326	0.00109 J	0.00109 J		

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-22A 02/03/2009	MW-22A 01/15/2010	MW-22A 06/29/2010	MW-22A 01/25/2011	MW-22A 07/21/2011	MW-22A 02/15/2012	MW-22A 07/18/2012	MW-22A 01/23/2014	MW-22A 07/30/2014	MW-22AR 02/08/2018	MW-22AR 03/25/2018	MW-22AR 05/31/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.0002	0.00296	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	0.000549	0.0403	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00022	<0.00015	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	0.000307 J	0.00925	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	0.000834 J	0.0569	<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.000108	<0.000109	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000304	<0.000307	<0.00004	<0.000041	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000127	<0.000129	<0.000059	<0.000059	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000784	<0.0000792	<0.000042	<0.000043	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000784	<0.0000792	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	<0.00007	<0.00007	<0.00007	0.00072	<0.00005	<0.00005	<0.00059	<0.0000686	0.00603	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.000814	<0.000822	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00007	0.00007 J	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000549	<0.000554	<0.000047	<0.000048	<0.000047
Acenaphthene	*1.5*	*4.4*	<0.00009	<0.00009	<0.00009	0.00015 J	<0.00005	0.00009 J	<0.00031	0.00557	0.0783	<0.000027	<0.000028	<0.000027
Acenaphthylene	*1.5*	*4.4*	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	0.000742	0.000943	<0.000015	<0.000015	<0.000015
Anthracene	*7.3*	*22*	0.0002	<0.00007	<0.00007	0.00011 J	<0.00005	0.000058 J	0.0004	<0.000939	0.00265	<0.000014	<0.000014	0.00017
Benzo(a)anthracene	*0.0091*	*0.02*	0.00015 J	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00011 J	<0.0000784	<0.0000792	<0.000051	<0.000051	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000784	<0.0000792	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000127	<0.000129	<0.00003	<0.000031	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00033	0.0013	<0.0012	<0.0002	0.0015	<0.0011	0.00011 J	<0.000363	0.000703	0.0033	<0.000038	0.0001 J
Chrysene	*0.91*	*2*	0.00014 J	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.0001 J	<0.0000784	<0.0000792	<0.000021	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	<0.00008	<0.00008	<0.00008	0.00015 J	<0.00005	0.000074 J	<0.00048	0.001	0.0224	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	0.00017 J	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000866	<0.000109	<0.00002	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.000086 J	<0.00041	0.000362 J	0.00247	<0.00001	<0.00001	<0.00001
Fluorene	*0.98*	*2.9*	<0.00007	<0.00007	<0.00007	0.0001 J	<0.00005	0.00008 J	<0.00029	0.000468 J	0.0175	<0.00003	<0.000031	<0.00003
Naphthalene	*0.49*	*1.5*	<0.0001	<0.0001	<0.0001	0.0035	0.0001 J	0.00024	<0.0018	<0.0034	**0.792**	<0.00017	0.00012	<0.00002
Nitrobenzene	*0.049*	*0.15*	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000108	<0.000109	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000098	<0.000099	<0.000025	<0.000026	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00008	0.00008 J	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000598	<0.000604	<0.00008	<0.000081	<0.000079
Phenanthrene	*0.73*	*2.2*	<0.00007	<0.00007	<0.00007	0.00028	<0.00005	0.0002 J	<0.0015	<0.000478	0.000604	<0.000021	0.00012	<0.000021
Phenol	*7.3*	*22*	<0.00007	<0.00007	<0.00007	0.00017 J	<0.00005	<0.00005	<0.00005	<0.0000392	<0.0000396	<0.000035	<0.000036	<0.000035
Pyrene	*0.73*	*2.2*	0.00013 J	<0.00007	<0.00007	<0.00007	<0.00005	0.000055 J	<0.00033	<0.000108	0.00106	<0.000019	<0.000019	<0.000019
Metals														
Arsenic	*0.01*	*0.01*										0.000896 J	0.000716 J	0.00293

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-22AR 01/22/2019	MW-22AR 07/31/2019	MW-22AR 02/10/2020	MW-22B 01/29/2008	MW-22B 07/14/2008	MW-22B 02/03/2009	MW-22B 01/15/2010	MW-22B 06/29/2010	MW-22B 01/25/2011	MW-22B 07/21/2011	MW-22B 02/15/2012	MW-22B 07/18/2012
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.00052	<0.00109	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.00025	0.00313 J	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	0.0042 J
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.00047	<0.0015	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.00025	0.00262 J	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	0.0088
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.00054	<0.00122	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.00041	<0.00138	<0.0005	<0.0005	0.00053 J	<0.0005	<0.001	<0.001	0.0033 J
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.00127	0.00339 J	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	0.0057 J
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.00008	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00004	<0.0003	<0.0003	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	0.00014 J	<0.00005
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	<0.0002	<0.0002	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.0002	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.0004	<0.0004	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	<0.00012	<0.0004	<0.0004	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00044	<0.00063
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.0002	<0.0002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.00025	<0.00025	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Acenaphthene	*1.5*	*4.4*	0.00071	<0.000027	<0.00015	0.0121	0.182	0.022	0.00016 J	0.0093	0.00022	0.003	0.068	0.18
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.0003	0.00192	0.00034	<0.00007	0.00012 J	<0.00007	<0.00005	0.00046	0.0018
Anthracene	*7.3*	*22*	0.000028 J	<0.000014	0.0002	0.000948	0.00575	0.00071	<0.00007	0.00031	<0.00007	0.00011 J	0.0017	0.0067
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	0.00029	<0.0002	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	0.0001	<0.0002	<0.0002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.0004	<0.0004	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.000065 J	<0.000037	0.00011 J	0.00172 J	<0.0002	0.00053	0.00022	<0.00061	<0.0002	0.00041	<0.00051	<0.0001
Chrysene	*0.91*	*2*	<0.000021	<0.000021	0.00032	<0.0002	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Dibenzofuran	*0.098*	*0.29*	0.000029 J	<0.00002	<0.00015	0.00363	0.0674	0.0051	0.00026	0.0019	<0.00008	0.00068	0.0079	0.046
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	0.00051	<0.00002	<0.00002	0.00066 J	<0.0002	0.00018 J	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Fluoranthene	*0.98*	*2.9*	0.000079 J	<0.00001	0.0015	0.00029 J	0.00661	0.0011	0.00011 J	0.00061	<0.00007	0.00019 J	0.0022	0.0065
Fluorene	*0.98*	*2.9*	0.00014	<0.00003	0.00019	0.00199	0.0395	0.0018	<0.00007	0.0018	<0.00007	0.00049	0.0035	0.019
Naphthalene	*0.49*	*1.5*	<0.00002	<0.00002	<0.00044	0.000691	0.00435	0.00017 J	0.00012 J	0.00036	<0.0001	<0.00005	0.0032	0.032
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.0004	<0.0004	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.00025	<0.00025	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	0.00029	<0.00005
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	<0.0002	<0.0002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005
Phenanthrene	*0.73*	*2.2*	0.000068 J	<0.000021	0.0015	<0.0002	0.000764	<0.00007	0.00015 J	<0.00007	<0.00007	<0.00005	0.00026	0.0027
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.000041	<0.0002	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.0001 J
Pyrene	*0.73*	*2.2*	0.000084 J	<0.000019	0.001	<0.0002	0.00239	0.00047	<0.00007	0.00027	<0.00007	0.00012 J	0.001	0.0033
Metals														
Arsenic	*0.01*	*0.01*	0.00488	0.000481 J	0.00352									

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-22B 01/23/2014	MW-22B 07/30/2014	MW-22B 08/28/2014	MW-22BR 02/08/2018	MW-22BR 03/25/2018	MW-22BR 05/31/2018	MW-22BR 01/22/2019	MW-22BR 07/31/2019	MW-22BR 02/10/2020	MW-23C 02/04/2009 DNAPL	MW-23C 01/18/2010 DNAPL	MW-23C 06/23/2010 DNAPL
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.00014	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.005
Benzene	*0.005*	*0.005*	0.000304 J	0.00185	0.00238	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	**0.017**	**0.012**	**0.0095 J**
Chlorobenzene	*0.1*	*0.1*	<0.00018	<0.00012	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.001 J		<0.005
Ethylbenzene	*0.7*	*0.7*	0.0022	0.0255	0.0275	0.00034 J	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.13	0.074	0.12
Methylene chloride	*0.005*	*0.005*	<0.00022	<0.00015	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	**<0.0092**
Toluene	*1*	*1*	0.00133	0.00584	0.00752	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0023 J	0.0012 J	<0.005
Vinyl chloride	*0.002*	*0.002*			<0.00011									
Xylenes (total)	*10*	*10*	0.00409	0.0362	0.0383	0.00082 J	<0.0003	0.001	<0.0003	<0.0003	<0.0003	0.073	0.044	0.069 J
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000108	<0.000109	<0.00011	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0001	<0.0001	**<0.005**
2,4-Dimethylphenol	*0.49*	*1.5*	<0.000304	0.00107	<0.00031	<0.00004	<0.000041	<0.00004	<0.00004	<0.00004	<0.00004	<0.00008	<0.00008	<0.004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000127	<0.000129	<0.00013	<0.000059	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058	<0.00009	<0.00009	**<0.0045**
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0000784	<0.0000792	<0.00008	<0.000042	<0.000043	<0.000042	<0.000042	<0.000042	<0.000042	<0.00007	<0.00007	**<0.0035**
2-Chloronaphthalene	*2*	*5.8*	<0.0000784	<0.0000792	<0.00008	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.00011 J	<0.00012	<0.0001	<0.005
2-Methylnaphthalene	*0.098*	*0.29*	0.000414 J	0.00721	0.00663	0.00056	0.000067 J	0.000071 J	<0.000019	<0.000019	<0.000043	**2.6**	**0.75**	**2.7**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.000814	<0.000822	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	**<0.004**
4-Nitrophenol	*0.049*	*0.15*	<0.000549	<0.000554	<0.00056	<0.000047	<0.000048	<0.000047	<0.000047	<0.000047	<0.000047	<0.00007	<0.00007	<0.0035
Acenaphthene	*1.5*	*4.4*	0.0244	0.0762	0.123	0.034	0.044	0.047	0.022	<0.000027	0.018	**3.4**	1.2	**3.4**
Acenaphthylene	*1.5*	*4.4*	0.000886	0.000641	0.00132	<0.000015	0.00096	0.00041	<0.000015	<0.000015	0.00018	0.017	0.01	0.03
Anthracene	*7.3*	*22*	<0.00146	0.00292	0.00404	0.00039	0.00062	0.0013	0.00048	<0.000014	0.00042	1.2	0.36	1.2
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0000784	<0.0000792	<0.00008	<0.000051	<0.000051	<0.00005	<0.00005	<0.00005	<0.00005	**0.31**	**0.12**	**0.3**
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0000784	<0.0000792	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	**0.072**	**0.029**	**0.093**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.000127	<0.000129	<0.00013	<0.00003	<0.000031	<0.00003	<0.00003	<0.00003	<0.00003	<0.00009	<0.00009	**<0.0045**
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000363	0.000672	<0.00037	<0.000037	<0.000038	<0.000037	<0.000037	<0.000037	0.000075 J	0.002	<0.0011	**<0.01**
Chrysene	*0.91*	*2*	<0.0000784	<0.0000792	<0.00008	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.28	0.093	0.27
Dibenzofuran	*0.098*	*0.29*	0.00784	0.0238	0.0409	0.00066	0.00049	0.0011	0.00029	<0.00002	<0.00029	**3.5**	**1.2**	**3.6**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.000873	<0.000109	<0.00011	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00007	<0.00007	<0.0035
Fluoranthene	*0.98*	*2.9*	0.00187	0.00304	0.00282	0.00098	0.0011	0.0028	0.0011	<0.00001	0.0017	**3**	0.77	**3**
Fluorene	*0.98*	*2.9*	0.00521	0.0198	0.0355	0.002	0.0017	0.0046	0.0025	<0.00003	0.0026	**2.5**	0.82	**2.6**
Naphthalene	*0.49*	*1.5*	0.13 J	**0.832**	**0.977**	0.0038	0.0008	0.00044	0.00017	<0.00002	<0.00013	**9.9**	**3.9**	**8.9**
Nitrobenzene	*0.049*	*0.15*	<0.000108	<0.000109	<0.00011	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00009	<0.00009	<0.0045
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000098	<0.000099	<0.0001	<0.000025	<0.000026	<0.000025	<0.000025	<0.000025	<0.000025	<0.00009	<0.00009	<0.0045
Pentachlorophenol	*0.001*	*0.001*	<0.000598	<0.000604	<0.00061	<0.00008	<0.000081	<0.000079	<0.000079	<0.000079	<0.000079	<0.00008	<0.00008	**<0.004**
Phenanthrene	*0.73*	*2.2*	<0.000562	0.00053	<0.00006	0.00081	0.00018	0.00039	<0.000021	<0.000021	<0.00013	**8.8**	**2.7**	**8.2**
Phenol	*7.3*	*22*	<0.0000392	<0.0000396	<0.00004	<0.000035	<0.000036	<0.000035	<0.000035	0.00069	<0.000035	<0.00007	<0.00007	<0.0035
Pyrene	*0.73*	*2.2*	0.000876	0.00123	0.0023	0.00062	0.00077	0.0015	0.00046	<0.000019	0.00082	**1.6**	0.59	**1.9**
Metals														
Arsenic	*0.01*	*0.01*				**0.0219**	**0.0159**	**0.0301**	**0.0535**	0.000559 J	**0.016**			

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
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CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-23C 01/19/2011 DNAPL	MW-23C 07/22/2011 DNAPL	MW-23C 02/02/2012 DNAPL	MW-23C 07/12/2012 DNAPL	MW-23C 02/11/2013 DNAPL	MW-23C 07/31/2013 DNAPL	MW-23C 01/15/2014 DNAPL	MW-23C 08/28/2014 DNAPL	MW-23C 01/09/2020 DNAPL	MW-24AR 02/05/2009	MW-24AR 01/14/2010	MW-24AR 06/29/2010
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.005	**<0.01**	**<0.01**	<0.0005	<0.00014	<0.0014	<0.0002	<0.0014	<0.001	<0.0005	<0.0005	<0.0005
Benzene	*0.005*	*0.005*	**0.0072 J**	**<0.01**	**<0.01**	**0.0071**	**0.0111**	**0.0138**	**0.0126**	**0.00596 J**	0.0027 J	<0.0005	<0.0005	<0.0005
Chlorobenzene	*0.1*	*0.1*	<0.005	<0.01	<0.01	<0.0005	0.000279 J	0.00146 J	<0.00018	<0.0012	<0.0015	<0.0005	<0.0005	<0.0005
Ethylbenzene	*0.7*	*0.7*	0.13	0.1	0.1	0.17	0.151	0.185	0.165	0.15	0.028	<0.0005	<0.0005	<0.0005
Methylene chloride	*0.005*	*0.005*	<0.005	**<0.013**	**<0.013**	<0.001	<0.00015	<0.0015	<0.00022	<0.0015	<0.005	<0.0005	<0.0005	<0.0005
Toluene	*1*	*1*	<0.005	<0.01	<0.01	0.0025 J	0.00433	0.00819 J	0.00728	0.00378 J	<0.001	<0.0005	<0.0005	<0.0005
Vinyl chloride	*0.002*	*0.002*	**<0.005**	**<0.01**	**<0.01**	<0.0005	<0.00011	<0.0011	<0.00018	<0.0011				
Xylenes (total)	*10*	*10*	0.059 J	0.048 J	0.039 J	0.11	0.0884	0.0988	0.0959	0.0915	0.025	<0.001	<0.001	<0.001
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0001	<0.00005	<0.0005	<0.001	<0.001	**<0.00534**	**<0.0259**	**<0.022**	<0.00021	<0.0001	<0.0001	<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00008	0.0035	0.0014 J	0.028	<0.00282	<0.015	<0.0731	0.202	<0.047	<0.00008	<0.00008	<0.00008
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00009	<0.00005	<0.0005	<0.001	<0.00118	**<0.00631**	**<0.0307**	**<0.026**	<0.00058	<0.00009	<0.00009	<0.00009
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00007	<0.00006	<0.0006	<0.0012	<0.000727	**<0.00388**	**<0.0189**	**<0.016**	<0.00042	<0.00007	<0.00007	<0.00007
2-Chloronaphthalene	*2*	*5.8*	<0.0001	<0.00005	<0.0005	<0.001	<0.000727	<0.00388	<0.0189	<0.016	<0.00021	<0.00012	<0.0001	<0.0001
2-Methylnaphthalene	*0.098*	*0.29*	**1.2**	**1.3**	**0.65**	**28**	**1.38**	**1.16**	**4.52**	**18.3**	**0.12**	<0.00007	0.00023	<0.00007
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.0008	<0.0016	**<0.00755**	**<0.0403**	**<0.196**	**<0.166**	<0.0002	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.00007	<0.00005	<0.0005	<0.001	<0.00509	<0.0272	**<0.132**	**<0.112**	<0.00047	<0.00007	<0.00007	<0.00007
Acenaphthene	*1.5*	*4.4*	**1.6**	**2**	0.89	**39**	**1.78**	**1.58**	**7.79**	**25.9**	0.21	<0.00009	<0.00009	<0.00009
Acenaphthylene	*1.5*	*4.4*	0.012	0.015	0.0068	0.45	<0.000545	<0.00291	<0.0142	0.336	0.0029	<0.00006	<0.00007	<0.00007
Anthracene	*7.3*	*22*	0.4	1.7	0.25	**16**	0.641	0.31	1.49	**8.74**	0.035	<0.00007	<0.00007	<0.00007
Benzo(a)anthracene	*0.0091*	*0.02*	**0.12**	**0.15**	**0.046**	**4.8**	**0.104**	**0.0905**	**0.5**	**2.63**	0.008	<0.00007	<0.00007	<0.00007
Benzo(a)pyrene	*0.0002*	*0.0002*	**0.04**	**0.044**	**0.016**	**1.2**	**0.0283**	**0.0235 J**	**0.119**	**0.73**	**0.0022**	<0.00008	<0.00008	<0.00008
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00009	<0.00005	<0.0005	**<0.001**	**<0.00118**	**<0.00631**	**<0.0307**	**<0.026**	<0.0003	<0.00009	<0.00009	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.0014	0.0019	<0.001	**0.042**	<0.00336	**<0.018**	**<0.0873**	**<0.074**	<0.00037	0.00031	<0.00029	<0.0024
Chrysene	*0.91*	*2*	0.099	0.21	0.044	**4.3**	0.103	0.0819	0.476	**2.24**	0.0072	<0.00007	<0.00007	<0.00007
Dibenzofuran	*0.098*	*0.29*	**1.6**	**2.7**	**0.85**	**46**	**1.82**	**1.48**	**5.45**	**25.7**	**0.17**	<0.00008	0.000084 J	0.00011 J
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00007	<0.00005	<0.0005	<0.001	<0.001	<0.00534	<0.0259	<0.022	<0.0002	0.0019	0.0001 J	<0.00007
Fluoranthene	*0.98*	*2.9*	**0.99**	**1.8**	0.48	**34**	**1.09**	0.812	**4.42**	**20.4**	0.068	<0.00007	0.00011 J	<0.00007
Fluorene	*0.98*	*2.9*	0.88	**2**	0.57	**32**	**1.19**	0.874	**3.78**	**20.5**	0.12	<0.00007	<0.00007	<0.00007
Naphthalene	*0.49*	*1.5*	**8.5**	**7.5**	**7.8**	**83**	**12.2**	**13.2**	**43.8**	**57.9**	**0.66**	<0.0001	<0.0023	0.00036
Nitrobenzene	*0.049*	*0.15*	<0.00009	<0.00005	<0.0005	<0.001	<0.001	<0.00534	<0.0259	<0.022	<0.00024	<0.00009	<0.00009	<0.00009
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00009	<0.00005	<0.0005	<0.001	<0.000909	<0.00485	<0.0236	<0.02	<0.00025	<0.00009	<0.00009	<0.00009
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.00005	<0.0005	<0.001	**<0.00555**	**<0.0296**	**<0.144**	**<0.122**	<0.00079	<0.00008	<0.00008	<0.00008
Phenanthrene	*0.73*	*2.2*	**3.6**	**3.8**	**1.9**	**130**	**3.48**	**2.8**	**18.2**	**59.4**	0.25	<0.00007	0.00018 J	<0.00007
Phenol	*7.3*	*22*	<0.00007	<0.00005	0.0011 J	<0.001	<0.000364	<0.00194	<0.00943	<0.008	0.0079	<0.00007	<0.00007	<0.00007
Pyrene	*0.73*	*2.2*	0.6	**1.1**	0.35	**21**	**0.754**	0.515	**3.04**	**13.3**	0.043	<0.00007	<0.00007	<0.00007
Metals														
Arsenic	*0.01*	*0.01*									0.00333			

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-24AR 01/25/2011	MW-24AR 07/21/2011	MW-24AR 02/09/2012	MW-24AR 07/25/2012	MW-24AR 02/12/2013	MW-24AR 08/08/2013	MW-24AR 01/23/2014	MW-24B 01/28/2008	MW-24B 07/14/2008	MW-24B 02/03/2009	MW-24B 01/14/2010	MW-24B 06/29/2010
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00245	<0.00109	<0.0005	<0.0005	<0.0005
Benzene	*0.005*	*0.005*	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00257	<0.00112	<0.0005	<0.0005	<0.0005
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.001	<0.001	<0.0005	0.000201 J	<0.00012	<0.00018	<0.00239	<0.0015	<0.0005	<0.0005	<0.0005
Ethylbenzene	*0.7*	*0.7*	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00203	<0.00142	<0.0005	<0.0005	<0.0005
Methylene chloride	*0.005*	*0.005*	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00195	<0.00122	<0.0005	<0.0005	<0.0005
Toluene	*1*	*1*	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00274	<0.00138	<0.0005	<0.0005	<0.0005
Vinyl chloride	*0.002*	*0.002*						<0.00011						
Xylenes (total)	*10*	*10*	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00581	<0.00302	<0.001	<0.001	<0.001
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0001	<0.00005	<0.00005	<0.00005	<0.000105	<0.000104	<0.000105	<0.00008	<0.00008	<0.0001	<0.0001	<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00008	<0.00005	0.00013 J	<0.00005	R	<0.000292	<0.000295	<0.00029	<0.0003	<0.00008	<0.00008	<0.00008
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00009	<0.00005	<0.00005	<0.00005	<0.000124	<0.000123	<0.000124	<0.00019	<0.0002	<0.00009	<0.00009	<0.00009
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000762	<0.0000755	<0.0000762	<0.00019	<0.0002	<0.00007	<0.00007	<0.00007
2-Chloronaphthalene	*2*	*5.8*	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000762	<0.00038	<0.0004	<0.00012	<0.0001	<0.0001
2-Methylnaphthalene	*0.098*	*0.29*	0.00018 J	<0.00005	<0.00005	<0.00005	<0.0000667	<0.000066	0.0000924 J	<0.00038	<0.0004	<0.00007	<0.00007	0.000099 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00079	<0.000783	<0.00079	<0.00019	<0.0002	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.00007	<0.00005	<0.00005	<0.00005	R	<0.000528	<0.000533	<0.00024	<0.00025	<0.00007	<0.00007	<0.00007
Acenaphthene	*1.5*	*4.4*	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	0.000146 J	<0.00029	<0.0003	<0.00009	<0.00009	<0.00009
Acenaphthylene	*1.5*	*4.4*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000571	<0.0000566	<0.0000571	<0.00029	<0.0003	<0.00006	<0.00007	<0.00007
Anthracene	*7.3*	*22*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000476	<0.0000472	<0.000452	0.00066	<0.0002	<0.00007	<0.00007	<0.00007
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000762	<0.00019	<0.0002	0.00015 J	<0.00007	<0.00007
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000762	<0.00019	<0.0002	<0.00008	<0.00008	<0.00008
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00009	<0.00005	<0.00005	<0.00005	<0.000124	<0.000123	<0.000124	<0.00038	<0.0004	<0.00009	<0.00009	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0002	0.00089	0.00048	<0.0001	<0.000352	<0.000349	0.000767 J	<0.00019	<0.0002	0.00046	<0.0021	<0.00074
Chrysene	*0.91*	*2*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000762	<0.00019	<0.0002	0.00015 J	<0.00007	<0.00007
Dibenzofuran	*0.098*	*0.29*	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	0.000164 J	0.000568	<0.0003	<0.00008	<0.00008	<0.00008
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00007	<0.00005	0.00017 J	<0.000071	<0.000105	0.000168 J	<0.000837	<0.00019	<0.0002	<0.00007	<0.00007	<0.00007
Fluoranthene	*0.98*	*2.9*	<0.00007	<0.00005	0.000069 J	<0.00005	<0.0000667	<0.000066	0.000224 J	<0.00019	<0.0002	0.00011 J	<0.00007	<0.00007
Fluorene	*0.98*	*2.9*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000667	<0.000066	0.000137 J	0.00026 J	<0.0002	<0.00007	<0.00007	<0.00007
Naphthalene	*0.49*	*1.5*	0.00081	<0.00005	<0.00005	<0.00005	<0.000139	<0.0000755	<0.000744	0.00105	<0.0004	<0.0001	<0.0001	0.00083
Nitrobenzene	*0.049*	*0.15*	<0.00009	<0.00005	<0.00005	<0.00005	<0.000105	<0.000104	<0.000105	<0.00038	<0.0004	<0.00009	<0.00009	<0.00009
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000952	<0.0000943	<0.0000952	<0.00024	<0.00025	<0.00009	<0.00009	<0.00009
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.00005	<0.00005	<0.00005	R	<0.000575	<0.000581	<0.00019	<0.0002	<0.00008	<0.00008	<0.00008
Phenanthrene	*0.73*	*2.2*	0.0001 J	<0.00005	<0.00005	<0.00005	0.000089 J	<0.0000566	<0.000691	0.000676	<0.0002	<0.00007	<0.00007	<0.00007
Phenol	*7.3*	*22*	<0.00007	<0.00005	0.00005 J	<0.00005	R	<0.0000377	<0.0000381	<0.00019	<0.0002	<0.00007	<0.00007	<0.00007
Pyrene	*0.73*	*2.2*	<0.00007	<0.00005	0.000067 J	<0.00005	<0.000105	<0.000104	0.000172 J	<0.00019	<0.0002	<0.00007	<0.00007	<0.00007
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-24B 01/25/2011	MW-24B 07/21/2011	MW-24B 02/09/2012	MW-24B 07/25/2012	MW-24B 02/12/2013	MW-24B 08/08/2013	MW-24C 01/28/2008	MW-24C 07/14/2008	MW-24C 02/03/2009	MW-24C 01/14/2010	MW-24C 06/29/2010	MW-24C 01/25/2011
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.00245	<0.00109	<0.0005	<0.0005	<0.0005	<0.0005
Benzene	*0.005*	*0.005*	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.00257	<0.00112	<0.0005	<0.0005	<0.0005	<0.0005
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00239	<0.0015	<0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	*0.7*	*0.7*	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00203	<0.00142	<0.0005	<0.0005	<0.0005	<0.0005
Methylene chloride	*0.005*	*0.005*	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00195	<0.00122	<0.0005	<0.0005	<0.0005	<0.0005
Toluene	*1*	*1*	<0.0005	<0.001	<0.001	<0.0005	<0.00015	0.0209	<0.00274	<0.00138	<0.0005	<0.0005	<0.0005	<0.0005
Vinyl chloride	*0.002*	*0.002*						<0.00011						
Xylenes (total)	*10*	*10*	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00581	<0.00302	<0.001	<0.001	<0.001	<0.001
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0001	<0.00005	<0.00005	<0.00005	<0.000105	<0.000108	<0.00008	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00008	<0.00005	<0.00005	<0.00005	<0.000295	<0.000304	<0.00029	<0.00029	<0.00008	<0.00008	<0.00008	<0.00008
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00009	<0.00005	<0.00005	<0.00005	<0.000124	<0.000127	<0.00019	<0.00019	<0.00009	<0.00009	<0.00009	<0.00009
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000762	<0.0000784	<0.00019	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007
2-Chloronaphthalene	*2*	*5.8*	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000784	<0.00038	<0.00038	<0.00012	<0.0001	<0.0001	<0.0001
2-Methylnaphthalene	*0.098*	*0.29*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000667	<0.0000686	<0.00038	<0.00038	<0.00007	<0.00007	<0.00007	<0.00007
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00079	<0.000814	<0.00019	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.00007	<0.00005	<0.00005	<0.00005	<0.000533	<0.000549	<0.00024	<0.00024	<0.00007	<0.00007	<0.00007	<0.00007
Acenaphthene	*1.5*	*4.4*	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000784	<0.00029	<0.00029	<0.00009	<0.00009	0.00022	<0.00009
Acenaphthylene	*1.5*	*4.4*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000571	<0.0000588	<0.00029	<0.00029	<0.00006	<0.00007	<0.00007	<0.00007
Anthracene	*7.3*	*22*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000476	<0.000049	<0.00019	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000784	<0.00019	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000784	<0.00019	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00009	<0.00005	<0.00005	<0.00005	<0.000124	<0.000127	<0.00038	<0.00038	<0.00009	<0.00009	<0.00009	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0002	0.00014 J	0.00011 J	<0.00015	<0.000352	<0.000363	<0.00019	<0.00019	0.00055	<0.0002	<0.001	<0.0002
Chrysene	*0.91*	*2*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000784	<0.00019	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007
Dibenzofuran	*0.098*	*0.29*	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000784	0.000571	<0.00029	<0.00008	<0.00008	<0.00008	<0.00008
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00007	<0.00005	<0.00005	<0.00013	<0.000105	<0.000108	0.00063 J	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007
Fluoranthene	*0.98*	*2.9*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000667	<0.0000686	0.000529	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007
Fluorene	*0.98*	*2.9*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000667	<0.0000686	<0.00019	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007
Naphthalene	*0.49*	*1.5*	<0.0001	<0.00005	<0.00005	0.00015 J	<0.0000762	<0.0000784	<0.00038	<0.00038	0.00013 J	<0.00026	<0.0001	<0.0001
Nitrobenzene	*0.049*	*0.15*	<0.00009	<0.00005	<0.00005	<0.00005	<0.000105	<0.000108	<0.00038	<0.00038	<0.00009	<0.00009	<0.00009	<0.00009
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000952	<0.000098	<0.00024	<0.00024	<0.00009	<0.00009	<0.00009	<0.00009
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.00005	<0.00005	<0.00005	<0.000581	<0.000598	<0.00019	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008
Phenanthrene	*0.73*	*2.2*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000571	<0.0000588	0.000677	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007
Phenol	*7.3*	*22*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000381	<0.0000392	<0.00019	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007
Pyrene	*0.73*	*2.2*	<0.00007	<0.00005	<0.00005	<0.00005	<0.000105	<0.000108	0.00041 J	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-24C 07/21/2011	MW-24C 02/09/2012	MW-24C 07/25/2012	MW-24C 02/12/2013	MW-24C 08/08/2013	MW-25A 01/28/2008	MW-25A 07/14/2008	MW-25A 02/03/2009	MW-25A 01/15/2010	MW-25A 06/30/2010	MW-25A 01/26/2011	MW-25A 01/26/2011 Duplicate
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.00245	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Benzene	*0.005*	*0.005*	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.00257	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Chlorobenzene	*0.1*	*0.1*	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00239	<0.00047	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	*0.7*	*0.7*	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00203	<0.00025	0.0029 J	<0.0005	<0.0005	<0.0005	<0.0005
Methylene chloride	*0.005*	*0.005*	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00195	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Toluene	*1*	*1*	<0.001	<0.001	<0.0005	0.000218 J	<0.00015	<0.00274	<0.00041	0.00074 J	<0.0005	<0.0005	<0.0005	<0.0005
Vinyl chloride	*0.002*	*0.002*					<0.00011							
Xylenes (total)	*10*	*10*	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00581	<0.00127	0.0047 J	<0.001	<0.001	<0.001	<0.001
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	<0.00005	<0.00005	<0.000105	<0.000108	<0.00008	<0.00009	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00005	<0.00005	<0.00005	<0.000295	<0.000304	<0.00029	<0.00033	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	<0.00005	<0.00005	<0.000124	<0.000127	<0.00019	<0.00022	<0.00009	<0.00009	0.00066	<0.00009	<0.00009
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	<0.00006	<0.00006	<0.0000762	<0.0000784	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000784	<0.00038	<0.00044	<0.00012	<0.0001	<0.0001	<0.0001	<0.0001
2-Methylnaphthalene	*0.098*	*0.29*	<0.00005	<0.00005	0.000077 J	<0.0000667	<0.0000686	<0.00038	<0.00044	0.024	<0.00007	<0.00007	<0.00007	<0.00007
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.00079	<0.000814	<0.00019	<0.00022	<0.00008	<0.00008	0.00026	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.00005	<0.00005	<0.00005	<0.000533	<0.000549	<0.00024	<0.00028	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
Acenaphthene	*1.5*	*4.4*	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000784	0.00038 J	<0.00033	0.034	0.0014	0.0012	0.00054	0.00052
Acenaphthylene	*1.5*	*4.4*	<0.00005	<0.00005	<0.00005	<0.0000571	<0.0000588	<0.00029	<0.00033	0.0004	<0.00007	0.00034	<0.00007	<0.00007
Anthracene	*7.3*	*22*	<0.00005	<0.00005	<0.00005	<0.0000476	<0.000049	0.00067	<0.00022	0.0005	<0.00007	<0.00007	<0.00007	<0.00007
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000784	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000784	<0.00019	**<0.00022**	<0.00008	<0.00008	0.00012 J	<0.00008	<0.00008
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	<0.00005	<0.00005	<0.000124	<0.000127	<0.00038	<0.00044	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00013 J	0.0013	<0.00013	<0.000352	<0.000363	0.00021 J	<0.00022	0.00033	<0.0002	<0.00056	<0.0002	0.00046
Chrysene	*0.91*	*2*	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000784	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
Dibenzofuran	*0.098*	*0.29*	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000784	0.000601	<0.00033	0.018	<0.00008	0.00034	<0.00008	<0.00008
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00005	<0.00005	<0.00005	<0.000105	<0.000108	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
Fluoranthene	*0.98*	*2.9*	<0.00005	<0.00005	<0.00005	<0.0000667	<0.0000686	0.000556	<0.00022	0.00057	0.000084 J	0.000092 J	<0.00007	<0.00007
Fluorene	*0.98*	*2.9*	<0.00005	<0.00005	<0.00005	<0.0000667	<0.0000686	0.00033 J	<0.00022	0.0049	<0.00007	<0.00007	<0.00007	<0.00007
Naphthalene	*0.49*	*1.5*	0.0002	<0.00005	0.00019 J	<0.0000762	<0.0000784	0.0011	<0.00044	0.45	<0.0001	0.00024	0.00018 J	0.00027
Nitrobenzene	*0.049*	*0.15*	<0.00005	<0.00005	<0.00005	<0.000105	<0.000108	<0.00038	<0.00044	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.00005	<0.00005	<0.0000952	<0.000098	<0.00024	<0.00028	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009
Pentachlorophenol	*0.001*	*0.001*	<0.00005	<0.00005	<0.00005	<0.000581	<0.000598	<0.00019	<0.00022	<0.00008	<0.00008	0.00033	<0.00008	<0.00008
Phenanthrene	*0.73*	*2.2*	<0.00005	<0.00005	<0.00005	<0.0000571	<0.0000588	0.000715	<0.00022	0.0034	<0.00007	<0.00007	<0.00007	<0.00007
Phenol	*7.3*	*22*	<0.00005	<0.00005	<0.00005	<0.0000381	<0.0000392	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
Pyrene	*0.73*	*2.2*	<0.00005	<0.00005	<0.00005	<0.000105	<0.000108	0.000484	<0.00022	0.00036	0.00047	0.00015 J	<0.00007	<0.00007
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-25A 07/20/2011	MW-25A 02/08/2012	MW-25A 07/18/2012	MW-25A 02/06/2013	MW-25A 08/06/2013	MW-25A 01/22/2014	MW-25A 07/29/2014	MW-25A 01/31/2018	MW-25A[8] 03/27/2018	MW-25A 05/31/2018	MW-25A 01/15/2019	MW-25A 07/16/2019
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.001	<0.001	<0.0005	0.000497 J	0.000121 J	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*	<0.001	<0.001	<0.0005	<0.00011	<0.00011	<0.00018	<0.00011	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Xylenes (total)	*10*	*10*	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	<0.00005	<0.00005	<0.000106	<0.00011	<0.000105	<0.000107	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00005	<0.00005	<0.00005	<0.000298	<0.00031	<0.000295	<0.000301	<0.00004	<0.000041	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	<0.00005	<0.00005	<0.000125	<0.00013	<0.000124	<0.000126	<0.000058	<0.000059	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	<0.00006	<0.00006	<0.0000769	<0.00008	<0.0000762	<0.0000777	<0.000042	<0.000043	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.00005	<0.00005	<0.0000769	<0.00008	<0.0000762	<0.0000777	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	<0.00005	<0.00005	<0.000061	<0.0000673	<0.00007	<0.0000667	<0.000068	0.00014	<0.000019	0.000052 J	<0.000051	0.000057 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.000798	<0.00083	<0.00079	<0.000806	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00005	<0.00005	<0.00005	<0.000538	<0.00056	<0.000533	<0.000544	<0.000047	<0.000048	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	0.0042	0.00053	<0.00005	0.000171 J	0.000345 J	0.00356	0.0000912 J	0.062	0.054	<0.000027	0.000036 J	<0.000027
Acenaphthylene	*1.5*	*4.4*	0.000053 J	<0.00005	<0.00005	<0.0000577	<0.00006	0.000542	<0.0000583	0.00044	0.00053	<0.000015	<0.000015	<0.000015
Anthracene	*7.3*	*22*	<0.00005	<0.00005	<0.00005	<0.0000481	<0.00005	<0.0000476	<0.0000485	0.00057	0.00068	<0.000014	0.000015 J	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00005	<0.0000769	<0.00008	<0.0000762	<0.0000777	<0.00005	<0.000051	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	<0.00005	<0.00005	<0.0000769	<0.00008	<0.0000762	<0.0000777	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	<0.00005	<0.00005	<0.000125	<0.00013	<0.000124	<0.000126	<0.00003	<0.000031	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00023	<0.0001	<0.0001	<0.000356	<0.00037	<0.000352	<0.000359	<0.00008	<0.000038	0.0001 J	<0.000078	<0.000037
Chrysene	*0.91*	*2*	<0.00005	<0.00005	<0.00005	<0.0000769	<0.00008	<0.0000762	<0.0000777	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	0.0013	0.0005	<0.00005	<0.0000769	<0.00008	<0.0000762	<0.0000777	0.00017	0.00011	0.000033 J	<0.00002	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00005	<0.00005	<0.00005	<0.000106	<0.00011	<0.000105	<0.000107	<0.00002	<0.00002	<0.00002	0.00002 J	<0.00002
Fluoranthene	*0.98*	*2.9*	0.00014 J	<0.00005	<0.00005	<0.0000673	<0.00007	0.00106	<0.000068	0.0062	0.0066	<0.00001	0.000015 J	<0.00001
Fluorene	*0.98*	*2.9*	0.00016 J	0.00011 J	<0.00005	<0.0000673	<0.00007	<0.0000667	<0.000068	0.026	0.022	<0.00003	<0.00003	<0.00003
Naphthalene	*0.49*	*1.5*	<0.00005	0.00017 J	<0.00038	<0.000692	<0.00008	<0.000217	<0.000817	<0.00029	0.0002	0.0006	<0.00029	0.00023
Nitrobenzene	*0.049*	*0.15*	<0.00005	<0.00005	<0.00005	<0.000106	<0.00011	<0.000105	<0.000107	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.00005	<0.00005	<0.0000962	<0.0001	<0.0000952	<0.0000971	<0.000025	<0.000026	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00005	<0.00005	<0.00005	<0.000587	<0.00061	<0.000581	<0.000592	<0.000079	<0.000081	<0.000079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	<0.00005	<0.00005	<0.00005	<0.0000577	<0.00006	<0.0000571	<0.0000583	0.00015	0.00015	<0.000021	0.000029 J	<0.000021
Phenol	*7.3*	*22*	<0.00005	0.00005 J	<0.00005	<0.0000385	<0.00004	<0.0000381	<0.0000388	<0.000035	<0.000036	<0.000035	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	0.0009	<0.00005	<0.00005	<0.000106	0.000124 J	0.000585	0.00018 J	0.0033	0.0049	<0.000019	0.000027 J	<0.000019
Metals														
Arsenic	*0.01*	*0.01*								**0.0171**	0.00714	0.00171 J	0.00216	0.00285

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-25A 01/15/2020	MW-25C 01/28/2008 DNAPL	MW-25C 01/15/2010 DNAPL	MW-25C 01/26/2011	MW-25C 07/20/2011	MW-25C 02/08/2012	MW-25C 07/18/2012	MW-25C 02/06/2013	MW-25C 08/06/2013	MW-25C 01/22/2014	MW-25C 07/29/2014	MW-25C 01/28/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.001	**<0.025**	<0.0005	<0.005	**<0.01**	<0.005	<0.0028	<0.0007	<0.0002	<0.0007	<0.0002
Benzene	*0.005*	*0.005*	<0.0002	**0.11**	**0.11 J**	**0.092**	**0.076**	**0.039 J**	**0.03 J**	**0.0304**	**0.0283**	**0.022**	**0.0119**	0.00089 J
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.00094	<0.025	<0.0005	<0.005	<0.01	<0.005	0.00653 J	<0.0006	0.00034 J	<0.0006	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0003	0.545	0.47	0.5	0.37	0.34	0.33	0.324	0.173	0.32	0.298	0.042
Methylene chloride	*0.005*	*0.005*	<0.001	<0.0011	**<0.025**	<0.0005	**<0.0065**	**<0.013**	**<0.01**	<0.003	<0.00075	<0.00022	<0.00075	<0.001
Toluene	*1*	*1*	<0.0002	0.556	0.52	0.53	0.4	0.31	0.31	0.291	0.204	0.261	0.207	0.015
Vinyl chloride	*0.002*	*0.002*	<0.0002				**<0.005**	**<0.01**	**<0.005**	**<0.0022**	<0.00055	<0.00018	<0.00055	<0.0002
Xylenes (total)	*10*	*10*	<0.0003	1.43	1.2	1.2	1	0.98	0.96	1.03	0.575	1.01	1.07	0.29
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	**<0.8**	0.0001 J	<0.0001	<0.00005	<0.00005	<0.00005	**<0.106**	**<0.011**	**<0.0105**	<0.000107	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	**<2.9**	0.00008 J	<0.00008	0.0051	<0.00005	<0.00005	<0.298	<0.031	0.372	<0.000301	0.00061
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	**<1.9**	0.00009 J	<0.00009	<0.00005	<0.00005	<0.00005	**<0.125**	**<0.013**	**<0.0124**	<0.000126	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	**<1.9**	0.00007 J	<0.00007	<0.00006	<0.00006	<0.00006	**<0.0769**	**<0.008**	**<0.00762**	<0.0000777	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.000021	**<3.8**	0.0001 J	<0.0001	<0.00005	<0.00005	<0.00005	<0.0769	<0.008	<0.00762	<0.0000777	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	**193**	**0.76**	**1.4**	**1.3**	**0.92**	**0.9**	**0.8**	**1.32**	**1.46**	**0.943**	**0.48**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	**<1.9**	0.00008 J	<0.00008	<0.00008	<0.00008	<0.00008	**<0.798**	**<0.083**	**<0.079**	<0.000806	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.000047	**<2.4**	0.00007 J	<0.00007	<0.00005	<0.00005	<0.00005	**<0.538**	**<0.056**	**<0.0533**	<0.000544	<0.000047
Acenaphthene	*1.5*	*4.4*	<0.000027	**97.5**	0.21	0.55	0.28	0.26	0.21	0.261 J	0.381	0.416	0.284	0.17
Acenaphthylene	*1.5*	*4.4*	<0.000015	**<2.9**	0.0027 J	0.0041	0.0029	0.0021	0.0021	<0.0577	<0.006	<0.00571	0.00316	0.0017
Anthracene	*7.3*	*22*	0.000089 J	**42.8**	0.035	0.19	0.031	0.021	0.019	<0.0481	0.0377 J	0.0372 J	0.0209	0.015
Benzo(a)anthracene	*0.0091*	*0.02*	0.00012	**9.37**	0.0027 J	**0.047**	0.0014	0.00054	0.00086	**<0.0769**	<0.008	<0.00762	0.000813	0.00079
Benzo(a)pyrene	*0.0002*	*0.0002*	0.000038 J	**2.3**	**0.0014 J**	**0.013**	**0.00043**	0.00017 J	0.0002	**<0.0769**	**<0.008**	**<0.00762**	**0.000435 J**	**0.00028**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	**<3.8**	0.00009 J	<0.00009	<0.00005	<0.00005	<0.00005	**<0.125**	**<0.013**	**<0.0124**	**0.0016**	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	**<1.9**	0.0002 J	<0.0002	<0.002	<0.0001	0.00012 J	**<0.356**	**<0.037**	**<0.0352**	<0.000674	0.00006 J
Chrysene	*0.91*	*2*	0.000097 J	**8.38**	0.0025 J	0.048	0.0012	0.00062	0.00086	<0.0769	<0.008	<0.00762	0.000957	0.00077
Dibenzofuran	*0.098*	*0.29*	<0.00002	**102**	**0.22**	**0.52**	**0.29**	**0.26**	**0.22**	**0.174 J**	**0.353**	<0.00762	**0.276**	**0.18**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<1.9	0.00007 J	<0.00007	<0.00005	<0.00005	<0.00005	<0.106	<0.011	<0.0105	<0.000107	<0.00002
Fluoranthene	*0.98*	*2.9*	0.00045	**84.1**	0.041	0.32	0.02	0.011	0.0088	<0.0673	0.0149 J	0.018 J	0.0127	0.0092
Fluorene	*0.98*	*2.9*	<0.00003	**75.5**	0.12	0.34	0.14	0.13	0.096	0.102 J	0.163	<0.00667	0.129	0.086
Naphthalene	*0.49*	*1.5*	0.0001	**750**	**9.8**	**18**	**19**	**15**	**13**	**10.7**	**19.7**	**19**	**10.7**	**3**
Nitrobenzene	*0.049*	*0.15*	<0.000024	**<3.8**	0.00009 J	<0.00009	<0.00005	<0.00005	<0.00005	**<0.106**	<0.011	<0.0105	<0.000107	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	**<2.4**	0.00009 J	<0.00009	<0.00005	<0.00005	<0.00005	<0.0962	<0.01	<0.00952	<0.0000971	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.000079	**<1.9**	0.00008 J	<0.00008	<0.00005	<0.00005	<0.00005	**<0.587**	**<0.061**	**<0.0581**	<0.000592	<0.000079
Phenanthrene	*0.73*	*2.2*	0.00017	**214**	0.19	0.7	0.18	0.14	0.12	0.147 J	0.187	0.222	0.14	0.089
Phenol	*7.3*	*22*	<0.000035	<1.9	0.00007 J	<0.00007	0.026	0.003	0.0045	<0.0385	0.12	<0.00381	0.00177	<0.000035
Pyrene	*0.73*	*2.2*	0.00035	**49.5**	0.022	0.24	0.0092	0.0047	0.0063	<0.106	<0.011	<0.0105	0.00769	0.0062
Metals														
Arsenic	*0.01*	*0.01*	0.00216											0.00283

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-25C[8] 03/26/2018	MW-25C 05/31/2018	MW-25C 01/15/2019	MW-25C 07/16/2019	MW-25C 01/15/2020	MW-26A 01/29/2008	MW-26A 07/14/2008	MW-26A 02/03/2009	MW-26A 01/13/2010	MW-26A 06/25/2010	MW-26A 01/24/2011	MW-26A 07/19/2011
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
Benzene	*0.005*	*0.005*	0.00047 J	0.0013	<0.0002	0.0013	0.0017	<0.00025	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	**0.031**
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047	<0.00047	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
Ethylbenzene	*0.7*	*0.7*	0.043	0.036	0.038	0.035	0.033	<0.00025	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00054	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013
Toluene	*1*	*1*	0.015	0.013	0.013	0.011	0.01	<0.00041	<0.00041	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
Vinyl chloride	*0.002*	*0.002*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002							
Xylenes (total)	*10*	*10*	0.32	0.28	0.27	0.25	0.22	<0.00127	<0.00127	<0.001	<0.001	<0.001	<0.001	0.0045 J
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00021	<0.00021	<0.000021	<0.00021	<0.000021	<0.00008	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	0.0033	0.0075	<0.00004	0.0075	0.0062	<0.0003	<0.0003	0.00054	<0.00008	<0.00008	<0.00008	<0.00005
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00058	<0.00058	<0.000058	<0.00058	<0.000058	<0.0002	<0.0002	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00042	<0.00042	<0.000042	<0.00042	<0.000042	<0.0002	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.00021	<0.00021	<0.000021	<0.00021	<0.000021	<0.0004	<0.0004	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	**0.69**	**0.71**	**0.4**	**0.54**	**0.96**	<0.0004	<0.0004	0.0024	<0.00007	<0.00007	0.00031	0.00039
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.0002	<0.0002	<0.00002	<0.0002	<0.00002	<0.0002	<0.0002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.00047	<0.00047	<0.000047	<0.00047	<0.000047	<0.00025	<0.00025	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005
Acenaphthene	*1.5*	*4.4*	0.21	0.23	0.13	0.2	0.36	0.0519	0.0173	0.015	0.0097	0.005	0.0039	0.12
Acenaphthylene	*1.5*	*4.4*	0.0023	0.0028	0.0012	0.002	0.0025	<0.0003	<0.0003	<0.00006	0.00014 J	<0.00007	<0.00007	0.00047
Anthracene	*7.3*	*22*	0.019	0.024	0.011	0.016	0.027	0.0018	0.00047 J	0.00079	<0.00007	0.0002	0.000099 J	0.0026
Benzo(a)anthracene	*0.0091*	*0.02*	0.0011	0.0012	0.00065	0.0013	0.00057	<0.0002	<0.0002	0.00016 J	<0.00007	<0.00007	<0.00007	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0002	**0.00042 J**	**0.00021**	**0.00037 J**	0.00019	<0.0002	<0.0002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.0003	<0.0003	<0.00003	<0.0003	<0.00003	<0.0004	<0.0004	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00037	<0.00037	<0.000037	<0.00037	0.00066	**0.0214**	<0.0002	0.00042	<0.00026	<0.00045	0.00043	<0.00031
Chrysene	*0.91*	*2*	0.0013	0.0014	0.00074	0.0014	0.00056	<0.0002	<0.0002	0.00018 J	<0.00007	0.0003	<0.00007	<0.00005
Dibenzofuran	*0.098*	*0.29*	**0.2**	**0.21**	**0.14**	**0.19**	**0.34**	0.00492	0.00123	0.0026	0.00078	0.00033	0.00038	0.021
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.0002	<0.0002	<0.00002	<0.0002	0.00068	<0.0002	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005
Fluoranthene	*0.98*	*2.9*	0.014	0.015	0.0079	0.014	0.0058	0.00244	0.000523	0.00091	0.0003	0.0004	0.00036	0.0048
Fluorene	*0.98*	*2.9*	0.091	0.11	0.062	0.081	0.15	0.00235	0.000742	0.0016	0.00028	0.00034	0.00017 J	0.0057
Naphthalene	*0.49*	*1.5*	**5.9**	**5.6**	**3.5**	**4.2**	**7.5**	0.00078	<0.0004	0.0074	<0.00051	<0.0001	0.0043	0.0019
Nitrobenzene	*0.049*	*0.15*	<0.00024	<0.00024	<0.000024	<0.00024	<0.000024	<0.0004	<0.0004	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00025	<0.00025	<0.000025	<0.00025	<0.000025	<0.00025	<0.00025	<0.00009	<0.00009	<0.00009	<0.00009	0.00023
Pentachlorophenol	*0.001*	*0.001*	<0.00079	<0.00079	<0.000079	<0.00079	**0.17**	<0.0002	<0.0002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005
Phenanthrene	*0.73*	*2.2*	0.15	0.16	0.077	0.12	0.18	<0.0002	<0.0002	0.003	0.00021	0.00017 J	0.00011 J	0.00029
Phenol	*7.3*	*22*	<0.00035	<0.00035	<0.000035	<0.00035	<0.000035	<0.0002	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005
Pyrene	*0.73*	*2.2*	0.011	0.01	0.0052	0.0085	0.0049	0.00126	0.00021 J	0.00069	0.000092 J	0.0002 J	0.00013 J	0.0031
Metals														
Arsenic	*0.01*	*0.01*	0.003	0.00305	0.00359	0.00487	0.00391							

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
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CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-26A 08/25/2011	MW-26A 10/20/2011	MW-26A 02/15/2012	MW-26A 07/17/2012	MW-26A 02/06/2013	MW-26A 08/07/2013	MW-26A 10/14/2013	MW-26A 01/22/2014	MW-26A 07/24/2014	MW-26A 01/28/2018	MW-26A 03/21/2018	MW-26A 06/05/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*			<0.001	<0.0005	<0.00014	<0.00014		<0.0002	<0.00014	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	**0.042**	0.004 J	<0.001	<0.0005	0.00118	**0.0097**	0.00391	0.000434 J	0.000189 J	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*			<0.001	<0.0005	0.000176 J	0.000297 J		<0.00018	0.000205 J	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*			<0.0011	<0.0005	<0.00011	0.000815 J		<0.00019	<0.00011	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*			<0.0013	<0.001	<0.00015	<0.00015		<0.00022	<0.00015	<0.001	<0.001	<0.001
Toluene	*1*	*1*			<0.001	<0.0005	<0.00015	<0.000291		<0.00017	<0.00015	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*									<0.00011			
Xylenes (total)	*10*	*10*			<0.0031	<0.0015	<0.00026	0.00239 J		<0.00058	<0.00026	<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*			<0.00005	<0.00005	**<0.00529**	<0.000104		<0.00011	<0.000107	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*			<0.00005	<0.00005	<0.0149	<0.000292		<0.00031	<0.000301	0.000056 J	<0.000041	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*			<0.00005	0.0001 J	**<0.00625**	<0.000123		<0.00013	<0.000126	<0.000058	<0.000059	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*			<0.00006	<0.00006	**<0.00385**	<0.0000755		<0.00008	<0.0000777	<0.000042	<0.000043	<0.000042
2-Chloronaphthalene	*2*	*5.8*			<0.00005	<0.00005	<0.00385	<0.0000755		<0.00008	<0.0000777	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*			<0.00005	0.000056 J	<0.00337	0.000414 J		<0.00007	<0.000068	0.000053 J	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*			<0.00008	<0.00008	**<0.0399**	<0.000783		<0.00083	<0.000806	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*			<0.00005	<0.00005	<0.0269	<0.000528		<0.00056	<0.000544	<0.000047	<0.000048	<0.000047
Acenaphthene	*1.5*	*4.4*			0.0095	0.0087	0.0481	0.141		0.0699	0.0663	0.0073	<0.000028	0.019
Acenaphthylene	*1.5*	*4.4*			0.00013 J	<0.00005	<0.00288	<0.0000566		<0.00006	0.000486	0.00007 J	<0.000015	0.000082 J
Anthracene	*7.3*	*22*			0.00025	0.00027	<0.0024	0.00228		0.00136	0.00141	0.00012	0.00015	0.00025
Benzo(a)anthracene	*0.0091*	*0.02*			<0.00005	<0.00005	<0.00385	<0.0000755		<0.00008	<0.0000777	<0.00005	<0.000051	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*			<0.00005	<0.00005	**<0.00385**	<0.0000755		<0.00008	<0.0000777	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*			<0.00005	<0.00005	**<0.00625**	<0.000123		<0.00013	<0.000126	<0.00003	<0.000031	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*			<0.0001	0.0002 J	**<0.0178**	<0.000349		<0.00037	<0.000359	0.000076 J	<0.000038	<0.000037
Chrysene	*0.91*	*2*			<0.00005	<0.00005	<0.00385	<0.0000755		<0.00008	<0.0000777	<0.000021	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*			0.0014	0.00084	0.00416 J	0.0151		<0.00008	0.00154	<0.00016	0.000086 J	0.0001
Di-n-butylphthalate (DBP)	*2.4*	*7.3*			<0.00005	<0.00005	<0.00529	<0.000104		<0.00011	<0.000107	<0.00002	0.000052 J	<0.00002
Fluoranthene	*0.98*	*2.9*			0.00049	0.00092	<0.00337	0.0062		0.00306	0.00465	0.00084	0.0011	0.0014
Fluorene	*0.98*	*2.9*			0.0006	0.00041	<0.00337	0.00611		0.0031	0.00245	0.00044	0.00051	0.00084
Naphthalene	*0.49*	*1.5*			0.0001 J	0.00027	<0.00385	0.0066		<0.000924	0.000419 J	<0.00014	<0.00002	<0.00002
Nitrobenzene	*0.049*	*0.15*			<0.00005	<0.00005	<0.00529	<0.000104		<0.00011	0.00394	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*			<0.00005	<0.00005	<0.00481	<0.0000943		<0.0001	<0.0000971	<0.000025	<0.000026	<0.000025
Pentachlorophenol	*0.001*	*0.001*			<0.00005	<0.00005	**<0.0293**	<0.000575		<0.00061	<0.000592	<0.000079	<0.000081	<0.000079
Phenanthrene	*0.73*	*2.2*			<0.00005	<0.00005	<0.00288	<0.0000566		0.000147 J	0.000155 J	<0.000038	<0.000021	<0.000021
Phenol	*7.3*	*22*			<0.00005	<0.00005	<0.00192	<0.0000377		<0.00004	<0.0000388	<0.000035	<0.000036	<0.000035
Pyrene	*0.73*	*2.2*			0.00024	0.00051	<0.00529	0.00322		0.00159	0.0022	0.00043	0.00042	0.00094
Metals														
Arsenic	*0.01*	*0.01*										**0.032**	**0.0427**	**0.0491**

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-26A 01/15/2019	MW-26A 07/17/2019	MW-26A 01/16/2020	MW-27A 01/28/2008	MW-27A 07/14/2008	MW-27A 02/09/2018	MW-27A 03/26/2018	MW-27A 06/01/2018	MW-27A 07/18/2019	MW-27A 01/15/2020	MW-27C 01/28/2008	MW-27C 07/14/2008
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.00245	<0.00109	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00245	<0.00109
Benzene	*0.005*	*0.005*	<0.0002	0.00036 J	<0.0002	<0.00257	<0.00112	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00257	<0.00112
Chlorobenzene	*0.1*	*0.1*	0.00056 J	<0.0003	<0.0003	<0.00239	<0.0015	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00239	<0.0015
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.00203	<0.00142	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00203	<0.00142
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.00195	<0.00122	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00195	<0.00122
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.00274	<0.00138	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00274	<0.00138
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.00581	<0.00302	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00581	<0.00302
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.0001	<0.00008	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00008	<0.00008
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00004	<0.00043	<0.0003	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00029	<0.00032
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	<0.00029	<0.0002	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058	<0.00019	<0.00021
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.00029	<0.0002	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.00019	<0.00021
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.00057	<0.0004	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00038	<0.00042
2-Methylnaphthalene	*0.098*	*0.29*	<0.00009	0.000059 J	<0.000042	<0.00057	<0.0004	<0.000019	<0.000019	<0.000019	0.00034	<0.000019	<0.00038	<0.00042
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00029	<0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019	<0.00021
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.00036	<0.00025	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00024	<0.00026
Acenaphthene	*1.5*	*4.4*	0.042	0.028	<0.00017	<0.00043	<0.0003	<0.000027	<0.000027	<0.000027	0.00011	<0.000027	<0.00029	<0.00032
Acenaphthylene	*1.5*	*4.4*	0.00027	0.00013	<0.000015	<0.00043	<0.0003	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.00029	<0.00032
Anthracene	*7.3*	*22*	0.00087	0.00047	<0.000087	0.00087	<0.0002	<0.000014	<0.000014	<0.000014	0.000036 J	<0.000014	<0.00019	<0.00021
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00005	<0.00029	<0.0002	<0.000051	<0.00005	<0.00005	<0.00005	<0.00005	<0.00019	<0.00021
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	**<0.00029**	<0.0002	<0.00002	<0.00002	<0.00002	<0.00002	0.000052 J	<0.00019	**<0.00021**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00057	<0.0004	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00038	<0.00042
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	<0.00019	<0.000037	0.00044 J	0.00026 J	0.0002	<0.000037	0.0005	0.0002	0.000062 J	0.00039 J	0.00029 J
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	<0.00029	<0.0002	0.00005 J	<0.000021	<0.000021	<0.000021	<0.000021	<0.00019	<0.00021
Dibenzofuran	*0.098*	*0.29*	0.0005	0.00021	<0.000044	0.00044 J	<0.0003	<0.00002	<0.00002	<0.00002	0.00014	<0.00002	<0.00029	<0.00032
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.00002	<0.00029	<0.0002	<0.00002	<0.00002	<0.00002	0.000034 J	<0.00002	<0.00019	<0.00021
Fluoranthene	*0.98*	*2.9*	0.0044	0.0029	0.00073	0.000756	<0.0002	0.000058 J	<0.00001	<0.00001	0.000024 J	<0.00001	<0.00019	<0.00021
Fluorene	*0.98*	*2.9*	0.0039	0.0017	<0.00029	<0.00029	<0.0002	<0.00003	<0.00003	<0.00003	0.000074 J	<0.00003	<0.00019	<0.00021
Naphthalene	*0.49*	*1.5*	<0.00049	<0.00032	<0.00017	0.0018	<0.0004	<0.00002	<0.00002	<0.00002	0.0026	0.000053 J	<0.00038	<0.00042
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.00057	<0.0004	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00038	<0.00042
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.00036	<0.00025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00024	<0.00026
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	<0.00029	<0.0002	<0.00008	<0.000079	<0.000079	<0.000079	<0.000079	<0.00019	<0.00021
Phenanthrene	*0.73*	*2.2*	0.00012	0.000083 J	<0.00003	0.000746	<0.0002	<0.000021	<0.000021	<0.000021	0.00013	<0.000021	<0.00019	<0.00021
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.000035	<0.00029	<0.0002	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.00019	<0.00021
Pyrene	*0.73*	*2.2*	0.0025	0.0015	0.00035	0.00062	<0.0002	0.000078 J	<0.000019	<0.000019	<0.000019	<0.000019	<0.00019	<0.00021
Metals														
Arsenic	*0.01*	*0.01*	**0.166**	**0.0933**	**0.0217**			0.000978 J	<0.0004	0.00207	0.000498 J	0.000859 J		

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-27C 02/03/2009	MW-27C 01/14/2010	MW-27C 06/30/2010	MW-27C 01/27/2011	MW-27C 07/20/2011	MW-27C 02/09/2012	MW-27C 07/25/2012	MW-27C 02/12/2013	MW-27C 08/08/2013	MW-27C 01/24/2014	MW-27C 07/25/2014	MW-27C 01/31/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002
Benzene	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001
Toluene	*1*	*1*	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002
Vinyl chloride	*0.002*	*0.002*									<0.00011		<0.00011	
Xylenes (total)	*10*	*10*	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.000105	<0.000104	<0.000105	<0.000108	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000295	<0.000292	<0.000297	<0.000304	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000124	<0.000123	<0.000124	<0.000127	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000762	<0.0000755	<0.0000766	<0.0000784	0.00052
2-Chloronaphthalene	*2*	*5.8*	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000766	<0.0000784	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000777	<0.000066	<0.000067	<0.0000686	0.00041
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00079	<0.000783	<0.000794	<0.000814	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000533	<0.000528	<0.000536	<0.000549	0.00031 J
Acenaphthene	*1.5*	*4.4*	0.00026	0.00015 J	0.00028	0.00019 J	0.00011 J	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000766	<0.0000784	0.0012
Acenaphthylene	*1.5*	*4.4*	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000571	<0.0000566	<0.0000574	<0.0000588	<0.000015
Anthracene	*7.3*	*22*	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000476	<0.0000472	0.000431 J	<0.000049	0.000065 J
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000766	<0.0000784	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000766	<0.0000784	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000124	<0.000123	<0.000124	<0.000127	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00038	<0.0016	<0.0015	0.00047	<0.00095	0.00014 J	<0.00021	0.000652	<0.000349	<0.000354	<0.000363	<0.000073
Chrysene	*0.91*	*2*	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000766	<0.0000784	<0.000021
Dibenzofuran	*0.098*	*0.29*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000766	<0.0000784	0.00038
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.000055	<0.000105	0.000143 J	<0.000851	<0.000108	<0.00002
Fluoranthene	*0.98*	*2.9*	<0.00007	0.00015 J	<0.00007	<0.00007	0.00011 J	<0.00005	<0.00005	<0.0000667	0.000114 J	0.0000881 J	<0.0000686	0.000085 J
Fluorene	*0.98*	*2.9*	<0.00007	<0.00007	0.00025	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000667	<0.000066	<0.000067	<0.0000686	0.00085
Naphthalene	*0.49*	*1.5*	0.00037	<0.00013	0.00024	0.00015 J	<0.00005	<0.00005	0.00019 J	<0.0000762	0.000353 J	<0.000953	<0.0000784	<0.00043
Nitrobenzene	*0.049*	*0.15*	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000105	<0.000104	<0.000105	<0.000108	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000952	<0.0000943	<0.0000957	<0.000098	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000581	<0.000575	<0.000584	<0.000598	<0.000079
Phenanthrene	*0.73*	*2.2*	<0.00007	0.00014 J	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000571	0.0000908 J	<0.000406	<0.0000588	0.00027
Phenol	*7.3*	*22*	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000381	<0.0000377	<0.0000383	<0.0000392	<0.000035
Pyrene	*0.73*	*2.2*	<0.00007	0.0001 J	<0.00007	<0.00007	0.000064 J	<0.00005	<0.00005	<0.000105	<0.000104	<0.000105	<0.000108	0.000044 J
Metals														
Arsenic	*0.01*	*0.01*												0.00261

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-27C 03/26/2018	MW-27C 06/01/2018	MW-27C 01/22/2019	MW-27C 07/18/2019	MW-27C 01/15/2020	MW-28A 01/29/2008	MW-28A 07/14/2008	MW-28A 02/03/2009	MW-28A 01/13/2010	MW-28A 06/30/2010	MW-28A 01/25/2011	MW-28A 07/19/2011
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00025	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047	<0.00047	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00025	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00054	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00041	<0.00041	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00127	<0.00127	<0.001	<0.001	<0.001	<0.001	<0.0031
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00008	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.0003	<0.00032	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058	<0.0002	<0.00021	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	0.00057	<0.000042	<0.000042	<0.000042	<0.0002	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0004	<0.00042	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.0004	<0.00042	<0.00007	<0.00007	<0.00007	0.00064	<0.00005
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002	<0.00021	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00025	<0.00026	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005
Acenaphthene	*1.5*	*4.4*	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.0003	<0.00032	<0.00009	<0.00009	<0.00009	0.0002	<0.00005
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.0003	<0.00032	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005
Anthracene	*7.3*	*22*	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	0.000611	<0.00021	<0.00007	<0.00007	<0.00007	0.00036	<0.00005
Benzo(a)anthracene	*0.0091*	*0.02*	<0.000051	<0.00005	<0.00005	<0.00005	<0.00005	<0.0002	<0.00021	0.00013 J	<0.00007	<0.00007	<0.00007	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002	**<0.00021**	0.00011 J	<0.00008	<0.00008	<0.00008	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.0004	<0.00042	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.000057 J	0.00042	<0.000037	0.000092 J	<0.000037	0.0003 J	<0.00021	0.0037	<0.00022	<0.0019	<0.0002	<0.00032
Chrysene	*0.91*	*2*	<0.000021	0.000054 J	<0.000021	<0.000021	<0.000021	<0.0002	<0.00021	0.00013 J	<0.00007	<0.00007	<0.00007	<0.00005
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00032 J	<0.00032	<0.00008	<0.00008	<0.00008	0.0005	<0.00005
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002	<0.00021	0.00016 J	<0.00007	<0.00007	<0.00007	<0.00005
Fluoranthene	*0.98*	*2.9*	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.0002	<0.00021	0.00012 J	<0.00007	<0.00007	0.00021	<0.00005
Fluorene	*0.98*	*2.9*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.0002	<0.00021	<0.00007	<0.00007	<0.00007	0.0003	<0.00005
Naphthalene	*0.49*	*1.5*	<0.00002	<0.00002	<0.00002	0.000066 J	0.000055 J	0.000699	<0.00042	0.00017 J	<0.0001	<0.0001	0.0023	<0.00005
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.0004	<0.00042	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00025	<0.00026	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.000079	<0.000079	<0.000079	<0.000079	<0.0002	<0.00021	<0.00008	<0.00008	0.00032	<0.00008	<0.00005
Phenanthrene	*0.73*	*2.2*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.00046 J	<0.00021	<0.00007	<0.00007	<0.00007	0.00097	<0.00005
Phenol	*7.3*	*22*	<0.000035	0.000053 J	<0.000035	0.00023	<0.000035	<0.0002	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005
Pyrene	*0.73*	*2.2*	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	0.00041 J	<0.00021	0.00016 J	<0.00007	<0.00007	0.00013 J	<0.00005
Metals														
Arsenic	*0.01*	*0.01*	<0.0004	0.00212	0.000786 J	0.000428 J	0.000623 J							

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-28A 02/16/2012	MW-28A 07/17/2012	MW-28A 02/07/2013	MW-28A 08/07/2013	MW-28A 01/22/2014	MW-28A 07/25/2014	MW-28A 01/25/2018	MW-28A 03/21/2018	MW-28A 05/17/2018	MW-28A 01/14/2019	MW-28A 07/16/2019	MW-28A 01/16/2020
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*						<0.00011						
Xylenes (total)	*10*	*10*	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	<0.00005	<0.00105	<0.000104	<0.000105	<0.000107	<0.000021	<0.000021	<0.00021	<0.000021	<0.000021	0.000034 J
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00005	<0.00005	<0.00295	<0.000292	<0.000295	<0.000301	<0.00004	<0.00004	0.012	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	<0.00005	<0.00124	<0.000123	<0.000124	<0.000126	<0.000059	<0.000059	<0.00058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	<0.00006	<0.000762	<0.0000755	<0.0000762	<0.0000777	<0.000042	<0.000042	<0.00042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.00005	<0.000762	<0.0000755	<0.0000762	<0.0000777	<0.000021	<0.000021	<0.00021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	<0.000066	0.00015 J	<0.000667	<0.000066	<0.0000667	<0.000068	<0.000019	<0.000019	0.001	<0.000055	0.0002	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	**<0.0079**	<0.000783	<0.00079	<0.000806	<0.00002	<0.00002	<0.0002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00005	<0.00005	<0.00533	<0.000528	<0.000533	<0.000544	<0.000047	<0.000047	<0.00047	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	0.00098	<0.00005	<0.000762	0.000368 J	<0.0000762	<0.0000777	<0.000027	<0.000027	0.00031 J	0.000092 J	0.000082 J	<0.00014
Acenaphthylene	*1.5*	*4.4*	<0.00005	<0.00005	<0.000571	<0.0000566	<0.0000571	<0.0000583	<0.000015	<0.000015	<0.00015	<0.000015	<0.000015	<0.000015
Anthracene	*7.3*	*22*	<0.00005	<0.00005	<0.000476	<0.0000472	<0.0000476	<0.0000485	0.000016 J	0.000021 J	<0.00014	<0.000014	0.000036 J	<0.00013
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.000762	<0.0000755	<0.0000762	<0.0000777	<0.000051	<0.000051	<0.0005	<0.00005	0.000055 J	0.000073 J
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	<0.00005	**<0.000762**	<0.0000755	<0.0000762	<0.0000777	0.000045 J	<0.00002	<0.0002	<0.00002	0.000095 J	0.000057 J
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	<0.00005	**<0.00124**	<0.000123	<0.000124	<0.000126	<0.00003	<0.00003	<0.0003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0001	<0.00043	<0.00352	<0.000349	<0.000352	<0.000359	0.00018 J	0.000062 J	0.00084 J	0.000061 J	<0.00023	0.00009 J
Chrysene	*0.91*	*2*	<0.00005	<0.00005	<0.000762	<0.0000755	<0.0000762	<0.0000777	0.000053 J	<0.000021	<0.00021	<0.000021	0.0001	0.000065 J
Dibenzofuran	*0.098*	*0.29*	<0.000051	<0.00005	<0.000762	<0.0000755	<0.0000762	<0.0000777	<0.00002	<0.00002	0.00031 J	<0.00011	0.000084 J	<0.0001
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00005	<0.00005	<0.00105	<0.000104	<0.000105	<0.000107	0.00003 J	<0.00002	<0.0002	<0.00002	<0.00002	0.000032 J
Fluoranthene	*0.98*	*2.9*	<0.00005	<0.00005	<0.000667	<0.000066	<0.0000667	<0.000068	0.000062 J	0.000055 J	<0.0001	<0.00001	0.00012	0.0003
Fluorene	*0.98*	*2.9*	<0.00005	<0.00005	<0.000667	<0.000066	<0.0000667	<0.000068	<0.00003	<0.00003	<0.0003	0.000056 J	0.000053 J	<0.00014
Naphthalene	*0.49*	*1.5*	<0.00093	0.0013	<0.000762	<0.000173	<0.0004	<0.0000777	<0.00002	<0.00002	0.024	<0.0024	0.0013	<0.0006
Nitrobenzene	*0.049*	*0.15*	<0.00005	<0.00005	<0.00105	<0.000104	<0.000105	<0.000107	<0.000024	<0.000024	<0.00024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.00005	<0.000952	<0.0000943	<0.0000952	<0.0000971	<0.000025	<0.000025	<0.00025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00005	<0.00005	**<0.00581**	<0.000575	<0.000581	<0.000592	<0.00008	<0.00008	<0.00079	<0.000079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	<0.00005	<0.00005	<0.000571	<0.0000566	<0.0000571	<0.0000583	0.000032 J	0.00003 J	0.00022 J	<0.000021	0.000049 J	0.00048
Phenol	*7.3*	*22*	<0.00005	<0.00005	<0.000381	<0.0000377	<0.0000381	<0.0000388	<0.000035	<0.000035	0.018	<0.000035	<0.000073	<0.000035
Pyrene	*0.73*	*2.2*	0.00011 J	<0.00005	<0.00105	0.000246 J	0.000105 J	<0.000107	0.000081 J	0.000079 J	<0.00019	0.000065 J	0.00016	0.00021
Metals														
Arsenic	*0.01*	*0.01*							0.0076	0.0053	**0.0177**	**0.0116**	0.0092	0.00664

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-28C 01/29/2008	MW-28C 07/14/2008	MW-28C 02/03/2009	MW-28C 01/13/2010	MW-28C 06/30/2010	MW-28C 01/25/2011	MW-28C 07/19/2011	MW-28C 02/16/2012	MW-28C 07/17/2012	MW-28C 02/07/2013	MW-28C 08/07/2013	MW-28C 01/22/2014
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00052	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002
Benzene	*0.005*	*0.005*	<0.00025	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.00047	<0.00047	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018
Ethylbenzene	*0.7*	*0.7*	<0.00025	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019
Methylene chloride	*0.005*	*0.005*	<0.00054	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022
Toluene	*1*	*1*	<0.00041	<0.00041	0.0026 J	0.0013 J	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.00127	<0.00127	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00008	<0.00009	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.000101	<0.000104	<0.00011
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00029	0.00114 J	<0.00008	0.0002	<0.00008	0.000086 J	<0.00005	<0.00005	<0.00005	<0.000284	<0.000292	<0.00031
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00019	<0.00022	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000119	<0.000123	<0.00013
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000734	<0.0000755	<0.00008
2-Chloronaphthalene	*2*	*5.8*	<0.00038	<0.00044	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000734	<0.0000755	<0.00008
2-Methylnaphthalene	*0.098*	*0.29*	<0.00038	<0.00044	0.000097 J	0.00024	0.000077 J	0.000079 J	<0.00005	<0.00005	0.00011 J	<0.0000642	<0.000066	0.0000741 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00019	<0.00022	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.000761	<0.000783	<0.00083
4-Nitrophenol	*0.049*	*0.15*	<0.00024	<0.00028	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000514	<0.000528	<0.00056
Acenaphthene	*1.5*	*4.4*	<0.00029	<0.00033	<0.00009	0.00018 J	0.00033	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000734	<0.0000755	<0.00008
Acenaphthylene	*1.5*	*4.4*	<0.00029	<0.00033	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000055	<0.0000566	<0.00006
Anthracene	*7.3*	*22*	0.00059	<0.00022	<0.00007	<0.00007	0.00014 J	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000459	<0.0000472	<0.00005
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000734	<0.0000755	<0.00008
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00019	**<0.00022**	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000734	<0.0000755	<0.00008
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00038	<0.00044	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000119	<0.000123	<0.00013
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00049 J	<0.00022	0.0033	<0.00046	<0.0012	0.00063	<0.00053	<0.00013	<0.0001	<0.000339	<0.000349	<0.00037
Chrysene	*0.91*	*2*	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000734	<0.0000755	<0.00008
Dibenzofuran	*0.098*	*0.29*	0.00044 J	<0.00033	<0.00008	0.00018 J	<0.00008	<0.00008	0.00019 J	<0.00005	<0.00005	<0.0000734	<0.0000755	<0.00008
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000101	<0.000104	<0.00011
Fluoranthene	*0.98*	*2.9*	0.000497	<0.00022	<0.00007	<0.00007	0.00012 J	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000642	<0.000066	<0.00007
Fluorene	*0.98*	*2.9*	0.00022 J	<0.00022	<0.00007	0.00016 J	0.00033	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000642	<0.000066	<0.00007
Naphthalene	*0.49*	*1.5*	0.00234	0.00196	0.00057	0.0014	0.00035	0.00029	<0.000091	<0.00031	0.00064	0.000163 J	<0.0000755	<0.000596
Nitrobenzene	*0.049*	*0.15*	<0.00038	<0.00044	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000101	<0.000104	<0.00011
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00024	<0.00028	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000917	<0.0000943	<0.0001
Pentachlorophenol	*0.001*	*0.001*	0.00056 J	<0.00022	<0.00008	<0.00008	0.00034	<0.00008	<0.00005	<0.00005	<0.00005	<0.00056	<0.000575	<0.00061
Phenanthrene	*0.73*	*2.2*	0.000624	<0.00022	0.00013 J	0.00033	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000055	<0.0000566	0.0000739 J
Phenol	*7.3*	*22*	0.00865	0.00648	0.00063	0.0027	0.00075	0.0014	0.00054	<0.00005	<0.00005	<0.0000367	<0.0000377	<0.00004
Pyrene	*0.73*	*2.2*	0.00041 J	<0.00022	<0.00007	<0.00007	0.00007 J	<0.00007	<0.00005	<0.00005	<0.00005	<0.000101	<0.000104	<0.00011
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-28C 07/25/2014	MW-28C 01/25/2018	MW-28C 03/21/2018	MW-28C 05/17/2018	MW-28C 01/14/2019	MW-28C 07/16/2019	MW-28C 01/16/2020	MW-29A 01/28/2008	MW-29B 01/28/2008	MW-29C 01/28/2008	MW-30A 01/30/2008	MW-30A 07/14/2011
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00245	<0.00245	<0.00245	<0.00052	**<0.01**
Benzene	*0.005*	*0.005*	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00257	<0.00257	<0.00257	**0.147**	**0.14**
Chlorobenzene	*0.1*	*0.1*	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00239	<0.00239	<0.00239	<0.00047	<0.01
Ethylbenzene	*0.7*	*0.7*	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00203	<0.00203	<0.00203	0.153	0.12
Methylene chloride	*0.005*	*0.005*	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00195	<0.00195	<0.00195	<0.00054	**<0.013**
Toluene	*1*	*1*	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00274	<0.00274	<0.00274	0.645	0.51
Vinyl chloride	*0.002*	*0.002*	<0.00011			<0.0002								
Xylenes (total)	*10*	*10*	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00581	<0.00581	<0.00581	0.386	0.32
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000107	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0002	0.00008 J	<0.00008	**<0.02**	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	<0.000301	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00057	<0.0003	<0.00029	**4.1**	**2.9**
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000126	<0.000058	<0.000059	<0.000059	<0.000058	<0.000058	<0.000058	<0.00038	<0.0002	<0.00019	**<0.038**	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0000777	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.00038	**0.00374**	<0.00019	**<0.038**	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.0000777	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00076	<0.0004	<0.00038	<0.076	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	<0.000068	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.00076	<0.0004	<0.00038	**0.573**	**0.85**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.000806	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00038	<0.0002	<0.00019	**<0.038**	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000544	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00048	<0.00025	<0.00024	<0.048	<0.00005
Acenaphthene	*1.5*	*4.4*	<0.0000777	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.00057	<0.0003	<0.00029	0.215	0.31
Acenaphthylene	*1.5*	*4.4*	<0.0000583	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.00057	<0.0003	<0.00029	<0.057	0.0075
Anthracene	*7.3*	*22*	<0.0000485	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.00038	<0.0002	<0.00019	<0.038	0.018
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0000777	<0.00005	<0.000051	<0.000051	<0.00005	<0.00005	<0.00005	<0.00038	<0.0002	<0.00019	**<0.038**	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0000777	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	**<0.00038**	<0.0002	<0.00019	**<0.038**	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.000126	<0.00003	<0.00003	0.00003 J	<0.00003	<0.00003	<0.00003	<0.00076	<0.0004	<0.00038	**<0.076**	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000359	0.000064 J	<0.000037	<0.000037	<0.000037	<0.00013	0.000072 J	0.00232 J	0.00037 J	0.00042 J	**<0.038**	<0.0001
Chrysene	*0.91*	*2*	<0.0000777	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00038	<0.0002	<0.00019	<0.038	<0.00005
Dibenzofuran	*0.098*	*0.29*	<0.0000777	<0.00002	<0.00002	0.00002 J	<0.00002	<0.00002	<0.00002	<0.00057	<0.0003	<0.00029	**0.156**	**0.25**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.000107	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00038	<0.0002	<0.00019	<0.038	<0.00005
Fluoranthene	*0.98*	*2.9*	<0.000068	<0.00001	<0.00001	<0.00001	<0.00001	0.000015 J	<0.00001	<0.00038	<0.0002	<0.00019	<0.038	0.0041
Fluorene	*0.98*	*2.9*	<0.000068	<0.00003	<0.00003	0.00003 J	<0.00003	<0.00003	<0.00003	<0.00038	<0.0002	<0.00019	0.109	0.18
Naphthalene	*0.49*	*1.5*	<0.0000777	<0.00021	<0.00002	<0.00002	<0.00002	0.000095 J	<0.00016	<0.00076	<0.0004	0.00047 J	**9.77**	**15**
Nitrobenzene	*0.049*	*0.15*	<0.000107	<0.000024	<0.000024	0.000024 J	<0.000024	<0.000024	<0.000024	<0.00076	<0.0004	<0.00038	**<0.076**	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.0000971	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00048	<0.00025	<0.00024	<0.048	<0.00005
Pentachlorophenol	*0.001*	*0.001*	<0.000592	<0.000079	<0.00008	<0.00008	<0.000079	<0.000079	<0.000079	<0.00038	<0.0002	<0.00019	**<0.038**	0.00033 J
Phenanthrene	*0.73*	*2.2*	<0.0000583	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00038	<0.0002	<0.00019	0.075	0.12
Phenol	*7.3*	*22*	<0.0000388	<0.000035	<0.000035	<0.000035	<0.000035	0.0025	0.000086 J	<0.00038	0.00287	<0.00019	0.174	0.14
Pyrene	*0.73*	*2.2*	<0.000107	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.00038	<0.0002	<0.00019	<0.038	0.0022
Metals														
Arsenic	*0.01*	*0.01*		0.00206	0.00184 J	0.00184 J	0.000447 J	0.000456 J	0.000937 J					

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-30A 02/03/2012	MW-30A 07/12/2012	MW-30A 02/01/2013	MW-31A 01/31/2008	MW-31A 07/14/2011	MW-31A 02/03/2012	MW-31A 07/12/2012	MW-31A 02/01/2013	MW-32A[7] 01/28/2008 DNAPL	MW-32A[7] 07/14/2008 DNAPL	MW-32A[7] 02/03/2009 DNAPL	MW-32A[7] 01/14/2010 DNAPL
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	**<0.01**	<0.0025	<0.0028	<0.00052	**<0.01**	**<0.025**	<0.005	<0.0014	<0.00052	<0.00109	<0.0005	<0.0005
Benzene	*0.005*	*0.005*	**0.13**	**0.14**	**0.117**	**0.178**	**0.14**	**0.14**	**0.11**	**0.135**	**0.884**	**0.884**	**0.69**	**0.34**
Chlorobenzene	*0.1*	*0.1*	<0.01	<0.0025	<0.0024	<0.00047	<0.01	<0.025	<0.005	<0.0012	<0.00047	<0.0015	<0.0005	<0.0005
Ethylbenzene	*0.7*	*0.7*	0.11	0.13	0.119	0.166	0.19	0.17	0.18	0.171	0.373	0.365	0.34	0.076
Methylene chloride	*0.005*	*0.005*	**<0.013**	<0.005	**0.0211**	<0.00054	**<0.013**	**<0.032**	**<0.01**	**0.00971 J**	<0.00054	<0.00122	<0.0005	<0.0005
Toluene	*1*	*1*	0.49	0.54	0.443	0.337	0.37	0.36	0.31	0.346	0.95	0.983	0.74	0.36
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	0.32	0.32	0.302	0.562	0.63	0.71	0.63	0.583	1.02	1.03	0.88	0.35
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0005	<0.00005	**<0.0524**	**<0.002**	<0.00005	<0.0005	<0.00005	**<0.055**	**<0.02**	**<0.008**	<0.0001	<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*	**3**	**2.7**	**2.94**	**4.74**	**5.3**	**5.1**	**3.4**	**4.45**	**9.57**	**12.6**	**2.2**	**2.1**
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.0005	<0.00005	**<0.0619**	**<0.0038**	<0.00005	<0.0005	<0.00005	**<0.065**	**<0.044**	**<0.019**	<0.00009	<0.00009
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0006	<0.00006	**<0.0381**	**<0.0038**	<0.00006	<0.0006	<0.00006	**<0.04**	**<0.044**	**<0.019**	<0.00007	<0.00007
2-Chloronaphthalene	*2*	*5.8*	<0.0005	<0.00005	<0.0381	<0.0076	<0.00005	<0.0005	<0.00005	<0.04	<0.089	<0.039	<0.00012	<0.0001
2-Methylnaphthalene	*0.098*	*0.29*	**0.42**	**0.67**	**1.01**	**0.887**	**1**	**0.65**	**0.83**	**1.17**	**1.13**	**0.989**	**1.2**	**0.3**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.0008	<0.00008	**<0.395**	**<0.0038**	<0.00008	<0.0008	<0.00008	**<0.415**	**<0.044**	**<0.019**	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.0005	<0.00005	**<0.267**	<0.0048	<0.00005	<0.0005	<0.00005	**<0.28**	**<0.056**	<0.024	<0.00007	<0.00007
Acenaphthene	*1.5*	*4.4*	0.23	0.24	0.436	0.206	0.37	0.3	0.28	0.488	0.341	0.294	0.34	0.13
Acenaphthylene	*1.5*	*4.4*	0.0064	0.0074	<0.0286	<0.0057	0.0076	0.0044	0.0032	<0.03	<0.067	<0.029	0.006	0.0019
Anthracene	*7.3*	*22*	0.013	0.018	0.0391 J	0.0145	0.032	0.026	0.026	0.056 J	<0.044	0.043	0.077	0.051
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0005	<0.00005	**<0.0381**	<0.0038	0.0038	<0.0005	0.00023	**<0.04**	**<0.044**	**<0.019**	**0.0096**	0.0067
Benzo(a)pyrene	*0.0002*	*0.0002*	**<0.0005**	<0.00005	**<0.0381**	**<0.0038**	**0.00089**	**<0.0005**	<0.00005	**<0.04**	**<0.044**	**<0.019**	**0.003**	**0.0023**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.0005	<0.00005	**<0.0619**	**<0.0076**	<0.00005	<0.0005	<0.00005	**<0.065**	**<0.089**	**<0.039**	<0.00009	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.001	<0.0001	**<0.176**	<0.0038	<0.0001	<0.001	<0.0001	**<0.185**	**<0.044**	**<0.019**	0.00042	<0.0018
Chrysene	*0.91*	*2*	<0.0005	<0.00005	<0.0381	<0.0038	0.0031	<0.0005	0.00017 J	<0.04	<0.044	<0.019	0.0087	0.0064
Dibenzofuran	*0.098*	*0.29*	**0.21**	**0.2**	**0.308**	**0.169**	**0.33**	**0.26**	**0.26**	**0.367**	**0.298**	**0.26**	**0.32**	**0.14**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.0005	0.0002	<0.0524	<0.0038	<0.00005	<0.0005	<0.00005	<0.055	<0.044	<0.019	<0.00007	<0.00007
Fluoranthene	*0.98*	*2.9*	0.0031	0.0038	<0.0333	0.006	0.031	0.0029	0.0052	<0.035	<0.044	0.026	0.098	0.07
Fluorene	*0.98*	*2.9*	0.13	0.14	0.247	0.123	0.24	0.17	0.17	0.273	0.163	0.156	0.22	0.087
Naphthalene	*0.49*	*1.5*	**7.8**	**12**	**16.8 J**	**13.7**	**21**	**18**	**17**	**19.3 J**	**25**	**16.2**	**16**	**3.5**
Nitrobenzene	*0.049*	*0.15*	<0.0005	<0.00005	**<0.0524**	<0.0076	<0.00005	<0.0005	<0.00005	**<0.055**	**<0.089**	<0.039	<0.00009	<0.00009
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.0005	<0.00005	<0.0476	<0.0048	<0.00005	<0.0005	<0.00005	<0.05	<0.056	<0.024	<0.00009	<0.00009
Pentachlorophenol	*0.001*	*0.001*	<0.0005	<0.00005	**<0.29**	**0.0895**	**0.076 J**	**0.11**	**0.094**	**<0.305**	**<0.044**	**<0.019**	<0.00008	<0.00008
Phenanthrene	*0.73*	*2.2*	0.064	0.1	0.162 J	0.0774	0.24	0.14	0.13	0.268	0.177	0.185	0.45	0.25
Phenol	*7.3*	*22*	0.015	0.02	0.0781 J	1.56	0.6	0.76	0.29	0.579	**9.01**	**8.83**	1.4	1.3
Pyrene	*0.73*	*2.2*	0.0021	0.0018	<0.0524	0.0084	0.018	0.0025	0.002	<0.055	<0.044	<0.019	0.062	0.043
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	***C/I Assessment Level***	MW-32A[7] 07/01/2010 DNAPL	MW-32A[7] 01/25/2011 DNAPL	MW-32A[7] 07/19/2011 DNAPL	MW-32AR 02/09/2012	MW-32AR 07/16/2012	MW-32AR 02/06/2013	MW-32AR 08/07/2013	MW-32AR 01/21/2014	MW-32AR 07/24/2014	MW-32AR 01/28/2018	MW-32AR 03/27/2018	MW-32AR 05/31/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0025	<0.0025	**0.03**	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	**1.5**	**0.61**	**1.4**	<0.001	<0.0005	**0.023**	0.000475 J	<0.0002	**0.0404**	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0025	<0.0025	<0.005	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	0.45	0.41	0.31	<0.0011	<0.0005	0.0082	0.000296 J	<0.00019	0.0208	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.0032	<0.0025	**<0.0065**	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001
Toluene	*1*	*1*	**1.5**	1	**1.2**	<0.001	<0.0005	0.00338	0.000234 J	<0.00017	0.000849 J	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*							<0.00011		<0.00011			
Xylenes (total)	*10*	*10*	1.3	1.1	0.87	<0.0031	<0.0015	0.0176	0.000873 J	<0.00058	0.0336	<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.001	<0.001	<0.0005	<0.00005	<0.00005	**<0.00529**	<0.000104	<0.000104	<0.000104	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	**15**	**2.3**	**31**	0.0012	0.000061 J	0.0172 J	<0.000292	<0.000292	0.0722	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.0009	<0.0009	<0.0005	<0.00005	<0.00005	**<0.00625**	<0.000123	<0.000123	<0.000123	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0007	<0.0007	<0.0006	<0.00006	<0.00006	**<0.00385**	<0.0000755	<0.0000755	<0.0000755	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.001	<0.001	<0.0005	<0.00005	<0.00005	<0.00385	<0.0000755	<0.0000755	<0.0000755	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	**0.48**	**6.9**	**0.95**	0.000088 J	0.00019 J	0.011 J	<0.000066	0.00021 J	**0.206**	0.000079 J	0.0068	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.0008	<0.0008	<0.0008	<0.00008	<0.00008	**<0.0399**	<0.000783	<0.000783	<0.000783	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.0007	<0.0007	<0.0005	<0.00005	<0.00005	<0.0269	<0.000528	<0.000528	<0.000528	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	0.19	**3.1**	0.25	0.0046	0.0029	0.0232 J	0.00625	0.0105	0.111	0.0013	0.0043	0.002
Acenaphthylene	*1.5*	*4.4*	0.0079	0.027	0.005	0.00032	<0.00005	<0.00288	0.000258 J	<0.000317	0.00226	0.000054 J	0.000054 J	<0.000015
Anthracene	*7.3*	*22*	0.093	0.91	0.09	0.00041	0.00026	<0.0024	0.000223 J	0.000444 J	0.00332	0.000082 J	0.00021	0.000064 J
Benzo(a)anthracene	*0.0091*	*0.02*	**0.01**	**0.3**	**0.038**	0.00012 J	0.00015 J	<0.00385	<0.0000755	<0.0000755	0.000218 J	0.00006 J	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	**0.0067**	**0.078**	**0.019**	<0.00005	<0.00005	**<0.00385**	<0.0000755	<0.0000755	<0.0000755	0.000027 J	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	**<0.0009**	**<0.0009**	<0.0005	<0.00005	<0.00005	**<0.00625**	<0.000123	<0.000123	0.000452 J	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0041	0.0046	<0.0013	0.00054	0.00014 J	**<0.0178**	<0.000349	<0.000349	0.000621	0.00011 J	<0.000037	0.00014 J
Chrysene	*0.91*	*2*	0.0099	0.28	0.033	0.000093 J	0.00023	<0.00385	<0.0000755	0.0000774 J	0.00016 J	0.000058 J	<0.000021	0.000037 J
Dibenzofuran	*0.098*	*0.29*	**0.21**	**3.2**	**0.27**	0.00096	0.0017	0.00936 J	0.000515	0.000664	0.05	<0.000053	0.0024	0.00007 J
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.0007	<0.0007	<0.0005	<0.00005	0.000056 J	<0.00529	<0.000104	<0.000104	<0.000104	<0.00002	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	0.09	**2.5**	0.11	0.002	0.003	0.00508 J	0.00102	0.00124	0.00656	0.00048	0.00023	0.00031
Fluorene	*0.98*	*2.9*	0.13	**2.5**	0.18	0.0017	0.0016	0.00932 J	0.00105	0.00317	0.0516	0.00012	0.00093	0.000058 J
Naphthalene	*0.49*	*1.5*	**11**	**31**	**21**	0.00044	0.0036	0.406	<0.00297	0.0087	**3.83**	<0.00058	0.026	0.000043 J
Nitrobenzene	*0.049*	*0.15*	<0.0009	<0.0009	<0.0005	<0.00005	<0.00005	<0.00529	<0.000104	<0.000104	<0.000104	0.00035	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	0.014	<0.0009	<0.0005	<0.00005	<0.00005	<0.00481	<0.0000943	<0.0000943	<0.0000943	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.0008	<0.0008	<0.0005	<0.00005	<0.00005	**<0.0293**	<0.000575	<0.000575	<0.000575	<0.000079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	0.19	**8.9**	0.35	0.00033	0.000055 J	0.00768 J	0.000112 J	0.000101 J	0.0111	0.00022	0.0013	<0.000021
Phenol	*7.3*	*22*	**14**	1.2	**21**	0.00012 J	0.00029	<0.00192	<0.0000377	<0.0000377	<0.0000377	<0.000035	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	0.047	**1.5**	0.072	0.0041	0.0046	<0.00529	0.000617	0.000625	0.00474	0.00031	0.00018	0.00049
Metals														
Arsenic	*0.01*	*0.01*										0.00294	**0.0228**	**0.0441**

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	***C/I Assessment Level***	MW-32AR 01/23/2019	MW-32AR 07/30/2019	MW-32AR 01/20/2020	MW-33A 01/29/2008	MW-33A 07/14/2008	MW-33A 02/03/2009	MW-33A 02/03/2009 Duplicate	MW-33A 01/13/2010	MW-33A 01/13/2010 Duplicate	MW-33A 06/29/2010	MW-33A 06/29/2010 Duplicate	MW-33A 01/24/2011
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.00052	<0.00109	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.00025	**0.0062**	0.00071 J	0.00074 J	0.0025 J	0.0024 J	0.0018 J	0.0034 J	**0.0056**
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.00047	<0.0015	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.00025	<0.00142	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0015 J
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.00054	<0.00122	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.00041	<0.00138	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Vinyl chloride	*0.002*	*0.002*			<0.0002									
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.00127	<0.00302	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0016 J
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.0001	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*	0.00013 J	<0.00004	<0.00004	<0.0005	<0.00029	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	0.0027
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	<0.00033	<0.00019	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.00033	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.00067	<0.00038	<0.00012	<0.00012	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	<0.000028	<0.00067	<0.00038	0.00066	<0.00007	0.0009 J	0.00051 J	0.00092	<0.00007	0.0067
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00033	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.00042	<0.00024	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
Acenaphthene	*1.5*	*4.4*	0.0001	<0.000027	0.0014	0.0133	0.0124	0.013	<0.00009	0.028	0.026	0.012	0.0072	0.014
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.0005	<0.00029	<0.00006	<0.00006	0.00015 J	0.00014 J	<0.00007	<0.00007	0.00014 J
Anthracene	*7.3*	*22*	0.00002 J	<0.000014	<0.000014	<0.00033	0.00024 J	0.0002 J	<0.00007	0.00028	0.00024	0.00021	<0.00007	0.00072
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	0.000054 J	<0.00005	<0.00033	<0.00019	0.0002 J	<0.00007	0.00017 J	0.00017 J	0.00014 J	0.00014 J	0.00025
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	0.000081 J	**<0.00033**	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00067	<0.00038	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000044	0.000074 J	0.000043 J	0.00137 J	<0.00019	0.00033	0.00035	<0.0003	<0.00038	<0.00035	<0.0016	0.00031
Chrysene	*0.91*	*2*	<0.000021	<0.000021	0.000042 J	<0.00033	<0.00019	0.00012 J	<0.00007	0.00012 J	0.000089 J	0.00009 J	<0.00007	0.00016 J
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00002	<0.00002	0.00074	0.000628	0.00078	<0.00008	0.0019	0.0017	0.0014	0.00035	0.0027
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	0.00002 J	<0.00002	<0.00002	0.00055 J	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
Fluoranthene	*0.98*	*2.9*	0.000051 J	<0.00001	<0.00029	0.00141	0.00154	0.0022	<0.00007	0.0013	0.0012	0.0012	0.00095	0.003
Fluorene	*0.98*	*2.9*	<0.00003	<0.00003	0.000038 J	0.0013	0.000939	0.00067	<0.00007	0.0015	0.0013	0.0012	0.00041	0.0027
Naphthalene	*0.49*	*1.5*	0.000067 J	<0.00002	<0.00014	0.00167	0.0047	0.0028	<0.0001	0.02 J	0.009 J	0.0082	0.0013	0.095
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.00067	<0.00038	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.00042	<0.00024	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	<0.00033	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
Phenanthrene	*0.73*	*2.2*	0.000034 J	<0.000021	<0.000032	<0.00033	0.00028 J	0.00037	<0.00007	0.00032	0.00024	0.00065	<0.00007	0.0048
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.000035	<0.00033	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
Pyrene	*0.73*	*2.2*	0.000036 J	0.00045	0.00042	0.0019	0.00167	0.0024	<0.00007	0.0019	0.0018	0.0016	0.0015	0.0035
Metals														
Arsenic	*0.01*	*0.01*	**0.0316**	**0.0628**	0.0077									

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-33A 07/19/2011	MW-33A 07/19/2011 Duplicate	MW-33A 02/15/2012	MW-33A 02/15/2012 Duplicate	MW-33A 07/17/2012	MW-33A 07/17/2012 Duplicate	MW-33A 02/12/2013	MW-33A 02/12/2013 Duplicate	MW-33A 08/07/2013	MW-33A 08/07/2013 Duplicate	MW-33A 01/23/2014	MW-33A 01/23/2014 Duplicate
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.005	<0.0005	<0.0005	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	**0.009**	**0.0091**	**0.054**	**0.051**	0.0023 J	0.0022 J	**0.00782**	**0.00782**	**0.165**	**0.174**	**0.223**	**0.223**
Chlorobenzene	*0.1*	*0.1*	<0.001	<0.001	<0.001	<0.005	<0.0005	<0.0005	<0.00012	<0.00012	0.000185 J	0.000189 J	0.000214 J	<0.00018
Ethylbenzene	*0.7*	*0.7*	0.0033 J	0.003 J	0.075	0.061	<0.0005	<0.0005	0.0022	0.00216	0.109	0.117	0.135	0.134
Methylene chloride	*0.005*	*0.005*	<0.0013	<0.0013	<0.0013	**<0.0065**	<0.001	<0.001	<0.00015	<0.00015	<0.00015	<0.00015	<0.00022	<0.00022
Toluene	*1*	*1*	<0.001	<0.001	0.019	0.018 J	<0.0005	<0.0005	<0.00015	<0.00015	0.00639	0.00672	0.23	0.229
Vinyl chloride	*0.002*	*0.002*						<0.0005			<0.00011	<0.00011		
Xylenes (total)	*10*	*10*	<0.0031	<0.0031	0.11	0.092	<0.0015	<0.0015	0.00223 J	0.00229 J	0.172	0.186	0.188	0.19
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000105	<0.000105	**<0.00519**	**<0.00519**	**<0.104**	**<0.106**
2,4-Dimethylphenol	*0.49*	*1.5*	0.0034	0.0046	0.029 J	0.019 J	<0.00005	<0.00005	0.00623	0.0199	**0.888**	**0.801**	**1.44**	**1.54**
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000124	<0.000124	**<0.00613**	**<0.00613**	**<0.123**	**<0.125**
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.0000762	<0.0000762	**<0.00377**	**<0.00377**	**<0.0755**	**<0.0769**
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000762	<0.00377	<0.00377	<0.0755	<0.0769
2-Methylnaphthalene	*0.098*	*0.29*	0.022 J	0.031 J	0.03	0.024	0.0015	0.0011	0.00345	0.0149	**0.195**	**0.16**	**0.263 J**	**0.27 J**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00079	<0.00079	**<0.0392**	**<0.0392**	**<0.783**	**<0.798**
4-Nitrophenol	*0.049*	*0.15*	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000533	<0.000533	<0.0264	<0.0264	**<0.528**	**<0.538**
Acenaphthene	*1.5*	*4.4*	0.037	0.042	0.048	0.064	0.019	0.023	0.0279	0.0374 J	0.157	0.151	0.288 J	0.217 J
Acenaphthylene	*1.5*	*4.4*	0.00018 J	0.00021	0.0003	0.0004	<0.00005	<0.00005	<0.0000571	0.000358 J	<0.00283	<0.00283	<0.0566	<0.0577
Anthracene	*7.3*	*22*	0.0013	0.0016	0.00082	0.00078	0.0026 J	0.0015 J	0.000748	0.000801	0.0049 J	0.00487 J	<0.0472	<0.0481
Benzo(a)anthracene	*0.0091*	*0.02*	0.00019 J	0.00018 J	0.0001 J	0.00011 J	0.00043 J	0.00026 J	0.000174 J	0.000211 J	<0.00377	<0.00377	**<0.0755**	**<0.0769**
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	<0.00005	<0.00005	<0.00005	0.00011 J	0.000054 J	<0.0000762	<0.0000762	**<0.00377**	**<0.00377**	**<0.0755**	**<0.0769**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000124	<0.000124	**<0.00613**	**<0.00613**	**<0.123**	**<0.125**
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00056	<0.00068	0.0013 J	0.00084 J	0.00014 J	0.00022	<0.000352	<0.000352	**<0.0175**	**<0.0175**	**<0.349**	**<0.356**
Chrysene	*0.91*	*2*	0.0001 J	0.00005 J	0.000061 J	<0.00005	0.00033 J	0.00016 J	0.000114 J	0.000106 J	<0.00377	<0.00377	<0.0755	<0.0769
Dibenzofuran	*0.098*	*0.29*	0.0088 J	0.014 J	0.019 J	0.026 J	0.0049	0.0061	0.00262	0.00699	0.0728	0.0717	**0.148 J**	**0.108 J**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000105	<0.000105	<0.00519	<0.00519	<0.104	<0.106
Fluoranthene	*0.98*	*2.9*	0.0021	0.0023	0.0012	0.0011	0.0036 J	0.0026 J	0.00212	0.0025	0.00385 J	0.00435 J	0.0703 J	<0.0673
Fluorene	*0.98*	*2.9*	0.0088 J	0.012 J	0.015	0.019	0.0056	0.0073	0.00641	0.00994	0.0668	0.0623	0.145 J	0.0939 J
Naphthalene	*0.49*	*1.5*	0.31 J	0.44 J	**0.96 J**	**1.6 J**	0.017	0.021	0.112	0.382 J	**4.98**	**4.07**	**5.82**	**5.3**
Nitrobenzene	*0.049*	*0.15*	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000105	<0.000105	<0.00519	<0.00519	**<0.104**	**<0.106**
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000952	<0.0000952	<0.00472	<0.00472	<0.0943	<0.0962
Pentachlorophenol	*0.001*	*0.001*	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000581	<0.000581	**<0.0288**	**<0.0288**	**<0.575**	**<0.587**
Phenanthrene	*0.73*	*2.2*	0.0046 J	0.0068 J	0.0038	0.0032	0.0058 J	0.0026 J	0.000488	0.000987	0.0232 J	0.0236	0.18 J	0.135 J
Phenol	*7.3*	*22*	0.00005 J	0.00091 J	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000381	<0.0000381	<0.00189	<0.00189	0.203 J	0.108 J
Pyrene	*0.73*	*2.2*	0.0025	0.0026	0.0021	0.0022	0.0035	0.0032	0.00283	0.00336	<0.00519	<0.00519	<0.104	<0.106
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-33A 08/28/2014	MW-33A 08/28/2014 Duplicate	MW-33A 01/30/2018	MW-33A 01/30/2018	MW-33A 03/27/2018	MW-33A 03/27/2018 Duplicate	MW-33A 06/05/2018	MW-33A 06/05/2018 Duplicate	MW-33A 01/22/2019	MW-33A 01/22/2019 Duplicate	MW-33A 07/17/2019	MW-33A 07/17/2019 Duplicate
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00014	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	0.00236 J	0.00389 J	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.00012	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	0.0014 J	0.00224 J	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.00015	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.00015	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*			<0.0002	<0.0002	<0.0002							
Xylenes (total)	*10*	*10*	0.000632 J	0.000872 J	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000108	<0.000108	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	0.0212 J	0.0608 J	<0.0002	<0.00021	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000127	<0.000127	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0000784	<0.0000784	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.0000784	<0.0000784	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	0.0216 J	0.0524 J	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.000814	<0.000814	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.000549	<0.000549	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	0.046 J	0.0692 J	0.0005	0.00016	<0.000027	<0.000027	0.00018 J	0.00097 J	<0.000027	<0.000027	0.000098 J	<0.000027
Acenaphthylene	*1.5*	*4.4*	0.00041 J	0.000636 J	0.000022 J	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	*7.3*	*22*	0.00132 J	0.00184 J	<0.000014	<0.000014	<0.000014	<0.000014	0.000021 J	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*	0.000288 J	0.000318 J	0.000077 J	<0.00005	<0.00005	<0.00005	0.000077 J	0.000091 J	<0.00005	0.000062 J	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0000784	<0.0000784	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.000127	0.000476 J	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.000363 J	0.000363 J	<0.000037	<0.000044	<0.000037	<0.000037	0.000078 J	0.00014 J	<0.000037	<0.000037	<0.00022	<0.000084
Chrysene	*0.91*	*2*	0.000168 J	0.000178 J	<0.000021	<0.000021	0.000047 J	<0.000021	0.00005 J	0.000061 J	0.000025 J	0.000034 J	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	0.0164 J	0.0334 J	0.000042 J	<0.00002	<0.00002	0.000036 J	0.00002 J	0.000038 J	<0.00002	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.000108	<0.000108	<0.00002	<0.00002	<0.00002	<0.00002	0.000039 J	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	0.00395	0.00426	0.0006	0.00034	0.00052	0.00052	0.00045 J	0.0006 J	0.00033	0.00044	0.00016	0.00017
Fluorene	*0.98*	*2.9*	0.0146 J	0.0224 J	<0.00003	<0.00003	<0.00003	<0.00003	0.000059 J	0.00017	<0.00003	<0.00003	<0.00003	<0.00003
Naphthalene	*0.49*	*1.5*	0.489 J	**1.02 J**	<0.00033	<0.00035	<0.00002	0.00013	<0.00019	<0.00002	<0.00002	<0.00002	<0.000076	<0.000096
Nitrobenzene	*0.049*	*0.15*	0.000108 J	0.00936 J	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000098	<0.000098	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.000598	<0.000598	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	0.00427 J	0.00736 J	<0.000021	<0.000021	<0.000021	<0.000021	0.000085 J	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Phenol	*7.3*	*22*	<0.0000392	<0.0000392	<0.0002	<0.00025	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	0.00011 J	0.000053 J
Pyrene	*0.73*	*2.2*	0.0043	0.00471	0.00028	0.000041 J	0.00057	0.00062	0.00073	0.001	0.00015	0.00034	0.00028	0.00069
Metals														
Arsenic	*0.01*	*0.01*			**0.0197**	**0.0202**	**0.0186**	**0.0201**	0.00573	0.00584	0.01	0.00995	**0.0155**	**0.0147**

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-33A 01/20/2020	MW-33A 01/20/2020 Duplicate	MW-34C 01/29/2008 DNAPL	MW-34C 02/08/2012	MW-34CR 07/29/2014	MW-34CR 01/29/2018	MW-34CR 03/27/2018	MW-34CR 06/05/2018	MW-34CR 01/15/2019	MW-35A 01/29/2008	MW-35A 07/14/2008	MW-35A 02/03/2009
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.00052	0.001 J	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052	<0.00052	<0.0005
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	**0.0287**	0.0014 J	0.000154 J	<0.0002	<0.0002	<0.0002	<0.0002	<0.00025	<0.00025	<0.0005
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.00047	0.001 J	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047	<0.00047	<0.0005
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	0.0903	0.0039 J	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.00025	<0.00025	<0.0005
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.00054	0.0013 J	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.00054	<0.00054	<0.0005
Toluene	*1*	*1*	<0.0002	<0.0002	0.0832	0.0041 J	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.00041	<0.00041	<0.0005
Vinyl chloride	*0.002*	*0.002*	<0.0002	<0.0002										
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	0.25	0.0077 J	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.00127	<0.00127	<0.001
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	**<0.002**	0.00005 J	<0.000108	<0.000021	<0.000021	<0.000021	<0.000021	<0.00008	0.00012 J	<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.0059	0.00022 J	<0.000304	<0.00004	<0.00004	<0.00004	<0.00004	<0.0003	<0.00028	<0.00008
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	**<0.004**	0.00005 J	<0.000127	<0.000058	<0.000058	<0.000058	<0.000058	<0.0002	<0.00019	<0.00009
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	**<0.004**	0.00006 J	<0.0000784	0.0001 J	<0.000042	<0.000042	<0.000042	<0.0002	<0.00019	<0.00007
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.0079	0.00005 J	<0.0000784	<0.000021	<0.000021	<0.000021	<0.000021	<0.0004	<0.00038	<0.00012
2-Methylnaphthalene	*0.098*	*0.29*	<0.000063	<0.000095	**0.437**	0.00011 J	0.000255 J	<0.000019	<0.000019	<0.000019	<0.000079	<0.0004	<0.00038	<0.00007
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	**<0.004**	0.00008 J	<0.000814	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002	<0.00019	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.005	0.00005 J	<0.000549	<0.000047	<0.000047	<0.000047	<0.000047	<0.00025	<0.00024	<0.00007
Acenaphthene	*1.5*	*4.4*	0.00073 J	0.0011 J	0.365	0.00005 J	<0.0000784	<0.000027	<0.000027	<0.000027	0.000029 J	0.0176	0.00656	0.0035
Acenaphthylene	*1.5*	*4.4*	0.000049 J	0.000038 J	<0.0059	0.00005 J	<0.0000588	<0.000015	<0.000015	<0.000015	<0.000015	<0.0003	<0.00028	<0.00006
Anthracene	*7.3*	*22*	0.000057 J	0.000044 J	0.0712	0.00005 J	<0.000049	<0.000014	<0.000014	<0.000014	<0.000014	0.000542	0.00023 J	<0.00007
Benzo(a)anthracene	*0.0091*	*0.02*	0.00012	0.00012	**0.017**	0.00005 J	<0.0000784	<0.00005	<0.00005	<0.00005	<0.00005	<0.0002	<0.00019	<0.00007
Benzo(a)pyrene	*0.0002*	*0.0002*	0.000066 J	0.000072 J	**0.0065**	0.00005 J	<0.0000784	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002	<0.00019	<0.00008
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	**<0.0079**	0.00005 J	<0.000127	<0.00003	<0.00003	<0.00003	<0.00003	<0.0004	<0.00038	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	<0.000037	**0.0076**	0.00053 J	<0.000799	<0.000037	<0.000037	0.000081 J	<0.000037	0.00453	<0.00019	0.00024
Chrysene	*0.91*	*2*	0.000078 J	0.000093 J	0.0128	0.00005 J	<0.0000784	<0.000021	<0.000021	<0.000021	<0.000021	<0.0002	<0.00019	<0.00007
Dibenzofuran	*0.098*	*0.29*	0.000096 J	0.000067 J	**0.412**	0.000071 J	<0.0000784	<0.00002	<0.00002	<0.00002	0.000027 J	0.00819	0.00319	0.0014
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.004	0.00005 J	<0.000108	<0.00002	<0.00002	<0.00002	0.000021 J	0.00046 J	<0.00019	<0.00007
Fluoranthene	*0.98*	*2.9*	0.00035 J	0.00057 J	0.14	0.00017 J	<0.0000686	<0.00001	<0.00001	<0.00001	0.000014 J	0.0014	0.00105	0.00034
Fluorene	*0.98*	*2.9*	0.000059 J	0.000072 J	0.228	0.00011 J	<0.0000686	<0.00003	<0.00003	<0.00003	<0.00003	0.00328	0.00161	0.00062
Naphthalene	*0.49*	*1.5*	<0.0005	<0.00066	**5.87**	0.00043 J	0.00282	<0.00017	<0.00002	<0.00023	<0.00069	0.0257	0.000704	<0.0001
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.0079	0.00005 J	<0.000108	<0.000024	<0.000024	<0.000024	<0.000024	<0.0004	<0.00038	<0.00009
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.005	0.00005 J	<0.000098	<0.000025	<0.000025	<0.000025	<0.000025	<0.00025	<0.00024	<0.00009
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	**<0.004**	0.00005 J	<0.000598	0.00013 J	<0.000079	<0.000079	<0.000079	<0.0002	<0.00019	<0.00008
Phenanthrene	*0.73*	*2.2*	<0.000056	<0.000046	0.431	0.0001 J	<0.0000588	<0.000021	<0.000021	<0.000021	<0.000021	0.00046 J	<0.00019	<0.00007
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.004	0.000072 J	<0.0000392	<0.000035	<0.000035	<0.000035	<0.000035	<0.0002	<0.00019	<0.00007
Pyrene	*0.73*	*2.2*	<0.00019	0.00052 J	0.0853	0.00021 J	<0.000108	<0.000019	<0.000019	<0.000019	<0.000019	0.000967	0.000547	0.00025
Metals														
Arsenic	*0.01*	*0.01*	0.0081	0.00755				0.00106 J	0.000801 J	0.000689 J	0.00132 J			

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-35A 01/14/2010	MW-35A 06/30/2010	MW-35A 01/27/2011	MW-35A 07/20/2011	MW-35A 02/15/2012	MW-35A 07/18/2012	MW-35A 02/07/2013	MW-35A 08/08/2013	MW-35A 01/24/2014	MW-35A 07/24/2014	MW-35A 01/25/2018	MW-35A 03/22/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	0.000367 J	0.00021 J	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	0.00015 J	<0.0003	0.00042 J
Ethylbenzene	*0.7*	*0.7*	0.0015 J	<0.0005	<0.0005	<0.0011	<0.0011	0.0015 J	<0.00011	<0.00011	<0.00019	0.000473 J	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001
Toluene	*1*	*1*	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*								<0.00011		<0.00011		
Xylenes (total)	*10*	*10*	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	0.000309 J	<0.00058	<0.00026	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0001	0.0003	<0.0001	<0.00005	<0.00005	<0.00005	<0.000105	<0.000108	<0.000104	<0.000106	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000295	<0.000304	<0.000292	<0.000298	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000124	<0.000127	<0.000123	<0.000125	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000762	<0.0000784	<0.0000755	<0.0000769	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000784	<0.0000755	<0.0000769	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	0.00061	<0.00007	<0.00007	<0.00005	<0.00005	0.0063	0.000239 J	<0.0000686	0.00035 J	0.000151 J	0.0019	0.000092 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00079	<0.000814	<0.000783	<0.000798	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000533	<0.000549	<0.000528	<0.000538	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	0.017	0.0077	0.00069	0.00091	0.00041	0.0072	0.0196	0.0181 J	0.0551	0.0294	0.0076	0.0064
Acenaphthylene	*1.5*	*4.4*	0.00011 J	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000571	<0.0000588	0.000754	<0.0000577	<0.000015	0.000088 J
Anthracene	*7.3*	*22*	0.00043	0.00035	<0.00007	<0.00005	<0.00005	0.0013	0.000389 J	<0.000049	0.00111	0.000601	0.00038	0.00028
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.0003	<0.0000762	<0.0000784	<0.0000755	<0.0000769	0.000054 J	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000784	<0.0000755	<0.0000769	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000124	<0.000127	<0.000123	<0.000125	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00045	<0.00048	0.0004	<0.00099	<0.00013	0.00014 J	<0.000352	<0.000363	<0.000349	<0.000356	0.00011 J	<0.000037
Chrysene	*0.91*	*2*	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00027	<0.0000762	<0.0000784	<0.0000755	<0.0000769	0.00005 J	<0.000021
Dibenzofuran	*0.098*	*0.29*	0.005	0.0026	0.00011 J	0.00013 J	0.00008 J	0.0043	0.000429 J	0.000141 J	0.00177	0.00115	0.0047	0.0011
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	0.000092 J	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000105	<0.000108	<0.000838	<0.000106	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	0.0011	0.00048	0.00021	0.00053	0.00007 J	0.0027	0.000109 J	0.000365 J	0.000484	0.000782	0.00065	0.00039
Fluorene	*0.98*	*2.9*	0.0028	0.0014	0.000095 J	0.00012 J	<0.00005	0.0029	<0.0000667	0.002 J	0.0149	0.0071	0.0024	0.00061
Naphthalene	*0.49*	*1.5*	0.19	0.0017	0.00028	<0.00005	0.00027	0.05	0.00286 J	0.000557 J	0.00968	0.00293	0.13	0.013
Nitrobenzene	*0.049*	*0.15*	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000105	<0.000108	<0.000104	<0.000106	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000952	<0.000098	<0.0000943	<0.0000962	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000581	<0.000598	<0.000575	<0.000587	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	0.00039	<0.00007	<0.00007	<0.00005	<0.00005	0.0068	0.000104 J	<0.0000588	<0.000848	0.000449 J	0.0016	0.00028
Phenol	*7.3*	*22*	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000381	<0.0000392	<0.0000377	<0.0000385	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	0.00092	0.00031	<0.00007	0.00029	<0.00005	0.0016	0.000305 J	0.000252 J	0.000376 J	0.000548	0.00055	0.00026
Metals														
Arsenic	*0.01*	*0.01*											**0.0166**	**0.0714**

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
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CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-35A 06/05/2018	MW-35A 01/15/2019	MW-35A 07/18/2019	MW-35A 01/10/2020	MW-35B 01/29/2008	MW-35B 07/14/2008	MW-35B 02/03/2009	MW-35B 01/14/2010	MW-35B 07/01/2010	MW-35B 01/27/2011	MW-35B 07/20/2011	MW-35B 02/15/2012
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052	<0.00109	<0.005	<0.005	<0.0005	<0.0005	<0.005	<0.001
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	**0.0648**	**0.0281**	**0.062**	**0.064**	**0.068**	**0.064**	**0.056**	**0.077**
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047	<0.0015	<0.005	<0.005	<0.0005	<0.0005	<0.005	<0.001
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	0.176	0.113	0.2	0.2	0.21	0.22	0.17	0.19
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.00054	<0.00122	<0.005	<0.005	<0.0005	<0.0005	**<0.0065**	<0.0013
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	0.00494 J	0.00249 J	0.0057 J	<0.005	0.005	0.0045 J	<0.005	0.0042 J
Vinyl chloride	*0.002*	*0.002*				<0.0002								
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	0.135	0.0787	0.15	0.15 J	0.17	0.16	0.12	0.13
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	<0.00008	<0.00008	<0.0001	<0.0001	**0.0012**	<0.0001	<0.00005	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	0.0021	<0.00004	<0.00004	<0.00029	<0.0003	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	<0.000058	<0.00019	<0.0002	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.000042	<0.00019	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.00038	<0.0004	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	0.00032	0.016	0.00012	<0.000019	**0.464**	0.0561	**0.4**	**0.47**	**0.36**	**0.41**	**0.48**	**0.18**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019	<0.0002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.00024	<0.00025	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Acenaphthene	*1.5*	*4.4*	0.006	0.0039	0.0028	<0.000027	0.217	0.116	0.17	0.22	0.2	0.19	0.2	0.08
Acenaphthylene	*1.5*	*4.4*	0.000066 J	0.000068 J	0.000071 J	<0.000015	<0.00029	<0.0003	0.00088	0.0013	0.0011	0.0012	0.00097	0.00063 J
Anthracene	*7.3*	*22*	0.00022	0.00044	0.00011	<0.000014	0.0129	0.00842	0.0056	0.008	0.015	0.014	0.016	0.0048 J
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00005	<0.00005	0.00044 J	0.0003 J	0.00017 J	0.00032	0.00022	0.00031	0.00021	0.00011 J
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019	<0.0002	<0.00008	0.00014 J	0.00012 J	0.00014 J	0.000069 J	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00038	<0.0004	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00018 J	<0.000037	0.000057 J	0.000061 J	**0.0198**	<0.0002	0.00052	<0.00029	<0.00097	0.00041	<0.00056	<0.00088
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	<0.000021	0.00033 J	0.00022 J	0.00015 J	0.00028	0.00017 J	0.00037	0.00025	0.0001 J
Dibenzofuran	*0.098*	*0.29*	0.00072	0.0041	0.00039	<0.00002	**0.198**	**0.104**	**0.16**	**0.23**	**0.22**	**0.2**	**0.21**	0.097
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Fluoranthene	*0.98*	*2.9*	0.00024	0.00015	0.00015	<0.00001	0.00698	0.00624	0.0031	0.0053	0.006	0.0065	0.0056	0.0026 J
Fluorene	*0.98*	*2.9*	0.00086	0.0022	0.00036	0.000065 J	0.0912	0.0685	0.063	0.092	0.11	0.09	0.097	0.048
Naphthalene	*0.49*	*1.5*	0.0075	0.22	0.00083	<0.0002	**9.3**	0.365	**12**	**14**	**11**	**4.8**	**12**	**7.4**
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.00038	<0.0004	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.00024	<0.00025	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	<0.000079	<0.00019	<0.0002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005
Phenanthrene	*0.73*	*2.2*	<0.000021	0.0025	0.000042 J	<0.000021	0.1	0.0782	0.061	0.086	0.12	0.078	0.12	0.052
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.000035	<0.000035	<0.00019	0.00059	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Pyrene	*0.73*	*2.2*	0.00027	0.00007 J	0.000096 J	<0.000019	0.00411	0.0026	0.0017	0.0027	0.0025	0.0032	0.0027	0.0016 J
Metals														
Arsenic	*0.01*	*0.01*	**0.0189**	**0.0198**	**0.0548**	**0.0219**								

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-35B 07/18/2012	MW-35B 02/07/2013	MW-35B 08/08/2013	MW-35B 01/24/2014	MW-35B 07/24/2014	MW-35B 01/25/2018	MW-35B 03/22/2018	MW-35B 06/05/2018	MW-35B 01/15/2019	MW-35B 07/18/2019	MW-35B 01/10/2020	MW-35B 01/10/2020 Duplicate
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.005	<0.0007	<0.0028	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	**0.064**	**0.0662**	**0.0855**	**0.0664**	**0.0539**	**0.078**	**0.088**	**0.044**	0.0033	0.0045	**0.025 J**	**0.016 J**
Chlorobenzene	*0.1*	*0.1*	<0.005	<0.0006	<0.0024	0.000241 J	0.000228 J	0.0009 J	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	0.19	0.225	0.258	0.187	0.176	0.15	0.15	0.12	0.0094	0.014	0.096	0.083
Methylene chloride	*0.005*	*0.005*	**0.02 J**	<0.00075	**0.0234**	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.005	0.00437 J	0.00584 J	0.00429	0.00377	0.0057	0.0041	0.0031	<0.0002	0.00054 J	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*			**<0.0022**		<0.00011						<0.0002	<0.0002
Xylenes (total)	*10*	*10*	0.13 J	0.153	0.174	0.132	0.114	0.064	0.066	0.056	0.004	0.0062	0.058 J	0.041 J
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	**<0.105**	**<0.00539**	**<0.106**	<0.00107	<0.00021	<0.00021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00005	<0.295	<0.0152	<0.298	<0.00301	<0.0004	<0.0004	<0.00004	<0.00004	<0.00004	<0.00004	0.00021
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	**<0.124**	**<0.00637**	**<0.125**	<0.00126	<0.00059	<0.00058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	**<0.0762**	**<0.00392**	**<0.0769**	<0.000777	<0.00042	<0.00042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.0762	<0.00392	<0.0769	<0.000777	<0.00021	<0.00021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	**0.26**	**0.295 J**	**0.431**	**0.534**	**0.376**	**0.13**	**0.22**	**0.25**	0.011	0.041	**0.14 J**	0.062 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	**<0.79**	**<0.0407**	**<0.798**	**<0.00806**	<0.0002	0.00078 J	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00005	**<0.533**	<0.0275	**<0.538**	<0.00544	<0.00047	<0.00047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	0.15	0.173 J	0.258	0.305 J	0.139	0.094	0.18	0.17	0.013	0.029	0.059 J	0.033 J
Acenaphthylene	*1.5*	*4.4*	0.00078	<0.0571	<0.00294	<0.0577	0.0015 J	<0.00015	0.0014	0.00076	0.00018	0.00022	0.00038	0.00027
Anthracene	*7.3*	*22*	0.0064	<0.0476	0.0202 J	<0.0481	0.0111	0.011	0.014	0.0072	0.0011	0.0022	0.0029 J	0.0018 J
Benzo(a)anthracene	*0.0091*	*0.02*	0.0002	**<0.0762**	<0.00392	**<0.0769**	<0.000777	<0.00051	<0.0005	0.000075 J	0.000077 J	0.000083 J	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	**<0.0762**	**<0.00392**	**<0.0769**	**<0.000777**	<0.0002	<0.0002	<0.00002	0.000058 J	0.000053 J	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	**<0.124**	**<0.00637**	**<0.125**	**<0.00126**	<0.0003	<0.0003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00018 J	**<0.352**	**<0.0181**	**<0.356**	<0.00359	<0.00037	<0.00037	<0.000037	<0.00014	0.00012 J	<0.000037	<0.000037
Chrysene	*0.91*	*2*	0.00023	<0.0762	<0.00392	<0.0769	<0.000777	0.00051 J	<0.00021	0.000086 J	0.000098 J	0.000091 J	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	**0.14**	**0.161 J**	**0.252**	**0.256 J**	**0.138**	**0.13**	**0.22**	**0.18**	0.015	0.029	0.054 J	0.031 J
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00005	<0.105	<0.00539	<0.106	<0.00107	<0.0002	<0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	0.0039	<0.0667	0.00756 J	0.0698 J	0.00692	0.0081	0.0098	0.0031	0.0013	0.0017	0.0015 J	0.00093 J
Fluorene	*0.98*	*2.9*	0.069	<0.0667	0.138	0.167 J	0.076	0.057	0.092	0.095	0.0066	0.014	0.028 J	0.015 J
Naphthalene	*0.49*	*1.5*	**7.6**	**8.83**	**14.1**	**13.1**	**9.36**	**5**	**13**	**15**	0.079	**1.1**	**2 J**	0.13 J
Nitrobenzene	*0.049*	*0.15*	<0.00005	**<0.105**	<0.00539	**<0.106**	<0.00107	<0.00024	<0.00024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.0952	<0.0049	<0.0962	<0.000971	<0.00025	<0.00025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00005	**<0.581**	**<0.0299**	**<0.587**	**<0.00592**	<0.0008	<0.00079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	0.066	0.0936 J	0.142	0.27 J	0.0891	0.088	0.18	0.11	0.0086	0.019	0.024 J	0.013 J
Phenol	*7.3*	*22*	0.00014 J	<0.0381	<0.00196	0.129 J	<0.000388	<0.00035	<0.00035	<0.000035	<0.000035	0.00017 J	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	0.0019	<0.105	<0.00539	<0.106	0.00327 J	0.0057	0.0053	0.0018	0.00075	0.00079	0.0007 J	0.00045 J
Metals														
Arsenic	*0.01*	*0.01*						0.00465	0.00595	**0.0116**	0.00862	0.0012 J	**0.012**	**0.0159**

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
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Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00052	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002
Benzene	*0.005*	*0.005*	<0.00025	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.00047	<0.00047	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018
Ethylbenzene	*0.7*	*0.7*	<0.00025	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019
Methylene chloride	*0.005*	*0.005*	<0.00054	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022
Toluene	*1*	*1*	<0.00041	<0.00041	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017
Vinyl chloride	*0.002*	*0.002*							<0.001	<0.001	<0.0005	<0.00011	<0.00011	<0.00018
Xylenes (total)	*10*	*10*	<0.00127	<0.00127	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00008	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.000104	<0.000104	<0.000104
2,4-Dimethylphenol	*0.49*	*1.5*	<0.0003	<0.00029	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000292	<0.000292	<0.000292
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.0002	<0.0002	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000123	<0.000123	<0.000123
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0002	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000755	<0.0000755	<0.0000755
2-Chloronaphthalene	*2*	*5.8*	<0.0004	<0.00039	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000755	<0.0000755
2-Methylnaphthalene	*0.098*	*0.29*	<0.0004	<0.00039	<0.00007	0.0003	0.00023	<0.00007	<0.00005	<0.00005	<0.00005	<0.000066	<0.000066	<0.000066
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.0002	<0.0002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.000783	<0.000783	<0.000783
4-Nitrophenol	*0.049*	*0.15*	<0.00025	<0.00024	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000528	<0.000528	<0.000528
Acenaphthene	*1.5*	*4.4*	<0.0003	<0.00029	<0.00009	0.00036	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000755	<0.0000867
Acenaphthylene	*1.5*	*4.4*	<0.0003	<0.00029	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000566	<0.0000566	<0.0000566
Anthracene	*7.3*	*22*	0.00065	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000472	<0.0000472	<0.0000472
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0002	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000755	<0.0000755
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0002	<0.0002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000755	<0.0000755
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.0004	<0.00039	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000123	<0.000123	<0.000123
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00061 J	<0.0002	0.00045	<0.00033	<0.00061	<0.00048	<0.0004	0.0025	<0.0001	<0.000349	<0.000349	<0.000349
Chrysene	*0.91*	*2*	<0.0002	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000755	<0.0000755
Dibenzofuran	*0.098*	*0.29*	0.00049 J	<0.00029	<0.00008	0.0003	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000755	<0.0000755
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.0002	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000104	<0.000391	<0.000104
Fluoranthene	*0.98*	*2.9*	0.000526	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000066	<0.000066	<0.000066
Fluorene	*0.98*	*2.9*	0.00028 J	<0.0002	<0.00007	0.00024	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000066	<0.000066	<0.000066
Naphthalene	*0.49*	*1.5*	0.00119	<0.00039	0.0006	0.0013	0.0023	<0.0001	<0.00005	<0.00005	0.0003	<0.000211	<0.0000755	<0.0000755
Nitrobenzene	*0.049*	*0.15*	<0.0004	<0.00039	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000104	<0.000104	<0.000104
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00025	<0.00024	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000943	<0.0000943	<0.0000943
Pentachlorophenol	*0.001*	*0.001*	<0.0002	<0.0002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000575	<0.000575	<0.000575
Phenanthrene	*0.73*	*2.2*	0.000727	<0.0002	<0.00007	0.00039	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000566	<0.0000861	<0.000201
Phenol	*7.3*	*22*	<0.0002	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000377	<0.0000377	<0.0000377
Pyrene	*0.73*	*2.2*	0.000531	<0.0002	0.00015 J	0.00021	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000104	<0.000104	0.000155 J
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-36A 07/28/2014	MW-36A 01/25/2018	MW-36A 03/21/2018	MW-36A 05/31/2018	MW-36A 01/14/2019	MW-36A 07/16/2019	MW-36A 01/09/2020	MW-36D 07/15/2010	MW-36D 01/26/2011	MW-36D 07/27/2011	MW-36D 02/14/2012	MW-36D 07/23/2012
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.001	<0.001	<0.0005
Benzene	*0.005*	*0.005*	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	0.00071 J	<0.001	<0.001	<0.0005
Chlorobenzene	*0.1*	*0.1*	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0005	<0.0005	<0.001	<0.001	<0.0005
Ethylbenzene	*0.7*	*0.7*	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005
Methylene chloride	*0.005*	*0.005*	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0013	<0.0013	<0.001
Toluene	*1*	*1*	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.001	<0.001	<0.0005
Vinyl chloride	*0.002*	*0.002*	<0.00011	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002					
Xylenes (total)	*10*	*10*	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.001	<0.001	<0.0031	<0.0031	<0.0015
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000107	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	<0.000301	<0.000041	<0.00004	<0.00004	<0.00004	<0.00004	<0.000052	0.00008 J	<0.00008	<0.00005	<0.00005	<0.00005
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000126	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	0.00009 J	<0.00009	<0.00005	<0.00005	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0000777	<0.000043	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.0000777	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	<0.000177	<0.000019	0.000022 J	<0.000019	<0.000019	<0.000019	<0.000019	<0.00007	0.00013 J	<0.00005	<0.00005	<0.00005
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.000806	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000544	<0.000048	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Acenaphthene	*1.5*	*4.4*	<0.0000777	<0.000028	0.00059	<0.000027	<0.000027	<0.000027	<0.000027	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
Acenaphthylene	*1.5*	*4.4*	<0.0000583	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Anthracene	*7.3*	*22*	<0.0000485	<0.000014	0.000066 J	<0.000014	<0.000014	<0.000014	<0.000014	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0000777	<0.000051	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0000777	<0.00002	0.000064 J	0.00003 J	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.000126	<0.000031	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000359	0.000089 J	0.00015 J	0.0001 J	<0.000037	<0.000037	<0.000037	0.005 J	0.00097	0.0012	<0.0012	<0.00035
Chrysene	*0.91*	*2*	<0.0000777	<0.000021	<0.000021	0.000027 J	<0.000021	<0.000021	<0.000021	<0.00007	<0.00007	<0.00005	0.000078 J	<0.00005
Dibenzofuran	*0.098*	*0.29*	<0.0000777	<0.00002	0.00061	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.000107	<0.00002	<0.00002	0.000028 J	<0.00002	<0.00002	<0.00002	<0.00007	<0.00007	0.00032	0.000052 J	<0.00005
Fluoranthene	*0.98*	*2.9*	<0.000068	<0.00001	0.00012	0.000033 J	<0.00001	<0.00001	<0.00001	<0.00007	<0.00007	0.000068 J	0.00013 J	0.000054 J
Fluorene	*0.98*	*2.9*	<0.000068	<0.000031	0.00034	<0.00003	<0.00003	<0.00003	<0.00003	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Naphthalene	*0.49*	*1.5*	<0.00101	<0.00002	<0.00002	<0.00002	<0.000062	0.00015	<0.00034	<0.0001	0.00083	0.000061 J	<0.000072	<0.00014
Nitrobenzene	*0.049*	*0.15*	<0.000107	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.0000971	<0.000026	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
Pentachlorophenol	*0.001*	*0.001*	<0.000592	<0.000081	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005
Phenanthrene	*0.73*	*2.2*	<0.0000583	<0.000021	0.00011	0.000026 J	<0.000021	<0.000021	<0.000021	<0.00007	<0.00007	0.000072 J	0.000069 J	<0.00005
Phenol	*7.3*	*22*	<0.0000388	<0.000036	<0.000035	<0.000035	<0.000035	<0.00014	<0.000035	0.00065	<0.00007	0.000056 J	0.00023	<0.00005
Pyrene	*0.73*	*2.2*	<0.000107	<0.000019	0.000076 J	0.000032 J	<0.000019	<0.000019	<0.000019	<0.00007	<0.00007	0.000053 J	0.000087 J	<0.00005
Metals														
Arsenic	*0.01*	*0.01*		0.00108 J	0.00753	0.00117 J	0.00107 J	0.00244	0.00354					

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-36D 07/23/2012 Duplicate	MW-36D 02/11/2013	MW-36D 08/05/2013	MW-36D 01/21/2014	MW-36D 08/28/2014	MW-36D 02/07/2018	MW-36D 03/26/2018	MW-36D 05/31/2018	MW-36D 01/24/2019	MW-36D 07/31/2019	MW-36D 01/16/2020	MW-38A 01/29/2008
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052
Benzene	*0.005*	*0.005*	<0.0005	<0.00008	<0.00008	<0.0002	0.0000895 J	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00025
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.00012	0.00013 J	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047
Ethylbenzene	*0.7*	*0.7*	<0.0005	<0.00011	0.000127 J	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00025
Methylene chloride	*0.005*	*0.005*	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00054
Toluene	*1*	*1*	<0.0005	<0.00015	<0.00015	<0.00017	0.00675	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00041
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00127
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	<0.000105	<0.00011	<0.000104	<0.000109	<0.00021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00008
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00005	<0.000295	<0.00031	<0.000292	<0.000307	<0.0004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00029
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	<0.000124	<0.00013	<0.000123	<0.000129	<0.00058	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058	<0.00019
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	<0.0000762	<0.00008	<0.0000755	<0.0000792	<0.00042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.00019
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.0000762	<0.00008	<0.0000755	<0.0000792	<0.00021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00039
2-Methylnaphthalene	*0.098*	*0.29*	<0.00005	<0.0000667	<0.00007	0.000189 J	<0.0000693	<0.00019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.00039
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00079	<0.00083	<0.000783	<0.000822	<0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019
4-Nitrophenol	*0.049*	*0.15*	<0.00005	<0.000533	<0.00056	<0.000528	<0.000554	<0.00047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00024
Acenaphthene	*1.5*	*4.4*	<0.00005	<0.0000762	<0.00008	0.00014 J	<0.0000792	0.00056 J	0.002	<0.000027	<0.000027	<0.000027	<0.000027	<0.00029
Acenaphthylene	*1.5*	*4.4*	<0.00005	<0.0000571	<0.00006	<0.0000566	<0.0000594	<0.00015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.00029
Anthracene	*7.3*	*22*	<0.00005	<0.0000476	<0.00005	0.000105 J	0.000224 J	<0.00014	0.00016	0.000037 J	<0.000014	0.000017 J	<0.000033	<0.00019
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.0000762	<0.00008	<0.0000755	0.000213 J	<0.0005	0.00024	0.00019	<0.00005	0.000053 J	<0.00005	<0.00019
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	<0.0000762	<0.00008	<0.0000755	0.000192 J	<0.0002	**0.0003**	**0.00024**	0.000027 J	0.000087 J	<0.00002	<0.00019
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	<0.000124	<0.00013	<0.000123	<0.000129	<0.0003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00039
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00059	<0.000352	<0.00037	<0.000349	0.00128	<0.00037	0.00054	0.0005	0.000055 J	0.00008 J	<0.000037	0.00078 J
Chrysene	*0.91*	*2*	<0.00005	<0.0000762	<0.00008	<0.0000755	0.000347 J	<0.00021	0.00031	0.00026	0.000031 J	0.000058 J	<0.000021	<0.00019
Dibenzofuran	*0.098*	*0.29*	<0.00005	<0.0000762	<0.00008	0.00017 J	<0.0000792	<0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00029
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00005	<0.000105	<0.00011	<0.000104	<0.000109	<0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019
Fluoranthene	*0.98*	*2.9*	0.000093 J	<0.0000667	<0.00007	0.000216 J	0.00111	<0.0001	0.00094	0.00039	0.000048 J	0.00011	<0.00001	<0.00019
Fluorene	*0.98*	*2.9*	<0.00005	<0.0000667	<0.00007	0.000147 J	0.0001 J	<0.0003	0.00086	0.00003 J	<0.00003	<0.00003	<0.00003	<0.00019
Naphthalene	*0.49*	*1.5*	<0.00015	<0.0000762	<0.00008	0.0011 J	0.0000923 J	<0.0002	0.00015	0.000045 J	<0.00002	<0.00002	<0.000033	<0.00039
Nitrobenzene	*0.049*	*0.15*	<0.00005	<0.000105	<0.00011	<0.000104	<0.000109	<0.00024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00039
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.0000952	<0.0001	<0.0000943	<0.000099	<0.00025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00024
Pentachlorophenol	*0.001*	*0.001*	<0.00005	<0.000581	<0.00061	<0.000575	<0.000604	<0.00079	<0.00008	<0.000079	<0.000079	<0.000079	<0.000079	<0.00019
Phenanthrene	*0.73*	*2.2*	0.00014 J	<0.0000571	<0.00006	0.000665	0.00102	<0.00021	0.00037	0.00028	<0.000021	0.000066 J	<0.000047	<0.00019
Phenol	*7.3*	*22*	<0.00005	<0.0000381	<0.00004	<0.0000377	0.00194	<0.00035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.00019
Pyrene	*0.73*	*2.2*	<0.00005	<0.000105	<0.00011	0.000159 J	0.000881	<0.00019	0.00062	0.00036	0.000042 J	0.000099 J	<0.000019	<0.00019
Metals														
Arsenic	*0.01*	*0.01*						0.000773 J	0.00137 J	<0.0004	0.000417 J	<0.0004	0.000533 J	

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	***C/I Assessment Level***	MW-38A 01/29/2008 Duplicate	MW-38A 07/14/2008	MW-38A 07/14/2008 Duplicate	MW-38A 02/03/2009	MW-38A 01/14/2010	MW-38A 06/29/2010	MW-38A 01/25/2011	MW-38A 07/19/2011	MW-38A 08/25/2011	MW-38A 02/15/2012	MW-38A 07/18/2012	MW-38A 02/07/2013
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00052	<0.00109	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	<0.0005	<0.00014
Benzene	*0.005*	*0.005*	<0.00025	<0.00112	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	<0.0005	<0.00008
Chlorobenzene	*0.1*	*0.1*	<0.00047	<0.0015	<0.00047	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	<0.0005	<0.00012
Ethylbenzene	*0.7*	*0.7*	<0.00025	<0.00142	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011		<0.0011	<0.0005	<0.00011
Methylene chloride	*0.005*	*0.005*	<0.00054	<0.00122	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013		<0.0013	<0.001	<0.00015
Toluene	*1*	*1*	<0.00041	<0.00138	<0.00041	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	<0.0005	<0.00015
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.00127	<0.00302	<0.00127	<0.001	<0.001	<0.001	<0.001	<0.0031		<0.0031	<0.0015	<0.00026
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00008	<0.00008	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005		<0.00005	<0.00005	<0.000105
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00029	<0.00029	<0.00028	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005		<0.00005	<0.00005	<0.000295
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.0002	<0.0002	<0.00019	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005		<0.00005	<0.00005	<0.000124
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0002	<0.0002	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006		<0.00006	<0.00006	<0.0000762
2-Chloronaphthalene	*2*	*5.8*	<0.00039	<0.00039	<0.00038	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005		<0.00005	<0.00005	<0.0000762
2-Methylnaphthalene	*0.098*	*0.29*	<0.00039	<0.00039	<0.00038	0.00044	<0.00007	0.00016 J	0.000085 J	<0.00005		<0.00005	<0.00031	<0.0000667
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.0002	<0.0002	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008		<0.00008	<0.00008	<0.00079
4-Nitrophenol	*0.049*	*0.15*	<0.00024	<0.00024	<0.00024	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005		<0.00005	<0.00005	<0.000533
Acenaphthene	*1.5*	*4.4*	<0.00029	<0.00029	<0.00028	<0.00009	0.00024	<0.00009	<0.00009	0.00043		<0.00005	<0.00025	<0.0000762
Acenaphthylene	*1.5*	*4.4*	<0.00029	<0.00029	<0.00028	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005		<0.00005	<0.00005	<0.0000571
Anthracene	*7.3*	*22*	<0.0002	<0.0002	<0.00019	<0.00007	<0.00007	<0.00007	0.00023	0.0001 J		<0.00005	<0.00013	0.0000712 J
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0002	<0.0002	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	0.00025		<0.00005	<0.00005	<0.0000762
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0002	<0.0002	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008	**0.00052**	<0.00005	<0.00005	<0.00005	<0.0000762
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00039	<0.00039	<0.00038	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005		<0.00005	<0.00005	<0.000124
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	**0.0145**	0.00022 J	0.00105 J	0.00042	<0.00049	<0.00044	0.00064	<0.00094		0.0016	0.00023	<0.000352
Chrysene	*0.91*	*2*	<0.0002	<0.0002	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	0.00022		<0.00005	<0.00005	<0.0000762
Dibenzofuran	*0.098*	*0.29*	<0.00029	<0.00029	<0.00028	<0.00008	<0.00008	0.000083 J	<0.00008	<0.00005	0.000055 J	<0.00005	<0.00014	<0.0000762
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.0002	<0.0002	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	0.00017 J		<0.00005	0.000052 J	<0.000105
Fluoranthene	*0.98*	*2.9*	<0.0002	<0.0002	<0.00019	<0.00007	0.00012 J	<0.00007	0.00034	0.00014 J		<0.00005	<0.00017	<0.0000667
Fluorene	*0.98*	*2.9*	<0.0002	<0.0002	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005		<0.00005	<0.00015	<0.0000667
Naphthalene	*0.49*	*1.5*	<0.00039	<0.00039	<0.00038	0.006	<0.0001	<0.0001	0.00059	<0.00026		<0.00005	<0.001	<0.0000762
Nitrobenzene	*0.049*	*0.15*	<0.00039	<0.00039	<0.00038	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005		<0.00005	<0.00005	<0.000105
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00024	<0.00024	<0.00024	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005		<0.00005	<0.00005	<0.0000952
Pentachlorophenol	*0.001*	*0.001*	<0.0002	<0.0002	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008	0.000067 J		<0.00005	<0.00005	<0.000581
Phenanthrene	*0.73*	*2.2*	<0.0002	<0.0002	<0.00019	<0.00007	<0.00007	<0.00007	0.0001 J	<0.00005		0.00011 J	<0.00032	<0.0000571
Phenol	*7.3*	*22*	<0.0002	<0.0002	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005		<0.00005	<0.00005	<0.0000381
Pyrene	*0.73*	*2.2*	<0.0002	<0.0002	<0.00019	<0.00007	0.0001 J	<0.00007	0.00021	0.00018 J		<0.00005	<0.00016	<0.000105
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-38A 08/08/2013	MW-38A 01/21/2014	MW-38A 07/25/2014	MW-38A 01/26/2018	MW-38A 03/25/2018	MW-38A 06/05/2018	MW-38A 01/22/2019	MW-38A 07/31/2019	MW-38A 01/21/2020	MW-38B 01/29/2008	MW-38B 07/14/2008	MW-38B 02/03/2009
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	0.00031 J	<0.0002	<0.00052	<0.00109	<0.0005
Benzene	*0.005*	*0.005*	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00025	<0.00112	<0.0005
Chlorobenzene	*0.1*	*0.1*	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047	<0.0015	<0.0005
Ethylbenzene	*0.7*	*0.7*	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00025	<0.00142	<0.0005
Methylene chloride	*0.005*	*0.005*	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00054	<0.00122	<0.0005
Toluene	*1*	*1*	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00041	<0.00138	<0.0005
Vinyl chloride	*0.002*	*0.002*	<0.00011		<0.00011									
Xylenes (total)	*10*	*10*	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00127	<0.00302	<0.001
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000104	<0.000105	<0.000107	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00008	<0.00008	<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*	<0.000292	<0.000295	<0.000301	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.0003	<0.00029	<0.00008
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000123	<0.000124	<0.000126	<0.000058	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058	<0.0002	<0.00019	<0.00009
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0000755	<0.0000762	<0.0000777	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.0002	<0.00019	<0.00007
2-Chloronaphthalene	*2*	*5.8*	<0.0000755	<0.0000762	<0.0000777	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0004	<0.00038	<0.00012
2-Methylnaphthalene	*0.098*	*0.29*	0.000115 J	<0.0000667	<0.000068	<0.000019	0.00014	<0.000019	0.000055 J	<0.000019	0.00017	<0.0004	<0.00038	0.00037
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.000783	<0.00079	<0.000806	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002	<0.00019	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000528	<0.000533	<0.000544	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00025	<0.00024	<0.00007
Acenaphthene	*1.5*	*4.4*	0.000638	<0.0000762	<0.0000777	<0.000027	0.0039	0.00061	0.014	<0.000027	0.00068	<0.0003	<0.00029	0.0001 J
Acenaphthylene	*1.5*	*4.4*	<0.0000566	<0.0000571	<0.0000583	<0.000015	0.000053 J	<0.000015	0.0002	<0.000015	<0.000015	<0.0003	<0.00029	<0.00006
Anthracene	*7.3*	*22*	<0.0000472	0.000103 J	<0.0000816	<0.000014	0.00026	0.00015	0.00017	0.000022 J	0.00015	<0.0002	0.00026 J	0.00013 J
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0000755	<0.0000762	<0.0000777	<0.00005	<0.000051	<0.00005	<0.00005	0.000087 J	<0.00005	<0.0002	<0.00019	<0.00007
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0000755	<0.0000762	<0.0000777	<0.00002	<0.00002	<0.00002	<0.00002	0.00012	0.000032 J	<0.0002	<0.00019	<0.00008
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.000123	<0.000124	<0.000126	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.0004	<0.00038	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000349	<0.000352	<0.000359	<0.000037	<0.000037	0.0001 J	<0.000037	0.000084 J	0.000063 J	0.00103 J	<0.00019	0.00041
Chrysene	*0.91*	*2*	<0.0000755	<0.0000762	<0.0000777	<0.000021	<0.000021	<0.000021	<0.000021	0.000092 J	0.00006 J	<0.0002	<0.00019	<0.00007
Dibenzofuran	*0.098*	*0.29*	<0.0000755	<0.0000762	<0.0000777	<0.00002	<0.00002	0.00006 J	0.00014	<0.00002	0.00036	<0.0003	<0.00029	<0.00008
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	0.000145 J	<0.000105	<0.000107	<0.00002	<0.00002	0.00017 J	0.000068 J	<0.00002	<0.00002	<0.0002	<0.00019	<0.00007
Fluoranthene	*0.98*	*2.9*	0.000164 J	<0.0000667	<0.000068	<0.00001	0.00023	0.000032 J	0.0013	0.00018	0.00018	<0.0002	<0.00019	<0.00007
Fluorene	*0.98*	*2.9*	<0.000066	<0.0000667	<0.000068	<0.00003	0.0003	0.00016	0.0024	<0.00003	0.00029	<0.0002	<0.00019	<0.00007
Naphthalene	*0.49*	*1.5*	0.00192 J	<0.000146	<0.0000777	<0.00002	<0.00002	0.00071	0.00015	0.000068 J	0.0011	<0.0004	<0.00038	0.0045
Nitrobenzene	*0.049*	*0.15*	<0.000104	<0.000105	<0.000107	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.0004	<0.00038	<0.00009
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.0000943	<0.0000952	<0.0000971	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	0.00011 J	<0.00025	<0.00024	<0.00009
Pentachlorophenol	*0.001*	*0.001*	<0.000575	<0.000581	<0.000592	<0.000079	<0.00008	<0.000079	<0.000079	<0.000079	<0.000079	<0.0002	<0.00019	<0.00008
Phenanthrene	*0.73*	*2.2*	<0.0000566	<0.0000571	<0.0000583	<0.000021	0.00033	<0.000021	0.00058	0.0001	0.00039	<0.0002	<0.00019	<0.00007
Phenol	*7.3*	*22*	<0.0000377	<0.0000381	<0.0000388	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.0002	<0.00019	<0.00007
Pyrene	*0.73*	*2.2*	0.000176 J	<0.000105	<0.000107	<0.000019	0.00021	0.000056 J	0.0011	0.00014	0.00014	<0.0002	<0.00019	<0.00007
Metals														
Arsenic	*0.01*	*0.01*				<0.0004	**0.0138**	**0.0124**	**0.0186**	<0.0004	**0.0177**			

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

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CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-38B 01/14/2010	MW-38B 06/29/2010	MW-38B 01/25/2011	MW-38B 07/18/2011	MW-38B 02/15/2012	MW-38B 07/18/2012	MW-38B 02/07/2013	MW-38B 08/08/2013	MW-38B 01/21/2014	MW-38B 07/25/2014	MW-38B 01/26/2018	MW-38B 03/25/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001
Toluene	*1*	*1*	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*								<0.00011		<0.00011		
Xylenes (total)	*10*	*10*	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.000105	<0.000104	<0.000105	<0.000109	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000295	<0.000292	<0.000295	<0.000307	<0.000041	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000124	<0.000123	<0.000124	<0.000129	<0.000059	<0.000059
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000762	<0.0000755	<0.0000762	<0.0000792	<0.000043	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000762	<0.0000792	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.0003	<0.0000667	<0.000066	0.000137 J	<0.0000992	0.000096 J	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00079	<0.000783	<0.00079	<0.000822	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000533	<0.000528	<0.000533	<0.000554	<0.000048	<0.000047
Acenaphthene	*1.5*	*4.4*	<0.00009	0.00047	<0.00009	<0.00005	0.0001 J	0.00096	0.000226 J	<0.0000755	0.0000786 J	<0.000342	<0.000028	0.000095 J
Acenaphthylene	*1.5*	*4.4*	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000571	<0.0000566	<0.0000571	<0.0000594	<0.000015	<0.000015
Anthracene	*7.3*	*22*	<0.00007	<0.00007	0.00011 J	0.00013 J	0.00021	<0.00023	0.000313 J	<0.0000472	0.000141 J	<0.000398	0.000047 J	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000762	<0.0000792	<0.000051	<0.000051
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000762	<0.0000792	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	0.000072 J	<0.000124	<0.000123	<0.000124	<0.000129	<0.000031	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00039	<0.00074	<0.0002	<0.001	<0.0001	<0.0001	<0.000352	<0.000349	<0.000352	<0.000366	0.000061 J	0.00012 J
Chrysene	*0.91*	*2*	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000762	<0.0000792	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00028	<0.0000762	<0.0000755	0.0000923 J	<0.00041	0.000053 J	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000105	<0.000104	<0.000105	<0.000109	<0.00002	0.000027 J
Fluoranthene	*0.98*	*2.9*	<0.00007	0.00017 J	<0.00007	<0.00005	<0.00005	<0.00032	<0.0000667	<0.000066	0.000101 J	<0.00058	<0.00001	0.000022 J
Fluorene	*0.98*	*2.9*	<0.00007	0.00015 J	<0.00007	<0.00005	<0.00005	<0.00027	<0.0000667	<0.000066	0.0000778 J	<0.000219	0.000046 J	<0.00003
Naphthalene	*0.49*	*1.5*	<0.00014	<0.0001	0.00031	<0.00005	0.00037	<0.0015	<0.0000762	<0.0000755	0.000466 J	<0.0016	0.00084	0.00016
Nitrobenzene	*0.049*	*0.15*	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000105	<0.000104	<0.000105	<0.000109	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000952	<0.0000943	<0.0000952	<0.000099	<0.000026	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000581	<0.000575	<0.000581	<0.000604	<0.000081	<0.00008
Phenanthrene	*0.73*	*2.2*	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00037	<0.0000571	<0.0000566	0.000304 J	<0.000164	0.000061 J	0.000052 J
Phenol	*7.3*	*22*	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000381	<0.0000377	<0.0000381	<0.0000396	<0.000036	<0.000035
Pyrene	*0.73*	*2.2*	<0.00007	0.00027	<0.00007	<0.00005	<0.00005	<0.00037	<0.000105	<0.000104	<0.000105	0.000472 J	<0.000019	0.000035 J
Metals														
Arsenic	*0.01*	*0.01*											0.000636 J	0.000972 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-38B 06/05/2018	MW-38B 01/22/2019	MW-38B 07/18/2019	MW-38B 01/21/2020	MW-39B 01/30/2008	MW-39B 07/15/2008	MW-39B 02/04/2009	MW-39B 01/19/2010	MW-39B 06/22/2010	MW-39B 01/18/2011	MW-39B 07/26/2011	MW-39B 02/01/2012
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.00025	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047	<0.00047	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	<0.00025	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.00054	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	<0.00041	<0.00041	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.00127	<0.00127	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	0.00025	<0.00008	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	0.000056 J	<0.00004	<0.0003	<0.00029	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	0.00005 J
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	<0.000058	<0.0002	<0.00019	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	0.00005 J
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.000042	<0.0002	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	0.00006 J
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.0004	<0.00039	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	0.00005 J
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	0.0003	0.00017	<0.0004	<0.00039	<0.00007	<0.00007	<0.00007	0.000086 J	<0.00005	0.00005 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002	<0.00049	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.00025	<0.00024	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00005 J
Acenaphthene	*1.5*	*4.4*	0.048	<0.000027	0.00012	0.054	0.000664	<0.00029	0.00022	0.00014 J	0.0034	0.00039	0.00028	0.0011 J
Acenaphthylene	*1.5*	*4.4*	0.00036	<0.000015	<0.000015	0.00045	<0.0003	<0.00029	<0.00006	<0.00007	<0.00007	<0.00007	0.000053 J	0.00005 J
Anthracene	*7.3*	*22*	0.0018	0.0001	0.000037 J	0.0012	0.00106	0.000619	0.00028	<0.00007	<0.00007	<0.00007	0.0004	<0.00005
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00005	0.000055 J	<0.0002	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00005 J
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	<0.0004	<0.00039	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	0.00005 J
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	<0.000037	0.00031	<0.000037	0.00119 J	<0.00019	0.00046	0.0007	<0.0002	0.00024	0.00092	<0.00015
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	0.000057 J	<0.0002	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Dibenzofuran	*0.098*	*0.29*	0.008	<0.00002	0.00014	0.0054	<0.0003	<0.00029	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	0.0004 J
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.00002	0.000036 J	<0.0002	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Fluoranthene	*0.98*	*2.9*	0.0014	<0.00001	<0.00001	0.0025	0.00213	0.000575	0.0014	<0.00007	0.0019	0.00013 J	0.000079 J	0.0011
Fluorene	*0.98*	*2.9*	0.019	<0.00003	0.00006 J	0.015	<0.0002	<0.00019	0.00025	0.00021	0.00048	0.00013 J	0.00011 J	0.00032 J
Naphthalene	*0.49*	*1.5*	0.00099	<0.00002	0.0026	0.00098	<0.0004	<0.00039	0.00052	0.00018 J	<0.00015	0.00076	<0.00005	0.00034 J
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.0004	<0.00039	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	0.00005 J
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.00025	<0.00024	<0.00009	<0.00009	<0.00009	<0.00009	0.000054 J	<0.00005
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	<0.000079	<0.0002	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	0.00005 J
Phenanthrene	*0.73*	*2.2*	<0.000021	<0.000021	0.000079 J	0.00095	0.00045 J	<0.00019	<0.00007	0.00025	<0.00007	0.00018 J	<0.00005	<0.00005
Phenol	*7.3*	*22*	<0.000035	<0.000035	0.000056 J	<0.000035	<0.0002	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Pyrene	*0.73*	*2.2*	0.00086	<0.000019	<0.000019	0.0015	0.00156	0.000956	0.0013	0.00018 J	0.002	<0.00007	0.00017 J	0.0013
Metals														
Arsenic	*0.01*	*0.01*	**0.0386**	<0.0004	0.000553 J	**0.0173**								

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-39B 07/19/2012	MW-39B 02/05/2013	MW-39B 07/31/2013	MW-39B 01/14/2014	MW-39B 07/25/2014	MW-39B 01/23/2018	MW-39B 03/19/2018	MW-39B 05/16/2018	MW-39B 01/08/2019	MW-39B 07/11/2019	MW-39B 01/13/2020	MW-40B 01/30/2008
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052
Benzene	*0.005*	*0.005*	<0.0005	<0.00008	<0.00008	<0.00008	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	**0.0348**
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.00012	<0.00012	<0.00012	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047
Ethylbenzene	*0.7*	*0.7*	<0.0005	<0.00011	<0.00011	<0.00011	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.162
Methylene chloride	*0.005*	*0.005*	<0.001	<0.00015	<0.00015	<0.00015	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00054
Toluene	*1*	*1*	<0.0005	<0.00015	<0.00015	<0.00015	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0791
Vinyl chloride	*0.002*	*0.002*		<0.00011			<0.00011							
Xylenes (total)	*10*	*10*	<0.0015	<0.00026	<0.00026	<0.00026	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.35
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	<0.000104	<0.000105	<0.00106	<0.000107	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	**<0.02**
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00005	<0.000292	<0.000295	<0.00298	<0.000301	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.071
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	<0.000123	<0.000124	<0.00125	<0.000126	<0.000058	<0.000059	<0.000059	<0.000058	<0.000058	<0.000058	**<0.048**
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	<0.0000755	<0.0000762	<0.000769	<0.0000777	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	**<0.048**
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.0000755	<0.0000762	<0.000769	<0.0000777	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.095
2-Methylnaphthalene	*0.098*	*0.29*	0.000069 J	<0.000066	<0.0000667	<0.000673	<0.0000708	0.000081 J	<0.000019	0.00008 J	<0.000019	<0.000027	0.00021	**0.522**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.000783	<0.00079	**<0.00798**	<0.000806	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	**<0.048**
4-Nitrophenol	*0.049*	*0.15*	<0.00005	<0.000528	<0.000533	<0.00538	<0.000544	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	**<0.06**
Acenaphthene	*1.5*	*4.4*	0.0004	0.000756	0.0007	0.00115 J	<0.0012	0.00093	0.001	0.00054	0.00062	0.00065	0.0012	0.365
Acenaphthylene	*1.5*	*4.4*	<0.00005	0.00011 J	0.0000676 J	<0.000577	0.0000623 J	<0.000015	<0.000015	<0.000015	<0.000015	0.000021 J	<0.000015	<0.071
Anthracene	*7.3*	*22*	0.0001 J	0.000901	0.000774	<0.00101	<0.000615	0.000053 J	<0.000014	0.0002	0.00016	0.00021	0.00016	<0.048
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.0000755	<0.0000762	<0.000769	<0.0000777	<0.00005	<0.000051	<0.000051	<0.00005	<0.00005	<0.00005	**<0.048**
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	<0.0000755	<0.0000762	**<0.000769**	<0.0000777	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	**<0.048**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	<0.000123	<0.000124	**<0.00125**	<0.000126	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	**<0.095**
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00015	<0.000349	<0.000352	<0.00356	<0.000359	0.0018	0.00013 J	0.00011 J	<0.000037	0.000042 J	<0.000037	**<0.048**
Chrysene	*0.91*	*2*	<0.00005	<0.0000755	<0.0000762	<0.000769	<0.0000777	0.000057 J	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.048
Dibenzofuran	*0.098*	*0.29*	0.000067 J	<0.0000755	<0.0000762	<0.000769	<0.0000823	0.0001	<0.00002	0.000054 J	<0.00002	0.000037 J	0.00019	**0.239**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00005	<0.000104	<0.000122	<0.00106	<0.000107	0.000082 J	<0.00002	0.000035 J	<0.00002	<0.00002	<0.00002	<0.048
Fluoranthene	*0.98*	*2.9*	0.00036	0.000112 J	0.000418 J	<0.000673	<0.000605	0.00015	0.000075 J	0.000053 J	0.000067 J	0.000048 J	0.00023	<0.048
Fluorene	*0.98*	*2.9*	0.00019 J	<0.000066	0.000216 J	<0.000673	<0.000311	0.00011	<0.00003	0.000061 J	<0.00003	0.000044 J	0.00032	0.175
Naphthalene	*0.49*	*1.5*	0.00018 J	0.000428 J	<0.0000762	<0.000769	<0.0000777	0.00082	<0.00002	<0.0013	<0.000092	<0.00041	0.0023	**9.34**
Nitrobenzene	*0.049*	*0.15*	<0.00005	<0.000104	<0.000105	<0.00106	0.000853	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	**<0.095**
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.0000943	0.000158 J	<0.000962	<0.0000971	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.06
Pentachlorophenol	*0.001*	*0.001*	<0.00005	<0.000575	<0.000581	**<0.00587**	<0.000592	<0.000079	<0.00008	<0.00008	<0.000079	<0.000079	<0.000079	**<0.048**
Phenanthrene	*0.73*	*2.2*	0.00016 J	<0.0000566	0.0000912 J	<0.000577	<0.0001	<0.000021	<0.000021	0.000056 J	0.000039 J	<0.000021	0.00019	0.173
Phenol	*7.3*	*22*	<0.00005	<0.0000377	<0.0000381	<0.000385	<0.0000388	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.048
Pyrene	*0.73*	*2.2*	0.00052	0.000131 J	0.000655	<0.00106	0.000818	0.00015	0.000074 J	0.000064 J	0.000052 J	0.000072 J	0.00022	<0.048
Metals														
Arsenic	*0.01*	*0.01*						**0.0108**	0.00188 J	0.00178 J	0.00365	0.00144 J	0.00248	

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-40B 07/15/2008	MW-40B 02/04/2009	MW-40B 01/19/2010	MW-40B 06/22/2010	MW-40B 01/18/2011	MW-40B 07/14/2011	MW-40B 02/03/2012	MW-40B 07/19/2012	MW-40B 02/05/2013	MW-40B 07/31/2013	MW-40B 01/14/2014	MW-40B 07/18/2014
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	**<0.01**	**<0.01**	<0.005	<0.00014	<0.0014	<0.0007	<0.00014
Benzene	*0.005*	*0.005*	**0.0269**	**0.026**	**0.028**	**0.026**	**0.019**	**0.016 J**	**0.013 J**	**0.013 J**	**0.0108**	**0.0115**	**0.0109**	**0.0103**
Chlorobenzene	*0.1*	*0.1*	<0.00047	0.001 J	<0.0005	<0.0005	<0.0005	<0.01	<0.01	<0.005	<0.00012	<0.0012	<0.0006	<0.00012
Ethylbenzene	*0.7*	*0.7*	0.116	0.1	0.12	0.12	0.13	0.081	0.08	0.082	0.0817	0.0798	0.084	0.0825
Methylene chloride	*0.005*	*0.005*	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	**<0.013**	**<0.013**	**<0.01**	<0.00015	<0.0015	<0.00075	<0.00015
Toluene	*1*	*1*	0.059	0.05	0.054	0.05	0.045	0.019 J	0.028 J	0.022 J	0.0118	0.0173	0.0147	0.0154
Vinyl chloride	*0.002*	*0.002*									<0.00011			<0.00011
Xylenes (total)	*10*	*10*	0.244	0.2	0.22	0.22	0.21	0.12 J	0.13 J	0.14 J	0.116	0.127	0.12	0.126
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0004	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	**<0.0104**	**<0.00524**	**<0.0212**	<0.00109
2,4-Dimethylphenol	*0.49*	*1.5*	0.0445	0.011	0.014	0.0044	0.00033 J	0.0034	0.004	0.0039	<0.0292	<0.0148	<0.0596	<0.00307
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.001	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	**<0.0123**	**<0.00619**	**<0.025**	<0.00129
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.001	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	**<0.00755**	**<0.00381**	**<0.0154**	<0.000792
2-Chloronaphthalene	*2*	*5.8*	<0.002	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00755	<0.00381	<0.0154	<0.000792
2-Methylnaphthalene	*0.098*	*0.29*	**4.41**	**0.58**	**0.49**	**0.41**	**0.27**	**0.24**	**0.2**	**0.28**	**0.302**	**0.309**	**0.35**	**0.263**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	**<0.0025**	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	**<0.0783**	**<0.0395**	**<0.16**	**<0.00822**
4-Nitrophenol	*0.049*	*0.15*	<0.0012	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	**<0.0528**	<0.0267	**<0.108**	<0.00554
Acenaphthene	*1.5*	*4.4*	**3.17**	0.35	0.33	0.27	0.25	0.17	0.2	0.23	0.315	0.35	0.402	0.236
Acenaphthylene	*1.5*	*4.4*	<0.0015	0.0027	0.0025	0.0031	0.0025	0.0019	0.0022	0.0021	<0.00566	<0.00286	<0.0115	0.00335 J
Anthracene	*7.3*	*22*	0.0141	0.016	0.0095	0.017	0.017	0.0097	0.019	0.007	0.0183 J	0.019 J	0.0247 J	0.0142
Benzo(a)anthracene	*0.0091*	*0.02*	<0.001	0.00028	0.0001 J	<0.00007	0.00016 J	<0.00005	0.000095 J	<0.00005	<0.00755	<0.00381	**<0.0154**	<0.000792
Benzo(a)pyrene	*0.0002*	*0.0002*	**<0.001**	0.0002 J	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**<0.00755**	**<0.00381**	**<0.0154**	**<0.000792**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	**<0.002**	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	**<0.0123**	**<0.00619**	**<0.025**	**<0.00129**
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.001	0.00047	0.0035	<0.0002	0.00075	<0.00053	0.00033	<0.00016	**<0.0349**	**<0.0176**	**<0.0712**	<0.00366
Chrysene	*0.91*	*2*	<0.001	0.00023	0.00011 J	<0.00007	0.00013 J	<0.00005	0.00011 J	<0.00005	<0.00755	<0.00381	<0.0154	<0.000792
Dibenzofuran	*0.098*	*0.29*	**2.13**	**0.25**	**0.17**	**0.22**	0.092	**0.13**	**0.15**	**0.17**	**0.206**	**0.242**	**0.252**	**0.178**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.001	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0104	<0.00524	<0.0212	<0.00109
Fluoranthene	*0.98*	*2.9*	0.0067	0.0082	0.0067	0.0064	0.0068	0.0049	0.0042	0.0031	<0.0066	0.0104 J	<0.0135	0.00562
Fluorene	*0.98*	*2.9*	0.247	0.2	0.15	0.17	0.093	0.13	0.13	0.15	0.175	0.212	0.217	0.183
Naphthalene	*0.49*	*1.5*	**94.2**	**9.7**	**8**	**6.8**	**6.1**	**4**	**4.2**	**6**	**6.78**	**7.73**	**6.07**	**4.24**
Nitrobenzene	*0.049*	*0.15*	<0.002	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0104	<0.00524	<0.0212	<0.00109
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.0012	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00943	<0.00476	<0.0192	<0.00099
Pentachlorophenol	*0.001*	*0.001*	<0.001	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**<0.0575**	**<0.029**	**<0.117**	**<0.00604**
Phenanthrene	*0.73*	*2.2*	0.177	0.16	0.12	0.15	0.083	0.11	0.08	0.1	0.137	0.158	0.197	0.111
Phenol	*7.3*	*22*	<0.001	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00377	<0.0019	<0.00769	<0.000396
Pyrene	*0.73*	*2.2*	0.0029	0.0043	0.0033	0.0035	0.0039	0.0021	0.0033	0.0019	<0.0104	<0.00524	<0.0212	0.00242 J
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-40B 01/24/2018	MW-40B 03/19/2018	MW-40B 05/16/2018	MW-40B 01/08/2019	MW-40B 07/11/2019	MW-40B 01/13/2020	MW-41B 01/31/2008 DNAPL	MW-41B 01/23/2020 DNAPL	MW-42B 01/30/2008	MW-42B 01/19/2010	MW-42B 07/14/2011	MW-42B 02/03/2012
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.00052	<0.0002	<0.00052	<0.0005	<0.001	<0.001
Benzene	*0.005*	*0.005*	**0.0091**	**0.0066**	**0.014**	**0.0063**	**0.0088**	**0.011**	**0.0103**	**0.012**	0.00117 J	<0.0005	<0.001	<0.001
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0015	<0.0003	<0.0003	<0.0003	<0.00047	<0.0003	<0.00047	<0.0005	<0.001	<0.001
Ethylbenzene	*0.7*	*0.7*	0.049	0.039	0.08	0.041	0.082	0.089	0.0508	0.066	0.00112 J	<0.0005	<0.0011	<0.0011
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.00054	<0.001	<0.00054	<0.0005	<0.0013	<0.0013
Toluene	*1*	*1*	0.0081	0.0049	0.019	0.0048	0.014	0.022	0.0525	0.087	0.00181 J	<0.0005	<0.001	<0.001
Vinyl chloride	*0.002*	*0.002*								<0.0002				
Xylenes (total)	*10*	*10*	0.066	0.044	0.11	0.052	0.13	0.16	0.127	0.16	0.00377 J	<0.001	<0.0031	<0.0031
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0008	<0.000021	<0.00008	<0.0001	<0.00005	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	0.00034	<0.00004	<0.00004	0.0013	0.0013	0.104	0.043	<0.00029	<0.00008	0.00013 J	<0.00005
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	**<0.0019**	<0.000058	<0.00019	<0.00009	<0.00005	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	**<0.0019**	<0.000042	<0.00019	<0.00007	<0.00006	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0038	<0.000021	<0.00039	<0.0001	<0.00005	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	**0.13**	0.056	0.091	0.077	**0.18**	**0.34**	**0.305**	**0.67 J**	<0.00039	<0.00007	<0.00005	0.000089 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0019	<0.00002	<0.00019	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	0.0015	<0.000047	<0.000047	<0.000047	<0.0024	<0.000047	<0.00024	<0.00007	<0.00005	<0.00005
Acenaphthene	*1.5*	*4.4*	0.26	0.16	0.14	0.12	0.21	0.39	0.161	0.49	<0.00029	0.00021	<0.00024	0.0017
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	0.0014	0.00083	0.0021	0.0021	<0.0029	0.0089	<0.00029	<0.00007	<0.00005	<0.00005
Anthracene	*7.3*	*22*	0.016	0.0082	0.0087	0.007	0.011	0.04	0.0191	0.045	<0.00019	<0.00007	0.00036	<0.00005
Benzo(a)anthracene	*0.0091*	*0.02*	<0.000051	<0.00005	<0.00005	<0.00005	<0.00005	0.000094 J	0.0036	0.004	<0.00019	<0.00007	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	**<0.0019**	**0.0009**	<0.00019	<0.00008	<0.00005	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	**<0.0038**	<0.00003	<0.00039	<0.00009	<0.00005	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00038	<0.000037	0.00012 J	0.000079 J	<0.000037	<0.000037	<0.0019	0.00032	0.00135 J	0.00028	<0.0008	<0.0001
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	0.000045 J	<0.000021	0.000051 J	0.003	0.0033	<0.00019	<0.00007	<0.00005	<0.00005
Dibenzofuran	*0.098*	*0.29*	**0.16**	0.085	0.086	0.069	**0.13**	**0.29**	**0.142**	**0.39**	0.000699	0.00037	<0.00014	0.00016 J
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0019	<0.00002	<0.00019	<0.00007	<0.00005	<0.00005
Fluoranthene	*0.98*	*2.9*	0.0081	0.0037	0.0034	0.0041	0.0059	0.017	0.027	0.052	0.000697	0.00059	0.00024	0.00085
Fluorene	*0.98*	*2.9*	0.18	0.096	0.1	0.087	0.13	0.3	0.148	0.35	<0.00019	0.00016 J	<0.00026	0.0005
Naphthalene	*0.49*	*1.5*	**1.5**	**0.97**	**1.8**	**1.3**	**3.6**	**7.9**	**4.57**	**10**	0.000725	0.00035	<0.00048	<0.00063
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.0038	<0.000024	<0.00039	<0.00009	<0.00005	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.0024	<0.000025	<0.00024	<0.00009	<0.00005	<0.00005
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	**<0.0019**	<0.000079	<0.00019	<0.00008	<0.00005	<0.00005
Phenanthrene	*0.73*	*2.2*	0.14	0.078	0.1	0.068	0.093	0.22	0.161	0.41	<0.00019	<0.00007	<0.00016	0.00012 J
Phenol	*7.3*	*22*	<0.000035	<0.000035	0.00065	<0.000035	0.000053 J	<0.000035	0.00576	<0.000035	<0.00019	<0.00007	<0.00005	<0.00005
Pyrene	*0.73*	*2.2*	0.0036	0.0019	0.0016	0.002	0.0024	0.0037	0.017	0.029	0.000624	0.00035	0.00014 J	0.00044
Metals														
Arsenic	*0.01*	*0.01*	**0.0679**	**0.0606**	**0.0494**	**0.085**	**0.052**	**0.0523**		**0.0842 J**				

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-42B 07/19/2012	MW-42B 02/05/2013	MW-42B 08/01/2013	MW-42B 01/15/2014	MW-42B 07/18/2014	MW-42B 01/24/2018	MW-42B 03/19/2018	MW-42B 05/16/2018	MW-42B 01/08/2019	MW-42B 07/11/2019	MW-42B 01/13/2020	MW-44A 01/30/2008
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0025	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.00052
Benzene	*0.005*	*0.005*	<0.0025	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	**0.00751**
Chlorobenzene	*0.1*	*0.1*	<0.0025	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0015	<0.0003	<0.0003	<0.0003	<0.00047
Ethylbenzene	*0.7*	*0.7*	<0.0025	<0.000132	<0.00011	<0.00019	0.000208 J	<0.0003	<0.0003	<0.0015	<0.0003	<0.0003	<0.0003	0.00363 J
Methylene chloride	*0.005*	*0.005*	**0.0097 J**	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.00054
Toluene	*1*	*1*	<0.0025	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	0.002 J
Vinyl chloride	*0.002*	*0.002*		<0.00011			<0.00011							
Xylenes (total)	*10*	*10*	<0.0075	<0.00026	<0.00026	<0.00058	0.000349 J	<0.0003	<0.0003	<0.0015	<0.0003	<0.0003	<0.0003	0.0186
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	<0.000104	<0.000105	<0.000104	<0.000109	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00008
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00005	<0.000292	<0.000295	0.000916 J	0.000577	<0.00004	<0.00004	<0.00041	<0.00004	<0.00004	<0.00004	<0.0003
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	<0.000123	<0.000124	<0.000123	<0.000129	<0.000059	<0.000058	<0.000059	<0.000058	<0.000058	<0.000058	<0.0002
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	<0.0000755	<0.0000762	<0.0000755	<0.0000792	<0.000042	<0.000042	**0.012**	<0.000042	<0.000042	<0.000042	<0.0002
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.0000755	<0.0000762	<0.0000755	<0.0000792	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0004
2-Methylnaphthalene	*0.098*	*0.29*	0.00015 J	0.000196 J	0.000141 J	0.000317 J	<0.0000693	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	0.000069 J	0.0244
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.000783	<0.00079	<0.000783	<0.000822	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002
4-Nitrophenol	*0.049*	*0.15*	<0.00005	<0.000528	<0.000533	<0.000528	<0.000554	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00025
Acenaphthene	*1.5*	*4.4*	0.00081	0.00036 J	<0.0000762	0.000355 J	<0.0000792	<0.000027	<0.000027	0.000067 J	<0.000027	0.000068 J	0.00012	0.127
Acenaphthylene	*1.5*	*4.4*	<0.00005	<0.0000566	<0.0000571	<0.0000566	<0.0000594	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.0003
Anthracene	*7.3*	*22*	<0.00005	0.000194 J	0.000122 J	0.000465 J	<0.0000495	0.000025 J	<0.000014	0.000019 J	<0.000014	0.000064 J	0.000049 J	0.00195
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.0000755	<0.0000762	<0.0000755	<0.0000792	<0.000051	<0.00005	<0.000051	<0.00005	<0.00005	<0.00005	<0.0002
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	<0.0000755	<0.0000762	<0.0000755	<0.0000792	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	<0.000123	<0.000124	<0.000123	<0.000129	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.0004
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00022	<0.000349	<0.000352	<0.000349	0.000513	0.00025	0.00015 J	0.00021	0.000061 J	0.00015 J	0.00013 J	0.00097 J
Chrysene	*0.91*	*2*	<0.00005	<0.0000755	<0.0000762	<0.0000755	<0.0000792	0.000038 J	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0002
Dibenzofuran	*0.098*	*0.29*	0.000066 J	0.000217 J	0.000131 J	0.000205 J	<0.0000792	<0.00002	<0.00002	0.000039 J	<0.00002	0.000038 J	0.000065 J	0.0642
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	0.000062 J	<0.000104	0.000108 J	<0.000104	<0.000109	0.00006 J	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002
Fluoranthene	*0.98*	*2.9*	0.00041	0.000641	0.000294 J	0.000339 J	<0.0000693	0.00024	0.00014	0.000016 J	0.00011	0.00004 J	0.00018	0.00269
Fluorene	*0.98*	*2.9*	0.00016 J	<0.000066	0.000134 J	0.000198 J	<0.0000693	<0.00003	<0.00003	0.000047 J	<0.00003	0.000057 J	0.000067 J	0.045
Naphthalene	*0.49*	*1.5*	0.0019	0.000476	0.00288 J	0.00242 J	0.000426 J	<0.00002	0.00049	<0.00061	<0.00002	<0.00043	<0.00076	**0.816**
Nitrobenzene	*0.049*	*0.15*	<0.00005	<0.000104	<0.000105	<0.000104	<0.000109	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.0004
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.0000943	<0.0000952	<0.0000943	<0.000099	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00025
Pentachlorophenol	*0.001*	*0.001*	<0.00005	<0.000575	<0.000581	<0.000575	<0.000604	<0.00008	<0.000079	<0.00008	<0.000079	<0.000079	<0.000079	<0.0002
Phenanthrene	*0.73*	*2.2*	<0.00005	0.000356 J	0.000122 J	0.000501	<0.0000594	0.000077 J	<0.000021	0.000039 J	<0.000021	0.000034 J	0.00012	0.0161
Phenol	*7.3*	*22*	<0.00005	<0.0000377	<0.0000381	<0.0000377	0.000801	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.0002
Pyrene	*0.73*	*2.2*	0.00023	0.000369 J	0.000127 J	0.000234 J	<0.000109	0.00023	0.00014	<0.000019	0.0001	0.000033 J	0.00013	0.00159
Metals														
Arsenic	*0.01*	*0.01*						0.00186 J	0.00108 J	0.00112 J	0.00216	0.0022	0.00133 J	

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
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7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-44A 07/14/2008	MW-44A 02/03/2009	MW-44A 01/13/2010	MW-44A 06/30/2010	MW-44A 01/26/2011	MW-44A 07/20/2011	MW-44A 02/15/2012	MW-44A 07/25/2012	MW-44A 02/12/2013	MW-44A 08/05/2013	MW-44A 01/17/2014	MW-44A 08/28/2014
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014
Benzene	*0.005*	*0.005*	**0.00635**	0.003 J	<0.0005	0.0026 J	<0.0005	0.002 J	0.0042 J	0.0044 J	0.00206	**0.00849**	**0.00727**	0.0042
Chlorobenzene	*0.1*	*0.1*	<0.00047	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012
Ethylbenzene	*0.7*	*0.7*	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	0.000624 J	0.00172	0.00067	0.000344 J
Methylene chloride	*0.005*	*0.005*	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015
Toluene	*1*	*1*	<0.00041	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	0.000252 J	<0.000705	0.000418 J	0.000329 J
Vinyl chloride	*0.002*	*0.002*						<0.001	<0.001	<0.0005		<0.00011	<0.00018	<0.00011
Xylenes (total)	*10*	*10*	0.006 J	0.0013 J	<0.001	0.0026 J	<0.001	<0.0031	0.0052 J	0.0033 J	0.00469	0.0207	0.00805	0.00561
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00105	<0.0011	<0.000106	<0.000108
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00032	<0.00008	<0.00008	<0.00008	0.00081	<0.00005	<0.00005	<0.00005	<0.00295	<0.0031	<0.000298	<0.000304
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00021	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00124	<0.0013	<0.000125	<0.000127
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.000762	<0.0008	<0.0000769	<0.0000784
2-Chloronaphthalene	*2*	*5.8*	<0.00042	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.000762	<0.0008	<0.0000769	<0.0000784
2-Methylnaphthalene	*0.098*	*0.29*	0.00779	0.00097	0.00012 J	0.004 J	<0.00007	0.0023	0.0048	0.0095 J	<0.000667	**0.109**	0.0106	0.00902
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00021	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	**<0.0079**	**<0.0083**	<0.000798	<0.000814
4-Nitrophenol	*0.049*	*0.15*	<0.00026	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00533	<0.0056	<0.000538	<0.000549
Acenaphthene	*1.5*	*4.4*	0.202	0.12	0.13	0.2	0.023	0.23	0.21	0.22	0.07	0.546	0.394	0.197
Acenaphthylene	*1.5*	*4.4*	<0.00032	0.0012	0.00079	0.00096 J	0.0014	0.0013	0.001	0.0013	0.00276 J	<0.0006	<0.0000577	0.0014
Anthracene	*7.3*	*22*	0.00393	0.0046	0.0077	0.0067 J	0.00055	0.0058	0.0068	0.004	<0.000476	0.017	0.017	0.00868
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000762	<0.0008	<0.0000769	<0.0000784
Benzo(a)pyrene	*0.0002*	*0.0002*	**<0.00021**	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**<0.000762**	**<0.0008**	<0.0000769	<0.0000784
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00042	<0.00009	<0.00009	0.00009 J	<0.00009	<0.00005	<0.00005	<0.00005	**<0.00124**	**<0.0013**	<0.000125	0.00014 J
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00021	0.00043	<0.00031	<0.00028	0.00048	<0.00075	<0.00011	<0.0001	<0.00352	<0.0037	<0.000356	<0.000363
Chrysene	*0.91*	*2*	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000762	<0.0008	<0.0000769	<0.0000784
Dibenzofuran	*0.098*	*0.29*	**0.125**	0.054	0.0087	0.0043 J	0.00072	0.0014	0.001	0.0031	<0.000762	**0.135**	**0.107**	0.0159
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00105	<0.0011	<0.000106	<0.000108
Fluoranthene	*0.98*	*2.9*	0.00367	0.0032	0.0056	0.006 J	0.0014	0.0095	0.0094	0.0065	0.00257 J	0.0137	0.0154	0.00749
Fluorene	*0.98*	*2.9*	0.0865	0.056	0.069	0.097	0.00027	0.094	0.11	0.091 J	0.00495	0.172	0.178	0.0987
Naphthalene	*0.49*	*1.5*	0.287	0.021	<0.0011	0.16	0.00035	0.042	0.32	0.39	<0.000941	**1.72**	0.235 J	0.0163
Nitrobenzene	*0.049*	*0.15*	<0.00042	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00105	<0.0011	<0.000106	0.0012
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00026	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	0.00065	<0.00005	<0.000952	<0.001	<0.0000962	<0.000098
Pentachlorophenol	*0.001*	*0.001*	<0.00021	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**<0.00581**	**<0.0061**	<0.000587	<0.000598
Phenanthrene	*0.73*	*2.2*	0.0184	0.02	0.0055	0.0025 J	<0.00007	0.0047	0.0073	0.0064	<0.000571	0.0416	0.0438	0.0217
Phenol	*7.3*	*22*	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.000062 J	<0.000381	<0.0004	<0.0000385	<0.0000392
Pyrene	*0.73*	*2.2*	0.00156	0.0016	0.0032	0.003 J	0.001	0.0046	0.0054	0.0038	0.00139 J	0.00732	0.0083	0.0041
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
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CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-44A 01/31/2018	MW-44A 03/26/2018	MW-44A 06/01/2018	MW-44A 01/22/2019	MW-44A 07/17/2019	MW-44A 01/09/2020	MW-44C 01/29/2008 DNAPL	MW-44C 07/20/2011 DNAPL	MW-44C 07/18/2012 DNAPL	MW-44C 02/06/2013 DNAPL	MW-44C 01/15/2020	MW-45C 01/29/2008 DNAPL
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052	<0.001	<0.005	<0.0014	<0.0002	<0.00052
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00025	<0.001	<0.005	0.000964 J	<0.0002	**0.0448**
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047	<0.001	<0.005	0.00293 J	<0.0003	<0.00047
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.0204	<0.0011	0.32	0.233	<0.0003	0.111
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00054	<0.0013	**<0.01**	<0.0015	<0.001	<0.00054
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0117	<0.001	0.16	0.0895	<0.0002	0.112
Vinyl chloride	*0.002*	*0.002*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002							
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.0487	<0.0031	0.84	0.688	<0.0003	0.298
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0002	<0.00005	<0.00075	**<0.529**	<0.000021	**<0.002**
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.000041	<0.00004	<0.00004	<0.00004	<0.00042	0.00219 J	<0.00005	<0.00075	**<1.49**	0.00011 J	0.0104
2,4-Dinitrotoluene	*0.0013*	*0.003*	0.00017 J	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058	<0.00039	<0.00005	<0.00075	**<0.625**	<0.000058	**<0.004**
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000043	<0.000042	<0.000042	<0.000042	<0.000042	<0.00039	<0.00006	<0.0009	**<0.385**	<0.000042	**<0.004**
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00078	<0.00005	<0.00075	<0.385	<0.000021	<0.008
2-Methylnaphthalene	*0.098*	*0.29*	<0.000093	<0.000019	<0.000019	<0.000019	<0.000019	<0.00035	0.00551	<0.00005	**62**	**1.15 J**	0.00012	**1.01**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00039	<0.00008	<0.0012	**<3.99**	<0.00002	**<0.004**
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000048	<0.000047	<0.000047	<0.000047	<0.000047	<0.00049	<0.00005	<0.00075	**<2.69**	<0.000047	<0.005
Acenaphthene	*1.5*	*4.4*	0.062	0.064	0.09	0.037	0.056	0.064	0.0531	0.00012 J	**31**	0.632 J	0.00045	0.472
Acenaphthylene	*1.5*	*4.4*	0.00078	0.0006	<0.000015	0.00036	0.00028	0.00097	0.00083	0.000097 J	0.29	<0.288	0.00065	0.0085
Anthracene	*7.3*	*22*	0.00066	0.0024	0.0022	0.00044	0.00089	0.00027	0.0131	0.00014 J	**19**	<0.24	0.0086	0.18
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.000051	<0.00005	<0.00005	0.000085 J	0.000054 J	0.00327	0.00017 J	**3.5**	**<0.385**	0.0018	**0.0416**
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	**<0.00039**	**0.00022**	**0.87**	**<0.385**	**0.00065**	**<0.004**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.000031	<0.00003	<0.00003	<0.00003	<0.00003	<0.00078	<0.00005	<0.00075	**<0.625**	<0.00003	**<0.008**
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0001	<0.000038	0.0001 J	<0.000037	<0.00025	<0.000037	0.00235 J	<0.00087	**0.013**	**<1.78**	0.0012	<0.004
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	0.000026 J	0.000052 J	<0.000021	0.00278	0.00032	**3.3**	<0.385	0.0022	0.0347
Dibenzofuran	*0.098*	*0.29*	0.00019	0.00029	<0.00002	<0.00002	<0.00002	<0.00033	0.046	<0.00005	**38**	**0.453 J**	0.00034	**0.488**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00039	<0.00005	<0.00075	<0.529	0.0016	<0.004
Fluoranthene	*0.98*	*2.9*	0.0067	0.0095	0.012	0.0058	0.0091	0.0059	0.0264	0.00016 J	**28**	<0.337	0.0095	0.384
Fluorene	*0.98*	*2.9*	0.024	0.03	0.039	0.0097	0.014	0.0078	0.0346	<0.00005	**26**	<0.337	0.00067	0.357
Naphthalene	*0.49*	*1.5*	<0.00028	0.00036	0.00038	0.00011	<0.00019	<0.003	<0.00078	<0.00016	**230**	**18 J**	0.000097 J	**6.05**
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00078	<0.00005	<0.00075	**<0.529**	<0.000024	<0.008
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000026	<0.000025	<0.000025	<0.000025	<0.000025	<0.00049	<0.00005	<0.00075	**<0.481**	<0.000025	<0.005
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000081	<0.000079	<0.000079	<0.000079	<0.000079	<0.00039	<0.00005	<0.00075	**<2.93**	<0.000079	**<0.004**
Phenanthrene	*0.73*	*2.2*	0.00012	0.00018	0.0002	<0.000021	0.00012	<0.00022	0.0668	0.000081 J	**88**	0.498 J	0.0077	**0.903**
Phenol	*7.3*	*22*	<0.000035	<0.000036	<0.000035	<0.000035	<0.000035	<0.00013	<0.00039	<0.00005	<0.00075	<0.192	<0.000035	<0.004
Pyrene	*0.73*	*2.2*	0.0037	0.0069	0.0073	0.0033	0.0057	0.0045	0.0159	0.00013 J	**19**	<0.529	0.006	0.234
Metals														
Arsenic	*0.01*	*0.01*	**0.0275**	**0.0169**	**0.0165**	**0.0101**	**0.0303**	0.00966					0.00314	

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-45C 01/20/2020	MW-46C 01/30/2008 DNAPL	MW-46C 01/15/2020	MW-47A 03/20/2020	MW-47A 06/01/2020	MW-47C 07/14/2008	MW-47C 02/04/2009	MW-47C 01/20/2010	MW-47C 06/24/2010	MW-47C 01/19/2011	MW-47C 07/21/2011	MW-47C 02/07/2012
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.00052	<0.0002	<0.0002	<0.0002	<0.00109	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001
Benzene	*0.005*	*0.005*	0.0005 J	**0.0222**	**0.028**	<0.0002	<0.0002	<0.00112	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.00047	<0.0003	<0.0003	<0.0003	<0.0015	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001
Ethylbenzene	*0.7*	*0.7*	0.00044 J	0.0249	0.051	<0.0003	<0.0003	<0.00142	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011
Methylene chloride	*0.005*	*0.005*	<0.001	<0.00054	<0.001	<0.001	<0.001	<0.00122	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013
Toluene	*1*	*1*	<0.0002	0.0167	0.0047	<0.0002	<0.0002	<0.00138	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001
Vinyl chloride	*0.002*	*0.002*	<0.0002											
Xylenes (total)	*10*	*10*	0.0051	0.0377	0.11	<0.0003	<0.0003	<0.00302	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000085	<0.0004	<0.000021	<0.000021	<0.000021	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.0014	0.00016 J	<0.00004	<0.00004	<0.00032	<0.00008	<0.00008	0.00011 J	<0.00008	<0.00005	<0.00005
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.00096	<0.000058	<0.000058	<0.000058	<0.00021	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	**0.0022 J**	<0.00096	<0.000042	<0.000042	<0.000042	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.0019	<0.000021	<0.000021	<0.000021	<0.00042	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	<0.00013	0.0825	**0.2**	<0.000019	<0.000019	<0.00042	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.0044
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00096	<0.00002	<0.00002	<0.00002	<0.00021	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	0.000067 J	<0.0012	<0.000047	<0.000047	<0.000047	<0.00026	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Acenaphthene	*1.5*	*4.4*	0.000084 J	0.0635	0.16	<0.000027	<0.000027	<0.00032	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	0.00017 J
Acenaphthylene	*1.5*	*4.4*	0.000037 J	<0.0014	0.0016	<0.000015	<0.000015	<0.00032	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Anthracene	*7.3*	*22*	0.0009	0.0222	0.073	<0.000014	<0.000014	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.000074 J
Benzo(a)anthracene	*0.0091*	*0.02*	0.00039	0.00597	0.0071	<0.00005	<0.00005	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	**0.00042**	**0.00215**	**0.0021**	<0.00002	<0.00002	**<0.00021**	<0.00008	0.000099 J	<0.00008	<0.00008	<0.00005	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	**<0.0019**	<0.00003	<0.00003	<0.00003	<0.00042	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.000067 J	<0.00096	0.0011	0.00011 J	0.000086 J	<0.00021	0.0036	<0.00065	<0.00021	<0.0002	0.0001 J	**0.011**
Chrysene	*0.91*	*2*	0.00062	0.00521	0.0068	<0.000021	<0.000021	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Dibenzofuran	*0.098*	*0.29*	0.000075 J	0.0636	**0.16**	<0.00002	<0.00002	<0.00032	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00096	<0.00002	0.000076 J	<0.00002	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00015 J
Fluoranthene	*0.98*	*2.9*	0.00062	0.0426	0.084	<0.00001	<0.00001	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Fluorene	*0.98*	*2.9*	0.00023	0.048	0.12	<0.00003	<0.00003	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00025
Naphthalene	*0.49*	*1.5*	<0.00061	**1.1**	**1.8**	<0.00002	<0.00002	<0.00042	0.00019 J	<0.0001	0.00046	0.00021	<0.00005	0.0041
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.0019	<0.000024	<0.000024	<0.000024	<0.00042	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.0012	<0.000025	<0.000025	<0.000025	<0.00026	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.00096	<0.000079	<0.000079	<0.000079	<0.00021	<0.00008	0.0004	<0.00008	<0.00008	<0.00005	<0.00005
Phenanthrene	*0.73*	*2.2*	<0.00027	0.119	0.24	<0.000021	<0.000021	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.0003
Phenol	*7.3*	*22*	<0.000035	0.0133	<0.000035	<0.000035	<0.000035	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00044
Pyrene	*0.73*	*2.2*	0.00068	0.0252	0.053	<0.000019	<0.000019	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00015 J
Metals														
Arsenic	*0.01*	*0.01*	0.00073 J		0.00272	0.000566 J	0.000699 J							

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-47C 07/27/2012	MW-47C 02/07/2013	MW-47C 08/06/2013	MW-47C 01/17/2014	MW-47C 07/30/2014	MW-47C 01/23/2019	MW-47C 07/17/2019	MW-47C 01/16/2020	MW-48C 01/29/2008	MW-48C 01/29/2008	MW-48C 07/14/2008	MW-48C 02/04/2009
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.00052	<0.00052	<0.00109	<0.0005
Benzene	*0.005*	*0.005*	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.00025	<0.00025	<0.00112	<0.0005
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.00047	<0.00047	<0.0015	<0.0005
Ethylbenzene	*0.7*	*0.7*	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.00025	<0.00025	<0.00142	<0.0005
Methylene chloride	*0.005*	*0.005*	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.00054	<0.00054	<0.00122	<0.0005
Toluene	*1*	*1*	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.00041	<0.00041	<0.00138	<0.0005
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.00127	<0.00127	<0.00302	<0.001
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	<0.000105	<0.00011	**R**	<0.000104	<0.000021	<0.000021	<0.000021	<0.00008	<0.00008	<0.00009	<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*	0.00042	**R**	<0.00031	**R**	<0.000292	0.000095 J	<0.00004	0.0002	<0.00029	<0.00029	<0.00033	<0.00008
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	<0.000124	<0.00013	**R**	<0.000123	<0.000058	<0.000058	<0.000058	<0.00019	<0.00019	<0.00022	<0.00009
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	<0.0000762	<0.00008	**R**	<0.0000755	<0.000042	<0.000042	<0.000042	<0.00019	<0.00019	<0.00022	<0.00007
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.0000762	<0.00008	**R**	<0.0000755	<0.000021	<0.000021	<0.000021	<0.00038	<0.00038	<0.00044	<0.00012
2-Methylnaphthalene	*0.098*	*0.29*	<0.00005	0.000098 J	<0.00007	**R**	<0.000066	<0.000019	<0.000019	<0.0001	<0.00038	<0.00038	<0.00044	<0.00007
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	**R**	<0.00083	**R**	<0.000783	<0.00002	<0.00002	<0.00002	<0.00019	<0.00019	<0.00022	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.00005	<0.000533	<0.00056	**R**	<0.000528	<0.000047	<0.000047	<0.000047	<0.00024	<0.00024	<0.00028	<0.00007
Acenaphthene	*1.5*	*4.4*	0.000058 J	<0.0000762	<0.00008	**R**	<0.0000755	<0.000027	<0.000027	<0.000057	<0.00029	<0.00029	<0.00033	<0.00009
Acenaphthylene	*1.5*	*4.4*	<0.00005	<0.0000571	<0.00006	**R**	<0.0000566	<0.000015	<0.000015	<0.000015	<0.00029	<0.00029	<0.00033	<0.00006
Anthracene	*7.3*	*22*	<0.00005	0.000107 J	<0.00005	**R**	<0.0000472	<0.000014	<0.000014	<0.000014	0.000584	0.000589	<0.00022	0.00012 J
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	0.000137 J	<0.00008	**R**	<0.0000755	<0.00005	<0.00005	<0.00005	<0.00019	<0.00019	<0.00022	<0.00007
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	**0.000306 J**	<0.00008	**R**	<0.0000755	<0.00002	<0.00002	0.00004 J	<0.00019	<0.00019	**<0.00022**	<0.00008
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	<0.000124	<0.00013	**R**	<0.000123	<0.00003	<0.00003	<0.00003	<0.00038	<0.00038	<0.00044	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0001	0.000594	<0.00037	**R**	<0.000349	<0.000056	<0.00027	0.00079	0.00045 J	<0.00019	0.00028 J	0.00034
Chrysene	*0.91*	*2*	<0.00005	0.000127 J	<0.00008	**R**	<0.0000755	<0.000021	<0.000021	0.00006 J	<0.00019	<0.00019	<0.00022	<0.00007
Dibenzofuran	*0.098*	*0.29*	<0.00005	0.000104 J	<0.00008	**R**	<0.0000755	0.000034 J	<0.00002	<0.000049	0.00031 J	<0.00029	<0.00033	0.00025
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00005	<0.000105	<0.00011	**R**	<0.000104	<0.00002	<0.00002	0.0014	<0.00019	<0.00019	<0.00022	<0.00007
Fluoranthene	*0.98*	*2.9*	<0.00005	0.000289 J	0.000186 J	0.0000718 J	<0.000066	0.000028 J	<0.00001	<0.00011	0.00047 J	0.000687	0.00033 J	<0.00007
Fluorene	*0.98*	*2.9*	<0.00005	0.000116 J	<0.00007	**R**	<0.000066	<0.00003	<0.00003	<0.000042	<0.00019	<0.00019	<0.00022	<0.00007
Naphthalene	*0.49*	*1.5*	0.00046	<0.000401	<0.00008	0.000297 J	<0.0000755	0.00083	<0.00002	<0.00056	0.00119	0.00062	<0.00044	0.00052
Nitrobenzene	*0.049*	*0.15*	<0.00005	<0.000105	<0.00011	**R**	<0.000104	<0.000024	<0.000024	<0.000024	<0.00038	<0.00038	<0.00044	<0.00009
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.0000952	<0.0001	**R**	<0.0000943	<0.000025	<0.000025	<0.000025	<0.00024	<0.00024	<0.00028	<0.00009
Pentachlorophenol	*0.001*	*0.001*	<0.00005	**R**	<0.00061	**R**	<0.000575	<0.000079	<0.000079	<0.000079	<0.00019	<0.00019	<0.00022	<0.00008
Phenanthrene	*0.73*	*2.2*	<0.00005	0.000406 J	<0.00006	0.000185 J	<0.0000566	0.000052 J	<0.000021	<0.000088	0.00046 J	0.00043 J	<0.00022	0.00032
Phenol	*7.3*	*22*	0.00056	**R**	<0.00004	**R**	<0.0000377	<0.000035	<0.000035	<0.000035	<0.00019	<0.00019	<0.00022	<0.00007
Pyrene	*0.73*	*2.2*	<0.00005	0.000388 J	0.000131 J	**R**	<0.000104	0.000021 J	<0.000019	<0.0001	0.00039 J	0.000528	<0.00022	<0.00007
Metals														
Arsenic	*0.01*	*0.01*						<0.0004	0.00044 J	0.00234				

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-48C 01/21/2010	MW-48C 06/24/2010	MW-48C 07/15/2010	MW-48C 01/19/2011	MW-48C 07/18/2011	MW-48C 02/06/2012	MW-48C 07/24/2012	MW-48C 01/31/2013	MW-48C 08/01/2013	MW-48C 01/16/2014	MW-48C 07/16/2014	MW-48C 01/28/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002
Benzene	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001
Toluene	*1*	*1*	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002
Vinyl chloride	*0.002*	*0.002*										<0.00018		
Xylenes (total)	*10*	*10*	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0001	<0.0005	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.000104	<0.000105	<0.000104	<0.000104	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00008	0.0073	<0.00008	<0.00008	<0.00005	<0.00005	0.00014 J	<0.000292	<0.000295	<0.000292	<0.000292	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00009	<0.00045	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000123	<0.000124	<0.000123	<0.000123	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00007	<0.00035	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000755	<0.0000762	<0.0000755	<0.0000755	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.0001	<0.0005	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000762	<0.0000755	<0.0000755	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	<0.00007	**0.18**	<0.00007	<0.00007	<0.00005	<0.00005	0.0013	<0.000066	<0.0000667	<0.000066	<0.000066	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.0004	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.000783	<0.00079	<0.000783	<0.000783	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00007	<0.00035	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000528	<0.000533	<0.000528	<0.000528	<0.000047
Acenaphthene	*1.5*	*4.4*	<0.00009	0.073	<0.00009	<0.00009	<0.00005	<0.00005	0.0011	<0.0000755	<0.0000762	<0.0000755	<0.0000755	<0.000027
Acenaphthylene	*1.5*	*4.4*	<0.00007	0.0014	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000566	<0.0000571	<0.0000566	<0.0000566	<0.000015
Anthracene	*7.3*	*22*	<0.00007	0.007	<0.00007	<0.00007	<0.00005	<0.00005	0.00077	<0.0000472	<0.0000476	<0.0000472	<0.0000472	0.000025 J
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00007	<0.00035	<0.00007	<0.00007	<0.00005	<0.00005	0.000066 J	<0.0000755	<0.0000762	<0.0000755	<0.0000755	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00008	**<0.0004**	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000762	<0.0000755	<0.0000755	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00009	<0.00045	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000123	<0.000124	<0.000123	<0.000123	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0018	<0.001	0.0013	0.001	<0.00043	<0.0001	<0.00024	<0.000349	<0.000352	<0.000349	<0.000349	0.000079 J
Chrysene	*0.91*	*2*	<0.00007	<0.00035	<0.00007	<0.00007	<0.00005	<0.00005	0.000073 J	<0.0000755	<0.0000762	<0.0000755	<0.0000755	<0.000021
Dibenzofuran	*0.098*	*0.29*	<0.00008	0.065	<0.00008	<0.00008	<0.00005	<0.00005	0.00096	<0.0000755	<0.0000762	<0.0000755	<0.0000755	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00007	<0.00035	<0.00007	<0.00007	<0.00005	<0.00005	0.000053 J	<0.000104	<0.000105	<0.000104	<0.000104	<0.00002
Fluoranthene	*0.98*	*2.9*	0.00013 J	0.0021	0.00019 J	0.00019 J	<0.00013	<0.00005	0.00095	<0.000066	0.000134 J	0.000153 J	<0.000066	0.000049 J
Fluorene	*0.98*	*2.9*	<0.00007	0.032	<0.00007	<0.00007	<0.00005	<0.00005	0.0011	<0.000066	<0.0000667	<0.000066	<0.000066	<0.00003
Naphthalene	*0.49*	*1.5*	0.0002 J	**5**	<0.0001	<0.0001	<0.00005	<0.00005	0.0071	<0.000495	<0.000158	<0.0000755	<0.0000755	<0.00002
Nitrobenzene	*0.049*	*0.15*	<0.00009	<0.00045	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000104	<0.000105	<0.000104	<0.000104	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00009	<0.00045	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000943	<0.0000952	<0.0000943	<0.0000943	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00008	**0.019**	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000575	<0.000581	<0.000575	<0.000575	<0.000079
Phenanthrene	*0.73*	*2.2*	<0.00007	0.03	<0.00007	<0.00007	<0.00005	<0.00005	0.0034	<0.0000566	<0.0000571	<0.0000566	<0.0000566	<0.000022
Phenol	*7.3*	*22*	<0.00007	0.024	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000377	<0.0000381	<0.0000377	<0.0000377	<0.000035
Pyrene	*0.73*	*2.2*	0.0001 J	0.001	0.00015 J	0.00012 J	<0.0001	<0.00005	0.00052	<0.000104	<0.000105	<0.000104	<0.000104	0.000052 J
Metals														
Arsenic	*0.01*	*0.01*												0.000831 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-48C 03/20/2018	MW-48C 05/24/2018	MW-48C 01/10/2019	MW-48C 07/17/2019	MW-48C 01/16/2020	MW-49A 01/31/2008	MW-49A 07/15/2008	MW-49A 02/04/2009	MW-49A 01/21/2010	MW-49A 06/25/2010	MW-49A 01/20/2011	MW-49A 07/22/2011
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052	<0.00052	<0.0005	<0.0005	<0.005	<0.005	**<0.01**
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	**0.0108**	**0.165**	**0.24**	**0.2**	**0.29**	**0.057**	**0.2**
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.00865	0.00702	0.0053	0.0024 J	<0.005	0.0084 J	<0.01
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.0238	0.0837	0.084	0.085	0.14	0.04 J	0.094
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00054	<0.00054	<0.0005	<0.0005	<0.005	<0.005	**<0.013**
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.00805	0.0415	0.077	0.083	0.13	0.021 J	0.11
Vinyl chloride	*0.002*	*0.002*											**<0.005**	**<0.01**
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.0352	0.187	0.2	0.21	0.34	0.079 J	0.2
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	**<0.004**	**<0.002**	<0.0001	<0.0001	<0.0005	<0.0001	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	0.001	<0.00004	<0.00004	0.025	**6.08**	**6.8**	**0.86**	**3.7**	0.18	**3**
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	**<0.0095**	**<0.004**	<0.00009	<0.00009	<0.00045	<0.00009	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	**<0.0095**	**<0.004**	<0.00007	<0.00007	<0.00035	<0.00007	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.019	<0.008	<0.00012	<0.0001	<0.0005	<0.0001	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	0.00038	<0.000019	<0.000076	0.0693	**0.492**	**0.6**	**0.35**	**0.44**	**0.13**	**0.27**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	**<0.0095**	**<0.01**	<0.00008	<0.00008	<0.0004	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.012	<0.005	<0.00007	<0.00007	<0.00035	<0.00007	<0.00005
Acenaphthene	*1.5*	*4.4*	<0.000027	<0.000027	0.000098 J	<0.000027	<0.000073	0.215	0.468	0.32	0.2	0.21	0.13	0.13
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.014	<0.006	0.0039	0.0032	0.0052	0.0018	0.0029
Anthracene	*7.3*	*22*	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.0095	0.0164	0.01	0.0071	0.0099	0.0096	0.011
Benzo(a)anthracene	*0.0091*	*0.02*	0.000057 J	<0.00005	<0.00005	<0.00005	<0.00005	**<0.0095**	<0.004	0.00066	<0.00007	<0.00035	<0.00007	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00002	0.000021 J	**<0.0095**	**<0.004**	**0.00024**	<0.00008	**<0.0004**	<0.00008	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	**<0.019**	**<0.008**	<0.00009	<0.00009	<0.00045	<0.00009	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00011 J	0.000063 J	<0.000037	<0.0003	0.000039 J	**<0.0095**	<0.004	0.0009	<0.0015	<0.001	<0.00029	<0.0001
Chrysene	*0.91*	*2*	0.000044 J	<0.000021	<0.000021	<0.000021	0.000029 J	<0.0095	<0.004	0.0006	<0.00007	<0.00035	<0.00007	<0.00005
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00002	<0.00002	<0.00002	<0.000054	**0.148**	**0.293**	**0.21**	**0.14**	**0.16**	0.075	0.09
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0095	<0.004	<0.00007	<0.00007	<0.00035	<0.00007	<0.00005
Fluoranthene	*0.98*	*2.9*	0.000099 J	<0.00001	<0.00001	0.000035 J	<0.000061	<0.0095	0.0063	0.0058	0.0025	0.0034	0.0038	0.0033
Fluorene	*0.98*	*2.9*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00005	0.102	0.205	0.15	0.11	0.13	0.073	0.092
Naphthalene	*0.49*	*1.5*	<0.00002	<0.00002	0.0085	<0.00002	<0.00052	**2.13**	**11**	**9**	**5.1**	**10**	**1.8**	**7.4**
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.019	<0.008	<0.00009	<0.00009	<0.00045	<0.00009	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.012	<0.005	<0.00009	<0.00009	<0.00045	<0.00009	<0.00005
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	**<0.0095**	**<0.004**	<0.00008	<0.00008	<0.0004	<0.00008	<0.00005
Phenanthrene	*0.73*	*2.2*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000052	0.0939	0.147	0.096	0.072	0.086	0.062	0.07
Phenol	*7.3*	*22*	<0.000035	<0.000035	0.002	0.000074 J	<0.000035	<0.0095	0.0111	<0.00007	0.00077	0.0011	0.0058	0.0095
Pyrene	*0.73*	*2.2*	0.000087 J	<0.000019	<0.000019	0.000036 J	<0.000065	<0.0095	<0.004	0.0046	0.0017	0.0018	0.002	0.0016
Metals														
Arsenic	*0.01*	*0.01*	0.000581 J	0.000562 J	0.000924 J	0.00167 J	0.00126 J							

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-49A 02/07/2012	MW-49A 07/26/2012	MW-49A 02/07/2013	MW-49A 08/01/2013	MW-49A 01/16/2014	MW-49A 07/16/2014	MW-49A 01/29/2018	MW-49A 04/01/2018	MW-49A 05/31/2018	MW-49A 01/23/2019	MW-49A 07/31/2019	MW-49A 01/07/2020
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	**<0.05**	<0.0005	<0.00014	<0.0014	<0.0002	<0.0028	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.002
Benzene	*0.005*	*0.005*	**<0.05**	**0.042**	**0.114**	**0.094**	**0.0565**	**0.108**	**0.013**	**0.016**	**0.01**	0.004	<0.0002	**0.3**
Chlorobenzene	*0.1*	*0.1*	<0.05	0.0037 J	**0.299**	**0.476**	**0.304**	**0.211**	<0.0003	<0.0015	<0.0003	<0.0003	<0.0003	0.0063 J
Ethylbenzene	*0.7*	*0.7*	<0.055	0.037	0.0321	0.0499	0.0331	0.0701	0.01	0.01	0.0067	0.0031	<0.0003	0.1
Methylene chloride	*0.005*	*0.005*	**<0.065**	<0.001	<0.00015	<0.0015	<0.00022	**0.0212**	<0.001	<0.005	<0.001	<0.001	<0.001	**<0.01**
Toluene	*1*	*1*	<0.05	0.031	0.0343	0.0347	0.0296	0.0593	0.003	0.0075	0.0065	0.0023	<0.0002	0.19
Vinyl chloride	*0.002*	*0.002*	**<0.05**	<0.0005	<0.00011	<0.0011	<0.00018	**<0.0022**	<0.0002		<0.0002	<0.0002	<0.0002	<0.002
Xylenes (total)	*10*	*10*	<0.16	0.082	0.0777	0.106	0.0699	0.157	0.023	0.023	0.015	0.0087	<0.0003	0.24
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	<0.00005	**<0.00524**	**<0.0105**	**<0.00519**	**<0.0104**	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00005	0.037	**1.42**	**0.903**	**2.1 J**	**1.23**	0.097	0.033	0.097	<0.00004	<0.00004	**5.7**
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	<0.00005	**<0.00619**	**<0.0124**	**<0.00613**	**<0.0123**	<0.000058	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	<0.00006	**<0.00381**	**<0.00762**	**<0.00377**	**<0.00755**	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.00005	<0.00381	<0.00762	<0.00377	<0.00755	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	<0.00005	<0.00005	**0.218**	**0.216**	**0.267**	**0.293**	0.000078 J	0.000067 J	0.0079	<0.000019	<0.000019	**0.13**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	**<0.0395**	**<0.079**	**<0.0392**	**<0.0783**	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00005	<0.00005	<0.0267	**<0.0533**	<0.0264	**<0.0528**	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	<0.00005	0.033	0.134	0.126	0.18	0.126	0.0036	0.0049	0.007	<0.000027	<0.000027	0.057
Acenaphthylene	*1.5*	*4.4*	<0.00005	0.00062	<0.00286	<0.00571	0.00528 J	<0.00566	0.00012	0.00012	0.00015	<0.000015	<0.000015	0.00097
Anthracene	*7.3*	*22*	<0.00005	0.00076	0.00824 J	0.0119 J	0.0132 J	<0.00472	0.00028	0.00035	0.00062	<0.000014	<0.000014	0.0028
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00381	<0.00762	<0.00377	<0.00755	<0.00005	<0.000051	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	<0.00005	**<0.00381**	**<0.00762**	**<0.00377**	**<0.00755**	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	<0.00005	**<0.00619**	**<0.0124**	**<0.00613**	**<0.0123**	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0001	0.0001 J	**<0.0176**	**<0.0352**	**<0.0175**	**<0.0349**	0.00013 J	0.00014 J	0.0002 J	<0.000055	<0.000037	<0.00011
Chrysene	*0.91*	*2*	<0.00005	<0.00005	<0.00381	<0.00762	<0.00377	<0.00755	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	<0.00005	0.0099	0.0851	0.0812	0.0902	0.0941	0.0021	0.0029	0.0049	<0.00002	<0.00002	0.037
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00005	<0.00005	<0.00524	<0.0105	<0.00519	<0.0104	0.000069 J	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	<0.00005	0.0018	<0.00333	<0.00667	0.00521 J	<0.0066	0.00035	0.00039	0.00049	<0.00001	<0.00001	0.00056
Fluorene	*0.98*	*2.9*	<0.00005	0.015 J	0.0717	0.0662	0.0864	0.0651	0.0025	0.0027	0.0039	<0.00003	<0.00003	0.027
Naphthalene	*0.49*	*1.5*	<0.00005	<0.00005	**2.88**	**3.3**	**5.86**	**5.13**	<0.00016	0.0002	0.046	0.000089 J	<0.00002	**4.5**
Nitrobenzene	*0.049*	*0.15*	<0.00005	<0.00005	<0.00524	<0.0105	<0.00519	<0.0104	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.00005	<0.00476	<0.00952	<0.00472	<0.00943	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00005	<0.00005	**<0.029**	**<0.0581**	**<0.0288**	**<0.0575**	<0.000079	<0.00008	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	<0.00005	0.002	0.0455	0.0684	0.0564	0.0519	0.00066	0.00055	0.0034	<0.000021	<0.000021	0.016
Phenol	*7.3*	*22*	<0.00005	<0.00023	<0.0019	<0.00381	<0.00189	<0.00377	<0.000035	<0.000035	0.0001 J	<0.000035	0.00064	0.17
Pyrene	*0.73*	*2.2*	<0.00005	0.00095	<0.00524	<0.0105	<0.00519	<0.0104	0.00018	0.00029	0.00034	<0.000019	<0.000019	0.00052
Metals														
Arsenic	*0.01*	*0.01*							0.00163 J	0.00233	0.000922 J	0.0012 J	0.000658 J	0.00463

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-50A 01/31/2008	MW-50A 07/16/2008	MW-50A 02/04/2009	MW-50A 01/20/2010	MW-50A 06/25/2010	MW-50A 01/27/2011	MW-50A 07/28/2011	MW-50A 02/09/2012	MW-50A 07/24/2012	MW-50A 04/02/2013	MW-50A 08/09/2013	MW-50A 01/29/2014
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00052	<0.00109	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.00014
Benzene	*0.005*	*0.005*	<0.00025	<0.00112	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.00008
Chlorobenzene	*0.1*	*0.1*	<0.00047	<0.0015	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00012
Ethylbenzene	*0.7*	*0.7*	<0.00025	<0.00142	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00011
Methylene chloride	*0.005*	*0.005*	<0.00054	<0.00122	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00015
Toluene	*1*	*1*	<0.00041	<0.00138	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00015
Vinyl chloride	*0.002*	*0.002*											<0.00011	
Xylenes (total)	*10*	*10*	<0.00127	<0.00302	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00026
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00008	<0.00009	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.000106	<0.000108	<0.000104
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00029	<0.00033	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	0.000083 J	<0.000298	<0.000304	<0.000292
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00019	<0.00022	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000125	<0.000127	<0.000123
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000769	<0.0000784	<0.0000755
2-Chloronaphthalene	*2*	*5.8*	<0.00038	<0.00044	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000769	<0.0000784	<0.0000755
2-Methylnaphthalene	*0.098*	*0.29*	<0.00038	<0.00044	<0.00007	<0.00007	<0.00007	0.00019 J	<0.00005	<0.00005	0.0039	0.000107 J	<0.0000686	0.000264 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00019	<0.00056	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.000798	<0.000814	<0.000783
4-Nitrophenol	*0.049*	*0.15*	<0.00024	<0.00028	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000538	<0.000549	<0.000528
Acenaphthene	*1.5*	*4.4*	<0.00029	<0.00033	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	0.0029	<0.0000769	<0.0000784	<0.0000755
Acenaphthylene	*1.5*	*4.4*	<0.00029	<0.00033	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000577	<0.0000588	<0.0000566
Anthracene	*7.3*	*22*	<0.00019	<0.00022	0.00011 J	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.0006	<0.0000481	<0.000049	<0.0000472
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	0.0000972 J	<0.0000784	<0.0000755
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00019	**<0.00022**	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	0.00015 J	<0.0000784	<0.0000755
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00038	<0.00044	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000125	<0.000127	<0.000123
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00019	<0.00022	0.0035	<0.0002	<0.0003	0.00029	<0.00077	0.00032	<0.00012	0.000512	0.000409 J	<0.000349
Chrysene	*0.91*	*2*	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	0.000157 J	<0.0000784	<0.0000755
Dibenzofuran	*0.098*	*0.29*	<0.00029	<0.00033	0.00025	<0.00008	<0.00008	0.00011 J	<0.00005	<0.00005	0.0024	<0.0000769	<0.0000784	0.000134 J
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.000086 J	0.000194 J	0.000147 J	<0.000104
Fluoranthene	*0.98*	*2.9*	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00061	<0.0000673	<0.0000686	<0.000066
Fluorene	*0.98*	*2.9*	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.0022	<0.0000673	<0.0000686	<0.000066
Naphthalene	*0.49*	*1.5*	<0.00038	<0.00044	0.0003	<0.0001	<0.0004	0.0026 J	<0.00005	<0.00005	0.02	<0.0000769	0.000265 J	0.00129
Nitrobenzene	*0.049*	*0.15*	<0.00038	<0.00044	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000106	<0.000108	<0.000104
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00024	<0.00028	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000962	<0.000098	<0.0000943
Pentachlorophenol	*0.001*	*0.001*	<0.00019	<0.00022	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	0.000921 J	<0.000598	<0.000575
Phenanthrene	*0.73*	*2.2*	0.00026 J	<0.00022	0.00031	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.0045	0.000164 J	<0.0000588	0.0000703 J
Phenol	*7.3*	*22*	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00038	<0.00005	<0.0000385	<0.0000392	<0.0000377
Pyrene	*0.73*	*2.2*	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00031	0.000138 J	<0.000108	<0.000104
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-50A 08/28/2014	MW-50A 01/30/2018	MW-50A 03/28/2018	MW-50A 04/01/2018	MW-50A 05/25/2018	MW-50A 01/10/2019	MW-50A 07/19/2019	MW-50A 01/09/2020	MW-50B 03/12/2020	MW-50B 05/26/2020	MW-50B 05/26/2020 Duplicate	MW-51A 01/31/2008
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00014	<0.0002		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052
Benzene	*0.005*	*0.005*	<0.00008	<0.0002		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00025
Chlorobenzene	*0.1*	*0.1*	<0.00012	<0.0003		<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047
Ethylbenzene	*0.7*	*0.7*	<0.00011	<0.0003		<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.0068	<0.0003	<0.0003	<0.00025
Methylene chloride	*0.005*	*0.005*	<0.00015	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00054
Toluene	*1*	*1*	<0.00015	<0.0002		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0033	0.001	0.0011	<0.00041
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.00026	<0.0003		<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.0056	<0.0003	<0.0003	<0.00127
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000109	<0.000021	<0.000021		<0.000021	<0.000021	<0.000021	<0.000021	<0.000022	<0.000021	<0.000021	<0.00008
2,4-Dimethylphenol	*0.49*	*1.5*	<0.000307	<0.00004	<0.00004		<0.00004	<0.00004	<0.00004	<0.00071	<0.000042	<0.00004	<0.00004	<0.00029
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000129	<0.000058	<0.000058		<0.000058	<0.000058	<0.000058	<0.000058	<0.00006	<0.000058	<0.000058	<0.00019
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0000792	<0.000042	<0.000042		<0.000042	<0.000042	<0.000042	<0.000042	<0.000044	<0.000042	<0.000042	<0.00019
2-Chloronaphthalene	*2*	*5.8*	<0.0000792	<0.000021	<0.000021		<0.000021	<0.000021	<0.000021	<0.000021	<0.000022	<0.000021	<0.000021	<0.00038
2-Methylnaphthalene	*0.098*	*0.29*	<0.0000693	<0.000019	<0.000019		<0.000019	<0.000019	<0.000019	<0.00019	0.016	0.000036 J	0.000035 J	<0.00038
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.000822	<0.00002	<0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.000021	<0.00002	<0.00002	<0.00019
4-Nitrophenol	*0.049*	*0.15*	<0.000554	<0.000047	<0.000047		<0.000047	<0.000047	<0.000047	<0.000047	<0.000049	<0.000047	<0.000047	<0.00024
Acenaphthene	*1.5*	*4.4*	<0.0000792	<0.000027	<0.000027		<0.000027	<0.000027	<0.000027	<0.00037	0.02	0.0012	0.0012	<0.00029
Acenaphthylene	*1.5*	*4.4*	<0.0000594	<0.000015	<0.000015		<0.000015	<0.000015	<0.000015	0.000022 J	0.00028	0.00039	0.000029 J	<0.00029
Anthracene	*7.3*	*22*	<0.0000495	<0.000014	<0.000014		<0.000014	<0.000014	<0.000014	<0.000014	0.0016	0.00038	0.00024	<0.00019
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0000792	<0.00005	<0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.000052	<0.00005	<0.00005	<0.00019
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0000792	<0.00002	<0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.000021	<0.00002	<0.00002	<0.00019
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.000129	<0.00003	<0.00003		<0.00003	<0.00003	<0.00003	<0.00003	<0.000031	<0.00003	<0.00003	<0.00038
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000366	<0.000037	<0.000037		0.0001 J	<0.000037	<0.000037	<0.000085	<0.000039	<0.000037	<0.000037	<0.00019
Chrysene	*0.91*	*2*	<0.0000792	<0.000021	<0.000021		<0.000021	<0.000021	<0.000021	<0.000021	<0.000022	<0.000021	<0.000021	<0.00019
Dibenzofuran	*0.098*	*0.29*	<0.0000792	<0.00002	<0.00002		<0.00002	<0.00002	<0.00002	<0.00013	0.015	0.00078	0.00082	0.000566
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.000109	<0.00002	<0.00002		<0.00002	<0.00002	<0.00002	<0.00002	0.000038 J	0.00016 J	0.00026	<0.00019
Fluoranthene	*0.98*	*2.9*	<0.0000693	<0.00001	<0.00001		<0.00001	<0.00001	<0.00001	0.000052 J	0.0011	0.00033 J	0.00032 J	<0.00019
Fluorene	*0.98*	*2.9*	<0.0000693	<0.00003	<0.00003		<0.00003	<0.00003	<0.00003	<0.00011	0.011	0.00042	0.0004	0.000602
Naphthalene	*0.49*	*1.5*	0.00071	<0.000046	<0.00002		0.00018	<0.00002	0.00027	<0.002	0.31	0.000037 J	0.000062 J	0.00182
Nitrobenzene	*0.049*	*0.15*	<0.000109	<0.000024	<0.000024		<0.000024	<0.000024	<0.000024	<0.000024	<0.000025	<0.000024	<0.000024	<0.00038
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000099	<0.000025	<0.000025		<0.000025	<0.000025	<0.000025	<0.000025	<0.000026	<0.000025	<0.000025	<0.00024
Pentachlorophenol	*0.001*	*0.001*	<0.000604	<0.000079	<0.000079		<0.000079	<0.000079	<0.000079	<0.000079	<0.000082	<0.000079	<0.000079	<0.00019
Phenanthrene	*0.73*	*2.2*	<0.0000594	<0.000021	<0.000021		<0.000021	<0.000021	<0.000021	<0.00007	0.016	0.00096	0.00073	0.00097
Phenol	*7.3*	*22*	<0.0000396	<0.000035	<0.000035		<0.000035	<0.000035	0.00016 J	<0.000066	<0.000036	<0.000035	<0.000035	0.00044 J
Pyrene	*0.73*	*2.2*	<0.000109	<0.000019	<0.000019		<0.000019	<0.000019	<0.000019	<0.000034	0.00059	0.00024	0.00021	<0.00019
Metals														
Arsenic	*0.01*	*0.01*		0.00205		<0.0004	0.00857	0.00134 J	0.000642 J	0.000718 J	0.00372	0.00656	0.00657	

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-51A 01/31/2008 Duplicate	MW-51A 02/04/2009	MW-51A 01/20/2010	MW-51A 06/24/2010	MW-51A 01/20/2011	MW-51A 07/28/2011	MW-51A 02/15/2012	MW-51A 07/24/2012	MW-51A 04/02/2013	MW-51A 08/09/2013	MW-51A 01/29/2014	MW-51A 07/24/2014
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.00014	<0.00014
Benzene	*0.005*	*0.005*	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.00008	<0.00008
Chlorobenzene	*0.1*	*0.1*	<0.00047	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00012	<0.00012
Ethylbenzene	*0.7*	*0.7*	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00011	<0.00011
Methylene chloride	*0.005*	*0.005*	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00015	<0.00015
Toluene	*1*	*1*	<0.00041	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00015	<0.00015
Vinyl chloride	*0.002*	*0.002*								<0.0005		<0.00011		<0.00011
Xylenes (total)	*10*	*10*	<0.00127	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00026	<0.00026
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.000106	<0.000108	<0.000104	<0.000104
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00057	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000298	<0.000304	<0.000292	<0.000292
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00038	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000125	<0.000127	<0.000123	<0.000123
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00038	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000769	<0.0000784	**0.00292**	<0.0000755
2-Chloronaphthalene	*2*	*5.8*	<0.00076	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000769	<0.0000784	<0.0000755	<0.0000755
2-Methylnaphthalene	*0.098*	*0.29*	<0.00076	<0.00007	<0.00007	0.00013 J	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000673	<0.0000686	<0.000066	<0.000066
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00038	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.000798	<0.000814	<0.000783	<0.000783
4-Nitrophenol	*0.049*	*0.15*	<0.00048	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000538	<0.000549	<0.000528	<0.000528
Acenaphthene	*1.5*	*4.4*	<0.00057	<0.00009	<0.00009	0.00013 J	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000769	<0.0000784	<0.0000755	<0.0000755
Acenaphthylene	*1.5*	*4.4*	<0.00057	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000577	<0.0000588	<0.0000566	<0.0000566
Anthracene	*7.3*	*22*	<0.00038	<0.00007	<0.00007	0.00017 J	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000481	<0.000049	<0.0000472	<0.0000472
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00038	<0.00007	<0.00007	0.00014 J	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000769	<0.0000784	<0.0000755	<0.0000755
Benzo(a)pyrene	*0.0002*	*0.0002*	**<0.00038**	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000769	<0.0000784	<0.0000755	<0.0000755
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00076	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000125	<0.000127	<0.000123	<0.000123
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00038	0.00034	<0.0019	<0.00035	<0.00029	<0.0018	<0.0001	<0.00033	<0.000356	<0.000363	0.00121	0.000804
Chrysene	*0.91*	*2*	<0.00038	<0.00007	<0.00007	0.00013 J	<0.00007	<0.00005	<0.00005	0.00011 J	<0.0000769	<0.0000784	<0.0000755	<0.0000755
Dibenzofuran	*0.098*	*0.29*	<0.00057	<0.00008	<0.00008	0.00012 J	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000769	<0.0000784	<0.0000755	<0.0000755
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00038	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.000051 J	<0.000106	0.00011 J	<0.000104	<0.000104
Fluoranthene	*0.98*	*2.9*	<0.00038	<0.00007	<0.00007	0.00072	<0.00007	<0.00005	<0.00005	0.00012 J	<0.0000673	<0.0000686	<0.000066	<0.000066
Fluorene	*0.98*	*2.9*	0.00042 J	<0.00007	<0.00007	0.00011 J	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000673	<0.0000686	<0.000066	<0.000066
Naphthalene	*0.49*	*1.5*	0.00131	0.00029	<0.0001	0.00087	<0.00011	<0.00005	<0.00005	<0.00005	<0.0000769	<0.0000784	0.000118 J	0.000162 J
Nitrobenzene	*0.049*	*0.15*	<0.00076	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000106	<0.000108	<0.000104	<0.000104
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00048	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000962	<0.000098	<0.0000943	<0.0000943
Pentachlorophenol	*0.001*	*0.001*	<0.00038	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000587	<0.000598	<0.000575	<0.000575
Phenanthrene	*0.73*	*2.2*	0.00075	<0.00007	<0.00007	0.00068	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000577	0.0000699 J	<0.0000566	<0.0000566
Phenol	*7.3*	*22*	<0.00038	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000385	<0.0000392	<0.0000377	<0.0000377
Pyrene	*0.73*	*2.2*	<0.00038	<0.00007	<0.00007	0.00037	<0.00007	<0.00005	<0.00005	0.000088 J	<0.000106	<0.000108	<0.000104	<0.000104
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-51A 01/29/2018	MW-51A 03/28/2018	MW-51A 05/24/2018	MW-51A 01/10/2019	MW-51A 07/19/2019	MW-51A 01/09/2020	MW-51C 07/24/2014	MW-51C 01/29/2018	MW-51C 03/28/2018	MW-51C 05/24/2018	MW-51C 01/10/2019	MW-51C 07/19/2019
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.000104 J	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*							<0.00011					
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000104	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.000292	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058	<0.000123	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.0000755	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0000755	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	0.000069 J	<0.000019	<0.000019	<0.000019	0.000067 J	<0.000044	<0.000066	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.000783	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000528	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.00004	<0.0000755	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.0000566	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	*7.3*	*22*	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000063	<0.0000472	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.000051	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000755	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	0.000022 J	<0.00002	<0.00002	0.000027 J	<0.0000755	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.000123	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	0.000069 J	0.000069 J	0.000078 J	0.00013 J	<0.00014	0.00111	<0.000037	<0.000037	0.000073 J	0.00013 J	0.000079 J
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.00005 J	<0.0000755	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00002	<0.00002	<0.00002	0.00003 J	<0.000049	<0.0000755	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	0.000025 J	<0.00002	<0.00002	0.000034 J	<0.000104	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00013	<0.000066	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Fluorene	*0.98*	*2.9*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.000043	<0.000066	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
Naphthalene	*0.49*	*1.5*	<0.00018	<0.00023	0.000087 J	0.00012	0.00055	<0.00032	0.000553	<0.0002	<0.00021	0.00029	0.00017	0.00023
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000104	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.0000943	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.00008	<0.000079	<0.000079	<0.000079	<0.000079	<0.000575	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	<0.000021	<0.000021	<0.000021	<0.000021	0.000026 J	<0.00021	<0.0000566	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.000035	<0.000035	0.00019 J	<0.000035	0.000628	<0.000035	<0.000035	<0.000035	<0.000035	0.00027
Pyrene	*0.73*	*2.2*	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000083	<0.000104	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019
Metals														
Arsenic	*0.01*	*0.01*	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	0.00188 J		0.000614 J	0.0004 J	<0.0004	<0.0004	<0.0004

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-51C 01/09/2020	MW-52A 01/31/2008	MW-52A 01/18/2010	MW-52A 07/14/2011	MW-52A 02/03/2012	MW-52A 07/12/2012	MW-52A 02/01/2013	MW-53C 01/29/2008	MW-53C 07/14/2008	MW-53C 02/03/2009	MW-53C 01/13/2010	MW-53C 06/30/2010
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.00052	<0.0025	<0.001	<0.001	<0.0005	<0.00014	<0.00052	<0.00052	<0.0005	<0.0005	<0.0005
Benzene	*0.005*	*0.005*	<0.0002	**0.0576**	0.0047 J	0.0025 J	0.0017 J	**0.0053**	0.00461	<0.00025	<0.00025	<0.0005	<0.0005	<0.0005
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.00047		<0.001	<0.001	<0.0005	<0.00012	<0.00047	<0.00047	<0.0005	<0.0005	<0.0005
Ethylbenzene	*0.7*	*0.7*	<0.0003	0.0892	0.014 J	0.011	0.0053	0.0099	0.00677	<0.00025	<0.00025	<0.0005	<0.0005	<0.0005
Methylene chloride	*0.005*	*0.005*	<0.001	<0.00054	<0.0025	<0.0013	<0.0013	<0.001	<0.00015	<0.00054	<0.00054	<0.0005	<0.0005	<0.0005
Toluene	*1*	*1*	<0.0002	0.103	0.012 J	0.0089	0.0034 J	0.0084	0.00679	<0.00041	<0.00041	<0.0005	<0.0005	<0.0005
Vinyl chloride	*0.002*	*0.002*				<0.001		<0.0005	0.000661 J					
Xylenes (total)	*10*	*10*	<0.0003	0.24	0.044 J	0.025	0.011 J	0.021	0.0147	<0.00127	<0.00127	<0.001	<0.001	<0.001
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	**<0.008**	<0.0001	<0.00005	<0.00005	<0.00005	**<0.00524**	<0.00008	<0.00009	<0.0001	<0.0001	<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	**1.54**	0.0046	0.0045	0.0034	0.029	0.0479	<0.00029	<0.00033	<0.00008	<0.00008	<0.00008
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	**<0.019**	<0.00009	<0.00005	<0.00005	<0.00005	**<0.00619**	<0.00019	<0.00022	<0.00009	<0.00009	<0.00009
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	**<0.019**	<0.00007	<0.00006	<0.00006	<0.00006	**<0.00381**	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.038	<0.0001	<0.00005	<0.00005	<0.00005	<0.00381	<0.00038	<0.00044	<0.00012	<0.0001	<0.0001
2-Methylnaphthalene	*0.098*	*0.29*	<0.000055	**0.929**	**0.54**	**0.33**	0.096	**0.16**	**0.165**	<0.00038	<0.00044	<0.00007	0.000071 J	<0.00007
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	**<0.019**	<0.00008	<0.00008	<0.00008	<0.00008	**<0.0395**	<0.00019	<0.00022	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.024	<0.00007	<0.00005	<0.00005	<0.00005	<0.0267	<0.00024	<0.00028	<0.00007	<0.00007	<0.00007
Acenaphthene	*1.5*	*4.4*	<0.000094	0.494	0.36	0.26	0.19	0.15	0.271	<0.00029	<0.00033	<0.00009	0.0002	0.00032
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.029	0.0045	0.004	0.0024	0.0025	<0.00286	<0.00029	<0.00033	<0.00006	<0.00007	<0.00007
Anthracene	*7.3*	*22*	<0.0001	0.046	0.022	0.041	0.036	0.021	0.0231 J	0.000569	<0.00022	<0.00007	<0.00007	<0.00007
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	**<0.019**	0.00047	0.00063	0.00031	0.00022	<0.00381	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	**<0.019**	0.00013 J	0.00017 J	0.000066 J	<0.00005	**<0.00381**	<0.00019	**<0.00022**	<0.00008	<0.00008	<0.00008
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	**<0.038**	<0.00009	<0.00005	<0.00005	<0.00005	**<0.00619**	<0.00038	<0.00044	<0.00009	<0.00009	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000085	**<0.019**	<0.00032	<0.00042	0.00043	<0.0001	**<0.0176**	<0.00019	0.00026 J	0.00072	<0.00024	<0.00032
Chrysene	*0.91*	*2*	<0.000021	<0.019	0.00041	0.0006	0.00033	0.00028	<0.00381	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007
Dibenzofuran	*0.098*	*0.29*	<0.00011	**0.373**	**0.28**	**0.2**	**0.14**	**0.13**	**0.178**	<0.00029	<0.00033	<0.00008	<0.00008	<0.00008
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.019	<0.00007	<0.00005	<0.00005	<0.00005	<0.00524	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007
Fluoranthene	*0.98*	*2.9*	0.00018	0.027	0.015	0.024	0.013	0.017	0.0245	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007
Fluorene	*0.98*	*2.9*	<0.00011	0.263	0.23	0.18	0.12	0.11	0.167	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007
Naphthalene	*0.49*	*1.5*	<0.0003	**10.3**	**3.9**	**1.9**	**0.77**	**0.83**	**0.878**	0.00075	0.00161	0.0012	<0.00027	<0.0001
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.038	<0.00009	<0.00005	<0.00005	<0.00005	<0.00524	<0.00038	<0.00044	<0.00009	<0.00009	<0.00009
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.024	<0.00009	<0.00005	<0.00005	<0.00005	<0.00476	<0.00024	<0.00028	<0.00009	<0.00009	<0.00009
Pentachlorophenol	*0.001*	*0.001*	<0.000079	**<0.019**	<0.00008	<0.00005	<0.00005	<0.00005	**<0.029**	<0.00019	<0.00022	<0.00008	<0.00008	<0.00008
Phenanthrene	*0.73*	*2.2*	<0.00056	0.24	0.24	0.22	0.081	0.12	0.226	0.00043 J	<0.00022	<0.00007	<0.00007	<0.00007
Phenol	*7.3*	*22*	<0.000035	0.038	<0.00007	0.000066 J	0.000052 J	<0.00015	<0.0019	<0.00019	0.00027 J	<0.00007	<0.00007	<0.00007
Pyrene	*0.73*	*2.2*	<0.00011	0.039	0.0066	0.011	0.0054	0.0071	0.0124 J	0.00039 J	<0.00022	<0.00007	<0.00007	<0.00007
Metals														
Arsenic	*0.01*	*0.01*	0.000452 J											

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-53C 01/26/2011	MW-53C 07/20/2011	MW-53C 02/09/2012	MW-53C 07/18/2012	MW-53C 02/06/2013	MW-53C 08/06/2013	MW-53C 01/22/2014	MW-53C 07/25/2014	MW-53C 01/28/2018	MW-53C 03/21/2018	MW-53C 05/31/2018	MW-53C 01/14/2019
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.001	<0.001	<0.0005	0.000644 J	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*								<0.00011				
Xylenes (total)	*10*	*10*	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0001	<0.00005	<0.00005	<0.00005	<0.000106	<0.00011	<0.000524	<0.000107	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00008	<0.00005	<0.00005	<0.00005	<0.000298	<0.00031	<0.00148	<0.000301	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00009	<0.00005	<0.00005	<0.00005	<0.000125	<0.00013	<0.000619	<0.000126	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000769	<0.00008	<0.000381	<0.0000777	<0.000042	<0.000042	**0.0016**	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000769	<0.00008	<0.000381	<0.0000777	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	<0.00007	<0.00005	0.00008 J	<0.000091	<0.0000673	<0.00007	0.000358 J	<0.0000826	<0.000019	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.00008	<0.000798	<0.00083	**<0.00395**	<0.000806	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00007	<0.00005	<0.00005	<0.00005	<0.000538	<0.00056	<0.00267	<0.000544	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	<0.00009	0.00032	0.0002 J	<0.00005	<0.0000769	<0.00008	0.000856 J	<0.0000777	<0.000027	<0.000027	0.000044 J	<0.000027
Acenaphthylene	*1.5*	*4.4*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000577	<0.00006	<0.000286	<0.0000583	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	*7.3*	*22*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000481	<0.00005	<0.000238	<0.0000485	<0.000014	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000769	<0.00008	<0.000381	<0.0000777	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000769	<0.00008	**<0.000381**	<0.0000777	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00009	<0.00005	<0.00005	<0.00005	<0.000125	<0.00013	<0.000619	<0.000126	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00037	<0.00014	<0.0001	<0.0001	<0.000356	<0.00037	<0.00176	<0.000359	0.00012 J	<0.000037	0.0001 J	<0.000037
Chrysene	*0.91*	*2*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000769	<0.00008	<0.000381	<0.0000777	<0.000021	<0.000021	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000769	<0.00008	<0.000381	<0.0000777	<0.00002	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00007	<0.00005	<0.00005	<0.00005	<0.000106	<0.00011	<0.000524	<0.000107	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000673	<0.00007	<0.000333	<0.000068	<0.00001	<0.00001	<0.00001	<0.00001
Fluorene	*0.98*	*2.9*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000673	<0.00007	0.000355 J	<0.000068	<0.00003	<0.00003	<0.00003	<0.00003
Naphthalene	*0.49*	*1.5*	0.00015 J	<0.00005	0.00066	<0.00048	<0.000183	<0.00008	<0.00212	<0.00194	<0.00002	<0.000034	0.00023	<0.00025
Nitrobenzene	*0.049*	*0.15*	<0.00009	<0.00005	<0.00005	<0.00005	<0.000106	<0.00011	<0.000524	<0.000107	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000962	<0.0001	<0.000476	<0.0000971	<0.000025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.00005	<0.00005	<0.00005	<0.000587	<0.00061	**<0.0029**	<0.000592	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000577	<0.00006	0.000939 J	<0.0000665	<0.000021	<0.000021	<0.000021	<0.000021
Phenol	*7.3*	*22*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000385	<0.00004	<0.00019	<0.0000388	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	<0.00007	<0.00005	<0.00005	<0.00005	<0.000106	<0.00011	<0.000524	<0.000107	<0.000019	<0.000019	<0.000019	<0.000019
Metals														
Arsenic	*0.01*	*0.01*									0.000502 J	0.000443 J	0.000694 J	<0.0004

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-53C 07/16/2019	MW-53C 01/09/2020	MW-54C 01/28/2008	MW-54C 07/14/2008	MW-54C 02/03/2009	MW-54C 01/21/2010	MW-54C 06/30/2010	MW-54C 01/26/2011	MW-54C 07/20/2011	MW-54C 02/08/2012	MW-54C 07/25/2012	MW-54C 02/12/2013
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.00245	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.00257	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.00239	<0.00047	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	0.00584	0.00391 J	0.0029 J	<0.0005	0.0024 J	<0.0005	0.0018 J	0.0011 J	0.0011 J	0.000187 J
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.00195	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015
Toluene	*1*	*1*	<0.0002	<0.0002	<0.00274	<0.00041	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.00581	<0.00127	0.0027 J	<0.001	0.0011 J	<0.001	<0.0031	<0.0031	<0.0015	<0.00026
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.00008	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.000105
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.0011	<0.00029	<0.00029	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	0.000098 J	<0.00005	<0.000295
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.00019	<0.0002	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000124
2,6-Dinitrotoluene	*0.0013*	*0.003*	**0.0028**	<0.000042	<0.00019	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000762
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.00038	<0.00039	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000762
2-Methylnaphthalene	*0.098*	*0.29*	0.000071 J	<0.00025	**0.109**	**0.14**	**0.13**	<0.00007	0.0096	0.00025	0.022	0.0065	0.0054 J	0.00392
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00019	<0.0002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00079
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.00024	<0.00024	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000533
Acenaphthene	*1.5*	*4.4*	<0.000027	<0.00032	0.074	0.0738	0.067	0.00016 J	0.024	0.0023	0.039	0.035	0.022	0.0219
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.00029	<0.00029	0.00072	<0.00007	0.00042	<0.00007	0.00045	0.00051	0.00039	<0.0000571
Anthracene	*7.3*	*22*	<0.000014	<0.000028	0.00268	0.00293	0.003	<0.00007	0.005	0.00027	0.0029	0.0024	0.0019	0.00183
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	0.00024 J	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000762
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00019	<0.0002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000762
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00038	<0.00039	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000124
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	<0.000037	0.00105 J	0.00029 J	0.00072	<0.00077	<0.00037	0.0016	<0.00015	<0.0001	0.00017 J	<0.000352
Chrysene	*0.91*	*2*	<0.000021	<0.000021	0.00021 J	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000762
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00027	0.0611	0.0739	0.064	<0.00008	0.028	0.0018	0.046	0.047	0.029	0.0223
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	0.00069 J	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.000064 J	<0.000105
Fluoranthene	*0.98*	*2.9*	<0.00001	0.000071 J	0.00426	0.00349	0.0032	<0.00007	0.0032	0.00016 J	0.0034	0.0026	0.002	0.00246
Fluorene	*0.98*	*2.9*	<0.00003	<0.0002	0.0323	0.0351	0.03	<0.00007	0.015	0.001	0.022	0.021	0.011	0.0092
Naphthalene	*0.49*	*1.5*	0.00013	<0.0012	**0.892**	**0.912**	**1.1**	<0.0001	0.21	0.0055	0.47	0.35	0.15	0.0681
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.00038	<0.00039	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000105
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	0.000056 J	<0.00024	<0.00024	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	0.00014 J	<0.0000952
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	0.00025 J	<0.0002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000581
Phenanthrene	*0.73*	*2.2*	<0.000021	<0.00025	0.0389	0.0495	0.042	<0.00007	0.024	0.0011	0.04	0.034	0.019	0.0128
Phenol	*7.3*	*22*	<0.00016	0.0005	<0.00019	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00011 J	<0.00005	<0.0000381
Pyrene	*0.73*	*2.2*	<0.000019	<0.000061	0.00227	0.00163	0.0018	<0.00007	0.0016	<0.00007	0.0017	0.0015	0.0013	0.00138
Metals														
Arsenic	*0.01*	*0.01*	0.000569 J	0.000728 J										

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-54C 08/06/2013	MW-54C 01/23/2014	MW-54C 07/25/2014	MW-54C 01/28/2018	MW-54C 03/20/2018	MW-54C 05/31/2018	MW-54C 01/14/2019	MW-54C 07/16/2019	MW-54C 01/09/2020	MW-55A 02/04/2009	MW-55A 01/18/2010	MW-55A 07/14/2011
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0025	<0.005
Benzene	*0.005*	*0.005*	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	**0.19**	**0.072**	**0.07**
Chlorobenzene	*0.1*	*0.1*	0.000128 J	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0005		<0.005
Ethylbenzene	*0.7*	*0.7*	0.00062 J	0.000527	0.000282 J	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.15	0.2	0.17
Methylene chloride	*0.005*	*0.005*	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0025	**<0.0065**
Toluene	*1*	*1*	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.44	0.29	0.24
Vinyl chloride	*0.002*	*0.002*			<0.00011									
Xylenes (total)	*10*	*10*	0.00076 J	0.00062 J	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.35	0.47	0.42
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00011	<0.000104	<0.000109	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0001	<0.0001	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00031	<0.000292	<0.000307	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	**1.2**	0.28	0.48
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00013	<0.000123	<0.000129	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.00009	<0.00009	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00008	<0.0000755	<0.0000792	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.00007	<0.00007	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.00008	<0.0000755	<0.0000792	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00012	<0.0001	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	0.0173	0.0176	0.00834	0.00048	0.00075	0.0059	0.0014	0.0021	0.002	**0.63**	**0.39**	**0.33**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00083	<0.000783	<0.000822	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.00056	<0.000528	<0.000554	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00007	<0.00007	<0.00005
Acenaphthene	*1.5*	*4.4*	0.0749	0.062	0.0367	0.023	0.03	0.04	0.014	0.041	0.021	0.28	0.19	0.16
Acenaphthylene	*1.5*	*4.4*	<0.00006	0.00105	0.000526	0.00034	0.00036	0.00054	<0.0002	0.00037	0.00023	0.0037	0.0028	0.003
Anthracene	*7.3*	*22*	0.00389	0.00445	0.00261	0.0015	0.0027	0.0041	0.0013	0.0023	0.0015	0.047	0.021	0.016
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00008	0.0000993 J	<0.0000792	<0.00005	<0.00005	0.000065 J	<0.00005	<0.00005	<0.00005	**0.01**	0.0018	0.0014
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00008	<0.0000755	<0.0000792	<0.00002	<0.00002	<0.00002	0.000039 J	<0.00002	<0.00002	**0.0069**	**0.00081**	**0.00062**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00013	<0.000123	<0.000129	<0.00003	<0.00003	<0.00003	0.000056 J	<0.00003	<0.00003	<0.00009	0.00009 J	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00037	<0.000349	<0.000366	0.000055 J	<0.000037	0.00011 J	0.000096 J	<0.000037	<0.00018	0.00073	<0.0031	<0.0001
Chrysene	*0.91*	*2*	<0.00008	0.0000758 J	<0.0000792	<0.000021	0.000059 J	0.000053 J	0.000038 J	<0.000021	0.000054 J	0.0099	0.0017	0.0014
Dibenzofuran	*0.098*	*0.29*	0.0878	0.0695	0.0471	0.025	0.029	0.045	0.015	0.032	0.02	**0.2**	**0.13**	**0.12**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00011	<0.000824	<0.000109	<0.00002	<0.00002	0.000029 J	<0.00002	<0.00002	<0.00002	<0.00007	<0.00007	<0.00005
Fluoranthene	*0.98*	*2.9*	0.00474	0.00575	0.00302	0.0023	0.004	0.0049	0.002	0.0033	0.0026	0.052	0.0081	0.009
Fluorene	*0.98*	*2.9*	0.0409	0.0321	<0.0208	0.011	0.014	0.022	0.0085	0.018	0.0095	0.16	0.083	0.08
Naphthalene	*0.49*	*1.5*	0.383 J	0.315 J	0.18	0.022	0.029	0.068	0.019	0.032	<0.035	**17**	**11**	**8.6**
Nitrobenzene	*0.049*	*0.15*	<0.00011	<0.000104	<0.000109	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00009	0.00009 J	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.0001	<0.0000943	<0.000099	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00009	<0.00009	<0.00005
Pentachlorophenol	*0.001*	*0.001*	<0.00061	<0.000575	<0.000604	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	0.00053	<0.00008	<0.00005
Phenanthrene	*0.73*	*2.2*	0.04	0.042	0.0148	0.0023	0.0041	0.023	0.0052	0.0065	0.0056	0.2	0.084	0.083
Phenol	*7.3*	*22*	<0.00004	<0.0000377	<0.0000396	<0.000035	<0.000035	<0.000035	<0.000035	0.00044	<0.000064	0.15	0.025 J	0.0038
Pyrene	*0.73*	*2.2*	0.00248	0.00373	0.00169	0.0012	0.0018	0.0028	0.001	0.0016	0.0014	0.032	0.0052	0.0061
Metals														
Arsenic	*0.01*	*0.01*				0.00128 J	0.00133 J	0.0012 J	0.00123 J	0.00103 J	0.00122 J			

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-55A 02/03/2012	MW-55A 07/12/2012	MW-55A 01/30/2013	MW-55A 07/30/2013	MW-55A 01/14/2014	MW-55A 07/17/2014	MW-55B 02/02/2012	MW-55B 07/12/2012	MW-55B 01/30/2013	MW-55B 07/30/2013	MW-55B 01/14/2014	MW-55B 07/17/2014
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	**<0.01**	<0.005	<0.0028	**<0.014**	**<0.007**	<0.0028	**<0.01**	<0.005	**<0.007**	**<0.014**	**<0.007**	<0.0028
Benzene	*0.005*	*0.005*	**0.15**	**0.17**	**0.133**	**0.145**	**0.0715**	**0.0881**	**0.78**	**0.89**	**0.881**	**0.809**	**0.648**	**0.846**
Chlorobenzene	*0.1*	*0.1*	<0.01	<0.005	<0.0024	<0.012	<0.006	<0.0024	<0.01	<0.005	<0.006	<0.012	<0.006	<0.0024
Ethylbenzene	*0.7*	*0.7*	0.2	0.24	0.228	0.26	0.2	0.368	0.13	0.21	0.162	0.173	0.134	0.126
Methylene chloride	*0.005*	*0.005*	**<0.013**	**<0.01**	<0.003	**0.0894 J**	**<0.0075**	**0.0179 J**	**<0.013**	**<0.01**	**0.0213 J**	**0.0517 J**	**<0.0075**	**0.0155 J**
Toluene	*1*	*1*	0.41	0.39	0.385	0.431	0.311	0.409	0.65	0.9	0.76	0.782	0.597	0.591
Vinyl chloride	*0.002*	*0.002*				**<0.011**						**<0.011**		
Xylenes (total)	*10*	*10*	0.48	0.62	0.575	0.584	0.486	0.869	0.39	0.68	0.623	0.624	0.481	0.443
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0005	<0.00005	<0.000104	**<0.00534**	**<0.0529**	**<0.00519**	<0.0005	<0.0005	**<0.0208**	**<0.0534**	**<0.529**	**<0.013**
2,4-Dimethylphenol	*0.49*	*1.5*	**1.8**	**0.96**	<0.000292	**0.956**	**0.519**	0.463	**35**	**30**	**2.06**	**25.2**	**44.2**	**35.6**
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.0005	<0.00005	<0.000123	**<0.00631**	**<0.0625**	**<0.00613**	<0.0005	<0.0005	**<0.0245**	**<0.0631**	**<0.625**	**<0.0153**
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0006	<0.00006	<0.0000755	**<0.00388**	**<0.0385**	**<0.00377**	<0.0006	<0.0006	**<0.0151**	**<0.0388**	**<0.385**	**<0.00943**
2-Chloronaphthalene	*2*	*5.8*	<0.0005	<0.00005	<0.0000755	<0.00388	<0.0385	<0.00377	<0.0005	<0.0005	<0.0151	<0.0388	<0.385	<0.00943
2-Methylnaphthalene	*0.098*	*0.29*	**0.25**	**0.31**	<0.000066	**0.468**	**0.463**	**0.486**	**0.28**	**0.64**	**0.757**	**0.868**	**0.901 J**	**0.512**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.0008	<0.00008	<0.000783	**<0.0403**	**<0.399**	**<0.0392**	<0.0008	<0.0008	**<0.157**	**<0.403**	**<3.99**	**<0.0979**
4-Nitrophenol	*0.049*	*0.15*	<0.0005	<0.00005	<0.000528	<0.0272	**<0.269**	<0.0264	<0.0005	<0.0005	**<0.106**	**<0.272**	**<2.69**	**<0.066**
Acenaphthene	*1.5*	*4.4*	0.14	0.11	0.0573	0.207	0.251	0.219	0.19	0.26	0.347	<0.0388	<0.385	0.19
Acenaphthylene	*1.5*	*4.4*	0.0019 J	0.0017	0.0021	<0.00291	<0.0288	<0.00283	0.0057	0.01	<0.0113	<0.0291	<0.288	<0.00708
Anthracene	*7.3*	*22*	0.016	0.0075	0.00062	0.0336	0.083 J	0.032	0.016	0.03	0.0492 J	0.0437 J	<0.24	0.027 J
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0005	0.00034	<0.0000755	<0.00388	**<0.0385**	<0.00377	0.0011 J	0.0012 J	**<0.0151**	**<0.0388**	**<0.385**	**<0.00943**
Benzo(a)pyrene	*0.0002*	*0.0002*	**<0.0005**	0.000081 J	<0.0000755	**<0.00388**	**<0.0385**	**<0.00377**	**<0.0005**	**<0.0005**	**<0.0151**	**<0.0388**	**<0.385**	**<0.00943**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.0005	<0.00005	<0.000123	**<0.00631**	**<0.0625**	**<0.00613**	<0.0005	<0.0005	**<0.0245**	**<0.0631**	**<0.625**	**<0.0153**
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.001	<0.0001	<0.000349	**<0.018**	**<0.178**	**<0.0175**	<0.001	<0.001	**<0.0698**	**<0.18**	**<1.78**	**<0.0436**
Chrysene	*0.91*	*2*	<0.0005	0.00025	<0.0000755	<0.00388	<0.0385	<0.00377	<0.0005	0.0009 J	<0.0151	<0.0388	<0.385	<0.00943
Dibenzofuran	*0.098*	*0.29*	0.084	0.078	0.0265	<0.00388	**0.15 J**	**0.14**	**0.15**	**0.23**	<0.0151	**0.309**	**<0.385**	**0.138**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.0005	<0.00005	<0.000104	<0.00534	<0.0529	<0.00519	<0.0005	<0.0005	<0.0208	<0.0534	<0.529	<0.013
Fluoranthene	*0.98*	*2.9*	0.0044	0.0042	0.000459 J	0.0148 J	0.0595 J	0.0175 J	0.0047	0.014	0.0153 J	<0.034	<0.337	0.0119 J
Fluorene	*0.98*	*2.9*	0.057	0.048	0.00213	0.0996	0.172 J	0.1	0.09	0.15	0.166	0.195 J	<0.337	0.0816
Naphthalene	*0.49*	*1.5*	**9.9**	**9.7**	<0.00227	**13.8**	**11.7**	**11.6**	**21**	**24**	**2.3**	**21.9**	**24.3**	**13.5**
Nitrobenzene	*0.049*	*0.15*	<0.0005	<0.00005	<0.000104	<0.00534	**<0.0529**	<0.00519	<0.0005	<0.0005	<0.0208	**<0.0534**	**<0.529**	<0.013
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.0005	<0.00005	<0.0000943	<0.00485	<0.0481	<0.00472	<0.0005	<0.0005	<0.0189	<0.0485	**<0.481**	<0.0118
Pentachlorophenol	*0.001*	*0.001*	<0.0005	<0.00005	<0.000575	**<0.0296**	**<0.293**	**<0.0288**	<0.0005	0.00069 J	**<0.115**	**<0.296**	**<2.93**	**<0.0719**
Phenanthrene	*0.73*	*2.2*	0.047	0.045	<0.0000566	0.078	0.174 J	0.0893	0.057	0.13	0.13	0.228 J	<0.288	0.1
Phenol	*7.3*	*22*	0.079	0.046	<0.0000377	<0.00194	<0.0192	<0.00189	**150**	**130**	0.0999	**103**	**454**	**127**
Pyrene	*0.73*	*2.2*	0.0041	0.0021	0.000223 J	0.00729 J	<0.0529	0.0101 J	0.0042	0.0076	<0.0208	<0.0534	<0.529	<0.013
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-57A 02/05/2009	MW-57A 01/20/2010	MW-57A 06/23/2010 DNAPL	MW-57A 01/18/2011 DNAPL	MW-57A 07/22/2011 DNAPL	MW-57A 02/02/2012 DNAPL	MW-57A 07/24/2012 DNAPL	MW-57A 02/11/2013 DNAPL	MW-57A 07/31/2013 DNAPL	MW-57A 01/15/2014 DNAPL	MW-57A 07/29/2014 DNAPL	MW-57A 07/10/2019
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.0025	<0.005	<0.005	**<0.01**	**<0.01**	<0.0005	<0.0014	**<0.007**	<0.0002	<0.00014	<0.0002
Benzene	*0.005*	*0.005*	**0.26**	**0.17**	**0.47**	**0.23**	**0.084**	**0.14**	**0.064**	**0.138**	**0.137**	**0.109**	**0.0412**	0.00057 J
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.0025	<0.005	<0.005	<0.01	<0.01	<0.0005	<0.0012	<0.006	0.000465 J	0.000625 J	<0.0003
Ethylbenzene	*0.7*	*0.7*	0.34	0.32	0.45	0.29	0.13	0.22	0.17	0.24	0.283	0.198	0.274	0.00085 J
Methylene chloride	*0.005*	*0.005*	<0.0005	<0.0025	**0.014 J**	<0.005	**<0.013**	**<0.013**	<0.001	0.00367 J	**<0.0075**	<0.00022	<0.00015	<0.001
Toluene	*1*	*1*	0.63	0.13	0.86	0.38	0.055	0.23	0.1	0.244	0.308	0.198	0.0355	<0.0002
Vinyl chloride	*0.002*	*0.002*		**<0.0025**		**<0.005**	**<0.01**	**<0.01**	0.0016 J	<0.0011	**<0.0055**	0.00154		<0.0002
Xylenes (total)	*10*	*10*	0.92	0.6	1.2	0.68	0.19	0.4	0.33	0.591	0.572	0.454	0.455	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0001	<0.0001	0.0005 J	<0.0001	<0.0005	<0.0005	<0.0005	**<0.075**	**<0.0267**	**<0.0259**	<0.000109	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	**1.8**	**3**	**2.7 J**	**2**	**1**	**1.7**	0.2	**1.62**	**0.994**	**7.91 J**	0.0443 J	<0.00059
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00009	<0.00009	0.00045 J	<0.00009	<0.0005	<0.0005	<0.0005	**<0.0886**	**<0.0316**	**<0.0307**	<0.000129	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00007	<0.00007	0.00035 J	<0.00007	<0.0006	<0.0006	<0.0006	**<0.0545**	**<0.0194**	**<0.0189**	<0.0000792	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.00012	<0.0001	0.0005 J	<0.0001	<0.0005	<0.0005	<0.0005	<0.0545	<0.0194	<0.0189	<0.0000792	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	**0.73**	**0.89**	**3.5 J**	**3.5**	**13**	**1.9**	**3.1**	**13.9**	**1.5**	**8.24**	**0.616**	**0.19**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	0.0004 J	<0.00008	<0.0008	<0.0008	<0.0008	**<0.566**	**<0.201**	**<0.196**	<0.000822	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00007	<0.00007	0.00035 J	<0.00007	<0.0005	<0.0005	<0.0005	**<0.382**	**<0.136**	**<0.132**	<0.000554	<0.000047
Acenaphthene	*1.5*	*4.4*	0.24	0.31	**2 J**	**1.9**	**8.6**	1.2	**1.8**	**8.56**	0.997	**5.69**	0.335	0.099
Acenaphthylene	*1.5*	*4.4*	0.0056	0.0061	0.02 J	0.022	0.091	0.014	0.024	<0.0409	<0.0146	<0.0142	0.00779	0.0019
Anthracene	*7.3*	*22*	0.044	0.022	0.9 J	0.62	**8.4**	0.34	0.55	3.09	0.337	2.02	0.0557	0.0084
Benzo(a)anthracene	*0.0091*	*0.02*	**0.011**	0.00051	**0.15 J**	**0.12**	**0.45**	**0.047**	**0.074**	**0.605**	**0.0521 J**	**0.361**	0.0072	0.001
Benzo(a)pyrene	*0.0002*	*0.0002*	**0.0045**	0.00012 J	**0.037 J**	**0.028**	**0.16**	**0.014**	**0.024**	**0.165 J**	**<0.0194**	**0.0962 J**	**0.00385**	**0.00054**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00009	<0.00009	0.00045 J	<0.00009	<0.0005	<0.0005	<0.0005	**<0.0886**	**<0.0316**	**<0.0307**	**0.0021**	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.002	<0.0004	0.001 J	<0.0002	<0.001	0.0016 J	<0.001	**<0.252**	**<0.0898**	**<0.0873**	<0.000808	0.00021
Chrysene	*0.91*	*2*	0.0094	0.00034	0.14 J	0.11	0.53	0.046	0.089	0.602	0.0482 J	0.36	0.00625	0.001
Dibenzofuran	*0.098*	*0.29*	**0.21**	**0.17**	**1.9 J**	**1.7**	**8.6**	**0.86**	**1.7**	**7.28**	**0.799**	**4.69**	**0.257**	0.076
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00007	<0.00007	0.00035 J	<0.00007	<0.0005	<0.0005	<0.0005	<0.075	<0.0267	<0.0259	<0.000109	<0.00002
Fluoranthene	*0.98*	*2.9*	0.054	0.0063	**1.4 J**	**0.99**	**6**	0.48	0.74	**4.98**	0.412	**3.19**	0.0561	0.0091
Fluorene	*0.98*	*2.9*	0.083	0.11	**1.6 J**	**1.4**	**7.9**	0.72	**1.4**	**6.54**	0.713	**4.16**	0.21	0.059
Naphthalene	*0.49*	*1.5*	**16**	**7.4**	**20 J**	**18**	**71**	**9.2**	**22**	**60.7**	**13.5**	**56.9**	**7.27**	**0.61**
Nitrobenzene	*0.049*	*0.15*	<0.00009	<0.00009	0.00045 J	<0.00009	<0.0005	<0.0005	<0.0005	**<0.075**	<0.0267	<0.0259	<0.000109	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00009	<0.00009	0.00045 J	<0.00009	<0.0005	<0.0005	<0.0005	<0.0682	<0.0243	<0.0236	<0.000099	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.00008	0.0004 J	<0.00008	<0.0005	<0.0005	<0.0005	**<0.416**	**<0.148**	**<0.144**	<0.000604	0.00059
Phenanthrene	*0.73*	*2.2*	0.22	0.088	**4 J**	**3.5**	**13**	**2**	**3**	**17**	**1.61**	**13.1**	0.271	0.059
Phenol	*7.3*	*22*	0.052	0.0099	0.042 J	0.02	<0.0005	0.0089	<0.0005	<0.0273	<0.00971	<0.00943	<0.0000396	<0.00016
Pyrene	*0.73*	*2.2*	0.038	0.0037	**0.84 J**	0.67	**3.3**	0.34	0.42	**3.12**	0.264	**2.29**	0.0308 J	0.0055
Metals														
Arsenic	*0.01*	*0.01*												0.00447

Notes:

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Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0025	<0.0025	<0.0025	<0.0025	<0.005	**<0.01**	<0.0005	<0.00014	<0.00014	<0.00014	<0.0014
Benzene	*0.005*	*0.005*	**0.038**	**0.052**	**0.038**	**0.075**	**0.034**	<0.005	**0.12**	**0.16**	**0.0943**	0.0000807 J	<0.00008	**0.259**
Chlorobenzene	*0.1*	*0.1*	0.00046 J	<0.0025	0.0093 J	0.01 J	0.0029 J	<0.005	<0.01	0.0018 J	0.00295	<0.00012	<0.00012	<0.0012
Ethylbenzene	*0.7*	*0.7*	0.015	0.079	0.063	0.11	0.03	<0.0055	0.085	0.099	0.0648	<0.00011	<0.00011	0.167
Methylene chloride	*0.005*	*0.005*	<0.001	<0.0025	<0.0025	<0.0048	<0.0025	**<0.0065**	**<0.013**	<0.001	<0.00015	<0.00015	<0.00015	<0.0015
Toluene	*1*	*1*	0.01	0.022 J	0.02 J	0.045	0.0059 J	<0.005	0.043 J	0.041	0.0176	<0.00015	<0.00015	0.135
Vinyl chloride	*0.002*	*0.002*	<0.0002		**<0.0025**		**<0.0025**	**<0.005**		**0.011**	**0.00281**	<0.00011	<0.00011	**0.0101 J**
Xylenes (total)	*10*	*10*	0.026	0.1	0.04 J	0.15	0.029 J	<0.016	0.23	0.31	0.122	<0.00026	<0.00026	0.352
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.0001	<0.0001	0.0001 J	<0.0001	<0.00005	<0.00005	<0.00005	**<0.01**	<0.00011	<0.000104	**<0.00539**
2,4-Dimethylphenol	*0.49*	*1.5*	0.41	0.047	0.097	**0.61**	**0.68**	<0.00005	**1.1**	**2.4**	**0.95**	<0.00031	<0.000292	**9.19**
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	**<0.0118**	<0.00013	<0.000123	**<0.00637**
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	**<0.00727**	<0.00008	<0.0000755	**<0.00392**
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00727	<0.00008	<0.0000755	<0.00392
2-Methylnaphthalene	*0.098*	*0.29*	**0.18**	**0.22**	**0.1**	**0.21**	0.057	<0.00005	0.082	0.0076	**0.243**	<0.00007	<0.000066	**0.373**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00008	<0.00008	0.00008 J	<0.00008	<0.00008	<0.00008	<0.00008	**<0.0755**	<0.00083	<0.000783	**<0.0407**
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.00007	<0.00007	0.00007 J	<0.00007	<0.00005	<0.00005	<0.00005	**<0.0509**	<0.00056	<0.000528	<0.0275
Acenaphthene	*1.5*	*4.4*	0.19	0.31	0.18	0.28	0.12	<0.00005	0.16	0.057	0.205	<0.00008	<0.0000755	0.221
Acenaphthylene	*1.5*	*4.4*	0.0025	0.0012	0.0013	0.0015	0.00072	<0.00005	0.0011	0.0011	<0.00545	<0.00006	<0.0000566	0.00996 J
Anthracene	*7.3*	*22*	0.048	0.0045	0.0098	0.017 J	0.0051	0.00039	0.0055	0.0069	0.0245 J	<0.00005	<0.0000472	0.0126 J
Benzo(a)anthracene	*0.0091*	*0.02*	0.0036	<0.00007	<0.00007	0.00007 J	<0.00007	<0.00005	<0.00005	0.00072	<0.00727	<0.00008	<0.0000755	<0.00392
Benzo(a)pyrene	*0.0002*	*0.0002*	**0.0011**	<0.00008	<0.00008	0.00008 J	<0.00008	<0.00005	<0.00005	**0.00027**	**<0.00727**	<0.00008	<0.0000755	**<0.00392**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	**0.0321 J**	<0.00013	<0.000123	**<0.00637**
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00037	0.0003	<0.0002	0.00046 J	0.00035	0.00071	<0.0001	<0.00094	**<0.0336**	<0.00037	<0.000349	**<0.0181**
Chrysene	*0.91*	*2*	0.003	<0.00007	<0.00007	0.00007 J	<0.00007	<0.00005	<0.00005	0.0011	<0.00727	<0.00008	<0.0000755	<0.00392
Dibenzofuran	*0.098*	*0.29*	**0.15**	**0.23**	**0.14**	**0.23**	0.079	0.0017	**0.13**	0.0088	**0.128**	<0.00008	<0.0000755	**0.136**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	0.0012	<0.00007	0.00007 J	<0.00007	<0.00005	<0.00005	<0.00005	<0.01	<0.00011	<0.000104	<0.00539
Fluoranthene	*0.98*	*2.9*	0.038	0.0025	0.0058	0.009 J	0.0049	0.001	0.0036	0.0099	0.0102 J	<0.00007	<0.000066	<0.00343
Fluorene	*0.98*	*2.9*	0.13	0.15	0.12	0.16	0.065	<0.00005	0.08	0.027	0.12	<0.00007	<0.000066	0.109
Naphthalene	*0.49*	*1.5*	**1**	**2.4**	**0.67**	**1.5**	0.45	<0.00005	**2.2**	0.068	**2.96 J**	0.00036 J	<0.0000755	**4.05**
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.01	<0.00011	<0.000104	<0.00539
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.00009	<0.00009	0.00009 J	<0.00009	<0.00005	<0.00005	<0.00005	<0.00909	<0.0001	<0.0000943	<0.0049
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.00008	<0.00008	0.00008 J	<0.00008	<0.00005	<0.00005	0.00017 J	**<0.0555**	<0.00061	<0.000575	**<0.0299**
Phenanthrene	*0.73*	*2.2*	0.17	0.041	0.049	0.061 J	0.037	<0.00005	0.039	0.036	0.0563	<0.00006	<0.0000566	0.0702
Phenol	*7.3*	*22*	0.0049	0.00029	0.0074	0.0065 J	0.00037	0.000077 J	0.0038	0.00074	<0.00364	<0.00004	<0.0000377	<0.00196
Pyrene	*0.73*	*2.2*	0.025	0.0012	0.0034	0.0042 J	0.0022	0.00073	0.0022	0.0069	<0.01	<0.00011	<0.000104	<0.00539
Metals														
Arsenic	*0.01*	*0.01*	**0.0545**											

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-58A 01/31/2018	MW-58A 03/19/2018	MW-58A 05/16/2018	MW-58A 01/23/2019	MW-58A 07/10/2019	MW-58A 01/08/2020	MW-59A 02/05/2009	MW-59A 01/20/2010	MW-59A 06/24/2010	MW-59A 01/20/2011	MW-59A 07/18/2011	MW-59A 02/06/2012
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001
Benzene	*0.005*	*0.005*	0.0048	**0.012**	**0.012**	0.0011	0.0049	**0.0053**	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001
Chlorobenzene	*0.1*	*0.1*	<0.0003	0.00054 J	<0.0015	0.00046 J	0.0008 J	0.00072 J	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001
Ethylbenzene	*0.7*	*0.7*	0.0066	0.038	0.035	0.0032	0.017	0.0098	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013
Toluene	*1*	*1*	0.00091 J	0.00063 J	0.0027 J	0.0014	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001
Vinyl chloride	*0.002*	*0.002*	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002					<0.001	<0.001
Xylenes (total)	*10*	*10*	0.012	0.068	0.015	0.005	0.028	0.028	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	0.0015 J	0.00053	<0.00004	0.0001 J	<0.00004	<0.00004	<0.00008	<0.00008	<0.00008	<0.00008	0.000066 J	<0.00005
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.00021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	0.038	0.045	**0.14**	0.000072 J	0.015	0.08	<0.00007	<0.00007	0.0002	0.0018	<0.00005	<0.00005
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.00047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Acenaphthene	*1.5*	*4.4*	0.1	0.17	0.19	0.023	0.11	0.27	<0.00009	<0.00009	0.0003	0.00079	<0.00005	<0.00005
Acenaphthylene	*1.5*	*4.4*	0.0012	0.001	0.0017	0.00038	0.00087	0.0015	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Anthracene	*7.3*	*22*	0.0055	0.008	0.011	0.002	0.062	0.018	<0.00007	<0.00007	0.00026	0.0004	<0.00005	<0.00005
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0005	0.000083 J	0.000083 J	<0.00005	0.00082	0.000091 J	<0.00007	<0.00007	<0.00007	0.00015 J	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.0003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00037	<0.000037	0.000098 J	<0.00007	<0.000037	<0.00011	0.0006	<0.00065	<0.00023	<0.00031	<0.00054	0.00015 J
Chrysene	*0.91*	*2*	<0.00021	0.000083 J	0.000082 J	0.00003 J	0.00084	0.000071 J	<0.00007	<0.00007	<0.00007	0.00014 J	<0.00005	<0.00005
Dibenzofuran	*0.098*	*0.29*	0.036	0.08	0.091	0.013	0.059	**0.13**	<0.00008	<0.00008	0.0007	0.00099	<0.00005	<0.00005
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.0002	<0.00002	<0.00002	0.000032 J	<0.00002	<0.00002	0.00077	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Fluoranthene	*0.98*	*2.9*	0.0065	0.0074	0.0067	0.002	0.02	0.0099	<0.00007	<0.00007	0.0005	0.0012	<0.00012	<0.00005
Fluorene	*0.98*	*2.9*	0.084	0.096	0.12	0.015	0.15	0.19	<0.00007	<0.00007	0.00045	0.00084	<0.00005	<0.00005
Naphthalene	*0.49*	*1.5*	0.0037	**0.95**	0.32	0.00042	0.46	**1.2**	<0.0001	<0.0001	0.00047	0.0066	<0.00005	<0.00005
Nitrobenzene	*0.049*	*0.15*	<0.00024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
Pentachlorophenol	*0.001*	*0.001*	<0.00079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005
Phenanthrene	*0.73*	*2.2*	0.024	0.042	0.038	0.0038	0.036	0.062	<0.00007	<0.00007	0.0017	0.0024	<0.00018	<0.00005
Phenol	*7.3*	*22*	0.00054 J	<0.000035	<0.000035	0.000074 J	<0.000035	<0.000035	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Pyrene	*0.73*	*2.2*	0.0031	0.0039	0.0036	0.00088	0.0099	0.005	<0.00007	<0.00007	0.00029	0.00059	<0.00005	<0.00005
Metals														
Arsenic	*0.01*	*0.01*	0.000713 J	0.00106 J	0.00143 J	0.00232	0.00748	0.000906 J						

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-59A 07/27/2012	MW-59A 01/31/2013	MW-59A 08/01/2013	MW-59A 01/16/2014	MW-59A 07/30/2014	MW-59A 01/29/2018	MW-59A 03/20/2018	MW-59A 05/24/2018	MW-59A 01/23/2019	MW-59A 07/17/2019	MW-59A 01/16/2020	MW-59D 02/05/2009
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005
Benzene	*0.005*	*0.005*	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0005
Ethylbenzene	*0.7*	*0.7*	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0005
Methylene chloride	*0.005*	*0.005*	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0011 J
Toluene	*1*	*1*	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.00064 J
Vinyl chloride	*0.002*	*0.002*	<0.0005	<0.00011	<0.00011	<0.00018	<0.00011	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Xylenes (total)	*10*	*10*	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.001
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	<0.000104	<0.000108	<0.000104	<0.000109	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00005	<0.000292	<0.000304	<0.000292	<0.000307	<0.00004	<0.000041	<0.00004	<0.00004	<0.00004	<0.00004	<0.00008
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	<0.000123	<0.000127	<0.000123	<0.000129	<0.000058	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058	<0.00009
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	<0.0000755	<0.0000784	<0.0000755	<0.0000792	<0.000042	<0.000043	<0.000042	<0.000042	<0.000042	<0.000042	<0.00007
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.0000755	<0.0000784	<0.0000755	<0.0000792	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00012
2-Methylnaphthalene	*0.098*	*0.29*	<0.00005	<0.000066	<0.0000686	<0.0000902	<0.0000693	0.00011	<0.000019	<0.000019	<0.000019	0.000036 J	<0.00016	0.00015 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.000783	<0.000814	<0.000783	<0.000822	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.00005	<0.000528	<0.000549	<0.000528	<0.000554	<0.000047	<0.000048	<0.000047	<0.000047	<0.000047	<0.000047	<0.00007
Acenaphthene	*1.5*	*4.4*	<0.00005	<0.0000755	<0.0000784	<0.0000831	<0.0000792	0.0001	<0.000028	<0.000027	<0.000027	<0.000027	<0.00029	0.00015 J
Acenaphthylene	*1.5*	*4.4*	<0.00005	<0.0000566	<0.0000588	<0.0000566	<0.0000594	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.00006
Anthracene	*7.3*	*22*	<0.00005	<0.0000472	0.0000519 J	0.000119 J	<0.0000495	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000027	<0.00007
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.0000755	<0.0000784	<0.0000755	<0.0000792	<0.00005	<0.000051	<0.00005	<0.00005	<0.00005	<0.00005	<0.00007
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	<0.0000755	<0.0000784	<0.0000755	<0.0000792	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	<0.000123	<0.000127	<0.000123	<0.000129	<0.00003	<0.000031	<0.00003	<0.00003	<0.00003	<0.00003	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0001	<0.000349	<0.000363	<0.000349	<0.000366	0.000094 J	<0.000038	<0.000037	<0.000037	<0.00005	<0.000037	0.006
Chrysene	*0.91*	*2*	<0.00005	<0.0000755	<0.0000784	<0.0000755	<0.0000792	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00007
Dibenzofuran	*0.098*	*0.29*	<0.00005	<0.0000755	<0.0000784	<0.000136	<0.0000792	0.00017	<0.00002	<0.00002	<0.00002	<0.00002	<0.00016	0.00014 J
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.000075	<0.000104	0.000169 J	0.000178 J	<0.000109	<0.00002	<0.00002	<0.00002	<0.00002	0.000064 J	<0.00002	0.0029
Fluoranthene	*0.98*	*2.9*	<0.00005	<0.000066	<0.0000686	0.000199 J	<0.0000693	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.000032	<0.00007
Fluorene	*0.98*	*2.9*	<0.00005	<0.000066	<0.0000686	0.000176 J	<0.0000693	0.00011	<0.000031	<0.00003	<0.00003	<0.00003	<0.00011	0.00013 J
Naphthalene	*0.49*	*1.5*	0.000051 J	<0.0000755	<0.0000784	<0.000381	0.000219 J	0.00068	<0.00002	<0.00002	<0.00002	<0.00012	<0.0012	0.0019
Nitrobenzene	*0.049*	*0.15*	<0.00005	<0.000104	<0.000108	<0.000104	<0.000109	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00009
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.0000943	<0.000098	<0.0000943	<0.000099	<0.000025	<0.000026	<0.000025	<0.000025	<0.000025	<0.000025	<0.00009
Pentachlorophenol	*0.001*	*0.001*	<0.00005	<0.000575	<0.000598	<0.000575	<0.000604	<0.000079	<0.000081	<0.000079	<0.000079	<0.000079	<0.000079	<0.00008
Phenanthrene	*0.73*	*2.2*	<0.00005	<0.0000566	0.000075 J	<0.000587	<0.0000594	0.00018	<0.000021	<0.000021	<0.000021	<0.000021	<0.00012	0.0002
Phenol	*7.3*	*22*	0.000065 J	<0.0000377	<0.0000392	<0.0000377	<0.0000396	<0.000035	<0.000036	0.000089 J	<0.000035	0.000058 J	<0.000035	<0.00007
Pyrene	*0.73*	*2.2*	<0.00005	<0.000104	<0.000108	0.00012 J	<0.000109	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000023	<0.00007
Metals														
Arsenic	*0.01*	*0.01*						0.00181 J	0.00131 J	**0.0101**	0.00243	0.00455	0.00368	

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-59D 02/05/2009 Duplicate	MW-59D 01/20/2010	MW-59D 01/20/2010 Duplicate	MW-59D 07/01/2010	MW-59D 07/01/2010 Duplicate	MW-59D 01/20/2011	MW-59D 07/27/2011	MW-59D 07/27/2011 Duplicate	MW-59D 02/14/2012	MW-59D 02/14/2012 Duplicate	MW-59D 07/23/2012	MW-59D 02/11/2013
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.00014
Benzene	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.00008
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.00012
Ethylbenzene	*0.7*	*0.7*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0011	<0.0011	<0.0005	<0.00011
Methylene chloride	*0.005*	*0.005*	0.0014 J	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.0013	<0.0013	<0.001	<0.00015
Toluene	*1*	*1*	0.0007 J	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.00015
Vinyl chloride	*0.002*	*0.002*										<0.001		
Xylenes (total)	*10*	*10*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0031	<0.0031	<0.0015	<0.00026
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000105
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000295
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000124
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.0000762
2-Chloronaphthalene	*2*	*5.8*	<0.00012	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000762
2-Methylnaphthalene	*0.098*	*0.29*	0.0003	<0.00007	<0.00007	<0.00007	<0.00007	0.00046	<0.00005	<0.00005	<0.00005	<0.00005	0.000071 J	<0.0000667
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00079
4-Nitrophenol	*0.049*	*0.15*	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000533
Acenaphthene	*1.5*	*4.4*	0.00014 J	<0.00009	<0.00009	<0.00009	<0.00009	0.00095	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000762
Acenaphthylene	*1.5*	*4.4*	<0.00006	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000571
Anthracene	*7.3*	*22*	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	0.00069	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000476
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	0.00027	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000762
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000762
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000124
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.0055	<0.00023	<0.00087	<0.00031	<0.00049	<0.0015	0.0011	0.0018	<0.00094	<0.00068	<0.00014	<0.000352
Chrysene	*0.91*	*2*	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	0.00024	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000762
Dibenzofuran	*0.098*	*0.29*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	0.0011	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000762
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	0.0023	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000105
Fluoranthene	*0.98*	*2.9*	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	0.0018	<0.00005	<0.00005	<0.00005	0.000075 J	<0.00005	<0.0000667
Fluorene	*0.98*	*2.9*	0.00012 J	<0.00007	<0.00007	<0.00007	<0.00007	0.00079	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000667
Naphthalene	*0.49*	*1.5*	0.0029	<0.0001	<0.0001	<0.00022	<0.0001	0.0034	<0.00005	<0.00005	<0.00005	<0.000064	<0.00036	<0.0000762
Nitrobenzene	*0.049*	*0.15*	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000105
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000952
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000581
Phenanthrene	*0.73*	*2.2*	0.00025	<0.00007	<0.00007	<0.00007	<0.00007	0.0037	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000571
Phenol	*7.3*	*22*	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00014 J	0.000087 J	<0.00005	<0.0000381
Pyrene	*0.73*	*2.2*	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	0.0011	<0.00005	<0.00005	<0.00005	0.000054 J	<0.00005	<0.000105
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-59D 02/11/2013 Duplicate	MW-59D 08/05/2013	MW-59D 08/05/2013 Duplicate	MW-59D 01/23/2014	MW-59D 01/23/2014 Duplicate	MW-59D 08/28/2014	MW-59D 08/28/2014 Duplicate	MW-59D 02/07/2018	MW-59D 02/07/2018 Duplicate	MW-59D 03/26/2018	MW-59D 03/26/2018 Duplicate	MW-59D 06/01/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00014	<0.00014	<0.00014	<0.0002	<0.0002	<0.00014	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.00008	<0.00008	<0.00008	<0.0002	<0.0002	0.000135 J	0.000114 J	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.00012	<0.00012	<0.00012	<0.00018	<0.00018	<0.00012	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.00011	<0.00011	<0.00011	<0.00019	<0.00019	<0.00011	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.00015	<0.00015	<0.00015	<0.00022	<0.00022	<0.00015	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.00015	<0.00015	<0.00015	<0.00017	<0.00017	0.000258 J	0.000249 J	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.00026	<0.00026	<0.00026	<0.00058	<0.00058	<0.00026	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000105	<0.00011	<0.00011	<0.000104	<0.000104	<0.00011	<0.00011	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.000295	<0.00031	<0.00031	<0.000292	<0.000292	<0.00031	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000124	<0.00013	<0.00013	<0.000123	<0.000123	<0.00013	<0.00013	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0000762	<0.00008	<0.00008	<0.0000755	<0.0000755	<0.00008	<0.00008	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.0000762	<0.00008	<0.00008	<0.0000755	<0.0000755	<0.00008	<0.00008	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	<0.0000667	0.00016 J	0.00007 J	<0.000066	<0.000066	0.000334 J	0.00007 J	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00079	<0.00083	<0.00083	<0.000783	<0.000783	<0.00083	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.000533	<0.00056	<0.00056	<0.000528	<0.000528	<0.00056	<0.00056	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	<0.0000762	<0.00008	<0.00008	<0.0000755	<0.0000755	<0.00008	<0.00008	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027
Acenaphthylene	*1.5*	*4.4*	<0.0000571	<0.00006	<0.00006	<0.0000566	<0.0000566	<0.00006	<0.00006	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	*7.3*	*22*	<0.0000476	<0.00005	<0.00005	<0.000425	<0.0000472	<0.00005	<0.00005	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0000762	<0.00008	<0.00008	<0.0000755	<0.0000755	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0000762	<0.00008	<0.00008	<0.0000755	<0.0000755	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.000124	<0.00013	<0.00013	<0.000123	<0.000123	<0.00013	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.000538	0.000805 J	0.000812 J	0.000425 J	0.000364 J	0.00306 J	0.00598 J	0.000063 J	0.000054 J	<0.000037	0.000095 J	0.00024
Chrysene	*0.91*	*2*	<0.0000762	<0.00008	<0.00008	<0.0000755	<0.0000755	<0.00008	<0.00008	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	<0.0000762	<0.00008	<0.00008	<0.0000755	<0.0000755	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002	0.000092 J
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.000105	<0.00011	<0.00011	<0.000825	<0.000827	<0.00011	<0.00011	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	<0.0000667	<0.00007	<0.00007	0.0000789 J	0.0000746 J	0.00018 J	0.00007 J	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Fluorene	*0.98*	*2.9*	<0.0000667	<0.00007	<0.00007	<0.000066	0.0000688 J	<0.00007	<0.00007	<0.00003	<0.00003	<0.00003	<0.00003	0.000064 J
Naphthalene	*0.49*	*1.5*	<0.0000762	0.00226 J	0.00008 J	<0.000727	<0.000796	0.00576 J	0.00008 J	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Nitrobenzene	*0.049*	*0.15*	<0.000105	<0.00011	<0.00011	<0.000104	<0.000104	<0.00011	<0.00011	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.0000952	<0.0001	<0.0001	<0.0000943	<0.0000943	<0.0001	<0.0001	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.000581	<0.00061	<0.00061	<0.000575	<0.000575	<0.00061	<0.00061	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	<0.0000571	<0.00006	<0.00006	<0.000455	<0.000464	0.00018 J	0.0000608 J	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Phenol	*7.3*	*22*	<0.0000381	<0.00004	<0.00004	<0.0000377	<0.0000377	<0.00004	<0.00004	<0.000035	<0.000035	<0.000035	<0.000035	0.00063 J
Pyrene	*0.73*	*2.2*	<0.000105	<0.00011	<0.00011	<0.000104	<0.000104	0.000131 J	<0.00011	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019
Metals														
Arsenic	*0.01*	*0.01*								<0.0004	<0.0004	<0.0004	<0.0004	0.00111 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-59D 06/01/2018 Duplicate	MW-59D 01/24/2019	MW-59D 01/24/2019 Duplicate	MW-59D 07/31/2019	MW-59D 07/31/2019 Duplicate	MW-59D 01/16/2020	MW-59D 01/16/2020 Duplicate	MW-60A 02/04/2009	MW-60A 01/20/2010	MW-60A 06/24/2010	MW-60A 01/19/2011	MW-60A 07/18/2011
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
Vinyl chloride	*0.002*	*0.002*											<0.0005	<0.001
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.001	<0.001	<0.001	<0.001	<0.0031
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	0.000083 J	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	0.00028	<0.00007	<0.00007	<0.00007	<0.00005
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005
Acenaphthene	*1.5*	*4.4*	0.00012	<0.000027	<0.000027	<0.000027	<0.000027	<0.000036	<0.000027	0.00045	<0.00009	<0.00009	<0.00009	<0.00005
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005
Anthracene	*7.3*	*22*	0.000024 J	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	0.00034	<0.00007	<0.00007	<0.00007	<0.00005
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00026	<0.000037	<0.000037	<0.000037	<0.000037	<0.000037	<0.000037	0.002	<0.0025	<0.0002	0.0031	<0.00017
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005
Dibenzofuran	*0.098*	*0.29*	0.00024 J	<0.00002	<0.00002	<0.00002	<0.00002	<0.000028	<0.00002	0.00035	<0.00008	<0.00008	<0.00008	<0.00005
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.0023	<0.00007	<0.00007	<0.00007	<0.00005
Fluoranthene	*0.98*	*2.9*	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00039	<0.00007	0.0003	0.00029	<0.00005
Fluorene	*0.98*	*2.9*	0.00017 J	<0.00003	<0.00003	<0.00003	<0.00003	<0.000031	<0.00003	0.00044	<0.00007	<0.00007	<0.00007	<0.00005
Naphthalene	*0.49*	*1.5*	0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00013	<0.00002	0.0095	<0.0001	0.0015	<0.0001	<0.00005
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005
Phenanthrene	*0.73*	*2.2*	0.00018	<0.000021	<0.000021	<0.000021	<0.000021	<0.000043	<0.000021	0.0011	<0.00007	<0.00007	<0.00007	<0.00005
Phenol	*7.3*	*22*	0.00097 J	<0.000035	<0.000035	0.00011 J	<0.000035	<0.000035	<0.000035	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005
Pyrene	*0.73*	*2.2*	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	0.00029	<0.00007	0.0002 J	0.00079	<0.00005
Metals														
Arsenic	*0.01*	*0.01*	0.00101 J	0.000765 J	0.000637 J	<0.0004	0.000502 J	0.000508 J	0.000478 J					

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-60A 02/07/2012	MW-60A 07/23/2012	MW-60A 02/14/2013	MW-60A 04/02/2013	MW-60A 08/02/2013	MW-60A 01/15/2014	MW-60A 07/16/2014	MW-60A 02/08/2018	MW-60A 03/20/2018	MW-60A 05/25/2018	MW-60A 01/11/2019	MW-60A 07/17/2019
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.001	<0.0005		<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.001	<0.0005		<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.001	<0.0005		<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0011	<0.0005		<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.0013	<0.001		<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.001	<0.0005		<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*	<0.001	<0.0005		<0.00011	<0.00011	<0.00018	<0.00011	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Xylenes (total)	*10*	*10*	<0.0031	<0.0015		<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	<0.00005	<0.00038	<0.000106	<0.000105	<0.000104	<0.000104	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00005	0.001	<0.00018	<0.000298	<0.000295	<0.000292	<0.000292	<0.00004	<0.000041	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	<0.00005	<0.00032	<0.000125	<0.000124	<0.000123	<0.000123	<0.000058	<0.000059	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	<0.00006	<0.00029	<0.0000769	<0.0000762	<0.0000755	<0.0000755	<0.000042	<0.000043	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.00005	<0.00019	<0.0000769	<0.0000762	<0.0000755	<0.0000755	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	<0.00005	0.0021	0.000146 J	<0.0000673	<0.0000667	0.000143 J	0.000516	<0.000019	<0.000019	<0.000019	<0.000019	0.000072 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00016	<0.000798	<0.00079	<0.000783	<0.000783	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00005	<0.00005	<0.00033	<0.000538	<0.000533	<0.000528	<0.000528	<0.000047	<0.000048	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	<0.00005	0.0012	<0.00016	<0.0000769	<0.0000762	0.000157 J	0.000167 J	<0.000027	<0.000028	<0.000027	<0.000027	<0.000027
Acenaphthylene	*1.5*	*4.4*	<0.00005	<0.00005	<0.00016	<0.0000577	<0.0000571	<0.0000566	<0.0000566	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	*7.3*	*22*	<0.00005	0.00027	<0.00044	<0.0000481	0.0000883 J	0.000158 J	<0.0000472	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00025	<0.0000769	<0.0000762	<0.0000755	<0.0000755	<0.00005	<0.000051	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	<0.00005	<0.00013	<0.0000769	<0.0000762	<0.0000755	<0.0000755	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	<0.00005	<0.00019	<0.000125	<0.000124	<0.000123	<0.000123	<0.00003	<0.000031	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00023	<0.0001	<0.00059	<0.000356	<0.000352	<0.000349	<0.000349	<0.000037	<0.000038	0.000076 J	<0.000092	<0.00055
Chrysene	*0.91*	*2*	<0.00005	<0.00005	<0.00024	<0.0000769	<0.0000762	<0.0000755	<0.0000755	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	<0.00005	0.00099	<0.00016	<0.0000769	<0.0000762	0.000145 J	0.000116 J	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00005	<0.000076	<0.00187	<0.000106	<0.000105	<0.000104	<0.000104	<0.00002	<0.00002	<0.00002	0.000064 J	0.000075 J
Fluoranthene	*0.98*	*2.9*	0.00028	0.0003	<0.00031	<0.0000673	<0.0000667	0.0000894 J	<0.000066	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Fluorene	*0.98*	*2.9*	0.00016 J	0.00089	<0.00012	<0.0000673	<0.0000667	0.000162 J	<0.000066	<0.00003	0.000054 J	<0.00003	<0.00003	<0.00003
Naphthalene	*0.49*	*1.5*	<0.00005	0.025	0.00043 J	<0.0000769	<0.0000762	0.000668 J	0.00653	<0.00002	<0.00002	<0.00002	<0.00002	<0.00013
Nitrobenzene	*0.049*	*0.15*	<0.00005	<0.00005	<0.0002	<0.000106	<0.000105	<0.000104	<0.000104	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.00005	<0.00033	<0.0000962	<0.0000952	<0.0000943	<0.0000943	<0.000025	<0.000026	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00005	<0.00005	<0.00096	<0.000587	<0.000581	<0.000575	<0.000575	<0.000079	<0.000081	<0.000079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	<0.00005	0.0015	<0.00029	<0.0000577	<0.0000571	0.000345 J	<0.0000566	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Phenol	*7.3*	*22*	<0.00005	<0.00005	0.000275 J	<0.0000385	<0.0000381	<0.0000377	<0.0000377	<0.000035	<0.000036	<0.000035	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	0.0013	0.00033	<0.00033	<0.000106	<0.000105	<0.000104	<0.000104	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019
Metals														
Arsenic	*0.01*	*0.01*								0.000649 J	0.000706 J	0.000636 J	0.00453	0.00044 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-60AR 03/20/2020	MW-60AR 06/01/2020	MW-61A 02/03/2009	MW-61A 01/20/2010	MW-61A 07/01/2010	MW-61A 01/27/2011	MW-61A 07/21/2011	MW-61A 02/07/2012	MW-61A 07/27/2012	MW-61A 04/02/2013	MW-61A 08/01/2013	MW-61A 01/23/2014
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017
Vinyl chloride	*0.002*	*0.002*							<0.001	<0.001	<0.0005	<0.00011	<0.00011	<0.00018
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.000106	<0.000105	<0.000104
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000298	<0.000295	<0.000292
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000125	<0.000124	<0.000123
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000769	<0.0000762	<0.0000755
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000769	<0.0000762	<0.0000755
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	0.00041	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000673	<0.0000667	<0.000066
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.000798	<0.00079	<0.000783
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000538	<0.000533	<0.000528
Acenaphthene	*1.5*	*4.4*	<0.000027	<0.000027	0.00017 J	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000769	<0.0000762	<0.0000755
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000577	<0.0000571	<0.0000566
Anthracene	*7.3*	*22*	<0.000014	0.000095 J	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000481	<0.0000476	<0.000434
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000769	<0.0000762	<0.0000755
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000769	<0.0000762	<0.0000755
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000125	<0.000124	<0.000123
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.000063 J	0.000077 J	0.0017	<0.002	<0.0021	<0.0002	0.00023	0.00038	0.00027	<0.000356	<0.000352	0.00163 J
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000769	<0.0000762	<0.0000755
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000769	<0.0000762	<0.0000755
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	0.0002	0.011	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000106	<0.000105	<0.000827
Fluoranthene	*0.98*	*2.9*	<0.00001	<0.00001	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000673	<0.0000667	0.0000806 J
Fluorene	*0.98*	*2.9*	<0.00003	<0.00003	0.00011 J	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000673	<0.0000667	<0.000066
Naphthalene	*0.49*	*1.5*	<0.00002	<0.00002	0.0066	<0.0001	<0.00018	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000769	<0.00012	<0.000668
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000106	<0.000105	<0.000104
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000962	<0.0000952	<0.0000943
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.00008	<0.00008	<0.00032	<0.00008	<0.00005	<0.00005	<0.00005	<0.000587	<0.000581	<0.000575
Phenanthrene	*0.73*	*2.2*	<0.000021	<0.000021	0.00021	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00016 J	<0.0000577	0.0000586 J	<0.00046
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000385	<0.0000381	<0.0000377
Pyrene	*0.73*	*2.2*	<0.000019	<0.000019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000106	<0.000105	<0.000104
Metals														
Arsenic	*0.01*	*0.01*	0.00189 J	0.00369										

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-61A 08/28/2014	MW-61A 02/08/2018	MW-61A 03/20/2018	MW-61A 05/25/2018	MW-61A 01/23/2019	MW-61A 07/17/2019	MW-61A 01/16/2020	MW-62B 02/04/2009	MW-62B 01/21/2010	MW-62B 07/14/2010	MW-62B 01/27/2011	MW-62B 07/27/2011
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
Benzene	*0.005*	*0.005*	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0043 J
Chlorobenzene	*0.1*	*0.1*	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
Ethylbenzene	*0.7*	*0.7*	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.00071 J	<0.0005	<0.0005	<0.0005	0.041
Methylene chloride	*0.005*	*0.005*	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013
Toluene	*1*	*1*	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0095
Vinyl chloride	*0.002*	*0.002*	<0.00011	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002					
Xylenes (total)	*10*	*10*	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.001	<0.001	<0.001	<0.001	0.025
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00011	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00013	<0.000058	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00008	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.00008	<0.000021	<0.000021	0.000021 J	<0.000021	<0.000021	<0.000021	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	<0.00007	<0.000019	<0.000019	0.000019 J	<0.000019	<0.000019	<0.000019	0.00012 J	0.0016	0.00064	<0.00007	<0.00005
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.00056	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005
Acenaphthene	*1.5*	*4.4*	<0.00008	<0.000027	<0.000027	0.000027 J	<0.000027	<0.000027	<0.000052	0.0078	0.039	0.00041	<0.00009	0.21
Acenaphthylene	*1.5*	*4.4*	<0.00006	<0.000015	<0.000015	0.000015 J	<0.000015	<0.000015	<0.000015	<0.00006	0.00066	<0.00007	<0.00007	0.0026
Anthracene	*7.3*	*22*	<0.00005	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	0.00024	0.0011	<0.00007	<0.00007	0.013
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00008	<0.00005	<0.000051	<0.00005	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.000536 J	<0.000037	<0.000037	0.000054 J	<0.000037	<0.00037	0.000081 J	0.00041	<0.00098	0.0016	0.00022	0.00042
Chrysene	*0.91*	*2*	<0.00008	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005
Dibenzofuran	*0.098*	*0.29*	<0.00008	<0.00002	<0.00002	0.00002 J	<0.00002	<0.00002	<0.00002	0.0024	0.013	0.00034	<0.00008	**0.15**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00011	<0.00002	<0.00002	<0.00002	<0.00002	0.000056 J	<0.00002	0.00065	<0.00007	<0.00007	<0.00007	<0.00005
Fluoranthene	*0.98*	*2.9*	<0.00007	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00006	0.00012 J	0.0011	<0.00007	0.00014 J	0.0079
Fluorene	*0.98*	*2.9*	<0.00007	<0.00003	<0.00003	0.00003 J	<0.00003	<0.00003	<0.00003	0.0012	0.015	0.00016 J	<0.00007	0.058
Naphthalene	*0.49*	*1.5*	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00021	0.0027	0.00028	0.0096	<0.0001	0.035
Nitrobenzene	*0.049*	*0.15*	<0.00011	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.0001	<0.000025	<0.000025	0.00015 J	<0.000025	<0.000025	<0.000025	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005
Pentachlorophenol	*0.001*	*0.001*	<0.00061	<0.000079	<0.00008	<0.000079	<0.000079	<0.000079	<0.000079	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005
Phenanthrene	*0.73*	*2.2*	<0.00006	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0001	0.00087	0.0025	0.00025	<0.00007	0.035
Phenol	*7.3*	*22*	<0.00004	<0.000035	<0.000035	<0.000035	<0.000035	0.00011 J	<0.000035	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005
Pyrene	*0.73*	*2.2*	<0.00011	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000059	<0.00007	0.00047	<0.00007	0.000077 J	0.0033
Metals														
Arsenic	*0.01*	*0.01*		0.000743 J	0.00116 J	0.00172 J	0.00069 J	0.00117 J	0.00107 J					

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-62B 08/25/2011	MW-62B 02/08/2012	MW-62B 07/26/2012	MW-62B 02/11/2013	MW-62B 08/02/2013	MW-62B 01/29/2014	MW-62B 07/29/2014	MW-62B 01/24/2018	MW-62B 03/20/2018	MW-62B 05/24/2018	MW-62B 01/23/2019	MW-62B 07/16/2019
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*		<0.001	<0.0005	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*		<0.001	0.002 J	<0.00008	<0.00008	<0.00008	<0.00008	<0.0002	<0.0002	0.0021	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*		<0.001	<0.0005	<0.00012	<0.00012	<0.00012	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*		<0.0011	0.0021 J	<0.00011	<0.00011	<0.00011	<0.00011	<0.0003	<0.0003	0.013	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*		<0.0013	<0.001	<0.00015	<0.00015	<0.00015	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*		<0.001	0.0012 J	<0.00015	<0.00015	<0.00015	<0.00015	<0.0002	<0.0002	0.003	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*		<0.0031	0.0053 J	<0.00026	<0.00026	<0.00026	<0.00026	<0.0003	<0.0003	0.014	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*		<0.00005	<0.00005	<0.0001	<0.000105	<0.000104	<0.000109	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*		<0.00005	<0.00005	<0.000282	<0.000295	<0.000292	<0.000307	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*		<0.00005	<0.00005	<0.000118	<0.000124	<0.000123	<0.000129	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*		<0.00006	<0.00006	<0.0000727	<0.0000762	<0.0000755	<0.0000792	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*		<0.00005	<0.00005	<0.0000727	<0.0000762	<0.0000755	<0.0000792	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*		<0.00005	<0.00006	<0.000174	<0.0000667	<0.000066	<0.0000693	<0.000019	<0.000019	0.00011	<0.000019	0.000096 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*		<0.00008	<0.00008	<0.000755	<0.00079	<0.000783	<0.000822	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*		<0.00005	<0.00005	<0.000509	<0.000533	<0.000528	<0.000554	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*		0.026	0.085	0.000242 J	<0.0000762	<0.0000755	0.000235 J	0.00006 J	0.023	0.11	<0.000027	0.000099 J
Acenaphthylene	*1.5*	*4.4*		0.0013	0.00084	0.000112 J	<0.0000571	<0.0000566	<0.0000594	0.000061 J	0.00063	0.0013	<0.000015	<0.000015
Anthracene	*7.3*	*22*		<0.00005	0.0032	0.000723	<0.0000476	<0.0000472	0.0000699 J	0.00036	0.00051	0.0044	<0.000014	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*		<0.00005	<0.00005	<0.0000727	<0.0000762	<0.0000755	<0.0000792	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	<0.00005	<0.00005	<0.0000727	<0.0000762	<0.0000755	<0.0000792	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*		<0.00005	<0.00005	<0.000118	<0.000124	<0.000123	<0.000129	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*		<0.00029	0.00013 J	<0.000336	<0.000352	<0.000349	<0.000366	0.00026	0.00018 J	0.00013 J	<0.000037	<0.000037
Chrysene	*0.91*	*2*		<0.00005	<0.00005	<0.0000727	<0.0000762	<0.0000755	<0.0000792	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	**0.23**	0.00012 J	0.038	0.000174 J	<0.0000762	<0.0000755	0.0000916 J	<0.00002	0.0031	0.048	<0.00002	0.000048 J
Di-n-butylphthalate (DBP)	*2.4*	*7.3*		<0.00005	<0.000078	<0.0001	0.000107 J	<0.000104	<0.000109	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*		0.00053	0.004	0.00033 J	<0.0000667	<0.000066	<0.0000693	0.00052	0.0015	0.0041	<0.00001	0.000017 J
Fluorene	*0.98*	*2.9*		0.0002	0.0087 J	<0.0000636	<0.0000667	<0.000066	0.000126 J	0.00015	0.0047	0.034	<0.00003	0.000036 J
Naphthalene	*0.49*	*1.5*		<0.00021	0.0056	<0.00129	<0.0000762	<0.0000755	<0.0000792	<0.00002	<0.00002	0.038	<0.00002	0.00028
Nitrobenzene	*0.049*	*0.15*		<0.00005	<0.00005	<0.0001	<0.000105	<0.000104	<0.000109	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*		<0.00005	<0.00005	<0.0000909	<0.0000952	<0.0000943	<0.000099	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*		<0.00005	<0.00005	<0.000555	<0.000581	<0.000575	<0.000604	<0.000079	0.00033	<0.000079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*		0.00014 J	0.0026	<0.000472	<0.0000571	<0.0000566	<0.000144	<0.000021	0.00023	0.0083	<0.000021	0.000021 J
Phenol	*7.3*	*22*		0.000053 J	<0.00005	<0.0000364	<0.0000381	<0.0000377	<0.0000396	<0.000035	<0.000035	<0.000035	<0.000035	0.00056
Pyrene	*0.73*	*2.2*		0.00037	0.0021	0.000387 J	<0.000105	<0.000104	<0.000109	0.00039	0.00077	0.002	<0.000019	<0.000019
Metals														
Arsenic	*0.01*	*0.01*								0.00842	**0.0173**	**0.028**	<0.0004	0.00194 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-62B 01/27/2020	MW-64A 02/04/2009	MW-64A 01/21/2010	MW-64A 07/14/2010	MW-64A 01/27/2011	MW-64A 07/27/2011	MW-64A 02/08/2012	MW-64A 07/25/2012	MW-64A 04/01/2013	MW-64A 08/06/2013	MW-64A 01/29/2014	MW-64A 07/29/2014
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.00014	<0.00014
Benzene	*0.005*	*0.005*	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	0.000154 J	<0.00008
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00012	<0.00012
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00011	<0.00011
Methylene chloride	*0.005*	*0.005*	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00015	<0.00015
Toluene	*1*	*1*	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00015	<0.00015
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.0003	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00026	<0.00026
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.000106	<0.00011	<0.000104	<0.000108
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000298	<0.00031	<0.000292	<0.000304
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000125	<0.00013	<0.000123	<0.000127
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000769	<0.00008	<0.0000755	<0.0000784
2-Chloronaphthalene	*2*	*5.8*	0.00016 J	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000769	<0.00008	<0.0000755	<0.0000784
2-Methylnaphthalene	*0.098*	*0.29*	0.00011	0.00014 J	<0.00007	<0.00007	<0.00007	<0.00005	0.000053 J	<0.00005	<0.0000673	<0.00007	<0.000066	<0.0000686
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.000798	<0.00083	<0.000783	<0.000814
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000538	<0.00056	<0.000528	<0.000549
Acenaphthene	*1.5*	*4.4*	0.04	0.00029	<0.00009	<0.00009	<0.00009	<0.00005	0.0096	<0.00005	<0.0000769	<0.00008	<0.0000755	<0.0000784
Acenaphthylene	*1.5*	*4.4*	0.00029	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	0.0005	<0.00005	<0.0000577	<0.00006	<0.0000566	<0.0000588
Anthracene	*7.3*	*22*	0.00096	0.00016 J	<0.00007	<0.00007	<0.00007	0.00036	<0.00005	<0.00005	0.000158 J	<0.00005	<0.0000472	0.000127 J
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000769	<0.00008	<0.0000755	<0.0000784
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000769	<0.00008	<0.0000755	<0.0000784
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000125	<0.00013	<0.000123	<0.000127
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.000095 J	0.0004	<0.0016	0.002	0.00049	0.00076	<0.00013	0.00021	<0.000356	<0.00037	<0.000349	<0.000363
Chrysene	*0.91*	*2*	0.000027 J	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000769	<0.00008	<0.0000755	<0.0000784
Dibenzofuran	*0.098*	*0.29*	0.0042	0.00012 J	<0.00008	<0.00008	<0.00008	0.0013	<0.00005	<0.00005	<0.0000769	<0.00008	<0.0000755	<0.0000784
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	0.00014 J	0.02	<0.00007	<0.00007	<0.00007	0.000079 J	<0.00005	0.000084 J	<0.000106	<0.00011	0.000117 J	<0.000108
Fluoranthene	*0.98*	*2.9*	0.002	0.00076	<0.00007	<0.00007	<0.00007	0.00057	0.00021	<0.00005	<0.0000673	<0.00007	<0.000066	<0.0000686
Fluorene	*0.98*	*2.9*	0.011	0.00018 J	<0.00007	<0.00007	<0.00007	<0.00005	0.00012 J	<0.00005	<0.0000673	<0.00007	<0.000066	<0.0000686
Naphthalene	*0.49*	*1.5*	0.001	0.00092	<0.0001	<0.0001	<0.0001	<0.00005	<0.00063	<0.00005	<0.0000769	<0.00008	<0.0000755	<0.000317
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000106	<0.00011	<0.000104	<0.000108
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000962	<0.0001	<0.0000943	<0.000098
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000587	<0.00061	<0.000575	<0.000598
Phenanthrene	*0.73*	*2.2*	0.00087	0.00055	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000577	<0.00006	<0.0000566	<0.0000588
Phenol	*7.3*	*22*	<0.000035	<0.00007	<0.00007	<0.00007	<0.00007	0.000077 J	<0.00005	<0.00005	<0.0000385	<0.00004	<0.0000377	<0.0000392
Pyrene	*0.73*	*2.2*	0.0013	0.00063	<0.00007	<0.00007	<0.00007	0.00042	0.00013 J	<0.00005	<0.000106	<0.00011	<0.000104	<0.000108
Metals														
Arsenic	*0.01*	*0.01*	**0.0161**											

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-64A 01/31/2018	MW-64A 03/25/2018	MW-64A 05/31/2018	MW-64A 01/23/2019	MW-64A 07/11/2019	MW-64A 01/27/2020	MW-65D 02/05/2009	MW-65D 01/21/2010	MW-65D 07/01/2010	MW-65D 01/26/2011	MW-65D 07/27/2011	MW-65D 02/14/2012
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	0.0013 J	<0.001	<0.001
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.00095 J	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	0.00037	0.00012 J	<0.00007	0.00014 J	<0.00007	<0.00005	<0.00005
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Acenaphthene	*1.5*	*4.4*	<0.000027	0.035	<0.000027	<0.000027	0.0003	0.00016	0.00019 J	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
Acenaphthylene	*1.5*	*4.4*	<0.000015	0.00086	<0.000015	<0.000015	<0.000015	<0.000015	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Anthracene	*7.3*	*22*	<0.000014	0.00056	<0.000014	<0.000014	<0.000014	0.000096 J	0.000078 J	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0001	<0.000037	0.00023	<0.000037	<0.000037	0.00031	0.0019	<0.0027	<0.001	0.001	0.001	<0.00013
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Dibenzofuran	*0.098*	*0.29*	0.00003 J	0.00038	<0.00002	<0.00002	<0.00002	0.0001 J	0.00016 J	0.00012 J	<0.00008	<0.00008	<0.00005	<0.00005
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.000079 J	0.00029	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Fluoranthene	*0.98*	*2.9*	<0.00001	0.00095	<0.00001	<0.00001	<0.00001	0.00028	0.000097 J	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Fluorene	*0.98*	*2.9*	<0.00003	0.0013	<0.00003	<0.00003	0.000031 J	0.000082 J	0.00016 J	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Naphthalene	*0.49*	*1.5*	<0.000094	0.00058	<0.00002	<0.00002	<0.00033	0.002	0.00051	0.00026	<0.00059	0.00019 J	<0.00005	<0.00005
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005
Phenanthrene	*0.73*	*2.2*	0.000032 J	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.00014 J	<0.00007	<0.00007	<0.00007	0.000065 J	<0.00005
Phenol	*7.3*	*22*	<0.000035	<0.000035	0.00051	<0.000035	<0.000035	<0.000035	<0.00007	0.0015	<0.00007	<0.00007	0.000051 J	<0.00005
Pyrene	*0.73*	*2.2*	<0.000019	0.00059	<0.000019	<0.000019	0.00015	0.00015	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Metals														
Arsenic	*0.01*	*0.01*	0.000419 J	**0.0117**	0.00111 J	<0.0004	0.00939	0.00126 J						

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-65D 07/23/2012	MW-65D 02/11/2013	MW-65D 08/05/2013	MW-65D 01/21/2014	MW-65D 08/28/2014	MW-65D 02/07/2018	MW-65D 03/26/2018	MW-65D 06/01/2018	MW-65D 01/24/2019	MW-65D 07/31/2019	MW-65D 01/16/2020	MW-66D 02/05/2009
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005
Benzene	*0.005*	*0.005*	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0005
Ethylbenzene	*0.7*	*0.7*	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0005
Methylene chloride	*0.005*	*0.005*	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005
Toluene	*1*	*1*	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.001
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	<0.000105	<0.000108	<0.000104	<0.00011	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00005	<0.000295	<0.000304	<0.000292	<0.00031	<0.00004	<0.00004	<0.00004	<0.00009	<0.00004	<0.00004	<0.00008
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	<0.000124	<0.000127	<0.000123	<0.00013	<0.000058	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058	<0.00009
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	<0.0000762	<0.0000784	<0.0000755	<0.00008	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.00007
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.0000762	<0.0000784	<0.0000755	<0.00008	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00012
2-Methylnaphthalene	*0.098*	*0.29*	<0.00005	<0.0000667	<0.0000686	0.0000808 J	<0.00007	<0.000019	<0.000019	0.000089 J	0.00016	<0.000019	<0.000019	0.00062
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00079	<0.000814	<0.000783	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.00005	<0.000533	<0.000549	<0.000528	<0.00056	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00007
Acenaphthene	*1.5*	*4.4*	<0.00005	<0.0000762	<0.0000784	<0.0000755	<0.00008	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	0.0004
Acenaphthylene	*1.5*	*4.4*	<0.00005	<0.0000571	<0.0000588	<0.0000566	<0.00006	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.00006
Anthracene	*7.3*	*22*	<0.00005	<0.0000476	<0.000049	0.0000574 J	<0.00005	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	0.00015 J
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.0000762	<0.0000784	<0.0000755	<0.00008	<0.00005	<0.000051	<0.00005	<0.00005	<0.00005	<0.00005	<0.00007
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	<0.0000762	<0.0000784	<0.0000755	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	<0.000124	<0.000127	<0.000123	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00025	0.000593	<0.000363	<0.000349	0.00244	<0.000037	<0.000037	0.0002 J	0.00006 J	0.00016 J	0.00026	**0.0064**
Chrysene	*0.91*	*2*	<0.00005	<0.0000762	<0.0000784	<0.0000755	<0.00008	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00007
Dibenzofuran	*0.098*	*0.29*	<0.00005	<0.0000762	<0.0000784	<0.0000755	<0.00008	<0.00002	<0.00002	0.000061 J	0.000039 J	<0.00002	<0.00002	0.00036
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00005	0.000135 J	0.000148 J	<0.000104	<0.00011	<0.00002	<0.00002	0.000022 J	<0.00002	<0.00002	<0.00002	0.00044
Fluoranthene	*0.98*	*2.9*	<0.00005	<0.0000667	<0.0000686	0.000117 J	<0.00007	<0.00001	<0.00001	0.000013 J	0.000027 J	<0.00001	<0.00001	0.00026
Fluorene	*0.98*	*2.9*	<0.00005	<0.0000667	<0.0000686	<0.000066	<0.00007	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	0.00033
Naphthalene	*0.49*	*1.5*	<0.000094	<0.0000762	<0.0000784	0.000529 J	0.00071	<0.00002	<0.00002	0.00029	<0.0026	<0.00002	<0.00002	0.0058
Nitrobenzene	*0.049*	*0.15*	<0.00005	<0.000105	<0.000108	<0.000104	<0.00011	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00009
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.0000952	<0.000098	<0.0000943	<0.0001	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00009
Pentachlorophenol	*0.001*	*0.001*	<0.00005	<0.000581	<0.000598	<0.000575	<0.00061	<0.000079	<0.00008	<0.000079	<0.000079	<0.000079	<0.000079	<0.00008
Phenanthrene	*0.73*	*2.2*	<0.00005	<0.0000571	0.000093 J	0.000294 J	<0.00006	<0.000021	<0.000021	0.000035 J	<0.000021	<0.000021	<0.000021	0.00073
Phenol	*7.3*	*22*	<0.00005	<0.0000381	<0.0000392	<0.0000377	<0.00004	<0.000035	<0.000035	<0.000035	<0.00019	<0.000035	<0.000035	<0.00007
Pyrene	*0.73*	*2.2*	<0.00005	<0.000105	<0.000108	<0.000104	<0.00011	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	0.00017 J
Metals														
Arsenic	*0.01*	*0.01*						<0.0004	0.00761	0.00292	0.00202	0.00135 J	0.000507 J	

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-66D 01/20/2010	MW-66D 07/01/2010	MW-66D 07/27/2011	MW-66D 02/14/2012	MW-66D 07/23/2012	MW-66D 04/02/2013	MW-66D 08/05/2013	MW-66D 01/29/2014	MW-66D 08/28/2014	MW-66D 10/03/2014	MW-66D 02/07/2018	MW-66D 03/26/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.00014	<0.00014		<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.00008	<0.00008		<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00012	<0.00012		<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00011	<0.00011		<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00015	<0.00015		<0.001	<0.001
Toluene	*1*	*1*	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00015	<0.00015		<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00026	<0.00026		<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.000106	<0.00011	<0.000104	<0.000109	<0.000107	<0.00021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000298	<0.00031	<0.000292	<0.000307	<0.000301	<0.0004	<0.000041
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000125	<0.00013	<0.000123	<0.000129	<0.000126	<0.00058	<0.000059
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000769	<0.00008	<0.0000755	<0.0000792	<0.0000777	<0.00042	<0.000043
2-Chloronaphthalene	*2*	*5.8*	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000769	<0.00008	<0.0000755	<0.0000792	<0.0000777	<0.00021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	<0.00007	<0.00007	<0.00005	<0.00005	0.000085 J	<0.0000673	<0.00007	<0.000066	0.000211 J	<0.000068	<0.00019	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.000798	<0.00083	<0.000783	<0.000822	<0.000806	<0.0002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000538	<0.00056	<0.000528	<0.000554	<0.000544	<0.00047	<0.000048
Acenaphthene	*1.5*	*4.4*	<0.00009	<0.00009	<0.00005	<0.00005	0.000054 J	<0.0000769	<0.00008	0.000145 J	0.000141 J	<0.0000777	<0.00027	<0.000028
Acenaphthylene	*1.5*	*4.4*	<0.00007	<0.00007	<0.00005	<0.00005	0.000081 J	<0.0000577	<0.00006	<0.0000566	0.000411 J	0.000206 J	<0.00015	<0.000015
Anthracene	*7.3*	*22*	<0.00007	<0.00007	0.00022	0.00027	0.00059	<0.0000481	<0.00005	<0.0000472	0.00304	0.00256	<0.00014	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00007	<0.00007	0.00011 J	0.00012 J	0.00036	<0.0000769	<0.00008	<0.0000755	0.00041 J	0.000245 J	<0.0005	<0.000051
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00008	<0.00008	0.00016 J	0.00013 J	**0.00067**	<0.0000769	<0.00008	<0.0000755	**0.000436 J**	**0.000439 J**	<0.0002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000125	<0.00013	<0.000123	<0.000129	<0.000126	<0.0003	<0.000031
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0028	<0.00096	0.0019	<0.0002	0.0032	<0.000356	<0.00037	<0.000349	0.000585	0.000415 J	<0.00037	<0.000038
Chrysene	*0.91*	*2*	<0.00007	<0.00007	0.00046	0.00052	0.0018	<0.0000769	<0.00008	<0.0000755	0.00104	0.000582	<0.00021	<0.000021
Dibenzofuran	*0.098*	*0.29*	<0.00008	0.000083 J	<0.00005	<0.00005	0.000066 J	<0.0000769	<0.00008	<0.0000755	0.000133 J	<0.0000777	<0.0002	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	0.000086 J	<0.00007	0.000056 J	<0.00005	<0.000078	<0.000106	<0.00011	<0.000104	0.000121 J	<0.000107	<0.0002	<0.00002
Fluoranthene	*0.98*	*2.9*	<0.00007	<0.00007	0.00035	0.00057	0.0019	<0.0000673	<0.00007	<0.000066	0.00116	0.000346 J	<0.0001	<0.00001
Fluorene	*0.98*	*2.9*	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000673	<0.00007	<0.000066	0.000143 J	<0.000068	<0.0003	<0.000031
Naphthalene	*0.49*	*1.5*	<0.0001	<0.0002	<0.00005	<0.00005	<0.0004	<0.0000769	0.0000999 J	0.000367 J	0.00118	<0.0000777	<0.0002	<0.00002
Nitrobenzene	*0.049*	*0.15*	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000106	<0.00011	<0.000104	<0.000109	<0.000107	<0.00024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000962	<0.0001	<0.0000943	<0.000099	<0.0000971	<0.00025	<0.000026
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.00008	0.000084 J	<0.00005	<0.00005	<0.000587	<0.00061	<0.000575	<0.000604	<0.000592	<0.00079	<0.000081
Phenanthrene	*0.73*	*2.2*	0.00012 J	<0.00007	0.00011 J	0.00011 J	0.00058	<0.0000577	<0.00006	0.000132 J	0.000295 J	0.0000729 J	<0.00021	<0.000021
Phenol	*7.3*	*22*	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000385	<0.00004	<0.0000377	<0.0000396	<0.0000388	<0.00035	<0.000036
Pyrene	*0.73*	*2.2*	<0.00007	<0.00007	0.00036	0.00051	0.0019	<0.000106	<0.00011	<0.000104	0.00118	0.000388 J	<0.00019	<0.000019
Metals														
Arsenic	*0.01*	*0.01*											0.000711 J	0.00663

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-66D 06/01/2018	MW-66D 01/24/2019	MW-66D 07/31/2019	MW-66D 01/16/2020	MW-68A 05/29/2019	MW-68A 05/29/2019 Duplicate	MW-68A 07/18/2019	MW-68A 01/17/2020	MW-68B 02/16/2012	MW-68B 07/16/2012	MW-68B 02/06/2013	MW-68B 08/08/2013
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.005	<0.005	**<0.014**	**<0.014**
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	**2.7**	**2.4**	**2.35**	**2.88**
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.005	<0.005	0.0273 J	<0.012
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.45	0.49	0.449	0.55
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	**<0.0065**	**<0.01**	**<0.015**	**0.101**
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.91	0.93	0.701	0.625
Vinyl chloride	*0.002*	*0.002*												**<0.011**
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	1.2	1.3	1.04	1.28
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00005	<0.00025	**<0.00524**	**<0.00519**
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	0.19	0.27	0.273	<0.0146
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000059	<0.000058	<0.000058	<0.00005	<0.00025	**<0.00619**	**<0.00613**
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.00006	<0.0003	**<0.00381**	**<0.00377**
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00005	<0.00025	<0.00381	<0.00377
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	<0.000019	<0.000095	<0.000019	0.000026 J	0.00012	0.000048 J	**0.66**	**1.3**	**0.952**	**1.41**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.0004	**<0.0395**	**<0.0392**
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00005	<0.00025	<0.0267	<0.0264
Acenaphthene	*1.5*	*4.4*	<0.000027	<0.000027	<0.000027	<0.000027	0.0012	0.0011	0.0019	0.0003	0.15	0.23	0.261	0.304
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	0.000054 J	0.0023	0.003	<0.00286	<0.00283
Anthracene	*7.3*	*22*	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	0.000028 J	0.000059 J	0.046	0.034	0.0194 J	0.023 J
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000051	<0.00005	<0.00005	0.006	0.0054	<0.00381	<0.00377
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	**0.0017**	**0.0016**	**<0.00381**	**<0.00377**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00005	<0.00025	**<0.00619**	**<0.00613**
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00019 J	0.00017 J	0.00022	0.000046 J	0.00015 J	0.000074 J	0.00024	<0.000061	<0.0001	<0.0005	**<0.0176**	**<0.0175**
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.0052	0.005	<0.00381	<0.00377
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.000082 J	<0.00002	**0.19**	**0.3**	**0.26**	**0.325**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.00002	<0.00002	0.00087	0.00064	0.00015 J	0.000034 J	<0.00005	<0.00025	<0.00524	<0.00519
Fluoranthene	*0.98*	*2.9*	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00013	0.05	0.044	<0.00333	0.00764 J
Fluorene	*0.98*	*2.9*	<0.00003	<0.00003	<0.00003	<0.00003	0.000044 J	0.000042 J	0.00012	0.000069 J	0.096	0.13	0.118	0.154
Naphthalene	*0.49*	*1.5*	<0.00002	<0.00002	<0.00002	<0.00013	0.00019	0.00025	0.00035	<0.00022	**14**	**26**	**11.8**	**31.2**
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00005	<0.00025	<0.00524	<0.00519
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	0.0011	<0.00025	<0.00476	<0.00472
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.00008	<0.000079	<0.000079	<0.00005	<0.00025	**<0.029**	**<0.0288**
Phenanthrene	*0.73*	*2.2*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.000062 J	0.00016	0.19	0.24	0.12	0.136
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.000035	<0.000035	0.000041 J	<0.000035	<0.000035	<0.000035	0.035	0.058	0.0421	0.0795
Pyrene	*0.73*	*2.2*	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	0.000068 J	0.031	0.024	<0.00524	<0.00519
Metals														
Arsenic	*0.01*	*0.01*	0.00223	0.00204	0.00124 J	0.00138 J	0.00966	0.00894	**0.0353**	**0.0423**				

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-68B 01/22/2014	MW-68B 01/22/2014 Duplicate	MW-68B 07/24/2014	MW-68B 07/24/2014 Duplicate	MW-68B 01/29/2018	MW-68B 01/29/2018 Duplicate	MW-68B 03/21/2018	MW-68B 03/21/2018 Duplicate	MW-68B 06/06/2018	MW-68B 06/06/2018 Duplicate	MW-68B 01/15/2019	MW-68B 01/15/2019 Duplicate
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0028	<0.0028	<0.001	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	**1.5**	**1.51**	**2.18**	**2.1**	**2.1**	**2.2**	**1.4**	**1.4**	**1.9**	**2**	**2**	**1.9**
Chlorobenzene	*0.1*	*0.1*	0.000454 J	0.000468 J	<0.0024	<0.0024	<0.0015	<0.0015	<0.0003	<0.0003	<0.0003	<0.0003	0.00056 J	0.00056 J
Ethylbenzene	*0.7*	*0.7*	0.364	0.363	0.403	0.453	0.61	0.56	0.29	0.28	0.5	0.5	0.5	0.49
Methylene chloride	*0.005*	*0.005*	<0.00022	<0.00022	<0.003	<0.003	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	0.329	0.329	0.538	0.57	0.45	0.42	0.2	0.19	0.45	0.44	0.086	0.084
Vinyl chloride	*0.002*	*0.002*			**0.007 J**	**0.0022 J**								
Xylenes (total)	*10*	*10*	0.857	0.862	1.08	1.22	1.6	1.5	0.83	0.84	1.4	1.4	1.2	1.2
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	**<0.0105**	**<0.0105**	**<0.0055**	**<0.00529**	<0.00021	<0.00021	<0.00021	<0.00021	<0.00021	<0.00021	<0.00021	<0.00021
2,4-Dimethylphenol	*0.49*	*1.5*	**0.536**	0.457 J	0.445	0.451	0.051 J	0.071 J	0.07	0.065	0.075 J	0.23 J	0.05	0.058
2,4-Dinitrotoluene	*0.0013*	*0.003*	**<0.0124**	**<0.0124**	**<0.0065**	**<0.00625**	<0.00058	<0.00058	<0.00059	<0.00059	<0.00058	<0.00058	<0.00058	0.0013 J
2,6-Dinitrotoluene	*0.0013*	*0.003*	**<0.00762**	**<0.00762**	**<0.004**	**<0.00385**	<0.00042	<0.00042	<0.00042	<0.00042	<0.00042	<0.00042	<0.00042	<0.00042
2-Chloronaphthalene	*2*	*5.8*	<0.00762	<0.00762	<0.004	<0.00385	<0.00021	<0.00021	<0.00021	<0.00021	<0.00021	<0.00021	<0.00021	<0.00021
2-Methylnaphthalene	*0.098*	*0.29*	**1.1**	**1.19**	**0.852**	**0.906**	**0.6**	**0.6**	**0.67**	**0.67**	**1.4**	**1.3**	**0.33**	**0.31**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	**<0.079**	**<0.079**	**<0.0415**	**<0.0399**	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0011 J
4-Nitrophenol	*0.049*	*0.15*	**<0.0533**	**<0.0533**	<0.028	<0.0269	<0.00047	<0.00047	<0.00047	<0.00047	<0.00047	<0.00047	<0.00047	0.0074 J
Acenaphthene	*1.5*	*4.4*	0.263	0.26	0.178	0.181	0.13	0.15	0.21	0.22	0.34	0.36	0.1	0.13
Acenaphthylene	*1.5*	*4.4*	<0.00571	<0.00571	<0.003	<0.00288	0.002	0.0024	0.0021	0.0016	0.0022	0.0029	0.0012	0.0014
Anthracene	*7.3*	*22*	0.0428 J	0.0292 J	0.0169 J	0.0162 J	0.014	0.014	0.014	0.012	0.015	0.021	0.008	0.0098
Benzo(a)anthracene	*0.0091*	*0.02*	**0.0123 J**	0.00762 J	<0.004	<0.00385	<0.0005	<0.0005	<0.00051	<0.00051	<0.0005	<0.0005	<0.0005	<0.0005
Benzo(a)pyrene	*0.0002*	*0.0002*	**<0.00762**	**<0.00762**	**<0.004**	**<0.00385**	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	**<0.0124**	**<0.0124**	**<0.0065**	**<0.00625**	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	**0.0036**
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	**<0.0352**	**<0.0352**	**<0.0185**	**<0.0178**	<0.00037	<0.00037	<0.00037	<0.00037	<0.00037	<0.00037	<0.00037	<0.00037
Chrysene	*0.91*	*2*	0.00806 J	0.00976 J	<0.004	<0.00385	<0.00021	<0.00021	<0.00021	<0.00021	<0.00021	<0.00021	<0.00021	<0.00021
Dibenzofuran	*0.098*	*0.29*	**0.284**	**0.276**	**0.198**	**0.196**	**0.16**	**0.16**	**0.24**	**0.25**	**0.38**	**0.38**	**0.1**	**0.12**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.0105	<0.0105	<0.0055	<0.00529	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Fluoranthene	*0.98*	*2.9*	0.052	0.0357 J	0.00825 J	0.00751 J	0.0052	0.0049	0.006	0.005	0.0063	0.0088	0.0031	0.0039
Fluorene	*0.98*	*2.9*	0.149	0.143	0.0966	0.0953	0.082	0.086	0.092	0.078	0.082 J	0.18 J	0.057	0.065
Naphthalene	*0.49*	*1.5*	**17**	**17.6**	**10.5**	**12.6**	**9.2**	**10**	**12**	**13**	**23**	**23**	**5**	**3.8**
Nitrobenzene	*0.049*	*0.15*	<0.0105	<0.0105	<0.0055	<0.00529	<0.00024	<0.00024	<0.00024	<0.00024	<0.00024	<0.00024	<0.00024	<0.00024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00952	<0.00952	<0.005	<0.00481	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	0.0051
Pentachlorophenol	*0.001*	*0.001*	**<0.0581**	**<0.0581**	**<0.0305**	**<0.0293**	<0.00079	<0.00079	<0.0008	<0.0008	<0.00079	<0.00079	<0.00079	<0.00079
Phenanthrene	*0.73*	*2.2*	0.263	0.196	0.106	0.103	0.099	0.098	0.15	0.088	0.096 J	0.22 J	0.065	0.073
Phenol	*7.3*	*22*	0.0862	0.0929	0.00988 J	0.00192 J	<0.00035	<0.00035	<0.00035	<0.00035	<0.00035	<0.00035	0.0019 J	0.0015 J
Pyrene	*0.73*	*2.2*	0.0341 J	0.0227 J	<0.0055	<0.00529	0.0025	0.0024	0.0032	0.0029	0.0045 J	0.0058 J	0.0015	0.0018
Metals														
Arsenic	*0.01*	*0.01*					**0.0114**	**0.0117**	**0.014**	**0.0151**	**0.0112**	**0.0107**	**0.0123**	**0.0125**

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-68B 07/18/2019	MW-68B 07/18/2019 Duplicate	MW-68B 01/23/2020 DNAPL	MW-68C 07/15/2010	MW-68C 01/25/2011	MW-68C 07/21/2011	MW-68C 02/16/2012	MW-68C 07/17/2012	MW-68C 02/06/2013	MW-68C 08/07/2013	MW-68C 01/22/2014	MW-68C 07/24/2014
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.002	<0.002	<0.005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014
Benzene	*0.005*	*0.005*	**1.4**	**1.4**	**1.4**	0.00081 J	0.0021 J	0.0032 J	**0.0069**	**0.0079**	0.00134	0.00364	0.00225	**0.0073**
Chlorobenzene	*0.1*	*0.1*	<0.003	<0.003	<0.0075	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.000352	<0.00012	<0.00018	<0.00012
Ethylbenzene	*0.7*	*0.7*	0.52	0.51	0.39	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	0.000363 J	0.000517 J	0.00024 J	0.000419 J
Methylene chloride	*0.005*	*0.005*	**<0.01**	**<0.01**	**<0.025**	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015
Toluene	*1*	*1*	0.37	0.37	0.23	<0.0005	0.00067 J	0.0011 J	0.0019 J	0.0023 J	0.000632 J	<0.0016	0.00059	0.00138
Vinyl chloride	*0.002*	*0.002*			**<0.005**									<0.00011
Xylenes (total)	*10*	*10*	1.5	1.4	1.1	<0.001	<0.001	<0.0031	<0.0031	<0.0015	0.000873 J	0.000879 J	<0.00058	0.000649 J
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00021	<0.00021	<0.000021	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.000105	<0.000104	<0.000105	<0.000104
2,4-Dimethylphenol	*0.49*	*1.5*	0.076	0.076	0.075	<0.00008	0.00012 J	0.00031	0.00095	0.0014	**R**	<0.000292	0.000454 J	<0.000292
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00058	<0.00058	<0.000058	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000124	<0.000123	<0.000124	<0.000123
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00042	<0.00042	<0.000042	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000762	<0.0000755	<0.0000762	<0.0000755
2-Chloronaphthalene	*2*	*5.8*	<0.00021	<0.00021	<0.000021	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000762	<0.0000755
2-Methylnaphthalene	*0.098*	*0.29*	**0.72**	**0.66**	**1.1 J**	<0.00007	0.00016 J	0.00024	<0.00011	0.0025	0.00132	0.000301 J	0.00331	0.000188 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.0002	<0.0002	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00079	<0.000783	<0.00079	<0.000783
4-Nitrophenol	*0.049*	*0.15*	<0.00047	<0.00047	<0.000047	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	**R**	<0.000528	<0.000533	<0.000528
Acenaphthene	*1.5*	*4.4*	0.2	0.17	0.44	<0.00009	<0.00009	0.00013 J	<0.00005	0.0013	0.000647	<0.0000755	0.00183	0.000235 J
Acenaphthylene	*1.5*	*4.4*	0.0027	0.0022	0.0037	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000571	<0.0000566	<0.0000571	<0.0000566
Anthracene	*7.3*	*22*	0.03 J	0.022 J	0.15	<0.00007	<0.00007	<0.00005	<0.00005	0.00089	<0.0000476	<0.0000472	0.00106	<0.0000472
Benzo(a)anthracene	*0.0091*	*0.02*	0.0051 J	0.003 J	**0.047**	<0.00007	<0.00007	<0.00005	<0.00005	0.00018 J	<0.0000762	<0.0000755	0.000276 J	<0.0000755
Benzo(a)pyrene	*0.0002*	*0.0002*	**0.0018**	**0.0012**	**0.0089**	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	0.000171 J	<0.0000755
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.0003	<0.0003	<0.00003	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000124	<0.000123	<0.000124	<0.000123
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00037	<0.00037	0.0011	0.00098	0.006	0.001	<0.0015	0.0018	0.000637	0.00157 J	<0.000352	<0.000349
Chrysene	*0.91*	*2*	0.005 J	0.0029 J	0.04	<0.00007	<0.00007	<0.00005	<0.00005	0.00016 J	<0.0000762	<0.0000755	0.000301 J	<0.0000755
Dibenzofuran	*0.098*	*0.29*	**0.21**	**0.18**	**0.5**	<0.00008	<0.00008	0.0002 J	<0.000078	0.0018	0.000168 J	<0.0000755	0.00192	0.0000942 J
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.0002	<0.0002	0.00018 J	<0.00007	<0.00007	<0.00005	<0.00005	0.00011 J	<0.000105	<0.000104	<0.000105	<0.000104
Fluoranthene	*0.98*	*2.9*	0.043 J	0.027 J	0.31	<0.00007	<0.00007	<0.00005	<0.00005	0.0016	<0.0000667	<0.000066	0.00233	<0.000066
Fluorene	*0.98*	*2.9*	0.11	0.083	0.32	<0.00007	<0.00007	0.0001 J	<0.00005	0.0012	0.00034 J	0.000135 J	0.00167	0.000155 J
Naphthalene	*0.49*	*1.5*	**9.6**	**9.9**	**12**	0.00083	0.0014	0.0027	<0.0015	0.015	0.0129	0.00643 J	0.0112	0.00274
Nitrobenzene	*0.049*	*0.15*	<0.00024	<0.00024	<0.000024	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000105	<0.000104	<0.000105	<0.000104
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00025	<0.00025	<0.000025	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000952	<0.0000943	<0.0000952	<0.0000943
Pentachlorophenol	*0.001*	*0.001*	<0.00079	<0.00079	<0.000079	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**R**	<0.000575	<0.000581	<0.000575
Phenanthrene	*0.73*	*2.2*	0.21	0.16	**0.95**	<0.00007	<0.00007	0.00016 J	<0.00005	0.005	0.000499	<0.0000566	0.00585	<0.0000566
Phenol	*7.3*	*22*	<0.00035	<0.00035	<0.000035	0.0005	0.0039	0.0049	0.0074	0.000062 J	**R**	<0.0000377	<0.0000381	<0.0000377
Pyrene	*0.73*	*2.2*	0.025 J	0.015 J	0.19	<0.00007	<0.00007	<0.00005	<0.00005	0.00086	<0.000105	<0.000104	0.0014	<0.000104
Metals														
Arsenic	*0.01*	*0.01*	**0.0134**	**0.0129**	0.00944 J									

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-68C 08/28/2014	MW-68C 01/29/2018	MW-68C 03/21/2018	MW-68C 06/06/2018	MW-68C 01/15/2019	MW-68C 07/18/2019	MW-68C 01/17/2020	MW-69A 07/15/2010	MW-69A 01/19/2011	MW-69A 07/21/2011	MW-69A 02/08/2012	MW-69A 07/24/2012
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.001	<0.001	<0.0005
Benzene	*0.005*	*0.005*	0.00118	0.0028	0.0049	<0.0002	<0.0002	<0.0002	0.00056 J	<0.0005	<0.0005	<0.001	<0.001	<0.0005
Chlorobenzene	*0.1*	*0.1*	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0005	<0.0005	<0.001	<0.001	<0.0005
Ethylbenzene	*0.7*	*0.7*	0.00014 J	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.00047 J	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005
Methylene chloride	*0.005*	*0.005*	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0013	<0.0013	<0.001
Toluene	*1*	*1*	0.000442 J	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.001	<0.001	<0.0005
Vinyl chloride	*0.002*	*0.002*	<0.00011									<0.001	<0.001	<0.0005
Xylenes (total)	*10*	*10*	<0.00026	<0.0003	0.00046 J	<0.0003	0.0011	<0.0003	0.00062 J	<0.001	<0.001	<0.0031	<0.0031	<0.0015
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*		<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*		<0.00004	0.0015	<0.00004	<0.00004	<0.00004	<0.00004	0.0036	<0.00008	<0.00005	<0.00005	0.000078 J
2,4-Dinitrotoluene	*0.0013*	*0.003*		<0.000058	<0.000058	<0.000058	<0.000059	<0.000058	<0.000058	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*		<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006
2-Chloronaphthalene	*2*	*5.8*		<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*		<0.000019	0.00014	<0.000019	<0.000077	0.000072 J	0.00033	0.0038	0.000074 J	<0.00005	<0.00005	0.0009
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*		<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Acenaphthene	*1.5*	*4.4*		<0.000027	0.00017	<0.000027	<0.000027	0.00012	0.000036 J	0.0037	0.00025	<0.00005	<0.00005	0.00082
Acenaphthylene	*1.5*	*4.4*		<0.000015	<0.000015	<0.000015	<0.000015	0.000053 J	0.000023 J	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Anthracene	*7.3*	*22*		<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	0.000036 J	0.00039	0.00024	<0.00005	<0.00005	0.00047
Benzo(a)anthracene	*0.0091*	*0.02*		<0.00005	<0.00005	<0.00005	<0.000051	<0.00005	0.000055 J	0.00049	<0.00007	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*		<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.000063 J	0.00013 J	<0.00008	<0.00005	<0.00005	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*		<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*		0.00015 J	<0.000037	<0.00056	<0.000044	0.00032	0.00029	0.0059	0.00081	0.00086	<0.00018	<0.0003
Chrysene	*0.91*	*2*		<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.000054 J	0.00032	0.00011 J	<0.00005	<0.00005	<0.00005
Dibenzofuran	*0.098*	*0.29*		<0.00002	<0.00002	<0.00002	0.000066 J	0.000064 J	0.00003 J	0.003	0.00022	<0.00005	<0.00005	0.00071
Di-n-butylphthalate (DBP)	*2.4*	*7.3*		<0.00002	<0.00002	0.0001 J	<0.00002	0.000067 J	<0.00002	<0.00007	<0.00007	0.000069 J	<0.00005	<0.00005
Fluoranthene	*0.98*	*2.9*		<0.00001	<0.00001	0.00021	<0.00001	<0.00001	0.000074 J	0.0025	0.00057	0.000059 J	<0.00005	0.00045
Fluorene	*0.98*	*2.9*		<0.00003	0.00012	<0.00003	0.000057 J	0.000051 J	0.000036 J	0.0033	0.00036	<0.00005	<0.00005	0.00085
Naphthalene	*0.49*	*1.5*		0.00088	0.0032	0.00035	<0.00079	0.0011	<0.00052	0.026	0.00011 J	<0.00005	<0.00029	<0.004
Nitrobenzene	*0.049*	*0.15*		<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*		<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
Pentachlorophenol	*0.001*	*0.001*		<0.000079	<0.000079	<0.000079	<0.00008	<0.000079	<0.000079	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005
Phenanthrene	*0.73*	*2.2*		<0.000021	0.0001	<0.000021	0.000062 J	<0.000021	0.000042 J	0.0083	0.0012	<0.00005	<0.00005	0.0022
Phenol	*7.3*	*22*		<0.000035	<0.000035	<0.000035	<0.000035	0.00026	<0.000035	0.0069	<0.00007	<0.00005	<0.00005	<0.00005
Pyrene	*0.73*	*2.2*		<0.000019	<0.000019	0.00015	<0.000019	<0.000019	0.000092 J	0.0022	0.00037	<0.00005	<0.00005	0.00033
Metals														
Arsenic	*0.01*	*0.01*		<0.0004	0.000618 J	<0.0004	<0.0004	<0.0004	<0.0004					

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-69A 02/07/2013	MW-69A 08/06/2013	MW-69A 01/24/2014	MW-69A 07/16/2014	MW-69A 01/28/2018	MW-69A 03/20/2018	MW-69A 05/24/2018	MW-69A 01/10/2019	MW-69A 07/17/2019	MW-70C 03/12/2020	MW-70C 03/12/2020 Duplicate	MW-70C 05/21/2020
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	**0.01**	**0.0089**	**0.019**
Chlorobenzene	*0.1*	*0.1*	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.057	0.052	0.11
Methylene chloride	*0.005*	*0.005*	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.034	0.032	0.056
Vinyl chloride	*0.002*	*0.002*	<0.00011	<0.00011	<0.00018	<0.00011	<0.0002	<0.0002		<0.0002	<0.0002			
Xylenes (total)	*10*	*10*	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.064	0.061	0.13
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000105	<0.00011	<0.000106	<0.000104	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000022	<0.000022	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.000295	<0.00031	<0.000298	<0.000292	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	0.00041	<0.000041	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000124	<0.00013	<0.000125	<0.000123	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.00006	<0.00006	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0000762	<0.00008	<0.0000769	<0.0000755	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000044	<0.000043	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.0000762	<0.00008	<0.0000769	<0.0000755	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000022	<0.000022	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	<0.0000667	<0.00007	<0.0000673	<0.000066	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	0.067 J	0.098 J	0.05
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00079	<0.00083	<0.000798	<0.000783	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.000021	<0.000021	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.000533	<0.00056	<0.000538	<0.000528	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000049	<0.000048	<0.000047
Acenaphthene	*1.5*	*4.4*	<0.0000762	<0.00008	<0.0000769	<0.0000755	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	0.059 J	0.087 J	0.068
Acenaphthylene	*1.5*	*4.4*	<0.0000571	<0.00006	<0.0000577	<0.0000566	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000016	0.00074	0.00066
Anthracene	*7.3*	*22*	<0.0000476	<0.00005	0.000497	<0.0000472	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	0.0049 J	0.0082 J	0.0035
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0000762	<0.00008	<0.0000769	<0.0000755	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000052	0.000079 J	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0000762	<0.00008	<0.0000769	<0.0000755	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.000021	<0.000021	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.000124	<0.00013	<0.000125	<0.000123	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.000031	<0.000031	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000352	<0.00037	<0.000356	<0.000349	0.00028	0.00038	0.00025	<0.000037	<0.00034	<0.000039	0.000052 J	<0.000037
Chrysene	*0.91*	*2*	<0.0000762	<0.00008	<0.0000769	<0.0000755	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000022	0.000061 J	<0.000021
Dibenzofuran	*0.098*	*0.29*	<0.0000762	<0.00008	<0.0000769	<0.0000755	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.055 J	0.078 J	0.053
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.000105	<0.00011	<0.000855	<0.000104	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.000061 J	0.0001 J	0.00016 J
Fluoranthene	*0.98*	*2.9*	<0.0000667	<0.00007	<0.0000673	<0.000066	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.003 J	0.0053 J	0.0027
Fluorene	*0.98*	*2.9*	<0.0000667	<0.00007	<0.0000673	<0.000066	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	0.028 J	0.038 J	0.034
Naphthalene	*0.49*	*1.5*	<0.000142	<0.00008	<0.000713	<0.000155	<0.00019	<0.00002	0.00008 J	<0.00002	<0.000078	**1.6 J**	**2.5 J**	**1.1**
Nitrobenzene	*0.049*	*0.15*	<0.000105	<0.00011	<0.000106	<0.000104	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000025	<0.000025	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.0000952	<0.0001	<0.0000962	<0.0000943	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000026	<0.000026	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.000581	<0.00061	<0.000587	<0.000575	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000082	<0.000081	<0.000079
Phenanthrene	*0.73*	*2.2*	<0.0000571	<0.00006	<0.00039	<0.0000566	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.04	0.054	0.03
Phenol	*7.3*	*22*	<0.0000381	<0.00004	<0.0000385	<0.0000377	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000036	<0.000036	<0.000035
Pyrene	*0.73*	*2.2*	<0.000105	<0.00011	<0.000106	<0.000104	<0.000019	0.000055 J	<0.000019	<0.000019	<0.000019	0.0017 J	0.0029 J	0.0011
Metals														
Arsenic	*0.01*	*0.01*					0.00916	0.0017 J	**0.0142**	0.000717 J	0.000642 J	0.00598	0.0047	0.00663

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-70C 05/21/2020 Duplicate	MW-73B 02/02/2012	MW-73B 07/16/2012	MW-73B 01/30/2013	MW-73B 07/30/2013	MW-73B 01/15/2014	MW-73B 07/18/2014	MW-74B 02/09/2012	MW-74B 07/26/2012	MW-74B 04/02/2013	MW-74B 01/29/2014	MW-74B 08/28/2014
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.001	<0.0005	<0.00014	0.000678 J	<0.0002	<0.00014	**<0.01**	<0.005	<0.0028	<0.0007	<0.0028
Benzene	*0.005*	*0.005*	**0.018**	**0.0097**	<0.0005	0.000218 J	0.000156 J	<0.0002	0.00309	**0.35**	**0.71**	**0.552**	**0.795**	**0.652**
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.01	<0.005	<0.0024	<0.0006	<0.0024
Ethylbenzene	*0.7*	*0.7*	0.12	0.0059	<0.0005	<0.00011	<0.00011	0.000437 J	<0.00011	0.086	0.14	0.147	0.203	0.2
Methylene chloride	*0.005*	*0.005*	<0.001	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	**<0.013**	**<0.01**	<0.003	<0.00075	<0.003
Toluene	*1*	*1*	0.06	0.015	<0.0005	0.000336 J	<0.00015	0.000575	<0.00015	0.32	0.56	0.533	0.774	0.741
Vinyl chloride	*0.002*	*0.002*							<0.00011					
Xylenes (total)	*10*	*10*	0.14	0.0059 J	<0.0015	<0.00026	<0.00026	0.00133 J	<0.00026	0.25	0.38	0.427	0.553	0.558
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.0005	<0.00005	<0.000104	<0.000107	<0.000104	<0.000109	<0.0005	<0.0005	**<0.106**	**<0.208**	**<0.216**
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	0.007	0.0028	<0.000292	<0.000301	0.000946 J	<0.000307	**55**	**41**	**56.9**	**525**	**70.6**
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.0005	<0.00005	<0.000123	<0.000126	<0.000123	<0.000129	<0.0005	<0.0005	**<0.125**	**<0.245**	**<0.255**
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.0006	<0.00006	<0.0000755	<0.0000777	<0.0000755	<0.0000792	<0.0006	<0.0006	**<0.0769**	**<0.151**	**<0.157**
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.0005	<0.00005	<0.0000755	<0.0000777	<0.0000755	<0.0000792	<0.0005	<0.0005	<0.0769	<0.151	<0.157
2-Methylnaphthalene	*0.098*	*0.29*	0.047	0.00055 J	0.00011 J	<0.000066	0.0000878 J	0.0161	<0.0000693	**0.39**	**0.43 J**	**0.673**	**5.52**	**0.95 J**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.0008	<0.00008	<0.000783	<0.000806	<0.000783	<0.000822	<0.0008	<0.0008	**<0.798**	**<1.57**	**<1.63**
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.0005	<0.00005	<0.000528	<0.000544	<0.000528	<0.000554	<0.0005	<0.0005	**<0.538**	**<1.06**	**<1.1**
Acenaphthene	*1.5*	*4.4*	0.053	0.012	0.00016 J	<0.000185	0.000118 J	0.0112	<0.0000792	0.29	0.21	0.31 J	**2.4**	0.413 J
Acenaphthylene	*1.5*	*4.4*	0.00048	0.0013 J	<0.00005	0.0000696 J	<0.0000583	<0.0000566	<0.0000594	0.0058	0.0062	<0.0577	<0.113	<0.118
Anthracene	*7.3*	*22*	0.0029	<0.0005	0.00012 J	0.000186 J	0.000245 J	0.00462	0.00015 J	0.037	0.024	<0.0481	0.282 J	<0.098
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.0005	0.000057 J	<0.0000755	<0.0000777	0.00131	<0.0000792	<0.0005	0.0022	**<0.0769**	**<0.151**	**<0.157**
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	**<0.0005**	<0.00005	<0.0000755	<0.0000777	**0.00039 J**	<0.0000792	**<0.0005**	**0.00085 J**	**<0.0769**	**<0.151**	**<0.157**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.0005	<0.00005	<0.000123	<0.000126	<0.000123	<0.000129	<0.0005	<0.0005	**<0.125**	**<0.245**	**<0.255**
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	<0.001	0.00012 J	<0.000349	<0.000359	0.0015 J	0.000603	<0.001	<0.001	**<0.356**	**<0.698**	**<0.725**
Chrysene	*0.91*	*2*	<0.000021	<0.0005	0.000096 J	<0.0000755	<0.0000777	0.00119	<0.0000792	<0.0005	0.0018 J	<0.0769	<0.151	<0.157
Dibenzofuran	*0.098*	*0.29*	0.046	0.00078 J	0.000067 J	<0.0000755	<0.0000777	0.0102	<0.0000792	**0.25**	**0.19**	**0.252 J**	**1.84**	**<0.157**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	0.0001 J	<0.0005	<0.00005	<0.000104	0.000133 J	0.000169 J	<0.000109	<0.0005	<0.0005	<0.106	<0.208	<0.216
Fluoranthene	*0.98*	*2.9*	0.002	0.01	0.000059 J	0.000138 J	<0.000068	0.00937	<0.0000693	0.0044	0.018	<0.0673	<0.132	<0.137
Fluorene	*0.98*	*2.9*	0.027	0.0041	0.00021	<0.000066	0.0000805 J	0.00951	<0.0000693	0.17	0.14 J	0.196 J	**1.34**	0.263 J
Naphthalene	*0.49*	*1.5*	**1.2**	0.0014 J	<0.00064	<0.000436	<0.000674	0.0906	<0.0000792	**16**	**10**	**13.9**	**139**	**17.9**
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.0005	<0.00005	<0.000104	<0.000107	<0.000104	<0.000109	<0.0005	<0.0005	**<0.106**	**<0.208**	**<0.216**
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.0005	<0.00005	<0.0000943	<0.0000971	<0.0000943	<0.000099	<0.0005	<0.0005	<0.0962	<0.189	**<0.196**
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.0005	<0.00005	<0.000575	<0.000592	<0.000575	<0.000604	<0.0005	<0.0005	**<0.587**	**<1.15**	**<1.2**
Phenanthrene	*0.73*	*2.2*	0.026	0.00087 J	0.000089 J	<0.0000566	0.000228 J	0.0348	<0.0000594	0.15	0.15	0.169 J	**1.28**	0.307 J
Phenol	*7.3*	*22*	<0.000035	0.0053	0.00015 J	<0.0000377	<0.0000388	0.000522	<0.0000396	**43**	**38**	**63.2**	**420**	**53.3**
Pyrene	*0.73*	*2.2*	0.00082	0.0077	<0.00005	<0.000104	<0.000107	0.00725	<0.000109	0.005	0.01	<0.106	<0.208	<0.216
Metals														
Arsenic	*0.01*	*0.01*	0.00606											

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-74B 01/30/2018	MW-74B 03/28/2018	MW-74B 06/07/2018	MW-74B 01/23/2019	MW-74B 07/30/2019	MW-74B 01/17/2020	MW-75B 02/08/2012 DNAPL	MW-75B 07/26/2012 DNAPL	MW-75B 04/02/2013 DNAPL	MW-75B 01/29/2014 DNAPL	MW-75B 07/24/2014 DNAPL	MW-75B 01/17/2020
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.002	<0.001	<0.0002	**<0.01**	<0.0025	<0.0028	<0.0007	<0.00014	<0.0002
Benzene	*0.005*	*0.005*	**0.47**	**0.58**	**0.71**	**0.83**	**0.59**	**0.12**	**0.61**	**0.85**	**0.369**	**0.502**	**0.298**	**0.12**
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.003	<0.0015	<0.0003	<0.01	<0.0025	<0.0024	<0.0006	<0.00012	<0.0003
Ethylbenzene	*0.7*	*0.7*	0.25	0.12	0.17 J	0.22	0.15	0.076	0.13	0.1	0.069	0.0773	0.0737	0.037
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	**<0.01**	<0.005	<0.001	**<0.013**	<0.005	<0.003	<0.00075	<0.00015	<0.001
Toluene	*1*	*1*	0.75	0.56	0.74	0.69	0.52	0.29	0.51	0.5	0.282	0.328	0.273	0.13
Vinyl chloride	*0.002*	*0.002*											<0.00011	
Xylenes (total)	*10*	*10*	0.53	0.33	0.51 J	0.63	0.42	0.2	0.41	0.33	0.247	0.276	0.255	0.11
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	**<0.0021**	<0.00021	**<0.0021**	<0.00021	<0.000021	<0.000021	<0.0005	<0.0005	**<0.00212**	**<0.0519**	**<0.00214**	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	**59**	**30**	**57**	**9**	**37**	0.21	0.18	**0.64**	0.0695	**6.35**	<0.00602	**0.86**
2,4-Dinitrotoluene	*0.0013*	*0.003*	**<0.0058**	<0.00058	**<0.0058**	<0.00058	<0.000058	<0.000058	<0.0005	<0.0005	**<0.0025**	**<0.0613**	**<0.00252**	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	**<0.0042**	<0.00042	**<0.0042**	<0.00042	<0.000042	<0.000042	<0.0006	<0.0006	**<0.00154**	**<0.0377**	**<0.00155**	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.0021	<0.00021	<0.0021	<0.00021	<0.000021	<0.000021	<0.0005	<0.0005	<0.00154	<0.0377	<0.00155	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	**0.3**	**2.4**	**0.99**	**0.22**	**0.48**	**1.3**	**0.62**	**0.6 J**	**0.101**	**3.18**	**0.546**	**0.81**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.002	<0.0002	<0.002	<0.0002	<0.00002	<0.00002	<0.0008	<0.0008	**<0.016**	**<0.392**	**<0.0161**	<0.00002
4-Nitrophenol	*0.049*	*0.15*	0.033 J	<0.00047	<0.0047	<0.00047	<0.000047	<0.000047	<0.0005	<0.0005	<0.0108	**<0.264**	<0.0109	<0.000047
Acenaphthene	*1.5*	*4.4*	0.31	1.4	0.33	0.098	0.24	0.98	0.34	0.26	0.0697	**2.57**	0.429	0.67
Acenaphthylene	*1.5*	*4.4*	0.012	0.019	0.0098 J	0.0032	0.0037	0.018	0.013	0.0058	<0.00115	0.0672 J	0.0121	0.0086
Anthracene	*7.3*	*22*	0.027	0.58	0.034	0.0074	0.0071	0.42	0.035	0.045	0.00948 J	0.605	0.0626	0.39
Benzo(a)anthracene	*0.0091*	*0.02*	<0.005	**0.22**	<0.005	<0.0005	0.00022	**0.13**	0.00064 J	0.0047	<0.00154	**0.0667 J**	0.00748 J	**0.12**
Benzo(a)pyrene	*0.0002*	*0.0002*	**<0.002**	**0.064**	**<0.002**	<0.0002	<0.00002	**0.034**	**<0.0005**	**0.0013 J**	**<0.00154**	**<0.0377**	**<0.00155**	**0.035**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	**<0.003**	<0.0003	**<0.003**	<0.0003	<0.00003	<0.00003	<0.0005	<0.0005	**<0.0025**	**<0.0613**	**<0.00252**	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0037	<0.00037	<0.0037	<0.00037	<0.000037	0.0014	<0.001	<0.001	**<0.00712**	**<0.175**	**<0.00718**	0.0021
Chrysene	*0.91*	*2*	<0.0021	0.23	<0.0021	<0.00021	0.00016	0.082	0.00062 J	0.0042	<0.00154	0.0704 J	0.00677 J	0.095
Dibenzofuran	*0.098*	*0.29*	**0.24**	**1.4**	**0.24**	0.079	**0.19**	**0.72**	**0.29**	**0.23**	0.0533	**1.56**	**0.214**	**0.54**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.002	<0.0002	<0.002	<0.0002	<0.00002	0.0022	<0.0005	<0.0005	<0.00212	<0.0519	<0.00214	0.0016
Fluoranthene	*0.98*	*2.9*	0.015	**1.4**	0.017	0.0038	0.0035	0.67	0.016	0.04	0.0103	0.708	0.0914	0.75
Fluorene	*0.98*	*2.9*	0.19	**1.4**	0.19	0.056	0.14	0.88	0.19	0.17 J	0.0425	**1.59**	0.218	0.61
Naphthalene	*0.49*	*1.5*	**18**	**21**	**19**	**4**	**13 J**	**8.5**	**8.9**	**9.3**	0.211	**27.1**	**5.7**	**7.5**
Nitrobenzene	*0.049*	*0.15*	<0.0024	<0.00024	<0.0024	<0.0024	<0.000024	<0.000024	<0.0005	<0.0005	<0.00212	**<0.0519**	<0.00214	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.0025	<0.00025	<0.0025	<0.00025	<0.000025	<0.000025	<0.0005	<0.0005	<0.00192	<0.0472	<0.00194	<0.000025
Pentachlorophenol	*0.001*	*0.001*	**<0.0079**	<0.00079	**<0.0079**	<0.00079	<0.000079	<0.000079	<0.0005	<0.0005	**<0.0117**	**<0.288**	**<0.0118**	<0.000079
Phenanthrene	*0.73*	*2.2*	0.16	**3.7**	0.17	0.046	0.087	**2.3**	0.24	0.27	0.0606	**2.13**	0.238	**1.9**
Phenol	*7.3*	*22*	**56**	**25**	**39**	5	**33**	0.048	0.0066	0.0027	0.0069 J	0.108 J	<0.000777	0.0029
Pyrene	*0.73*	*2.2*	0.0079 J	**0.83**	0.0077 J	0.002	0.0023	0.44	0.0098	0.026	0.00617 J	0.416	0.0537	0.51
Metals														
Arsenic	*0.01*	*0.01*	0.00162 J	0.00142 J	0.00131 J	0.0014 J	0.00128 J	0.000443 J						0.00167 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-76B 03/12/2020	MW-76B 05/26/2020	MW-76C 07/24/2014	MW-76C 10/03/2014	MW-76C 01/30/2018	MW-76C 03/28/2018	MW-76C 05/25/2018	MW-76C 01/23/2019	MW-76C 07/30/2019	MW-76C 01/09/2020	MW-77A 07/24/2014	MW-77A 01/30/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.00014		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00014	<0.0002
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	0.000149 J		<0.0002	<0.0002	0.00021 J	<0.0002	<0.0002	<0.0002	<0.00008	**0.054**
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.00012		<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00012	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.00011		<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00011	0.059
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.00015		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00015	<0.001
Toluene	*1*	*1*	<0.0002	<0.0002	0.000156 J		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00015	0.011
Vinyl chloride	*0.002*	*0.002*			<0.00011								<0.00011	
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.00026		<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00026	0.1
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000022	<0.000021	<0.000104	<0.000107	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	**<0.00519**	<0.00021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.000042	<0.00004	<0.000292	<0.000301	0.0018	<0.00004	<0.00004	0.0041	<0.00004	<0.00038	<0.0146	0.014
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	<0.000058	<0.000123	<0.000126	<0.000058	<0.000058	<0.000059	<0.000058	<0.000058	<0.000058	**<0.00613**	<0.00058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000044	<0.000042	<0.0000755	<0.0000777	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	**<0.00377**	<0.00042
2-Chloronaphthalene	*2*	*5.8*	<0.000022	<0.000021	<0.0000755	<0.0000777	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00377	<0.00021
2-Methylnaphthalene	*0.098*	*0.29*	<0.00002	<0.000019	0.000392 J	0.0000976 J	0.0001	0.00012	0.000032 J	0.00031	<0.000019	<0.00045	0.0571	**0.2**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.000021	<0.00002	<0.000783	<0.000806	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	**<0.0392**	<0.0002
4-Nitrophenol	*0.049*	*0.15*	<0.000049	<0.000047	<0.000528	<0.000544	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.0264	0.0044 J
Acenaphthene	*1.5*	*4.4*	<0.000028	<0.000027	0.000696	0.00024 J	0.00015	0.00023	0.000071 J	0.00011	<0.000027	<0.00041	0.0456	0.2
Acenaphthylene	*1.5*	*4.4*	<0.000016	<0.000015	<0.0000566	<0.0000583	0.0002	<0.000015	<0.000015	<0.000015	<0.000015	0.000035 J	<0.00283	0.0032
Anthracene	*7.3*	*22*	<0.000015	<0.000014	0.000234 J	0.00011 J	0.00006 J	0.000055 J	0.000048 J	0.000041 J	<0.000014	<0.00017	<0.00236	0.0034
Benzo(a)anthracene	*0.0091*	*0.02*	<0.000052	<0.00005	<0.0000755	<0.0000777	<0.00005	<0.00005	<0.000051	<0.00005	<0.00005	0.00014	<0.00377	<0.0005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.000021	<0.00002	<0.0000755	**0.000276 J**	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.000037 J	**<0.00377**	<0.0002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.000031	<0.00003	<0.000123	<0.000126	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	**<0.00613**	<0.0003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000039	0.000039 J	0.000803	0.000714	<0.00024	0.00015 J	0.000096 J	<0.000091	<0.000037	<0.00016	**<0.0175**	<0.00037
Chrysene	*0.91*	*2*	<0.000022	<0.000021	<0.0000755	<0.0000777	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.00013	<0.00377	<0.00021
Dibenzofuran	*0.098*	*0.29*	<0.000021	<0.00002	0.000507	0.000159 J	0.00012	0.00012	0.000056 J	0.00011	<0.00002	<0.00029	0.0229 J	0.086
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	0.000025 J	<0.00002	<0.000104	0.000124 J	<0.00002	<0.00002	0.00004 J	0.000027 J	0.000054 J	<0.00002	<0.00519	<0.0002
Fluoranthene	*0.98*	*2.9*	<0.00001	<0.00001	0.000322 J	0.000188 J	0.00019	0.00018	0.00007 J	<0.00001	<0.00001	0.001	<0.0033	0.0014
Fluorene	*0.98*	*2.9*	<0.000031	<0.00003	0.000778	0.000264 J	0.00016	0.00014	0.000076 J	0.000076 J	<0.00003	<0.00032	0.024	0.076
Naphthalene	*0.49*	*1.5*	0.000096 J	<0.00002	0.00176	0.000506	<0.0028	0.0019	0.00036	0.007	0.00018 J	<0.0038	**0.884**	**7.8**
Nitrobenzene	*0.049*	*0.15*	<0.000025	<0.000024	<0.000104	0.000124 J	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00519	<0.00024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000026	<0.000025	<0.0000943	<0.0000971	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00472	<0.00025
Pentachlorophenol	*0.001*	*0.001*	<0.000082	<0.000079	**0.00272**	<0.000592	<0.000079	<0.000079	<0.00008	<0.000079	<0.000079	<0.000079	**<0.0288**	<0.00079
Phenanthrene	*0.73*	*2.2*	<0.000022	<0.000021	0.00183	0.000611	0.00051	0.00044	0.00023	0.000086 J	<0.000021	<0.00069	0.0262	0.026
Phenol	*7.3*	*22*	<0.000036	<0.000035	0.00284	0.00163	0.0032	<0.000035	<0.000035	0.0012	<0.000035	<0.000035	<0.00189	<0.00035
Pyrene	*0.73*	*2.2*	<0.00002	<0.000019	0.000194 J	0.000161 J	0.00016	0.00012	0.000048 J	<0.000019	<0.000019	0.0007	<0.00519	0.00068 J
Metals														
Arsenic	*0.01*	*0.01*	0.00115 J	0.00404			0.00157 J	0.000631 J	0.000527 J	0.000579 J	0.00216	0.00299		**0.0263**

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-77A 03/28/2018	MW-77A 05/24/2018	MW-77A 02/01/2019	MW-77A 07/30/2019	MW-77A 01/09/2020	MW-78A 07/24/2014 DNAPL	MW-78A 01/17/2020 DNAPL	MW-79A 08/28/2014	MW-79A 01/30/2018	MW-79A 03/28/2018	MW-79A 05/25/2018	MW-79A 01/23/2019
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0007	<0.0002	<0.0007	<0.0002	<0.0002	<0.0002	<0.002
Benzene	*0.005*	*0.005*	**0.063**	**0.053**	<0.0002	**0.063**	**0.058**	**0.0571**	**0.018**	**0.0485**	**1**	**0.3**	**0.36**	**0.45**
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0006	<0.0003	<0.0006	<0.0003	<0.0003	<0.0003	<0.003
Ethylbenzene	*0.7*	*0.7*	0.063	0.044	<0.0003	0.072	0.063	0.0637	0.011	0.0215	0.18	0.12	0.14	0.19
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00075	<0.001	<0.00075	<0.001	<0.001	<0.001	**<0.01**
Toluene	*1*	*1*	0.011	0.006	<0.0002	0.012	0.0069	0.1	0.033	0.076	0.99	0.44	0.48	0.55
Vinyl chloride	*0.002*	*0.002*						<0.00055						
Xylenes (total)	*10*	*10*	0.11	0.058	<0.0003	0.097	0.065	0.158	0.028	0.0763	0.48	0.31	0.41	0.54
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00021	<0.00021	<0.000022	<0.000021	<0.000021	**<0.0259**	<0.000021	**<0.00539**	<0.00021	<0.00021	<0.00021	<0.00021
2,4-Dimethylphenol	*0.49*	*1.5*	0.015	0.007	<0.000042	0.062	0.055	**6.66**	**2.5**	**6.11**	**11**	**11**	**20**	**2.5**
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00058	<0.00058	<0.00006	<0.000058	<0.000058	**<0.0307**	<0.000058	**<0.00637**	<0.00058	<0.00058	<0.00058	<0.00058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00042	<0.00042	<0.000044	<0.000042	<0.000042	**<0.0189**	<0.000042	**<0.00392**	<0.00042	<0.00042	<0.00042	<0.00042
2-Chloronaphthalene	*2*	*5.8*	<0.00021	<0.00021	<0.000022	<0.000021	<0.000021	<0.0189	<0.000021	<0.00392	<0.00021	<0.00021	<0.00021	<0.00021
2-Methylnaphthalene	*0.098*	*0.29*	**0.28**	0.085	<0.00002	**0.2**	**0.22**	**0.879**	**0.13**	**0.654**	**0.17**	**0.42**	**0.44**	**0.1**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.0002	<0.0002	<0.000021	<0.00002	<0.00002	**<0.196**	<0.00002	**<0.0407**	<0.0002	<0.0002	<0.0002	<0.0002
4-Nitrophenol	*0.049*	*0.15*	<0.00047	<0.00047	<0.000049	<0.000047	<0.000047	**<0.132**	<0.000047	<0.0275	<0.00047	<0.00047	0.016 J	<0.00047
Acenaphthene	*1.5*	*4.4*	0.23	0.079	<0.000028	0.16	0.13	0.497	0.071	0.427	0.13	0.17	0.16	0.039
Acenaphthylene	*1.5*	*4.4*	0.0035	0.0012	<0.000016	0.0013	0.0013	<0.0142	0.0015	0.0112 J	0.0045	<0.00015	0.0056	0.0015
Anthracene	*7.3*	*22*	0.0052	0.0025	<0.000015	0.0028	0.0036	0.105 J	0.004	0.0673	0.0057	0.0092	0.0084	0.0021
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0005	<0.0005	<0.000052	<0.00005	<0.00005	**0.0336 J**	0.00043	**0.00985 J**	<0.0005	<0.0005	<0.0005	<0.0005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0002	<0.0002	<0.000021	<0.00002	<0.00002	**<0.0189**	0.00014	**<0.00392**	<0.0002	<0.0002	<0.0002	<0.0002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.0003	<0.0003	<0.000031	<0.00003	<0.00003	**<0.0307**	<0.00003	**<0.00637**	<0.0003	<0.0003	<0.0003	<0.0003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00037	<0.00037	0.0001 J	<0.000037	<0.000077	**<0.0873**	0.00092	**<0.0181**	<0.00037	<0.00037	<0.00037	<0.00037
Chrysene	*0.91*	*2*	<0.00021	<0.00021	<0.000022	<0.000021	0.000041 J	0.0248 J	0.00039	0.00948 J	<0.00021	<0.00021	<0.00021	<0.00021
Dibenzofuran	*0.098*	*0.29*	0.09	0.04	<0.000021	0.096	0.079	**0.411**	0.055	**0.342**	0.097	**0.14**	0.092	0.037
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.0002	<0.0002	0.000081 J	<0.00002	<0.00002	<0.0259	0.0016	<0.00539	<0.0002	<0.0002	<0.0002	<0.0002
Fluoranthene	*0.98*	*2.9*	0.0013	0.00067 J	<0.00001	0.00052	0.00071	0.165	0.0029	0.0713	0.0036	0.0051	0.0023	0.001
Fluorene	*0.98*	*2.9*	0.083	0.037	<0.000031	0.078	0.067	0.382	0.04	0.291	0.063	0.081	0.056	0.022
Naphthalene	*0.49*	*1.5*	**6**	**1.5**	<0.000021	**4.9 J**	**4.7**	**7.18**	**3.1**	**6.89**	**7.9**	**8.5**	**15**	**1.9**
Nitrobenzene	*0.049*	*0.15*	<0.00024	<0.00024	<0.000025	<0.000024	<0.000024	<0.0259	<0.000024	<0.00539	<0.00024	<0.00024	<0.00024	<0.00024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00025	<0.00025	<0.000026	<0.000025	<0.000025	<0.0236	<0.000025	<0.0049	<0.00025	<0.00025	<0.00025	<0.00025
Pentachlorophenol	*0.001*	*0.001*	<0.00079	<0.00079	<0.000082	<0.000079	<0.000079	**<0.144**	<0.000079	**<0.0299**	<0.00079	<0.00079	<0.00079	<0.00079
Phenanthrene	*0.73*	*2.2*	0.035	0.019	<0.000022	0.032	0.031	0.604	0.031	0.355	0.038	0.049	0.039	0.012
Phenol	*7.3*	*22*	<0.00035	<0.00035	<0.000036	<0.000035	<0.000035	0.192	0.13	1.13	2.6	4	4.2	0.51
Pyrene	*0.73*	*2.2*	0.001	0.00037 J	<0.00002	0.00041	0.00046	0.0967 J	0.0018	0.0434	0.0022	0.0038	0.0022	0.00063 J
Metals														
Arsenic	*0.01*	*0.01*	**0.0187**	**0.019**	0.00207	**0.0231**	**0.0237**		0.00991		**0.0184**	**0.0149**	**0.0134**	**0.0133**

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-79A 07/30/2019	MW-79A 01/17/2020	MW-80B 08/28/2014	MW-80B 01/30/2018	MW-80B 03/28/2018	MW-80B 05/24/2018	MW-80B 01/10/2019	MW-80B 07/30/2019	MW-80B 01/07/2020	MW-81B 07/24/2014	MW-81B 01/29/2018	MW-81B 03/28/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00014	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	**0.013**	**0.12**	0.0000898 J	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00008	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00012	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	0.0067	0.075	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00011	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00015	<0.001	<0.001
Toluene	*1*	*1*	0.018	0.26	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00015	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*										<0.00011		
Xylenes (total)	*10*	*10*	0.023	0.2	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00026	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.00011	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000107	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	0.33	**6.7**	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	0.00028	<0.000301	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.00013	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000126	<0.000058	<0.000059
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.00008	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.0000777	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.00008	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0000777	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	0.051	**0.43**	0.000158 J	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000036	<0.000068	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.000806	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.00056	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000544	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	0.034	0.19	0.0000835 J	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	0.000046 J	<0.0000777	<0.000027	<0.000027
Acenaphthylene	*1.5*	*4.4*	0.00076	0.0036	<0.00006	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.0000583	<0.000015	<0.000015
Anthracene	*7.3*	*22*	0.002	0.0094	<0.00005	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	0.000026 J	<0.0000485	<0.000014	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*	0.00023	0.00081	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000777	<0.00005	<0.000051
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	**0.00029**	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0000777	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.000126	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00055	<0.000037	0.00106	<0.000069	<0.000037	0.00012 J	<0.000037	0.00007 J	<0.000069	<0.000359	<0.000037	<0.000037
Chrysene	*0.91*	*2*	0.00027	0.00072	<0.00008	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0000777	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	0.026	**0.14**	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.000048 J	<0.0000777	<0.00002	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	0.00098	<0.00011	<0.00002	<0.00002	0.000047 J	<0.00002	<0.00002	<0.00002	<0.000107	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	0.0012	0.0076	<0.00007	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.000068	<0.00001	<0.00001
Fluorene	*0.98*	*2.9*	0.017	0.094	<0.00007	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	0.000032 J	<0.000068	<0.00003	<0.00003
Naphthalene	*0.49*	*1.5*	**0.74 J**	**9**	0.00157	<0.00002	<0.00002	<0.00002	0.000068 J	<0.00002	<0.00034	<0.0000777	<0.00002	<0.00002
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.00011	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000107	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.0001	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.0000971	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.00061	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000592	<0.000079	<0.00008
Phenanthrene	*0.73*	*2.2*	0.0082	0.081	0.0000792 J	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.000027 J	0.0000944 J	<0.000021	<0.000021
Phenol	*7.3*	*22*	0.063	0.35	0.00018 J	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.0000388	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	0.0011	0.0035	<0.00011	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000107	<0.000019	<0.000019
Metals														
Arsenic	*0.01*	*0.01*	0.00991	0.00893		0.00286	0.00187 J	0.00202	0.0018 J	0.00162 J	0.00212		0.00207	0.00134 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-81B 05/25/2018	MW-81B 01/10/2019	MW-81B 07/19/2019	MW-81B 01/09/2020	MW-82B 02/01/2018	MW-82B 03/22/2018	MW-82B 06/06/2018	MW-82B 01/22/2019	MW-82B 07/30/2019	MW-82B 01/21/2020	MW-83B 02/08/2018	MW-83B 03/22/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	0.00021 J	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	**0.018**	**0.019**
Chlorobenzene	*0.1*	*0.1*	0.00036 J	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.08	0.1
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0055	0.0046
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.00065 J	<0.0003	<0.0003	<0.0003	<0.0003	0.1	0.11
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00021	<0.00021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.0004	<0.0004
2,4-Dinitrotoluene	*0.0013*	*0.003*	0.00079	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.00058	<0.00059
2,6-Dinitrotoluene	*0.0013*	*0.003*	0.001	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.00042	<0.00042
2-Chloronaphthalene	*2*	*5.8*	0.0018	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.000021 J	<0.000021	<0.000021	<0.000021	<0.00021	<0.00021
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	0.000019 J	<0.000019	<0.000019	0.0001	**0.15**	**0.75**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002	<0.0002
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00047	<0.00047
Acenaphthene	*1.5*	*4.4*	<0.000027	<0.000027	<0.000027	<0.000077	<0.000027	<0.000027	0.000027 J	<0.000027	<0.000027	0.000043 J	0.098	0.33
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	0.000015 J	<0.000015	<0.000015	<0.000015	0.00086 J	0.0016
Anthracene	*7.3*	*22*	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	0.000068 J	0.000091 J	0.000042 J	<0.000014	0.000031 J	0.01	0.011
Benzo(a)anthracene	*0.0091*	*0.02*	<0.000051	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0005	<0.00051
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002	<0.0002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.0003	<0.0003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00006 J	0.000058 J	<0.000037	<0.000066	0.00011 J	<0.000037	<0.00056	<0.000037	<0.000037	<0.000037	<0.00037	<0.00037
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00021	<0.00021
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00002 J	<0.00002	<0.00002	0.00004 J	0.043	**0.17**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002	<0.0002
Fluoranthene	*0.98*	*2.9*	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.0035	0.0043
Fluorene	*0.98*	*2.9*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	0.00003 J	<0.00003	<0.00003	0.000037 J	0.046	0.072
Naphthalene	*0.49*	*1.5*	<0.00002	0.00016	0.000099 J	<0.00023	0.00019	<0.00015	0.00002 J	<0.00002	<0.00002	<0.00041	**2.6**	**14**
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00024	<0.00024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00025	<0.00025
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.00079	<0.0008
Phenanthrene	*0.73*	*2.2*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.00012	0.04	0.071
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.00035	<0.00035
Pyrene	*0.73*	*2.2*	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	0.0029	0.0023
Metals														
Arsenic	*0.01*	*0.01*	0.00203	0.00116 J	0.000563 J	0.0013 J	0.00271	0.00175 J	**0.0103**	0.00838	0.00873	0.00484	**0.0353**	**0.0185**

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-83B 06/07/2018	MW-83B 07/19/2018	MW-83B 01/15/2019	MW-83B 07/18/2019	MW-83B 01/10/2020	MW-83C 02/08/2018	MW-83C 03/22/2018	MW-83C 06/07/2018	MW-83C 01/15/2019	MW-83C 07/18/2019	MW-83C 01/10/2020	MW-84A 03/12/2020
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	**0.02**	**0.03**	**0.032**	**0.021**	**0.021**	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	0.085	0.068	0.091	0.055	0.078	0.00066 J	0.0005 J	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	0.0049	0.007	0.0082	0.0042	0.0052	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*					<0.0002						<0.0002	
Xylenes (total)	*10*	*10*	0.091	0.066	0.1	0.061	0.098	0.0014	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.000087 J	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00004	<0.00004	0.000072 J	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.000041
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000059
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000043
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	**0.23**	0.076	0.086	0.05	0.078	0.0015	0.0015	0.000089 J	<0.000019	0.00012	0.00021	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	0.0003 J	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000048
Acenaphthene	*1.5*	*4.4*	0.11	0.027	0.026	0.021	0.066	0.00083	0.001	0.00017	<0.000027	0.000094 J	0.00018	<0.000028
Acenaphthylene	*1.5*	*4.4*	0.00064	<0.000015	0.00034	0.00025	0.00047	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	*7.3*	*22*	0.007	0.0014	0.0012	0.00099	0.0039	0.000034 J	0.000068 J	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*	0.000058 J	<0.00005	<0.00005	<0.00005	0.00007 J	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000051
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.000031
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00012 J	<0.000037	<0.000064	0.00036	<0.000037	0.00019 J	<0.000037	0.00012 J	<0.000037	0.00023	<0.000037	<0.000038
Chrysene	*0.91*	*2*	0.00009 J	<0.000021	<0.000021	<0.000021	0.000065 J	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	0.061	0.023	0.02	0.014	0.023	0.00061	0.00044	0.000046 J	<0.00002	0.00007 J	0.00015	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	0.000094 J	0.00021	0.00015 J	0.00012 J	<0.00002	<0.00002	<0.00002	0.000092 J	0.00006 J	0.00004 J	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	0.0046	0.00057	0.00051	0.00038	0.0033	0.000044 J	<0.00001	0.000018 J	<0.00001	<0.00001	<0.00001	<0.00001
Fluorene	*0.98*	*2.9*	0.039	0.0083	0.0099	0.0076	0.024	0.00035	0.00034	0.000067 J	<0.00003	<0.00003	0.00012	<0.000031
Naphthalene	*0.49*	*1.5*	**2**	**1.5**	**1.6**	**0.77**	**1.2**	0.012	0.016	0.00039	<0.00036	0.0014	0.0018	0.000023 J
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000026
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000081
Phenanthrene	*0.73*	*2.2*	0.045	0.0086	0.0074	0.0059	0.021	0.00044	0.00053	0.000038 J	<0.000021	<0.000021	0.00017	<0.000021
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.000035	0.00051	<0.000035	<0.000035	<0.000035	<0.000035	0.000038 J	0.000068 J	<0.000035	<0.000036
Pyrene	*0.73*	*2.2*	0.0026	0.00037	0.0003	0.0002	0.0022	0.000027 J	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019
Metals														
Arsenic	*0.01*	*0.01*	**0.0673**	**0.0731**	**0.0916**	**0.0648**	**0.0709**	0.000609 J	<0.0004	0.00139 J	0.00616	0.00617	0.00564	0.00464

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-84A 05/21/2020	MW-84B 02/08/2018	MW-84B 03/27/2018	MW-84B 06/07/2018	MW-84B 07/19/2018	MW-84B 07/19/2018 Duplicate	MW-84B 01/24/2019	MW-84B 07/30/2019	MW-84B 01/16/2020	MW-85C 02/01/2018	MW-85C 03/28/2018	MW-85C 05/24/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.0002	**0.0097**	**0.0086**	0.0017	0.002	0.0019	0.0024	**0.01**	**0.0064**	<0.0002	**0.013**	0.0026
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0003	0.039	0.037	0.0036	0.0029	0.0026	0.0051	0.013	0.0094	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.0002	0.0025	0.00099 J	<0.0002	<0.0002	<0.0002	0.00056 J	0.0015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.0003	0.035	0.031	0.003	0.0019	0.0017	0.0033	0.0041	0.0032	<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	**0.0014 J**	<0.00021	<0.00021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.0004	<0.0004	0.0017 J	0.00048	<0.00004	<0.00016	0.00081	0.00048	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.00058	<0.00058	<0.00058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.00042	<0.00042	<0.00042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.00021	<0.00021	<0.00021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	**0.55**	**0.58**	0.025	0.074 J	**0.2 J**	<0.000019	0.0027	0.0065	0.0001 J	0.000049 J	0.000067 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.0002	<0.0002	**0.0038**	<0.00002	<0.00002	<0.00002	<0.00002	0.00035	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.00047	<0.00047	<0.00047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	<0.000027	0.22	0.27	0.031	0.048 J	0.14 J	0.000032 J	0.008	0.025	0.00013	<0.000027	<0.000027
Acenaphthylene	*1.5*	*4.4*	<0.000015	0.003	0.0032	0.00061 J	0.00062	<0.000015	0.000043 J	0.0003	0.00031	<0.000015	<0.000015	<0.000015
Anthracene	*7.3*	*22*	<0.000014	0.02	0.0092	0.0022	0.0027 J	0.0042 J	<0.000014	0.00042	0.00095	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.0005	<0.0005	<0.0005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.0002	<0.0002	<0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.0003	<0.0003	<0.0003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	0.00056 J	<0.00037	<0.00037	<0.000037	<0.000037	<0.000037	0.00026	<0.000037	0.000091 J	0.0002	0.00013 J
Chrysene	*0.91*	*2*	<0.000021	<0.00021	<0.00021	<0.00021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	<0.00002	**0.13**	**0.22**	0.019	0.037 J	0.077 J	<0.00002	0.0054	0.015	0.000087 J	<0.00002	0.000036 J
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.0002	<0.0002	<0.0002	<0.00002	<0.00002	<0.00002	0.000055 J	<0.00002	0.00023	<0.00002	0.00003 J
Fluoranthene	*0.98*	*2.9*	<0.00001	0.0039	0.0029	0.00069 J	0.0011 J	0.0016 J	<0.00001	0.00015	0.00037	0.000015 J	<0.00001	<0.00001
Fluorene	*0.98*	*2.9*	<0.00003	0.074	0.076	0.011	0.018 J	0.039 J	<0.00003	0.0026	0.0063	0.00011	<0.00003	0.000034 J
Naphthalene	*0.49*	*1.5*	<0.00002	**2.4**	**2.2**	0.066	0.49 J	**0.95 J**	<0.00002	0.06 J	0.13	0.00069	0.0017	0.0026
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.00024	<0.00024	<0.00024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.00025	<0.00025	<0.00025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.00079	<0.00079	<0.00079	**0.005**	0.000094 J	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	0.00015 J
Phenanthrene	*0.73*	*2.2*	<0.000021	0.088	0.072	0.013	0.024 J	0.043 J	<0.000021	0.0021	0.0065	0.0001	<0.000021	0.0001
Phenol	*7.3*	*22*	<0.000035	<0.00035	<0.00035	0.00062 J	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	0.00011 J	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	<0.000019	0.0025	0.0018	0.00036 J	0.00062 J	0.00097 J	<0.000019	0.00011	0.00025	<0.000019	<0.000019	<0.000019
Metals														
Arsenic	*0.01*	*0.01*	**0.0112**	0.00269	0.00277	<0.0004	<0.0004	<0.0004	0.00219	0.00838	0.00363	0.00152 J	0.00287	0.00588

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-85C 02/01/2019	MW-85C 07/30/2019	MW-85C 01/09/2020	MW-86C 02/01/2018	MW-86C 02/01/2018	MW-86C 03/28/2018	MW-86C 03/28/2018 Duplicate	MW-86C 05/25/2018	MW-86C 05/25/2018 Duplicate	MW-86C 01/11/2019	MW-86C 01/11/2019 Duplicate	MW-86C 07/30/2019
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.0002	0.00093 J	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*				<0.0002	<0.0002	<0.0002						
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	0.000069 J	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.000041	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000043	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	<0.000041	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.000048	<0.000047	0.00077 J	<0.000047	0.0003 J	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	<0.000028	<0.000027	<0.000077	0.00091	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	*7.3*	*22*	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*	<0.000051	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	0.000031 J	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.000031	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000038	<0.000037	<0.00016	0.000053 J	<0.000037	<0.000037	<0.000037	0.000052 J	0.000061 J	<0.000057	<0.0001	0.00006 J
Chrysene	*0.91*	*2*	<0.000021	<0.000021	0.000053 J	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00002	<0.000059	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.00002	0.000093 J	0.000051 J	<0.00002	<0.00002	<0.00002	<0.00002	0.000072 J	0.00011 J	0.00011 J
Fluoranthene	*0.98*	*2.9*	<0.00001	<0.00001	0.00025	0.00011	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Fluorene	*0.98*	*2.9*	<0.000031	<0.00003	<0.000055	0.00038	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
Naphthalene	*0.49*	*1.5*	<0.00002	0.0012 J	<0.00046	0.000054 J	<0.00002	<0.00002	<0.00002	0.000079 J	<0.00002	0.000079 J	<0.00002	0.00012 J
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000026	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.000081	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	<0.000021	<0.000021	<0.000067	<0.000021	<0.000021	<0.000021	<0.000021	0.000032 J	<0.000021	<0.000021	<0.000021	<0.000021
Phenol	*7.3*	*22*	<0.000036	<0.000035	<0.000042	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	<0.000019	<0.000019	0.00021	0.00006 J	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019
Metals														
Arsenic	*0.01*	*0.01*	0.00136 J	0.000633 J	0.00272	0.00146 J	0.00156 J	0.00612	0.00608	0.00768	0.00824	0.00402	0.00405	0.00236

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-86C 07/30/2019 Duplicate	MW-86C 01/17/2020	MW-86C 01/17/2020 Duplicate	MW-87C 02/08/2018	MW-87C 03/27/2018	MW-87C 06/07/2018	MW-87C 01/22/2019	MW-87C 07/17/2019	MW-87C 01/20/2020	MW-88A 03/17/2020	MW-88A 05/26/2020	MW-88B 03/17/2020
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.0002	0.0039	0.0045	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*	<0.0002								<0.0002			
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	**0.0028**	0.00041 J	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	0.00018 J	<0.00004	<0.00004	<0.00004	0.00004 J	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	0.000058 J	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	0.000042 J	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.000021 J	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	0.000061 J	0.000066 J	0.00043	0.00014	0.000019 J	<0.000019	<0.000019	0.00023	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00002 J	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	0.00033 J	<0.000047	0.000047 J	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	<0.000027	<0.000027	<0.000027	0.00042	0.00011	0.000027 J	<0.000027	<0.000027	0.00011	0.0015	0.0011	<0.000027
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	0.000015 J	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	*7.3*	*22*	<0.000014	<0.000014	0.00012	0.000081 J	<0.000014	0.000014 J	<0.000014	<0.000014	0.000088 J	<0.000014	0.00015	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00005 J	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00002 J	<0.00002	<0.00002	0.000066 J	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	0.00003 J	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00005 J	<0.000037	<0.000053	0.0003	<0.000037	0.00012 J	<0.000037	<0.00018	<0.000037	0.0001 J	0.000064 J	<0.000037
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.000021 J	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00002	<0.00002	0.00032	0.000063 J	0.00002 J	<0.00002	<0.00002	0.00011	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	0.000073 J	<0.00002	<0.00002	<0.00002	<0.00002	0.00002 J	<0.00002	0.00017 J	<0.00002	<0.00002	0.00008 J	<0.00002
Fluoranthene	*0.98*	*2.9*	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00001 J	<0.00001	<0.00001	<0.000086	0.00025	0.00022 J	<0.00001
Fluorene	*0.98*	*2.9*	<0.00003	<0.00003	<0.00003	0.00027	<0.00003	0.00003 J	<0.00003	<0.00003	0.000093 J	0.00026	0.000075 J	<0.00003
Naphthalene	*0.49*	*1.5*	0.00031 J	<0.00075	<0.00022	0.0014	0.00038	0.00002 J	<0.00002	<0.00017	0.0011	<0.00002	<0.00002	<0.00002
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	0.000024 J	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	0.000025 J	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	0.000079 J	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	<0.000021	<0.000021	0.00036	0.00048	0.00015	0.000021 J	<0.000021	<0.000021	<0.00028	<0.000021	0.000027 J	<0.000021
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.000035	<0.00011	<0.000035	0.000035 J	<0.000035	0.00013 J	0.00048	<0.000035	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	0.000019 J	<0.000019	<0.000019	<0.000057	0.00053	0.0006	<0.000019
Metals														
Arsenic	*0.01*	*0.01*	0.0019 J	0.000645 J	0.000699 J	<0.0004	<0.0004	<0.0004	0.000587 J	<0.0004	0.00135 J	0.00355	0.00405	0.00166 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-88B 05/26/2020	MW-88C 02/01/2018	MW-88C 03/19/2018	MW-88C 05/24/2018	MW-88C 01/08/2019	MW-88C 07/31/2019	MW-88C 01/14/2020	MW-89B 07/19/2018	MW-89B 01/22/2019	MW-89B 07/18/2019	MW-89B 01/16/2020	MW-90B 07/19/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058	<0.000059	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	0.000052 J	<0.000019	<0.000019	<0.000019	<0.000019	0.000054 J	<0.000019	0.00005 J	<0.000032	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	<0.000027	0.000053 J	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000083	<0.000027
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	0.000045 J	<0.000015
Anthracene	*7.3*	*22*	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	0.0002	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00005	<0.000051	<0.00005	<0.00005	<0.00005	<0.00005	<0.000051	<0.00005	0.00017	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.000079 J	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.000052 J	0.000052 J	<0.000037	0.00017 J	<0.000037	<0.000037	0.000064 J	0.000065 J	<0.000037	0.00015 J	0.000099 J	0.000097 J
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.00024	<0.000021
Dibenzofuran	*0.098*	*0.29*	<0.00002	0.000023 J	0.000056 J	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00011	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	0.00015 J	<0.00002	0.000025 J	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.000038 J	0.000034 J	<0.00002
Fluoranthene	*0.98*	*2.9*	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.0012	<0.00001
Fluorene	*0.98*	*2.9*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00018	<0.00003
Naphthalene	*0.49*	*1.5*	<0.00002	0.00011	0.00055	0.00011	<0.000059	<0.00002	<0.00002	0.0009	<0.00002	0.00025	<0.00029	<0.00002
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	<0.00008	<0.000079	<0.000079	<0.000079	<0.000079	<0.00008	<0.000079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	<0.000021	0.00003 J	<0.000021	0.000035 J	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.00083	<0.000021
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	0.00055	<0.000035	<0.000035	<0.000035	0.00042	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	0.00081	<0.000019
Metals														
Arsenic	*0.01*	*0.01*	0.00246	0.000557 J	0.000653 J	0.00346	0.000864 J	<0.0004	0.000862 J	0.00138 J	0.000683 J	<0.0004	0.000463 J	0.00169 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-90B 01/22/2019	MW-90B 07/18/2019	MW-90B 01/20/2020	MW-91A 03/12/2020	MW-91A 05/21/2020	MW-92B 03/12/2020	MW-92B 05/21/2020	MW-93B 03/12/2020	MW-93B 05/22/2020	MW-94A 03/12/2020	MW-94A 05/22/2020	MW-95A 03/17/2020
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.00049 J	<0.0002	0.00092 J	0.00036 J	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*			<0.0002									
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000022	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000022	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	0.000075 J	<0.000042	<0.00004	<0.00004	<0.00004	<0.000041	<0.00004	<0.000041	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	<0.000061	<0.000058	<0.000059	<0.000058	<0.000059	<0.000058	<0.00006	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.000044	<0.000042	<0.000042	<0.000042	<0.000043	<0.000042	<0.000043	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000022	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000022	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	0.00034	<0.00002	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.00002	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.000021	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.000021	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000049	<0.000047	<0.000047	<0.000047	<0.000048	<0.000047	<0.000048	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	<0.000027	<0.000027	0.00015	<0.000028	<0.000027	<0.000027	<0.000027	0.000039 J	<0.000027	<0.000028	<0.000027	<0.000027
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.000016	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	*7.3*	*22*	<0.000014	<0.000014	0.00014	<0.000015	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00005	<0.000053	<0.00005	<0.000051	<0.00005	<0.000051	<0.00005	<0.000052	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	0.000052 J	<0.000021	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.000021	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.000032	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.000031	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	0.00011 J	<0.000037	<0.000039	<0.000037	<0.000037	<0.000037	<0.000038	0.000053 J	0.000056 J	<0.000037	<0.000037
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	<0.000022	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000022	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00002	0.00011	<0.000021	<0.00002	<0.00002	<0.00002	0.000071 J	<0.00002	<0.000021	<0.00002	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.00002	0.000031 J	0.00019 J	<0.00002	<0.00002	<0.00002	0.000068 J	<0.000021	0.000072 J	<0.00002
Fluoranthene	*0.98*	*2.9*	<0.00001	<0.00001	<0.00012	<0.000011	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Fluorene	*0.98*	*2.9*	<0.00003	<0.00003	0.00013	<0.000032	<0.00003	<0.00003	<0.00003	0.000058 J	<0.00003	<0.000031	<0.00003	<0.00003
Naphthalene	*0.49*	*1.5*	0.000045 J	0.000091 J	0.003	0.000083 J	0.00037	<0.00002	<0.00002	<0.00002	<0.00002	<0.000021	<0.00002	<0.00002
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000025	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000025	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000026	<0.000025	<0.000025	<0.000025	<0.000026	<0.000025	<0.000026	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	<0.000083	<0.000079	<0.00008	<0.000079	<0.000081	<0.000079	<0.000081	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	<0.000021	<0.000021	0.0004	<0.000022	<0.000021	<0.000021	<0.000021	0.00016	<0.000021	<0.000022	<0.000021	<0.000021
Phenol	*7.3*	*22*	<0.000035	<0.000035	0.00019 J	<0.000037	<0.000035	<0.000035	<0.000035	<0.000036	<0.000035	<0.000036	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	<0.000019	<0.000019	<0.000077	<0.00002	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.00002	<0.000019	<0.000019
Metals														
Arsenic	*0.01*	*0.01*	0.00346	**0.0135**	0.0029	0.00989	**0.0169**	0.00201	0.0038	0.00455	**0.0133**	0.0054	0.006	0.000977 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-95A 05/22/2020	MW-96B 03/17/2020	MW-96B 03/17/2020 Duplicate	MW-96B 05/22/2020	MW-97A 03/12/2020	MW-97A 05/26/2020	MW-98A 03/12/2020	MW-98A 05/26/2020	MW-98B 03/12/2020	MW-98B 05/26/2020	MW-99C 03/11/2020	MW-99C 05/22/2020
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.00065 J	<0.0002	0.002	0.00054 J	0.00078 J	0.00051 J
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	0.000078 J	<0.00004	<0.000041	<0.00004	<0.000041	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	<0.000058	<0.000059	<0.000058	<0.000059	<0.000058	<0.000059	<0.000058	<0.000059	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000043	<0.000042	<0.000043	<0.000042	<0.000043	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	0.000086 J	0.000036 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000048	<0.000047	<0.000048	<0.000047	<0.000048	<0.000047
Acenaphthene	*1.5*	*4.4*	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	0.00004 J	<0.000027	<0.000028	<0.000027	<0.000028	<0.000027
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	*7.3*	*22*	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	0.000055 J	<0.000014	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00005	<0.00005	<0.000051	<0.00005	<0.000051	<0.00005	<0.000051	<0.00005	<0.000051	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.000031	<0.00003	<0.000031	<0.00003	<0.000031	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	0.00035	0.00013 J	<0.000037	<0.000037	<0.000037	<0.000038	0.000068 J	<0.000038	<0.000037	0.00007 J	<0.000037
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.00002	0.000077 J	<0.00002	0.000084 J	<0.00002	0.000027 J	<0.00002	0.00011 J	<0.00002	0.00019 J
Fluoranthene	*0.98*	*2.9*	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.000018 J	0.000023 J	<0.00001	<0.00001	<0.00001	<0.00001
Fluorene	*0.98*	*2.9*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.000031	<0.00003	<0.000031	<0.00003	<0.000031	<0.00003
Naphthalene	*0.49*	*1.5*	<0.00002	<0.00002	<0.00002	0.000083 J	<0.00002	<0.00002	0.000042 J	<0.00002	0.000036 J	<0.00002	0.00018	0.0004
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000026	<0.000025	<0.000026	<0.000025	<0.000026	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	<0.000079	<0.00008	<0.000079	<0.000081	<0.000079	<0.000081	<0.000079	<0.000081	<0.000079
Phenanthrene	*0.73*	*2.2*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.000048 J	<0.000021	<0.000021	0.000053 J	<0.000021
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000036	<0.000035	<0.000036	<0.000035	<0.000036	<0.000035
Pyrene	*0.73*	*2.2*	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019
Metals														
Arsenic	*0.01*	*0.01*	0.00254	0.00312	0.00311	0.00179 J	0.00121 J	0.00438	0.00963	**0.0119**	0.00165 J	0.00214	0.000866 J	0.000455 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	P-10 01/29/2008	P-10 01/29/2008 Duplicate	P-10 07/16/2008	P-10 01/22/2009	P-10 07/22/2009	P-10 07/22/2009 Duplicate	P-10 01/22/2010	P-10 01/22/2010 Duplicate	P-10 07/14/2010	P-10 07/14/2010 Duplicate	P-10 01/12/2011	P-10 07/12/2011
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*			<0.00052									
Benzene	*0.005*	*0.005*			<0.00025									
Chlorobenzene	*0.1*	*0.1*			<0.00047									
Ethylbenzene	*0.7*	*0.7*			<0.00025									
Methylene chloride	*0.005*	*0.005*			<0.00054									
Toluene	*1*	*1*			<0.00041									
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*			<0.00127									
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*												
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	0.00373	0.00854	0.0106	<0.0008	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0005
Acenaphthylene	*1.5*	*4.4*	<0.00028	<0.00028	0.00053	<0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Anthracene	*7.3*	*22*	0.000703	0.00036 J	0.000747	<0.0007	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0005
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00023 J	<0.00019	0.00022 J	<0.0012	<0.0033	<0.0033	<0.0033	<0.0033	<0.0033	<0.0033	<0.0033	<0.0005
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	0.000713	0.00175	0.00176	<0.0007	<0.0007	<0.0007	<0.0007	<0.0007	<0.0007	<0.0007	<0.0007	<0.0005
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00019	<0.00019	0.00092 J	<0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Fluoranthene	*0.98*	*2.9*	0.000506	0.00025 J	0.00022 J	<0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Fluorene	*0.98*	*2.9*	0.000668	0.00251	0.00245	<0.0008	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0005
Naphthalene	*0.49*	*1.5*	<0.00038	<0.00037	0.00079	<0.0008	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0005
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*												
Phenol	*7.3*	*22*	<0.00019	<0.00019	<0.00021	<0.0015	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Pyrene	*0.73*	*2.2*	0.00039 J	<0.00019	<0.00021	<0.0009	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	P-10 07/12/2011 Duplicate	P-10 01/31/2012	P-10 01/31/2012 Duplicate	P-10 07/11/2012	P-10 07/11/2012 Duplicate	P-10 01/10/2013	P-10 01/10/2013 Duplicate	P-10 07/11/2013	P-10 07/11/2013 Duplicate	P-10 01/09/2014	P-10 01/09/2014 Duplicate	P-10 07/02/2014
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*												
Benzene	*0.005*	*0.005*												
Chlorobenzene	*0.1*	*0.1*												
Ethylbenzene	*0.7*	*0.7*												
Methylene chloride	*0.005*	*0.005*												
Toluene	*1*	*1*												
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*												
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*												0.0000718 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0000755	<0.0000755	<0.0000808	<0.0000812	0.000102 J	0.000966	0.01 J
Acenaphthylene	*1.5*	*4.4*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0000566	<0.0000566	<0.0000606	<0.0000609	<0.0000556	0.0000571 J	0.0000588 J
Anthracene	*7.3*	*22*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0000472 J	0.000148 J	0.000133 J	0.000181 J	0.000323 J	0.000369 J	0.000375 J
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.0015 J	<0.0005	<0.0005	<0.0005	<0.0005	0.000906	0.00112	0.000492 J	0.000575	<0.000343	<0.000343	0.00127
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0000755	<0.0000755	<0.0000808	<0.0000812	<0.0000741	0.000135 J	0.00205 J
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.000104	<0.000104	<0.000111	<0.000112	<0.000262	<0.000309	0.000108 J
Fluoranthene	*0.98*	*2.9*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.000066	<0.000066	<0.0000707	<0.0000711	<0.0000648	<0.0000648	0.00042 J
Fluorene	*0.98*	*2.9*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.000066	<0.000066	<0.0000707	<0.0000711	<0.0000648	0.000262 J	0.00393
Naphthalene	*0.49*	*1.5*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0000755	<0.0000755	<0.0000808	<0.0000812	<0.0000741	<0.0000741	0.0000784 J
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*												0.000575 J
Phenol	*7.3*	*22*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0000377	<0.0000377	<0.0000404	<0.0000406	<0.000037	<0.000037	<0.0000392
Pyrene	*0.73*	*2.2*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.000104	<0.000104	<0.000111	<0.000112	<0.000102	<0.000102	0.000318 J
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	P-10 07/02/2014 Duplicate	P-10 01/07/2015	P-10 01/07/2015 Duplicate	P-10 07/08/2015	P-10 07/08/2015 Duplicate	P-10 01/13/2016	P-10 01/13/2016 Duplicate	P-10 07/07/2016	P-10 07/07/2016 Duplicate	P-10 01/12/2017	P-10 01/12/2017 Duplicate	P-10 07/13/2017
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*												
Benzene	*0.005*	*0.005*												
Chlorobenzene	*0.1*	*0.1*												
Ethylbenzene	*0.7*	*0.7*												
Methylene chloride	*0.005*	*0.005*												
Toluene	*1*	*1*												
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*												
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*	0.000891 J											
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	0.0169 J	<0.0000792	<0.0000792	0.023	0.022	<0.000027	<0.000027	<0.000027	<0.000027	0.000027 J	0.000078 J	<0.000027
Acenaphthylene	*1.5*	*4.4*	0.000265 J	<0.0000594	<0.0000594	0.00012	0.00012	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	*7.3*	*22*	0.000473 J	0.000122 J	0.000115 J	0.00039	0.00033	0.000014 J	0.00007 J	<0.000014	<0.000014	0.000014 J	0.000081 J	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00133	0.000853 J	0.00155 J	0.0006 J	0.00032 J	0.0002 J	0.00035 J	0.00029	0.0003	0.00025 J	0.00018 J	0.000097 J
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	0.00304 J	<0.0000792	<0.0000792	0.0024	0.0021	<0.00002	<0.00002	<0.00002	<0.00002	0.00002 J	0.000055 J	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	0.000321 J	<0.000109	<0.000119	<0.000044	<0.000059	<0.000058	<0.00011	<0.000046	<0.000031	<0.00002	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	0.00039 J	0.000114 J	0.000113 J	0.0006	0.00047	<0.00001	<0.00001	<0.00001	<0.00001	0.00001 J	0.000088 J	<0.00001
Fluorene	*0.98*	*2.9*	0.00514	<0.0000693	<0.0000693	0.0046	0.0038	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
Naphthalene	*0.49*	*1.5*	0.000924 J	<0.0000792	<0.0000792	0.019	0.018	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*	0.000808 J											
Phenol	*7.3*	*22*	<0.0000396	<0.0000396	<0.0000396	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	0.000306 J	<0.000109	<0.000109	0.00038	0.00029	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	0.000022 J	<0.000019
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	P-10 07/13/2017 Duplicate	P-10 01/04/2018	P-10 01/04/2018 Duplicate	P-10 07/19/2018	P-10 07/19/2018 Duplicate	P-10 01/08/2019	P-10 01/08/2019 Duplicate	P-10 07/01/2019	P-10 01/13/2020	P-11 01/30/2008	P-11 07/15/2008	P-11 02/04/2009
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*										<0.00052	<0.00052	<0.0005
Benzene	*0.005*	*0.005*										<0.00025	<0.00025	<0.0005
Chlorobenzene	*0.1*	*0.1*										<0.00047	<0.00047	<0.0005
Ethylbenzene	*0.7*	*0.7*										<0.00025	<0.00025	<0.0005
Methylene chloride	*0.005*	*0.005*										<0.00054	<0.00054	<0.0005
Toluene	*1*	*1*										<0.00041	<0.00041	<0.0005
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*										<0.00127	<0.00127	<0.001
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*										<0.00008	<0.00008	<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*										<0.00031	<0.00028	<0.00008
2,4-Dinitrotoluene	*0.0013*	*0.003*										<0.00021	<0.00019	<0.00009
2,6-Dinitrotoluene	*0.0013*	*0.003*										<0.00021	<0.00019	<0.00007
2-Chloronaphthalene	*2*	*5.8*										<0.00042	<0.00038	<0.00012
2-Methylnaphthalene	*0.098*	*0.29*										0.000783	<0.00038	<0.00007
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*										<0.00021	<0.00047	<0.00008
4-Nitrophenol	*0.049*	*0.15*										<0.00026	<0.00024	<0.00007
Acenaphthene	*1.5*	*4.4*	<0.000027	<0.000027	0.0033	0.041	0.043	<0.000027	<0.000027	0.0028	<0.000027	0.0776	<0.00028	0.0057
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	0.00038	0.00032	<0.000015	<0.000015	<0.000015	<0.000015	<0.00031	<0.00028	<0.00006
Anthracene	*7.3*	*22*	<0.000014	<0.000014	0.00017	0.00058	0.0006	0.00025	0.00021	0.000065 J	<0.000014	0.00356	<0.00019	0.00015 J
Benzo(a)anthracene	*0.0091*	*0.02*										<0.00021	<0.00019	<0.00007
Benzo(a)pyrene	*0.0002*	*0.0002*										**<0.00021**	<0.00019	<0.00008
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*										<0.00042	<0.00038	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00016 J	<0.00024	<0.00017	<0.00019	<0.00022	<0.000061	<0.000057	0.00029	<0.000037	0.00116 J	<0.00019	0.00022
Chrysene	*0.91*	*2*										<0.00021	<0.00019	<0.00007
Dibenzofuran	*0.098*	*0.29*	<0.00002	0.00029	0.00093	0.0047	0.0042	<0.00002	<0.00002	<0.00002	<0.00002	<0.00031	<0.00028	0.00024
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.000042	<0.000034	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00021	<0.00019	<0.00007
Fluoranthene	*0.98*	*2.9*	<0.00001	0.00017	0.00016	0.00099	0.001	<0.00001	<0.00001	<0.00001	<0.00001	0.0061	<0.00019	<0.00007
Fluorene	*0.98*	*2.9*	<0.00003	0.00042	0.0012	0.0073	0.007	<0.00003	0.00003 J	<0.00003	<0.00003	0.0219	<0.00019	0.0018
Naphthalene	*0.49*	*1.5*	<0.00002	<0.00002	0.0034	0.00014	0.000056 J	<0.00002	<0.00002	0.000063 J	0.00017	0.0324	<0.00038	0.0027
Nitrobenzene	*0.049*	*0.15*										<0.00042	<0.00038	<0.00009
N-Nitrosodiphenylamine	*0.19*	*0.42*										<0.00026	<0.00024	<0.00009
Pentachlorophenol	*0.001*	*0.001*										<0.00021	<0.00019	<0.00008
Phenanthrene	*0.73*	*2.2*										0.0196	<0.00019	0.00048
Phenol	*7.3*	*22*	<0.000035	<0.000035	0.0014	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.00021	<0.00019	<0.00007
Pyrene	*0.73*	*2.2*	<0.000019	<0.000019	<0.000019	0.00049	0.00048	<0.000019	<0.000019	<0.000019	<0.000019	0.00369	<0.00019	<0.00007
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	P-11 01/21/2010	P-11 06/22/2010	P-11 01/18/2011	P-11 07/27/2011	P-11 02/02/2012	P-11 07/26/2012	P-11 02/05/2013	P-11 08/01/2013	P-11 01/15/2014	P-11 07/29/2014	P-11 01/24/2018	P-11 03/23/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	0.000207 J	<0.00008	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	0.000253 J	<0.00011	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001
Toluene	*1*	*1*	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*							<0.00011					
Xylenes (total)	*10*	*10*	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.000104	<0.000105	<0.000104	<0.000108	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**R**	<0.000295	<0.000292	<0.000304	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000123	<0.000124	<0.000123	<0.000127	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000755	<0.0000762	<0.0000755	<0.0000784	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000762	<0.0000755	<0.0000784	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	<0.00007	<0.00007	<0.00007	<0.00005	0.00023	<0.000052	0.000127 J	<0.0000667	0.000257 J	<0.0000686	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	**R**	<0.00079	<0.000783	<0.000814	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	**R**	<0.000533	<0.000528	<0.000549	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	<0.00009	0.0037	<0.00009	0.00075	0.03	0.018	<0.0000755	<0.0000762	0.00951	0.000653	<0.000027	0.00021
Acenaphthylene	*1.5*	*4.4*	<0.00007	<0.00007	<0.00007	<0.00005	0.0002	0.0001 J	<0.0000566	<0.0000571	<0.0000566	<0.0000588	<0.000015	<0.000015
Anthracene	*7.3*	*22*	<0.00007	0.00012 J	<0.00007	0.00012 J	0.0016	0.00039	0.00025 J	0.0000997 J	0.000503	0.000119 J	<0.000014	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000762	<0.0000755	<0.0000784	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000762	<0.0000755	<0.0000784	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000123	<0.000124	<0.000123	<0.000127	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00051	<0.00021	0.0016	0.00018 J	<0.00013	0.00021	0.00036 J	0.000593 J	0.00403	<0.000711	0.00018 J	<0.000037
Chrysene	*0.91*	*2*	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000762	<0.0000755	<0.0000784	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	<0.00008	0.000093 J	<0.00008	0.00013 J	0.0035	0.00059	0.000135 J	<0.0000762	0.00103	0.000176 J	<0.00002	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000104	<0.000105	<0.000104	<0.000108	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	<0.00007	0.00042	<0.00007	0.000081 J	0.0022	0.00048	<0.000066	<0.0000667	0.000287 J	0.0000771 J	0.000038 J	<0.00001
Fluorene	*0.98*	*2.9*	<0.00007	0.0016	<0.00007	0.000082 J	0.011	0.0044 J	0.0000769 J	<0.0000667	0.00264	0.000344 J	0.000045 J	<0.00003
Naphthalene	*0.49*	*1.5*	<0.0001	0.0027	<0.0001	0.00013 J	0.0017	<0.00026	0.000662	<0.0000762	0.0554	<0.0000784	<0.00002	<0.00002
Nitrobenzene	*0.049*	*0.15*	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000104	<0.000105	<0.000104	<0.000108	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000943	<0.0000952	<0.0000943	<0.000098	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**R**	<0.000581	<0.000575	<0.000598	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	<0.00007	0.00053	<0.00007	0.000086 J	0.0045	0.00055	0.0000854 J	<0.0000571	0.00189	<0.000317	<0.000021	<0.000021
Phenol	*7.3*	*22*	<0.00007	<0.00007	<0.00007	<0.00005	<0.00015	<0.00005	**R**	<0.0000381	<0.0000377	<0.0000392	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	<0.00007	0.00015 J	<0.00007	<0.00005	0.0013	0.00023	<0.000104	<0.000105	0.000274 J	<0.000108	0.000039 J	<0.000019
Metals														
Arsenic	*0.01*	*0.01*											**0.0374**	**0.016**

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	P-11 05/24/2018	P-11 01/09/2019	P-11 07/11/2019	P-11 01/14/2020	P-12 01/29/2008	P-12 07/16/2008	P-12 07/16/2008 Duplicate	P-12 01/22/2009	P-12 01/22/2009 Duplicate	P-12 07/22/2009	P-12 01/22/2010	P-12 07/14/2010
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002		<0.00109	<0.00052					
Benzene	*0.005*	*0.005*	0.00021 J	<0.0002	<0.0002	<0.0002		<0.00112	<0.00025					
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003		<0.0015	<0.00047					
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003		<0.00142	<0.00025					
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001		<0.00122	<0.00054					
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002		<0.00138	<0.00041					
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	0.00032 J	<0.0003	<0.0003	<0.0003		<0.00302	<0.00127					
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021								
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00004	<0.00004								
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000059	<0.000058	<0.000058	<0.000058								
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.000042								
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021								
2-Methylnaphthalene	*0.098*	*0.29*	0.00015	<0.000019	0.00005 J	0.000076 J						<0.0009		
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002								
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000047								
Acenaphthene	*1.5*	*4.4*	0.081	<0.000027	0.0019	0.0046	<0.00029	<0.0003	<0.0003	<0.0008	<0.0008	<0.0009	<0.0009	<0.0009
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.000015	<0.00029	<0.0003	<0.0003	<0.0007	<0.0007	<0.0005	<0.0005	<0.0005
Anthracene	*7.3*	*22*	0.0037	<0.000014	0.000063 J	0.000081 J	0.000645	0.000552	0.000566	<0.0007	<0.0007	<0.0006	<0.0006	<0.0006
Benzo(a)anthracene	*0.0091*	*0.02*	<0.000051	<0.00005	<0.00005	<0.00005								
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00002								
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003								
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.000063 J	<0.000037	0.000087 J	<0.000037	<0.00019	0.00034 J	0.00064 J	<0.0012	<0.0012	<0.0033	<0.0033	<0.0033
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	<0.000021								
Dibenzofuran	*0.098*	*0.29*	0.0016	<0.00002	0.000079 J	0.00016	<0.00029	<0.0003	<0.0003	<0.0007	<0.0007	<0.0007	<0.0007	<0.0007
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	0.000025 J	<0.00002	<0.00002	<0.00002	<0.00019	0.00085 J	0.00087 J	<0.0007	<0.0007	<0.0005	<0.0005	<0.0005
Fluoranthene	*0.98*	*2.9*	0.0056	<0.00001	0.00006 J	<0.00001	<0.00019	<0.0002	<0.0002	<0.0006	<0.0006	<0.0005	<0.0005	<0.0005
Fluorene	*0.98*	*2.9*	0.037	<0.00003	0.00074	0.0013	<0.00019	<0.0002	<0.0002	<0.0008	<0.0008	<0.0006	<0.0006	<0.0006
Naphthalene	*0.49*	*1.5*	0.0024	<0.00002	<0.0018	0.00048	<0.00038	0.000626	0.000639	<0.0008	<0.0008	<0.0006	<0.0006	<0.0006
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024								
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025								
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.000079	<0.000079	<0.000079								
Phenanthrene	*0.73*	*2.2*	0.04	<0.000021	0.0002	0.00035						<0.0005		
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.000035	<0.000035	<0.00019	<0.0002	<0.0002	<0.0015	<0.0015	<0.0005	<0.0005	<0.0005
Pyrene	*0.73*	*2.2*	0.0032	<0.000019	0.000036 J	<0.000019	0.00932	0.00211	0.00166	0.0026 J	0.0012 J	<0.0005	<0.0005	<0.0005
Metals														
Arsenic	*0.01*	*0.01*	**0.0622**	**0.0183**	**0.0704**	**0.036**								

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	P-12 01/12/2011	P-12 07/12/2011	P-12 01/31/2012	P-12 07/11/2012	P-12 01/09/2013	P-12 07/11/2013	P-12 01/09/2014	P-12 07/02/2014	P-12 01/07/2015	P-12 07/08/2015	P-12 01/13/2016	P-12 07/07/2016
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*												
Benzene	*0.005*	*0.005*												
Chlorobenzene	*0.1*	*0.1*												
Ethylbenzene	*0.7*	*0.7*												
Methylene chloride	*0.005*	*0.005*												
Toluene	*1*	*1*												
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*												
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*								<0.000066				
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	<0.0009	<0.0005	<0.0005	<0.0005	<0.0000755	<0.00008	<0.0000741	<0.0000755	<0.0000792	<0.000027	<0.000027	<0.000027
Acenaphthylene	*1.5*	*4.4*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0000566	<0.00006	<0.0000556	<0.0000566	<0.0000594	<0.000015	<0.000015	<0.000015
Anthracene	*7.3*	*22*	<0.0006	<0.0005	<0.0005	<0.0005	<0.0000472	<0.00005	0.0002 J	0.000189 J	<0.0000495	<0.000014	<0.000014	0.000026 J
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0033	<0.0005	<0.0005	<0.0005	0.00142 J	0.00039 J	0.000515 J	0.000439 J	<0.000366	0.00055	0.00036	0.000086 J
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	<0.0007	<0.0005	<0.0005	<0.0005	<0.0000755	<0.00008	<0.0000741	<0.0000755	<0.0000792	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.0005	<0.0005	<0.0005	<0.0005	<0.000104	<0.00011	<0.000416	0.000144 J	<0.000109	<0.00002	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	<0.0005	<0.0005	<0.0005	<0.0005	<0.000066	<0.00007	<0.0000648	<0.000066	<0.0000693	<0.00001	<0.00001	<0.00001
Fluorene	*0.98*	*2.9*	<0.0006	<0.0005	<0.0005	<0.0005	<0.000066	<0.00007	<0.0000648	<0.000066	<0.0000693	<0.00003	<0.00003	<0.00003
Naphthalene	*0.49*	*1.5*	0.0006 J	<0.0005	<0.0005	<0.0005	<0.0000755	<0.00008	<0.0000741	<0.0000755	<0.0000792	<0.00002	<0.00002	<0.00002
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*								<0.0000566				
Phenol	*7.3*	*22*	0.0005 J	<0.0005	<0.0005	<0.0005	<0.0000377	<0.00004	<0.000037	<0.0000377	<0.0000396	<0.000035	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	<0.0005	<0.0005	<0.0005	<0.0005	<0.000104	<0.00011	<0.000102	0.00189	0.00152 J	<0.000019	<0.000019	<0.000019
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	P-12 01/12/2017	P-12 07/13/2017	P-12 01/04/2018	P-12 07/19/2018	P-12 01/07/2019	P-12 07/01/2019	P-12 01/13/2020	TW-41B 01/19/2010	TW-41B 07/27/2011	TW-41B 02/01/2012	TW-41B 07/26/2012	TW-41B 02/05/2013
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*								<0.0005	<0.001	<0.001	<0.0005	<0.00014
Benzene	*0.005*	*0.005*								<0.0005	<0.001	<0.001	<0.0005	<0.00008
Chlorobenzene	*0.1*	*0.1*								<0.0005	<0.001	<0.001	<0.0005	<0.00012
Ethylbenzene	*0.7*	*0.7*								<0.0005	0.0075	<0.0011	<0.0005	<0.00011
Methylene chloride	*0.005*	*0.005*								<0.0005	<0.0013	<0.0013	<0.001	<0.00015
Toluene	*1*	*1*								<0.0005	0.0033 J	<0.001	<0.0005	<0.00015
Vinyl chloride	*0.002*	*0.002*												<0.00011
Xylenes (total)	*10*	*10*								<0.001	0.0052 J	<0.0031	<0.0015	<0.00026
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*								<0.0001	<0.00005	<0.00005	<0.00005	<0.000104
2,4-Dimethylphenol	*0.49*	*1.5*								<0.00008	<0.00005	0.00005 J	0.0014	<0.000292
2,4-Dinitrotoluene	*0.0013*	*0.003*								<0.00009	<0.00005	0.00005 J	<0.00005	<0.000123
2,6-Dinitrotoluene	*0.0013*	*0.003*								<0.00007	<0.00006	0.00006 J	<0.00006	<0.0000755
2-Chloronaphthalene	*2*	*5.8*								<0.0001	<0.00005	0.00005 J	<0.00005	<0.0000755
2-Methylnaphthalene	*0.098*	*0.29*								<0.00007	0.015	0.00005 J	<0.0001	<0.000066
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*								<0.00008	<0.00008	<0.00008	<0.00008	<0.000783
4-Nitrophenol	*0.049*	*0.15*								<0.00007	<0.00005	0.00005 J	<0.00005	<0.000528
Acenaphthene	*1.5*	*4.4*	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.00009	0.041	0.00005 J	0.039	<0.0000755
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.00007	0.00053	0.00005 J	0.00041	0.0000751 J
Anthracene	*7.3*	*22*	<0.000014	<0.000014	0.000036 J	<0.000014	0.000063 J	0.000052 J	0.0001	<0.00007	0.0022	0.00016 J	0.0011	0.000979
Benzo(a)anthracene	*0.0091*	*0.02*								<0.00007	<0.00005	<0.00005	<0.00005	<0.0000755
Benzo(a)pyrene	*0.0002*	*0.0002*								<0.00008	<0.00005	<0.00005	<0.00005	<0.0000755
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*								<0.00009	<0.00005	0.00005 J	<0.00005	<0.000123
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00029	0.00026	<0.00012	<0.00009	<0.000037	<0.000037	<0.000037	0.0011	0.00022	<0.00023	<0.0001	<0.000349
Chrysene	*0.91*	*2*								<0.00007	<0.00005	<0.00005	<0.00005	<0.0000755
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	0.029	0.00005 J	0.016	<0.0000755
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.000022	<0.00002	<0.00002	<0.00002	<0.00002	<0.00007	<0.00005	<0.00005	<0.0001	<0.000104
Fluoranthene	*0.98*	*2.9*	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00007	0.0022	<0.00005	0.0015	<0.000066
Fluorene	*0.98*	*2.9*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	0.00015 J	0.028	0.00005 J	0.0054 J	0.0000917 J
Naphthalene	*0.49*	*1.5*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00016	0.00014 J	0.049	0.00051 J	<0.0013	0.000156 J
Nitrobenzene	*0.049*	*0.15*								<0.00009	<0.00005	0.00005 J	<0.00005	<0.000104
N-Nitrosodiphenylamine	*0.19*	*0.42*								<0.00009	<0.00005	<0.00005	<0.00005	<0.0000943
Pentachlorophenol	*0.001*	*0.001*								<0.00008	<0.00005	0.00005 J	<0.00005	<0.000575
Phenanthrene	*0.73*	*2.2*								<0.00007	0.019	<0.00005	<0.00005	<0.0000566
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.00007	<0.00005	0.000057 J	0.0016	<0.0000377
Pyrene	*0.73*	*2.2*	<0.000019	<0.000019	0.000097 J	<0.000019	<0.000019	<0.000019	0.00063	<0.00007	0.00095	<0.00005	0.00066	<0.000104
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	TW-41B 07/31/2013	TW-41B 01/16/2014	TW-41B 07/25/2014	TW-41B 01/24/2018	TW-41B 03/20/2018	TW-41B 05/16/2018	TW-41B 01/09/2019	TW-41B 07/12/2019	TW-41B 01/13/2020	TW-56A 01/20/2010	TW-56A 07/14/2011	TW-56A 02/02/2012
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.002	<0.0002	<0.0002	**0.023 J**	<0.005	**<0.01**
Benzene	*0.005*	*0.005*	0.000347 J	<0.0002	0.000594 J	0.00065 J	0.001 J	0.0013	<0.002	<0.0013	0.00039 J	**0.26**	**0.27**	**0.15**
Chlorobenzene	*0.1*	*0.1*	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.003	<0.0003	<0.0003	<0.0025	<0.005	<0.01
Ethylbenzene	*0.7*	*0.7*	0.00115	<0.00019	0.00501	<0.0003	0.0036	0.0029	<0.003	<0.0011	<0.0003	0.36	0.16	0.068
Methylene chloride	*0.005*	*0.005*	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	**<0.01**	<0.001	<0.001	<0.0025	**<0.0065**	**<0.013**
Toluene	*1*	*1*	<0.000279	<0.00017	0.00116	<0.0002	0.00068 J	0.0012	<0.002	<0.0011	<0.0002	0.32	0.14	0.028 J
Vinyl chloride	*0.002*	*0.002*			<0.00011							**<0.0025**	**0.0069 J**	**0.01 J**
Xylenes (total)	*10*	*10*	0.000386 J	<0.00058	0.0101	0.0079	0.013	0.015	<0.003	0.019	0.0021	0.98	0.61	0.53
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000105	<0.000104	<0.000107	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0001	<0.00005	<0.0005
2,4-Dimethylphenol	*0.49*	*1.5*	<0.000295	<0.000292	<0.000301	<0.000041	<0.00004	<0.00004	<0.00004	<0.00004	0.00017 J	**2.9**	**6.8**	**4.2**
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000124	<0.000123	<0.000126	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.00009	<0.00005	<0.0005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0000762	<0.0000755	<0.0000777	<0.000043	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.00007	<0.00006	<0.0006
2-Chloronaphthalene	*2*	*5.8*	<0.0000762	<0.0000755	<0.0000777	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.00012 J	<0.0001	<0.00005	<0.0005
2-Methylnaphthalene	*0.098*	*0.29*	0.000256 J	<0.0000846	0.0125	0.0003	0.011	0.026	0.0098	0.067	0.0071	**0.15**	**0.16**	**0.11**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00079	<0.000783	<0.000806	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.0008
4-Nitrophenol	*0.049*	*0.15*	<0.000533	<0.000528	<0.000544	<0.000048	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00007	<0.00005	<0.0005
Acenaphthene	*1.5*	*4.4*	0.0252	<0.0000755	0.142	0.087	0.072	0.08	0.058	0.15	0.12	0.077	0.18	0.19
Acenaphthylene	*1.5*	*4.4*	0.000409 J	0.0000926 J	0.00185	0.0019	0.0017	0.0016	0.00091	0.0014	0.0011	0.0024	0.004	0.0038
Anthracene	*7.3*	*22*	0.00161	0.00093	0.00697	0.0016	0.0034	0.0039	0.0023	0.0055	0.0031	0.0035	0.021	0.02
Benzo(a)anthracene	*0.0091*	*0.02*	0.0000879 J	<0.0000755	<0.0000777	<0.000051	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00099	0.0014	0.0016 J
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0000762	<0.0000755	<0.0000777	<0.00002	<0.00002	<0.00002	0.000097 J	<0.00002	<0.00002	**0.00031**	**0.00047**	**0.00051 J**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.000124	<0.000123	<0.000126	<0.000031	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00009	<0.00005	<0.0005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000352	<0.000349	<0.000359	0.000058 J	<0.000037	<0.000037	<0.000037	<0.000037	<0.000037	<0.00025	<0.0018	<0.001
Chrysene	*0.91*	*2*	<0.0000762	<0.0000755	<0.0000777	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.00084	0.0014	0.0018 J
Dibenzofuran	*0.098*	*0.29*	0.0104	<0.0000755	0.0845	0.022	0.026	0.034	0.026	0.074	0.055	0.043	0.09	0.049
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.000138	0.000116 J	<0.000107	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00045	<0.00005	<0.0005
Fluoranthene	*0.98*	*2.9*	0.00153	0.000206 J	0.00475	0.0019	0.0026	0.0022	0.0014	0.0034	0.0021	0.01	0.021	0.02
Fluorene	*0.98*	*2.9*	0.00386	<0.000066	<0.0811	0.035	0.037	0.045	0.035	0.085	0.078	0.033	0.09	0.058
Naphthalene	*0.49*	*1.5*	0.00309 J	<0.000259	0.149	0.027	0.12	0.28	0.061	**0.69**	0.058	**2.5**	**2.3**	**2.2**
Nitrobenzene	*0.049*	*0.15*	<0.000105	<0.000104	<0.000107	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00009	<0.00005	<0.0005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.0000952	<0.0000943	<0.0000971	<0.000026	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00009	<0.00005	<0.0005
Pentachlorophenol	*0.001*	*0.001*	<0.000581	<0.000575	<0.000592	<0.000081	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	0.00013 J	0.00076 J	<0.0005
Phenanthrene	*0.73*	*2.2*	0.000659	<0.000176	0.0573	0.00048	0.0089	0.013	0.0035	0.027	0.0084	0.06	0.17	0.2
Phenol	*7.3*	*22*	<0.0000381	<0.0000377	<0.0000388	<0.000036	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	0.014	<0.00005	0.0063
Pyrene	*0.73*	*2.2*	0.000702	0.000223 J	0.00209	0.00083	0.0011	0.001	0.00056	0.0014	0.00082	0.0067	0.012	0.015
Metals														
Arsenic	*0.01*	*0.01*				**0.0376**	**0.0953**	**0.0976**	**0.125**	**0.113**	**0.0557**			

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	***C/I Assessment Level***	TW-56A 07/11/2012	TW-56A 01/31/2013
Volatile Organic Compounds				
1,2-Dichloroethane	*0.005*	*0.005*	<0.0025	<0.0014
Benzene	*0.005*	*0.005*	**0.26**	**0.238**
Chlorobenzene	*0.1*	*0.1*	<0.0025	0.00412 J
Ethylbenzene	*0.7*	*0.7*	0.14	0.202
Methylene chloride	*0.005*	*0.005*	<0.005	<0.0015
Toluene	*1*	*1*	0.069	0.0314
Vinyl chloride	*0.002*	*0.002*	**0.016**	**0.0126 J**
Xylenes (total)	*10*	*10*	0.43	0.5
Semivolatile Organic Compounds				
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	**<0.055**
2,4-Dimethylphenol	*0.49*	*1.5*	**3.8**	**4.81**
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	**<0.065**
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	**<0.04**
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.04
2-Methylnaphthalene	*0.098*	*0.29*	0.052	**0.123 J**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	**<0.415**
4-Nitrophenol	*0.049*	*0.15*	<0.00005	**<0.28**
Acenaphthene	*1.5*	*4.4*	0.095	0.25
Acenaphthylene	*1.5*	*4.4*	0.0028	<0.03
Anthracene	*7.3*	*22*	0.0083	0.0338 J
Benzo(a)anthracene	*0.0091*	*0.02*	0.0024	**<0.04**
Benzo(a)pyrene	*0.0002*	*0.0002*	**0.0008**	**<0.04**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	**<0.065**
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0001	**<0.185**
Chrysene	*0.91*	*2*	0.0022	<0.04
Dibenzofuran	*0.098*	*0.29*	0.038	**0.108 J**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00005	<0.055
Fluoranthene	*0.98*	*2.9*	0.027	<0.035
Fluorene	*0.98*	*2.9*	0.047	0.12 J
Naphthalene	*0.49*	*1.5*	**0.81**	**1.75 J**
Nitrobenzene	*0.049*	*0.15*	<0.00005	**<0.055**
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.05
Pentachlorophenol	*0.001*	*0.001*	0.00091	**<0.305**
Phenanthrene	*0.73*	*2.2*	0.073	0.217 J
Phenol	*7.3*	*22*	<0.00005	<0.02
Pyrene	*0.73*	*2.2*	0.018	<0.055
Metals				
Arsenic	*0.01*	*0.01*		

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 3
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 3 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Class 3 Residential Assessment	*Class 3 C/I Assessment Level*	MW-32B 02/09/2012 DNAPL	MW-32B 07/16/2012 DNAPL	MW-32B 02/06/2013 DNAPL	MW-32B 01/21/2014 DNAPL	MW-32B 01/20/2020 DNAPL	MW-33B 01/29/2008 DNAPL	MW-33B 07/14/2008 DNAPL	MW-33B 07/14/2008 Duplicate	MW-33B 02/03/2009 DNAPL	MW-33B 01/13/2010 DNAPL	MW-33B 06/29/2010	MW-33B 01/24/2011 DNAPL
Volatile Organic Compounds														
1,2-Dichloroethane	*0.5*	*0.5*	0.025 J	<0.0005	<0.00014	<0.0002	<0.005	<0.00052	<0.00109	<0.00109	<0.005	<0.005	<0.005	<0.005
Benzene	*0.5*	*0.5*	**2.6 J**	<0.0005	0.00428	0.239	**1.8**	**1.92**	**2.73**	**2.69**	**2.4**	**1.2**	**2**	**1**
Chlorobenzene	*10*	*10*	0.025 J	<0.0005	<0.000343	<0.00018	<0.0075	<0.00047	<0.0015	<0.0015	<0.005	<0.005	<0.005	<0.005
Ethylbenzene	*70*	*70*	0.53 J	<0.0005	0.00561	0.254	0.73	0.491	0.626	0.598	0.47	0.41	0.62	0.36
Methylene chloride	*0.5*	*0.5*	0.032 J	<0.001	<0.00015	<0.00022	<0.025	<0.00054	<0.00122	<0.00122	0.0096 J	<0.005	<0.005	<0.005
Toluene	*100*	*100*	2.2 J	<0.0005	0.00261	0.541	2.3	0.1	0.136	0.13	0.084	0.019 J	0.016 J	0.0067 J
Vinyl chloride	*0.2*	*0.2*					<0.005							
Xylenes (total)	*1000*	*1000*	1.5 J	<0.0015	0.0203	0.749	2.1	1.24	1.63	1.58	1.4	1.2	1.5	0.85
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.11*	*0.26*	0.0005 J	<0.00005	<0.0262	<0.00104	<0.00042	<0.01	<0.008	<0.008	<0.0001	<0.0001	<0.0001	<0.0001
2,4-Dimethylphenol	*49*	*150*	46	0.0014	<0.0738	0.178	26	<0.043	<0.028	<0.028	<0.00008	0.0035	<0.00008	0.0029
2,4-Dinitrotoluene	*0.13*	*0.3*	0.0005 J	<0.00005	<0.031	<0.00123	<0.0012	<0.029	<0.019	<0.019	<0.00009	<0.00009	<0.00009	<0.00009
2,6-Dinitrotoluene	*0.13*	*0.3*	0.0006 J	<0.00006	<0.019	<0.000755	<0.00084	<0.029	<0.019	<0.019	<0.00007	<0.00007	<0.00007	<0.00007
2-Chloronaphthalene	*200*	*580*	0.0005 J	<0.00005	<0.019	<0.000755	<0.00042	<0.057	<0.038	<0.038	<0.00012	<0.0001	<0.0001	<0.0001
2-Methylnaphthalene	*9.8*	*29*	0.53	0.00019 J	<0.0167	0.137	**50**	0.443	0.808	0.787	1.9	0.71	0.51	0.52
4,6-Dinitro-2-methylphenol	*0.24*	*0.73*	0.0008 J	<0.00008	<0.198	<0.00783	<0.0004	<0.029	<0.019	<0.019	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*4.9*	*15*	0.0005 J	<0.00005	<0.133	<0.00528	<0.00094	<0.036	<0.024	<0.024	<0.00007	<0.00007	<0.00007	<0.00007
Acenaphthene	*150*	*440*	0.28 J	0.014	0.0416 J	0.0427	26	0.137	0.152	0.182	0.41	0.17	0.096	0.15
Acenaphthylene	*150*	*440*	0.0059 J	0.00085	<0.0143	<0.000566	<0.0003	<0.043	<0.028	<0.028	0.0037	0.0016	0.0011	0.0015
Anthracene	*730*	*2200*	0.059 J	0.0048	<0.0119	0.144	23	<0.029	<0.019	0.035	0.14	0.015	0.011	0.027
Benzo(a)anthracene	*0.91*	*2*	0.0033 J	0.0033	<0.019	0.0195	**2.2**	<0.029	<0.019	<0.019	0.022	0.00019 J	0.000073 J	0.0019
Benzo(a)pyrene	*0.02*	*0.02*	0.0005 J	0.00089	<0.019	0.00649	**0.74**	**<0.029**	<0.019	<0.019	0.0045	<0.00008	<0.00008	0.00073
bis(2-Chloroethoxy)methane	*0.083*	*0.19*	<0.0005	<0.00005	<0.031	<0.00123	<0.0006	<0.057	<0.038	<0.038	<0.00009	<0.00009	<0.00009	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.6*	*0.6*	0.001 J	0.00079	<0.0881	<0.00349	<0.00074	<0.029	<0.019	<0.019	0.00031	0.008	<0.00054	0.00091
Chrysene	*91*	*200*	0.0042 J	0.0023	<0.019	0.018	2.4	<0.029	<0.019	<0.019	0.02	0.00018 J	0.000092 J	0.0018
Dibenzofuran	*9.8*	*29*	0.28 J	0.0012	<0.019	0.0428	**28**	0.118	0.17	0.205	0.46	0.18	0.13	0.17
Di-n-butylphthalate (DBP)	*240*	*730*	0.0005 J	<0.00005	<0.0262	<0.00104	<0.0004	<0.029	<0.019	<0.019	<0.00007	<0.00007	<0.00007	<0.00007
Fluoranthene	*98*	*290*	0.03 J	0.031	<0.0167	0.121	21	<0.029	<0.019	0.042	0.2	0.0033	0.0018	0.033
Fluorene	*98*	*290*	0.15 J	0.0021	<0.0167	0.0282	23	0.046	0.0683	0.098	0.26	0.068	0.048	0.069
Naphthalene	*49*	*150*	26	<0.00057	<0.019	2.17 J	**300**	12.5	16	13.1	20	10	2.2	7
Nitrobenzene	*4.9*	*15*	<0.0005	<0.00005	<0.0262	<0.00104	<0.00048	<0.057	<0.038	<0.038	<0.00009	<0.00009	<0.00009	<0.00009
N-Nitrosodiphenylamine	*19*	*42*	0.0005 J	<0.00005	<0.0238	<0.000943	<0.0005	<0.036	<0.024	<0.024	<0.00009	<0.00009	<0.00009	<0.00009
Pentachlorophenol	*0.1*	*0.1*	0.0005 J	<0.00005	**<0.145**	<0.00575	<0.0016	<0.029	<0.019	<0.019	<0.00008	<0.00008	<0.00008	<0.00008
Phenanthrene	*73*	*220*	0.25 J	0.0012	<0.0143	0.0548	69	0.0903	0.0688	0.186	0.72	0.066	0.041	0.09
Phenol	*730*	*2200*	38 J	0.000066 J	<0.00952	0.0357	17	<0.029	<0.019	<0.019	0.003	<0.00007	0.0032	<0.00007
Pyrene	*73*	*220*	0.02 J	0.04	<0.0262	0.0841	14	0.045	<0.019	0.022	0.13	0.0016	0.00092	0.007
Metals														
Arsenic	*1*	*1*					0.00193 J							

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.

TABLE 3
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 3 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Class 3 Residential Assessment	***Class 3 C/I Assessment Level***	MW-33B 07/19/2011 DNAPL	MW-33B 02/15/2012	MW-33B 07/17/2012	MW-33BR 02/06/2013	MW-33BR 08/07/2013	MW-33BR 01/21/2014	MW-33BR 07/28/2014	MW-33BR 01/28/2018	MW-33BR 03/29/2018	MW-33BR 05/31/2018	MW-33BR 01/22/2019	MW-33BR 07/30/2019
Volatile Organic Compounds														
1,2-Dichloroethane	*0.5*	*0.5*	<0.01	<0.005	<0.0005	<0.007	<0.0007	<0.0002	<0.0007	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.5*	*0.5*	**1.6**	**2**	0.3	**1.61**	**1.62**	**0.837**	**1.41**	<0.0002	<0.0002	0.12	0.0025	0.25
Chlorobenzene	*10*	*10*	<0.01	<0.005	<0.0005	<0.006	<0.0006	0.000349 J	<0.0006	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*70*	*70*	0.4	0.46	0.07	0.471	0.389	0.128	0.348	<0.0003	<0.0003	0.0058	0.013	0.065
Methylene chloride	*0.5*	*0.5*	<0.013	<0.0065	<0.001	0.011 J	<0.00075	<0.00022	<0.00075	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*100*	*100*	<0.01	0.12	0.023	0.157	0.0645	0.00942	0.00638	<0.0002	<0.0002	<0.0002	<0.0002	0.0031
Vinyl chloride	*0.2*	*0.2*	<0.01	<0.005	<0.0005	<0.0055	<0.00055	<0.00018	<0.00055	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Xylenes (total)	*1000*	*1000*	1.2	0.82	0.15	0.924	0.182	0.128	0.0649	<0.0003	<0.0003	0.0058	<0.0003	0.016
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.11*	*0.26*	<0.00005	<0.00005	<0.0005	**<0.529**	<0.00519	<0.000529	<0.000107	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*49*	*150*	0.0034	<0.00005	0.0074	<1.49	<0.0146	<0.00149	<0.000301	<0.00004	<0.00004	<0.00004	<0.00004	0.00028
2,4-Dinitrotoluene	*0.13*	*0.3*	<0.00005	<0.00005	<0.0005	**<0.625**	<0.00613	<0.000625	<0.000126	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.13*	*0.3*	<0.00006	<0.00006	<0.0006	**<0.385**	<0.00377	<0.000385	<0.0000777	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*200*	*580*	<0.00005	<0.00005	<0.0005	<0.385	<0.00377	<0.000385	<0.0000777	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*9.8*	*29*	1.6	0.81	0.55	0.993 J	0.198	0.0558	0.277	<0.000019	<0.000019	0.0029	<0.000019	0.014
4,6-Dinitro-2-methylphenol	*0.24*	*0.73*	<0.00008	<0.00008	<0.0008	**<3.99**	<0.0392	<0.00399	<0.000806	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*4.9*	*15*	<0.00005	<0.00005	<0.0005	<2.69	<0.0264	<0.00269	<0.000544	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	*150*	*440*	0.41	0.23	0.099	<0.385	0.0455	0.0625	0.0711	<0.000027	<0.000027	0.0019	0.0013	0.0078
Acenaphthylene	*150*	*440*	0.0033	<0.00005	0.0014 J	<0.288	<0.00283	<0.000679	0.00087	<0.000015	<0.000015	0.000068 J	<0.000015	<0.000015
Anthracene	*730*	*2200*	0.16	0.054	0.011	<0.24	<0.00236	0.0045	0.00564	<0.000014	<0.000014	0.00018	<0.000014	0.00055
Benzo(a)anthracene	*0.91*	*2*	0.032	0.000074 J	<0.0005	<0.385	<0.00377	<0.000385	0.000119 J	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.02*	*0.02*	0.0077	<0.00005	<0.0005	**<0.385**	<0.00377	<0.000385	<0.0000777	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.083*	*0.19*	<0.00005	<0.00005	<0.0005	**<0.625**	<0.00613	<0.000625	<0.000126	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.6*	*0.6*	<0.00046	<0.00018	<0.001	**<1.78**	<0.0175	<0.00178	0.000722	0.000062 J	<0.000037	0.0001 J	<0.000037	0.00007 J
Chrysene	*91*	*200*	0.026	0.000073 J	<0.0005	<0.385	<0.00377	<0.000385	0.000132 J	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Dibenzofuran	*9.8*	*29*	0.53	0.38	0.15	<0.385	0.0498	0.0769	0.0868	<0.000021	<0.00002	0.0019	0.000079 J	0.012
Di-n-butylphthalate (DBP)	*240*	*730*	<0.00005	<0.00005	<0.0005	<0.529	<0.00519	<0.000529	<0.000384	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	*98*	*290*	0.28	0.0049	0.01	<0.337	<0.0033	0.00107 J	0.00265	0.000049 J	<0.00001	0.0003	0.000053 J	0.00039
Fluorene	*98*	*290*	0.31	0.12	0.051	<0.337	0.0181 J	0.0287	0.035 J	<0.00003	<0.00003	0.00058	<0.00003	0.0042
Naphthalene	*49*	*150*	13	21	7.3	14.9 J	6.54	1.68 J	6.59	<0.00018	<0.00002	0.069	0.00004 J	0.53 J
Nitrobenzene	*4.9*	*15*	<0.00005	<0.00005	<0.0005	<0.529	<0.00519	<0.000529	<0.000107	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*19*	*42*	<0.00005	0.00081	<0.0005	<0.481	<0.00472	<0.000481	<0.0000971	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.1*	*0.1*	<0.00005	<0.00005	<0.0005	**<2.93**	<0.0288	<0.00293	<0.000592	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	*73*	*220*	0.79	0.17	0.091	<0.288	0.0141 J	0.0238	0.0313 J	<0.000047	<0.000021	0.0008	<0.000021	0.0048
Phenol	*730*	*2200*	0.001	0.0043	0.0014 J	<0.192	<0.00189	<0.000192	<0.0000388	<0.000035	<0.000035	<0.000035	<0.000035	0.00021
Pyrene	*73*	*220*	0.17	0.0025	0.0054	<0.529	<0.00519	0.000734 J	0.00126	<0.000019	<0.000019	0.00019	0.00003 J	0.00026
Metals														
Arsenic	*1*	*1*								0.00144 J	0.00187 J	0.00294	0.00143 J	0.00117 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.

TABLE 3
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 3 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Class 3 Residential Assessment	*Class 3 C/I Assessment Level*	MW-33BR 01/15/2020	MW-36B 07/15/2010	MW-36B 07/15/2010 Duplicate	MW-36B 01/20/2011	MW-36B 07/19/2011	MW-36B 02/08/2012	MW-36B 07/17/2012	MW-36B 01/31/2013	MW-36B 08/06/2013	MW-36B 01/16/2014	MW-36B 07/28/2014	MW-36B 01/25/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.5*	*0.5*	<0.0002	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002
Benzene	*0.5*	*0.5*	0.12	<0.0005	<0.0005	0.0018 J	0.0014 J	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002
Chlorobenzene	*10*	*10*	<0.0003	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003
Ethylbenzene	*70*	*70*	0.043	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003
Methylene chloride	*0.5*	*0.5*	<0.001	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001
Toluene	*100*	*100*	<0.0002	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002
Vinyl chloride	*0.2*	*0.2*	<0.0002				<0.001		<0.0005	<0.00011	<0.00011	<0.00018	<0.00011	<0.0002
Xylenes (total)	*1000*	*1000*	0.011	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.11*	*0.26*	<0.000021	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.000104	<0.00011	<0.000104	<0.000107	<0.000021
2,4-Dimethylphenol	*49*	*150*	0.00018 J	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000292	<0.00031	<0.000292	<0.000301	<0.00004
2,4-Dinitrotoluene	*0.13*	*0.3*	<0.000058	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000123	<0.00013	<0.000123	<0.000126	<0.000059
2,6-Dinitrotoluene	*0.13*	*0.3*	<0.000042	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000755	<0.00008	<0.0000755	<0.0000777	<0.000042
2-Chloronaphthalene	*200*	*580*	<0.000021	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000755	<0.00008	<0.0000755	<0.0000777	<0.000021
2-Methylnaphthalene	*9.8*	*29*	0.00025	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000762	<0.00007	<0.000271	<0.000068	<0.000019
4,6-Dinitro-2-methylphenol	*0.24*	*0.73*	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.000783	<0.00083	<0.000783	<0.000806	<0.00002
4-Nitrophenol	*4.9*	*15*	<0.000047	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000528	<0.00056	<0.000528	<0.000544	<0.000047
Acenaphthene	*150*	*440*	0.0051	<0.00009	<0.00009	0.00023	0.00014 J	0.00023	0.00016 J	<0.0000755	<0.00008	0.000463 J	<0.0000777	0.00014
Acenaphthylene	*150*	*440*	0.00015	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000566	<0.00006	<0.0000566	<0.0000583	<0.000015
Anthracene	*730*	*2200*	0.00046	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000472	<0.00005	0.00035 J	<0.0000485	<0.000014
Benzo(a)anthracene	*0.91*	*2*	0.0001	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000755	<0.00008	0.00012 J	<0.0000777	<0.000051
Benzo(a)pyrene	*0.02*	*0.02*	0.000039 J	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000755	<0.00008	<0.0000755	<0.0000777	<0.00002
bis(2-Chloroethoxy)methane	*0.083*	*0.19*	<0.00003	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000123	<0.00013	<0.000123	<0.000126	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.6*	*0.6*	0.00067	0.01	0.0024	<0.00048	<0.00068	<0.00033	0.00021	<0.000349	<0.00037	0.00044 J	<0.000359	0.00015 J
Chrysene	*91*	*200*	0.00011	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000755	<0.00008	0.000146 J	<0.0000777	<0.000021
Dibenzofuran	*9.8*	*29*	0.0039	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	0.00011 J	<0.000118	<0.00008	<0.000409	<0.0000777	<0.00002
Di-n-butylphthalate (DBP)	*240*	*730*	0.00099	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000104	<0.00011	<0.000104	<0.000107	<0.00002
Fluoranthene	*98*	*290*	0.00082	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000066	<0.00007	0.000756	<0.000068	<0.00001
Fluorene	*98*	*290*	0.0018	<0.00007	<0.00007	<0.00007	<0.00005	0.00011 J	<0.00005	<0.000066	<0.00007	0.000434 J	<0.000068	<0.00003
Naphthalene	*49*	*150*	0.0051	<0.0001	<0.0001	<0.0001	<0.00005	<0.00024	<0.00005	<0.000943	0.0000895 J	0.000825 J	<0.0000777	<0.00002
Nitrobenzene	*4.9*	*15*	<0.000024	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000104	<0.00011	<0.000104	<0.000107	<0.000024
N-Nitrosodiphenylamine	*19*	*42*	<0.000025	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000943	<0.0001	<0.0000943	<0.0000971	<0.000025
Pentachlorophenol	*0.1*	*0.1*	<0.000079	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000575	<0.00061	<0.000575	<0.000592	<0.00008
Phenanthrene	*73*	*220*	0.0013	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00027	<0.0000566	<0.00006	0.00183	<0.0000583	<0.000021
Phenol	*730*	*2200*	0.00018 J	<0.00007	<0.00007	0.000089 J	<0.00005	0.00026	<0.00005	<0.0000377	<0.00004	<0.0000377	<0.0000388	<0.000035
Pyrene	*73*	*220*	0.00057	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000104	<0.00011	0.00046 J	<0.000107	<0.000019
Metals														
Arsenic	*1*	*1*	0.000877 J											0.00116 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.

TABLE 3
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 3 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Class 3 Residential Assessment	*Class 3 C/I Assessment Level*	MW-36B 03/21/2018	MW-36B 05/31/2018	MW-36B 01/14/2019	MW-36B 07/16/2019	MW-36B 01/09/2020	MW-49B 02/04/2009	MW-49B 01/20/2010	MW-49B 06/24/2010	MW-49B 01/20/2011	MW-49B 01/20/2011 Duplicate	MW-49B 07/22/2011	MW-49B 02/07/2012
Volatile Organic Compounds														
1,2-Dichloroethane	*0.5*	*0.5*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001
Benzene	*0.5*	*0.5*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0095	0.013	0.1	0.0057	0.0056	0.056	0.0056
Chlorobenzene	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001
Ethylbenzene	*70*	*70*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.0081	0.024	0.019	0.004 J	0.0046 J	0.0091	0.0042 J
Methylene chloride	*0.5*	*0.5*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013
Toluene	*100*	*100*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.016	0.045	0.071	0.0072	0.0072	0.038	0.0057
Vinyl chloride	*0.2*	*0.2*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002						<0.001	<0.001
Xylenes (total)	*1000*	*1000*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.024	0.07	0.047	0.0066 J	0.0073 J	0.02	0.008 J
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.11*	*0.26*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0001	<0.0001	<0.0005	<0.0001	<0.0001	<0.00005	<0.00005
2,4-Dimethylphenol	*49*	*150*	<0.00004	<0.00004	<0.00004	0.000078 J	<0.000054	0.031	0.013	1.2	0.18	0.16	0.59	0.19
2,4-Dinitrotoluene	*0.13*	*0.3*	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.00009	<0.00009	<0.00045	<0.00009	<0.00009	<0.00005	<0.00005
2,6-Dinitrotoluene	*0.13*	*0.3*	<0.000042	0.0073	<0.000042	<0.000042	<0.000042	<0.00007	<0.00007	<0.00035	<0.00007	<0.00007	<0.00006	<0.00006
2-Chloronaphthalene	*200*	*580*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00012	<0.0001	<0.0005	<0.0001	<0.0001	<0.00005	<0.00005
2-Methylnaphthalene	*9.8*	*29*	<0.000019	<0.000019	<0.000019	0.00058	<0.00013	0.14	<0.00007	0.0016	<0.00007	<0.00007	0.0029	0.0095
4,6-Dinitro-2-methylphenol	*0.24*	*0.73*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.0004	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*4.9*	*15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00007	<0.00007	<0.00035	<0.00007	<0.00007	<0.00005	<0.00005
Acenaphthene	*150*	*440*	<0.000027	0.00014	<0.000027	0.00014	<0.00017	0.094	0.017	0.014	0.00067	0.00049	0.0051	0.034
Acenaphthylene	*150*	*440*	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	0.0016	0.0007	0.00063 J	<0.00007	0.000072 J	0.00019 J	0.0007
Anthracene	*730*	*2200*	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	0.019	0.00015 J	<0.00035	0.00031	0.000083 J	0.00093	0.0029
Benzo(a)anthracene	*0.91*	*2*	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00035	<0.00007	<0.00035	<0.00007	<0.00007	0.00018 J	<0.00005
Benzo(a)pyrene	*0.02*	*0.02*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.0004	<0.00008	<0.00008	0.000057 J	<0.00005
bis(2-Chloroethoxy)methane	*0.083*	*0.19*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00009	<0.00009	<0.00045	<0.00009	<0.00009	<0.00005	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.6*	*0.6*	<0.000037	0.00017 J	0.00022	<0.000088	<0.000037	0.00029	<0.00053	<0.001	<0.00055	<0.0015	<0.00024	0.00069
Chrysene	*91*	*200*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.00038	<0.00007	<0.00035	<0.00007	<0.00007	0.00016 J	<0.00005
Dibenzofuran	*9.8*	*29*	<0.00002	<0.00002	<0.00002	0.000087 J	<0.00012	0.071	0.0024	0.0026	0.00018 J	0.00012 J	0.0018	0.019
Di-n-butylphthalate (DBP)	*240*	*730*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.0013	0.000083 J	<0.00035	<0.00007	<0.00007	<0.00005	<0.00005
Fluoranthene	*98*	*290*	<0.00001	<0.00001	<0.00001	0.000017 J	0.000051 J	0.014	0.00023	<0.00035	0.00019 J	<0.00007	0.0011	0.0015
Fluorene	*98*	*290*	<0.00003	<0.00003	<0.00003	0.000047 J	<0.00012	0.071	0.0036	0.0016	0.00018 J	<0.00007	0.0014	0.019
Naphthalene	*49*	*150*	<0.00002	<0.00002	<0.00002	0.006	<0.00093	1.4	0.00044	0.23	<0.00052	<0.0002	0.13	0.047
Nitrobenzene	*4.9*	*15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00009	<0.00009	<0.00045	<0.00009	<0.00009	<0.00005	<0.00005
N-Nitrosodiphenylamine	*19*	*42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00009	<0.00009	<0.00045	<0.00009	<0.00009	<0.00005	<0.00005
Pentachlorophenol	*0.1*	*0.1*	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.00008	<0.00008	<0.0004	<0.00008	<0.00008	<0.00005	<0.00005
Phenanthrene	*73*	*220*	<0.000021	<0.000021	<0.000021	<0.000021	<0.0001	0.11	0.00017 J	<0.00035	<0.00021	<0.0003	0.0025	0.0098
Phenol	*730*	*2200*	<0.000035	<0.000035	<0.000035	<0.00017	<0.000075	<0.00007	<0.00007	0.0053	0.00044	0.0004	0.00021	<0.00005
Pyrene	*73*	*220*	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	0.0074	0.0002	<0.00035	0.00024	0.00017 J	0.00066	0.00083
Metals														
Arsenic	*1*	*1*	0.000942 J	0.000817 J	0.00118 J	0.00127 J	0.001 J							

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.

TABLE 3
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 3 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Class 3 Residential Assessment	*Class 3 C/I Assessment Level*	MW-49B 07/23/2012	MW-49B 02/07/2013 DNAPL	MW-49B 08/01/2013 DNAPL	MW-49B 01/16/2014	MW-49B 07/16/2014	MW-49B 01/29/2018	MW-49B 03/21/2018	MW-49B 05/25/2018	MW-49B 01/27/2020 DNAPL	MW-54B 03/11/2020	MW-54B 05/22/2020	MW-57B 02/15/2012 DNAPL
Volatile Organic Compounds														
1,2-Dichloroethane	*0.5*	*0.5*	<0.0005	<0.00014	<0.0028	<0.0002	<0.0028	<0.0002	<0.0002	<0.0002	<0.01	<0.0002	<0.0002	<0.01
Benzene	*0.5*	*0.5*	0.11	0.0631	0.469	0.0691	0.346	0.0073	0.026	0.26	**0.6**	0.00043 J	<0.0002	**1.4**
Chlorobenzene	*10*	*10*	<0.0005	<0.00012	0.0103 J	<0.00018	<0.0024	<0.0003	<0.0003	<0.0003	<0.015	<0.0003	<0.0003	<0.01
Ethylbenzene	*70*	*70*	0.023	0.0182	0.0825	0.0425	0.0847	<0.0003	<0.0003	0.048	0.26	0.0011	<0.0003	0.39
Methylene chloride	*0.5*	*0.5*	<0.001	<0.00015	<0.003	<0.00022	0.0212	<0.001	<0.001	<0.001	<0.05	<0.001	<0.001	<0.013
Toluene	*100*	*100*	0.089	0.0633	0.345	0.091	0.31	0.0058	0.014	0.23	0.72	<0.0002	<0.0002	1.3
Vinyl chloride	*0.2*	*0.2*	<0.0005	<0.00011	<0.0022	<0.00018	<0.0022	<0.0002	<0.0002	<0.0002	<0.01			
Xylenes (total)	*1000*	*1000*	0.06	0.0527	0.222	0.112	0.249	0.0095	0.012	0.14	0.71	0.0018	<0.0003	1.2
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.11*	*0.26*	<0.00005	<0.00524	<0.0105	<0.0259	<0.00208	<0.000021	<0.00021	<0.00021	<0.0013	<0.000021	<0.000021	<0.0005
2,4-Dimethylphenol	*49*	*150*	6.3	1.09	21.4	4.96 J	13.6	0.2	0.34	3.4	25	<0.00004	<0.00004	6.3
2,4-Dinitrotoluene	*0.13*	*0.3*	<0.00005	<0.00619	<0.0124	<0.0307	<0.00245	<0.000058	<0.00058	<0.00058	<0.0035	<0.000059	<0.000058	<0.0005
2,6-Dinitrotoluene	*0.13*	*0.3*	<0.00006	<0.00381	<0.00762	<0.0189	<0.00151	0.002	<0.00042	<0.00042	<0.0025	<0.000042	<0.000042	<0.0006
2-Chloronaphthalene	*200*	*580*	<0.00005	<0.00381	<0.00762	<0.0189	<0.00151	<0.000021	<0.00021	<0.00021	<0.0013	<0.000021	<0.000021	<0.0005
2-Methylnaphthalene	*9.8*	*29*	0.18	0.297	0.223	0.691	0.276	0.00011	0.00084 J	0.072	**250**	0.00011	<0.000019	0.92
4,6-Dinitro-2-methylphenol	*0.24*	*0.73*	<0.00008	<0.0395	<0.079	<0.196	<0.0157	<0.00002	<0.0002	<0.0002	<0.0012	<0.00002	<0.00002	<0.0008
4-Nitrophenol	*4.9*	*15*	<0.00005	<0.0267	<0.0533	<0.132	<0.0106	<0.000047	<0.00047	<0.00047	<0.0028	<0.000047	<0.000047	<0.0005
Acenaphthene	*150*	*440*	0.14	0.248	0.0964	0.622	0.117	0.071	0.066	0.071	**190**	0.0093	<0.000027	0.35
Acenaphthylene	*150*	*440*	0.0013	<0.00286	<0.00571	<0.0142	0.00432 J	0.0017	0.003	0.0026	2.1	0.000087 J	<0.000015	0.006
Anthracene	*730*	*2200*	0.056	0.0876	<0.00476	0.221	0.013	0.003	0.0038	0.0073	87	0.00017	<0.000014	0.023
Benzo(a)anthracene	*0.91*	*2*	0.013	0.0228 J	<0.00762	0.0671 J	<0.00151	0.000088 J	<0.0005	<0.0005	**23**	<0.000051	<0.00005	0.0011 J
Benzo(a)pyrene	*0.02*	*0.02*	0.0038	<0.00381	<0.00762	<0.0189	<0.00151	<0.00002	<0.0002	<0.0002	**7.5**	<0.00002	<0.00002	<0.0005
bis(2-Chloroethoxy)methane	*0.083*	*0.19*	<0.00005	<0.00619	<0.0124	<0.0307	<0.00245	<0.00003	<0.0003	<0.0003	<0.0018	<0.00003	<0.00003	<0.0005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.6*	*0.6*	<0.00055	<0.0176	<0.0352	<0.0873	<0.00698	0.00011 J	<0.00037	<0.00037	<0.0022	0.000089 J	<0.000037	0.0019 J
Chrysene	*91*	*200*	0.015	0.0207 J	<0.00762	0.0737 J	<0.00151	0.00012	<0.00021	<0.00021	23	<0.000021	<0.000021	0.00099 J
Dibenzofuran	*9.8*	*29*	0.12	0.2	<0.00762	0.484	0.08	0.0028	0.009	0.03	**160**	0.000076 J	<0.00002	0.28
Di-n-butylphthalate (DBP)	*240*	*730*	<0.00005	<0.00524	<0.0105	<0.0259	<0.00208	<0.00002	<0.0002	<0.0002	<0.0012	0.000033 J	0.0002 J	<0.0005
Fluoranthene	*98*	*290*	0.093	0.167	<0.00667	0.415	0.00456 J	0.0027	0.0038	0.0036	**170**	0.000022 J	<0.00001	0.0081
Fluorene	*98*	*290*	0.13	0.217	0.049	0.464	0.0633	0.0087	0.018	0.031	**170**	0.00015	<0.00003	0.095
Naphthalene	*49*	*150*	2.3	1.58 J	9.38	6.75	5.57	0.00042	0.0075	2.5	**1200**	0.0021	0.00011	24
Nitrobenzene	*4.9*	*15*	<0.00005	<0.00524	<0.0105	<0.0259	<0.00208	<0.000024	<0.00024	<0.00024	<0.0014	<0.000024	<0.000024	<0.0005
N-Nitrosodiphenylamine	*19*	*42*	<0.00005	<0.00476	<0.00952	<0.0236	<0.00189	<0.000025	<0.00025	<0.00025	<0.0015	<0.000025	<0.000025	<0.0005
Pentachlorophenol	*0.1*	*0.1*	<0.00005	<0.029	<0.0581	**<0.144**	<0.0115	<0.000079	<0.00079	<0.00079	<0.0047	<0.00008	<0.000079	<0.0005
Phenanthrene	*73*	*220*	0.35	0.466	0.039 J	1.29	0.0458	0.0073	0.011	0.028	**500**	0.0028	<0.000021	0.16
Phenol	*730*	*2200*	0.0063	<0.0019	<0.00381	0.0445 J	0.0145	<0.000035	<0.00035	<0.00035	<0.0021	<0.000035	<0.000035	0.45
Pyrene	*73*	*220*	0.062	0.101	<0.0105	0.262	<0.00208	0.0014	0.002	0.0021	**96**	<0.000019	<0.000019	0.0075
Metals														
Arsenic	*1*	*1*						0.000564 J	0.000746 J	0.00146 J	0.0107	0.00117 J	0.00147 J	

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.

TABLE 3
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 3 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Class 3 Residential Assessment	*Class 3 C/I Assessment Level*	MW-57B 07/24/2012 DNAPL	MW-57B 01/31/2013 DNAPL	MW-57B 07/31/2013 DNAPL	MW-57B 01/15/2014 DNAPL	MW-57B 07/29/2014 DNAPL	MW-57B 01/31/2018	MW-57B 04/01/2018	MW-57B 05/25/2018	MW-57B 07/10/2019	MW-57B 01/08/2020	MW-59B 07/15/2010	MW-59B 01/20/2011
Volatile Organic Compounds														
1,2-Dichloroethane	*0.5*	*0.5*	<0.005	<0.0035	<0.014	<0.0002	<0.0007	<0.0002	<0.001	<0.0002	<0.0002	<0.002	<0.0005	<0.0005
Benzene	*0.5*	*0.5*	**1.5**	**0.733**	**1.49**	**0.716**	**1.25**	0.012	0.01	**0.82**	**0.84**	**0.52**	<0.0005	<0.0005
Chlorobenzene	*10*	*10*	<0.005	<0.003	<0.012	<0.00018	<0.0006	<0.0003	<0.0015	<0.0003	<0.0003	<0.003	<0.0005	<0.0005
Ethylbenzene	*70*	*70*	0.42	0.193	0.501	0.174	0.371	0.026	0.032	0.3	0.39	0.25	<0.0005	<0.0005
Methylene chloride	*0.5*	*0.5*	0.017 J	<0.00375	0.0405 J	<0.00022	<0.00075	<0.001	<0.005	<0.001	<0.001	<0.01	<0.0005	<0.0005
Toluene	*100*	*100*	1.4	0.692	1.62	0.63	1.33	0.0043	0.0019 J	0.84	0.93	0.64	<0.0005	<0.0005
Vinyl chloride	*0.2*	*0.2*					0.00299 J				0.00048 J			
Xylenes (total)	*1000*	*1000*	1.1	0.589	1.4	0.574	1.16	0.057	0.055	0.84	1.2	0.7	<0.001	<0.001
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.11*	*0.26*	<0.0005	<0.055	<0.0267	<0.0519	<0.0109	<0.00021	<0.000021	<0.00021	<0.00021	<0.00021	<0.0001	<0.0001
2,4-Dimethylphenol	*49*	*150*	16	13.8	9.67	19.8 J	15	0.01	<0.00004	3.7	6.5	2.8	<0.00008	<0.00008
2,4-Dinitrotoluene	*0.13*	*0.3*	<0.0005	<0.065	<0.0316	<0.0613	<0.0129	<0.00058	<0.000058	<0.00058	<0.00058	<0.00058	<0.00009	<0.00009
2,6-Dinitrotoluene	*0.13*	*0.3*	<0.0006	<0.04	<0.0194	<0.0377	<0.00792	<0.00042	<0.000042	<0.00042	<0.00042	<0.00042	<0.00007	<0.00007
2-Chloronaphthalene	*200*	*580*	<0.0005	<0.04	<0.0194	<0.0377	<0.00792	<0.00021	<0.000021	<0.00021	<0.00021	<0.00021	<0.0001	<0.0001
2-Methylnaphthalene	*9.8*	*29*	1.6	1.75	1.07	0.892	0.945	0.17	0.029	0.61	0.93	1.1	<0.00007	<0.00007
4,6-Dinitro-2-methylphenol	*0.24*	*0.73*	<0.0008	**<0.415**	<0.201	**<0.392**	<0.0822	<0.0002	<0.00002	<0.0002	<0.0002	<0.0002	<0.00008	<0.00008
4-Nitrophenol	*4.9*	*15*	<0.0005	<0.28	<0.136	<0.264	<0.0554	<0.00047	<0.000047	<0.00047	<0.00047	<0.00047	<0.00007	<0.00007
Acenaphthene	*150*	*440*	0.44	0.93	0.423	0.524	0.267	0.13	0.13	0.3	0.38	0.55	<0.00009	<0.00009
Acenaphthylene	*150*	*440*	0.0087	<0.03	<0.0146	<0.0283	<0.00594	0.0029	0.0011	0.0063	0.0051	0.0086	<0.00007	<0.00007
Anthracene	*730*	*2200*	0.05	0.292	0.0493 J	0.0844 J	0.0355 J	0.014	0.005	0.44	0.039	0.19	<0.00007	<0.00007
Benzo(a)anthracene	*0.91*	*2*	0.0012 J	0.0543 J	<0.0194	<0.0377	<0.00792	0.001	<0.00005	0.03	0.0071	0.04	<0.00007	<0.00007
Benzo(a)pyrene	*0.02*	*0.02*	<0.0005	**<0.04**	<0.0194	**<0.0377**	<0.00792	0.00058 J	<0.00002	0.0094	0.0021	0.012	<0.00008	<0.00008
bis(2-Chloroethoxy)methane	*0.083*	*0.19*	<0.0005	<0.065	<0.0316	<0.0613	<0.0129	<0.0003	<0.00003	<0.0003	<0.0003	<0.0003	<0.00009	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.6*	*0.6*	<0.001	<0.185	<0.0898	<0.175	<0.0366	0.00043 J	0.000095 J	<0.00037	<0.00037	<0.00037	0.002	<0.00021
Chrysene	*91*	*200*	0.0016 J	0.0561 J	<0.0194	<0.0377	<0.00792	0.00091 J	<0.000021	0.024	0.0065	0.042	<0.00007	<0.00007
Dibenzofuran	*9.8*	*29*	0.38	0.814	0.322	0.392	0.226	0.11	0.081	0.29	0.32	0.49	<0.00008	<0.00008
Di-n-butylphthalate (DBP)	*240*	*730*	<0.0005	<0.055	<0.0267	<0.0519	<0.0109	<0.0002	<0.00002	<0.0002	<0.0002	<0.0002	<0.00007	<0.00007
Fluoranthene	*98*	*290*	0.016	0.387	0.0301 J	0.0752 J	0.0109 J	0.012	0.0044	0.19	0.047	0.34	<0.00007	<0.00007
Fluorene	*98*	*290*	0.23	0.65	0.208	0.298	0.138	0.081	0.096	0.27	0.21	0.46	<0.00007	<0.00007
Naphthalene	*49*	*150*	27	18.9 J	18.1	10.6	17	1.8	0.39	12	17	13	0.00014 J	<0.0001
Nitrobenzene	*4.9*	*15*	<0.0005	<0.055	<0.0267	<0.0519	<0.0109	<0.00024	<0.000024	<0.00024	<0.00024	<0.00024	<0.00009	<0.00009
N-Nitrosodiphenylamine	*19*	*42*	<0.0005	<0.05	<0.0243	<0.0472	<0.0099	<0.00025	<0.000025	<0.00025	<0.00025	<0.00025	<0.00009	<0.00009
Pentachlorophenol	*0.1*	*0.1*	<0.0005	**<0.305**	**<0.148**	**<0.288**	<0.0604	<0.00079	<0.000079	<0.00079	<0.00079	<0.00079	<0.00008	<0.00008
Phenanthrene	*73*	*220*	0.24	1.39	0.242	0.456	0.127	0.094	0.033	0.63	0.29	1.1	<0.00007	<0.00007
Phenol	*730*	*2200*	1	1	0.645	1	0.495	<0.00035	<0.000035	0.22	1	0.32	0.0002	<0.00007
Pyrene	*73*	*220*	0.011	0.245 J	<0.0267	<0.0519	<0.0109	0.0068	0.003	0.13	0.03	0.21	<0.00007	<0.00007
Metals														
Arsenic	*1*	*1*						0.0419	0.00179 J	0.00285	0.00404	0.00404		

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.

TABLE 3
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 3 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Class 3 Residential Assessment	*Class 3 C/I Assessment Level*	MW-59B 07/18/2011	MW-59B 02/06/2012	MW-59B 07/27/2012	MW-59B 01/31/2013	MW-59B 08/01/2013	MW-59B 01/16/2014	MW-59B 07/30/2014	MW-59B 01/29/2018	MW-59B 03/20/2018	MW-59B 05/25/2018	MW-59B 01/23/2019	MW-59B 07/17/2019
Volatile Organic Compounds														
1,2-Dichloroethane	*0.5*	*0.5*	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.5*	*0.5*	<0.001	<0.001	<0.0005	<0.00008	0.0000981 J	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	*10*	*10*	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*70*	*70*	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.5*	*0.5*	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*100*	*100*	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.2*	*0.2*	<0.001	<0.001	<0.0005	<0.00011	<0.00011	<0.00018	<0.00011	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Xylenes (total)	*1000*	*1000*	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.11*	*0.26*	<0.00005	<0.00005	<0.00005	<0.000104	<0.000105	<0.000104	**R**	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*49*	*150*	<0.00005	0.25	<0.00005	<0.000292	<0.000295	<0.000292	**R**	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.13*	*0.3*	<0.00005	<0.00005	<0.00005	<0.000123	<0.000124	<0.000123	**R**	<0.000058	<0.000059	<0.000059	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.13*	*0.3*	<0.00006	<0.00006	<0.00006	<0.0000755	<0.0000762	<0.0000755	**R**	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*200*	*580*	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000762	<0.0000755	**R**	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*9.8*	*29*	<0.00005	<0.00005	<0.00005	<0.000066	<0.0000667	<0.000066	**R**	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	*0.24*	*0.73*	<0.00008	<0.00008	<0.00008	<0.000783	<0.00079	<0.000783	**R**	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*4.9*	*15*	<0.00005	<0.00005	<0.00005	<0.000528	<0.000533	<0.000528	**R**	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	*150*	*440*	<0.00005	0.0017	<0.00005	<0.0000755	<0.0000762	<0.0000755	**0.000621U**	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027
Acenaphthylene	*150*	*440*	<0.00005	0.00014 J	<0.00005	<0.0000566	<0.0000571	<0.0000566	**R**	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	*730*	*2200*	<0.00005	0.000054 J	<0.00005	<0.0000472	<0.0000476	<0.0000472	**R**	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	*0.91*	*2*	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000762	<0.0000755	**R**	<0.00005	<0.000051	<0.000051	<0.00005	<0.00005
Benzo(a)pyrene	*0.02*	*0.02*	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000762	<0.0000755	**R**	<0.00002	<0.00002	<0.00002	0.000033 J	<0.00002
bis(2-Chloroethoxy)methane	*0.083*	*0.19*	<0.00005	<0.00005	<0.00005	<0.000123	<0.000124	<0.000123	**R**	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.6*	*0.6*	<0.00031	0.00068	0.00018 J	<0.000349	<0.000352	<0.000349	**R**	0.000058 J	<0.000037	<0.000037	<0.000056	<0.00039
Chrysene	*91*	*200*	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000762	<0.0000755	**R**	<0.000021	<0.000021	<0.000021	0.000036 J	<0.000021
Dibenzofuran	*9.8*	*29*	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000762	<0.0000755	**0.000201U**	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate (DBP)	*240*	*730*	<0.00005	<0.00005	<0.00005	<0.000104	0.000115 J	0.000105 J	**R**	<0.00002	<0.00002	<0.00002	<0.00002	0.000055 J
Fluoranthene	*98*	*290*	<0.00005	<0.00005	<0.00005	<0.000066	<0.0000667	<0.000066	**R**	<0.00001	<0.00001	<0.00001	0.000051 J	<0.00001
Fluorene	*98*	*290*	<0.00005	<0.00005	<0.00005	<0.000066	<0.0000667	<0.000066	**0.000189U**	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
Naphthalene	*49*	*150*	<0.00005	0.00012 J	0.00006 J	<0.000269	<0.000166	<0.000172	**0.00627U**	<0.00002	<0.00002	<0.00002	0.000072 J	<0.00015
Nitrobenzene	*4.9*	*15*	<0.00005	<0.00005	<0.00005	<0.000104	<0.000105	<0.000104	**R**	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*19*	*42*	<0.00005	<0.00005	<0.00005	<0.0000943	<0.0000952	<0.0000943	**R**	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.1*	*0.1*	<0.00005	0.00011 J	<0.00005	<0.000575	<0.000581	<0.000575	**R**	<0.000079	<0.00008	<0.00008	<0.000079	<0.000079
Phenanthrene	*73*	*220*	<0.00005	0.00025	<0.00005	<0.0000566	<0.0000571	<0.000112	**R**	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Phenol	*730*	*2200*	<0.00005	0.00033	<0.00005	<0.0000377	<0.0000381	<0.0000377	**R**	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	*73*	*220*	<0.00005	0.000062 J	<0.00005	<0.000104	<0.000105	<0.000104	**R**	<0.000019	<0.000019	<0.000019	0.000053 J	<0.000019
Metals														
Arsenic	*1*	*1*								<0.0004	<0.0004	<0.0004	0.000983 J	0.000542 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.

TABLE 3
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 3 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Class 3 Residential Assessment	*Class 3 C/I Assessment Level*	MW-59B 01/16/2020	MW60B 03/17/2020	MW-60B 06/01/2020	MW61B 03/17/2020	MW-61B 06/01/2020	MW-63B 01/13/2010	MW-63B 06/30/2010	MW-63B 01/27/2011	MW-63B 07/19/2011	MW-63B 07/19/2011 Duplicate	MW-63B 02/09/2012	MW-63B 02/09/2012 Duplicate
Volatile Organic Compounds														
1,2-Dichloroethane	*0.5*	*0.5*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001
Benzene	*0.5*	*0.5*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.21	0.015	0.019	0.019	0.024	<0.001	<0.001
Chlorobenzene	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001
Ethylbenzene	*70*	*70*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.2	0.072	0.071	0.04	0.045	0.0012 J	0.0012 J
Methylene chloride	*0.5*	*0.5*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.0013	<0.0013
Toluene	*100*	*100*	0.18	<0.0002	<0.0002	<0.0002	<0.0002	0.015	0.0016 J	0.0018 J	0.0017 J	0.0019 J	<0.001	<0.001
Vinyl chloride	*0.2*	*0.2*	<0.0002											
Xylenes (total)	*1000*	*1000*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.082	0.02	0.016	0.013 J	0.014 J	<0.0031	<0.0031
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.11*	*0.26*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00005
2,4-Dimethylphenol	*49*	*150*	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00008	<0.00008	<0.00008	0.000056 J	<0.00005	0.00005 J	0.00044 J
2,4-Dinitrotoluene	*0.13*	*0.3*	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00005
2,6-Dinitrotoluene	*0.13*	*0.3*	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00006
2-Chloronaphthalene	*200*	*580*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00005
2-Methylnaphthalene	*9.8*	*29*	<0.000038	<0.000019	<0.000019	<0.000019	<0.000019	0.11	0.031	0.025	0.014	0.013	0.0029	0.0029
4,6-Dinitro-2-methylphenol	*0.24*	*0.73*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*4.9*	*15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005
Acenaphthene	*150*	*440*	<0.000051	<0.000027	<0.000027	<0.000027	<0.000027	0.028	0.013	0.017	0.0053	0.0066	0.002	0.0019
Acenaphthylene	*150*	*440*	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	0.00051	0.00018 J	<0.00007	0.000066 J	0.00011 J	0.00012 J	0.00016 J
Anthracene	*730*	*2200*	<0.000031	<0.000014	<0.000014	<0.000014	0.000014 J	0.00068	0.00039	0.0011	0.00011 J	0.0002 J	0.00015 J	0.00015 J
Benzo(a)anthracene	*0.91*	*2*	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	0.00087	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.02*	*0.02*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	0.00027	<0.00005	<0.00005	<0.00005	<0.00005
bis(2-Chloroethoxy)methane	*0.083*	*0.19*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.6*	*0.6*	<0.000037	0.00092	0.000089 J	0.00015 J	0.000062 J	<0.00036	<0.00036	0.0006	<0.00051	<0.00029	0.00096	0.00073
Chrysene	*91*	*200*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00007	<0.00007	0.00079	<0.00005	<0.00005	<0.00005	<0.00005
Dibenzofuran	*9.8*	*29*	<0.00005	<0.00002	<0.00002	<0.00002	<0.00002	0.022	0.008	0.013	0.0041	0.0049	0.0024	0.0019
Di-n-butylphthalate (DBP)	*240*	*730*	<0.00002	0.000047 J	0.000099 J	<0.00002	0.00012 J	0.00019 J	<0.00007	<0.00007	<0.00005	<0.00005	0.00014 J	0.00005 J
Fluoranthene	*98*	*290*	<0.000025	0.000015 J	<0.00001	<0.00001	<0.00001	<0.00007	<0.00007	0.0042	<0.00005	<0.00005	0.000091 J	0.00005 J
Fluorene	*98*	*290*	<0.000042	<0.00003	<0.00003	<0.00003	<0.00003	0.0078	0.0041	0.0054	0.0019	0.0024	0.00093	0.00078
Naphthalene	*49*	*150*	<0.00024	<0.00002	<0.00002	<0.00002	<0.00002	3.1	0.67	0.76	0.36 J	0.49 J	0.027	0.026
Nitrobenzene	*4.9*	*15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00005
N-Nitrosodiphenylamine	*19*	*42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00005
Pentachlorophenol	*0.1*	*0.1*	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	0.00018 J	0.00005 J
Phenanthrene	*73*	*220*	<0.000099	<0.000021	<0.000021	<0.000021	<0.000021	0.0034	0.00076	0.0044	0.00075	0.00098	0.00072 J	0.0005 J
Phenol	*730*	*2200*	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00057 J	0.00095 J
Pyrene	*73*	*220*	<0.000021	<0.000019	<0.000019	<0.000019	<0.000019	<0.00007	<0.00007	0.0029	<0.00005	<0.00005	0.000063 J	<0.00005
Metals														
Arsenic	*1*	*1*	0.000486 J	0.00234	0.00222	0.00461	0.0104							

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.

TABLE 3
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 3 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Class 3 Residential Assessment	*Class 3 C/I Assessment Level*	MW-63B 07/18/2012	MW-63B 07/18/2012 Duplicate	MW-63B 02/07/2013	MW-63B 02/07/2013 Duplicate	MW-63B 08/07/2013	MW-63B 01/22/2014	MW-63B 07/24/2014	MW-63B 01/28/2018	MW-63B 03/26/2018	MW-63B 06/06/2018	MW-63B 01/14/2019	MW-63B 07/16/2019
Volatile Organic Compounds														
1,2-Dichloroethane	*0.5*	*0.5*	<0.0005	<0.0005	<0.00014	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.5*	*0.5*	0.0015 J	0.0016 J	0.00952	0.00919	0.0869	0.0762	0.108	0.0033	0.0026	0.048	0.35	0.11
Chlorobenzene	*10*	*10*	<0.0005	<0.0005	<0.00012	<0.00012	<0.00012	<0.00018	0.000216 J	<0.0003	<0.0003	<0.0003	0.00073 J	<0.0003
Ethylbenzene	*70*	*70*	0.0014 J	0.0014 J	0.0165	0.0163	0.0341	0.0418	0.151	0.012	0.0059	0.048	0.48	0.14
Methylene chloride	*0.5*	*0.5*	<0.001	<0.001	<0.00015	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*100*	*100*	0.0038 J	0.0038 J	0.00241	0.00231	<0.000434	0.000399 J	0.00257	<0.0002	<0.0002	0.00093 J	0.0071	0.00071 J
Vinyl chloride	*0.2*	*0.2*							<0.00011					
Xylenes (total)	*1000*	*1000*	<0.0015	<0.0015	0.00629	0.00635	0.0113	0.0156	0.0535	0.0048	0.0016	0.011	0.11	0.041
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.11*	*0.26*	<0.00005	<0.00005	<0.00524	<0.000105	<0.000104	<0.00109	<0.0011	<0.000021	<0.000021	<0.00021	<0.00021	<0.000021
2,4-Dimethylphenol	*49*	*150*	<0.00005	<0.00005	<0.0148	<0.000295	<0.000292	<0.00307	<0.0031	<0.00004	<0.00004	<0.0004	<0.0004	<0.00004
2,4-Dinitrotoluene	*0.13*	*0.3*	<0.00005	<0.00005	<0.00619	<0.000124	<0.000123	<0.00129	<0.0013	<0.000058	<0.000058	<0.00058	<0.00059	<0.000058
2,6-Dinitrotoluene	*0.13*	*0.3*	<0.00006	<0.00006	<0.00381	<0.0000762	<0.0000755	<0.000792	<0.0008	<0.000042	<0.000042	<0.00042	<0.00042	<0.000042
2-Chloronaphthalene	*200*	*580*	<0.00005	<0.00005	<0.00381	<0.0000762	<0.0000755	<0.000792	<0.0008	<0.000021	<0.000021	<0.00021	<0.00021	<0.000021
2-Methylnaphthalene	*9.8*	*29*	0.0034	0.0032	0.0104 J	0.00865	0.00242	0.00756	0.0302	0.000059 J	<0.000019	0.0016	0.042	0.037
4,6-Dinitro-2-methylphenol	*0.24*	*0.73*	<0.00008	<0.00008	<0.0395	<0.00079	<0.000783	<0.00822	<0.0083	<0.00002	<0.00002	<0.0002	<0.0002	<0.00002
4-Nitrophenol	*4.9*	*15*	<0.00005	<0.00005	<0.0267	<0.000533	<0.000528	<0.00554	<0.0056	<0.000047	<0.000047	<0.00047	<0.00047	<0.000047
Acenaphthene	*150*	*440*	0.0023	0.0022	0.00952 J	0.0065	0.000833	0.00274 J	0.00754	0.00066	<0.000027	0.0027	<0.00027	0.012
Acenaphthylene	*150*	*440*	<0.00005	<0.00005	<0.00286	<0.0000571	<0.0000566	<0.000594	<0.0006	<0.000015	<0.000015	<0.00015	0.0029	0.00016
Anthracene	*730*	*2200*	<0.00013	<0.00011	0.00238 J	0.000124 J	<0.0000472	<0.000495	<0.0005	0.00011	0.00022	<0.00014	0.00017 J	0.00034
Benzo(a)anthracene	*0.91*	*2*	<0.00005	<0.00005	<0.00381	<0.0000762	<0.0000755	<0.000792	<0.0008	<0.00005	<0.00005	<0.0005	<0.00051	<0.00005
Benzo(a)pyrene	*0.02*	*0.02*	<0.00005	<0.00005	<0.00381	<0.0000762	<0.0000755	<0.000792	<0.0008	<0.00002	<0.00002	<0.0002	<0.0002	<0.00002
bis(2-Chloroethoxy)methane	*0.083*	*0.19*	<0.00005	<0.00005	<0.00619	<0.000124	<0.000123	<0.00129	<0.0013	<0.00003	<0.00003	<0.0003	<0.0003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.6*	*0.6*	0.00096 J	0.00051 J	<0.0176	<0.000376	0.000381 J	<0.00366	<0.0037	<0.000037	<0.000037	<0.00037	<0.00037	<0.000037
Chrysene	*91*	*200*	<0.00005	<0.00005	<0.00381	<0.0000762	<0.0000755	<0.000792	<0.0008	<0.000021	<0.000021	<0.00021	<0.00021	<0.000021
Dibenzofuran	*9.8*	*29*	0.0026	0.0023	0.00576 J	0.00514	0.00104	0.002 J	0.00663	0.00065	<0.00002	0.002	0.0087	0.011
Di-n-butylphthalate (DBP)	*240*	*730*	<0.00005	<0.00005	0.00524 J	0.000127 J	<0.000104	<0.00109	<0.0011	<0.00002	<0.00002	<0.0002	<0.0002	<0.00002
Fluoranthene	*98*	*290*	<0.00013	<0.00013	<0.00333	<0.0000667	<0.000066	<0.000693	<0.0007	0.0001	<0.00001	<0.0001	<0.0001	<0.00001
Fluorene	*98*	*290*	0.0011	0.001	<0.00333	0.00208	0.000349 J	0.00102 J	0.00248 J	0.00033	<0.00003	0.00099 J	0.0029	0.0037
Naphthalene	*49*	*150*	0.044	0.04	0.251	0.162 J	0.146	0.374	1.69	<0.00066	<0.00002	0.29	2.1	1.5
Nitrobenzene	*4.9*	*15*	<0.00005	<0.00005	<0.00524	<0.000105	<0.000104	<0.00109	<0.0011	<0.000024	<0.000024	<0.00024	<0.00024	<0.000024
N-Nitrosodiphenylamine	*19*	*42*	<0.00005	<0.00005	<0.00476	<0.0000952	<0.0000943	<0.00099	<0.001	<0.000025	<0.000025	<0.00025	<0.00025	<0.000025
Pentachlorophenol	*0.1*	*0.1*	<0.00005	<0.00005	<0.029	<0.000581	<0.000575	<0.00604	<0.0061	<0.000079	<0.000079	<0.00079	<0.0008	<0.000079
Phenanthrene	*73*	*220*	<0.001	<0.001	0.00286 J	0.000776 J	<0.0000566	0.00133 J	<0.0006	<0.000075	<0.000021	<0.00021	0.00094 J	0.0013
Phenol	*730*	*2200*	<0.00005	<0.00005	<0.0019	<0.0000381	<0.0000377	0.000889 J	<0.0004	<0.000035	<0.000035	<0.00035	<0.00035	<0.000035
Pyrene	*73*	*220*	<0.00005	<0.00005	<0.00524	<0.000105	<0.000104	<0.00109	<0.0011	<0.000019	<0.000019	<0.00019	<0.00019	<0.000019
Metals														
Arsenic	*1*	*1*								0.00114 J	0.00211	0.000818 J	0.00338	0.00156 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.

TABLE 3
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 3 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Class 3 Residential Assessment	*Class 3 C/I Assessment Level*	MW-63B 01/16/2020	MW-67B 07/15/2010	MW-67B 01/27/2011	MW-67B 07/20/2011	MW-67B 02/09/2012	MW-67B 07/17/2012	MW-67B 02/12/2013	MW-67B 08/08/2013	MW-67B 01/23/2014	MW-67B 07/24/2014	MW-67B 01/31/2018	MW-67B 03/27/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.5*	*0.5*	<0.0002	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002
Benzene	*0.5*	*0.5*	0.018	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002
Chlorobenzene	*10*	*10*	<0.0003	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003
Ethylbenzene	*70*	*70*	0.051	0.0015 J	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003
Methylene chloride	*0.5*	*0.5*	<0.001	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001
Toluene	*100*	*100*	<0.0002	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002
Vinyl chloride	*0.2*	*0.2*								<0.00011		<0.00011		
Xylenes (total)	*1000*	*1000*	0.013	0.0012 J	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.11*	*0.26*	<0.000021	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.000105	<0.000104	<0.000106	<0.000106	<0.000021	<0.000021
2,4-Dimethylphenol	*49*	*150*	<0.00004	<0.00008	<0.00008	<0.00005	0.0005 J	<0.00005	<0.000295	<0.000292	<0.000298	<0.000298	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.13*	*0.3*	<0.000058	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000124	<0.000123	<0.000125	<0.000125	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.13*	*0.3*	<0.000042	<0.00007	<0.00007	<0.00006	<0.00006	0.0022 J	<0.0000762	<0.0000755	<0.0000769	<0.0000769	<0.000042	<0.000042
2-Chloronaphthalene	*200*	*580*	<0.000021	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000769	<0.0000769	<0.000021	<0.000021
2-Methylnaphthalene	*9.8*	*29*	<0.000056	<0.00007	0.00007 J	<0.00005	0.00023 J	0.000062 J	<0.0000667	<0.000066	<0.0000673	<0.0000673	<0.000031	<0.000019
4,6-Dinitro-2-methylphenol	*0.24*	*0.73*	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	**R**	<0.000783	<0.000798	<0.000798	<0.00002	<0.00002
4-Nitrophenol	*4.9*	*15*	<0.000047	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000533	<0.000528	<0.000538	<0.000538	<0.000047	<0.000047
Acenaphthene	*150*	*440*	<0.000059	0.00011 J	<0.00009	<0.00005	0.00012 J	<0.00005	<0.0000762	<0.0000755	<0.0000769	<0.0000769	<0.000027	<0.000027
Acenaphthylene	*150*	*440*	0.000032 J	<0.00007	0.00007 J	<0.00005	<0.00005	<0.00005	<0.0000571	<0.0000566	<0.0000577	<0.0000577	<0.000015	<0.000015
Anthracene	*730*	*2200*	<0.000081	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000476	<0.0000472	<0.000424	<0.0000481	<0.000014	<0.000014
Benzo(a)anthracene	*0.91*	*2*	<0.00005	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000769	<0.0000769	<0.00005	<0.00005
Benzo(a)pyrene	*0.02*	*0.02*	<0.00002	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000769	<0.0000769	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.083*	*0.19*	<0.00003	<0.00009	0.00009 J	<0.00005	<0.00005	<0.00005	<0.000124	<0.000123	<0.000125	<0.000125	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.6*	*0.6*	0.000065 J	0.0016	0.0022 J	<0.00094	0.00042	0.00012 J	<0.000352	<0.000349	<0.000356	0.00184	<0.000056	<0.000037
Chrysene	*91*	*200*	<0.000021	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000769	<0.0000769	<0.000021	<0.000021
Dibenzofuran	*9.8*	*29*	<0.000063	<0.00008	0.00008 J	<0.00005	0.00013 J	<0.00005	<0.0000762	<0.0000755	<0.0000769	<0.0000769	<0.00002	<0.00002
Di-n-butylphthalate (DBP)	*240*	*730*	0.000034 J	<0.00007	0.000083 J	<0.00005	<0.00005	<0.00005	<0.000105	0.000119 J	<0.000834	<0.000106	<0.00002	<0.00002
Fluoranthene	*98*	*290*	<0.000023	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000667	<0.000066	<0.0000673	<0.0000673	<0.00001	<0.00001
Fluorene	*98*	*290*	<0.00012	<0.00007	<0.00007	<0.00005	0.0001 J	<0.00005	<0.0000667	<0.000066	<0.0000673	<0.0000673	<0.00003	<0.00003
Naphthalene	*49*	*150*	<0.00035	<0.0001	0.00062	<0.00005	0.0019	0.00049	<0.0000762	0.000433 J	<0.000711	0.000275 J	<0.00045	0.00013
Nitrobenzene	*4.9*	*15*	<0.000024	<0.00009	0.00009 J	<0.00005	<0.00005	<0.00005	<0.000105	<0.000104	<0.000106	<0.000106	<0.000024	<0.000024
N-Nitrosodiphenylamine	*19*	*42*	<0.000025	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000952	<0.0000943	<0.0000962	<0.0000962	<0.000025	<0.000025
Pentachlorophenol	*0.1*	*0.1*	<0.000079	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	0.000581 J	<0.000575	<0.000587	<0.000587	<0.000079	<0.000079
Phenanthrene	*73*	*220*	<0.000072	<0.00007	<0.00007	<0.00005	0.00011 J	<0.00005	<0.0000571	<0.0000566	<0.000377	<0.0000577	<0.000021	<0.000021
Phenol	*730*	*2200*	<0.000035	<0.00007	<0.00007	<0.00005	0.000089 J	<0.00005	<0.0000381	<0.0000377	<0.0000385	<0.0000385	0.00018 J	<0.000035
Pyrene	*73*	*220*	<0.000021	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000105	<0.000104	<0.000106	<0.000106	<0.000019	<0.000019
Metals														
Arsenic	*1*	*1*	0.00204										0.000751 J	0.000565 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.

TABLE 3
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 3 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Class 3 Residential Assessment	*Class 3 C/I Assessment Level*	MW-67B 06/06/2018	MW-67B 01/24/2019	MW-67B 07/31/2019	MW-67B 01/15/2020	MW-70B 07/17/2012 DNAPL	MW-70B 02/07/2013 DNAPL	MW-70B 01/22/2014 DNAPL	MW-70B 07/28/2014 DNAPL	MW-70B 01/20/2020 DNAPL	MW-71B 02/08/2012	MW-71B 07/18/2012	MW-71B 02/07/2013
Volatile Organic Compounds														
1,2-Dichloroethane	*0.5*	*0.5*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0025	<0.007	<0.0002	<0.0014	<0.01	<0.001	<0.0005	<0.00014
Benzene	*0.5*	*0.5*	<0.0002	<0.0002	<0.0002	<0.0002	0.21	**2.01**	**2.39**	**2.55**	**1.9**	0.012	0.0014 J	0.0124
Chlorobenzene	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0025	0.0317 J	0.000715	<0.0012	<0.015	<0.001	<0.0005	<0.00012
Ethylbenzene	*70*	*70*	<0.0003	<0.0003	<0.0003	<0.0003	0.058	0.524	0.621	0.742	0.57	0.0045 J	0.0075	0.00541
Methylene chloride	*0.5*	*0.5*	<0.001	<0.001	<0.001	<0.001	<0.005	<0.0075	<0.00022	<0.0015	<0.05	<0.0013	<0.001	<0.00015
Toluene	*100*	*100*	<0.0002	<0.0002	<0.0002	<0.0002	0.22	1.65	2.31	2.76	2.1	0.0077	0.0078	0.0104
Vinyl chloride	*0.2*	*0.2*									<0.01			
Xylenes (total)	*1000*	*1000*	<0.0003	<0.0003	<0.0003	<0.0003	0.19	1.51	1.68	2.11	1.5	0.016	0.033	0.0143
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.11*	*0.26*	<0.000021	<0.000021	<0.000021	<0.000021	<0.0005	<0.075	<0.0157	<0.0107	<0.00042	<0.00005	<0.00005	<0.000105
2,4-Dimethylphenol	*49*	*150*	<0.00004	<0.00004	<0.00004	<0.00004	2.6	<2.11	**72**	**50.8**	49	0.0034	<0.00005	<0.000295
2,4-Dinitrotoluene	*0.13*	*0.3*	0.000058 J	<0.000058	<0.000058	<0.000058	<0.0005	<0.0886	<0.0186	<0.0126	<0.0012	<0.00005	<0.00005	<0.000124
2,6-Dinitrotoluene	*0.13*	*0.3*	<0.000042	<0.000042	<0.000042	<0.000042	<0.0006	<0.0545	<0.0114	<0.00777	<0.00084	<0.00006	<0.00006	<0.0000762
2-Chloronaphthalene	*200*	*580*	0.000021 J	<0.000021	<0.000021	<0.000021	<0.0005	<0.0545	<0.0114	<0.00777	<0.00042	<0.00005	<0.00005	<0.0000762
2-Methylnaphthalene	*9.8*	*29*	0.000061 J	<0.000019	<0.000019	<0.000019	0.94	1.21	1.4	1.31	**10**	0.0076	<0.0004	0.000377 J
4,6-Dinitro-2-methylphenol	*0.24*	*0.73*	<0.00002	<0.00002	<0.00002	<0.00002	<0.0008	**<0.566**	<0.119	<0.0806	<0.0004	<0.00008	<0.00008	<0.00079
4-Nitrophenol	*4.9*	*15*	0.000047 J	<0.000047	<0.000047	<0.000047	<0.0005	<0.382	<0.08	<0.0544	<0.00094	<0.00005	<0.00005	<0.000533
Acenaphthene	*150*	*440*	0.000027 J	<0.000027	<0.000027	<0.000027	0.91	0.515	0.454	0.374	7.1	0.0039	<0.00017	0.0044
Acenaphthylene	*150*	*440*	0.000015 J	<0.000015	<0.000015	<0.000015	0.011	0.0424 J	<0.00857	0.0114 J	0.079	0.00019 J	<0.00005	0.000135 J
Anthracene	*730*	*2200*	<0.000014	<0.000014	<0.000014	<0.000014	0.096	0.051 J	0.0423 J	0.0387 J	5.8	0.00056	<0.00013	0.000452 J
Benzo(a)anthracene	*0.91*	*2*	<0.00005	<0.00005	<0.00005	<0.00005	0.016	<0.0545	<0.0114	<0.00777	0.52	0.000081 J	0.00011 J	<0.0000762
Benzo(a)pyrene	*0.02*	*0.02*	<0.00002	<0.00002	<0.00002	<0.00002	0.0041	**<0.0545**	<0.0114	<0.00777	**0.13**	0.00012 J	0.00014 J	<0.0000762
bis(2-Chloroethoxy)methane	*0.083*	*0.19*	0.00003 J	<0.00003	<0.00003	<0.00003	<0.0005	**<0.0886**	<0.0186	<0.0126	<0.0006	<0.00005	<0.00005	<0.000124
bis(2-Ethylhexyl)phthalate (DEHP)	*0.6*	*0.6*	<0.00056	0.000051 J	<0.000037	0.00009 J	0.0068	<0.252	<0.0529	<0.0359	0.0039 J	<0.0013	0.00012 J	<0.000352
Chrysene	*91*	*200*	<0.000021	<0.000021	<0.000021	<0.000021	0.013	<0.0545	<0.0114	<0.00777	0.63	0.000089 J	0.00015 J	<0.0000762
Dibenzofuran	*9.8*	*29*	0.000069 J	<0.00002	<0.00002	<0.00002	0.69	0.345	0.355	0.278	6.2	0.0031	<0.00016	0.00244
Di-n-butylphthalate (DBP)	*240*	*730*	<0.00002	<0.00002	<0.00002	<0.00002	<0.0005	<0.075	<0.0157	<0.0107	<0.0004	<0.00005	<0.00005	<0.000105
Fluoranthene	*98*	*290*	<0.00001	<0.00001	<0.00001	<0.00001	0.28	<0.0477	0.0105 J	0.013 J	4.7	0.00053	<0.00026	0.000387 J
Fluorene	*98*	*290*	0.00003 J	<0.00003	<0.00003	<0.00003	0.66	0.211 J	0.217	0.186	6.7	0.002	<0.00023	0.00168
Naphthalene	*49*	*150*	0.00047 J	<0.00002	0.000079 J	<0.00002	5.3	17.3 J	30.1	18.1	**71**	0.051	<0.0019	0.0000937 J
Nitrobenzene	*4.9*	*15*	0.000024 J	<0.000024	<0.000024	<0.000024	<0.0005	<0.075	<0.0157	<0.0107	<0.00048	<0.00005	<0.00005	<0.000105
N-Nitrosodiphenylamine	*19*	*42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.0005	<0.0682	<0.0143	<0.00971	<0.0005	<0.00005	<0.00005	<0.0000952
Pentachlorophenol	*0.1*	*0.1*	<0.000079	<0.000079	<0.000079	<0.000079	<0.0005	**<0.416**	<0.0871	<0.0592	<0.0016	0.00022	<0.00005	<0.000581
Phenanthrene	*73*	*220*	<0.000021	<0.000021	<0.000021	<0.000021	0.93	0.227 J	0.175	0.162	14	0.0025	<0.00034	0.00127
Phenol	*730*	*2200*	<0.000035	<0.000035	<0.000035	<0.000035	0.077	2.87	3.86	1.69	3.4	0.00037	<0.00005	<0.0000381
Pyrene	*73*	*220*	<0.000019	<0.000019	<0.000019	<0.000019	0.094	<0.075	<0.0157	<0.0107	3.2	0.00057	<0.00026	0.000253 J
Metals														
Arsenic	*1*	*1*	0.000416 J	<0.0004	0.000494 J	0.000467 J					0.0012 J			

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.

TABLE 3
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 3 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Class 3 Residential Assessment	***Class 3 C/I Assessment Level***	MW-71B 08/07/2013	MW-71B 01/24/2014	MW-71B 07/28/2014	MW-71B 01/25/2018	MW-71B 03/26/2018	MW-71B 06/06/2018	MW-71B 01/15/2019	MW-71B 07/17/2019	MW-71B 01/15/2020	MW-72B 07/12/2012	MW-72B 02/01/2013	MW-72B 07/29/2013
Volatile Organic Compounds														
1,2-Dichloroethane	*0.5*	*0.5*	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.005	<0.007	<0.014
Benzene	*0.5*	*0.5*	0.103	0.039	0.00155	<0.0002	0.0042	0.027	0.0024	0.13	0.0021	**1.4**	**1.45**	**1.23**
Chlorobenzene	*10*	*10*	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.005	<0.006	<0.012
Ethylbenzene	*70*	*70*	0.0354	0.00793	<0.00011	<0.0003	0.00065 J	0.0055	0.00093 J	0.031	0.0013	0.31	0.321	0.332
Methylene chloride	*0.5*	*0.5*	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.0075	0.291
Toluene	*100*	*100*	0.0355	0.00918	0.00423	<0.0002	0.00094 J	0.0033	<0.0002	0.023	<0.0002	1.1	1.18	1.12
Vinyl chloride	*0.2*	*0.2*	<0.00011											
Xylenes (total)	*1000*	*1000*	0.0615	0.0202	0.0126	<0.0003	0.0044	0.013	0.00084 J	0.054	0.003	0.88	0.96	0.928
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.11*	*0.26*	<0.00519	<0.000106	<0.000107	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0005	<0.0524	<0.0267
2,4-Dimethylphenol	*49*	*150*	<0.0146	0.0225	<0.000301	<0.000041	<0.000041	0.00044	<0.00004	<0.00004	<0.00004	20	**98.1**	29.9
2,4-Dinitrotoluene	*0.13*	*0.3*	<0.00613	<0.000125	<0.000126	<0.000059	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058	<0.0005	<0.0619	<0.0316
2,6-Dinitrotoluene	*0.13*	*0.3*	<0.00377	<0.0000769	<0.0000777	<0.000043	<0.000043	<0.000042	<0.000042	<0.000042	<0.000042	<0.0006	<0.0381	<0.0194
2-Chloronaphthalene	*200*	*580*	<0.00377	<0.0000769	<0.0000777	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0005	<0.0381	<0.0194
2-Methylnaphthalene	*9.8*	*29*	0.114	0.0476	<0.000068	<0.000019	0.0017	0.00031	<0.000019	0.024	0.006	0.74	1.39	1.19
4,6-Dinitro-2-methylphenol	*0.24*	*0.73*	<0.0392	<0.000798	<0.000806	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0008	**<0.395**	<0.201
4-Nitrophenol	*4.9*	*15*	<0.0264	<0.000538	<0.000544	<0.000048	<0.000048	<0.000047	<0.000047	<0.000047	<0.000047	<0.0005	<0.267	<0.136
Acenaphthene	*150*	*440*	0.0346	0.0212	0.000785	<0.000028	0.0043	0.0023	<0.000027	0.016	0.0053	0.23	0.584	0.476
Acenaphthylene	*150*	*440*	<0.00283	0.00122	<0.0000583	<0.000015	0.000066 J	0.00011	<0.000015	0.00033	0.00015	0.0073	<0.0286	<0.0146
Anthracene	*730*	*2200*	0.00383 J	0.00198	<0.0000485	0.000064 J	0.0022	0.00041	<0.000014	0.0066	0.0039	0.017	0.0646 J	0.033 J
Benzo(a)anthracene	*0.91*	*2*	<0.00377	<0.0000769	<0.0000777	0.00015	0.00067	0.00013	<0.00005	0.0026	0.0011	<0.0005	<0.0381	<0.0194
Benzo(a)pyrene	*0.02*	*0.02*	<0.00377	<0.0000769	<0.0000777	0.0002	0.00029	0.00018	0.000021 J	0.00083	0.00052	<0.0005	**<0.0381**	<0.0194
bis(2-Chloroethoxy)methane	*0.083*	*0.19*	<0.00613	<0.000125	<0.000126	<0.000031	<0.000031	<0.00003	<0.00003	<0.00003	<0.00003	<0.0005	<0.0619	<0.0316
bis(2-Ethylhexyl)phthalate (DEHP)	*0.6*	*0.6*	<0.0175	<0.000356	<0.000359	0.00018 J	0.000081 J	<0.00056	<0.000037	<0.00014	0.00063	<0.001	<0.176	<0.0898
Chrysene	*91*	*200*	<0.00377	<0.0000769	<0.0000777	0.00023	0.00077	0.00025	<0.000021	0.0024	0.0011	<0.0005	<0.0381	<0.0194
Dibenzofuran	*9.8*	*29*	0.0292	0.0175	<0.0000777	<0.00002	0.004	0.0019	<0.00002	0.016	0.0049	0.18	0.355	0.348
Di-n-butylphthalate (DBP)	*240*	*730*	<0.00519	<0.00085	<0.000107	<0.00002	<0.00002	<0.00002	0.000022 J	<0.00002	0.00098	<0.0005	<0.0524	<0.0267
Fluoranthene	*98*	*290*	<0.0033	0.000712	0.000149 J	0.00033	0.0045	0.0005	0.000039 J	0.017	0.0057	0.0034	<0.0333	<0.017
Fluorene	*98*	*290*	0.0127 J	0.0104	<0.000068	<0.000031	0.0032	0.0013	<0.00003	0.0093	0.0038	0.11	0.253	0.224
Naphthalene	*49*	*150*	2.07	0.504	<0.000471	<0.00002	0.00048	0.00011	<0.00002	0.44	0.0064	16	**88.5 J**	25
Nitrobenzene	*4.9*	*15*	<0.00519	<0.000106	<0.000107	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.0005	<0.0524	<0.0267
N-Nitrosodiphenylamine	*19*	*42*	<0.00472	<0.0000962	<0.0000971	<0.000026	<0.000026	<0.000025	<0.000025	<0.000025	<0.000025	<0.0005	<0.0476	<0.0243
Pentachlorophenol	*0.1*	*0.1*	<0.0288	<0.000587	<0.000592	<0.000081	<0.000081	<0.000079	<0.000079	<0.000079	<0.000079	<0.0005	**<0.29**	**<0.148**
Phenanthrene	*73*	*220*	0.0124 J	0.00677	<0.0000583	0.00012	0.012	0.0016	<0.000021	0.03	0.017	0.079	0.264	0.182
Phenol	*730*	*2200*	<0.00189	<0.0000385	<0.0000388	<0.000036	<0.000036	<0.000035	<0.000035	0.000051 J	<0.000035	3.4	7.51	6.31
Pyrene	*73*	*220*	<0.00519	0.000353 J	<0.000107	0.00031	0.0028	0.00064	0.000037 J	0.0088	0.0042	0.0019 J	<0.0524	<0.0267
Metals														
Arsenic	*1*	*1*				0.00174 J	0.00214	0.000851 J	0.00158 J	0.000626 J	0.00279			

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.

TABLE 3
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 3 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Class 3 Residential Assessment	*Class 3 C/I Assessment Level*	MW-72B 01/15/2014	MW-72B 02/08/2018	MW-72B 03/19/2018	MW-72B 05/16/2018	MW-72B 01/24/2019	MW-72B 07/10/2019	MW-72B 01/09/2020
Volatile Organic Compounds									
1,2-Dichloroethane	*0.5*	*0.5*	<0.0002	0.018	<0.0002	<0.001	0.011	<0.0002	<0.002
Benzene	*0.5*	*0.5*	**0.932**	**0.8**	**1.1**	**1.2**	**0.63**	**1.1**	**0.7**
Chlorobenzene	*10*	*10*	0.00029 J	0.00033 J	<0.0003	<0.0015	<0.003	<0.0003	<0.003
Ethylbenzene	*70*	*70*	0.224	0.26	0.31	0.34	0.2	0.3	0.13
Methylene chloride	*0.5*	*0.5*	<0.00022	<0.001	<0.001	<0.005	<0.01	<0.001	<0.01
Toluene	*100*	*100*	0.724	0.72	0.99	0.95	0.58	0.96	0.58
Vinyl chloride	*0.2*	*0.2*							
Xylenes (total)	*1000*	*1000*	0.661	0.87	0.94	1.1	0.63	0.97	0.36
Semivolatile Organic Compounds									
1,2-Diphenylhydrazine	*0.11*	*0.26*	**<0.156**	<0.00021	<0.00021	<0.00021	<0.00021	<0.00021	<0.00021
2,4-Dimethylphenol	*49*	*150*	**182 J**	10	16	14	2	19	13
2,4-Dinitrotoluene	*0.13*	*0.3*	**<0.184**	<0.00058	<0.00058	<0.00058	<0.00058	<0.00058	<0.00058
2,6-Dinitrotoluene	*0.13*	*0.3*	<0.113	<0.00042	<0.00042	<0.00042	<0.00042	<0.00042	<0.00042
2-Chloronaphthalene	*200*	*580*	<0.113	<0.00021	<0.00021	<0.00021	<0.00021	<0.00021	<0.00021
2-Methylnaphthalene	*9.8*	*29*	3.37	0.33	0.42	0.23	0.071	0.57	0.22
4,6-Dinitro-2-methylphenol	*0.24*	*0.73*	**<1.17**	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
4-Nitrophenol	*4.9*	*15*	<0.792	<0.00047	<0.00047	<0.00047	0.0073 J	<0.00047	<0.00047
Acenaphthene	*150*	*440*	1.6	0.07	0.15	0.12	0.019	0.2	0.079
Acenaphthylene	*150*	*440*	<0.0849	0.0021	<0.00015	0.003	0.00069 J	0.0044	0.0023
Anthracene	*730*	*2200*	0.179 J	0.0085	0.02	<0.00014	0.0015	0.034	0.02
Benzo(a)anthracene	*0.91*	*2*	<0.113	<0.0005	<0.0005	<0.0005	<0.0005	0.0069	0.0031
Benzo(a)pyrene	*0.02*	*0.02*	**<0.113**	<0.0002	<0.0002	<0.0002	<0.0002	0.0019	0.0011
bis(2-Chloroethoxy)methane	*0.083*	*0.19*	**<0.184**	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.6*	*0.6*	<0.524	<0.00037	<0.00037	<0.00037	<0.00037	<0.00037	<0.00037
Chrysene	*91*	*200*	<0.113	<0.00021	<0.00021	<0.00021	<0.00021	0.0069	0.0033
Dibenzofuran	*9.8*	*29*	1.21	0.06	0.13	0.082	0.017	0.16	0.061
Di-n-butylphthalate (DBP)	*240*	*730*	<0.156	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Fluoranthene	*98*	*290*	<0.0991	<0.0001	0.0015	0.00095 J	<0.0001	0.046	0.024
Fluorene	*98*	*290*	0.7 J	0.032	0.069	0.051	0.0091	0.12	0.049
Naphthalene	*49*	*150*	**82.8**	7.5	13	12	1.2	12	2
Nitrobenzene	*4.9*	*15*	<0.156	<0.00024	<0.00024	<0.00024	<0.00024	<0.00024	<0.00024
N-Nitrosodiphenylamine	*19*	*42*	<0.142	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025
Pentachlorophenol	*0.1*	*0.1*	**<0.863**	<0.00079	<0.00079	<0.00079	<0.00079	<0.00079	<0.00079
Phenanthrene	*73*	*220*	0.76	0.02	0.084	0.045	0.0042	0.16	0.075
Phenol	*730*	*2200*	31.4	4.2	4.2	2.3	0.58	9.3	5.2
Pyrene	*73*	*220*	<0.156	<0.00019	0.0012	0.00074 J	<0.00019	0.029	0.013
Metals									
Arsenic	*1*	*1*		0.00127 J	0.000624 J	0.000951 J	0.00106 J	0.000861 J	0.00105 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.

LOG OF BORING: **MW-22AR**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	7
Completion Date:	1/24/2018	Total Depth (ft):	25
Driller:	Roger Rodriguez	Water Level (ft bgl):	2.6
Driller's License:	TX 59618M	Northing:	727909.3
Logged By:	M. Hermiston	Easting:	3165659.9
Drilling Method:	Sonic LS 600	TOC Elev. (ft AMSL):	46.06
Sampling Method:	6" & 4" x 10' Core	Ground Elev. (ft AMSL):	45.55

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
8/27/2018

Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0		NR	NA	NR	(0 - 10) No Recovery - Hydrovac to 10.0'.
10		6.0/6.0	1.0	CL	(10 - 11) Silty CLAY, CL, light gray 10YR 7/1 with yellow mottling 10YR 7/6, dry, medium plasticity, some sand, no odor.
			1.5	SC	(11 - 12) Sandy CLAY, SC, light gray 10YR 7/1 with yellow mottling 10YR 7/6, no odor.
15			1.9	SM	(12 - 14) Silty SAND, SM, light gray 10YR 7/1 with brownish yellow mottling 10YR 6/6, moist to wet, some clay, clay content increases with depth, no odor.
		4.0/4.0	1.1		(14 - 15) Silty CLAY, CL, with some sand, light gray 10YR 7/1 with yellowish red 5YR 5/6 and yellow 10YR 7/6 and gray 2.5Y 5/1 mottling, black staining, medium plasticity, no odor, thin sand bed at 14.6'.
20			1.3	CL	(15 - 25) Silty CLAY, CL, red 2.5YR 5/6 with gray 2.5Y 5/1 mottling, black staining throughout, dry, medium plasticity, becomes light bluish gray GLEY2 8/1 mottling from 16.0'-17.5', becomes light gray 10YR 7/1 with yellow 10YR 7/6 mottling from 17.5'-25.0', no odor.
		5.0/5.0	4.4		
			2.2		
25			0.9		
30					
35					
40					
45					
50					

GOLDER
2201 Double Creek Dr., Suite 4004
Round Rock, Texas 78664
O·512.671.3434 F·512.671.3446

Notes:
1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) Depth to water as of 02/01/2018 prior to development.
3.) 7.0" Sonic isolation casing to 20.0'. Removed during grouting.

Casing Materials
(0.0 - 9.6) 2" SCH-40 PVC Casing
(9.6 - 19.6) 2" SCH-40 PVC 0.010" Slotted Screen
(19.6 - 20.0) End Cap

Annular Materials
(0.0 - 1.0) Concrete
(1.0 - 8.0) 3/8" Bentonite Chips
(8.0 - 20.0) 16/30 Silica Sand
(20.0 - 25.0 3/8" Bentonite Chips

LOG OF BORING: **MW-22BR**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	7
Completion Date:	1/24/2018	Total Depth (ft):	39
Driller:	Roger Rodriguez	Water Level (ft bgl):	2.45
Driller's License:	TX 59618M	Northing:	727904.1
Logged By:	M. Hermiston	Easting:	3165660.5
Drilling Method:	Sonic LS 600	TOC Elev. (ft AMSL):	45.99
Sampling Method:	6" & 4" x 10' Core	Ground Elev. (ft AMSL):	45.71

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
8/27/2018

Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0		NR	NA	NR	(0 - 10) No Recovery - Hydrovac to 10.0'.
10		6.0/6.0	1.0	CL / SC	(10 - 11) Silty CLAY, CL, light gray 10YR 7/1 with yellow mottling 10YR 7/6, dry, medium plasticity, some sand, no odor.
			1.5	SM	(11 - 12) Sandy CLAY, SC, light gray 10YR 7/1 with yellow mottling 10YR 7/6, no odor.
15			1.9		(12 - 14) Silty SAND, SM, light gray 10YR 7/1 with brownish yellow mottling 10YR 6/6, moist to wet, some clay, clay content increases with depth, no odor.
		4.0/4.0	1.1		(14 - 15) Silty CLAY, CL, with some sand, light gray 10YR 7/1 with yellowish red 5YR 5/6 and yellow 10YR 7/6 and gray 2.5Y 5/1 mottling, black staining, medium plasticity, no odor, thin sand bed at 14.6'.
			1.3		
20		4.0/4.0	4.4	CL	(15 - 25) Silty CLAY, CL, red 2.5YR 5/6 with gray 2.5Y 5/1 mottling, black staining throughout, dry, medium plasticity, becomes light bluish gray GLEY2 8/1 mottling from 16.0'-17.5', becomes light gray 10YR 7/1 with yellow 10YR 7/6 mottling from 17.5'-25.0', no odor.
			2.2		
25		2.0/2.0	0.9		
		5.0/5.0	3.3		(25 - 28) Silty CLAY, CL, light gray 7.5YR 7/1 with yellowish red 5YR 5/6 and strong brown 7.5YR 5/8 mottling, dry, medium plasticity, transitions to primarily yellowish red 5YR 5/6 with gray mottling with depth, become coarser with depth, no odor.
			0.1	SC	(28 - 30) Sandy CLAY, SC, yellowish red 5YR 5/6, very fine grained sand, becomes coarser with depth, medium plasticity.
30		5.0/5.0	4.0	SM	(30 - 37) Silty SAND, SM, with interbedded clayey sand beds, silty sand is yellowish red 5YR 5/6, interbedded clayey sand beds are light bluish gray (GLEY2 7/1) and have calcacareous nodules, clay beds are at 32.0', 33.0', 33.8' (hard/cemented), and 35.0-35.5', wet from 32.0'-37.0', slight odor from 32.0'-36.0'.
			4.4		
35			3.7		
		3.0/3.0	3.1		
			5.0	CL	(37 - 39) Silty CLAY, CL, red 2.5YR 4/6, hard, medium plasticity, black staining throughout, calcareous gravelly bed at 37.5' and 38.0',
40					
45					
50					

GOLDER
2201 Double Creek Dr., Suite 4004
Round Rock, Texas 78664
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Notes:
1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) Depth to water as of 02/01/2018 prior to development.
3.) 7.0" Sonic isolation casing to 19.0'. 6.0" Sonic isolation casing to 39.0'. Removed during grouting.

Casing Materials
(0.0 - 27.6.0) 2" SCH-40 PVC Casing
(27.6 - 37.6) 2" SCH-40 PVC 0.010" Slotted Screen
(37.6 - 38.0) End Cap

Annular Materials
(0.0 - 1.0) Concrete
(1.0 - 22.0) Portland/Bentonite Grout
(22.0 - 26.0) 3/8" Bentonite Chips
(26.0 - 39.0) 16/30 Silica Sand

LOG OF BORING: **MW-82B**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	7
Completion Date:	1/22/2018	Total Depth (ft):	38
Driller:	Roger Rodriguez	Water Level (ft bgl):	2.82
Driller's License:	TX 59618M	Northing:	729101.7
Logged By:	M. Hermiston	Easting:	3166702.7
Drilling Method:	Sonic LS 600	TOC Elev. (ft AMSL):	44.96
Sampling Method:	6" & 4" x 10' Core	Ground Elev. (ft AMSL):	44.64

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LIC. # 795
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8/22/2018

Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0		NR	NA	NR	(0 - 10) No Recovery - Hydrovac to 10.0'.
10		5.0/5.0	4.7	CL	(10 - 12.7) Silty CLAY, CL, light gray 7.5YR 7/1, yellow 2.5Y 7/6 mottling, trace red 2.5Y 5/8 mottling, black staining throughout, medium plasticity, no odor.
			4.1		
			4.5	SM	(12.7 - 17) Silty SAND, SM, light gray 7.5YR 7/1, some yellow 2.5Y 7/6 mottling, very fine grained sand, wet, no odor.
15		5.0/5.0	3.5		
			5.0	CL	(17 - 18.5) Sandy, silty CLAY, CL, red 2.5Y 5/8 and gray 5YR 6/1 mottling, friable, medium plasticity, sand content decreases with depth.
20		6.0/6.0	5.1		(18.5 - 27) Silty CLAY, CL, light gray, firm to hard from 18.5'-20.0' firm from 20.0'-27.0', yellow 2.5Y 7/6 18.5'-21.0', yellowish red 5YR 5/6 with red 2.5Y 5/8 mottling 21.0'-27.0', red mottling increases with depth.
			4.5		
25			5.1		
		5.0/5.0	2.2		
			1.4	SC	(27 - 30) Clayey SAND / sandy CLAY, SC, light gray 5YR 7/1, some yellow 2.5Y 7/6 mottling, wet, medium plasticity, no odor, becomes coarser with depth.
30		5.0/5.0	4.1	SM	(30 - 33) Silty SAND, SM, yellowish red, 5YR 5/6, some strong brown 7.5YR 5/8 and light red 2.5YR 6/6 mottling, wet, no odor.
			2.4		
35			3.6	CL	(33 - 38) Silty CLAY, CL, red 2.5YR 4/6 with some light bluish gray/ light greenish gray mottling GLEY2 7/1, gravelly calcareous nodules/seams throughout, nodules decrease with depth, some black staining, medium plasticity, firm to hard.
		2.0/2.0	2.5		
40					
45					
50					

GOLDER
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Notes:
1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) Depth to water as of 01/31/2018 prior to development.
3.) 7.0" Sonic isolation casing to 23.0'. 6.0" Sonic isolation casing to 36.0'. Removed during grouting.

Casing Materials
(0.0 - 29.6) 2" SCH-40 PVC Casing
(29.6 - 34.6) 2" SCH-40 PVC 0.010" Slotted Screen
(34.6 - 35.0) End Cap

Annular Materials
(0.0 - 23.0) Portland/Bentonite Grout
(23.0 - 27.8) 3/8" Bentonite Chips
(27.8 - 38.0) 16/30 Silica Sand

LOG OF BORING: **MW-83B**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	7
Completion Date:	1/30/2018	Total Depth (ft):	37
Driller:	Roger Rodriguez	Water Level (ft bgl):	4.16
Driller's License:	TX 59618M	Northing:	729388.9
Logged By:	M. Hermiston	Easting:	3167015.1
Drilling Method:	Sonic LS 600	TOC Elev. (ft AMSL):	45.68
Sampling Method:	6" & 4" x 10' Core	Ground Elev. (ft AMSL):	45.33

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8/22/2018

Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0		NR	NA	NR	(0 - 10) No Recovery - Hydrovac to 10.0'.
10		6.0/6.0	3.6	SC	(10 - 12) Clayey SAND, SC, light gray 7.5YR 7/1, with yellowish brown 10YR 6/6 mottling, moist, low to no plasticity, sand content increases with depth, gravel at 12.0', no odor.
			4.5	SM	(12 - 19) Silty SAND, SM, light gray 7.5YR 7/1, very fine to fine grained sand, wet from 16.0' to 18.0', silt content decreases with depth, no odor.
15			3.1		
		4.0/4.0	4.3		
20			4.4	CL	(19 - 21) Clayey SAND, CL, interbedded with sand and clay, light gray 7.5YR 7/1 with trace yellow 2.5Y 7/6 mottling, low plasticity, clay content increases with depth, no odor.
		5.0/5.0	3.7		(21 - 22) Silty CLAY, CL, red 2.5Y 5/8, hard to firm, low to no plasticity, friable.
			5.4		(22 - 27) Silty CLAY, CL, light gray 7.5YR 7/1, with yellow 2.5Y 7/6 and trace red 2.5YR 5/8 mottling, firm, medium plasticity, wet at 24.0', transitions to red with light gray mottling from 25.0'-27.0'.
25			5.6		
		5.0/5.0	4.7		(27 - 32) Silty CLAY, CL, red 2.5Y 5/8 with light gray 7.5YR 7/1 mottling, abundant gravelly calcareous nodules/seams, hard, medium plasticity from 30.0'-32.0', low plasticity from 27.0'-30.0', light bluish gray GLEY2 7/1 with red mottling from 30.0'-32.0'.
			4.9		
30		5.0/5.0	4.5		
			5.8	SM	(32 - 34.5) Silty SAND, SM, brown 7.5YR 5/4 with trace light bluish gray GLEY2 7/1 mottling, wet, strong odor.
35		2.0/2.0	13.7	CL	(34.5 - 37) Silty CLAY, CL, with gravel, red 2.5Y 4/6 and light gray 7.5YR 7/1 mottling, strong odor.
40					
45					
50					

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Notes:
1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) Depth to water as of 02/01/2018 prior to development.
3.) 7.0" Sonic isolation casing to 24.0'. 6.0" Sonic isolation casing to 35.0'. Removed during grouting.

Casing Materials
(0.0 - 29.6) 2" SCH-40 PVC Casing
(29.6 - 34.6) 2" SCH-40 PVC 0.010" Slotted Screen
(34.6 - 35.0) End Cap

Annular Materials
(0.0 - 23.0) Portland/Bentonite Grout
(23.0 - 27.6) 3/8" Bentonite Chips
(27.6 - 37.0) 16/30 Silica Sand

LOG OF BORING: **MW-83C**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	7
Completion Date:	2/2/2018	Total Depth (ft):	70
Driller:	Roger Rodriguez	Water Level (ft bgl):	17.56
Driller's License:	TX 59618M	Northing:	729389
Logged By:	C. Kakolewski	Easting:	3167011
Drilling Method:	Sonic LS 600	TOC Elev. (ft AMSL):	45.78
Sampling Method:	6" & 4" x 10' Core	Ground Elev. (ft AMSL):	45.42

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Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0				FILL	(0 - 0.15) FILL - ASPHALT
					(0.15 - 0.6) FILL - ROAD BASE - sandy, silty, clayey gravel, light red, 2.5YR 6/8, slightly moist, very hard, no plasticity, cohesive, well consolidated.
5		10.0/10.0	NA	CL	(0.6 - 7.5) CLAY, CL, black 5YR 2.5/1, slightly moist, hard, locally firm, medium to high plasticity, becomes lighter with depth, silt and sand content increase with depth.
10		5.7/6.0	3.3	SC	(7.5 - 9) Silty CLAY, CL, moderate fine sand, gray 5YR 6/1, moist, moderate to high plasticity, sticky, mottled with light gray 5YR 7/1 and strong brown 7.5YR 5/8, strong brown is sandy, sand content increases with depth.
			2.6		(9 - 13) Sandy CLAY / Clayey SAND, SC, gray 5YR 6/1, moist, moderate plasticity, sticky, mottled with light gray 5YR 7/1 and strong brown 7.5YR 5/8, strong brown is sandy, gray sand lenses throughout, sand content increases with depth.
15			2.5		
		5.7/6.0	2.2	SM	(13 - 21.3) Silty SAND, SM, light gray 2.5Y 7/1, moist, wet from 17.8'-20.0', unconsolidated, very fine to fine, slightly micaceous, becomes lighter with depth, light yellowish staining from 20.0'-21.3'.
			1.6		
20			3.0		
		6.0/6.0	3.2	CL	(21.3 - 22) CLAY, CL, reddish brown 5YR 4/4, slightly moist, very hard, low to medium plasticity, locally friable.
			3.4		(22 - 26) Silty CLAY, CL, light brownish gray 2.5Y 6/2, light yellow brown mottling 10YR 6/6, moist, hard, becomes harder with depth, medium to low plasticity.
25			3.3		
			3.3		(26 - 30) Silty CLAY, CL, strong brown 7.5YR 4/6, some gray mottling, moist, hard to very hard, low plasticity, abundant calcareous nodules from 29.0'-30.0'.
30		6.0/6.0	2.8	SM	(30 - 33.4) Silty SAND, SM, brown 7.5YR 5/4, trace bluish gray mottling, wet, unconsolidated, rapid dilatancy, very fine sand, strong odor 32.0'-33.4'.
			29.7		
		6.0/6.0	28.8	CL	(33.4 - 53) Silty CLAY, CL, with calcareous gravel, red 2.5Y 4/6, slightly moist, low to no plasticity, trace gravel after 36.0', becomes very hard and slightly moist to moist, bluish gray mottling increases with depth, plasticity increases with depth (low to locally moderate), occasional black staining throughout, becomes sticky at 46.0' with no gravel, sand content increases after 46.0', strong odor 33.4'-36.0', slight odor 36.0'-38.0', moderate odor 44.0'-51.0', slight odor 51.0;-52.5'.
35			4.8		
			3.1		
40		5.8/6.0	3.2		
			4.1		
			12.4		
45		5.0/5.0	10.0		
			7.8		
50					

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Notes:
1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) Depth to water as of 02/07/2018 prior to development.
3.) 7.0" Sonic isolation casing to 27.0'. 6.0" Sonic isolation casing to 52.0'. Removed during grouting.

Casing Materials
(0.0 - 58.6) 2" SCH-40 PVC Casing
(58.6 - 68.6) 2" SCH-40 PVC 0.010" Slotted Screen
(68.6 - 69.0) End Cap

Annular Materials
(0.0 - 4.0) Concrete
(4.0 - 50.0) Portland/Bentonite Grout
(50.0 - 54.0) 3/8" Bentonite Chips
(54.0 - 70.0) 16/30 Silica Sand

LOG OF BORING: **MW-83C**

Union Pacific Railroad

SITE INFORMATION	PROJECT AND DRILLING INFORMATION			
Houston Wood Preserving Works Houston, TX	Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	7
	Completion Date:	2/2/2018	Total Depth (ft):	70
	Driller:	Roger Rodriguez	Water Level (ft bgl):	17.56
	Driller's License:	TX 59618M	Northing:	729389
	Logged By:	C. Kakolewski	Easting:	3167011
Project No. 19119232	Drilling Method:	Sonic LS 600	TOC Elev. (ft AMSL):	45.78
	Sampling Method:	6" & 4" x 10' Core	Ground Elev. (ft AMSL):	45.42

Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
55		5.0/5.0	4.7		
			3.3	SM	(53 - 56) Silty SAND, SM, strong brown, 7.5YR 5/6, wet/saturated, unconsolidated, very fine.
60		5.0/5.0	4.0	CL/SM	(56 - 61.5) Interbedded CLAY, and Silty SAND, CL/SM, brown 7.5YR 4/4, occasional light brown interbeds, moist, firm to hard, locally soft, low to no plasticity.
			3.2		
65		5.0/5.0	3.1	SM	(61.5 - 67.6) Silty SAND, SM, brown 7.5YR 4/4, occasional light brown bands/laminae, moist to wet, very fine, unconsolidated, some banding or stratification, occasional 2.0"-3.0" thick clay interbeds, clay and silt content increases with depth.
			3.2		
70		4.0/4.0	3.1	CL	(67.6 - 70) CLAY, CL, brown, 7.5YR 4/4, moist, very hard, medium to high plasticity, laminated, occasional gray or yellowish green silty/sandy thin laminae.
			3.2		
75					

GOLDER

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Notes:
1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) Depth to water as of 02/07/2018 prior to development.
3.) 7.0" Sonic isolation casing to 27.0'. 6.0" Sonic isolation casing to 52.0'. Removed during grouting.

Casing Materials
(0.0 - 58.6) 2" SCH-40 PVC Casing
(58.6 - 68.6) 2" SCH-40 PVC 0.010" Slotted Screen
(68.6 - 69.0) End Cap

Annular Materials
(0.0 - 4.0) Concrete
(4.0 - 50.0) Portland/Bentonite Grout
(50.0 - 54.0) 3/8" Bentonite Chips
(54.0 - 70.0) 16/30 Silica Sand

LOG OF BORING: **MW-84B**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	7
Completion Date:	1/23/2018	Total Depth (ft):	43
Driller:	Roger Rodriguez	Water Level (ft bgl):	4.28
Driller's License:	TX 59618M	Northing:	729502.9
Logged By:	M. Hermiston	Easting:	3167398.9
Drilling Method:	Sonic LS 600	TOC Elev. (ft AMSL):	44.79
Sampling Method:	6" & 4" x 10' Core	Ground Elev. (ft AMSL):	44.5

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8/27/2018

Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0		NR	NA	NR	(0 - 10) No Recovery - Hydrovac to 10.0'.
10		2.0/2.0	0.8	CL	(10 - 12.5) Silty CLAY, CL, light gray 2.5Y 7/1, yellow mottling 2.5Y 7/6, black staining, medium plasticity, no odor.
		4.0/4.0	0.7	SM	(12.5 - 21) Silty SAND, SM, light gray 2.5Y 7/1, wet, no odor, fine sand, trace clay 12.5'-14.3', becomes coarser with depth, clay bed at 19.0' to 19.1'.
15			1.2		
		5.0/5.0	2.3		
			2.2		
20			1.2		
		6.0/6.0	1.8	CL	(21 - 24.5) Silty CLAY, CL, red 2.5YR 5/8, light bluish gray mottling GLEY2 7/1, becomes light gray at 24.0' with yellow 2.5Y 7/6 mottling and very thin yellow laminae, medium plasticity.
25			1.3		(24.5 - 28.5) Silty CLAY, CL, light gray 2.5Y 7/1 with yellow 2.5Y 7/6 mottling, mottling increases with depth, medium plasticity, no odor.
		5.0/5.0	1.6		
			1.2		(28.5 - 37) Silty CLAY, CL, red 2.5Y 4/6 with light gray 2.5Y 7/1 mottling, gravelly calcareous nodules throughout, silt content increases from 28.5'-30.0' gravelly calcareous beds from 33.0'-36.0', increase in silt content with some sand 36.0'-37.0'.
30			1.2		
		5.0/5.0	3.1		
35			4.1		
		2.0/2.0	8.1	SM	(37 - 40) Silty SAND, SM, yellowish red 5YR 5/8, wet, very fine to fine grained sand, strong odor.
		2.0/2.0	6.1		
40		3.0/3.0	19.1	CL	(40 - 43) Silty CLAY, CL, yellowish red 5YR 5/8 with trace light bluish gray mottling GLEY2 7/1, strong odor 40.0'-40.7'.
			6.6		
45					
50					

GOLDER
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Notes:
1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) Depth to water as of 01/31/2018 prior to development.
3.) 7.0" Sonic isolation casing to 24.0'. 6.0" Sonic isolation casing to 40.0'. Removed during grouting.

Casing Materials
(0.0 - 34.6) 2" SCH-40 PVC Casing
(34.6 - 39.6) 2" SCH-40 PVC 0.010" Slotted Screen
(39.6 - 40.0) End Cap

Annular Materials
(0.0 - 24.0) Portland/Bentonite Grout
(24.0 - 32.2) 3/8" Bentonite Chips
(32.2 - 40.0) 16/30 Silica Sand

LOG OF BORING: **MW-85C**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	8
Completion Date:	1/20/2018	Total Depth (ft):	75
Driller:	Roger Rodriguez	Water Level (ft bgl):	22.85
Driller's License:	TX 59618M	Northing:	727661
Logged By:	M. Hermiston	Easting:	3166988
Drilling Method:	Sonic LS 600	TOC Elev. (ft AMSL):	49.39
Sampling Method:	6" & 4" x 10' Core	Ground Elev. (ft AMSL):	49.1

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8/27/2018

Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0		NR	NA	NR	(0 - 10) No Recovery - Hydrovac to 10.0'.
10		6.0/6.0	0.2	CL	(10 - 14) Silty CLAY, CL, light gray 2.5Y 7/1 with gray 2.5Y 5/1 and yellow 2.5Y 7/6 mottling, trace light olive brown 2.5Y 5/6, black staining 12.0'-14.0', medium plasticity, trace calcareous nodules throughout.
			0.3		
15			0.5	SC	(14 - 17) Sandy CLAY, CL, light gray 2.5Y 7/1 and 7/2, yellow mottling 2.5Y 7/6, black staining throughout, abundant staining at 16.0', becomes more sandy with depth, becomes light bluish gray GLEY2 8/1 at 16.0' with yellow mottling 2.5Y 7/8, medium plasticity, no odor.
		6.0/6.0	0.6		
20			3.2	SM	(17 - 22) Silty SAND, SM, light gray, 2.5Y 7/1, fine grained, moist to wet, strong odor.
			6.5		
25		6.0/6.0	2.2	CL	(22 - 29.5) Silty CLAY, CL, gray 2.5Y 6/1, with yellow mottling 2.5Y 7/6, reddish yellow mottling 7.5YR 6/6 from 25.0'-27.0', mottling decreases with depth, firm friable, medium plasticity.
			1.3		
			0.6		
30		6.0/6.0	0.5		
			0.9	SC	(29.5 - 32.7) Sandy CLAY, CL, light gray 2.5Y 7/1 with yellowish red mottling 5YR 5/6, firm, medium plasticity, thin sand bed at 31.8'.
			0.3	CL	(32.7 - 39.3) Silty CLAY, CL, red 2.5YR 5/8, black staining throughout, firm to hard, low plasticity, abundant calcareous nodules and gravel, some light gray mottling 10YR 7/1, mottling increases with depth and becomes light greenish gray GLEY2 8/1, mild odor.
35		6.0/6.0	0.3		
			0.4		
			27.2		
40		6.0/6.0	30.6		(39.3 - 54) Silty CLAY, CL, red 2.5YR 5/8, some light greenish gray mottling GLEY2 8/1, very hard, medium plasticity, black staining 39.3'-46.7' and 52.0'-53.4', mild odor, calcareous nodules at 42.5' and 49.7', gravelly at 46.7', clayey sand 48.0'-48.4', becomes yellowish red 5YR 5/8 with trace white 5YR 8/1 mottling, calcareous gravel bed at 50.8' and 53.4'-53.8'.
			40.8		
45			9.7		
		6.0/6.0	5.7		
50			3.1		

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Notes:
1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) Depth to water as of 01/31/2018 prior to development.
3.) 8.0" Sonic isolation casing to 27.0'. 7.0" Sonic isolation casing to 54.0'. 6.0" Sonic isolation casing to 74.0'. Removed during grouting.

Casing Materials
(0.0 - 59.9) 2" SCH-40 PVC Casing
(59.9 - 69.9) 2" SCH-40 PVC 0.010" Slotted Screen
(69.9 - 70.3) End Cap

Annular Materials
(0.0 - 50.2) Portland/Bentonite Grout
(50.2 - 58.0) 3/8" Bentonite Chips
(58.0 - 75.0) 16/30 Silica Sand

LOG OF BORING: **MW-85C**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	8
Completion Date:	1/20/2018	Total Depth (ft):	75
Driller:	Roger Rodriguez	Water Level (ft bgl):	22.85
Driller's License:	TX 59618M	Northing:	727661
Logged By:	M. Hermiston	Easting:	3166988
Drilling Method:	Sonic LS 600	TOC Elev. (ft AMSL):	49.39
Sampling Method:	6" & 4" x 10' Core	Ground Elev. (ft AMSL):	49.1

Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
55			0.3		
		6.0/6.0	0.1		
			0.1		(54 - 56.5) Sandy CLAY, CL, interbedded sand and clay, yellowish red 5YR 5/8, trace light gray mottling 2.5Y 7/1, moist to wet, rocks/cobbles (0.3'x0.2'x0.2') at 55.7', very sandy from 56.5'-62.5', black staining throughout.
			0.1		
60		6.0/6.0	0.1	SC	(56.5 - 64.2) Silty, clayey SAND, yellowish red 5YR 5/8, moist to wet, black staining, sandy clay bed at 58.9'-59.1', very thin clay laminae at 62.0', rocks/cobbles at 63.' (0.4'x0.3'x0.2'), yellowish red with light gray clay bed 63.6'-64.2', friable, hard.
			0.0		
			0.1		
65		6.0/6.0	0.1	SP	(64.2 - 71) SAND, SP, yellowish red 5YR 5/8, becomes reddish yellow 5YR 6/8 at 66.0', very fine to fine grained sand, some black staining at 71.0', wet.
			0.1		
70			0.1		
		4.0/4.0	0.2	CL	(71 - 75) CLAY, CL, yellowish red, 5YR 5/8, hard to firm, some black staining.
75		0.0/1.0	NA		

GOLDER

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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) Depth to water as of 01/31/2018 prior to development.
3.) 8.0" Sonic isolation casing to 27.0'. 7.0" Sonic isolation casing to 54.0'. 6.0" Sonic isolation casing to 74.0'. Removed during grouting.

Casing Materials
(0.0 - 59.9) 2" SCH-40 PVC Casing
(59.9 - 69.9) 2" SCH-40 PVC 0.010" Slotted Screen
(69.9 - 70.3) End Cap

Annular Materials
(0.0 - 50.2) Portland/Bentonite Grout
(50.2 - 58.0) 3/8" Bentonite Chips
(58.0 - 75.0) 16/30 Silica Sand

LOG OF BORING: **MW-86C**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	8
Completion Date:	1/18/2018	Total Depth (ft):	70
Driller:	Roger Rodriguez	Water Level (ft bgl):	20.54
Driller's License:	TX 59618M	Northing:	727083.1
Logged By:	M. Hermiston	Easting:	3166438
Drilling Method:	Sonic LS 600	TOC Elev. (ft AMSL):	46.79
Sampling Method:	6" & 4" x 10' Core	Ground Elev. (ft AMSL):	46.61

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LIC. # 795
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8/27/2018

Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0					(0 - 10) No Recovery - Hydrovac to 10.0'.
5		NR	NA	NR	
10		5.0/5.0	0.4	CL	(10 - 16) Silty CLAY, CL, light bluish gray GLEY2 8/1, with strong brown mottling 7.5YR 5/8, firm, moderate plasticity, trace black staining gravel present, abundant white clay clasts and calcareous nodules from 14.0'-16.0', no odor.
			0.1		
15			0.2		
		5.0/5.0	0.2	SM	(16 - 16.8) Silty SAND, SM, light gray 7.5YR 7/1, with light brown 7.5YR 6/4 and strong brown 7.5YR 5/6 mottling, wet, very fine grained, no odor.
			0.1	CL	(16.8 - 36) Silty CLAY, CL, light gray 7.5YR 7/1 with strong brown 7.5YR 5/8 mottling, firm, moderate plasticity, mottling increases with depth (20.0'-30.0'), cobbles (0.4' x 0.1' x 0.05') present at 17.1', calcareous nodules/gravel throughout with higher abundance between 20.0'-30.0', carbonate seams at 25.4', 26.9', 29.8', 30.8', 31.2' (gravelly), 33.0', and 35.0' (very hard and gravelly), strong brown with light gray mottling from 30.0'-36.0', black staining in calcareous layer at 27.0'-27.3', no odor.
20		5.0/5.0	0.4		
			0.6		
25			0.3		
		5.0/5.0	0.2		
			0.2		
30			0.3		
		5.0/5.0	0.2		
35			0.3		
		5.0/5.0	0.3		(36 - 43.5) CLAY, CL, yellowish red, 5YR 5/6, trace gray mottling, trace black staining, hard, no plasticity, friable, increase in gray mottling 41.0'-43.5', calcareous nodules throughout.
			0.3		
40			0.3		
		5.0/5.0	0.3		
			0.3	SM	(43.5 - 44.5) Silty SAND, SM, some clay, yellowish red 5YR 5/6, very fine grained, no odor.
45			0.3	CL	(44.5 - 49.3) Silty CLAY, CL, yellowish red 5YR 5/6, firm, medium plasticity, trace pockets of light bluish gray GLEY2 7/1, becomes sandy with gravel 47.0'-47.8', sand content decreases and becomes hard after 47.8', no odor.
		5.0/5.0	0.3		
50			0.1	SC	

GOLDER
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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) Depth to water as of 01/30/2018 prior to development.
3.) 8.0" Sonic isolation casing to 22.0'. 7.0" Sonic isolation casing to 52.0'. 6.0" Sonic isolation casing to 70.0'. Removed during grouting.

Casing Materials
(0.0 - 59.6) 2" SCH-40 PVC Casing
(59.6 - 69.6) 2" SCH-40 PVC 0.010" Slotted Screen
(69.6 - 70.0) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 49.0) Portland/Bentonite Grout
(49.0 - 58.0) 3/8" Bentonite Chips
(58.0 - 70.0) 16/30 Silica Sand

LOG OF BORING: **MW-86C**

Union Pacific Railroad

SITE INFORMATION

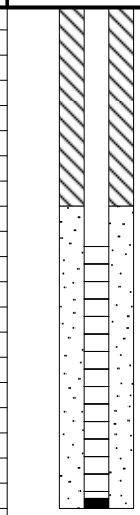
Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	8
Completion Date:	1/18/2018	Total Depth (ft):	70
Driller:	Roger Rodriguez	Water Level (ft bgl):	20.54
Driller's License:	TX 59618M	Northing:	727083.1
Logged By:	M. Hermiston	Easting:	3166438
Drilling Method:	Sonic LS 600	TOC Elev. (ft AMSL):	46.79
Sampling Method:	6" & 4" x 10' Core	Ground Elev. (ft AMSL):	46.61

Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
55		10.0/10.0	0.1	CL	(49.3 - 50) Sandy CLAY, SC, yellowish red 5YR 5/6 with gray mottling, dry, hard, no odor.
			0.2		(50 - 54.3) Silty CLAY, CL, yellowish red 5YR 5/6, trace light bluish gray GLEY2 7/1 mottling, very hard 50.0'-52.0', calcareous nodules at 50.5', abundant nodules at 52.3'-52.7', no odor.
			0.2		
			0.3		(54.3 - 58.2) Silty CLAY, CL, yellowish red 5YR 5/6, firm, medium plasticity, gravel/pebbles at 54.3'-54.6', cemented beds at 54.3'-55.5', calcareous throughout, sandy 54.3'-55.3', slightly sandy 57.3'-58.2', no odor.
60			0.3	SM	(58.2 - 69) Silty SAND, SM, yellowish red 5YR 5/6, very fine grained, some clay, clay beds at 62.0', 64.0', and trace throughout, clayey sand from 66.0'-66.5', hard clay bed from 68.0'-68.5', no odor.
		5.0/5.0	0.3		
			0.2		
65			0.3		
		5.0/5.0	0.4		
			0.6		
70				SP	(69 - 70) SAND, SP, reddish yellow 7.5YR 6/6, fine grained, wet, no odor.
		3.0/3.0	0.3	CL	(70 - 73) CLAY, CL, some sand, yellowish red 5YR 5/6, hard, medium plasticity, no odor.
75					

GOLDER

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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) Depth to water as of 01/30/2018 prior to development.
3.) 8.0" Sonic isolation casing to 22.0'. 7.0" Sonic isolation casing to 52.0'. 6.0" Sonic isolation casing to 70.0'. Removed during grouting.

Casing Materials
(0.0 - 59.6) 2" SCH-40 PVC Casing
(59.6 - 69.6) 2" SCH-40 PVC 0.010" Slotted Screen
(69.6 - 70.0) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 49.0) Portland/Bentonite Grout
(49.0 - 58.0) 3/8" Bentonite Chips
(58.0 - 70.0) 16/30 Silica Sand

LOG OF BORING: **MW-87C**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	8
Completion Date:	1/31/2018	Total Depth (ft):	70
Driller:	Roger Rodriguez	Water Level (ft bgl):	15.89
Driller's License:	TX 59618M	Northing:	729266.2
Logged By:	M. Hermiston	Easting:	3167944
Drilling Method:	Sonic LS 600	TOC Elev. (ft AMSL):	44.78
Sampling Method:	6" & 4" x 10' Core	Ground Elev. (ft AMSL):	44.26

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Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0		NR	NA	NR	(0 - 10) No Recovery - Hydrovac to 10.0'.
10		6.0/6.0	2.5 3.6 3.6	CL	(10 - 16) Silty CLAY, CL, light gray 2.5YR 7/1, with yellow 2.5Y 7/6 mottling, black staining throughout, becomes light gray with red 2.5YR 5/8 mottling 12.0'-16.0', medium plasticity, very firm 10.0'-12.0', firm 12.0'-16.0'.
15	▼	4.0/4.0	2.5 2.6	SC	(16 - 17) Clayey SAND, SC, light gray 2.5YR 7/1 and red 2.5Y 5/8 banded, very fine sand, wet, slight odor.
20		5.0/5.0	1.6 2.7 4.3	SM	(17 - 25) Silty SAND, SM, reddish yellow 5YR 6/6 with some gray mottling, wet, fine sand, more gray from 20.0'-22.0', brownish yellow 10YR 6/6 from 22.0'-25.0'.
25		3.0/3.0	4.9	CL	(25 - 30) Silty CLAY, CL, yellowish red 5YR 5/8 with light gray 2.5Y 7/1 mottling, black staining, firm, medium plasticity,28.0'-30.0' strong brown 7.5YR 4/6 with abundant calcareous nodules/gravel.
		2.0/2.0	5.4		
30		6.0/6.0	5.3 3.5 4.6		(30 - 44) CLAY, CL, strong brown 7.5YR 5/6, light bluish gray mottling GLEY2 7/1, black staining throughout, calcareous nodules throughout, hard, medium to high plasticity, becomes red 2.5Y 5/8 at 36.0' with light gray 2.5Y 7/1 mottling, very hard 36.0'-44.0', no odor.
35					
40		10.0/10.0	4.4 5.4 6.5 6.7		
45			5.1		(44 - 45.5) Sandy, silty CLAY, CL, red 2.5YR 5/8, medium plasticity, very fine sand.
		4.0/4.0	4.7 6.3		(45.5 - 55) Silty CLAY, CL, red 2.5YR 5/8, trace gray mottling, hard, low plasticity, some calcareous nodules 45.5'-55.0', nodule abundance decreases with depth, gravelly at 52.0', some black staining 45.5'-50.0'.
50					

GOLDER
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Notes:
1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) Depth to water as of 02/07/2018 prior to development.
3.) 8.0" Sonic isolation casing to 28.0'. 7.0" Sonic isolation casing to 50.0'. 6.0" Sonic isolation casing to 68.0'. Removed during grouting.

Casing Materials	Annular Materials
(+2.9 - 57.6) 2" SCH-40 PVC Casing	(0.0 - 48.0) Portland/Bentonite Grout
(57.6 - 67.6) 2" SCH-40 PVC 0.010" Slotted Screen	(48.0 - 56.0) 3/8" Bentonite Chips
(67.6 - 68.0) End Cap	(56.0 - 70.0) 16/30 Silica Sand

LOG OF BORING: **MW-87C**

Union Pacific Railroad

SITE INFORMATION	PROJECT AND DRILLING INFORMATION			
Houston Wood Preserving Works Houston, TX	Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	8
	Completion Date:	1/31/2018	Total Depth (ft):	70
	Driller:	Roger Rodriguez	Water Level (ft bgl):	15.89
	Driller's License:	TX 59618M	Northing:	729266.2
	Logged By:	M. Hermiston	Easting:	3167944
Project No. 19119232	Drilling Method:	Sonic LS 600	TOC Elev. (ft AMSL):	44.78
	Sampling Method:	6" & 4" x 10' Core	Ground Elev. (ft AMSL):	44.26

Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
55		6.0/6.0	4.3		
			4.2		
			1.6		(55 - 63.5) Clayey, sandy SILT, ML, red 2.5YR 5/8, very fine sand, interbedded clay and silt, moist, wet at 60.0'-62.5', sand and clay content decrease with depth.
		5.0/5.0	0.1	ML	
60			1.6		
			1.5		
			2.1		
65			1.8	SM	(63.5 - 67) Silty SAND, red 2.5YR 5/8, wet, some staining at base.
		NA	0.5		
			1.6	CL	(67 - 70) Silty CLAY, CL, red 2.5YR 5/8 with gray mottling, medium plasticity.
70					
75					

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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) Depth to water as of 02/07/2018 prior to development.
3.) 8.0" Sonic isolation casing to 28.0'. 7.0" Sonic isolation casing to 50.0'. 6.0" Sonic isolation casing to 68.0'. Removed during grouting.

Casing Materials	Annular Materials
(+2.9 - 57.6) 2" SCH-40 PVC Casing	(0.0 - 48.0) Portland/Bentonite Grout
(57.6 - 67.6) 2" SCH-40 PVC 0.010" Slotted Screen	(48.0 - 56.0) 3/8" Bentonite Chips
(67.6 - 68.0) End Cap	(56.0 - 70.0) 16/30 Silica Sand

LOG OF BORING: **MW-88C**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	8
Completion Date:	1/21/2018	Total Depth (ft):	75
Driller:	Roger Rodriguez	Water Level (ft bgl):	21.89
Driller's License:	TX 59618M	Northing:	728195.1
Logged By:	M. Hermiston	Easting:	3166845
Drilling Method:	Sonic LS 600	TOC Elev. (ft AMSL):	47.99
Sampling Method:	6" & 4" x 10' Core	Ground Elev. (ft AMSL):	51.17

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8/27/2018

Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0		NR	NA	NR	(0 - 10) No Recovery - Hydrovac to 10.0'.
10		6.0/6.0	0.7	CL	(10 - 15.8) Silty CLAY, CL, light gray 7.5YR 7/1 with reddish yellow 7.5YR 6/6 mottling, trace red 2.5YR 5/8 mottling and black staining 10.0'-12.5', sand bed 13.3'-13.4', slightly sandy 13.8'-14.2', medium plasticity, firm moist, brown 7.5YR 4/3 and black staining at 15.0'.
			1.0		
15			1.0		
		10.0/10.0	0.2	SM	(15.8 - 17.8) Silty SAND, SM, light gray 7.5YR 7/1, very fine to fine grained, wet.
			1.0	CL	(17.8 - 26) Silty CLAY, CL, light gray 7.5YR 7/1 with reddish yellow 7.5YR 6/6 mottling, firm to hard, medium plasticity, no odor.
20			1.4		
			1.8		
25			1.5		
		5.0/5.0	1.6		(26 - 52.5) Silty CLAY, CL, red 2.5YR 5/8 with light gray 7.5YR 7/1 mottling, mottling decreases with depth, medium plasticity, less silty 31.5'-34.5', calcareous gravelly bed 34.5'-34.6', 35.0'-36.0', light gray mottling becomes light bluish gray GLEY2 7/1 at 36.0', calcareous nodules 36.0'-46.0', black staining and mild odor 36.0'-46.0', sandy mixed with clay and strong odor at 47.6'-47.9', gravelly calcareous bed at 48.4'-48.5' 50.8'-51.0', cobble (0.3' x 0.2' x 0.1) 50.8'-51.0'.
			2.0		
30			1.9		
		5.0/5.0	1.6		
			1.5		
35			1.2		
		10.0/10.0	2.4		
			NA		
40			3.4		
			3.2		
45			3.3		
		5.0/5.0	3.3		
50					

GOLDER

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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) Depth to water as of 01/30/2018 prior to development.
3.) 8.0" Sonic isolation casing to 27.0'. 7.0" Sonic isolation casing to 57.0'. 6.0" Sonic isolation casing to 74.0'. Removed during grouting.

Casing Materials
(0.0 - 64.6) 2" SCH-40 PVC Casing
(64.6 - 74.6) 2" SCH-40 PVC 0.010" Slotted Screen
(74.6 - 75.0) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(0.2 - 55.0) Portland/Bentonite Grout
(55.0 - 60.0) 3/8" Bentonite Chips
(60.0 - 75.0) 16/30 Silica Sand

LOG OF BORING: **MW-88C**

Union Pacific Railroad

SITE INFORMATION	PROJECT AND DRILLING INFORMATION			
Houston Wood Preserving Works Houston, TX	Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	8
	Completion Date:	1/21/2018	Total Depth (ft):	75
	Driller:	Roger Rodriguez	Water Level (ft bgl):	21.89
	Driller's License:	TX 59618M	Northing:	728195.1
	Logged By:	M. Hermiston	Easting:	3166845
Project No. 19119232	Drilling Method:	Sonic LS 600	TOC Elev. (ft AMSL):	47.99
	Sampling Method:	6" & 4" x 10' Core	Ground Elev. (ft AMSL):	51.17

Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
			0.7		
		9.0/9.0	2.7	ML	(52.5 - 57) Clayey, sandy SILT, ML, red 2.5YR 5/8 with trace light gray 7.5YR 7/1 mottling, wet, soft, medium plasticity, gravel bed at 53.0', 54.0', large pebbles at 56.5', sand content varies throughout, some calcareous nodules throughout.
55			3.8		
			3.2	CL	(57 - 60.2) Silty CLAY, CL, red 2.5YR 5/8, some light gray 7.5YR 7/1 mottling, hard, some calcareous nodules at 59.0' within hard clay,
60			2.5		
		6.0/6.0	2.8	SM	(60.2 - 71.5) Silty SAND, SM, red 2.5YR 5/8, wet, some clay 60.2'-61.5', gravel/pebbles at 61.5', and gravel bed at 65.0', becomes reddish brown 5YR 4/4 at 61.5', some staining at 71.5', no odor.
65			3.8		
			3.3		
		8.0/8.0	3.3		
			2.3		
70			0.3		
			0.2	CL	(71.5 - 74) Silty CLAY, CL, red 2.5YR 5/8 with black staining, firm, medium plasticity.
75					

GOLDER

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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) Depth to water as of 01/30/2018 prior to development.
3.) 8.0" Sonic isolation casing to 27.0'. 7.0" Sonic isolation casing to 57.0'. 6.0" Sonic isolation casing to 74.0'. Removed during grouting.

Casing Materials
(0.0 - 64.6) 2" SCH-40 PVC Casing
(64.6 - 74.6) 2" SCH-40 PVC 0.010" Slotted Screen
(74.6 - 75.0) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(0.2 - 55.0) Portland/Bentonite Grout
(55.0 - 60.0) 3/8" Bentonite Chips
(60.0 - 75.0) 16/30 Silica Sand

LOG OF BORING: **MW-89B**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Walker Hill Env.	Borehole Diameter (in.):	6
Completion Date:	7/12/2018	Total Depth (ft):	40
Driller:	Timmy Beach	Water Level (ft bgl):	
Driller's License:	TX 59114	Northing:	729868.9
Logged By:	M. Hermiston	Easting:	3167249
Drilling Method:	Sonic 8150LS	TOC Elev. (ft AMSL):	44.88
Sampling Method:	6" & 4" x 10' Core	Ground Elev. (ft AMSL):	44.57

STATE OF TEXAS
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8/27/2018

Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0		NR	NA	NR	(0 - 10) No Recovery - Hydrovac to 10.0'.
10		6.0/10.0			(10 - 14) No Recovery - mixed fill with silty sand and clay
15			1.5	SM	(14 - 24) Silty SAND, light gray GLEY 1 7/ with yellow 10YR 7/6 mottling, some clay present from 14' to 16', moist, wet from 18' to 20', becomes coarser with depth, no odor, sharp basal contact.
			1.6		
			1.3		
20		10.0/10.0	3.3		
			2.0		
25			3.3	CL	(24 - 40) Silty CLAY, yellowish red 5YR 5/8, with light gray GLEY 1 7/ mottling and black staining, thin bed of calcareous nodules at 26.7', abundant calcareous nodules from 26.7' to 30', ~0.2' sand bed at 28.0' and thin sand bed at 30', some sand from 30' to 31.5', becomes yellowish red 5YR 5/8 clay with abundant black staining and some light gray mottling from 31.5' to 40', calcareous nodules throughout, very firm, no odor.
			3.0		
			1.6		
30		10.0/10.0	1.1		
			1.4		
35			1.0		
			1.0		
			1.3		
40					
45					
50					

GOLDER
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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) Depth to water as of 07/18/2018 prior to development.
3.) 7.0" Sonic isolation casing to 30.0'. 6.0" Sonic isolation casing to 40.0'. Removed during bentonite placement.

Casing Materials
(0.0 - 30.0) 2" SCH-40 PVC Casing
(30.0 - 40.0) 2" SCH-40 PVC 0.010" Slotted Screen
(40.0 - 40.4) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 26.0) 3/8" Bentonite Chips
(26.0 - 28.0) 3/8" TR30 Bentonite Pellets
(28.0 - 40.0) 16/30 Silica Sand

LOG OF BORING: **MW-90B**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Walker Hill Env.	Borehole Diameter (in.):	6
Completion Date:	7/13/2018	Total Depth (ft):	40
Driller:	Timmy Beach	Water Level (ft bgl):	
Driller's License:	TX 59114	Northing:	729616.1
Logged By:	M. Hermiston	Easting:	3167172.7
Drilling Method:	Sonic 8150LS	TOC Elev. (ft AMSL):	44.75
Sampling Method:	6" & 4" x 10' Core	Ground Elev. (ft AMSL):	44.39

STATE OF TEXAS
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8/27/2018

Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0					(0 - 10) No Recovery - Hydrovac to 10.0'.
5		NR	NA	NR	
10					(10 - 14) No Recovery - mixed fill with silty sand and clay
15		6.0/10.0	1.0		(14 - 24) Silty SAND, light gray GLEY 1 7/, wet, very fine grained, no odor.
			2.1		
			1.2	SM	
20		10.0/10.0	1.6		
			1.5		
25			1.7		(24 - 25.8) CLAY, some silt, red 2.5YR 5/8, with light gray mottling, very firm, medium plasticity, calcareous nodules throughout, no odor.
			1.3	CL	(25.8 - 30) Silty CLAY, yellow 10YR 7/6 with light gray mottling, high silt content, soft, medium plasticity, no odor.
			0.7		
30		8.5/10.0	NA		(30 - 32) Silty CLAY, red 2.5YR 5/8, firm, calcareous nodules throughout, no odor.
			1.7		
			4.8	SM	(32 - 33) Silty SAND, gray 7.5YR 6/1 with some brown 7.5 YR 5/4, moist, no odor.
35			4.2		(33 - 40) Silty CLAY, light gray GLEY1 7/ with yellow 10YR 7/6 mottling, firm, becomes red 2.5YR 5/8 with light gray mottling from 37' to 40', medium plasticity, no odor.
			5.2	CL	
			7.1		
40					
45					
50					

GOLDER
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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) Depth to water as of 07/18/2018 prior to development.
3.) 7.0" Sonic isolation casing to 30.0'. 6.0" Sonic isolation casing to 40.0'. Removed during bentonite placement.

Casing Materials
(0.0 - 30.0) 2" SCH-40 PVC Casing
(30.0 - 35.0) 2" SCH-40 PVC 0.010" Slotted Screen
(35.0 - 35.4) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 26.0) 3/8" Bentonite Chips
(26.0 - 28.0) 3/8" TR30 Bentonite Pellets
(28.0 - 35.0) 16/30 Silica Sand

LOG OF BORING: **MW-47A**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	8
Completion Date:	3/17/2020	Total Depth (ft):	26
Driller:	Davis Ocana	Water Level (ft bgl):	--
Driller's License:	TX 59380	Northing:	728644.1
Logged By:	K. Worley	Easting:	3168558.3
Drilling Method:	HSA	TOC Elev. (ft AMSL):	45.58
Sampling Method:	2" x 5' Core	Ground Elev. (ft AMSL):	45.46

STATE OF TEXAS
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LIC. # 795
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8/27/2020

Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0		0.0/15.0		NR	(0 - 15) No Recovery - Hydrovac to 15.0'
16		5.0/5.0	0.9	SP	(15 - 24.8) SAND, SP, tan to gray, fine, poorly sorted, soft, unconsolidated, interbedded tan silty clay lenses, no odor, color change to gray at 17.3', fine to medium grained at 17.9', interbedded gray fine sand and brown medium sand at 24.2'
18			0.7		
20			0.0		
22		5.0/5.0	0.1		
24			0.0		
26		1.0/1.0	0.0	CL	(24.8 - 26) Sandy, Silty, CLAY, CL, brown to reddish brown, medium density, wet, no odor, clay content increases with depth.

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Notes: 1.) Top 15.0' drilled out with a hydrovac to clear for utilities.

Casing Materials
(0.0 - 16.0) 2" SCH-40 PVC Casing
(16.0 - 26.0) 2" SCH-40 PVC 0.010" Slotted Screen
(26.0 - 26.5) End Cap

Annular Materials
(0.0 - 1.0) Concrete
(1.0 - 14.0) 3/8" Bentonite Chips
(14.0 - 26.0) 16/30 Silica Sand

LOG OF BORING: **MW-50B**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
Completion Date:	2/7/2020	Total Depth (ft):	40
Driller:	Joey Lester	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	727585.1
Logged By:	K. Worley	Easting:	3167950.5
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	47.55
Sampling Method:	4" x 10' Core	Ground Elev. (ft AMSL):	47.82

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Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0		0.0/10.0		NR	(0 - 10) No Recovery - Hydrovac to 10.0'.
10		10.0/10.0	0.0	CL	(10 - 14.8) Sandy CLAY, CL, tan with gray mottling, 20% fine sand, high plasticity clay, medium stiff to firm, slight odor.
12			0.0		
14			0.0		
16			0.0	SC	(14.8 - 16.5) Clayey SAND, SC, light brown to gray, soft, fine to very fine sand, sand content increases with depth, no odor, wet.
18			0.0	SP	(16.5 - 22) Sand, SP, gray, poorly sorted, fine grained, unconsolidated, no odor, wet.
20			0.0		
22		5.0/5.0	0.0	SC	(22 - 23.2) Sandy CLAY, SC, gray to brown, medium plasticity.
24			0.0	CL	(23.2 - 25) CLAY, CL, gray to brown with orange mottling, stiff, low plasticity, moist.
26		10.0/10.0	0.0	CH	(25 - 40) Silty CLAY, CH, gray, becomes red brown at 27.2', stiff, medium plasticity at 31.2', no plasticity at 33', carbonate gravel abundant at 33' to 37.2', silty sand seam, moist, strong odor at 37.8' to 38.7'
28			0.0		
30			0.0		
32			0.0		
34			0.0		
36		5.0/5.0	0.0		
38			0.0		
40					

GOLDER
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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) 8.0" Sonic isolation casing to 27.0'. Removed during grouting.

Casing Materials
(0.0 - 34.5) 2" SCH-40 PVC Casing
(34.5 - 39.5) 2" SCH-40 PVC 0.010" Slotted Screen
(39.5 - 40.0) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 26.0) Grout
(26.0 - 32.0) 3/8" Bentonite Chips
(32.0 - 40.0) 16/30 Silica Sand

LOG OF BORING: **MW-54B**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
Completion Date:	2/22/2020	Total Depth (ft):	40
Driller:	Joey Lester	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	729308
Logged By:	M. Hermiston	Easting:	3168726.9
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	45.25
Sampling Method:	6" x 10' Core	Ground Elev. (ft AMSL):	

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Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0					(0 - 10) No Recovery - Hydrovac to 10.0'.
2					
4					
6		0.0/10.0		NR	
8					
10					
12		2.5/2.5	0.0		(10 - 17.8) Silty CLAY, CL, light gray GLEY1 7/ with yellow 2.5Y 7/8 mottling, black staining, moist, no odor, white beds/mottling throughout 11.5' to 13.5', yellowish reddish 5YR 5/8 with reddish brown 5YR 5/4 mottling to 15.2', calcareous nodules abundant from 16' to 17.8', moderately firm, medium plasticity
14		2.5/2.5	0.0	CL	
16		2.5/2.5	0.0		
18		2.5/2.5	0.0		
20		2.5/2.5	0.0	ML/CL	(17.8 - 20.2) Clayey SILT/ silty CLAY, ML/CL, light gray GLEY1 7/ with reddish brown 5YR 5/4 mottling, trace yellow 2.5Y 7/8 mottling, moist, no odor, cobble (2.4"x1"x1') at 19.8', sand content increases with depth.
22		2.5/2.5	0.0	ML/SC	(20.2 - 23.8) Sandy, clayey SILT / Clayey, silty SAND, ML/SC, reddish brown with some gray pockets, sand is very fine, wet, interbedded silty clay beds.
24		2.5/2.5	0.0	CL	(23.8 - 25) Silty CLAY, CL, reddish brown 5YR 5/4, very firm, some calcareous nodules present.
26		2.5/2.5	0.0	SM	(25 - 27.8) Silty SAND, SM, reddish brown 5YR 5/4, very fine grained, wet.
28		2.5/2.5	0.0		(27.8 - 30.2) Silty CLAY, CL, reddish brown 5YR 5/4 and red 2.5 YR 4/8, thin sand lenses present.
30					
32		5.0/5.0		CL	(30.2 - 40) Silty CLAY, CL, light gray GLEY1 7/ with yellow 2.5Y 7/8 mottling, silt content decreases with depth, firm to hard, trace calcareous nodules throuought 32.4' to 40', calcareous gravel near 36', red mottling from 38' to 40'.
34					
36		5.0/5.0			
38					
40					

GOLDER
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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) 7" Sonic isolation casing to 25'. Removed during grouting.

Casing Materials
(0.0 - 34.5) 2" SCH-40 PVC Casing
(34.5 - 39.5) 2" SCH-40 PVC 0.010" Slotted Screen
(39.5 - 40.0) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 30.0) Grout
(30.0 - 33.0) 3/8" Bentonite Chips
(33.0 - 40.0) 16/30 Silica Sand

LOG OF BORING: **MW-60AR**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	8
Completion Date:	3/17/2020	Total Depth (ft):	30
Driller:	Davis Ocana	Water Level (ft bgl):	--
Driller's License:	TX 59380	Northing:	728810.3
Logged By:	K. Worley	Easting:	3168817.9
Drilling Method:	HSA	TOC Elev. (ft AMSL):	47.09
Sampling Method:	2" x 5' Core	Ground Elev. (ft AMSL):	47.08

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Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0		0.0/15.0		NR	(0 - 15) No Recovery - Hydrovac to 15.0'.
16		5.0/5.0	0.5	SC	(15 - 16.3) Clayey SAND, SC, gray, very fine to fine grained, saturated, no odor, soft.
18			0.9	SP	(16.3 - 29.4) SAND, SP, greenish gray, poorly sorted, fine grained, wet, no odor, fine to medium grained, gray at 19.2' to 19.5', begins grading to reddish brown at 20.0', saturated at 22', brown at 27.3'.
20			1.0		
22		5.0/5.0	0.8		
24			0.8		
26		5.0/5.0	0.6		
28			0.3		
30				CL	(29.4 - 30) Silty CLAY, CL, reddish brown, firm, moist, no odor.

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Notes: 1.) Top 15.0' drilled out with a hydrovac to clear for utilities.

Casing Materials
(0.0 - 20.0) 2" SCH-40 PVC Casing
(20.0 - 30.0) 2" SCH-40 PVC 0.010" Slotted Screen
(30.0 - 30.5) End Cap

Annular Materials
(0.0 - 1.0) Concrete
(1.0 - 16.0) 3/8" Bentonite Chips
(16.0 - 30.0) 16/30 Silica Sand

LOG OF BORING: **MW-60B**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
Completion Date:	2/27/2020	Total Depth (ft):	40
Driller:	Jesse Van Kirk	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	728811.6
Logged By:	S. Ruiz	Easting:	3168823.6
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	47.04
Sampling Method:	6" x 10' Core	Ground Elev. (ft AMSL):	47.30

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Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0		0.0/10.0		NR	(0 - 11.2) No Recovery - Hydrovac to 10.0'.
10		0.0/5.0		CL	(11.2 - 20.9) Sandy CLAY, CL, bluish gray with yellow-orange mottle, low plasticity, firm, wet. Abundant black streaks, very stiff from 18.1' - 18.8'.
16		8.8/10.0	0.1		
18			0.2		
20			0.3	SP	(20.9 - 24.2) SAND, SP, fine, poorly sorted, light gray with brown streaks, wet, very soft.
22			0.3		
24			0.2	SM	(24.2 - 27.6) Silty SAND, SM, brown with light gray, wet, soft, slow dilatancy. Interbedded silt and clay lenses throughout, localized clay lenses with medium plasticity.
26			0.1		
28		10.0/10.0	0.1	CL	(27.6 - 40) Silty CLAY, CL, reddish brown with bluish gray mottle, some yellow-orange and black streaks, moist, firm to very firm, medium plasticity, laminated. Less cohesive from 30.0' - 32.5'. Color change to light brown with light gray mottle with brown-red streaks below 34.5. Localized black gravel pockets, small to medium size, at 34.5', 35.1', 37.8', and 39.4'. Trace calcareous nodules below 38.0'.
30			0.2		
32			0.2		
34			0.2		
36		5.0/5.0	0.3		
38			0.2		
40					

GOLDER
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Notes: 1.) Top 15.0' drilled out with a hydrovac to clear for utilities.
2.) 8.0" Sonic isolation casing to 30.0'. Removed during grouting.
2.)

Casing Materials
(0.0 - 35.0) 2" SCH-40 PVC Casing
(35.0 - 40.0) 2" SCH-40 PVC 0.010" Slotted Screen
(40.0 - 40.5) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 30.0) Grout
(30.0 - 33.0) 3/8" Bentonite Chips
(33.0 - 40.0) 16/30 Silica Sand

LOG OF BORING: **MW-61B**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
Completion Date:	2/23/2020	Total Depth (ft):	40
Driller:	Joey Lester	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	728352.3
Logged By:	M. Hermiston	Easting:	3168629.6
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	45.09
Sampling Method:	6" x 10' Core	Ground Elev. (ft AMSL):	45.24

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Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0		0.0/10.0		NR	(0 - 10) No Recovery - Hydrovac to 10.0'.
10		5.0/5.0	1.7	CL	(10 - 14) Sandy Silty CLAY, CL, light gray 7.5YR 7/1 with yellow 10YR 7/8 mottling and pinkish gray 7.5YR 7/2, no odor, sand content increases with depth.
12			0.4		
14		5.0/5.0	3.5	SM	(14 - 21.4) Silty SAND, SM, interbedded / mottled light gray 7.5YR 7/1 and strong brown 7.5YR 5/8, light gray sand has higher % fines, becomes light gray from 19.7' to 21.4', no odor, wet.
16			3.4		
18			3.5		
20		5.0/5.0	0.0	CL	(21.4 - 35) Silty CLAY, CL, reddish brown 2.5YR 5/4 /red 2.5YR 5/8 /yellowish red 5YR 5/8 with gray mottling, moist, firm, black staining from 24' to 25', becomes more firm with depth, becomes red with depth near 28.5', calcareous gravel beds from 28.3' to 28.4', gravel beds with ironstone at 30.7' and 32.2', wet from 28' to 32.5', moist from 32.5' to 35', interbedded clayey silt / silty clay from 33' to 35', moist , soft to firm, no odor.
22			0.0		
24		2.5/2.5	0.0		
26			0.0		
28		5.0/5.0	0.0		
30			0.0		
32		2.5/2.5	0.0		
34			0.0		
36		5.0/5.0	0.0		(35 - 40) CLAY, CL, red 2.5YR 5/4 with trace gray, low silt content, trace nodules, dry, very firm, no odor.
38			0.0		
40					

GOLDER
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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) 7.0" sonic isolation casing to 25.0'. Removed during grouting.
3.) Photoionization detector (PID) readings were inconsistent.

Casing Materials
(0.0 - 28.0) 2" SCH-40 PVC Casing
(28.0 - 33.0) 2" SCH-40 PVC 0.010" Slotted Screen
(33.0 - 33.5) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 22.5) Grout
(22.5 - 26.0) 3/8" Bentonite Chips
(26.0 - 33.0) 16/30 Silica Sand

LOG OF BORING: **MW-70C**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	8
Completion Date:	2/21/2020	Total Depth (ft):	70
Driller:	Jesse Van Kirk	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	728954.390
Logged By:	S. Ruiz	Easting:	3167673.513
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	45.07
Sampling Method:	6" & 4" x 10' Core	Ground Elev. (ft AMSL):	

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Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0					(0 - 10) No Recovery - Hydrovac to 10.0'.
5		0.0/10.0		NR	
10					
		10.0/10.0	1.7	SP	(10 - 15.7) Fine SAND, SP, bluish gray with light gray with localized brown discoloration, wet, very soft, rapid dilatancy.
			2.2		
15			2.3	CL	(15.7 - 16.5) Sandy CLAY, CL, bluish gray with red-brown mottle, moist, firm, medium plasticity.
			2.5	SM	(16.5 - 22.9) Silty SAND, SM, light brown with bluish gray, wet, very soft, slow dilatancy, trace iron (Fe) staining at 17.5', odor.
20			3.3		
		7.0/7.0	7.4		
			16.3	CH	(22.9 - 24.3) Silty CLAY, CH, red-brown with light gray mottle, dry, very firm, high plasticity.
25			13.2	CL	(24.3 - 37) CLAY, CL, light gray with light brown mottle, dry, very firm, medium plasticity, strong odor. Color transitions to tan with light gray mottle, streaks of black, red-brown, and yellow-orange, then to red-brown with light gray mottle below 32.0'. Strong odor throughout. Large calcareous gravel layers at 32.8' - 34.5', with thinner gravel lenses starting at 29.5' to 33.0'. Gravel lenses are moist and stained, with visible sheen on clay between 27.0' - 29.0'. Clay is very moist below 30.0', with thin, interbedded, stained silt lenses.
			201.3		
30			234.2		
		10.0/10.0	42.3		
			21.3		
35			362.5		
			59.5	CH	(37 - 45) CLAY, CH, red-brown with bluish gray mottle, moist, very firm and stiff, medium to high plasticity, trace black organic staining, slight odor.
40		7.0/7.0	6.2		
			5.1		
			6.9		
45			12.0	ML	(45 - 46.5) SILT, ML, red-brown silt with interbedded clay nodules, moist, very soft, low plasticity.
		5.0/5.0	10.1		(46.5 - 58.6) Silty CLAY, CH, red-brown with trace black streaks, dry, very firm to hard, high plasticity, strong cementation, concretions from 47.6' - 47.8'. Calcareous lenses below 55.8'.
50			4.2		

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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) 12.0" Sonic isolation casing to 50.0'. Removed during grouting of 7.0" permanent casing. 7.0" permanent isolation casing to 52.0'.

Casing Materials
(2.0 - 52.0) 7" Permanent Steel Isolation Casing
(0.0 - 58.0) 2" SCH-40 PVC Casing
(58.0 - 68.0) 2" SCH-40 PVC 0.010" Slotted Screen
(68.0 - 68.5) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 50.0) Grout
(50.0 - 58.0) 3/8" Bentonite Chips
(58.0 - 68.0) 16/30 Silica Sand

LOG OF BORING: **MW-70C**

Union Pacific Railroad

SITE INFORMATION	PROJECT AND DRILLING INFORMATION			
Houston Wood Preserving Works Houston, TX	Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	8
	Completion Date:	2/21/2020	Total Depth (ft):	70
	Driller:	Jesse Van Kirk	Water Level (ft bgl):	--
	Driller's License:	TX 59618M	Northing:	728954.390
	Logged By:	S. Ruiz	Easting:	3167673.513
Project No. 19119232	Drilling Method:	Sonic	TOC Elev. (ft AMSL):	45.07
	Sampling Method:	6" & 4" x 10' Core	Ground Elev. (ft AMSL):	

Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
55		10.0/10.0	3.2	CH	
			1.8		
			2.1		
			3.4		
			1.4	ML	(58.6 - 59.3) SILT, ML, red-brown silt, wet, very soft, low plasticity, increasing clay content with depth, odor.
60		10.0/10.0	10.0	CH	(59.3 - 62.3) Silty CLAY, CH, red-brown, wet, firm, high plasticity, silt seams throughout.
			23.5	SM	(62.3 - 67.5) Silty SAND, SM, red-brown, very fine, wet, very soft, slow dilatancy, trace black staining and odor throughout. Clay lenses from 64.8' - 65.5', small concretions with small to medium gravel from 65.5' - 66.1'.
65			4.8		
			2.0		
70			1.6	CH	(67.5 - 70) Silty CLAY, CH, red-brown with black streaks, moist, very firm to hard, high plasticity, laminated, trace silt seams.

GOLDER
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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) 12.0" Sonic isolation casing to 50.0'. Removed during grouting of 7.0" permanent casing. 7.0" permanent isolation casing to 52.0'.

Casing Materials	Annular Materials
(2.0 - 52.0) 7" Permanent Steel Isolation Casing	(0.0 - 2.0) Concrete
(0.0 - 58.0) 2" SCH-40 PVC Casing	(2.0 - 50.0) Grout
(58.0 - 68.0) 2" SCH-40 PVC 0.010" Slotted Screen	(50.0 - 58.0) 3/8" Bentonite Chips
(68.0 - 68.5) End Cap	(58.0 - 68.0) 16/30 Silica Sand

LOG OF BORING: **MW-76B**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
Completion Date:	2/12/2020	Total Depth (ft):	40
Driller:	Jesse Van Kirk	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	727463.2
Logged By:	S. Ruiz	Easting:	3166640.1
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	47.98
Sampling Method:	6" x 10' Core	Ground Elev. (ft AMSL):	48.35

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8/27/2020

Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0		0.0/0.0		NR	(0 - 10) No recovery - Hydrovac to 10.0'.
10		12.5/15.0	0.2	CL	(10 - 19.9) Silty CLAY, CL, gray with yellow-orange mottle, moist, firm to very firm, medium plasticity. Calcareous lens from 12.9' - 13.3', black organic staining above 13.7', trace red mottle. Thin fine sand seams from 15.7' - 16.9'. Increasing orange mottle with depth.
			0.4		
			0.4		
			0.5		
20				SC/SM	(19.9 - 21.5) Silty SAND, SM/SC, tan with red-brown, fine to very fine with clay nodules throughout, some light gray, wet, soft, slow dilatancy, low plasticity.
			0.5	CL	(21.5 - 40) Silty CLAY, CL, light gray with orange mottle, trace fine sand, moist, firm to very firm, medium to high plasticity. Increasing red-brown mottle with depth. Wet calcareous gravel, small to medium, mixed with silt layers from 29.2' - 29.8', 32.3' - 32.5', 32.9' - 33.2', 34.8' - 35.1'. Clay is dryer below 35', with dry calcareous nodule layers at 36.9' - 37.4' and 38.9' - 39.3'. Color change to red-brown with light gray mottle below 35.5, with increasing firmness, becoming very hard below 36.0'.
			0.4		
26		10.0/10.0	0.5		
			1.0		
28			0.6		
30			0.9		
			1.0		
32			0.9		
34			1.1		
36		5.0/5.0	0.8		
38					
40					

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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) 8.0" Sonic isolation casing to 27.0'. Removed during grouting.

Casing Materials
(0.0 - 31.0) 2" SCH-40 PVC Casing
(31.0 - 36.0) 2" SCH-40 PVC 0.010" Slotted Screen
(36.0 - 36.5) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 26.0) Grout
(26.0 - 29.0) 3/8" Bentonite Chips
(29.0 - 36.0) 16/30 Silica Sand

LOG OF BORING: **MW-84A**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
Completion Date:	2/19/2020	Total Depth (ft):	25
Driller:	Jesse Van Kirk	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	729510.3
Logged By:	S. Ruiz	Easting:	3167398.8
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	44.67
Sampling Method:	6" x 10' Core	Ground Elev. (ft AMSL):	

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Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0					(0 - 10) No recovery - Hydrovac to 10.0'
2					
4		0.0/10.0			
6				NR	
8					
10					(10 - 11.7) No recovery - lost
12			0.8		(11.7 - 18.3) Silty SAND, SM, light gray, very fine with clay nodules throughout, trace iron (Fe) staining at 13', wet, soft, slow dilatancy, low plasticity.
14		8.3/10.0	0.8	SM	
16			0.6		
18			0.8	CL	(18.3 - 18.8) Sandy CLAY, CL, bluish gray with reddish brown mottle, wet, firm, medium plasticity.
20				SM	(18.8 - 23.9) Silty SAND, SM, light gray, very fine, wet.
22		5.0/5.0	0.6		
24			0.4	CL	(23.9 - 25) CLAY, CL, reddish brown with light gray mottle, moist, firm to very firm, medium to high plasticity.
26					

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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.

Casing Materials
(0.0 - 13.5) 2" SCH-40 PVC Casing
(13.5 - 23.5) 2" SCH-40 PVC 0.010" Slotted Screen
(23.5 - 24) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 11.5) 3/8" Bentonite Chips
(11.5 - 24) 16/30 Silica Sand

LOG OF BORING: **MW-88A**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
Completion Date:	2/22/2020	Total Depth (ft):	25
Driller:	Joey Lester	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	728247.4
Logged By:	M. Hermiston	Easting:	3166771
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	51.49
Sampling Method:	6" x 10' Core	Ground Elev. (ft AMSL):	48.61

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Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0		0.0/10.0		NR	(0 - 10) No recovery - Hydrovac to 10.0'
10		5.0/5.0	0.0	CL	(10 - 15) Silty CLAY, CL, gray 7.5 YR 7/1 / greenish gray GLEY1 6/1 with yellow 2.5Y 7/8 mottling from 10' to 12.5', no mottling from 12.5' to 15', firm, moist to wet, no odor, med plasticity.
12			0.2		
14			0.0		
16		5.0/5.0	0.0	ML	(15 - 17.8) Clayey SILT, ML, light bluish gray GLEY2 7/1, interbedded clay, mostly silt, wet, no odor, grades into sand unit below.
18			0.0	SM	(17.8 - 21.8) Silty SAND, SM, light gray 7.5YR 7/1, wet
20		2.0/2.0	0.2		
22		3.0/3.0	0.2	CL	(21.8 - 25) Silty CLAY, CL, light gray with yellow mottling, moderate plasticity.
24			0.2		
26					

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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.

Casing Materials
(+2.9 - 13.0) 2" SCH-40 PVC Casing
(13.0 - 23.0) 2" SCH-40 PVC 0.010" Slotted Screen
(23.0 - 23.5) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 11.0) 3/8" Bentonite Chips
(11.0 - 23.0) 16/30 Silica Sand

LOG OF BORING: **MW-88B**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
Completion Date:	2/19/2020	Total Depth (ft):	45
Driller:	Jesse Van Kirk	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	728245
Logged By:	S. Ruiz	Easting:	3166777.6
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	51.57
Sampling Method:	6" x 10' Core	Ground Elev. (ft AMSL):	48.52

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Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0		0.0/10.0		NR	(0 - 10) No recovery - Hydrovac to 10.0'
12		15.0/15.0	1.7	CL	(10 - 16.1) Silty CLAY, CL, bluish gray with reddish brown, orange yellow streaks with green and black streaks, moist, weak cementation, firm, medium plasticity, soft below 14' silt content increases with depth.
			1.4		
			1.4		
16			1.4	ML	(16.1 - 16.8) SILT, ML, light blueish gray with orange and some black organic staining, some clay, moist, soft, low plasticity.
			1.2	SM	(16.8 - 20.3) Silty SAND, SM, light gray with yellow and orange streaks, with blueish gray, at 18.5 transitions to light gray, wet, moderate cementation, very firm, high plasticity.
20			1.4	CH	(20.3 - 20.7) Silty CLAY, CH, bluish gray clay with reddish brown streaks, clear boundary, moist, very firm, high plasticity.
			1.5	ML/CL	(20.7 - 21.5) SILT with clay nodules, ML/CL, light gray, moist, very soft, medium to high plasticity.
24		5.0/5.0	0.6	CL	(21.5 - 40) Silty CLAY, CL, light grey with yellow streaks and reddish brown streaks below 24', moist, very soft, medium to high plasticity. Color transitions from light gray to red brown, with interbedded moist, soft, silt seams below 30'.
			0.8		
28			0.5		
32		10/0/10.0	0.6		
36			0.6		
40		5.0/5.0	--	CH	(40 - 45) Silty CLAY, CH, reddish brown, with silt lenses, light gray mottle, calcareous nodules and gravel mixed throughout, wet, very firm to hard, moderate plasticity.
44					
48					

GOLDER
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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) 8.0" Sonic isolation casing to 30.0'. Removed during sanding.

Casing Materials
(0.0 - 35.0) 2" SCH-40 PVC Casing
(35.0 - 40.0) 2" SCH-40 PVC 0.010" Slotted Screen
(40.0 - 40.5) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 30.0) Grout
(30.0 - 33.0) 3/8" Bentonite Chips
(33.0 - 40.0) 16/30 Silica Sand

LOG OF BORING: **MW-91A**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
Completion Date:	2/19/2020	Total Depth (ft):	30
Driller:	Jesse Van Kirk	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	729702.2
Logged By:	S. Ruiz	Easting:	3167936.8
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	44.02
Sampling Method:	6" x 10' Core	Ground Elev. (ft AMSL):	

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Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0		0.0/10.0		NR	(0 - 10) No recovery - Hydrovac to 10.0'
10					(10 - 10.7) No recovery - lost
12		6.3/7.0	1.3	CL	(10.7 - 17) Sandy CLAY, CL, light gray with reddish brown and yellow orange mottle with blueish streaks, moist, firm, medium to high plasticity, color change to light gray with just reddish brown mottle below 14', trace black streaks.
14			1.2		
16			1.1		
18		7.0/8.0	0.8	SM	(17 - 24.5) Silty SAND, SM, light orange brown with streaks of gray, trace clay nodules, color change to light brown below 21', with gray streaks, very fine, wet, very soft, rapid dilatancy.
20			0.8		
22			1.0		
24			0.9		
26		5.0/5.0	1.5	CL	(24.5 - 30) Silty CLAY, CL, light brown with small light gray mottle, trace lenses of black staining at 26.5', moist, firm to very firm, medium to high plasticity.
28			--		
30			--		

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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.

Casing Materials
(0.0 - 14.5) 2" SCH-40 PVC Casing
(14.5 - 24.5) 2" SCH-40 PVC 0.010" Slotted Screen
(24.5 - 25) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 12.5) 3/8" Bentonite Chips
(12.5 - 25) 16/30 Silica Sand

LOG OF BORING: **MW-92B**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
Completion Date:	2/20/2020	Total Depth (ft):	40
Driller:	Jesse Van Kirk	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	729582.6
Logged By:	S. Ruiz	Easting:	3166813.6
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	44.91
Sampling Method:	6" x 10' Core	Ground Elev. (ft AMSL):	

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Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0					
2					
4		0.0/10.0		NR	(0 - 10) No recovery - Hydrovac to 10.0'
6					
8					
10					(10 - 11.8) No recovery
12			0.7		
14			0.7	SP	(11.8 - 17.5) Fine SAND, SP, light gray with some Iron (Fe) staining, wet below 13', soft, low plasticity.
16			0.7		
18		13.2/15.0	0.7	CL	(17.5 - 19) Silty CLAY, CL, light gray with reddish brown mottle, trace calcareous nodules, clear boundary, moist, moderate cementation, very firm, medium plasticity.
20			6.7	SM	(19 - 21.9) Silty SAND, SM, light gray, wet, no cementation, very soft, rounded, no plasticity.
22			6.5		
24			6.6	CL	(21.9 - 26.8) Silty CLAY, CL, light gray with red mottle to 23', thin light gray with yellow mottling, clear boundary, sands increasing with depth, moist, moderate cementation, very firm, medium plasticity.
26			0.9		
28			0.8		
30			0.7	SM/SC	(26.8 - 33.2) Silty SAND Clayey SAND, SM/SC, tan with some light gray, moist to wet, weak cementation, soft, slow dilatancy, low plasticity.
32		15.0/15.0	1.0		
34			1.1		
36			1.0	CL	(33.2 - 40) CLAY, CL, brownish red with light brown, some blue streaks, moist, moderate cementation, very firm to hard, low to medium plasticity, calc gravel from 33.34' to 41.8' with trace calc noddules below.
38			0.6		
40			0.7		

GOLDER
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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) 8.0" Sonic isolation casing to 25.0'. Removed during grouting.

Casing Materials
(0.0 - 30.0) 2" SCH-40 PVC Casing
(30.0 - 35.0) 2" SCH-40 PVC 0.010" Slotted Screen
(35.0 - 35.5) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 24.0) Grout
(24.0 - 27.0) 3/8" Bentonite Chips
(27.0 - 35.0) 16/30 Silica Sand

LOG OF BORING: **MW-93B**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
Completion Date:	2/26/2020	Total Depth (ft):	40
Driller:	Jesse Van Kirk	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	729451.5
Logged By:	S. Ruiz	Easting:	3166744.3
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	45.05
Sampling Method:	6" x 10' Core	Ground Elev. (ft AMSL):	

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Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0					(0 - 10) No recovery - Hydrovac to 10.0'
2					
4					
6		0.0/10.0		NR	
8					
10					
12		4.0/5.0		SP	(10 - 16.8) Fine SAND, SP, tan fine to medium grained, small unit of light gray sand at 14.3' to 14.6', wet, soft, subang, slow dilatancy.
14					
16			0.3		
18			0.0	SM	(16.8 - 21.6) Silty SAND, SM, light gray that transitions to bluish gray below 20.8', increasing clay content with depth, wet, weak cementation, very soft, slow dilatancy, low plasticity.
20		8.0/8.0	0.1		
22			0.1	SC	(21.6 - 22.8) Clayey SAND, SC, light gray with tan, wet, weak cementation, soft, low plasticity.
24		2.0/2.0	0.1	CL	(22.8 - 26.8) Sandy CLAY, CL, bluish gray with tan mottle, sand grains above 25.5 are fine grained, light gray with tan and orange yellow mottle, moist, weak cementation, firm, low to medium plasticity.
26			0.2		
28			0.2	ML/SM	(26.8 - 31.5) SILT and Silty SAND, ML/SM, light gray with reddish brown, silty sand, clay nodules throughout, wet, weak cementation, soft, slow dilatancy, low plasticity.
30		10/0/10.0	0.0		
32			0.3		
34			0.2	CL	(31.5 - 34.8) Silty CLAY, CL, reddish brown with light gray, calc nodules from 32.5' to 34', some yellowish streaks, wet, moderate cementation, firm, subangular, high dry strength, medium plasticity.
36			0.1		(34.8 - 40) Silty Clay, CL, reddish brown with light bluish gray streaks, trace black streaks throughout, dry, strong cementation, very firm to hard, low plasticity.
38		5.0/5.0	0.1		
40			0.0		

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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) 8.0" Sonic isolation casing to 25.0'. Removed during grouting.

Casing Materials
(0.0 - 30.0) 2" SCH-40 PVC Casing
(30.0 - 35.0) 2" SCH-40 PVC 0.010" Slotted Screen
(35.0 - 35.5) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 24.0) Grout
(24.0 - 27.0) 3/8" Bentonite Chips
(27.0 - 35.0) 16/30 Silica Sand

LOG OF BORING: **MW-94A**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
Completion Date:	2/18/2020	Total Depth (ft):	22
Driller:	Jesse Van Kirk	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	729051.6
Logged By:	S. Ruiz	Easting:	3166533.1
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	45.21
Sampling Method:	6" x 10' Core	Ground Elev. (ft AMSL):	

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Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0		0.0/10.0		NR	(0 - 10) No recovery - Hydrovac to 10.0'
10		3.0/5.0	--	SC	(10 - 12) No recovery - lost (12 - 17) Clayey SAND, light gray with tan, fine grained, wet.
16		6.0/8.0	--		
18			0.9	CL	(17 - 18.2) CLAY, CL, tan with light gray, mottled, moist firm, medium plasticity.
20			0.8	SM	(18.2 - 20.1) Silty SAND, SM, tan with light gray, mottled clay, moist, firm, medium plasticity.
22			0.8	CL SM CL	(20.1 - 20.8) CLAY, CL, tan with light gray, mottled, moist firm, medium plasticity. (20.8 - 21.4) Silty SAND, SM, light gray, wet, soft, very fine grain. (21.4 - 22) CLAY, CL, light gray, gravel, firm orange mottling with brownish red streaks below 22.5', dry, firm, medium plasticity.

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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.

Casing Materials
(0.0 - 11.5) 2" SCH-40 PVC Casing
(11.5 - 21.5) 2" SCH-40 PVC 0.010" Slotted Screen
(21.5 - 22) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 9.5) 3/8" Bentonite Chips
(9.5 - 22) 16/30 Silica Sand

LOG OF BORING: **MW-95A**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
Completion Date:	2/19/2020	Total Depth (ft):	25
Driller:	Joey Lester	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	728563.9
Logged By:	K. Worley	Easting:	3165892.7
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	46.19
Sampling Method:	6" x 10' Core	Ground Elev. (ft AMSL):	47.23

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Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0		0.0/10.0		NR	(0 - 10) No recovery - Hydrovac to 10.0'
10		5.0/5.0	0.0	SC	(10 - 15.8) Clayey SAND, SC, gray to beige, orange mottling, iron staining, no odor, sand content increases with depth, moist.
			0.0		
			0.1		
16		5.0/5.0	0.0	SP	(15.8 - 21.5) SAND, SP, gray, poorly sorted, fine grained, unconsolidated, no odor, wet
			0.0		
20			0.0		
22		5.0/5.0	0.0	CL	(21.5 - 24.2) Sandy CLAY, CL, gray, orange mottling, medium plasticity, moist.
24					(24.2 - 25) CLAY, CL, gray to brown, medium stiff, < 10% silt, no odor.
26					

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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) 8.0" Sonic isolation casing to 15.0'. Removed during sanding.

Casing Materials
(0.0 - 15.0) 2" SCH-40 PVC Casing
(15.0 - 25.0) 2" SCH-40 PVC 0.010" Slotted Screen
(25.0 - 25.5) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 12.0) 3/8" Bentonite Chips
(12.0 - 25.0) 16/30 Silica Sand

LOG OF BORING: **MW-96B**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
Completion Date:	2/24/2020	Total Depth (ft):	40
Driller:	Joey Lester	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	727928.5
Logged By:	M. Hermiston	Easting:	3165445.9
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	47.02
Sampling Method:	6" x 10' Core	Ground Elev. (ft AMSL):	47.23

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
8/27/2020

Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0		0.0/10.0		NR	(0 - 10) No recovery - Hydrovac to 10.0'
10		5.0/5.0	2.0	CL	(10 - 13.4) Silty CLAY, CL, light gray with reddish yellow mottling and black staining, trace white pockets, silt content increases with depth, no odor.
12			6.3		
14			5.7	SM	(13.4 - 19.4) Silty SAND, SM, light gray with strong brown mottling from 16' to 19.4', no odor, wet.
16		5.0/5.0	4.8		
18			4.3		
20		5.0/5.0	3.7	CL	(19.4 - 23) CLAY, CL, light gray with yellow mottling, becomes red mottling near 23' with black mottling near 23.5', more abundant red mottling with depth, no odor, firm , moderate plasticity.
22			3.4		
24		5.0/5.0	4.4		(23 - 37) Silty CLAY, CL,light gray with red mottling, calcareous nodules at 25.2', 28' to 29', 30.2' to 31.4', interbedded and friable clay from 33' to 34', moist from 35' to 37', some silt at 37', no odor.
26			4.3		
28			3.6		
30		5.0/5.0	3.7		
32			5.7		
34			5.1		
36		2.0/2.0	4.7		
38		3.0/3.0	3.2		(37 - 40) CLAY, CL, red with some gray mottling, moist, very firm, no odor, moderate plasticity.
40					

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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) 7.0" Sonic isolation casing to 25.0'. Removed during grouting.

Casing Materials
(0.0 - 27.0) 2" SCH-40 PVC Casing
(27.0 - 37.0) 2" SCH-40 PVC 0.010" Slotted Screen
(37.0 - 37.5) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 22.0) Grout
(22.0 - 25.0) 3/8" Bentonite Chips
(25.0 - 37.0) 16/30 Silica Sand

LOG OF BORING: **MW-97A**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
Completion Date:	2/13/2020	Total Depth (ft):	23
Driller:	Jesse Van Kirk	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	727373
Logged By:	S. Ruiz	Easting:	3166767.2
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	47.77
Sampling Method:	6" x 10' Core	Ground Elev. (ft AMSL):	48.18

STATE OF TEXAS
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GEOLOGY
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LICENSED
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2/27/2020

Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0		0.0/10.0		NR	(0 - 10) No recovery - Hydrovac to 10.0'
10		8.9/10.0		NR	(10 - 11.1) No recovery
12			0.4	CL	(11.1 - 15.2) Sandy CLAY, CL, light gray with orange and yellow mottle and streaks of black, moist, firm, medium plasticity.
14			0.2		
16				SC	(15.2 - 15.8) Clayey SAND, SC, light gray with yellow and orange mottling, trace black organic staining, wet, firm to soft, slow dilatancy, low plasticity.
			0.3	CL	(15.8 - 17.8) CLAY, CL, light gray with reddish brown mottle and trace black organic staining, wet, very stiff.
18			0.4	SM/SC	(17.8 - 20.2) Silty SAND and Clayey SAND, SM/SC, light gray with tan, interbedded clay nodules, very fine, wet, no cementation, soft to very soft, slow dilatancy.
20		3.0/3.0	0.4	CL	(20.2 - 23) Sandy CLAY, CL, light gray, yellow and reddish brown mottle below 22', moist, very firm to stiff, medium to high plasticity.
22			0.4		
24					

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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.

Casing Materials
(0.0 - 10.5) 2" SCH-40 PVC Casing
(10.5 - 20.5) 2" SCH-40 PVC 0.010" Slotted Screen
(20.5 - 21) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 8.5) 3/8" Bentonite Chips
(8.5 - 21) 16/30 Silica Sand

LOG OF BORING: **MW-98A**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
Completion Date:	2/10/2020	Total Depth (ft):	25
Driller:	Jesse Van Kirk	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	727349.7
Logged By:	S. Ruiz	Easting:	3167312
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	48.35
Sampling Method:	6" x 10' Core	Ground Elev. (ft AMSL):	48.79

STATE OF TEXAS
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GEOLOGY
LIC. # 795
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7/27/2020

Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0		0.0/10.0		NR	(0 - 10) No recovery - Hydrovac to 10.0'
10		10.0/10.0	0.1	CL	(10 - 19) CLAY, CL, light gray with tan and yellow orange mottle, abundant calcareous, color change to bluish gray below 15', gravel layer from 17.5' to 18.6', small to medium, moist, firm to very firm, medium to high plasticity.
12			0.0		
14			0.0		
16			0.2		
18			0.1		
20				SM	(19 - 20.6) Silty SAND, SM, light gray, gradual boundary, fine to very fine grain, wet, very soft, slow dilatancy.
22		5.0/5.0	0.1	CL	(20.6 - 25) Silty CLAY, CL, light gray, light brown mottling, increasing light brown color with depth, moist, very firm , medium to high plasticity.
24			0.0		
26			0.0		

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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.

Casing Materials
(0.0 - 10.5) 2" SCH-40 PVC Casing
(10.5 - 20.5) 2" SCH-40 PVC 0.010" Slotted Screen
(20.5 - 21) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 8.5) 3/8" Bentonite Chips
(8.5 - 21) 16/30 Silica Sand

LOG OF BORING: **MW-98B**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
Completion Date:	2/11/2020	Total Depth (ft):	40
Driller:	Jesse Van Kirk	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	727358.6
Logged By:	S. Ruiz	Easting:	3167306.4
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	48.59
Sampling Method:	6" x 10' Core	Ground Elev. (ft AMSL):	48.83

STATE OF TEXAS
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GEOLOGY
LIC. # 795
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PROFESSIONAL GEOSCIENTIST
8/27/2020

Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0					(0 - 10) No recovery - Hydrovac to 10.0'
10		0.0/10.0		NR	
12				CH	(10 - 14.4) CLAY, CH, gray with bluish gray and orange mottle, black organic staining from 15.0' to 15.5', small sand seams, moist, firm, medium to high plasticity.
14		8.0/10.0	0.3		
16			0.3	SC	(14.4 - 16.8) Clayey SAND, SC, light gray with bluish gray and orange mottle, fine grain sand, moist, firm to soft, gradual boundary, low to medium plasticity.
18			0.3	SM	(16.8 - 21.1) Silty SAND, SM, light gray with light brown mottle above 17', clay nodules above 17.6', fine grain sand, wet at 17.6', very moist to wet, soft to very soft, slow dilatancy, diffused boundary, low plasticity.
20			0.2		
22		5.0/5.0	0.6	CH	(21.1 - 33.8) CLAY, CH, gray with bluish gray and orange mottle, black organic staining from 15.0' to 15.5', small sand seams, calcareous nodules, moist, firm, medium to high plasticity.
24			0.2		
26		3.0/5.0	0.0		
28			0.1		
30					
32		10.0/10.0	0.7		
34			0.8	SC	(33.8 - 34.7) Clayey SAND, SC, gray with red below 31', calcareous nodules at 33', moist, soft, low to medium plasticity.
36			1.1	CL	(34.7 - 40) CLAY, CL, red to gray, color change to reddish brown below 34', 32.1' to 32.9' clayey sand, calcareous nodules at 33.3' with sandy clay below, silty sand seem at 39.3' to 39.61', dry, very hard, medium to high plasticity.
38			1.3		
40			1.2		

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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) 8.0" Sonic isolation casing to 28.0'. Removed during grouting.

Casing Materials
(0.0 - 35.0) 2" SCH-40 PVC Casing
(35.0 - 40.0) 2" SCH-40 PVC 0.010" Slotted Screen
(40.0 - 40.5) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 28.0) Grout
(28.0 - 31.0) 3/8" Bentonite Chips
(21.0 - 40.0) 16/30 Silica Sand

LOG OF BORING: **MW-99C**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
Completion Date:	2/23/2020	Total Depth (ft):	70
Driller:	Jesse Van Kirk	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	729500.354
Logged By:	S. Ruiz	Easting:	3168707.132
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	45.33
Sampling Method:	6" & 4" x 10' Core	Ground Elev. (ft AMSL):	

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8/27/2020
Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0		0.0/10.0		NR	(0 - 11.5) No recovery - Hydrovac to 10.0'
5					
10			0.7		
		8.5/10.0	0.1	CL	(11.5 - 15.9) CLAY, CL, dark gray with greenish gray, calcareous nodules throughout, color change to light gray with reddish brown mottle below 18', some black streaks, increasing sand with depth, moist, weak cementation, soft, subangular grains, high plasticity.
15			0.1		
			0.0	SM	(15.9 - 22.5) Silty SAND, SM, clayey sand from 15.9 to 16.2, brown sand with lite gray interbedded clay lenses, wet, soft, slow dilatancy, low plasticity.
			0.0		
20			0.0		
		10.0/10.0	0.0	CL	(22.5 - 23.6) CLAY, CL, silty sand, brown with light gray, calc nodules, thin silt seams, moist to wet, firm, low plasticity.
			0.3	SM	(23.6 - 26.1) Silty SAND, SM, brown with light gray above 24.5', very fine grain, wet, weak cementation, slow dilatancy.
25			0.3	CH	(26.1 - 56.1) Silty CLAY, CH, reddish brown and gray with orange and yellow mottling below 30.51, abundant calcareous nodules below 35.51, some black streaks at 38.5' with gravel, orange and yellow mottle becomes reddish brown below 38', trace calcareous with localized black staining around black organic concentrations, dry silt seam with calcareous nodules from 52.6' to 54.8', dry, moderate cementation, firm, subangular grains, med dry strength.
			0.2		
30					
			0.5		
		10.0/10.0	0.7		
35			0.3		
			0.4		
			0.6		
40					
			0.0		
			0.0		
45			0.2		
		15.0/15.0	0.1		
50			0.0		

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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) 8.0" Sonic isolation casing to 30.0', 7" Sonic isolation casing to 45.0'. Both removed during grouting.

Casing Materials
(0.0 - 59.5) 2" SCH-40 PVC Casing
(59.5 - 69.5) 2" SCH-40 PVC 0.010" Slotted Screen
(69.5 - 70.0) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 51.0) Grout
(51.0 - 56.0) 3/8" Bentonite Chips
(56.0 - 70.0) 16/30 Silica Sand

LOG OF BORING: **MW-99C**

Union Pacific Railroad

SITE INFORMATION	PROJECT AND DRILLING INFORMATION			
Houston Wood Preserving Works Houston, TX	Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
	Completion Date:	2/23/2020	Total Depth (ft):	70
	Driller:	Jesse Van Kirk	Water Level (ft bgl):	--
	Driller's License:	TX 59618M	Northing:	729500.354
	Logged By:	S. Ruiz	Easting:	3168707.132
Project No. 19119232	Drilling Method:	Sonic	TOC Elev. (ft AMSL):	45.33
	Sampling Method:	6" & 4" x 10' Core	Ground Elev. (ft AMSL):	

Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
55			0.0		
			0.3		
			0.1		
60		15.0/15.0	0.3	SM	(56.1 - 68.8) Silty SAND, SM, red, very fine grain, poorly sorted, clay nodules with calcareous nodules from 57' to 58', clay lenses from 60' to 61' with silt seams, clay nodules, calcareous nodules, wet, very soft
			0.2		
			0.5		
65			0.5		
			0.3		
			0.0		
70			0.4	CH	(68.8 - 70) Silty CLAY, CH, red with trace black streaks, moist, moderate cementation, very firm to hard, med toughness, high plasticity.

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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) 8.0" Sonic isolation casing to 30.0', 7" Sonic isolation casing to 45.0'. Both removed during grouting.

Casing Materials
(0.0 - 59.5) 2" SCH-40 PVC Casing
(59.5 - 69.5) 2" SCH-40 PVC 0.010" Slotted Screen
(69.5 - 70.0) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 51.0) Grout
(51.0 - 56.0) 3/8" Bentonite Chips
(56.0 - 70.0) 16/30 Silica Sand

APPENDIX 3

STUDIES AND TESTS DOCUMENTATION

3A. Pentachlorophenol Soil Assessment Interim Report dated March 30, 2020 and Updated Pentachlorophenol Soil Assessment Interim Report dated July 14, 2020

3B. Soil Vapor Intrusion Assessment Interim Report dated March 31, 2020 and Updated Soil Vapor Intrusion Assessment Interim Report dated August 4, 2020

3C. Interim Groundwater Monitoring Report (2019-2020) dated April 30, 2020

a. *Addendum1: Revised Groundwater Gradient Maps Figure 5A-1b through 5A-3b (January-March 2020)*
b. *Addendum 2: Data Usability Summary and Laboratory Report - May/June 2020 Groundwater Sampling of New Wells*

3D. Interim Non-Aqueous Phase Liquid (NAPL) and Total Petroleum Hydrocarbon (TPH)-NAPL Assessment Report dated May 29, 2020

3E. Risk-Based NAPL Management Technical Memorandum dated August 20, 2020

3F. 3-D Visualization Model Technical Memorandum dated August 18, 2020

3G. Groundwater Flow Model Technical Memorandum dated August 18, 2020

3H. Mass Flux Technical Memorandum dated August 18, 2020

3I. DNAPL Recovery Activities Report – 2nd Quarter 2020

Hard copies of Appendix 3A through 3D previously submitted to TCEQ except for Addenda to 3C

See attached USB with electronic copies of reports in 3A through 3D

Appendix 3A

Pentachlorophenol Soil Assessment Interim Report dated March 30, 2020 and Updated Pentachlorophenol Soil Assessment Interim Report dated July 14, 2020

March 30, 2020 Project No. 19119232

Ms. Maureen Hatfield
Texas Commission on Environmental Quality
VCP-CA Section, Team 1, Remediation Division, MC-127
P.O. Box 13087
Austin, Texas 78711-3087

PENTACHLOROPHENOL SOIL ASSESSMENT INTERIM REPORT
UNION PACIFIC RAILROAD HOUSTON WOOD PRESERVING WORKS FACILITY
4910 LIBERTY ROAD FACILITY, HOUSTON, TEXAS
POST-CLOSURE CARE PERMIT NO. HW-50343; INDUSTRIAL SWR NO. 31547

Dear Ms. Hatfield,

Golder Associates Inc (Golder) is pleased to provide on behalf of Union Pacific Railroad (UPRR) this Interim Report summarizing the surface soil sampling for pentachlorophenol (PCP) conducted in February 2020 at the UPRR former Houston Wood Preserving Works (HWPW) site (the Site). The additional soil sampling was requested by the Texas Commission on Environmental Quality (TCEQ) during a meeting on June 12, 2019, with additional samples requested in a September 6, 2019 TCEQ letter to UPRR in order to evaluate PCP concentrations in surface soils along the western and northern boundary of the Tie Storage Area (Solid Waste Management Unit (SWMU) No 12) near soil samples previously collected (Figure 1). The soil concentrations for PCP were less than the method detection limits (MDLs) in some of the surface soil samples collected in the northern and western portions of the Site during previous investigations (Phase 2A Report (ERM, 1997), Phase 2B Report, (ERM, 1999)), however, the MDLs were greater than the critical protective concentration level (PCL).

The PCP MDLs for the soil samples detailed in the Phase 2A and 2B Reports (ERM,1997 and 1999, respectively) were previously discussed in the TCEQ comment letter dated August 1, 2005. In response to that letter, UPRR and the TCEQ agreed that a subset of the previous surface soil locations be resampled and analyzed for PCP as detailed in a UPRR letter dated September 5, 2006, email exchanges between UPRR and the TCEQ dated October 12 and 20, 2005 discussing specific resample locations across the Site including the former Tie Storage Area, and in the TCEQ approval letter dated November 29, 2005. The resampled soil samples were collected in 2006. As discussed in the Affected Property Assessment Report (APAR) Addendum (PBW, 2009), the distribution of the resampled surface soil locations collected in 2006 indicated that the PCP MDLs and concentrations within the Tie Storage Area were less than PCP Residential Assessment Levels (RALs). However, to address a potential data gap along the northern and western perimeter of the Tie Storage Area, the TCEQ requested in 2019 that 15 additional soil samples be collected along the northern and western boundary to evaluate PCP concentrations in the surface soils. Details of the field sampling activities and soil data evaluation are provided in the following sections.

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Field Sampling Activities

On February 10 and 11, 2020, Golder advanced 15 soil borings (SSO-01 through SSO-15) to a depth of 2 feet below ground surface (bgs) in the vicinity of the previous surface soil sample locations on the northern and western boundary of the Site, as shown on Figures 1 and 2. Soil samples were collected with a hand auger collected continuously across the two-foot depth interval and field screened using a photoionization detector (PID). Prior to sampling, the PID was calibrated using 100 parts per million (ppm) by volume isobutylene standard. The hand auger was decontaminated before and between each boring. The location for each soil boring was surveyed in the field using a Trimble handheld GPS unit. Table 1 summarizes the soil sample locations, PID readings, and soil descriptions for each location.

Composite soil samples were collected from 0 to 2 feet bgs at each location, placed in laboratory-supplied containers, stored on ice in an insulated cooler, and hand delivered to ALS Environmental in Houston, Texas for PCP analysis by EPA Method 8270. A completed chain-of-custody accompanied the samples through receipt at the analytical laboratory. Copies of the laboratory report and a data usability summary prepared pursuant to TRRP-13 Guidance are included in Attachment 1.

Data Evaluation

PCP concentrations in the soil samples collected in February 2020 are summarized in Table 2. The soil analytical results were compared to TCEQ Texas Risk Reduction Program (TRRP) Tier 1 Residential and Commercial/Industrial (C/I) $^{Tot}Soil_{Comb}$ PCLs (30-acre source area) and Tier 2 $^{GW}Soil_{Ing}$ PCL calculated using site-specific data. Details of the Tier 2 PCL calculation are discussed in Section 11 of the *Affected Property Assessment Report Addendum* dated July 21, 2009 with equations and supporting site-specific documentation in Appendix 9 of the same document (PBW, 2009).

As shown on Table 2 and Figure 2, PCP concentrations in surface soil samples at some locations along the northern and western boundary exceed the Tier 2 $^{GW}Soil_{Ing}$ PCL (0.12 mg/kg). PCP concentrations detected above the Tier 2 $^{GW}Soil_{Ing}$ PCL ranged from 0.13 mg/kg (SSO-04) to 13 mg/kg (SSO-08). To further evaluate the soil-to-groundwater pathway, groundwater sampling results for PCP concentrations from monitoring wells in the uppermost water-bearing zone (A-TZ) across the Site were reviewed. Except for one sample from MW-18A located on the east side of the Site near the former Recent Process Area (see Figure 1), none of the groundwater samples analyzed for PCP from A-TZ wells collected during the 2018 and 2019 groundwater monitoring events have had detected PCP concentrations above the Tier 1 $^{GW}GW_{Ing}$ PCL. PCP was detected in MW-18A during the January 2019 sampling event, which was the first detection in the well since 2002, but was below the detection limit during the July 2019 sampling event. PCP concentrations have been below detection limits since 2012 in monitoring wells MW-12A, MW-13, MW-15A, and MW-38A, which are all located near the northern and western boundaries of the Site. This indicates that even though some surface soil samples collected in this area have PCP concentrations greater than the $^{GW}Soil_{Ing}$ pathway, the concentrations are protective of groundwater per TCEQ Title 30 Chapter 350.75(i)(7)(C) given the length of time since the releases at the Site (prior to 1984 when the facility shut down) and that no concentrations were detected in groundwater recently above the PCL.

Since PCP concentrations in soils are likely protective of groundwater based on long-term groundwater data, PCP concentrations in soils were compared to the $^{Tot}Soil_{Comb}$ PCLs to evaluate the remaining exposure pathway. PCP concentrations from the 15 samples collected in February 2020 are all below the C/I $^{Tot}Soil_{Comb}$ PCL for a 30-acre source area (32 mg/kg). However, since the soil samples were collected near the Site property boundary, the

concentrations were also conservatively compared to the Tier 1 Residential $^{Tot}Soil_{Comb}$ PCL for a 30-acre source area (0.73 mg/kg). PCP concentrations in three samples, SSO-03 (3.7 mg/kg), SSO-07 (3.9 mg/kg (field duplicate of 6.7 mg/kg)), and SSO-08 (13 mg/kg), exceed the Tier 1 Residential $^{Tot}Soil_{Comb}$ PCL. Since PCP concentrations along the boundary of the Site exceeded the Tier 1 Residential $^{Tot}Soil_{Comb}$ PCL, additional delineation is recommended to evaluate PCP concentrations offsite to the north and to the west of the Site boundary. Golder on behalf of UPRR is preparing a work plan detailing the additional soil delineation activities that will be submitted to the TCEQ for review.

If you have any questions or comments, please feel free to give Mr. Kevin Peterburs of UPRR a call at (414) 267-4164 or us at 512-671-3434.

Sincerely,

Golder Associates Inc.

Michelle Hermiston, P.G.
Senior Project Manager

Eric C. Matzner, P.G.
Principal / Practice Leader

Texas Geosciences Firm No. 50369

References

ERM-Southwest, Inc. (ERM), 1997. *Phase 2A Report, RCRA Facility Investigation and Extent of Contamination Investigation, Houston Wood Preserving Works, Houston, Texas*. February

ERM, 1999. *Phase 2B, RCRA Facility Investigation and Extent of Contamination Investigation, Houston Wood Preserving Works, Houston, Texas*. February

Pastor, Behling and Wheeler LLC (PBW), 2009, *Affected Property Assessment Report Addendum and Response to Comments*, Union Pacific Railroad Houston Wood Preserving Works Facility, July 21.

CC: TCEQ Region 12, Houston Texas

Attachments: Table 1 – Surface Soil Sample Locations
Table 2 – Pentachlorophenol Concentrations – Surface Soil Sampling Results
Figure 1 – Surface Soil Sampling Location – Site-Wide – Pentachlorophenol
Figure 2 - Surface Soil Sampling Location – Tie Storage Area – Pentachlorophenol
Attachment 1 – Data Usability Summary and Laboratory Analytical Reports

https://golderassociates.sharepoint.com/sites/116841/project files/6 deliverables/rap/rap revision 5/pcp interim report/uprr hwpw pentachlorophenol surface soil assessment letter report march 2020.docx

Tables

Table 1

Surface Soil Sample Locations - Soil Pentachlorophenol Assessment
UPRR Houston Wood Preserving Works

Sample ID	Sample Interval (ft bgs)	Latitude	Longitude	PID (ppmV)	Soil type
SSO-01	0-2	29.787449	-95.321182	0.1	0-0.5 topsoil; 0.5-2 clay
SSO-02	0-2	29.787543	-95.321721	2.9	0-0.5 topsoil; 0.5-2 clay
SSO-03	0-2	29.787589	-95.322464	0.6	0-2 topsoil
SSO-04	0-2	29.787584	-95.323116	0.1	0-0.5 topsoil; 0.5-2 clay
SSO-05	0-2	29.787492	-95.323864	3.6	0-0.5 topsoil; 0.5-2 clay
SSO-06	0-2	29.787247	-95.323866	1.7	0-0.5 topsoil; 0.5-2 clay
SSO-07	0-2	29.786992	-95.323861	0.9	0-0.5 topsoil; 0.5-2 clay
SSO-08	0-2	29.786795	-95.323857	2.5	0-0.5 topsoil; 0.5-2 clay
SSO-09	0-2	29.786591	-95.323853	2.2	0-0.5 topsoil; 0.5-2 clay
SSO-10	0-2	29.786271	-95.323843	1.8	0-0.5 topsoil; 0.5-2 clay
SSO-11	0-2	29.785992	-95.323796	4.0	0-0.5 sand; 0.5-2 clay
SSO-12	0-2	29.785685	-95.323799	2.3	0-0.5 sand; 0.5-2 clay
SSO-13	0-2	29.785438	-95.323797	1.6	0-2 sand
SSO-14	0-2	29.785342	-95.324344	4.7	0-2 clay
SSO-15	0-2	29.785056	-95.324525	6.0	0-2 clay

Notes:
Soil samples collected on February 10 and 11, 2020

Table 2

Pentachlorophenol Concentrations - Surface Soil Sampling Results
UPRR Houston Wood Preserving Works

Sample ID	Sample Interval	Sample Date	Pentachlorophenol (mg/kg)	
TRRP Tier 2 Residential $^{GW}Soil_{Ing}$ PCL (mg/kg) *			0.12	
TRRP Tier 1 Residential $^{Tot}Soil_{Comb}$ PCL (mg/kg)			0.73	
TRRP Tier 1 C/I $^{Tot}Soil_{Comb}$ PCL (mg/kg)			32	
SSO-01	0-2	02/10/2020	0.2	
SSO-02	0-2	02/11/2020	0.032	
SSO-03	0-2	02/10/2020	3.7	
SSO-04	0-2	02/10/2020	0.13	
SSO-05	0-2	02/11/2020	0.062	
SSO-06	0-2	02/10/2020	0.26	
SSO-07	0-2	02/10/2020	3.9	J
SSO-07 (duplicate)	0-2	02/10/2020	6.7	J
SSO-08	0-2	02/10/2020	13	
SSO-09	0-2	02/10/2020	0.21	
SSO-10	0-2	02/10/2020	0.13	
SSO-11	0-2	02/11/2020	0.22	
SSO-12	0-2	02/11/2020	0.0059	J
SSO-13	0-2	02/11/2020	0.09	
SSO-14	0-2	02/11/2020	< 0.0041	
SSO-14 (duplicate)	0-2	02/11/2020	< 0.0041	
SSO-15	0-2	02/11/2020	< 0.004	

Notes: TRRP 30-acre source area PCLs (30 TAC §350, Tables 1 and 2), last updated November 2019.
* Tier 2 calculations using site-specific data are detailed in Affected Property Assessment Report Addendum dated July 21, 2009.

Figures

LEGEND

- UPRR PROPERTY BOUNDARY
- HISTORICAL STRUCTURE AND FEATURE
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION
- TEMPORARY MONITORING WELL LOCATION
- SOIL BORING LOCATION
- 0.078 — PENTACHLOROPHENOL CONCENTRATION IN mg/Kg
- (NS) — NOT SAMPLED

PCL EVALUATION

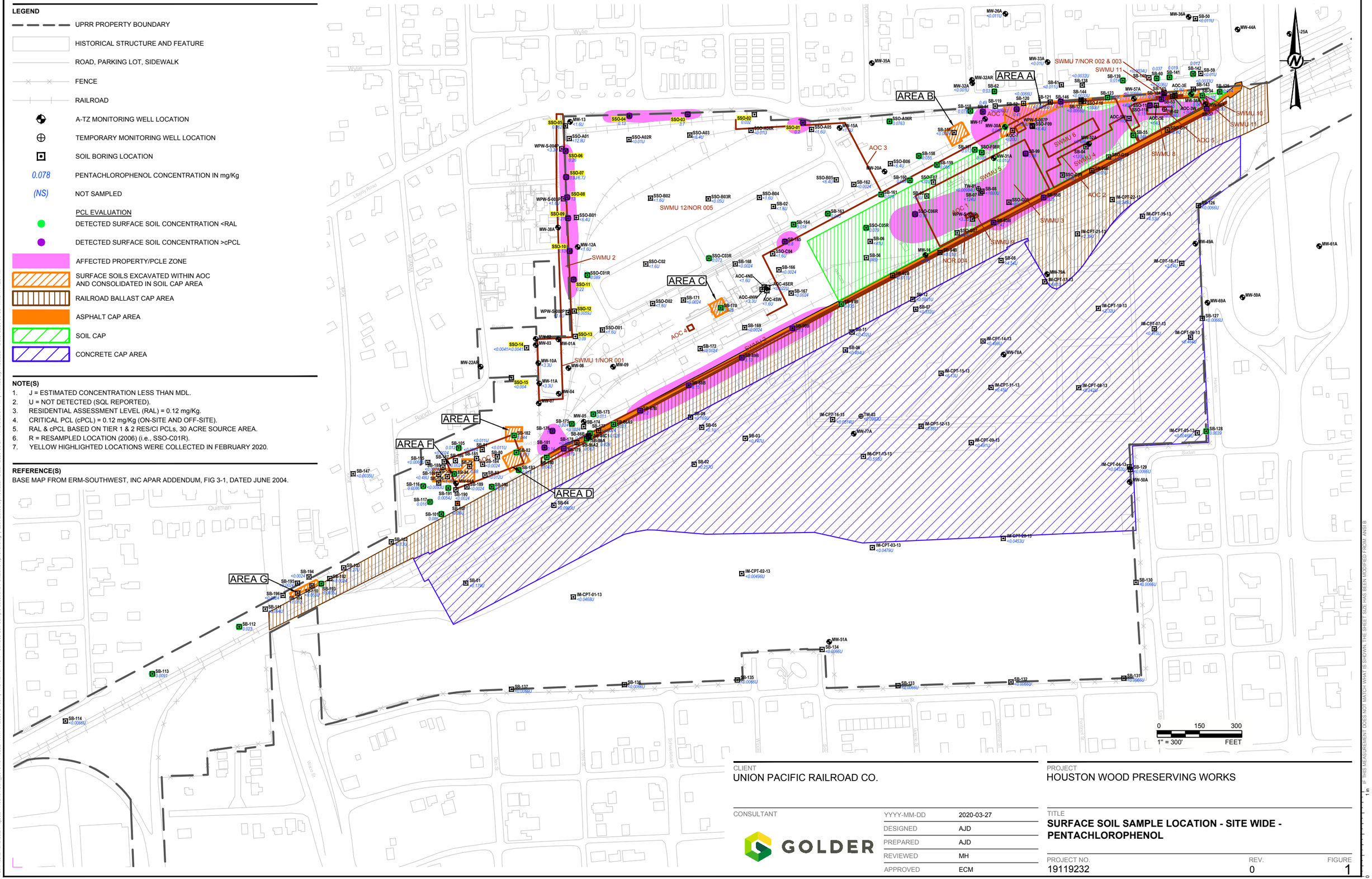
- DETECTED SURFACE SOIL CONCENTRATION <RAL
- DETECTED SURFACE SOIL CONCENTRATION >cPCL
- AFFECTED PROPERTY/PCLE ZONE
- SURFACE SOILS EXCAVATED WITHIN AOC AND CONSOLIDATED IN SOIL CAP AREA
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA

NOTE(S)

1. J = ESTIMATED CONCENTRATION LESS THAN MDL.
2. U = NOT DETECTED (SQL REPORTED).
3. RESIDENTIAL ASSESSMENT LEVEL (RAL) = 0.12 mg/Kg.
4. CRITICAL PCL (cPCL) = 0.12 mg/Kg (ON-SITE AND OFF-SITE).
5. RAL & cPCL BASED ON TIER 1 & 2 RES/CI PCLs, 30 ACRE SOURCE AREA.
6. R = RESAMPLED LOCATION (2006) (i.e., SSO-C01R).
7. YELLOW HIGHLIGHTED LOCATIONS WERE COLLECTED IN FEBRUARY 2020.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.



CLIENT
UNION PACIFIC RAILROAD CO.

CONSULTANT
GOLDER

YYYY-MM-DD	2020-03-27
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

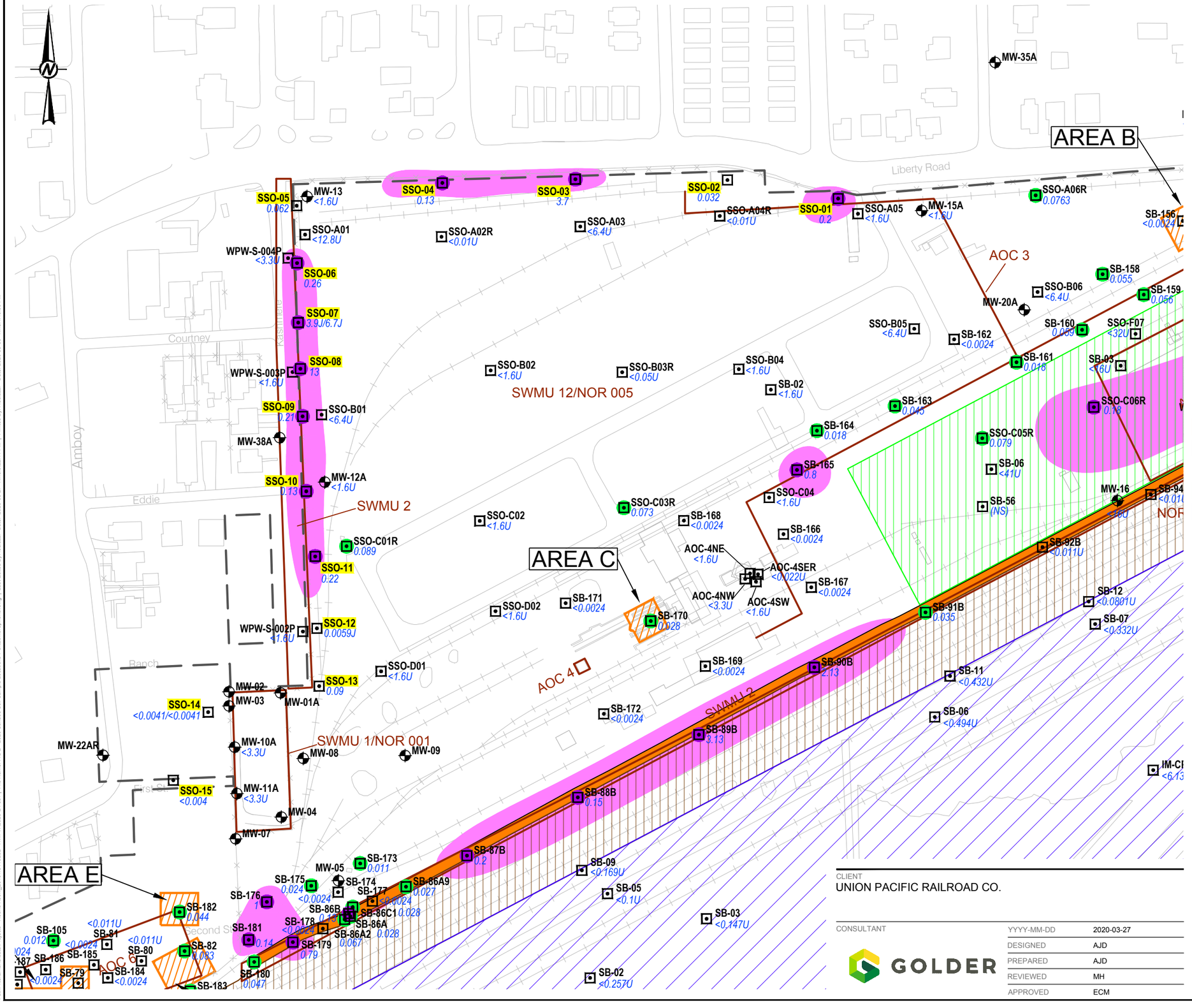
PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
SURFACE SOIL SAMPLE LOCATION - SITE WIDE - PENTACHLOROPHENOL

PROJECT NO. 19119232 | REV. 0 | FIGURE 1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\waxarkana\data\Projects - Round Rock_2019\19119232 - HWPW\2020-2 Feb\ | File Name: FIG 1 - Surface Soil Sample Locations-Pentachlorophenol.dwg | Last Edited By: rsalazar Date: 2020-03-27 Time: 5:23:51 PM | Printed By: RSalazar Date: 2020-03-30 Time: 1:44:23 PM



LEGEND

- UPRR PROPERTY BOUNDARY
- HISTORICAL STRUCTURE AND FEATURE
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION
- TEMPORARY MONITORING WELL LOCATION
- SOIL BORING LOCATION
- 0.078 PENTACHLOROPHENOL CONCENTRATION IN mg/Kg
- (NS) NOT SAMPLED

PCL EVALUATION

- DETECTED SURFACE SOIL CONCENTRATION <RAL
- DETECTED SURFACE SOIL CONCENTRATION >cPCL
- AFFECTED PROPERTY/PCLE ZONE
- SURFACE SOILS EXCAVATED WITHIN AOC AND CONSOLIDATED IN SOIL CAP AREA
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- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA

NOTE(S)

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3. RESIDENTIAL ASSESSMENT LEVEL (RAL) = 0.12 mg/Kg.
4. CRITICAL PCL (cPCL) = 0.12 mg/Kg (ON-SITE AND OFF-SITE).
5. RAL & cPCL BASED ON TIER 1 & 2 RES/CI PCLs, 30 ACRE SOURCE AREA.
6. R = RESAMPLED LOCATION (2006) (i.e., SSO-C01R).
7. YELLOW HIGHLIGHTED LOCATIONS WERE COLLECTED IN FEBRUARY 2020.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

CLIENT
UNION PACIFIC RAILROAD CO.

CONSULTANT
GOLDER

YYYY-MM-DD	2020-03-27
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
SURFACE SOIL SAMPLE LOCATION - TIE STORAGE AREA - PENTACHLOROPHENOL

PROJECT NO.	REV.	FIGURE
19119232	0	2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\toarkana\data\Projects - Round Rock_2019\19119232 - HWPW\2020-2 Feb\ | File Name: FIG 2 - 2020 Surface Soil Sample Locations-Pentachlorophenol.dwg | Last Edited By: rsalazar Date: 2020-03-27 Time:5:22:41 PM | Printed By: RSalazar Date: 2020-03-30 Time:1:43:50 PM

ATTACHMENT 1

Data Usability Summary and Laboratory Analytical Report

Memorandum

February 27, 2020
Revised February 28, 2020

To:	Eric Matzner	Ref. No.:	11183954-1620
From:	Angela Bown/cs/550-NF	Tel:	513-285-1102
CC:	Jesse Orth; Jon Lang; Julie Lidstone; Chris Knight		

Subject: **Data Usability Summary**
Pentachlorophenol Assessment in Soils
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
February 2020

1. Scope of Data Usability Study

This document details a Data Usability Summary (DUS) of analytical results for soil samples collected in support of the Pentachlorophenol Assessment in Soils at the Union Pacific Railroad (UPRR)/Houston TX-Wood Preserving Works site during February 2020. Samples were submitted to ALS Environmental (ALS), located in Houston, Texas and are reported in data package HS20020447. The intended use of the data is to support the Pentachlorophenol Assessments in Soils investigation at the site by providing current concentrations of the chemical of concern.

Data were reviewed and validated by Angela Bown of GHD, in accordance with Title 30 of the Texas Administrative Code Section 350.54 (30 TAC 350.54) as described in the Texas Commission on Environmental Quality (TCEQ) Regulatory Guidance document entitled "Review and Reporting of COC Concentration Data under TRRP", (RG-366/TRRP-13), revised May 2010, herein referred to as "TRRP-13 Guidance". Evaluation of the data was based on information obtained from the chain of custody form, the finished report forms, method blank data, recovery data from surrogate spikes/laboratory control samples (LCS)/matrix spikes (MS), duplicate data, field quality assurance/quality control (QA/QC) samples, the laboratory review checklists (LRC), and the laboratory exception reports (ER).

A sample collection and analysis summary is presented in Table 1. This summary provides a cross-reference of field sample identification numbers and location identification. Each sample is assigned a unique field identification number.

The validated sample results are presented in Table 2. A summary of the analytical methodology is presented in Table 3.

2. Laboratory Qualifications

The Laboratory's quality assurance program is consistent with the quality standards outlined in the National Environmental Laboratory Accreditation Program (NELAP). This laboratory was accredited under Texas Certification number # TX104704231 at the time the analysis was performed and the certificate is included in Attachment A.

3. Project Objectives

3.1 Sampling/Analytical QA/QC Objectives

The QA/QC program was designed to identify contamination resulting from the sampling, sample transport and analytical process through the analysis of trip blank samples, field blank samples, field duplicate sample sets, and method blanks. The QA/QC program was designed to evaluate the quality of the resulting data with respect to bias and precision through analysis of LCS, MS, and duplicate analyses.

4. Data Review/Validation Results

4.1 Sample Holding Time and Preservation

Samples were shipped with a chain of custody and the paper work was filled out properly.

All samples were properly preserved, delivered on ice, and stored by the laboratory at the required temperature (0-6°C).

The sample chain of custody document and the analytical report were used to determine sample holding times. All samples were prepared and analyzed within the required holding times.

4.2 Sample Containers

Sample containers used were certified pre-cleaned glass and plastic containers provided by the laboratory. These containers meet or exceed analyte specifications established in the United States Environmental Protection Agency (USEPA) *Specifications and Guidance for Contaminant-free Sample Containers*.

4.3 Calibrations

According to the LRC, initial calibration and continuing calibration data met the criteria for the selected method.

4.4 Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures. As these were not discrete samples handled in the field, these blanks are not listed on the sample identification cross-reference list found in the data packages.

For this study, laboratory method blanks were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch and results are reported in the laboratory data packages.

The method blank result was non-detect or below the method quantitation limit (MQL), indicating that laboratory contamination was not a factor for this investigation.

4.5 Internal Standard and Surrogate Spike Recoveries

Recoveries of internal standards are addressed in the LRC of the data packages. All internal standard recoveries associated with the compounds of interest were acceptable per the LRC.

In accordance with the methods employed, all samples, blanks, and QC samples analyzed for semi-volatile organic compounds (SVOCs) are spiked with surrogate compounds prior to sample analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project. Each individual surrogate compound is expected to meet the laboratory control limits. According to the TRRP-13 Guidelines, one outlying surrogate is acceptable for methods with multiple surrogate spike compounds as long as the recovery is at least ten percent. Sample analyzed at elevated sample dilutions (five times or greater) were not assessed.

Surrogate recoveries were assessed against laboratory control limits and/or the guidance in TRRP-13. All surrogate recoveries met the above criteria.

4.6 Laboratory Control Sample Analysis

LCSs are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project.

For this study, LCSs were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch.

The LCS contained the analyte specified in the method. All LCS recoveries were within the laboratory control limits, demonstrating acceptable analytical accuracy.

4.7 Matrix Spike Analysis

To evaluate the effects of sample matrices on the preparation process, measurement procedures, and accuracy of a particular analysis, samples are spiked with known concentrations of the analytes of interest and analyzed as MS/matrix spike duplicate (MSD) samples. The RPD between the MS and MSD is used to assess analytical precision.

No site-specific samples were selected for MS/MSD analyses. The laboratory performed MS/MSD on non-site samples. These cannot be used to assess accuracy and precision for the site samples.

4.8 Field QA/QC Samples

The field QA/QC consisted of two field duplicate sample sets.

Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, two field duplicate sample sets were collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples must be less than 50 percent for soil samples. The RPDs are only used when sample concentrations are above the estimated regions of detection.

Field duplicate summary data are presented in Table 2. The results for sample set SO-1620-SSO07(0-2)-20200210 and SO-1620-FD01-20200210 displayed variability in pentachlorophenol results. Table 4 presents the qualified sample results.

4.9 Field Procedures

Golder Associates, Inc. collected soil samples in accordance with their Standard Operating Procedures (SOP) for sample collection.

4.10 Analyte Reporting

The laboratory reported detected results for each analyte down to the sample detection limit (SDL), which is defined as the method detection limit (MDL) with sample-specific adjustments for dilutions, aliquot size, volumes, etc. Positive analyte detections less than the MQL but greater than the SDL were qualified as estimated (J) in Table 2 unless qualified otherwise in this memorandum.

The detectability check standard (DCS) results supported the laboratory MDLs.

5. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are usable for the purpose of supporting the Pentachlorophenol Assessment in Soils investigation at the site by providing current concentrations of the chemical of concern with the specific qualifications noted herein.

Table 1

Sample Collection and Analysis Summary
Pentachlorophenol Assessment in Soils
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
February 2020

							Analysis/Parameters	
Sample Identification	**Location**	**Matrix**	**Start Depth (ft bgs)**	**End Depth (ft bgs)**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**Pentachlorophenol**	**Comments**
SO-1620-SSO01(0-2)-20200210	SSO01	Soil	0	2	02/10/2020	13:10	X	
SO-1620-SSO03(0-2)-20200210	SSO03	Soil	0	2	02/10/2020	13:40	X	
SO-1620-SSO04(0-2)-20200210	SSO04	Soil	0	2	02/10/2020	13:50	X	
SO-1620-SSO06(0-2)-20200210	SSO06	Soil	0	2	02/10/2020	14:00	X	
SO-1620-SSO07(0-2)-20200210	SSO07	Soil	0	2	02/10/2020	14:10	X	
SO-1620-SSO08(0-2)-20200210	SSO08	Soil	0	2	02/10/2020	14:20	X	
SO-1620-SSO09(0-2)-20200210	SSO09	Soil	0	2	02/10/2020	14:30	X	
SO-1620-SSO10(0-2)-20200210	SSO10	Soil	0	2	02/10/2020	14:45	X	
SO-1620-SSO05(0-2)-20200211	SSO05	Soil	0	2	02/11/2020	09:25	X	
SO-1620-SSO11(0-2)-20200211	SSO11	Soil	0	2	02/11/2020	09:40	X	
SO-1620-SSO12(0-2)-20200211	SSO12	Soil	0	2	02/11/2020	09:45	X	
SO-1620-SSO13(0-2)-20200211	SSO13	Soil	0	2	02/11/2020	09:50	X	
SO-1620-SSO14(0-2)-20200211	SSO14	Soil	0	2	02/11/2020	10:00	X	
SO-1620-SSO15(0-2)-20200211	SSO15	Soil	0	2	02/11/2020	10:19	X	
SO-1620-SSO02(0-2)-20200211	SSO02	Soil	0	2	02/11/2020	11:00	X	
SO-1620-FD01-20200210	SSO07	Soil	0	2	02/10/2020	-	X	FD(SO-1620-SSO07(0-2)-20200210)
SO-1620-FD02-20200211	SSO14	Soil	0	2	02/11/2020	-	X	FD(SO-1620-SSO14(0-2)-20200211)

Notes:

FD - Field Duplicate of Sample in Parentheses
"-" - Not Applicable
ft bgs - Feet below ground surface

Table 2

Analytical Results Summary
Pentachlorophenol Assessment in Soils
Union Pacific Railroad (UPRR/Houston, TX-Wood Preserving Works
Houston, Texas
February 2020

Location ID:		**SSO01**	**SSO02**	**SSO03**
Sample Name:		**SO-1620-SSO01(0-2)-20200210**	**SO-1620-SSO02(0-2)-20200211**	**SO-1620-SSO03(0-2)-20200210**
Sample Date:		**02/10/2020**	**02/11/2020**	**02/10/2020**
Depth:		**0-2 ft BGS**	**0-2 ft BGS**	**0-2 ft BGS**
Parameters	**Unit**			
Semivolatile Organic Compounds				
Pentachlorophenol	mg/kg	0.20	0.032	3.7
General Chemistry				
Moisture	wt%	13.4	14.9	10.9

Notes:

J - Estimated concentration

Table 2

Analytical Results Summary
Pentachlorophenol Assessment in Soils
Union Pacific Railroad (UPRR/Houston, TX-Wood Preserving Works
Houston, Texas
February 2020

Location ID:		**SSO04**	**SSO05**	**SSO06**
Sample Name:		**SO-1620-SSO04(0-2)-20200210**	**SO-1620-SSO05(0-2)-20200211**	**SO-1620-SSO06(0-2)-20200210**
Sample Date:		**02/10/2020**	**02/11/2020**	**02/10/2020**
Depth:		**0-2 ft BGS**	**0-2 ft BGS**	**0-2 ft BGS**
Parameters	**Unit**			
Semivolatile Organic Compounds				
Pentachlorophenol	mg/kg	0.13	0.062	0.26
General Chemistry				
Moisture	wt%	8.75	14.8	15.6

Notes:

J - Estimated concentration

Table 2

Analytical Results Summary
Pentachlorophenol Assessment in Soils
Union Pacific Railroad (UPRR/Houston, TX-Wood Preserving Works
Houston, Texas
February 2020

Location ID:		**SSO07**	**SSO07**	**SSO08**
Sample Name:		**SO-1620-SSO07(0-2)-20200210**	**SO-1620-FD01-20200210**	**SO-1620-SSO08(0-2)-20200210**
Sample Date:		**02/10/2020**	**02/10/2020**	**02/10/2020**
Depth:		**0-2 ft BGS**	**0-2 ft BGS**	**0-2 ft BGS**
			Duplicate	
Parameters	**Unit**			
Semivolatile Organic Compounds				
Pentachlorophenol	mg/kg	6.7 J	3.9 J	13
General Chemistry				
Moisture	wt%	15.7	22.2	16.9

Notes:

J - Estimated concentration

Table 2

Analytical Results Summary
Pentachlorophenol Assessment in Soils
Union Pacific Railroad (UPRR/Houston, TX-Wood Preserving Works
Houston, Texas
February 2020

Location ID:		**SSO09**	**SSO10**	**SSO11**
Sample Name:		**SO-1620-SSO09(0-2)-20200210**	**SO-1620-SSO10(0-2)-20200210**	**SO-1620-SSO11(0-2)-20200211**
Sample Date:		**02/10/2020**	**02/10/2020**	**02/11/2020**
Depth:		**0-2 ft BGS**	**0-2 ft BGS**	**0-2 ft BGS**
Parameters	**Unit**			
Semivolatile Organic Compounds				
Pentachlorophenol	mg/kg	0.21	0.13	0.22
General Chemistry				
Moisture	wt%	18.9	17.4	7.94

Notes:

J - Estimated concentration

Table 2

Analytical Results Summary
Pentachlorophenol Assessment in Soils
Union Pacific Railroad (UPRR/Houston, TX-Wood Preserving Works
Houston, Texas
February 2020

Location ID:		**SSO12**	**SSO13**	**SSO14**
Sample Name:		**SO-1620-SSO12(0-2)-20200211**	**SO-1620-SSO13(0-2)-20200211**	**SO-1620-SSO14(0-2)-20200211**
Sample Date:		**02/11/2020**	**02/11/2020**	**02/11/2020**
Depth:		**0-2 ft BGS**	**0-2 ft BGS**	**0-2 ft BGS**
Parameters	**Unit**			
Semivolatile Organic Compounds				
Pentachlorophenol	mg/kg	0.0059 J	0.090	<0.0041
General Chemistry				
Moisture	wt%	14.7	8.83	19.4

Notes:

J - Estimated concentration

Table 2

Analytical Results Summary
Pentachlorophenol Assessment in Soils
Union Pacific Railroad (UPRR/Houston, TX-Wood Preserving Works
Houston, Texas
February 2020

Location ID:		**SSO14**	**SSO15**
Sample Name:		**SO-1620-FD02-20200211**	**SO-1620-SSO15(0-2)-20200211**
Sample Date:		**02/11/2020**	**02/11/2020**
Depth:		**0-2 ft BGS**	**0-2 ft BGS**
		Duplicate	
Parameters	**Unit**		
Semivolatile Organic Compounds			
Pentachlorophenol	mg/kg	<0.0041	<0.0040
General Chemistry			
Moisture	wt%	20.7	18.2

Notes:

J - Estimated concentration

Table 3

Analytical Methods
Pentachlorophenol Assessment in Soils
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
February 2020

Parameter	Method	Matrix	Holding Time	
			Collection to Extraction (Days)	Extraction to Analysis (Days)
Pentachlorophenol	SW-846 8270D	Soil	14	40

Method References:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions

Table 4

Qualified Sample Data Due to Variability in Field Duplicate Results
Pentachlorophenol Assessment in Soils
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
February 2020

Parameter	Analyte	RPD	Sample ID	Qualified Result	Field Duplicate Sample ID	Qualified Result	Units
SVOCs	Pentachlorophenol	53	SO-1620-SSO07(0-2)-20200210	6.7 J	SO-1620-FD01-20200210	3.9 J	mg/Kg

Notes:

RPD - Relative Percent Difference
SVOCs - Semi-volatile Organic Compounds
J - Estimated concentration

Attachment A
Laboratory NELAP Certificate

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-19-23

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

Expiration Date: 4/30/2020

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2019

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: ***Drinking Water***

Method EPA 1613

Analyte	AB	Analyte ID	Method ID
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10120408

Method EPA 200.8

Analyte	AB	Analyte ID	Method ID
Copper	TX	1055	10014605
Lead	TX	1075	10014605

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NELAP - Recognized Laboratory Fields of Accreditation

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Issue Date: 5/1/2019

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Matrix: ***Non-Potable Water***

Method EPA 1010

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10116606

Method EPA 120.1

Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	10006403

Method EPA 1311

Analyte	AB	Analyte ID	Method ID
TCLP	TX	849	10118806

Method EPA 1312

Analyte	AB	Analyte ID	Method ID
SPLP	TX	850	10119003

Method EPA 160.4

Analyte	AB	Analyte ID	Method ID
Residue-volatile	TX	1970	10010409

Method EPA 1613

Analyte	AB	Analyte ID	Method ID
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10120408
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10120408
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10120408
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10120408
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10120408
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10120408
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10120408
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10120408
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10120408
1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10120408
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10120408
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10120408
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10120408
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10120408

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Matrix: ***Non-Potable Water***

2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10120408
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10120408
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10120408
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10120408
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10120408
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10120408
Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10120408
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10120408
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10120408
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10120408
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10120408

Method EPA 1664

Analyte	**AB**	**Analyte ID**	**Method ID**
n-Hexane Extractable Material (HEM) (O&G)	TX	1803	10127807

Method EPA 180.1

Analyte	**AB**	**Analyte ID**	**Method ID**
Turbidity	TX	2055	10011606

Method EPA 200.8

Analyte	**AB**	**Analyte ID**	**Method ID**
Aluminum	TX	1000	10014605
Antimony	TX	1005	10014605
Arsenic	TX	1010	10014605
Barium	TX	1015	10014605
Beryllium	TX	1020	10014605
Boron	TX	1025	10014605
Cadmium	TX	1030	10014605
Calcium	TX	1035	10014605
Chromium	TX	1040	10014605
Cobalt	TX	1050	10014605
Copper	TX	1055	10014605
Iron	TX	1070	10014605

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Matrix: ***Non-Potable Water***

Lead	TX	1075	10014605
Magnesium	TX	1085	10014605
Manganese	TX	1090	10014605
Molybdenum	TX	1100	10014605
Nickel	TX	1105	10014605
Potassium	TX	1125	10014605
Selenium	TX	1140	10014605
Silver	TX	1150	10014605
Sodium	TX	1155	10014605
Strontium	TX	1160	10014605
Thallium	TX	1165	10014605
Tin	TX	1175	10014605
Titanium	TX	1180	10014605
Uranium	TX	3035	10014605
Vanadium	TX	1185	10014605
Zinc	TX	1190	10014605

Method EPA 245.1

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10036609

Method EPA 300.0

Analyte	**AB**	**Analyte ID**	**Method ID**
Bromide	TX	1540	10053200
Chloride	TX	1575	10053200
Fluoride	TX	1730	10053200
Nitrate as N	TX	1810	10053200
Nitrate-nitrite	TX	1820	10053200
Nitrite as N	TX	1840	10053200
Orthophosphate as P	TX	1870	10053200
Sulfate	TX	2000	10053200

Method EPA 325.1

Analyte	**AB**	**Analyte ID**	**Method ID**

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Matrix: ***Non-Potable Water***

Chloride	TX	1575	10056801

Method EPA 335.1

Analyte	AB	Analyte ID	Method ID
Amenable cyanide	TX	1510	10060001

Method EPA 335.2

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	10278203

Method EPA 335.4

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	10061402

Method EPA 350.3

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	10064401

Method EPA 365.3

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	10070801
Phosphorus	TX	1910	10070801

Method EPA 375.4

Analyte	AB	Analyte ID	Method ID
Sulfate	TX	2000	10073800

Method EPA 376.1

Analyte	AB	Analyte ID	Method ID
Sulfide	TX	2005	10074201

Method EPA 410.4

Analyte	AB	Analyte ID	Method ID
Chemical oxygen demand (COD)	TX	1565	10077404

Method EPA 415.1

Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	10078407

Method EPA 420.1

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10079400

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Matrix: ***Non-Potable Water***

Method EPA 420.4

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10080203

Method EPA 6020

Analyte	AB	Analyte ID	Method ID
Aluminum	TX	1000	10156419
Antimony	TX	1005	10156419
Arsenic	TX	1010	10156419
Barium	TX	1015	10156419
Beryllium	TX	1020	10156419
Boron	TX	1025	10156419
Cadmium	TX	1030	10156419
Calcium	TX	1035	10156419
Chromium	TX	1040	10156419
Cobalt	TX	1050	10156419
Copper	TX	1055	10156419
Iron	TX	1070	10156419
Lead	TX	1075	10156419
Lithium	TX	1080	10156419
Magnesium	TX	1085	10156419
Manganese	TX	1090	10156419
Molybdenum	TX	1100	10156419
Nickel	TX	1105	10156419
Potassium	TX	1125	10156419
Selenium	TX	1140	10156419
Silver	TX	1150	10156419
Sodium	TX	1155	10156419
Strontium	TX	1160	10156419
Thallium	TX	1165	10156419
Tin	TX	1175	10156419
Titanium	TX	1180	10156419

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Matrix: ***Non-Potable Water***

Vanadium	TX	1185	10156419
Zinc	TX	1190	10156419

Method EPA 608

Analyte	AB	Analyte ID	Method ID
4,4'-DDD	TX	7355	10103603
4,4'-DDE	TX	7360	10103603
4,4'-DDT	TX	7365	10103603
Aldrin	TX	7025	10103603
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10103603
alpha-Chlordane	TX	7240	10103603
Aroclor-1016 (PCB-1016)	TX	8880	10103603
Aroclor-1221 (PCB-1221)	TX	8885	10103603
Aroclor-1232 (PCB-1232)	TX	8890	10103603
Aroclor-1242 (PCB-1242)	TX	8895	10103603
Aroclor-1248 (PCB-1248)	TX	8900	10103603
Aroclor-1254 (PCB-1254)	TX	8905	10103603
Aroclor-1260 (PCB-1260)	TX	8910	10103603
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10103603
Chlordane (tech.)	TX	7250	10103603
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10103603
Dieldrin	TX	7470	10103603
Endosulfan I	TX	7510	10103603
Endosulfan II	TX	7515	10103603
Endosulfan sulfate	TX	7520	10103603
Endrin	TX	7540	10103603
Endrin aldehyde	TX	7530	10103603
Endrin ketone	TX	7535	10103603
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10103603
gamma-Chlordane	TX	7245	10103603
Heptachlor	TX	7685	10103603

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Matrix: ***Non-Potable Water***

Heptachlor epoxide	TX	7690	10103603
Methoxychlor	TX	7810	10103603
Toxaphene (Chlorinated camphene)	TX	8250	10103603

Method EPA 624

Analyte	AB	Analyte ID	Method ID
1,1,1-Trichloroethane	TX	5160	10107207
1,1,2,2-Tetrachloroethane	TX	5110	10107207
1,1,2-Trichloroethane	TX	5165	10107207
1,1-Dichloroethane	TX	4630	10107207
1,1-Dichloroethylene	TX	4640	10107207
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10107207
1,2-Dichlorobenzene	TX	4610	10107207
1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10107207
1,2-Dichloropropane	TX	4655	10107207
1,3-Dichlorobenzene	TX	4615	10107207
1,4-Dichlorobenzene	TX	4620	10107207
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10107207
2-Chloroethyl vinyl ether	TX	4500	10107207
Acetone (2-Propanone)	TX	4315	10107207
Acrolein (Propenal)	TX	4325	10107207
Acrylonitrile	TX	4340	10107207
Benzene	TX	4375	10107207
Bromodichloromethane	TX	4395	10107207
Bromoform	TX	4400	10107207
Carbon tetrachloride	TX	4455	10107207
Chlorobenzene	TX	4475	10107207
Chlorodibromomethane	TX	4575	10107207
Chloroethane (Ethyl chloride)	TX	4485	10107207
Chloroform	TX	4505	10107207
cis-1,2-Dichloroethylene	TX	4645	10107207

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Matrix: ***Non-Potable Water***

cis-1,3-Dichloropropene	TX	4680	10107207
Ethylbenzene	TX	4765	10107207
m+p-xylene	TX	5240	10107207
Methyl bromide (Bromomethane)	TX	4950	10107207
Methyl chloride (Chloromethane)	TX	4960	10107207
Methyl tert-butyl ether (MTBE)	TX	5000	10107207
Methylene chloride (Dichloromethane)	TX	4975	10107207
Naphthalene	TX	5005	10107207
o-Xylene	TX	5250	10107207
Tetrachloroethylene (Perchloroethylene)	TX	5115	10107207
Toluene	TX	5140	10107207
trans-1,2-Dichloroethylene	TX	4700	10107207
trans-1,3-Dichloropropylene	TX	4685	10107207
Trichloroethene (Trichloroethylene)	TX	5170	10107207
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10107207
Vinyl chloride	TX	5235	10107207
Xylene (total)	TX	5260	10107207

Method EPA 625

Analyte	**AB**	**Analyte ID**	**Method ID**
1,2,4,5-Tetrachlorobenzene	TX	6715	10107401
1,2,4-Trichlorobenzene	TX	5155	10107401
1,2-Dichlorobenzene	TX	4610	10107401
1,2-Diphenylhydrazine	TX	6220	10107401
1,3-Dichlorobenzene	TX	4615	10107401
1,4-Dichlorobenzene	TX	4620	10107401
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10107401
2,4,5-Trichlorophenol	TX	6835	10107401
2,4,6-Trichlorophenol	TX	6840	10107401
2,4-Dichlorophenol	TX	6000	10107401
2,4-Dimethylphenol	TX	6130	10107401

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Matrix: ***Non-Potable Water***

2,4-Dinitrophenol	TX	6175	10107401
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10107401
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10107401
2-Chloronaphthalene	TX	5795	10107401
2-Chlorophenol	TX	5800	10107401
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10107401
2-Methylphenol (o-Cresol)	TX	6400	10107401
2-Nitrophenol	TX	6490	10107401
3,3'-Dichlorobenzidine	TX	5945	10107401
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10107401
4-Chloro-3-methylphenol	TX	5700	10107401
4-Chlorophenyl phenylether	TX	5825	10107401
4-Methylphenol (p-Cresol)	TX	6410	10107401
4-Nitrophenol	TX	6500	10107401
Acenaphthene	TX	5500	10107401
Acenaphthylene	TX	5505	10107401
Anthracene	TX	5555	10107401
Benzidine	TX	5595	10107401
Benzo(a)anthracene	TX	5575	10107401
Benzo(a)pyrene	TX	5580	10107401
Benzo(b)fluoranthene	TX	5585	10107401
Benzo(g,h,i)perylene	TX	5590	10107401
Benzo(k)fluoranthene	TX	5600	10107401
bis(2-Chloroethoxy)methane	TX	5760	10107401
bis(2-Chloroethyl) ether	TX	5765	10107401
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10107401
Butyl benzyl phthalate	TX	5670	10107401
Chrysene	TX	5855	10107401
Dibenz(a,h) anthracene	TX	5895	10107401
Diethyl phthalate	TX	6070	10107401

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Dimethyl phthalate	TX	6135	10107401
Di-n-butyl phthalate	TX	5925	10107401
Di-n-octyl phthalate	TX	6200	10107401
Fluoranthene	TX	6265	10107401
Fluorene	TX	6270	10107401
Hexachlorobenzene	TX	6275	10107401
Hexachlorobutadiene	TX	4835	10107401
Hexachlorocyclopentadiene	TX	6285	10107401
Hexachloroethane	TX	4840	10107401
Indeno(1,2,3-cd) pyrene	TX	6315	10107401
Isophorone	TX	6320	10107401
Naphthalene	TX	5005	10107401
Nitrobenzene	TX	5015	10107401
n-Nitrosodiethylamine	TX	6525	10107401
n-Nitrosodimethylamine	TX	6530	10107401
n-Nitrosodi-n-butylamine	TX	5025	10107401
n-Nitrosodi-n-propylamine	TX	6545	10107401
n-Nitrosodiphenylamine	TX	6535	10107401
Pentachlorobenzene	TX	6590	10107401
Pentachlorophenol	TX	6605	10107401
Phenanthrene	TX	6615	10107401
Phenol	TX	6625	10107401
Pyrene	TX	6665	10107401
Pyridine	TX	5095	10107401

Method EPA 7196

Analyte	**AB**	**Analyte ID**	**Method ID**
Chromium (VI)	TX	1045	10162206

Method EPA 7470

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10165603

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Matrix: ***Non-Potable Water***

Method EPA 8011

Analyte	AB	Analyte ID	Method ID
1,2,3-Trichloropropane	TX	5180	10173009
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10173009
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10173009

Method EPA 8015

Analyte	AB	Analyte ID	Method ID
Diesel range organics (DRO)	TX	9369	10173203
Ethanol	TX	4750	10173203
Ethylene glycol	TX	4785	10173203
Gasoline range organics (GRO)	TX	9408	10173203
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10173203
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10173203
Methanol	TX	4930	10173203
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10173203
n-Propanol (1-Propanol)	TX	5055	10173203
Propylene Glycol	TX	6657	10173203
tert-Butyl alcohol	TX	4420	10173203

Method EPA 8021

Analyte	AB	Analyte ID	Method ID
Benzene	TX	4375	10174400
Ethylbenzene	TX	4765	10174400
m+p-xylene	TX	5240	10174400
Methyl tert-butyl ether (MTBE)	TX	5000	10174400
o-Xylene	TX	5250	10174400
Toluene	TX	5140	10174400
Xylene (total)	TX	5260	10174400

Method EPA 8081

Analyte	AB	Analyte ID	Method ID
4,4'-DDD	TX	7355	10178402
4,4'-DDE	TX	7360	10178402

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Matrix: ***Non-Potable Water***

4,4'-DDT	TX	7365	10178402
Aldrin	TX	7025	10178402
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10178402
alpha-Chlordane	TX	7240	10178402
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10178402
Chlordane (tech.)	TX	7250	10178402
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10178402
Dieldrin	TX	7470	10178402
Endosulfan I	TX	7510	10178402
Endosulfan II	TX	7515	10178402
Endosulfan sulfate	TX	7520	10178402
Endrin	TX	7540	10178402
Endrin aldehyde	TX	7530	10178402
Endrin ketone	TX	7535	10178402
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10178402
gamma-Chlordane	TX	7245	10178402
Heptachlor	TX	7685	10178402
Heptachlor epoxide	TX	7690	10178402
Hexachlorobenzene	TX	6275	10178402
Methoxychlor	TX	7810	10178402
Mirex	TX	7870	10178402
Toxaphene (Chlorinated camphene)	TX	8250	10178402

Method EPA 8082

Analyte	**AB**	**Analyte ID**	**Method ID**
Aroclor-1016 (PCB-1016)	TX	8880	10179201
Aroclor-1221 (PCB-1221)	TX	8885	10179201
Aroclor-1232 (PCB-1232)	TX	8890	10179201
Aroclor-1242 (PCB-1242)	TX	8895	10179201
Aroclor-1248 (PCB-1248)	TX	8900	10179201
Aroclor-1254 (PCB-1254)	TX	8905	10179201

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Matrix: ***Non-Potable Water***

Aroclor-1260 (PCB-1260)	TX	8910	10179201
PCBs (total)	TX	8870	10179201

Method EPA 8151

Analyte	AB	Analyte ID	Method ID
2,4,5-T	TX	8655	10183003
2,4-D	TX	8545	10183003
2,4-DB	TX	8560	10183003
Dalapon	TX	8555	10183003
Dicamba	TX	8595	10183003
Dichloroprop (Dichlorprop, Weedone)	TX	8605	10183003
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10183003
MCPA	TX	7775	10183003
MCPP	TX	7780	10183003
Silvex (2,4,5-TP)	TX	8650	10183003

Method EPA 8260

Analyte	AB	Analyte ID	Method ID
1,1,1,2-Tetrachloroethane	TX	5105	10184404
1,1,1-Trichloroethane	TX	5160	10184404
1,1,2,2-Tetrachloroethane	TX	5110	10184404
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	TX	5195	10184404
1,1,2-Trichloroethane	TX	5165	10184404
1,1-Dichloroethane	TX	4630	10184404
1,1-Dichloroethylene	TX	4640	10184404
1,1-Dichloropropene	TX	4670	10184404
1,2,3-Trichlorobenzene	TX	5150	10184404
1,2,3-Trichloropropane	TX	5180	10184404
1,2,4-Trichlorobenzene	TX	5155	10184404
1,2,4-Trimethylbenzene	TX	5210	10184404
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10184404
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10184404
1,2-Dichlorobenzene	TX	4610	10184404

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Matrix: ***Non-Potable Water***

1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10184404
1,2-Dichloropropane	TX	4655	10184404
1,3,5-Trimethylbenzene	TX	5215	10184404
1,3-Dichlorobenzene	TX	4615	10184404
1,3-Dichloropropane	TX	4660	10184404
1,4-Dichlorobenzene	TX	4620	10184404
1,4-Dioxane (1,4-Diethyleneoxide)	TX	4735	10184404
1-Chlorohexane	TX	4510	10184404
1-Propanol	TX	5060	10184404
2,2-Dichloropropane	TX	4665	10184404
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10184404
2-Chloroethyl vinyl ether	TX	4500	10184404
2-Chlorotoluene	TX	4535	10184404
2-Hexanone (MBK)	TX	4860	10184404
2-Pentanone	TX	5045	10184404
4-Chlorotoluene	TX	4540	10184404
4-Isopropyltoluene (p-Cymene)	TX	4915	10184404
4-Methyl-2-pentanone (MIBK)	TX	4995	10184404
Acetone (2-Propanone)	TX	4315	10184404
Acetonitrile	TX	4320	10184404
Acrolein (Propenal)	TX	4325	10184404
Acrylonitrile	TX	4340	10184404
Allyl alcohol	TX	4350	10184404
Allyl chloride (3-Chloropropene)	TX	4355	10184404
Benzene	TX	4375	10184404
Benzyl chloride	TX	5635	10184404
Bromobenzene	TX	4385	10184404
Bromochloromethane	TX	4390	10184404
Bromodichloromethane	TX	4395	10184404
Bromoform	TX	4400	10184404

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Carbon disulfide	TX	4450	10184404
Carbon tetrachloride	TX	4455	10184404
Chlorobenzene	TX	4475	10184404
Chlorodibromomethane	TX	4575	10184404
Chloroethane (Ethyl chloride)	TX	4485	10184404
Chloroform	TX	4505	10184404
Chloroprene (2-Chloro-1,3-butadiene)	TX	4525	10184404
cis-1,2-Dichloroethylene	TX	4645	10184404
cis-1,3-Dichloropropene	TX	4680	10184404
Dibromofluoromethane	TX	4590	10184404
Dibromomethane (Methylene bromide)	TX	4595	10184404
Dichlorodifluoromethane (Freon-12)	TX	4625	10184404
Diethyl ether	TX	4725	10184404
Di-isopropylether (DIPE)	TX	9375	10184404
Epichlorohydrin (1-Chloro-2,3-epoxypropane)	TX	4745	10184404
Ethanol	TX	4750	10184404
Ethyl acetate	TX	4755	10184404
Ethyl methacrylate	TX	4810	10184404
Ethylbenzene	TX	4765	10184404
Ethylene oxide	TX	4795	10184404
Ethyl-t-butylether (ETBE) (2-Ethoxy-2-methylpropane)	TX	4770	10184404
Hexachlorobutadiene	TX	4835	10184404
Iodomethane (Methyl iodide)	TX	4870	10184404
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10184404
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10184404
Isopropylbenzene (Cumene)	TX	4900	10184404
m+p-xylene	TX	5240	10184404
Methacrylonitrile	TX	4925	10184404
Methyl acetate	TX	4940	10184404
Methyl acrylate	TX	4945	10184404

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Matrix: ***Non-Potable Water***

Methyl bromide (Bromomethane)	TX	4950	10184404
Methyl chloride (Chloromethane)	TX	4960	10184404
Methyl methacrylate	TX	4990	10184404
Methyl tert-butyl ether (MTBE)	TX	5000	10184404
Methylcyclohexane	TX	4965	10184404
Methylene chloride (Dichloromethane)	TX	4975	10184404
Naphthalene	TX	5005	10184404
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10184404
n-Butylbenzene	TX	4435	10184404
n-Propylbenzene	TX	5090	10184404
o-Xylene	TX	5250	10184404
Pentachloroethane	TX	5035	10184404
Propionitrile (Ethyl cyanide)	TX	5080	10184404
Pyridine	TX	5095	10184404
sec-Butylbenzene	TX	4440	10184404
Styrene	TX	5100	10184404
T-amylmethylether (TAME)	TX	4370	10184404
tert-Butyl alcohol	TX	4420	10184404
tert-Butylbenzene	TX	4445	10184404
Tetrachloroethylene (Perchloroethylene)	TX	5115	10184404
Toluene	TX	5140	10184404
trans-1,2-Dichloroethylene	TX	4700	10184404
trans-1,3-Dichloropropylene	TX	4685	10184404
trans-1,4-Dichloro-2-butene	TX	4605	10184404
Trichloroethene (Trichloroethylene)	TX	5170	10184404
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10184404
Vinyl acetate	TX	5225	10184404
Vinyl chloride	TX	5235	10184404
Xylene (total)	TX	5260	10184404

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Matrix: ***Non-Potable Water***

Method EPA 8270

Analyte	AB	Analyte ID	Method ID
1,2,4,5-Tetrachlorobenzene	TX	6715	10185203
1,2,4-Trichlorobenzene	TX	5155	10185203
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10185203
1,2-Dichlorobenzene	TX	4610	10185203
1,2-Dinitrobenzene	TX	6155	10185203
1,2-Diphenylhydrazine	TX	6220	10185203
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10185203
1,3-Dichlorobenzene	TX	4615	10185203
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10185203
1,4-Dichlorobenzene	TX	4620	10185203
1,4-Dinitrobenzene	TX	6165	10185203
1,4-Naphthoquinone	TX	6420	10185203
1,4-Phenylenediamine	TX	6630	10185203
1-Chloronaphthalene	TX	5790	10185203
1-Naphthylamine	TX	6425	10185203
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10185203
2,3,4,6-Tetrachlorophenol	TX	6735	10185203
2,4,5-Trichlorophenol	TX	6835	10185203
2,4,5-Trimethylaniline	TX	6880	10185203
2,4,6-Trichlorophenol	TX	6840	10185203
2,4-Diaminotoluene	TX	5880	10185203
2,4-Dichlorophenol	TX	6000	10185203
2,4-Dimethylphenol	TX	6130	10185203
2,4-Dinitrophenol	TX	6175	10185203
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10185203
2,6-Dichlorophenol	TX	6005	10185203
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10185203
2-Acetylaminofluorene	TX	5515	10185203

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Matrix: ***Non-Potable Water***

2-Chloronaphthalene	TX	5795	10185203
2-Chlorophenol	TX	5800	10185203
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10185203
2-Methylaniline (o-Toluidine)	TX	5145	10185203
2-Methylnaphthalene	TX	6385	10185203
2-Methylphenol (o-Cresol)	TX	6400	10185203
2-Naphthylamine	TX	6430	10185203
2-Nitroaniline	TX	6460	10185203
2-Nitrophenol	TX	6490	10185203
2-Picoline (2-Methylpyridine)	TX	5050	10185203
3,3'-Dichlorobenzidine	TX	5945	10185203
3,3'-Dimethylbenzidine	TX	6120	10185203
3-Methylcholanthrene	TX	6355	10185203
3-Methylphenol (m-Cresol)	TX	6405	10185203
3-Nitroaniline	TX	6465	10185203
4-Aminobiphenyl	TX	5540	10185203
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10185203
4-Chloro-3-methylphenol	TX	5700	10185203
4-Chloroaniline	TX	5745	10185203
4-Chlorophenyl phenylether	TX	5825	10185203
4-Dimethyl aminoazobenzene	TX	6105	10185203
4-Methylphenol (p-Cresol)	TX	6410	10185203
4-Nitroaniline	TX	6470	10185203
4-Nitrobiphenyl	TX	6480	10185203
4-Nitrophenol	TX	6500	10185203
4-Nitroquinoline-1-oxide	TX	6510	10185203
5-Chloro-2-methylaniline	TX	5695	10185203
5-Nitro-o-toluidine	TX	6570	10185203
7,12-Dimethylbenz(a) anthracene	TX	6115	10185203
a-a-Dimethylphenethylamine	TX	6125	10185203

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Matrix: ***Non-Potable Water***

Acenaphthene	TX	5500	10185203
Acenaphthylene	TX	5505	10185203
Acetophenone	TX	5510	10185203
Aniline	TX	5545	10185203
Anthracene	TX	5555	10185203
Aramite	TX	5560	10185203
Atrazine	TX	7065	10185203
Azinphos-methyl (Guthion)	TX	7075	10185203
Azobenzene	TX	5562	10185203
Benzenethiol (Thiophenol)	TX	6750	10185203
Benzidine	TX	5595	10185203
Benzo(a)anthracene	TX	5575	10185203
Benzo(a)pyrene	TX	5580	10185203
Benzo(b)fluoranthene	TX	5585	10185203
Benzo(e)pyrene	TX	5605	10185203
Benzo(g,h,i)perylene	TX	5590	10185203
Benzo(k)fluoranthene	TX	5600	10185203
Benzoic acid	TX	5610	10185203
Benzyl alcohol	TX	5630	10185203
Biphenyl	TX	5640	10185203
bis(2-Chloroethoxy)methane	TX	5760	10185203
bis(2-Chloroethyl) ether	TX	5765	10185203
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10185203
Butyl benzyl phthalate	TX	5670	10185203
Caprolactam	TX	7180	10185203
Captan	TX	7190	10185203
Carbaryl (Sevin)	TX	7195	10185203
Carbazole	TX	5680	10185203
Carbophenothion	TX	7220	10185203
Chlorobenzilate	TX	7260	10185203

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Matrix: ***Non-Potable Water***

Chrysene	TX	5855	10185203
Coumaphos	TX	7315	10185203
Demeton	TX	7390	10185203
Demeton	TX	7390	10185203
Demeton-o	TX	7395	10185203
Demeton-s	TX	7385	10185203
Diallate	TX	7405	10185203
Dibenz(a,h) anthracene	TX	5895	10185203
Dibenz(a,j) acridine	TX	5900	10185203
Dibenzofuran	TX	5905	10185203
Dichlorovos (DDVP, Dichlorvos)	TX	8610	10185203
Diethyl phthalate	TX	6070	10185203
Dimethoate	TX	7475	10185203
Dimethoate	TX	7475	10185203
Dimethyl phthalate	TX	6135	10185203
Di-n-butyl phthalate	TX	5925	10185203
Di-n-octyl phthalate	TX	6200	10185203
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10185203
Dioxathion	TX	7495	10185203
Diphenylamine	TX	6205	10185203
Disulfoton	TX	8625	10185203
Ethion	TX	7565	10185203
Ethyl methanesulfonate	TX	6260	10185203
Famphur	TX	7580	10185203
Fluoranthene	TX	6265	10185203
Fluorene	TX	6270	10185203
Hexachlorobenzene	TX	6275	10185203
Hexachlorobutadiene	TX	4835	10185203
Hexachlorocyclopentadiene	TX	6285	10185203
Hexachloroethane	TX	4840	10185203

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Matrix: ***Non-Potable Water***

Hexachlorophene	TX	6290	10185203
Hexachloropropene	TX	6295	10185203
Indeno(1,2,3-cd) pyrene	TX	6315	10185203
Isodrin	TX	7725	10185203
Isophorone	TX	6320	10185203
Isosafrole	TX	6325	10185203
Kepone	TX	7740	10185203
Maleic anhydride	TX	6335	10185203
Methapyrilene	TX	6345	10185203
Methyl methanesulfonate	TX	6375	10185203
Methyl parathion (Parathion, methyl)	TX	7825	10185203
Mevinphos	TX	7850	10185203
Naled	TX	7905	10185203
Naphthalene	TX	5005	10185203
Nitrobenzene	TX	5015	10185203
n-Nitrosodiethylamine	TX	6525	10185203
n-Nitrosodimethylamine	TX	6530	10185203
n-Nitrosodi-n-butylamine	TX	5025	10185203
n-Nitrosodi-n-propylamine	TX	6545	10185203
n-Nitrosodiphenylamine	TX	6535	10185203
n-Nitrosomethylethylamine	TX	6550	10185203
n-Nitrosomorpholine	TX	6555	10185203
n-Nitrosopiperidine	TX	6560	10185203
n-Nitrosopyrrolidine	TX	6565	10185203
o,o,o-Triethyl phosphorothioate	TX	8290	10185203
o-Anisidine	TX	5550	10185203
Parathion, ethyl	TX	7955	10185203
p-Cresidine	TX	5860	10185203
Pentachlorobenzene	TX	6590	10185203
Pentachloronitrobenzene (PCNB)	TX	6600	10185203

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Matrix: ***Non-Potable Water***

Pentachlorophenol	TX	6605	10185203
Phenacetin	TX	6610	10185203
Phenanthrene	TX	6615	10185203
Phenol	TX	6625	10185203
Phorate	TX	7985	10185203
Phosmet (Imidan)	TX	8000	10185203
Phthalic anhydride	TX	6640	10185203
Pronamide (Kerb)	TX	6650	10185203
Pyrene	TX	6665	10185203
Pyridine	TX	5095	10185203
Quinoline	TX	6670	10185203
Resorcinol	TX	6680	10185203
Safrole	TX	6685	10185203
Sulfotepp	TX	8155	10185203
Terbufos	TX	8185	10185203
Tetrachlorvinphos (Stirophos, Gardona)	TX	8197	10185203
Thionazin (Zinophos)	TX	8235	10185203
Toluene diisocyanate	TX	6775	10185203
Trifluralin (Treflan)	TX	8295	10185203

Method EPA 8290

Analyte	**AB**	**Analyte ID**	**Method ID**
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10187209
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10187209
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10187209
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10187209
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10187209
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10187209
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10187209
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10187209
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10187209

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Matrix: ***Non-Potable Water***

1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10187209
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10187209
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10187209
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10187209
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10187209
2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10187209
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10187209
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10187209
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10187209
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10187209
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10187209
Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10187209
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10187209
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10187209
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10187209
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10187209

Method EPA 8316

Analyte	**AB**	**Analyte ID**	**Method ID**
Acrylamide	TX	4330	10188202

Method EPA 8330

Analyte	**AB**	**Analyte ID**	**Method ID**
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10189807
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10189807
2,4,6-Trinitrotoluene (2,4,6-TNT)	TX	9651	10189807
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10189807
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10189807
2-Amino-4,6-dinitrotoluene (2-am-dnt)	TX	9303	10189807
2-Nitrotoluene	TX	9507	10189807
3-Nitrotoluene	TX	9510	10189807
4-Amino-2,6-dinitrotoluene (4-am-dnt)	TX	9306	10189807
4-Nitrotoluene	TX	9513	10189807

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Issue Date: 5/1/2019

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Matrix: ***Non-Potable Water***

Methyl-2,4,6-trinitrophenylnitramine (tetryl)	TX	6415	10189807
Nitrobenzene	TX	5015	10189807
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	TX	9522	10189807
RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine)	TX	9432	10189807

Method EPA 9014

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	10193803
Total cyanide	TX	1645	10193803

Method EPA 9038

Analyte	**AB**	**Analyte ID**	**Method ID**
Sulfate	TX	2000	10196608

Method EPA 9040

Analyte	**AB**	**Analyte ID**	**Method ID**
pH	TX	1900	10196802

Method EPA 9050

Analyte	**AB**	**Analyte ID**	**Method ID**
Conductivity	TX	1610	10198604

Method EPA 9056

Analyte	**AB**	**Analyte ID**	**Method ID**
Bromide	TX	1540	10199209
Chloride	TX	1575	10199209
Fluoride	TX	1730	10199209
Nitrate as N	TX	1810	10199209
Nitrate-nitrite	TX	1820	10199209
Nitrite as N	TX	1840	10199209
Orthophosphate as P	TX	1870	10199209
Sulfate	TX	2000	10199209

Method EPA 9060

Analyte	**AB**	**Analyte ID**	**Method ID**
Total Organic Carbon (TOC)	TX	2040	10200201

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Matrix: ***Non-Potable Water***

Method EPA 9065

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200405

Method EPA 9066

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200609

Method EPA 9250

Analyte	AB	Analyte ID	Method ID
Chloride	TX	1575	10207202

Method EPA RSK 175

Analyte	AB	Analyte ID	Method ID
2-methylpropane (Isobutane)	TX	4942	10212905
Ethane	TX	4747	10212905
Ethene	TX	4752	10212905
Methane	TX	4926	10212905
n-Butane	TX	5007	10212905
n-Propane	TX	5029	10212905

Method HACH 8000

Analyte	AB	Analyte ID	Method ID
Chemical oxygen demand (COD)	TX	1565	60003001

Method SM 2120 B

Analyte	AB	Analyte ID	Method ID
Color	TX	1605	20223807

Method SM 2310 B (4a)

Analyte	AB	Analyte ID	Method ID
Acidity, as CaCO3	TX	1500	20002806

Method SM 2320 B

Analyte	AB	Analyte ID	Method ID
Alkalinity as CaCO3	TX	1505	20045005

Method SM 2340 B

Analyte	AB	Analyte ID	Method ID

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Matrix: ***Non-Potable Water***

Total hardness as CaCO3	TX	1755	20046008

Method SM 2510 B

Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	20048004

Method SM 2540 B

Analyte	AB	Analyte ID	Method ID
Residue-total (total solids)	TX	1950	20004608

Method SM 2540 C

Analyte	AB	Analyte ID	Method ID
Residue-filterable (TDS)	TX	1955	20049803

Method SM 2540 D

Analyte	AB	Analyte ID	Method ID
Residue-nonfilterable (TSS)	TX	1960	20004802

Method SM 3500-Cr B

Analyte	AB	Analyte ID	Method ID
Chromium (VI)	TX	1045	20065809

Method SM 4500-Cl F

Analyte	AB	Analyte ID	Method ID
Total residual chlorine	TX	1940	20080482

Method SM 4500-Cl^- E

Analyte	AB	Analyte ID	Method ID
Chloride	TX	1575	20019209

Method SM 4500-CN^- C

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	20020808

Method SM 4500-CN^- E

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	20021209

Method SM 4500-CN^- G

Analyte	AB	Analyte ID	Method ID
Amenable cyanide	TX	1510	20021607

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Matrix: ***Non-Potable Water***

Method SM 4500-H+ B

Analyte	AB	Analyte ID	Method ID
pH	TX	1900	20104603

Method SM 4500-NH3 D

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	20108809
Kjeldahl Nitrogen (Total Kjeldahl Nitrogen-TKN)	TX	1790	20108809

Method SM 4500-NH3 F

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	20023001

Method SM 4500-O G

Analyte	AB	Analyte ID	Method ID
Oxygen, dissolved	TX	1880	20025405

Method SM 4500-P E

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	20025803
Phosphorus	TX	1910	20025803

Method SM 4500-$S2^{-}$ F

Analyte	AB	Analyte ID	Method ID
Sulfide	TX	2005	20126209

Method SM 4500-SiO2 D

Analyte	AB	Analyte ID	Method ID
Silica as SiO2	TX	1990	20127202

Method SM 4500-$SO3^{-}$ B

Analyte	AB	Analyte ID	Method ID
Sulfite	TX	2015	20026806

Method SM 5210 B

Analyte	AB	Analyte ID	Method ID
Biochemical oxygen demand (BOD)	TX	1530	20027401
Carbonaceous BOD, CBOD	TX	1555	20027401

Method SM 5310 B

Analyte	AB	Analyte ID	Method ID

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Matrix: ***Non-Potable Water***

Total Organic Carbon (TOC)	TX	2040	20137206

Method SM 5310 C

Analyte	**AB**	**Analyte ID**	**Method ID**
Total Organic Carbon (TOC)	TX	2040	20138209

Method SM 5540 C

Analyte	**AB**	**Analyte ID**	**Method ID**
Surfactants - MBAS	TX	2025	20144405

Method TCEQ 1005

Analyte	**AB**	**Analyte ID**	**Method ID**
Total Petroleum Hydrocarbons (TPH)	TX	2050	90019208

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Matrix: ***Solid & Chemical Materials***

Method ASTM D2216

Analyte	AB	Analyte ID	Method ID
Moisture	TX	10337	ASTM D2216-05

Method EPA 1010

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10116606

Method EPA 1030

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10117201

Method EPA 1311

Analyte	AB	Analyte ID	Method ID
TCLP	TX	849	10118806

Method EPA 1312

Analyte	AB	Analyte ID	Method ID
SPLP	TX	850	10119003

Method EPA 1668

Analyte	AB	Analyte ID	Method ID
Decachlorobiphenyls	TX	10332	10262007
Dichlorobiphenyls	TX	464	10262007
Heptachlorobiphenyls	TX	486	10262007
Hexachlorobiphenyls	TX	487	10262007
Monochlorobiphenyls	TX	501	10262007
Nonachlorobiphenyls	TX	507	10262007
Octachlorobiphenyls	TX	508	10262007
Pentachlorobiphenyls	TX	515	10262007
Tetrachlorobiphenyls	TX	528	10262007
Trichlorobiphenyls	TX	541	10262007

Method EPA 200.8

Analyte	AB	Analyte ID	Method ID
Uranium	TX	3035	10014605

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Matrix: ***Solid & Chemical Materials***

Method EPA 300.0

Analyte	AB	Analyte ID	Method ID
Bromide	TX	1540	10053200
Chloride	TX	1575	10053200
Fluoride	TX	1730	10053200
Nitrate as N	TX	1810	10053200
Nitrate-nitrite	TX	1820	10053200
Nitrite as N	TX	1840	10053200
Orthophosphate as P	TX	1870	10053200
Sulfate	TX	2000	10053200

Method EPA 310.1

Analyte	AB	Analyte ID	Method ID
Alkalinity as CaCO3	TX	1505	10054805

Method EPA 350.3

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	10064401

Method EPA 365.3

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	10070801
Phosphorus	TX	1910	10070801

Method EPA 6020

Analyte	AB	Analyte ID	Method ID
Aluminum	TX	1000	10156204
Antimony	TX	1005	10156204
Arsenic	TX	1010	10156204
Barium	TX	1015	10156204
Beryllium	TX	1020	10156204
Boron	TX	1025	10156204
Cadmium	TX	1030	10156204
Calcium	TX	1035	10156204
Chromium	TX	1040	10156204

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Matrix: ***Solid & Chemical Materials***

Cobalt	TX	1050	10156204
Copper	TX	1055	10156204
Iron	TX	1070	10156204
Lead	TX	1075	10156204
Lithium	TX	1080	10156204
Magnesium	TX	1085	10156204
Manganese	TX	1090	10156204
Molybdenum	TX	1100	10156204
Nickel	TX	1105	10156204
Potassium	TX	1125	10156204
Selenium	TX	1140	10156204
Silver	TX	1150	10156204
Sodium	TX	1155	10156204
Strontium	TX	1160	10156204
Thallium	TX	1165	10156204
Tin	TX	1175	10156204
Titanium	TX	1180	10156204
Vanadium	TX	1185	10156204
Zinc	TX	1190	10156204

Method EPA 7196

Analyte	**AB**	**Analyte ID**	**Method ID**
Chromium (VI)	TX	1045	10162206

Method EPA 7470

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10165603

Method EPA 7471

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10166004

Method EPA 8015

Analyte	**AB**	**Analyte ID**	**Method ID**
Diesel range organics (DRO)	TX	9369	10173203

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Matrix: ***Solid & Chemical Materials***

Ethanol	TX	4750	10173203
Ethylene glycol	TX	4785	10173203
Gasoline range organics (GRO)	TX	9408	10173203
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10173203
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10173203
Methanol	TX	4930	10173203
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10173203
n-Propanol (1-Propanol)	TX	5055	10173203
Propylene Glycol	TX	6657	10173203
tert-Butyl alcohol	TX	4420	10173203

Method EPA 8021

Analyte	**AB**	**Analyte ID**	**Method ID**
Benzene	TX	4375	10174400
Ethylbenzene	TX	4765	10174400
m+p-xylene	TX	5240	10174400
Methyl tert-butyl ether (MTBE)	TX	5000	10174400
o-Xylene	TX	5250	10174400
Toluene	TX	5140	10174400
Xylene (total)	TX	5260	10174400

Method EPA 8081

Analyte	**AB**	**Analyte ID**	**Method ID**
4,4'-DDD	TX	7355	10178402
4,4'-DDE	TX	7360	10178402
4,4'-DDT	TX	7365	10178402
Aldrin	TX	7025	10178402
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10178402
alpha-Chlordane	TX	7240	10178402
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10178402
Chlordane (tech.)	TX	7250	10178402
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10178402
Dieldrin	TX	7470	10178402

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Matrix: ***Solid & Chemical Materials***

Endosulfan I	TX	7510	10178402
Endosulfan II	TX	7515	10178402
Endosulfan sulfate	TX	7520	10178402
Endrin	TX	7540	10178402
Endrin aldehyde	TX	7530	10178402
Endrin ketone	TX	7535	10178402
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10178402
gamma-Chlordane	TX	7245	10178402
Heptachlor	TX	7685	10178402
Heptachlor epoxide	TX	7690	10178402
Methoxychlor	TX	7810	10178402
Mirex	TX	7870	10178402
Toxaphene (Chlorinated camphene)	TX	8250	10178402

Method EPA 8082

Analyte	**AB**	**Analyte ID**	**Method ID**
Aroclor-1016 (PCB-1016)	TX	8880	10179201
Aroclor-1221 (PCB-1221)	TX	8885	10179201
Aroclor-1232 (PCB-1232)	TX	8890	10179201
Aroclor-1242 (PCB-1242)	TX	8895	10179201
Aroclor-1248 (PCB-1248)	TX	8900	10179201
Aroclor-1254 (PCB-1254)	TX	8905	10179201
Aroclor-1260 (PCB-1260)	TX	8910	10179201
PCBs (total)	TX	8870	10179201

Method EPA 8260

Analyte	**AB**	**Analyte ID**	**Method ID**
1,1,1,2-Tetrachloroethane	TX	5105	10184404
1,1,1-Trichloroethane	TX	5160	10184404
1,1,2,2-Tetrachloroethane	TX	5110	10184404
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	TX	5195	10184404
1,1,2-Trichloroethane	TX	5165	10184404
1,1-Dichloroethane	TX	4630	10184404

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Matrix: ***Solid & Chemical Materials***

1,1-Dichloroethylene	TX	4640	10184404
1,1-Dichloropropene	TX	4670	10184404
1,2,3-Trichlorobenzene	TX	5150	10184404
1,2,3-Trichloropropane	TX	5180	10184404
1,2,4-Trichlorobenzene	TX	5155	10184404
1,2,4-Trimethylbenzene	TX	5210	10184404
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10184404
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10184404
1,2-Dichlorobenzene	TX	4610	10184404
1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10184404
1,2-Dichloropropane	TX	4655	10184404
1,3,5-Trimethylbenzene	TX	5215	10184404
1,3-Dichlorobenzene	TX	4615	10184404
1,3-Dichloropropane	TX	4660	10184404
1,4-Dichlorobenzene	TX	4620	10184404
1,4-Dioxane (1,4-Diethyleneoxide)	TX	4735	10184404
1-Chlorohexane	TX	4510	10184404
1-Propanol	TX	5060	10184404
2,2-Dichloropropane	TX	4665	10184404
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10184404
2-Chloroethyl vinyl ether	TX	4500	10184404
2-Chlorotoluene	TX	4535	10184404
2-Hexanone (MBK)	TX	4860	10184404
4-Chlorotoluene	TX	4540	10184404
4-Isopropyltoluene (p-Cymene)	TX	4915	10184404
4-Methyl-2-pentanone (MIBK)	TX	4995	10184404
Acetone (2-Propanone)	TX	4315	10184404
Acetonitrile	TX	4320	10184404
Acrolein (Propenal)	TX	4325	10184404
Acrylonitrile	TX	4340	10184404

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Matrix: ***Solid & Chemical Materials***

Allyl chloride (3-Chloropropene)	TX	4355	10184404
Benzene	TX	4375	10184404
Benzyl chloride	TX	5635	10184404
Bromobenzene	TX	4385	10184404
Bromochloromethane	TX	4390	10184404
Bromodichloromethane	TX	4395	10184404
Bromoform	TX	4400	10184404
Carbon disulfide	TX	4450	10184404
Carbon tetrachloride	TX	4455	10184404
Chlorobenzene	TX	4475	10184404
Chlorodibromomethane	TX	4575	10184404
Chloroethane (Ethyl chloride)	TX	4485	10184404
Chloroform	TX	4505	10184404
Chloroprene (2-Chloro-1,3-butadiene)	TX	4525	10184404
cis-1,2-Dichloroethylene	TX	4645	10184404
cis-1,3-Dichloropropene	TX	4680	10184404
Dibromofluoromethane	TX	4590	10184404
Dibromomethane (Methylene bromide)	TX	4595	10184404
Dichlorodifluoromethane (Freon-12)	TX	4625	10184404
Diethyl ether	TX	4725	10184404
Epichlorohydrin (1-Chloro-2,3-epoxypropane)	TX	4745	10184404
Ethanol	TX	4750	10184404
Ethyl acetate	TX	4755	10184404
Ethyl methacrylate	TX	4810	10184404
Ethylbenzene	TX	4765	10184404
Ethylene oxide	TX	4795	10184404
Hexachlorobutadiene	TX	4835	10184404
Iodomethane (Methyl iodide)	TX	4870	10184404
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10184404
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10184404

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Matrix: ***Solid & Chemical Materials***

Isopropylbenzene (Cumene)	TX	4900	10184404
m+p-xylene	TX	5240	10184404
Methacrylonitrile	TX	4925	10184404
Methyl acetate	TX	4940	10184404
Methyl acrylate	TX	4945	10184404
Methyl bromide (Bromomethane)	TX	4950	10184404
Methyl chloride (Chloromethane)	TX	4960	10184404
Methyl methacrylate	TX	4990	10184404
Methyl tert-butyl ether (MTBE)	TX	5000	10184404
Methylcyclohexane	TX	4965	10184404
Methylene chloride (Dichloromethane)	TX	4975	10184404
Naphthalene	TX	5005	10184404
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10184404
n-Butylbenzene	TX	4435	10184404
n-Propylbenzene	TX	5090	10184404
o-Xylene	TX	5250	10184404
Pentachloroethane	TX	5035	10184404
Propionitrile (Ethyl cyanide)	TX	5080	10184404
Pyridine	TX	5095	10184404
sec-Butylbenzene	TX	4440	10184404
Styrene	TX	5100	10184404
tert-Butyl alcohol	TX	4420	10184404
tert-Butylbenzene	TX	4445	10184404
Tetrachloroethylene (Perchloroethylene)	TX	5115	10184404
Toluene	TX	5140	10184404
trans-1,2-Dichloroethylene	TX	4700	10184404
trans-1,3-Dichloropropylene	TX	4685	10184404
trans-1,4-Dichloro-2-butene	TX	4605	10184404
Trichloroethene (Trichloroethylene)	TX	5170	10184404
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10184404

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-19-23

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

Expiration Date: 4/30/2020

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2019

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Matrix: ***Solid & Chemical Materials***

Vinyl acetate	TX	5225	10184404
Vinyl chloride	TX	5235	10184404
Xylene (total)	TX	5260	10184404

Method EPA 8270

Analyte	AB	Analyte ID	Method ID
1,2,4,5-Tetrachlorobenzene	TX	6715	10185203
1,2,4-Trichlorobenzene	TX	5155	10185203
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10185203
1,2-Dichlorobenzene	TX	4610	10185203
1,2-Dinitrobenzene	TX	6155	10185203
1,2-Diphenylhydrazine	TX	6220	10185203
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10185203
1,3-Dichlorobenzene	TX	4615	10185203
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10185203
1,4-Dichlorobenzene	TX	4620	10185203
1,4-Dinitrobenzene	TX	6165	10185203
1,4-Naphthoquinone	TX	6420	10185203
1,4-Phenylenediamine	TX	6630	10185203
1-Chloronaphthalene	TX	5790	10185203
1-Naphthylamine	TX	6425	10185203
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10185203
2,3,4,6-Tetrachlorophenol	TX	6735	10185203
2,4,5-Trichlorophenol	TX	6835	10185203
2,4,5-Trimethylaniline	TX	6880	10185203
2,4,6-Trichlorophenol	TX	6840	10185203
2,4-Diaminotoluene	TX	5880	10185203
2,4-Dichlorophenol	TX	6000	10185203
2,4-Dimethylphenol	TX	6130	10185203
2,4-Dinitrophenol	TX	6175	10185203
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10185203

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Matrix: ***Solid & Chemical Materials***

2,6-Dichlorophenol	TX	6005	10185203
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10185203
2-Acetylaminofluorene	TX	5515	10185203
2-Chloronaphthalene	TX	5795	10185203
2-Chlorophenol	TX	5800	10185203
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10185203
2-Methylaniline (o-Toluidine)	TX	5145	10185203
2-Methylnaphthalene	TX	6385	10185203
2-Methylphenol (o-Cresol)	TX	6400	10185203
2-Naphthylamine	TX	6430	10185203
2-Nitroaniline	TX	6460	10185203
2-Nitrophenol	TX	6490	10185203
2-Picoline (2-Methylpyridine)	TX	5050	10185203
3,3'-Dichlorobenzidine	TX	5945	10185203
3,3'-Dimethylbenzidine	TX	6120	10185203
3-Methylcholanthrene	TX	6355	10185203
3-Methylphenol (m-Cresol)	TX	6405	10185203
3-Nitroaniline	TX	6465	10185203
4-Aminobiphenyl	TX	5540	10185203
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10185203
4-Chloro-3-methylphenol	TX	5700	10185203
4-Chloroaniline	TX	5745	10185203
4-Chlorophenyl phenylether	TX	5825	10185203
4-Methylphenol (p-Cresol)	TX	6410	10185203
4-Nitroaniline	TX	6470	10185203
4-Nitrophenol	TX	6500	10185203
4-Nitroquinoline-1-oxide	TX	6510	10185203
5-Nitro-o-toluidine	TX	6570	10185203
7,12-Dimethylbenz(a) anthracene	TX	6115	10185203
a-a-Dimethylphenethylamine	TX	6125	10185203

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Matrix: ***Solid & Chemical Materials***

Acenaphthene	TX	5500	10185203
Acenaphthylene	TX	5505	10185203
Acetophenone	TX	5510	10185203
Aniline	TX	5545	10185203
Anthracene	TX	5555	10185203
Aramite	TX	5560	10185203
Atrazine	TX	7065	10185203
Azinphos-methyl (Guthion)	TX	7075	10185203
Azobenzene	TX	5562	10185203
Benzenethiol (Thiophenol)	TX	6750	10185203
Benzidine	TX	5595	10185203
Benzo(a)anthracene	TX	5575	10185203
Benzo(a)pyrene	TX	5580	10185203
Benzo(b)fluoranthene	TX	5585	10185203
Benzo(e)pyrene	TX	5605	10185203
Benzo(g,h,i)perylene	TX	5590	10185203
Benzo(k)fluoranthene	TX	5600	10185203
Benzoic acid	TX	5610	10185203
Benzyl alcohol	TX	5630	10185203
Biphenyl	TX	5640	10185203
bis(2-Chloroethoxy)methane	TX	5760	10185203
bis(2-Chloroethyl) ether	TX	5765	10185203
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10185203
Butyl benzyl phthalate	TX	5670	10185203
Caprolactam	TX	7180	10185203
Carbaryl (Sevin)	TX	7195	10185203
Carbazole	TX	5680	10185203
Carbophenothion	TX	7220	10185203
Chlorobenzilate	TX	7260	10185203
Chrysene	TX	5855	10185203

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Matrix: ***Solid & Chemical Materials***

Demeton	TX	7390	10185203
Demeton-o	TX	7395	10185203
Demeton-s	TX	7385	10185203
Diallate	TX	7405	10185203
Dibenz(a,h) anthracene	TX	5895	10185203
Dibenz(a,j) acridine	TX	5900	10185203
Dibenzo(a,e) pyrene	TX	5890	10185203
Dibenzofuran	TX	5905	10185203
Dichlorovos (DDVP, Dichlorvos)	TX	8610	10185203
Diethyl phthalate	TX	6070	10185203
Dimethoate	TX	7475	10185203
Dimethyl phthalate	TX	6135	10185203
Di-n-butyl phthalate	TX	5925	10185203
Di-n-octyl phthalate	TX	6200	10185203
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10185203
Diphenylamine	TX	6205	10185203
Disulfoton	TX	8625	10185203
Ethyl methanesulfonate	TX	6260	10185203
Fluoranthene	TX	6265	10185203
Fluorene	TX	6270	10185203
Hexachlorobenzene	TX	6275	10185203
Hexachlorobutadiene	TX	4835	10185203
Hexachlorocyclopentadiene	TX	6285	10185203
Hexachloroethane	TX	4840	10185203
Hexachlorophene	TX	6290	10185203
Hexachloropropene	TX	6295	10185203
Indeno(1,2,3-cd) pyrene	TX	6315	10185203
Isodrin	TX	7725	10185203
Isophorone	TX	6320	10185203
Isosafrole	TX	6325	10185203

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Matrix: ***Solid & Chemical Materials***

Kepone	TX	7740	10185203
Malathion	TX	7770	10185203
Methapyrilene	TX	6345	10185203
Methyl methanesulfonate	TX	6375	10185203
Methyl parathion (Parathion, methyl)	TX	7825	10185203
Mevinphos	TX	7850	10185203
Naphthalene	TX	5005	10185203
Nitrobenzene	TX	5015	10185203
n-Nitrosodiethylamine	TX	6525	10185203
n-Nitrosodimethylamine	TX	6530	10185203
n-Nitrosodi-n-butylamine	TX	5025	10185203
n-Nitrosodi-n-propylamine	TX	6545	10185203
n-Nitrosodiphenylamine	TX	6535	10185203
n-Nitrosomethylethylamine	TX	6550	10185203
n-Nitrosomorpholine	TX	6555	10185203
n-Nitrosopiperidine	TX	6560	10185203
n-Nitrosopyrrolidine	TX	6565	10185203
o,o,o-Triethyl phosphorothioate	TX	8290	10185203
o-Anisidine	TX	5550	10185203
Parathion, ethyl	TX	7955	10185203
p-Cresidine	TX	5860	10185203
Pentachlorobenzene	TX	6590	10185203
Pentachloronitrobenzene (PCNB)	TX	6600	10185203
Pentachlorophenol	TX	6605	10185203
Phenacetin	TX	6610	10185203
Phenanthrene	TX	6615	10185203
Phenol	TX	6625	10185203
Phorate	TX	7985	10185203
Pronamide (Kerb)	TX	6650	10185203
Pyrene	TX	6665	10185203

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Matrix: ***Solid & Chemical Materials***

Pyridine	TX	5095	10185203
Quinoline	TX	6670	10185203
Safrole	TX	6685	10185203
Sulfotepp	TX	8155	10185203
Terbufos	TX	8185	10185203
Tetrachlorvinphos (Stirophos, Gardona)	TX	8197	10185203
Thionazin (Zinophos)	TX	8235	10185203
Toluene diisocyanate	TX	6775	10185203

Method EPA 8290

Analyte	**AB**	**Analyte ID**	**Method ID**
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10187209
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10187209
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10187209
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10187209
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10187209
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10187209
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10187209
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10187209
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10187209
1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10187209
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10187209
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10187209
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10187209
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10187209
2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10187209
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10187209
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10187209
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10187209
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10187209
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10187209

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Matrix: ***Solid & Chemical Materials***

Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10187209
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10187209
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10187209
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10187209
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10187209

Method EPA 8316

Analyte	**AB**	**Analyte ID**	**Method ID**
Acrylamide	TX	4330	10188202

Method EPA 8330

Analyte	**AB**	**Analyte ID**	**Method ID**
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10189807
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10189807
2,4,6-Trinitrotoluene (2,4,6-TNT)	TX	9651	10189807
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10189807
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10189807
2-Amino-4,6-dinitrotoluene (2-am-dnt)	TX	9303	10189807
2-Nitrotoluene	TX	9507	10189807
3-Nitrotoluene	TX	9510	10189807
4-Amino-2,6-dinitrotoluene (4-am-dnt)	TX	9306	10189807
4-Nitrotoluene	TX	9513	10189807
Methyl-2,4,6-trinitrophenylnitramine (tetryl)	TX	6415	10189807
Nitrobenzene	TX	5015	10189807
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	TX	9522	10189807
RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine)	TX	9432	10189807

Method EPA 9014

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	10193803
Total cyanide	TX	1645	10193803

Method EPA 9038

Analyte	**AB**	**Analyte ID**	**Method ID**
Sulfate	TX	2000	10196608

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Matrix: ***Solid & Chemical Materials***

Method EPA 9040

Analyte	AB	Analyte ID	Method ID
Corrosivity	TX	1615	10197203
pH	TX	1900	10196802

Method EPA 9045

Analyte	AB	Analyte ID	Method ID
Corrosivity	TX	1615	10197805
pH	TX	1900	10197805

Method EPA 9050

Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	10198604

Method EPA 9056

Analyte	AB	Analyte ID	Method ID
Bromide	TX	1540	10199209
Chloride	TX	1575	10199209
Fluoride	TX	1730	10199209
Nitrate as N	TX	1810	10199209
Nitrate-nitrite	TX	1820	10199209
Nitrite as N	TX	1840	10199209
Orthophosphate as P	TX	1870	10199209
Sulfate	TX	2000	10199209

Method EPA 9060

Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	10200201

Method EPA 9065

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200405

Method EPA 9071

Analyte	AB	Analyte ID	Method ID
n-Hexane Extractable Material (HEM) (O&G)	TX	1803	10201204

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Matrix: ***Solid & Chemical Materials***

Method	Analyte	AB	Analyte ID	Method ID
EPA 9095	Paint Filter Liquids Test	TX	10312	10204009
EPA 9250	Chloride	TX	1575	10207202
SM 2320 B	Alkalinity as CaCO3	TX	1505	20045005
SM 2510 B	Conductivity	TX	1610	20048004
SM 2540 G	Residue-total (total solids)	TX	1950	20005203
SSA/ASA Part 3:34	Carbon, organic (Walkley-Black)	TX	10340	SSA/ASA Pt 3:34
TCEQ 1005	Total Petroleum Hydrocarbons (TPH)	TX	2050	90019208

10450 Stancliff Rd. Suite 210
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T: +1 281 530 5656
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February 19, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20020447**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 17 sample(s) on Feb 11, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20020447**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20020447**	

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/19/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020447				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150597,150608,R356459				
#[1]	A[2]	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			1
		Were MS/MSD RPDs within laboratory QC limits?		X			2
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				3
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/19/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020447				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150597,150608,R356459				
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 02/19/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20020447
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 150597,150608,R356459

ER#[5]	Description
1	Batch 150609, Semivolatile Organics Method SW8270, sample HS20020449-01, MS and MSD were performed on unrelated sample.
2	Batch 150609, Semivolatile Organics Method SW8270, sample HS20020449-01, MS/MSD RPD is for an unrelated sample.
3	Batch 150597, Semivolatile Organics Method SW8270, samples SO-1620-SSO03(0-2)-20200210, SO-1620-SSO07(0-2)-20200210 and SO-1620-SSO08(0-2)-20200210: the GCMS semi-volatile extract of the samples were run at a dilution due to a high level of matrix interference.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20020447

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20020447-01	SO-1620-SSO01(0-2)-20200210	Soil		10-Feb-2020 13:10	11-Feb-2020 14:40	☐
HS20020447-02	SO-1620-SSO03(0-2)-20200210	Soil		10-Feb-2020 13:40	11-Feb-2020 14:40	☐
HS20020447-03	SO-1620-SSO04(0-2)-20200210	Soil		10-Feb-2020 13:50	11-Feb-2020 14:40	☐
HS20020447-04	SO-1620-SSO06(0-2)-20200210	Soil		10-Feb-2020 14:00	11-Feb-2020 14:40	☐
HS20020447-05	SO-1620-SSO07(0-2)-20200210	Soil		10-Feb-2020 14:10	11-Feb-2020 14:40	☐
HS20020447-06	SO-1620-SSO08(0-2)-20200210	Soil		10-Feb-2020 14:20	11-Feb-2020 14:40	☐
HS20020447-07	SO-1620-SSO09(0-2)-20200210	Soil		10-Feb-2020 14:30	11-Feb-2020 14:40	☐
HS20020447-08	SO-1620-SSO10(0-2)-20200210	Soil		10-Feb-2020 14:45	11-Feb-2020 14:40	☐
HS20020447-09	SO-1620-SSO05(0-2)-20200211	Soil		11-Feb-2020 09:25	11-Feb-2020 14:40	☐
HS20020447-10	SO-1620-SSO11(0-2)-20200211	Soil		11-Feb-2020 09:40	11-Feb-2020 14:40	☐
HS20020447-11	SO-1620-SSO12(0-2)-20200211	Soil		11-Feb-2020 09:45	11-Feb-2020 14:40	☐
HS20020447-12	SO-1620-SSO13(0-2)-20200211	Soil		11-Feb-2020 09:50	11-Feb-2020 14:40	☐
HS20020447-13	SO-1620-SSO14(0-2)-20200211	Soil		11-Feb-2020 10:00	11-Feb-2020 14:40	☐
HS20020447-14	SO-1620-SSO15(0-2)-20200211	Soil		11-Feb-2020 10:19	11-Feb-2020 14:40	☐
HS20020447-15	SO-1620-SSO02(0-2)-20200211	Soil		11-Feb-2020 11:00	11-Feb-2020 14:40	☐
HS20020447-16	SO-1620-FD01-20200210	Soil		10-Feb-2020 00:00	11-Feb-2020 14:40	☐
HS20020447-17	SO-1620-FD02-20200211	Soil		11-Feb-2020 00:00	11-Feb-2020 14:40	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO01(0-2)-20200210
Collection Date: 10-Feb-2020 13:10

ANALYTICAL REPORT
WorkOrder:HS20020447
Lab ID:HS20020447-01
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 13-Feb-2020		Analyst: GEY
Pentachlorophenol	**0.20**		**0.0038**	**0.0076**	**mg/Kg-dry**	1	13-Feb-2020 21:07
Surr: 2,4,6-Tribromophenol	*67.2*			*36-126*	*%REC*	*1*	*13-Feb-2020 21:07*
Surr: 2-Fluorobiphenyl	*58.5*			*43-125*	*%REC*	*1*	*13-Feb-2020 21:07*
Surr: 2-Fluorophenol	*56.5*			*37-125*	*%REC*	*1*	*13-Feb-2020 21:07*
Surr: 4-Terphenyl-d14	*67.2*			*32-125*	*%REC*	*1*	*13-Feb-2020 21:07*
Surr: Nitrobenzene-d5	*52.2*			*37-125*	*%REC*	*1*	*13-Feb-2020 21:07*
Surr: Phenol-d6	*59.5*			*40-125*	*%REC*	*1*	*13-Feb-2020 21:07*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**13.4**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO03(0-2)-20200210
Collection Date: 10-Feb-2020 13:40

ANALYTICAL REPORT
WorkOrder:HS20020447
Lab ID:HS20020447-02
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 13-Feb-2020		Analyst: GEY
Pentachlorophenol	**3.7**		**0.074**	**0.15**	**mg/Kg-dry**	20	14-Feb-2020 13:44
Surr: 2,4,6-Tribromophenol	*89.2*			*36-126*	*%REC*	*20*	*14-Feb-2020 13:44*
Surr: 2-Fluorobiphenyl	*72.4*			*43-125*	*%REC*	*20*	*14-Feb-2020 13:44*
Surr: 2-Fluorophenol	*48.7*			*37-125*	*%REC*	*20*	*14-Feb-2020 13:44*
Surr: 4-Terphenyl-d14	*90.5*			*32-125*	*%REC*	*20*	*14-Feb-2020 13:44*
Surr: Nitrobenzene-d5	*43.8*			*37-125*	*%REC*	*20*	*14-Feb-2020 13:44*
Surr: Phenol-d6	*52.9*			*40-125*	*%REC*	*20*	*14-Feb-2020 13:44*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**10.9**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO04(0-2)-20200210
Collection Date: 10-Feb-2020 13:50

ANALYTICAL REPORT
WorkOrder:HS20020447
Lab ID:HS20020447-03
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 13-Feb-2020		Analyst: GEY
Pentachlorophenol	**0.13**		**0.0036**	**0.0072**	**mg/Kg-dry**	1	13-Feb-2020 21:45
Surr: 2,4,6-Tribromophenol	*81.4*			*36-126*	*%REC*	*1*	*13-Feb-2020 21:45*
Surr: 2-Fluorobiphenyl	*76.4*			*43-125*	*%REC*	*1*	*13-Feb-2020 21:45*
Surr: 2-Fluorophenol	*61.7*			*37-125*	*%REC*	*1*	*13-Feb-2020 21:45*
Surr: 4-Terphenyl-d14	*79.9*			*32-125*	*%REC*	*1*	*13-Feb-2020 21:45*
Surr: Nitrobenzene-d5	*52.4*			*37-125*	*%REC*	*1*	*13-Feb-2020 21:45*
Surr: Phenol-d6	*61.1*			*40-125*	*%REC*	*1*	*13-Feb-2020 21:45*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**8.75**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO06(0-2)-20200210
Collection Date: 10-Feb-2020 14:00

ANALYTICAL REPORT
WorkOrder:HS20020447
Lab ID:HS20020447-04
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 13-Feb-2020		Analyst: GEY
Pentachlorophenol	**0.26**		**0.0039**	**0.0078**	**mg/Kg-dry**	1	13-Feb-2020 22:04
Surr: 2,4,6-Tribromophenol	*56.6*			*36-126*	*%REC*	*1*	*13-Feb-2020 22:04*
Surr: 2-Fluorobiphenyl	*58.8*			*43-125*	*%REC*	*1*	*13-Feb-2020 22:04*
Surr: 2-Fluorophenol	*39.0*			*37-125*	*%REC*	*1*	*13-Feb-2020 22:04*
Surr: 4-Terphenyl-d14	*64.6*			*32-125*	*%REC*	*1*	*13-Feb-2020 22:04*
Surr: Nitrobenzene-d5	*58.3*			*37-125*	*%REC*	*1*	*13-Feb-2020 22:04*
Surr: Phenol-d6	*44.1*			*40-125*	*%REC*	*1*	*13-Feb-2020 22:04*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**15.6**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO07(0-2)-20200210
Collection Date: 10-Feb-2020 14:10

ANALYTICAL REPORT
WorkOrder:HS20020447
Lab ID:HS20020447-05
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 13-Feb-2020		Analyst: GEY
Pentachlorophenol	**6.7**		**0.077**	**0.15**	**mg/Kg-dry**	20	14-Feb-2020 14:03
Surr: 2,4,6-Tribromophenol	*109*			*36-126*	*%REC*	*20*	*14-Feb-2020 14:03*
Surr: 2-Fluorobiphenyl	*98.8*			*43-125*	*%REC*	*20*	*14-Feb-2020 14:03*
Surr: 2-Fluorophenol	*78.9*			*37-125*	*%REC*	*20*	*14-Feb-2020 14:03*
Surr: 4-Terphenyl-d14	*114*			*32-125*	*%REC*	*20*	*14-Feb-2020 14:03*
Surr: Nitrobenzene-d5	*63.9*			*37-125*	*%REC*	*20*	*14-Feb-2020 14:03*
Surr: Phenol-d6	*65.5*			*40-125*	*%REC*	*20*	*14-Feb-2020 14:03*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**15.7**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO08(0-2)-20200210
Collection Date: 10-Feb-2020 14:20

ANALYTICAL REPORT
WorkOrder:HS20020447
Lab ID:HS20020447-06
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 13-Feb-2020		Analyst: GEY
Pentachlorophenol	**13**		**0.20**	**0.39**	**mg/Kg-dry**	50	14-Feb-2020 14:22
Surr: 2,4,6-Tribromophenol	*113*			*36-126*	*%REC*	*50*	*14-Feb-2020 14:22*
Surr: 2-Fluorobiphenyl	*95.1*			*43-125*	*%REC*	*50*	*14-Feb-2020 14:22*
Surr: 2-Fluorophenol	*67.8*			*37-125*	*%REC*	*50*	*14-Feb-2020 14:22*
Surr: 4-Terphenyl-d14	*34.1*			*32-125*	*%REC*	*50*	*14-Feb-2020 14:22*
Surr: Nitrobenzene-d5	*57.8*			*37-125*	*%REC*	*50*	*14-Feb-2020 14:22*
Surr: Phenol-d6	*66.1*			*40-125*	*%REC*	*50*	*14-Feb-2020 14:22*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**16.9**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO09(0-2)-20200210
Collection Date: 10-Feb-2020 14:30

ANALYTICAL REPORT
WorkOrder:HS20020447
Lab ID:HS20020447-07
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 13-Feb-2020		Analyst: GEY
Pentachlorophenol	**0.21**		**0.0040**	**0.0080**	**mg/Kg-dry**	1	13-Feb-2020 23:01
Surr: 2,4,6-Tribromophenol	*69.0*			*36-126*	*%REC*	*1*	*13-Feb-2020 23:01*
Surr: 2-Fluorobiphenyl	*72.1*			*43-125*	*%REC*	*1*	*13-Feb-2020 23:01*
Surr: 2-Fluorophenol	*60.1*			*37-125*	*%REC*	*1*	*13-Feb-2020 23:01*
Surr: 4-Terphenyl-d14	*74.1*			*32-125*	*%REC*	*1*	*13-Feb-2020 23:01*
Surr: Nitrobenzene-d5	*41.9*			*37-125*	*%REC*	*1*	*13-Feb-2020 23:01*
Surr: Phenol-d6	*47.6*			*40-125*	*%REC*	*1*	*13-Feb-2020 23:01*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**18.9**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO10(0-2)-20200210
Collection Date: 10-Feb-2020 14:45

ANALYTICAL REPORT
WorkOrder:HS20020447
Lab ID:HS20020447-08
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 13-Feb-2020		Analyst: LG
Pentachlorophenol	**0.13**		**0.0040**	**0.0080**	**mg/Kg-dry**	1	17-Feb-2020 13:25
Surr: 2,4,6-Tribromophenol	*88.3*			*36-126*	*%REC*	*1*	*17-Feb-2020 13:25*
Surr: 2-Fluorobiphenyl	*75.1*			*43-125*	*%REC*	*1*	*17-Feb-2020 13:25*
Surr: 2-Fluorophenol	*64.2*			*37-125*	*%REC*	*1*	*17-Feb-2020 13:25*
Surr: 4-Terphenyl-d14	*86.1*			*32-125*	*%REC*	*1*	*17-Feb-2020 13:25*
Surr: Nitrobenzene-d5	*58.8*			*37-125*	*%REC*	*1*	*17-Feb-2020 13:25*
Surr: Phenol-d6	*60.7*			*40-125*	*%REC*	*1*	*17-Feb-2020 13:25*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**17.4**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO05(0-2)-20200211
Collection Date: 11-Feb-2020 09:25

ANALYTICAL REPORT
WorkOrder:HS20020447
Lab ID:HS20020447-09
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 13-Feb-2020		Analyst: LG
Pentachlorophenol	**0.062**		**0.0038**	**0.0077**	**mg/Kg-dry**	1	17-Feb-2020 13:44
Surr: 2,4,6-Tribromophenol	*109*			*36-126*	*%REC*	*1*	*17-Feb-2020 13:44*
Surr: 2-Fluorobiphenyl	*88.8*			*43-125*	*%REC*	*1*	*17-Feb-2020 13:44*
Surr: 2-Fluorophenol	*72.8*			*37-125*	*%REC*	*1*	*17-Feb-2020 13:44*
Surr: 4-Terphenyl-d14	*97.9*			*32-125*	*%REC*	*1*	*17-Feb-2020 13:44*
Surr: Nitrobenzene-d5	*73.6*			*37-125*	*%REC*	*1*	*17-Feb-2020 13:44*
Surr: Phenol-d6	*69.6*			*40-125*	*%REC*	*1*	*17-Feb-2020 13:44*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**14.8**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO11(0-2)-20200211
Collection Date: 11-Feb-2020 09:40

ANALYTICAL REPORT
WorkOrder:HS20020447
Lab ID:HS20020447-10
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 13-Feb-2020		Analyst: LG
Pentachlorophenol	**0.22**		**0.0035**	**0.0071**	**mg/Kg-dry**	1	17-Feb-2020 14:03
Surr: 2,4,6-Tribromophenol	*94.7*			*36-126*	*%REC*	*1*	*17-Feb-2020 14:03*
Surr: 2-Fluorobiphenyl	*75.6*			*43-125*	*%REC*	*1*	*17-Feb-2020 14:03*
Surr: 2-Fluorophenol	*69.1*			*37-125*	*%REC*	*1*	*17-Feb-2020 14:03*
Surr: 4-Terphenyl-d14	*84.4*			*32-125*	*%REC*	*1*	*17-Feb-2020 14:03*
Surr: Nitrobenzene-d5	*67.4*			*37-125*	*%REC*	*1*	*17-Feb-2020 14:03*
Surr: Phenol-d6	*65.6*			*40-125*	*%REC*	*1*	*17-Feb-2020 14:03*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**7.94**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO12(0-2)-20200211
Collection Date: 11-Feb-2020 09:45

ANALYTICAL REPORT
WorkOrder:HS20020447
Lab ID:HS20020447-11
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 13-Feb-2020		Analyst: LG
Pentachlorophenol	**0.0059**	J	**0.0038**	**0.0077**	**mg/Kg-dry**	1	17-Feb-2020 14:22
Surr: 2,4,6-Tribromophenol	*99.2*			*36-126*	*%REC*	*1*	*17-Feb-2020 14:22*
Surr: 2-Fluorobiphenyl	*70.9*			*43-125*	*%REC*	*1*	*17-Feb-2020 14:22*
Surr: 2-Fluorophenol	*72.3*			*37-125*	*%REC*	*1*	*17-Feb-2020 14:22*
Surr: 4-Terphenyl-d14	*88.9*			*32-125*	*%REC*	*1*	*17-Feb-2020 14:22*
Surr: Nitrobenzene-d5	*71.2*			*37-125*	*%REC*	*1*	*17-Feb-2020 14:22*
Surr: Phenol-d6	*64.8*			*40-125*	*%REC*	*1*	*17-Feb-2020 14:22*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**14.7**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO13(0-2)-20200211
Collection Date: 11-Feb-2020 09:50

ANALYTICAL REPORT
WorkOrder:HS20020447
Lab ID:HS20020447-12
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 13-Feb-2020		Analyst: LG
Pentachlorophenol	**0.090**		**0.0036**	**0.0072**	**mg/Kg-dry**	1	17-Feb-2020 14:41
Surr: 2,4,6-Tribromophenol	*89.4*			*36-126*	*%REC*	*1*	*17-Feb-2020 14:41*
Surr: 2-Fluorobiphenyl	*75.2*			*43-125*	*%REC*	*1*	*17-Feb-2020 14:41*
Surr: 2-Fluorophenol	*65.6*			*37-125*	*%REC*	*1*	*17-Feb-2020 14:41*
Surr: 4-Terphenyl-d14	*77.5*			*32-125*	*%REC*	*1*	*17-Feb-2020 14:41*
Surr: Nitrobenzene-d5	*61.9*			*37-125*	*%REC*	*1*	*17-Feb-2020 14:41*
Surr: Phenol-d6	*57.5*			*40-125*	*%REC*	*1*	*17-Feb-2020 14:41*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**8.83**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO14(0-2)-20200211
Collection Date: 11-Feb-2020 10:00

ANALYTICAL REPORT
WorkOrder:HS20020447
Lab ID:HS20020447-13
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 13-Feb-2020		Analyst: LG
Pentachlorophenol		U	0.0041	0.0082	mg/Kg-dry	1	17-Feb-2020 15:00
Surr: 2,4,6-Tribromophenol	*91.8*			*36-126*	*%REC*	*1*	*17-Feb-2020 15:00*
Surr: 2-Fluorobiphenyl	*86.2*			*43-125*	*%REC*	*1*	*17-Feb-2020 15:00*
Surr: 2-Fluorophenol	*67.2*			*37-125*	*%REC*	*1*	*17-Feb-2020 15:00*
Surr: 4-Terphenyl-d14	*87.8*			*32-125*	*%REC*	*1*	*17-Feb-2020 15:00*
Surr: Nitrobenzene-d5	*65.4*			*37-125*	*%REC*	*1*	*17-Feb-2020 15:00*
Surr: Phenol-d6	*64.3*			*40-125*	*%REC*	*1*	*17-Feb-2020 15:00*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**19.4**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO15(0-2)-20200211
Collection Date: 11-Feb-2020 10:19

ANALYTICAL REPORT
WorkOrder:HS20020447
Lab ID:HS20020447-14
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 13-Feb-2020		Analyst: LG
Pentachlorophenol		U	0.0040	0.0080	mg/Kg-dry	1	17-Feb-2020 15:20
Surr: 2,4,6-Tribromophenol	*62.2*			*36-126*	*%REC*	*1*	*17-Feb-2020 15:20*
Surr: 2-Fluorobiphenyl	*67.1*			*43-125*	*%REC*	*1*	*17-Feb-2020 15:20*
Surr: 2-Fluorophenol	*55.0*			*37-125*	*%REC*	*1*	*17-Feb-2020 15:20*
Surr: 4-Terphenyl-d14	*66.3*			*32-125*	*%REC*	*1*	*17-Feb-2020 15:20*
Surr: Nitrobenzene-d5	*47.6*			*37-125*	*%REC*	*1*	*17-Feb-2020 15:20*
Surr: Phenol-d6	*49.9*			*40-125*	*%REC*	*1*	*17-Feb-2020 15:20*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**18.2**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO02(0-2)-20200211
Collection Date: 11-Feb-2020 11:00

ANALYTICAL REPORT
WorkOrder:HS20020447
Lab ID:HS20020447-15
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 13-Feb-2020		Analyst: LG
Pentachlorophenol	**0.032**		**0.0038**	**0.0077**	**mg/Kg-dry**	1	17-Feb-2020 15:39
Surr: 2,4,6-Tribromophenol	*91.7*			*36-126*	*%REC*	*1*	*17-Feb-2020 15:39*
Surr: 2-Fluorobiphenyl	*71.6*			*43-125*	*%REC*	*1*	*17-Feb-2020 15:39*
Surr: 2-Fluorophenol	*58.4*			*37-125*	*%REC*	*1*	*17-Feb-2020 15:39*
Surr: 4-Terphenyl-d14	*68.4*			*32-125*	*%REC*	*1*	*17-Feb-2020 15:39*
Surr: Nitrobenzene-d5	*56.2*			*37-125*	*%REC*	*1*	*17-Feb-2020 15:39*
Surr: Phenol-d6	*58.3*			*40-125*	*%REC*	*1*	*17-Feb-2020 15:39*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**14.9**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-FD01-20200210
Collection Date: 10-Feb-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20020447
Lab ID:HS20020447-16
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 13-Feb-2020		Analyst: LG
Pentachlorophenol	**3.9**		**0.042**	**0.083**	**mg/Kg-dry**	10	17-Feb-2020 16:36
Surr: 2,4,6-Tribromophenol	*112*			*36-126*	*%REC*	*10*	*17-Feb-2020 16:36*
Surr: 2-Fluorobiphenyl	*103*			*43-125*	*%REC*	*10*	*17-Feb-2020 16:36*
Surr: 2-Fluorophenol	*78.1*			*37-125*	*%REC*	*10*	*17-Feb-2020 16:36*
Surr: 4-Terphenyl-d14	*102*			*32-125*	*%REC*	*10*	*17-Feb-2020 16:36*
Surr: Nitrobenzene-d5	*70.3*			*37-125*	*%REC*	*10*	*17-Feb-2020 16:36*
Surr: Phenol-d6	*86.3*			*40-125*	*%REC*	*10*	*17-Feb-2020 16:36*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**22.2**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-FD02-20200211
Collection Date: 11-Feb-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20020447
Lab ID:HS20020447-17
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 13-Feb-2020		Analyst: LG
Pentachlorophenol		U	0.0041	0.0083	mg/Kg-dry	1	17-Feb-2020 16:17
Surr: 2,4,6-Tribromophenol	*104*			*36-126*	*%REC*	*1*	*17-Feb-2020 16:17*
Surr: 2-Fluorobiphenyl	*86.2*			*43-125*	*%REC*	*1*	*17-Feb-2020 16:17*
Surr: 2-Fluorophenol	*68.9*			*37-125*	*%REC*	*1*	*17-Feb-2020 16:17*
Surr: 4-Terphenyl-d14	*93.7*			*32-125*	*%REC*	*1*	*17-Feb-2020 16:17*
Surr: Nitrobenzene-d5	*74.4*			*37-125*	*%REC*	*1*	*17-Feb-2020 16:17*
Surr: Phenol-d6	*55.5*			*40-125*	*%REC*	*1*	*17-Feb-2020 16:17*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**20.7**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020447

Batch ID: 150597 **Start Date:** 13 Feb 2020 11:26 **End Date:** 13 Feb 2020 16:00
Method: SV SOXHLET EXTRACT-LOWLEVEL-SW3541 **Prep Code:** 3541_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20020447-01		30.19 (g)	1 (mL)	0.03312
HS20020447-02		30.18 (g)	1 (mL)	0.03313
HS20020447-03		30.02 (g)	1 (mL)	0.03331
HS20020447-04		30.12 (g)	1 (mL)	0.0332
HS20020447-05		30.45 (g)	1 (mL)	0.03284
HS20020447-06		30.32 (g)	1 (mL)	0.03298
HS20020447-07		30.37 (g)	1 (mL)	0.03293

Batch ID: 150608 **Start Date:** 13 Feb 2020 13:39 **End Date:** 13 Feb 2020 18:00
Method: SV SOXHLET EXTRACT-LOWLEVEL-SW3541 **Prep Code:** 3541_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20020447-08		30.05 (g)	1 (mL)	0.03328
HS20020447-09		30.32 (g)	1 (mL)	0.03298
HS20020447-10		30.32 (g)	1 (mL)	0.03298
HS20020447-11		30.19 (g)	1 (mL)	0.03312
HS20020447-12		30.11 (g)	1 (mL)	0.03321
HS20020447-13		30.02 (g)	1 (mL)	0.03331
HS20020447-14		30.12 (g)	1 (mL)	0.0332
HS20020447-15		30.37 (g)	1 (mL)	0.03293
HS20020447-16		30.48 (g)	1 (mL)	0.03281
HS20020447-17		30.25 (g)	1 (mL)	0.03306

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020447

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 150597 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Soil	
HS20020447-01	SO-1620-SSO01(0-2)-20200210	10 Feb 2020 13:10		13 Feb 2020 11:26	13 Feb 2020 21:07	1
HS20020447-02	SO-1620-SSO03(0-2)-20200210	10 Feb 2020 13:40		13 Feb 2020 11:26	14 Feb 2020 13:44	20
HS20020447-03	SO-1620-SSO04(0-2)-20200210	10 Feb 2020 13:50		13 Feb 2020 11:26	13 Feb 2020 21:45	1
HS20020447-04	SO-1620-SSO06(0-2)-20200210	10 Feb 2020 14:00		13 Feb 2020 11:26	13 Feb 2020 22:04	1
HS20020447-05	SO-1620-SSO07(0-2)-20200210	10 Feb 2020 14:10		13 Feb 2020 11:26	14 Feb 2020 14:03	20
HS20020447-06	SO-1620-SSO08(0-2)-20200210	10 Feb 2020 14:20		13 Feb 2020 11:26	14 Feb 2020 14:22	50
HS20020447-07	SO-1620-SSO09(0-2)-20200210	10 Feb 2020 14:30		13 Feb 2020 11:26	13 Feb 2020 23:01	1
Batch ID: 150608 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Soil	
HS20020447-08	SO-1620-SSO10(0-2)-20200210	10 Feb 2020 14:45		13 Feb 2020 13:39	17 Feb 2020 13:25	1
HS20020447-09	SO-1620-SSO05(0-2)-20200211	11 Feb 2020 09:25		13 Feb 2020 13:39	17 Feb 2020 13:44	1
HS20020447-10	SO-1620-SSO11(0-2)-20200211	11 Feb 2020 09:40		13 Feb 2020 13:39	17 Feb 2020 14:03	1
HS20020447-11	SO-1620-SSO12(0-2)-20200211	11 Feb 2020 09:45		13 Feb 2020 13:39	17 Feb 2020 14:22	1
HS20020447-12	SO-1620-SSO13(0-2)-20200211	11 Feb 2020 09:50		13 Feb 2020 13:39	17 Feb 2020 14:41	1
HS20020447-13	SO-1620-SSO14(0-2)-20200211	11 Feb 2020 10:00		13 Feb 2020 13:39	17 Feb 2020 15:00	1
HS20020447-14	SO-1620-SSO15(0-2)-20200211	11 Feb 2020 10:19		13 Feb 2020 13:39	17 Feb 2020 15:20	1
HS20020447-15	SO-1620-SSO02(0-2)-20200211	11 Feb 2020 11:00		13 Feb 2020 13:39	17 Feb 2020 15:39	1
HS20020447-16	SO-1620-FD01-20200210	10 Feb 2020 00:00		13 Feb 2020 13:39	17 Feb 2020 16:36	10
HS20020447-17	SO-1620-FD02-20200211	11 Feb 2020 00:00		13 Feb 2020 13:39	17 Feb 2020 16:17	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020447

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R356459 (0)	**Test Name :** MOISTURE - ASTM D2216				**Matrix:** Soil	
HS20020447-01	SO-1620-SSO01(0-2)-20200210	10 Feb 2020 13:10			17 Feb 2020 10:27	1
HS20020447-02	SO-1620-SSO03(0-2)-20200210	10 Feb 2020 13:40			17 Feb 2020 10:27	1
HS20020447-03	SO-1620-SSO04(0-2)-20200210	10 Feb 2020 13:50			17 Feb 2020 10:27	1
HS20020447-04	SO-1620-SSO06(0-2)-20200210	10 Feb 2020 14:00			17 Feb 2020 10:27	1
HS20020447-05	SO-1620-SSO07(0-2)-20200210	10 Feb 2020 14:10			17 Feb 2020 10:27	1
HS20020447-06	SO-1620-SSO08(0-2)-20200210	10 Feb 2020 14:20			17 Feb 2020 10:27	1
HS20020447-07	SO-1620-SSO09(0-2)-20200210	10 Feb 2020 14:30			17 Feb 2020 10:27	1
HS20020447-08	SO-1620-SSO10(0-2)-20200210	10 Feb 2020 14:45			17 Feb 2020 10:27	1
HS20020447-09	SO-1620-SSO05(0-2)-20200211	11 Feb 2020 09:25			17 Feb 2020 10:27	1
HS20020447-10	SO-1620-SSO11(0-2)-20200211	11 Feb 2020 09:40			17 Feb 2020 10:27	1
HS20020447-11	SO-1620-SSO12(0-2)-20200211	11 Feb 2020 09:45			17 Feb 2020 10:27	1
HS20020447-12	SO-1620-SSO13(0-2)-20200211	11 Feb 2020 09:50			17 Feb 2020 10:27	1
HS20020447-13	SO-1620-SSO14(0-2)-20200211	11 Feb 2020 10:00			17 Feb 2020 10:27	1
HS20020447-14	SO-1620-SSO15(0-2)-20200211	11 Feb 2020 10:19			17 Feb 2020 10:27	1
HS20020447-15	SO-1620-SSO02(0-2)-20200211	11 Feb 2020 11:00			17 Feb 2020 10:27	1
HS20020447-16	SO-1620-FD01-20200210	10 Feb 2020 00:00			17 Feb 2020 10:27	1
HS20020447-17	SO-1620-FD02-20200211	11 Feb 2020 00:00			17 Feb 2020 10:27	1

WorkOrder: HS20020447
InstrumentID: SV-7
Test Code: 8270_LOW_S
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Pentachlorophenol	87-86-5	0.0033	0.0025	0.0033	0.0066
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	2-Fluorophenol	367-12-4	0	0	0	0
S	4-Terphenyl-d14	1718-51-0	0	0	0	0
S	Nitrobenzene-d5	4165-60-0	0	0	0	0
S	Phenol-d6	13127-88-3	0	0	0	0

WorkOrder: HS20020447
InstrumentID: SV-6
Test Code: 8270_LOW_S
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Pentachlorophenol	87-86-5	0.0033	0.00021	0.0033	0.0066
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	2-Fluorophenol	367-12-4	0	0	0	0
S	4-Terphenyl-d14	1718-51-0	0	0	0	0
S	Nitrobenzene-d5	4165-60-0	0	0	0	0
S	Phenol-d6	13127-88-3	0	0	0	0

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020447

QC BATCH REPORT

Batch ID: 150597 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-150597** Units: **ug/Kg** Analysis Date: **13-Feb-2020 16:22**
Client ID: Run ID: **SV-7_356280** SeqNo: **5473119** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	U	6.6								
Surr: 2,4,6-Tribromophenol	*111*	*0*	*167*	*0*	*66.5*	*36 - 126*				
Surr: 2-Fluorobiphenyl	*128.7*	*0*	*167*	*0*	*77.1*	*43 - 125*				
Surr: 2-Fluorophenol	*91.39*	*0*	*167*	*0*	*54.7*	*37 - 125*				
Surr: 4-Terphenyl-d14	*146*	*0*	*167*	*0*	*87.4*	*32 - 125*				
Surr: Nitrobenzene-d5	*119.2*	*0*	*167*	*0*	*71.4*	*37 - 125*				
Surr: Phenol-d6	*99.27*	*0*	*167*	*0*	*59.4*	*40 - 125*				

LCS Sample ID: **LCS-150597** Units: **ug/Kg** Analysis Date: **13-Feb-2020 16:41**
Client ID: Run ID: **SV-7_356280** SeqNo: **5473120** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	49	6.6	167	0	29.3	23 - 136				
Surr: 2,4,6-Tribromophenol	*105.5*	*0*	*167*	*0*	*63.2*	*36 - 126*				
Surr: 2-Fluorobiphenyl	*86.63*	*0*	*167*	*0*	*51.9*	*43 - 125*				
Surr: 2-Fluorophenol	*75.53*	*0*	*167*	*0*	*45.2*	*37 - 125*				
Surr: 4-Terphenyl-d14	*109.5*	*0*	*167*	*0*	*65.5*	*32 - 125*				
Surr: Nitrobenzene-d5	*117.4*	*0*	*167*	*0*	*70.3*	*37 - 125*				
Surr: Phenol-d6	*75*	*0*	*167*	*0*	*44.9*	*40 - 125*				

MS Sample ID: **HS20020501-02MS** Units: **ug/Kg** Analysis Date: **14-Feb-2020 12:00**
Client ID: Run ID: **SV-7_356313** SeqNo: **5473790** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	77.31	6.6	166.6	0	46.4	23 - 136				
Surr: 2,4,6-Tribromophenol	*148.1*	*0*	*166.6*	*0*	*88.9*	*36 - 126*				
Surr: 2-Fluorobiphenyl	*147.3*	*0*	*166.6*	*0*	*88.5*	*43 - 125*				
Surr: 2-Fluorophenol	*77.89*	*0*	*166.6*	*0*	*46.8*	*37 - 125*				
Surr: 4-Terphenyl-d14	*144.9*	*0*	*166.6*	*0*	*87.0*	*32 - 125*				
Surr: Nitrobenzene-d5	*95.46*	*0*	*166.6*	*0*	*57.3*	*37 - 125*				
Surr: Phenol-d6	*86.77*	*0*	*166.6*	*0*	*52.1*	*40 - 125*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020447

QC BATCH REPORT

Batch ID: 150597 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MSD Sample ID: **HS20020501-02MSD** Units: **ug/Kg** Analysis Date: **13-Feb-2020 19:13**
Client ID: Run ID: **SV-7_356280** SeqNo: **5473127** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Pentachlorophenol	94.05	6.6	166.4	0	56.5	23 - 136	77.31	19.5	30	
Surr: 2,4,6-Tribromophenol	*134.5*	*0*	*166.4*	*0*	*80.8*	*36 - 126*	*148.1*	*9.58*	*30*	
Surr: 2-Fluorobiphenyl	*134.9*	*0*	*166.4*	*0*	*81.1*	*43 - 125*	*147.3*	*8.77*	*30*	
Surr: 2-Fluorophenol	*102.5*	*0*	*166.4*	*0*	*61.6*	*37 - 125*	*77.89*	*27.2*	*30*	
Surr: 4-Terphenyl-d14	*141*	*0*	*166.4*	*0*	*84.8*	*32 - 125*	*144.9*	*2.73*	*30*	
Surr: Nitrobenzene-d5	*109.9*	*0*	*166.4*	*0*	*66.0*	*37 - 125*	*95.46*	*14.1*	*30*	
Surr: Phenol-d6	*74.37*	*0*	*166.4*	*0*	*44.7*	*40 - 125*	*86.77*	*15.4*	*30*	

The following samples were analyzed in this batch: HS20020447-01 HS20020447-02 HS20020447-03 HS20020447-04
HS20020447-05 HS20020447-06 HS20020447-07

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020447

QC BATCH REPORT

Batch ID: 150608 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-150608** Units: **ug/Kg** Analysis Date: **13-Feb-2020 17:29**
Client ID: Run ID: **SV-6_356229** SeqNo: **5472906** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	U	6.6								
Surr: 2,4,6-Tribromophenol	*88.84*	*0*	*167*	*0*	*53.2*	*36 - 126*				
Surr: 2-Fluorobiphenyl	*127.4*	*0*	*167*	*0*	*76.3*	*43 - 125*				
Surr: 2-Fluorophenol	*101.9*	*0*	*167*	*0*	*61.0*	*37 - 125*				
Surr: 4-Terphenyl-d14	*123.1*	*0*	*167*	*0*	*73.7*	*32 - 125*				
Surr: Nitrobenzene-d5	*118.2*	*0*	*167*	*0*	*70.8*	*37 - 125*				
Surr: Phenol-d6	*88.12*	*0*	*167*	*0*	*52.8*	*40 - 125*				

LCS Sample ID: **LCS-150608** Units: **ug/Kg** Analysis Date: **13-Feb-2020 17:48**
Client ID: Run ID: **SV-6_356229** SeqNo: **5472907** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	60.33	6.6	167	0	36.1	23 - 136				
Surr: 2,4,6-Tribromophenol	*108.6*	*0*	*167*	*0*	*65.0*	*36 - 126*				
Surr: 2-Fluorobiphenyl	*139.8*	*0*	*167*	*0*	*83.7*	*43 - 125*				
Surr: 2-Fluorophenol	*116.9*	*0*	*167*	*0*	*70.0*	*37 - 125*				
Surr: 4-Terphenyl-d14	*142.8*	*0*	*167*	*0*	*85.5*	*32 - 125*				
Surr: Nitrobenzene-d5	*127.2*	*0*	*167*	*0*	*76.2*	*37 - 125*				
Surr: Phenol-d6	*117.6*	*0*	*167*	*0*	*70.4*	*40 - 125*				

MS Sample ID: **HS20020449-01MS** Units: **ug/Kg** Analysis Date: **14-Feb-2020 11:51**
Client ID: Run ID: **SV-6_356287** SeqNo: **5473656** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	10.9	6.6	166.7	0	6.54	23 - 136				S
Surr: 2,4,6-Tribromophenol	*66.74*	*0*	*166.7*	*0*	*40.0*	*36 - 126*				
Surr: 2-Fluorobiphenyl	*127.2*	*0*	*166.7*	*0*	*76.3*	*43 - 125*				
Surr: 2-Fluorophenol	*77.49*	*0*	*166.7*	*0*	*46.5*	*37 - 125*				
Surr: 4-Terphenyl-d14	*129.4*	*0*	*166.7*	*0*	*77.6*	*32 - 125*				
Surr: Nitrobenzene-d5	*107*	*0*	*166.7*	*0*	*64.2*	*37 - 125*				
Surr: Phenol-d6	*88.11*	*0*	*166.7*	*0*	*52.9*	*40 - 125*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020447

QC BATCH REPORT

Batch ID: 150608 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MSD Sample ID: **HS20020449-01MSD** Units: **ug/Kg** Analysis Date: **14-Feb-2020 12:10**
Client ID: Run ID: **SV-6_356287** SeqNo: **5473657** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	4.024	6.5	165	0	2.44	23 - 136	10.9	0	30	JS
Surr: 2,4,6-Tribromophenol	*U*	*0*	*165*	*0*	*0*	*36 - 126*	*66.74*	*200*	*30*	SR
Surr: 2-Fluorobiphenyl	*124.1*	*0*	*165*	*0*	*75.2*	*43 - 125*	*127.2*	*2.46*	*30*	
Surr: 2-Fluorophenol	*12.68*	*0*	*165*	*0*	*7.68*	*37 - 125*	*77.49*	*144*	*30*	SR
Surr: 4-Terphenyl-d14	*118.8*	*0*	*165*	*0*	*72.0*	*32 - 125*	*129.4*	*8.49*	*30*	
Surr: Nitrobenzene-d5	*106.2*	*0*	*165*	*0*	*64.4*	*37 - 125*	*107*	*0.758*	*30*	
Surr: Phenol-d6	*25.04*	*0*	*165*	*0*	*15.2*	*40 - 125*	*88.11*	*111*	*30*	SR

The following samples were analyzed in this batch:

HS20020447-08	HS20020447-09	HS20020447-10	HS20020447-11
HS20020447-12	HS20020447-13	HS20020447-14	HS20020447-15
HS20020447-16	HS20020447-17		

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020447

QC BATCH REPORT

Batch ID: **R356459 (0)** **Instrument:** **Balance1** **Method:** **MOISTURE - ASTM D2216**

DUP Sample ID: **HS20020447-17DUP** Units: **wt%** Analysis Date: **17-Feb-2020 10:27**
Client ID: **SO-1620-FD02-20200211** Run ID: **Balance1_356459** SeqNo: **5476913** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	20.2	0.0100					20.7	2.44	20	

The following samples were analyzed in this batch:

HS20020447-01	HS20020447-02	HS20020447-03	HS20020447-04
HS20020447-05	HS20020447-06	HS20020447-07	HS20020447-08
HS20020447-09	HS20020447-10	HS20020447-11	HS20020447-12
HS20020447-13	HS20020447-14	HS20020447-15	HS20020447-16
HS20020447-17			

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20020447**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/Kg-dry	Milligrams per Kilogram- Dry weight corrected

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20020447

Date/Time Received: **11-Feb-2020 14:40**
Received by: **PMG**

Checklist completed by: *Nilesh D. Ranchod* eSignature — 11-Feb-2020 Date

Reviewed by: *Dane J. Wacasey* eSignature — 12-Feb-2020 Date

Matrices: **Soil**

Carrier name: **Client**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	2 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:213525/213524
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	0.2°C UC/C		IR # 25
Cooler(s)/Kit(s):	45623		
Date/Time sample(s) sent to storage:	02/11/2020 19:30		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

Page 1 of 2

COC ID: 213525

HS20020447

NV

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-12-Rev0 SR 92688
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Patrick Marty	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	Patrick_Marty@golder.com	e-Mail Address	

A	8270_LOW_W (5632532 SVOC - Pentachlorophenol only)
B	MOIST_ASTM (5631931 Moisture%)
C	
D	
E	Per Golder MSA
F	
G	
H	
I	
J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620-SS001(0-2)-20200210	2-10-20	1310	Soil	8	1	X	X									
2	SS003(0-2)		1340														
3	SS004(0-2)		1350														
4	SS006(0-2)		1400														
5	SS007(0-2)		1410														
6	SS008(0-2)		1420														
7	SS009(0-2)		1430														
8	SS010(0-2)		1445														
9	SS005(0-2)-20200211	2-11-20	925														
10	SS011(0-2)		940														

Sampler(s) Please Print & Sign: Blake Sokora Tim McSpadden

Shipment Method:

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by:	Blake Sokora	Date: 2-11-20	Time: 1440	Received by:	
Relinquished by:		Date:	Time:	Received by (Laboratory):	2/11/2020 14:40
Logged by (Laboratory):		Date:	Time:	Checked by (Laboratory):	

Notes: UPRR HWPW 1620-12

Cooler ID	Cooler Temp.
45623	0.2° C.
	#25 2/11/20

QC Package: (Check One Box Below)
- [ ] Level II Std QC
- [ ] Level III Std QC/Raw Data
- [ ] Level IV SW846/CLP
- [ ] Other
- [X] TRRP Checklist
- [ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Chain of Custody Form

Page 2 of 2

COC ID: 213524

HS20020447

, WV

Golder Associates Inc.

Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-12-Rev0 SR 92688
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Patrick Marty	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	Patrick_Marty@golder.com	e-Mail Address	

A: 8270_LOW_W (5632532 SVOC - Pentachlorophenol only)

B: MOIST_ASTM (5631931 Moisture%)

C:

D:

E: Per Golder

F: MSA

G:

H:

I:

J:

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620-SS012(0-2)-20200211	2-11-20	945	Soil	8	1	X	X									
2	SS013(0-2)		950				X	X									
3	SS014(0-2)		1000				X	X									
4	SS015(0-2)		1019				X	X									
5	SS002(0-2)		1100				X	X									
6	FD01-20200210	—	—				X	X									
7	FD02-20200211	—	—				X	X									
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Blake Sokora Tim McSpadden

Shipment Method:

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
Blake Sokora	2-11-20	1440	
Relinquished by:	Date:	Time:	Received by (Laboratory): 2/11/2020 14:40
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: UPRR HWPW 1620-12

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)

- [ ] Level II Std QC
- [ ] Level III Std QC/Raw Data
- [ ] Level IV SW846/CLP
- [ ] Other
- [X] TRRP Checklist
- [ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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July 14, 2020 Project No. 19119232

Ms. Maureen Hatfield
Texas Commission on Environmental Quality
VCP-CA Section, Team 1, Remediation Division, MC-127
P.O. Box 13087
Austin, Texas 78711-3087

UPDATED PENTACHLOROPHENOL SOIL ASSESSMENT INTERIM REPORT
UNION PACIFIC RAILROAD HOUSTON WOOD PRESERVING WORKS FACILITY
4910 LIBERTY ROAD FACILITY, HOUSTON, TEXAS
POST-CLOSURE CARE PERMIT NO. HW-50343; INDUSTRIAL SWR NO. 31547

Dear Ms. Hatfield,

Golder Associates Inc (Golder) is pleased to provide, on behalf of Union Pacific Railroad (UPRR), this Updated Pentachlorophenol (PCP) Soil Assessment Interim Report (Updated PCP Report) to the Texas Commission on Environmental Quality (TCEQ). This update provides the results of additional surface soil sampling for PCP conducted in June 2020 at the UPRR Houston Wood Preserving Works (HWPW) site (the Site). The additional soil sampling activities were proposed in a response letter dated May 8, 2020 to the TCEQ Approval with Comments Letter dated April 23, 2020 on the Pentachlorophenol (PCP) Soil Assessment Interim Report (PCP Report) dated March 30, 2020. The TCEQ approved UPRR to proceed with the additional soil sampling activities in a Notice to Proceed with Proposed Additional PCP Soil Assessment letter dated May 19, 2020.

As detailed in the May 8, 2020 letter, the additional soil sampling plan was designed to meet the following assessment objectives: 1.) evaluate the lateral extent of PCP concentrations in surface soils off-site in areas where PCP concentrations in surface soil samples collected on-site along the UPRR property boundary exceeded the TCEQ Texas Risk Reduction Program (TRRP) Tier 1 Residential $^{Tot}Soil_{Comb}$ protective concentration level (PCL); and 2.) evaluate the soil to groundwater pathway through the TRRP Tier 3 PCL process by assessing the potential leachability of PCP from surface soils in areas where the highest PCP concentrations in the February 2020 soil samples were detected. The additional soil PCP assessment detailed in this letter supplements the soil data provided in the PCP Report. Details of the field sampling activities and soil data evaluation are provided in the following sections.

June 2020 Field Sampling Activities

As detailed in the PCP Report (March 2020), three on-site soil samples collected in February 2020 near the property boundary SSO-03 (along the northern perimeter), SSO-07, and SSO-08 (along the western perimeter) had PCP concentrations that were less than the commercial/industrial $^{Tot}Soil_{Comb}$ PCL of 32 mg/kg but exceeded the residential $^{Tot}Soil_{Comb}$ PCL of 0.73 mg/kg. To assess the lateral extent of PCP concentrations in surface soil

Golder Associates Inc.
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off-site to the residential $^{Tot}Soil_{Comb}$ PCL, Golder collected surface soil samples in the following off-site areas (shown on attached Figure 1):

- North of the Site – Five soil borings (SSO-16 through SSO-20) were drilled and sampled within the City of Houston right-of-way (ROW) north of the Site near on-site location SSO-03; and
- West of the Site – Eighteen soil borings (six transects of three borings per transect) were drilled and sampled in the off-site storm water ditch area within the City of Houston ROW between the western fence line of the Site and Kashmere Street in the vicinity of on-site soil borings SSO-07 and SSO-08. The three borings conducted along each transect were sampled at the following locations:
    - Within approximately two feet west of the UPRR fence line,
    - At the bottom or centerline of the drainage ditch, and
    - Between the centerline of the ditch and Kashmere Street (underground utilities were located near Kashmere Street).

In addition, Golder drilled and sampled three soil borings SSO-3R, SSO-7R, and SSO-08R adjacent to on-site locations SSO-03, SSO-07, and SSO-08, respectively where the highest PCP concentrations were detected above the Tier 2 $^{GW}Soil_{Ing}$ PCL in the February 2020 soil samples. These soil borings were conducted to collect soil samples to evaluate the soil-to-groundwater pathway.

From June 2 through June 5, 2020, Golder advanced the 26 soil borings to a depth of 4 feet below ground surface (bgs) with a hand auger. Samples were field screened using a photoionization detector (PID). Prior to sampling, the PID was calibrated using 100 parts per million (ppm) by volume isobutylene standard. The hand auger was decontaminated before and between each soil boring. The location for each soil boring was surveyed in the field using a Trimble handheld GPS unit and backfilled with bentonite chips once the soil samples were collected. Table 1 summarizes the soil sample locations, PID readings, and soil type descriptions for each location sampled in February and June 2020. Figure 1 shows the approximate locations of the June 2020 soil borings with the previous soil sample locations.

Soil samples were collected from 0 to 2 feet bgs and 2 to 4 feet bgs at each location during the additional sampling activities in June 2020. Soil samples were placed in laboratory-supplied containers, stored on ice in an insulated cooler, and hand delivered to ALS Environmental in Houston, Texas for PCP analysis by EPA Method 8270. Soil samples from on-site boring locations SSO-03R, SSO-07R, and SSO-08R were also analyzed for pH by EPA Method 9045D and select samples (SSO-03R (0-2) for the north perimeter and SSO-08R (0-2) for the west perimeter) were analyzed for PCP concentrations in the extraction from the synthetic precipitation leaching procedure (SPLP) by EPA Test Method 1312 (SPLP extraction) and EPA Method 8270 (PCP analysis of the extract). A completed chain-of-custody accompanied the samples through receipt at the analytical laboratory. Copies of the laboratory reports and data usability summary prepared pursuant to TRRP-13 Guidance are included in Attachment 1.

Data Evaluation

PCP concentrations in the soil samples collected in February 2020 and June 2020 are summarized in Table 2. For the off-site soil samples collected, the soil analytical results were compared to TCEQ TRRP Tier 1 (30-acre source area) Residential $^{Tot}Soil_{Comb}$ PCL (0.73 mg/kg) and preliminarily to the Tier 2 $^{GW}Soil_{Ing}$ PCL (0.12 mg/kg) for initial screening purposes. For the soil-to-groundwater pathway evaluation, PCP concentrations from the SPLP

analysis were compared to the PCP Tier 1 Residential groundwater ingestion pathway PCL ($^{GW}GW_{Ing}$=0.001 mg/L).

Residential $^{Tot}Soil_{Comb}$ PCL Evaluation

PCP concentrations in soils from the off-site soil borings within the City of Houston ROW ranged from not detected above the method detection level (MDL) at twelve samples to 0.69 mg/kg at SSO-16 (0-2) (Table 2). None of the off-site soil samples had PCP concentrations that exceeded the Tier 1 Residential $^{Tot}Soil_{Comb}$ PCL for a 30-acre source area of 0.73 mg/kg, indicating that the off-site soils are protective to the residential soil exposure pathway.

Soil-to-Groundwater Pathway

Twelve of the soil samples collected in June 2020 off-site had PCP concentrations greater than the Tier 2 $^{GW}Soil_{Ing}$ PCL (0.12 mg/kg) for the 0-2 feet bgs depth interval. Only two of the soil samples collected off-site from 2-4 feet bgs exceeded the Tier 2 $^{GW}Soil_{Ing}$ PCL. Except for SSO-21-02 soil boring, the PCP concentrations in the deeper sample (2-4 feet bgs) had lower concentrations compared to the 0-2 foot sample at the same soil boring, often lower by an order of magnitude or more, indicating that the PCP concentrations quickly attenuate with depth.

PCP concentrations in the samples collected adjacent to previous on-site borings SSO-03, SSO-07, and SSO-08 in the 0-2-foot interval were detected at 2.2 mg/kg, 0.45 mg/kg, and 1.5 mg/kg, respectively. These concentrations are less than the concentrations detected at the adjacent locations during the February 2020 soil sampling activities (Table 2). Since SSO-03R (0-2) at 2.2 mg/kg and SSO-08R (0-2) at 1.5 mg/kg had the highest PCP concentrations detected during the June 2020 sampling activities, these two samples were further analyzed for PCP concentrations in the SPLP extract to evaluate the potential leachability of the PCP concentrations from the soils. PCP SPLP results for SSO-03R (0-2) and SSO-08R (0-2) were 0.00057 mg/L and <0.00005 mg/L, respectively. These concentrations are orders of magnitude below the Tier 1 Residential $^{GW}GW_{Ing}$ PCL of 0.001 mg/L. Based on this evaluation, PCP concentrations as high as 2.2 mg/kg are protective of the shallow groundwater.

As detailed in the PCP Report (March 2020), groundwater sampling results for PCP concentrations from monitoring wells in the shallow, uppermost groundwater-bearing zone (A-TZ) on the west side of the Site have been below detection limits since 2012 in monitoring wells MW-12A, MW-13, MW-15A, and MW-38A and in MW-94A and MW-95A (installed in 2020). As shown on Figure 1, these wells are all located near the northern and western boundaries of the Site. The TCEQ concurred in the April 23, 2020 letter that the groundwater results generally support the conclusion that the concentrations of PCP in soil are protective of groundwater.

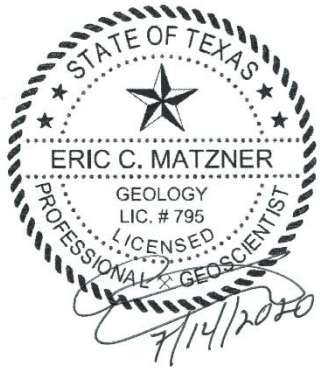
Pursuant to 30 TAC §350.75(i)(7)(C) that states that a soil leachate-to-groundwater PCL may not be required when a demonstration can be made that the soils are protective of groundwater, a weight-of-evidence approach was used to demonstrate that the existing PCP concentrations in soil attain the soil response objectives for groundwater protection in this area. The multiple lines of evidence, as discussed above, include: 1) probable time since the release (prior to 1984 when the facility shut down); 2) the significant decrease (typically by an order of magnitude or more) in PCP concentrations with depth; 3) the very low leachability of PCP concentrations from these soils as indicated by SPLP extraction concentrations below the groundwater drinking water-based PCL; and 4) the absence of detectable PCP concentrations in groundwater in the area. Based on this evaluation, the PCP concentrations in soils both on-site and off-site are considered protective of the shallow groundwater pursuant to 30 TAC §350.75(i)(7)(C) and thus a soil leachate-to-groundwater PCL for PCP is not required for the Site.

Additionally, since PCP concentrations in soil samples collected off-site to the north and to the west of the UPRR property boundary were below the Tier 1 Residential $^{Tot}Soil_{Comb}$ PCL, delineation of PCP in soils has been achieved and no further investigation of PCP concentrations in soil north and west of the Site is necessary.

If you have any questions or comments, please feel free to give Mr. Kevin Peterburs of UPRR a call at (414) 267-4164 or us at 512-671-3434.

Sincerely,

Golder Associates Inc.



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Texas Engineering Firm No. 2578

CC: TCEQ Region 12, Houston Texas

Attachments: Table 1 – Surface Soil Sample Locations
Table 2 – Pentachlorophenol Concentrations – Surface Soil Sampling Results
Figure 1 – Surface Soil Sampling Location – North West Tie Storage Area – Pentachlorophenol
Attachment 1 – Data Usability Summary and Laboratory Analytical Reports

https://golderassociates.sharepoint.com/sites/116841/project files/6 deliverables/rap/rap revision 5/pcp interim report/updated letter/uprr hwpw updated pentachlorophenol surface soil assessment letter report july 2020.docx

Tables

Table 1

Surface Soil Sample Locations - Soil Pentachlorophenol Assessment
UPRR Houston Wood Preserving Works

Sample ID	Sample Date	Sample Interval (ft bgs)	Latitude	Longitude	PID (ppmV)	Soil type
SSO-01	02/10/2020	0-2	29.787449	-95.321182	0.1	0-0.5 topsoil; 0.5-2 clay
SSO-02	02/11/2020	0-2	29.787543	-95.321721	2.9	0-0.5 topsoil; 0.5-2 clay
SSO-03	02/10/2020	0-2	29.787589	-95.322464	0.6	0-2 topsoil
SSO-03R	06/05/2020	0-2	29.78759001	-95.32246165	0.0	0-2 fill
SSO-03R	06/05/2020	2-4	29.78759001	-95.32246165	0.9	2-4 silty clay
SSO-04	02/10/2020	0-2	29.787584	-95.323116	0.1	0-0.5 topsoil; 0.5-2 clay
SSO-05	02/11/2020	0-2	29.787492	-95.323864	3.6	0-0.5 topsoil; 0.5-2 clay
SSO-06	02/10/2020	0-2	29.787247	-95.323866	1.7	0-0.5 topsoil; 0.5-2 clay
SSO-07	02/10/2020	0-2	29.786992	-95.323861	0.9	0-0.5 topsoil; 0.5-2 clay
SSO-07R	06/05/2020	0-2	29.78699184	-95.3238624	3.2	0-2 fill
SSO-07R	06/05/2020	2-4	29.78699184	-95.3238624	3.8	2-4 clay
SSO-08	02/10/2020	0-2	29.786795	-95.323857	2.5	0-0.5 topsoil; 0.5-2 clay
SSO-08R	06/05/2020	0-2	29.78679863	-95.32385836	8.8	0-2 sandy clay
SSO-08R	06/05/2020	2-4	29.78679863	-95.32385836	5.5	2-4 silty clay
SSO-09	02/10/2020	0-2	29.786591	-95.323853	2.2	0-0.5 topsoil; 0.5-2 clay
SSO-10	02/10/2020	0-2	29.786271	-95.323843	1.8	0-0.5 topsoil; 0.5-2 clay
SSO-11	02/11/2020	0-2	29.785992	-95.323796	4.0	0-0.5 sand; 0.5-2 clay
SSO-12	02/11/2020	0-2	29.785685	-95.323799	2.3	0-0.5 sand; 0.5-2 clay
SSO-13	02/11/2020	0-2	29.785438	-95.323797	1.6	0-2 sand
SSO-14	02/11/2020	0-2	29.785342	-95.324344	4.7	0-2 clay
SSO-15	02/11/2020	0-2	29.785056	-95.324525	6.0	0-2 clay
SSO-16	06/02/2020	0-2	29.78760088	-95.32279881	7.8	0-2 clay
SSO-16	06/02/2020	2-4	29.78760088	-95.32279881	4.8	2-4 clay
SSO-17	06/02/2020	0-2	29.7876034	-95.32262841	2.8	0-2 clay
SSO-17	06/02/2020	2-4	29.7876034	-95.32262841	0.2	2-4 clay
SSO-18	06/02/2020	0-2	29.78760076	-95.32245908	0.2	0-2 clay
SSO-18	06/02/2020	2-4	29.78760076	-95.32245908	0.1	2-4 clay
SSO-19	06/03/2020	0-2	29.78759496	-95.32230921	14.0	0-2 clay
SSO-19	06/03/2020	2-4	29.78759496	-95.32230921	20.6	2-4 clay
SSO-20	06/03/2020	0-2	29.78760357	-95.32215457	5.2	0-2 fill
SSO-20	06/03/2020	2-4	29.78760357	-95.32215457	14.8	2-4 clay
SSO-21-01	06/02/2020	0-2	29.7872361	-95.32387585	0.6	0-2 clay
SSO-21-01	06/02/2020	2-4	29.7872361	-95.32387585	1.5	2-4 clay
SSO-21-02	06/02/2020	0-2	29.78724033	-95.32390237	2.9	0-2 clay
SSO-21-02	06/02/2020	2-4	29.78724033	-95.32390237	13.5	2-4 clay
SSO-21-03	06/02/2020	0-2	29.78724478	-95.32390114	0.9	0-2 clay
SSO-21-03	06/02/2020	2-4	29.78724478	-95.32390114	3.5	2-4 clay
SSO-22-01	06/03/2020	0-2	29.78711015	-95.32387437	0.0	0-2 clay
SSO-22-01	06/03/2020	2-4	29.78711015	-95.32387437	0.0	2-4 clay
SSO-22-02	06/03/2020	0-2	29.78711208	-95.32389382	0.0	0-2 clay
SSO-22-02	06/03/2020	2-4	29.78711208	-95.32389382	0.0	2-4 clay
SSO-22-03	06/03/2020	0-2	29.78711869	-95.32390887	8.8	0-2 clay
SSO-22-03	06/03/2020	2-4	29.78711869	-95.32390887	14.1	2-4 clay
SSO-23-01	06/03/2020	0-2	29.78699274	-95.32387758	0.0	0-2 clay
SSO-23-01	06/03/2020	2-4	29.78699274	-95.32387758	0.0	2-4 clay
SSO-23-02	06/03/2020	0-2	29.78700019	-95.32389061	0.0	0-2 clay
SSO-23-02	06/03/2020	2-4	29.78700019	-95.32389061	0.0	2-4 clay
SSO-23-03	06/04/2020	0-2	29.7870028	-95.32390598	0.0	0-2 clay
SSO-23-03	06/04/2020	2-4	29.7870028	-95.32390598	0.0	2-4 silty clay
SSO-24-01	06/04/2020	0-2	29.78685104	-95.32386466	5.2	0-2 clay
SSO-24-01	06/04/2020	2-4	29.78685104	-95.32386466	1.5	2-4 silty clay

Table 1

Surface Soil Sample Locations - Soil Pentachlorophenol Assessment
UPRR Houston Wood Preserving Works

Sample ID	Sample Date	Sample Interval (ft bgs)	Latitude	Longitude	PID (ppmV)	Soil type
SSO-24-02	06/04/2020	0-2	29.78684723	-95.32388424	1.1	0-2 silty clay
SSO-24-02	06/04/2020	2-4	29.78684723	-95.32388424	2.1	2-4 silty clay
SSO-24-03	06/04/2020	0-2	29.78684965	-95.32390307	9.5	0-2 silty clay
SSO-24-03	06/04/2020	2-4	29.78684965	-95.32390307	10.8	2-4 silty clay
SSO-25-01	06/04/2020	0-2	29.7867081	-95.32387453	1.2	0-2 silty clay
SSO-25-01	06/04/2020	2-4	29.7867081	-95.32387453	1.9	2-4 silty clay
SSO-25-02	06/04/2020	0-2	29.78670726	-95.32388831	2.6	0-2 silty clay
SSO-25-02	06/04/2020	2-4	29.78670726	-95.32388831	1.0	2-4 silty clay
SSO-25-03	06/04/2020	0-2	29.78670864	-95.32390291	1.4	0-2 clay
SSO-25-03	06/04/2020	2-4	29.78670864	-95.32390291	0.1	2-4 silty clay
SSO-26-01	06/04/2020	0-2	29.78657007	-95.3238753	1.9	0-2 clay
SSO-26-01	06/04/2020	2-4	29.78657007	-95.3238753	0.0	2-4 silty clay
SSO-26-02	06/04/2020	0-2	29.78656472	-95.32388143	0.0	0-2 silty clay
SSO-26-02	06/04/2020	2-4	29.78656472	-95.32388143	0.0	2-4 clay
SSO-26-03	06/04/2020	0-2	29.78656511	-95.32389626	19.0	0-2 clay
SSO-26-03	06/04/2020	2-4	29.78656511	-95.32389626	1.7	2-4 silty clay

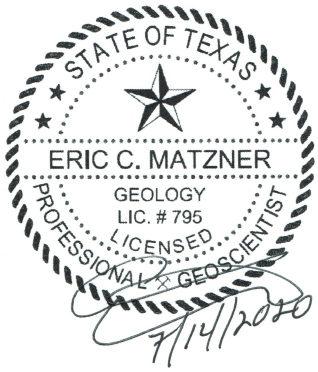


Table 2

Pentachlorophenol Concentrations - Surface Soil Sampling Results
UPRR Houston Wood Preserving Works

Sample ID	Sample Interval (ft)	Sample Date	Pentachlorophenol (mg/kg)		Pentachlorophenol (SPLP[1]) (mg/L)	
TRRP Tier 2 Residential $^{GW}Soil_{Ing}$ PCL (mg/kg) *			0.12		--	
TRRP Tier 1 Residential $^{Tot}Soil_{Comb}$ PCL (mg/kg)			0.73		--	
TRRP Tier 1 C/I $^{Tot}Soil_{Comb}$ PCL (mg/kg)			32		--	
TRRP Tier 1 Residential and C/I $^{GW}GW_{Ing}$ PCL (mg/L)			--		0.001	
February 2020 Sampling						
SSO-01	0-2	02/10/2020	0.2		--	
SSO-02	0-2	02/11/2020	0.032		--	
SSO-03	0-2	02/10/2020	3.7		--	
SSO-04	0-2	02/10/2020	0.13		--	
SSO-05	0-2	02/11/2020	0.062		--	
SSO-06	0-2	02/10/2020	0.26		--	
SSO-07	0-2	02/10/2020	3.9	J	--	
SSO-07 (duplicate)	0-2	02/10/2020	6.7	J	--	
SSO-08	0-2	02/10/2020	13		--	
SSO-09	0-2	02/10/2020	0.21		--	
SSO-10	0-2	02/10/2020	0.13		--	
SSO-11	0-2	02/11/2020	0.22		--	
SSO-12	0-2	02/11/2020	0.0059	J	--	
SSO-13	0-2	02/11/2020	0.09		--	
SSO-14	0-2	02/11/2020	< 0.0041		--	
SSO-14 (duplicate)	0-2	02/11/2020	< 0.0041		--	
SSO-15	0-2	02/11/2020	< 0.004		--	
June 2020 Sampling						
SSO-03R	0-2	06/05/2020	2.2		0.00057	
	2-4	06/05/2020	0.022	J	--	
SSO-03R (duplicate)	2-4	06/05/2020	0.0067	J	--	
SSO-07R	0-2	06/05/2020	0.45		--	
	2-4	06/05/2020	0.44		--	
SSO-08R	0-2	06/05/2020	1.5		< 0.00005	
	2-4	06/05/2020	0.13		--	
SSO-16	0-2	06/02/2020	0.69		--	
	2-4	06/02/2020	0.060		--	
SSO-17	0-2	06/02/2020	0.15		--	
	2-4	06/02/2020	0.019		--	
SSO-18	0-2	06/02/2020	0.22		--	
	2-4	06/02/2020	0.046		--	
SSO-19	0-2	06/03/2020	0.32		--	
	2-4	06/03/2020	0.019		--	
SSO-20	0-2	06/03/2020	0.016		--	
SSO-20 (duplicate)	0-2	06/03/2020	0.030		--	
	2-4	06/03/2020	< 0.0039		--	
SSO-21-01	0-2	06/02/2020	0.086		--	
	2-4	06/02/2020	0.019		--	
SSO-21-02	0-2	06/02/2020	0.23		--	
	2-4	06/02/2020	0.32		--	
SSO-21-03	0-2	06/02/2020	0.044		--	
	2-4	06/02/2020	< 0.0039		--	

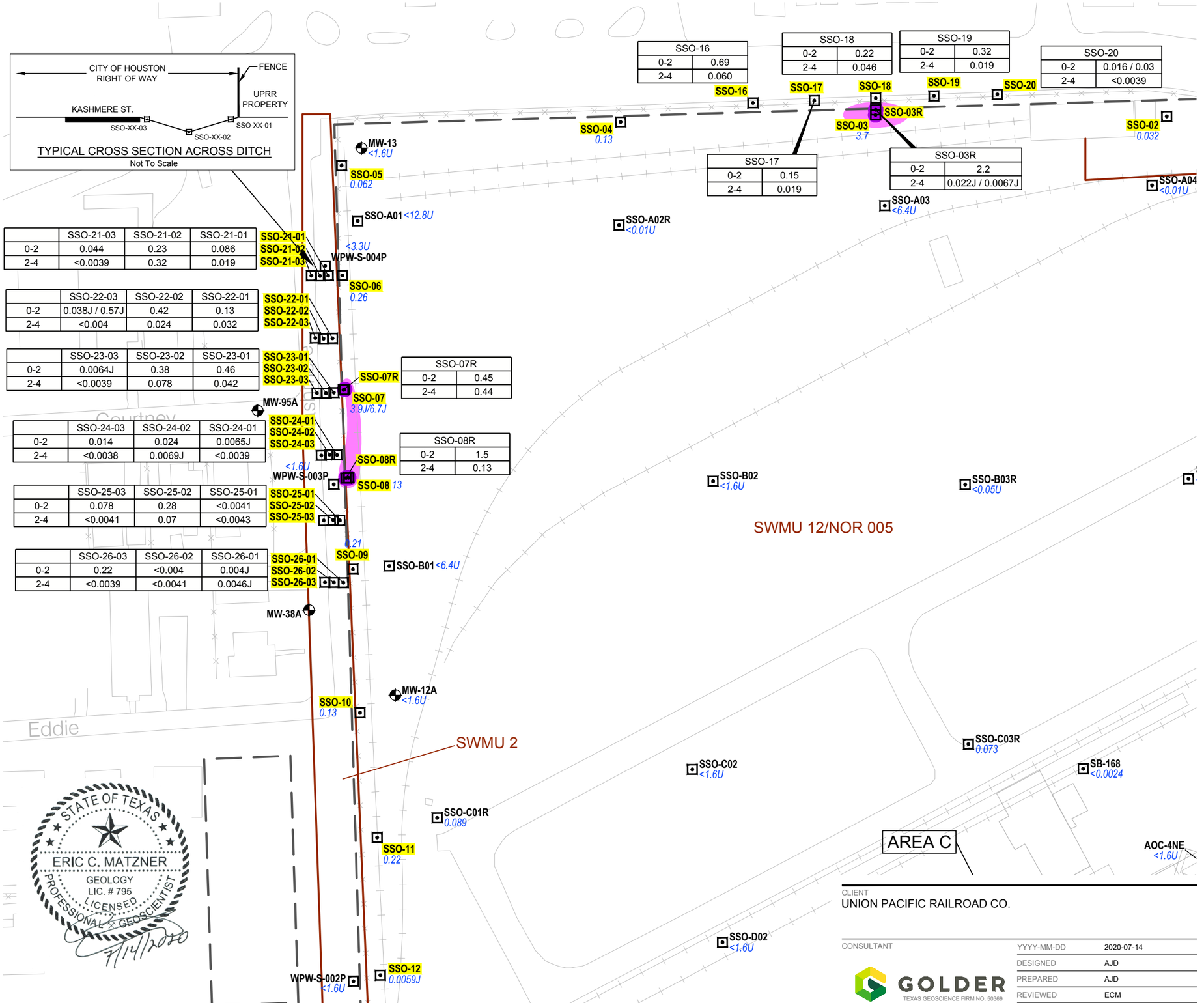
Table 2

Pentachlorophenol Concentrations - Surface Soil Sampling Results
UPRR Houston Wood Preserving Works

Sample ID	Sample Interval (ft)	Sample Date	Pentachlorophenol (mg/kg)		Pentachlorophenol (SPLP[1]) (mg/L)
TRRP Tier 2 Residential $^{GW}Soil_{Ing}$ PCL (mg/kg) *			0.12		--
TRRP Tier 1 Residential $^{Tot}Soil_{Comb}$ PCL (mg/kg)			0.73		--
TRRP Tier 1 C/I $^{Tot}Soil_{Comb}$ PCL (mg/kg)			32		--
TRRP Tier 1 Residential and C/I $^{GW}GW_{Ing}$ PCL (mg/L)			--		0.001
SSO-22-01	0-2	06/03/2020	0.13		--
	2-4	06/03/2020	0.032		--
SSO-22-02	0-2	06/03/2020	0.42		--
	2-4	06/03/2020	0.024		--
SSO-22-03	0-2	06/03/2020	0.038	J	--
SSO-22-03 (duplicate)	0-2	06/03/2020	0.57	J	--
	2-4	06/03/2020	< 0.0040		--
SSO-23-01	0-2	06/03/2020	0.46		--
	2-4	06/03/2020	0.042		--
SSO-23-02	0-2	06/03/2020	0.38		--
	2-4	06/03/2020	0.078		--
SSO-23-03	0-2	06/04/2020	0.0064	J	--
	2-4	06/04/2020	< 0.0039		--
SSO-24-01	0-2	06/04/2020	0.0065	J	--
	2-4	06/04/2020	< 0.0039		--
SSO-24-02	0-2	06/04/2020	0.024		--
	2-4	06/04/2020	0.0069	J	--
SSO-24-03	0-2	06/04/2020	0.014		--
	2-4	06/04/2020	< 0.0038		--
SSO-25-01	0-2	06/04/2020	< 0.0041		--
	2-4	06/04/2020	< 0.0043		--
SSO-25-02	0-2	06/04/2020	0.28		--
	2-4	06/04/2020	0.070		--
SSO-25-03	0-2	06/04/2020	0.078		--
	2-4	06/04/2020	< 0.0041		--
SSO-26-01	0-2	06/04/2020	0.0040	J	--
	2-4	06/04/2020	0.0046	J	--
SSO-26-02	0-2	06/04/2020	< 0.0040		--
	2-4	06/04/2020	< 0.0041		--
SSO-26-03	0-2	06/04/2020	0.22		--
	2-4	06/04/2020	< 0.0039		--

Notes: TRRP 30-acre source area PCLs (30 TAC §350, Tables 1 and 2), last updated November 2019.
Results that exceed the Tier 2 $^{GW}Soil_{Ing}$ PCL are highlighted blue; results that exceed the Tier 1 Residential $^{TOT}Soil_{Comb}$ PCL are highlighted green (all on-site).
* Tier 2 calculations using site-specific data are detailed in Affected Property Assessment Report Addendum dated July 21, 2009.
[1] SPLP- Synthetic Precipitation Leaching Procedure SW1312

Figures



	SSO-21-03	SSO-21-02	SSO-21-01
0-2	0.044	0.23	0.086
2-4	<0.0039	0.32	0.019

	SSO-22-03	SSO-22-02	SSO-22-01
0-2	0.038J / 0.57J	0.42	0.13
2-4	<0.004	0.024	0.032

	SSO-23-03	SSO-23-02	SSO-23-01
0-2	0.0064J	0.38	0.46
2-4	<0.0039	0.078	0.042

	SSO-24-03	SSO-24-02	SSO-24-01
0-2	0.014	0.024	0.0065J
2-4	<0.0038	0.0069J	<0.0039

	SSO-25-03	SSO-25-02	SSO-25-01
0-2	0.078	0.28	<0.0041
2-4	<0.0041	0.07	<0.0043

	SSO-26-03	SSO-26-02	SSO-26-01
0-2	0.22	<0.004	0.004J
2-4	<0.0039	<0.0041	0.0046J

LEGEND

- UPRR PROPERTY BOUNDARY
- HISTORICAL STRUCTURE AND FEATURE
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION
- TEMPORARY MONITORING WELL LOCATION
- SOIL BORING LOCATION
- 0.078 PENTACHLOROPHENOL CONCENTRATION IN mg/Kg
- (NS) NOT SAMPLED

PCL EVALUATION

- DETECTED SURFACE SOIL CONCENTRATION >RAL
- AFFECTED PROPERTY/PCLE ZONE
- SURFACE SOILS EXCAVATED WITHIN AOC AND CONSOLIDATED IN SOIL CAP AREA
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA

NOTE(S)

1. J = ESTIMATED CONCENTRATION LESS THAN MDL.
2. U = NOT DETECTED (SQL REPORTED).
3. RESIDENTIAL ASSESSMENT LEVEL (RAL) = 0.73 mg/Kg.
4. CRITICAL PCL (cPCL) = 0.73 mg/Kg (OFF-SITE) AND 32 mg/kg (ON-SITE).
5. RAL & cPCL BASED ON TIER 1 RESIDENTIAL/C/I $^{TOT}SOIL_{comb}$ PCLs, 30 ACRE SOURCE AREA.
6. R = RESAMPLED LOCATION (2006) (i.e., SSO-C01R).
7. YELLOW HIGHLIGHTED LOCATIONS WERE COLLECTED IN FEBRUARY AND JUNE 2020.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

0 40 80
1" = 80' FEET

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
7/14/2020

CLIENT
UNION PACIFIC RAILROAD CO.

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-07-14
DESIGNED	AJD
PREPARED	AJD
REVIEWED	ECM
APPROVED	ECM

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
SURFACE SOIL SAMPLE LOCATION -
TIE STORAGE AREA - PENTACHLOROPHENOL

PROJECT NO.	REV.	FIGURE
19119232	0	1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\Projects - Round Rock_2019\19119232 - HWPW\2020-6 June\ | File Name: FIG 3 - 2020 Surface Soil Sample Locations-Pentachlorophenol.dwg | Last Edited By: adlamond Date: 2020-07-14 Time:9:16:33 AM | Printed By: adlamond Date: 2020-07-14 Time:9:17:54 AM

ATTACHMENT 1

Data Usability Summaries and Laboratory Analytical Reports

Memorandum

February 27, 2020
Revised February 28, 2020

To:	Eric Matzner	Ref. No.:	11183954-1620
From:	Angela Bown/cs/550-NF	Tel:	513-285-1102
cc:	Jesse Orth; Jon Lang; Julie Lidstone; Chris Knight		

Subject: **Data Usability Summary**
Pentachlorophenol Assessment in Soils
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
February 2020

1. Scope of Data Usability Study

This document details a Data Usability Summary (DUS) of analytical results for soil samples collected in support of the Pentachlorophenol Assessment in Soils at the Union Pacific Railroad (UPRR)/Houston TX-Wood Preserving Works site during February 2020. Samples were submitted to ALS Environmental (ALS), located in Houston, Texas and are reported in data package HS20020447. The intended use of the data is to support the Pentachlorophenol Assessments in Soils investigation at the site by providing current concentrations of the chemical of concern.

Data were reviewed and validated by Angela Bown of GHD, in accordance with Title 30 of the Texas Administrative Code Section 350.54 (30 TAC 350.54) as described in the Texas Commission on Environmental Quality (TCEQ) Regulatory Guidance document entitled "Review and Reporting of COC Concentration Data under TRRP", (RG-366/TRRP-13), revised May 2010, herein referred to as "TRRP-13 Guidance". Evaluation of the data was based on information obtained from the chain of custody form, the finished report forms, method blank data, recovery data from surrogate spikes/laboratory control samples (LCS)/matrix spikes (MS), duplicate data, field quality assurance/quality control (QA/QC) samples, the laboratory review checklists (LRC), and the laboratory exception reports (ER).

A sample collection and analysis summary is presented in Table 1. This summary provides a cross-reference of field sample identification numbers and location identification. Each sample is assigned a unique field identification number.

The validated sample results are presented in Table 2. A summary of the analytical methodology is presented in Table 3.

2. Laboratory Qualifications

The Laboratory's quality assurance program is consistent with the quality standards outlined in the National Environmental Laboratory Accreditation Program (NELAP). This laboratory was accredited under Texas Certification number # TX104704231 at the time the analysis was performed and the certificate is included in Attachment A.

3. Project Objectives

3.1 Sampling/Analytical QA/QC Objectives

The QA/QC program was designed to identify contamination resulting from the sampling, sample transport and analytical process through the analysis of trip blank samples, field blank samples, field duplicate sample sets, and method blanks. The QA/QC program was designed to evaluate the quality of the resulting data with respect to bias and precision through analysis of LCS, MS, and duplicate analyses.

4. Data Review/Validation Results

4.1 Sample Holding Time and Preservation

Samples were shipped with a chain of custody and the paper work was filled out properly.

All samples were properly preserved, delivered on ice, and stored by the laboratory at the required temperature (0-6°C).

The sample chain of custody document and the analytical report were used to determine sample holding times. All samples were prepared and analyzed within the required holding times.

4.2 Sample Containers

Sample containers used were certified pre-cleaned glass and plastic containers provided by the laboratory. These containers meet or exceed analyte specifications established in the United States Environmental Protection Agency (USEPA) *Specifications and Guidance for Contaminant-free Sample Containers*.

4.3 Calibrations

According to the LRC, initial calibration and continuing calibration data met the criteria for the selected method.

4.4 Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures. As these were not discrete samples handled in the field, these blanks are not listed on the sample identification cross-reference list found in the data packages.

For this study, laboratory method blanks were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch and results are reported in the laboratory data packages.

The method blank result was non-detect or below the method quantitation limit (MQL), indicating that laboratory contamination was not a factor for this investigation.

4.5 Internal Standard and Surrogate Spike Recoveries

Recoveries of internal standards are addressed in the LRC of the data packages. All internal standard recoveries associated with the compounds of interest were acceptable per the LRC.

In accordance with the methods employed, all samples, blanks, and QC samples analyzed for semi-volatile organic compounds (SVOCs) are spiked with surrogate compounds prior to sample analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project. Each individual surrogate compound is expected to meet the laboratory control limits. According to the TRRP-13 Guidelines, one outlying surrogate is acceptable for methods with multiple surrogate spike compounds as long as the recovery is at least ten percent. Sample analyzed at elevated sample dilutions (five times or greater) were not assessed.

Surrogate recoveries were assessed against laboratory control limits and/or the guidance in TRRP-13. All surrogate recoveries met the above criteria.

4.6 Laboratory Control Sample Analysis

LCSs are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project.

For this study, LCSs were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch.

The LCS contained the analyte specified in the method. All LCS recoveries were within the laboratory control limits, demonstrating acceptable analytical accuracy.

4.7 Matrix Spike Analysis

To evaluate the effects of sample matrices on the preparation process, measurement procedures, and accuracy of a particular analysis, samples are spiked with known concentrations of the analytes of interest and analyzed as MS/matrix spike duplicate (MSD) samples. The RPD between the MS and MSD is used to assess analytical precision.

No site-specific samples were selected for MS/MSD analyses. The laboratory performed MS/MSD on non-site samples. These cannot be used to assess accuracy and precision for the site samples.

4.8 Field QA/QC Samples

The field QA/QC consisted of two field duplicate sample sets.

Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, two field duplicate sample sets were collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples must be less than 50 percent for soil samples. The RPDs are only used when sample concentrations are above the estimated regions of detection.

Field duplicate summary data are presented in Table 2. The results for sample set SO-1620-SSO07(0-2)-20200210 and SO-1620-FD01-20200210 displayed variability in pentachlorophenol results. Table 4 presents the qualified sample results.

4.9 Field Procedures

Golder Associates, Inc. collected soil samples in accordance with their Standard Operating Procedures (SOP) for sample collection.

4.10 Analyte Reporting

The laboratory reported detected results for each analyte down to the sample detection limit (SDL), which is defined as the method detection limit (MDL) with sample-specific adjustments for dilutions, aliquot size, volumes, etc. Positive analyte detections less than the MQL but greater than the SDL were qualified as estimated (J) in Table 2 unless qualified otherwise in this memorandum.

The detectability check standard (DCS) results supported the laboratory MDLs.

5. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are usable for the purpose of supporting the Pentachlorophenol Assessment in Soils investigation at the site by providing current concentrations of the chemical of concern with the specific qualifications noted herein.

Table 1

Sample Collection and Analysis Summary
Pentachlorophenol Assessment in Soils
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
February 2020

Sample Identification	Location	Matrix	Start Depth (ft bgs)	End Depth (ft bgs)	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Analysis/Parameters: Pentachlorophenol	Comments
SO-1620-SSO01(0-2)-20200210	SSO01	Soil	0	2	02/10/2020	13:10	X	
SO-1620-SSO03(0-2)-20200210	SSO03	Soil	0	2	02/10/2020	13:40	X	
SO-1620-SSO04(0-2)-20200210	SSO04	Soil	0	2	02/10/2020	13:50	X	
SO-1620-SSO06(0-2)-20200210	SSO06	Soil	0	2	02/10/2020	14:00	X	
SO-1620-SSO07(0-2)-20200210	SSO07	Soil	0	2	02/10/2020	14:10	X	
SO-1620-SSO08(0-2)-20200210	SSO08	Soil	0	2	02/10/2020	14:20	X	
SO-1620-SSO09(0-2)-20200210	SSO09	Soil	0	2	02/10/2020	14:30	X	
SO-1620-SSO10(0-2)-20200210	SSO10	Soil	0	2	02/10/2020	14:45	X	
SO-1620-SSO05(0-2)-20200211	SSO05	Soil	0	2	02/11/2020	09:25	X	
SO-1620-SSO11(0-2)-20200211	SSO11	Soil	0	2	02/11/2020	09:40	X	
SO-1620-SSO12(0-2)-20200211	SSO12	Soil	0	2	02/11/2020	09:45	X	
SO-1620-SSO13(0-2)-20200211	SSO13	Soil	0	2	02/11/2020	09:50	X	
SO-1620-SSO14(0-2)-20200211	SSO14	Soil	0	2	02/11/2020	10:00	X	
SO-1620-SSO15(0-2)-20200211	SSO15	Soil	0	2	02/11/2020	10:19	X	
SO-1620-SSO02(0-2)-20200211	SSO02	Soil	0	2	02/11/2020	11:00	X	
SO-1620-FD01-20200210	SSO07	Soil	0	2	02/10/2020	-	X	FD(SO-1620-SSO07(0-2)-20200210)
SO-1620-FD02-20200211	SSO14	Soil	0	2	02/11/2020	-	X	FD(SO-1620-SSO14(0-2)-20200211)

Notes:

FD - Field Duplicate of Sample in Parentheses
"-" - Not Applicable
ft bgs - Feet below ground surface

Table 2

Analytical Results Summary
Pentachlorophenol Assessment in Soils
Union Pacific Railroad (UPRR/Houston, TX-Wood Preserving Works
Houston, Texas
February 2020

Location ID:		**SSO01**	**SSO02**	**SSO03**
Sample Name:		**SO-1620-SSO01(0-2)-20200210**	**SO-1620-SSO02(0-2)-20200211**	**SO-1620-SSO03(0-2)-20200210**
Sample Date:		**02/10/2020**	**02/11/2020**	**02/10/2020**
Depth:		**0-2 ft BGS**	**0-2 ft BGS**	**0-2 ft BGS**
Parameters	**Unit**			
Semivolatile Organic Compounds				
Pentachlorophenol	mg/kg	0.20	0.032	3.7
General Chemistry				
Moisture	wt%	13.4	14.9	10.9

Notes:

J - Estimated concentration

Table 2

Analytical Results Summary
Pentachlorophenol Assessment in Soils
Union Pacific Railroad (UPRR/Houston, TX-Wood Preserving Works
Houston, Texas
February 2020

Location ID:		**SSO04**	**SSO05**	**SSO06**
Sample Name:		**SO-1620-SSO04(0-2)-20200210**	**SO-1620-SSO05(0-2)-20200211**	**SO-1620-SSO06(0-2)-20200210**
Sample Date:		**02/10/2020**	**02/11/2020**	**02/10/2020**
Depth:		**0-2 ft BGS**	**0-2 ft BGS**	**0-2 ft BGS**
Parameters	**Unit**			
Semivolatile Organic Compounds				
Pentachlorophenol	mg/kg	0.13	0.062	0.26
General Chemistry				
Moisture	wt%	8.75	14.8	15.6

Notes:

J - Estimated concentration

Table 2

Analytical Results Summary
Pentachlorophenol Assessment in Soils
Union Pacific Railroad (UPRR/Houston, TX-Wood Preserving Works
Houston, Texas
February 2020

Location ID:		**SSO07**	**SSO07**	**SSO08**
Sample Name:		**SO-1620-SSO07(0-2)-20200210**	**SO-1620-FD01-20200210**	**SO-1620-SSO08(0-2)-20200210**
Sample Date:		**02/10/2020**	**02/10/2020**	**02/10/2020**
Depth:		**0-2 ft BGS**	**0-2 ft BGS**	**0-2 ft BGS**
			Duplicate	
Parameters	**Unit**			
Semivolatile Organic Compounds				
Pentachlorophenol	mg/kg	6.7 J	3.9 J	13
General Chemistry				
Moisture	wt%	15.7	22.2	16.9

Notes:

J - Estimated concentration

Table 2

Analytical Results Summary
Pentachlorophenol Assessment in Soils
Union Pacific Railroad (UPRR/Houston, TX-Wood Preserving Works
Houston, Texas
February 2020

Location ID:		**SSO09**	**SSO10**	**SSO11**
Sample Name:		**SO-1620-SSO09(0-2)-20200210**	**SO-1620-SSO10(0-2)-20200210**	**SO-1620-SSO11(0-2)-20200211**
Sample Date:		**02/10/2020**	**02/10/2020**	**02/11/2020**
Depth:		**0-2 ft BGS**	**0-2 ft BGS**	**0-2 ft BGS**
Parameters	**Unit**			
Semivolatile Organic Compounds				
Pentachlorophenol	mg/kg	0.21	0.13	0.22
General Chemistry				
Moisture	wt%	18.9	17.4	7.94

Notes:

J - Estimated concentration

Table 2

Analytical Results Summary
Pentachlorophenol Assessment in Soils
Union Pacific Railroad (UPRR/Houston, TX-Wood Preserving Works
Houston, Texas
February 2020

Location ID:		**SSO12**	**SSO13**	**SSO14**
Sample Name:		**SO-1620-SSO12(0-2)-20200211**	**SO-1620-SSO13(0-2)-20200211**	**SO-1620-SSO14(0-2)-20200211**
Sample Date:		**02/11/2020**	**02/11/2020**	**02/11/2020**
Depth:		**0-2 ft BGS**	**0-2 ft BGS**	**0-2 ft BGS**
Parameters	**Unit**			
Semivolatile Organic Compounds				
Pentachlorophenol	mg/kg	0.0059 J	0.090	<0.0041
General Chemistry				
Moisture	wt%	14.7	8.83	19.4

Notes:

J - Estimated concentration

Table 2

Analytical Results Summary
Pentachlorophenol Assessment in Soils
Union Pacific Railroad (UPRR/Houston, TX-Wood Preserving Works
Houston, Texas
February 2020

Location ID:		**SSO14**	**SSO15**
Sample Name:		**SO-1620-FD02-20200211**	**SO-1620-SSO15(0-2)-20200211**
Sample Date:		**02/11/2020**	**02/11/2020**
Depth:		**0-2 ft BGS**	**0-2 ft BGS**
		Duplicate	
Parameters	**Unit**		
Semivolatile Organic Compounds			
Pentachlorophenol	mg/kg	<0.0041	<0.0040
General Chemistry			
Moisture	wt%	20.7	18.2

Notes:

J - Estimated concentration

Table 3

Analytical Methods
Pentachlorophenol Assessment in Soils
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
February 2020

Parameter	Method	Matrix	Holding Time	
			Collection to Extraction (Days)	Extraction to Analysis (Days)
Pentachlorophenol	SW-846 8270D	Soil	14	40

Method References:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions

Table 4

Qualified Sample Data Due to Variability in Field Duplicate Results
Pentachlorophenol Assessment in Soils
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
February 2020

Parameter	Analyte	RPD	Sample ID	Qualified Result	Field Duplicate Sample ID	Qualified Result	Units
SVOCs	Pentachlorophenol	53	SO-1620-SSO07(0-2)-20200210	6.7 J	SO-1620-FD01-20200210	3.9 J	mg/Kg

Notes:

RPD - Relative Percent Difference
SVOCs - Semi-volatile Organic Compounds
J - Estimated concentration

Attachment A
Laboratory NELAP Certificate

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-19-23

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

Expiration Date: 4/30/2020

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2019

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: ***Drinking Water***

Method EPA 1613

Analyte	AB	Analyte ID	Method ID
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10120408

Method EPA 200.8

Analyte	AB	Analyte ID	Method ID
Copper	TX	1055	10014605
Lead	TX	1075	10014605

Texas Commission on Environmental Quality

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Matrix: ***Non-Potable Water***

Method EPA 1010

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10116606

Method EPA 120.1

Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	10006403

Method EPA 1311

Analyte	AB	Analyte ID	Method ID
TCLP	TX	849	10118806

Method EPA 1312

Analyte	AB	Analyte ID	Method ID
SPLP	TX	850	10119003

Method EPA 160.4

Analyte	AB	Analyte ID	Method ID
Residue-volatile	TX	1970	10010409

Method EPA 1613

Analyte	AB	Analyte ID	Method ID
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10120408
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10120408
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10120408
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10120408
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10120408
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10120408
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10120408
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10120408
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10120408
1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10120408
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10120408
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10120408
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10120408
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10120408

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Matrix: ***Non-Potable Water***

2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10120408
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10120408
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10120408
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10120408
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10120408
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10120408
Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10120408
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10120408
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10120408
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10120408
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10120408

Method EPA 1664

Analyte	**AB**	**Analyte ID**	**Method ID**
n-Hexane Extractable Material (HEM) (O&G)	TX	1803	10127807

Method EPA 180.1

Analyte	**AB**	**Analyte ID**	**Method ID**
Turbidity	TX	2055	10011606

Method EPA 200.8

Analyte	**AB**	**Analyte ID**	**Method ID**
Aluminum	TX	1000	10014605
Antimony	TX	1005	10014605
Arsenic	TX	1010	10014605
Barium	TX	1015	10014605
Beryllium	TX	1020	10014605
Boron	TX	1025	10014605
Cadmium	TX	1030	10014605
Calcium	TX	1035	10014605
Chromium	TX	1040	10014605
Cobalt	TX	1050	10014605
Copper	TX	1055	10014605
Iron	TX	1070	10014605

Texas Commission on Environmental Quality

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Matrix: ***Non-Potable Water***

Lead	TX	1075	10014605
Magnesium	TX	1085	10014605
Manganese	TX	1090	10014605
Molybdenum	TX	1100	10014605
Nickel	TX	1105	10014605
Potassium	TX	1125	10014605
Selenium	TX	1140	10014605
Silver	TX	1150	10014605
Sodium	TX	1155	10014605
Strontium	TX	1160	10014605
Thallium	TX	1165	10014605
Tin	TX	1175	10014605
Titanium	TX	1180	10014605
Uranium	TX	3035	10014605
Vanadium	TX	1185	10014605
Zinc	TX	1190	10014605

Method EPA 245.1

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10036609

Method EPA 300.0

Analyte	**AB**	**Analyte ID**	**Method ID**
Bromide	TX	1540	10053200
Chloride	TX	1575	10053200
Fluoride	TX	1730	10053200
Nitrate as N	TX	1810	10053200
Nitrate-nitrite	TX	1820	10053200
Nitrite as N	TX	1840	10053200
Orthophosphate as P	TX	1870	10053200
Sulfate	TX	2000	10053200

Method EPA 325.1

Analyte	**AB**	**Analyte ID**	**Method ID**

Texas Commission on Environmental Quality

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Issue Date: 5/1/2019

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: ***Non-Potable Water***

Chloride	TX	1575	10056801

Method EPA 335.1

Analyte	AB	Analyte ID	Method ID
Amenable cyanide	TX	1510	10060001

Method EPA 335.2

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	10278203

Method EPA 335.4

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	10061402

Method EPA 350.3

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	10064401

Method EPA 365.3

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	10070801
Phosphorus	TX	1910	10070801

Method EPA 375.4

Analyte	AB	Analyte ID	Method ID
Sulfate	TX	2000	10073800

Method EPA 376.1

Analyte	AB	Analyte ID	Method ID
Sulfide	TX	2005	10074201

Method EPA 410.4

Analyte	AB	Analyte ID	Method ID
Chemical oxygen demand (COD)	TX	1565	10077404

Method EPA 415.1

Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	10078407

Method EPA 420.1

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10079400

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Issue Date: 5/1/2019

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Matrix: ***Non-Potable Water***

Method EPA 420.4

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10080203

Method EPA 6020

Analyte	AB	Analyte ID	Method ID
Aluminum	TX	1000	10156419
Antimony	TX	1005	10156419
Arsenic	TX	1010	10156419
Barium	TX	1015	10156419
Beryllium	TX	1020	10156419
Boron	TX	1025	10156419
Cadmium	TX	1030	10156419
Calcium	TX	1035	10156419
Chromium	TX	1040	10156419
Cobalt	TX	1050	10156419
Copper	TX	1055	10156419
Iron	TX	1070	10156419
Lead	TX	1075	10156419
Lithium	TX	1080	10156419
Magnesium	TX	1085	10156419
Manganese	TX	1090	10156419
Molybdenum	TX	1100	10156419
Nickel	TX	1105	10156419
Potassium	TX	1125	10156419
Selenium	TX	1140	10156419
Silver	TX	1150	10156419
Sodium	TX	1155	10156419
Strontium	TX	1160	10156419
Thallium	TX	1165	10156419
Tin	TX	1175	10156419
Titanium	TX	1180	10156419

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Matrix: ***Non-Potable Water***

Vanadium	TX	1185	10156419
Zinc	TX	1190	10156419

Method EPA 608

Analyte	AB	Analyte ID	Method ID
4,4'-DDD	TX	7355	10103603
4,4'-DDE	TX	7360	10103603
4,4'-DDT	TX	7365	10103603
Aldrin	TX	7025	10103603
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10103603
alpha-Chlordane	TX	7240	10103603
Aroclor-1016 (PCB-1016)	TX	8880	10103603
Aroclor-1221 (PCB-1221)	TX	8885	10103603
Aroclor-1232 (PCB-1232)	TX	8890	10103603
Aroclor-1242 (PCB-1242)	TX	8895	10103603
Aroclor-1248 (PCB-1248)	TX	8900	10103603
Aroclor-1254 (PCB-1254)	TX	8905	10103603
Aroclor-1260 (PCB-1260)	TX	8910	10103603
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10103603
Chlordane (tech.)	TX	7250	10103603
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10103603
Dieldrin	TX	7470	10103603
Endosulfan I	TX	7510	10103603
Endosulfan II	TX	7515	10103603
Endosulfan sulfate	TX	7520	10103603
Endrin	TX	7540	10103603
Endrin aldehyde	TX	7530	10103603
Endrin ketone	TX	7535	10103603
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10103603
gamma-Chlordane	TX	7245	10103603
Heptachlor	TX	7685	10103603

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Matrix: ***Non-Potable Water***

Heptachlor epoxide	TX	7690	10103603
Methoxychlor	TX	7810	10103603
Toxaphene (Chlorinated camphene)	TX	8250	10103603

Method EPA 624

Analyte	AB	Analyte ID	Method ID
1,1,1-Trichloroethane	TX	5160	10107207
1,1,2,2-Tetrachloroethane	TX	5110	10107207
1,1,2-Trichloroethane	TX	5165	10107207
1,1-Dichloroethane	TX	4630	10107207
1,1-Dichloroethylene	TX	4640	10107207
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10107207
1,2-Dichlorobenzene	TX	4610	10107207
1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10107207
1,2-Dichloropropane	TX	4655	10107207
1,3-Dichlorobenzene	TX	4615	10107207
1,4-Dichlorobenzene	TX	4620	10107207
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10107207
2-Chloroethyl vinyl ether	TX	4500	10107207
Acetone (2-Propanone)	TX	4315	10107207
Acrolein (Propenal)	TX	4325	10107207
Acrylonitrile	TX	4340	10107207
Benzene	TX	4375	10107207
Bromodichloromethane	TX	4395	10107207
Bromoform	TX	4400	10107207
Carbon tetrachloride	TX	4455	10107207
Chlorobenzene	TX	4475	10107207
Chlorodibromomethane	TX	4575	10107207
Chloroethane (Ethyl chloride)	TX	4485	10107207
Chloroform	TX	4505	10107207
cis-1,2-Dichloroethylene	TX	4645	10107207

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Matrix: ***Non-Potable Water***

cis-1,3-Dichloropropene	TX	4680	10107207
Ethylbenzene	TX	4765	10107207
m+p-xylene	TX	5240	10107207
Methyl bromide (Bromomethane)	TX	4950	10107207
Methyl chloride (Chloromethane)	TX	4960	10107207
Methyl tert-butyl ether (MTBE)	TX	5000	10107207
Methylene chloride (Dichloromethane)	TX	4975	10107207
Naphthalene	TX	5005	10107207
o-Xylene	TX	5250	10107207
Tetrachloroethylene (Perchloroethylene)	TX	5115	10107207
Toluene	TX	5140	10107207
trans-1,2-Dichloroethylene	TX	4700	10107207
trans-1,3-Dichloropropylene	TX	4685	10107207
Trichloroethene (Trichloroethylene)	TX	5170	10107207
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10107207
Vinyl chloride	TX	5235	10107207
Xylene (total)	TX	5260	10107207

Method EPA 625

Analyte	**AB**	**Analyte ID**	**Method ID**
1,2,4,5-Tetrachlorobenzene	TX	6715	10107401
1,2,4-Trichlorobenzene	TX	5155	10107401
1,2-Dichlorobenzene	TX	4610	10107401
1,2-Diphenylhydrazine	TX	6220	10107401
1,3-Dichlorobenzene	TX	4615	10107401
1,4-Dichlorobenzene	TX	4620	10107401
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10107401
2,4,5-Trichlorophenol	TX	6835	10107401
2,4,6-Trichlorophenol	TX	6840	10107401
2,4-Dichlorophenol	TX	6000	10107401
2,4-Dimethylphenol	TX	6130	10107401

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Matrix: ***Non-Potable Water***

2,4-Dinitrophenol	TX	6175	10107401
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10107401
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10107401
2-Chloronaphthalene	TX	5795	10107401
2-Chlorophenol	TX	5800	10107401
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10107401
2-Methylphenol (o-Cresol)	TX	6400	10107401
2-Nitrophenol	TX	6490	10107401
3,3'-Dichlorobenzidine	TX	5945	10107401
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10107401
4-Chloro-3-methylphenol	TX	5700	10107401
4-Chlorophenyl phenylether	TX	5825	10107401
4-Methylphenol (p-Cresol)	TX	6410	10107401
4-Nitrophenol	TX	6500	10107401
Acenaphthene	TX	5500	10107401
Acenaphthylene	TX	5505	10107401
Anthracene	TX	5555	10107401
Benzidine	TX	5595	10107401
Benzo(a)anthracene	TX	5575	10107401
Benzo(a)pyrene	TX	5580	10107401
Benzo(b)fluoranthene	TX	5585	10107401
Benzo(g,h,i)perylene	TX	5590	10107401
Benzo(k)fluoranthene	TX	5600	10107401
bis(2-Chloroethoxy)methane	TX	5760	10107401
bis(2-Chloroethyl) ether	TX	5765	10107401
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10107401
Butyl benzyl phthalate	TX	5670	10107401
Chrysene	TX	5855	10107401
Dibenz(a,h) anthracene	TX	5895	10107401
Diethyl phthalate	TX	6070	10107401

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Dimethyl phthalate	TX	6135	10107401
Di-n-butyl phthalate	TX	5925	10107401
Di-n-octyl phthalate	TX	6200	10107401
Fluoranthene	TX	6265	10107401
Fluorene	TX	6270	10107401
Hexachlorobenzene	TX	6275	10107401
Hexachlorobutadiene	TX	4835	10107401
Hexachlorocyclopentadiene	TX	6285	10107401
Hexachloroethane	TX	4840	10107401
Indeno(1,2,3-cd) pyrene	TX	6315	10107401
Isophorone	TX	6320	10107401
Naphthalene	TX	5005	10107401
Nitrobenzene	TX	5015	10107401
n-Nitrosodiethylamine	TX	6525	10107401
n-Nitrosodimethylamine	TX	6530	10107401
n-Nitrosodi-n-butylamine	TX	5025	10107401
n-Nitrosodi-n-propylamine	TX	6545	10107401
n-Nitrosodiphenylamine	TX	6535	10107401
Pentachlorobenzene	TX	6590	10107401
Pentachlorophenol	TX	6605	10107401
Phenanthrene	TX	6615	10107401
Phenol	TX	6625	10107401
Pyrene	TX	6665	10107401
Pyridine	TX	5095	10107401

Method EPA 7196

Analyte	**AB**	**Analyte ID**	**Method ID**
Chromium (VI)	TX	1045	10162206

Method EPA 7470

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10165603

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Matrix: ***Non-Potable Water***

Method EPA 8011

Analyte	AB	Analyte ID	Method ID
1,2,3-Trichloropropane	TX	5180	10173009
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10173009
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10173009

Method EPA 8015

Analyte	AB	Analyte ID	Method ID
Diesel range organics (DRO)	TX	9369	10173203
Ethanol	TX	4750	10173203
Ethylene glycol	TX	4785	10173203
Gasoline range organics (GRO)	TX	9408	10173203
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10173203
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10173203
Methanol	TX	4930	10173203
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10173203
n-Propanol (1-Propanol)	TX	5055	10173203
Propylene Glycol	TX	6657	10173203
tert-Butyl alcohol	TX	4420	10173203

Method EPA 8021

Analyte	AB	Analyte ID	Method ID
Benzene	TX	4375	10174400
Ethylbenzene	TX	4765	10174400
m+p-xylene	TX	5240	10174400
Methyl tert-butyl ether (MTBE)	TX	5000	10174400
o-Xylene	TX	5250	10174400
Toluene	TX	5140	10174400
Xylene (total)	TX	5260	10174400

Method EPA 8081

Analyte	AB	Analyte ID	Method ID
4,4'-DDD	TX	7355	10178402
4,4'-DDE	TX	7360	10178402

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Matrix: ***Non-Potable Water***

4,4'-DDT	TX	7365	10178402
Aldrin	TX	7025	10178402
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10178402
alpha-Chlordane	TX	7240	10178402
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10178402
Chlordane (tech.)	TX	7250	10178402
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10178402
Dieldrin	TX	7470	10178402
Endosulfan I	TX	7510	10178402
Endosulfan II	TX	7515	10178402
Endosulfan sulfate	TX	7520	10178402
Endrin	TX	7540	10178402
Endrin aldehyde	TX	7530	10178402
Endrin ketone	TX	7535	10178402
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10178402
gamma-Chlordane	TX	7245	10178402
Heptachlor	TX	7685	10178402
Heptachlor epoxide	TX	7690	10178402
Hexachlorobenzene	TX	6275	10178402
Methoxychlor	TX	7810	10178402
Mirex	TX	7870	10178402
Toxaphene (Chlorinated camphene)	TX	8250	10178402

Method EPA 8082

Analyte	**AB**	**Analyte ID**	**Method ID**
Aroclor-1016 (PCB-1016)	TX	8880	10179201
Aroclor-1221 (PCB-1221)	TX	8885	10179201
Aroclor-1232 (PCB-1232)	TX	8890	10179201
Aroclor-1242 (PCB-1242)	TX	8895	10179201
Aroclor-1248 (PCB-1248)	TX	8900	10179201
Aroclor-1254 (PCB-1254)	TX	8905	10179201

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Matrix: ***Non-Potable Water***

Aroclor-1260 (PCB-1260)	TX	8910	10179201
PCBs (total)	TX	8870	10179201

Method EPA 8151

Analyte	AB	Analyte ID	Method ID
2,4,5-T	TX	8655	10183003
2,4-D	TX	8545	10183003
2,4-DB	TX	8560	10183003
Dalapon	TX	8555	10183003
Dicamba	TX	8595	10183003
Dichloroprop (Dichlorprop, Weedone)	TX	8605	10183003
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10183003
MCPA	TX	7775	10183003
MCPP	TX	7780	10183003
Silvex (2,4,5-TP)	TX	8650	10183003

Method EPA 8260

Analyte	AB	Analyte ID	Method ID
1,1,1,2-Tetrachloroethane	TX	5105	10184404
1,1,1-Trichloroethane	TX	5160	10184404
1,1,2,2-Tetrachloroethane	TX	5110	10184404
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	TX	5195	10184404
1,1,2-Trichloroethane	TX	5165	10184404
1,1-Dichloroethane	TX	4630	10184404
1,1-Dichloroethylene	TX	4640	10184404
1,1-Dichloropropene	TX	4670	10184404
1,2,3-Trichlorobenzene	TX	5150	10184404
1,2,3-Trichloropropane	TX	5180	10184404
1,2,4-Trichlorobenzene	TX	5155	10184404
1,2,4-Trimethylbenzene	TX	5210	10184404
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10184404
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10184404
1,2-Dichlorobenzene	TX	4610	10184404

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Matrix: ***Non-Potable Water***

1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10184404
1,2-Dichloropropane	TX	4655	10184404
1,3,5-Trimethylbenzene	TX	5215	10184404
1,3-Dichlorobenzene	TX	4615	10184404
1,3-Dichloropropane	TX	4660	10184404
1,4-Dichlorobenzene	TX	4620	10184404
1,4-Dioxane (1,4-Diethyleneoxide)	TX	4735	10184404
1-Chlorohexane	TX	4510	10184404
1-Propanol	TX	5060	10184404
2,2-Dichloropropane	TX	4665	10184404
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10184404
2-Chloroethyl vinyl ether	TX	4500	10184404
2-Chlorotoluene	TX	4535	10184404
2-Hexanone (MBK)	TX	4860	10184404
2-Pentanone	TX	5045	10184404
4-Chlorotoluene	TX	4540	10184404
4-Isopropyltoluene (p-Cymene)	TX	4915	10184404
4-Methyl-2-pentanone (MIBK)	TX	4995	10184404
Acetone (2-Propanone)	TX	4315	10184404
Acetonitrile	TX	4320	10184404
Acrolein (Propenal)	TX	4325	10184404
Acrylonitrile	TX	4340	10184404
Allyl alcohol	TX	4350	10184404
Allyl chloride (3-Chloropropene)	TX	4355	10184404
Benzene	TX	4375	10184404
Benzyl chloride	TX	5635	10184404
Bromobenzene	TX	4385	10184404
Bromochloromethane	TX	4390	10184404
Bromodichloromethane	TX	4395	10184404
Bromoform	TX	4400	10184404

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Matrix: ***Non-Potable Water***

Carbon disulfide	TX	4450	10184404
Carbon tetrachloride	TX	4455	10184404
Chlorobenzene	TX	4475	10184404
Chlorodibromomethane	TX	4575	10184404
Chloroethane (Ethyl chloride)	TX	4485	10184404
Chloroform	TX	4505	10184404
Chloroprene (2-Chloro-1,3-butadiene)	TX	4525	10184404
cis-1,2-Dichloroethylene	TX	4645	10184404
cis-1,3-Dichloropropene	TX	4680	10184404
Dibromofluoromethane	TX	4590	10184404
Dibromomethane (Methylene bromide)	TX	4595	10184404
Dichlorodifluoromethane (Freon-12)	TX	4625	10184404
Diethyl ether	TX	4725	10184404
Di-isopropylether (DIPE)	TX	9375	10184404
Epichlorohydrin (1-Chloro-2,3-epoxypropane)	TX	4745	10184404
Ethanol	TX	4750	10184404
Ethyl acetate	TX	4755	10184404
Ethyl methacrylate	TX	4810	10184404
Ethylbenzene	TX	4765	10184404
Ethylene oxide	TX	4795	10184404
Ethyl-t-butylether (ETBE) (2-Ethoxy-2-methylpropane)	TX	4770	10184404
Hexachlorobutadiene	TX	4835	10184404
Iodomethane (Methyl iodide)	TX	4870	10184404
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10184404
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10184404
Isopropylbenzene (Cumene)	TX	4900	10184404
m+p-xylene	TX	5240	10184404
Methacrylonitrile	TX	4925	10184404
Methyl acetate	TX	4940	10184404
Methyl acrylate	TX	4945	10184404

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Matrix: ***Non-Potable Water***

Methyl bromide (Bromomethane)	TX	4950	10184404
Methyl chloride (Chloromethane)	TX	4960	10184404
Methyl methacrylate	TX	4990	10184404
Methyl tert-butyl ether (MTBE)	TX	5000	10184404
Methylcyclohexane	TX	4965	10184404
Methylene chloride (Dichloromethane)	TX	4975	10184404
Naphthalene	TX	5005	10184404
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10184404
n-Butylbenzene	TX	4435	10184404
n-Propylbenzene	TX	5090	10184404
o-Xylene	TX	5250	10184404
Pentachloroethane	TX	5035	10184404
Propionitrile (Ethyl cyanide)	TX	5080	10184404
Pyridine	TX	5095	10184404
sec-Butylbenzene	TX	4440	10184404
Styrene	TX	5100	10184404
T-amylmethylether (TAME)	TX	4370	10184404
tert-Butyl alcohol	TX	4420	10184404
tert-Butylbenzene	TX	4445	10184404
Tetrachloroethylene (Perchloroethylene)	TX	5115	10184404
Toluene	TX	5140	10184404
trans-1,2-Dichloroethylene	TX	4700	10184404
trans-1,3-Dichloropropylene	TX	4685	10184404
trans-1,4-Dichloro-2-butene	TX	4605	10184404
Trichloroethene (Trichloroethylene)	TX	5170	10184404
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10184404
Vinyl acetate	TX	5225	10184404
Vinyl chloride	TX	5235	10184404
Xylene (total)	TX	5260	10184404

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NELAP - Recognized Laboratory Fields of Accreditation

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Houston, TX 77099-4338

Issue Date: 5/1/2019

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Matrix: ***Non-Potable Water***

Method EPA 8270

Analyte	AB	Analyte ID	Method ID
1,2,4,5-Tetrachlorobenzene	TX	6715	10185203
1,2,4-Trichlorobenzene	TX	5155	10185203
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10185203
1,2-Dichlorobenzene	TX	4610	10185203
1,2-Dinitrobenzene	TX	6155	10185203
1,2-Diphenylhydrazine	TX	6220	10185203
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10185203
1,3-Dichlorobenzene	TX	4615	10185203
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10185203
1,4-Dichlorobenzene	TX	4620	10185203
1,4-Dinitrobenzene	TX	6165	10185203
1,4-Naphthoquinone	TX	6420	10185203
1,4-Phenylenediamine	TX	6630	10185203
1-Chloronaphthalene	TX	5790	10185203
1-Naphthylamine	TX	6425	10185203
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10185203
2,3,4,6-Tetrachlorophenol	TX	6735	10185203
2,4,5-Trichlorophenol	TX	6835	10185203
2,4,5-Trimethylaniline	TX	6880	10185203
2,4,6-Trichlorophenol	TX	6840	10185203
2,4-Diaminotoluene	TX	5880	10185203
2,4-Dichlorophenol	TX	6000	10185203
2,4-Dimethylphenol	TX	6130	10185203
2,4-Dinitrophenol	TX	6175	10185203
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10185203
2,6-Dichlorophenol	TX	6005	10185203
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10185203
2-Acetylaminofluorene	TX	5515	10185203

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Matrix: ***Non-Potable Water***

2-Chloronaphthalene	TX	5795	10185203
2-Chlorophenol	TX	5800	10185203
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10185203
2-Methylaniline (o-Toluidine)	TX	5145	10185203
2-Methylnaphthalene	TX	6385	10185203
2-Methylphenol (o-Cresol)	TX	6400	10185203
2-Naphthylamine	TX	6430	10185203
2-Nitroaniline	TX	6460	10185203
2-Nitrophenol	TX	6490	10185203
2-Picoline (2-Methylpyridine)	TX	5050	10185203
3,3'-Dichlorobenzidine	TX	5945	10185203
3,3'-Dimethylbenzidine	TX	6120	10185203
3-Methylcholanthrene	TX	6355	10185203
3-Methylphenol (m-Cresol)	TX	6405	10185203
3-Nitroaniline	TX	6465	10185203
4-Aminobiphenyl	TX	5540	10185203
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10185203
4-Chloro-3-methylphenol	TX	5700	10185203
4-Chloroaniline	TX	5745	10185203
4-Chlorophenyl phenylether	TX	5825	10185203
4-Dimethyl aminoazobenzene	TX	6105	10185203
4-Methylphenol (p-Cresol)	TX	6410	10185203
4-Nitroaniline	TX	6470	10185203
4-Nitrobiphenyl	TX	6480	10185203
4-Nitrophenol	TX	6500	10185203
4-Nitroquinoline-1-oxide	TX	6510	10185203
5-Chloro-2-methylaniline	TX	5695	10185203
5-Nitro-o-toluidine	TX	6570	10185203
7,12-Dimethylbenz(a) anthracene	TX	6115	10185203
a-a-Dimethylphenethylamine	TX	6125	10185203

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Matrix: ***Non-Potable Water***

Acenaphthene	TX	5500	10185203
Acenaphthylene	TX	5505	10185203
Acetophenone	TX	5510	10185203
Aniline	TX	5545	10185203
Anthracene	TX	5555	10185203
Aramite	TX	5560	10185203
Atrazine	TX	7065	10185203
Azinphos-methyl (Guthion)	TX	7075	10185203
Azobenzene	TX	5562	10185203
Benzenethiol (Thiophenol)	TX	6750	10185203
Benzidine	TX	5595	10185203
Benzo(a)anthracene	TX	5575	10185203
Benzo(a)pyrene	TX	5580	10185203
Benzo(b)fluoranthene	TX	5585	10185203
Benzo(e)pyrene	TX	5605	10185203
Benzo(g,h,i)perylene	TX	5590	10185203
Benzo(k)fluoranthene	TX	5600	10185203
Benzoic acid	TX	5610	10185203
Benzyl alcohol	TX	5630	10185203
Biphenyl	TX	5640	10185203
bis(2-Chloroethoxy)methane	TX	5760	10185203
bis(2-Chloroethyl) ether	TX	5765	10185203
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10185203
Butyl benzyl phthalate	TX	5670	10185203
Caprolactam	TX	7180	10185203
Captan	TX	7190	10185203
Carbaryl (Sevin)	TX	7195	10185203
Carbazole	TX	5680	10185203
Carbophenothion	TX	7220	10185203
Chlorobenzilate	TX	7260	10185203

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Matrix: ***Non-Potable Water***

Chrysene	TX	5855	10185203
Coumaphos	TX	7315	10185203
Demeton	TX	7390	10185203
Demeton	TX	7390	10185203
Demeton-o	TX	7395	10185203
Demeton-s	TX	7385	10185203
Diallate	TX	7405	10185203
Dibenz(a,h) anthracene	TX	5895	10185203
Dibenz(a,j) acridine	TX	5900	10185203
Dibenzofuran	TX	5905	10185203
Dichlorovos (DDVP, Dichlorvos)	TX	8610	10185203
Diethyl phthalate	TX	6070	10185203
Dimethoate	TX	7475	10185203
Dimethoate	TX	7475	10185203
Dimethyl phthalate	TX	6135	10185203
Di-n-butyl phthalate	TX	5925	10185203
Di-n-octyl phthalate	TX	6200	10185203
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10185203
Dioxathion	TX	7495	10185203
Diphenylamine	TX	6205	10185203
Disulfoton	TX	8625	10185203
Ethion	TX	7565	10185203
Ethyl methanesulfonate	TX	6260	10185203
Famphur	TX	7580	10185203
Fluoranthene	TX	6265	10185203
Fluorene	TX	6270	10185203
Hexachlorobenzene	TX	6275	10185203
Hexachlorobutadiene	TX	4835	10185203
Hexachlorocyclopentadiene	TX	6285	10185203
Hexachloroethane	TX	4840	10185203

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Matrix: ***Non-Potable Water***

Hexachlorophene	TX	6290	10185203
Hexachloropropene	TX	6295	10185203
Indeno(1,2,3-cd) pyrene	TX	6315	10185203
Isodrin	TX	7725	10185203
Isophorone	TX	6320	10185203
Isosafrole	TX	6325	10185203
Kepone	TX	7740	10185203
Maleic anhydride	TX	6335	10185203
Methapyrilene	TX	6345	10185203
Methyl methanesulfonate	TX	6375	10185203
Methyl parathion (Parathion, methyl)	TX	7825	10185203
Mevinphos	TX	7850	10185203
Naled	TX	7905	10185203
Naphthalene	TX	5005	10185203
Nitrobenzene	TX	5015	10185203
n-Nitrosodiethylamine	TX	6525	10185203
n-Nitrosodimethylamine	TX	6530	10185203
n-Nitrosodi-n-butylamine	TX	5025	10185203
n-Nitrosodi-n-propylamine	TX	6545	10185203
n-Nitrosodiphenylamine	TX	6535	10185203
n-Nitrosomethylethylamine	TX	6550	10185203
n-Nitrosomorpholine	TX	6555	10185203
n-Nitrosopiperidine	TX	6560	10185203
n-Nitrosopyrrolidine	TX	6565	10185203
o,o,o-Triethyl phosphorothioate	TX	8290	10185203
o-Anisidine	TX	5550	10185203
Parathion, ethyl	TX	7955	10185203
p-Cresidine	TX	5860	10185203
Pentachlorobenzene	TX	6590	10185203
Pentachloronitrobenzene (PCNB)	TX	6600	10185203

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Matrix: ***Non-Potable Water***

Pentachlorophenol	TX	6605	10185203
Phenacetin	TX	6610	10185203
Phenanthrene	TX	6615	10185203
Phenol	TX	6625	10185203
Phorate	TX	7985	10185203
Phosmet (Imidan)	TX	8000	10185203
Phthalic anhydride	TX	6640	10185203
Pronamide (Kerb)	TX	6650	10185203
Pyrene	TX	6665	10185203
Pyridine	TX	5095	10185203
Quinoline	TX	6670	10185203
Resorcinol	TX	6680	10185203
Safrole	TX	6685	10185203
Sulfotepp	TX	8155	10185203
Terbufos	TX	8185	10185203
Tetrachlorvinphos (Stirophos, Gardona)	TX	8197	10185203
Thionazin (Zinophos)	TX	8235	10185203
Toluene diisocyanate	TX	6775	10185203
Trifluralin (Treflan)	TX	8295	10185203

Method EPA 8290

Analyte	**AB**	**Analyte ID**	**Method ID**
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10187209
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10187209
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10187209
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10187209
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10187209
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10187209
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10187209
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10187209
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10187209

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Matrix: ***Non-Potable Water***

1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10187209
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10187209
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10187209
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10187209
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10187209
2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10187209
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10187209
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10187209
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10187209
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10187209
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10187209
Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10187209
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10187209
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10187209
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10187209
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10187209

Method EPA 8316

Analyte	**AB**	**Analyte ID**	**Method ID**
Acrylamide	TX	4330	10188202

Method EPA 8330

Analyte	**AB**	**Analyte ID**	**Method ID**
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10189807
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10189807
2,4,6-Trinitrotoluene (2,4,6-TNT)	TX	9651	10189807
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10189807
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10189807
2-Amino-4,6-dinitrotoluene (2-am-dnt)	TX	9303	10189807
2-Nitrotoluene	TX	9507	10189807
3-Nitrotoluene	TX	9510	10189807
4-Amino-2,6-dinitrotoluene (4-am-dnt)	TX	9306	10189807
4-Nitrotoluene	TX	9513	10189807

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Matrix: ***Non-Potable Water***

Methyl-2,4,6-trinitrophenylnitramine (tetryl)	TX	6415	10189807
Nitrobenzene	TX	5015	10189807
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	TX	9522	10189807
RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine)	TX	9432	10189807

Method EPA 9014

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	10193803
Total cyanide	TX	1645	10193803

Method EPA 9038

Analyte	**AB**	**Analyte ID**	**Method ID**
Sulfate	TX	2000	10196608

Method EPA 9040

Analyte	**AB**	**Analyte ID**	**Method ID**
pH	TX	1900	10196802

Method EPA 9050

Analyte	**AB**	**Analyte ID**	**Method ID**
Conductivity	TX	1610	10198604

Method EPA 9056

Analyte	**AB**	**Analyte ID**	**Method ID**
Bromide	TX	1540	10199209
Chloride	TX	1575	10199209
Fluoride	TX	1730	10199209
Nitrate as N	TX	1810	10199209
Nitrate-nitrite	TX	1820	10199209
Nitrite as N	TX	1840	10199209
Orthophosphate as P	TX	1870	10199209
Sulfate	TX	2000	10199209

Method EPA 9060

Analyte	**AB**	**Analyte ID**	**Method ID**
Total Organic Carbon (TOC)	TX	2040	10200201

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Matrix: ***Non-Potable Water***

Method EPA 9065

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200405

Method EPA 9066

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200609

Method EPA 9250

Analyte	AB	Analyte ID	Method ID
Chloride	TX	1575	10207202

Method EPA RSK 175

Analyte	AB	Analyte ID	Method ID
2-methylpropane (Isobutane)	TX	4942	10212905
Ethane	TX	4747	10212905
Ethene	TX	4752	10212905
Methane	TX	4926	10212905
n-Butane	TX	5007	10212905
n-Propane	TX	5029	10212905

Method HACH 8000

Analyte	AB	Analyte ID	Method ID
Chemical oxygen demand (COD)	TX	1565	60003001

Method SM 2120 B

Analyte	AB	Analyte ID	Method ID
Color	TX	1605	20223807

Method SM 2310 B (4a)

Analyte	AB	Analyte ID	Method ID
Acidity, as CaCO3	TX	1500	20002806

Method SM 2320 B

Analyte	AB	Analyte ID	Method ID
Alkalinity as CaCO3	TX	1505	20045005

Method SM 2340 B

Analyte	AB	Analyte ID	Method ID

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Matrix: ***Non-Potable Water***

Total hardness as CaCO3	TX	1755	20046008

Method SM 2510 B

Analyte	**AB**	**Analyte ID**	**Method ID**
Conductivity	TX	1610	20048004

Method SM 2540 B

Analyte	**AB**	**Analyte ID**	**Method ID**
Residue-total (total solids)	TX	1950	20004608

Method SM 2540 C

Analyte	**AB**	**Analyte ID**	**Method ID**
Residue-filterable (TDS)	TX	1955	20049803

Method SM 2540 D

Analyte	**AB**	**Analyte ID**	**Method ID**
Residue-nonfilterable (TSS)	TX	1960	20004802

Method SM 3500-Cr B

Analyte	**AB**	**Analyte ID**	**Method ID**
Chromium (VI)	TX	1045	20065809

Method SM 4500-Cl F

Analyte	**AB**	**Analyte ID**	**Method ID**
Total residual chlorine	TX	1940	20080482

Method SM 4500-Cl^- E

Analyte	**AB**	**Analyte ID**	**Method ID**
Chloride	TX	1575	20019209

Method SM 4500-CN^- C

Analyte	**AB**	**Analyte ID**	**Method ID**
Total cyanide	TX	1645	20020808

Method SM 4500-CN^- E

Analyte	**AB**	**Analyte ID**	**Method ID**
Total cyanide	TX	1645	20021209

Method SM 4500-CN^- G

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	20021607

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Matrix: ***Non-Potable Water***

Method SM 4500-H+ B

Analyte	AB	Analyte ID	Method ID
pH	TX	1900	20104603

Method SM 4500-NH3 D

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	20108809
Kjeldahl Nitrogen (Total Kjeldahl Nitrogen-TKN)	TX	1790	20108809

Method SM 4500-NH3 F

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	20023001

Method SM 4500-O G

Analyte	AB	Analyte ID	Method ID
Oxygen, dissolved	TX	1880	20025405

Method SM 4500-P E

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	20025803
Phosphorus	TX	1910	20025803

Method SM 4500-$S2^{-}$ F

Analyte	AB	Analyte ID	Method ID
Sulfide	TX	2005	20126209

Method SM 4500-SiO2 D

Analyte	AB	Analyte ID	Method ID
Silica as SiO2	TX	1990	20127202

Method SM 4500-$SO3^{-}$ B

Analyte	AB	Analyte ID	Method ID
Sulfite	TX	2015	20026806

Method SM 5210 B

Analyte	AB	Analyte ID	Method ID
Biochemical oxygen demand (BOD)	TX	1530	20027401
Carbonaceous BOD, CBOD	TX	1555	20027401

Method SM 5310 B

Analyte	AB	Analyte ID	Method ID

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Issue Date: 5/1/2019

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Matrix: ***Non-Potable Water***

Total Organic Carbon (TOC)	TX	2040	20137206

Method SM 5310 C

Analyte	**AB**	**Analyte ID**	**Method ID**
Total Organic Carbon (TOC)	TX	2040	20138209

Method SM 5540 C

Analyte	**AB**	**Analyte ID**	**Method ID**
Surfactants - MBAS	TX	2025	20144405

Method TCEQ 1005

Analyte	**AB**	**Analyte ID**	**Method ID**
Total Petroleum Hydrocarbons (TPH)	TX	2050	90019208

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Matrix: ***Solid & Chemical Materials***

Method ASTM D2216

Analyte	AB	Analyte ID	Method ID
Moisture	TX	10337	ASTM D2216-05

Method EPA 1010

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10116606

Method EPA 1030

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10117201

Method EPA 1311

Analyte	AB	Analyte ID	Method ID
TCLP	TX	849	10118806

Method EPA 1312

Analyte	AB	Analyte ID	Method ID
SPLP	TX	850	10119003

Method EPA 1668

Analyte	AB	Analyte ID	Method ID
Decachlorobiphenyls	TX	10332	10262007
Dichlorobiphenyls	TX	464	10262007
Heptachlorobiphenyls	TX	486	10262007
Hexachlorobiphenyls	TX	487	10262007
Monochlorobiphenyls	TX	501	10262007
Nonachlorobiphenyls	TX	507	10262007
Octachlorobiphenyls	TX	508	10262007
Pentachlorobiphenyls	TX	515	10262007
Tetrachlorobiphenyls	TX	528	10262007
Trichlorobiphenyls	TX	541	10262007

Method EPA 200.8

Analyte	AB	Analyte ID	Method ID
Uranium	TX	3035	10014605

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Matrix: ***Solid & Chemical Materials***

Method EPA 300.0

Analyte	AB	Analyte ID	Method ID
Bromide	TX	1540	10053200
Chloride	TX	1575	10053200
Fluoride	TX	1730	10053200
Nitrate as N	TX	1810	10053200
Nitrate-nitrite	TX	1820	10053200
Nitrite as N	TX	1840	10053200
Orthophosphate as P	TX	1870	10053200
Sulfate	TX	2000	10053200

Method EPA 310.1

Analyte	AB	Analyte ID	Method ID
Alkalinity as CaCO3	TX	1505	10054805

Method EPA 350.3

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	10064401

Method EPA 365.3

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	10070801
Phosphorus	TX	1910	10070801

Method EPA 6020

Analyte	AB	Analyte ID	Method ID
Aluminum	TX	1000	10156204
Antimony	TX	1005	10156204
Arsenic	TX	1010	10156204
Barium	TX	1015	10156204
Beryllium	TX	1020	10156204
Boron	TX	1025	10156204
Cadmium	TX	1030	10156204
Calcium	TX	1035	10156204
Chromium	TX	1040	10156204

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Matrix: ***Solid & Chemical Materials***

Cobalt	TX	1050	10156204
Copper	TX	1055	10156204
Iron	TX	1070	10156204
Lead	TX	1075	10156204
Lithium	TX	1080	10156204
Magnesium	TX	1085	10156204
Manganese	TX	1090	10156204
Molybdenum	TX	1100	10156204
Nickel	TX	1105	10156204
Potassium	TX	1125	10156204
Selenium	TX	1140	10156204
Silver	TX	1150	10156204
Sodium	TX	1155	10156204
Strontium	TX	1160	10156204
Thallium	TX	1165	10156204
Tin	TX	1175	10156204
Titanium	TX	1180	10156204
Vanadium	TX	1185	10156204
Zinc	TX	1190	10156204

Method EPA 7196

Analyte	**AB**	**Analyte ID**	**Method ID**
Chromium (VI)	TX	1045	10162206

Method EPA 7470

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10165603

Method EPA 7471

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10166004

Method EPA 8015

Analyte	**AB**	**Analyte ID**	**Method ID**
Diesel range organics (DRO)	TX	9369	10173203

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Matrix: ***Solid & Chemical Materials***

Ethanol	TX	4750	10173203
Ethylene glycol	TX	4785	10173203
Gasoline range organics (GRO)	TX	9408	10173203
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10173203
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10173203
Methanol	TX	4930	10173203
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10173203
n-Propanol (1-Propanol)	TX	5055	10173203
Propylene Glycol	TX	6657	10173203
tert-Butyl alcohol	TX	4420	10173203

Method EPA 8021

Analyte	**AB**	**Analyte ID**	**Method ID**
Benzene	TX	4375	10174400
Ethylbenzene	TX	4765	10174400
m+p-xylene	TX	5240	10174400
Methyl tert-butyl ether (MTBE)	TX	5000	10174400
o-Xylene	TX	5250	10174400
Toluene	TX	5140	10174400
Xylene (total)	TX	5260	10174400

Method EPA 8081

Analyte	**AB**	**Analyte ID**	**Method ID**
4,4'-DDD	TX	7355	10178402
4,4'-DDE	TX	7360	10178402
4,4'-DDT	TX	7365	10178402
Aldrin	TX	7025	10178402
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10178402
alpha-Chlordane	TX	7240	10178402
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10178402
Chlordane (tech.)	TX	7250	10178402
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10178402
Dieldrin	TX	7470	10178402

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Matrix: ***Solid & Chemical Materials***

Endosulfan I	TX	7510	10178402
Endosulfan II	TX	7515	10178402
Endosulfan sulfate	TX	7520	10178402
Endrin	TX	7540	10178402
Endrin aldehyde	TX	7530	10178402
Endrin ketone	TX	7535	10178402
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10178402
gamma-Chlordane	TX	7245	10178402
Heptachlor	TX	7685	10178402
Heptachlor epoxide	TX	7690	10178402
Methoxychlor	TX	7810	10178402
Mirex	TX	7870	10178402
Toxaphene (Chlorinated camphene)	TX	8250	10178402

Method EPA 8082

Analyte	**AB**	**Analyte ID**	**Method ID**
Aroclor-1016 (PCB-1016)	TX	8880	10179201
Aroclor-1221 (PCB-1221)	TX	8885	10179201
Aroclor-1232 (PCB-1232)	TX	8890	10179201
Aroclor-1242 (PCB-1242)	TX	8895	10179201
Aroclor-1248 (PCB-1248)	TX	8900	10179201
Aroclor-1254 (PCB-1254)	TX	8905	10179201
Aroclor-1260 (PCB-1260)	TX	8910	10179201
PCBs (total)	TX	8870	10179201

Method EPA 8260

Analyte	**AB**	**Analyte ID**	**Method ID**
1,1,1,2-Tetrachloroethane	TX	5105	10184404
1,1,1-Trichloroethane	TX	5160	10184404
1,1,2,2-Tetrachloroethane	TX	5110	10184404
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	TX	5195	10184404
1,1,2-Trichloroethane	TX	5165	10184404
1,1-Dichloroethane	TX	4630	10184404

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Matrix: ***Solid & Chemical Materials***

1,1-Dichloroethylene	TX	4640	10184404
1,1-Dichloropropene	TX	4670	10184404
1,2,3-Trichlorobenzene	TX	5150	10184404
1,2,3-Trichloropropane	TX	5180	10184404
1,2,4-Trichlorobenzene	TX	5155	10184404
1,2,4-Trimethylbenzene	TX	5210	10184404
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10184404
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10184404
1,2-Dichlorobenzene	TX	4610	10184404
1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10184404
1,2-Dichloropropane	TX	4655	10184404
1,3,5-Trimethylbenzene	TX	5215	10184404
1,3-Dichlorobenzene	TX	4615	10184404
1,3-Dichloropropane	TX	4660	10184404
1,4-Dichlorobenzene	TX	4620	10184404
1,4-Dioxane (1,4-Diethyleneoxide)	TX	4735	10184404
1-Chlorohexane	TX	4510	10184404
1-Propanol	TX	5060	10184404
2,2-Dichloropropane	TX	4665	10184404
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10184404
2-Chloroethyl vinyl ether	TX	4500	10184404
2-Chlorotoluene	TX	4535	10184404
2-Hexanone (MBK)	TX	4860	10184404
4-Chlorotoluene	TX	4540	10184404
4-Isopropyltoluene (p-Cymene)	TX	4915	10184404
4-Methyl-2-pentanone (MIBK)	TX	4995	10184404
Acetone (2-Propanone)	TX	4315	10184404
Acetonitrile	TX	4320	10184404
Acrolein (Propenal)	TX	4325	10184404
Acrylonitrile	TX	4340	10184404

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Matrix: ***Solid & Chemical Materials***

Allyl chloride (3-Chloropropene)	TX	4355	10184404
Benzene	TX	4375	10184404
Benzyl chloride	TX	5635	10184404
Bromobenzene	TX	4385	10184404
Bromochloromethane	TX	4390	10184404
Bromodichloromethane	TX	4395	10184404
Bromoform	TX	4400	10184404
Carbon disulfide	TX	4450	10184404
Carbon tetrachloride	TX	4455	10184404
Chlorobenzene	TX	4475	10184404
Chlorodibromomethane	TX	4575	10184404
Chloroethane (Ethyl chloride)	TX	4485	10184404
Chloroform	TX	4505	10184404
Chloroprene (2-Chloro-1,3-butadiene)	TX	4525	10184404
cis-1,2-Dichloroethylene	TX	4645	10184404
cis-1,3-Dichloropropene	TX	4680	10184404
Dibromofluoromethane	TX	4590	10184404
Dibromomethane (Methylene bromide)	TX	4595	10184404
Dichlorodifluoromethane (Freon-12)	TX	4625	10184404
Diethyl ether	TX	4725	10184404
Epichlorohydrin (1-Chloro-2,3-epoxypropane)	TX	4745	10184404
Ethanol	TX	4750	10184404
Ethyl acetate	TX	4755	10184404
Ethyl methacrylate	TX	4810	10184404
Ethylbenzene	TX	4765	10184404
Ethylene oxide	TX	4795	10184404
Hexachlorobutadiene	TX	4835	10184404
Iodomethane (Methyl iodide)	TX	4870	10184404
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10184404
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10184404

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Matrix: ***Solid & Chemical Materials***

Isopropylbenzene (Cumene)	TX	4900	10184404
m+p-xylene	TX	5240	10184404
Methacrylonitrile	TX	4925	10184404
Methyl acetate	TX	4940	10184404
Methyl acrylate	TX	4945	10184404
Methyl bromide (Bromomethane)	TX	4950	10184404
Methyl chloride (Chloromethane)	TX	4960	10184404
Methyl methacrylate	TX	4990	10184404
Methyl tert-butyl ether (MTBE)	TX	5000	10184404
Methylcyclohexane	TX	4965	10184404
Methylene chloride (Dichloromethane)	TX	4975	10184404
Naphthalene	TX	5005	10184404
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10184404
n-Butylbenzene	TX	4435	10184404
n-Propylbenzene	TX	5090	10184404
o-Xylene	TX	5250	10184404
Pentachloroethane	TX	5035	10184404
Propionitrile (Ethyl cyanide)	TX	5080	10184404
Pyridine	TX	5095	10184404
sec-Butylbenzene	TX	4440	10184404
Styrene	TX	5100	10184404
tert-Butyl alcohol	TX	4420	10184404
tert-Butylbenzene	TX	4445	10184404
Tetrachloroethylene (Perchloroethylene)	TX	5115	10184404
Toluene	TX	5140	10184404
trans-1,2-Dichloroethylene	TX	4700	10184404
trans-1,3-Dichloropropylene	TX	4685	10184404
trans-1,4-Dichloro-2-butene	TX	4605	10184404
Trichloroethene (Trichloroethylene)	TX	5170	10184404
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10184404

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Matrix: ***Solid & Chemical Materials***

Vinyl acetate	TX	5225	10184404
Vinyl chloride	TX	5235	10184404
Xylene (total)	TX	5260	10184404

Method EPA 8270

Analyte	AB	Analyte ID	Method ID
1,2,4,5-Tetrachlorobenzene	TX	6715	10185203
1,2,4-Trichlorobenzene	TX	5155	10185203
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10185203
1,2-Dichlorobenzene	TX	4610	10185203
1,2-Dinitrobenzene	TX	6155	10185203
1,2-Diphenylhydrazine	TX	6220	10185203
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10185203
1,3-Dichlorobenzene	TX	4615	10185203
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10185203
1,4-Dichlorobenzene	TX	4620	10185203
1,4-Dinitrobenzene	TX	6165	10185203
1,4-Naphthoquinone	TX	6420	10185203
1,4-Phenylenediamine	TX	6630	10185203
1-Chloronaphthalene	TX	5790	10185203
1-Naphthylamine	TX	6425	10185203
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10185203
2,3,4,6-Tetrachlorophenol	TX	6735	10185203
2,4,5-Trichlorophenol	TX	6835	10185203
2,4,5-Trimethylaniline	TX	6880	10185203
2,4,6-Trichlorophenol	TX	6840	10185203
2,4-Diaminotoluene	TX	5880	10185203
2,4-Dichlorophenol	TX	6000	10185203
2,4-Dimethylphenol	TX	6130	10185203
2,4-Dinitrophenol	TX	6175	10185203
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10185203

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Matrix: ***Solid & Chemical Materials***

2,6-Dichlorophenol	TX	6005	10185203
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10185203
2-Acetylaminofluorene	TX	5515	10185203
2-Chloronaphthalene	TX	5795	10185203
2-Chlorophenol	TX	5800	10185203
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10185203
2-Methylaniline (o-Toluidine)	TX	5145	10185203
2-Methylnaphthalene	TX	6385	10185203
2-Methylphenol (o-Cresol)	TX	6400	10185203
2-Naphthylamine	TX	6430	10185203
2-Nitroaniline	TX	6460	10185203
2-Nitrophenol	TX	6490	10185203
2-Picoline (2-Methylpyridine)	TX	5050	10185203
3,3'-Dichlorobenzidine	TX	5945	10185203
3,3'-Dimethylbenzidine	TX	6120	10185203
3-Methylcholanthrene	TX	6355	10185203
3-Methylphenol (m-Cresol)	TX	6405	10185203
3-Nitroaniline	TX	6465	10185203
4-Aminobiphenyl	TX	5540	10185203
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10185203
4-Chloro-3-methylphenol	TX	5700	10185203
4-Chloroaniline	TX	5745	10185203
4-Chlorophenyl phenylether	TX	5825	10185203
4-Methylphenol (p-Cresol)	TX	6410	10185203
4-Nitroaniline	TX	6470	10185203
4-Nitrophenol	TX	6500	10185203
4-Nitroquinoline-1-oxide	TX	6510	10185203
5-Nitro-o-toluidine	TX	6570	10185203
7,12-Dimethylbenz(a) anthracene	TX	6115	10185203
a-a-Dimethylphenethylamine	TX	6125	10185203

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Matrix: ***Solid & Chemical Materials***

Acenaphthene	TX	5500	10185203
Acenaphthylene	TX	5505	10185203
Acetophenone	TX	5510	10185203
Aniline	TX	5545	10185203
Anthracene	TX	5555	10185203
Aramite	TX	5560	10185203
Atrazine	TX	7065	10185203
Azinphos-methyl (Guthion)	TX	7075	10185203
Azobenzene	TX	5562	10185203
Benzenethiol (Thiophenol)	TX	6750	10185203
Benzidine	TX	5595	10185203
Benzo(a)anthracene	TX	5575	10185203
Benzo(a)pyrene	TX	5580	10185203
Benzo(b)fluoranthene	TX	5585	10185203
Benzo(e)pyrene	TX	5605	10185203
Benzo(g,h,i)perylene	TX	5590	10185203
Benzo(k)fluoranthene	TX	5600	10185203
Benzoic acid	TX	5610	10185203
Benzyl alcohol	TX	5630	10185203
Biphenyl	TX	5640	10185203
bis(2-Chloroethoxy)methane	TX	5760	10185203
bis(2-Chloroethyl) ether	TX	5765	10185203
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10185203
Butyl benzyl phthalate	TX	5670	10185203
Caprolactam	TX	7180	10185203
Carbaryl (Sevin)	TX	7195	10185203
Carbazole	TX	5680	10185203
Carbophenothion	TX	7220	10185203
Chlorobenzilate	TX	7260	10185203
Chrysene	TX	5855	10185203

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Matrix: ***Solid & Chemical Materials***

Demeton	TX	7390	10185203
Demeton-o	TX	7395	10185203
Demeton-s	TX	7385	10185203
Diallate	TX	7405	10185203
Dibenz(a,h) anthracene	TX	5895	10185203
Dibenz(a,j) acridine	TX	5900	10185203
Dibenzo(a,e) pyrene	TX	5890	10185203
Dibenzofuran	TX	5905	10185203
Dichlorovos (DDVP, Dichlorvos)	TX	8610	10185203
Diethyl phthalate	TX	6070	10185203
Dimethoate	TX	7475	10185203
Dimethyl phthalate	TX	6135	10185203
Di-n-butyl phthalate	TX	5925	10185203
Di-n-octyl phthalate	TX	6200	10185203
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10185203
Diphenylamine	TX	6205	10185203
Disulfoton	TX	8625	10185203
Ethyl methanesulfonate	TX	6260	10185203
Fluoranthene	TX	6265	10185203
Fluorene	TX	6270	10185203
Hexachlorobenzene	TX	6275	10185203
Hexachlorobutadiene	TX	4835	10185203
Hexachlorocyclopentadiene	TX	6285	10185203
Hexachloroethane	TX	4840	10185203
Hexachlorophene	TX	6290	10185203
Hexachloropropene	TX	6295	10185203
Indeno(1,2,3-cd) pyrene	TX	6315	10185203
Isodrin	TX	7725	10185203
Isophorone	TX	6320	10185203
Isosafrole	TX	6325	10185203

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-19-23

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

Expiration Date: 4/30/2020

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2019

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Matrix: ***Solid & Chemical Materials***

Kepone	TX	7740	10185203
Malathion	TX	7770	10185203
Methapyrilene	TX	6345	10185203
Methyl methanesulfonate	TX	6375	10185203
Methyl parathion (Parathion, methyl)	TX	7825	10185203
Mevinphos	TX	7850	10185203
Naphthalene	TX	5005	10185203
Nitrobenzene	TX	5015	10185203
n-Nitrosodiethylamine	TX	6525	10185203
n-Nitrosodimethylamine	TX	6530	10185203
n-Nitrosodi-n-butylamine	TX	5025	10185203
n-Nitrosodi-n-propylamine	TX	6545	10185203
n-Nitrosodiphenylamine	TX	6535	10185203
n-Nitrosomethylethylamine	TX	6550	10185203
n-Nitrosomorpholine	TX	6555	10185203
n-Nitrosopiperidine	TX	6560	10185203
n-Nitrosopyrrolidine	TX	6565	10185203
o,o,o-Triethyl phosphorothioate	TX	8290	10185203
o-Anisidine	TX	5550	10185203
Parathion, ethyl	TX	7955	10185203
p-Cresidine	TX	5860	10185203
Pentachlorobenzene	TX	6590	10185203
Pentachloronitrobenzene (PCNB)	TX	6600	10185203
Pentachlorophenol	TX	6605	10185203
Phenacetin	TX	6610	10185203
Phenanthrene	TX	6615	10185203
Phenol	TX	6625	10185203
Phorate	TX	7985	10185203
Pronamide (Kerb)	TX	6650	10185203
Pyrene	TX	6665	10185203

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Matrix: ***Solid & Chemical Materials***

Pyridine	TX	5095	10185203
Quinoline	TX	6670	10185203
Safrole	TX	6685	10185203
Sulfotepp	TX	8155	10185203
Terbufos	TX	8185	10185203
Tetrachlorvinphos (Stirophos, Gardona)	TX	8197	10185203
Thionazin (Zinophos)	TX	8235	10185203
Toluene diisocyanate	TX	6775	10185203

Method EPA 8290

Analyte	AB	Analyte ID	Method ID
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10187209
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10187209
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10187209
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10187209
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10187209
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10187209
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10187209
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10187209
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10187209
1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10187209
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10187209
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10187209
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10187209
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10187209
2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10187209
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10187209
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10187209
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10187209
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10187209
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10187209

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Matrix: ***Solid & Chemical Materials***

Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10187209
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10187209
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10187209
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10187209
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10187209

Method EPA 8316

Analyte	**AB**	**Analyte ID**	**Method ID**
Acrylamide	TX	4330	10188202

Method EPA 8330

Analyte	**AB**	**Analyte ID**	**Method ID**
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10189807
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10189807
2,4,6-Trinitrotoluene (2,4,6-TNT)	TX	9651	10189807
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10189807
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10189807
2-Amino-4,6-dinitrotoluene (2-am-dnt)	TX	9303	10189807
2-Nitrotoluene	TX	9507	10189807
3-Nitrotoluene	TX	9510	10189807
4-Amino-2,6-dinitrotoluene (4-am-dnt)	TX	9306	10189807
4-Nitrotoluene	TX	9513	10189807
Methyl-2,4,6-trinitrophenylnitramine (tetryl)	TX	6415	10189807
Nitrobenzene	TX	5015	10189807
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	TX	9522	10189807
RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine)	TX	9432	10189807

Method EPA 9014

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	10193803
Total cyanide	TX	1645	10193803

Method EPA 9038

Analyte	**AB**	**Analyte ID**	**Method ID**
Sulfate	TX	2000	10196608

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Matrix: ***Solid & Chemical Materials***

Method EPA 9040

Analyte	AB	Analyte ID	Method ID
Corrosivity	TX	1615	10197203
pH	TX	1900	10196802

Method EPA 9045

Analyte	AB	Analyte ID	Method ID
Corrosivity	TX	1615	10197805
pH	TX	1900	10197805

Method EPA 9050

Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	10198604

Method EPA 9056

Analyte	AB	Analyte ID	Method ID
Bromide	TX	1540	10199209
Chloride	TX	1575	10199209
Fluoride	TX	1730	10199209
Nitrate as N	TX	1810	10199209
Nitrate-nitrite	TX	1820	10199209
Nitrite as N	TX	1840	10199209
Orthophosphate as P	TX	1870	10199209
Sulfate	TX	2000	10199209

Method EPA 9060

Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	10200201

Method EPA 9065

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200405

Method EPA 9071

Analyte	AB	Analyte ID	Method ID
n-Hexane Extractable Material (HEM) (O&G)	TX	1803	10201204

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Issue Date: 5/1/2019

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Matrix: ***Solid & Chemical Materials***

Method	Analyte	AB	Analyte ID	Method ID
EPA 9095	Paint Filter Liquids Test	TX	10312	10204009
EPA 9250	Chloride	TX	1575	10207202
SM 2320 B	Alkalinity as CaCO3	TX	1505	20045005
SM 2510 B	Conductivity	TX	1610	20048004
SM 2540 G	Residue-total (total solids)	TX	1950	20005203
SSA/ASA Part 3:34	Carbon, organic (Walkley-Black)	TX	10340	SSA/ASA Pt 3:34
TCEQ 1005	Total Petroleum Hydrocarbons (TPH)	TX	2050	90019208

10450 Stancliff Rd. Suite 210
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T: +1 281 530 5656
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February 19, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20020447**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 17 sample(s) on Feb 11, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20020447**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS20020447**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data								
Laboratory Name: ALS Laboratory Group			LRC Date: 02/19/2020					
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020447					
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150597,150608,R356459					
#[1]	A[2]	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			1
		Were MS/MSD RPDs within laboratory QC limits?		X			2
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				3
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/19/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020447				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150597,150608,R356459				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 02/19/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20020447
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 150597,150608,R356459

ER#[5]	Description
1	Batch 150609, Semivolatile Organics Method SW8270, sample HS20020449-01, MS and MSD were performed on unrelated sample.
2	Batch 150609, Semivolatile Organics Method SW8270, sample HS20020449-01, MS/MSD RPD is for an unrelated sample.
3	Batch 150597, Semivolatile Organics Method SW8270, samples SO-1620-SSO03(0-2)-20200210, SO-1620-SSO07(0-2)-20200210 and SO-1620-SSO08(0-2)-20200210: the GCMS semi-volatile extract of the samples were run at a dilution due to a high level of matrix interference.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
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Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20020447

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20020447-01	SO-1620-SSO01(0-2)-20200210	Soil		10-Feb-2020 13:10	11-Feb-2020 14:40	☐
HS20020447-02	SO-1620-SSO03(0-2)-20200210	Soil		10-Feb-2020 13:40	11-Feb-2020 14:40	☐
HS20020447-03	SO-1620-SSO04(0-2)-20200210	Soil		10-Feb-2020 13:50	11-Feb-2020 14:40	☐
HS20020447-04	SO-1620-SSO06(0-2)-20200210	Soil		10-Feb-2020 14:00	11-Feb-2020 14:40	☐
HS20020447-05	SO-1620-SSO07(0-2)-20200210	Soil		10-Feb-2020 14:10	11-Feb-2020 14:40	☐
HS20020447-06	SO-1620-SSO08(0-2)-20200210	Soil		10-Feb-2020 14:20	11-Feb-2020 14:40	☐
HS20020447-07	SO-1620-SSO09(0-2)-20200210	Soil		10-Feb-2020 14:30	11-Feb-2020 14:40	☐
HS20020447-08	SO-1620-SSO10(0-2)-20200210	Soil		10-Feb-2020 14:45	11-Feb-2020 14:40	☐
HS20020447-09	SO-1620-SSO05(0-2)-20200211	Soil		11-Feb-2020 09:25	11-Feb-2020 14:40	☐
HS20020447-10	SO-1620-SSO11(0-2)-20200211	Soil		11-Feb-2020 09:40	11-Feb-2020 14:40	☐
HS20020447-11	SO-1620-SSO12(0-2)-20200211	Soil		11-Feb-2020 09:45	11-Feb-2020 14:40	☐
HS20020447-12	SO-1620-SSO13(0-2)-20200211	Soil		11-Feb-2020 09:50	11-Feb-2020 14:40	☐
HS20020447-13	SO-1620-SSO14(0-2)-20200211	Soil		11-Feb-2020 10:00	11-Feb-2020 14:40	☐
HS20020447-14	SO-1620-SSO15(0-2)-20200211	Soil		11-Feb-2020 10:19	11-Feb-2020 14:40	☐
HS20020447-15	SO-1620-SSO02(0-2)-20200211	Soil		11-Feb-2020 11:00	11-Feb-2020 14:40	☐
HS20020447-16	SO-1620-FD01-20200210	Soil		10-Feb-2020 00:00	11-Feb-2020 14:40	☐
HS20020447-17	SO-1620-FD02-20200211	Soil		11-Feb-2020 00:00	11-Feb-2020 14:40	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO01(0-2)-20200210
Collection Date: 10-Feb-2020 13:10

ANALYTICAL REPORT
WorkOrder:HS20020447
Lab ID:HS20020447-01
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 13-Feb-2020		Analyst: GEY
Pentachlorophenol	**0.20**		**0.0038**	**0.0076**	**mg/Kg-dry**	1	13-Feb-2020 21:07
Surr: 2,4,6-Tribromophenol	*67.2*			*36-126*	*%REC*	*1*	*13-Feb-2020 21:07*
Surr: 2-Fluorobiphenyl	*58.5*			*43-125*	*%REC*	*1*	*13-Feb-2020 21:07*
Surr: 2-Fluorophenol	*56.5*			*37-125*	*%REC*	*1*	*13-Feb-2020 21:07*
Surr: 4-Terphenyl-d14	*67.2*			*32-125*	*%REC*	*1*	*13-Feb-2020 21:07*
Surr: Nitrobenzene-d5	*52.2*			*37-125*	*%REC*	*1*	*13-Feb-2020 21:07*
Surr: Phenol-d6	*59.5*			*40-125*	*%REC*	*1*	*13-Feb-2020 21:07*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**13.4**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO03(0-2)-20200210
Collection Date: 10-Feb-2020 13:40

ANALYTICAL REPORT
WorkOrder:HS20020447
Lab ID:HS20020447-02
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 13-Feb-2020		Analyst: GEY
Pentachlorophenol	**3.7**		**0.074**	**0.15**	**mg/Kg-dry**	20	14-Feb-2020 13:44
Surr: 2,4,6-Tribromophenol	*89.2*			*36-126*	*%REC*	*20*	*14-Feb-2020 13:44*
Surr: 2-Fluorobiphenyl	*72.4*			*43-125*	*%REC*	*20*	*14-Feb-2020 13:44*
Surr: 2-Fluorophenol	*48.7*			*37-125*	*%REC*	*20*	*14-Feb-2020 13:44*
Surr: 4-Terphenyl-d14	*90.5*			*32-125*	*%REC*	*20*	*14-Feb-2020 13:44*
Surr: Nitrobenzene-d5	*43.8*			*37-125*	*%REC*	*20*	*14-Feb-2020 13:44*
Surr: Phenol-d6	*52.9*			*40-125*	*%REC*	*20*	*14-Feb-2020 13:44*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**10.9**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO04(0-2)-20200210
Collection Date: 10-Feb-2020 13:50

ANALYTICAL REPORT
WorkOrder:HS20020447
Lab ID:HS20020447-03
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 13-Feb-2020		Analyst: GEY
Pentachlorophenol	**0.13**		**0.0036**	**0.0072**	**mg/Kg-dry**	1	13-Feb-2020 21:45
Surr: 2,4,6-Tribromophenol	*81.4*			*36-126*	*%REC*	*1*	*13-Feb-2020 21:45*
Surr: 2-Fluorobiphenyl	*76.4*			*43-125*	*%REC*	*1*	*13-Feb-2020 21:45*
Surr: 2-Fluorophenol	*61.7*			*37-125*	*%REC*	*1*	*13-Feb-2020 21:45*
Surr: 4-Terphenyl-d14	*79.9*			*32-125*	*%REC*	*1*	*13-Feb-2020 21:45*
Surr: Nitrobenzene-d5	*52.4*			*37-125*	*%REC*	*1*	*13-Feb-2020 21:45*
Surr: Phenol-d6	*61.1*			*40-125*	*%REC*	*1*	*13-Feb-2020 21:45*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**8.75**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO06(0-2)-20200210
Collection Date: 10-Feb-2020 14:00

ANALYTICAL REPORT
WorkOrder:HS20020447
Lab ID:HS20020447-04
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 13-Feb-2020		Analyst: GEY
Pentachlorophenol	**0.26**		**0.0039**	**0.0078**	**mg/Kg-dry**	1	13-Feb-2020 22:04
Surr: 2,4,6-Tribromophenol	*56.6*			*36-126*	*%REC*	*1*	*13-Feb-2020 22:04*
Surr: 2-Fluorobiphenyl	*58.8*			*43-125*	*%REC*	*1*	*13-Feb-2020 22:04*
Surr: 2-Fluorophenol	*39.0*			*37-125*	*%REC*	*1*	*13-Feb-2020 22:04*
Surr: 4-Terphenyl-d14	*64.6*			*32-125*	*%REC*	*1*	*13-Feb-2020 22:04*
Surr: Nitrobenzene-d5	*58.3*			*37-125*	*%REC*	*1*	*13-Feb-2020 22:04*
Surr: Phenol-d6	*44.1*			*40-125*	*%REC*	*1*	*13-Feb-2020 22:04*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**15.6**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO07(0-2)-20200210
Collection Date: 10-Feb-2020 14:10

ANALYTICAL REPORT
WorkOrder:HS20020447
Lab ID:HS20020447-05
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 13-Feb-2020		Analyst: GEY
Pentachlorophenol	**6.7**		**0.077**	**0.15**	**mg/Kg-dry**	20	14-Feb-2020 14:03
Surr: 2,4,6-Tribromophenol	*109*			*36-126*	*%REC*	*20*	*14-Feb-2020 14:03*
Surr: 2-Fluorobiphenyl	*98.8*			*43-125*	*%REC*	*20*	*14-Feb-2020 14:03*
Surr: 2-Fluorophenol	*78.9*			*37-125*	*%REC*	*20*	*14-Feb-2020 14:03*
Surr: 4-Terphenyl-d14	*114*			*32-125*	*%REC*	*20*	*14-Feb-2020 14:03*
Surr: Nitrobenzene-d5	*63.9*			*37-125*	*%REC*	*20*	*14-Feb-2020 14:03*
Surr: Phenol-d6	*65.5*			*40-125*	*%REC*	*20*	*14-Feb-2020 14:03*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**15.7**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO08(0-2)-20200210
Collection Date: 10-Feb-2020 14:20

ANALYTICAL REPORT
WorkOrder:HS20020447
Lab ID:HS20020447-06
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 13-Feb-2020		Analyst: GEY
Pentachlorophenol	**13**		**0.20**	**0.39**	**mg/Kg-dry**	50	14-Feb-2020 14:22
Surr: 2,4,6-Tribromophenol	*113*			*36-126*	*%REC*	*50*	*14-Feb-2020 14:22*
Surr: 2-Fluorobiphenyl	*95.1*			*43-125*	*%REC*	*50*	*14-Feb-2020 14:22*
Surr: 2-Fluorophenol	*67.8*			*37-125*	*%REC*	*50*	*14-Feb-2020 14:22*
Surr: 4-Terphenyl-d14	*34.1*			*32-125*	*%REC*	*50*	*14-Feb-2020 14:22*
Surr: Nitrobenzene-d5	*57.8*			*37-125*	*%REC*	*50*	*14-Feb-2020 14:22*
Surr: Phenol-d6	*66.1*			*40-125*	*%REC*	*50*	*14-Feb-2020 14:22*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**16.9**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO09(0-2)-20200210
Collection Date: 10-Feb-2020 14:30

ANALYTICAL REPORT
WorkOrder:HS20020447
Lab ID:HS20020447-07
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 13-Feb-2020		Analyst: GEY
Pentachlorophenol	**0.21**		**0.0040**	**0.0080**	**mg/Kg-dry**	1	13-Feb-2020 23:01
Surr: 2,4,6-Tribromophenol	*69.0*			*36-126*	*%REC*	*1*	*13-Feb-2020 23:01*
Surr: 2-Fluorobiphenyl	*72.1*			*43-125*	*%REC*	*1*	*13-Feb-2020 23:01*
Surr: 2-Fluorophenol	*60.1*			*37-125*	*%REC*	*1*	*13-Feb-2020 23:01*
Surr: 4-Terphenyl-d14	*74.1*			*32-125*	*%REC*	*1*	*13-Feb-2020 23:01*
Surr: Nitrobenzene-d5	*41.9*			*37-125*	*%REC*	*1*	*13-Feb-2020 23:01*
Surr: Phenol-d6	*47.6*			*40-125*	*%REC*	*1*	*13-Feb-2020 23:01*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**18.9**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO10(0-2)-20200210
Collection Date: 10-Feb-2020 14:45

ANALYTICAL REPORT
WorkOrder:HS20020447
Lab ID:HS20020447-08
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 13-Feb-2020		Analyst: LG
Pentachlorophenol	**0.13**		**0.0040**	**0.0080**	**mg/Kg-dry**	1	17-Feb-2020 13:25
Surr: 2,4,6-Tribromophenol	*88.3*			*36-126*	*%REC*	*1*	*17-Feb-2020 13:25*
Surr: 2-Fluorobiphenyl	*75.1*			*43-125*	*%REC*	*1*	*17-Feb-2020 13:25*
Surr: 2-Fluorophenol	*64.2*			*37-125*	*%REC*	*1*	*17-Feb-2020 13:25*
Surr: 4-Terphenyl-d14	*86.1*			*32-125*	*%REC*	*1*	*17-Feb-2020 13:25*
Surr: Nitrobenzene-d5	*58.8*			*37-125*	*%REC*	*1*	*17-Feb-2020 13:25*
Surr: Phenol-d6	*60.7*			*40-125*	*%REC*	*1*	*17-Feb-2020 13:25*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**17.4**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO05(0-2)-20200211
Collection Date: 11-Feb-2020 09:25

ANALYTICAL REPORT
WorkOrder:HS20020447
Lab ID:HS20020447-09
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 13-Feb-2020		Analyst: LG
Pentachlorophenol	**0.062**		**0.0038**	**0.0077**	**mg/Kg-dry**	1	17-Feb-2020 13:44
Surr: 2,4,6-Tribromophenol	*109*			*36-126*	*%REC*	*1*	*17-Feb-2020 13:44*
Surr: 2-Fluorobiphenyl	*88.8*			*43-125*	*%REC*	*1*	*17-Feb-2020 13:44*
Surr: 2-Fluorophenol	*72.8*			*37-125*	*%REC*	*1*	*17-Feb-2020 13:44*
Surr: 4-Terphenyl-d14	*97.9*			*32-125*	*%REC*	*1*	*17-Feb-2020 13:44*
Surr: Nitrobenzene-d5	*73.6*			*37-125*	*%REC*	*1*	*17-Feb-2020 13:44*
Surr: Phenol-d6	*69.6*			*40-125*	*%REC*	*1*	*17-Feb-2020 13:44*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**14.8**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO11(0-2)-20200211
Collection Date: 11-Feb-2020 09:40

ANALYTICAL REPORT
WorkOrder:HS20020447
Lab ID:HS20020447-10
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 13-Feb-2020		Analyst: LG
Pentachlorophenol	**0.22**		**0.0035**	**0.0071**	**mg/Kg-dry**	1	17-Feb-2020 14:03
Surr: 2,4,6-Tribromophenol	*94.7*			*36-126*	*%REC*	*1*	*17-Feb-2020 14:03*
Surr: 2-Fluorobiphenyl	*75.6*			*43-125*	*%REC*	*1*	*17-Feb-2020 14:03*
Surr: 2-Fluorophenol	*69.1*			*37-125*	*%REC*	*1*	*17-Feb-2020 14:03*
Surr: 4-Terphenyl-d14	*84.4*			*32-125*	*%REC*	*1*	*17-Feb-2020 14:03*
Surr: Nitrobenzene-d5	*67.4*			*37-125*	*%REC*	*1*	*17-Feb-2020 14:03*
Surr: Phenol-d6	*65.6*			*40-125*	*%REC*	*1*	*17-Feb-2020 14:03*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**7.94**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO12(0-2)-20200211
Collection Date: 11-Feb-2020 09:45

ANALYTICAL REPORT
WorkOrder:HS20020447
Lab ID:HS20020447-11
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 13-Feb-2020		Analyst: LG
Pentachlorophenol	**0.0059**	J	**0.0038**	**0.0077**	**mg/Kg-dry**	1	17-Feb-2020 14:22
Surr: 2,4,6-Tribromophenol	*99.2*			*36-126*	*%REC*	*1*	*17-Feb-2020 14:22*
Surr: 2-Fluorobiphenyl	*70.9*			*43-125*	*%REC*	*1*	*17-Feb-2020 14:22*
Surr: 2-Fluorophenol	*72.3*			*37-125*	*%REC*	*1*	*17-Feb-2020 14:22*
Surr: 4-Terphenyl-d14	*88.9*			*32-125*	*%REC*	*1*	*17-Feb-2020 14:22*
Surr: Nitrobenzene-d5	*71.2*			*37-125*	*%REC*	*1*	*17-Feb-2020 14:22*
Surr: Phenol-d6	*64.8*			*40-125*	*%REC*	*1*	*17-Feb-2020 14:22*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**14.7**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO13(0-2)-20200211
Collection Date: 11-Feb-2020 09:50

ANALYTICAL REPORT
WorkOrder:HS20020447
Lab ID:HS20020447-12
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 13-Feb-2020		Analyst: LG
Pentachlorophenol	**0.090**		**0.0036**	**0.0072**	**mg/Kg-dry**	1	17-Feb-2020 14:41
Surr: 2,4,6-Tribromophenol	*89.4*			*36-126*	*%REC*	*1*	*17-Feb-2020 14:41*
Surr: 2-Fluorobiphenyl	*75.2*			*43-125*	*%REC*	*1*	*17-Feb-2020 14:41*
Surr: 2-Fluorophenol	*65.6*			*37-125*	*%REC*	*1*	*17-Feb-2020 14:41*
Surr: 4-Terphenyl-d14	*77.5*			*32-125*	*%REC*	*1*	*17-Feb-2020 14:41*
Surr: Nitrobenzene-d5	*61.9*			*37-125*	*%REC*	*1*	*17-Feb-2020 14:41*
Surr: Phenol-d6	*57.5*			*40-125*	*%REC*	*1*	*17-Feb-2020 14:41*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**8.83**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO14(0-2)-20200211
Collection Date: 11-Feb-2020 10:00

ANALYTICAL REPORT
WorkOrder:HS20020447
Lab ID:HS20020447-13
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 13-Feb-2020		Analyst: LG
Pentachlorophenol		U	0.0041	0.0082	mg/Kg-dry	1	17-Feb-2020 15:00
Surr: 2,4,6-Tribromophenol	*91.8*			*36-126*	*%REC*	*1*	*17-Feb-2020 15:00*
Surr: 2-Fluorobiphenyl	*86.2*			*43-125*	*%REC*	*1*	*17-Feb-2020 15:00*
Surr: 2-Fluorophenol	*67.2*			*37-125*	*%REC*	*1*	*17-Feb-2020 15:00*
Surr: 4-Terphenyl-d14	*87.8*			*32-125*	*%REC*	*1*	*17-Feb-2020 15:00*
Surr: Nitrobenzene-d5	*65.4*			*37-125*	*%REC*	*1*	*17-Feb-2020 15:00*
Surr: Phenol-d6	*64.3*			*40-125*	*%REC*	*1*	*17-Feb-2020 15:00*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**19.4**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO15(0-2)-20200211
Collection Date: 11-Feb-2020 10:19

ANALYTICAL REPORT
WorkOrder:HS20020447
Lab ID:HS20020447-14
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 13-Feb-2020		Analyst: LG
Pentachlorophenol		U	0.0040	0.0080	mg/Kg-dry	1	17-Feb-2020 15:20
Surr: 2,4,6-Tribromophenol	*62.2*			*36-126*	*%REC*	*1*	*17-Feb-2020 15:20*
Surr: 2-Fluorobiphenyl	*67.1*			*43-125*	*%REC*	*1*	*17-Feb-2020 15:20*
Surr: 2-Fluorophenol	*55.0*			*37-125*	*%REC*	*1*	*17-Feb-2020 15:20*
Surr: 4-Terphenyl-d14	*66.3*			*32-125*	*%REC*	*1*	*17-Feb-2020 15:20*
Surr: Nitrobenzene-d5	*47.6*			*37-125*	*%REC*	*1*	*17-Feb-2020 15:20*
Surr: Phenol-d6	*49.9*			*40-125*	*%REC*	*1*	*17-Feb-2020 15:20*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**18.2**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO02(0-2)-20200211
Collection Date: 11-Feb-2020 11:00

ANALYTICAL REPORT
WorkOrder:HS20020447
Lab ID:HS20020447-15
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 13-Feb-2020		Analyst: LG
Pentachlorophenol	**0.032**		**0.0038**	**0.0077**	**mg/Kg-dry**	1	17-Feb-2020 15:39
Surr: 2,4,6-Tribromophenol	*91.7*			*36-126*	*%REC*	*1*	*17-Feb-2020 15:39*
Surr: 2-Fluorobiphenyl	*71.6*			*43-125*	*%REC*	*1*	*17-Feb-2020 15:39*
Surr: 2-Fluorophenol	*58.4*			*37-125*	*%REC*	*1*	*17-Feb-2020 15:39*
Surr: 4-Terphenyl-d14	*68.4*			*32-125*	*%REC*	*1*	*17-Feb-2020 15:39*
Surr: Nitrobenzene-d5	*56.2*			*37-125*	*%REC*	*1*	*17-Feb-2020 15:39*
Surr: Phenol-d6	*58.3*			*40-125*	*%REC*	*1*	*17-Feb-2020 15:39*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**14.9**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-FD01-20200210
Collection Date: 10-Feb-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20020447
Lab ID:HS20020447-16
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 13-Feb-2020		Analyst: LG
Pentachlorophenol	**3.9**		**0.042**	**0.083**	**mg/Kg-dry**	10	17-Feb-2020 16:36
Surr: 2,4,6-Tribromophenol	*112*			*36-126*	*%REC*	*10*	*17-Feb-2020 16:36*
Surr: 2-Fluorobiphenyl	*103*			*43-125*	*%REC*	*10*	*17-Feb-2020 16:36*
Surr: 2-Fluorophenol	*78.1*			*37-125*	*%REC*	*10*	*17-Feb-2020 16:36*
Surr: 4-Terphenyl-d14	*102*			*32-125*	*%REC*	*10*	*17-Feb-2020 16:36*
Surr: Nitrobenzene-d5	*70.3*			*37-125*	*%REC*	*10*	*17-Feb-2020 16:36*
Surr: Phenol-d6	*86.3*			*40-125*	*%REC*	*10*	*17-Feb-2020 16:36*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**22.2**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-FD02-20200211
Collection Date: 11-Feb-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20020447
Lab ID:HS20020447-17
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 13-Feb-2020		Analyst: LG
Pentachlorophenol		U	0.0041	0.0083	mg/Kg-dry	1	17-Feb-2020 16:17
Surr: 2,4,6-Tribromophenol	*104*			*36-126*	*%REC*	*1*	*17-Feb-2020 16:17*
Surr: 2-Fluorobiphenyl	*86.2*			*43-125*	*%REC*	*1*	*17-Feb-2020 16:17*
Surr: 2-Fluorophenol	*68.9*			*37-125*	*%REC*	*1*	*17-Feb-2020 16:17*
Surr: 4-Terphenyl-d14	*93.7*			*32-125*	*%REC*	*1*	*17-Feb-2020 16:17*
Surr: Nitrobenzene-d5	*74.4*			*37-125*	*%REC*	*1*	*17-Feb-2020 16:17*
Surr: Phenol-d6	*55.5*			*40-125*	*%REC*	*1*	*17-Feb-2020 16:17*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**20.7**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020447

Batch ID: 150597 **Start Date:** 13 Feb 2020 11:26 **End Date:** 13 Feb 2020 16:00
Method: SV SOXHLET EXTRACT-LOWLEVEL-SW3541 **Prep Code:** 3541_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20020447-01		30.19 (g)	1 (mL)	0.03312
HS20020447-02		30.18 (g)	1 (mL)	0.03313
HS20020447-03		30.02 (g)	1 (mL)	0.03331
HS20020447-04		30.12 (g)	1 (mL)	0.0332
HS20020447-05		30.45 (g)	1 (mL)	0.03284
HS20020447-06		30.32 (g)	1 (mL)	0.03298
HS20020447-07		30.37 (g)	1 (mL)	0.03293

Batch ID: 150608 **Start Date:** 13 Feb 2020 13:39 **End Date:** 13 Feb 2020 18:00
Method: SV SOXHLET EXTRACT-LOWLEVEL-SW3541 **Prep Code:** 3541_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20020447-08		30.05 (g)	1 (mL)	0.03328
HS20020447-09		30.32 (g)	1 (mL)	0.03298
HS20020447-10		30.32 (g)	1 (mL)	0.03298
HS20020447-11		30.19 (g)	1 (mL)	0.03312
HS20020447-12		30.11 (g)	1 (mL)	0.03321
HS20020447-13		30.02 (g)	1 (mL)	0.03331
HS20020447-14		30.12 (g)	1 (mL)	0.0332
HS20020447-15		30.37 (g)	1 (mL)	0.03293
HS20020447-16		30.48 (g)	1 (mL)	0.03281
HS20020447-17		30.25 (g)	1 (mL)	0.03306

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020447

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 150597 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Soil	
HS20020447-01	SO-1620-SSO01(0-2)-20200210	10 Feb 2020 13:10		13 Feb 2020 11:26	13 Feb 2020 21:07	1
HS20020447-02	SO-1620-SSO03(0-2)-20200210	10 Feb 2020 13:40		13 Feb 2020 11:26	14 Feb 2020 13:44	20
HS20020447-03	SO-1620-SSO04(0-2)-20200210	10 Feb 2020 13:50		13 Feb 2020 11:26	13 Feb 2020 21:45	1
HS20020447-04	SO-1620-SSO06(0-2)-20200210	10 Feb 2020 14:00		13 Feb 2020 11:26	13 Feb 2020 22:04	1
HS20020447-05	SO-1620-SSO07(0-2)-20200210	10 Feb 2020 14:10		13 Feb 2020 11:26	14 Feb 2020 14:03	20
HS20020447-06	SO-1620-SSO08(0-2)-20200210	10 Feb 2020 14:20		13 Feb 2020 11:26	14 Feb 2020 14:22	50
HS20020447-07	SO-1620-SSO09(0-2)-20200210	10 Feb 2020 14:30		13 Feb 2020 11:26	13 Feb 2020 23:01	1
Batch ID: 150608 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Soil	
HS20020447-08	SO-1620-SSO10(0-2)-20200210	10 Feb 2020 14:45		13 Feb 2020 13:39	17 Feb 2020 13:25	1
HS20020447-09	SO-1620-SSO05(0-2)-20200211	11 Feb 2020 09:25		13 Feb 2020 13:39	17 Feb 2020 13:44	1
HS20020447-10	SO-1620-SSO11(0-2)-20200211	11 Feb 2020 09:40		13 Feb 2020 13:39	17 Feb 2020 14:03	1
HS20020447-11	SO-1620-SSO12(0-2)-20200211	11 Feb 2020 09:45		13 Feb 2020 13:39	17 Feb 2020 14:22	1
HS20020447-12	SO-1620-SSO13(0-2)-20200211	11 Feb 2020 09:50		13 Feb 2020 13:39	17 Feb 2020 14:41	1
HS20020447-13	SO-1620-SSO14(0-2)-20200211	11 Feb 2020 10:00		13 Feb 2020 13:39	17 Feb 2020 15:00	1
HS20020447-14	SO-1620-SSO15(0-2)-20200211	11 Feb 2020 10:19		13 Feb 2020 13:39	17 Feb 2020 15:20	1
HS20020447-15	SO-1620-SSO02(0-2)-20200211	11 Feb 2020 11:00		13 Feb 2020 13:39	17 Feb 2020 15:39	1
HS20020447-16	SO-1620-FD01-20200210	10 Feb 2020 00:00		13 Feb 2020 13:39	17 Feb 2020 16:36	10
HS20020447-17	SO-1620-FD02-20200211	11 Feb 2020 00:00		13 Feb 2020 13:39	17 Feb 2020 16:17	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020447

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R356459 (0)	**Test Name :** MOISTURE - ASTM D2216				**Matrix:** Soil	
HS20020447-01	SO-1620-SSO01(0-2)-20200210	10 Feb 2020 13:10			17 Feb 2020 10:27	1
HS20020447-02	SO-1620-SSO03(0-2)-20200210	10 Feb 2020 13:40			17 Feb 2020 10:27	1
HS20020447-03	SO-1620-SSO04(0-2)-20200210	10 Feb 2020 13:50			17 Feb 2020 10:27	1
HS20020447-04	SO-1620-SSO06(0-2)-20200210	10 Feb 2020 14:00			17 Feb 2020 10:27	1
HS20020447-05	SO-1620-SSO07(0-2)-20200210	10 Feb 2020 14:10			17 Feb 2020 10:27	1
HS20020447-06	SO-1620-SSO08(0-2)-20200210	10 Feb 2020 14:20			17 Feb 2020 10:27	1
HS20020447-07	SO-1620-SSO09(0-2)-20200210	10 Feb 2020 14:30			17 Feb 2020 10:27	1
HS20020447-08	SO-1620-SSO10(0-2)-20200210	10 Feb 2020 14:45			17 Feb 2020 10:27	1
HS20020447-09	SO-1620-SSO05(0-2)-20200211	11 Feb 2020 09:25			17 Feb 2020 10:27	1
HS20020447-10	SO-1620-SSO11(0-2)-20200211	11 Feb 2020 09:40			17 Feb 2020 10:27	1
HS20020447-11	SO-1620-SSO12(0-2)-20200211	11 Feb 2020 09:45			17 Feb 2020 10:27	1
HS20020447-12	SO-1620-SSO13(0-2)-20200211	11 Feb 2020 09:50			17 Feb 2020 10:27	1
HS20020447-13	SO-1620-SSO14(0-2)-20200211	11 Feb 2020 10:00			17 Feb 2020 10:27	1
HS20020447-14	SO-1620-SSO15(0-2)-20200211	11 Feb 2020 10:19			17 Feb 2020 10:27	1
HS20020447-15	SO-1620-SSO02(0-2)-20200211	11 Feb 2020 11:00			17 Feb 2020 10:27	1
HS20020447-16	SO-1620-FD01-20200210	10 Feb 2020 00:00			17 Feb 2020 10:27	1
HS20020447-17	SO-1620-FD02-20200211	11 Feb 2020 00:00			17 Feb 2020 10:27	1

WorkOrder: HS20020447
InstrumentID: SV-7
Test Code: 8270_LOW_S
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Pentachlorophenol	87-86-5	0.0033	0.0025	0.0033	0.0066
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	2-Fluorophenol	367-12-4	0	0	0	0
S	4-Terphenyl-d14	1718-51-0	0	0	0	0
S	Nitrobenzene-d5	4165-60-0	0	0	0	0
S	Phenol-d6	13127-88-3	0	0	0	0

WorkOrder: HS20020447
InstrumentID: SV-6
Test Code: 8270_LOW_S
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Pentachlorophenol	87-86-5	0.0033	0.00021	0.0033	0.0066
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	2-Fluorophenol	367-12-4	0	0	0	0
S	4-Terphenyl-d14	1718-51-0	0	0	0	0
S	Nitrobenzene-d5	4165-60-0	0	0	0	0
S	Phenol-d6	13127-88-3	0	0	0	0

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020447

QC BATCH REPORT

Batch ID: 150597 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-150597** Units: **ug/Kg** Analysis Date: **13-Feb-2020 16:22**
Client ID: Run ID: **SV-7_356280** SeqNo: **5473119** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	U	6.6								
Surr: 2,4,6-Tribromophenol	*111*	*0*	*167*	*0*	*66.5*	*36 - 126*				
Surr: 2-Fluorobiphenyl	*128.7*	*0*	*167*	*0*	*77.1*	*43 - 125*				
Surr: 2-Fluorophenol	*91.39*	*0*	*167*	*0*	*54.7*	*37 - 125*				
Surr: 4-Terphenyl-d14	*146*	*0*	*167*	*0*	*87.4*	*32 - 125*				
Surr: Nitrobenzene-d5	*119.2*	*0*	*167*	*0*	*71.4*	*37 - 125*				
Surr: Phenol-d6	*99.27*	*0*	*167*	*0*	*59.4*	*40 - 125*				

LCS Sample ID: **LCS-150597** Units: **ug/Kg** Analysis Date: **13-Feb-2020 16:41**
Client ID: Run ID: **SV-7_356280** SeqNo: **5473120** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	49	6.6	167	0	29.3	23 - 136				
Surr: 2,4,6-Tribromophenol	*105.5*	*0*	*167*	*0*	*63.2*	*36 - 126*				
Surr: 2-Fluorobiphenyl	*86.63*	*0*	*167*	*0*	*51.9*	*43 - 125*				
Surr: 2-Fluorophenol	*75.53*	*0*	*167*	*0*	*45.2*	*37 - 125*				
Surr: 4-Terphenyl-d14	*109.5*	*0*	*167*	*0*	*65.5*	*32 - 125*				
Surr: Nitrobenzene-d5	*117.4*	*0*	*167*	*0*	*70.3*	*37 - 125*				
Surr: Phenol-d6	*75*	*0*	*167*	*0*	*44.9*	*40 - 125*				

MS Sample ID: **HS20020501-02MS** Units: **ug/Kg** Analysis Date: **14-Feb-2020 12:00**
Client ID: Run ID: **SV-7_356313** SeqNo: **5473790** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	77.31	6.6	166.6	0	46.4	23 - 136				
Surr: 2,4,6-Tribromophenol	*148.1*	*0*	*166.6*	*0*	*88.9*	*36 - 126*				
Surr: 2-Fluorobiphenyl	*147.3*	*0*	*166.6*	*0*	*88.5*	*43 - 125*				
Surr: 2-Fluorophenol	*77.89*	*0*	*166.6*	*0*	*46.8*	*37 - 125*				
Surr: 4-Terphenyl-d14	*144.9*	*0*	*166.6*	*0*	*87.0*	*32 - 125*				
Surr: Nitrobenzene-d5	*95.46*	*0*	*166.6*	*0*	*57.3*	*37 - 125*				
Surr: Phenol-d6	*86.77*	*0*	*166.6*	*0*	*52.1*	*40 - 125*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020447

QC BATCH REPORT

Batch ID: 150597 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MSD Sample ID: **HS20020501-02MSD** Units: **ug/Kg** Analysis Date: **13-Feb-2020 19:13**
Client ID: Run ID: **SV-7_356280** SeqNo: **5473127** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Pentachlorophenol	94.05	6.6	166.4	0	56.5	23 - 136	77.31	19.5	30	
Surr: 2,4,6-Tribromophenol	*134.5*	*0*	*166.4*	*0*	*80.8*	*36 - 126*	*148.1*	*9.58*	*30*	
Surr: 2-Fluorobiphenyl	*134.9*	*0*	*166.4*	*0*	*81.1*	*43 - 125*	*147.3*	*8.77*	*30*	
Surr: 2-Fluorophenol	*102.5*	*0*	*166.4*	*0*	*61.6*	*37 - 125*	*77.89*	*27.2*	*30*	
Surr: 4-Terphenyl-d14	*141*	*0*	*166.4*	*0*	*84.8*	*32 - 125*	*144.9*	*2.73*	*30*	
Surr: Nitrobenzene-d5	*109.9*	*0*	*166.4*	*0*	*66.0*	*37 - 125*	*95.46*	*14.1*	*30*	
Surr: Phenol-d6	*74.37*	*0*	*166.4*	*0*	*44.7*	*40 - 125*	*86.77*	*15.4*	*30*	

The following samples were analyzed in this batch: HS20020447-01 HS20020447-02 HS20020447-03 HS20020447-04
HS20020447-05 HS20020447-06 HS20020447-07

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020447

QC BATCH REPORT

Batch ID: 150608 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-150608** Units: **ug/Kg** Analysis Date: **13-Feb-2020 17:29**
Client ID: Run ID: **SV-6_356229** SeqNo: **5472906** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	U	6.6								
Surr: 2,4,6-Tribromophenol	*88.84*	*0*	*167*	*0*	*53.2*	*36 - 126*				
Surr: 2-Fluorobiphenyl	*127.4*	*0*	*167*	*0*	*76.3*	*43 - 125*				
Surr: 2-Fluorophenol	*101.9*	*0*	*167*	*0*	*61.0*	*37 - 125*				
Surr: 4-Terphenyl-d14	*123.1*	*0*	*167*	*0*	*73.7*	*32 - 125*				
Surr: Nitrobenzene-d5	*118.2*	*0*	*167*	*0*	*70.8*	*37 - 125*				
Surr: Phenol-d6	*88.12*	*0*	*167*	*0*	*52.8*	*40 - 125*				

LCS Sample ID: **LCS-150608** Units: **ug/Kg** Analysis Date: **13-Feb-2020 17:48**
Client ID: Run ID: **SV-6_356229** SeqNo: **5472907** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	60.33	6.6	167	0	36.1	23 - 136				
Surr: 2,4,6-Tribromophenol	*108.6*	*0*	*167*	*0*	*65.0*	*36 - 126*				
Surr: 2-Fluorobiphenyl	*139.8*	*0*	*167*	*0*	*83.7*	*43 - 125*				
Surr: 2-Fluorophenol	*116.9*	*0*	*167*	*0*	*70.0*	*37 - 125*				
Surr: 4-Terphenyl-d14	*142.8*	*0*	*167*	*0*	*85.5*	*32 - 125*				
Surr: Nitrobenzene-d5	*127.2*	*0*	*167*	*0*	*76.2*	*37 - 125*				
Surr: Phenol-d6	*117.6*	*0*	*167*	*0*	*70.4*	*40 - 125*				

MS Sample ID: **HS20020449-01MS** Units: **ug/Kg** Analysis Date: **14-Feb-2020 11:51**
Client ID: Run ID: **SV-6_356287** SeqNo: **5473656** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	10.9	6.6	166.7	0	6.54	23 - 136				S
Surr: 2,4,6-Tribromophenol	*66.74*	*0*	*166.7*	*0*	*40.0*	*36 - 126*				
Surr: 2-Fluorobiphenyl	*127.2*	*0*	*166.7*	*0*	*76.3*	*43 - 125*				
Surr: 2-Fluorophenol	*77.49*	*0*	*166.7*	*0*	*46.5*	*37 - 125*				
Surr: 4-Terphenyl-d14	*129.4*	*0*	*166.7*	*0*	*77.6*	*32 - 125*				
Surr: Nitrobenzene-d5	*107*	*0*	*166.7*	*0*	*64.2*	*37 - 125*				
Surr: Phenol-d6	*88.11*	*0*	*166.7*	*0*	*52.9*	*40 - 125*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020447

QC BATCH REPORT

Batch ID: 150608 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MSD Sample ID: **HS20020449-01MSD** Units: **ug/Kg** Analysis Date: **14-Feb-2020 12:10**
Client ID: Run ID: **SV-6_356287** SeqNo: **5473657** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	4.024	6.5	165	0	2.44	23 - 136	10.9	0	30	JS
Surr: 2,4,6-Tribromophenol	*U*	*0*	*165*	*0*	*0*	*36 - 126*	*66.74*	*200*	*30*	SR
Surr: 2-Fluorobiphenyl	*124.1*	*0*	*165*	*0*	*75.2*	*43 - 125*	*127.2*	*2.46*	*30*	
Surr: 2-Fluorophenol	*12.68*	*0*	*165*	*0*	*7.68*	*37 - 125*	*77.49*	*144*	*30*	SR
Surr: 4-Terphenyl-d14	*118.8*	*0*	*165*	*0*	*72.0*	*32 - 125*	*129.4*	*8.49*	*30*	
Surr: Nitrobenzene-d5	*106.2*	*0*	*165*	*0*	*64.4*	*37 - 125*	*107*	*0.758*	*30*	
Surr: Phenol-d6	*25.04*	*0*	*165*	*0*	*15.2*	*40 - 125*	*88.11*	*111*	*30*	SR

The following samples were analyzed in this batch: HS20020447-08 HS20020447-09 HS20020447-10 HS20020447-11 HS20020447-12 HS20020447-13 HS20020447-14 HS20020447-15 HS20020447-16 HS20020447-17

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020447

QC BATCH REPORT

Batch ID: **R356459 (0)** **Instrument:** **Balance1** **Method:** **MOISTURE - ASTM D2216**

DUP Sample ID: **HS20020447-17DUP** Units: **wt%** Analysis Date: **17-Feb-2020 10:27**
Client ID: **SO-1620-FD02-20200211** Run ID: **Balance1_356459** SeqNo: **5476913** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	20.2	0.0100					20.7	2.44	20	

The following samples were analyzed in this batch:

HS20020447-01	HS20020447-02	HS20020447-03	HS20020447-04
HS20020447-05	HS20020447-06	HS20020447-07	HS20020447-08
HS20020447-09	HS20020447-10	HS20020447-11	HS20020447-12
HS20020447-13	HS20020447-14	HS20020447-15	HS20020447-16
HS20020447-17			

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20020447**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/Kg-dry	Milligrams per Kilogram- Dry weight corrected

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20020447

Date/Time Received: **11-Feb-2020 14:40**
Received by: **PMG**

Checklist completed by: *Nilesh D. Ranchod* eSignature — 11-Feb-2020 Date

Reviewed by: *Dane J. Wacasey* eSignature — 12-Feb-2020 Date

Matrices: **Soil**

Carrier name: **Client**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	2 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:213525/213524
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	0.2°C UC/C		IR # 25
Cooler(s)/Kit(s):	45623		
Date/Time sample(s) sent to storage:	02/11/2020 19:30		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

COC ID: 213525

HS20020447

NV

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-12-Rev0 SR 92688
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Patrick Marty	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	Patrick_Marty@golder.com	e-Mail Address	

A: 8270_LOW_W (5632532 SVOC - Pentachlorophenol only)
B: MOIST_ASTM (5631931 Moisture%)
C:
D:
E: Per Golder MSA
F:
G:
H:
I:
J:

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620-SS001(0-2)-20200210	2-10-20	1310	Soil	8	1	X	X									
2	SS003(0-2)		1340														
3	SS004(0-2)		1350														
4	SS005(0-2)		1406														
5	SS006(0-2)		1410														
6	SS008(0-2)		1420														
7	SS009(0-2)		1430														
8	SS010(0-2)		1445														
9	SS005(0-2)-20200211	2-11-20	925														
10	SS011(0-2)		940														

Sampler(s) Please Print & Sign: Blake Sokora Tim McSpadden

Shipment Method:

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: Date: 2-11-20 Time: 1440 Received by:

Relinquished by: Date: Time: Received by (Laboratory): 2/11/2020 14:45

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR HWPW 1620-12

Cooler ID	Cooler Temp.
45623	5.2°C
	#2

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[X] TRRP Checklist
[ ] TRRP Level IV
[ ] Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Everett, WA +1 425 356 2600
Holland, MI +1 616 399 6070

Chain of Custody Form

Page 2 of 2

COC ID: 213524

HS20020447

, WV

Golder Associates Inc.

Houston TX-Wood Preserving Works

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-12-Rev0 SR 92688
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Patrick Marty	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	Patrick_Marty@golder.com	e-Mail Address	

ALS Project Manager:

A: 8270_LOW_W (5632532 SVOC - Pentachlorophenol only)

B: MOIST_ASTM (5631931 Moisture%)

Per Golder MSA

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620-SS012(0-2)-20200211	2-11-20	945	Soil	8	1	X	X									
2	SS013(0-2)		950														
3	SS014(0-2)		1000														
4	SS015(0-2)		1019														
5	SS002(0-2)		1100														
6	FD01-20200210	—	—														
7	FD02-20200211	—	—														
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Blake Sokora Tim McSpadden

Shipment Method:

Required Turnaround Time: (Check Box) ☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other

Results Due Date:

Relinquished by: Blake Sokora Date: 2-11-20 Time: 1440 Received by:

Relinquished by: Date: Time: Received by (Laboratory): 2/11/2020 14:40

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR HWPW 1620-12

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)

☐ Level II Std QC ☒ TRRP Checklist

☐ Level III Std QC/Raw Data ☐ TRRP Level IV

☐ Level IV SW846/CLP

☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Memorandum

June 29, 2020
Revision: July 14, 2020

To:	Eric Matzner	Ref. No.:	11183954-1620
From:	Chris G. Knight/eew/663-NF	Tel:	512-506-8803
CC:	Jesse Orth, Jon Lang; Julie Lidstone		

Subject: **Data Usability Summary**
Pentachlorophenol Assessment
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
June 2020

1. Scope of Data Usability Study

This document details a Data Usability Summary (DUS) of analytical results for soil samples collected in support of the Pentachlorophenol Assessment at the Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works site during June 2020. Samples were submitted to ALS Environmental (ALS), located in Houston, Texas and are reported in data packages HS20060152 and HS20060313. The intended use of the data is to support the Pentachlorophenol Assessment at the site by providing current concentration of chemicals of concern.

Data were reviewed and validated by Chris G. Knight of GHD, in accordance with Title 30 of the Texas Administrative Code Section 350.54 (30 TAC 350.54) as described in the Texas Commission on Environmental Quality (TCEQ) Regulatory Guidance document entitled "Review and Reporting of COC Concentration Data under TRRP", (RG-366/TRRP-13), revised May 2010, herein referred to as "TRRP-13 Guidance". Evaluation of the data was based on information obtained from the chain of custody forms, the finished report forms, method blank data, recovery data from surrogate spikes/laboratory control samples (LCS)/matrix spikes (MS)/duplicate data, field quality assurance/quality control (QA/QC) samples, the laboratory review checklists (LRC), and the laboratory exception reports (ER).

A sample collection and analysis summary is presented in Table 1. This summary provides a cross-reference of field sample identification numbers and location identification. Each sample is assigned a unique field identification number.

The validated sample results are presented in Table 2A. While synthetic precipitation leaching procedure (SPLP) results are presented in Table 2B, they are included only for informational purposes. No data review or verification was performed on the SPLP analyses. A summary of the analytical methodology is presented in Table 3.

2. Laboratory Qualifications

The Laboratory's quality assurance program is consistent with the quality standards outlined in the National Environmental Laboratory Accreditation Program (NELAP). This laboratory was accredited under Texas Certification number # TX104704231 at the time the analysis was performed and the certificate is included in Attachment A.

3. Project Objectives

3.1 Sampling/Analytical QA/QC Objectives

The QA/QC program was designed to identify contamination resulting from the sampling, sample transport and analytical process through the analysis of method blanks. The QA/QC program was designed to evaluate the quality of the resulting data with respect to bias and precision through analysis of LCS, MS, and duplicate analyses.

4. Data Review/Validation Results

4.1 Sample Holding Time and Preservation

Samples were shipped with a chain of custody and the paper work was filled out properly. All samples were delivered on ice and stored by the laboratory at the required temperature (0-6°C).

The sample chain of custody documents and the analytical reports were used to determine sample holding times. All samples were prepared and analyzed within the required holding times.

4.2 Sample Containers

Sample containers used were certified pre-cleaned glass containers provided by the laboratory. These containers meet or exceed analyte specifications established in the United States Environmental Protection Agency (USEPA) *Specifications and Guidance for Contaminant-free Sample Containers*.

4.3 Calibrations

According to the LRC, initial calibration and continuing calibration data met the criteria for the selected method.

4.4 Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures. As these were not discrete samples handled in the field, these blanks are not listed on the sample identification cross-reference list found in the data packages.

For this study, laboratory method blanks were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch and results are reported in the laboratory data packages.

The method blank results were non-detect or below the method quantitation limit (MQL), indicating that laboratory contamination was not a factor for this investigation.

4.5 Internal Standard and Surrogate Spike Recoveries

Recoveries of internal standards are addressed in the LRC of the data packages. All internal standard recoveries associated with the compounds of interest were acceptable per the LRC.

In accordance with the methods employed, all samples, blanks, and QC samples analyzed for pentachlorophenol determinations are spiked with surrogate compounds prior to sample analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project. Each individual surrogate compound is expected to meet the laboratory control limits. According to the TRRP-13 Guidelines, one outlying surrogate is acceptable for methods with multiple surrogate spike compounds as long as the recovery is at least ten percent. Sample analyzed at elevated sample dilutions (five times or greater) were not assessed.

Surrogate recoveries were assessed against laboratory control limits and/or the guidance in TRRP-13. All surrogate recoveries met the above criteria.

4.6 Laboratory Control Sample Analysis

LCS or LCS/laboratory control sample duplicate (LCSD) are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects. The relative percent difference (RPD) of the LCS/LCSD recoveries is used to evaluate analytical precision. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project.

For this study, LCS or LCS/LCSD were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch.

The LCS or LCS/LCSD contained pentachlorophenol. All LCS recoveries and/or RPDs were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision (where applicable).

4.7 Matrix Spike Analysis

To evaluate the effects of sample matrices on the preparation process, measurement procedures, and accuracy of a particular analysis, samples are spiked with known concentrations of the analytes of interest and analyzed as MS/matrix spike duplicate (MSD) samples. The RPD between the MS and MSD is used to assess analytical precision.

MS/MSD analyses were performed as specified in Table 1. The recovery ranges established by the laboratory is adopted as the acceptance criteria for the project.

The MS/MSD samples were spiked with pentachlorophenol. All percent recoveries and the RPD value were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision.

The laboratory also performed additional MS/MSD on non-site samples. These cannot be used to assess accuracy and precision for the site samples.

4.8 Duplicate Sample Analyses

Analytical precision is evaluated based on the analysis of laboratory duplicate samples. For this study, duplicate samples were prepared and analyzed by the laboratory for pH analysis. The relative percent differences (RPD) established by the laboratory are adopted as the acceptance criteria for the project.

The laboratory performed duplicate analyses on non-site samples. These cannot be used to assess precision for the site samples.

4.9 Field QA/QC Samples

The field QA/QC consisted of three equipment blank sample samples and three field duplicate sample sets.

Equipment Blank Sample Analysis

To assess field decontamination procedures and cleanliness of sample containers, three equipment blank samples were submitted for analysis, as identified in Table 1. All results were non-detect for pentachlorophenol.

Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, three field duplicate sample sets were collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples must be less than fifty percent for soil samples. The RPDs are only used when sample concentrations are above the estimated regions of detection.

Field duplicate summary data are presented in Table 2A. SO-1620-SS020(0-2)-2020060/ SO-1620-FD01-20200603 results were within acceptable agreement, demonstrating acceptable sampling and analytical precision. SO-1620-SS0223(0-2)-20200603/SO-1620-FD02-20200603 and SO-1620-SSO03R(2-4)-20200605/SO-1620-FD03-20200605 did show some variability in pentachlorophenol results and were qualified as estimated (see Table 4).

4.10 Field Procedures

Golder Associates, Inc. collected soil samples in accordance with their Standard Operating Procedures (SOP) for sample collection.

4.11 Analyte Reporting

The laboratory reported detected results for each analyte down to the sample detection limit (SDL), which is defined as the method detection limit (MDL) with sample-specific adjustments for dilutions, aliquot size,

volumes, etc. Positive analyte detections less than the MQL but greater than the SDL were qualified as estimated (J) in Table 2A unless qualified elsewhere in this memorandum.

The detectability check standard (DCS) results supported the laboratory MDLs.

All soil results were reported on a dry weight basis.

5. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2A are usable for the purpose of supporting the Pentachlorophenol Assessment at the site by providing current concentration of chemicals of concern in soil samples with the specific qualifications noted herein.

Table 1

Sample Collection and Analysis Summary
Pentachlorophenol Assessment
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
June 2020

							Analysis/Parameters			
Sample Identification	**Location**	**Matrix**	**Initial Sample Depth (ft bgs)**	**Final Sample Depth (ft bgs)**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**Pentachlorophenol**	**pH**	**SPLP Pentachlorophenol**	**Comments**
SO-1620-SS016(0-2)-20200602	SSO-16	Soil	0	2	06/02/2020	12:10	X			
SO-1620-SS016(2-4)-20200602	SSO-16	Soil	2	4	06/02/2020	12:18	X			
SO-1620-SS017(0-2)-20200602	SSO-17	Soil	0	2	06/02/2020	12:20	X			
SO-1620-SS017(2-4)-20200602	SSO-17	Soil	2	4	06/02/2020	12:25	X			
SO-1620-SS018(0-2)-20200602	SSO-18	Soil	0	2	06/02/2020	12:30	X			
SO-1620-SS018(2-4)-20200602	SSO-18	Soil	2	4	06/02/2020	12:35	X			
SO-1620-SS0211(0-2)-20200602	SSO-21-1	Soil	0	2	06/02/2020	14:55	X			
SO-1620-SS0211(2-4)-20200602	SSO-21-1	Soil	2	4	06/02/2020	15:00	X			
SO-1620-SS0212(0-2)-20200602	SSO-21-2	Soil	0	2	06/02/2020	15:05	X			
SO-1620-SS0212(2-4)-20200602	SSO-21-2	Soil	2	4	06/02/2020	15:10	X			
SO-1620-SS0213(0-2)-20200602	SSO-21-3	Soil	0	2	06/02/2020	16:45	X			
SO-1620-SS0213(2-4)-20200602	SSO-21-3	Soil	2	4	06/02/2020	16:50	X			
SO-1620-EB01-2020603	-	Water			06/03/2020	08:15	X			Equipment Blank
SO-1620-SS019(0-2)-20200603	SSO-19	Soil	0	2	06/03/2020	09:45	X			
SO-1620-SS019(2-4)-20200603	SSO-19	Soil	2	4	06/03/2020	09:50	X			
SO-1620-SS020(0-2)-20200603	SSO-20	Soil	0	2	06/03/2020	09:55	X			
SO-1620-SS020(2-4)-20200603	SSO-20	Soil	2	4	06/03/2020	10:00	X			

Table 1

Sample Collection and Analysis Summary
Pentachlorophenol Assessment
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
June 2020

							Analysis/Parameters			
Sample Identification	**Location**	**Matrix**	**Initial Sample Depth (ft bgs)**	**Final Sample Depth (ft bgs)**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**Pentachlorophenol**	**pH**	**SPLP Pentachlorophenol**	**Comments**
SO-1620-FD01-20200603	SSO-20	Soil	0	2	06/03/2020	10:10	X			Field duplicate of SSO-20
SO-1620-SS0223(0-2)-20200603	SSO-22-3	Soil	0	2	06/03/2020	10:50	X			
SO-1620-SS0223(2-4)-20200603	SSO-22-3	Soil	2	4	06/03/2020	10:55	X			
SO-1620-FD02-20200603	SSO-22-3	Soil	0	2	06/03/2020	11:00	X			Field duplicate of SSO-22-3
SO-1620-SSO221(0-2)-20200603	SSO-22-1	Soil	0	2	06/03/2020	16:00	X			
SO-1620-SSO221(2-4)-20200603	SSO-22-1	Soil	2	4	06/03/2020	16:05	X			
SO-1620-SSO222(0-2)-20200603	SSO-22-2	Soil	0	2	06/03/2020	16:10	X			MS/MSD
SO-1620-SSO222(2-4)-20200603	SSO-22-2	Soil	2	4	06/03/2020	16:15	X			
SO-1620-SSO231(0-2)-20200603	SSO-23-1	Soil	0	2	06/03/2020	16:20	X			
SO-1620-SSO231(2-4)-20200603	SSO-23-1	Soil	2	4	06/03/2020	16:25	X			
SO-1620-SSO232(0-2)-20200603	SSO-23-2	Soil	0	2	06/03/2020	16:30	X			
SO-1620-SSO232(2-4)-20200603	SSO-23-2	Soil	2	4	06/03/2020	16:35	X			
WQ-1620-EB02-20200604	-	Water			06/04/2020	08:10	X			Equipment Blank
SO-1620-SSO233(0-2)-20200604	SSO-23-3	Soil	0	2	06/04/2020	10:30	X			
SO-1620-SSO233(2-4)-20200604	SSO-23-3	Soil	2	4	06/04/2020	10:35	X			
SO-1620-SSO241(0-2)-20200604	SSO-24-1	Soil	0	2	06/04/2020	10:40	X			
SO-1620-SSO241(2-4)-20200604	SSO-24-1	Soil	2	4	06/04/2020	10:45	X			

Table 1

Sample Collection and Analysis Summary
Pentachlorophenol Assessment
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
June 2020

							Analysis/Parameters			
Sample Identification	**Location**	**Matrix**	**Initial Sample Depth (ft bgs)**	**Final Sample Depth (ft bgs)**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**Pentachlorophenol**	**pH**	**SPLP Pentachlorophenol**	**Comments**
SO-1620-SSO242(0-2)-20200604	SSO-24-2	Soil	0	2	06/04/2020	10:50	X			
SO-1620-SSO242(2-4)-20200604	SSO-24-2	Soil	2	4	06/04/2020	10:55	X			
SO-1620-SSO243(0-2)-20200604	SSO-24-3	Soil	0	2	06/04/2020	11:00	X			
SO-1620-SSO243(2-4)-20200604	SSO-24-3	Soil	2	4	06/04/2020	11:05	X			
SO-1620-SSO251(0-2)-20200604	SSO-25-1	Soil	0	2	06/04/2020	13:00	X			
SO-1620-SSO251(2-4)-20200604	SSO-25-1	Soil	2	4	06/04/2020	13:05	X			
SO-1620-SSO252(0-2)-20200604	SSO-25-2	Soil	0	2	06/04/2020	13:10	X			
SO-1620-SSO252(2-4)-20200604	SSO-25-2	Soil	2	4	06/04/2020	13:15	X			
SO-1620-SSO253(0-2)-20200604	SSO-25-3	Soil	0	2	06/04/2020	16:20	X			
SO-1620-SSO253(2-4)-20200604	SSO-25-3	Soil	2	4	06/04/2020	16:25	X			
SO-1620-SSO261(0-2)-20200604	SSO-26-1	Soil	0	2	06/04/2020	16:30	X			
SO-1620-SSO261(2-4)-20200604	SSO-26-1	Soil	2	4	06/04/2020	16:35	X			
SO-1620-SSO262(0-2)-20200604	SSO-26-2	Soil	0	2	06/04/2020	16:40	X			
SO-1620-SSO262(2-4)-20200604	SSO-26-2	Soil	2	4	06/04/2020	16:45	X			
SO-1620-SSO263(0-2)-20200604	SSO-26-3	Soil	0	2	06/04/2020	16:50	X			
SO-1620-SSO263(2-4)-20200604	SSO-26-3	Soil	2	4	06/04/2020	16:55	X			
WQ-1620-EB03-20200605	-	Water			06/05/2020	08:15	X			Equipment Blank

Table 1

Sample Collection and Analysis Summary
Pentachlorophenol Assessment
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
June 2020

							Analysis/Parameters			
Sample Identification	**Location**	**Matrix**	**Initial Sample Depth (ft bgs)**	**Final Sample Depth (ft bgs)**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**Pentachlorophenol**	**pH**	**SPLP Pentachlorophenol**	**Comments**
SO-1620-SSO03R(0-2)-20200605	SSO-03R	Soil	0	2	06/05/2020	10:55	X	X	X	
SO-1620-SSO03R(2-4)-20200605	SSO-03R	Soil	2	4	06/05/2020	11:00	X	X		
SO-1620-FD03-20200605	SSO-03R	Soil	2	4	06/05/2020	11:00	X	X		Field duplicate of SSO-03R; MS/MSD
SO-1620-SSO07R(0-2)-20200605	SSO-07R	Soil	0	2	06/05/2020	11:05	X	X		
SO-1620-SSO07R(2-4)-20200605	SSO-07R	Soil	2	4	06/05/2020	11:10	X	X		
SO-1620-SSO08R(0-2)-20200605	SSO-08R	Soil	0	2	06/05/2020	11:15	X	X	X	
SO-1620-SSO08R(2-4)-20200605	SSO-08R	Soil	2	4	06/05/2020	11:20	X	X		

Notes:

ft bgs - Feet Below Ground Surface
SPLP - Synthetic Precipitation Leaching Procedure
MS/MSD - Matrix Spike/ Matrix Spike Duplicate

Table 2A

Soil Analytical Results Summary
Pentachlorophenol Assessment
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
June 2020

Location ID:		**SSO-03R**	**SSO-03R**	**SSO-03R**	**SSO-07R**	**SSO-07R**
Sample Name:		**SO-1620-SSO03R(2-4)-20200605**	**SO-1620-FD03-20200605**	**SO-1620-SSO03R(0-2)-20200605**	**SO-1620-SSO07R(2-4)-20200605**	**SO-1620-SSO07R(0-2)-20200605**
Sample Date:		**06/05/2020**	**06/05/2020**	**06/05/2020**	**06/05/2020**	**06/05/2020**
Depth:		**2-4 ft bgs**	**2-4 ft bgs**	**0-2 ft bgs**	**2-4 ft bgs**	**0-2 ft bgs**
			Duplicate			
Parameters	**Unit**					
Semi-volatile Organic Compounds						
Pentachlorophenol	mg/kg	0.022	0.0067 J	2.2 J	0.44	0.45
General Chemistry						
pH	s.u.	7.02	7.08	7.61	7.03	7.21

Table 2A

Soil Analytical Results Summary
Pentachlorophenol Assessment
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
June 2020

Location ID:		**SSO-08R**	**SSO-08R**	**SSO-16**	**SSO-16**	**SSO-17**
Sample Name:		**SO-1620-SSO08R(2-4)-20200605**	**SO-1620-SSO08R(0-2)-20200605**	**SO-1620-SS016(2-4)-20200602**	**SO-1620-SS016(0-2)-20200602**	**SO-1620-SS017(2-4)-20200602**
Sample Date:		**06/05/2020**	**06/05/2020**	**06/02/2020**	**06/02/2020**	**06/02/2020**
Depth:		**2-4 ft bgs**	**0-2 ft bgs**	**2-4 ft bgs**	**0-2 ft bgs**	**2-4 ft bgs**
Parameters	**Unit**					
Semi-volatile Organic Compounds						
Pentachlorophenol	mg/kg	0.13	1.5	0.060	0.69	0.019
General Chemistry						
pH	s.u.	7.57	7.53	--	--	--

Table 2A

Soil Analytical Results Summary
Pentachlorophenol Assessment
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
June 2020

Location ID:		**SSO-17**	**SSO-18**	**SSO-18**	**SSO-19**	**SSO-19**
Sample Name:		**SO-1620-SS017(0-2)-20200602**	**SO-1620-SS018(2-4)-20200602**	**SO-1620-SS018(0-2)-20200602**	**SO-1620-SS019(2-4)-20200603**	**SO-1620-SS019(0-2)-20200603**
Sample Date:		**06/02/2020**	**06/02/2020**	**06/02/2020**	**06/03/2020**	**06/03/2020**
Depth:		**0-2 ft bgs**	**2-4 ft bgs**	**0-2 ft bgs**	**2-4 ft bgs**	**0-2 ft bgs**
Parameters	**Unit**					
Semi-volatile Organic Compounds						
Pentachlorophenol	mg/kg	0.15	0.046	0.22	0.019	0.32
General Chemistry						
pH	s.u.	--	--	--	--	--

Table 2A

Soil Analytical Results Summary
Pentachlorophenol Assessment
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
June 2020

Location ID:		**SSO-20**	**SSO-20**	**SSO-20**	**SSO-21-1**	**SSO-21-1**
Sample Name:		**SO-1620-SS020(2-4)-20200603**	**SO-1620-SS020(0-2)-20200603**	**SO-1620-FD01-20200603**	**SO-1620-SS0211(2-4)-20200602**	**SO-1620-SS0211(0-2)-20200602**
Sample Date:		**06/03/2020**	**06/03/2020**	**06/03/2020**	**06/02/2020**	**06/02/2020**
Depth:		**2-4 ft bgs**	**0-2 ft bgs**	**0-2 ft bgs**	**2-4 ft bgs**	**0-2 ft bgs**
				Duplicate		
Parameters	**Unit**					
Semi-volatile Organic Compounds						
Pentachlorophenol	mg/kg	<0.0039	0.016	0.030	0.019	0.086
General Chemistry						
pH	s.u.	--	--	--	--	--

Table 2A

Soil Analytical Results Summary
Pentachlorophenol Assessment
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
June 2020

Location ID:		**SSO-21-2**	**SSO-21-2**	**SSO-21-3**	**SSO-21-3**	**SSO-22-1**
Sample Name:		**SO-1620-SS0212(2-4)-20200602**	**SO-1620-SS0212(0-2)-20200602**	**SO-1620-SS0213(2-4)-20200602**	**SO-1620-SS0213(0-2)-20200602**	**SO-1620-SSO221(2-4)-20200603**
Sample Date:		**06/02/2020**	**06/02/2020**	**06/02/2020**	**06/02/2020**	**06/03/2020**
Depth:		**2-4 ft bgs**	**0-2 ft bgs**	**2-4 ft bgs**	**0-2 ft bgs**	**2-4 ft bgs**
Parameters	**Unit**					
Semi-volatile Organic Compounds						
Pentachlorophenol	mg/kg	0.32	0.23	<0.0039	0.044	0.032
General Chemistry						
pH	s.u.	--	--	--	--	--

Table 2A

Soil Analytical Results Summary
Pentachlorophenol Assessment
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
June 2020

Location ID:		**SSO-22-1**	**SSO-22-2**	**SSO-22-2**	**SSO-22-3**	**SSO-22-3**
Sample Name:		**SO-1620-SSO221(0-2)-20200603**	**SO-1620-SSO222(2-4)-20200603**	**SO-1620-SSO222(0-2)-20200603**	**SO-1620-SS0223(2-4)-20200603**	**SO-1620-SS0223(0-2)-20200603**
Sample Date:		**06/03/2020**	**06/03/2020**	**06/03/2020**	**06/03/2020**	**06/03/2020**
Depth:		**0-2 ft bgs**	**2-4 ft bgs**	**0-2 ft bgs**	**2-4 ft bgs**	**0-2 ft bgs**
Parameters	**Unit**					
Semi-volatile Organic Compounds						
Pentachlorophenol	mg/kg	0.13	0.024	0.42	<0.0040	0.038 J
General Chemistry						
pH	s.u.	--	--	--	--	--

Table 2A

Soil Analytical Results Summary
Pentachlorophenol Assessment
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
June 2020

Location ID:		**SSO-22-3**	**SSO-23-1**	**SSO-23-1**	**SSO-23-2**	**SSO-23-2**
Sample Name:		**SO-1620-FD02-20200603**	**SO-1620-SSO231(2-4)-20200603**	**SO-1620-SSO231(0-2)-20200603**	**SO-1620-SSO232(2-4)-20200603**	**SO-1620-SSO232(0-2)-20200603**
Sample Date:		**06/03/2020**	**06/03/2020**	**06/03/2020**	**06/03/2020**	**06/03/2020**
Depth:		**0-2 ft bgs**	**2-4 ft bgs**	**0-2 ft bgs**	**2-4 ft bgs**	**0-2 ft bgs**
		Duplicate				
Parameters	**Unit**					
Semi-volatile Organic Compounds						
Pentachlorophenol	mg/kg	0.57 J	0.042	0.46	0.078	0.38
General Chemistry						
pH	s.u.	--	--	--	--	--

Table 2A

Soil Analytical Results Summary
Pentachlorophenol Assessment
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
June 2020

Location ID:		**SSO-23-3**	**SSO-23-3**	**SSO-24-1**	**SSO-24-1**	**SSO-24-2**
Sample Name:		**SO-1620-SSO233(2-4)-20200604**	**SO-1620-SSO233(0-2)-20200604**	**SO-1620-SSO241(2-4)-20200604**	**SO-1620-SSO241(0-2)-20200604**	**SO-1620-SSO242(2-4)-20200604**
Sample Date:		**06/04/2020**	**06/04/2020**	**06/04/2020**	**06/04/2020**	**06/04/2020**
Depth:		**2-4 ft bgs**	**0-2 ft bgs**	**2-4 ft bgs**	**0-2 ft bgs**	**2-4 ft bgs**
Parameters	**Unit**					
Semi-volatile Organic Compounds						
Pentachlorophenol	mg/kg	<0.0039	0.0064 J	<0.0039	0.0065 J	0.0069 J
General Chemistry						
pH	s.u.	--	--	--	--	--

Table 2A

Soil Analytical Results Summary
Pentachlorophenol Assessment
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
June 2020

Location ID:		**SSO-24-2**	**SSO-24-3**	**SSO-24-3**	**SSO-25-1**	**SSO-25-1**
Sample Name:		**SO-1620-SSO242(0-2)-20200604**	**SO-1620-SSO243(2-4)-20200604**	**SO-1620-SSO243(0-2)-20200604**	**SO-1620-SSO251(2-4)-20200604**	**SO-1620-SSO251(0-2)-20200604**
Sample Date:		**06/04/2020**	**06/04/2020**	**06/04/2020**	**06/04/2020**	**06/04/2020**
Depth:		**0-2 ft bgs**	**2-4 ft bgs**	**0-2 ft bgs**	**2-4 ft bgs**	**0-2 ft bgs**
Parameters	**Unit**					
Semi-volatile Organic Compounds						
Pentachlorophenol	mg/kg	0.024	<0.0038	0.014	<0.0043	<0.0041
General Chemistry						
pH	s.u.	--	--	--	--	--

Table 2A

Soil Analytical Results Summary
Pentachlorophenol Assessment
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
June 2020

Location ID:		**SSO-25-2**	**SSO-25-2**	**SSO-25-3**	**SSO-25-3**	**SSO-26-1**
Sample Name:		**SO-1620-SSO252(2-4)-20200604**	**SO-1620-SSO252(0-2)-20200604**	**SO-1620-SSO253(2-4)-20200604**	**SO-1620-SSO253(0-2)-20200604**	**SO-1620-SSO261(2-4)-20200604**
Sample Date:		**06/04/2020**	**06/04/2020**	**06/04/2020**	**06/04/2020**	**06/04/2020**
Depth:		**2-4 ft bgs**	**0-2 ft bgs**	**2-4 ft bgs**	**0-2 ft bgs**	**2-4 ft bgs**
Parameters	**Unit**					
Semi-volatile Organic Compounds						
Pentachlorophenol	mg/kg	0.070	0.28	<0.0041	0.078	0.0046 J
General Chemistry						
pH	s.u.	--	--	--	--	--

Table 2A

Soil Analytical Results Summary
Pentachlorophenol Assessment
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
June 2020

Location ID:		**SSO-26-1**	**SSO-26-2**	**SSO-26-2**	**SSO-26-3**	**SSO-26-3**
Sample Name:		**SO-1620-SSO261(0-2)-20200604**	**SO-1620-SSO262(2-4)-20200604**	**SO-1620-SSO262(0-2)-20200604**	**SO-1620-SSO263(2-4)-20200604**	**SO-1620-SSO263(0-2)-20200604**
Sample Date:		**06/04/2020**	**06/04/2020**	**06/04/2020**	**06/04/2020**	**06/04/2020**
Depth:		**0-2 ft bgs**	**2-4 ft bgs**	**0-2 ft bgs**	**2-4 ft bgs**	**0-2 ft bgs**
Parameters	**Unit**					
Semi-volatile Organic Compounds						
Pentachlorophenol	mg/kg	0.0040 J	<0.0041	<0.0040	<0.0039	0.22
General Chemistry						
pH	s.u.	--	--	--	--	--

Notes:

ft bgs - Feet below ground surface
< - Not detected at the associated reporting limit
J - Estimated concentration
"--" - Not applicable

Table 2B

SPLP Analytical Results Summary
Pentachlorophenol Assessment
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
June 2020

Location ID:		**SSO-03R**	**SSO-08R**
Sample Name:		**SO-1620-SSO03R(0-2)-20200605**	**SO-1620-SSO08R(0-2)-20200605**
Sample Date:		**06/05/2020**	**06/05/2020**
Depth:		**0-2 ft bgs**	**0-2 ft bgs**
Parameters	**Unit**		
Semi-volatile Organic Compounds (SPLP)			
Pentachlorophenol	mg/L	0.00057	<0.000050

Notes:

ft bgs - Feet below ground surface

SPLP - Synthetic Precipitation Leaching Procedure

Table 3

Analytical Methods
Pentachlorophenol Assessment
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
June 2020

Parameter	Method	Matrix	Holding Time	
			Collection to Extraction (Days)	Extraction to Analysis (Days)
Pentachlorophenol	SW-846 8270D	Soil	14	40
pH	SW-846 9045	Soil	-	-
SPLP Pentachlorophenol	SW-846 1312/8270D	Soil	14	40

Notes:

SPLP - Synthetic Precipitation Leaching Procedure

Methods:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions

Table 4

Qualified Sample Data Due to Variability in Field Duplicate Results
Pentachlorophenol Assessment
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
June 2020

Parameter	Analyte	RPD	Sample ID	Qualified Result	Field Duplicate Sample ID	Qualified Result	Units
SVOCs	Pentachlorophenol	175	SO-1620-SS0223(0-2)-20200603	0.038 J	SO-1620-FD02-20200603	0.57 J	mg/kg
SVOCs	Pentachlorophenol	106	SO-1620-SSO03R(2-4)-20200605	0.022 J	SO-1620-FD03-20200605	0.0067 J	mg/kg

Notes:

RPD - Relative Percent Difference
SVOCs - Semi-volatile Organic Compounds
J - Estimated concentration

Attachment A
Laboratory NELAP Certificate

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-20-26

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

Expiration Date: 4/30/2021

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2020

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: ***Drinking Water***

Method EPA 1613

Analyte	AB	Analyte ID	Method ID
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10120408

Method EPA 200.8

Analyte	AB	Analyte ID	Method ID
Copper	TX	1055	10014605
Lead	TX	1075	10014605

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

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ALS Laboratory Group, Environmental Services Division (Houston, Texas)

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10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2020

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Matrix: ***Non-Potable Water***

Method EPA 1010

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10116606

Method EPA 120.1

Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	10006403

Method EPA 1311

Analyte	AB	Analyte ID	Method ID
TCLP	TX	849	10118806

Method EPA 1312

Analyte	AB	Analyte ID	Method ID
SPLP	TX	850	10119003

Method EPA 160.4

Analyte	AB	Analyte ID	Method ID
Residue-volatile	TX	1970	10010409

Method EPA 1613

Analyte	AB	Analyte ID	Method ID
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10120408
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10120408
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10120408
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10120408
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10120408
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10120408
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10120408
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10120408
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10120408
1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10120408
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10120408
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10120408
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10120408
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10120408

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-20-26

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

Expiration Date: 4/30/2021

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2020

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: ***Non-Potable Water***

2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10120408
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10120408
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10120408
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10120408
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10120408
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10120408
Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10120408
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10120408
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10120408
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10120408
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10120408

Method EPA 1664

Analyte	**AB**	**Analyte ID**	**Method ID**
n-Hexane Extractable Material (HEM) (O&G)	TX	1803	10127807

Method EPA 180.1

Analyte	**AB**	**Analyte ID**	**Method ID**
Turbidity	TX	2055	10011606

Method EPA 200.8

Analyte	**AB**	**Analyte ID**	**Method ID**
Aluminum	TX	1000	10014605
Antimony	TX	1005	10014605
Arsenic	TX	1010	10014605
Barium	TX	1015	10014605
Beryllium	TX	1020	10014605
Boron	TX	1025	10014605
Cadmium	TX	1030	10014605
Calcium	TX	1035	10014605
Chromium	TX	1040	10014605
Cobalt	TX	1050	10014605
Copper	TX	1055	10014605
Iron	TX	1070	10014605

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Matrix: ***Non-Potable Water***

Lead	TX	1075	10014605
Magnesium	TX	1085	10014605
Manganese	TX	1090	10014605
Molybdenum	TX	1100	10014605
Nickel	TX	1105	10014605
Potassium	TX	1125	10014605
Selenium	TX	1140	10014605
Silver	TX	1150	10014605
Sodium	TX	1155	10014605
Strontium	TX	1160	10014605
Thallium	TX	1165	10014605
Tin	TX	1175	10014605
Titanium	TX	1180	10014605
Uranium	TX	3035	10014605
Vanadium	TX	1185	10014605
Zinc	TX	1190	10014605

Method EPA 245.1

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10036609

Method EPA 300.0

Analyte	**AB**	**Analyte ID**	**Method ID**
Bromide	TX	1540	10053200
Chloride	TX	1575	10053200
Fluoride	TX	1730	10053200
Nitrate as N	TX	1810	10053200
Nitrate-nitrite	TX	1820	10053200
Nitrite as N	TX	1840	10053200
Orthophosphate as P	TX	1870	10053200
Sulfate	TX	2000	10053200

Method EPA 325.1

Analyte	**AB**	**Analyte ID**	**Method ID**

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Matrix: ***Non-Potable Water***

Chloride	TX	1575	10056801

Method EPA 335.1

Analyte	AB	Analyte ID	Method ID
Amenable cyanide	TX	1510	10060001

Method EPA 335.2

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	10278203

Method EPA 335.4

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	10061402

Method EPA 350.3

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	10064401

Method EPA 365.3

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	10070801
Phosphorus	TX	1910	10070801

Method EPA 375.4

Analyte	AB	Analyte ID	Method ID
Sulfate	TX	2000	10073800

Method EPA 376.1

Analyte	AB	Analyte ID	Method ID
Sulfide	TX	2005	10074201

Method EPA 410.4

Analyte	AB	Analyte ID	Method ID
Chemical oxygen demand (COD)	TX	1565	10077404

Method EPA 415.1

Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	10078407

Method EPA 420.1

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10079400

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Matrix: ***Non-Potable Water***

Method EPA 420.4

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10080203

Method EPA 6020

Analyte	AB	Analyte ID	Method ID
Aluminum	TX	1000	10156419
Antimony	TX	1005	10156419
Arsenic	TX	1010	10156419
Barium	TX	1015	10156419
Beryllium	TX	1020	10156419
Boron	TX	1025	10156419
Cadmium	TX	1030	10156419
Calcium	TX	1035	10156419
Chromium	TX	1040	10156419
Cobalt	TX	1050	10156419
Copper	TX	1055	10156419
Iron	TX	1070	10156419
Lead	TX	1075	10156419
Lithium	TX	1080	10156419
Magnesium	TX	1085	10156419
Manganese	TX	1090	10156419
Molybdenum	TX	1100	10156419
Nickel	TX	1105	10156419
Potassium	TX	1125	10156419
Selenium	TX	1140	10156419
Silver	TX	1150	10156419
Sodium	TX	1155	10156419
Strontium	TX	1160	10156419
Thallium	TX	1165	10156419
Tin	TX	1175	10156419
Titanium	TX	1180	10156419

Matrix: ***Non-Potable Water***

Vanadium	TX	1185	10156419
Zinc	TX	1190	10156419

Method EPA 608

Analyte	AB	Analyte ID	Method ID
4,4'-DDD	TX	7355	10103603
4,4'-DDE	TX	7360	10103603
4,4'-DDT	TX	7365	10103603
Aldrin	TX	7025	10103603
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10103603
alpha-Chlordane	TX	7240	10103603
Aroclor-1016 (PCB-1016)	TX	8880	10103603
Aroclor-1221 (PCB-1221)	TX	8885	10103603
Aroclor-1232 (PCB-1232)	TX	8890	10103603
Aroclor-1242 (PCB-1242)	TX	8895	10103603
Aroclor-1248 (PCB-1248)	TX	8900	10103603
Aroclor-1254 (PCB-1254)	TX	8905	10103603
Aroclor-1260 (PCB-1260)	TX	8910	10103603
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10103603
Chlordane (tech.)	TX	7250	10103603
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10103603
Dieldrin	TX	7470	10103603
Endosulfan I	TX	7510	10103603
Endosulfan II	TX	7515	10103603
Endosulfan sulfate	TX	7520	10103603
Endrin	TX	7540	10103603
Endrin aldehyde	TX	7530	10103603
Endrin ketone	TX	7535	10103603
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10103603
gamma-Chlordane	TX	7245	10103603
Heptachlor	TX	7685	10103603

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Matrix: ***Non-Potable Water***

Heptachlor epoxide	TX	7690	10103603
Methoxychlor	TX	7810	10103603
Toxaphene (Chlorinated camphene)	TX	8250	10103603

Method EPA 624

Analyte	AB	Analyte ID	Method ID
1,1,1-Trichloroethane	TX	5160	10107207
1,1,2,2-Tetrachloroethane	TX	5110	10107207
1,1,2-Trichloroethane	TX	5165	10107207
1,1-Dichloroethane	TX	4630	10107207
1,1-Dichloroethylene	TX	4640	10107207
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10107207
1,2-Dichlorobenzene	TX	4610	10107207
1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10107207
1,2-Dichloropropane	TX	4655	10107207
1,3-Dichlorobenzene	TX	4615	10107207
1,4-Dichlorobenzene	TX	4620	10107207
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10107207
2-Chloroethyl vinyl ether	TX	4500	10107207
Acetone (2-Propanone)	TX	4315	10107207
Acrolein (Propenal)	TX	4325	10107207
Acrylonitrile	TX	4340	10107207
Benzene	TX	4375	10107207
Bromodichloromethane	TX	4395	10107207
Bromoform	TX	4400	10107207
Carbon tetrachloride	TX	4455	10107207
Chlorobenzene	TX	4475	10107207
Chlorodibromomethane	TX	4575	10107207
Chloroethane (Ethyl chloride)	TX	4485	10107207
Chloroform	TX	4505	10107207
cis-1,2-Dichloroethylene	TX	4645	10107207

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cis-1,3-Dichloropropene	TX	4680	10107207
Ethylbenzene	TX	4765	10107207
m+p-xylene	TX	5240	10107207
Methyl bromide (Bromomethane)	TX	4950	10107207
Methyl chloride (Chloromethane)	TX	4960	10107207
Methyl tert-butyl ether (MTBE)	TX	5000	10107207
Methylene chloride (Dichloromethane)	TX	4975	10107207
Naphthalene	TX	5005	10107207
o-Xylene	TX	5250	10107207
Tetrachloroethylene (Perchloroethylene)	TX	5115	10107207
Toluene	TX	5140	10107207
trans-1,2-Dichloroethylene	TX	4700	10107207
trans-1,3-Dichloropropylene	TX	4685	10107207
Trichloroethene (Trichloroethylene)	TX	5170	10107207
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10107207
Vinyl chloride	TX	5235	10107207
Xylene (total)	TX	5260	10107207

Method EPA 625

Analyte	**AB**	**Analyte ID**	**Method ID**
1,2,4,5-Tetrachlorobenzene	TX	6715	10107401
1,2,4-Trichlorobenzene	TX	5155	10107401
1,2-Dichlorobenzene	TX	4610	10107401
1,2-Diphenylhydrazine	TX	6220	10107401
1,3-Dichlorobenzene	TX	4615	10107401
1,4-Dichlorobenzene	TX	4620	10107401
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10107401
2,4,5-Trichlorophenol	TX	6835	10107401
2,4,6-Trichlorophenol	TX	6840	10107401
2,4-Dichlorophenol	TX	6000	10107401
2,4-Dimethylphenol	TX	6130	10107401

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Matrix: ***Non-Potable Water***

2,4-Dinitrophenol	TX	6175	10107401
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10107401
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10107401
2-Chloronaphthalene	TX	5795	10107401
2-Chlorophenol	TX	5800	10107401
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10107401
2-Methylphenol (o-Cresol)	TX	6400	10107401
2-Nitrophenol	TX	6490	10107401
3,3'-Dichlorobenzidine	TX	5945	10107401
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10107401
4-Chloro-3-methylphenol	TX	5700	10107401
4-Chlorophenyl phenylether	TX	5825	10107401
4-Methylphenol (p-Cresol)	TX	6410	10107401
4-Nitrophenol	TX	6500	10107401
Acenaphthene	TX	5500	10107401
Acenaphthylene	TX	5505	10107401
Anthracene	TX	5555	10107401
Benzidine	TX	5595	10107401
Benzo(a)anthracene	TX	5575	10107401
Benzo(a)pyrene	TX	5580	10107401
Benzo(b)fluoranthene	TX	5585	10107401
Benzo(g,h,i)perylene	TX	5590	10107401
Benzo(k)fluoranthene	TX	5600	10107401
bis(2-Chloroethoxy)methane	TX	5760	10107401
bis(2-Chloroethyl) ether	TX	5765	10107401
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10107401
Butyl benzyl phthalate	TX	5670	10107401
Chrysene	TX	5855	10107401
Dibenz(a,h) anthracene	TX	5895	10107401
Diethyl phthalate	TX	6070	10107401

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Matrix: ***Non-Potable Water***

Dimethyl phthalate	TX	6135	10107401
Di-n-butyl phthalate	TX	5925	10107401
Di-n-octyl phthalate	TX	6200	10107401
Fluoranthene	TX	6265	10107401
Fluorene	TX	6270	10107401
Hexachlorobenzene	TX	6275	10107401
Hexachlorobutadiene	TX	4835	10107401
Hexachlorocyclopentadiene	TX	6285	10107401
Hexachloroethane	TX	4840	10107401
Indeno(1,2,3-cd) pyrene	TX	6315	10107401
Isophorone	TX	6320	10107401
Naphthalene	TX	5005	10107401
Nitrobenzene	TX	5015	10107401
n-Nitrosodiethylamine	TX	6525	10107401
n-Nitrosodimethylamine	TX	6530	10107401
n-Nitrosodi-n-butylamine	TX	5025	10107401
n-Nitrosodi-n-propylamine	TX	6545	10107401
n-Nitrosodiphenylamine	TX	6535	10107401
Pentachlorobenzene	TX	6590	10107401
Pentachlorophenol	TX	6605	10107401
Phenanthrene	TX	6615	10107401
Phenol	TX	6625	10107401
Pyrene	TX	6665	10107401
Pyridine	TX	5095	10107401

Method EPA 7196

Analyte	**AB**	**Analyte ID**	**Method ID**
Chromium (VI)	TX	1045	10162206

Method EPA 7470

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10165603

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Matrix: ***Non-Potable Water***

Method EPA 8011

Analyte	AB	Analyte ID	Method ID
1,2,3-Trichloropropane	TX	5180	10173009
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10173009
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10173009

Method EPA 8015

Analyte	AB	Analyte ID	Method ID
Diesel range organics (DRO)	TX	9369	10173203
Ethanol	TX	4750	10173203
Ethylene glycol	TX	4785	10173203
Gasoline range organics (GRO)	TX	9408	10173203
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10173203
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10173203
Methanol	TX	4930	10173203
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10173203
n-Propanol (1-Propanol)	TX	5055	10173203
Propylene Glycol	TX	6657	10173203
tert-Butyl alcohol	TX	4420	10173203

Method EPA 8081

Analyte	AB	Analyte ID	Method ID
4,4'-DDD	TX	7355	10178402
4,4'-DDE	TX	7360	10178402
4,4'-DDT	TX	7365	10178402
Aldrin	TX	7025	10178402
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10178402
alpha-Chlordane	TX	7240	10178402
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10178402
Chlordane (tech.)	TX	7250	10178402
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10178402
Dieldrin	TX	7470	10178402
Endosulfan I	TX	7510	10178402

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Matrix: ***Non-Potable Water***

Endosulfan II	TX	7515	10178402
Endosulfan sulfate	TX	7520	10178402
Endrin	TX	7540	10178402
Endrin aldehyde	TX	7530	10178402
Endrin ketone	TX	7535	10178402
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10178402
gamma-Chlordane	TX	7245	10178402
Heptachlor	TX	7685	10178402
Heptachlor epoxide	TX	7690	10178402
Hexachlorobenzene	TX	6275	10178402
Methoxychlor	TX	7810	10178402
Mirex	TX	7870	10178402
Toxaphene (Chlorinated camphene)	TX	8250	10178402

Method EPA 8082

Analyte	**AB**	**Analyte ID**	**Method ID**
Aroclor-1016 (PCB-1016)	TX	8880	10179201
Aroclor-1221 (PCB-1221)	TX	8885	10179201
Aroclor-1232 (PCB-1232)	TX	8890	10179201
Aroclor-1242 (PCB-1242)	TX	8895	10179201
Aroclor-1248 (PCB-1248)	TX	8900	10179201
Aroclor-1254 (PCB-1254)	TX	8905	10179201
Aroclor-1260 (PCB-1260)	TX	8910	10179201
PCBs (total)	TX	8870	10179201

Method EPA 8151

Analyte	**AB**	**Analyte ID**	**Method ID**
2,4,5-T	TX	8655	10183003
2,4-D	TX	8545	10183003
2,4-DB	TX	8560	10183003
Dalapon	TX	8555	10183003
Dicamba	TX	8595	10183003
Dichloroprop (Dichlorprop, Weedone)	TX	8605	10183003

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Matrix: ***Non-Potable Water***

Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10183003
MCPA	TX	7775	10183003
MCPP	TX	7780	10183003
Silvex (2,4,5-TP)	TX	8650	10183003

Method EPA 8260

Analyte	AB	Analyte ID	Method ID
1,1,1,2-Tetrachloroethane	TX	5105	10184404
1,1,1-Trichloroethane	TX	5160	10184404
1,1,2,2-Tetrachloroethane	TX	5110	10184404
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	TX	5195	10184404
1,1,2-Trichloroethane	TX	5165	10184404
1,1-Dichloroethane	TX	4630	10184404
1,1-Dichloroethylene	TX	4640	10184404
1,1-Dichloropropene	TX	4670	10184404
1,2,3-Trichlorobenzene	TX	5150	10184404
1,2,3-Trichloropropane	TX	5180	10184404
1,2,4-Trichlorobenzene	TX	5155	10184404
1,2,4-Trimethylbenzene	TX	5210	10184404
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10184404
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10184404
1,2-Dichlorobenzene	TX	4610	10184404
1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10184404
1,2-Dichloropropane	TX	4655	10184404
1,3,5-Trimethylbenzene	TX	5215	10184404
1,3-Dichlorobenzene	TX	4615	10184404
1,3-Dichloropropane	TX	4660	10184404
1,4-Dichlorobenzene	TX	4620	10184404
1,4-Dioxane (1,4-Diethyleneoxide)	TX	4735	10184404
1-Chlorohexane	TX	4510	10184404
1-Propanol	TX	5060	10184404

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Matrix: ***Non-Potable Water***

2,2-Dichloropropane	TX	4665	10184404
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10184404
2-Chloroethyl vinyl ether	TX	4500	10184404
2-Chlorotoluene	TX	4535	10184404
2-Hexanone (MBK)	TX	4860	10184404
2-Pentanone	TX	5045	10184404
4-Chlorotoluene	TX	4540	10184404
4-Isopropyltoluene (p-Cymene)	TX	4915	10184404
4-Methyl-2-pentanone (MIBK)	TX	4995	10184404
Acetone (2-Propanone)	TX	4315	10184404
Acetonitrile	TX	4320	10184404
Acrolein (Propenal)	TX	4325	10184404
Acrylonitrile	TX	4340	10184404
Allyl alcohol	TX	4350	10184404
Allyl chloride (3-Chloropropene)	TX	4355	10184404
Benzene	TX	4375	10184404
Benzyl chloride	TX	5635	10184404
Bromobenzene	TX	4385	10184404
Bromochloromethane	TX	4390	10184404
Bromodichloromethane	TX	4395	10184404
Bromoform	TX	4400	10184404
Carbon disulfide	TX	4450	10184404
Carbon tetrachloride	TX	4455	10184404
Chlorobenzene	TX	4475	10184404
Chlorodibromomethane	TX	4575	10184404
Chloroethane (Ethyl chloride)	TX	4485	10184404
Chloroform	TX	4505	10184404
Chloroprene (2-Chloro-1,3-butadiene)	TX	4525	10184404
cis-1,2-Dichloroethylene	TX	4645	10184404
cis-1,3-Dichloropropene	TX	4680	10184404

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-20-26

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

Expiration Date: 4/30/2021

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2020

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Matrix: ***Non-Potable Water***

Dibromofluoromethane	TX	4590	10184404
Dibromomethane (Methylene bromide)	TX	4595	10184404
Dichlorodifluoromethane (Freon-12)	TX	4625	10184404
Diethyl ether	TX	4725	10184404
Di-isopropylether (DIPE)	TX	9375	10184404
Epichlorohydrin (1-Chloro-2,3-epoxypropane)	TX	4745	10184404
Ethanol	TX	4750	10184404
Ethyl acetate	TX	4755	10184404
Ethyl methacrylate	TX	4810	10184404
Ethylbenzene	TX	4765	10184404
Ethyl-t-butylether (ETBE) (2-Ethoxy-2-methylpropane)	TX	4770	10184404
Hexachlorobutadiene	TX	4835	10184404
Iodomethane (Methyl iodide)	TX	4870	10184404
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10184404
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10184404
Isopropylbenzene (Cumene)	TX	4900	10184404
m+p-xylene	TX	5240	10184404
Methacrylonitrile	TX	4925	10184404
Methyl acetate	TX	4940	10184404
Methyl acrylate	TX	4945	10184404
Methyl bromide (Bromomethane)	TX	4950	10184404
Methyl chloride (Chloromethane)	TX	4960	10184404
Methyl methacrylate	TX	4990	10184404
Methyl tert-butyl ether (MTBE)	TX	5000	10184404
Methylcyclohexane	TX	4965	10184404
Methylene chloride (Dichloromethane)	TX	4975	10184404
Naphthalene	TX	5005	10184404
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10184404
n-Butylbenzene	TX	4435	10184404
n-Propylbenzene	TX	5090	10184404

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Matrix: ***Non-Potable Water***

o-Xylene	TX	5250	10184404
Propionitrile (Ethyl cyanide)	TX	5080	10184404
Pyridine	TX	5095	10184404
sec-Butylbenzene	TX	4440	10184404
Styrene	TX	5100	10184404
T-amylmethylether (TAME)	TX	4370	10184404
tert-Butyl alcohol	TX	4420	10184404
tert-Butylbenzene	TX	4445	10184404
Tetrachloroethylene (Perchloroethylene)	TX	5115	10184404
Toluene	TX	5140	10184404
trans-1,2-Dichloroethylene	TX	4700	10184404
trans-1,3-Dichloropropylene	TX	4685	10184404
trans-1,4-Dichloro-2-butene	TX	4605	10184404
Trichloroethene (Trichloroethylene)	TX	5170	10184404
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10184404
Vinyl acetate	TX	5225	10184404
Vinyl chloride	TX	5235	10184404
Xylene (total)	TX	5260	10184404

Method EPA 8270

Analyte	**AB**	**Analyte ID**	**Method ID**
1,2,4,5-Tetrachlorobenzene	TX	6715	10185203
1,2,4-Trichlorobenzene	TX	5155	10185203
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10185203
1,2-Dichlorobenzene	TX	4610	10185203
1,2-Dinitrobenzene	TX	6155	10185203
1,2-Diphenylhydrazine	TX	6220	10185203
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10185203
1,3-Dichlorobenzene	TX	4615	10185203
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10185203
1,4-Dichlorobenzene	TX	4620	10185203

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Matrix: ***Non-Potable Water***

1,4-Dinitrobenzene	TX	6165	10185203
1,4-Naphthoquinone	TX	6420	10185203
1,4-Phenylenediamine	TX	6630	10185203
1-Chloronaphthalene	TX	5790	10185203
1-Naphthylamine	TX	6425	10185203
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10185203
2,3,4,6-Tetrachlorophenol	TX	6735	10185203
2,4,5-Trichlorophenol	TX	6835	10185203
2,4,5-Trimethylaniline	TX	6880	10185203
2,4,6-Trichlorophenol	TX	6840	10185203
2,4-Diaminotoluene	TX	5880	10185203
2,4-Dichlorophenol	TX	6000	10185203
2,4-Dimethylphenol	TX	6130	10185203
2,4-Dinitrophenol	TX	6175	10185203
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10185203
2,6-Dichlorophenol	TX	6005	10185203
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10185203
2-Acetylaminofluorene	TX	5515	10185203
2-Chloronaphthalene	TX	5795	10185203
2-Chlorophenol	TX	5800	10185203
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10185203
2-Methylaniline (o-Toluidine)	TX	5145	10185203
2-Methylnaphthalene	TX	6385	10185203
2-Methylphenol (o-Cresol)	TX	6400	10185203
2-Naphthylamine	TX	6430	10185203
2-Nitroaniline	TX	6460	10185203
2-Nitrophenol	TX	6490	10185203
2-Picoline (2-Methylpyridine)	TX	5050	10185203
3,3'-Dichlorobenzidine	TX	5945	10185203
3,3'-Dimethylbenzidine	TX	6120	10185203

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Matrix: ***Non-Potable Water***

3-Methylcholanthrene	TX	6355	10185203
3-Methylphenol (m-Cresol)	TX	6405	10185203
3-Nitroaniline	TX	6465	10185203
4-Aminobiphenyl	TX	5540	10185203
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10185203
4-Chloro-3-methylphenol	TX	5700	10185203
4-Chloroaniline	TX	5745	10185203
4-Chlorophenyl phenylether	TX	5825	10185203
4-Dimethyl aminoazobenzene	TX	6105	10185203
4-Methylphenol (p-Cresol)	TX	6410	10185203
4-Nitroaniline	TX	6470	10185203
4-Nitrobiphenyl	TX	6480	10185203
4-Nitrophenol	TX	6500	10185203
4-Nitroquinoline-1-oxide	TX	6510	10185203
5-Chloro-2-methylaniline	TX	5695	10185203
5-Nitro-o-toluidine	TX	6570	10185203
7,12-Dimethylbenz(a) anthracene	TX	6115	10185203
a-a-Dimethylphenethylamine	TX	6125	10185203
Acenaphthene	TX	5500	10185203
Acenaphthylene	TX	5505	10185203
Acetophenone	TX	5510	10185203
Aniline	TX	5545	10185203
Anthracene	TX	5555	10185203
Aramite	TX	5560	10185203
Atrazine	TX	7065	10185203
Azinphos-methyl (Guthion)	TX	7075	10185203
Azobenzene	TX	5562	10185203
Benzenethiol (Thiophenol)	TX	6750	10185203
Benzidine	TX	5595	10185203
Benzo(a)anthracene	TX	5575	10185203

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Matrix: ***Non-Potable Water***

Benzo(a)pyrene	TX	5580	10185203
Benzo(b)fluoranthene	TX	5585	10185203
Benzo(e)pyrene	TX	5605	10185203
Benzo(g,h,i)perylene	TX	5590	10185203
Benzo(k)fluoranthene	TX	5600	10185203
Benzoic acid	TX	5610	10185203
Benzyl alcohol	TX	5630	10185203
Biphenyl	TX	5640	10185203
bis(2-Chloroethoxy)methane	TX	5760	10185203
bis(2-Chloroethyl) ether	TX	5765	10185203
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10185203
Butyl benzyl phthalate	TX	5670	10185203
Caprolactam	TX	7180	10185203
Captan	TX	7190	10185203
Carbaryl (Sevin)	TX	7195	10185203
Carbazole	TX	5680	10185203
Carbophenothion	TX	7220	10185203
Chlorobenzilate	TX	7260	10185203
Chrysene	TX	5855	10185203
Coumaphos	TX	7315	10185203
Demeton	TX	7390	10185203
Demeton	TX	7390	10185203
Demeton-o	TX	7395	10185203
Demeton-s	TX	7385	10185203
Diallate	TX	7405	10185203
Dibenz(a,h) anthracene	TX	5895	10185203
Dibenz(a,j) acridine	TX	5900	10185203
Dibenzofuran	TX	5905	10185203
Dichlorovos (DDVP, Dichlorvos)	TX	8610	10185203
Diethyl phthalate	TX	6070	10185203

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Matrix: ***Non-Potable Water***

Dimethoate	TX	7475	10185203
Dimethoate	TX	7475	10185203
Dimethyl phthalate	TX	6135	10185203
Di-n-butyl phthalate	TX	5925	10185203
Di-n-octyl phthalate	TX	6200	10185203
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10185203
Dioxathion	TX	7495	10185203
Diphenylamine	TX	6205	10185203
Disulfoton	TX	8625	10185203
Ethion	TX	7565	10185203
Ethyl methanesulfonate	TX	6260	10185203
Famphur	TX	7580	10185203
Fluoranthene	TX	6265	10185203
Fluorene	TX	6270	10185203
Hexachlorobenzene	TX	6275	10185203
Hexachlorobutadiene	TX	4835	10185203
Hexachlorocyclopentadiene	TX	6285	10185203
Hexachloroethane	TX	4840	10185203
Hexachlorophene	TX	6290	10185203
Hexachloropropene	TX	6295	10185203
Indeno(1,2,3-cd) pyrene	TX	6315	10185203
Isodrin	TX	7725	10185203
Isophorone	TX	6320	10185203
Isosafrole	TX	6325	10185203
Kepone	TX	7740	10185203
Maleic anhydride	TX	6335	10185203
Methapyrilene	TX	6345	10185203
Methyl methanesulfonate	TX	6375	10185203
Methyl parathion (Parathion, methyl)	TX	7825	10185203
Mevinphos	TX	7850	10185203

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Matrix: ***Non-Potable Water***

Naled	TX	7905	10185203
Naphthalene	TX	5005	10185203
Nitrobenzene	TX	5015	10185203
n-Nitrosodiethylamine	TX	6525	10185203
n-Nitrosodimethylamine	TX	6530	10185203
n-Nitrosodi-n-butylamine	TX	5025	10185203
n-Nitrosodi-n-propylamine	TX	6545	10185203
n-Nitrosodiphenylamine	TX	6535	10185203
n-Nitrosomethylethylamine	TX	6550	10185203
n-Nitrosomorpholine	TX	6555	10185203
n-Nitrosopiperidine	TX	6560	10185203
n-Nitrosopyrrolidine	TX	6565	10185203
o,o,o-Triethyl phosphorothioate	TX	8290	10185203
o-Anisidine	TX	5550	10185203
Parathion, ethyl	TX	7955	10185203
p-Cresidine	TX	5860	10185203
Pentachlorobenzene	TX	6590	10185203
Pentachloronitrobenzene (PCNB)	TX	6600	10185203
Pentachlorophenol	TX	6605	10185203
Phenacetin	TX	6610	10185203
Phenanthrene	TX	6615	10185203
Phenol	TX	6625	10185203
Phorate	TX	7985	10185203
Phosmet (Imidan)	TX	8000	10185203
Phthalic anhydride	TX	6640	10185203
Pronamide (Kerb)	TX	6650	10185203
Pyrene	TX	6665	10185203
Pyridine	TX	5095	10185203
Quinoline	TX	6670	10185203
Resorcinol	TX	6680	10185203

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Matrix: ***Non-Potable Water***

Safrole	TX	6685	10185203
Sulfotepp	TX	8155	10185203
Terbufos	TX	8185	10185203
Tetrachlorvinphos (Stirophos, Gardona)	TX	8197	10185203
Thionazin (Zinophos)	TX	8235	10185203
Toluene diisocyanate	TX	6775	10185203
Trifluralin (Treflan)	TX	8295	10185203

Method EPA 8290

Analyte	AB	Analyte ID	Method ID
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10187209
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10187209
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10187209
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10187209
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10187209
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10187209
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10187209
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10187209
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10187209
1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10187209
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10187209
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10187209
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10187209
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10187209
2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10187209
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10187209
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10187209
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10187209
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10187209
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10187209
Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10187209

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Matrix: ***Non-Potable Water***

Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10187209
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10187209
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10187209
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10187209

Method EPA 8316

Analyte	**AB**	**Analyte ID**	**Method ID**
Acrylamide	TX	4330	10188202

Method EPA 8330

Analyte	**AB**	**Analyte ID**	**Method ID**
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10189807
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10189807
2,4,6-Trinitrotoluene (2,4,6-TNT)	TX	9651	10189807
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10189807
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10189807
2-Amino-4,6-dinitrotoluene (2-am-dnt)	TX	9303	10189807
2-Nitrotoluene	TX	9507	10189807
3-Nitrotoluene	TX	9510	10189807
4-Amino-2,6-dinitrotoluene (4-am-dnt)	TX	9306	10189807
4-Nitrotoluene	TX	9513	10189807
Methyl-2,4,6-trinitrophenylnitramine (tetryl)	TX	6415	10189807
Nitrobenzene	TX	5015	10189807
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	TX	9522	10189807
RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine)	TX	9432	10189807

Method EPA 9014

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	10193803
Total cyanide	TX	1645	10193803

Method EPA 9038

Analyte	**AB**	**Analyte ID**	**Method ID**
Sulfate	TX	2000	10196608

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Matrix: ***Non-Potable Water***

Method EPA 9040

Analyte	AB	Analyte ID	Method ID
pH	TX	1900	10196802

Method EPA 9050

Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	10198604

Method EPA 9056

Analyte	AB	Analyte ID	Method ID
Bromide	TX	1540	10199209
Chloride	TX	1575	10199209
Fluoride	TX	1730	10199209
Nitrate as N	TX	1810	10199209
Nitrate-nitrite	TX	1820	10199209
Nitrite as N	TX	1840	10199209
Orthophosphate as P	TX	1870	10199209
Sulfate	TX	2000	10199209

Method EPA 9060

Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	10200201

Method EPA 9065

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200405

Method EPA 9066

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200609

Method EPA 9250

Analyte	AB	Analyte ID	Method ID
Chloride	TX	1575	10207202

Method EPA RSK 175

Analyte	AB	Analyte ID	Method ID
2-methylpropane (Isobutane)	TX	4942	10212905

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Matrix: ***Non-Potable Water***

Ethane	TX	4747	10212905
Ethene	TX	4752	10212905
Methane	TX	4926	10212905
n-Butane	TX	5007	10212905
n-Propane	TX	5029	10212905

Method HACH 8000

Analyte	**AB**	**Analyte ID**	**Method ID**
Chemical oxygen demand (COD)	TX	1565	60003001

Method SM 2120 B

Analyte	**AB**	**Analyte ID**	**Method ID**
Color	TX	1605	20223807

Method SM 2310 B (4a)

Analyte	**AB**	**Analyte ID**	**Method ID**
Acidity, as CaCO3	TX	1500	20002806

Method SM 2320 B

Analyte	**AB**	**Analyte ID**	**Method ID**
Alkalinity as CaCO3	TX	1505	20045005

Method SM 2340 B

Analyte	**AB**	**Analyte ID**	**Method ID**
Total hardness as CaCO3	TX	1755	20046008

Method SM 2510 B

Analyte	**AB**	**Analyte ID**	**Method ID**
Conductivity	TX	1610	20048004

Method SM 2540 B

Analyte	**AB**	**Analyte ID**	**Method ID**
Residue-total (total solids)	TX	1950	20004608

Method SM 2540 C

Analyte	**AB**	**Analyte ID**	**Method ID**
Residue-filterable (TDS)	TX	1955	20049803

Method SM 2540 D

Analyte	**AB**	**Analyte ID**	**Method ID**

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Matrix: ***Non-Potable Water***

Residue-nonfilterable (TSS)	TX	1960	20004802

Method SM 3500-Cr B

Analyte	**AB**	**Analyte ID**	**Method ID**
Chromium (VI)	TX	1045	20065809

Method SM 4500-Cl F

Analyte	**AB**	**Analyte ID**	**Method ID**
Total residual chlorine	TX	1940	20080482

Method SM 4500-Cl⁻ E

Analyte	**AB**	**Analyte ID**	**Method ID**
Chloride	TX	1575	20019209

Method SM 4500-CN⁻ C

Analyte	**AB**	**Analyte ID**	**Method ID**
Total cyanide	TX	1645	20020808

Method SM 4500-CN⁻ E

Analyte	**AB**	**Analyte ID**	**Method ID**
Total cyanide	TX	1645	20021209

Method SM 4500-CN⁻ G

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	20021607

Method SM 4500-H+ B

Analyte	**AB**	**Analyte ID**	**Method ID**
pH	TX	1900	20104603

Method SM 4500-NH3 D

Analyte	**AB**	**Analyte ID**	**Method ID**
Ammonia as N	TX	1515	20108809
Kjeldahl Nitrogen (Total Kjeldahl Nitrogen-TKN)	TX	1790	20108809

Method SM 4500-NH3 F

Analyte	**AB**	**Analyte ID**	**Method ID**
Ammonia as N	TX	1515	20023001

Method SM 4500-O G

Analyte	**AB**	**Analyte ID**	**Method ID**
Oxygen, dissolved	TX	1880	20025405

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Matrix: ***Non-Potable Water***

Method SM 4500-P E

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	20025803
Phosphorus	TX	1910	20025803

Method SM 4500-$S2^{-}$ D

Analyte	AB	Analyte ID	Method ID
Sulfide	TX	2005	20125400

Method SM 4500-$S2^{-}$ F

Analyte	AB	Analyte ID	Method ID
Sulfide	TX	2005	20126209

Method SM 4500-SiO2 D

Analyte	AB	Analyte ID	Method ID
Silica as SiO2	TX	1990	20127202

Method SM 4500-$SO3^{-}$ B

Analyte	AB	Analyte ID	Method ID
Sulfite	TX	2015	20026806

Method SM 5210 B

Analyte	AB	Analyte ID	Method ID
Biochemical oxygen demand (BOD)	TX	1530	20027401
Carbonaceous BOD, CBOD	TX	1555	20027401

Method SM 5310 B

Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	20137206

Method SM 5310 C

Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	20138209

Method SM 5540 C

Analyte	AB	Analyte ID	Method ID
Surfactants - MBAS	TX	2025	20144405

Method TCEQ 1005

Analyte	AB	Analyte ID	Method ID
Total Petroleum Hydrocarbons (TPH)	TX	2050	90019208

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Matrix: ***Solid & Chemical Materials***

Method ASTM D2216

Analyte	AB	Analyte ID	Method ID
Moisture	TX	10337	ASTM D2216-05

Method EPA 1010

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10116606

Method EPA 1030

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10117201

Method EPA 1311

Analyte	AB	Analyte ID	Method ID
TCLP	TX	849	10118806

Method EPA 1312

Analyte	AB	Analyte ID	Method ID
SPLP	TX	850	10119003

Method EPA 200.8

Analyte	AB	Analyte ID	Method ID
Uranium	TX	3035	10014605

Method EPA 300.0

Analyte	AB	Analyte ID	Method ID
Bromide	TX	1540	10053200
Chloride	TX	1575	10053200
Fluoride	TX	1730	10053200
Nitrate as N	TX	1810	10053200
Nitrate-nitrite	TX	1820	10053200
Nitrite as N	TX	1840	10053200
Orthophosphate as P	TX	1870	10053200
Sulfate	TX	2000	10053200

Method EPA 310.1

Analyte	AB	Analyte ID	Method ID
Alkalinity as CaCO3	TX	1505	10054805

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Matrix: ***Solid & Chemical Materials***

Method EPA 350.3

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	10064401

Method EPA 365.3

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	10070801
Phosphorus	TX	1910	10070801

Method EPA 6020

Analyte	AB	Analyte ID	Method ID
Aluminum	TX	1000	10156204
Antimony	TX	1005	10156204
Arsenic	TX	1010	10156204
Barium	TX	1015	10156204
Beryllium	TX	1020	10156204
Boron	TX	1025	10156204
Cadmium	TX	1030	10156204
Calcium	TX	1035	10156204
Chromium	TX	1040	10156204
Cobalt	TX	1050	10156204
Copper	TX	1055	10156204
Iron	TX	1070	10156204
Lead	TX	1075	10156204
Lithium	TX	1080	10156204
Magnesium	TX	1085	10156204
Manganese	TX	1090	10156204
Molybdenum	TX	1100	10156204
Nickel	TX	1105	10156204
Potassium	TX	1125	10156204
Selenium	TX	1140	10156204
Silver	TX	1150	10156204
Sodium	TX	1155	10156204

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Matrix: ***Solid & Chemical Materials***

Strontium	TX	1160	10156204
Thallium	TX	1165	10156204
Tin	TX	1175	10156204
Titanium	TX	1180	10156204
Vanadium	TX	1185	10156204
Zinc	TX	1190	10156204

Method EPA 7196

Analyte	**AB**	**Analyte ID**	**Method ID**
Chromium (VI)	TX	1045	10162206

Method EPA 7470

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10165603

Method EPA 7471

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10166004

Method EPA 8015

Analyte	**AB**	**Analyte ID**	**Method ID**
Diesel range organics (DRO)	TX	9369	10173203
Ethanol	TX	4750	10173203
Ethylene glycol	TX	4785	10173203
Gasoline range organics (GRO)	TX	9408	10173203
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10173203
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10173203
Methanol	TX	4930	10173203
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10173203
n-Propanol (1-Propanol)	TX	5055	10173203
Propylene Glycol	TX	6657	10173203
tert-Butyl alcohol	TX	4420	10173203

Method EPA 8081

Analyte	**AB**	**Analyte ID**	**Method ID**
4,4'-DDD	TX	7355	10178402

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Matrix: ***Solid & Chemical Materials***

4,4'-DDE	TX	7360	10178402
4,4'-DDT	TX	7365	10178402
Aldrin	TX	7025	10178402
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10178402
alpha-Chlordane	TX	7240	10178402
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10178402
Chlordane (tech.)	TX	7250	10178402
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10178402
Dieldrin	TX	7470	10178402
Endosulfan I	TX	7510	10178402
Endosulfan II	TX	7515	10178402
Endosulfan sulfate	TX	7520	10178402
Endrin	TX	7540	10178402
Endrin aldehyde	TX	7530	10178402
Endrin ketone	TX	7535	10178402
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10178402
gamma-Chlordane	TX	7245	10178402
Heptachlor	TX	7685	10178402
Heptachlor epoxide	TX	7690	10178402
Methoxychlor	TX	7810	10178402
Mirex	TX	7870	10178402
Toxaphene (Chlorinated camphene)	TX	8250	10178402

Method EPA 8082

Analyte	**AB**	**Analyte ID**	**Method ID**
Aroclor-1016 (PCB-1016)	TX	8880	10179201
Aroclor-1221 (PCB-1221)	TX	8885	10179201
Aroclor-1232 (PCB-1232)	TX	8890	10179201
Aroclor-1242 (PCB-1242)	TX	8895	10179201
Aroclor-1248 (PCB-1248)	TX	8900	10179201
Aroclor-1254 (PCB-1254)	TX	8905	10179201

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Matrix: ***Solid & Chemical Materials***

Aroclor-1260 (PCB-1260)	TX	8910	10179201
PCBs (total)	TX	8870	10179201

Method EPA 8260

Analyte	AB	Analyte ID	Method ID
1,1,1,2-Tetrachloroethane	TX	5105	10184404
1,1,1-Trichloroethane	TX	5160	10184404
1,1,2,2-Tetrachloroethane	TX	5110	10184404
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	TX	5195	10184404
1,1,2-Trichloroethane	TX	5165	10184404
1,1-Dichloroethane	TX	4630	10184404
1,1-Dichloroethylene	TX	4640	10184404
1,1-Dichloropropene	TX	4670	10184404
1,2,3-Trichlorobenzene	TX	5150	10184404
1,2,3-Trichloropropane	TX	5180	10184404
1,2,4-Trichlorobenzene	TX	5155	10184404
1,2,4-Trimethylbenzene	TX	5210	10184404
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10184404
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10184404
1,2-Dichlorobenzene	TX	4610	10184404
1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10184404
1,2-Dichloropropane	TX	4655	10184404
1,3,5-Trimethylbenzene	TX	5215	10184404
1,3-Dichlorobenzene	TX	4615	10184404
1,3-Dichloropropane	TX	4660	10184404
1,4-Dichlorobenzene	TX	4620	10184404
1,4-Dioxane (1,4-Diethyleneoxide)	TX	4735	10184404
1-Chlorohexane	TX	4510	10184404
1-Propanol	TX	5060	10184404
2,2-Dichloropropane	TX	4665	10184404
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10184404

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Matrix: ***Solid & Chemical Materials***

2-Chloroethyl vinyl ether	TX	4500	10184404
2-Chlorotoluene	TX	4535	10184404
2-Hexanone (MBK)	TX	4860	10184404
4-Chlorotoluene	TX	4540	10184404
4-Isopropyltoluene (p-Cymene)	TX	4915	10184404
4-Methyl-2-pentanone (MIBK)	TX	4995	10184404
Acetone (2-Propanone)	TX	4315	10184404
Acetonitrile	TX	4320	10184404
Acrolein (Propenal)	TX	4325	10184404
Acrylonitrile	TX	4340	10184404
Allyl chloride (3-Chloropropene)	TX	4355	10184404
Benzene	TX	4375	10184404
Benzyl chloride	TX	5635	10184404
Bromobenzene	TX	4385	10184404
Bromochloromethane	TX	4390	10184404
Bromodichloromethane	TX	4395	10184404
Bromoform	TX	4400	10184404
Carbon disulfide	TX	4450	10184404
Carbon tetrachloride	TX	4455	10184404
Chlorobenzene	TX	4475	10184404
Chlorodibromomethane	TX	4575	10184404
Chloroethane (Ethyl chloride)	TX	4485	10184404
Chloroform	TX	4505	10184404
Chloroprene (2-Chloro-1,3-butadiene)	TX	4525	10184404
cis-1,2-Dichloroethylene	TX	4645	10184404
cis-1,3-Dichloropropene	TX	4680	10184404
Dibromofluoromethane	TX	4590	10184404
Dibromomethane (Methylene bromide)	TX	4595	10184404
Dichlorodifluoromethane (Freon-12)	TX	4625	10184404
Diethyl ether	TX	4725	10184404

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Matrix: ***Solid & Chemical Materials***

Epichlorohydrin (1-Chloro-2,3-epoxypropane)	TX	4745	10184404
Ethanol	TX	4750	10184404
Ethyl acetate	TX	4755	10184404
Ethyl methacrylate	TX	4810	10184404
Ethylbenzene	TX	4765	10184404
Ethylene oxide	TX	4795	10184404
Hexachlorobutadiene	TX	4835	10184404
Iodomethane (Methyl iodide)	TX	4870	10184404
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10184404
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10184404
Isopropylbenzene (Cumene)	TX	4900	10184404
m+p-xylene	TX	5240	10184404
Methacrylonitrile	TX	4925	10184404
Methyl acetate	TX	4940	10184404
Methyl acrylate	TX	4945	10184404
Methyl bromide (Bromomethane)	TX	4950	10184404
Methyl chloride (Chloromethane)	TX	4960	10184404
Methyl methacrylate	TX	4990	10184404
Methyl tert-butyl ether (MTBE)	TX	5000	10184404
Methylcyclohexane	TX	4965	10184404
Methylene chloride (Dichloromethane)	TX	4975	10184404
Naphthalene	TX	5005	10184404
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10184404
n-Butylbenzene	TX	4435	10184404
n-Propylbenzene	TX	5090	10184404
o-Xylene	TX	5250	10184404
Pentachloroethane	TX	5035	10184404
Propionitrile (Ethyl cyanide)	TX	5080	10184404
Pyridine	TX	5095	10184404
sec-Butylbenzene	TX	4440	10184404

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Matrix: ***Solid & Chemical Materials***

Styrene	TX	5100	10184404
tert-Butyl alcohol	TX	4420	10184404
tert-Butylbenzene	TX	4445	10184404
Tetrachloroethylene (Perchloroethylene)	TX	5115	10184404
Toluene	TX	5140	10184404
trans-1,2-Dichloroethylene	TX	4700	10184404
trans-1,3-Dichloropropylene	TX	4685	10184404
trans-1,4-Dichloro-2-butene	TX	4605	10184404
Trichloroethene (Trichloroethylene)	TX	5170	10184404
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10184404
Vinyl acetate	TX	5225	10184404
Vinyl chloride	TX	5235	10184404
Xylene (total)	TX	5260	10184404

Method EPA 8270

Analyte	**AB**	**Analyte ID**	**Method ID**
1,2,4,5-Tetrachlorobenzene	TX	6715	10185203
1,2,4-Trichlorobenzene	TX	5155	10185203
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10185203
1,2-Dichlorobenzene	TX	4610	10185203
1,2-Dinitrobenzene	TX	6155	10185203
1,2-Diphenylhydrazine	TX	6220	10185203
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10185203
1,3-Dichlorobenzene	TX	4615	10185203
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10185203
1,4-Dichlorobenzene	TX	4620	10185203
1,4-Dinitrobenzene	TX	6165	10185203
1,4-Naphthoquinone	TX	6420	10185203
1,4-Phenylenediamine	TX	6630	10185203
1-Chloronaphthalene	TX	5790	10185203
1-Naphthylamine	TX	6425	10185203

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Matrix: ***Solid & Chemical Materials***

2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10185203
2,3,4,6-Tetrachlorophenol	TX	6735	10185203
2,4,5-Trichlorophenol	TX	6835	10185203
2,4,5-Trimethylaniline	TX	6880	10185203
2,4,6-Trichlorophenol	TX	6840	10185203
2,4-Diaminotoluene	TX	5880	10185203
2,4-Dichlorophenol	TX	6000	10185203
2,4-Dimethylphenol	TX	6130	10185203
2,4-Dinitrophenol	TX	6175	10185203
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10185203
2,6-Dichlorophenol	TX	6005	10185203
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10185203
2-Acetylaminofluorene	TX	5515	10185203
2-Chloronaphthalene	TX	5795	10185203
2-Chlorophenol	TX	5800	10185203
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10185203
2-Methylaniline (o-Toluidine)	TX	5145	10185203
2-Methylnaphthalene	TX	6385	10185203
2-Methylphenol (o-Cresol)	TX	6400	10185203
2-Naphthylamine	TX	6430	10185203
2-Nitroaniline	TX	6460	10185203
2-Nitrophenol	TX	6490	10185203
2-Picoline (2-Methylpyridine)	TX	5050	10185203
3,3'-Dichlorobenzidine	TX	5945	10185203
3,3'-Dimethylbenzidine	TX	6120	10185203
3-Methylcholanthrene	TX	6355	10185203
3-Methylphenol (m-Cresol)	TX	6405	10185203
3-Nitroaniline	TX	6465	10185203
4-Aminobiphenyl	TX	5540	10185203
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10185203

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Matrix: ***Solid & Chemical Materials***

4-Chloro-3-methylphenol	TX	5700	10185203
4-Chloroaniline	TX	5745	10185203
4-Chlorophenyl phenylether	TX	5825	10185203
4-Methylphenol (p-Cresol)	TX	6410	10185203
4-Nitroaniline	TX	6470	10185203
4-Nitrophenol	TX	6500	10185203
4-Nitroquinoline-1-oxide	TX	6510	10185203
5-Nitro-o-toluidine	TX	6570	10185203
7,12-Dimethylbenz(a) anthracene	TX	6115	10185203
a-a-Dimethylphenethylamine	TX	6125	10185203
Acenaphthene	TX	5500	10185203
Acenaphthylene	TX	5505	10185203
Acetophenone	TX	5510	10185203
Aniline	TX	5545	10185203
Anthracene	TX	5555	10185203
Aramite	TX	5560	10185203
Atrazine	TX	7065	10185203
Azinphos-methyl (Guthion)	TX	7075	10185203
Azobenzene	TX	5562	10185203
Benzenethiol (Thiophenol)	TX	6750	10185203
Benzidine	TX	5595	10185203
Benzo(a)anthracene	TX	5575	10185203
Benzo(a)pyrene	TX	5580	10185203
Benzo(b)fluoranthene	TX	5585	10185203
Benzo(e)pyrene	TX	5605	10185203
Benzo(g,h,i)perylene	TX	5590	10185203
Benzo(k)fluoranthene	TX	5600	10185203
Benzoic acid	TX	5610	10185203
Benzyl alcohol	TX	5630	10185203
Biphenyl	TX	5640	10185203

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Matrix: ***Solid & Chemical Materials***

bis(2-Chloroethoxy)methane	TX	5760	10185203
bis(2-Chloroethyl) ether	TX	5765	10185203
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10185203
Butyl benzyl phthalate	TX	5670	10185203
Caprolactam	TX	7180	10185203
Carbaryl (Sevin)	TX	7195	10185203
Carbazole	TX	5680	10185203
Carbophenothion	TX	7220	10185203
Chlorobenzilate	TX	7260	10185203
Chrysene	TX	5855	10185203
Demeton	TX	7390	10185203
Demeton-o	TX	7395	10185203
Demeton-s	TX	7385	10185203
Diallate	TX	7405	10185203
Dibenz(a,h) anthracene	TX	5895	10185203
Dibenz(a,j) acridine	TX	5900	10185203
Dibenzo(a,e) pyrene	TX	5890	10185203
Dibenzofuran	TX	5905	10185203
Dichlorovos (DDVP, Dichlorvos)	TX	8610	10185203
Diethyl phthalate	TX	6070	10185203
Dimethoate	TX	7475	10185203
Dimethyl phthalate	TX	6135	10185203
Di-n-butyl phthalate	TX	5925	10185203
Di-n-octyl phthalate	TX	6200	10185203
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10185203
Diphenylamine	TX	6205	10185203
Disulfoton	TX	8625	10185203
Ethyl methanesulfonate	TX	6260	10185203
Fluoranthene	TX	6265	10185203
Fluorene	TX	6270	10185203

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-20-26

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

Expiration Date: 4/30/2021

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2020

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: ***Solid & Chemical Materials***

Hexachlorobenzene	TX	6275	10185203
Hexachlorobutadiene	TX	4835	10185203
Hexachlorocyclopentadiene	TX	6285	10185203
Hexachloroethane	TX	4840	10185203
Hexachlorophene	TX	6290	10185203
Hexachloropropene	TX	6295	10185203
Indeno(1,2,3-cd) pyrene	TX	6315	10185203
Isodrin	TX	7725	10185203
Isophorone	TX	6320	10185203
Isosafrole	TX	6325	10185203
Kepone	TX	7740	10185203
Malathion	TX	7770	10185203
Methapyrilene	TX	6345	10185203
Methyl methanesulfonate	TX	6375	10185203
Methyl parathion (Parathion, methyl)	TX	7825	10185203
Mevinphos	TX	7850	10185203
Naphthalene	TX	5005	10185203
Nitrobenzene	TX	5015	10185203
n-Nitrosodiethylamine	TX	6525	10185203
n-Nitrosodimethylamine	TX	6530	10185203
n-Nitrosodi-n-butylamine	TX	5025	10185203
n-Nitrosodi-n-propylamine	TX	6545	10185203
n-Nitrosodiphenylamine	TX	6535	10185203
n-Nitrosomethylethylamine	TX	6550	10185203
n-Nitrosomorpholine	TX	6555	10185203
n-Nitrosopiperidine	TX	6560	10185203
n-Nitrosopyrrolidine	TX	6565	10185203
o,o,o-Triethyl phosphorothioate	TX	8290	10185203
o-Anisidine	TX	5550	10185203
Parathion, ethyl	TX	7955	10185203

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Matrix: ***Solid & Chemical Materials***

p-Cresidine	TX	5860	10185203
Pentachlorobenzene	TX	6590	10185203
Pentachloronitrobenzene (PCNB)	TX	6600	10185203
Pentachlorophenol	TX	6605	10185203
Phenacetin	TX	6610	10185203
Phenanthrene	TX	6615	10185203
Phenol	TX	6625	10185203
Phorate	TX	7985	10185203
Pronamide (Kerb)	TX	6650	10185203
Pyrene	TX	6665	10185203
Pyridine	TX	5095	10185203
Quinoline	TX	6670	10185203
Safrole	TX	6685	10185203
Sulfotepp	TX	8155	10185203
Terbufos	TX	8185	10185203
Tetrachlorvinphos (Stirophos, Gardona)	TX	8197	10185203
Thionazin (Zinophos)	TX	8235	10185203
Toluene diisocyanate	TX	6775	10185203

Method EPA 8290

Analyte	AB	Analyte ID	Method ID
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10187209
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10187209
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10187209
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10187209
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10187209
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10187209
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10187209
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10187209
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10187209
1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10187209

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Matrix: ***Solid & Chemical Materials***

1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10187209
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10187209
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10187209
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10187209
2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10187209
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10187209
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10187209
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10187209
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10187209
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10187209
Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10187209
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10187209
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10187209
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10187209
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10187209

Method EPA 8316

Analyte	**AB**	**Analyte ID**	**Method ID**
Acrylamide	TX	4330	10188202

Method EPA 8330

Analyte	**AB**	**Analyte ID**	**Method ID**
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10189807
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10189807
2,4,6-Trinitrotoluene (2,4,6-TNT)	TX	9651	10189807
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10189807
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10189807
2-Amino-4,6-dinitrotoluene (2-am-dnt)	TX	9303	10189807
2-Nitrotoluene	TX	9507	10189807
3-Nitrotoluene	TX	9510	10189807
4-Amino-2,6-dinitrotoluene (4-am-dnt)	TX	9306	10189807
4-Nitrotoluene	TX	9513	10189807
Methyl-2,4,6-trinitrophenylnitramine (tetryl)	TX	6415	10189807

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Nitrobenzene	TX	5015	10189807
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	TX	9522	10189807
RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine)	TX	9432	10189807

Method EPA 9014

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	10193803
Total cyanide	TX	1645	10193803

Method EPA 9038

Analyte	**AB**	**Analyte ID**	**Method ID**
Sulfate	TX	2000	10196608

Method EPA 9040

Analyte	**AB**	**Analyte ID**	**Method ID**
Corrosivity	TX	1615	10197203
pH	TX	1900	10196802

Method EPA 9045

Analyte	**AB**	**Analyte ID**	**Method ID**
Corrosivity	TX	1615	10197805
pH	TX	1900	10197805

Method EPA 9050

Analyte	**AB**	**Analyte ID**	**Method ID**
Conductivity	TX	1610	10198604

Method EPA 9056

Analyte	**AB**	**Analyte ID**	**Method ID**
Bromide	TX	1540	10199209
Chloride	TX	1575	10199209
Fluoride	TX	1730	10199209
Nitrate as N	TX	1810	10199209
Nitrate-nitrite	TX	1820	10199209
Nitrite as N	TX	1840	10199209
Orthophosphate as P	TX	1870	10199209
Sulfate	TX	2000	10199209

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Matrix: ***Solid & Chemical Materials***

Method	Analyte	AB	Analyte ID	Method ID
EPA 9060	Total Organic Carbon (TOC)	TX	2040	10200201
EPA 9065	Total phenolics	TX	1905	10200405
EPA 9071	n-Hexane Extractable Material (HEM) (O&G)	TX	1803	10201204
EPA 9095	Paint Filter Liquids Test	TX	10312	10204009
EPA 9250	Chloride	TX	1575	10207202
SM 2320 B	Alkalinity as CaCO3	TX	1505	20045005
SM 2510 B	Conductivity	TX	1610	20048004
SM 2540 G	Residue-total (total solids)	TX	1950	20005203
SSA/ASA Part 3:34	Carbon, organic (Walkley-Black)	TX	10340	SSA/ASA Pt 3:34
TCEQ 1005	Total Petroleum Hydrocarbons (TPH)	TX	2050	90019208

10450 Stancliff Rd. Suite 210
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June 19, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20060313**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric Matzner,

ALS Environmental received 37 sample(s) on Jun 05, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: DANE.WACASEY
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20060313**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS20060313**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data								
Laboratory Name: ALS Laboratory Group			LRC Date: 06/19/2020					
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20060313					
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 154255, 154287, 154378, 154569, R362991, R363048, R363172					
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?		X			1
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?	X				
		If required for the project, TICs reported?	X				
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?		X			2
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				3
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 06/19/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20060313				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 154255, 154287, 154378, 154569, R362991, R363048, R363172				
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
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NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Data	
Laboratory Name: ALS Laboratory Group	LRC Date: 06/19/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20060313
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 154255, 154287, 154378, 154569, R362991, R363048, R363172

ER#[5]	Description
1	Sample received outside method holding time for pH. pH is an immediate test. Sample results are flagged with an "H" qualifier. The temperature at the time of pH is reported. Please note that all pH results are already normalized to a temperature of 25 °C.
2	Batch 154378, Semi volatile Organics, Sample LCSD-154378; The LCSD RPD criterion was exceeded for surrogates 2-Fluorophenol and Phenol d-6. Individual recoveries were within control limits. Batch 154569, Semi volatile Organics, Sample LCSD-154569, the LCSD RPD criterion (20%) was exceeded for Phenol-d6 (20.04%).
3	Batch 154378, Semi volatile Organics, insufficient volume available to analyze MS/MSD, the batch contains LCS/LCSD pair for precision demonstration.
4	Batch 154255, Semi volatile Organics, Sample HS20060313-01MSD (SO-1620-SSO222(0-2)-20200603), the MSD RPD criterion was exceeded for Pentachlorophenol and all surrogates due to possible matrix heterogeneity and or matrix effect.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20060313

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20060313-01	SO-1620-SSO222(0-2)-20200603	Soil		03-Jun-2020 16:10	05-Jun-2020 13:20	☐
HS20060313-02	SO-1620-SSO222(2-4)-20200603	Soil		03-Jun-2020 16:15	05-Jun-2020 13:20	☐
HS20060313-03	SO-1620-SSO221(0-2)-20200603	Soil		03-Jun-2020 16:00	05-Jun-2020 13:20	☐
HS20060313-04	SO-1620-SSO221(2-4)-20200603	Soil		03-Jun-2020 16:05	05-Jun-2020 13:20	☐
HS20060313-05	SO-1620-SSO231(0-2)-20200603	Soil		03-Jun-2020 16:20	05-Jun-2020 13:20	☐
HS20060313-06	SO-1620-SSO231(2-4)-20200603	Soil		03-Jun-2020 16:25	05-Jun-2020 13:20	☐
HS20060313-07	SO-1620-SSO232(0-2)-20200603	Soil		03-Jun-2020 16:30	05-Jun-2020 13:20	☐
HS20060313-08	SO-1620-SSO232(2-4)-20200603	Soil		03-Jun-2020 16:35	05-Jun-2020 13:20	☐
HS20060313-09	SO-1620-SSO233(0-2)-20200604	Soil		04-Jun-2020 10:30	05-Jun-2020 13:20	☐
HS20060313-10	SO-1620-SSO233(2-4)-20200604	Soil		04-Jun-2020 10:35	05-Jun-2020 13:20	☐
HS20060313-11	SO-1620-SSO241(0-2)-20200604	Soil		04-Jun-2020 10:40	05-Jun-2020 13:20	☐
HS20060313-12	SO-1620-SSO241(2-4)-20200604	Soil		04-Jun-2020 10:45	05-Jun-2020 13:20	☐
HS20060313-13	SO-1620-SSO242(0-2)-20200604	Soil		04-Jun-2020 10:50	05-Jun-2020 13:20	☐
HS20060313-14	SO-1620-SSO242(2-4)-20200604	Soil		04-Jun-2020 10:55	05-Jun-2020 13:20	☐
HS20060313-15	SO-1620-SSO243(0-2)-20200604	Soil		04-Jun-2020 11:00	05-Jun-2020 13:20	☐
HS20060313-16	SO-1620-SSO243(2-4)-20200604	Soil		04-Jun-2020 11:05	05-Jun-2020 13:20	☐
HS20060313-17	SO-1620-SSO251(0-2)-20200604	Soil		04-Jun-2020 13:00	05-Jun-2020 13:20	☐
HS20060313-18	SO-1620-SSO251(2-4)-20200604	Soil		04-Jun-2020 13:05	05-Jun-2020 13:20	☐
HS20060313-19	SO-1620-SSO252(0-2)-20200604	Soil		04-Jun-2020 13:10	05-Jun-2020 13:20	☐
HS20060313-20	SO-1620-SSO252(2-4)-20200604	Soil		04-Jun-2020 13:15	05-Jun-2020 13:20	☐
HS20060313-21	SO-1620-SSO253(0-2)-20200604	Soil		04-Jun-2020 16:20	05-Jun-2020 13:20	☐
HS20060313-22	SO-1620-SSO253(2-4)-20200604	Soil		04-Jun-2020 16:25	05-Jun-2020 13:20	☐
HS20060313-23	SO-1620-SSO261(0-2)-20200604	Soil		04-Jun-2020 16:30	05-Jun-2020 13:20	☐
HS20060313-24	SO-1620-SSO261(2-4)-20200604	Soil		04-Jun-2020 16:35	05-Jun-2020 13:20	☐
HS20060313-25	SO-1620-SSO262(0-2)-20200604	Soil		04-Jun-2020 16:40	05-Jun-2020 13:20	☐
HS20060313-26	SO-1620-SSO262(2-4)-20200604	Soil		04-Jun-2020 16:45	05-Jun-2020 13:20	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20060313

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20060313-27	SO-1620-SSO263(0-2)-20200604	Soil		04-Jun-2020 16:50	05-Jun-2020 13:20	☐
HS20060313-28	SO-1620-SSO263(2-4)-20200604	Soil		04-Jun-2020 16:55	05-Jun-2020 13:20	☐
HS20060313-29	SO-1620-SSO07R(0-2)-20200605	Soil		05-Jun-2020 11:05	05-Jun-2020 13:20	☐
HS20060313-30	SO-1620-SSO07R(2-4)-20200605	Soil		05-Jun-2020 11:10	05-Jun-2020 13:20	☐
HS20060313-31	SO-1620-SSO03R(0-2)-20200605	Soil		05-Jun-2020 10:55	05-Jun-2020 13:20	☐
HS20060313-32	SO-1620-SSO03R(2-4)-20200605	Soil		05-Jun-2020 11:00	05-Jun-2020 13:20	☐
HS20060313-33	SO-1620-SSO08R(0-2)-20200605	Soil		05-Jun-2020 11:15	05-Jun-2020 13:20	☐
HS20060313-34	SO-1620-SSO08R(2-4)-20200605	Soil		05-Jun-2020 11:20	05-Jun-2020 13:20	☐
HS20060313-35	SO-1620-FD03-20200605	Soil		05-Jun-2020 11:00	05-Jun-2020 13:20	☐
HS20060313-36	WQ-1620-EB02-20200604	Water		04-Jun-2020 08:10	05-Jun-2020 13:20	☐
HS20060313-37	WQ-1620-EB03-20200605	Water		05-Jun-2020 08:15	05-Jun-2020 13:20	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO222(0-2)-20200603
Collection Date: 03-Jun-2020 16:10

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-01
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 09-Jun-2020		Analyst: GEY
Pentachlorophenol	**0.42**		**0.020**	**0.041**	**mg/Kg-dry**	5	11-Jun-2020 21:07
Surr: 2,4,6-Tribromophenol	*61.5*			*36-126*	*%REC*	*5*	*11-Jun-2020 21:07*
Surr: 2-Fluorophenol	*52.2*			*37-125*	*%REC*	*5*	*11-Jun-2020 21:07*
Surr: Phenol-d6	*64.8*			*40-125*	*%REC*	*5*	*11-Jun-2020 21:07*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**19.6**		**0.0100**	**0.0100**	**wt%**	1	12-Jun-2020 08:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO222(2-4)-20200603
Collection Date: 03-Jun-2020 16:15

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-02
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 09-Jun-2020		Analyst: GEY
Pentachlorophenol	**0.024**		**0.0039**	**0.0079**	**mg/Kg-dry**	1	10-Jun-2020 18:43
Surr: 2,4,6-Tribromophenol	*102*			*36-126*	*%REC*	*1*	*10-Jun-2020 18:43*
Surr: 2-Fluorophenol	*95.6*			*37-125*	*%REC*	*1*	*10-Jun-2020 18:43*
Surr: Phenol-d6	*105*			*40-125*	*%REC*	*1*	*10-Jun-2020 18:43*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**16.6**		**0.0100**	**0.0100**	**wt%**	1	12-Jun-2020 08:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO221(0-2)-20200603
Collection Date: 03-Jun-2020 16:00

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-03
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 09-Jun-2020		Analyst: GEY
Pentachlorophenol	**0.13**		**0.0040**	**0.0080**	**mg/Kg-dry**	1	10-Jun-2020 19:03
Surr: 2,4,6-Tribromophenol	*114*			*36-126*	*%REC*	*1*	*10-Jun-2020 19:03*
Surr: 2-Fluorophenol	*77.0*			*37-125*	*%REC*	*1*	*10-Jun-2020 19:03*
Surr: Phenol-d6	*87.4*			*40-125*	*%REC*	*1*	*10-Jun-2020 19:03*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**17.4**		**0.0100**	**0.0100**	**wt%**	1	12-Jun-2020 08:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO221(2-4)-20200603
Collection Date: 03-Jun-2020 16:05

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-04
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 09-Jun-2020		Analyst: GEY
Pentachlorophenol	**0.032**		**0.0040**	**0.0081**	**mg/Kg-dry**	1	10-Jun-2020 19:22
Surr: 2,4,6-Tribromophenol	*104*			*36-126*	*%REC*	*1*	*10-Jun-2020 19:22*
Surr: 2-Fluorophenol	*81.9*			*37-125*	*%REC*	*1*	*10-Jun-2020 19:22*
Surr: Phenol-d6	*93.9*			*40-125*	*%REC*	*1*	*10-Jun-2020 19:22*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**18.8**		**0.0100**	**0.0100**	**wt%**	1	12-Jun-2020 08:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO231(0-2)-20200603
Collection Date: 03-Jun-2020 16:20

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-05
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 09-Jun-2020		Analyst: GEY
Pentachlorophenol	**0.46**		**0.020**	**0.039**	**mg/Kg-dry**	5	16-Jun-2020 14:02
Surr: 2,4,6-Tribromophenol	*81.2*			*36-126*	*%REC*	*5*	*16-Jun-2020 14:02*
Surr: 2-Fluorophenol	*86.3*			*37-125*	*%REC*	*5*	*16-Jun-2020 14:02*
Surr: Phenol-d6	*111*			*40-125*	*%REC*	*5*	*16-Jun-2020 14:02*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**16.5**		**0.0100**	**0.0100**	**wt%**	1	12-Jun-2020 08:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO231(2-4)-20200603
Collection Date: 03-Jun-2020 16:25

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-06
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 09-Jun-2020		Analyst: GEY
Pentachlorophenol	**0.042**		**0.0040**	**0.0080**	**mg/Kg-dry**	1	10-Jun-2020 20:01
Surr: 2,4,6-Tribromophenol	*105*			*36-126*	*%REC*	*1*	*10-Jun-2020 20:01*
Surr: 2-Fluorophenol	*61.9*			*37-125*	*%REC*	*1*	*10-Jun-2020 20:01*
Surr: Phenol-d6	*68.8*			*40-125*	*%REC*	*1*	*10-Jun-2020 20:01*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**18.0**		**0.0100**	**0.0100**	**wt%**	1	12-Jun-2020 08:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO232(0-2)-20200603
Collection Date: 03-Jun-2020 16:30

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-07
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 09-Jun-2020		Analyst: GEY
Pentachlorophenol	**0.38**		**0.021**	**0.041**	**mg/Kg-dry**	5	16-Jun-2020 14:21
Surr: 2,4,6-Tribromophenol	*90.1*			*36-126*	*%REC*	*5*	*16-Jun-2020 14:21*
Surr: 2-Fluorophenol	*104*			*37-125*	*%REC*	*5*	*16-Jun-2020 14:21*
Surr: Phenol-d6	*114*			*40-125*	*%REC*	*5*	*16-Jun-2020 14:21*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**20.1**		**0.0100**	**0.0100**	**wt%**	1	12-Jun-2020 08:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO232(2-4)-20200603
Collection Date: 03-Jun-2020 16:35

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-08
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 09-Jun-2020		Analyst: GEY
Pentachlorophenol	**0.078**		**0.0042**	**0.0083**	**mg/Kg-dry**	1	10-Jun-2020 20:40
Surr: 2,4,6-Tribromophenol	*111*			*36-126*	*%REC*	*1*	*10-Jun-2020 20:40*
Surr: 2-Fluorophenol	*78.2*			*37-125*	*%REC*	*1*	*10-Jun-2020 20:40*
Surr: Phenol-d6	*88.7*			*40-125*	*%REC*	*1*	*10-Jun-2020 20:40*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**20.8**		**0.0100**	**0.0100**	**wt%**	1	12-Jun-2020 08:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO233(0-2)-20200604
Collection Date: 04-Jun-2020 10:30

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-09
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 09-Jun-2020		Analyst: GEY
Pentachlorophenol	**0.0064**	J	**0.0039**	**0.0079**	**mg/Kg-dry**	1	10-Jun-2020 20:59
Surr: 2,4,6-Tribromophenol	*119*			*36-126*	*%REC*	*1*	*10-Jun-2020 20:59*
Surr: 2-Fluorophenol	*69.0*			*37-125*	*%REC*	*1*	*10-Jun-2020 20:59*
Surr: Phenol-d6	*88.0*			*40-125*	*%REC*	*1*	*10-Jun-2020 20:59*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**16.7**		**0.0100**	**0.0100**	**wt%**	1	12-Jun-2020 08:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO233(2-4)-20200604
Collection Date: 04-Jun-2020 10:35

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-10
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 09-Jun-2020		Analyst: GEY
Pentachlorophenol		U	0.0039	0.0079	mg/Kg-dry	1	10-Jun-2020 21:19
Surr: 2,4,6-Tribromophenol	*106*			*36-126*	*%REC*	*1*	*10-Jun-2020 21:19*
Surr: 2-Fluorophenol	*70.4*			*37-125*	*%REC*	*1*	*10-Jun-2020 21:19*
Surr: Phenol-d6	*85.2*			*40-125*	*%REC*	*1*	*10-Jun-2020 21:19*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**16.6**		**0.0100**	**0.0100**	**wt%**	1	12-Jun-2020 08:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO241(0-2)-20200604
Collection Date: 04-Jun-2020 10:40

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-11
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 09-Jun-2020		Analyst: GEY
Pentachlorophenol	**0.0065**	J	**0.0039**	**0.0078**	**mg/Kg-dry**	1	10-Jun-2020 21:38
Surr: 2,4,6-Tribromophenol	*115*			*36-126*	*%REC*	*1*	*10-Jun-2020 21:38*
Surr: 2-Fluorophenol	*70.9*			*37-125*	*%REC*	*1*	*10-Jun-2020 21:38*
Surr: Phenol-d6	*109*			*40-125*	*%REC*	*1*	*10-Jun-2020 21:38*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**15.6**		**0.0100**	**0.0100**	**wt%**	1	12-Jun-2020 08:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO241(2-4)-20200604
Collection Date: 04-Jun-2020 10:45

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-12
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 09-Jun-2020		Analyst: GEY
Pentachlorophenol		U	0.0039	0.0078	mg/Kg-dry	1	12-Jun-2020 18:44
Surr: 2,4,6-Tribromophenol	*67.0*			*36-126*	*%REC*	*1*	*12-Jun-2020 18:44*
Surr: 2-Fluorophenol	*88.1*			*37-125*	*%REC*	*1*	*12-Jun-2020 18:44*
Surr: Phenol-d6	*108*			*40-125*	*%REC*	*1*	*12-Jun-2020 18:44*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**15.4**		**0.0100**	**0.0100**	**wt%**	1	12-Jun-2020 08:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO242(0-2)-20200604
Collection Date: 04-Jun-2020 10:50

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-13
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 09-Jun-2020		Analyst: GEY
Pentachlorophenol	**0.024**		**0.0040**	**0.0079**	**mg/Kg-dry**	1	12-Jun-2020 19:04
Surr: 2,4,6-Tribromophenol	*60.7*			*36-126*	*%REC*	*1*	*12-Jun-2020 19:04*
Surr: 2-Fluorophenol	*94.0*			*37-125*	*%REC*	*1*	*12-Jun-2020 19:04*
Surr: Phenol-d6	*111*			*40-125*	*%REC*	*1*	*12-Jun-2020 19:04*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**16.8**		**0.0100**	**0.0100**	**wt%**	1	12-Jun-2020 08:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO242(2-4)-20200604
Collection Date: 04-Jun-2020 10:55

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-14
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 09-Jun-2020		Analyst: GEY
Pentachlorophenol	**0.0069**	J	**0.0039**	**0.0078**	**mg/Kg-dry**	1	16-Jun-2020 14:40
Surr: 2,4,6-Tribromophenol	*104*			*36-126*	*%REC*	*1*	*16-Jun-2020 14:40*
Surr: 2-Fluorophenol	*112*			*37-125*	*%REC*	*1*	*16-Jun-2020 14:40*
Surr: Phenol-d6	*121*			*40-125*	*%REC*	*1*	*16-Jun-2020 14:40*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**15.5**		**0.0100**	**0.0100**	**wt%**	1	12-Jun-2020 08:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO243(0-2)-20200604
Collection Date: 04-Jun-2020 11:00

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-15
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 09-Jun-2020		Analyst: GEY
Pentachlorophenol	**0.014**		**0.0041**	**0.0082**	**mg/Kg-dry**	1	12-Jun-2020 19:43
Surr: 2,4,6-Tribromophenol	*44.7*			*36-126*	*%REC*	*1*	*12-Jun-2020 19:43*
Surr: 2-Fluorophenol	*54.6*			*37-125*	*%REC*	*1*	*12-Jun-2020 19:43*
Surr: Phenol-d6	*65.6*			*40-125*	*%REC*	*1*	*12-Jun-2020 19:43*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**19.8**		**0.0100**	**0.0100**	**wt%**	1	12-Jun-2020 08:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO243(2-4)-20200604
Collection Date: 04-Jun-2020 11:05

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-16
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 09-Jun-2020		Analyst: GEY
Pentachlorophenol		U	0.0038	0.0077	mg/Kg-dry	1	12-Jun-2020 20:02
Surr: 2,4,6-Tribromophenol	*72.9*			*36-126*	*%REC*	*1*	*12-Jun-2020 20:02*
Surr: 2-Fluorophenol	*66.2*			*37-125*	*%REC*	*1*	*12-Jun-2020 20:02*
Surr: Phenol-d6	*84.1*			*40-125*	*%REC*	*1*	*12-Jun-2020 20:02*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: KAH
Percent Moisture	**14.7**		**0.0100**	**0.0100**	**wt%**	1	12-Jun-2020 08:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO251(0-2)-20200604
Collection Date: 04-Jun-2020 13:00

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-17
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 09-Jun-2020		Analyst: GEY
Pentachlorophenol		U	0.0041	0.0081	mg/Kg-dry	1	12-Jun-2020 20:22
Surr: 2,4,6-Tribromophenol	*54.8*			*36-126*	*%REC*	*1*	*12-Jun-2020 20:22*
Surr: 2-Fluorophenol	*70.4*			*37-125*	*%REC*	*1*	*12-Jun-2020 20:22*
Surr: Phenol-d6	*80.5*			*40-125*	*%REC*	*1*	*12-Jun-2020 20:22*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**19.5**		**0.0100**	**0.0100**	**wt%**	1	12-Jun-2020 08:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO251(2-4)-20200604
Collection Date: 04-Jun-2020 13:05

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-18
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 09-Jun-2020		Analyst: GEY
Pentachlorophenol		U	0.0043	0.0085	mg/Kg-dry	1	12-Jun-2020 20:41
Surr: 2,4,6-Tribromophenol	*86.3*			*36-126*	*%REC*	*1*	*12-Jun-2020 20:41*
Surr: 2-Fluorophenol	*80.4*			*37-125*	*%REC*	*1*	*12-Jun-2020 20:41*
Surr: Phenol-d6	*93.7*			*40-125*	*%REC*	*1*	*12-Jun-2020 20:41*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**22.8**		**0.0100**	**0.0100**	**wt%**	1	12-Jun-2020 08:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO252(0-2)-20200604
Collection Date: 04-Jun-2020 13:10

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-19
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 09-Jun-2020		Analyst: GEY
Pentachlorophenol	**0.28**		**0.0041**	**0.0081**	**mg/Kg-dry**	1	12-Jun-2020 21:01
Surr: 2,4,6-Tribromophenol	*89.3*			*36-126*	*%REC*	*1*	*12-Jun-2020 21:01*
Surr: 2-Fluorophenol	*100.0*			*37-125*	*%REC*	*1*	*12-Jun-2020 21:01*
Surr: Phenol-d6	*96.3*			*40-125*	*%REC*	*1*	*12-Jun-2020 21:01*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**18.7**		**0.0100**	**0.0100**	**wt%**	1	12-Jun-2020 08:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO252(2-4)-20200604
Collection Date: 04-Jun-2020 13:15

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-20
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 09-Jun-2020		Analyst: GEY
Pentachlorophenol	**0.070**		**0.0040**	**0.0079**	**mg/Kg-dry**	1	12-Jun-2020 21:20
Surr: 2,4,6-Tribromophenol	*55.8*			*36-126*	*%REC*	*1*	*12-Jun-2020 21:20*
Surr: 2-Fluorophenol	*96.3*			*37-125*	*%REC*	*1*	*12-Jun-2020 21:20*
Surr: Phenol-d6	*110*			*40-125*	*%REC*	*1*	*12-Jun-2020 21:20*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**16.5**		**0.0100**	**0.0100**	**wt%**	1	12-Jun-2020 08:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO253(0-2)-20200604
Collection Date: 04-Jun-2020 16:20

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-21
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 09-Jun-2020		Analyst: GEY
Pentachlorophenol	**0.078**		**0.0039**	**0.0078**	**mg/Kg-dry**	1	15-Jun-2020 16:52
Surr: 2,4,6-Tribromophenol	*67.2*			*36-126*	*%REC*	*1*	*15-Jun-2020 16:52*
Surr: 2-Fluorophenol	*71.9*			*37-125*	*%REC*	*1*	*15-Jun-2020 16:52*
Surr: Phenol-d6	*77.2*			*40-125*	*%REC*	*1*	*15-Jun-2020 16:52*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**15.9**		**0.0100**	**0.0100**	**wt%**	1	12-Jun-2020 10:01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO253(2-4)-20200604
Collection Date: 04-Jun-2020 16:25

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-22
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 09-Jun-2020		Analyst: GEY
Pentachlorophenol		U	0.0041	0.0081	mg/Kg-dry	1	15-Jun-2020 17:11
Surr: 2,4,6-Tribromophenol	*68.8*			*36-126*	*%REC*	*1*	*15-Jun-2020 17:11*
Surr: 2-Fluorophenol	*83.4*			*37-125*	*%REC*	*1*	*15-Jun-2020 17:11*
Surr: Phenol-d6	*93.4*			*40-125*	*%REC*	*1*	*15-Jun-2020 17:11*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**19.3**		**0.0100**	**0.0100**	**wt%**	1	12-Jun-2020 10:01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO261(0-2)-20200604
Collection Date: 04-Jun-2020 16:30

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-23
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 09-Jun-2020		Analyst: GEY
Pentachlorophenol	**0.0040**	J	**0.0039**	**0.0078**	**mg/Kg-dry**	1	15-Jun-2020 17:30
Surr: 2,4,6-Tribromophenol	*57.2*			*36-126*	*%REC*	*1*	*15-Jun-2020 17:30*
Surr: 2-Fluorophenol	*67.1*			*37-125*	*%REC*	*1*	*15-Jun-2020 17:30*
Surr: Phenol-d6	*68.9*			*40-125*	*%REC*	*1*	*15-Jun-2020 17:30*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**15.6**		**0.0100**	**0.0100**	**wt%**	1	12-Jun-2020 10:01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO261(2-4)-20200604
Collection Date: 04-Jun-2020 16:35

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-24
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 09-Jun-2020		Analyst: GEY
Pentachlorophenol	**0.0046**	J	**0.0039**	**0.0079**	**mg/Kg-dry**	1	15-Jun-2020 17:49
Surr: 2,4,6-Tribromophenol	*83.6*			*36-126*	*%REC*	*1*	*15-Jun-2020 17:49*
Surr: 2-Fluorophenol	*80.6*			*37-125*	*%REC*	*1*	*15-Jun-2020 17:49*
Surr: Phenol-d6	*95.9*			*40-125*	*%REC*	*1*	*15-Jun-2020 17:49*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**16.1**		**0.0100**	**0.0100**	**wt%**	1	12-Jun-2020 10:01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO262(0-2)-20200604
Collection Date: 04-Jun-2020 16:40

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-25
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 09-Jun-2020		Analyst: GEY
Pentachlorophenol		U	0.0040	0.0080	mg/Kg-dry	1	15-Jun-2020 18:09
Surr: 2,4,6-Tribromophenol	*69.0*			*36-126*	*%REC*	*1*	*15-Jun-2020 18:09*
Surr: 2-Fluorophenol	*67.0*			*37-125*	*%REC*	*1*	*15-Jun-2020 18:09*
Surr: Phenol-d6	*81.5*			*40-125*	*%REC*	*1*	*15-Jun-2020 18:09*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**17.2**		**0.0100**	**0.0100**	**wt%**	1	12-Jun-2020 10:01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO262(2-4)-20200604
Collection Date: 04-Jun-2020 16:45

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-26
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 09-Jun-2020		Analyst: GEY
Pentachlorophenol		U	0.0041	0.0081	mg/Kg-dry	1	15-Jun-2020 18:28
Surr: 2,4,6-Tribromophenol	*62.4*			*36-126*	*%REC*	*1*	*15-Jun-2020 18:28*
Surr: 2-Fluorophenol	*48.4*			*37-125*	*%REC*	*1*	*15-Jun-2020 18:28*
Surr: Phenol-d6	*54.8*			*40-125*	*%REC*	*1*	*15-Jun-2020 18:28*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**18.6**		**0.0100**	**0.0100**	**wt%**	1	12-Jun-2020 10:01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO263(0-2)-20200604
Collection Date: 04-Jun-2020 16:50

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-27
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 09-Jun-2020		Analyst: GEY
Pentachlorophenol	**0.22**		**0.0039**	**0.0079**	**mg/Kg-dry**	1	15-Jun-2020 18:47
Surr: 2,4,6-Tribromophenol	*46.2*			*36-126*	*%REC*	*1*	*15-Jun-2020 18:47*
Surr: 2-Fluorophenol	*60.7*			*37-125*	*%REC*	*1*	*15-Jun-2020 18:47*
Surr: Phenol-d6	*76.5*			*40-125*	*%REC*	*1*	*15-Jun-2020 18:47*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**16.1**		**0.0100**	**0.0100**	**wt%**	1	12-Jun-2020 10:01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO263(2-4)-20200604
Collection Date: 04-Jun-2020 16:55

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-28
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 09-Jun-2020		Analyst: GEY
Pentachlorophenol		U	0.0039	0.0078	mg/Kg-dry	1	16-Jun-2020 15:38
Surr: 2,4,6-Tribromophenol	*57.8*			*36-126*	*%REC*	*1*	*16-Jun-2020 15:38*
Surr: 2-Fluorophenol	*56.0*			*37-125*	*%REC*	*1*	*16-Jun-2020 15:38*
Surr: Phenol-d6	*70.5*			*40-125*	*%REC*	*1*	*16-Jun-2020 15:38*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**16.1**		**0.0100**	**0.0100**	**wt%**	1	12-Jun-2020 10:01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO07R(0-2)-20200605
Collection Date: 05-Jun-2020 11:05

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-29
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 09-Jun-2020		Analyst: GEY
Pentachlorophenol	**0.45**		**0.039**	**0.078**	**mg/Kg-dry**	10	18-Jun-2020 00:52
Surr: 2,4,6-Tribromophenol	*75.9*			*36-126*	*%REC*	*10*	*18-Jun-2020 00:52*
Surr: 2-Fluorophenol	*109*			*37-125*	*%REC*	*10*	*18-Jun-2020 00:52*
Surr: Phenol-d6	*106*			*40-125*	*%REC*	*10*	*18-Jun-2020 00:52*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**15.3**		**0.0100**	**0.0100**	**wt%**	1	12-Jun-2020 10:01
PH SOIL BY SW9045D	**Method:SW9045D**						Analyst: JAC
pH	**7.21**	H	**0.100**	**0.100**	**pH Units**	1	10-Jun-2020 14:15
Temp Deg C @pH	**21.4**	H	**0**	**0**	**°C**	1	10-Jun-2020 14:15

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO07R(2-4)-20200605
Collection Date: 05-Jun-2020 11:10

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-30
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 09-Jun-2020		Analyst: GEY
Pentachlorophenol	**0.44**		**0.039**	**0.078**	**mg/Kg-dry**	10	18-Jun-2020 01:12
Surr: 2,4,6-Tribromophenol	*81.6*			*36-126*	*%REC*	*10*	*18-Jun-2020 01:12*
Surr: 2-Fluorophenol	*81.2*			*37-125*	*%REC*	*10*	*18-Jun-2020 01:12*
Surr: Phenol-d6	*90.0*			*40-125*	*%REC*	*10*	*18-Jun-2020 01:12*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**16.0**		**0.0100**	**0.0100**	**wt%**	1	12-Jun-2020 10:01
PH SOIL BY SW9045D	**Method:SW9045D**						Analyst: JAC
pH	**7.03**	H	**0.100**	**0.100**	**pH Units**	1	10-Jun-2020 14:15
Temp Deg C @pH	**21.8**	H	**0**	**0**	**°C**	1	10-Jun-2020 14:15

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO03R(0-2)-20200605
Collection Date: 05-Jun-2020 10:55

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-31
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
SPLP SEMIVOLATILES		**Method:SW8270**	Leache:SW1312 / 17-Jun-2020	Prep:SW3510 / 17-Jun-2020			Analyst: ACN
Pentachlorophenol	**0.00057**		**0.000050**	**0.00020**	**mg/L**	1	19-Jun-2020 17:58
Surr: 2,4,6-Tribromophenol	*67.8*			*34-129*	*%REC*	*1*	*19-Jun-2020 17:58*
Surr: 2-Fluorophenol	*48.2*			*20-120*	*%REC*	*1*	*19-Jun-2020 17:58*
Surr: Phenol-d6	*70.0*			*20-120*	*%REC*	*1*	*19-Jun-2020 17:58*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**		Prep:SW3541 / 09-Jun-2020			Analyst: GEY
Pentachlorophenol	**2.2**		**0.036**	**0.072**	**mg/Kg-dry**	10	16-Jun-2020 14:59
Surr: 2,4,6-Tribromophenol	*102*			*36-126*	*%REC*	*10*	*16-Jun-2020 14:59*
Surr: 2-Fluorophenol	*98.7*			*37-125*	*%REC*	*10*	*16-Jun-2020 14:59*
Surr: Phenol-d6	*124*			*40-125*	*%REC*	*10*	*16-Jun-2020 14:59*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: KAH
Percent Moisture	**8.97**		**0.0100**	**0.0100**	**wt%**	1	12-Jun-2020 10:01
PH SOIL BY SW9045D		**Method:SW9045D**					Analyst: JAC
pH	**7.61**	H	**0.100**	**0.100**	**pH Units**	1	10-Jun-2020 14:15
Temp Deg C @pH	**21.5**	H	**0**	**0**	**°C**	1	10-Jun-2020 14:15

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO03R(2-4)-20200605
Collection Date: 05-Jun-2020 11:00

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-32
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 09-Jun-2020		Analyst: GEY
Pentachlorophenol	**0.022**		**0.0039**	**0.0078**	**mg/Kg-dry**	1	15-Jun-2020 20:42
Surr: 2,4,6-Tribromophenol	*72.2*			*36-126*	*%REC*	*1*	*15-Jun-2020 20:42*
Surr: 2-Fluorophenol	*77.3*			*37-125*	*%REC*	*1*	*15-Jun-2020 20:42*
Surr: Phenol-d6	*96.0*			*40-125*	*%REC*	*1*	*15-Jun-2020 20:42*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**15.4**		**0.0100**	**0.0100**	**wt%**	1	12-Jun-2020 10:01
PH SOIL BY SW9045D	**Method:SW9045D**						Analyst: JAC
pH	**7.02**	H	**0.100**	**0.100**	**pH Units**	1	10-Jun-2020 14:15
Temp Deg C @pH	**21.4**	H	**0**	**0**	**°C**	1	10-Jun-2020 14:15

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO08R(0-2)-20200605
Collection Date: 05-Jun-2020 11:15

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-33
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
SPLP SEMIVOLATILES		**Method:SW8270**	Leache:SW1312 / 17-Jun-2020	Prep:SW3510 / 17-Jun-2020			Analyst: ACN
Pentachlorophenol	U		0.000050	0.00020	mg/L	1	19-Jun-2020 17:35
Surr: 2,4,6-Tribromophenol	*83.9*			*34-129*	*%REC*	*1*	*19-Jun-2020 17:35*
Surr: 2-Fluorophenol	*56.8*			*20-120*	*%REC*	*1*	*19-Jun-2020 17:35*
Surr: Phenol-d6	*71.5*			*20-120*	*%REC*	*1*	*19-Jun-2020 17:35*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**		Prep:SW3541 / 09-Jun-2020			Analyst: GEY
Pentachlorophenol	**1.5**		**0.039**	**0.078**	**mg/Kg-dry**	10	16-Jun-2020 15:18
Surr: 2,4,6-Tribromophenol	*86.0*			*36-126*	*%REC*	*10*	*16-Jun-2020 15:18*
Surr: 2-Fluorophenol	*106*			*37-125*	*%REC*	*10*	*16-Jun-2020 15:18*
Surr: Phenol-d6	*114*			*40-125*	*%REC*	*10*	*16-Jun-2020 15:18*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: KAH
Percent Moisture	**15.6**		**0.0100**	**0.0100**	**wt%**	1	12-Jun-2020 10:01
PH SOIL BY SW9045D		**Method:SW9045D**					Analyst: JAC
pH	**7.53**	H	**0.100**	**0.100**	**pH Units**	1	10-Jun-2020 14:15
Temp Deg C @pH	**21.7**	H	**0**	**0**	**°C**	1	10-Jun-2020 14:15

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SSO08R(2-4)-20200605
Collection Date: 05-Jun-2020 11:20

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-34
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 09-Jun-2020		Analyst: GEY
Pentachlorophenol	**0.13**		**0.0039**	**0.0078**	**mg/Kg-dry**	1	15-Jun-2020 21:20
Surr: 2,4,6-Tribromophenol	*90.4*			*36-126*	*%REC*	*1*	*15-Jun-2020 21:20*
Surr: 2-Fluorophenol	*88.4*			*37-125*	*%REC*	*1*	*15-Jun-2020 21:20*
Surr: Phenol-d6	*93.1*			*40-125*	*%REC*	*1*	*15-Jun-2020 21:20*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**15.3**		**0.0100**	**0.0100**	**wt%**	1	12-Jun-2020 10:01
PH SOIL BY SW9045D	**Method:SW9045D**						Analyst: JAC
pH	**7.57**	H	**0.100**	**0.100**	**pH Units**	1	10-Jun-2020 14:15
Temp Deg C @pH	**22.0**	H	**0**	**0**	**°C**	1	10-Jun-2020 14:15

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-FD03-20200605
Collection Date: 05-Jun-2020 11:00

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-35
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 09-Jun-2020		Analyst: GEY
Pentachlorophenol	**0.0067**	J	**0.0039**	**0.0078**	**mg/Kg-dry**	1	15-Jun-2020 15:54
Surr: 2,4,6-Tribromophenol	*74.3*			*36-126*	*%REC*	*1*	*15-Jun-2020 15:54*
Surr: 2-Fluorophenol	*95.7*			*37-125*	*%REC*	*1*	*15-Jun-2020 15:54*
Surr: Phenol-d6	*101*			*40-125*	*%REC*	*1*	*15-Jun-2020 15:54*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**15.4**		**0.0100**	**0.0100**	**wt%**	1	12-Jun-2020 10:01
PH SOIL BY SW9045D	**Method:SW9045D**						Analyst: JAC
pH	**7.08**	H	**0.100**	**0.100**	**pH Units**	1	10-Jun-2020 14:15
Temp Deg C @pH	**21.4**	H	**0**	**0**	**°C**	1	10-Jun-2020 14:15

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WQ-1620-EB02-20200604
Collection Date: 04-Jun-2020 08:10

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-36
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 11-Jun-2020		Analyst: ACN
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	15-Jun-2020 15:34
Surr: 2,4,6-Tribromophenol	*61.2*			*34-129*	*%REC*	*1*	*15-Jun-2020 15:34*
Surr: 2-Fluorophenol	*46.7*			*20-120*	*%REC*	*1*	*15-Jun-2020 15:34*
Surr: Phenol-d6	*62.8*			*20-120*	*%REC*	*1*	*15-Jun-2020 15:34*
PH BY SW9040C	**Method:SW9040C**						Analyst: KVL
pH	**4.95**	H	**0.100**	**0.100**	**pH Units**	1	11-Jun-2020 11:30
Temp Deg C @pH	**23.4**	H	**0**	**0**	**DEG C**	1	11-Jun-2020 11:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WQ-1620-EB03-20200605
Collection Date: 05-Jun-2020 08:15

ANALYTICAL REPORT
WorkOrder:HS20060313
Lab ID:HS20060313-37
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 11-Jun-2020		Analyst: ACN
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	15-Jun-2020 15:53
Surr: 2,4,6-Tribromophenol	*66.1*			*34-129*	*%REC*	*1*	*15-Jun-2020 15:53*
Surr: 2-Fluorophenol	*53.9*			*20-120*	*%REC*	*1*	*15-Jun-2020 15:53*
Surr: Phenol-d6	*58.7*			*20-120*	*%REC*	*1*	*15-Jun-2020 15:53*
PH BY SW9040C	**Method:SW9040C**						Analyst: KVL
pH	**4.94**	H	**0.100**	**0.100**	**pH Units**	1	11-Jun-2020 11:30
Temp Deg C @pH	**23.4**	H	**0**	**0**	**DEG C**	1	11-Jun-2020 11:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060313

Batch ID: 154255 **Start Date:** 09 Jun 2020 08:17 **End Date:**
Method: SV SOXHLET EXTRACT-LOWLEVEL-SW3541 **Prep Code:** 3541_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20060313-01	1	30.04 (g)	1 (mL)	0.03329
HS20060313-02	1	30.11 (g)	1 (mL)	0.03321
HS20060313-03	1	30.06 (g)	1 (mL)	0.03327
HS20060313-04	1	30.13 (g)	1 (mL)	0.03319
HS20060313-05	1	30.17 (g)	1 (mL)	0.03315
HS20060313-06	1	30.1 (g)	1 (mL)	0.03322
HS20060313-07	1	30.02 (g)	1 (mL)	0.03331
HS20060313-08	1	30.08 (g)	1 (mL)	0.03324
HS20060313-09	1	30.13 (g)	1 (mL)	0.03319
HS20060313-10	1	30.15 (g)	1 (mL)	0.03317
HS20060313-11	1	30.19 (g)	1 (mL)	0.03312
HS20060313-12	1	30.07 (g)	1 (mL)	0.03326
HS20060313-13	1	30.09 (g)	1 (mL)	0.03323
HS20060313-14	1	30.03 (g)	1 (mL)	0.0333
HS20060313-15	1	30.15 (g)	1 (mL)	0.03317
HS20060313-16	1	30.18 (g)	1 (mL)	0.03313
HS20060313-17	1	30.21 (g)	1 (mL)	0.0331
HS20060313-18	1	30.16 (g)	1 (mL)	0.03316
HS20060313-19	1	30.05 (g)	1 (mL)	0.03328
HS20060313-20	1	30.01 (g)	1 (mL)	0.03332

Batch ID: 154287 **Start Date:** 09 Jun 2020 15:30 **End Date:** 09 Jun 2020 18:00
Method: SV SOXHLET EXTRACT-LOWLEVEL-SW3541 **Prep Code:** 3541_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20060313-21		30.1 (g)	1 (mL)	0.03322
HS20060313-22		30.15 (g)	1 (mL)	0.03317
HS20060313-23		30.12 (g)	1 (mL)	0.0332
HS20060313-24		30.01 (g)	1 (mL)	0.03332
HS20060313-25		30.05 (g)	1 (mL)	0.03328
HS20060313-26		30 (g)	1 (mL)	0.03333
HS20060313-27		30.03 (g)	1 (mL)	0.0333
HS20060313-28		30.11 (g)	1 (mL)	0.03321
HS20060313-29		30.07 (g)	1 (mL)	0.03326
HS20060313-30		30.14 (g)	1 (mL)	0.03318
HS20060313-31		30.09 (g)	1 (mL)	0.03323
HS20060313-32		30.04 (g)	1 (mL)	0.03329
HS20060313-33		30.01 (g)	1 (mL)	0.03332
HS20060313-34		30.11 (g)	1 (mL)	0.03321
HS20060313-35		30.16 (g)	1 (mL)	0.03316

Batch ID: 154378 **Start Date:** 11 Jun 2020 07:00 **End Date:** 11 Jun 2020 17:00
Method: SV AQ SEP FUN EXTRACT-LOWLEV - 3510C **Prep Code:** 3510_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20060313-36	1	1000 (mL)	1 (mL)	0.001
HS20060313-37	1	1000 (mL)	1 (mL)	0.001

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060313

Batch ID: 154544 **Start Date:** 16 Jun 2020 19:00 **End Date:** 17 Jun 2020 11:00
Method: SPLP SAMPLE EXTRACTION SEMI **Prep Code:** 1312LO_SV

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20060313-31		150 (grams)	3000 (mL)	20
HS20060313-33		100 (grams)	2000 (mL)	20

Batch ID: 154569 **Start Date:** 17 Jun 2020 11:30 **End Date:** 17 Jun 2020 15:00
Method: SV AQ SEP FUNL EXTRACT-LOWLEV-3510C **Prep Code:** 3510_B_LO_1312

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20060313-31	1	1000 (mL)	1 (mL)	0.001
HS20060313-33	1	1000 (mL)	1 (mL)	0.001

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060313

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 154255 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Soil	
HS20060313-01	SO-1620-SSO222(0-2)-20200603	03 Jun 2020 16:10		09 Jun 2020 08:17	11 Jun 2020 21:07	5
HS20060313-02	SO-1620-SSO222(2-4)-20200603	03 Jun 2020 16:15		09 Jun 2020 08:17	10 Jun 2020 18:43	1
HS20060313-03	SO-1620-SSO221(0-2)-20200603	03 Jun 2020 16:00		09 Jun 2020 08:17	10 Jun 2020 19:03	1
HS20060313-04	SO-1620-SSO221(2-4)-20200603	03 Jun 2020 16:05		09 Jun 2020 08:17	10 Jun 2020 19:22	1
HS20060313-05	SO-1620-SSO231(0-2)-20200603	03 Jun 2020 16:20		09 Jun 2020 08:17	16 Jun 2020 14:02	5
HS20060313-06	SO-1620-SSO231(2-4)-20200603	03 Jun 2020 16:25		09 Jun 2020 08:17	10 Jun 2020 20:01	1
HS20060313-07	SO-1620-SSO232(0-2)-20200603	03 Jun 2020 16:30		09 Jun 2020 08:17	16 Jun 2020 14:21	5
HS20060313-08	SO-1620-SSO232(2-4)-20200603	03 Jun 2020 16:35		09 Jun 2020 08:17	10 Jun 2020 20:40	1
HS20060313-09	SO-1620-SSO233(0-2)-20200604	04 Jun 2020 10:30		09 Jun 2020 08:17	10 Jun 2020 20:59	1
HS20060313-10	SO-1620-SSO233(2-4)-20200604	04 Jun 2020 10:35		09 Jun 2020 08:17	10 Jun 2020 21:19	1
HS20060313-11	SO-1620-SSO241(0-2)-20200604	04 Jun 2020 10:40		09 Jun 2020 08:17	10 Jun 2020 21:38	1
HS20060313-12	SO-1620-SSO241(2-4)-20200604	04 Jun 2020 10:45		09 Jun 2020 08:17	12 Jun 2020 18:44	1
HS20060313-13	SO-1620-SSO242(0-2)-20200604	04 Jun 2020 10:50		09 Jun 2020 08:17	12 Jun 2020 19:04	1
HS20060313-14	SO-1620-SSO242(2-4)-20200604	04 Jun 2020 10:55		09 Jun 2020 08:17	16 Jun 2020 14:40	1
HS20060313-15	SO-1620-SSO243(0-2)-20200604	04 Jun 2020 11:00		09 Jun 2020 08:17	12 Jun 2020 19:43	1
HS20060313-16	SO-1620-SSO243(2-4)-20200604	04 Jun 2020 11:05		09 Jun 2020 08:17	12 Jun 2020 20:02	1
HS20060313-17	SO-1620-SSO251(0-2)-20200604	04 Jun 2020 13:00		09 Jun 2020 08:17	12 Jun 2020 20:22	1
HS20060313-18	SO-1620-SSO251(2-4)-20200604	04 Jun 2020 13:05		09 Jun 2020 08:17	12 Jun 2020 20:41	1
HS20060313-19	SO-1620-SSO252(0-2)-20200604	04 Jun 2020 13:10		09 Jun 2020 08:17	12 Jun 2020 21:01	1
HS20060313-20	SO-1620-SSO252(2-4)-20200604	04 Jun 2020 13:15		09 Jun 2020 08:17	12 Jun 2020 21:20	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060313

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 154287 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Soil	
HS20060313-21	SO-1620-SSO253(0-2)-20200604	04 Jun 2020 16:20		09 Jun 2020 15:30	15 Jun 2020 16:52	1
HS20060313-22	SO-1620-SSO253(2-4)-20200604	04 Jun 2020 16:25		09 Jun 2020 15:30	15 Jun 2020 17:11	1
HS20060313-23	SO-1620-SSO261(0-2)-20200604	04 Jun 2020 16:30		09 Jun 2020 15:30	15 Jun 2020 17:30	1
HS20060313-24	SO-1620-SSO261(2-4)-20200604	04 Jun 2020 16:35		09 Jun 2020 15:30	15 Jun 2020 17:49	1
HS20060313-25	SO-1620-SSO262(0-2)-20200604	04 Jun 2020 16:40		09 Jun 2020 15:30	15 Jun 2020 18:09	1
HS20060313-26	SO-1620-SSO262(2-4)-20200604	04 Jun 2020 16:45		09 Jun 2020 15:30	15 Jun 2020 18:28	1
HS20060313-27	SO-1620-SSO263(0-2)-20200604	04 Jun 2020 16:50		09 Jun 2020 15:30	15 Jun 2020 18:47	1
HS20060313-28	SO-1620-SSO263(2-4)-20200604	04 Jun 2020 16:55		09 Jun 2020 15:30	16 Jun 2020 15:38	1
HS20060313-29	SO-1620-SSO07R(0-2)-20200605	05 Jun 2020 11:05		09 Jun 2020 15:30	18 Jun 2020 00:52	10
HS20060313-30	SO-1620-SSO07R(2-4)-20200605	05 Jun 2020 11:10		09 Jun 2020 15:30	18 Jun 2020 01:12	10
HS20060313-31	SO-1620-SSO03R(0-2)-20200605	05 Jun 2020 10:55		09 Jun 2020 15:30	16 Jun 2020 14:59	10
HS20060313-32	SO-1620-SSO03R(2-4)-20200605	05 Jun 2020 11:00		09 Jun 2020 15:30	15 Jun 2020 20:42	1
HS20060313-33	SO-1620-SSO08R(0-2)-20200605	05 Jun 2020 11:15		09 Jun 2020 15:30	16 Jun 2020 15:18	10
HS20060313-34	SO-1620-SSO08R(2-4)-20200605	05 Jun 2020 11:20		09 Jun 2020 15:30	15 Jun 2020 21:20	1
HS20060313-35	SO-1620-FD03-20200605	05 Jun 2020 11:00		09 Jun 2020 15:30	15 Jun 2020 15:54	1
Batch ID: 154378 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Water	
HS20060313-36	WQ-1620-EB02-20200604	04 Jun 2020 08:10		11 Jun 2020 14:47	15 Jun 2020 15:34	1
HS20060313-37	WQ-1620-EB03-20200605	05 Jun 2020 08:15		11 Jun 2020 14:47	15 Jun 2020 15:53	1
Batch ID: 154569 (0)	**Test Name :** SPLP SEMIVOLATILES				**Matrix:** Soil	
HS20060313-31	SO-1620-SSO03R(0-2)-20200605	05 Jun 2020 10:55		17 Jun 2020 13:41	19 Jun 2020 17:58	1
HS20060313-33	SO-1620-SSO08R(0-2)-20200605	05 Jun 2020 11:15		17 Jun 2020 13:41	19 Jun 2020 17:35	1
Batch ID: R362991 (0)	**Test Name :** PH SOIL BY SW9045D				**Matrix:** Soil	
HS20060313-29	SO-1620-SSO07R(0-2)-20200605	05 Jun 2020 11:05			10 Jun 2020 14:15	1
HS20060313-30	SO-1620-SSO07R(2-4)-20200605	05 Jun 2020 11:10			10 Jun 2020 14:15	1
HS20060313-31	SO-1620-SSO03R(0-2)-20200605	05 Jun 2020 10:55			10 Jun 2020 14:15	1
HS20060313-32	SO-1620-SSO03R(2-4)-20200605	05 Jun 2020 11:00			10 Jun 2020 14:15	1
HS20060313-33	SO-1620-SSO08R(0-2)-20200605	05 Jun 2020 11:15			10 Jun 2020 14:15	1
HS20060313-34	SO-1620-SSO08R(2-4)-20200605	05 Jun 2020 11:20			10 Jun 2020 14:15	1
HS20060313-35	SO-1620-FD03-20200605	05 Jun 2020 11:00			10 Jun 2020 14:15	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060313

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R363048 (0)	**Test Name :** PH BY SW9040C				**Matrix:** Water	
HS20060313-36	WQ-1620-EB02-20200604	04 Jun 2020 08:10			11 Jun 2020 11:30	1
HS20060313-37	WQ-1620-EB03-20200605	05 Jun 2020 08:15			11 Jun 2020 11:30	1
Batch ID: R363172 (0)	**Test Name :** MOISTURE - ASTM D2216				**Matrix:** Soil	
HS20060313-21	SO-1620-SSO253(0-2)-20200604	04 Jun 2020 16:20			12 Jun 2020 10:01	1
HS20060313-22	SO-1620-SSO253(2-4)-20200604	04 Jun 2020 16:25			12 Jun 2020 10:01	1
HS20060313-23	SO-1620-SSO261(0-2)-20200604	04 Jun 2020 16:30			12 Jun 2020 10:01	1
HS20060313-24	SO-1620-SSO261(2-4)-20200604	04 Jun 2020 16:35			12 Jun 2020 10:01	1
HS20060313-25	SO-1620-SSO262(0-2)-20200604	04 Jun 2020 16:40			12 Jun 2020 10:01	1
HS20060313-26	SO-1620-SSO262(2-4)-20200604	04 Jun 2020 16:45			12 Jun 2020 10:01	1
HS20060313-27	SO-1620-SSO263(0-2)-20200604	04 Jun 2020 16:50			12 Jun 2020 10:01	1
HS20060313-28	SO-1620-SSO263(2-4)-20200604	04 Jun 2020 16:55			12 Jun 2020 10:01	1
HS20060313-29	SO-1620-SSO07R(0-2)-20200605	05 Jun 2020 11:05			12 Jun 2020 10:01	1
HS20060313-30	SO-1620-SSO07R(2-4)-20200605	05 Jun 2020 11:10			12 Jun 2020 10:01	1
HS20060313-31	SO-1620-SSO03R(0-2)-20200605	05 Jun 2020 10:55			12 Jun 2020 10:01	1
HS20060313-32	SO-1620-SSO03R(2-4)-20200605	05 Jun 2020 11:00			12 Jun 2020 10:01	1
HS20060313-33	SO-1620-SSO08R(0-2)-20200605	05 Jun 2020 11:15			12 Jun 2020 10:01	1
HS20060313-34	SO-1620-SSO08R(2-4)-20200605	05 Jun 2020 11:20			12 Jun 2020 10:01	1
HS20060313-35	SO-1620-FD03-20200605	05 Jun 2020 11:00			12 Jun 2020 10:01	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060313

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R363175 (0)	**Test Name :** MOISTURE - ASTM D2216				**Matrix:** Soil	
HS20060313-01	SO-1620-SSO222(0-2)-20200603	03 Jun 2020 16:10			12 Jun 2020 08:37	1
HS20060313-02	SO-1620-SSO222(2-4)-20200603	03 Jun 2020 16:15			12 Jun 2020 08:37	1
HS20060313-03	SO-1620-SSO221(0-2)-20200603	03 Jun 2020 16:00			12 Jun 2020 08:37	1
HS20060313-04	SO-1620-SSO221(2-4)-20200603	03 Jun 2020 16:05			12 Jun 2020 08:37	1
HS20060313-05	SO-1620-SSO231(0-2)-20200603	03 Jun 2020 16:20			12 Jun 2020 08:37	1
HS20060313-06	SO-1620-SSO231(2-4)-20200603	03 Jun 2020 16:25			12 Jun 2020 08:37	1
HS20060313-07	SO-1620-SSO232(0-2)-20200603	03 Jun 2020 16:30			12 Jun 2020 08:37	1
HS20060313-08	SO-1620-SSO232(2-4)-20200603	03 Jun 2020 16:35			12 Jun 2020 08:37	1
HS20060313-09	SO-1620-SSO233(0-2)-20200604	04 Jun 2020 10:30			12 Jun 2020 08:37	1
HS20060313-10	SO-1620-SSO233(2-4)-20200604	04 Jun 2020 10:35			12 Jun 2020 08:37	1
HS20060313-11	SO-1620-SSO241(0-2)-20200604	04 Jun 2020 10:40			12 Jun 2020 08:37	1
HS20060313-12	SO-1620-SSO241(2-4)-20200604	04 Jun 2020 10:45			12 Jun 2020 08:37	1
HS20060313-13	SO-1620-SSO242(0-2)-20200604	04 Jun 2020 10:50			12 Jun 2020 08:37	1
HS20060313-14	SO-1620-SSO242(2-4)-20200604	04 Jun 2020 10:55			12 Jun 2020 08:37	1
HS20060313-15	SO-1620-SSO243(0-2)-20200604	04 Jun 2020 11:00			12 Jun 2020 08:37	1
HS20060313-16	SO-1620-SSO243(2-4)-20200604	04 Jun 2020 11:05			12 Jun 2020 08:37	1
HS20060313-17	SO-1620-SSO251(0-2)-20200604	04 Jun 2020 13:00			12 Jun 2020 08:37	1
HS20060313-18	SO-1620-SSO251(2-4)-20200604	04 Jun 2020 13:05			12 Jun 2020 08:37	1
HS20060313-19	SO-1620-SSO252(0-2)-20200604	04 Jun 2020 13:10			12 Jun 2020 08:37	1
HS20060313-20	SO-1620-SSO252(2-4)-20200604	04 Jun 2020 13:15			12 Jun 2020 08:37	1

WorkOrder: HS20060313
InstrumentID: SV-6
Test Code: 1312_8270_LOW
Test Number: SW8270
Test Name: SPLP Semivolatiles

METHOD DETECTION / REPORTING LIMITS

Matrix: Leachate **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Pentachlorophenol	87-86-5	0.00010	0.0000050	0.000050	0.00020
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0.00020
S	2-Fluorophenol	367-12-4	0	0	0	0.00020
S	Phenol-d6	13127-88-3	0	0	0	0.00020

WorkOrder: HS20060313
InstrumentID: SV-7
Test Code: 8270_LOW_S
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Pentachlorophenol	87-86-5	0.0033	0.00025	0.0033	0.0066
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0
S	2-Fluorophenol	367-12-4	0	0	0	0
S	Phenol-d6	13127-88-3	0	0	0	0

WorkOrder: HS20060313
InstrumentID: SV-6
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Pentachlorophenol	87-86-5	0.00010	0.0000050	0.000079	0.00020
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0.00020
S	2-Fluorophenol	367-12-4	0	0	0	0.00020
S	Phenol-d6	13127-88-3	0	0	0	0.00020

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060313

QC BATCH REPORT

Batch ID: 154255 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-154255** Units: **ug/Kg** Analysis Date: **11-Jun-2020 11:43**
Client ID: Run ID: **SV-7_363077** SeqNo: **5615550** PrepDate: **09-Jun-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	U	6.6								
Surr: 2,4,6-Tribromophenol	*143.6*	*0*	*167*	*0*	*86.0*	*36 - 126*				
Surr: 2-Fluorophenol	*92.5*	*0*	*167*	*0*	*55.4*	*37 - 125*				
Surr: Phenol-d6	*161*	*0*	*167*	*0*	*96.4*	*40 - 125*				

LCS Sample ID: **LCS-154255** Units: **ug/Kg** Analysis Date: **11-Jun-2020 12:03**
Client ID: Run ID: **SV-7_363077** SeqNo: **5615551** PrepDate: **09-Jun-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	107.4	6.6	167	0	64.3	23 - 136				
Surr: 2,4,6-Tribromophenol	*144.1*	*0*	*167*	*0*	*86.3*	*36 - 126*				
Surr: 2-Fluorophenol	*134.4*	*0*	*167*	*0*	*80.5*	*37 - 125*				
Surr: Phenol-d6	*168.2*	*0*	*167*	*0*	*101*	*40 - 125*				

MS Sample ID: **HS20060313-01MS** Units: **ug/Kg** Analysis Date: **11-Jun-2020 21:27**
Client ID: **SO-1620-SSO222(0-2)-20200603** Run ID: **SV-7_363077** SeqNo: **5620860** PrepDate: **09-Jun-2020** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	515.4	33	166.9	340.6	105	23 - 136				
Surr: 2,4,6-Tribromophenol	*171.3*	*0*	*166.9*	*0*	*103*	*36 - 126*				
Surr: 2-Fluorophenol	*136.4*	*0*	*166.9*	*0*	*81.7*	*37 - 125*				
Surr: Phenol-d6	*159.4*	*0*	*166.9*	*0*	*95.5*	*40 - 125*				

MSD Sample ID: **HS20060313-01MSD** Units: **ug/Kg** Analysis Date: **11-Jun-2020 21:46**
Client ID: **SO-1620-SSO222(0-2)-20200603** Run ID: **SV-7_363077** SeqNo: **5620861** PrepDate: **09-Jun-2020** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	337.2	33	166.5	340.6	-2.03	23 - 136	515.4	41.8	30	SR
Surr: 2,4,6-Tribromophenol	*102.4*	*0*	*166.5*	*0*	*61.5*	*36 - 126*	*171.3*	*50.3*	*30*	R
Surr: 2-Fluorophenol	*91.8*	*0*	*166.5*	*0*	*55.1*	*37 - 125*	*136.4*	*39.1*	*30*	R
Surr: Phenol-d6	*95.82*	*0*	*166.5*	*0*	*57.6*	*40 - 125*	*159.4*	*49.8*	*30*	R

The following samples were analyzed in this batch:

HS20060313-01	HS20060313-02	HS20060313-03	HS20060313-04
HS20060313-05	HS20060313-06	HS20060313-07	HS20060313-08
HS20060313-09	HS20060313-10	HS20060313-11	HS20060313-12
HS20060313-13	HS20060313-14	HS20060313-15	HS20060313-16
HS20060313-17	HS20060313-18	HS20060313-19	HS20060313-20

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060313

QC BATCH REPORT

Batch ID: 154287 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-154287** Units: **ug/Kg** Analysis Date: **15-Jun-2020 15:16**
Client ID: Run ID: **SV-7_363243** SeqNo: **5621017** PrepDate: **09-Jun-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	U	6.6								
Surr: 2,4,6-Tribromophenol	*114.3*	*0*	*167*	*0*	*68.4*	*36 - 126*				
Surr: 2-Fluorophenol	*167.5*	*0*	*167*	*0*	*100*	*37 - 125*				
Surr: Phenol-d6	*196.6*	*0*	*167*	*0*	*118*	*40 - 125*				

LCS Sample ID: **LCS-154287** Units: **ug/Kg** Analysis Date: **15-Jun-2020 15:35**
Client ID: Run ID: **SV-7_363243** SeqNo: **5621018** PrepDate: **09-Jun-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	79.43	6.6	167	0	47.6	23 - 136				
Surr: 2,4,6-Tribromophenol	*111.3*	*0*	*167*	*0*	*66.7*	*36 - 126*				
Surr: 2-Fluorophenol	*109.2*	*0*	*167*	*0*	*65.4*	*37 - 125*				
Surr: Phenol-d6	*146.2*	*0*	*167*	*0*	*87.5*	*40 - 125*				

MS Sample ID: **HS20060313-35MS** Units: **ug/Kg** Analysis Date: **15-Jun-2020 16:14**
Client ID: **SO-1620-FD03-20200605** Run ID: **SV-7_363243** SeqNo: **5621020** PrepDate: **09-Jun-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	116.6	6.6	166.4	5.652	66.7	23 - 136				
Surr: 2,4,6-Tribromophenol	*118.8*	*0*	*166.4*	*0*	*71.4*	*36 - 126*				
Surr: 2-Fluorophenol	*134.2*	*0*	*166.4*	*0*	*80.6*	*37 - 125*				
Surr: Phenol-d6	*151.3*	*0*	*166.4*	*0*	*90.9*	*40 - 125*				

MSD Sample ID: **HS20060313-35MSD** Units: **ug/Kg** Analysis Date: **15-Jun-2020 16:33**
Client ID: **SO-1620-FD03-20200605** Run ID: **SV-7_363243** SeqNo: **5621021** PrepDate: **09-Jun-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	95.2	6.6	166.7	5.652	53.7	23 - 136	116.6	20.2	30	
Surr: 2,4,6-Tribromophenol	*123.8*	*0*	*166.7*	*0*	*74.3*	*36 - 126*	*118.8*	*4.16*	*30*	
Surr: 2-Fluorophenol	*150.3*	*0*	*166.7*	*0*	*90.2*	*37 - 125*	*134.2*	*11.3*	*30*	
Surr: Phenol-d6	*169.4*	*0*	*166.7*	*0*	*102*	*40 - 125*	*151.3*	*11.3*	*30*	

The following samples were analyzed in this batch:

HS20060313-21	HS20060313-22	HS20060313-23	HS20060313-24
HS20060313-25	HS20060313-26	HS20060313-27	HS20060313-28
HS20060313-29	HS20060313-30	HS20060313-31	HS20060313-32
HS20060313-33	HS20060313-34	HS20060313-35	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060313

QC BATCH REPORT

Batch ID: 154378 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-154378** Units: **ug/L** Analysis Date: **15-Jun-2020 14:35**
Client ID: Run ID: **SV-6_363248** SeqNo: **5620389** PrepDate: **11-Jun-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	U	0.20								
Surr: 2,4,6-Tribromophenol	*3.655*	*0.20*	*5*	*0*	*73.1*	*34 - 129*				
Surr: 2-Fluorophenol	*3.199*	*0.20*	*5*	*0*	*64.0*	*20 - 120*				
Surr: Phenol-d6	*3.469*	*0.20*	*5*	*0*	*69.4*	*20 - 120*				

LCS Sample ID: **LCS-154378** Units: **ug/L** Analysis Date: **15-Jun-2020 14:55**
Client ID: Run ID: **SV-6_363248** SeqNo: **5620390** PrepDate: **11-Jun-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	2.235	0.20	5	0	44.7	19 - 121				
Surr: 2,4,6-Tribromophenol	*3.636*	*0.20*	*5*	*0*	*72.7*	*34 - 129*				
Surr: 2-Fluorophenol	*2.674*	*0.20*	*5*	*0*	*53.5*	*20 - 120*				
Surr: Phenol-d6	*3.369*	*0.20*	*5*	*0*	*67.4*	*20 - 120*				

LCSD Sample ID: **LCSD-154378** Units: **ug/L** Analysis Date: **15-Jun-2020 15:14**
Client ID: Run ID: **SV-6_363248** SeqNo: **5620391** PrepDate: **11-Jun-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	2.292	0.20	5	0	45.8	19 - 121	2.235	2.52	20	
Surr: 2,4,6-Tribromophenol	*4.277*	*0.20*	*5*	*0*	*85.5*	*34 - 129*	*3.636*	*16.2*	*20*	
Surr: 2-Fluorophenol	*3.394*	*0.20*	*5*	*0*	*67.9*	*20 - 120*	*2.674*	*23.7*	*20*	R
Surr: Phenol-d6	*4.581*	*0.20*	*5*	*0*	*91.6*	*20 - 120*	*3.369*	*30.5*	*20*	R

The following samples were analyzed in this batch: HS20060313-36 HS20060313-37

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060313

QC BATCH REPORT

Batch ID: 154569 (0) **Instrument: SV-6** **Method: SPLP SEMIVOLATILES**

MBLK Sample ID: **MBLK-154569** Units: **ug/L** Analysis Date: **19-Jun-2020 15:37**
Client ID: Run ID: **SV-6_363605** SeqNo: **5627959** PrepDate: **17-Jun-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	U	0.20								
Surr: 2,4,6-Tribromophenol	*3.16*	*0.20*	*5*	*0*	*63.2*	*34 - 129*				
Surr: 2-Fluorophenol	*2.939*	*0.20*	*5*	*0*	*58.8*	*20 - 120*				
Surr: Phenol-d6	*3.274*	*0.20*	*5*	*0*	*65.5*	*20 - 120*				

LCS Sample ID: **LCS-154569** Units: **ug/L** Analysis Date: **19-Jun-2020 15:57**
Client ID: Run ID: **SV-6_363605** SeqNo: **5627960** PrepDate: **17-Jun-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	2.174	0.20	5	0	43.5	20 - 140				
Surr: 2,4,6-Tribromophenol	*3.774*	*0.20*	*5*	*0*	*75.5*	*34 - 129*				
Surr: 2-Fluorophenol	*2.956*	*0.20*	*5*	*0*	*59.1*	*20 - 125*				
Surr: Phenol-d6	*3.31*	*0.20*	*5*	*0*	*66.2*	*20 - 120*				

LCSD Sample ID: **LCSD-154569** Units: **ug/L** Analysis Date: **19-Jun-2020 16:17**
Client ID: Run ID: **SV-6_363605** SeqNo: **5627961** PrepDate: **17-Jun-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	2.367	0.20	5	0	47.3	20 - 140	2.174	8.5	20	
Surr: 2,4,6-Tribromophenol	*4.006*	*0.20*	*5*	*0*	*80.1*	*34 - 129*	*3.774*	*5.96*	*20*	
Surr: 2-Fluorophenol	*3.323*	*0.20*	*5*	*0*	*66.5*	*20 - 125*	*2.956*	*11.7*	*20*	
Surr: Phenol-d6	*4.047*	*0.20*	*5*	*0*	*80.9*	*20 - 120*	*3.31*	*20*	*20*	R

MS Sample ID: **HS20060313-31MS** Units: **ug/L** Analysis Date: **19-Jun-2020 17:15**
Client ID: **SO-1620-SSO03R(0-2)-20200605** Run ID: **SV-6_363605** SeqNo: **5627962** PrepDate: **17-Jun-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	4.044	0.20	5	0.5728	69.4	20 - 140				
Surr: 2,4,6-Tribromophenol	*4.334*	*0.20*	*5*	*0*	*86.7*	*34 - 129*				
Surr: 2-Fluorophenol	*3.042*	*0.20*	*5*	*0*	*60.8*	*20 - 125*				
Surr: Phenol-d6	*4.006*	*0.20*	*5*	*0*	*80.1*	*20 - 120*				

The following samples were analyzed in this batch: HS20060313-31 HS20060313-33

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060313

QC BATCH REPORT

Batch ID: R362991 (0) **Instrument: WetChem_HS** **Method: PH SOIL BY SW9045D**

DUP Sample ID: **HS20060271-05DUP** Units: **pH Units** Analysis Date: **10-Jun-2020 14:15**
Client ID: Run ID: **WetChem_HS_362991** SeqNo: **5613574** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	7.76	0.100					7.77	0.129	10	
Temp Deg C @pH	21.5	0					21.4	0.466	10	

The following samples were analyzed in this batch: HS20060313-29 HS20060313-30 HS20060313-31 HS20060313-32 HS20060313-33 HS20060313-34 HS20060313-35

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060313

QC BATCH REPORT

Batch ID: R363048 (0) **Instrument:** WetChem_HS **Method:** PH BY SW9040C

DUP Sample ID: **HS20060411-01DUP** Units: **pH Units** Analysis Date: **11-Jun-2020 11:30**
Client ID: Run ID: **WetChem_HS_363048** SeqNo: **5615099** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	7.8	0.100					7.91	1.4	10	
Temp Deg C @pH	20.2	0					20.3	0.494	10	

The following samples were analyzed in this batch: HS20060313-36 HS20060313-37

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060313

QC BATCH REPORT

Batch ID: R363172 (0) **Instrument:** Balance1 **Method:** MOISTURE - ASTM D2216

DUP Sample ID: **HS20060313-35DUP** Units: **wt%** Analysis Date: **12-Jun-2020 10:01**
Client ID: **SO-1620-FD03-20200605** Run ID: **Balance1_363172** SeqNo: **5617802** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	15.6	0.0100					15.4	1.29	20	

The following samples were analyzed in this batch:

HS20060313-21	HS20060313-22	HS20060313-23	HS20060313-24
HS20060313-25	HS20060313-26	HS20060313-27	HS20060313-28
HS20060313-29	HS20060313-30	HS20060313-31	HS20060313-32
HS20060313-33	HS20060313-34	HS20060313-35	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060313

QC BATCH REPORT

Batch ID: **R363175 (0)** **Instrument:** **Balance1** **Method:** **MOISTURE - ASTM D2216**

DUP Sample ID: **HS20060313-20DUP** Units: **wt%** Analysis Date: **12-Jun-2020 08:37**
Client ID: **SO-1620-SSO252(2-4)-20200604** Run ID: **Balance1_363175** SeqNo: **5617857** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	16.5	0.0100					16.5	0	20	

The following samples were analyzed in this batch:

HS20060313-01	HS20060313-02	HS20060313-03	HS20060313-04
HS20060313-05	HS20060313-06	HS20060313-07	HS20060313-08
HS20060313-09	HS20060313-10	HS20060313-11	HS20060313-12
HS20060313-13	HS20060313-14	HS20060313-15	HS20060313-16
HS20060313-17	HS20060313-18	HS20060313-19	HS20060313-20

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20060313**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/Kg-dry	Milligrams per Kilogram- Dry weight corrected
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	20-030-0	26-Mar-2021
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322020-4	09-May-2021
Kansas	E-10352 2019-2020	31-Jul-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
Oklahoma	2019-141	31-Aug-2020
Texas	T104704231-20-26	30-Apr-2021

Sample Receipt Checklist

Work Order ID: HS20060313 **Date/Time Received:** **05-Jun-2020 13:20**

Client Name: PBW **Received by:** **Nelson D. Dusara**

Completed By: */S/ Nilesh D. Ranchod* (eSignature) 07-Jun-2020 21:48 (Date/Time) **Reviewed by:** */S/ Corey Grandits* (eSignature) 09-Jun-2020 13:29 (Date/Time)

Matrices: **SOIL/WATER** Carrier name: **Client**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	4 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:216941/216940/216945/ 216943
	Yes ☑	No ☐	
Samplers name present on COC?	Yes ☐	No ☑	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	1.4C/1.4C, 1.2C/1.2C, 1.3C/1.3C UC/C	IR25
Cooler(s)/Kit(s):	45115,3698,45931	
Date/Time sample(s) sent to storage:	06/05/2020 19:00	

Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:
Sample Label Ids Differ
COC= SQ-1620-SS008R (2-4) Labels = SQ-1620-SS007R (2-4)
COC= WQ-1620-EB02-20200604 Labels = SQ-1620-EB02-02200604
LOGGED IN PER COC

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

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Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

Page 1 of 5

COC ID: 216941

HS20060313 WV

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information			
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A	8270_LOW_S (5632532 SVOC Pentachlorophenol)
Work Order		Project Number	1620-13-Rev0 SR 92688	B	MOIST_ASTM (5631931 Gen.Chem. MOIST%)
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P	C	PH_S (5652651 pH)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	CONTINGENCY (For SPLP Pentachlorophenol)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	F	
Phone	(512) 671-3434	Phone		G	
Fax	(512) 671-3446	Fax		H	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address		I	
				J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620-SS022(0-2)-20200603	6-3-20	1610	Soil	8	1											
2	SS022(2-4)		1615														
3	SS022(0-2)		1600														
4	SS022(2-4)		1605														
5	SS023(0-2)		1620														
6	SS023(2-4)		1625														
7	SS032(0-2)		1630														
8	SS032(2-4)		1635														
9	SS033(0-2)-20200604	6-4-20	1030														
0	SS033(2-4)-20200604		1035														

Sampler(s) Please Print & Sign: Blake Storey Jacqueline Engel

Shipment Method:

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: Blake Storey Date: 6-5-20 Time: 1320 Received by:

Relinquished by: Date: 06/05/20 Time: 13:20 Received by (Laboratory):

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR HWPW 1620-13

Cooler ID	Cooler Temp.
45115	1.4
36976	1.3
45931	1.3

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[X] TRRP CheckList
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions
3. The Chain of Custody is a legal document.

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Page 2 of 5

COC ID: 216940

HS20060313 WV

Golder Associates Inc.
Houston TX-Wood Preserving Works

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-13-Rev0 SR 92688
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address	

ALS Project Manager:

A: 8270_LOW_S (5632532 SVOC Pentachlorophenol)
B: MOIST_ASTM (5031931 Gen.Chem. MOIST%)
C: PH_S (5652651 pH)
D: CONTINGENCY (For SPLP Pentachlorophenol)
E:
F:
G:
H:
I:
J:

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620-SS0241(0-2)-20200604	6/4/2020	1040	Soil	8	1	X	X	X PLZ								
2	SS0241(2-4)		1045				X	X									
3	SS0242(0-2)		1050				X	X									
4	SS0242(2-4)		1055				X	X									
5	SS0243(0-2)		1100				X	X									
6	SS0243(2-4)		1105				X	X									
7	SS0251(0-2)		1300				X	X									
8	SS0251(2-4)		1305				X	X									
9	SS0252(0-2)		1310				X	X									
10	SS0252(2-4)		1315				X	X									

Sampler(s) Please Print & Sign: Blake Sokora / Jacqueline Engel

Shipment Method:

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hours [ ] Other

Results Due Date:

Relinquished by: Blake Sokora Date: 6-5-20 Time: 1320 Received by:

Relinquished by: Date: 06/05/20 Time: 13:20 Received by (Laboratory): Nelson

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR HWPW 1620-13

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[X] TRRP Checklist
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

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COC ID: 216945

HS20060313

Golder Associates Inc.

Houston TX-Wood Preserving Works

Customer Information		Project Information		ALS Project Manager:
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	
Work Order		Project Number	1620-13-Rev0 SR 92588	
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P	
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	
Phone	(512) 671-3434	Phone		
Fax	(512) 671-3446	Fax		
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address		

A: 8270_LOW_S (5632532 SVOC Pentachlorophenol)
B: MOIST_ASTM (5631931 Gen.Chem. MOIST%)
C: PH_S (5652651 pH)
D: CONTINGENCY (For SPLP Pentachlorophenol)
E:
F:
G:
H:
I:
J:

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620-550253(0-2)-20200604	6/4/2020	1620	Soil	8	1	X	X									
2	550253(2-4)		1625				X	X									
3	550261(0-2)		1630				X	X									
4	550261(2-4)		1635				X	X									
5	550262(0-2)		1640				X	X									
6	550262(2-4)		1645				X	X									
7	550263(0-2)		1650				X	X									
8	550263(2-4)		1655				X	X									
9	550987R(0-2)-20200605	6/5/2020	1105				X	X	X	X							
10	550988R(2-4)		1110				X	X	X	X							

Sampler(s) Please Print & Sign: Blake Spkora, Jacqueline Engel

Shipment Method:

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: Blake Spkora Date: 6-5-20 Time: 1320 Received by:

Relinquished by: Date: 06/05/20 Time: 13:20 Received by (Laboratory): Nelson

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR HWPW 1620-13

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[X] TRRP Checklist
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

ote:
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Chain of Custody Form

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COC ID: 216943

HS20060313

Golder Associates Inc.
Houston TX-Wood Preserving Works

WV

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-13-Rev0 SR 92668
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- AP
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address	

ALS Project Manager:

A	8270_LOW_S (5632532 SVOC Pentachlorophenol)
B	MOIST_ASTM (5631931 Gen.Chem. MOIST%)
C	PH_S (5652651 pH)
D	CONTINGENCY (For SPLP Pentachlorophenol)
E	
F	
G	
H	
I	
J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620-SS003R(0-2)-20200605	6-5-20	1055	Soil	6	1											
2	SS003R(2-4)		1100														
3	SS008R(0-2)		1115														
4	SS008R(2-4)		1120														
5	FD03		1100														
6	WQ-1620-EB02-20200604	6-4-20	0810	WQ		3											
7	WQ-1620-EB03-20200605	6-5-20	0815	WQ		3											
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Blake Sakora Blake Sakora

Relinquished by: Blake Sakora Date: 6-5-20 Time: 1320

Relinquished by: Date: 06/05/20 Time: 13:20

Logged by (Laboratory): Date: Time:

Shipment Method:

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Received by:

Received by (Laboratory):

Checked by (Laboratory): NELSON

Notes: UPRR HW/PW 1620-13

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[X] TRRP Checklist
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

ote:
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T: +1 281 530 5656
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June 17, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20060152**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 21 sample(s) on Jun 03, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20060152**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS20060152**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 06/17/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20060152				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 154106,154116,154141,R363062,R363063				
#[1]	A[2]	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?		X			1
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 06/17/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20060152				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 154106,154116,154141,R363062,R363063				
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 06/17/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20060152
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 154106,154116,154141,R363062,R363063

ER#[5]	Description
1	Batch 154116, Semivolatile Organics Method SW8270, LCS/LCSD were analyzed and reported in lieu of an MS/MSD for this batch.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20060152

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20060152-01	SO-1620-SS016(0-2)-20200602	Soil		02-Jun-2020 12:10	03-Jun-2020 12:15	☐
HS20060152-02	SO-1620-SS016(2-4)-20200602	Soil		02-Jun-2020 12:18	03-Jun-2020 12:15	☐
HS20060152-03	SO-1620-SS017(0-2)-20200602	Soil		02-Jun-2020 12:20	03-Jun-2020 12:15	☐
HS20060152-04	SO-1620-SS017(2-4)-20200602	Soil		02-Jun-2020 12:25	03-Jun-2020 12:15	☐
HS20060152-05	SO-1620-SS018(0-2)-20200602	Soil		02-Jun-2020 12:30	03-Jun-2020 12:15	☐
HS20060152-06	SO-1620-SS018(2-4)-20200602	Soil		02-Jun-2020 12:35	03-Jun-2020 12:15	☐
HS20060152-07	SO-1620-SS0211(0-2)-20200602	Soil		02-Jun-2020 14:55	03-Jun-2020 12:15	☐
HS20060152-08	SO-1620-SS0211(2-4)-20200602	Soil		02-Jun-2020 15:00	03-Jun-2020 12:15	☐
HS20060152-09	SO-1620-SS0212(0-2)-20200602	Soil		02-Jun-2020 15:05	03-Jun-2020 12:15	☐
HS20060152-10	SO-1620-SS0212(2-4)-20200602	Soil		02-Jun-2020 15:10	03-Jun-2020 12:15	☐
HS20060152-11	SO-1620-SS0213(0-2)-20200602	Soil		02-Jun-2020 16:45	03-Jun-2020 12:15	☐
HS20060152-12	SO-1620-SS0213(2-4)-20200602	Soil		02-Jun-2020 16:50	03-Jun-2020 12:15	☐
HS20060152-13	SO-1620-SS019(0-2)-20200603	Soil		03-Jun-2020 09:45	03-Jun-2020 12:15	☐
HS20060152-14	SO-1620-SS019(2-4)-20200603	Soil		03-Jun-2020 09:50	03-Jun-2020 12:15	☐
HS20060152-15	SO-1620-SS020(0-2)-20200603	Soil		03-Jun-2020 09:55	03-Jun-2020 12:15	☐
HS20060152-16	SO-1620-SS020(2-4)-20200603	Soil		03-Jun-2020 10:00	03-Jun-2020 12:15	☐
HS20060152-17	SO-1620-SS0223(0-2)-20200603	Soil		03-Jun-2020 10:50	03-Jun-2020 12:15	☐
HS20060152-18	SO-1620-SS0223(2-4)-20200603	Soil		03-Jun-2020 10:55	03-Jun-2020 12:15	☐
HS20060152-19	SO-1620-EB01-2020603	Water		03-Jun-2020 08:15	03-Jun-2020 12:15	☐
HS20060152-20	SO-1620-FD01-20200603	Soil		03-Jun-2020 10:10	03-Jun-2020 12:15	☐
HS20060152-21	SO-1620-FD02-20200603	Soil		03-Jun-2020 11:00	03-Jun-2020 12:15	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SS016(0-2)-20200602
Collection Date: 02-Jun-2020 12:10

ANALYTICAL REPORT
WorkOrder:HS20060152
Lab ID:HS20060152-01
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 04-Jun-2020		Analyst: GEY
Pentachlorophenol	**0.69**		**0.018**	**0.037**	**mg/Kg-dry**	5	11-Jun-2020 20:28
Surr: 2,4,6-Tribromophenol	*63.4*			*36-126*	*%REC*	*5*	*11-Jun-2020 20:28*
Surr: 2-Fluorophenol	*58.1*			*37-125*	*%REC*	*5*	*11-Jun-2020 20:28*
Surr: Phenol-d6	*74.8*			*40-125*	*%REC*	*5*	*11-Jun-2020 20:28*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: JAC
Percent Moisture	**11.0**		**0.0100**	**0.0100**	**wt%**	1	10-Jun-2020 14:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SS016(2-4)-20200602
Collection Date: 02-Jun-2020 12:18

ANALYTICAL REPORT
WorkOrder:HS20060152
Lab ID:HS20060152-02
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 04-Jun-2020		Analyst: GEY
Pentachlorophenol	**0.060**		**0.0039**	**0.0079**	**mg/Kg-dry**	1	10-Jun-2020 15:09
Surr: 2,4,6-Tribromophenol	*90.0*			*36-126*	*%REC*	*1*	*10-Jun-2020 15:09*
Surr: 2-Fluorophenol	*73.6*			*37-125*	*%REC*	*1*	*10-Jun-2020 15:09*
Surr: Phenol-d6	*69.0*			*40-125*	*%REC*	*1*	*10-Jun-2020 15:09*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: JAC
Percent Moisture	**17.1**		**0.0100**	**0.0100**	**wt%**	1	10-Jun-2020 14:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20060152
Sample ID: SO-1620-SS017(0-2)-20200602
Lab ID:HS20060152-03
Collection Date: 02-Jun-2020 12:20
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 04-Jun-2020		Analyst: GEY
Pentachlorophenol	**0.15**		**0.0038**	**0.0077**	**mg/Kg-dry**	1	10-Jun-2020 15:28
Surr: 2,4,6-Tribromophenol	*82.4*			*36-126*	*%REC*	*1*	*10-Jun-2020 15:28*
Surr: 2-Fluorophenol	*89.3*			*37-125*	*%REC*	*1*	*10-Jun-2020 15:28*
Surr: Phenol-d6	*82.5*			*40-125*	*%REC*	*1*	*10-Jun-2020 15:28*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: JAC
Percent Moisture	**15.0**		**0.0100**	**0.0100**	**wt%**	1	10-Jun-2020 14:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SS017(2-4)-20200602
Collection Date: 02-Jun-2020 12:25

ANALYTICAL REPORT
WorkOrder:HS20060152
Lab ID:HS20060152-04
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 04-Jun-2020		Analyst: GEY
Pentachlorophenol	**0.019**		**0.0039**	**0.0079**	**mg/Kg-dry**	1	11-Jun-2020 20:09
Surr: 2,4,6-Tribromophenol	*93.5*			*36-126*	*%REC*	*1*	*11-Jun-2020 20:09*
Surr: 2-Fluorophenol	*75.1*			*37-125*	*%REC*	*1*	*11-Jun-2020 20:09*
Surr: Phenol-d6	*78.1*			*40-125*	*%REC*	*1*	*11-Jun-2020 20:09*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: JAC
Percent Moisture	**16.7**		**0.0100**	**0.0100**	**wt%**	1	10-Jun-2020 14:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20060152
Sample ID: SO-1620-SS018(0-2)-20200602
Lab ID:HS20060152-05
Collection Date: 02-Jun-2020 12:30
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 04-Jun-2020		Analyst: GEY
Pentachlorophenol	**0.22**		**0.0039**	**0.0078**	**mg/Kg-dry**	1	10-Jun-2020 16:07
Surr: 2,4,6-Tribromophenol	*74.1*			*36-126*	*%REC*	*1*	*10-Jun-2020 16:07*
Surr: 2-Fluorophenol	*63.5*			*37-125*	*%REC*	*1*	*10-Jun-2020 16:07*
Surr: Phenol-d6	*70.6*			*40-125*	*%REC*	*1*	*10-Jun-2020 16:07*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: JAC
Percent Moisture	**15.6**		**0.0100**	**0.0100**	**wt%**	1	10-Jun-2020 14:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20060152
Sample ID: SO-1620-SS018(2-4)-20200602
Lab ID:HS20060152-06
Collection Date: 02-Jun-2020 12:35
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 04-Jun-2020		Analyst: GEY
Pentachlorophenol	**0.046**		**0.0040**	**0.0079**	**mg/Kg-dry**	1	10-Jun-2020 16:27
Surr: 2,4,6-Tribromophenol	*103*			*36-126*	*%REC*	*1*	*10-Jun-2020 16:27*
Surr: 2-Fluorophenol	*75.8*			*37-125*	*%REC*	*1*	*10-Jun-2020 16:27*
Surr: Phenol-d6	*93.1*			*40-125*	*%REC*	*1*	*10-Jun-2020 16:27*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: JAC
Percent Moisture	**17.3**		**0.0100**	**0.0100**	**wt%**	1	10-Jun-2020 14:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SS0211(0-2)-20200602
Collection Date: 02-Jun-2020 14:55

ANALYTICAL REPORT
WorkOrder:HS20060152
Lab ID:HS20060152-07
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 04-Jun-2020		Analyst: GEY
Pentachlorophenol	**0.086**		**0.0039**	**0.0078**	**mg/Kg-dry**	1	10-Jun-2020 16:46
Surr: 2,4,6-Tribromophenol	*91.3*			*36-126*	*%REC*	*1*	*10-Jun-2020 16:46*
Surr: 2-Fluorophenol	*78.2*			*37-125*	*%REC*	*1*	*10-Jun-2020 16:46*
Surr: Phenol-d6	*102*			*40-125*	*%REC*	*1*	*10-Jun-2020 16:46*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: JAC
Percent Moisture	**16.2**		**0.0100**	**0.0100**	**wt%**	1	10-Jun-2020 14:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SS0211(2-4)-20200602
Collection Date: 02-Jun-2020 15:00

ANALYTICAL REPORT
WorkOrder:HS20060152
Lab ID:HS20060152-08
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 04-Jun-2020		Analyst: GEY
Pentachlorophenol	**0.019**		**0.0038**	**0.0077**	**mg/Kg-dry**	1	10-Jun-2020 17:06
Surr: 2,4,6-Tribromophenol	*105*			*36-126*	*%REC*	*1*	*10-Jun-2020 17:06*
Surr: 2-Fluorophenol	*107*			*37-125*	*%REC*	*1*	*10-Jun-2020 17:06*
Surr: Phenol-d6	*84.4*			*40-125*	*%REC*	*1*	*10-Jun-2020 17:06*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: JAC
Percent Moisture	**15.0**		**0.0100**	**0.0100**	**wt%**	1	10-Jun-2020 14:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20060152
Sample ID: SO-1620-SS0212(0-2)-20200602
Lab ID:HS20060152-09
Collection Date: 02-Jun-2020 15:05
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 04-Jun-2020		Analyst: GEY
Pentachlorophenol	**0.23**		**0.0040**	**0.0080**	**mg/Kg-dry**	1	10-Jun-2020 17:25
Surr: 2,4,6-Tribromophenol	*73.2*			*36-126*	*%REC*	*1*	*10-Jun-2020 17:25*
Surr: 2-Fluorophenol	*72.8*			*37-125*	*%REC*	*1*	*10-Jun-2020 17:25*
Surr: Phenol-d6	*80.9*			*40-125*	*%REC*	*1*	*10-Jun-2020 17:25*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: JAC
Percent Moisture	**17.6**		**0.0100**	**0.0100**	**wt%**	1	10-Jun-2020 14:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SS0212(2-4)-20200602
Collection Date: 02-Jun-2020 15:10

ANALYTICAL REPORT
WorkOrder:HS20060152
Lab ID:HS20060152-10
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 04-Jun-2020		Analyst: GEY
Pentachlorophenol	**0.32**		**0.0040**	**0.0080**	**mg/Kg-dry**	1	10-Jun-2020 17:45
Surr: 2,4,6-Tribromophenol	*93.0*			*36-126*	*%REC*	*1*	*10-Jun-2020 17:45*
Surr: 2-Fluorophenol	*75.0*			*37-125*	*%REC*	*1*	*10-Jun-2020 17:45*
Surr: Phenol-d6	*71.0*			*40-125*	*%REC*	*1*	*10-Jun-2020 17:45*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: JAC
Percent Moisture	**17.9**		**0.0100**	**0.0100**	**wt%**	1	10-Jun-2020 14:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SS0213(0-2)-20200602
Collection Date: 02-Jun-2020 16:45

ANALYTICAL REPORT
WorkOrder:HS20060152
Lab ID:HS20060152-11
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 04-Jun-2020		Analyst: GEY
Pentachlorophenol	**0.044**		**0.0040**	**0.0079**	**mg/Kg-dry**	1	10-Jun-2020 18:04
Surr: 2,4,6-Tribromophenol	*119*			*36-126*	*%REC*	*1*	*10-Jun-2020 18:04*
Surr: 2-Fluorophenol	*80.1*			*37-125*	*%REC*	*1*	*10-Jun-2020 18:04*
Surr: Phenol-d6	*98.9*			*40-125*	*%REC*	*1*	*10-Jun-2020 18:04*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: JAC
Percent Moisture	**16.8**		**0.0100**	**0.0100**	**wt%**	1	10-Jun-2020 14:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20060152
Sample ID: SO-1620-SS0213(2-4)-20200602
Lab ID:HS20060152-12
Collection Date: 02-Jun-2020 16:50
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 05-Jun-2020		Analyst: ACN
Pentachlorophenol		U	0.0039	0.0078	mg/Kg-dry	1	09-Jun-2020 15:54
Surr: 2,4,6-Tribromophenol	*76.2*			*36-126*	*%REC*	*1*	*09-Jun-2020 15:54*
Surr: 2-Fluorophenol	*66.3*			*37-125*	*%REC*	*1*	*09-Jun-2020 15:54*
Surr: Phenol-d6	*90.9*			*40-125*	*%REC*	*1*	*09-Jun-2020 15:54*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: JAC
Percent Moisture	**15.8**		**0.0100**	**0.0100**	**wt%**	1	10-Jun-2020 14:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SS019(0-2)-20200603
Collection Date: 03-Jun-2020 09:45

ANALYTICAL REPORT
WorkOrder:HS20060152
Lab ID:HS20060152-13
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 05-Jun-2020		Analyst: ACN
Pentachlorophenol	**0.32**		**0.0036**	**0.0073**	**mg/Kg-dry**	1	09-Jun-2020 16:14
Surr: 2,4,6-Tribromophenol	*92.7*			*36-126*	*%REC*	*1*	*09-Jun-2020 16:14*
Surr: 2-Fluorophenol	*52.8*			*37-125*	*%REC*	*1*	*09-Jun-2020 16:14*
Surr: Phenol-d6	*83.9*			*40-125*	*%REC*	*1*	*09-Jun-2020 16:14*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: JAC
Percent Moisture	**9.26**		**0.0100**	**0.0100**	**wt%**	1	10-Jun-2020 14:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SS019(2-4)-20200603
Collection Date: 03-Jun-2020 09:50

ANALYTICAL REPORT
WorkOrder:HS20060152
Lab ID:HS20060152-14
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 05-Jun-2020		Analyst: ACN
Pentachlorophenol	**0.019**		**0.0039**	**0.0077**	**mg/Kg-dry**	1	09-Jun-2020 16:33
Surr: 2,4,6-Tribromophenol	*79.6*			*36-126*	*%REC*	*1*	*09-Jun-2020 16:33*
Surr: 2-Fluorophenol	*51.7*			*37-125*	*%REC*	*1*	*09-Jun-2020 16:33*
Surr: Phenol-d6	*83.7*			*40-125*	*%REC*	*1*	*09-Jun-2020 16:33*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: JAC
Percent Moisture	**14.9**		**0.0100**	**0.0100**	**wt%**	1	10-Jun-2020 14:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SS020(0-2)-20200603
Collection Date: 03-Jun-2020 09:55

ANALYTICAL REPORT
WorkOrder:HS20060152
Lab ID:HS20060152-15
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 05-Jun-2020		Analyst: ACN
Pentachlorophenol	**0.016**		**0.0039**	**0.0078**	**mg/Kg-dry**	1	09-Jun-2020 16:53
Surr: 2,4,6-Tribromophenol	*79.4*			*36-126*	*%REC*	*1*	*09-Jun-2020 16:53*
Surr: 2-Fluorophenol	*69.9*			*37-125*	*%REC*	*1*	*09-Jun-2020 16:53*
Surr: Phenol-d6	*77.5*			*40-125*	*%REC*	*1*	*09-Jun-2020 16:53*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: JAC
Percent Moisture	**16.0**		**0.0100**	**0.0100**	**wt%**	1	10-Jun-2020 14:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20060152
Sample ID: SO-1620-SS020(2-4)-20200603
Lab ID:HS20060152-16
Collection Date: 03-Jun-2020 10:00
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 05-Jun-2020		Analyst: ACN
Pentachlorophenol		U	0.0039	0.0078	mg/Kg-dry	1	09-Jun-2020 17:12
Surr: 2,4,6-Tribromophenol	*78.7*			*36-126*	*%REC*	*1*	*09-Jun-2020 17:12*
Surr: 2-Fluorophenol	*63.1*			*37-125*	*%REC*	*1*	*09-Jun-2020 17:12*
Surr: Phenol-d6	*71.1*			*40-125*	*%REC*	*1*	*09-Jun-2020 17:12*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: JAC
Percent Moisture	**16.0**		**0.0100**	**0.0100**	**wt%**	1	10-Jun-2020 14:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SS0223(0-2)-20200603
Collection Date: 03-Jun-2020 10:50

ANALYTICAL REPORT
WorkOrder:HS20060152
Lab ID:HS20060152-17
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 05-Jun-2020		Analyst: ACN
Pentachlorophenol	**0.038**		**0.0039**	**0.0079**	**mg/Kg-dry**	1	09-Jun-2020 17:32
Surr: 2,4,6-Tribromophenol	*78.6*			*36-126*	*%REC*	*1*	*09-Jun-2020 17:32*
Surr: 2-Fluorophenol	*64.6*			*37-125*	*%REC*	*1*	*09-Jun-2020 17:32*
Surr: Phenol-d6	*71.3*			*40-125*	*%REC*	*1*	*09-Jun-2020 17:32*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: JAC
Percent Moisture	**16.7**		**0.0100**	**0.0100**	**wt%**	1	10-Jun-2020 14:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20060152
Sample ID: SO-1620-SS0223(2-4)-20200603
Lab ID:HS20060152-18
Collection Date: 03-Jun-2020 10:55
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 05-Jun-2020		Analyst: ACN
Pentachlorophenol		U	0.0040	0.0080	mg/Kg-dry	1	09-Jun-2020 17:51
Surr: 2,4,6-Tribromophenol	*72.1*			*36-126*	*%REC*	*1*	*09-Jun-2020 17:51*
Surr: 2-Fluorophenol	*68.0*			*37-125*	*%REC*	*1*	*09-Jun-2020 17:51*
Surr: Phenol-d6	*74.5*			*40-125*	*%REC*	*1*	*09-Jun-2020 17:51*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: JAC
Percent Moisture	**17.8**		**0.0100**	**0.0100**	**wt%**	1	10-Jun-2020 14:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-EB01-2020603
Collection Date: 03-Jun-2020 08:15

ANALYTICAL REPORT
WorkOrder:HS20060152
Lab ID:HS20060152-19
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 04-Jun-2020		Analyst: ACN
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	09-Jun-2020 18:50
Surr: 2,4,6-Tribromophenol	*49.8*			*34-129*	*%REC*	*1*	*09-Jun-2020 18:50*
Surr: 2-Fluorophenol	*42.4*			*20-120*	*%REC*	*1*	*09-Jun-2020 18:50*
Surr: Phenol-d6	*49.0*			*20-120*	*%REC*	*1*	*09-Jun-2020 18:50*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-FD01-20200603
Collection Date: 03-Jun-2020 10:10

ANALYTICAL REPORT
WorkOrder:HS20060152
Lab ID:HS20060152-20
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 05-Jun-2020		Analyst: ACN
Pentachlorophenol	**0.030**		**0.0040**	**0.0079**	**mg/Kg-dry**	1	09-Jun-2020 18:11
Surr: 2,4,6-Tribromophenol	*79.9*			*36-126*	*%REC*	*1*	*09-Jun-2020 18:11*
Surr: 2-Fluorophenol	*69.2*			*37-125*	*%REC*	*1*	*09-Jun-2020 18:11*
Surr: Phenol-d6	*87.1*			*40-125*	*%REC*	*1*	*09-Jun-2020 18:11*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: JAC
Percent Moisture	**16.8**		**0.0100**	**0.0100**	**wt%**	1	10-Jun-2020 14:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-FD02-20200603
Collection Date: 03-Jun-2020 11:00

ANALYTICAL REPORT
WorkOrder:HS20060152
Lab ID:HS20060152-21
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3541 / 05-Jun-2020		Analyst: GEY
Pentachlorophenol	**0.57**		**0.015**	**0.031**	**mg/Kg-dry**	4	11-Jun-2020 20:48
Surr: 2,4,6-Tribromophenol	*120*			*36-126*	*%REC*	*4*	*11-Jun-2020 20:48*
Surr: 2-Fluorophenol	*88.3*			*37-125*	*%REC*	*4*	*11-Jun-2020 20:48*
Surr: Phenol-d6	*92.5*			*40-125*	*%REC*	*4*	*11-Jun-2020 20:48*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: JAC
Percent Moisture	**14.1**		**0.0100**	**0.0100**	**wt%**	1	10-Jun-2020 14:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060152

Batch ID: 154106 **Start Date:** 04 Jun 2020 09:00 **End Date:** 04 Jun 2020 14:30
Method: SV SOXHLET EXTRACT-LOWLEVEL-SW3541 **Prep Code:** 3541_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20060152-01		30.4 (g)	1 (mL)	0.03289
HS20060152-02		30.29 (g)	1 (mL)	0.03301
HS20060152-03		30.33 (g)	1 (mL)	0.03297
HS20060152-04		30.14 (g)	1 (mL)	0.03318
HS20060152-05		30.22 (g)	1 (mL)	0.03309
HS20060152-06		30.17 (g)	1 (mL)	0.03315
HS20060152-07		30.27 (g)	1 (mL)	0.03304
HS20060152-08		30.39 (g)	1 (mL)	0.03291
HS20060152-09		30.1 (g)	1 (mL)	0.03322
HS20060152-10		30.01 (g)	1 (mL)	0.03332
HS20060152-11		30.07 (g)	1 (mL)	0.03326

Batch ID: 154116 **Start Date:** 04 Jun 2020 07:00 **End Date:** 04 Jun 2020 16:30
Method: SV AQ SEP FUN EXTRACT-LOWLEV - 3510C **Prep Code:** 3510_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20060152-19	1	1000 (mL)	1 (mL)	0.001

Batch ID: 154141 **Start Date:** 05 Jun 2020 08:00 **End Date:** 05 Jun 2020 13:00
Method: SV SOXHLET EXTRACT-LOWLEVEL-SW3541 **Prep Code:** 3541_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20060152-12		30.08 (g)	1 (mL)	0.03324
HS20060152-13		30.01 (g)	1 (mL)	0.03332
HS20060152-14		30.09 (g)	1 (mL)	0.03323
HS20060152-15		30.12 (g)	1 (mL)	0.0332
HS20060152-16		30.03 (g)	1 (mL)	0.0333
HS20060152-17		30.19 (g)	1 (mL)	0.03312
HS20060152-18		30.07 (g)	1 (mL)	0.03326
HS20060152-20		30.02 (g)	1 (mL)	0.03331
HS20060152-21		30.15 (g)	1 (mL)	0.03317

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060152

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 154106 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Soil	
HS20060152-01	SO-1620-SS016(0-2)-20200602	02 Jun 2020 12:10		04 Jun 2020 09:00	11 Jun 2020 20:28	5
HS20060152-02	SO-1620-SS016(2-4)-20200602	02 Jun 2020 12:18		04 Jun 2020 09:00	10 Jun 2020 15:09	1
HS20060152-03	SO-1620-SS017(0-2)-20200602	02 Jun 2020 12:20		04 Jun 2020 09:00	10 Jun 2020 15:28	1
HS20060152-04	SO-1620-SS017(2-4)-20200602	02 Jun 2020 12:25		04 Jun 2020 09:00	11 Jun 2020 20:09	1
HS20060152-05	SO-1620-SS018(0-2)-20200602	02 Jun 2020 12:30		04 Jun 2020 09:00	10 Jun 2020 16:07	1
HS20060152-06	SO-1620-SS018(2-4)-20200602	02 Jun 2020 12:35		04 Jun 2020 09:00	10 Jun 2020 16:27	1
HS20060152-07	SO-1620-SS0211(0-2)-20200602	02 Jun 2020 14:55		04 Jun 2020 09:00	10 Jun 2020 16:46	1
HS20060152-08	SO-1620-SS0211(2-4)-20200602	02 Jun 2020 15:00		04 Jun 2020 09:00	10 Jun 2020 17:06	1
HS20060152-09	SO-1620-SS0212(0-2)-20200602	02 Jun 2020 15:05		04 Jun 2020 09:00	10 Jun 2020 17:25	1
HS20060152-10	SO-1620-SS0212(2-4)-20200602	02 Jun 2020 15:10		04 Jun 2020 09:00	10 Jun 2020 17:45	1
HS20060152-11	SO-1620-SS0213(0-2)-20200602	02 Jun 2020 16:45		04 Jun 2020 09:00	10 Jun 2020 18:04	1
Batch ID: 154116 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Water	
HS20060152-19	SO-1620-EB01-2020603	03 Jun 2020 08:15		04 Jun 2020 07:00	09 Jun 2020 18:50	1
Batch ID: 154141 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Soil	
HS20060152-12	SO-1620-SS0213(2-4)-20200602	02 Jun 2020 16:50		05 Jun 2020 08:00	09 Jun 2020 15:54	1
HS20060152-13	SO-1620-SS019(0-2)-20200603	03 Jun 2020 09:45		05 Jun 2020 08:00	09 Jun 2020 16:14	1
HS20060152-14	SO-1620-SS019(2-4)-20200603	03 Jun 2020 09:50		05 Jun 2020 08:00	09 Jun 2020 16:33	1
HS20060152-15	SO-1620-SS020(0-2)-20200603	03 Jun 2020 09:55		05 Jun 2020 08:00	09 Jun 2020 16:53	1
HS20060152-16	SO-1620-SS020(2-4)-20200603	03 Jun 2020 10:00		05 Jun 2020 08:00	09 Jun 2020 17:12	1
HS20060152-17	SO-1620-SS0223(0-2)-20200603	03 Jun 2020 10:50		05 Jun 2020 08:00	09 Jun 2020 17:32	1
HS20060152-18	SO-1620-SS0223(2-4)-20200603	03 Jun 2020 10:55		05 Jun 2020 08:00	09 Jun 2020 17:51	1
HS20060152-20	SO-1620-FD01-20200603	03 Jun 2020 10:10		05 Jun 2020 08:00	09 Jun 2020 18:11	1
HS20060152-21	SO-1620-FD02-20200603	03 Jun 2020 11:00		05 Jun 2020 08:00	11 Jun 2020 20:48	4

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060152

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R363062 (0)	**Test Name :** MOISTURE - ASTM D2216				**Matrix:** Soil	
HS20060152-01	SO-1620-SS016(0-2)-20200602	02 Jun 2020 12:10			10 Jun 2020 14:20	1
HS20060152-02	SO-1620-SS016(2-4)-20200602	02 Jun 2020 12:18			10 Jun 2020 14:20	1
HS20060152-03	SO-1620-SS017(0-2)-20200602	02 Jun 2020 12:20			10 Jun 2020 14:20	1
HS20060152-04	SO-1620-SS017(2-4)-20200602	02 Jun 2020 12:25			10 Jun 2020 14:20	1
HS20060152-05	SO-1620-SS018(0-2)-20200602	02 Jun 2020 12:30			10 Jun 2020 14:20	1
HS20060152-06	SO-1620-SS018(2-4)-20200602	02 Jun 2020 12:35			10 Jun 2020 14:20	1
HS20060152-07	SO-1620-SS0211(0-2)-20200602	02 Jun 2020 14:55			10 Jun 2020 14:20	1
HS20060152-08	SO-1620-SS0211(2-4)-20200602	02 Jun 2020 15:00			10 Jun 2020 14:20	1
HS20060152-09	SO-1620-SS0212(0-2)-20200602	02 Jun 2020 15:05			10 Jun 2020 14:20	1
HS20060152-10	SO-1620-SS0212(2-4)-20200602	02 Jun 2020 15:10			10 Jun 2020 14:20	1
HS20060152-11	SO-1620-SS0213(0-2)-20200602	02 Jun 2020 16:45			10 Jun 2020 14:20	1
Batch ID: R363063 (0)	**Test Name :** MOISTURE - ASTM D2216				**Matrix:** Soil	
HS20060152-12	SO-1620-SS0213(2-4)-20200602	02 Jun 2020 16:50			10 Jun 2020 14:45	1
HS20060152-13	SO-1620-SS019(0-2)-20200603	03 Jun 2020 09:45			10 Jun 2020 14:45	1
HS20060152-14	SO-1620-SS019(2-4)-20200603	03 Jun 2020 09:50			10 Jun 2020 14:45	1
HS20060152-15	SO-1620-SS020(0-2)-20200603	03 Jun 2020 09:55			10 Jun 2020 14:45	1
HS20060152-16	SO-1620-SS020(2-4)-20200603	03 Jun 2020 10:00			10 Jun 2020 14:45	1
HS20060152-17	SO-1620-SS0223(0-2)-20200603	03 Jun 2020 10:50			10 Jun 2020 14:45	1
HS20060152-18	SO-1620-SS0223(2-4)-20200603	03 Jun 2020 10:55			10 Jun 2020 14:45	1
HS20060152-20	SO-1620-FD01-20200603	03 Jun 2020 10:10			10 Jun 2020 14:45	1
HS20060152-21	SO-1620-FD02-20200603	03 Jun 2020 11:00			10 Jun 2020 14:45	1

WorkOrder: HS20060152
InstrumentID: SV-7
Test Code: 8270_LOW_S
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Pentachlorophenol	87-86-5	0.0033	0.00025	0.0033	0.0066
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0
S	2-Fluorophenol	367-12-4	0	0	0	0
S	Phenol-d6	13127-88-3	0	0	0	0

WorkOrder: HS20060152
InstrumentID: SV-6
Test Code: 8270_LOW_S
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Pentachlorophenol	87-86-5	0.0033	0.00036	0.0033	0.0066
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0
S	2-Fluorophenol	367-12-4	0	0	0	0
S	Phenol-d6	13127-88-3	0	0	0	0

WorkOrder: HS20060152
InstrumentID: SV-6
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Pentachlorophenol	87-86-5	0.00010	0.0000050	0.000079	0.00020
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0.00020
S	2-Fluorophenol	367-12-4	0	0	0	0.00020
S	Phenol-d6	13127-88-3	0	0	0	0.00020

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060152

QC BATCH REPORT

Batch ID: 154106 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-154106** Units: **ug/Kg** Analysis Date: **08-Jun-2020 15:52**
Client ID: Run ID: **SV-7_362890** SeqNo: **5611492** PrepDate: **04-Jun-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	U	6.6								
Surr: 2,4,6-Tribromophenol	*125.6*	*0*	*167*	*0*	*75.2*	*36 - 126*				
Surr: 2-Fluorophenol	*134.8*	*0*	*167*	*0*	*80.7*	*37 - 125*				
Surr: Phenol-d6	*150.1*	*0*	*167*	*0*	*89.9*	*40 - 125*				

LCS Sample ID: **LCS-154106** Units: **ug/Kg** Analysis Date: **08-Jun-2020 16:12**
Client ID: Run ID: **SV-7_362890** SeqNo: **5611493** PrepDate: **04-Jun-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	120.2	6.6	167	0	72.0	23 - 136				
Surr: 2,4,6-Tribromophenol	*140.1*	*0*	*167*	*0*	*83.9*	*36 - 126*				
Surr: 2-Fluorophenol	*116.2*	*0*	*167*	*0*	*69.6*	*37 - 125*				
Surr: Phenol-d6	*132.6*	*0*	*167*	*0*	*79.4*	*40 - 125*				

MS Sample ID: **HS20060075-01MS** Units: **ug/Kg** Analysis Date: **08-Jun-2020 18:48**
Client ID: Run ID: **SV-7_362890** SeqNo: **5611495** PrepDate: **04-Jun-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	121.6	6.6	166.7	0	72.9	23 - 136				
Surr: 2,4,6-Tribromophenol	*144.9*	*0*	*166.7*	*0*	*86.9*	*36 - 126*				
Surr: 2-Fluorophenol	*89.91*	*0*	*166.7*	*0*	*53.9*	*37 - 125*				
Surr: Phenol-d6	*118.6*	*0*	*166.7*	*0*	*71.2*	*40 - 125*				

MSD Sample ID: **HS20060075-01MSD** Units: **ug/Kg** Analysis Date: **08-Jun-2020 19:07**
Client ID: Run ID: **SV-7_362890** SeqNo: **5611496** PrepDate: **04-Jun-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	95.93	6.6	166.4	0	57.6	23 - 136	121.6	23.6	30	
Surr: 2,4,6-Tribromophenol	*112.8*	*0*	*166.4*	*0*	*67.8*	*36 - 126*	*144.9*	*24.9*	*30*	
Surr: 2-Fluorophenol	*87.46*	*0*	*166.4*	*0*	*52.5*	*37 - 125*	*89.91*	*2.76*	*30*	
Surr: Phenol-d6	*103.3*	*0*	*166.4*	*0*	*62.1*	*40 - 125*	*118.6*	*13.8*	*30*	

The following samples were analyzed in this batch:

HS20060152-01	HS20060152-02	HS20060152-03	HS20060152-04
HS20060152-05	HS20060152-06	HS20060152-07	HS20060152-08
HS20060152-09	HS20060152-10	HS20060152-11	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060152

QC BATCH REPORT

Batch ID: 154116 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-154116** Units: **ug/L** Analysis Date: **10-Jun-2020 11:54**
Client ID: Run ID: **SV-7_363058** SeqNo: **5615213** PrepDate: **04-Jun-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	U	0.20								
Surr: 2,4,6-Tribromophenol	*3.567*	*0.20*	*5*	*0*	*71.3*	*34 - 129*				
Surr: 2-Fluorophenol	*4.652*	*0.20*	*5*	*0*	*93.0*	*20 - 120*				
Surr: Phenol-d6	*5.206*	*0.20*	*5*	*0*	*104*	*20 - 120*				

LCS Sample ID: **LCS-154116** Units: **ug/L** Analysis Date: **10-Jun-2020 12:14**
Client ID: Run ID: **SV-7_363058** SeqNo: **5615214** PrepDate: **04-Jun-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	3.496	0.20	5	0	69.9	19 - 121				
Surr: 2,4,6-Tribromophenol	*4.219*	*0.20*	*5*	*0*	*84.4*	*34 - 129*				
Surr: 2-Fluorophenol	*4.557*	*0.20*	*5*	*0*	*91.1*	*20 - 120*				
Surr: Phenol-d6	*5.445*	*0.20*	*5*	*0*	*109*	*20 - 120*				

LCSD Sample ID: **LCSD-154116** Units: **ug/L** Analysis Date: **10-Jun-2020 12:33**
Client ID: Run ID: **SV-7_363058** SeqNo: **5615215** PrepDate: **04-Jun-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	3.623	0.20	5	0	72.5	19 - 121	3.496	3.59	20	
Surr: 2,4,6-Tribromophenol	*3.859*	*0.20*	*5*	*0*	*77.2*	*34 - 129*	*4.219*	*8.92*	*20*	
Surr: 2-Fluorophenol	*4.482*	*0.20*	*5*	*0*	*89.6*	*20 - 120*	*4.557*	*1.66*	*20*	
Surr: Phenol-d6	*5.22*	*0.20*	*5*	*0*	*104*	*20 - 120*	*5.445*	*4.22*	*20*	

The following samples were analyzed in this batch: HS20060152-19

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060152

QC BATCH REPORT

Batch ID: 154141 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-154141** Units: **ug/Kg** Analysis Date: **05-Jun-2020 13:27**
Client ID: Run ID: **SV-6_362737** SeqNo: **5608343** PrepDate: **05-Jun-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	U	6.6								
Surr: 2,4,6-Tribromophenol	*99.49*	*0*	*167*	*0*	*59.6*	*36 - 126*				
Surr: 2-Fluorophenol	*91.2*	*0*	*167*	*0*	*54.6*	*37 - 125*				
Surr: Phenol-d6	*137.9*	*0*	*167*	*0*	*82.6*	*40 - 125*				

LCS Sample ID: **LCS-154141** Units: **ug/Kg** Analysis Date: **05-Jun-2020 13:47**
Client ID: Run ID: **SV-6_362737** SeqNo: **5608344** PrepDate: **05-Jun-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	108.4	6.6	167	0	64.9	23 - 136				
Surr: 2,4,6-Tribromophenol	*127.1*	*0*	*167*	*0*	*76.1*	*36 - 126*				
Surr: 2-Fluorophenol	*111.2*	*0*	*167*	*0*	*66.6*	*37 - 125*				
Surr: Phenol-d6	*133.8*	*0*	*167*	*0*	*80.1*	*40 - 125*				

MS Sample ID: **HS20060149-02MS** Units: **ug/Kg** Analysis Date: **05-Jun-2020 15:04**
Client ID: Run ID: **SV-6_362737** SeqNo: **5608347** PrepDate: **05-Jun-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	186.4	13	330.3	0	56.5	23 - 136				
Surr: 2,4,6-Tribromophenol	*233.2*	*0*	*330.3*	*0*	*70.6*	*36 - 126*				
Surr: 2-Fluorophenol	*201*	*0*	*330.3*	*0*	*60.9*	*37 - 125*				
Surr: Phenol-d6	*241*	*0*	*330.3*	*0*	*73.0*	*40 - 125*				

MSD Sample ID: **HS20060149-02MSD** Units: **ug/Kg** Analysis Date: **05-Jun-2020 15:24**
Client ID: Run ID: **SV-6_362737** SeqNo: **5608348** PrepDate: **05-Jun-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Pentachlorophenol	202.9	13	333.6	0	60.8	23 - 136	186.4	8.45	30	
Surr: 2,4,6-Tribromophenol	*217.6*	*0*	*333.6*	*0*	*65.2*	*36 - 126*	*233.2*	*6.93*	*30*	
Surr: 2-Fluorophenol	*167.2*	*0*	*333.6*	*0*	*50.1*	*37 - 125*	*201*	*18.3*	*30*	
Surr: Phenol-d6	*223.2*	*0*	*333.6*	*0*	*66.9*	*40 - 125*	*241*	*7.67*	*30*	

The following samples were analyzed in this batch: HS20060152-12, HS20060152-13, HS20060152-14, HS20060152-15, HS20060152-16, HS20060152-17, HS20060152-18, HS20060152-20, HS20060152-21

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060152

QC BATCH REPORT

Batch ID: **R363062 (0)** **Instrument:** **Balance1** **Method:** **MOISTURE - ASTM D2216**

DUP Sample ID: **HS20060152-10DUP** Units: **wt%** Analysis Date: **10-Jun-2020 14:20**
Client ID: **SO-1620-SS0212(2-4)-20200602** Run ID: **Balance1_363062** SeqNo: **5615285** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	18.1	0.0100					17.9	1.11	20	

The following samples were analyzed in this batch:

HS20060152-01	HS20060152-02	HS20060152-03	HS20060152-04
HS20060152-05	HS20060152-06	HS20060152-07	HS20060152-08
HS20060152-09	HS20060152-10	HS20060152-11	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060152

QC BATCH REPORT

Batch ID: R363063 (0) **Instrument:** Balance1 **Method:** MOISTURE - ASTM D2216

DUP Sample ID: **HS20060152-20DUP** Units: **wt%** Analysis Date: **10-Jun-2020 14:45**
Client ID: **SO-1620-FD01-20200603** Run ID: **Balance1_363063** SeqNo: **5615295** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	17.3	0.0100					16.8	2.93	20	

The following samples were analyzed in this batch:

HS20060152-12	HS20060152-13	HS20060152-14	HS20060152-15
HS20060152-16	HS20060152-17	HS20060152-18	HS20060152-20
HS20060152-21			

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20060152**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/Kg-dry	Milligrams per Kilogram- Dry weight corrected
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	20-030-0	26-Mar-2021
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322020-4	09-May-2021
Kansas	E-10352 2019-2020	31-Jul-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
Oklahoma	2019-141	31-Aug-2020
Texas	T104704231-20-26	30-Apr-2021

Sample Receipt Checklist

Work Order ID: HS20060152 **Date/Time Received:** **03-Jun-2020 12:15**

Client Name: PBW **Received by:** **Patrick Salome**

Completed By: */S/ Jared R. Makan* (eSignature) 03-Jun-2020 19:56 (Date/Time) **Reviewed by:** */S/ Dane J. Wacasey* (eSignature) 04-Jun-2020 13:43 (Date/Time)

Matrices: **Water, Soil** Carrier name: **ALS Courier**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	2 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:216939, 216938, 216942
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	1.6°C, 3.8° UC/C	IR25
Cooler(s)/Kit(s):	43535, 25487	
Date/Time sample(s) sent to storage:	06/03/2020 19:57	

Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

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Everett, WA +1 425 356 2600
Holland, MI +1 616 399 6070

Chain of Custody Form

Page 1 of 2

COC ID: 216939

HS20060152

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-13-Rev0 SR 92688
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address	

A	8270_LOW_S (5632632 SVOC Pentachlorophenol)
B	MOIST_ASTM (5631931 Gen.Chem. MOIST%)
C	PH_S (5652651 pH)
D	CONTINGENCY (For SPLP Pentachlorophenol)
E	
F	
G	
H	
I	
J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620-SS016(0-2)-20200602	6.2.20	12:10	Soil	S	1	X	X									
2	" -SS016(2-4)- "		12:18														
3	" -SS017(0-2)- "		12:20														
4	" -SS017(2-4)- "		12:25														
5	" -SS018(0-2)- "		12:30														
6	" -SS018(2-4)- "		12:35														
7	" -SS021(0-2)- "		14:55														
8	" -SS021(2-4)- "		15:00														
9	" -SS212(0-2)- "		15:05														
10	" -SS212(2-4)- "		15:10														

Sampler(s) Please Print & Sign: Sawah Bolton Sawah Bolton Blake Strain

Shipment Method: Courier

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by:	Date: 6.3.20	Time: 11:40	Received by:	
Relinquished by:	Date: 6-5-20	Time: 12:15	Received by (Laboratory):	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

Notes: UPRR HWPW 1620-13

Cooler ID	Cooler Temp.
43535	1.6
25487	3.8

QC Package: (Check One Box Below)

- [ ] Level II Std QC
- [ ] Level III Std QC/Raw Data
- [ ] Level IV SW846/CLP
- [ ] Other
- [X] TRRP-Checklist
- [ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Chain of Custody Form

Page 2 of 3

COC ID: 216938

HS20060152

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information			
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A	8270_LOW_S (5632532 SVOC Pentachlorophenol)
Work Order		Project Number	1620-13-Rev0 SR 92688	B	MOIST_ASTM (563 1931 Gen.Chem. MOIST%)
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P	C	PH_S (5652651 pH)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	CONTINGENCY (For SPLP Pentachlorophenol)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620-SS0213(0-2)-20200602	6.2.20	16:45	Soil	8	1	X	X									
2	" -SS0213(2-4)- "	6.2.20	16:50														
3	" -SS0 19 (0-2)-20200603	6.3.20	9:45														
4	" -SS019 (2-4) - "		9:50														
5	" -SS0 20 (0-2) - "		9:55														
6	" -SS0 20(2-4) - "		10:00														
7	" -SS0223(0-2)- "		10:50														
8	" -SS0223(2-4) - "		10:55														
9	" - EB01 - "		8:15														
10	" - FD01 - "		10:10														

Sampler(s) Please Print & Sign: Sarah Balke, Sarah Balke, Blake Sorsen

Shipment Method: Courier

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

	Date:	Time:		
Relinquished by:	6.3.20	11:40	Received by:	
Relinquished by:	6-3-20	1215	Received by (Laboratory):	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

Notes: UPRR HW/PW 1620-13

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)

- [ ] Level II Std QC
- [ ] Level III Std QC/Raw Data
- [ ] Level IV SW846/CLP
- [ ] Other
- [X] TRRP Checklist
- [ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
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Holland, MI
+1 616 399 6070

Chain of Custody Form

Page 3 of 3

COC ID: 216942

HS20060152

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-13-Rev0 SR 92688
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address	

A	8270_LOW_S (5632532_SVOC Pentachlorophenol)
B	MOIST_ASTM (5631931 Gen.Chem. MOIST%)
C	PH_S (5652651 pH)
D	CONTINGENCY (For SPLP Pentachlorophenol)
E	
F	
G	
H	
I	
J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620-FD02-20200603	6.3.20	11:05	Soil	8	1	X	X									
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Sarah Baker Blake Shaver

Shipment Method: Courier

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other:

Results Due Date:

Relinquished by: Sarah Baker — Date: 6.3.20 — Time: 11:40 — Received by:

Relinquished by: — Date: 6-3-20 — Time: 1215 — Received by (Laboratory):

Logged by (Laboratory): — Date: — Time: — Checked by (Laboratory):

Notes: UPRR HWPW 1620-13

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)

[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[X] TRRP Cat. Haz
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
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Appendix 3B

Soil Vapor Intrusion Assessment Interim Report dated March 31, 2020 and Updated Soil Vapor Intrusion Assessment Interim Report dated August 4, 2020

March 31, 2020 Project No. 19119232

Ms. Maureen Hatfield
Texas Commission on Environmental Quality
VCP-CA Section, Team 1, Remediation Division, MC-127
P.O. Box 13087
Austin, Texas 78711-3087

SOIL VAPOR INTRUSION ASSESSMENT INTERIM REPORT
UNION PACIFIC RAILROAD HOUSTON WOOD PRESERVING WORKS FACILITY
4910 LIBERTY ROAD, HOUSTON, TEXAS
POST-CLOSURE CARE PERMIT NO. HW-50343; INDUSTRIAL SWR NO. 31547

Dear Ms. Hatfield,

Golder Associates Inc (Golder) is pleased to provide, on behalf of Union Pacific Railroad (UPRR), this Interim Report preliminarily summarizing the vapor intrusion (VI) evaluation conducted at the UPRR former Houston Wood Preserving Works (HWPW) site (the Site). This letter details the VI evaluation background, overview of potential vapor migration processes, field procedures, soil and soil gas sample collection, quality control/quality assurance, and data evaluation, as discussed below.

Background

The Texas Commission on Environmental Quality (TCEQ) issued the 4th Technical Notice of Deficiency (TNOD) dated April 11, 2019 requesting UPRR conduct a supplemental groundwater evaluation for potential VI from the A-Transmissive Zone (A-TZ) in the residential area north of the Site near monitoring well MW-68B (detailed in TCEQ Deficiency ID T59). UPRR completed the agreed upon groundwater evaluation in May 2019 and submitted the results of the evaluation in a letter dated July 3, 2019 that was included in Appendix 3 of the Conceptual Response Action Plan – Revision No. 4 dated July 9, 2019. The results of the groundwater evaluation documented that chemicals of concern (COC) concentrations in groundwater from the May 2019 sampling event at A-TZ monitoring well MW-68A (installed next to MW-68B) were below the conservative screening values estimated by U.S. Environmental Protection Agency's (EPA's) VI Screening Level (VISL) calculator (EPA, 2019) and indicated the VI pathway was incomplete.

The TCEQ acknowledged the July 3, 2019 letter and requested further evaluation of the VI pathway in a letter dated September 6, 2019. UPRR, Golder and TCEQ met on September 23, 2019 at the TCEQ Austin Office to discuss options to further evaluate the VI pathway. Based on those discussions, Golder, on behalf of UPRR, submitted a response letter dated October 23, 2019 to the TCEQ comment letter dated September 6, 2019 detailing the proposed VI assessment through a soil gas evaluation north of the Site. The TCEQ issued a letter dated December 13, 2019 requesting a meeting to discuss the proposed VI field activities. The proposed VI assessment field activities were discussed during the meeting on December 19, 2019 between UPRR, Golder,

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2201 Double Creek Dr, Suite 4004, Round Rock, Texas, USA 78664 T: +1 512 671-3434 F: +1 512 671-3446

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and TCEQ. Based on that meeting, Golder on behalf of UPRR, submitted the Proposed Vapor Intrusion Assessment Work Plan (Work Plan) dated December 20, 2019 to the TCEQ for review. The TCEQ issued a comment letter on the Work Plan dated December 23, 2019. A revised Work Plan was submitted to the TCEQ on January 2, 2020 and was approved by the TCEQ in a letter dated January 3, 2020 and field activities were initiated on January 29, 2020. A change in soil gas probe installation procedures was needed due to field conditions, and an updated Work Plan dated January 31, 2020 was submitted following a conference call with the TCEQ on January 30, 2020 to modify the January 2, 2020 work plan to document the modified installation procedures. The updated plan was approved via e-mail from the TCEQ on January 31, 2020 with the request that soil gas probes be allowed to equilibrate for 10 days after installation prior to soil gas sample collection.

Overview of Potential Vapor Migration Processes

Vapor intrusion describes the migration of hazardous vapors from a subsurface source, such as impacted soil or groundwater, into an overlying building. This migration may occur through subsurface soils and then through foundations and basements, or through preferential pathways such as utility conduits or other openings in the buildings. As outlined in the EPA's guidance document, *OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air*, VI is considered a potential human exposure pathway, with the pathway only considered complete when all of the following conditions are met (EPA, 2015a):

- A source of vapors is present underneath or near the buildings;
- Vapor migration from the source to the building (receptor) can occur;
- The vapors can enter the building;
- Chemicals associated with the vapor source are found in the building; and
- The buildings are occupied when the chemicals associated with the vapor source are present.

If all of these conditions are met, then the VI pathway may be complete and there may be an opportunity for human exposure, which indicates additional analysis may be required to determine if an exposure condition exists. If one or more of these conditions are not present and are not reasonably expected to be present in the future, the VI pathway is considered "incomplete". An example of a condition that would render the pathway incomplete is if vapor migration is impeded by the geology, hydrogeology, or biochemical (biodegradation) conditions present at a site. A determination that the VI pathway is incomplete should be supported by site-specific information that shows the nature and extent of the vapor source in the subsurface is well understood, and that the vapor sources, vadose zone conditions, and surrounding infrastructure would not allow for the unattenuated or enhanced migration of vapors. If the VI pathway is shown to be incomplete, additional VI investigation and mitigation is typically not necessary (EPA, 2015b).

In addition to the general guidance for addressing vapor intrusion, EPA has developed a companion guide to address VI specifically associated with petroleum hydrocarbons (*Technical Guide for Addressing Petroleum Vapor Intrusion at Leaking Underground Storage Tank Sites*). This guidance recognizes the difference between petroleum hydrocarbon vapor intrusion (PVI) and VI associated with other volatile chemicals. While the PVI guidance is primarily intended to address releases associated with underground storage tank (UST) releases, the guidance is also appropriate for evaluating non-UST sites that may have similar characteristics (i.e., size, chemicals of concern) (EPA, 2015a). PVI is a sub-category of VI that occurs when volatile petroleum

hydrocarbons released as vapors from various subsurface sources (free product, soil, groundwater) migrate into buildings through the vadose zone. The migration of petroleum hydrocarbon vapors can be highly limited by biodegradation occurring in the vadose zone. The amount of biodegradation is dependent on the strength of the vapor source, the distance the vapors travel through the soil of the vadose zone, and availability of oxygen (O_2) in the vadose zone (ITRC, 2014).

Field Procedures

As described in the approved Work Plan, Golder installed 22 shallow, single-depth soil gas probes off-site within the City of Houston Right-of-Way (ROW) to evaluate the VI pathway at the Site (Figure 1). Soil gas probe installation began on January 29, 2020 in accordance with the procedures outlined in the approved Work Plan. Prior to the start of activities, Golder obtained required permits from the City of Houston, conducted the necessary utility notifications (i.e. 811 One Call and reviewed City of Houston utility maps), and used a private utility locator using ground penetrating radar (GPR) to scan each proposed location. Boreholes and soil gas point installation was completed by Cascade Environmental, a Texas-licensed drilling firm subcontracted by Golder. On January 29, 2020, soil gas points were advanced using a hand-auger. During installation of the second soil gas probe, the field crew encountered material at a depth of around 5.5 feet below ground surface that was suspected to potentially be a buried utility pipe. Upon further investigation, the material encountered was identified as buried brick and concrete debris within general fill material and not associated with an underground utility. The depth of the debris (approximately 3 to 4 feet bgs) and other environmental variables, such as soil moisture, prevented GPR from locating anomalies deeper than 2 feet with confidence. Therefore, in consideration of this encounter and given the high potential for the presence of underground utilities in the area that could not be located using GPR or identified on city utility maps (i.e., private sanitary sewer service lines), Golder proposed modifying the soil gas probe installation procedures to use hydrovac excavation methods (i.e., excavation using a high-pressure water probe and vacuum) to advance the remaining boreholes. This modification to the Work Plan was approved by the TCEQ via e-mail on January 31, 2020.

The general lithology of the borings consisted of brown sandy clay from the surface to a depth of approximately 4 feet below ground surface (bgs) with a light grey clay with sand present from approximately 4 to 6 feet bgs. Except at locations SG-22 and SG-21, historical debris such as brick, concrete, and glass were found in the boreholes at a depth interval from approximately 2 to 3.5 feet bgs.

Soil gas points were constructed in accordance with EPA guidance and the approved Work Plan procedures (Figure 2). First, the boreholes for the soil gas points were backfilled from the bottom of the hole (6 feet bgs) to 5.5 feet bgs with a filter pack of industrial silica sand. Next, a 6-inch long by 0.5-inch in diameter soil vapor implant, composed of a stainless-steel mesh screen with a 0.15 mm pore size, was connected to ¼-inch outer diameter Teflon tubing with a Swagelok compression fitting and placed into the borehole. Filter pack material was backfilled around the soil vapor implant to a depth of 5 feet bgs. The borehole was then backfilled with bentonite by hydrating bentonite granules from 5 feet bgs to 1 feet bgs. The upper foot of the borehole was sealed with cement and the tubing housed in a 5-inch diameter flush-mount vault centered in a concrete pad (SG-22, SG-21, SG-20, SG-14 and SG-06) or concrete/asphalt road/sidewalk. The sample tubing extending from the sample point was sealed and coiled inside the vault.

The approximate location of each soil gas point was surveyed in the field using a Trimble handheld GPS unit.

Soil Sample Collection

During the installation of the soil gas points, hydrovac advancement was halted to collect an undisturbed soil sample from the 0.5 to 1 feet interval and the 5.5 to 6 feet interval at each location. The undisturbed soil sample was collected using a 1-inch diameter soil probe with a 12-inch long plastic liner within the collection chamber. The samples were field screened with a MiniRAE Photoionization Detector (PID) for the presence of VOCs. Prior to sampling, the PID was calibrated using 100 parts per million by volume (ppmV) isobutylene standard. The soil probe was decontaminated after each sample collection and a new plastic sleeve replaced the used one.

Soil samples were placed in laboratory-supplied containers, stored on ice in an insulated cooler, and delivered to ALS Environmental in Houston, Texas for analysis of benzene, ethylbenzene, and xylenes by EPA Method 8260 and naphthalene by EPA Method 8270. A completed chain-of-custody accompanied the samples through receipt at the analytical laboratory. Copies of the laboratory report and a data usability summary prepared pursuant to Texas Risk Reduction Program (TRRP)-13 Guidance are included in Attachment 1. A summary of the soil analytical results and PID readings is provided in Table 1.

Soil Gas Sample Collection

Soil gas samples were collected a minimum of 10 days after the installation of the sample points using the procedures described in the approved Work Plan. A leak check was performed at each sample point using helium gas as a tracer. The leak check was conducted by introducing helium gas into a shroud over the sample point and measuring the concentration of helium in the shroud, around 20% to 50% during this check, and then measuring the concentration of helium in vapor from the sampling point. An MGD-2002 helium detector was used to measure the initial tracer gas concentration in the shroud and in the soil gas point. Helium was not detected in any of the soil gas points indicating that the sample points were adequately sealed from ambient air.

Prior to sample collection, each sample point was purged of approximately 90 milliliters (ml) of air. Soil gas samples were collected using laboratory certified-clean 1-L summa canisters. The vacuum on each canister was verified prior to sample collection and the sample train was checked for leaks using a shut-in/vacuum test prior to sampling. The canister was connected to a sampling train consisting of a “T” fitting and two valves. A shut-in/vacuum test was performed on the sampling train to check for leaks. To collect the sample, the sample tubing was connected directly to the sampling train summa canister using a compression fitting. The sample was collected by opening the valve on the summa canister and monitoring the vacuum as the sample was collected. Samples were collected at a flow rate of 200 ml/minute using flow controllers set and provided by the laboratory. Based on the vacuum readings observed during sample collection, the sample collection rate was consistent with a flow rate of 200 ml/minute. To collect the duplicate sample, a “T” fitting was added to the sample train and the parent and duplicate sample collected concurrently.

Soil gas sample collection began on February 19, 2020. During this sampling event, it was observed that water had infiltrated sample points SG-03, SG-09, and SG-13. The next sampling event was scheduled for February 27, 2020 (to meet the minimum 10 days after installation requirement). On February 25, 2020, the remaining soil gas sample points were checked for water by connecting a peristaltic pump to the installation tubing. If water was discovered, the soil gas points were purged until dry. Water had infiltrated 9 of the 22 soil gas points (SG-01 through SG-07, SG-09, and SG-13) and they were purged dry, except for SG-03. Water recharged in SG-03 at a rate equal to the pump rate. On February 27, 2020, Golder representatives were on-site to collect the remaining soil gas samples with oversight from TCEQ representatives. Water had re-infiltrated the soil gas points (SG-01

through SG-07, SG-09, and SG-13) that had been purged dry two days prior and were not able to be sampled. A review of various state and federal guidance documents did not reveal any corrective measures to be implemented when soil gas points become saturated water. However, per the analytical laboratory, a vapor sample would be compromised if water were to enter the summa canister during sampling, and the water would likely cause damage to the summa canister. Based on discussions with TCEQ staff, the TCEQ agreed that these water saturated soil gas probes would not be sampled.

Following collection, soil gas samples were shipped to Pace Analytical in Minneapolis, Minnesota for analysis of benzene, ethylbenzene, naphthalene, and xylenes by EPA Method TO-15. A completed chain-of-custody accompanied the samples through receipt at the analytical laboratory. Copies of the laboratory reports and a data usability summary prepared pursuant to TRRP-13 Guidance are included in Attachment 2. A summary of the soil gas analytical results is provided in Table 2.

Quality Assurance/Quality Control

Sampling activities were conducted in accordance with general industry standard practices and as specified in the approved Work Plan. Samples were handled under appropriate chain-of-custody documentation. To confirm the accuracy and reproducibility of the laboratory analytical results, the analytical laboratory implements a program that includes laboratory replicate samples, method blanks and control standards. The laboratory QA/QC data generated during the sample analysis are included in the laboratory analytical report provided to Golder (provided as Attachments 1 and 2 to this letter report). Field QA/QC protocols included field duplicate samples and ambient air control samples AA-1 (2/19/2020) and AA-2 (2/27/2020) that were collected during sampling events to assess background conditions. The ambient air control samples were collected within the vicinity of the soil gas points in 6-liter summa canisters with a 200 ml/minute flow regulator. A sample of the helium used for the leak test procedure, HE-1, was also collected by providing a constant flow of helium gas to the summa canister inlet. Analytical results of the control samples are summarized in Table 2.

The analytical data were validated pursuant to TRRP-13 Guidance. Data usability summaries are included in Attachments 1 and 2.

Data Evaluation

Pursuant to TRRP procedures, analytical data for the soil samples collected from each soil gas boring were compared to the lesser value between the TRRP Residential (30 acre) $^{Tot}Soil_{Comb}$ Protective Concentration Level (PCL) and the $^{GW}Soil_{Ing}$ PCL for surface soils, which is the Residential Assessment Level (RAL). Benzene, ethylbenzene, xylene, and naphthalene concentrations in the soil samples collected during the soil gas probe installation were generally not detected and in all cases were below applicable RALs (Table 1). These data support a conclusion that the vertical separation distance between potential receptors at the ground surface, and the potential source of contamination (groundwater), is greater than 6 feet (the base depth of the deeper soil samples collected for this evaluation).

Consistent with the approved Work Plan, soil gas analytical results were compared to the target soil gas assessment levels which are calculated by dividing the TRRP Residential Risk-Based Exposure Limits (RBELs) for inhalation ($^{Air}RBEL_{Inh}$) by an attenuation factor of 0.03 (US EPA, 2015b) for soil gas. The inhalation RBELs apply to sites under TRRP and are considered protective concentrations for a COC in air at the point of exposure (POE) for human inhalation. The RBEL is adjusted using the specified attenuation factor to account for the following: (1) the soil gas sample does not represent an indoor air concentration (i.e. in a POE sample) and (2)

that COC attenuation through multiple processes (e.g., dispersion, biodegradation, etc.) is anticipated if vapors were to migrate from the vadose zone to an indoor air receptor. As shown in Table 2, benzene, ethylbenzene, naphthalene, and xylene concentrations in all of the soil gas samples were orders of magnitude less than their respective target soil gas assessment levels.

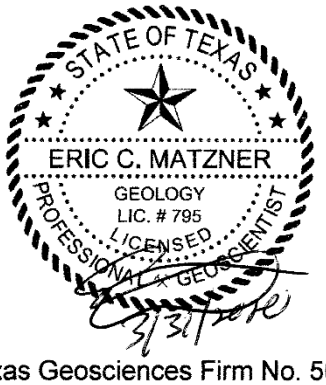
Based on the vertical separation distance and benzene, ethylbenzene, xylenes, and naphthalene concentrations in soil gas samples collected for this evaluation, it is concluded that the vapor intrusion pathway is incomplete.

Options for assessing the areas where the nine soil gas probes contained water and could not be sampled are currently being evaluated based on discussions with the TCEQ. Any additional soil gas sampling activities will be submitted to the TCEQ in a separate report.

If you have any questions or comments, please feel free to give Mr. Kevin Peterburs of UPRR (414-267-4164) or us a call.

Sincerely,

Golder Associates Inc.



Tim Nickels
Senior Consultant

Eric Matzner, P.G.
Principal Hydrogeologist

Texas Geosciences Firm No. 50369

CC: TCEQ Region 12, Houston Texas

Attachments: Table 1 – Summary of Soil Analytical Results
Table 2 – Summary of Soil Gas Analytical Results
Figure 1 – Soil Gas & Surface Soil Sampling Locations
Figure 2 – Soil Gas Probe Construction Diagram
Attachment 1 – Soil Samples – Data Usability Summary and Laboratory Analytical Reports
Attachment 2 – Soil Gas Samples – Data Usability Summary and Laboratory Analytical Reports

References

United States Environmental Protection Agency (EPA), 2015a. *Technical Guide for Addressing Petroleum Vapor Intrusion at Leaking Underground Storage Tank Sites* (EPA 510-R-15-001), June.

EPA, 2015b. *OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air* (OSWER Publication 9200.2-154), June.

EPA, 2019. Vapor Intrusion Screening Level (VISL) calculator, https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator. Accessed April 2019.

Interstate Technology & Regulatory Council (ITRC), 2014. *Petroleum Vapor Intrusion: Fundamentals of Screening, Investigation, and Management*.

TABLES

Table 1

Summary of Soil Analytical Results
UPRR Houston Wood Preserving Works

Sample Location	Sample Depth (ft BGS)	Field PID	Sample Date	Benzene	Ethylbenzene	Xylenes	Naphthalene
TRRP Tier 1 Residential Assessment Level (mg/kg)				*0.013*	*3.8*	*61*	*16*
SG-01	0.5-1	0	2/11/2020	<0.00059	<0.00082	<0.0012	<0.00070
SG-01	5.5-6	0	2/11/2020	<0.00082	<0.0011	<0.0016	<0.00073
SG-02	0.5-1	0	2/10/2020	<0.00053	<0.00075	<0.0011	**0.0024 J**
SG-02	5.5-6	0	2/10/2020	<0.00037	<0.00051	<0.00073	<0.00079
SG-03	0.5-1	0.3	2/5/2020	<0.00037	<0.00052	**0.0066**	**0.0018 J**
SG-03	5.5-6	0.1	2/5/2020	<0.00071	<0.0010	<0.0014	**0.0017 J**
SG-04	0.5-1	0	2/10/2020	<0.00044	<0.00061	<0.00087	<0.00071
SG-04	5.5-6	0.1	2/10/2020	<0.00068	<0.00096	<0.0014	<0.00072
SG-05	0.5-1	0.5	2/10/2020	<0.00037	<0.00051	<0.00073	**0.0049**
SG-05	5.5-6	0	2/10/2020	<0.00078	<0.0011	<0.0016	<0.00074
SG-06	0.5-1	0.1	2/17/2020	<0.00065	<0.00091	<0.0013	<0.0067
SG-06	5.5-6	0	2/17/2020	<0.00042	<0.00059	<0.00084	<0.00071
SG-07	0.5-1	0	2/17/2020	<0.00058	<0.00082	<0.0012	**0.0071 J**
SG-07	5.5-6	0	2/17/2020	<0.00036	<0.00050	<0.00072	<0.00072
SG-08	0.5-1	0.8	2/7/2020	<0.00062	<0.00087	<0.0012	**0.0034 J**
SG-08	5.5-6	1.8	2/7/2020	<0.00038	<0.00053	<0.00075	**0.0014 J**
SG-09	0.5-1	--	2/3/2020	<0.00052	<0.00074	<0.0010	**0.0042**
SG-09	5.5-6	0.5	2/3/2020	<0.00082	<0.0012	<0.0016	<0.00072
SG-10	0.5-1	0.3	2/7/2020	<0.00052	<0.00072	<0.0010	**0.0056**
SG-10	5.5-6	1.1	2/7/2020	<0.00039	<0.00054	<0.00077	<0.00072
SG-11	0.5-1	0.4	2/6/2020	<0.00070	<0.00098	<0.0014	**0.0084 J**
SG-11	5.5-6	0.5	2/6/2020	<0.00032	<0.00045	<0.00064	**0.0011 J**
SG-12	0.5-1	0	2/17/2020	<0.00062	<0.00087	<0.0012	**0.0039**
SG-12	5.5-6	0	2/17/2020	<0.00060	<0.00084	<0.0012	<0.00071
SG-13	0.5-1	--	2/3/2020	<0.00076	<0.0011	<0.0015	<0.00075
SG-13	5.5-6	--	2/3/2020	<0.00049	<0.00068	<0.00097	<0.00071
SG-14	0.5-1	0	2/17/2020	<0.00030	<0.00042	<0.00061	**0.0027 J**
SG-14	5.5-6	0	2/17/2020	<0.00037	<0.00051	<0.00073	<0.00077
SG-15	0.5-1	0.2	2/13/2020	<0.00050	<0.00070	<0.0010	**0.014**
SG-15	5.5-6	0.1	2/13/2020	<0.00032	<0.00045	<0.00065	<0.00071
SG-16	0.5-1	0.1	2/13/2020	<0.00066	<0.00093	<0.0013	**0.0099**
SG-16	5.5-6	0	2/13/2020	<0.00068	<0.00095	<0.0014	<0.00071
SG-17	0.5-1	0	2/12/2020	<0.00071	<0.0010	<0.0014	**0.0095**
SG-17	5.5-6	0	2/12/2020	<0.00079	<0.0011	<0.0016	**0.0015 J**
SG-18	0.5-1	--	2/3/2020	**0.0034 J**	**0.0034 J**	**0.0056**	<0.00069
SG-18	5.5-6	--	2/3/2020	<0.00054	<0.00076	<0.0011	**0.0041**
SG-19	0.5-1	0	2/12/2020	<0.00059	<0.00082	<0.0012	<0.00069
SG-19 (DUP)	0.5-1	0	2/12/2020	<0.00060	<0.00083	<0.0012	**0.0053**
SG-19	5.5-6	0	2/12/2020	<0.00062	<0.00087	<0.0012	<0.00071
SG-20	0.5-1	0	2/11/2020	<0.00080	<0.0011	<0.0016	<0.00069
SG-20	5.5-6	0	2/11/2020	<0.00072	<0.0010	<0.0014	<0.00071
SG-21	0.5-1	0	1/29/2020	<0.00088	<0.0012	<0.0018	**0.022**
SG-21	5.5-6	0	1/29/2020	<0.00053	<0.00074	<0.0011	**0.01**
SG-22	0.5-1	0	1/29/2020	<0.00061	<0.00085	<0.0012	**0.14**
SG-22	5.5-6	0	1/29/2020	<0.00056	<0.00079	<0.0011	<0.00072

Notes:

1. TCEQ Texas Risk Reduction Program (TRRP) Tier 1 Residential Assessment level (RAL) based on lowest of Soil PCLs GWSoilIng or TotSoilComb (assuming 30 acre source area).
2. Bolded concentrations are greater than the sample detection limit (SDL).
3. J = Result is estimated due to a detected concentration that is less than the MQL but greater than or equal to the SDL.
4. -- = Not Applicable / Not Analyzed.
5. Concentrations in milligrams per kilogram (mg/kg).

Table 2

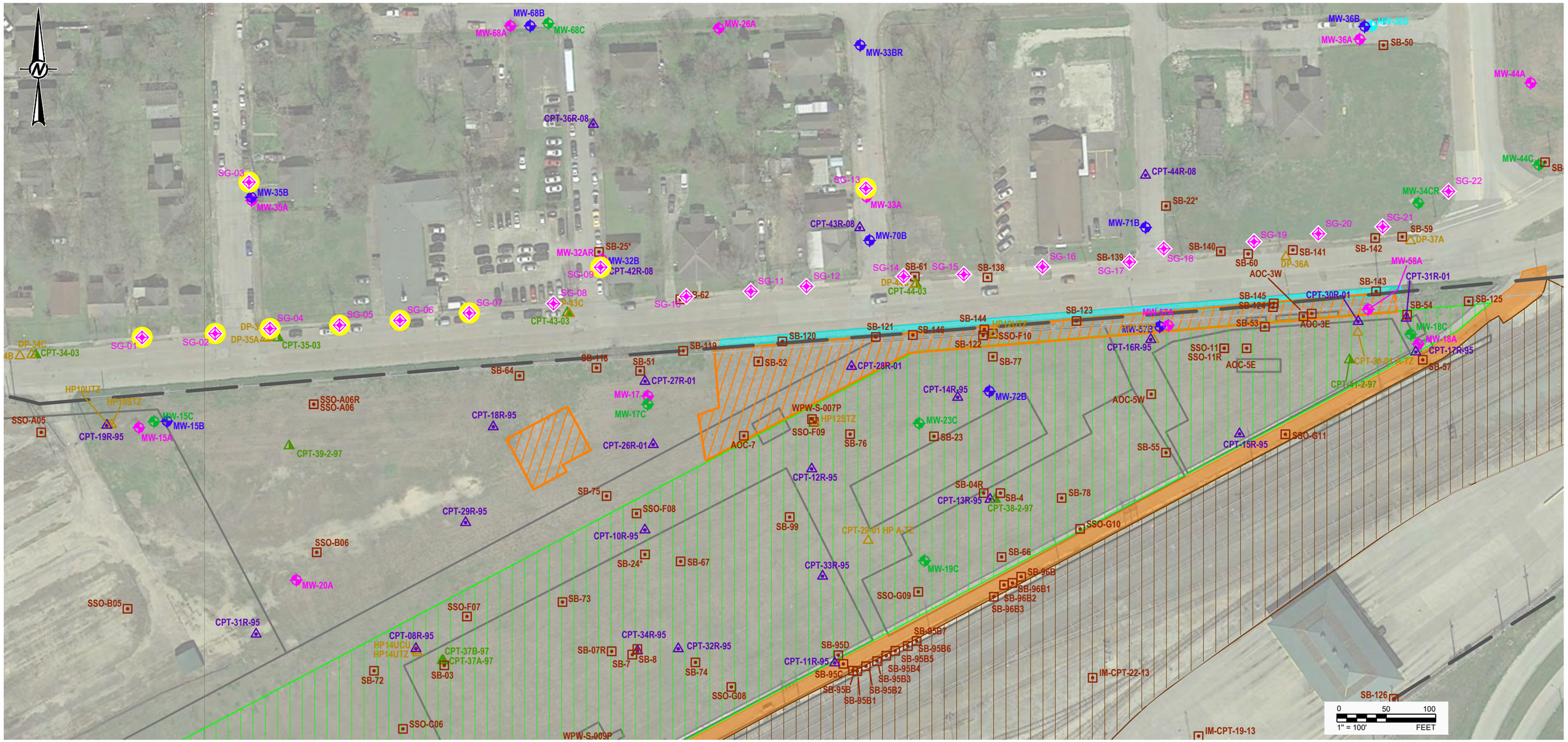
Summary of Soil Gas Analytical Results
UPRR Houston Wood Preserving Works

Sample Location	Sample Date	Benzene	Ethylbenzene	m&p-Xylene	o-Xylene	Naphthalene
	$^{Air}RBEL_{Inh}$ (ug/m^3)	11	2000	640	640	3.1
Target Soil Gas Assessment Level** (ug/m^3)		*367*	*66,667*	*21,333*	*21,333*	*103*
Soil Gas Samples						
SG-08	2/19/2020	**0.31 J**	**0.63 J**	**2.4 J**	**0.81 J**	<2.3
SG-10	2/19/2020	<0.26	**0.54 J**	**2.1 J**	**0.69 J**	<2.2
SG-11	2/19/2020	**0.87**	**5.1**	**13.1**	**7.6**	**3.8 J**
SG-12	2/27/2020	**0.28 J**	<0.54	**1.3 J**	<0.61	<3.1
SG-14	2/27/2020	<0.27	<0.54	<1.2	<0.61	<2.3
SG-15	2/27/2020	<0.26	<0.51	<1.2	<0.58	<3.4
SG-16	2/27/2020	<0.26	**13.4**	**46.9**	**20.9**	<3.1
SG-16 (DUP)	2/27/2020	**0.58**	**14**	**50.6**	**21.5**	<3.2
SG-17	2/27/2020	**0.25 J**	<0.48	**1.1 J**	<0.54	<3.0
SG-18	2/19/2020	**1**	**3.9**	**8**	**3.7**	<2.2
SG-19	2/27/2020	**0.46 J**	<0.51	**1.6 J**	**0.91 J**	<3.5
SG-20	2/27/2020	**0.27 J**	<0.53	**1.7 J**	<0.60	<3.1
SG-21	2/19/2020	<0.26	<0.51	<1.2	<0.58	<2.2
SG-21 (DUP)	2/19/2020	<0.26	<0.51	<1.2	<0.58	<2.2
SG-22	2/19/2020	<0.26	**0.82 J**	**2.5 J**	**0.81 J**	<2.2
Control Samples						
AA-1	2/19/2020	**0.73**	<0.38	<0.88	<0.43	<1.7
AA-2	2/27/2020	**1.1**	<0.37	**0.99 J**	<0.42	<1.6
HE-1	2/19/2020	**5.6**	**3.8**	**22**	**21.2**	<1.3

Notes:

1. Bolded concentrations are greater than the method detection limit (MDL).
2. ** Target soil gas assessment levels calculated by dividing the $^{Air}RBEL_{Inh}$ (Table 9 TRRP PCL Tables last revised November 8, 2019) by the soil gas attenuation factor of 0.03 (EPA, 2015b)
3. J = Result is estimated due to a detected concentration that is less than the MQL but greater than or equal to the SDL.
4. One method blank yielded a low level detection for naphthalene in lab report 10510405. Associated sample results with similar detections to the method blank were qualified as non-detect (see Data Usability Summary in Attachment 2 for details).
5. Concentrations in micrograms per cubic meter (ug/m^3).

FIGURES



LEGEND

- UPRR PROPERTY BOUNDARY
- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION
- B-CZ/B-TZ MONITORING WELL LOCATION
- C-TZ MONITORING WELL LOCATION
- D-TZ MONITORING WELL LOCATION
- CPT WITH ROST LOCATION
- CPT LOCATION
- HYDROPUNCH SAMPLE LOCATION
- SOIL BORING LOCATION
- SOIL CAP AREA (2016)
- ASPHALT CAP AREA
- CONCRETE SIDEWALK CAP AREA
- RAILROAD CAP AREA
- SURFACE SOIL EXCAVATION AREA (2016)
- SOIL GAS AND SURFACE SOIL SAMPLE LOCATION
- SOIL GAS AND SURFACE SOIL SAMPLE LOCATION (SOIL GAS SAMPLE POINT SATURATED WITH WATER)

NOTE(S)

1. * SOIL ANALYTICAL DATA REJECTED BY VALIDATOR.

REFERENCE(S)

BASE MAP TAKEN FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.
AERIAL: GOOGLE EARTH, IMAGERY DATED 2/23/19.

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
SOIL GAS & SURFACE SOIL SAMPLING LOCATIONS

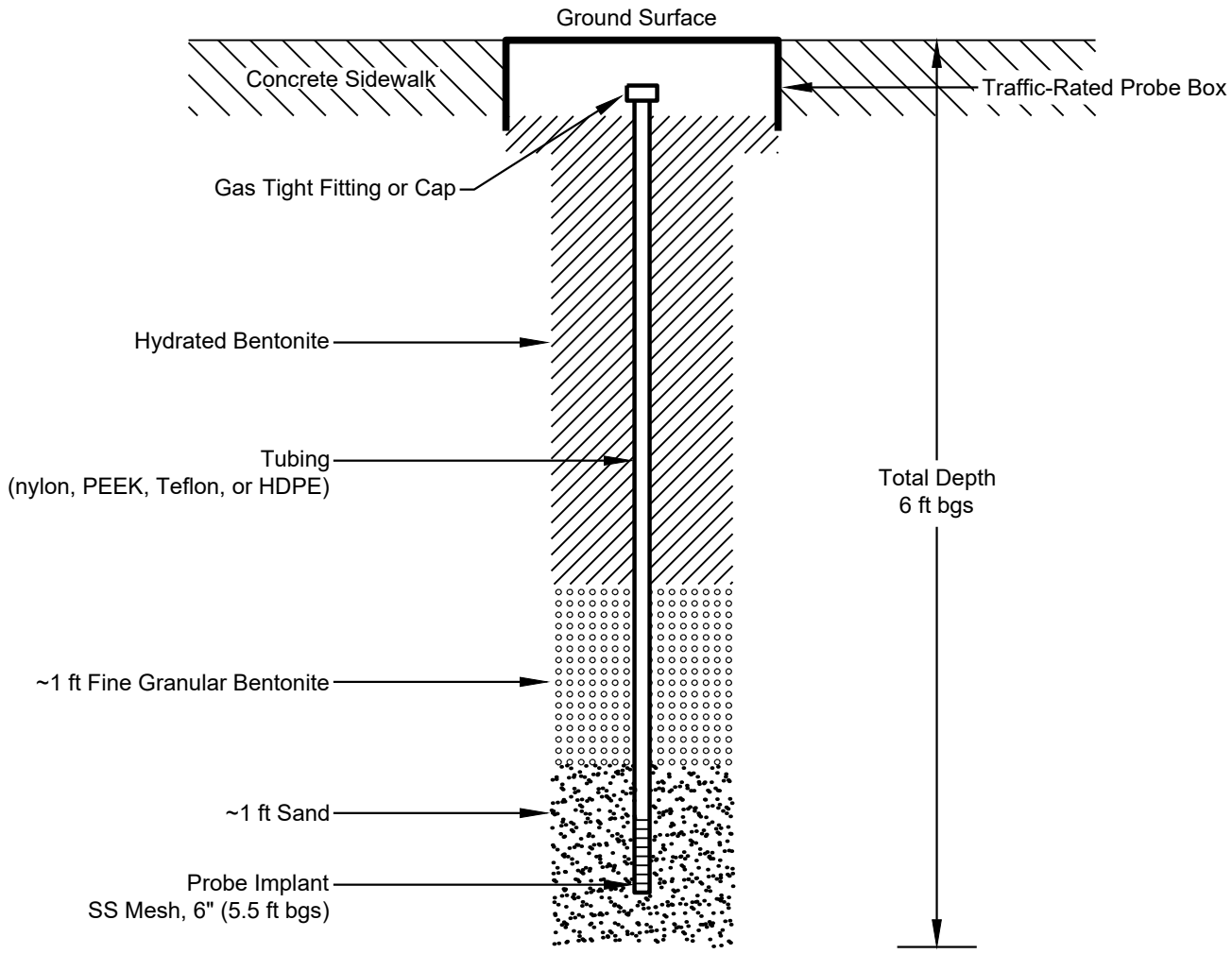
CONSULTANT
GOLDER

YYYY-MM-DD	2020-03-13
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\waxarkansfs\data\Projects - Round Rock_2019\19119232 - HWPW\2020-03 March\ | File Name: FIG 1 - Soil Gas Sampling Locations.dwg | Last Edited By: ajdiamond Date: 2020-03-13 Time:10:30:32 AM | Printed By: ajdiamond Date: 2020-03-13 Time:10:31:30 AM



CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
SOIL GAS PROBE CONSTRUCTION DIAGRAM

CONSULTANT
GOLDER

YYYY-MM-DD	2019-12-20
DESIGNED	AJD
PREPARED	AJD
REVIEWED	ECM
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A

0 1 in

Last Edited By: adiamond Date: 2019-12-20 Time:8:26:39 AM | Printed By: adiamond Date: 2019-12-20 Time:3:05:23 PM
Path: \\texarkanadata\Projects - Round Rock_2019\19119232 - HWPW\2019-9 Sept\ | File Name: FIG 2 - Soil Gas Probe Diagram.dwg

ATTACHMENT 1

Soil Samples - Data Usability Summary and Laboratory Analytical Reports

Memorandum

March 5, 2020
Revision: March 31, 2020

To:	Eric Matzner	Ref. No.:	11183954-1620
From:	Chris G. Knight/eew/554-NF	Tel:	512-506-8803
cc:	Jesse Orth, Jon Lang; Julie Lidstone		

Subject: **Data Usability Summary**
Soil Gas Probes
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2020

1. Scope of Data Usability Study

This document details a Data Usability Summary (DUS) of analytical results for soil samples collected in support of the Soil Gas Probes at the Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works site during January-February 2020. Samples were submitted to ALS Environmental (ALS), located in Houston, Texas and are reported in data packages HS20011451, HS20020120, HS20020243, HS20020308, HS20020445, HS20020506, HS20020571, and HS20020741. The intended use of the data is to support the Soil Gas Probes at the site by providing current concentration of chemicals of concern.

Data were reviewed and validated by Chris G. Knight of GHD, in accordance with Title 30 of the Texas Administrative Code Section 350.54 (30 TAC 350.54) as described in the Texas Commission on Environmental Quality (TCEQ) Regulatory Guidance document entitled "Review and Reporting of COC Concentration Data under TRRP", (RG-366/TRRP-13), revised May 2010, herein referred to as "TRRP-13 Guidance". Evaluation of the data was based on information obtained from the chain of custody forms, the finished report forms, method blank data, recovery data from surrogate spikes/laboratory control samples (LCS)/matrix spikes (MS), field quality assurance/quality control samples (QA/QC), the laboratory review checklists (LRC), and the laboratory exception reports (ER).

A sample collection and analysis summary is presented in Table 1. This summary provides a cross-reference of field sample identification numbers and location identification. Each sample is assigned a unique field identification number.

The validated sample results are presented in Table 2. A summary of the analytical methodology is presented in Table 3.

2. Laboratory Qualifications

The Laboratory's quality assurance program is consistent with the quality standards outlined in the National Environmental Laboratory Accreditation Program (NELAP). This laboratory was accredited under Texas Certification number # TX104704231 at the time the analysis was performed and the certificate is included in Attachment A.

3. Project Objectives

3.1 Sampling/Analytical QA/QC Objectives

The QA/QC program was designed to identify contamination resulting from the sampling, sample transport and analytical process through the analysis of field duplicate sample sets and method blanks. The QA/QC program was designed to evaluate the quality of the resulting data with respect to bias and precision through analysis of LCS and MS analyses.

4. Data Review/Validation Results

4.1 Sample Holding Time and Preservation

Samples were shipped with a chain of custody and the paper work was filled out properly with the following exceptions:

i) HS20011451 - Sample container count differs. The chain of custody states 5 sample containers were submitted, but the laboratory only received 4 sample containers. All 2 oz. amber bottles were received empty. No further action was required.

ii) HS20020120 - Sample container count differs. The chain of custody states 5 sample containers were submitted, but the laboratory only received 4 sample containers. All 2 oz. amber bottles were received empty. No further action was required. Per M. Hermiston, SG-3 samples were placed on hold; and will be re-collected.

iii) HS20020243 - Sample container count differs. The chain of custody states 5 sample containers were submitted, but the laboratory only received 4 sample containers. All 2 oz. amber bottles were received empty. No further action was required.

iv) HS20020445 - Sample container count differs. The chain of custody states 5 sample containers were submitted, but the laboratory only received 4 sample containers. All 2 oz. amber bottles were received empty. No further action was required.

v) HS20020506 - This report was revised. The sample collection date for the field duplicate sample was changed from 2/11/2020 to 2/12/2020. No further action was required.

vi) HS20020741 - Sample container count differs. The chain of custody states 5 sample containers were submitted, but the laboratory only received 4 sample containers. All 2 oz. amber bottles were received empty. No further action was required.

All samples were delivered on ice and stored by the laboratory at the required temperature (0-6°C).

The sample chain of custody documents and the analytical reports were used to determine sample holding times. All samples were prepared and analyzed within the required holding times.

4.2 Sample Containers

Sample containers used were certified pre-cleaned glass containers provided by the laboratory. These containers meet or exceed analyte specifications established in the United States Environmental Protection Agency (USEPA) *Specifications and Guidance for Contaminant-free Sample Containers*.

4.3 Calibrations

According to the LRC, initial calibration and continuing calibration data met the criteria for the selected method.

4.4 Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures. As these were not discrete samples handled in the field, these blanks are not listed on the sample identification cross-reference list found in the data packages.

For this study, laboratory method blanks were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch and results are reported in the laboratory data packages.

The method blank results were non-detect or below the method quantitation limit (MQL), indicating that laboratory contamination was not a factor for this investigation.

4.5 Internal Standard and Surrogate Spike Recoveries

Recoveries of internal standards are addressed in the LRC of the data packages. All internal standard recoveries associated with the compounds of interest were acceptable per the LRC with the following exceptions:

i) SO-1620-SG10(0.5-1)20200207 was reported with one or more of the semi-volatile organic compounds (SVOCs) internal standards were recovered at less than fifty percent. The target compound naphthalene was not associated with the failing internal standards. No further action was required.

ii) SO-1620-SG02(0.5-1) 20200210 and SO-1620-FD01-20200212 were reported with the internal standard Perylene-d12 shifted due to possible matrix effect. The target compound naphthalene was not associated with the failing internal standards. No further action was required.

In accordance with the methods employed, all samples, blanks, and QC samples analyzed for volatile organic compounds (VOCs) and naphthalene are spiked with surrogate compounds prior to sample analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample

matrices. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project. Each individual surrogate compound is expected to meet the laboratory control limits. According to the TRRP-13 Guidelines, one outlying surrogate is acceptable for methods with multiple surrogate spike compounds as long as the recovery is at least ten percent. Sample analyzed at elevated sample dilutions (five times or greater) were not assessed.

Surrogate recoveries were assessed against laboratory control limits and/or the guidance in TRRP-13. All surrogate recoveries met the above criteria.

4.6 Laboratory Control Sample Analysis

LCS are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project.

For this study, LCS were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch.

The LCS contained all compounds specified in the methods. All LCS recoveries were within the laboratory control limits, demonstrating acceptable analytical accuracy.

4.7 Matrix Spike Analysis

To evaluate the effects of sample matrices on the preparation process, measurement procedures, and accuracy of a particular analysis, samples are spiked with known concentrations of the analytes of interest and analyzed as MS/matrix spike duplicate (MSD) samples. The RPD between the MS and MSD is used to assess analytical precision.

An MS/MSD analysis was performed as specified in Table 1. The recovery ranges established by the laboratory is adopted as the acceptance criteria for the project.

The MS/MSD samples were spiked with all compounds specified in the methods. All percent recoveries and the RPD value were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision.

The laboratory also performed additional MS/MSD on non-site samples. These cannot be used to assess accuracy and precision for the site samples.

4.8 Field QA/QC Samples

The field QA/QC consisted of two field duplicate sample sets.

To assess the analytical and sampling protocol precision, two field duplicate sample sets were collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples must be less than fifty percent for soil samples. The RPDs are only used when sample concentrations are above the estimated regions of detection.

Field duplicate summary data are presented in Table 2. All field duplicate results were within acceptable agreement, demonstrating acceptable sampling and analytical precision. SO-1620-DUP1-2020203 was not assessed; the parent sample was not analyzed. No further action was required.

4.9 Field Procedures

Golder Associates, Inc. collected soil samples in accordance with their Standard Operating Procedures (SOP) for sample collection.

4.10 Analyte Reporting

The laboratory reported detected results for each analyte down to the sample detection limit (SDL), which is defined as the method detection limit (MDL) with sample-specific adjustments for dilutions, aliquot size, volumes, etc. Positive analyte detections less than the MQL but greater than the SDL were qualified as estimated (J) in Table 2.

i) The following sample extracts were analyzed at an elevated sample dilution for naphthalene due to a high level of matrix interference: SO-1620-SG11(0.5-1) 20200206, SO-1620-SG07(0.5-1)20200217 and SO-1620-SG06(0.5-1)20200217. No further action was required.

The detectability check standard (DCS) results supported the laboratory MDLs.

All soil results were reported on a dry weight basis.

5. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are usable for the purpose of supporting the Soil Gas Probes at the site by providing current concentration of chemicals of concern in soil samples without qualification.

Table 1

Sample Collection and Analysis Summary
Soil Gas Probes
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

								Analysis/Parameters		
Work Order	**Sample Identification**	**Location**	**Matrix**	**Initial Sample Depth (ft bgs)**	**Final Sample Depth (ft bgs)**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**VOCs**	**Naphthalene**	**Comments**
HS20011451	SO-1620-SG22 (0.5-1) 20200129	SG22	Soil	0.5	1	01/29/2020	09:45	X	X	
	SO-1620-SG22 (5.5-6) 20200129	SG22	Soil	5.5	6	01/29/2020	10:30	X	X	
	SO-1620-SG21 (0.5-1) 20200129	SG21	Soil	0.5	1	01/29/2020	11:30	X	X	
	SO-1620-SG21 (5.5-6) 20200129	SG21	Soil	5.5	6	01/29/2020	14:15	X	X	
HS20020120	SO-1620-SG-18(0.5-1)-2020203	SG18	Soil	0.5	1	02/03/2020	09:45	X	X	
	SO-1620-SG-18(5.5-6)-2020203	SG18	Soil	5.5	6	02/03/2020	10:00	X	X	
	SO-1620-SG-9(0.5-1)-2020203	SG09	Soil	0.5	1	02/03/2020	11:00	X	X	
	SO-1620-SG-9(5.5-6)-2020203	SG09	Soil	5.5	6	02/03/2020	11:35	X	X	
	SO-1620-SG-13(0.5-1)-2020203	SG13	Soil	0.5	1	02/03/2020	14:15	X	X	
	SO-1620-SG-13(5.5-6)-2020203	SG13	Soil	5.5	6	02/03/2020	14:45	X	X	
	SO-1620-DUP1-2020203	SG03	Soil	5.5	6	02/03/2020	12:40	X	X	
HS20020243	SO-1620-SG03(0.5-1) 20200205	SG03	Soil	0.5	1	02/05/2020	10:30	X	X	
	SO-1620-SG03(5.5-6) 20200205	SG03	Soil	5.5	6	02/05/2020	10:45	X	X	
	SO-1620-SG11(0.5-1) 20200206	SG11	Soil	0.5	1	02/06/2020	13:40	X	X	
	SO-1620-SG11(5.5-6) 20200206	SG11	Soil	5.5	6	02/06/2020	14:00	X	X	MS/MSD-P
HS20020308	SO-1620-SG10(0.5-1)20200207	SG10	Soil	0.5	1	02/07/2020	11:10	X	X	
	SO-1620-SG10(5.5-6)20200207	SG10	Soil	5.5	6	02/07/2020	11:30	X	X	
	SO-1620-SG08(0.5-1)20200207	SG08	Soil	0.5	1	02/07/2020	14:00	X	X	
	SO-1620-SG08(5.5-6)20200207	SG08	Soil	5.5	6	02/07/2020	14:20	X	X	

Table 1

Sample Collection and Analysis Summary
Soil Gas Probes
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

								Analysis/Parameters		
Work Order	**Sample Identification**	**Location**	**Matrix**	**Initial Sample Depth (ft bgs)**	**Final Sample Depth (ft bgs)**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**VOCs**	**Naphthalene**	**Comments**
HS20020445	SO-1620-SG05(0.5-1) 20200210	SG05	Soil	0.5	1	02/10/2020	09:50	X	X	
	SO-1620-SG05(5.5-6) 20200210	SG05	Soil	5.5	6	02/10/2020	10:10	X	X	
	SO-1620-SG04(0.5-1) 20200210	SG04	Soil	0.5	1	02/10/2020	13:20	X	X	
	SO-1620-SG04(5.5-6) 20200210	SG04	Soil	5.5	6	02/10/2020	13:30	X	X	
	SO-1620-SG02(0.5-1) 20200210	SG02	Soil	0.5	1	02/10/2020	15:50	X	X	
	SO-1620-SG02(5.5-6) 20200210	SG02	Soil	5.5	6	02/10/2020	16:00	X	X	
HS20020506	SO-1620-SG01(0.5-1)-20200211	SG01	Soil	0.5	1	02/11/2020	11:50	X	X	
	SO-1620-SG01(5.5-6)-20200211	SG01	Soil	5.5	6	02/11/2020	12:10	X	X	
	SO-1620-SG20(0.5-1)-20200211	SG20	Soil	0.5	1	02/11/2020	15:00	X	X	
	SO-1620-SG20(5.5-6)-20200211	SG20	Soil	5.5	6	02/11/2020	15:20	X	X	
	SO-1620-SG19(0.5-1)-20200212	SG19	Soil	0.5	1	02/12/2020	11:20	X	X	
	SO-1620-FD01-20200212	SG19	Soil	5.5	6	02/12/2020	11:20	X	X	Field duplicate of SG19 (0.5-1)
	SO-1620-SG19(5.5-6)-20200212	SG19	Soil	5.5	6	02/12/2020	11:35	X	X	
HS20020571	SO-1620-SG17(0.5-1)20200212	SG17	Soil	0.5	1	02/12/2020	15:40	X	X	
	SO-1620-SG17(5.5-6)20200212	SG17	Soil	5.5	6	02/12/2020	15:50	X	X	
	SO-1620-SG16(0.5-1)20200213	SG16	Soil	0.5	1	02/13/2020	12:15	X	X	
	SO-1620-SG16(5.5-6)20200213	SG16	Soil	5.5	6	02/13/2020	12:30	X	X	
	SO-1620-SG15(0.5-1)20200213	SG15	Soil	0.5	1	02/13/2020	14:30	X	X	
	SO-1620-SG15(5.5-6)20200213	SG15	Soil	5.5	6	02/13/2020	14:40	X	X	

Table 1

Sample Collection and Analysis Summary
Soil Gas Probes
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

								Analysis/Parameters		
Work Order	**Sample Identification**	**Location**	**Matrix**	**Initial Sample Depth (ft bgs)**	**Final Sample Depth (ft bgs)**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**VOCs**	**Naphthalene**	**Comments**
HS20020741	SO-1620-SG12(0.5-1)20200217	SG12	Soil	0.5	1	02/17/2020	09:11	X	X	
	SO-1620-SG12(5.5-6)20200217	SG12	Soil	5.5	6	02/17/2020	09:30	X	X	
	SO-1620-SG07(0.5-1)20200217	SG07	Soil	0.5	1	02/17/2020	10:50	X	X	
	SO-1620-SG07(5.5-6)20200217	SG07	Soil	5.5	6	02/17/2020	11:10	X	X	
	SO-1620-SG06(0.5-1)20200217	SG06	Soil	0.5	1	02/17/2020	14:00	X	X	
	SO-1620-SG06(5.5-6)20200217	SG06	Soil	5.5	6	02/17/2020	14:15	X	X	
	SO-1620-SG14(0.5-1)20200217	SG14	Soil	0.5	1	02/17/2020	16:15	X	X	
	SO-1620-SG14(5.5-6)20200217	SG14	Soil	5.5	6	02/17/2020	16:30	X	X	

Notes:

ft bgs - Feet Below Ground Surface
VOCs - Volatile Organic Compounds
MS/MSD-P - Matrix Spike/ Matrix Spike Duplicate (partial parameters)

Table 2

Analytical Results Summary
Soil Gas Probes
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		SG01	SG01	SG02	SG02	SG03
Sample Name:		SO-1620-SG01(0.5-1)-20200211	SO-1620-SG01(5.5-6)-20200211	SO-1620-SG02(0.5-1) 20200210	SO-1620-SG02(5.5-6) 20200210	SO-1620-DUP1-2020203
Sample Date:		02/11/2020	02/11/2020	02/10/2020	02/10/2020	02/03/2020
Depth:		0.5-1 ft bgs	5.5-6 ft bgs	0.5-1 ft bgs	5.5-6 ft bgs	5.5-6 ft bgs
Parameters	**Unit**					
Volatile Organic Compounds						
Benzene	mg/kg	<0.00059	<0.00082	<0.00053	<0.00037	<0.00040
Ethylbenzene	mg/kg	<0.00082	<0.0011	<0.00075	<0.00051	<0.00056
Xylenes (total)	mg/kg	<0.0012	<0.0016	<0.0011	<0.00073	<0.00080
Semivolatile Organic Compounds						
Naphthalene	mg/kg	<0.00070	<0.00073	0.0024 J	<0.00079	<0.00069

Table 2

Analytical Results Summary
Soil Gas Probes
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		SG03	SG03	SG04	SG04
Sample Name:		SO-1620-SG03(0.5-1) 20200205	SO-1620-SG03(5.5-6) 20200205	SO-1620-SG04(0.5-1) 20200210	SO-1620-SG04(5.5-6) 20200210
Sample Date:		02/05/2020	02/05/2020	02/10/2020	02/10/2020
Depth:		0.5-1 ft bgs	5.5-6 ft bgs	0.5-1 ft bgs	5.5-6 ft bgs
Parameters	**Unit**				
Volatile Organic Compounds					
Benzene	mg/kg	<0.00037	<0.00071	<0.00044	<0.00068
Ethylbenzene	mg/kg	<0.00052	<0.0010	<0.00061	<0.00096
Xylenes (total)	mg/kg	0.0066	<0.0014	<0.00087	<0.0014
Semivolatile Organic Compounds					
Naphthalene	mg/kg	0.0018 J	0.0017 J	<0.00071	<0.00072

Table 2

Analytical Results Summary
Soil Gas Probes
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		SG05	SG05	SG06	SG06	SG07
Sample Name:		SO-1620-SG05(0.5-1) 20200210	SO-1620-SG05(5.5-6) 20200210	SO-1620-SG06(0.5-1)20200217	SO-1620-SG06(5.5-6)20200217	SO-1620-SG07(0.5-1)20200217
Sample Date:		02/10/2020	02/10/2020	02/17/2020	02/17/2020	02/17/2020
Depth:		0.5-1 ft bgs	5.5-6 ft bgs	0.5-1 ft bgs	5.5-6 ft bgs	0.5-1 ft bgs
Parameters	**Unit**					
Volatile Organic Compounds						
Benzene	mg/kg	<0.00037	<0.00078	<0.00065	<0.00042	<0.00058
Ethylbenzene	mg/kg	<0.00051	<0.0011	<0.00091	<0.00059	<0.00082
Xylenes (total)	mg/kg	<0.00073	<0.0016	<0.0013	<0.00084	<0.0012
Semivolatile Organic Compounds						
Naphthalene	mg/kg	0.0049	<0.00074	<0.0067	<0.00071	0.0071 J

Table 2

Analytical Results Summary
Soil Gas Probes
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		**SG07**	**SG08**	**SG08**	**SG09**
Sample Name:		**SO-1620-SG07(5.5-6)20200217**	**SO-1620-SG08(0.5-1)20200207**	**SO-1620-SG08(5.5-6)20200207**	**SO-1620-SG-9(0.5-1)-2020203**
Sample Date:		**02/17/2020**	**02/07/2020**	**02/07/2020**	**02/03/2020**
Depth:		**5.5-6 ft bgs**	**0.5-1 ft bgs**	**5.5-6 ft bgs**	**0.5-1 ft bgs**
Parameters	**Unit**				
Volatile Organic Compounds					
Benzene	mg/kg	<0.00036	<0.00062	<0.00038	<0.00052
Ethylbenzene	mg/kg	<0.00050	<0.00087	<0.00053	<0.00074
Xylenes (total)	mg/kg	<0.00072	<0.0012	<0.00075	<0.0010
Semivolatile Organic Compounds					
Naphthalene	mg/kg	<0.00072	0.0034 J	0.0014 J	0.0042

Table 2

Analytical Results Summary
Soil Gas Probes
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		**SG09**	**SG10**	**SG10**	**SG11**
Sample Name:		**SO-1620-SG-9(5.5-6)-2020203**	**SO-1620-SG10(0.5-1)20200207**	**SO-1620-SG10(5.5-6)20200207**	**SO-1620-SG11(0.5-1) 20200206**
Sample Date:		**02/03/2020**	**02/07/2020**	**02/07/2020**	**02/06/2020**
Depth:		**5.5-6 ft bgs**	**0.5-1 ft bgs**	**5.5-6 ft bgs**	**0.5-1 ft bgs**
Parameters	**Unit**				
Volatile Organic Compounds					
Benzene	mg/kg	<0.00082	<0.00052	<0.00039	<0.00070
Ethylbenzene	mg/kg	<0.0012	<0.00072	<0.00054	<0.00098
Xylenes (total)	mg/kg	<0.0016	<0.0010	<0.00077	<0.0014
Semivolatile Organic Compounds					
Naphthalene	mg/kg	<0.00072	0.0056	<0.00072	0.0084 J

Notes:

ft bgs - Feet below ground surface
< - Not detected at the associated reporting lim
J - Estimated concentration

Table 2

Analytical Results Summary
Soil Gas Probes
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		SG11	SG12	SG12	SG13
Sample Name:		SO-1620-SG11(5.5-6) 20200206	SO-1620-SG12(0.5-1)20200217	SO-1620-SG12(5.5-6)20200217	SO-1620-SG-13(0.5-1)-2020203
Sample Date:		02/06/2020	02/17/2020	02/17/2020	02/03/2020
Depth:		5.5-6 ft bgs	0.5-1 ft bgs	5.5-6 ft bgs	0.5-1 ft bgs
Parameters	**Unit**				
Volatile Organic Compounds					
Benzene	mg/kg	<0.00032	<0.00062	<0.00060	<0.00076
Ethylbenzene	mg/kg	<0.00045	<0.00087	<0.00084	<0.0011
Xylenes (total)	mg/kg	<0.00064	<0.0012	<0.0012	<0.0015
Semivolatile Organic Compounds					
Naphthalene	mg/kg	0.0011 J	0.0039	<0.00071	<0.00075

Table 2

Analytical Results Summary
Soil Gas Probes
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		SG13	SG14	SG14	SG15	SG15
Sample Name:		SO-1620-SG-13(5.5-6)-2020203	SO-1620-SG14(0.5-1)20200217	SO-1620-SG14(5.5-6)20200217	SO-1620-SG15(0.5-1)20200213	SO-1620-SG15(5.5-6)20200213
Sample Date:		02/03/2020	02/17/2020	02/17/2020	02/13/2020	02/13/2020
Depth:		5.5-6 ft bgs	0.5-1 ft bgs	5.5-6 ft bgs	0.5-1 ft bgs	5.5-6 ft bgs
Parameters	**Unit**					
Volatile Organic Compounds						
Benzene	mg/kg	<0.00049	<0.00030	<0.00037	<0.00050	<0.00032
Ethylbenzene	mg/kg	<0.00068	<0.00042	<0.00051	<0.00070	<0.00045
Xylenes (total)	mg/kg	<0.00097	<0.00061	<0.00073	<0.0010	<0.00065
Semivolatile Organic Compounds						
Naphthalene	mg/kg	<0.00071	0.0027 J	<0.00077	0.014	<0.00071

Table 2

Analytical Results Summary
Soil Gas Probes
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		SG16	SG16	SG17	SG17	SG18
Sample Name:		SO-1620-SG16(0.5-1)20200213	SO-1620-SG16(5.5-6)20200213	SO-1620-SG17(0.5-1)20200212	SO-1620-SG17(5.5-6)20200212	SO-1620-SG-18(0.5-1)-2020203
Sample Date:		02/13/2020	02/13/2020	02/12/2020	02/12/2020	02/03/2020
Depth:		0.5-1 ft bgs	5.5-6 ft bgs	0.5-1 ft bgs	5.5-6 ft bgs	0.5-1 ft bgs
Parameters	**Unit**					
Volatile Organic Compounds						
Benzene	mg/kg	<0.00066	<0.00068	<0.00071	<0.00079	0.0034 J
Ethylbenzene	mg/kg	<0.00093	<0.00095	<0.0010	<0.0011	0.0034 J
Xylenes (total)	mg/kg	<0.0013	<0.0014	<0.0014	<0.0016	0.0056
Semivolatile Organic Compounds						
Naphthalene	mg/kg	0.0099	<0.00071	0.0095	0.0015 J	<0.00069

Table 2

Analytical Results Summary
Soil Gas Probes
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		SG18	SG19	SG19	SG19	SG20
Sample Name:		SO-1620-SG-18(5.5-6)-2020203	SO-1620-SG19(0.5-1)-20200212	SO-1620-FD01-20200212	SO-1620-SG19(5.5-6)-20200212	SO-1620-SG20(0.5-1)-20200211
Sample Date:		02/03/2020	02/12/2020	02/12/2020	02/12/2020	02/11/2020
Depth:		5.5-6 ft bgs	0.5-1 ft bgs	0.5-1 ft bgs Duplicate	5.5-6 ft bgs	0.5-1 ft bgs
Parameters	**Unit**					
Volatile Organic Compounds						
Benzene	mg/kg	<0.00054	<0.00059	<0.00060	<0.00062	<0.00080
Ethylbenzene	mg/kg	<0.00076	<0.00082	<0.00083	<0.00087	<0.0011
Xylenes (total)	mg/kg	<0.0011	<0.0012	<0.0012	<0.0012	<0.0016
Semivolatile Organic Compounds						
Naphthalene	mg/kg	0.0041	<0.00069	0.0053	<0.00071	<0.00069

Table 2

Analytical Results Summary
Soil Gas Probes
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		SG20	SG21	SG21	SG22	SG22
Sample Name:		SO-1620-SG20(5.5-6)-20200211	SO-1620-SG21 (0.5-1) 20200129	SO-1620-SG21 (5.5-6) 20200129	SO-1620-SG22 (0.5-1) 20200129	SO-1620-SG22 (5.5-6) 20200129
Sample Date:		02/11/2020	01/29/2020	01/29/2020	01/29/2020	01/29/2020
Depth:		5.5-6 ft bgs	0.5-1 ft bgs	5.5-6 ft bgs	0.5-1 ft bgs	5.5-6 ft bgs
Parameters	**Unit**					
Volatile Organic Compounds						
Benzene	mg/kg	<0.00072	<0.00088	<0.00053	<0.00061	<0.00056
Ethylbenzene	mg/kg	<0.0010	<0.0012	<0.00074	<0.00085	<0.00079
Xylenes (total)	mg/kg	<0.0014	<0.0018	<0.0011	<0.0012	<0.0011
Semivolatile Organic Compounds						
Naphthalene	mg/kg	<0.00071	0.022	0.010	0.14	<0.00072

Notes:

ft bgs - Feet below ground surface
< - Not detected at the associated reporting limit
J - Estimated concentration

Table 3

Analytical Methods
Soil Gas Probes
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Parameter	Method	Matrix	Holding Time	
			Collection to Extraction (Days)	Extraction to Analysis (Days)
VOCs	SW-846 8260C	Soil	-	14
Naphthalene	SW-846 8270D	Soil	14	40

Notes:

VOCs - Volatile Organic Compounds
"-" - Not Applicable

Method References:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions

Attachment A
Laboratory NELAP Certificate

Texas Commission on Environmental Quality

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Matrix: ***Drinking Water***

Method EPA 1613

Analyte	AB	Analyte ID	Method ID
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10120408

Method EPA 200.8

Analyte	AB	Analyte ID	Method ID
Copper	TX	1055	10014605
Lead	TX	1075	10014605

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Matrix: ***Non-Potable Water***

Method EPA 1010

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10116606

Method EPA 120.1

Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	10006403

Method EPA 1311

Analyte	AB	Analyte ID	Method ID
TCLP	TX	849	10118806

Method EPA 1312

Analyte	AB	Analyte ID	Method ID
SPLP	TX	850	10119003

Method EPA 160.4

Analyte	AB	Analyte ID	Method ID
Residue-volatile	TX	1970	10010409

Method EPA 1613

Analyte	AB	Analyte ID	Method ID
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10120408
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10120408
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10120408
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10120408
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10120408
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10120408
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10120408
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10120408
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10120408
1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10120408
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10120408
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10120408
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10120408
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10120408

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Matrix: ***Non-Potable Water***

2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10120408
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10120408
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10120408
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10120408
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10120408
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10120408
Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10120408
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10120408
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10120408
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10120408
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10120408

Method EPA 1664

Analyte	**AB**	**Analyte ID**	**Method ID**
n-Hexane Extractable Material (HEM) (O&G)	TX	1803	10127807

Method EPA 180.1

Analyte	**AB**	**Analyte ID**	**Method ID**
Turbidity	TX	2055	10011606

Method EPA 200.8

Analyte	**AB**	**Analyte ID**	**Method ID**
Aluminum	TX	1000	10014605
Antimony	TX	1005	10014605
Arsenic	TX	1010	10014605
Barium	TX	1015	10014605
Beryllium	TX	1020	10014605
Boron	TX	1025	10014605
Cadmium	TX	1030	10014605
Calcium	TX	1035	10014605
Chromium	TX	1040	10014605
Cobalt	TX	1050	10014605
Copper	TX	1055	10014605
Iron	TX	1070	10014605

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Matrix: ***Non-Potable Water***

Lead	TX	1075	10014605
Magnesium	TX	1085	10014605
Manganese	TX	1090	10014605
Molybdenum	TX	1100	10014605
Nickel	TX	1105	10014605
Potassium	TX	1125	10014605
Selenium	TX	1140	10014605
Silver	TX	1150	10014605
Sodium	TX	1155	10014605
Strontium	TX	1160	10014605
Thallium	TX	1165	10014605
Tin	TX	1175	10014605
Titanium	TX	1180	10014605
Uranium	TX	3035	10014605
Vanadium	TX	1185	10014605
Zinc	TX	1190	10014605

Method EPA 245.1

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10036609

Method EPA 300.0

Analyte	**AB**	**Analyte ID**	**Method ID**
Bromide	TX	1540	10053200
Chloride	TX	1575	10053200
Fluoride	TX	1730	10053200
Nitrate as N	TX	1810	10053200
Nitrate-nitrite	TX	1820	10053200
Nitrite as N	TX	1840	10053200
Orthophosphate as P	TX	1870	10053200
Sulfate	TX	2000	10053200

Method EPA 325.1

Analyte	**AB**	**Analyte ID**	**Method ID**

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Matrix: ***Non-Potable Water***

Chloride	TX	1575	10056801

Method EPA 335.1

Analyte	AB	Analyte ID	Method ID
Amenable cyanide	TX	1510	10060001

Method EPA 335.2

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	10278203

Method EPA 335.4

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	10061402

Method EPA 350.3

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	10064401

Method EPA 365.3

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	10070801
Phosphorus	TX	1910	10070801

Method EPA 375.4

Analyte	AB	Analyte ID	Method ID
Sulfate	TX	2000	10073800

Method EPA 376.1

Analyte	AB	Analyte ID	Method ID
Sulfide	TX	2005	10074201

Method EPA 410.4

Analyte	AB	Analyte ID	Method ID
Chemical oxygen demand (COD)	TX	1565	10077404

Method EPA 415.1

Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	10078407

Method EPA 420.1

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10079400

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Matrix: ***Non-Potable Water***

Method EPA 420.4

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10080203

Method EPA 6020

Analyte	AB	Analyte ID	Method ID
Aluminum	TX	1000	10156419
Antimony	TX	1005	10156419
Arsenic	TX	1010	10156419
Barium	TX	1015	10156419
Beryllium	TX	1020	10156419
Boron	TX	1025	10156419
Cadmium	TX	1030	10156419
Calcium	TX	1035	10156419
Chromium	TX	1040	10156419
Cobalt	TX	1050	10156419
Copper	TX	1055	10156419
Iron	TX	1070	10156419
Lead	TX	1075	10156419
Lithium	TX	1080	10156419
Magnesium	TX	1085	10156419
Manganese	TX	1090	10156419
Molybdenum	TX	1100	10156419
Nickel	TX	1105	10156419
Potassium	TX	1125	10156419
Selenium	TX	1140	10156419
Silver	TX	1150	10156419
Sodium	TX	1155	10156419
Strontium	TX	1160	10156419
Thallium	TX	1165	10156419
Tin	TX	1175	10156419
Titanium	TX	1180	10156419

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Matrix: ***Non-Potable Water***

Vanadium	TX	1185	10156419
Zinc	TX	1190	10156419

Method EPA 608

Analyte	AB	Analyte ID	Method ID
4,4'-DDD	TX	7355	10103603
4,4'-DDE	TX	7360	10103603
4,4'-DDT	TX	7365	10103603
Aldrin	TX	7025	10103603
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10103603
alpha-Chlordane	TX	7240	10103603
Aroclor-1016 (PCB-1016)	TX	8880	10103603
Aroclor-1221 (PCB-1221)	TX	8885	10103603
Aroclor-1232 (PCB-1232)	TX	8890	10103603
Aroclor-1242 (PCB-1242)	TX	8895	10103603
Aroclor-1248 (PCB-1248)	TX	8900	10103603
Aroclor-1254 (PCB-1254)	TX	8905	10103603
Aroclor-1260 (PCB-1260)	TX	8910	10103603
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10103603
Chlordane (tech.)	TX	7250	10103603
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10103603
Dieldrin	TX	7470	10103603
Endosulfan I	TX	7510	10103603
Endosulfan II	TX	7515	10103603
Endosulfan sulfate	TX	7520	10103603
Endrin	TX	7540	10103603
Endrin aldehyde	TX	7530	10103603
Endrin ketone	TX	7535	10103603
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10103603
gamma-Chlordane	TX	7245	10103603
Heptachlor	TX	7685	10103603

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Matrix: ***Non-Potable Water***

Heptachlor epoxide	TX	7690	10103603
Methoxychlor	TX	7810	10103603
Toxaphene (Chlorinated camphene)	TX	8250	10103603

Method EPA 624

Analyte	AB	Analyte ID	Method ID
1,1,1-Trichloroethane	TX	5160	10107207
1,1,2,2-Tetrachloroethane	TX	5110	10107207
1,1,2-Trichloroethane	TX	5165	10107207
1,1-Dichloroethane	TX	4630	10107207
1,1-Dichloroethylene	TX	4640	10107207
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10107207
1,2-Dichlorobenzene	TX	4610	10107207
1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10107207
1,2-Dichloropropane	TX	4655	10107207
1,3-Dichlorobenzene	TX	4615	10107207
1,4-Dichlorobenzene	TX	4620	10107207
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10107207
2-Chloroethyl vinyl ether	TX	4500	10107207
Acetone (2-Propanone)	TX	4315	10107207
Acrolein (Propenal)	TX	4325	10107207
Acrylonitrile	TX	4340	10107207
Benzene	TX	4375	10107207
Bromodichloromethane	TX	4395	10107207
Bromoform	TX	4400	10107207
Carbon tetrachloride	TX	4455	10107207
Chlorobenzene	TX	4475	10107207
Chlorodibromomethane	TX	4575	10107207
Chloroethane (Ethyl chloride)	TX	4485	10107207
Chloroform	TX	4505	10107207
cis-1,2-Dichloroethylene	TX	4645	10107207

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Matrix: ***Non-Potable Water***

cis-1,3-Dichloropropene	TX	4680	10107207
Ethylbenzene	TX	4765	10107207
m+p-xylene	TX	5240	10107207
Methyl bromide (Bromomethane)	TX	4950	10107207
Methyl chloride (Chloromethane)	TX	4960	10107207
Methyl tert-butyl ether (MTBE)	TX	5000	10107207
Methylene chloride (Dichloromethane)	TX	4975	10107207
Naphthalene	TX	5005	10107207
o-Xylene	TX	5250	10107207
Tetrachloroethylene (Perchloroethylene)	TX	5115	10107207
Toluene	TX	5140	10107207
trans-1,2-Dichloroethylene	TX	4700	10107207
trans-1,3-Dichloropropylene	TX	4685	10107207
Trichloroethene (Trichloroethylene)	TX	5170	10107207
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10107207
Vinyl chloride	TX	5235	10107207
Xylene (total)	TX	5260	10107207

Method EPA 625

Analyte	**AB**	**Analyte ID**	**Method ID**
1,2,4,5-Tetrachlorobenzene	TX	6715	10107401
1,2,4-Trichlorobenzene	TX	5155	10107401
1,2-Dichlorobenzene	TX	4610	10107401
1,2-Diphenylhydrazine	TX	6220	10107401
1,3-Dichlorobenzene	TX	4615	10107401
1,4-Dichlorobenzene	TX	4620	10107401
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10107401
2,4,5-Trichlorophenol	TX	6835	10107401
2,4,6-Trichlorophenol	TX	6840	10107401
2,4-Dichlorophenol	TX	6000	10107401
2,4-Dimethylphenol	TX	6130	10107401

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Matrix: ***Non-Potable Water***

2,4-Dinitrophenol	TX	6175	10107401
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10107401
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10107401
2-Chloronaphthalene	TX	5795	10107401
2-Chlorophenol	TX	5800	10107401
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10107401
2-Methylphenol (o-Cresol)	TX	6400	10107401
2-Nitrophenol	TX	6490	10107401
3,3'-Dichlorobenzidine	TX	5945	10107401
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10107401
4-Chloro-3-methylphenol	TX	5700	10107401
4-Chlorophenyl phenylether	TX	5825	10107401
4-Methylphenol (p-Cresol)	TX	6410	10107401
4-Nitrophenol	TX	6500	10107401
Acenaphthene	TX	5500	10107401
Acenaphthylene	TX	5505	10107401
Anthracene	TX	5555	10107401
Benzidine	TX	5595	10107401
Benzo(a)anthracene	TX	5575	10107401
Benzo(a)pyrene	TX	5580	10107401
Benzo(b)fluoranthene	TX	5585	10107401
Benzo(g,h,i)perylene	TX	5590	10107401
Benzo(k)fluoranthene	TX	5600	10107401
bis(2-Chloroethoxy)methane	TX	5760	10107401
bis(2-Chloroethyl) ether	TX	5765	10107401
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10107401
Butyl benzyl phthalate	TX	5670	10107401
Chrysene	TX	5855	10107401
Dibenz(a,h) anthracene	TX	5895	10107401
Diethyl phthalate	TX	6070	10107401

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Matrix: ***Non-Potable Water***

Dimethyl phthalate	TX	6135	10107401
Di-n-butyl phthalate	TX	5925	10107401
Di-n-octyl phthalate	TX	6200	10107401
Fluoranthene	TX	6265	10107401
Fluorene	TX	6270	10107401
Hexachlorobenzene	TX	6275	10107401
Hexachlorobutadiene	TX	4835	10107401
Hexachlorocyclopentadiene	TX	6285	10107401
Hexachloroethane	TX	4840	10107401
Indeno(1,2,3-cd) pyrene	TX	6315	10107401
Isophorone	TX	6320	10107401
Naphthalene	TX	5005	10107401
Nitrobenzene	TX	5015	10107401
n-Nitrosodiethylamine	TX	6525	10107401
n-Nitrosodimethylamine	TX	6530	10107401
n-Nitrosodi-n-butylamine	TX	5025	10107401
n-Nitrosodi-n-propylamine	TX	6545	10107401
n-Nitrosodiphenylamine	TX	6535	10107401
Pentachlorobenzene	TX	6590	10107401
Pentachlorophenol	TX	6605	10107401
Phenanthrene	TX	6615	10107401
Phenol	TX	6625	10107401
Pyrene	TX	6665	10107401
Pyridine	TX	5095	10107401

Method EPA 7196

Analyte	**AB**	**Analyte ID**	**Method ID**
Chromium (VI)	TX	1045	10162206

Method EPA 7470

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10165603

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Issue Date: 5/1/2019

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Matrix: ***Non-Potable Water***

Method EPA 8011

Analyte	AB	Analyte ID	Method ID
1,2,3-Trichloropropane	TX	5180	10173009
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10173009
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10173009

Method EPA 8015

Analyte	AB	Analyte ID	Method ID
Diesel range organics (DRO)	TX	9369	10173203
Ethanol	TX	4750	10173203
Ethylene glycol	TX	4785	10173203
Gasoline range organics (GRO)	TX	9408	10173203
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10173203
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10173203
Methanol	TX	4930	10173203
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10173203
n-Propanol (1-Propanol)	TX	5055	10173203
Propylene Glycol	TX	6657	10173203
tert-Butyl alcohol	TX	4420	10173203

Method EPA 8021

Analyte	AB	Analyte ID	Method ID
Benzene	TX	4375	10174400
Ethylbenzene	TX	4765	10174400
m+p-xylene	TX	5240	10174400
Methyl tert-butyl ether (MTBE)	TX	5000	10174400
o-Xylene	TX	5250	10174400
Toluene	TX	5140	10174400
Xylene (total)	TX	5260	10174400

Method EPA 8081

Analyte	AB	Analyte ID	Method ID
4,4'-DDD	TX	7355	10178402
4,4'-DDE	TX	7360	10178402

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4,4'-DDT	TX	7365	10178402
Aldrin	TX	7025	10178402
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10178402
alpha-Chlordane	TX	7240	10178402
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10178402
Chlordane (tech.)	TX	7250	10178402
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10178402
Dieldrin	TX	7470	10178402
Endosulfan I	TX	7510	10178402
Endosulfan II	TX	7515	10178402
Endosulfan sulfate	TX	7520	10178402
Endrin	TX	7540	10178402
Endrin aldehyde	TX	7530	10178402
Endrin ketone	TX	7535	10178402
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10178402
gamma-Chlordane	TX	7245	10178402
Heptachlor	TX	7685	10178402
Heptachlor epoxide	TX	7690	10178402
Hexachlorobenzene	TX	6275	10178402
Methoxychlor	TX	7810	10178402
Mirex	TX	7870	10178402
Toxaphene (Chlorinated camphene)	TX	8250	10178402

Method EPA 8082

Analyte	**AB**	**Analyte ID**	**Method ID**
Aroclor-1016 (PCB-1016)	TX	8880	10179201
Aroclor-1221 (PCB-1221)	TX	8885	10179201
Aroclor-1232 (PCB-1232)	TX	8890	10179201
Aroclor-1242 (PCB-1242)	TX	8895	10179201
Aroclor-1248 (PCB-1248)	TX	8900	10179201
Aroclor-1254 (PCB-1254)	TX	8905	10179201

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Matrix: ***Non-Potable Water***

Aroclor-1260 (PCB-1260)	TX	8910	10179201
PCBs (total)	TX	8870	10179201

Method EPA 8151

Analyte	AB	Analyte ID	Method ID
2,4,5-T	TX	8655	10183003
2,4-D	TX	8545	10183003
2,4-DB	TX	8560	10183003
Dalapon	TX	8555	10183003
Dicamba	TX	8595	10183003
Dichloroprop (Dichlorprop, Weedone)	TX	8605	10183003
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10183003
MCPA	TX	7775	10183003
MCPP	TX	7780	10183003
Silvex (2,4,5-TP)	TX	8650	10183003

Method EPA 8260

Analyte	AB	Analyte ID	Method ID
1,1,1,2-Tetrachloroethane	TX	5105	10184404
1,1,1-Trichloroethane	TX	5160	10184404
1,1,2,2-Tetrachloroethane	TX	5110	10184404
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	TX	5195	10184404
1,1,2-Trichloroethane	TX	5165	10184404
1,1-Dichloroethane	TX	4630	10184404
1,1-Dichloroethylene	TX	4640	10184404
1,1-Dichloropropene	TX	4670	10184404
1,2,3-Trichlorobenzene	TX	5150	10184404
1,2,3-Trichloropropane	TX	5180	10184404
1,2,4-Trichlorobenzene	TX	5155	10184404
1,2,4-Trimethylbenzene	TX	5210	10184404
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10184404
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10184404
1,2-Dichlorobenzene	TX	4610	10184404

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Matrix: ***Non-Potable Water***

1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10184404
1,2-Dichloropropane	TX	4655	10184404
1,3,5-Trimethylbenzene	TX	5215	10184404
1,3-Dichlorobenzene	TX	4615	10184404
1,3-Dichloropropane	TX	4660	10184404
1,4-Dichlorobenzene	TX	4620	10184404
1,4-Dioxane (1,4-Diethyleneoxide)	TX	4735	10184404
1-Chlorohexane	TX	4510	10184404
1-Propanol	TX	5060	10184404
2,2-Dichloropropane	TX	4665	10184404
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10184404
2-Chloroethyl vinyl ether	TX	4500	10184404
2-Chlorotoluene	TX	4535	10184404
2-Hexanone (MBK)	TX	4860	10184404
2-Pentanone	TX	5045	10184404
4-Chlorotoluene	TX	4540	10184404
4-Isopropyltoluene (p-Cymene)	TX	4915	10184404
4-Methyl-2-pentanone (MIBK)	TX	4995	10184404
Acetone (2-Propanone)	TX	4315	10184404
Acetonitrile	TX	4320	10184404
Acrolein (Propenal)	TX	4325	10184404
Acrylonitrile	TX	4340	10184404
Allyl alcohol	TX	4350	10184404
Allyl chloride (3-Chloropropene)	TX	4355	10184404
Benzene	TX	4375	10184404
Benzyl chloride	TX	5635	10184404
Bromobenzene	TX	4385	10184404
Bromochloromethane	TX	4390	10184404
Bromodichloromethane	TX	4395	10184404
Bromoform	TX	4400	10184404

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Carbon disulfide	TX	4450	10184404
Carbon tetrachloride	TX	4455	10184404
Chlorobenzene	TX	4475	10184404
Chlorodibromomethane	TX	4575	10184404
Chloroethane (Ethyl chloride)	TX	4485	10184404
Chloroform	TX	4505	10184404
Chloroprene (2-Chloro-1,3-butadiene)	TX	4525	10184404
cis-1,2-Dichloroethylene	TX	4645	10184404
cis-1,3-Dichloropropene	TX	4680	10184404
Dibromofluoromethane	TX	4590	10184404
Dibromomethane (Methylene bromide)	TX	4595	10184404
Dichlorodifluoromethane (Freon-12)	TX	4625	10184404
Diethyl ether	TX	4725	10184404
Di-isopropylether (DIPE)	TX	9375	10184404
Epichlorohydrin (1-Chloro-2,3-epoxypropane)	TX	4745	10184404
Ethanol	TX	4750	10184404
Ethyl acetate	TX	4755	10184404
Ethyl methacrylate	TX	4810	10184404
Ethylbenzene	TX	4765	10184404
Ethylene oxide	TX	4795	10184404
Ethyl-t-butylether (ETBE) (2-Ethoxy-2-methylpropane)	TX	4770	10184404
Hexachlorobutadiene	TX	4835	10184404
Iodomethane (Methyl iodide)	TX	4870	10184404
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10184404
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10184404
Isopropylbenzene (Cumene)	TX	4900	10184404
m+p-xylene	TX	5240	10184404
Methacrylonitrile	TX	4925	10184404
Methyl acetate	TX	4940	10184404
Methyl acrylate	TX	4945	10184404

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Matrix: ***Non-Potable Water***

Methyl bromide (Bromomethane)	TX	4950	10184404
Methyl chloride (Chloromethane)	TX	4960	10184404
Methyl methacrylate	TX	4990	10184404
Methyl tert-butyl ether (MTBE)	TX	5000	10184404
Methylcyclohexane	TX	4965	10184404
Methylene chloride (Dichloromethane)	TX	4975	10184404
Naphthalene	TX	5005	10184404
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10184404
n-Butylbenzene	TX	4435	10184404
n-Propylbenzene	TX	5090	10184404
o-Xylene	TX	5250	10184404
Pentachloroethane	TX	5035	10184404
Propionitrile (Ethyl cyanide)	TX	5080	10184404
Pyridine	TX	5095	10184404
sec-Butylbenzene	TX	4440	10184404
Styrene	TX	5100	10184404
T-amylmethylether (TAME)	TX	4370	10184404
tert-Butyl alcohol	TX	4420	10184404
tert-Butylbenzene	TX	4445	10184404
Tetrachloroethylene (Perchloroethylene)	TX	5115	10184404
Toluene	TX	5140	10184404
trans-1,2-Dichloroethylene	TX	4700	10184404
trans-1,3-Dichloropropylene	TX	4685	10184404
trans-1,4-Dichloro-2-butene	TX	4605	10184404
Trichloroethene (Trichloroethylene)	TX	5170	10184404
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10184404
Vinyl acetate	TX	5225	10184404
Vinyl chloride	TX	5235	10184404
Xylene (total)	TX	5260	10184404

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Matrix: ***Non-Potable Water***

Method EPA 8270

Analyte	AB	Analyte ID	Method ID
1,2,4,5-Tetrachlorobenzene	TX	6715	10185203
1,2,4-Trichlorobenzene	TX	5155	10185203
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10185203
1,2-Dichlorobenzene	TX	4610	10185203
1,2-Dinitrobenzene	TX	6155	10185203
1,2-Diphenylhydrazine	TX	6220	10185203
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10185203
1,3-Dichlorobenzene	TX	4615	10185203
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10185203
1,4-Dichlorobenzene	TX	4620	10185203
1,4-Dinitrobenzene	TX	6165	10185203
1,4-Naphthoquinone	TX	6420	10185203
1,4-Phenylenediamine	TX	6630	10185203
1-Chloronaphthalene	TX	5790	10185203
1-Naphthylamine	TX	6425	10185203
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10185203
2,3,4,6-Tetrachlorophenol	TX	6735	10185203
2,4,5-Trichlorophenol	TX	6835	10185203
2,4,5-Trimethylaniline	TX	6880	10185203
2,4,6-Trichlorophenol	TX	6840	10185203
2,4-Diaminotoluene	TX	5880	10185203
2,4-Dichlorophenol	TX	6000	10185203
2,4-Dimethylphenol	TX	6130	10185203
2,4-Dinitrophenol	TX	6175	10185203
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10185203
2,6-Dichlorophenol	TX	6005	10185203
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10185203
2-Acetylaminofluorene	TX	5515	10185203

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Matrix: ***Non-Potable Water***

2-Chloronaphthalene	TX	5795	10185203
2-Chlorophenol	TX	5800	10185203
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10185203
2-Methylaniline (o-Toluidine)	TX	5145	10185203
2-Methylnaphthalene	TX	6385	10185203
2-Methylphenol (o-Cresol)	TX	6400	10185203
2-Naphthylamine	TX	6430	10185203
2-Nitroaniline	TX	6460	10185203
2-Nitrophenol	TX	6490	10185203
2-Picoline (2-Methylpyridine)	TX	5050	10185203
3,3'-Dichlorobenzidine	TX	5945	10185203
3,3'-Dimethylbenzidine	TX	6120	10185203
3-Methylcholanthrene	TX	6355	10185203
3-Methylphenol (m-Cresol)	TX	6405	10185203
3-Nitroaniline	TX	6465	10185203
4-Aminobiphenyl	TX	5540	10185203
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10185203
4-Chloro-3-methylphenol	TX	5700	10185203
4-Chloroaniline	TX	5745	10185203
4-Chlorophenyl phenylether	TX	5825	10185203
4-Dimethyl aminoazobenzene	TX	6105	10185203
4-Methylphenol (p-Cresol)	TX	6410	10185203
4-Nitroaniline	TX	6470	10185203
4-Nitrobiphenyl	TX	6480	10185203
4-Nitrophenol	TX	6500	10185203
4-Nitroquinoline-1-oxide	TX	6510	10185203
5-Chloro-2-methylaniline	TX	5695	10185203
5-Nitro-o-toluidine	TX	6570	10185203
7,12-Dimethylbenz(a) anthracene	TX	6115	10185203
a-a-Dimethylphenethylamine	TX	6125	10185203

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Matrix: ***Non-Potable Water***

Acenaphthene	TX	5500	10185203
Acenaphthylene	TX	5505	10185203
Acetophenone	TX	5510	10185203
Aniline	TX	5545	10185203
Anthracene	TX	5555	10185203
Aramite	TX	5560	10185203
Atrazine	TX	7065	10185203
Azinphos-methyl (Guthion)	TX	7075	10185203
Azobenzene	TX	5562	10185203
Benzenethiol (Thiophenol)	TX	6750	10185203
Benzidine	TX	5595	10185203
Benzo(a)anthracene	TX	5575	10185203
Benzo(a)pyrene	TX	5580	10185203
Benzo(b)fluoranthene	TX	5585	10185203
Benzo(e)pyrene	TX	5605	10185203
Benzo(g,h,i)perylene	TX	5590	10185203
Benzo(k)fluoranthene	TX	5600	10185203
Benzoic acid	TX	5610	10185203
Benzyl alcohol	TX	5630	10185203
Biphenyl	TX	5640	10185203
bis(2-Chloroethoxy)methane	TX	5760	10185203
bis(2-Chloroethyl) ether	TX	5765	10185203
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10185203
Butyl benzyl phthalate	TX	5670	10185203
Caprolactam	TX	7180	10185203
Captan	TX	7190	10185203
Carbaryl (Sevin)	TX	7195	10185203
Carbazole	TX	5680	10185203
Carbophenothion	TX	7220	10185203
Chlorobenzilate	TX	7260	10185203

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Matrix: ***Non-Potable Water***

Chrysene	TX	5855	10185203
Coumaphos	TX	7315	10185203
Demeton	TX	7390	10185203
Demeton	TX	7390	10185203
Demeton-o	TX	7395	10185203
Demeton-s	TX	7385	10185203
Diallate	TX	7405	10185203
Dibenz(a,h) anthracene	TX	5895	10185203
Dibenz(a,j) acridine	TX	5900	10185203
Dibenzofuran	TX	5905	10185203
Dichlorovos (DDVP, Dichlorvos)	TX	8610	10185203
Diethyl phthalate	TX	6070	10185203
Dimethoate	TX	7475	10185203
Dimethoate	TX	7475	10185203
Dimethyl phthalate	TX	6135	10185203
Di-n-butyl phthalate	TX	5925	10185203
Di-n-octyl phthalate	TX	6200	10185203
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10185203
Dioxathion	TX	7495	10185203
Diphenylamine	TX	6205	10185203
Disulfoton	TX	8625	10185203
Ethion	TX	7565	10185203
Ethyl methanesulfonate	TX	6260	10185203
Famphur	TX	7580	10185203
Fluoranthene	TX	6265	10185203
Fluorene	TX	6270	10185203
Hexachlorobenzene	TX	6275	10185203
Hexachlorobutadiene	TX	4835	10185203
Hexachlorocyclopentadiene	TX	6285	10185203
Hexachloroethane	TX	4840	10185203

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Matrix: ***Non-Potable Water***

Hexachlorophene	TX	6290	10185203
Hexachloropropene	TX	6295	10185203
Indeno(1,2,3-cd) pyrene	TX	6315	10185203
Isodrin	TX	7725	10185203
Isophorone	TX	6320	10185203
Isosafrole	TX	6325	10185203
Kepone	TX	7740	10185203
Maleic anhydride	TX	6335	10185203
Methapyrilene	TX	6345	10185203
Methyl methanesulfonate	TX	6375	10185203
Methyl parathion (Parathion, methyl)	TX	7825	10185203
Mevinphos	TX	7850	10185203
Naled	TX	7905	10185203
Naphthalene	TX	5005	10185203
Nitrobenzene	TX	5015	10185203
n-Nitrosodiethylamine	TX	6525	10185203
n-Nitrosodimethylamine	TX	6530	10185203
n-Nitrosodi-n-butylamine	TX	5025	10185203
n-Nitrosodi-n-propylamine	TX	6545	10185203
n-Nitrosodiphenylamine	TX	6535	10185203
n-Nitrosomethylethylamine	TX	6550	10185203
n-Nitrosomorpholine	TX	6555	10185203
n-Nitrosopiperidine	TX	6560	10185203
n-Nitrosopyrrolidine	TX	6565	10185203
o,o,o-Triethyl phosphorothioate	TX	8290	10185203
o-Anisidine	TX	5550	10185203
Parathion, ethyl	TX	7955	10185203
p-Cresidine	TX	5860	10185203
Pentachlorobenzene	TX	6590	10185203
Pentachloronitrobenzene (PCNB)	TX	6600	10185203

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Matrix: ***Non-Potable Water***

Pentachlorophenol	TX	6605	10185203
Phenacetin	TX	6610	10185203
Phenanthrene	TX	6615	10185203
Phenol	TX	6625	10185203
Phorate	TX	7985	10185203
Phosmet (Imidan)	TX	8000	10185203
Phthalic anhydride	TX	6640	10185203
Pronamide (Kerb)	TX	6650	10185203
Pyrene	TX	6665	10185203
Pyridine	TX	5095	10185203
Quinoline	TX	6670	10185203
Resorcinol	TX	6680	10185203
Safrole	TX	6685	10185203
Sulfotepp	TX	8155	10185203
Terbufos	TX	8185	10185203
Tetrachlorvinphos (Stirophos, Gardona)	TX	8197	10185203
Thionazin (Zinophos)	TX	8235	10185203
Toluene diisocyanate	TX	6775	10185203
Trifluralin (Treflan)	TX	8295	10185203

Method EPA 8290

Analyte	**AB**	**Analyte ID**	**Method ID**
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10187209
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10187209
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10187209
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10187209
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10187209
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10187209
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10187209
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10187209
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10187209

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NELAP - Recognized Laboratory Fields of Accreditation

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Issue Date: 5/1/2019

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Matrix: ***Non-Potable Water***

1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10187209
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10187209
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10187209
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10187209
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10187209
2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10187209
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10187209
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10187209
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10187209
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10187209
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10187209
Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10187209
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10187209
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10187209
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10187209
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10187209

Method EPA 8316

Analyte	**AB**	**Analyte ID**	**Method ID**
Acrylamide	TX	4330	10188202

Method EPA 8330

Analyte	**AB**	**Analyte ID**	**Method ID**
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10189807
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10189807
2,4,6-Trinitrotoluene (2,4,6-TNT)	TX	9651	10189807
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10189807
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10189807
2-Amino-4,6-dinitrotoluene (2-am-dnt)	TX	9303	10189807
2-Nitrotoluene	TX	9507	10189807
3-Nitrotoluene	TX	9510	10189807
4-Amino-2,6-dinitrotoluene (4-am-dnt)	TX	9306	10189807
4-Nitrotoluene	TX	9513	10189807

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Matrix: ***Non-Potable Water***

Methyl-2,4,6-trinitrophenylnitramine (tetryl)	TX	6415	10189807
Nitrobenzene	TX	5015	10189807
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	TX	9522	10189807
RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine)	TX	9432	10189807

Method EPA 9014

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	10193803
Total cyanide	TX	1645	10193803

Method EPA 9038

Analyte	**AB**	**Analyte ID**	**Method ID**
Sulfate	TX	2000	10196608

Method EPA 9040

Analyte	**AB**	**Analyte ID**	**Method ID**
pH	TX	1900	10196802

Method EPA 9050

Analyte	**AB**	**Analyte ID**	**Method ID**
Conductivity	TX	1610	10198604

Method EPA 9056

Analyte	**AB**	**Analyte ID**	**Method ID**
Bromide	TX	1540	10199209
Chloride	TX	1575	10199209
Fluoride	TX	1730	10199209
Nitrate as N	TX	1810	10199209
Nitrate-nitrite	TX	1820	10199209
Nitrite as N	TX	1840	10199209
Orthophosphate as P	TX	1870	10199209
Sulfate	TX	2000	10199209

Method EPA 9060

Analyte	**AB**	**Analyte ID**	**Method ID**
Total Organic Carbon (TOC)	TX	2040	10200201

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Matrix: ***Non-Potable Water***

Method EPA 9065

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200405

Method EPA 9066

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200609

Method EPA 9250

Analyte	AB	Analyte ID	Method ID
Chloride	TX	1575	10207202

Method EPA RSK 175

Analyte	AB	Analyte ID	Method ID
2-methylpropane (Isobutane)	TX	4942	10212905
Ethane	TX	4747	10212905
Ethene	TX	4752	10212905
Methane	TX	4926	10212905
n-Butane	TX	5007	10212905
n-Propane	TX	5029	10212905

Method HACH 8000

Analyte	AB	Analyte ID	Method ID
Chemical oxygen demand (COD)	TX	1565	60003001

Method SM 2120 B

Analyte	AB	Analyte ID	Method ID
Color	TX	1605	20223807

Method SM 2310 B (4a)

Analyte	AB	Analyte ID	Method ID
Acidity, as CaCO3	TX	1500	20002806

Method SM 2320 B

Analyte	AB	Analyte ID	Method ID
Alkalinity as CaCO3	TX	1505	20045005

Method SM 2340 B

Analyte	AB	Analyte ID	Method ID

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Matrix: ***Non-Potable Water***

Total hardness as CaCO3	TX	1755	20046008

Method SM 2510 B

Analyte	**AB**	**Analyte ID**	**Method ID**
Conductivity	TX	1610	20048004

Method SM 2540 B

Analyte	**AB**	**Analyte ID**	**Method ID**
Residue-total (total solids)	TX	1950	20004608

Method SM 2540 C

Analyte	**AB**	**Analyte ID**	**Method ID**
Residue-filterable (TDS)	TX	1955	20049803

Method SM 2540 D

Analyte	**AB**	**Analyte ID**	**Method ID**
Residue-nonfilterable (TSS)	TX	1960	20004802

Method SM 3500-Cr B

Analyte	**AB**	**Analyte ID**	**Method ID**
Chromium (VI)	TX	1045	20065809

Method SM 4500-Cl F

Analyte	**AB**	**Analyte ID**	**Method ID**
Total residual chlorine	TX	1940	20080482

Method SM 4500-Cl^- E

Analyte	**AB**	**Analyte ID**	**Method ID**
Chloride	TX	1575	20019209

Method SM 4500-CN^- C

Analyte	**AB**	**Analyte ID**	**Method ID**
Total cyanide	TX	1645	20020808

Method SM 4500-CN^- E

Analyte	**AB**	**Analyte ID**	**Method ID**
Total cyanide	TX	1645	20021209

Method SM 4500-CN^- G

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	20021607

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Matrix: ***Non-Potable Water***

Method SM 4500-H+ B

Analyte	AB	Analyte ID	Method ID
pH	TX	1900	20104603

Method SM 4500-NH3 D

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	20108809
Kjeldahl Nitrogen (Total Kjeldahl Nitrogen-TKN)	TX	1790	20108809

Method SM 4500-NH3 F

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	20023001

Method SM 4500-O G

Analyte	AB	Analyte ID	Method ID
Oxygen, dissolved	TX	1880	20025405

Method SM 4500-P E

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	20025803
Phosphorus	TX	1910	20025803

Method SM 4500-$S2^{-}$ F

Analyte	AB	Analyte ID	Method ID
Sulfide	TX	2005	20126209

Method SM 4500-SiO2 D

Analyte	AB	Analyte ID	Method ID
Silica as SiO2	TX	1990	20127202

Method SM 4500-$SO3^{-}$ B

Analyte	AB	Analyte ID	Method ID
Sulfite	TX	2015	20026806

Method SM 5210 B

Analyte	AB	Analyte ID	Method ID
Biochemical oxygen demand (BOD)	TX	1530	20027401
Carbonaceous BOD, CBOD	TX	1555	20027401

Method SM 5310 B

Analyte	AB	Analyte ID	Method ID

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Matrix: ***Non-Potable Water***

Total Organic Carbon (TOC)	TX	2040	20137206

Method SM 5310 C

Analyte	**AB**	**Analyte ID**	**Method ID**
Total Organic Carbon (TOC)	TX	2040	20138209

Method SM 5540 C

Analyte	**AB**	**Analyte ID**	**Method ID**
Surfactants - MBAS	TX	2025	20144405

Method TCEQ 1005

Analyte	**AB**	**Analyte ID**	**Method ID**
Total Petroleum Hydrocarbons (TPH)	TX	2050	90019208

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Matrix: ***Solid & Chemical Materials***

Method ASTM D2216

Analyte	AB	Analyte ID	Method ID
Moisture	TX	10337	ASTM D2216-05

Method EPA 1010

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10116606

Method EPA 1030

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10117201

Method EPA 1311

Analyte	AB	Analyte ID	Method ID
TCLP	TX	849	10118806

Method EPA 1312

Analyte	AB	Analyte ID	Method ID
SPLP	TX	850	10119003

Method EPA 1668

Analyte	AB	Analyte ID	Method ID
Decachlorobiphenyls	TX	10332	10262007
Dichlorobiphenyls	TX	464	10262007
Heptachlorobiphenyls	TX	486	10262007
Hexachlorobiphenyls	TX	487	10262007
Monochlorobiphenyls	TX	501	10262007
Nonachlorobiphenyls	TX	507	10262007
Octachlorobiphenyls	TX	508	10262007
Pentachlorobiphenyls	TX	515	10262007
Tetrachlorobiphenyls	TX	528	10262007
Trichlorobiphenyls	TX	541	10262007

Method EPA 200.8

Analyte	AB	Analyte ID	Method ID
Uranium	TX	3035	10014605

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Matrix: ***Solid & Chemical Materials***

Method EPA 300.0

Analyte	AB	Analyte ID	Method ID
Bromide	TX	1540	10053200
Chloride	TX	1575	10053200
Fluoride	TX	1730	10053200
Nitrate as N	TX	1810	10053200
Nitrate-nitrite	TX	1820	10053200
Nitrite as N	TX	1840	10053200
Orthophosphate as P	TX	1870	10053200
Sulfate	TX	2000	10053200

Method EPA 310.1

Analyte	AB	Analyte ID	Method ID
Alkalinity as CaCO3	TX	1505	10054805

Method EPA 350.3

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	10064401

Method EPA 365.3

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	10070801
Phosphorus	TX	1910	10070801

Method EPA 6020

Analyte	AB	Analyte ID	Method ID
Aluminum	TX	1000	10156204
Antimony	TX	1005	10156204
Arsenic	TX	1010	10156204
Barium	TX	1015	10156204
Beryllium	TX	1020	10156204
Boron	TX	1025	10156204
Cadmium	TX	1030	10156204
Calcium	TX	1035	10156204
Chromium	TX	1040	10156204

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Matrix: ***Solid & Chemical Materials***

Cobalt	TX	1050	10156204
Copper	TX	1055	10156204
Iron	TX	1070	10156204
Lead	TX	1075	10156204
Lithium	TX	1080	10156204
Magnesium	TX	1085	10156204
Manganese	TX	1090	10156204
Molybdenum	TX	1100	10156204
Nickel	TX	1105	10156204
Potassium	TX	1125	10156204
Selenium	TX	1140	10156204
Silver	TX	1150	10156204
Sodium	TX	1155	10156204
Strontium	TX	1160	10156204
Thallium	TX	1165	10156204
Tin	TX	1175	10156204
Titanium	TX	1180	10156204
Vanadium	TX	1185	10156204
Zinc	TX	1190	10156204

Method EPA 7196

Analyte	**AB**	**Analyte ID**	**Method ID**
Chromium (VI)	TX	1045	10162206

Method EPA 7470

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10165603

Method EPA 7471

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10166004

Method EPA 8015

Analyte	**AB**	**Analyte ID**	**Method ID**
Diesel range organics (DRO)	TX	9369	10173203

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Matrix: ***Solid & Chemical Materials***

Ethanol	TX	4750	10173203
Ethylene glycol	TX	4785	10173203
Gasoline range organics (GRO)	TX	9408	10173203
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10173203
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10173203
Methanol	TX	4930	10173203
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10173203
n-Propanol (1-Propanol)	TX	5055	10173203
Propylene Glycol	TX	6657	10173203
tert-Butyl alcohol	TX	4420	10173203

Method EPA 8021

Analyte	**AB**	**Analyte ID**	**Method ID**
Benzene	TX	4375	10174400
Ethylbenzene	TX	4765	10174400
m+p-xylene	TX	5240	10174400
Methyl tert-butyl ether (MTBE)	TX	5000	10174400
o-Xylene	TX	5250	10174400
Toluene	TX	5140	10174400
Xylene (total)	TX	5260	10174400

Method EPA 8081

Analyte	**AB**	**Analyte ID**	**Method ID**
4,4'-DDD	TX	7355	10178402
4,4'-DDE	TX	7360	10178402
4,4'-DDT	TX	7365	10178402
Aldrin	TX	7025	10178402
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10178402
alpha-Chlordane	TX	7240	10178402
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10178402
Chlordane (tech.)	TX	7250	10178402
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10178402
Dieldrin	TX	7470	10178402

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Matrix: ***Solid & Chemical Materials***

Endosulfan I	TX	7510	10178402
Endosulfan II	TX	7515	10178402
Endosulfan sulfate	TX	7520	10178402
Endrin	TX	7540	10178402
Endrin aldehyde	TX	7530	10178402
Endrin ketone	TX	7535	10178402
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10178402
gamma-Chlordane	TX	7245	10178402
Heptachlor	TX	7685	10178402
Heptachlor epoxide	TX	7690	10178402
Methoxychlor	TX	7810	10178402
Mirex	TX	7870	10178402
Toxaphene (Chlorinated camphene)	TX	8250	10178402

Method EPA 8082

Analyte	**AB**	**Analyte ID**	**Method ID**
Aroclor-1016 (PCB-1016)	TX	8880	10179201
Aroclor-1221 (PCB-1221)	TX	8885	10179201
Aroclor-1232 (PCB-1232)	TX	8890	10179201
Aroclor-1242 (PCB-1242)	TX	8895	10179201
Aroclor-1248 (PCB-1248)	TX	8900	10179201
Aroclor-1254 (PCB-1254)	TX	8905	10179201
Aroclor-1260 (PCB-1260)	TX	8910	10179201
PCBs (total)	TX	8870	10179201

Method EPA 8260

Analyte	**AB**	**Analyte ID**	**Method ID**
1,1,1,2-Tetrachloroethane	TX	5105	10184404
1,1,1-Trichloroethane	TX	5160	10184404
1,1,2,2-Tetrachloroethane	TX	5110	10184404
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	TX	5195	10184404
1,1,2-Trichloroethane	TX	5165	10184404
1,1-Dichloroethane	TX	4630	10184404

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Matrix: ***Solid & Chemical Materials***

1,1-Dichloroethylene	TX	4640	10184404
1,1-Dichloropropene	TX	4670	10184404
1,2,3-Trichlorobenzene	TX	5150	10184404
1,2,3-Trichloropropane	TX	5180	10184404
1,2,4-Trichlorobenzene	TX	5155	10184404
1,2,4-Trimethylbenzene	TX	5210	10184404
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10184404
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10184404
1,2-Dichlorobenzene	TX	4610	10184404
1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10184404
1,2-Dichloropropane	TX	4655	10184404
1,3,5-Trimethylbenzene	TX	5215	10184404
1,3-Dichlorobenzene	TX	4615	10184404
1,3-Dichloropropane	TX	4660	10184404
1,4-Dichlorobenzene	TX	4620	10184404
1,4-Dioxane (1,4-Diethyleneoxide)	TX	4735	10184404
1-Chlorohexane	TX	4510	10184404
1-Propanol	TX	5060	10184404
2,2-Dichloropropane	TX	4665	10184404
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10184404
2-Chloroethyl vinyl ether	TX	4500	10184404
2-Chlorotoluene	TX	4535	10184404
2-Hexanone (MBK)	TX	4860	10184404
4-Chlorotoluene	TX	4540	10184404
4-Isopropyltoluene (p-Cymene)	TX	4915	10184404
4-Methyl-2-pentanone (MIBK)	TX	4995	10184404
Acetone (2-Propanone)	TX	4315	10184404
Acetonitrile	TX	4320	10184404
Acrolein (Propenal)	TX	4325	10184404
Acrylonitrile	TX	4340	10184404

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-19-23

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

Expiration Date: 4/30/2020

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2019

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Matrix: ***Solid & Chemical Materials***

Allyl chloride (3-Chloropropene)	TX	4355	10184404
Benzene	TX	4375	10184404
Benzyl chloride	TX	5635	10184404
Bromobenzene	TX	4385	10184404
Bromochloromethane	TX	4390	10184404
Bromodichloromethane	TX	4395	10184404
Bromoform	TX	4400	10184404
Carbon disulfide	TX	4450	10184404
Carbon tetrachloride	TX	4455	10184404
Chlorobenzene	TX	4475	10184404
Chlorodibromomethane	TX	4575	10184404
Chloroethane (Ethyl chloride)	TX	4485	10184404
Chloroform	TX	4505	10184404
Chloroprene (2-Chloro-1,3-butadiene)	TX	4525	10184404
cis-1,2-Dichloroethylene	TX	4645	10184404
cis-1,3-Dichloropropene	TX	4680	10184404
Dibromofluoromethane	TX	4590	10184404
Dibromomethane (Methylene bromide)	TX	4595	10184404
Dichlorodifluoromethane (Freon-12)	TX	4625	10184404
Diethyl ether	TX	4725	10184404
Epichlorohydrin (1-Chloro-2,3-epoxypropane)	TX	4745	10184404
Ethanol	TX	4750	10184404
Ethyl acetate	TX	4755	10184404
Ethyl methacrylate	TX	4810	10184404
Ethylbenzene	TX	4765	10184404
Ethylene oxide	TX	4795	10184404
Hexachlorobutadiene	TX	4835	10184404
Iodomethane (Methyl iodide)	TX	4870	10184404
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10184404
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10184404

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Matrix: ***Solid & Chemical Materials***

Isopropylbenzene (Cumene)	TX	4900	10184404
m+p-xylene	TX	5240	10184404
Methacrylonitrile	TX	4925	10184404
Methyl acetate	TX	4940	10184404
Methyl acrylate	TX	4945	10184404
Methyl bromide (Bromomethane)	TX	4950	10184404
Methyl chloride (Chloromethane)	TX	4960	10184404
Methyl methacrylate	TX	4990	10184404
Methyl tert-butyl ether (MTBE)	TX	5000	10184404
Methylcyclohexane	TX	4965	10184404
Methylene chloride (Dichloromethane)	TX	4975	10184404
Naphthalene	TX	5005	10184404
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10184404
n-Butylbenzene	TX	4435	10184404
n-Propylbenzene	TX	5090	10184404
o-Xylene	TX	5250	10184404
Pentachloroethane	TX	5035	10184404
Propionitrile (Ethyl cyanide)	TX	5080	10184404
Pyridine	TX	5095	10184404
sec-Butylbenzene	TX	4440	10184404
Styrene	TX	5100	10184404
tert-Butyl alcohol	TX	4420	10184404
tert-Butylbenzene	TX	4445	10184404
Tetrachloroethylene (Perchloroethylene)	TX	5115	10184404
Toluene	TX	5140	10184404
trans-1,2-Dichloroethylene	TX	4700	10184404
trans-1,3-Dichloropropylene	TX	4685	10184404
trans-1,4-Dichloro-2-butene	TX	4605	10184404
Trichloroethene (Trichloroethylene)	TX	5170	10184404
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10184404

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Matrix: ***Solid & Chemical Materials***

Vinyl acetate	TX	5225	10184404
Vinyl chloride	TX	5235	10184404
Xylene (total)	TX	5260	10184404

Method EPA 8270

Analyte	AB	Analyte ID	Method ID
1,2,4,5-Tetrachlorobenzene	TX	6715	10185203
1,2,4-Trichlorobenzene	TX	5155	10185203
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10185203
1,2-Dichlorobenzene	TX	4610	10185203
1,2-Dinitrobenzene	TX	6155	10185203
1,2-Diphenylhydrazine	TX	6220	10185203
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10185203
1,3-Dichlorobenzene	TX	4615	10185203
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10185203
1,4-Dichlorobenzene	TX	4620	10185203
1,4-Dinitrobenzene	TX	6165	10185203
1,4-Naphthoquinone	TX	6420	10185203
1,4-Phenylenediamine	TX	6630	10185203
1-Chloronaphthalene	TX	5790	10185203
1-Naphthylamine	TX	6425	10185203
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10185203
2,3,4,6-Tetrachlorophenol	TX	6735	10185203
2,4,5-Trichlorophenol	TX	6835	10185203
2,4,5-Trimethylaniline	TX	6880	10185203
2,4,6-Trichlorophenol	TX	6840	10185203
2,4-Diaminotoluene	TX	5880	10185203
2,4-Dichlorophenol	TX	6000	10185203
2,4-Dimethylphenol	TX	6130	10185203
2,4-Dinitrophenol	TX	6175	10185203
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10185203

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Matrix: ***Solid & Chemical Materials***

2,6-Dichlorophenol	TX	6005	10185203
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10185203
2-Acetylaminofluorene	TX	5515	10185203
2-Chloronaphthalene	TX	5795	10185203
2-Chlorophenol	TX	5800	10185203
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10185203
2-Methylaniline (o-Toluidine)	TX	5145	10185203
2-Methylnaphthalene	TX	6385	10185203
2-Methylphenol (o-Cresol)	TX	6400	10185203
2-Naphthylamine	TX	6430	10185203
2-Nitroaniline	TX	6460	10185203
2-Nitrophenol	TX	6490	10185203
2-Picoline (2-Methylpyridine)	TX	5050	10185203
3,3'-Dichlorobenzidine	TX	5945	10185203
3,3'-Dimethylbenzidine	TX	6120	10185203
3-Methylcholanthrene	TX	6355	10185203
3-Methylphenol (m-Cresol)	TX	6405	10185203
3-Nitroaniline	TX	6465	10185203
4-Aminobiphenyl	TX	5540	10185203
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10185203
4-Chloro-3-methylphenol	TX	5700	10185203
4-Chloroaniline	TX	5745	10185203
4-Chlorophenyl phenylether	TX	5825	10185203
4-Methylphenol (p-Cresol)	TX	6410	10185203
4-Nitroaniline	TX	6470	10185203
4-Nitrophenol	TX	6500	10185203
4-Nitroquinoline-1-oxide	TX	6510	10185203
5-Nitro-o-toluidine	TX	6570	10185203
7,12-Dimethylbenz(a) anthracene	TX	6115	10185203
a-a-Dimethylphenethylamine	TX	6125	10185203

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Matrix: ***Solid & Chemical Materials***

Acenaphthene	TX	5500	10185203
Acenaphthylene	TX	5505	10185203
Acetophenone	TX	5510	10185203
Aniline	TX	5545	10185203
Anthracene	TX	5555	10185203
Aramite	TX	5560	10185203
Atrazine	TX	7065	10185203
Azinphos-methyl (Guthion)	TX	7075	10185203
Azobenzene	TX	5562	10185203
Benzenethiol (Thiophenol)	TX	6750	10185203
Benzidine	TX	5595	10185203
Benzo(a)anthracene	TX	5575	10185203
Benzo(a)pyrene	TX	5580	10185203
Benzo(b)fluoranthene	TX	5585	10185203
Benzo(e)pyrene	TX	5605	10185203
Benzo(g,h,i)perylene	TX	5590	10185203
Benzo(k)fluoranthene	TX	5600	10185203
Benzoic acid	TX	5610	10185203
Benzyl alcohol	TX	5630	10185203
Biphenyl	TX	5640	10185203
bis(2-Chloroethoxy)methane	TX	5760	10185203
bis(2-Chloroethyl) ether	TX	5765	10185203
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10185203
Butyl benzyl phthalate	TX	5670	10185203
Caprolactam	TX	7180	10185203
Carbaryl (Sevin)	TX	7195	10185203
Carbazole	TX	5680	10185203
Carbophenothion	TX	7220	10185203
Chlorobenzilate	TX	7260	10185203
Chrysene	TX	5855	10185203

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Matrix: ***Solid & Chemical Materials***

Demeton	TX	7390	10185203
Demeton-o	TX	7395	10185203
Demeton-s	TX	7385	10185203
Diallate	TX	7405	10185203
Dibenz(a,h) anthracene	TX	5895	10185203
Dibenz(a,j) acridine	TX	5900	10185203
Dibenzo(a,e) pyrene	TX	5890	10185203
Dibenzofuran	TX	5905	10185203
Dichlorovos (DDVP, Dichlorvos)	TX	8610	10185203
Diethyl phthalate	TX	6070	10185203
Dimethoate	TX	7475	10185203
Dimethyl phthalate	TX	6135	10185203
Di-n-butyl phthalate	TX	5925	10185203
Di-n-octyl phthalate	TX	6200	10185203
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10185203
Diphenylamine	TX	6205	10185203
Disulfoton	TX	8625	10185203
Ethyl methanesulfonate	TX	6260	10185203
Fluoranthene	TX	6265	10185203
Fluorene	TX	6270	10185203
Hexachlorobenzene	TX	6275	10185203
Hexachlorobutadiene	TX	4835	10185203
Hexachlorocyclopentadiene	TX	6285	10185203
Hexachloroethane	TX	4840	10185203
Hexachlorophene	TX	6290	10185203
Hexachloropropene	TX	6295	10185203
Indeno(1,2,3-cd) pyrene	TX	6315	10185203
Isodrin	TX	7725	10185203
Isophorone	TX	6320	10185203
Isosafrole	TX	6325	10185203

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Matrix: ***Solid & Chemical Materials***

Kepone	TX	7740	10185203
Malathion	TX	7770	10185203
Methapyrilene	TX	6345	10185203
Methyl methanesulfonate	TX	6375	10185203
Methyl parathion (Parathion, methyl)	TX	7825	10185203
Mevinphos	TX	7850	10185203
Naphthalene	TX	5005	10185203
Nitrobenzene	TX	5015	10185203
n-Nitrosodiethylamine	TX	6525	10185203
n-Nitrosodimethylamine	TX	6530	10185203
n-Nitrosodi-n-butylamine	TX	5025	10185203
n-Nitrosodi-n-propylamine	TX	6545	10185203
n-Nitrosodiphenylamine	TX	6535	10185203
n-Nitrosomethylethylamine	TX	6550	10185203
n-Nitrosomorpholine	TX	6555	10185203
n-Nitrosopiperidine	TX	6560	10185203
n-Nitrosopyrrolidine	TX	6565	10185203
o,o,o-Triethyl phosphorothioate	TX	8290	10185203
o-Anisidine	TX	5550	10185203
Parathion, ethyl	TX	7955	10185203
p-Cresidine	TX	5860	10185203
Pentachlorobenzene	TX	6590	10185203
Pentachloronitrobenzene (PCNB)	TX	6600	10185203
Pentachlorophenol	TX	6605	10185203
Phenacetin	TX	6610	10185203
Phenanthrene	TX	6615	10185203
Phenol	TX	6625	10185203
Phorate	TX	7985	10185203
Pronamide (Kerb)	TX	6650	10185203
Pyrene	TX	6665	10185203

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Matrix: ***Solid & Chemical Materials***

Pyridine	TX	5095	10185203
Quinoline	TX	6670	10185203
Safrole	TX	6685	10185203
Sulfotepp	TX	8155	10185203
Terbufos	TX	8185	10185203
Tetrachlorvinphos (Stirophos, Gardona)	TX	8197	10185203
Thionazin (Zinophos)	TX	8235	10185203
Toluene diisocyanate	TX	6775	10185203

Method EPA 8290

Analyte	AB	Analyte ID	Method ID
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10187209
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10187209
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10187209
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10187209
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10187209
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10187209
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10187209
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10187209
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10187209
1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10187209
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10187209
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10187209
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10187209
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10187209
2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10187209
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10187209
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10187209
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10187209
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10187209
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10187209

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Matrix: ***Solid & Chemical Materials***

Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10187209
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10187209
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10187209
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10187209
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10187209

Method EPA 8316

Analyte	**AB**	**Analyte ID**	**Method ID**
Acrylamide	TX	4330	10188202

Method EPA 8330

Analyte	**AB**	**Analyte ID**	**Method ID**
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10189807
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10189807
2,4,6-Trinitrotoluene (2,4,6-TNT)	TX	9651	10189807
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10189807
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10189807
2-Amino-4,6-dinitrotoluene (2-am-dnt)	TX	9303	10189807
2-Nitrotoluene	TX	9507	10189807
3-Nitrotoluene	TX	9510	10189807
4-Amino-2,6-dinitrotoluene (4-am-dnt)	TX	9306	10189807
4-Nitrotoluene	TX	9513	10189807
Methyl-2,4,6-trinitrophenylnitramine (tetryl)	TX	6415	10189807
Nitrobenzene	TX	5015	10189807
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	TX	9522	10189807
RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine)	TX	9432	10189807

Method EPA 9014

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	10193803
Total cyanide	TX	1645	10193803

Method EPA 9038

Analyte	**AB**	**Analyte ID**	**Method ID**
Sulfate	TX	2000	10196608

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Matrix: ***Solid & Chemical Materials***

Method EPA 9040

Analyte	AB	Analyte ID	Method ID
Corrosivity	TX	1615	10197203
pH	TX	1900	10196802

Method EPA 9045

Analyte	AB	Analyte ID	Method ID
Corrosivity	TX	1615	10197805
pH	TX	1900	10197805

Method EPA 9050

Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	10198604

Method EPA 9056

Analyte	AB	Analyte ID	Method ID
Bromide	TX	1540	10199209
Chloride	TX	1575	10199209
Fluoride	TX	1730	10199209
Nitrate as N	TX	1810	10199209
Nitrate-nitrite	TX	1820	10199209
Nitrite as N	TX	1840	10199209
Orthophosphate as P	TX	1870	10199209
Sulfate	TX	2000	10199209

Method EPA 9060

Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	10200201

Method EPA 9065

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200405

Method EPA 9071

Analyte	AB	Analyte ID	Method ID
n-Hexane Extractable Material (HEM) (O&G)	TX	1803	10201204

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Matrix: ***Solid & Chemical Materials***

Method	Analyte	AB	Analyte ID	Method ID
EPA 9095	Paint Filter Liquids Test	TX	10312	10204009
EPA 9250	Chloride	TX	1575	10207202
SM 2320 B	Alkalinity as CaCO3	TX	1505	20045005
SM 2510 B	Conductivity	TX	1610	20048004
SM 2540 G	Residue-total (total solids)	TX	1950	20005203
SSA/ASA Part 3:34	Carbon, organic (Walkley-Black)	TX	10340	SSA/ASA Pt 3:34
TCEQ 1005	Total Petroleum Hydrocarbons (TPH)	TX	2050	90019208

10450 Stancliff Rd. Suite 210
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February 10, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20011451**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 5 sample(s) on Jan 30, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20011451**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS20011451**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/10/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20011451				
Reviewer Name: Bernadette Fini			Prep Batch Number(s): 150183,R355572,R355975				
#[1]	A[2]	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?	X				
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			1
		Were MS/MSD RPDs within laboratory QC limits?		X			2
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/10/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20011451				
Reviewer Name: Bernadette Fini			Prep Batch Number(s): 150183,R355572,R355975				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 02/10/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20011451
Reviewer Name: Bernadette Fini	Prep Batch Number(s): 150183,R355572,R355975

ER#[5]	Description
1	Batch 150183, Semivolatile Organics Method SW8270, sample HS20011422-01, MSD was performed on unrelated sample. Batch zzr355572, Volatile Organics Method SW8260, sample HS20011456-02, MS and MSD were performed on unrelated sample.
2	Batch 150183, Semivolatile Organics Method SW8270, sample HS20011422-01, MS/MSD RPD is for an unrelated sample.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20011451

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20011451-01	SO-1620-SG22 (0.5-1) 20200129	Soil		29-Jan-2020 09:45	30-Jan-2020 16:40	☐
HS20011451-02	SO-1620-SG22 (5.5-6) 20200129	Soil		29-Jan-2020 10:30	30-Jan-2020 16:40	☐
HS20011451-03	SO-1620-SG21 (0.5-1) 20200129	Soil		29-Jan-2020 11:30	30-Jan-2020 16:40	☐
HS20011451-04	SO-1620-SG21 (5.5-6) 20200129	Soil		29-Jan-2020 14:15	30-Jan-2020 16:40	☐
HS20011451-05	SO-1620-SG20 (0.5-1) 20200129	Soil		29-Jan-2020 15:00	30-Jan-2020 16:40	☑

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG22 (0.5-1) 20200129
Collection Date: 29-Jan-2020 09:45

ANALYTICAL REPORT
WorkOrder:HS20011451
Lab ID:HS20011451-01
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00061	0.0061	mg/Kg-dry	1	04-Feb-2020 03:37
Ethylbenzene		U	0.00085	0.0061	mg/Kg-dry	1	04-Feb-2020 03:37
Xylenes, Total		U	0.0012	0.0061	mg/Kg-dry	1	04-Feb-2020 03:37
Surr: 1,2-Dichloroethane-d4	*114*			*70-126*	*%REC*	*1*	*04-Feb-2020 03:37*
Surr: 4-Bromofluorobenzene	*105*			*70-130*	*%REC*	*1*	*04-Feb-2020 03:37*
Surr: Dibromofluoromethane	*109*			*70-130*	*%REC*	*1*	*04-Feb-2020 03:37*
Surr: Toluene-d8	*104*			*70-130*	*%REC*	*1*	*04-Feb-2020 03:37*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 31-Jan-2020		Analyst: GEY
Naphthalene	**0.14**		**0.00072**	**0.0039**	**mg/Kg-dry**	1	03-Feb-2020 19:59
Surr: 2-Fluorobiphenyl	*89.1*			*43-125*	*%REC*	*1*	*03-Feb-2020 19:59*
Surr: 4-Terphenyl-d14	*98.1*			*32-125*	*%REC*	*1*	*03-Feb-2020 19:59*
Surr: Nitrobenzene-d5	*72.7*			*37-125*	*%REC*	*1*	*03-Feb-2020 19:59*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: MZD
Percent Moisture	**16.9**		**0.0100**	**0.0100**	**wt%**	1	10-Feb-2020 08:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG22 (5.5-6) 20200129
Collection Date: 29-Jan-2020 10:30

ANALYTICAL REPORT
WorkOrder:HS20011451
Lab ID:HS20011451-02
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00056	0.0056	mg/Kg-dry	1	04-Feb-2020 03:59
Ethylbenzene		U	0.00079	0.0056	mg/Kg-dry	1	04-Feb-2020 03:59
Xylenes, Total		U	0.0011	0.0056	mg/Kg-dry	1	04-Feb-2020 03:59
Surr: 1,2-Dichloroethane-d4	*112*			*70-126*	*%REC*	*1*	*04-Feb-2020 03:59*
Surr: 4-Bromofluorobenzene	*104*			*70-130*	*%REC*	*1*	*04-Feb-2020 03:59*
Surr: Dibromofluoromethane	*106*			*70-130*	*%REC*	*1*	*04-Feb-2020 03:59*
Surr: Toluene-d8	*102*			*70-130*	*%REC*	*1*	*04-Feb-2020 03:59*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 31-Jan-2020		Analyst: GEY
Naphthalene		U	0.00072	0.0039	mg/Kg-dry	1	31-Jan-2020 20:29
Surr: 2-Fluorobiphenyl	*86.4*			*43-125*	*%REC*	*1*	*31-Jan-2020 20:29*
Surr: 4-Terphenyl-d14	*95.7*			*32-125*	*%REC*	*1*	*31-Jan-2020 20:29*
Surr: Nitrobenzene-d5	*72.0*			*37-125*	*%REC*	*1*	*31-Jan-2020 20:29*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: MZD
Percent Moisture	**16.4**		**0.0100**	**0.0100**	**wt%**	1	10-Feb-2020 08:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG21 (0.5-1) 20200129
Collection Date: 29-Jan-2020 11:30

ANALYTICAL REPORT
WorkOrder:HS20011451
Lab ID:HS20011451-03
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00088	0.0088	mg/Kg-dry	1	04-Feb-2020 04:22
Ethylbenzene		U	0.0012	0.0088	mg/Kg-dry	1	04-Feb-2020 04:22
Xylenes, Total		U	0.0018	0.0088	mg/Kg-dry	1	04-Feb-2020 04:22
Surr: 1,2-Dichloroethane-d4	*109*			*70-126*	*%REC*	*1*	*04-Feb-2020 04:22*
Surr: 4-Bromofluorobenzene	*104*			*70-130*	*%REC*	*1*	*04-Feb-2020 04:22*
Surr: Dibromofluoromethane	*105*			*70-130*	*%REC*	*1*	*04-Feb-2020 04:22*
Surr: Toluene-d8	*103*			*70-130*	*%REC*	*1*	*04-Feb-2020 04:22*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 31-Jan-2020		Analyst: GEY
Naphthalene	**0.022**		**0.00068**	**0.0038**	**mg/Kg-dry**	1	03-Feb-2020 20:18
Surr: 2-Fluorobiphenyl	*83.7*			*43-125*	*%REC*	*1*	*03-Feb-2020 20:18*
Surr: 4-Terphenyl-d14	*97.1*			*32-125*	*%REC*	*1*	*03-Feb-2020 20:18*
Surr: Nitrobenzene-d5	*72.5*			*37-125*	*%REC*	*1*	*03-Feb-2020 20:18*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: MZD
Percent Moisture	**12.4**		**0.0100**	**0.0100**	**wt%**	1	10-Feb-2020 08:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG21 (5.5-6) 20200129
Collection Date: 29-Jan-2020 14:15

ANALYTICAL REPORT
WorkOrder:HS20011451
Lab ID:HS20011451-04
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00053	0.0053	mg/Kg-dry	1	04-Feb-2020 04:45
Ethylbenzene		U	0.00074	0.0053	mg/Kg-dry	1	04-Feb-2020 04:45
Xylenes, Total		U	0.0011	0.0053	mg/Kg-dry	1	04-Feb-2020 04:45
Surr: 1,2-Dichloroethane-d4	*106*			*70-126*	*%REC*	*1*	*04-Feb-2020 04:45*
Surr: 4-Bromofluorobenzene	*103*			*70-130*	*%REC*	*1*	*04-Feb-2020 04:45*
Surr: Dibromofluoromethane	*105*			*70-130*	*%REC*	*1*	*04-Feb-2020 04:45*
Surr: Toluene-d8	*104*			*70-130*	*%REC*	*1*	*04-Feb-2020 04:45*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 31-Jan-2020		Analyst: GEY
Naphthalene	**0.010**		**0.00071**	**0.0039**	**mg/Kg-dry**	1	31-Jan-2020 21:07
Surr: 2-Fluorobiphenyl	*93.4*			*43-125*	*%REC*	*1*	*31-Jan-2020 21:07*
Surr: 4-Terphenyl-d14	*101*			*32-125*	*%REC*	*1*	*31-Jan-2020 21:07*
Surr: Nitrobenzene-d5	*76.5*			*37-125*	*%REC*	*1*	*31-Jan-2020 21:07*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: MZD
Percent Moisture	**16.2**		**0.0100**	**0.0100**	**wt%**	1	10-Feb-2020 08:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011451

Batch ID: 3589 **Start Date:** 31 Jan 2020 09:41 **End Date:** 31 Jan 2020 09:41
Method: VOLATILES BY SW8260C

Sample ID	Container	Sample Wt/Vol	Final Volume	Weight Factor	Container Type
HS20011451-01	1	4.941 (g)	5 (mL)	1.01	TerraCore (5035A)
HS20011451-02	1	5.297 (g)	5 (mL)	0.94	TerraCore (5035A)
HS20011451-03	1	3.243 (g)	5 (mL)	1.54	TerraCore (5035A)
HS20011451-04	1	5.707 (g)	5 (mL)	0.88	TerraCore (5035A)

Batch ID: 150183 **Start Date:** 31 Jan 2020 07:28 **End Date:** 31 Jan 2020 14:00
Method: SV SOXHLET EXTRACT-LOWLEVEL-SW3541 **Prep Code:** 3541_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20011451-01	1	30.19 (g)	1 (mL)	0.03312
HS20011451-02	1	30.11 (g)	1 (mL)	0.03321
HS20011451-03	1	30.04 (g)	1 (mL)	0.03329
HS20011451-04	1	30.21 (g)	1 (mL)	0.0331

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011451

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 150183 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Soil	
HS20011451-01	SO-1620-SG22 (0.5-1) 20200129	29 Jan 2020 09:45		31 Jan 2020 07:28	03 Feb 2020 19:59	1
HS20011451-02	SO-1620-SG22 (5.5-6) 20200129	29 Jan 2020 10:30		31 Jan 2020 07:28	31 Jan 2020 20:29	1
HS20011451-03	SO-1620-SG21 (0.5-1) 20200129	29 Jan 2020 11:30		31 Jan 2020 07:28	03 Feb 2020 20:18	1
HS20011451-04	SO-1620-SG21 (5.5-6) 20200129	29 Jan 2020 14:15		31 Jan 2020 07:28	31 Jan 2020 21:07	1
Batch ID: R355572 (0)	**Test Name :** VOLATILES BY SW8260C				**Matrix:** Soil	
HS20011451-01	SO-1620-SG22 (0.5-1) 20200129	29 Jan 2020 09:45			04 Feb 2020 03:37	1
HS20011451-02	SO-1620-SG22 (5.5-6) 20200129	29 Jan 2020 10:30			04 Feb 2020 03:59	1
HS20011451-03	SO-1620-SG21 (0.5-1) 20200129	29 Jan 2020 11:30			04 Feb 2020 04:22	1
HS20011451-04	SO-1620-SG21 (5.5-6) 20200129	29 Jan 2020 14:15			04 Feb 2020 04:45	1
Batch ID: R355975 (0)	**Test Name :** MOISTURE - ASTM D2216				**Matrix:** Soil	
HS20011451-01	SO-1620-SG22 (0.5-1) 20200129	29 Jan 2020 09:45			10 Feb 2020 08:28	1
HS20011451-02	SO-1620-SG22 (5.5-6) 20200129	29 Jan 2020 10:30			10 Feb 2020 08:28	1
HS20011451-03	SO-1620-SG21 (0.5-1) 20200129	29 Jan 2020 11:30			10 Feb 2020 08:28	1
HS20011451-04	SO-1620-SG21 (5.5-6) 20200129	29 Jan 2020 14:15			10 Feb 2020 08:28	1

WorkOrder: HS20011451
InstrumentID: SV-7
Test Code: 8270_LOW_S
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Naphthalene	91-20-3	0.0017	0.0018	0.00060	0.0033
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	4-Terphenyl-d14	1718-51-0	0	0	0	0
S	Nitrobenzene-d5	4165-60-0	0	0	0	0

WorkOrder: HS20011451
InstrumentID: VOA8
Test Code: 8260_S
Test Number: SW8260
Test Name: Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Benzene	71-43-2	0.0012	0.0013	0.00050	0.0050
A	Ethylbenzene	100-41-4	0.0012	0.0014	0.00070	0.0050
A	Xylenes, Total	1330-20-7	0.0012	0.0014	0.0010	0.0050
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0
S	4-Bromofluorobenzene	460-00-4	0	0	0	0
S	Dibromofluoromethane	1868-53-7	0	0	0	0
S	Toluene-d8	2037-26-5	0	0	0	0

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011451

QC BATCH REPORT

Batch ID: 150183 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-150183** Units: **ug/Kg** Analysis Date: **31-Jan-2020 10:33**
Client ID: Run ID: **SV-7_355477** SeqNo: **5455791** PrepDate: **31-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	U	3.3								
Surr: 2-Fluorobiphenyl	*154.1*	*0*	*167*	*0*	*92.3*	*43 - 125*				
Surr: 4-Terphenyl-d14	*171.7*	*0*	*167*	*0*	*103*	*32 - 125*				
Surr: Nitrobenzene-d5	*156.1*	*0*	*167*	*0*	*93.5*	*37 - 125*				

LCS Sample ID: **LCS-150183** Units: **ug/Kg** Analysis Date: **31-Jan-2020 10:52**
Client ID: Run ID: **SV-7_355477** SeqNo: **5455792** PrepDate: **31-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	153	3.3	167	0	91.6	50 - 125				
Surr: 2-Fluorobiphenyl	*151.2*	*0*	*167*	*0*	*90.6*	*43 - 125*				
Surr: 4-Terphenyl-d14	*157.9*	*0*	*167*	*0*	*94.5*	*32 - 125*				
Surr: Nitrobenzene-d5	*157.8*	*0*	*167*	*0*	*94.5*	*37 - 125*				

MS Sample ID: **HS20011422-01MS** Units: **ug/Kg** Analysis Date: **31-Jan-2020 12:28**
Client ID: Run ID: **SV-7_355477** SeqNo: **5455797** PrepDate: **31-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	132.7	3.3	166.9	5.281	76.3	50 - 125				
Surr: 2-Fluorobiphenyl	*135.6*	*0*	*166.9*	*0*	*81.2*	*43 - 125*				
Surr: 4-Terphenyl-d14	*161.8*	*0*	*166.9*	*0*	*96.9*	*32 - 125*				
Surr: Nitrobenzene-d5	*118.8*	*0*	*166.9*	*0*	*71.2*	*37 - 125*				

MSD Sample ID: **HS20011422-01MSD** Units: **ug/Kg** Analysis Date: **31-Jan-2020 12:47**
Client ID: Run ID: **SV-7_355477** SeqNo: **5455798** PrepDate: **31-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	83.57	3.3	166.8	5.281	46.9	50 - 125	132.7	45.4	30	SR
Surr: 2-Fluorobiphenyl	*80.37*	*0*	*166.8*	*0*	*48.2*	*43 - 125*	*135.6*	*51.1*	*30*	R
Surr: 4-Terphenyl-d14	*154.8*	*0*	*166.8*	*0*	*92.8*	*32 - 125*	*161.8*	*4.43*	*30*	
Surr: Nitrobenzene-d5	*79.51*	*0*	*166.8*	*0*	*47.7*	*37 - 125*	*118.8*	*39.7*	*30*	R

The following samples were analyzed in this batch: HS20011451-01 HS20011451-02 HS20011451-03 HS20011451-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011451

QC BATCH REPORT

Batch ID: R355572 (0) **Instrument: VOA8** **Method: VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKS2-020320** Units: **ug/Kg** Analysis Date: **03-Feb-2020 21:08**
Client ID: Run ID: **VOA8_355572** SeqNo: **5457712** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	5.0								
Ethylbenzene	U	5.0								
Xylenes, Total	U	5.0								
Surr: 1,2-Dichloroethane-d4	*55.45*	*0*	*50*	*0*	*111*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*53*	*0*	*50*	*0*	*106*	*80 - 120*				
Surr: Dibromofluoromethane	*54.1*	*0*	*50*	*0*	*108*	*80 - 119*				
Surr: Toluene-d8	*52.29*	*0*	*50*	*0*	*105*	*81 - 118*				

LCS Sample ID: **VLCSS2-020320** Units: **ug/Kg** Analysis Date: **03-Feb-2020 20:22**
Client ID: Run ID: **VOA8_355572** SeqNo: **5457711** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	49.8	5.0	50	0	99.6	75 - 124				
Ethylbenzene	48.47	5.0	50	0	96.9	70 - 123				
Xylenes, Total	149.3	5.0	150	0	99.5	77 - 128				
Surr: 1,2-Dichloroethane-d4	*60.1*	*0*	*50*	*0*	*120*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*53.76*	*0*	*50*	*0*	*108*	*80 - 120*				
Surr: Dibromofluoromethane	*55.9*	*0*	*50*	*0*	*112*	*80 - 119*				
Surr: Toluene-d8	*50.9*	*0*	*50*	*0*	*102*	*81 - 118*				

MS Sample ID: **HS20011456-02MS** Units: **ug/Kg** Analysis Date: **03-Feb-2020 21:54**
Client ID: Run ID: **VOA8_355572** SeqNo: **5457714** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	33.22	4.9	49	0	67.8	70 - 130				S
Ethylbenzene	29.37	4.9	49	0	59.9	70 - 130				S
Xylenes, Total	82.6	4.9	147	0	56.2	70 - 130				S
Surr: 1,2-Dichloroethane-d4	*61.13*	*0*	*49*	*0*	*125*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*55.77*	*0*	*49*	*0*	*114*	*70 - 130*				
Surr: Dibromofluoromethane	*55.83*	*0*	*49*	*0*	*114*	*70 - 130*				
Surr: Toluene-d8	*43.91*	*0*	*49*	*0*	*89.6*	*70 - 130*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011451

QC BATCH REPORT

Batch ID: R355572 (0) **Instrument: VOA8** **Method: VOLATILES BY SW8260C**

MSD Sample ID: **HS20011456-02MSD** Units: **ug/Kg** Analysis Date: **03-Feb-2020 22:16**
Client ID: Run ID: **VOA8_355572** SeqNo: **5457715** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	32.95	5.0	50	0	65.9	70 - 130	33.22	0.823	30	S
Ethylbenzene	30.67	5.0	50	0	61.3	70 - 130	29.37	4.34	30	S
Xylenes, Total	89.52	5.0	150	0	59.7	70 - 130	82.6	8.04	30	S
Surr: 1,2-Dichloroethane-d4	*61.26*	*0*	*50*	*0*	*123*	*70 - 126*	*61.13*	*0.221*	*30*	
Surr: 4-Bromofluorobenzene	*54.06*	*0*	*50*	*0*	*108*	*70 - 130*	*55.77*	*3.11*	*30*	
Surr: Dibromofluoromethane	*58.31*	*0*	*50*	*0*	*117*	*70 - 130*	*55.83*	*4.35*	*30*	
Surr: Toluene-d8	*52.29*	*0*	*50*	*0*	*105*	*70 - 130*	*43.91*	*17.4*	*30*	

The following samples were analyzed in this batch: HS20011451-01 HS20011451-02 HS20011451-03 HS20011451-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011451

QC BATCH REPORT

Batch ID: R355975 (0) **Instrument:** Balance1 **Method:** MOISTURE - ASTM D2216

DUP Sample ID: **HS20011451-04DUP** Units: **wt%** Analysis Date: **10-Feb-2020 08:28**
Client ID: **SO-1620-SG21 (5.5-6) 20200129** Run ID: **Balance1_355975** SeqNo: **5466359** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	17.3	0.0100					16.2	6.57	20	

The following samples were analyzed in this batch: HS20011451-01 HS20011451-02 HS20011451-03 HS20011451-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20011451**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/Kg-dry	Milligrams per Kilogram- Dry weight corrected

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20011451

Date/Time Received: **30-Jan-2020 16:40**
Received by: **JRM**

Checklist completed by: *Nilesh D. Ranchod* eSignature — 30-Jan-2020 Date

Reviewed by: *Dane J. Wacasey* eSignature — 5-Feb-2020 Date

Matrices: **Soil**

Carrier name: **Client**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☑	No ☐	Not Present ☐
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:214102
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	0.4C UC/C	IR # 25
Cooler(s)/Kit(s):	44381	
Date/Time sample(s) sent to storage:	01/30/2020 21:00	

Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes: Sample count differ COC=5 Rec'd 4 containers; all 2oz amber bottles empty

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody For

Page 1 of 1

COC ID: 214102

HS20011451

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-11-Rev0 SR 92688
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address	

A: 8260_S (5652652 B,E,X)
B: 8270_LOW_S (5632532 SVOC - Naphthalene only)
C: MOIST_ASTM (5631931 Gen Chem. MOIST%)
D:
E:
F:
G:
H:
I:
J:

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620-SG22 (0.5-1) 20200129	1-29-20	0945	Soil	8.9	5	X	X	X								
2	SG22 (5.5-6)		1030														
3	SG21 (0.5-1)		1130														
4	SG21 (5.5-6)		1415														
5	SG20 (0.5-1)		1500														
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Anthony Reid

Shipment Method: Hand Delivered

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: Date: 1-30-20 Time: 1640 Received by:

Relinquished by: Date: 1/30/20 Time: 1640 Received by (Laboratory): J. Hannan

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR HWPW 1620-11

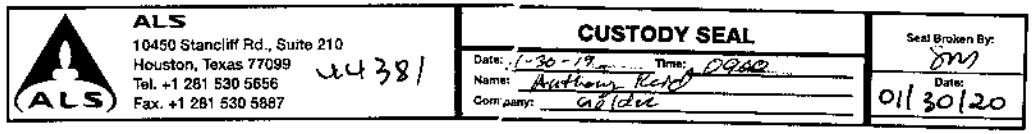
Cooler ID	Cooler Temp.
44381	2.4
	1.2.5
	1.5.0

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[X] TRRP Checklist
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

Copyright 2011 by ALS Environmental.



ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

44381

CUSTODY SEAL

Date: 1-30-19 Time: 0940
Name: Anthony Reed
Company: Golder

Seal Broken By: DM
Date: 01/30/20

44381

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

February 14, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20020120**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 9 sample(s) on Feb 04, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: DAYNA.FISHER
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20020120**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS20020120**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/14/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020120				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150335, R355926, R356283				
#[1]	A[2]	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?	X				
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			1
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/14/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020120				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150335, R355926, R356283				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 02/14/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20020120
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 150335, R355926, R356283

ER#[5]	Description
1	Batch R355926, Volatiles by Method SW8260, Sample HS20020179-09, MS and MSD were performed on an unrelated sample.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20020120

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20020120-01	SO-1620-SG-18(0.5-1)-2020203	Soil		03-Feb-2020 09:45	04-Feb-2020 13:00	☐
HS20020120-02	SO-1620-SG-18(5.5-6)-2020203	Soil		03-Feb-2020 10:00	04-Feb-2020 13:00	☐
HS20020120-03	SO-1620-SG-9(0.5-1)-2020203	Soil		03-Feb-2020 11:00	04-Feb-2020 13:00	☐
HS20020120-04	SO-1620-SG-9(5.5-6)-2020203	Soil		03-Feb-2020 11:35	04-Feb-2020 13:00	☐
HS20020120-05	SO-1620-SG-13(0.5-1)-2020203	Soil		03-Feb-2020 14:15	04-Feb-2020 13:00	☐
HS20020120-06	SO-1620-SG-13(5.5-6)-2020203	Soil		03-Feb-2020 14:45	04-Feb-2020 13:00	☐
HS20020120-07	SO-1620-SG-3(0.5-1)-2020203	Soil		03-Feb-2020 12:10	04-Feb-2020 13:00	☑
HS20020120-08	SO-1620-SG-3(5.5-6)-2020203	Soil		03-Feb-2020 12:40	04-Feb-2020 13:00	☑
HS20020120-09	SO-1620-DUP1-2020203	Soil		03-Feb-2020 12:40	04-Feb-2020 13:00	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG-18(0.5-1)-2020203
Collection Date: 03-Feb-2020 09:45

ANALYTICAL REPORT
WorkOrder:HS20020120
Lab ID:HS20020120-01
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	**0.0034**	J	**0.00048**	**0.0048**	**mg/Kg-dry**	1	08-Feb-2020 18:34
Ethylbenzene	**0.0034**	J	**0.00067**	**0.0048**	**mg/Kg-dry**	1	08-Feb-2020 18:34
Xylenes, Total	**0.0056**		**0.00095**	**0.0048**	**mg/Kg-dry**	1	08-Feb-2020 18:34
Surr: 1,2-Dichloroethane-d4	*88.2*			*70-126*	*%REC*	*1*	*08-Feb-2020 18:34*
Surr: 4-Bromofluorobenzene	*96.3*			*70-130*	*%REC*	*1*	*08-Feb-2020 18:34*
Surr: Dibromofluoromethane	*89.4*			*70-130*	*%REC*	*1*	*08-Feb-2020 18:34*
Surr: Toluene-d8	*97.7*			*70-130*	*%REC*	*1*	*08-Feb-2020 18:34*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 05-Feb-2020		Analyst: LG
Naphthalene	U		0.00069	0.0038	mg/Kg-dry	1	06-Feb-2020 17:00
Surr: 2-Fluorobiphenyl	*87.0*			*43-125*	*%REC*	*1*	*06-Feb-2020 17:00*
Surr: 4-Terphenyl-d14	*84.2*			*32-125*	*%REC*	*1*	*06-Feb-2020 17:00*
Surr: Nitrobenzene-d5	*75.9*			*37-125*	*%REC*	*1*	*06-Feb-2020 17:00*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: MWG
Percent Moisture	**13.7**		**0.0100**	**0.0100**	**wt%**	1	13-Feb-2020 11:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG-18(5.5-6)-2020203
Collection Date: 03-Feb-2020 10:00

ANALYTICAL REPORT
WorkOrder:HS20020120
Lab ID:HS20020120-02
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene		U	0.00054	0.0054	mg/Kg-dry	1	08-Feb-2020 18:59
Ethylbenzene		U	0.00076	0.0054	mg/Kg-dry	1	08-Feb-2020 18:59
Xylenes, Total		U	0.0011	0.0054	mg/Kg-dry	1	08-Feb-2020 18:59
Surr: 1,2-Dichloroethane-d4	*87.5*			*70-126*	*%REC*	*1*	*08-Feb-2020 18:59*
Surr: 4-Bromofluorobenzene	*96.8*			*70-130*	*%REC*	*1*	*08-Feb-2020 18:59*
Surr: Dibromofluoromethane	*90.7*			*70-130*	*%REC*	*1*	*08-Feb-2020 18:59*
Surr: Toluene-d8	*101*			*70-130*	*%REC*	*1*	*08-Feb-2020 18:59*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 05-Feb-2020		Analyst: LG
Naphthalene	**0.0041**		**0.00070**	**0.0038**	**mg/Kg-dry**	1	06-Feb-2020 17:19
Surr: 2-Fluorobiphenyl	*79.2*			*43-125*	*%REC*	*1*	*06-Feb-2020 17:19*
Surr: 4-Terphenyl-d14	*88.4*			*32-125*	*%REC*	*1*	*06-Feb-2020 17:19*
Surr: Nitrobenzene-d5	*77.3*			*37-125*	*%REC*	*1*	*06-Feb-2020 17:19*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: MWG
Percent Moisture	**14.8**		**0.0100**	**0.0100**	**wt%**	1	13-Feb-2020 11:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG-9(0.5-1)-2020203
Collection Date: 03-Feb-2020 11:00

ANALYTICAL REPORT
WorkOrder:HS20020120
Lab ID:HS20020120-03
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene		U	0.00052	0.0052	mg/Kg-dry	1	08-Feb-2020 19:24
Ethylbenzene		U	0.00074	0.0052	mg/Kg-dry	1	08-Feb-2020 19:24
Xylenes, Total		U	0.0010	0.0052	mg/Kg-dry	1	08-Feb-2020 19:24
Surr: 1,2-Dichloroethane-d4	*88.2*			*70-126*	*%REC*	*1*	*08-Feb-2020 19:24*
Surr: 4-Bromofluorobenzene	*95.6*			*70-130*	*%REC*	*1*	*08-Feb-2020 19:24*
Surr: Dibromofluoromethane	*90.9*			*70-130*	*%REC*	*1*	*08-Feb-2020 19:24*
Surr: Toluene-d8	*99.9*			*70-130*	*%REC*	*1*	*08-Feb-2020 19:24*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 05-Feb-2020		Analyst: LG
Naphthalene	**0.0042**		**0.00074**	**0.0041**	**mg/Kg-dry**	1	06-Feb-2020 17:38
Surr: 2-Fluorobiphenyl	*81.0*			*43-125*	*%REC*	*1*	*06-Feb-2020 17:38*
Surr: 4-Terphenyl-d14	*88.8*			*32-125*	*%REC*	*1*	*06-Feb-2020 17:38*
Surr: Nitrobenzene-d5	*81.0*			*37-125*	*%REC*	*1*	*06-Feb-2020 17:38*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: MWG
Percent Moisture	**20.0**		**0.0100**	**0.0100**	**wt%**	1	13-Feb-2020 11:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG-9(5.5-6)-2020203
Collection Date: 03-Feb-2020 11:35

ANALYTICAL REPORT
WorkOrder:HS20020120
Lab ID:HS20020120-04
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene		U	0.00082	0.0082	mg/Kg-dry	1	08-Feb-2020 19:49
Ethylbenzene		U	0.0012	0.0082	mg/Kg-dry	1	08-Feb-2020 19:49
Xylenes, Total		U	0.0016	0.0082	mg/Kg-dry	1	08-Feb-2020 19:49
Surr: 1,2-Dichloroethane-d4	*86.6*			*70-126*	*%REC*	*1*	*08-Feb-2020 19:49*
Surr: 4-Bromofluorobenzene	*95.2*			*70-130*	*%REC*	*1*	*08-Feb-2020 19:49*
Surr: Dibromofluoromethane	*92.6*			*70-130*	*%REC*	*1*	*08-Feb-2020 19:49*
Surr: Toluene-d8	*100.0*			*70-130*	*%REC*	*1*	*08-Feb-2020 19:49*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 05-Feb-2020		Analyst: LG
Naphthalene		U	0.00072	0.0039	mg/Kg-dry	1	06-Feb-2020 17:58
Surr: 2-Fluorobiphenyl	*82.1*			*43-125*	*%REC*	*1*	*06-Feb-2020 17:58*
Surr: 4-Terphenyl-d14	*80.5*			*32-125*	*%REC*	*1*	*06-Feb-2020 17:58*
Surr: Nitrobenzene-d5	*74.4*			*37-125*	*%REC*	*1*	*06-Feb-2020 17:58*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: MWG
Percent Moisture	**17.3**		**0.0100**	**0.0100**	**wt%**	1	13-Feb-2020 11:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG-13(0.5-1)-2020203
Collection Date: 03-Feb-2020 14:15

ANALYTICAL REPORT
WorkOrder:HS20020120
Lab ID:HS20020120-05
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene		U	0.00076	0.0076	mg/Kg-dry	1	08-Feb-2020 20:14
Ethylbenzene		U	0.0011	0.0076	mg/Kg-dry	1	08-Feb-2020 20:14
Xylenes, Total		U	0.0015	0.0076	mg/Kg-dry	1	08-Feb-2020 20:14
Surr: 1,2-Dichloroethane-d4	*87.1*			*70-126*	*%REC*	*1*	*08-Feb-2020 20:14*
Surr: 4-Bromofluorobenzene	*97.1*			*70-130*	*%REC*	*1*	*08-Feb-2020 20:14*
Surr: Dibromofluoromethane	*89.2*			*70-130*	*%REC*	*1*	*08-Feb-2020 20:14*
Surr: Toluene-d8	*102*			*70-130*	*%REC*	*1*	*08-Feb-2020 20:14*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 05-Feb-2020		Analyst: LG
Naphthalene		U	0.00075	0.0041	mg/Kg-dry	1	06-Feb-2020 18:17
Surr: 2-Fluorobiphenyl	*78.0*			*43-125*	*%REC*	*1*	*06-Feb-2020 18:17*
Surr: 4-Terphenyl-d14	*80.9*			*32-125*	*%REC*	*1*	*06-Feb-2020 18:17*
Surr: Nitrobenzene-d5	*72.2*			*37-125*	*%REC*	*1*	*06-Feb-2020 18:17*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: MWG
Percent Moisture	**20.0**		**0.0100**	**0.0100**	**wt%**	1	13-Feb-2020 11:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG-13(5.5-6)-2020203
Collection Date: 03-Feb-2020 14:45

ANALYTICAL REPORT
WorkOrder:HS20020120
Lab ID:HS20020120-06
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene		U	0.00049	0.0049	mg/Kg-dry	1	08-Feb-2020 20:39
Ethylbenzene		U	0.00068	0.0049	mg/Kg-dry	1	08-Feb-2020 20:39
Xylenes, Total		U	0.00097	0.0049	mg/Kg-dry	1	08-Feb-2020 20:39
Surr: 1,2-Dichloroethane-d4	*88.2*			*70-126*	*%REC*	*1*	*08-Feb-2020 20:39*
Surr: 4-Bromofluorobenzene	*96.6*			*70-130*	*%REC*	*1*	*08-Feb-2020 20:39*
Surr: Dibromofluoromethane	*92.8*			*70-130*	*%REC*	*1*	*08-Feb-2020 20:39*
Surr: Toluene-d8	*98.8*			*70-130*	*%REC*	*1*	*08-Feb-2020 20:39*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 05-Feb-2020		Analyst: LG
Naphthalene		U	0.00071	0.0039	mg/Kg-dry	1	06-Feb-2020 18:36
Surr: 2-Fluorobiphenyl	*69.5*			*43-125*	*%REC*	*1*	*06-Feb-2020 18:36*
Surr: 4-Terphenyl-d14	*83.0*			*32-125*	*%REC*	*1*	*06-Feb-2020 18:36*
Surr: Nitrobenzene-d5	*71.5*			*37-125*	*%REC*	*1*	*06-Feb-2020 18:36*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: MWG
Percent Moisture	**15.7**		**0.0100**	**0.0100**	**wt%**	1	13-Feb-2020 11:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-DUP1-2020203
Collection Date: 03-Feb-2020 12:40

ANALYTICAL REPORT
WorkOrder:HS20020120
Lab ID:HS20020120-09
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene		U	0.00040	0.0040	mg/Kg-dry	1	08-Feb-2020 21:04
Ethylbenzene		U	0.00056	0.0040	mg/Kg-dry	1	08-Feb-2020 21:04
Xylenes, Total		U	0.00080	0.0040	mg/Kg-dry	1	08-Feb-2020 21:04
Surr: 1,2-Dichloroethane-d4	*88.7*			*70-126*	*%REC*	*1*	*08-Feb-2020 21:04*
Surr: 4-Bromofluorobenzene	*97.6*			*70-130*	*%REC*	*1*	*08-Feb-2020 21:04*
Surr: Dibromofluoromethane	*93.0*			*70-130*	*%REC*	*1*	*08-Feb-2020 21:04*
Surr: Toluene-d8	*101*			*70-130*	*%REC*	*1*	*08-Feb-2020 21:04*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 05-Feb-2020		Analyst: LG
Naphthalene		U	0.00069	0.0038	mg/Kg-dry	1	06-Feb-2020 18:55
Surr: 2-Fluorobiphenyl	*76.1*			*43-125*	*%REC*	*1*	*06-Feb-2020 18:55*
Surr: 4-Terphenyl-d14	*83.6*			*32-125*	*%REC*	*1*	*06-Feb-2020 18:55*
Surr: Nitrobenzene-d5	*75.4*			*37-125*	*%REC*	*1*	*06-Feb-2020 18:55*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: MWG
Percent Moisture	**14.2**		**0.0100**	**0.0100**	**wt%**	1	13-Feb-2020 11:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020120

Batch ID: 3597 **Start Date:** 05 Feb 2020 10:00 **End Date:** 05 Feb 2020 10:00
Method: VOLATILES BY SW8260C

Sample ID	Container	Sample Wt/Vol	Final Volume	Weight Factor	Container Type
HS20020120-01	1	6.133 (g)	5 (mL)	0.82	TerraCore (5035A)
HS20020120-02	1	5.413 (g)	5 (mL)	0.92	TerraCore (5035A)
HS20020120-03	1	5.923 (g)	5 (mL)	0.84	TerraCore (5035A)
HS20020120-04	1	3.683 (g)	5 (mL)	1.36	TerraCore (5035A)
HS20020120-05	1	4.14 (g)	5 (mL)	1.21	TerraCore (5035A)
HS20020120-06	1	6.075 (g)	5 (mL)	0.82	TerraCore (5035A)
HS20020120-09	1	7.218 (g)	5 (mL)	0.69	TerraCore (5035A)

Batch ID: 150335 **Start Date:** 05 Feb 2020 11:25 **End Date:** 05 Feb 2020 15:30
Method: SV SOXHLET EXTRACT-LOWLEVEL-SW3541 **Prep Code:** 3541_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20020120-01		30.02 (g)	1 (mL)	0.03331
HS20020120-02		30.34 (g)	1 (mL)	0.03296
HS20020120-03		30.22 (g)	1 (mL)	0.03309
HS20020120-04		30.39 (g)	1 (mL)	0.03291
HS20020120-05		30.15 (g)	1 (mL)	0.03317
HS20020120-06		30.12 (g)	1 (mL)	0.0332
HS20020120-09		30.2 (g)	1 (mL)	0.03311

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020120

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 150335 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Soil	
HS20020120-01	SO-1620-SG-18(0.5-1)-2020203	03 Feb 2020 09:45		05 Feb 2020 11:25	06 Feb 2020 17:00	1
HS20020120-02	SO-1620-SG-18(5.5-6)-2020203	03 Feb 2020 10:00		05 Feb 2020 11:25	06 Feb 2020 17:19	1
HS20020120-03	SO-1620-SG-9(0.5-1)-2020203	03 Feb 2020 11:00		05 Feb 2020 11:25	06 Feb 2020 17:38	1
HS20020120-04	SO-1620-SG-9(5.5-6)-2020203	03 Feb 2020 11:35		05 Feb 2020 11:25	06 Feb 2020 17:58	1
HS20020120-05	SO-1620-SG-13(0.5-1)-2020203	03 Feb 2020 14:15		05 Feb 2020 11:25	06 Feb 2020 18:17	1
HS20020120-06	SO-1620-SG-13(5.5-6)-2020203	03 Feb 2020 14:45		05 Feb 2020 11:25	06 Feb 2020 18:36	1
HS20020120-09	SO-1620-DUP1-2020203	03 Feb 2020 12:40		05 Feb 2020 11:25	06 Feb 2020 18:55	1
Batch ID: R355926 (0)	**Test Name :** VOLATILES BY SW8260C				**Matrix:** Soil	
HS20020120-01	SO-1620-SG-18(0.5-1)-2020203	03 Feb 2020 09:45			08 Feb 2020 18:34	1
HS20020120-02	SO-1620-SG-18(5.5-6)-2020203	03 Feb 2020 10:00			08 Feb 2020 18:59	1
HS20020120-03	SO-1620-SG-9(0.5-1)-2020203	03 Feb 2020 11:00			08 Feb 2020 19:24	1
HS20020120-04	SO-1620-SG-9(5.5-6)-2020203	03 Feb 2020 11:35			08 Feb 2020 19:49	1
HS20020120-05	SO-1620-SG-13(0.5-1)-2020203	03 Feb 2020 14:15			08 Feb 2020 20:14	1
HS20020120-06	SO-1620-SG-13(5.5-6)-2020203	03 Feb 2020 14:45			08 Feb 2020 20:39	1
HS20020120-09	SO-1620-DUP1-2020203	03 Feb 2020 12:40			08 Feb 2020 21:04	1
Batch ID: R356283 (0)	**Test Name :** MOISTURE - ASTM D2216				**Matrix:** Soil	
HS20020120-01	SO-1620-SG-18(0.5-1)-2020203	03 Feb 2020 09:45			13 Feb 2020 11:17	1
HS20020120-02	SO-1620-SG-18(5.5-6)-2020203	03 Feb 2020 10:00			13 Feb 2020 11:17	1
HS20020120-03	SO-1620-SG-9(0.5-1)-2020203	03 Feb 2020 11:00			13 Feb 2020 11:17	1
HS20020120-04	SO-1620-SG-9(5.5-6)-2020203	03 Feb 2020 11:35			13 Feb 2020 11:17	1
HS20020120-05	SO-1620-SG-13(0.5-1)-2020203	03 Feb 2020 14:15			13 Feb 2020 11:17	1
HS20020120-06	SO-1620-SG-13(5.5-6)-2020203	03 Feb 2020 14:45			13 Feb 2020 11:17	1
HS20020120-09	SO-1620-DUP1-2020203	03 Feb 2020 12:40			13 Feb 2020 11:17	1

WorkOrder: HS20020120
InstrumentID: SV-6
Test Code: 8270_LOW_S
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Naphthalene	91-20-3	0.0017	0.0019	0.00060	0.0033
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	4-Terphenyl-d14	1718-51-0	0	0	0	0
S	Nitrobenzene-d5	4165-60-0	0	0	0	0

WorkOrder: HS20020120
InstrumentID: VOA5
Test Code: 8260_S
Test Number: SW8260
Test Name: Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Benzene	71-43-2	0.0012	0.0016	0.00050	0.0050
A	Ethylbenzene	100-41-4	0.0012	0.0016	0.00070	0.0050
A	Xylenes, Total	1330-20-7	0.0012	0.0016	0.0010	0.0050
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0
S	4-Bromofluorobenzene	460-00-4	0	0	0	0
S	Dibromofluoromethane	1868-53-7	0	0	0	0
S	Toluene-d8	2037-26-5	0	0	0	0

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020120

QC BATCH REPORT

Batch ID: 150335 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-150335** Units: **ug/Kg** Analysis Date: **06-Feb-2020 08:25**
Client ID: Run ID: **SV-6_355779** SeqNo: **5463959** PrepDate: **05-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	U	3.3								
Surr: 2-Fluorobiphenyl	*127.7*	*0*	*167*	*0*	*76.5*	*43 - 125*				
Surr: 4-Terphenyl-d14	*129.2*	*0*	*167*	*0*	*77.4*	*32 - 125*				
Surr: Nitrobenzene-d5	*111.8*	*0*	*167*	*0*	*66.9*	*37 - 125*				

LCS Sample ID: **LCS-150335** Units: **ug/Kg** Analysis Date: **06-Feb-2020 08:44**
Client ID: Run ID: **SV-6_355779** SeqNo: **5463960** PrepDate: **05-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	135.8	3.3	167	0	81.3	50 - 125				
Surr: 2-Fluorobiphenyl	*135.7*	*0*	*167*	*0*	*81.2*	*43 - 125*				
Surr: 4-Terphenyl-d14	*133.2*	*0*	*167*	*0*	*79.8*	*32 - 125*				
Surr: Nitrobenzene-d5	*124.9*	*0*	*167*	*0*	*74.8*	*37 - 125*				

MS Sample ID: **HS20020018-24MS** Units: **ug/Kg** Analysis Date: **06-Feb-2020 15:02**
Client ID: Run ID: **SV-6_355779** SeqNo: **5463962** PrepDate: **05-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	108.8	3.3	166.8	2.438	63.8	50 - 125				
Surr: 2-Fluorobiphenyl	*106.2*	*0*	*166.8*	*0*	*63.7*	*43 - 125*				
Surr: 4-Terphenyl-d14	*113.2*	*0*	*166.8*	*0*	*67.8*	*32 - 125*				
Surr: Nitrobenzene-d5	*104.5*	*0*	*166.8*	*0*	*62.6*	*37 - 125*				

MSD Sample ID: **HS20020018-24MSD** Units: **ug/Kg** Analysis Date: **06-Feb-2020 15:21**
Client ID: Run ID: **SV-6_355779** SeqNo: **5463963** PrepDate: **05-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	109.2	3.3	166.1	2.438	64.2	50 - 125	108.8	0.295	30	
Surr: 2-Fluorobiphenyl	*109.2*	*0*	*166.1*	*0*	*65.8*	*43 - 125*	*106.2*	*2.78*	*30*	
Surr: 4-Terphenyl-d14	*112.8*	*0*	*166.1*	*0*	*67.9*	*32 - 125*	*113.2*	*0.348*	*30*	
Surr: Nitrobenzene-d5	*97.48*	*0*	*166.1*	*0*	*58.7*	*37 - 125*	*104.5*	*6.96*	*30*	

The following samples were analyzed in this batch: HS20020120-01 HS20020120-02 HS20020120-03 HS20020120-04 HS20020120-05 HS20020120-06 HS20020120-09

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020120

QC BATCH REPORT

Batch ID: R355926 (0) **Instrument: VOA5** **Method: VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKS1-020820** Units: **ug/Kg** Analysis Date: **08-Feb-2020 12:20**
Client ID: Run ID: **VOA5_355926** SeqNo: **5465160** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	5.0								
Ethylbenzene	U	5.0								
Xylenes, Total	U	5.0								
Surr: 1,2-Dichloroethane-d4	*44.68*	*0*	*50*	*0*	*89.4*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*48.29*	*0*	*50*	*0*	*96.6*	*80 - 120*				
Surr: Dibromofluoromethane	*46.86*	*0*	*50*	*0*	*93.7*	*80 - 119*				
Surr: Toluene-d8	*49.02*	*0*	*50*	*0*	*98.0*	*81 - 118*				

LCS Sample ID: **VLCSS1-020820** Units: **ug/Kg** Analysis Date: **08-Feb-2020 11:30**
Client ID: Run ID: **VOA5_355926** SeqNo: **5465159** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	51.97	5.0	50	0	104	75 - 124				
Ethylbenzene	56.35	5.0	50	0	113	70 - 123				
Xylenes, Total	151.2	5.0	150	0	101	77 - 128				
Surr: 1,2-Dichloroethane-d4	*47.79*	*0*	*50*	*0*	*95.6*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*49.74*	*0*	*50*	*0*	*99.5*	*80 - 120*				
Surr: Dibromofluoromethane	*50.68*	*0*	*50*	*0*	*101*	*80 - 119*				
Surr: Toluene-d8	*49.98*	*0*	*50*	*0*	*100.0*	*81 - 118*				

MS Sample ID: **HS20020179-09MS** Units: **ug/Kg** Analysis Date: **08-Feb-2020 13:10**
Client ID: Run ID: **VOA5_355926** SeqNo: **5465162** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	34.97	4.8	48.5	0	72.1	70 - 130				
Ethylbenzene	34.05	4.8	48.5	0	70.2	70 - 130				
Xylenes, Total	92.59	4.8	145.5	0	63.6	70 - 130				S
Surr: 1,2-Dichloroethane-d4	*47.1*	*0*	*48.5*	*0*	*97.1*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*48.18*	*0*	*48.5*	*0*	*99.3*	*70 - 130*				
Surr: Dibromofluoromethane	*48.78*	*0*	*48.5*	*0*	*101*	*70 - 130*				
Surr: Toluene-d8	*48.47*	*0*	*48.5*	*0*	*99.9*	*70 - 130*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020120

QC BATCH REPORT

Batch ID: R355926 (0) **Instrument: VOA5** **Method: VOLATILES BY SW8260C**

MSD Sample ID: **HS20020179-09MSD** Units: **ug/Kg** Analysis Date: **08-Feb-2020 13:35**
Client ID: Run ID: **VOA5_355926** SeqNo: **5465163** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	36.35	5.2	51.5	0	70.6	70 - 130	34.97	3.87	30	
Ethylbenzene	35.45	5.2	51.5	0	68.8	70 - 130	34.05	4.03	30	S
Xylenes, Total	96.33	5.2	154.5	0	62.4	70 - 130	92.59	3.97	30	S
Surr: 1,2-Dichloroethane-d4	*50.64*	*0*	*51.5*	*0*	*98.3*	*70 - 126*	*47.1*	*7.25*	*30*	
Surr: 4-Bromofluorobenzene	*51.32*	*0*	*51.5*	*0*	*99.6*	*70 - 130*	*48.18*	*6.3*	*30*	
Surr: Dibromofluoromethane	*52.29*	*0*	*51.5*	*0*	*102*	*70 - 130*	*48.78*	*6.95*	*30*	
Surr: Toluene-d8	*52.49*	*0*	*51.5*	*0*	*102*	*70 - 130*	*48.47*	*7.97*	*30*	

The following samples were analyzed in this batch: HS20020120-01 HS20020120-02 HS20020120-03 HS20020120-04 HS20020120-05 HS20020120-06 HS20020120-09

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020120

QC BATCH REPORT

Batch ID: **R356283 (0)** **Instrument:** **Balance1** **Method:** **MOISTURE - ASTM D2216**

DUP Sample ID: **HS20020120-09DUP** Units: **wt%** Analysis Date: **13-Feb-2020 11:17**
Client ID: **SO-1620-DUP1-2020203** Run ID: **Balance1_356283** SeqNo: **5473179** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	13.6	0.0100					14.2	4.32	20	

The following samples were analyzed in this batch:

HS20020120-01	HS20020120-02	HS20020120-03	HS20020120-04
HS20020120-05	HS20020120-06	HS20020120-09	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20020120**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/Kg-dry	Milligrams per Kilogram- Dry weight corrected

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20020120

Date/Time Received: **04-Feb-2020 13:00**
Received by: **PS**

Checklist completed by: *Nilesh D. Ranchod* eSignature — 4-Feb-2020 Date

Reviewed by: *Dane J. Wacasey* eSignature — 5-Feb-2020 Date

Matrices: **Soil**

Carrier name: **ALS Courier**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☑	No ☐	Not Present ☐
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:214093
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☐	No ☑	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	1.6°C UC/C	IR # 25
Cooler(s)/Kit(s):	43453	
Date/Time sample(s) sent to storage:	02/04/2020 18:00	

Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes: Sample Count Differ all samples COC=5 Received 4.
Sample SG-3 (5.5-6) 2oz amber bulk received empty. (2/4/20: Per M. Hermiston, SG-3 samples will be re-collected. Place SG-3 samples on hold)

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody For

Page 1 of 1

COC ID: 214093

HS20020120

Golder Associates Inc.

Houston TX-Wood Preserving Works

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-11-Rev0 SR 92688
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address	

ALS Project Manager:

A 8260_S (5652652 B,E,X)
B 8270_LOW_S (5632532 SVOC - Naphthalene only)
C MOIST_ASTM (5631931 Gen.Chem_MOIST%)
D
E
F
G
H
I
J

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620-S6-18 (0.5-1) - 20200203	2/3/20	0945	Soil	8,9	5	X	X	X								
2	S6-18 (5.5-6)		1000														
3	S6-9 (0.5-1)		1100														
4	S6-9 (5.5-6)		1135														
5	S6-13 (0.5-1)	1415	1415														
6	S6-13 (5.5-6)		1445														
7	S6-3 (0.5-1)		1210														
8	S6-3 (5.5-6		1240														
9	Dup-1		1240														
10																	

Sampler(s) Please Print & Sign: Tim Nichols

Shipment Method: Lab Courier

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: Date: 2/4/20 Time: 0800 Received by:

Relinquished by: Date: 2-4-20 Time: 0830 Received by (Laboratory):

Logged by (Laboratory): Date: 2-4-20 Time: 1300 Checked by (Laboratory):

Notes: UPRR HWPW 1620-11

Cooler ID	Cooler Temp.
43453	1.6

QC Package: (Check One Box Below)

- [ ] Level II Std QC
- [ ] Level III Std QC/Raw Data
- [ ] Level IV SW846/CLP
- [ ] Other
- [X] TRRP Checklist
- [ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

February 14, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20020243**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 4 sample(s) on Feb 06, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: DAYNA.FISHER
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20020243**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20020243**	

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data								
Laboratory Name: ALS Laboratory Group			LRC Date: 02/14/2020					
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020243					
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150435, R355985, R356088, R356209, R356241					
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?	X				
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			1
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				2
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/14/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020243				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150435, R355985, R356088, R356209, R356241				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 02/14/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20020243
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 150435, R355985, R356088, R356209, R356241

ER#[5]	Description
1	Batch 150435, Semivolatiles by method SW8270, Sample HS20020244-01, MS was performed on an unrelated sample. Batch R355985, Volatiles by Method SW8260, Sample HS20020280-02, MS was performed on an unrelated sample.
2	Batch 150435, Semivolatiles by method SW8270, Sample SO-1620-SG11(0.5-1) 20200206, The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20020243

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20020243-01	SO-1620-SG03(0.5-1) 20200205	Soil		05-Feb-2020 10:30	06-Feb-2020 16:05	☐
HS20020243-02	SO-1620-SG03(5.5-6) 20200205	Soil		05-Feb-2020 10:45	06-Feb-2020 16:05	☐
HS20020243-03	SO-1620-SG11(0.5-1) 20200206	Soil		06-Feb-2020 13:40	06-Feb-2020 16:05	☐
HS20020243-04	SO-1620-SG11(5.5-6) 20200206	Soil		06-Feb-2020 14:00	06-Feb-2020 16:05	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG03(0.5-1) 20200205
Collection Date: 05-Feb-2020 10:30

ANALYTICAL REPORT
WorkOrder:HS20020243
Lab ID:HS20020243-01
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	U		0.00037	0.0037	mg/Kg-dry	1	10-Feb-2020 21:02
Ethylbenzene	U		0.00052	0.0037	mg/Kg-dry	1	10-Feb-2020 21:02
Xylenes, Total	**0.0066**		**0.00075**	**0.0037**	**mg/Kg-dry**	1	10-Feb-2020 21:02
Surr: 1,2-Dichloroethane-d4	*102*			*70-126*	*%REC*	*1*	*10-Feb-2020 21:02*
Surr: 4-Bromofluorobenzene	*100*			*70-130*	*%REC*	*1*	*10-Feb-2020 21:02*
Surr: Dibromofluoromethane	*99.1*			*70-130*	*%REC*	*1*	*10-Feb-2020 21:02*
Surr: Toluene-d8	*101*			*70-130*	*%REC*	*1*	*10-Feb-2020 21:02*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 07-Feb-2020		Analyst: GEY
Naphthalene	**0.0018**	J	**0.00072**	**0.0040**	**mg/Kg-dry**	1	07-Feb-2020 20:28
Surr: 2-Fluorobiphenyl	*78.8*			*43-125*	*%REC*	*1*	*07-Feb-2020 20:28*
Surr: 4-Terphenyl-d14	*74.4*			*32-125*	*%REC*	*1*	*07-Feb-2020 20:28*
Surr: Nitrobenzene-d5	*56.9*			*37-125*	*%REC*	*1*	*07-Feb-2020 20:28*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**17.2**		**0.0100**	**0.0100**	**wt%**	1	12-Feb-2020 13:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG03(5.5-6) 20200205
Collection Date: 05-Feb-2020 10:45

ANALYTICAL REPORT
WorkOrder:HS20020243
Lab ID:HS20020243-02
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	U		0.00071	0.0071	mg/Kg-dry	1	11-Feb-2020 15:54
Ethylbenzene	U		0.0010	0.0071	mg/Kg-dry	1	11-Feb-2020 15:54
Xylenes, Total	U		0.0014	0.0071	mg/Kg-dry	1	11-Feb-2020 15:54
Surr: 1,2-Dichloroethane-d4	*114*			*70-126*	*%REC*	*1*	*11-Feb-2020 15:54*
Surr: 4-Bromofluorobenzene	*105*			*70-130*	*%REC*	*1*	*11-Feb-2020 15:54*
Surr: Dibromofluoromethane	*106*			*70-130*	*%REC*	*1*	*11-Feb-2020 15:54*
Surr: Toluene-d8	*106*			*70-130*	*%REC*	*1*	*11-Feb-2020 15:54*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 07-Feb-2020		Analyst: GEY
Naphthalene	**0.0017**	J	**0.00069**	**0.0038**	**mg/Kg-dry**	1	07-Feb-2020 20:47
Surr: 2-Fluorobiphenyl	*67.4*			*43-125*	*%REC*	*1*	*07-Feb-2020 20:47*
Surr: 4-Terphenyl-d14	*72.1*			*32-125*	*%REC*	*1*	*07-Feb-2020 20:47*
Surr: Nitrobenzene-d5	*50.2*			*37-125*	*%REC*	*1*	*07-Feb-2020 20:47*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**13.7**		**0.0100**	**0.0100**	**wt%**	1	12-Feb-2020 13:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG11(0.5-1) 20200206
Collection Date: 06-Feb-2020 13:40

ANALYTICAL REPORT
WorkOrder:HS20020243
Lab ID:HS20020243-03
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene		U	0.00070	0.0070	mg/Kg-dry	1	11-Feb-2020 16:19
Ethylbenzene		U	0.00098	0.0070	mg/Kg-dry	1	11-Feb-2020 16:19
Xylenes, Total		U	0.0014	0.0070	mg/Kg-dry	1	11-Feb-2020 16:19
Surr: 1,2-Dichloroethane-d4	*118*			*70-126*	*%REC*	*1*	*11-Feb-2020 16:19*
Surr: 4-Bromofluorobenzene	*103*			*70-130*	*%REC*	*1*	*11-Feb-2020 16:19*
Surr: Dibromofluoromethane	*108*			*70-130*	*%REC*	*1*	*11-Feb-2020 16:19*
Surr: Toluene-d8	*106*			*70-130*	*%REC*	*1*	*11-Feb-2020 16:19*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 07-Feb-2020		Analyst: GEY
Naphthalene	**0.0084**	J	**0.0065**	**0.036**	**mg/Kg-dry**	10	07-Feb-2020 21:06
Surr: 2-Fluorobiphenyl	*88.6*			*43-125*	*%REC*	*10*	*07-Feb-2020 21:06*
Surr: 4-Terphenyl-d14	*82.4*			*32-125*	*%REC*	*10*	*07-Feb-2020 21:06*
Surr: Nitrobenzene-d5	*61.4*			*37-125*	*%REC*	*10*	*07-Feb-2020 21:06*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**8.37**		**0.0100**	**0.0100**	**wt%**	1	12-Feb-2020 13:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG11(5.5-6) 20200206
Collection Date: 06-Feb-2020 14:00

ANALYTICAL REPORT
WorkOrder:HS20020243
Lab ID:HS20020243-04
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene	U		0.00032	0.0032	mg/Kg-dry	1	13-Feb-2020 16:56
Ethylbenzene	U		0.00045	0.0032	mg/Kg-dry	1	13-Feb-2020 16:56
Xylenes, Total	U		0.00064	0.0032	mg/Kg-dry	1	13-Feb-2020 16:56
Surr: 1,2-Dichloroethane-d4	*89.0*			*70-126*	*%REC*	*1*	*13-Feb-2020 16:56*
Surr: 4-Bromofluorobenzene	*96.5*			*70-130*	*%REC*	*1*	*13-Feb-2020 16:56*
Surr: Dibromofluoromethane	*93.9*			*70-130*	*%REC*	*1*	*13-Feb-2020 16:56*
Surr: Toluene-d8	*102*			*70-130*	*%REC*	*1*	*13-Feb-2020 16:56*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 07-Feb-2020		Analyst: GEY
Naphthalene	**0.0011**	J	**0.00069**	**0.0038**	**mg/Kg-dry**	1	07-Feb-2020 21:25
Surr: 2-Fluorobiphenyl	*73.2*			*43-125*	*%REC*	*1*	*07-Feb-2020 21:25*
Surr: 4-Terphenyl-d14	*59.3*			*32-125*	*%REC*	*1*	*07-Feb-2020 21:25*
Surr: Nitrobenzene-d5	*49.7*			*37-125*	*%REC*	*1*	*07-Feb-2020 21:25*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**12.8**		**0.0100**	**0.0100**	**wt%**	1	12-Feb-2020 13:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020243

Batch ID: 3602 **Start Date:** 07 Feb 2020 09:46 **End Date:** 07 Feb 2020 09:46
Method: VOLATILES BY SW8260C

Sample ID	Container	Sample Wt/Vol	Final Volume	Weight Factor	Container Type
HS20020243-01	1	8.032 (g)	5 (mL)	0.62	TerraCore (5035A)
HS20020243-02	1	4.05 (g)	5 (mL)	1.23	TerraCore (5035A)
HS20020243-03	1	3.902 (g)	5 (mL)	1.28	TerraCore (5035A)
HS20020243-04	1	8.912 (g)	5 (mL)	0.56	TerraCore (5035A)

Batch ID: 150435 **Start Date:** 07 Feb 2020 08:00 **End Date:** 07 Feb 2020 15:30
Method: SV SOXHLET EXTRACT-LOWLEVEL-SW3541 **Prep Code:** 3541_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20020243-01		30.01 (g)	1 (mL)	0.03332
HS20020243-02		30.05 (g)	1 (mL)	0.03328
HS20020243-03		30.04 (g)	1 (mL)	0.03329
HS20020243-04		30.09 (g)	1 (mL)	0.03323

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020243

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 150435 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Soil	
HS20020243-01	SO-1620-SG03(0.5-1) 20200205	05 Feb 2020 10:30		07 Feb 2020 08:00	07 Feb 2020 20:28	1
HS20020243-02	SO-1620-SG03(5.5-6) 20200205	05 Feb 2020 10:45		07 Feb 2020 08:00	07 Feb 2020 20:47	1
HS20020243-03	SO-1620-SG11(0.5-1) 20200206	06 Feb 2020 13:40		07 Feb 2020 08:00	07 Feb 2020 21:06	10
HS20020243-04	SO-1620-SG11(5.5-6) 20200206	06 Feb 2020 14:00		07 Feb 2020 08:00	07 Feb 2020 21:25	1
Batch ID: R355985 (0)	**Test Name :** VOLATILES BY SW8260C				**Matrix:** Soil	
HS20020243-01	SO-1620-SG03(0.5-1) 20200205	05 Feb 2020 10:30			10 Feb 2020 21:02	1
Batch ID: R356088 (0)	**Test Name :** VOLATILES BY SW8260C				**Matrix:** Soil	
HS20020243-02	SO-1620-SG03(5.5-6) 20200205	05 Feb 2020 10:45			11 Feb 2020 15:54	1
HS20020243-03	SO-1620-SG11(0.5-1) 20200206	06 Feb 2020 13:40			11 Feb 2020 16:19	1
Batch ID: R356209 (0)	**Test Name :** MOISTURE - ASTM D2216				**Matrix:** Soil	
HS20020243-01	SO-1620-SG03(0.5-1) 20200205	05 Feb 2020 10:30			12 Feb 2020 13:39	1
HS20020243-02	SO-1620-SG03(5.5-6) 20200205	05 Feb 2020 10:45			12 Feb 2020 13:39	1
HS20020243-03	SO-1620-SG11(0.5-1) 20200206	06 Feb 2020 13:40			12 Feb 2020 13:39	1
HS20020243-04	SO-1620-SG11(5.5-6) 20200206	06 Feb 2020 14:00			12 Feb 2020 13:39	1
Batch ID: R356241 (0)	**Test Name :** VOLATILES BY SW8260C				**Matrix:** Soil	
HS20020243-04	SO-1620-SG11(5.5-6) 20200206	06 Feb 2020 14:00			13 Feb 2020 16:56	1

WorkOrder: HS20020243
InstrumentID: SV-7
Test Code: 8270_LOW_S
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Naphthalene	91-20-3	0.0017	0.0018	0.00060	0.0033
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	4-Terphenyl-d14	1718-51-0	0	0	0	0
S	Nitrobenzene-d5	4165-60-0	0	0	0	0

WorkOrder: HS20020243
InstrumentID: VOA5
Test Code: 8260_S
Test Number: SW8260
Test Name: Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Benzene	71-43-2	0.0012	0.0016	0.00050	0.0050
A	Ethylbenzene	100-41-4	0.0012	0.0016	0.00070	0.0050
A	Xylenes, Total	1330-20-7	0.0012	0.0016	0.0010	0.0050
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0
S	4-Bromofluorobenzene	460-00-4	0	0	0	0
S	Dibromofluoromethane	1868-53-7	0	0	0	0
S	Toluene-d8	2037-26-5	0	0	0	0

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020243

QC BATCH REPORT

Batch ID: 150435 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-150435** Units: **ug/Kg** Analysis Date: **07-Feb-2020 11:34**
Client ID: Run ID: **SV-7_355905** SeqNo: **5464751** PrepDate: **07-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	U	3.3								
Surr: 2-Fluorobiphenyl	*103.6*	*0*	*167*	*0*	*62.1*	*43 - 125*				
Surr: 4-Terphenyl-d14	*123.6*	*0*	*167*	*0*	*74.0*	*32 - 125*				
Surr: Nitrobenzene-d5	*94.28*	*0*	*167*	*0*	*56.5*	*37 - 125*				

LCS Sample ID: **LCS-150435** Units: **ug/Kg** Analysis Date: **07-Feb-2020 11:53**
Client ID: Run ID: **SV-7_355905** SeqNo: **5464752** PrepDate: **07-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	120.9	3.3	167	0	72.4	50 - 125				
Surr: 2-Fluorobiphenyl	*129.4*	*0*	*167*	*0*	*77.5*	*43 - 125*				
Surr: 4-Terphenyl-d14	*135.5*	*0*	*167*	*0*	*81.1*	*32 - 125*				
Surr: Nitrobenzene-d5	*108.9*	*0*	*167*	*0*	*65.2*	*37 - 125*				

MS Sample ID: **HS20020244-01MS** Units: **ug/Kg** Analysis Date: **07-Feb-2020 16:39**
Client ID: Run ID: **SV-7_355905** SeqNo: **5465991** PrepDate: **07-Feb-2020** DF: **10**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	447.5	33	166.7	394	32.0	50 - 125				S
Surr: 2-Fluorobiphenyl	*150.4*	*0*	*166.7*	*0*	*90.2*	*43 - 125*				
Surr: 4-Terphenyl-d14	*105.7*	*0*	*166.7*	*0*	*63.4*	*32 - 125*				
Surr: Nitrobenzene-d5	*132*	*0*	*166.7*	*0*	*79.2*	*37 - 125*				

MSD Sample ID: **HS20020244-01MSD** Units: **ug/Kg** Analysis Date: **07-Feb-2020 16:58**
Client ID: Run ID: **SV-7_355905** SeqNo: **5465992** PrepDate: **07-Feb-2020** DF: **10**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	525.7	33	166.6	394	79.0	50 - 125	447.5	16.1	30	
Surr: 2-Fluorobiphenyl	*159.4*	*0*	*166.6*	*0*	*95.7*	*43 - 125*	*150.4*	*5.81*	*30*	
Surr: 4-Terphenyl-d14	*104.4*	*0*	*166.6*	*0*	*62.7*	*32 - 125*	*105.7*	*1.15*	*30*	
Surr: Nitrobenzene-d5	*158.3*	*0*	*166.6*	*0*	*95.0*	*37 - 125*	*132*	*18.1*	*30*	

The following samples were analyzed in this batch: HS20020243-01 HS20020243-02 HS20020243-03 HS20020243-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020243

QC BATCH REPORT

Batch ID: R355985 (0) **Instrument: VOA5** **Method: VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKS1-021020** Units: **ug/Kg** Analysis Date: **10-Feb-2020 12:43**
Client ID: Run ID: **VOA5_355985** SeqNo: **5466616** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	5.0								
Ethylbenzene	U	5.0								
Xylenes, Total	U	5.0								
Surr: 1,2-Dichloroethane-d4	*49.26*	*0*	*50*	*0*	*98.5*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*49.3*	*0*	*50*	*0*	*98.6*	*80 - 120*				
Surr: Dibromofluoromethane	*47.86*	*0*	*50*	*0*	*95.7*	*80 - 119*				
Surr: Toluene-d8	*49.84*	*0*	*50*	*0*	*99.7*	*81 - 118*				

LCS Sample ID: **VLCSS1-021020** Units: **ug/Kg** Analysis Date: **10-Feb-2020 11:53**
Client ID: Run ID: **VOA5_355985** SeqNo: **5466615** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	47.28	5.0	50	0	94.6	75 - 124				
Ethylbenzene	50.95	5.0	50	0	102	70 - 123				
Xylenes, Total	134.9	5.0	150	0	89.9	77 - 128				
Surr: 1,2-Dichloroethane-d4	*47.85*	*0*	*50*	*0*	*95.7*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*48.72*	*0*	*50*	*0*	*97.4*	*80 - 120*				
Surr: Dibromofluoromethane	*49.94*	*0*	*50*	*0*	*99.9*	*80 - 119*				
Surr: Toluene-d8	*48.92*	*0*	*50*	*0*	*97.8*	*81 - 118*				

MS Sample ID: **HS20020280-02MS** Units: **ug/Kg** Analysis Date: **10-Feb-2020 14:22**
Client ID: Run ID: **VOA5_355985** SeqNo: **5466619** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	33.09	4.8	48.5	0	68.2	70 - 130				S
Ethylbenzene	23.88	4.8	48.5	0	49.2	70 - 130				S
Xylenes, Total	61.38	4.8	145.5	4.78	38.9	70 - 130				S
Surr: 1,2-Dichloroethane-d4	*47.86*	*0*	*48.5*	*0*	*98.7*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*48.37*	*0*	*48.5*	*0*	*99.7*	*70 - 130*				
Surr: Dibromofluoromethane	*48.23*	*0*	*48.5*	*0*	*99.4*	*70 - 130*				
Surr: Toluene-d8	*48.16*	*0*	*48.5*	*0*	*99.3*	*70 - 130*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020243

QC BATCH REPORT

Batch ID: R355985 (0) **Instrument: VOA5** **Method: VOLATILES BY SW8260C**

MSD Sample ID: **HS20020280-02MSD** Units: **ug/Kg** Analysis Date: **10-Feb-2020 14:47**
Client ID: Run ID: **VOA5_355985** SeqNo: **5466620** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	44.38	5.0	50.5	0	87.9	70 - 130	33.09	29.1	30	
Ethylbenzene	31.59	5.0	50.5	0	62.6	70 - 130	23.88	27.8	30	S
Xylenes, Total	80.08	5.0	151.5	4.78	49.7	70 - 130	61.38	26.4	30	S
Surr: 1,2-Dichloroethane-d4	*49.11*	*0*	*50.5*	*0*	*97.3*	*70 - 126*	*47.86*	*2.58*	*30*	
Surr: 4-Bromofluorobenzene	*50.61*	*0*	*50.5*	*0*	*100*	*70 - 130*	*48.37*	*4.52*	*30*	
Surr: Dibromofluoromethane	*51.23*	*0*	*50.5*	*0*	*101*	*70 - 130*	*48.23*	*6.04*	*30*	
Surr: Toluene-d8	*50.91*	*0*	*50.5*	*0*	*101*	*70 - 130*	*48.16*	*5.54*	*30*	

The following samples were analyzed in this batch: HS20020243-01

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020243

QC BATCH REPORT

Batch ID: R356088 (0) **Instrument: VOA5** **Method: VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKS1-022011** Units: **ug/Kg** Analysis Date: **11-Feb-2020 13:24**
Client ID: Run ID: **VOA5_356088** SeqNo: **5468643** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	5.0								
Ethylbenzene	U	5.0								
Xylenes, Total	U	5.0								
Surr: 1,2-Dichloroethane-d4	*59.86*	*0*	*50*	*0*	*120*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*52.54*	*0*	*50*	*0*	*105*	*80 - 120*				
Surr: Dibromofluoromethane	*53.86*	*0*	*50*	*0*	*108*	*80 - 119*				
Surr: Toluene-d8	*52.74*	*0*	*50*	*0*	*105*	*81 - 118*				

LCS Sample ID: **VLCSS1-022011** Units: **ug/Kg** Analysis Date: **11-Feb-2020 12:35**
Client ID: Run ID: **VOA5_356088** SeqNo: **5468642** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	59.21	5.0	50	0	118	75 - 124				
Ethylbenzene	59.17	5.0	50	0	118	70 - 123				
Xylenes, Total	157.5	5.0	150	0	105	77 - 128				
Surr: 1,2-Dichloroethane-d4	*57.36*	*0*	*50*	*0*	*115*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*53.37*	*0*	*50*	*0*	*107*	*80 - 120*				
Surr: Dibromofluoromethane	*56.8*	*0*	*50*	*0*	*114*	*80 - 119*				
Surr: Toluene-d8	*53.01*	*0*	*50*	*0*	*106*	*81 - 118*				

MS Sample ID: **HS20020288-11MS** Units: **ug/Kg** Analysis Date: **11-Feb-2020 14:39**
Client ID: Run ID: **VOA5_356088** SeqNo: **5468645** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	48.37	5.3	53	0	91.3	70 - 130				
Ethylbenzene	45.68	5.3	53	0	86.2	70 - 130				
Xylenes, Total	122.4	5.3	159	0	77.0	70 - 130				
Surr: 1,2-Dichloroethane-d4	*62.72*	*0*	*53*	*0*	*118*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*56.62*	*0*	*53*	*0*	*107*	*70 - 130*				
Surr: Dibromofluoromethane	*60.52*	*0*	*53*	*0*	*114*	*70 - 130*				
Surr: Toluene-d8	*56.29*	*0*	*53*	*0*	*106*	*70 - 130*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020243

QC BATCH REPORT

Batch ID: R356088 (0) **Instrument: VOA5** **Method: VOLATILES BY SW8260C**

MSD Sample ID: **HS20020288-11MSD** Units: **ug/Kg** Analysis Date: **11-Feb-2020 15:04**
Client ID: Run ID: **VOA5_356088** SeqNo: **5468646** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Benzene	50.5	5.3	53	0	95.3	70 - 130	48.37	4.32	30	
Ethylbenzene	47.93	5.3	53	0	90.4	70 - 130	45.68	4.81	30	
Xylenes, Total	128.6	5.3	159	0	80.9	70 - 130	122.4	4.94	30	
Surr: 1,2-Dichloroethane-d4	*63.79*	*0*	*53*	*0*	*120*	*70 - 126*	*62.72*	*1.69*	*30*	
Surr: 4-Bromofluorobenzene	*57.15*	*0*	*53*	*0*	*108*	*70 - 130*	*56.62*	*0.93*	*30*	
Surr: Dibromofluoromethane	*60.69*	*0*	*53*	*0*	*115*	*70 - 130*	*60.52*	*0.289*	*30*	
Surr: Toluene-d8	*56.37*	*0*	*53*	*0*	*106*	*70 - 130*	*56.29*	*0.149*	*30*	

The following samples were analyzed in this batch: HS20020243-02 HS20020243-03

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020243

QC BATCH REPORT

Batch ID: R356241 (0) **Instrument: VOA5** **Method: VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKS1-021320** Units: **ug/Kg** Analysis Date: **13-Feb-2020 14:52**
Client ID: Run ID: **VOA5_356241** SeqNo: **5472076** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	5.0								
Ethylbenzene	U	5.0								
Xylenes, Total	U	5.0								
Surr: 1,2-Dichloroethane-d4	*44.98*	*0*	*50*	*0*	*90.0*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*49.47*	*0*	*50*	*0*	*98.9*	*80 - 120*				
Surr: Dibromofluoromethane	*48.02*	*0*	*50*	*0*	*96.0*	*80 - 119*				
Surr: Toluene-d8	*51.05*	*0*	*50*	*0*	*102*	*81 - 118*				

LCS Sample ID: **VLCSS1-021320** Units: **ug/Kg** Analysis Date: **13-Feb-2020 14:02**
Client ID: Run ID: **VOA5_356241** SeqNo: **5472075** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	57	5.0	50	0	114	75 - 124				
Ethylbenzene	59.18	5.0	50	0	118	70 - 123				
Xylenes, Total	178.5	5.0	150	0	119	77 - 128				
Surr: 1,2-Dichloroethane-d4	*48.05*	*0*	*50*	*0*	*96.1*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*49.7*	*0*	*50*	*0*	*99.4*	*80 - 120*				
Surr: Dibromofluoromethane	*50.37*	*0*	*50*	*0*	*101*	*80 - 119*				
Surr: Toluene-d8	*49.56*	*0*	*50*	*0*	*99.1*	*81 - 118*				

MS Sample ID: **HS20020243-04MS** Units: **ug/Kg** Analysis Date: **13-Feb-2020 16:07**
Client ID: **SO-1620-SG11(5.5-6) 20200206** Run ID: **VOA5_356241** SeqNo: **5472463** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	57.37	5.0	50	0	115	70 - 130				
Ethylbenzene	58.66	5.0	50	0	117	70 - 130				
Xylenes, Total	175	5.0	150	0	117	70 - 130				
Surr: 1,2-Dichloroethane-d4	*47.79*	*0*	*50*	*0*	*95.6*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.77*	*0*	*50*	*0*	*99.5*	*70 - 130*				
Surr: Dibromofluoromethane	*50.12*	*0*	*50*	*0*	*100*	*70 - 130*				
Surr: Toluene-d8	*50.23*	*0*	*50*	*0*	*100*	*70 - 130*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020243

QC BATCH REPORT

Batch ID: R356241 (0) **Instrument: VOA5** **Method: VOLATILES BY SW8260C**

MSD Sample ID: **HS20020243-04MSD** Units: **ug/Kg** Analysis Date: **13-Feb-2020 16:31**
Client ID: **SO-1620-SG11(5.5-6) 20200206** Run ID: **VOA5_356241** SeqNo: **5472464** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Benzene	54.71	5.2	52	0	105	70 - 130	57.37	4.74	30	
Ethylbenzene	54.49	5.2	52	0	105	70 - 130	58.66	7.38	30	
Xylenes, Total	166.4	5.2	156	0	107	70 - 130	175	5.07	30	
Surr: 1,2-Dichloroethane-d4	*49.83*	*0*	*52*	*0*	*95.8*	*70 - 126*	*47.79*	*4.17*	*30*	
Surr: 4-Bromofluorobenzene	*51.63*	*0*	*52*	*0*	*99.3*	*70 - 130*	*49.77*	*3.68*	*30*	
Surr: Dibromofluoromethane	*52.03*	*0*	*52*	*0*	*100*	*70 - 130*	*50.12*	*3.73*	*30*	
Surr: Toluene-d8	*52.62*	*0*	*52*	*0*	*101*	*70 - 130*	*50.23*	*4.64*	*30*	

The following samples were analyzed in this batch: HS20020243-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020243

QC BATCH REPORT

Batch ID: **R356209 (0)** **Instrument:** **Balance1** **Method:** **MOISTURE - ASTM D2216**

DUP Sample ID: **HS20020243-04DUP** Units: **wt%** Analysis Date: **12-Feb-2020 13:39**
Client ID: **SO-1620-SG11(5.5-6) 20200206** Run ID: **Balance1_356209** SeqNo: **5471563** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	12.9	0.0100					12.8	0.778	20	

The following samples were analyzed in this batch: HS20020243-01 HS20020243-02 HS20020243-03 HS20020243-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20020243**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/Kg-dry	Milligrams per Kilogram- Dry weight corrected

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20020243

Date/Time Received: **06-Feb-2020 16:05**
Received by: **DDG**

Checklist completed by: *Nilesh D. Ranchod* eSignature — 6-Feb-2020 Date

Reviewed by: *Dane J. Wacasey* eSignature — 10-Feb-2020 Date

Matrices: **Soil**

Carrier name: **ALS Courier**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:214094
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	1.2C UC/C	IR # 25
Cooler(s)/Kit(s):	44839	
Date/Time sample(s) sent to storage:	02/06/2020 20:00	

Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes: Sample Count differ COC= 5 Rec'd = 4

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

Page 1 of 1

COC ID: 214094

HS20020243

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-11-Rev0 SR 92688
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address	

A: 8260_S (5652652 B,E,X)
B: 8270_LOW_S (5632532 SVOC - Naphthalene only)
C: MOIST_ASTM (5631931 Gen.Chem_MOIST%)
D:
E:
F:
G:
H:
I:
J:

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620-SG03 (0.5-1) 20200205	2-5-2020	1030	Soil	8,9	5	X	X	X								
2	SG03 (5.5-6) 20200205	"	1045				X	X	X								
3	SG11 (0.5-1) 20200206	2-6-2020	1340				X	X	X								
4	SG11 (5.5-6) 20200206	"	1400				X	X	X								
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Anthony Reed

Shipment Method:

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: Date: 2-6-20 Time: 1445 Received by:

Relinquished by: Date: 2-6-20 Time: 1645 Received by (Laboratory):

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR HWPW 1620-11

Cooler ID	Cooler Temp.
44835	4.2

QC Package: (Check One Box Below)

- [ ] Level II Std QC
- [ ] Level III Std QC/Raw Data
- [ ] Level IV SW846/CLP
- [ ] Other
- [X] TRRP Checklist
- [ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse side.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Houston, TX 77099
T: +1 281 530 5656
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February 17, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20020308**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 4 sample(s) on Feb 07, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: DAYNA.FISHER
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20020308**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS20020308**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/17/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020308				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150518, R356283, R356340				
#[1]	A[2]	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			1
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				2
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/17/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020308				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150518, R356283, R356340				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports		
Laboratory Name: ALS Laboratory Group		LRC Date: 02/17/2020
Project Name: Houston TX-Wood Preserving Works		Laboratory Job Number: HS20020308
Reviewer Name: Dane Wacasey		Prep Batch Number(s): 150518, R356283, R356340
ER#[5]	**Description**	
1	Batch 150518, Semivolatiles by Method SW8270, Sample HS20020315-01, MS and MSD were performed on an unrelated sample	
2	Batch 150518, Semivolatiles by Method SW8270, Sample SO-1620-SG10(0.5-1)20200207: One or more of the GCMS semi-volatile internal standards were recovered at <50%. There are no target analytes associated with the failing internal standards.	

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20020308

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20020308-01	SO-1620-SG10(0.5-1)20200207	Soil		07-Feb-2020 11:10	07-Feb-2020 16:40	☐
HS20020308-02	SO-1620-SG10(5.5-6)20200207	Soil		07-Feb-2020 11:30	07-Feb-2020 16:40	☐
HS20020308-03	SO-1620-SG08(0.5-1)20200207	Soil		07-Feb-2020 14:00	07-Feb-2020 16:40	☐
HS20020308-04	SO-1620-SG08(5.5-6)20200207	Soil		07-Feb-2020 14:20	07-Feb-2020 16:40	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG10(0.5-1)20200207
Collection Date: 07-Feb-2020 11:10

ANALYTICAL REPORT
WorkOrder:HS20020308
Lab ID:HS20020308-01
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00052	0.0052	mg/Kg-dry	1	15-Feb-2020 12:09
Ethylbenzene		U	0.00072	0.0052	mg/Kg-dry	1	15-Feb-2020 12:09
Xylenes, Total		U	0.0010	0.0052	mg/Kg-dry	1	15-Feb-2020 12:09
Surr: 1,2-Dichloroethane-d4	*73.8*			*70-126*	*%REC*	*1*	*15-Feb-2020 12:09*
Surr: 4-Bromofluorobenzene	*92.4*			*70-130*	*%REC*	*1*	*15-Feb-2020 12:09*
Surr: Dibromofluoromethane	*85.3*			*70-130*	*%REC*	*1*	*15-Feb-2020 12:09*
Surr: Toluene-d8	*109*			*70-130*	*%REC*	*1*	*15-Feb-2020 12:09*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 11-Feb-2020		Analyst: GEY
Naphthalene	**0.0056**		**0.00067**	**0.0037**	**mg/Kg-dry**	1	12-Feb-2020 00:24
Surr: 2-Fluorobiphenyl	*75.4*			*43-125*	*%REC*	*1*	*12-Feb-2020 00:24*
Surr: 4-Terphenyl-d14	*78.4*			*32-125*	*%REC*	*1*	*12-Feb-2020 00:24*
Surr: Nitrobenzene-d5	*42.3*			*37-125*	*%REC*	*1*	*12-Feb-2020 00:24*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: MWG
Percent Moisture	**11.1**		**0.0100**	**0.0100**	**wt%**	1	13-Feb-2020 11:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG10(5.5-6)20200207
Collection Date: 07-Feb-2020 11:30

ANALYTICAL REPORT
WorkOrder:HS20020308
Lab ID:HS20020308-02
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00039	0.0039	mg/Kg-dry	1	15-Feb-2020 12:32
Ethylbenzene		U	0.00054	0.0039	mg/Kg-dry	1	15-Feb-2020 12:32
Xylenes, Total		U	0.00077	0.0039	mg/Kg-dry	1	15-Feb-2020 12:32
Surr: 1,2-Dichloroethane-d4	*88.2*			*70-126*	*%REC*	*1*	*15-Feb-2020 12:32*
Surr: 4-Bromofluorobenzene	*94.6*			*70-130*	*%REC*	*1*	*15-Feb-2020 12:32*
Surr: Dibromofluoromethane	*90.9*			*70-130*	*%REC*	*1*	*15-Feb-2020 12:32*
Surr: Toluene-d8	*103*			*70-130*	*%REC*	*1*	*15-Feb-2020 12:32*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 11-Feb-2020		Analyst: GEY
Naphthalene		U	0.00072	0.0040	mg/Kg-dry	1	11-Feb-2020 20:36
Surr: 2-Fluorobiphenyl	*66.7*			*43-125*	*%REC*	*1*	*11-Feb-2020 20:36*
Surr: 4-Terphenyl-d14	*81.0*			*32-125*	*%REC*	*1*	*11-Feb-2020 20:36*
Surr: Nitrobenzene-d5	*59.6*			*37-125*	*%REC*	*1*	*11-Feb-2020 20:36*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: MWG
Percent Moisture	**17.0**		**0.0100**	**0.0100**	**wt%**	1	13-Feb-2020 11:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG08(0.5-1)20200207
Collection Date: 07-Feb-2020 14:00

ANALYTICAL REPORT
WorkOrder:HS20020308
Lab ID:HS20020308-03
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene	U		0.00062	0.0062	mg/Kg-dry	1	15-Feb-2020 12:55
Ethylbenzene	U		0.00087	0.0062	mg/Kg-dry	1	15-Feb-2020 12:55
Xylenes, Total	U		0.0012	0.0062	mg/Kg-dry	1	15-Feb-2020 12:55
Surr: 1,2-Dichloroethane-d4	*77.6*			*70-126*	*%REC*	*1*	*15-Feb-2020 12:55*
Surr: 4-Bromofluorobenzene	*93.0*			*70-130*	*%REC*	*1*	*15-Feb-2020 12:55*
Surr: Dibromofluoromethane	*88.5*			*70-130*	*%REC*	*1*	*15-Feb-2020 12:55*
Surr: Toluene-d8	*108*			*70-130*	*%REC*	*1*	*15-Feb-2020 12:55*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 11-Feb-2020		Analyst: GEY
Naphthalene	**0.0034**	J	**0.00068**	**0.0037**	**mg/Kg-dry**	1	11-Feb-2020 21:33
Surr: 2-Fluorobiphenyl	*68.7*			*43-125*	*%REC*	*1*	*11-Feb-2020 21:33*
Surr: 4-Terphenyl-d14	*69.0*			*32-125*	*%REC*	*1*	*11-Feb-2020 21:33*
Surr: Nitrobenzene-d5	*60.1*			*37-125*	*%REC*	*1*	*11-Feb-2020 21:33*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: MWG
Percent Moisture	**11.9**		**0.0100**	**0.0100**	**wt%**	1	13-Feb-2020 11:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG08(5.5-6)20200207
Collection Date: 07-Feb-2020 14:20

ANALYTICAL REPORT
WorkOrder:HS20020308
Lab ID:HS20020308-04
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene	U		0.00038	0.0038	mg/Kg-dry	1	15-Feb-2020 13:18
Ethylbenzene	U		0.00053	0.0038	mg/Kg-dry	1	15-Feb-2020 13:18
Xylenes, Total	U		0.00075	0.0038	mg/Kg-dry	1	15-Feb-2020 13:18
Surr: 1,2-Dichloroethane-d4	*77.6*			*70-126*	*%REC*	*1*	*15-Feb-2020 13:18*
Surr: 4-Bromofluorobenzene	*92.7*			*70-130*	*%REC*	*1*	*15-Feb-2020 13:18*
Surr: Dibromofluoromethane	*86.9*			*70-130*	*%REC*	*1*	*15-Feb-2020 13:18*
Surr: Toluene-d8	*107*			*70-130*	*%REC*	*1*	*15-Feb-2020 13:18*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 11-Feb-2020		Analyst: GEY
Naphthalene	**0.0014**	J	**0.00070**	**0.0039**	**mg/Kg-dry**	1	11-Feb-2020 20:55
Surr: 2-Fluorobiphenyl	*77.7*			*43-125*	*%REC*	*1*	*11-Feb-2020 20:55*
Surr: 4-Terphenyl-d14	*83.0*			*32-125*	*%REC*	*1*	*11-Feb-2020 20:55*
Surr: Nitrobenzene-d5	*67.9*			*37-125*	*%REC*	*1*	*11-Feb-2020 20:55*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: MWG
Percent Moisture	**15.1**		**0.0100**	**0.0100**	**wt%**	1	13-Feb-2020 11:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020308

Batch ID: 3601 **Start Date:** 07 Feb 2020 09:08 **End Date:** 07 Feb 2020 09:08
Method: VOLATILES BY SW8260C

Sample ID	Container	Sample Wt/Vol	Final Volume	Weight Factor	Container Type
HS20020308-01	1	5.418 (g)	5 (mL)	0.92	TerraCore (5035A)
HS20020308-02	1	7.784 (g)	5 (mL)	0.64	TerraCore (5035A)
HS20020308-03	1	4.594 (g)	5 (mL)	1.09	TerraCore (5035A)
HS20020308-04	1	7.789 (g)	5 (mL)	0.64	TerraCore (5035A)

Batch ID: 150518 **Start Date:** 11 Feb 2020 10:30 **End Date:** 11 Feb 2020 13:30
Method: SV SOXHLET EXTRACT-LOWLEVEL-SW3541 **Prep Code:** 3541_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20020308-01		30.11 (g)	1 (mL)	0.03321
HS20020308-02		30.09 (g)	1 (mL)	0.03323
HS20020308-03		30.04 (g)	1 (mL)	0.03329
HS20020308-04		30.2 (g)	1 (mL)	0.03311

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020308

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 150518 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Soil	
HS20020308-01	SO-1620-SG10(0.5-1) 20200207	07 Feb 2020 11:10		11 Feb 2020 10:30	12 Feb 2020 00:24	1
HS20020308-02	SO-1620-SG10(5.5-6) 20200207	07 Feb 2020 11:30		11 Feb 2020 10:30	11 Feb 2020 20:36	1
HS20020308-03	SO-1620-SG08(0.5-1) 20200207	07 Feb 2020 14:00		11 Feb 2020 10:30	11 Feb 2020 21:33	1
HS20020308-04	SO-1620-SG08(5.5-6) 20200207	07 Feb 2020 14:20		11 Feb 2020 10:30	11 Feb 2020 20:55	1
Batch ID: R356283 (0)	**Test Name :** MOISTURE - ASTM D2216				**Matrix:** Soil	
HS20020308-01	SO-1620-SG10(0.5-1) 20200207	07 Feb 2020 11:10			13 Feb 2020 11:17	1
HS20020308-02	SO-1620-SG10(5.5-6) 20200207	07 Feb 2020 11:30			13 Feb 2020 11:17	1
HS20020308-03	SO-1620-SG08(0.5-1) 20200207	07 Feb 2020 14:00			13 Feb 2020 11:17	1
HS20020308-04	SO-1620-SG08(5.5-6) 20200207	07 Feb 2020 14:20			13 Feb 2020 11:17	1
Batch ID: R356340 (0)	**Test Name :** VOLATILES BY SW8260C				**Matrix:** Soil	
HS20020308-01	SO-1620-SG10(0.5-1) 20200207	07 Feb 2020 11:10			15 Feb 2020 12:09	1
HS20020308-02	SO-1620-SG10(5.5-6) 20200207	07 Feb 2020 11:30			15 Feb 2020 12:32	1
HS20020308-03	SO-1620-SG08(0.5-1) 20200207	07 Feb 2020 14:00			15 Feb 2020 12:55	1
HS20020308-04	SO-1620-SG08(5.5-6) 20200207	07 Feb 2020 14:20			15 Feb 2020 13:18	1

WorkOrder: HS20020308
InstrumentID: SV-7
Test Code: 8270_LOW_S
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Naphthalene	91-20-3	0.0017	0.0018	0.00060	0.0033
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	4-Terphenyl-d14	1718-51-0	0	0	0	0
S	Nitrobenzene-d5	4165-60-0	0	0	0	0

WorkOrder: HS20020308
InstrumentID: VOA8
Test Code: 8260_S
Test Number: SW8260
Test Name: Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Benzene	71-43-2	0.0012	0.0013	0.00050	0.0050
A	Ethylbenzene	100-41-4	0.0012	0.0014	0.00070	0.0050
A	Xylenes, Total	1330-20-7	0.0012	0.0014	0.0010	0.0050
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0
S	4-Bromofluorobenzene	460-00-4	0	0	0	0
S	Dibromofluoromethane	1868-53-7	0	0	0	0
S	Toluene-d8	2037-26-5	0	0	0	0

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020308

QC BATCH REPORT

Batch ID: 150518 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-150518** Units: **ug/Kg** Analysis Date: **11-Feb-2020 14:16**
Client ID: Run ID: **SV-7_356089** SeqNo: **5468650** PrepDate: **11-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	U	3.3								
Surr: 2-Fluorobiphenyl	*88.44*	*0*	*167*	*0*	*53.0*	*43 - 125*				
Surr: 4-Terphenyl-d14	*118.8*	*0*	*167*	*0*	*71.1*	*32 - 125*				
Surr: Nitrobenzene-d5	*110*	*0*	*167*	*0*	*65.9*	*37 - 125*				

LCS Sample ID: **LCS-150518** Units: **ug/Kg** Analysis Date: **11-Feb-2020 14:35**
Client ID: Run ID: **SV-7_356089** SeqNo: **5468651** PrepDate: **11-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	91.52	3.3	167	0	54.8	50 - 125				
Surr: 2-Fluorobiphenyl	*108*	*0*	*167*	*0*	*64.7*	*43 - 125*				
Surr: 4-Terphenyl-d14	*111.2*	*0*	*167*	*0*	*66.6*	*32 - 125*				
Surr: Nitrobenzene-d5	*69.56*	*0*	*167*	*0*	*41.7*	*37 - 125*				

MS Sample ID: **HS20020315-01MS** Units: **ug/Kg** Analysis Date: **11-Feb-2020 16:29**
Client ID: Run ID: **SV-7_356089** SeqNo: **5468655** PrepDate: **11-Feb-2020** DF: **100**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	5995	990	166.4	6348	-212	50 - 125				SO
Surr: 2-Fluorobiphenyl	*U*	*0*	*166.4*	*0*	*0*	*43 - 125*				S
Surr: 4-Terphenyl-d14	*U*	*0*	*166.4*	*0*	*0*	*32 - 125*				S
Surr: Nitrobenzene-d5	*U*	*0*	*166.4*	*0*	*0*	*37 - 125*				S

MSD Sample ID: **HS20020315-01MSD** Units: **ug/Kg** Analysis Date: **11-Feb-2020 16:48**
Client ID: Run ID: **SV-7_356089** SeqNo: **5468656** PrepDate: **11-Feb-2020** DF: **100**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	7056	990	166.2	6348	426	50 - 125	5995	16.3	30	SO
Surr: 2-Fluorobiphenyl	*U*	*0*	*166.2*	*0*	*0*	*43 - 125*	*0*	*0*	*30*	S
Surr: 4-Terphenyl-d14	*U*	*0*	*166.2*	*0*	*0*	*32 - 125*	*0*	*0*	*30*	S
Surr: Nitrobenzene-d5	*U*	*0*	*166.2*	*0*	*0*	*37 - 125*	*0*	*0*	*30*	S

The following samples were analyzed in this batch: HS20020308-01 HS20020308-02 HS20020308-03 HS20020308-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020308

QC BATCH REPORT

Batch ID: R356340 (0) **Instrument: VOA8** **Method: VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKS1-021520** Units: **ug/Kg** Analysis Date: **15-Feb-2020 10:37**
Client ID: Run ID: **VOA8_356340** SeqNo: **5474381** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	5.0								
Ethylbenzene	U	5.0								
Xylenes, Total	U	5.0								
Surr: 1,2-Dichloroethane-d4	*38.39*	*0*	*50*	*0*	*76.8*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*47.41*	*0*	*50*	*0*	*94.8*	*80 - 120*				
Surr: Dibromofluoromethane	*41.87*	*0*	*50*	*0*	*83.7*	*80 - 119*				
Surr: Toluene-d8	*54.45*	*0*	*50*	*0*	*109*	*81 - 118*				

LCS Sample ID: **VLCSS1-021520** Units: **ug/Kg** Analysis Date: **15-Feb-2020 09:52**
Client ID: Run ID: **VOA8_356340** SeqNo: **5474380** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	49.89	5.0	50	0	99.8	75 - 124				
Ethylbenzene	54.19	5.0	50	0	108	70 - 123				
Xylenes, Total	157.2	5.0	150	0	105	77 - 128				
Surr: 1,2-Dichloroethane-d4	*40.31*	*0*	*50*	*0*	*80.6*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*47.65*	*0*	*50*	*0*	*95.3*	*80 - 120*				
Surr: Dibromofluoromethane	*45.8*	*0*	*50*	*0*	*91.6*	*80 - 119*				
Surr: Toluene-d8	*52.33*	*0*	*50*	*0*	*105*	*81 - 118*				

MS Sample ID: **HS20020334-01MS** Units: **ug/Kg** Analysis Date: **15-Feb-2020 19:24**
Client ID: Run ID: **VOA8_356340** SeqNo: **5474402** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	51.68	5.0	49.5	0	104	70 - 130				
Ethylbenzene	51.59	5.0	49.5	0	104	70 - 130				
Xylenes, Total	152.9	5.0	148.5	0	103	70 - 130				
Surr: 1,2-Dichloroethane-d4	*47.55*	*0*	*49.5*	*0*	*96.1*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*50.16*	*0*	*49.5*	*0*	*101*	*70 - 130*				
Surr: Dibromofluoromethane	*49.39*	*0*	*49.5*	*0*	*99.8*	*70 - 130*				
Surr: Toluene-d8	*49.98*	*0*	*49.5*	*0*	*101*	*70 - 130*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020308

QC BATCH REPORT

Batch ID: R356340 (0) **Instrument: VOA8** **Method: VOLATILES BY SW8260C**

MSD Sample ID: **HS20020334-01MSD** Units: **ug/Kg** Analysis Date: **15-Feb-2020 11:46**
Client ID: Run ID: **VOA8_356340** SeqNo: **5474383** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Benzene	49.35	5.0	50	0	98.7	70 - 130	51.68	4.61	30	
Ethylbenzene	50.79	5.0	50	0	102	70 - 130	51.59	1.58	30	
Xylenes, Total	148.4	5.0	150	0	99.0	70 - 130	152.9	2.96	30	
Surr: 1,2-Dichloroethane-d4	*44.94*	*0*	*50*	*0*	*89.9*	*70 - 126*	*47.55*	*5.64*	*30*	
Surr: 4-Bromofluorobenzene	*49.81*	*0*	*50*	*0*	*99.6*	*70 - 130*	*50.16*	*0.696*	*30*	
Surr: Dibromofluoromethane	*48.83*	*0*	*50*	*0*	*97.7*	*70 - 130*	*49.39*	*1.15*	*30*	
Surr: Toluene-d8	*51.03*	*0*	*50*	*0*	*102*	*70 - 130*	*49.98*	*2.08*	*30*	

The following samples were analyzed in this batch: HS20020308-01 HS20020308-02 HS20020308-03 HS20020308-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020308

QC BATCH REPORT

Batch ID: R356283 (0) **Instrument:** Balance1 **Method:** MOISTURE - ASTM D2216

DUP Sample ID: **HS20020120-09DUP** Units: **wt%** Analysis Date: **13-Feb-2020 11:17**
Client ID: Run ID: **Balance1_356283** SeqNo: **5473179** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	13.6	0.0100					14.2	4.32	20	

The following samples were analyzed in this batch: HS20020308-01 HS20020308-02 HS20020308-03 HS20020308-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20020308**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/Kg-dry	Milligrams per Kilogram- Dry weight corrected

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20020308

Date/Time Received: **07-Feb-2020 16:40**
Received by: **DDG**

Checklist completed by: *Paresh M. Giga* eSignature — 7-Feb-2020 Date

Reviewed by: *Dane J. Wacasey* eSignature — 10-Feb-2020 Date

Matrices: **Soil**

Carrier name: **ALS Courier**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☑	No ☐	Not Present ☐
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:214095
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	0.8c U/c	IR25	
Cooler(s)/Kit(s):	25749		
Date/Time sample(s) sent to storage:	2/7/2020 17:30		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH
+1 513 733 5336

Fort Collins, CO
+1 970 490 1511

Everett, WA
+1 425 356 2600

Holland, MI
+1 616 399 6070

Chain of Custody Form

Page 1 of 1

COC ID: 214095

HS20020308

Golder Associates Inc.
Houston TX-Wood Preserving Works

Customer Information		Project Information		ALS Project Manager:
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	
Work Order		Project Number	1620-11-Rev0 SR 92688	
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P	
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	
Phone	(512) 671-3434	Phone		
Fax	(512) 671-3446	Fax		
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address		

A: 8260_S (5652652 B,E,X)
B: 8270_LOW_S (5632532 SVOC - Naphthalene only)
C: MOIST_ASTM (5631931 Gen.Chem. MOIST%)
D:
E:
F:
G:
H:
I:
J:

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620- SG10 (0.5-1) 20200207	2-7-20	1110	Soil	8,9	5	X	X	X								
2	SG10 (5.5-6) 20200207	2 7 20	1130														
3	SG08 (0.5-1) 20200207		1400														
4	SG08 (5.5-6) 20200207		1420														
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Anthony Retel

Shipment Method:

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: Date: 2-7-20 Time: 1540 Received by:

Relinquished by: Date: 2-7-20 Time: 1645 Received by (Laboratory):

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR HWPW 1620-11

Cooler ID	Cooler Temp.
25749	4.1C 0.5

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[X] TRRP Checklist
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

ote:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

Copyright 2011 by ALS Environmental.

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

February 19, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20020445**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 6 sample(s) on Feb 11, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20020445**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS20020445**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/19/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020445				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150597,R356342,R356458				
#[1]	A[2]	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?	X				
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				1
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/19/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020445				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150597,R356342,R356458				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 02/19/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20020445
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 150597,R356342,R356458

ER#[5]	Description
1	Semivolatile Organics Method SW2870, sample SO-1620-SG02(0.5-1) 20200210, Internal standard Perylene-d12 shifted due to possible matrix effect. There are no target analyte associated with this internal standard.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20020445

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20020445-01	SO-1620-SG05(0.5-1) 20200210	Soil		10-Feb-2020 09:50	11-Feb-2020 13:15	☐
HS20020445-02	SO-1620-SG05(5.5-6) 20200210	Soil		10-Feb-2020 10:10	11-Feb-2020 13:15	☐
HS20020445-03	SO-1620-SG04(0.5-1) 20200210	Soil		10-Feb-2020 13:20	11-Feb-2020 13:15	☐
HS20020445-04	SO-1620-SG04(5.5-6) 20200210	Soil		10-Feb-2020 13:30	11-Feb-2020 13:15	☐
HS20020445-05	SO-1620-SG02(0.5-1) 20200210	Soil		10-Feb-2020 15:50	11-Feb-2020 13:15	☐
HS20020445-06	SO-1620-SG02(5.5-6) 20200210	Soil		10-Feb-2020 16:00	11-Feb-2020 13:15	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG05(0.5-1) 20200210
Collection Date: 10-Feb-2020 09:50

ANALYTICAL REPORT
WorkOrder:HS20020445
Lab ID:HS20020445-01
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00037	0.0037	mg/Kg-dry	1	15-Feb-2020 16:01
Ethylbenzene		U	0.00051	0.0037	mg/Kg-dry	1	15-Feb-2020 16:01
Xylenes, Total		U	0.00073	0.0037	mg/Kg-dry	1	15-Feb-2020 16:01
Surr: 1,2-Dichloroethane-d4	*86.9*			*70-126*	*%REC*	*1*	*15-Feb-2020 16:01*
Surr: 4-Bromofluorobenzene	*93.5*			*70-130*	*%REC*	*1*	*15-Feb-2020 16:01*
Surr: Dibromofluoromethane	*92.3*			*70-130*	*%REC*	*1*	*15-Feb-2020 16:01*
Surr: Toluene-d8	*105*			*70-130*	*%REC*	*1*	*15-Feb-2020 16:01*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 13-Feb-2020		Analyst: GEY
Naphthalene	**0.0049**		**0.00066**	**0.0037**	**mg/Kg-dry**	1	13-Feb-2020 23:20
Surr: 2-Fluorobiphenyl	*69.2*			*43-125*	*%REC*	*1*	*13-Feb-2020 23:20*
Surr: 4-Terphenyl-d14	*75.0*			*32-125*	*%REC*	*1*	*13-Feb-2020 23:20*
Surr: Nitrobenzene-d5	*50.2*			*37-125*	*%REC*	*1*	*13-Feb-2020 23:20*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**9.74**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:26

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG05(5.5-6) 20200210
Collection Date: 10-Feb-2020 10:10

ANALYTICAL REPORT
WorkOrder:HS20020445
Lab ID:HS20020445-02
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00078	0.0078	mg/Kg-dry	1	15-Feb-2020 16:26
Ethylbenzene		U	0.0011	0.0078	mg/Kg-dry	1	15-Feb-2020 16:26
Xylenes, Total		U	0.0016	0.0078	mg/Kg-dry	1	15-Feb-2020 16:26
Surr: 1,2-Dichloroethane-d4	*81.9*			*70-126*	*%REC*	*1*	*15-Feb-2020 16:26*
Surr: 4-Bromofluorobenzene	*93.7*			*70-130*	*%REC*	*1*	*15-Feb-2020 16:26*
Surr: Dibromofluoromethane	*91.5*			*70-130*	*%REC*	*1*	*15-Feb-2020 16:26*
Surr: Toluene-d8	*102*			*70-130*	*%REC*	*1*	*15-Feb-2020 16:26*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 13-Feb-2020		Analyst: GEY
Naphthalene		U	0.00074	0.0041	mg/Kg-dry	1	13-Feb-2020 19:32
Surr: 2-Fluorobiphenyl	*90.5*			*43-125*	*%REC*	*1*	*13-Feb-2020 19:32*
Surr: 4-Terphenyl-d14	*79.8*			*32-125*	*%REC*	*1*	*13-Feb-2020 19:32*
Surr: Nitrobenzene-d5	*47.3*			*37-125*	*%REC*	*1*	*13-Feb-2020 19:32*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**19.0**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:26

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG04(0.5-1) 20200210
Collection Date: 10-Feb-2020 13:20

ANALYTICAL REPORT
WorkOrder:HS20020445
Lab ID:HS20020445-03
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00044	0.0044	mg/Kg-dry	1	15-Feb-2020 16:51
Ethylbenzene		U	0.00061	0.0044	mg/Kg-dry	1	15-Feb-2020 16:51
Xylenes, Total		U	0.00087	0.0044	mg/Kg-dry	1	15-Feb-2020 16:51
Surr: 1,2-Dichloroethane-d4	*83.5*			*70-126*	*%REC*	*1*	*15-Feb-2020 16:51*
Surr: 4-Bromofluorobenzene	*94.7*			*70-130*	*%REC*	*1*	*15-Feb-2020 16:51*
Surr: Dibromofluoromethane	*92.7*			*70-130*	*%REC*	*1*	*15-Feb-2020 16:51*
Surr: Toluene-d8	*101*			*70-130*	*%REC*	*1*	*15-Feb-2020 16:51*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 13-Feb-2020		Analyst: GEY
Naphthalene		U	0.00071	0.0039	mg/Kg-dry	1	14-Feb-2020 13:25
Surr: 2-Fluorobiphenyl	*89.3*			*43-125*	*%REC*	*1*	*14-Feb-2020 13:25*
Surr: 4-Terphenyl-d14	*76.5*			*32-125*	*%REC*	*1*	*14-Feb-2020 13:25*
Surr: Nitrobenzene-d5	*57.9*			*37-125*	*%REC*	*1*	*14-Feb-2020 13:25*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**15.3**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:26

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG04(5.5-6) 20200210
Collection Date: 10-Feb-2020 13:30

ANALYTICAL REPORT
WorkOrder:HS20020445
Lab ID:HS20020445-04
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00068	0.0068	mg/Kg-dry	1	15-Feb-2020 17:16
Ethylbenzene		U	0.00096	0.0068	mg/Kg-dry	1	15-Feb-2020 17:16
Xylenes, Total		U	0.0014	0.0068	mg/Kg-dry	1	15-Feb-2020 17:16
Surr: 1,2-Dichloroethane-d4	*82.9*			*70-126*	*%REC*	*1*	*15-Feb-2020 17:16*
Surr: 4-Bromofluorobenzene	*95.6*			*70-130*	*%REC*	*1*	*15-Feb-2020 17:16*
Surr: Dibromofluoromethane	*91.9*			*70-130*	*%REC*	*1*	*15-Feb-2020 17:16*
Surr: Toluene-d8	*103*			*70-130*	*%REC*	*1*	*15-Feb-2020 17:16*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 13-Feb-2020		Analyst: GEY
Naphthalene		U	0.00072	0.0040	mg/Kg-dry	1	13-Feb-2020 20:10
Surr: 2-Fluorobiphenyl	*80.6*			*43-125*	*%REC*	*1*	*13-Feb-2020 20:10*
Surr: 4-Terphenyl-d14	*84.1*			*32-125*	*%REC*	*1*	*13-Feb-2020 20:10*
Surr: Nitrobenzene-d5	*56.1*			*37-125*	*%REC*	*1*	*13-Feb-2020 20:10*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**17.2**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:26

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG02(0.5-1) 20200210
Collection Date: 10-Feb-2020 15:50

ANALYTICAL REPORT
WorkOrder:HS20020445
Lab ID:HS20020445-05
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene	U		0.00053	0.0053	mg/Kg-dry	1	15-Feb-2020 17:41
Ethylbenzene	U		0.00075	0.0053	mg/Kg-dry	1	15-Feb-2020 17:41
Xylenes, Total	U		0.0011	0.0053	mg/Kg-dry	1	15-Feb-2020 17:41
Surr: 1,2-Dichloroethane-d4	*83.5*			*70-126*	*%REC*	*1*	*15-Feb-2020 17:41*
Surr: 4-Bromofluorobenzene	*93.5*			*70-130*	*%REC*	*1*	*15-Feb-2020 17:41*
Surr: Dibromofluoromethane	*92.6*			*70-130*	*%REC*	*1*	*15-Feb-2020 17:41*
Surr: Toluene-d8	*102*			*70-130*	*%REC*	*1*	*15-Feb-2020 17:41*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 13-Feb-2020		Analyst: GEY
Naphthalene	**0.0024**	J	**0.00071**	**0.0039**	**mg/Kg-dry**	1	14-Feb-2020 20:41
Surr: 2-Fluorobiphenyl	*66.7*			*43-125*	*%REC*	*1*	*14-Feb-2020 20:41*
Surr: 4-Terphenyl-d14	*82.0*			*32-125*	*%REC*	*1*	*14-Feb-2020 20:41*
Surr: Nitrobenzene-d5	*51.3*			*37-125*	*%REC*	*1*	*14-Feb-2020 20:41*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**15.6**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:26

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG02(5.5-6) 20200210
Collection Date: 10-Feb-2020 16:00

ANALYTICAL REPORT
WorkOrder:HS20020445
Lab ID:HS20020445-06
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00037	0.0037	mg/Kg-dry	1	15-Feb-2020 18:06
Ethylbenzene		U	0.00051	0.0037	mg/Kg-dry	1	15-Feb-2020 18:06
Xylenes, Total		U	0.00073	0.0037	mg/Kg-dry	1	15-Feb-2020 18:06
Surr: 1,2-Dichloroethane-d4	*84.3*			*70-126*	*%REC*	*1*	*15-Feb-2020 18:06*
Surr: 4-Bromofluorobenzene	*94.2*			*70-130*	*%REC*	*1*	*15-Feb-2020 18:06*
Surr: Dibromofluoromethane	*89.3*			*70-130*	*%REC*	*1*	*15-Feb-2020 18:06*
Surr: Toluene-d8	*101*			*70-130*	*%REC*	*1*	*15-Feb-2020 18:06*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 13-Feb-2020		Analyst: GEY
Naphthalene		U	0.00079	0.0043	mg/Kg-dry	1	13-Feb-2020 20:29
Surr: 2-Fluorobiphenyl	*62.8*			*43-125*	*%REC*	*1*	*13-Feb-2020 20:29*
Surr: 4-Terphenyl-d14	*75.3*			*32-125*	*%REC*	*1*	*13-Feb-2020 20:29*
Surr: Nitrobenzene-d5	*58.3*			*37-125*	*%REC*	*1*	*13-Feb-2020 20:29*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**23.8**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:26

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020445

Batch ID: 3611 **Start Date:** 13 Feb 2020 12:33 **End Date:** 13 Feb 2020 12:33
Method: VOLATILES BY SW8260C

Sample ID	Container	Sample Wt/Vol	Final Volume	Weight Factor	Container Type
HS20020445-01	1	7.52 (g)	5 (mL)	0.66	TerraCore (5035A)
HS20020445-02	1	3.922 (g)	5 (mL)	1.27	TerraCore (5035A)
HS20020445-03	1	6.778 (g)	5 (mL)	0.74	TerraCore (5035A)
HS20020445-04	1	4.416 (g)	5 (mL)	1.13	TerraCore (5035A)
HS20020445-05	1	5.562 (g)	5 (mL)	0.9	TerraCore (5035A)
HS20020445-06	1	8.94 (g)	5 (mL)	0.56	TerraCore (5035A)

Batch ID: 150597 **Start Date:** 13 Feb 2020 11:26 **End Date:** 13 Feb 2020 16:00
Method: SV SOXHLET EXTRACT-LOWLEVEL-SW3541 **Prep Code:** 3541_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20020445-01		30.02 (g)	1 (mL)	0.03331
HS20020445-02		30.12 (g)	1 (mL)	0.0332
HS20020445-03		30.14 (g)	1 (mL)	0.03318
HS20020445-04		30.19 (g)	1 (mL)	0.03312
HS20020445-05		30.14 (g)	1 (mL)	0.03318
HS20020445-06		30.09 (g)	1 (mL)	0.03323

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020445

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 150597 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Soil	
HS20020445-01	SO-1620-SG05(0.5-1) 20200210	10 Feb 2020 09:50		13 Feb 2020 11:26	13 Feb 2020 23:20	1
HS20020445-02	SO-1620-SG05(5.5-6) 20200210	10 Feb 2020 10:10		13 Feb 2020 11:26	13 Feb 2020 19:32	1
HS20020445-03	SO-1620-SG04(0.5-1) 20200210	10 Feb 2020 13:20		13 Feb 2020 11:26	14 Feb 2020 13:25	1
HS20020445-04	SO-1620-SG04(5.5-6) 20200210	10 Feb 2020 13:30		13 Feb 2020 11:26	13 Feb 2020 20:10	1
HS20020445-05	SO-1620-SG02(0.5-1) 20200210	10 Feb 2020 15:50		13 Feb 2020 11:26	14 Feb 2020 20:41	1
HS20020445-06	SO-1620-SG02(5.5-6) 20200210	10 Feb 2020 16:00		13 Feb 2020 11:26	13 Feb 2020 20:29	1
Batch ID: R356342 (0)	**Test Name :** VOLATILES BY SW8260C				**Matrix:** Soil	
HS20020445-01	SO-1620-SG05(0.5-1) 20200210	10 Feb 2020 09:50			15 Feb 2020 16:01	1
HS20020445-02	SO-1620-SG05(5.5-6) 20200210	10 Feb 2020 10:10			15 Feb 2020 16:26	1
HS20020445-03	SO-1620-SG04(0.5-1) 20200210	10 Feb 2020 13:20			15 Feb 2020 16:51	1
HS20020445-04	SO-1620-SG04(5.5-6) 20200210	10 Feb 2020 13:30			15 Feb 2020 17:16	1
HS20020445-05	SO-1620-SG02(0.5-1) 20200210	10 Feb 2020 15:50			15 Feb 2020 17:41	1
HS20020445-06	SO-1620-SG02(5.5-6) 20200210	10 Feb 2020 16:00			15 Feb 2020 18:06	1
Batch ID: R356458 (0)	**Test Name :** MOISTURE - ASTM D2216				**Matrix:** Soil	
HS20020445-01	SO-1620-SG05(0.5-1) 20200210	10 Feb 2020 09:50			17 Feb 2020 10:26	1
HS20020445-02	SO-1620-SG05(5.5-6) 20200210	10 Feb 2020 10:10			17 Feb 2020 10:26	1
HS20020445-03	SO-1620-SG04(0.5-1) 20200210	10 Feb 2020 13:20			17 Feb 2020 10:26	1
HS20020445-04	SO-1620-SG04(5.5-6) 20200210	10 Feb 2020 13:30			17 Feb 2020 10:26	1
HS20020445-05	SO-1620-SG02(0.5-1) 20200210	10 Feb 2020 15:50			17 Feb 2020 10:26	1
HS20020445-06	SO-1620-SG02(5.5-6) 20200210	10 Feb 2020 16:00			17 Feb 2020 10:26	1

WorkOrder: HS20020445
InstrumentID: SV-7
Test Code: 8270_LOW_S
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Naphthalene	91-20-3	0.0017	0.0018	0.00060	0.0033
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	4-Terphenyl-d14	1718-51-0	0	0	0	0
S	Nitrobenzene-d5	4165-60-0	0	0	0	0

WorkOrder: HS20020445
InstrumentID: VOA5
Test Code: 8260_S
Test Number: SW8260
Test Name: Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Benzene	71-43-2	0.0012	0.0016	0.00050	0.0050
A	Ethylbenzene	100-41-4	0.0012	0.0016	0.00070	0.0050
A	Xylenes, Total	1330-20-7	0.0012	0.0016	0.0010	0.0050
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0
S	4-Bromofluorobenzene	460-00-4	0	0	0	0
S	Dibromofluoromethane	1868-53-7	0	0	0	0
S	Toluene-d8	2037-26-5	0	0	0	0

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020445

QC BATCH REPORT

Batch ID: 150597 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-150597** Units: **ug/Kg** Analysis Date: **13-Feb-2020 16:22**
Client ID: Run ID: **SV-7_356280** SeqNo: **5473119** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	U	3.3								
Surr: 2-Fluorobiphenyl	*128.7*	*0*	*167*	*0*	*77.1*	*43 - 125*				
Surr: 4-Terphenyl-d14	*146*	*0*	*167*	*0*	*87.4*	*32 - 125*				
Surr: Nitrobenzene-d5	*119.2*	*0*	*167*	*0*	*71.4*	*37 - 125*				

LCS Sample ID: **LCS-150597** Units: **ug/Kg** Analysis Date: **13-Feb-2020 16:41**
Client ID: Run ID: **SV-7_356280** SeqNo: **5473120** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	97.38	3.3	167	0	58.3	50 - 125				
Surr: 2-Fluorobiphenyl	*86.63*	*0*	*167*	*0*	*51.9*	*43 - 125*				
Surr: 4-Terphenyl-d14	*109.5*	*0*	*167*	*0*	*65.5*	*32 - 125*				
Surr: Nitrobenzene-d5	*117.4*	*0*	*167*	*0*	*70.3*	*37 - 125*				

MS Sample ID: **HS20020501-02MS** Units: **ug/Kg** Analysis Date: **14-Feb-2020 12:00**
Client ID: Run ID: **SV-7_356313** SeqNo: **5473790** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	150.7	3.3	166.6	3.15	88.6	50 - 125				
Surr: 2-Fluorobiphenyl	*147.3*	*0*	*166.6*	*0*	*88.5*	*43 - 125*				
Surr: 4-Terphenyl-d14	*144.9*	*0*	*166.6*	*0*	*87.0*	*32 - 125*				
Surr: Nitrobenzene-d5	*95.46*	*0*	*166.6*	*0*	*57.3*	*37 - 125*				

MSD Sample ID: **HS20020501-02MSD** Units: **ug/Kg** Analysis Date: **13-Feb-2020 19:13**
Client ID: Run ID: **SV-7_356280** SeqNo: **5473127** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	135.9	3.3	166.4	3.15	79.8	50 - 125	150.7	10.3	30	
Surr: 2-Fluorobiphenyl	*134.9*	*0*	*166.4*	*0*	*81.1*	*43 - 125*	*147.3*	*8.77*	*30*	
Surr: 4-Terphenyl-d14	*141*	*0*	*166.4*	*0*	*84.8*	*32 - 125*	*144.9*	*2.73*	*30*	
Surr: Nitrobenzene-d5	*109.9*	*0*	*166.4*	*0*	*66.0*	*37 - 125*	*95.46*	*14.1*	*30*	

The following samples were analyzed in this batch: HS20020445-01 HS20020445-02 HS20020445-03 HS20020445-04 HS20020445-05 HS20020445-06

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020445

QC BATCH REPORT

Batch ID: R356342 (0) **Instrument: VOA5** **Method: VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKS1-021520** Units: **ug/Kg** Analysis Date: **15-Feb-2020 10:38**
Client ID: Run ID: **VOA5_356342** SeqNo: **5474460** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	5.0								
Ethylbenzene	U	5.0								
Xylenes, Total	U	5.0								
Surr: 1,2-Dichloroethane-d4	*45.4*	*0*	*50*	*0*	*90.8*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*47.6*	*0*	*50*	*0*	*95.2*	*80 - 120*				
Surr: Dibromofluoromethane	*46.63*	*0*	*50*	*0*	*93.3*	*80 - 119*				
Surr: Toluene-d8	*49.33*	*0*	*50*	*0*	*98.7*	*81 - 118*				

LCS Sample ID: **VLCSS1-021520** Units: **ug/Kg** Analysis Date: **15-Feb-2020 09:48**
Client ID: Run ID: **VOA5_356342** SeqNo: **5474459** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	53.58	5.0	50	0	107	75 - 124				
Ethylbenzene	54.61	5.0	50	0	109	70 - 123				
Xylenes, Total	164.4	5.0	150	0	110	77 - 128				
Surr: 1,2-Dichloroethane-d4	*47.23*	*0*	*50*	*0*	*94.5*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*48.41*	*0*	*50*	*0*	*96.8*	*80 - 120*				
Surr: Dibromofluoromethane	*50.12*	*0*	*50*	*0*	*100*	*80 - 119*				
Surr: Toluene-d8	*49.87*	*0*	*50*	*0*	*99.7*	*81 - 118*				

MS Sample ID: **HS20020288-10MS** Units: **ug/Kg** Analysis Date: **15-Feb-2020 11:28**
Client ID: Run ID: **VOA5_356342** SeqNo: **5474462** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	45.6	4.8	48	0	95.0	70 - 130				
Ethylbenzene	42.51	4.8	48	0	88.6	70 - 130				
Xylenes, Total	129.8	4.8	144	0	90.1	70 - 130				
Surr: 1,2-Dichloroethane-d4	*44.43*	*0*	*48*	*0*	*92.6*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*47.23*	*0*	*48*	*0*	*98.4*	*70 - 130*				
Surr: Dibromofluoromethane	*46.9*	*0*	*48*	*0*	*97.7*	*70 - 130*				
Surr: Toluene-d8	*48.33*	*0*	*48*	*0*	*101*	*70 - 130*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020445

QC BATCH REPORT

Batch ID: R356342 (0) **Instrument: VOA5** **Method: VOLATILES BY SW8260C**

MSD Sample ID: **HS20020288-10MSD** Units: **ug/Kg** Analysis Date: **15-Feb-2020 11:53**
Client ID: Run ID: **VOA5_356342** SeqNo: **5474463** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Benzene	37.07	4.8	48	0	77.2	70 - 130	45.6	20.6	30	
Ethylbenzene	35.46	4.8	48	0	73.9	70 - 130	42.51	18.1	30	
Xylenes, Total	106.4	4.8	144	0	73.9	70 - 130	129.8	19.8	30	
Surr: 1,2-Dichloroethane-d4	*45.65*	*0*	*48*	*0*	*95.1*	*70 - 126*	*44.43*	*2.72*	*30*	
Surr: 4-Bromofluorobenzene	*46.55*	*0*	*48*	*0*	*97.0*	*70 - 130*	*47.23*	*1.45*	*30*	
Surr: Dibromofluoromethane	*48.59*	*0*	*48*	*0*	*101*	*70 - 130*	*46.9*	*3.54*	*30*	
Surr: Toluene-d8	*48.64*	*0*	*48*	*0*	*101*	*70 - 130*	*48.33*	*0.631*	*30*	

The following samples were analyzed in this batch: HS20020445-01 HS20020445-02 HS20020445-03 HS20020445-04 HS20020445-05 HS20020445-06

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020445

QC BATCH REPORT

Batch ID: **R356458 (0)** **Instrument:** **Balance1** **Method:** **MOISTURE - ASTM D2216**

DUP Sample ID: **HS20020445-06DUP** Units: **wt%** Analysis Date: **17-Feb-2020 10:26**
Client ID: **SO-1620-SG02(5.5-6) 20200210** Run ID: **Balance1_356458** SeqNo: **5476887** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	22.2	0.0100					23.8	6.96	20	

The following samples were analyzed in this batch: HS20020445-01 HS20020445-02 HS20020445-03 HS20020445-04 HS20020445-05 HS20020445-06

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20020445**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/Kg-dry	Milligrams per Kilogram- Dry weight corrected

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20020445

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS20020445-01	SO-1620-SG05(0.5-1) 20200210	Login	2/11/2020 3:58:43 PM	NDR	SPA207
HS20020445-01	SO-1620-SG05(0.5-1) 20200210	Login	2/11/2020 3:58:43 PM	NDR	J036
HS20020445-02	SO-1620-SG05(5.5-6) 20200210	Login	2/11/2020 3:58:43 PM	NDR	SPA207
HS20020445-02	SO-1620-SG05(5.5-6) 20200210	Login	2/11/2020 3:58:43 PM	NDR	J036
HS20020445-03	SO-1620-SG04(0.5-1) 20200210	Login	2/11/2020 3:58:43 PM	NDR	SPA207
HS20020445-03	SO-1620-SG04(0.5-1) 20200210	Login	2/11/2020 3:58:43 PM	NDR	J036
HS20020445-04	SO-1620-SG04(5.5-6) 20200210	Login	2/11/2020 3:58:43 PM	NDR	SPA207
HS20020445-04	SO-1620-SG04(5.5-6) 20200210	Login	2/11/2020 3:58:43 PM	NDR	J036

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20020445

Date/Time Received: **11-Feb-2020 13:15**
Received by: **DDG**

Checklist completed by: *Nilesh D. Ranchod* eSignature — 11-Feb-2020 Date

Reviewed by: *Corey Grandits* eSignature — 11-Feb-2020 Date

Matrices: **Soil**

Carrier name: **ALS Courier**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:214096
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	1.8C UC/C	IR # 25
Cooler(s)/Kit(s):	43416	
Date/Time sample(s) sent to storage:	02/11/2020 17:00	

Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes: Sample Count differ COC= 5 Rec'd = 4

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

Page _____ of _____

COC ID: 214096

HS20020445

Golder Associates Inc.
Houston TX-Wood Preserving Works

Customer Information		Project Information		ALS Project Manager:
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	
Work Order		Project Number	1620-11-Rev0 SR 92688	
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P	
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	
Phone	(512) 671-3434	Phone		
Fax	(512) 671-3446	Fax		
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address		

A: 8260_S (5652652 B,E,X)
B: 8270_LOW_S (5632632 SVOC - Naphthalene only)
C: MOIST_ASTM (5631931 Gen.Chem. MOIST%)
D:
E:
F:
G:
H:
I:
J:

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620-SG05 (0.5-1) 20200210	2-10-20	0950	Soil	8.9	5	X	X	X								
2	SG05 (5.5-6) 20200210		1010														
3	SG04 (0.5-1)		1320														
4	SG04 (5.5-6)		1330														
5	SG02 (0.5-1)		1550														
6	SG02 (5.5-6)		1600														
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Anthony Patel

Shipment Method:

Required Turnaround Time: (Check Box) ☒ STD 10 WK Days ☐ 5 WK Days ☐ 2 WK Days ☐ 24 Hour ☐ Other _____

Results Due Date:

Relinquished by: Date: 2-11-20 Time: 1200 Received by:

Relinquished by: Date: 2/11/20 Time: 1315 Received by (Laboratory):

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR HWPW 1620-11

Cooler ID	Cooler Temp.
U5416	4.2

QC Package: (Check One Box Below)
☐ Level II Std QC
☐ Level III Std QC/Raw Data
☐ Level IV SW846/CLP
☐ Other
☒ TRRP Checklist
☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

Copyright 2011 by ALS Environmental.

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

February 24, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20020506**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 7 sample(s) on Feb 12, 2020 for the analysis presented in the following report.

This is a REVISED REPORT. Please see the Case Narrative for discussion concerning this revision.

Regards,

Generated By: DANE.WACASEY
Dane J. Wacasey

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20020506

CASE NARRATIVE

Work Order Comments

- This report was revised February 24, 2020 in order to adjust sample collection date for the field duplicate sample from 2/11/2020 to 2/12/2020.

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20020506**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS20020506**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data								
Laboratory Name: ALS Laboratory Group			LRC Date: 02/19/2020					
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020506					
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150608, 150621, R356340, R356342, R356347, R356526					
#[1]	A[2]	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?	X				
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				1
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/19/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020506				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150608, 150621, R356340, R356342, R356347, R356526				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports		
Laboratory Name: ALS Laboratory Group		LRC Date: 02/19/2020
Project Name: Houston TX-Wood Preserving Works		Laboratory Job Number: HS20020506
Reviewer Name: Dane Wacasey		Prep Batch Number(s): 150608, 150621, R356340, R356342, R356347, R356526
ER#[5]	**Description**	
1	Batch 150621, Semivolatiles by Method SW8270, Sample SO-1620-FD01-20200212: Internal standard Perylene-d12 shifted due to possible matrix effect. There are no target analytes associated with compound.	

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20020506

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20020506-01	SO-1620-SG01(0.5-1)-20200211	Soil		11-Feb-2020 11:50	12-Feb-2020 15:40	☐
HS20020506-02	SO-1620-SG01(5.5-6)-20200211	Soil		11-Feb-2020 12:10	12-Feb-2020 15:40	☐
HS20020506-03	SO-1620-SG20(0.5-1)-20200211	Soil		11-Feb-2020 15:00	12-Feb-2020 15:40	☐
HS20020506-04	SO-1620-SG20(5.5-6)-20200211	Soil		11-Feb-2020 15:20	12-Feb-2020 15:40	☐
HS20020506-05	SO-1620-SG19(0.5-1)-20200212	Soil		12-Feb-2020 11:20	12-Feb-2020 15:40	☐
HS20020506-06	SO-1620-SG19(5.5-6)-20200212	Soil		12-Feb-2020 11:35	12-Feb-2020 15:40	☐
HS20020506-07	SO-1620-FD01-20200212	Soil		12-Feb-2020 00:00	12-Feb-2020 15:40	☐

Revision:1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG01(0.5-1)-20200211
Collection Date: 11-Feb-2020 11:50

ANALYTICAL REPORT
WorkOrder:HS20020506
Lab ID:HS20020506-01
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00059	0.0059	mg/Kg-dry	1	15-Feb-2020 14:47
Ethylbenzene		U	0.00082	0.0059	mg/Kg-dry	1	15-Feb-2020 14:47
Xylenes, Total		U	0.0012	0.0059	mg/Kg-dry	1	15-Feb-2020 14:47
Surr: 1,2-Dichloroethane-d4	*82.9*			*70-126*	*%REC*	*1*	*15-Feb-2020 14:47*
Surr: 4-Bromofluorobenzene	*95.2*			*70-130*	*%REC*	*1*	*15-Feb-2020 14:47*
Surr: Dibromofluoromethane	*91.5*			*70-130*	*%REC*	*1*	*15-Feb-2020 14:47*
Surr: Toluene-d8	*103*			*70-130*	*%REC*	*1*	*15-Feb-2020 14:47*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 13-Feb-2020		Analyst: LG
Naphthalene		U	0.00070	0.0038	mg/Kg-dry	1	17-Feb-2020 17:34
Surr: 2-Fluorobiphenyl	*62.7*			*43-125*	*%REC*	*1*	*17-Feb-2020 17:34*
Surr: 4-Terphenyl-d14	*62.4*			*32-125*	*%REC*	*1*	*17-Feb-2020 17:34*
Surr: Nitrobenzene-d5	*41.5*			*37-125*	*%REC*	*1*	*17-Feb-2020 17:34*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**14.7**		**0.0100**	**0.0100**	**wt%**	1	18-Feb-2020 09:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG01(5.5-6)-20200211
Collection Date: 11-Feb-2020 12:10

ANALYTICAL REPORT
WorkOrder:HS20020506
Lab ID:HS20020506-02
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00082	0.0082	mg/Kg-dry	1	15-Feb-2020 15:12
Ethylbenzene		U	0.0011	0.0082	mg/Kg-dry	1	15-Feb-2020 15:12
Xylenes, Total		U	0.0016	0.0082	mg/Kg-dry	1	15-Feb-2020 15:12
Surr: 1,2-Dichloroethane-d4	*82.9*			*70-126*	*%REC*	*1*	*15-Feb-2020 15:12*
Surr: 4-Bromofluorobenzene	*96.0*			*70-130*	*%REC*	*1*	*15-Feb-2020 15:12*
Surr: Dibromofluoromethane	*91.0*			*70-130*	*%REC*	*1*	*15-Feb-2020 15:12*
Surr: Toluene-d8	*103*			*70-130*	*%REC*	*1*	*15-Feb-2020 15:12*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 13-Feb-2020		Analyst: LG
Naphthalene		U	0.00073	0.0040	mg/Kg-dry	1	17-Feb-2020 17:53
Surr: 2-Fluorobiphenyl	*92.9*			*43-125*	*%REC*	*1*	*17-Feb-2020 17:53*
Surr: 4-Terphenyl-d14	*80.1*			*32-125*	*%REC*	*1*	*17-Feb-2020 17:53*
Surr: Nitrobenzene-d5	*63.7*			*37-125*	*%REC*	*1*	*17-Feb-2020 17:53*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**17.8**		**0.0100**	**0.0100**	**wt%**	1	18-Feb-2020 09:20

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG20(0.5-1)-20200211
Collection Date: 11-Feb-2020 15:00

ANALYTICAL REPORT
WorkOrder:HS20020506
Lab ID:HS20020506-03
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00080	0.0080	mg/Kg-dry	1	15-Feb-2020 15:36
Ethylbenzene		U	0.0011	0.0080	mg/Kg-dry	1	15-Feb-2020 15:36
Xylenes, Total		U	0.0016	0.0080	mg/Kg-dry	1	15-Feb-2020 15:36
Surr: 1,2-Dichloroethane-d4	*83.8*			*70-126*	*%REC*	*1*	*15-Feb-2020 15:36*
Surr: 4-Bromofluorobenzene	*94.2*			*70-130*	*%REC*	*1*	*15-Feb-2020 15:36*
Surr: Dibromofluoromethane	*91.1*			*70-130*	*%REC*	*1*	*15-Feb-2020 15:36*
Surr: Toluene-d8	*102*			*70-130*	*%REC*	*1*	*15-Feb-2020 15:36*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 13-Feb-2020		Analyst: LG
Naphthalene		U	0.00069	0.0038	mg/Kg-dry	1	17-Feb-2020 18:12
Surr: 2-Fluorobiphenyl	*72.9*			*43-125*	*%REC*	*1*	*17-Feb-2020 18:12*
Surr: 4-Terphenyl-d14	*81.7*			*32-125*	*%REC*	*1*	*17-Feb-2020 18:12*
Surr: Nitrobenzene-d5	*58.8*			*37-125*	*%REC*	*1*	*17-Feb-2020 18:12*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**12.8**		**0.0100**	**0.0100**	**wt%**	1	18-Feb-2020 09:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG20(5.5-6)-20200211
Collection Date: 11-Feb-2020 15:20

ANALYTICAL REPORT
WorkOrder:HS20020506
Lab ID:HS20020506-04
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00072	0.0072	mg/Kg-dry	1	15-Feb-2020 13:41
Ethylbenzene		U	0.0010	0.0072	mg/Kg-dry	1	15-Feb-2020 13:41
Xylenes, Total		U	0.0014	0.0072	mg/Kg-dry	1	15-Feb-2020 13:41
Surr: 1,2-Dichloroethane-d4	*81.5*			*70-126*	*%REC*	*1*	*15-Feb-2020 13:41*
Surr: 4-Bromofluorobenzene	*94.9*			*70-130*	*%REC*	*1*	*15-Feb-2020 13:41*
Surr: Dibromofluoromethane	*89.2*			*70-130*	*%REC*	*1*	*15-Feb-2020 13:41*
Surr: Toluene-d8	*105*			*70-130*	*%REC*	*1*	*15-Feb-2020 13:41*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 13-Feb-2020		Analyst: LG
Naphthalene		U	0.00071	0.0039	mg/Kg-dry	1	17-Feb-2020 18:31
Surr: 2-Fluorobiphenyl	*87.8*			*43-125*	*%REC*	*1*	*17-Feb-2020 18:31*
Surr: 4-Terphenyl-d14	*83.9*			*32-125*	*%REC*	*1*	*17-Feb-2020 18:31*
Surr: Nitrobenzene-d5	*59.3*			*37-125*	*%REC*	*1*	*17-Feb-2020 18:31*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**16.8**		**0.0100**	**0.0100**	**wt%**	1	18-Feb-2020 09:20

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG19(0.5-1)-20200212
Collection Date: 12-Feb-2020 11:20

ANALYTICAL REPORT
WorkOrder:HS20020506
Lab ID:HS20020506-05
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00059	0.0059	mg/Kg-dry	1	17-Feb-2020 10:14
Ethylbenzene		U	0.00082	0.0059	mg/Kg-dry	1	17-Feb-2020 10:14
Xylenes, Total		U	0.0012	0.0059	mg/Kg-dry	1	17-Feb-2020 10:14
Surr: 1,2-Dichloroethane-d4	*81.6*			*70-126*	*%REC*	*1*	*17-Feb-2020 10:14*
Surr: 4-Bromofluorobenzene	*90.1*			*70-130*	*%REC*	*1*	*17-Feb-2020 10:14*
Surr: Dibromofluoromethane	*92.9*			*70-130*	*%REC*	*1*	*17-Feb-2020 10:14*
Surr: Toluene-d8	*100*			*70-130*	*%REC*	*1*	*17-Feb-2020 10:14*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 13-Feb-2020		Analyst: LG
Naphthalene		U	0.00069	0.0038	mg/Kg-dry	1	17-Feb-2020 18:50
Surr: 2-Fluorobiphenyl	*75.2*			*43-125*	*%REC*	*1*	*17-Feb-2020 18:50*
Surr: 4-Terphenyl-d14	*90.7*			*32-125*	*%REC*	*1*	*17-Feb-2020 18:50*
Surr: Nitrobenzene-d5	*67.0*			*37-125*	*%REC*	*1*	*17-Feb-2020 18:50*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**14.1**		**0.0100**	**0.0100**	**wt%**	1	18-Feb-2020 09:20

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG19(5.5-6)-20200212
Collection Date: 12-Feb-2020 11:35

ANALYTICAL REPORT
WorkOrder:HS20020506
Lab ID:HS20020506-06
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00062	0.0062	mg/Kg-dry	1	15-Feb-2020 14:27
Ethylbenzene		U	0.00087	0.0062	mg/Kg-dry	1	15-Feb-2020 14:27
Xylenes, Total		U	0.0012	0.0062	mg/Kg-dry	1	15-Feb-2020 14:27
Surr: 1,2-Dichloroethane-d4	*81.7*			*70-126*	*%REC*	*1*	*15-Feb-2020 14:27*
Surr: 4-Bromofluorobenzene	*96.8*			*70-130*	*%REC*	*1*	*15-Feb-2020 14:27*
Surr: Dibromofluoromethane	*89.3*			*70-130*	*%REC*	*1*	*15-Feb-2020 14:27*
Surr: Toluene-d8	*108*			*70-130*	*%REC*	*1*	*15-Feb-2020 14:27*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 13-Feb-2020		Analyst: LG
Naphthalene		U	0.00071	0.0039	mg/Kg-dry	1	17-Feb-2020 19:10
Surr: 2-Fluorobiphenyl	*51.8*			*43-125*	*%REC*	*1*	*17-Feb-2020 19:10*
Surr: 4-Terphenyl-d14	*65.3*			*32-125*	*%REC*	*1*	*17-Feb-2020 19:10*
Surr: Nitrobenzene-d5	*43.9*			*37-125*	*%REC*	*1*	*17-Feb-2020 19:10*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**15.1**		**0.0100**	**0.0100**	**wt%**	1	18-Feb-2020 09:20

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-FD01-20200212
Collection Date: 12-Feb-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20020506
Lab ID:HS20020506-07
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00060	0.0060	mg/Kg-dry	1	15-Feb-2020 14:49
Ethylbenzene		U	0.00083	0.0060	mg/Kg-dry	1	15-Feb-2020 14:49
Xylenes, Total		U	0.0012	0.0060	mg/Kg-dry	1	15-Feb-2020 14:49
Surr: 1,2-Dichloroethane-d4	*86.9*			*70-126*	*%REC*	*1*	*15-Feb-2020 14:49*
Surr: 4-Bromofluorobenzene	*92.6*			*70-130*	*%REC*	*1*	*15-Feb-2020 14:49*
Surr: Dibromofluoromethane	*91.9*			*70-130*	*%REC*	*1*	*15-Feb-2020 14:49*
Surr: Toluene-d8	*105*			*70-130*	*%REC*	*1*	*15-Feb-2020 14:49*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 13-Feb-2020		Analyst: GEY
Naphthalene	**0.0053**		**0.00071**	**0.0039**	**mg/Kg-dry**	1	14-Feb-2020 20:22
Surr: 2-Fluorobiphenyl	*76.4*			*43-125*	*%REC*	*1*	*14-Feb-2020 20:22*
Surr: 4-Terphenyl-d14	*98.9*			*32-125*	*%REC*	*1*	*14-Feb-2020 20:22*
Surr: Nitrobenzene-d5	*71.3*			*37-125*	*%REC*	*1*	*14-Feb-2020 20:22*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**15.3**		**0.0100**	**0.0100**	**wt%**	1	18-Feb-2020 09:20

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020506

Batch ID: 3612 **Start Date:** 13 Feb 2020 14:50 **End Date:** 13 Feb 2020 14:50
Method: VOLATILES BY SW8260C

Sample ID	Container	Sample Wt/Vol	Final Volume	Weight Factor	Container Type
HS20020506-01	1	4.978 (g)	5 (mL)	1	TerraCore (5035A)
HS20020506-02	1	3.722 (g)	5 (mL)	1.34	TerraCore (5035A)
HS20020506-03	1	3.579 (g)	5 (mL)	1.4	TerraCore (5035A)
HS20020506-04	1	4.215 (g)	5 (mL)	1.19	TerraCore (5035A)
HS20020506-05	1	4.974 (g)	5 (mL)	1.01	TerraCore (5035A)
HS20020506-06	1	4.771 (g)	5 (mL)	1.05	TerraCore (5035A)
HS20020506-07	1	4.955 (g)	5 (mL)	1.01	TerraCore (5035A)

Batch ID: 150608 **Start Date:** 13 Feb 2020 13:39 **End Date:** 13 Feb 2020 18:00
Method: SV SOXHLET EXTRACT-LOWLEVEL-SW3541 **Prep Code:** 3541_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20020506-01		30.35 (g)	1 (mL)	0.03295
HS20020506-02		30.14 (g)	1 (mL)	0.03318
HS20020506-03		30.1 (g)	1 (mL)	0.03322
HS20020506-04		30.27 (g)	1 (mL)	0.03304
HS20020506-05		30.16 (g)	1 (mL)	0.03316
HS20020506-06		30.02 (g)	1 (mL)	0.03331

Batch ID: 150621 **Start Date:** 13 Feb 2020 16:41 **End Date:** 13 Feb 2020 20:00
Method: SV SOXHLET EXTRACT-LOWLEVEL-SW3541 **Prep Code:** 3541_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20020506-07		30 (g)	1 (mL)	0.03333

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020506

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 150608 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Soil	
HS20020506-01	SO-1620-SG01(0.5-1)-20200211	11 Feb 2020 11:50		13 Feb 2020 13:39	17 Feb 2020 17:34	1
HS20020506-02	SO-1620-SG01(5.5-6)-20200211	11 Feb 2020 12:10		13 Feb 2020 13:39	17 Feb 2020 17:53	1
HS20020506-03	SO-1620-SG20(0.5-1)-20200211	11 Feb 2020 15:00		13 Feb 2020 13:39	17 Feb 2020 18:12	1
HS20020506-04	SO-1620-SG20(5.5-6)-20200211	11 Feb 2020 15:20		13 Feb 2020 13:39	17 Feb 2020 18:31	1
HS20020506-05	SO-1620-SG19(0.5-1)-20200212	12 Feb 2020 11:20		13 Feb 2020 13:39	17 Feb 2020 18:50	1
HS20020506-06	SO-1620-SG19(5.5-6)-20200212	12 Feb 2020 11:35		13 Feb 2020 13:39	17 Feb 2020 19:10	1
Batch ID: 150621 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Soil	
HS20020506-07	SO-1620-FD01-20200212	12 Feb 2020 00:00		13 Feb 2020 16:41	14 Feb 2020 20:22	1
Batch ID: R356340 (0)	**Test Name :** VOLATILES BY SW8260C				**Matrix:** Soil	
HS20020506-04	SO-1620-SG20(5.5-6)-20200211	11 Feb 2020 15:20			15 Feb 2020 13:41	1
HS20020506-06	SO-1620-SG19(5.5-6)-20200212	12 Feb 2020 11:35			15 Feb 2020 14:27	1
HS20020506-07	SO-1620-FD01-20200212	12 Feb 2020 00:00			15 Feb 2020 14:49	1
Batch ID: R356342 (0)	**Test Name :** VOLATILES BY SW8260C				**Matrix:** Soil	
HS20020506-01	SO-1620-SG01(0.5-1)-20200211	11 Feb 2020 11:50			15 Feb 2020 14:47	1
HS20020506-02	SO-1620-SG01(5.5-6)-20200211	11 Feb 2020 12:10			15 Feb 2020 15:12	1
HS20020506-03	SO-1620-SG20(0.5-1)-20200211	11 Feb 2020 15:00			15 Feb 2020 15:36	1
Batch ID: R356347 (0)	**Test Name :** VOLATILES BY SW8260C				**Matrix:** Soil	
HS20020506-05	SO-1620-SG19(0.5-1)-20200212	12 Feb 2020 11:20			17 Feb 2020 10:14	1
Batch ID: R356526 (0)	**Test Name :** MOISTURE - ASTM D2216				**Matrix:** Soil	
HS20020506-01	SO-1620-SG01(0.5-1)-20200211	11 Feb 2020 11:50			18 Feb 2020 09:20	1
HS20020506-02	SO-1620-SG01(5.5-6)-20200211	11 Feb 2020 12:10			18 Feb 2020 09:20	1
HS20020506-03	SO-1620-SG20(0.5-1)-20200211	11 Feb 2020 15:00			18 Feb 2020 09:20	1
HS20020506-04	SO-1620-SG20(5.5-6)-20200211	11 Feb 2020 15:20			18 Feb 2020 09:20	1
HS20020506-05	SO-1620-SG19(0.5-1)-20200212	12 Feb 2020 11:20			18 Feb 2020 09:20	1
HS20020506-06	SO-1620-SG19(5.5-6)-20200212	12 Feb 2020 11:35			18 Feb 2020 09:20	1
HS20020506-07	SO-1620-FD01-20200212	12 Feb 2020 00:00			18 Feb 2020 09:20	1

Revision: 1

WorkOrder: HS20020506
InstrumentID: SV-6
Test Code: 8270_LOW_S
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Naphthalene	91-20-3	0.0017	0.0019	0.00060	0.0033
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	4-Terphenyl-d14	1718-51-0	0	0	0	0
S	Nitrobenzene-d5	4165-60-0	0	0	0	0

Revision:1

WorkOrder: HS20020506
InstrumentID: SV-7
Test Code: 8270_LOW_S
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Naphthalene	91-20-3	0.0017	0.0018	0.00060	0.0033
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	4-Terphenyl-d14	1718-51-0	0	0	0	0
S	Nitrobenzene-d5	4165-60-0	0	0	0	0

Revision:1

WorkOrder: HS20020506
InstrumentID: VOA5
Test Code: 8260_S
Test Number: SW8260
Test Name: Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Benzene	71-43-2	0.0012	0.0016	0.00050	0.0050
A	Ethylbenzene	100-41-4	0.0012	0.0016	0.00070	0.0050
A	Xylenes, Total	1330-20-7	0.0012	0.0016	0.0010	0.0050
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0
S	4-Bromofluorobenzene	460-00-4	0	0	0	0
S	Dibromofluoromethane	1868-53-7	0	0	0	0
S	Toluene-d8	2037-26-5	0	0	0	0

Revision:1

WorkOrder: HS20020506
InstrumentID: VOA8
Test Code: 8260_S
Test Number: SW8260
Test Name: Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Benzene	71-43-2	0.0012	0.0013	0.00050	0.0050
A	Ethylbenzene	100-41-4	0.0012	0.0014	0.00070	0.0050
A	Xylenes, Total	1330-20-7	0.0012	0.0014	0.0010	0.0050
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0
S	4-Bromofluorobenzene	460-00-4	0	0	0	0
S	Dibromofluoromethane	1868-53-7	0	0	0	0
S	Toluene-d8	2037-26-5	0	0	0	0

Revision:1

WorkOrder: HS20020506
InstrumentID: Balance1
Test Code: MOIST_ASTM
Test Number: ASTM D2216
Test Name: Moisture - ASTM D2216

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** wt%

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Percent Moisture	MOIST	0.0100	0.0100	0.0100	0.0100

Revision:1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020506

QC BATCH REPORT

Batch ID: 150608 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-150608** Units: **ug/Kg** Analysis Date: **13-Feb-2020 17:29**
Client ID: Run ID: **SV-6_356229** SeqNo: **5472906** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	U	3.3								
Surr: 2-Fluorobiphenyl	*127.4*	*0*	*167*	*0*	*76.3*	*43 - 125*				
Surr: 4-Terphenyl-d14	*123.1*	*0*	*167*	*0*	*73.7*	*32 - 125*				
Surr: Nitrobenzene-d5	*118.2*	*0*	*167*	*0*	*70.8*	*37 - 125*				

LCS Sample ID: **LCS-150608** Units: **ug/Kg** Analysis Date: **13-Feb-2020 17:48**
Client ID: Run ID: **SV-6_356229** SeqNo: **5472907** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	133.9	3.3	167	0	80.2	50 - 125				
Surr: 2-Fluorobiphenyl	*139.8*	*0*	*167*	*0*	*83.7*	*43 - 125*				
Surr: 4-Terphenyl-d14	*142.8*	*0*	*167*	*0*	*85.5*	*32 - 125*				
Surr: Nitrobenzene-d5	*127.2*	*0*	*167*	*0*	*76.2*	*37 - 125*				

MS Sample ID: **HS20020449-01MS** Units: **ug/Kg** Analysis Date: **14-Feb-2020 11:51**
Client ID: Run ID: **SV-6_356287** SeqNo: **5473656** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	116.6	3.3	166.7	0	70.0	50 - 125				
Surr: 2-Fluorobiphenyl	*127.2*	*0*	*166.7*	*0*	*76.3*	*43 - 125*				
Surr: 4-Terphenyl-d14	*129.4*	*0*	*166.7*	*0*	*77.6*	*32 - 125*				
Surr: Nitrobenzene-d5	*107*	*0*	*166.7*	*0*	*64.2*	*37 - 125*				

MSD Sample ID: **HS20020449-01MSD** Units: **ug/Kg** Analysis Date: **14-Feb-2020 12:10**
Client ID: Run ID: **SV-6_356287** SeqNo: **5473657** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	115.5	3.3	165	0	70.0	50 - 125	116.6	0.905	30	
Surr: 2-Fluorobiphenyl	*124.1*	*0*	*165*	*0*	*75.2*	*43 - 125*	*127.2*	*2.46*	*30*	
Surr: 4-Terphenyl-d14	*118.8*	*0*	*165*	*0*	*72.0*	*32 - 125*	*129.4*	*8.49*	*30*	
Surr: Nitrobenzene-d5	*106.2*	*0*	*165*	*0*	*64.4*	*37 - 125*	*107*	*0.758*	*30*	

The following samples were analyzed in this batch: HS20020506-01 HS20020506-02 HS20020506-03 HS20020506-04 HS20020506-05 HS20020506-06

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020506

QC BATCH REPORT

Batch ID: 150621 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-150621** Units: **ug/Kg** Analysis Date: **14-Feb-2020 11:22**
Client ID: Run ID: **SV-7_356313** SeqNo: **5475049** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	U	3.3								
Surr: 2-Fluorobiphenyl	*108.8*	*0*	*167*	*0*	*65.1*	*43 - 125*				
Surr: 4-Terphenyl-d14	*120.7*	*0*	*167*	*0*	*72.3*	*32 - 125*				
Surr: Nitrobenzene-d5	*90.27*	*0*	*167*	*0*	*54.1*	*37 - 125*				

LCS Sample ID: **LCS-150621** Units: **ug/Kg** Analysis Date: **14-Feb-2020 11:41**
Client ID: Run ID: **SV-7_356313** SeqNo: **5475050** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	123	3.3	167	0	73.6	50 - 125				
Surr: 2-Fluorobiphenyl	*122*	*0*	*167*	*0*	*73.1*	*43 - 125*				
Surr: 4-Terphenyl-d14	*133.5*	*0*	*167*	*0*	*79.9*	*32 - 125*				
Surr: Nitrobenzene-d5	*108.7*	*0*	*167*	*0*	*65.1*	*37 - 125*				

MS Sample ID: **HS20020518-01MS** Units: **ug/Kg** Analysis Date: **14-Feb-2020 12:47**
Client ID: Run ID: **SV-7_356313** SeqNo: **5475052** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	117.8	3.3	167	0.6599	70.2	50 - 125				
Surr: 2-Fluorobiphenyl	*110.4*	*0*	*167*	*0*	*66.1*	*43 - 125*				
Surr: 4-Terphenyl-d14	*130.2*	*0*	*167*	*0*	*78.0*	*32 - 125*				
Surr: Nitrobenzene-d5	*89.84*	*0*	*167*	*0*	*53.8*	*37 - 125*				

MSD Sample ID: **HS20020518-01MSD** Units: **ug/Kg** Analysis Date: **18-Feb-2020 00:44**
Client ID: Run ID: **SV-7_356439** SeqNo: **5476514** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	120.3	3.3	167	0.6599	71.6	50 - 125	117.8	2.08	30	
Surr: 2-Fluorobiphenyl	*108.4*	*0*	*167*	*0*	*64.9*	*43 - 125*	*110.4*	*1.8*	*30*	
Surr: 4-Terphenyl-d14	*126.5*	*0*	*167*	*0*	*75.8*	*32 - 125*	*130.2*	*2.89*	*30*	
Surr: Nitrobenzene-d5	*97.75*	*0*	*167*	*0*	*58.5*	*37 - 125*	*89.84*	*8.43*	*30*	

The following samples were analyzed in this batch: HS20020506-07

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020506

QC BATCH REPORT

Batch ID: R356340 (0) **Instrument: VOA8** **Method: VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKS1-021520** Units: **ug/Kg** Analysis Date: **15-Feb-2020 10:37**
Client ID: Run ID: **VOA8_356340** SeqNo: **5474381** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	5.0								
Ethylbenzene	U	5.0								
Xylenes, Total	U	5.0								
Surr: 1,2-Dichloroethane-d4	*38.39*	*0*	*50*	*0*	*76.8*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*47.41*	*0*	*50*	*0*	*94.8*	*80 - 120*				
Surr: Dibromofluoromethane	*41.87*	*0*	*50*	*0*	*83.7*	*80 - 119*				
Surr: Toluene-d8	*54.45*	*0*	*50*	*0*	*109*	*81 - 118*				

LCS Sample ID: **VLCSS1-021520** Units: **ug/Kg** Analysis Date: **15-Feb-2020 09:52**
Client ID: Run ID: **VOA8_356340** SeqNo: **5474380** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	49.89	5.0	50	0	99.8	75 - 124				
Ethylbenzene	54.19	5.0	50	0	108	70 - 123				
Xylenes, Total	157.2	5.0	150	0	105	77 - 128				
Surr: 1,2-Dichloroethane-d4	*40.31*	*0*	*50*	*0*	*80.6*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*47.65*	*0*	*50*	*0*	*95.3*	*80 - 120*				
Surr: Dibromofluoromethane	*45.8*	*0*	*50*	*0*	*91.6*	*80 - 119*				
Surr: Toluene-d8	*52.33*	*0*	*50*	*0*	*105*	*81 - 118*				

MS Sample ID: **HS20020334-01MS** Units: **ug/Kg** Analysis Date: **15-Feb-2020 19:24**
Client ID: Run ID: **VOA8_356340** SeqNo: **5474402** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	51.68	5.0	49.5	0	104	70 - 130				
Ethylbenzene	51.59	5.0	49.5	0	104	70 - 130				
Xylenes, Total	152.9	5.0	148.5	0	103	70 - 130				
Surr: 1,2-Dichloroethane-d4	*47.55*	*0*	*49.5*	*0*	*96.1*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*50.16*	*0*	*49.5*	*0*	*101*	*70 - 130*				
Surr: Dibromofluoromethane	*49.39*	*0*	*49.5*	*0*	*99.8*	*70 - 130*				
Surr: Toluene-d8	*49.98*	*0*	*49.5*	*0*	*101*	*70 - 130*				

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020506

QC BATCH REPORT

Batch ID: R356340 (0) **Instrument: VOA8** **Method: VOLATILES BY SW8260C**

MSD Sample ID: **HS20020334-01MSD** Units: **ug/Kg** Analysis Date: **15-Feb-2020 11:46**
Client ID: Run ID: **VOA8_356340** SeqNo: **5474383** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Benzene	49.35	5.0	50	0	98.7	70 - 130	51.68	4.61	30	
Ethylbenzene	50.79	5.0	50	0	102	70 - 130	51.59	1.58	30	
Xylenes, Total	148.4	5.0	150	0	99.0	70 - 130	152.9	2.96	30	
Surr: 1,2-Dichloroethane-d4	*44.94*	*0*	*50*	*0*	*89.9*	*70 - 126*	*47.55*	*5.64*	*30*	
Surr: 4-Bromofluorobenzene	*49.81*	*0*	*50*	*0*	*99.6*	*70 - 130*	*50.16*	*0.696*	*30*	
Surr: Dibromofluoromethane	*48.83*	*0*	*50*	*0*	*97.7*	*70 - 130*	*49.39*	*1.15*	*30*	
Surr: Toluene-d8	*51.03*	*0*	*50*	*0*	*102*	*70 - 130*	*49.98*	*2.08*	*30*	

The following samples were analyzed in this batch: HS20020506-04 HS20020506-06 HS20020506-07

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020506

QC BATCH REPORT

Batch ID: R356342 (0) **Instrument: VOA5** **Method: VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKS1-021520** Units: **ug/Kg** Analysis Date: **15-Feb-2020 10:38**
Client ID: Run ID: **VOA5_356342** SeqNo: **5474460** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	5.0								
Ethylbenzene	U	5.0								
Xylenes, Total	U	5.0								
Surr: 1,2-Dichloroethane-d4	*45.4*	*0*	*50*	*0*	*90.8*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*47.6*	*0*	*50*	*0*	*95.2*	*80 - 120*				
Surr: Dibromofluoromethane	*46.63*	*0*	*50*	*0*	*93.3*	*80 - 119*				
Surr: Toluene-d8	*49.33*	*0*	*50*	*0*	*98.7*	*81 - 118*				

LCS Sample ID: **VLCSS1-021520** Units: **ug/Kg** Analysis Date: **15-Feb-2020 09:48**
Client ID: Run ID: **VOA5_356342** SeqNo: **5474459** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	53.58	5.0	50	0	107	75 - 124				
Ethylbenzene	54.61	5.0	50	0	109	70 - 123				
Xylenes, Total	164.4	5.0	150	0	110	77 - 128				
Surr: 1,2-Dichloroethane-d4	*47.23*	*0*	*50*	*0*	*94.5*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*48.41*	*0*	*50*	*0*	*96.8*	*80 - 120*				
Surr: Dibromofluoromethane	*50.12*	*0*	*50*	*0*	*100*	*80 - 119*				
Surr: Toluene-d8	*49.87*	*0*	*50*	*0*	*99.7*	*81 - 118*				

MS Sample ID: **HS20020288-10MS** Units: **ug/Kg** Analysis Date: **15-Feb-2020 11:28**
Client ID: Run ID: **VOA5_356342** SeqNo: **5474462** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	45.6	4.8	48	0	95.0	70 - 130				
Ethylbenzene	42.51	4.8	48	0	88.6	70 - 130				
Xylenes, Total	129.8	4.8	144	0	90.1	70 - 130				
Surr: 1,2-Dichloroethane-d4	*44.43*	*0*	*48*	*0*	*92.6*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*47.23*	*0*	*48*	*0*	*98.4*	*70 - 130*				
Surr: Dibromofluoromethane	*46.9*	*0*	*48*	*0*	*97.7*	*70 - 130*				
Surr: Toluene-d8	*48.33*	*0*	*48*	*0*	*101*	*70 - 130*				

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020506

QC BATCH REPORT

Batch ID: R356342 (0) **Instrument: VOA5** **Method: VOLATILES BY SW8260C**

MSD Sample ID: **HS20020288-10MSD** Units: **ug/Kg** Analysis Date: **15-Feb-2020 11:53**
Client ID: Run ID: **VOA5_356342** SeqNo: **5474463** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	37.07	4.8	48	0	77.2	70 - 130	45.6	20.6	30	
Ethylbenzene	35.46	4.8	48	0	73.9	70 - 130	42.51	18.1	30	
Xylenes, Total	106.4	4.8	144	0	73.9	70 - 130	129.8	19.8	30	
Surr: 1,2-Dichloroethane-d4	*45.65*	*0*	*48*	*0*	*95.1*	*70 - 126*	*44.43*	*2.72*	*30*	
Surr: 4-Bromofluorobenzene	*46.55*	*0*	*48*	*0*	*97.0*	*70 - 130*	*47.23*	*1.45*	*30*	
Surr: Dibromofluoromethane	*48.59*	*0*	*48*	*0*	*101*	*70 - 130*	*46.9*	*3.54*	*30*	
Surr: Toluene-d8	*48.64*	*0*	*48*	*0*	*101*	*70 - 130*	*48.33*	*0.631*	*30*	

The following samples were analyzed in this batch: HS20020506-01 HS20020506-02 HS20020506-03

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020506

QC BATCH REPORT

Batch ID: R356347 (0) **Instrument: VOA5** **Method: VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKS1-021720** Units: **ug/Kg** Analysis Date: **17-Feb-2020 09:25**
Client ID: Run ID: **VOA5_356347** SeqNo: **5474687** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	5.0								
Ethylbenzene	U	5.0								
Xylenes, Total	U	5.0								
Surr: 1,2-Dichloroethane-d4	*43.64*	*0*	*50*	*0*	*87.3*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*46.48*	*0*	*50*	*0*	*93.0*	*80 - 120*				
Surr: Dibromofluoromethane	*47.05*	*0*	*50*	*0*	*94.1*	*80 - 119*				
Surr: Toluene-d8	*49.59*	*0*	*50*	*0*	*99.2*	*81 - 118*				

LCS Sample ID: **VLCSS1-021720** Units: **ug/Kg** Analysis Date: **17-Feb-2020 08:35**
Client ID: Run ID: **VOA5_356347** SeqNo: **5474686** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	55.18	5.0	50	0	110	75 - 124				
Ethylbenzene	55.2	5.0	50	0	110	70 - 123				
Xylenes, Total	166.1	5.0	150	0	111	77 - 128				
Surr: 1,2-Dichloroethane-d4	*46.03*	*0*	*50*	*0*	*92.1*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*47.82*	*0*	*50*	*0*	*95.6*	*80 - 120*				
Surr: Dibromofluoromethane	*50.21*	*0*	*50*	*0*	*100*	*80 - 119*				
Surr: Toluene-d8	*49.94*	*0*	*50*	*0*	*99.9*	*81 - 118*				

MS Sample ID: **HS20020533-09MS** Units: **ug/Kg** Analysis Date: **17-Feb-2020 11:29**
Client ID: Run ID: **VOA5_356347** SeqNo: **5475037** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	48.07	5.1	51	0	94.3	70 - 130				
Ethylbenzene	48.17	5.1	51	0	94.5	70 - 130				
Xylenes, Total	143.4	5.1	153	0	93.7	70 - 130				
Surr: 1,2-Dichloroethane-d4	*46.89*	*0*	*51*	*0*	*91.9*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*48.14*	*0*	*51*	*0*	*94.4*	*70 - 130*				
Surr: Dibromofluoromethane	*51.35*	*0*	*51*	*0*	*101*	*70 - 130*				
Surr: Toluene-d8	*51.16*	*0*	*51*	*0*	*100*	*70 - 130*				

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020506

QC BATCH REPORT

Batch ID: R356347 (0) **Instrument: VOA5** **Method: VOLATILES BY SW8260C**

MSD Sample ID: **HS20020533-09MSD** Units: **ug/Kg** Analysis Date: **17-Feb-2020 11:54**
Client ID: Run ID: **VOA5_356347** SeqNo: **5475038** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	46.11	5.0	50	0	92.2	70 - 130	48.07	4.17	30	
Ethylbenzene	45.33	5.0	50	0	90.7	70 - 130	48.17	6.08	30	
Xylenes, Total	136.9	5.0	150	0	91.3	70 - 130	143.4	4.6	30	
Surr: 1,2-Dichloroethane-d4	*46.52*	*0*	*50*	*0*	*93.0*	*70 - 126*	*46.89*	*0.8*	*30*	
Surr: 4-Bromofluorobenzene	*47.95*	*0*	*50*	*0*	*95.9*	*70 - 130*	*48.14*	*0.404*	*30*	
Surr: Dibromofluoromethane	*50.78*	*0*	*50*	*0*	*102*	*70 - 130*	*51.35*	*1.12*	*30*	
Surr: Toluene-d8	*50.25*	*0*	*50*	*0*	*100*	*70 - 130*	*51.16*	*1.81*	*30*	

The following samples were analyzed in this batch: HS20020506-05

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020506

QC BATCH REPORT

Batch ID: R356526 (0) **Instrument:** Balance1 **Method:** MOISTURE - ASTM D2216

DUP Sample ID: **HS20020571-06DUP** Units: **wt%** Analysis Date: **18-Feb-2020 09:20**
Client ID: Run ID: **Balance1_356526** SeqNo: **5478088** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	15.1	0.0100					15.2	0.66	20	

The following samples were analyzed in this batch: HS20020506-01 HS20020506-02 HS20020506-03 HS20020506-04 HS20020506-05 HS20020506-06 HS20020506-07

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20020506**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/Kg-dry	Milligrams per Kilogram- Dry weight corrected

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20020506

Date/Time Received: **12-Feb-2020 15:40**
Received by: **DDG**

Checklist completed by: *Paresh M. Giga* eSignature — 12-Feb-2020 Date

Reviewed by: *Dane J. Wacasey* eSignature — 13-Feb-2020 Date

Matrices: **Soil**

Carrier name: **ALS Courier**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☑	No ☐	Not Present ☐
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:214097
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	0.9°C uc/c	IR25	
Cooler(s)/Kit(s):	45557		
Date/Time sample(s) sent to storage:	2/12/2020 18:25		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

Page ____ of ____

COC ID: 214097

HS20020506

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information			
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A	8260_S (5652652 B,E,X)
Work Order		Project Number	1620-11-Rev0 SR 92688	B	8270_LOW_S (5632532 SVOC - Naphthalene only)
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P	C	MOIST_ASTM (5631931 Gen.Chem. MOIST%)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620-SG01 (0.5-1) 20200211	2-11-20	1150	Soil	6.9	5	X	X	X								
2	SG01 (5.5-6) 20200211	"	1210	"	"	"	"	"	"								
3	SG20 (0.5-1) 20200211	"	1500	"	"	"	"	"	"								
4	SG20 (5.5-6) 20200211	"	1520	"	"	"	"	"	"								
5	SG19 (0.5-1) 20200212	2-12-20	1120	"	"	"	"	"	"								
6	SG19 (5.5-6) 20200212	"	1135	"	"	"	"	"	"								
7	Duplicate	—	—				X	X	X								
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Anthony Reid

Shipment Method:

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other ____

Results Due Date:

Relinquished by:	Date: 2-12-20	Time: 1400	Received by:		
Relinquished by:	Date: 2-12-20	Time: 1540	Received by (Laboratory):		
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):		

Notes: UPRR HWPW 1620-11

Cooler ID	Cooler Temp.
15557	0.9

QC Package: (Check One Box Below)

- [ ] Level II Std QC
- [ ] Level III Std QC/Raw Data
- [ ] Level IV SW846/CLP
- [ ] Other
- [X] TRRP Checklist
- [ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

February 20, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20020571**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 6 sample(s) on Feb 13, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20020571**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20020571**	

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/20/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020571				
Reviewer Name: Corey Grandits			Prep Batch Number(s): 150668,150728,R356419,R356526				
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?	X				
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			1
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/20/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020571				
Reviewer Name: Corey Grandits			Prep Batch Number(s): 150668,150728,R356419,R356526				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 02/20/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20020571
Reviewer Name: Corey Grandits	Prep Batch Number(s): 150668,150728,R356419,R356526

ER#[5]	Description
1	Batch R354619, Volatile Organics Method SW8260, sample HS20020397-01, MS and MSD were performed on unrelated sample.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20020571

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20020571-01	SO-1620-SG17(0.5-1)20200212	Soil		12-Feb-2020 15:40	13-Feb-2020 18:01	☐
HS20020571-02	SO-1620-SG17(5.5-6)20200212	Soil		12-Feb-2020 15:50	13-Feb-2020 18:01	☐
HS20020571-03	SO-1620-SG16(0.5-1)20200213	Soil		13-Feb-2020 12:15	13-Feb-2020 18:01	☐
HS20020571-04	SO-1620-SG16(5.5-6)20200213	Soil		13-Feb-2020 12:30	13-Feb-2020 18:01	☐
HS20020571-05	SO-1620-SG15(0.5-1)20200213	Soil		13-Feb-2020 14:30	13-Feb-2020 18:01	☐
HS20020571-06	SO-1620-SG15(5.5-6)20200213	Soil		13-Feb-2020 14:40	13-Feb-2020 18:01	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG17(0.5-1)20200212
Collection Date: 12-Feb-2020 15:40

ANALYTICAL REPORT
WorkOrder:HS20020571
Lab ID:HS20020571-01
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00071	0.0071	mg/Kg-dry	1	18-Feb-2020 00:53
Ethylbenzene		U	0.0010	0.0071	mg/Kg-dry	1	18-Feb-2020 00:53
Xylenes, Total		U	0.0014	0.0071	mg/Kg-dry	1	18-Feb-2020 00:53
Surr: 1,2-Dichloroethane-d4	*79.2*			*70-126*	*%REC*	*1*	*18-Feb-2020 00:53*
Surr: 4-Bromofluorobenzene	*91.5*			*70-130*	*%REC*	*1*	*18-Feb-2020 00:53*
Surr: Dibromofluoromethane	*88.2*			*70-130*	*%REC*	*1*	*18-Feb-2020 00:53*
Surr: Toluene-d8	*109*			*70-130*	*%REC*	*1*	*18-Feb-2020 00:53*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 17-Feb-2020		Analyst: GEY
Naphthalene	**0.0095**		**0.00070**	**0.0038**	**mg/Kg-dry**	1	19-Feb-2020 15:55
Surr: 2-Fluorobiphenyl	*74.2*			*43-125*	*%REC*	*1*	*19-Feb-2020 15:55*
Surr: 4-Terphenyl-d14	*89.2*			*32-125*	*%REC*	*1*	*19-Feb-2020 15:55*
Surr: Nitrobenzene-d5	*60.6*			*37-125*	*%REC*	*1*	*19-Feb-2020 15:55*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**13.7**		**0.0100**	**0.0100**	**wt%**	1	18-Feb-2020 09:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG17(5.5-6)20200212
Collection Date: 12-Feb-2020 15:50

ANALYTICAL REPORT
WorkOrder:HS20020571
Lab ID:HS20020571-02
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene	U		0.00079	0.0079	mg/Kg-dry	1	18-Feb-2020 01:16
Ethylbenzene	U		0.0011	0.0079	mg/Kg-dry	1	18-Feb-2020 01:16
Xylenes, Total	U		0.0016	0.0079	mg/Kg-dry	1	18-Feb-2020 01:16
Surr: 1,2-Dichloroethane-d4	*83.9*			*70-126*	*%REC*	*1*	*18-Feb-2020 01:16*
Surr: 4-Bromofluorobenzene	*99.0*			*70-130*	*%REC*	*1*	*18-Feb-2020 01:16*
Surr: Dibromofluoromethane	*91.0*			*70-130*	*%REC*	*1*	*18-Feb-2020 01:16*
Surr: Toluene-d8	*109*			*70-130*	*%REC*	*1*	*18-Feb-2020 01:16*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 17-Feb-2020		Analyst: GEY
Naphthalene	**0.0015**	J	**0.00073**	**0.0040**	**mg/Kg-dry**	1	19-Feb-2020 16:14
Surr: 2-Fluorobiphenyl	*77.0*			*43-125*	*%REC*	*1*	*19-Feb-2020 16:14*
Surr: 4-Terphenyl-d14	*73.4*			*32-125*	*%REC*	*1*	*19-Feb-2020 16:14*
Surr: Nitrobenzene-d5	*52.0*			*37-125*	*%REC*	*1*	*19-Feb-2020 16:14*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**17.8**		**0.0100**	**0.0100**	**wt%**	1	18-Feb-2020 09:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG16(0.5-1)20200213
Collection Date: 13-Feb-2020 12:15

ANALYTICAL REPORT
WorkOrder:HS20020571
Lab ID:HS20020571-03
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00066	0.0066	mg/Kg-dry	1	18-Feb-2020 01:39
Ethylbenzene		U	0.00093	0.0066	mg/Kg-dry	1	18-Feb-2020 01:39
Xylenes, Total		U	0.0013	0.0066	mg/Kg-dry	1	18-Feb-2020 01:39
Surr: 1,2-Dichloroethane-d4	*80.6*			*70-126*	*%REC*	*1*	*18-Feb-2020 01:39*
Surr: 4-Bromofluorobenzene	*97.3*			*70-130*	*%REC*	*1*	*18-Feb-2020 01:39*
Surr: Dibromofluoromethane	*88.6*			*70-130*	*%REC*	*1*	*18-Feb-2020 01:39*
Surr: Toluene-d8	*108*			*70-130*	*%REC*	*1*	*18-Feb-2020 01:39*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 17-Feb-2020		Analyst: GEY
Naphthalene	**0.0099**		**0.00069**	**0.0038**	**mg/Kg-dry**	1	19-Feb-2020 16:34
Surr: 2-Fluorobiphenyl	*68.8*			*43-125*	*%REC*	*1*	*19-Feb-2020 16:34*
Surr: 4-Terphenyl-d14	*99.4*			*32-125*	*%REC*	*1*	*19-Feb-2020 16:34*
Surr: Nitrobenzene-d5	*64.2*			*37-125*	*%REC*	*1*	*19-Feb-2020 16:34*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**13.1**		**0.0100**	**0.0100**	**wt%**	1	18-Feb-2020 09:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG16(5.5-6)20200213
Collection Date: 13-Feb-2020 12:30

ANALYTICAL REPORT
WorkOrder:HS20020571
Lab ID:HS20020571-04
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00068	0.0068	mg/Kg-dry	1	18-Feb-2020 02:02
Ethylbenzene		U	0.00095	0.0068	mg/Kg-dry	1	18-Feb-2020 02:02
Xylenes, Total		U	0.0014	0.0068	mg/Kg-dry	1	18-Feb-2020 02:02
Surr: 1,2-Dichloroethane-d4	*76.0*			*70-126*	*%REC*	*1*	*18-Feb-2020 02:02*
Surr: 4-Bromofluorobenzene	*94.4*			*70-130*	*%REC*	*1*	*18-Feb-2020 02:02*
Surr: Dibromofluoromethane	*86.3*			*70-130*	*%REC*	*1*	*18-Feb-2020 02:02*
Surr: Toluene-d8	*105*			*70-130*	*%REC*	*1*	*18-Feb-2020 02:02*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 17-Feb-2020		Analyst: LG
Naphthalene		U	0.00071	0.0039	mg/Kg-dry	1	18-Feb-2020 20:21
Surr: 2-Fluorobiphenyl	*75.9*			*43-125*	*%REC*	*1*	*18-Feb-2020 20:21*
Surr: 4-Terphenyl-d14	*83.6*			*32-125*	*%REC*	*1*	*18-Feb-2020 20:21*
Surr: Nitrobenzene-d5	*58.1*			*37-125*	*%REC*	*1*	*18-Feb-2020 20:21*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**17.2**		**0.0100**	**0.0100**	**wt%**	1	18-Feb-2020 09:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG15(0.5-1)20200213
Collection Date: 13-Feb-2020 14:30

ANALYTICAL REPORT
WorkOrder:HS20020571
Lab ID:HS20020571-05
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00050	0.0050	mg/Kg-dry	1	18-Feb-2020 02:25
Ethylbenzene		U	0.00070	0.0050	mg/Kg-dry	1	18-Feb-2020 02:25
Xylenes, Total		U	0.0010	0.0050	mg/Kg-dry	1	18-Feb-2020 02:25
Surr: 1,2-Dichloroethane-d4	*80.7*			*70-126*	*%REC*	*1*	*18-Feb-2020 02:25*
Surr: 4-Bromofluorobenzene	*96.9*			*70-130*	*%REC*	*1*	*18-Feb-2020 02:25*
Surr: Dibromofluoromethane	*88.2*			*70-130*	*%REC*	*1*	*18-Feb-2020 02:25*
Surr: Toluene-d8	*107*			*70-130*	*%REC*	*1*	*18-Feb-2020 02:25*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 18-Feb-2020		Analyst: GEY
Naphthalene	**0.014**		**0.00067**	**0.0037**	**mg/Kg-dry**	1	19-Feb-2020 15:35
Surr: 2-Fluorobiphenyl	*45.0*			*43-125*	*%REC*	*1*	*19-Feb-2020 15:35*
Surr: 4-Terphenyl-d14	*60.0*			*32-125*	*%REC*	*1*	*19-Feb-2020 15:35*
Surr: Nitrobenzene-d5	*39.9*			*37-125*	*%REC*	*1*	*19-Feb-2020 15:35*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**10.6**		**0.0100**	**0.0100**	**wt%**	1	18-Feb-2020 09:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG15(5.5-6)20200213
Collection Date: 13-Feb-2020 14:40

ANALYTICAL REPORT
WorkOrder:HS20020571
Lab ID:HS20020571-06
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00032	0.0032	mg/Kg-dry	1	18-Feb-2020 02:48
Ethylbenzene		U	0.00045	0.0032	mg/Kg-dry	1	18-Feb-2020 02:48
Xylenes, Total		U	0.00065	0.0032	mg/Kg-dry	1	18-Feb-2020 02:48
Surr: 1,2-Dichloroethane-d4	*78.6*			*70-126*	*%REC*	*1*	*18-Feb-2020 02:48*
Surr: 4-Bromofluorobenzene	*97.5*			*70-130*	*%REC*	*1*	*18-Feb-2020 02:48*
Surr: Dibromofluoromethane	*88.1*			*70-130*	*%REC*	*1*	*18-Feb-2020 02:48*
Surr: Toluene-d8	*109*			*70-130*	*%REC*	*1*	*18-Feb-2020 02:48*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 18-Feb-2020		Analyst: GEY
Naphthalene		U	0.00071	0.0039	mg/Kg-dry	1	19-Feb-2020 13:38
Surr: 2-Fluorobiphenyl	*53.8*			*43-125*	*%REC*	*1*	*19-Feb-2020 13:38*
Surr: 4-Terphenyl-d14	*64.6*			*32-125*	*%REC*	*1*	*19-Feb-2020 13:38*
Surr: Nitrobenzene-d5	*48.4*			*37-125*	*%REC*	*1*	*19-Feb-2020 13:38*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**15.2**		**0.0100**	**0.0100**	**wt%**	1	18-Feb-2020 09:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020571

Batch ID: 3615 **Start Date:** 14 Feb 2020 14:41 **End Date:** 14 Feb 2020 14:41
Method: VOLATILES BY SW8260C

Sample ID	Container	Sample Wt/Vol	Final Volume	Weight Factor	Container Type
HS20020571-01	1	4.065 (g)	5 (mL)	1.23	TerraCore (5035A)
HS20020571-02	1	3.853 (g)	5 (mL)	1.3	TerraCore (5035A)
HS20020571-03	1	4.352 (g)	5 (mL)	1.15	TerraCore (5035A)
HS20020571-04	1	4.448 (g)	5 (mL)	1.12	TerraCore (5035A)
HS20020571-05	1	5.638 (g)	5 (mL)	0.89	TerraCore (5035A)
HS20020571-06	1	9.1 (g)	5 (mL)	0.55	TerraCore (5035A)

Batch ID: 150668 **Start Date:** 17 Feb 2020 07:30 **End Date:** 17 Feb 2020 10:15
Method: SV SOXHLET EXTRACT-LOWLEVEL-SW3541 **Prep Code:** 3541_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20020571-01		30.01 (g)	1 (mL)	0.03332
HS20020571-02		30.2 (g)	1 (mL)	0.03311
HS20020571-03		30.06 (g)	1 (mL)	0.03327
HS20020571-04		30.49 (g)	1 (mL)	0.0328

Batch ID: 150728 **Start Date:** 18 Feb 2020 11:34 **End Date:** 18 Feb 2020 17:30
Method: SV SOXHLET EXTRACT-LOWLEVEL-SW3541 **Prep Code:** 3541_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20020571-05		30.01 (g)	1 (mL)	0.03332
HS20020571-06		30.03 (g)	1 (mL)	0.0333

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020571

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 150668 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Soil	
HS20020571-01	SO-1620-SG17(0.5-1) 20200212	12 Feb 2020 15:40		17 Feb 2020 07:30	19 Feb 2020 15:55	1
HS20020571-02	SO-1620-SG17(5.5-6) 20200212	12 Feb 2020 15:50		17 Feb 2020 07:30	19 Feb 2020 16:14	1
HS20020571-03	SO-1620-SG16(0.5-1) 20200213	13 Feb 2020 12:15		17 Feb 2020 07:30	19 Feb 2020 16:34	1
HS20020571-04	SO-1620-SG16(5.5-6) 20200213	13 Feb 2020 12:30		17 Feb 2020 07:30	18 Feb 2020 20:21	1
Batch ID: 150728 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Soil	
HS20020571-05	SO-1620-SG15(0.5-1) 20200213	13 Feb 2020 14:30		18 Feb 2020 11:34	19 Feb 2020 15:35	1
HS20020571-06	SO-1620-SG15(5.5-6) 20200213	13 Feb 2020 14:40		18 Feb 2020 11:34	19 Feb 2020 13:38	1
Batch ID: R356419 (0)	**Test Name :** VOLATILES BY SW8260C				**Matrix:** Soil	
HS20020571-01	SO-1620-SG17(0.5-1) 20200212	12 Feb 2020 15:40			18 Feb 2020 00:53	1
HS20020571-02	SO-1620-SG17(5.5-6) 20200212	12 Feb 2020 15:50			18 Feb 2020 01:16	1
HS20020571-03	SO-1620-SG16(0.5-1) 20200213	13 Feb 2020 12:15			18 Feb 2020 01:39	1
HS20020571-04	SO-1620-SG16(5.5-6) 20200213	13 Feb 2020 12:30			18 Feb 2020 02:02	1
HS20020571-05	SO-1620-SG15(0.5-1) 20200213	13 Feb 2020 14:30			18 Feb 2020 02:25	1
HS20020571-06	SO-1620-SG15(5.5-6) 20200213	13 Feb 2020 14:40			18 Feb 2020 02:48	1
Batch ID: R356526 (0)	**Test Name :** MOISTURE - ASTM D2216				**Matrix:** Soil	
HS20020571-01	SO-1620-SG17(0.5-1) 20200212	12 Feb 2020 15:40			18 Feb 2020 09:20	1
HS20020571-02	SO-1620-SG17(5.5-6) 20200212	12 Feb 2020 15:50			18 Feb 2020 09:20	1
HS20020571-03	SO-1620-SG16(0.5-1) 20200213	13 Feb 2020 12:15			18 Feb 2020 09:20	1
HS20020571-04	SO-1620-SG16(5.5-6) 20200213	13 Feb 2020 12:30			18 Feb 2020 09:20	1
HS20020571-05	SO-1620-SG15(0.5-1) 20200213	13 Feb 2020 14:30			18 Feb 2020 09:20	1
HS20020571-06	SO-1620-SG15(5.5-6) 20200213	13 Feb 2020 14:40			18 Feb 2020 09:20	1

WorkOrder: HS20020571
InstrumentID: SV-7
Test Code: 8270_LOW_S
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Naphthalene	91-20-3	0.0017	0.0018	0.00060	0.0033
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	4-Terphenyl-d14	1718-51-0	0	0	0	0
S	Nitrobenzene-d5	4165-60-0	0	0	0	0

WorkOrder: HS20020571
InstrumentID: SV-6
Test Code: 8270_LOW_S
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Naphthalene	91-20-3	0.0017	0.0019	0.00060	0.0033
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	4-Terphenyl-d14	1718-51-0	0	0	0	0
S	Nitrobenzene-d5	4165-60-0	0	0	0	0

WorkOrder: HS20020571
InstrumentID: VOA8
Test Code: 8260_S
Test Number: SW8260
Test Name: Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Benzene	71-43-2	0.0012	0.0013	0.00050	0.0050
A	Ethylbenzene	100-41-4	0.0012	0.0014	0.00070	0.0050
A	Xylenes, Total	1330-20-7	0.0012	0.0014	0.0010	0.0050
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0
S	4-Bromofluorobenzene	460-00-4	0	0	0	0
S	Dibromofluoromethane	1868-53-7	0	0	0	0
S	Toluene-d8	2037-26-5	0	0	0	0

WorkOrder: HS20020571
InstrumentID: Balance1
Test Code: MOIST_ASTM
Test Number: ASTM D2216
Test Name: Moisture - ASTM D2216

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** wt%

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Percent Moisture	MOIST	0.0100	0.0100	0.0100	0.0100

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020571

QC BATCH REPORT

Batch ID: 150668 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-150668** Units: **ug/Kg** Analysis Date: **18-Feb-2020 10:47**
Client ID: Run ID: **SV-6_356483** SeqNo: **5477344** PrepDate: **17-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	U	3.3								
Surr: 2-Fluorobiphenyl	*149.5*	*0*	*167*	*0*	*89.5*	*43 - 125*				
Surr: 4-Terphenyl-d14	*162.8*	*0*	*167*	*0*	*97.5*	*32 - 125*				
Surr: Nitrobenzene-d5	*115.6*	*0*	*167*	*0*	*69.2*	*37 - 125*				

LCS Sample ID: **LCS-150668** Units: **ug/Kg** Analysis Date: **18-Feb-2020 11:06**
Client ID: Run ID: **SV-6_356483** SeqNo: **5477345** PrepDate: **17-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	152.4	3.3	167	0	91.3	50 - 125				
Surr: 2-Fluorobiphenyl	*144.9*	*0*	*167*	*0*	*86.8*	*43 - 125*				
Surr: 4-Terphenyl-d14	*157.4*	*0*	*167*	*0*	*94.2*	*32 - 125*				
Surr: Nitrobenzene-d5	*110.3*	*0*	*167*	*0*	*66.1*	*37 - 125*				

MS Sample ID: **HS20020618-01MS** Units: **ug/Kg** Analysis Date: **18-Feb-2020 13:01**
Client ID: Run ID: **SV-6_356483** SeqNo: **5477347** PrepDate: **17-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	154.2	3.3	165.7	2.907	91.3	50 - 125				
Surr: 2-Fluorobiphenyl	*150.4*	*0*	*165.7*	*0*	*90.8*	*43 - 125*				
Surr: 4-Terphenyl-d14	*155.6*	*0*	*165.7*	*0*	*93.9*	*32 - 125*				
Surr: Nitrobenzene-d5	*110.9*	*0*	*165.7*	*0*	*67.0*	*37 - 125*				

MSD Sample ID: **HS20020618-01MSD** Units: **ug/Kg** Analysis Date: **18-Feb-2020 13:20**
Client ID: Run ID: **SV-6_356483** SeqNo: **5477348** PrepDate: **17-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	143.4	3.3	165.8	2.907	84.7	50 - 125	154.2	7.27	30	
Surr: 2-Fluorobiphenyl	*139.8*	*0*	*165.8*	*0*	*84.3*	*43 - 125*	*150.4*	*7.31*	*30*	
Surr: 4-Terphenyl-d14	*147.3*	*0*	*165.8*	*0*	*88.8*	*32 - 125*	*155.6*	*5.5*	*30*	
Surr: Nitrobenzene-d5	*100.1*	*0*	*165.8*	*0*	*60.4*	*37 - 125*	*110.9*	*10.3*	*30*	

The following samples were analyzed in this batch: HS20020571-01 HS20020571-02 HS20020571-03 HS20020571-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020571

QC BATCH REPORT

Batch ID: 150728 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-150728** Units: **ug/Kg** Analysis Date: **19-Feb-2020 10:03**
Client ID: Run ID: **SV-7_356549** SeqNo: **5479049** PrepDate: **18-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	U	3.3								
Surr: 2-Fluorobiphenyl	*85.05*	*0*	*167*	*0*	*50.9*	*43 - 125*				
Surr: 4-Terphenyl-d14	*104.2*	*0*	*167*	*0*	*62.4*	*32 - 125*				
Surr: Nitrobenzene-d5	*78.83*	*0*	*167*	*0*	*47.2*	*37 - 125*				

LCS Sample ID: **LCS-150728** Units: **ug/Kg** Analysis Date: **19-Feb-2020 10:22**
Client ID: Run ID: **SV-7_356549** SeqNo: **5479050** PrepDate: **18-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	110.1	3.3	167	0	65.9	50 - 125				
Surr: 2-Fluorobiphenyl	*103.1*	*0*	*167*	*0*	*61.7*	*43 - 125*				
Surr: 4-Terphenyl-d14	*111.3*	*0*	*167*	*0*	*66.7*	*32 - 125*				
Surr: Nitrobenzene-d5	*103.7*	*0*	*167*	*0*	*62.1*	*37 - 125*				

MS Sample ID: **HS20020646-08MS** Units: **ug/Kg** Analysis Date: **19-Feb-2020 14:17**
Client ID: Run ID: **SV-7_356549** SeqNo: **5479109** PrepDate: **18-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	112.9	3.3	165	0	68.4	50 - 125				
Surr: 2-Fluorobiphenyl	*92.79*	*0*	*165*	*0*	*56.2*	*43 - 125*				
Surr: 4-Terphenyl-d14	*112.9*	*0*	*165*	*0*	*68.4*	*32 - 125*				
Surr: Nitrobenzene-d5	*92.08*	*0*	*165*	*0*	*55.8*	*37 - 125*				

MSD Sample ID: **HS20020646-08MSD** Units: **ug/Kg** Analysis Date: **19-Feb-2020 14:37**
Client ID: Run ID: **SV-7_356549** SeqNo: **5479110** PrepDate: **18-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	103.5	3.3	166.6	0	62.1	50 - 125	112.9	8.7	30	
Surr: 2-Fluorobiphenyl	*84.78*	*0*	*166.6*	*0*	*50.9*	*43 - 125*	*92.79*	*9.02*	*30*	
Surr: 4-Terphenyl-d14	*111.3*	*0*	*166.6*	*0*	*66.8*	*32 - 125*	*112.9*	*1.4*	*30*	
Surr: Nitrobenzene-d5	*74.44*	*0*	*166.6*	*0*	*44.7*	*37 - 125*	*92.08*	*21.2*	*30*	

The following samples were analyzed in this batch: HS20020571-05 HS20020571-06

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020571

QC BATCH REPORT

Batch ID: R356419 (0) **Instrument: VOA8** **Method: VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKS2-021720** Units: **ug/Kg** Analysis Date: **17-Feb-2020 21:04**
Client ID: Run ID: **VOA8_356419** SeqNo: **5475882** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	5.0								
Ethylbenzene	U	5.0								
Xylenes, Total	U	5.0								
Surr: 1,2-Dichloroethane-d4	*40.58*	*0*	*50*	*0*	*81.2*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*45.93*	*0*	*50*	*0*	*91.9*	*80 - 120*				
Surr: Dibromofluoromethane	*45.06*	*0*	*50*	*0*	*90.1*	*80 - 119*				
Surr: Toluene-d8	*50.63*	*0*	*50*	*0*	*101*	*81 - 118*				

LCS Sample ID: **VLCSS2-021720** Units: **ug/Kg** Analysis Date: **17-Feb-2020 20:18**
Client ID: Run ID: **VOA8_356419** SeqNo: **5475881** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	49.93	5.0	50	0	99.9	75 - 124				
Ethylbenzene	49.66	5.0	50	0	99.3	70 - 123				
Xylenes, Total	146.1	5.0	150	0	97.4	77 - 128				
Surr: 1,2-Dichloroethane-d4	*46.26*	*0*	*50*	*0*	*92.5*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*49.67*	*0*	*50*	*0*	*99.3*	*80 - 120*				
Surr: Dibromofluoromethane	*49.24*	*0*	*50*	*0*	*98.5*	*80 - 119*				
Surr: Toluene-d8	*49.65*	*0*	*50*	*0*	*99.3*	*81 - 118*				

MS Sample ID: **HS20020397-01MS** Units: **ug/Kg** Analysis Date: **17-Feb-2020 21:50**
Client ID: Run ID: **VOA8_356419** SeqNo: **5475884** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	35.15	4.9	49	0	71.7	70 - 130				
Ethylbenzene	26.61	4.9	49	0	54.3	70 - 130				S
Xylenes, Total	77.68	4.9	147	0	52.8	70 - 130				S
Surr: 1,2-Dichloroethane-d4	*47.61*	*0*	*49*	*0*	*97.2*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.55*	*0*	*49*	*0*	*101*	*70 - 130*				
Surr: Dibromofluoromethane	*49.43*	*0*	*49*	*0*	*101*	*70 - 130*				
Surr: Toluene-d8	*49.45*	*0*	*49*	*0*	*101*	*70 - 130*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020571

QC BATCH REPORT

Batch ID: R356419 (0) **Instrument: VOA8** **Method: VOLATILES BY SW8260C**

MSD Sample ID: **HS20020397-01MSD** Units: **ug/Kg** Analysis Date: **17-Feb-2020 22:13**
Client ID: Run ID: **VOA8_356419** SeqNo: **5475885** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	41.85	4.9	49	0	85.4	70 - 130	35.15	17.4	30	
Ethylbenzene	26.7	4.9	49	0	54.5	70 - 130	26.61	0.348	30	S
Xylenes, Total	75.56	4.9	147	0	51.4	70 - 130	77.68	2.77	30	S
Surr: 1,2-Dichloroethane-d4	*61.16*	*0*	*49*	*0*	*125*	*70 - 126*	*47.61*	*24.9*	*30*	
Surr: 4-Bromofluorobenzene	*50.78*	*0*	*49*	*0*	*104*	*70 - 130*	*49.55*	*2.45*	*30*	
Surr: Dibromofluoromethane	*59.17*	*0*	*49*	*0*	*121*	*70 - 130*	*49.43*	*17.9*	*30*	
Surr: Toluene-d8	*48.03*	*0*	*49*	*0*	*98.0*	*70 - 130*	*49.45*	*2.91*	*30*	

The following samples were analyzed in this batch: HS20020571-01 HS20020571-02 HS20020571-03 HS20020571-04 HS20020571-05 HS20020571-06

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020571

QC BATCH REPORT

Batch ID: **R356526 (0)** **Instrument:** **Balance1** **Method:** **MOISTURE - ASTM D2216**

DUP Sample ID: **HS20020571-06DUP** Units: **wt%** Analysis Date: **18-Feb-2020 09:20**
Client ID: **SO-1620-SG15(5.5-6)20200213** Run ID: **Balance1_356526** SeqNo: **5478088** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	15.1	0.0100					15.2	0.66	20	

The following samples were analyzed in this batch: HS20020571-01 HS20020571-02 HS20020571-03 HS20020571-04 HS20020571-05 HS20020571-06

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20020571**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/Kg-dry	Milligrams per Kilogram- Dry weight corrected

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20020571

Date/Time Received: **13-Feb-2020 18:01**
Received by: **JRM**

Checklist completed by: *Paresh M. Giga* eSignature — 13-Feb-2020 Date

Reviewed by: *Dane J. Wacasey* eSignature — 14-Feb-2020 Date

Matrices: **Soil**

Carrier name: **Client**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☑	No ☐	Not Present ☐
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:214098
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.3°C UC/C	IR11	
Cooler(s)/Kit(s):	43057		
Date/Time sample(s) sent to storage:	2/13/2020 19:40		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

Page ____ of ____

COC ID: 214098

HS20020571

Golder Associates Inc.
Houston TX-Wood Preserving Works

Customer Information		Project Information		ALS Project Manager:
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A 8260_S (5652652 B,E,X)
Work Order		Project Number	1620-11-Rev0 SR 92688	B 8270_LOW_S (5632532 SVOC - Naphthalene only)
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P	C MOIST_ASTM (5631931 Gen Chem_MOIST%)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E F
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G
Phone	(512) 671-3434	Phone		H
Fax	(512) 671-3446	Fax		I
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address		J

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620- SG17 (0.5-1) 20200212	2-12-20	1540	Soil	8,9	5	X	X	X								
2	SG17 (5.5-6)	2-12-20	1550														
3	SG16 (0.5-1) 20200213	2-13-20	1215														
4	SG16 (5.5-6)		1230														
5	SG15 (0.5-1)		1430														
6	SG15 (5.5-6)		1440														
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Anthony Repol

Shipment Method:

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other ____

Results Due Date:

Relinquished by: Date: 2-13-20 Time: 1801 Received by:

Relinquished by: Date: 2/13/20 Time: 18:01 Received by (Laboratory): JJ Mancuso

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR HWPW 1620-11

Cooler ID	Cooler Temp.
43057	2.3
	IR 11
	CF 0.0

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[X] TRRP Checklist
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

February 26, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20020741**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 8 sample(s) on Feb 18, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20020741**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS20020741**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/26/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020741				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150835,R356625,R356904				
#[1]	A[2]	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		Were MS/MSD RPDs within laboratory QC limits?		X			1
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				2
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/26/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020741				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150835,R356625,R356904				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 02/26/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20020741
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 150835,R356625,R356904

ER#[5]	Description
1	Batch 150835, Semivolatile Organics Method SW8270, sample HS2020747-03, MS/MSD RPD is for an unrelated sample.
2	Batch 150835, Semivolatile Organics Method SW8270, samples SO-1620-SG07(0.5-1)20200217 and SO-1620-SG06(0.5-1)20200217: the GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20020741

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20020741-01	SO-1620-SG12(0.5-1)20200217	Soil		17-Feb-2020 09:11	18-Feb-2020 17:40	☐
HS20020741-02	SO-1620-SG12(5.5-6)20200217	Soil		17-Feb-2020 09:30	18-Feb-2020 17:40	☐
HS20020741-03	SO-1620-SG07(0.5-1)20200217	Soil		17-Feb-2020 10:50	18-Feb-2020 17:40	☐
HS20020741-04	SO-1620-SG07(5.5-6)20200217	Soil		17-Feb-2020 11:10	18-Feb-2020 17:40	☐
HS20020741-05	SO-1620-SG06(0.5-1)20200217	Soil		17-Feb-2020 14:00	18-Feb-2020 17:40	☐
HS20020741-06	SO-1620-SG06(5.5-6)20200217	Soil		17-Feb-2020 14:15	18-Feb-2020 17:40	☐
HS20020741-07	SO-1620-SG14(0.5-1)20200217	Soil		17-Feb-2020 16:15	18-Feb-2020 17:40	☐
HS20020741-08	SO-1620-SG14(5.5-6)20200217	Soil		17-Feb-2020 16:30	18-Feb-2020 17:40	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG12(0.5-1)20200217
Collection Date: 17-Feb-2020 09:11

ANALYTICAL REPORT
WorkOrder:HS20020741
Lab ID:HS20020741-01
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00062	0.0062	mg/Kg-dry	1	20-Feb-2020 10:54
Ethylbenzene		U	0.00087	0.0062	mg/Kg-dry	1	20-Feb-2020 10:54
Xylenes, Total		U	0.0012	0.0062	mg/Kg-dry	1	20-Feb-2020 10:54
Surr: 1,2-Dichloroethane-d4	*84.1*			*70-126*	*%REC*	*1*	*20-Feb-2020 10:54*
Surr: 4-Bromofluorobenzene	*97.1*			*70-130*	*%REC*	*1*	*20-Feb-2020 10:54*
Surr: Dibromofluoromethane	*88.9*			*70-130*	*%REC*	*1*	*20-Feb-2020 10:54*
Surr: Toluene-d8	*107*			*70-130*	*%REC*	*1*	*20-Feb-2020 10:54*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 20-Feb-2020		Analyst: LG
Naphthalene	**0.0039**		**0.00067**	**0.0037**	**mg/Kg-dry**	1	21-Feb-2020 22:53
Surr: 2-Fluorobiphenyl	*58.3*			*43-125*	*%REC*	*1*	*21-Feb-2020 22:53*
Surr: 4-Terphenyl-d14	*70.0*			*32-125*	*%REC*	*1*	*21-Feb-2020 22:53*
Surr: Nitrobenzene-d5	*44.2*			*37-125*	*%REC*	*1*	*21-Feb-2020 22:53*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**10.2**		**0.0100**	**0.0100**	**wt%**	1	24-Feb-2020 09:04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG12(5.5-6)20200217
Collection Date: 17-Feb-2020 09:30

ANALYTICAL REPORT
WorkOrder:HS20020741
Lab ID:HS20020741-02
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00060	0.0060	mg/Kg-dry	1	20-Feb-2020 11:32
Ethylbenzene		U	0.00084	0.0060	mg/Kg-dry	1	20-Feb-2020 11:32
Xylenes, Total		U	0.0012	0.0060	mg/Kg-dry	1	20-Feb-2020 11:32
Surr: 1,2-Dichloroethane-d4	*76.1*			*70-126*	*%REC*	*1*	*20-Feb-2020 11:32*
Surr: 4-Bromofluorobenzene	*96.3*			*70-130*	*%REC*	*1*	*20-Feb-2020 11:32*
Surr: Dibromofluoromethane	*86.6*			*70-130*	*%REC*	*1*	*20-Feb-2020 11:32*
Surr: Toluene-d8	*108*			*70-130*	*%REC*	*1*	*20-Feb-2020 11:32*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 20-Feb-2020		Analyst: LG
Naphthalene		U	0.00071	0.0039	mg/Kg-dry	1	21-Feb-2020 23:13
Surr: 2-Fluorobiphenyl	*74.4*			*43-125*	*%REC*	*1*	*21-Feb-2020 23:13*
Surr: 4-Terphenyl-d14	*86.6*			*32-125*	*%REC*	*1*	*21-Feb-2020 23:13*
Surr: Nitrobenzene-d5	*52.7*			*37-125*	*%REC*	*1*	*21-Feb-2020 23:13*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**16.2**		**0.0100**	**0.0100**	**wt%**	1	24-Feb-2020 09:04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG07(0.5-1)20200217
Collection Date: 17-Feb-2020 10:50

ANALYTICAL REPORT
WorkOrder:HS20020741
Lab ID:HS20020741-03
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene	U		0.00058	0.0058	mg/Kg-dry	1	20-Feb-2020 11:55
Ethylbenzene	U		0.00082	0.0058	mg/Kg-dry	1	20-Feb-2020 11:55
Xylenes, Total	U		0.0012	0.0058	mg/Kg-dry	1	20-Feb-2020 11:55
Surr: 1,2-Dichloroethane-d4	*71.8*			*70-126*	*%REC*	*1*	*20-Feb-2020 11:55*
Surr: 4-Bromofluorobenzene	*91.4*			*70-130*	*%REC*	*1*	*20-Feb-2020 11:55*
Surr: Dibromofluoromethane	*82.9*			*70-130*	*%REC*	*1*	*20-Feb-2020 11:55*
Surr: Toluene-d8	*108*			*70-130*	*%REC*	*1*	*20-Feb-2020 11:55*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 20-Feb-2020		Analyst: LG
Naphthalene	**0.0071**	J	**0.0034**	**0.019**	**mg/Kg-dry**	5	21-Feb-2020 23:32
Surr: 2-Fluorobiphenyl	*75.1*			*43-125*	*%REC*	*5*	*21-Feb-2020 23:32*
Surr: 4-Terphenyl-d14	*94.4*			*32-125*	*%REC*	*5*	*21-Feb-2020 23:32*
Surr: Nitrobenzene-d5	*51.8*			*37-125*	*%REC*	*5*	*21-Feb-2020 23:32*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**13.4**		**0.0100**	**0.0100**	**wt%**	1	24-Feb-2020 09:04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG07(5.5-6)20200217
Collection Date: 17-Feb-2020 11:10

ANALYTICAL REPORT
WorkOrder:HS20020741
Lab ID:HS20020741-04
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00036	0.0036	mg/Kg-dry	1	20-Feb-2020 12:18
Ethylbenzene		U	0.00050	0.0036	mg/Kg-dry	1	20-Feb-2020 12:18
Xylenes, Total		U	0.00072	0.0036	mg/Kg-dry	1	20-Feb-2020 12:18
Surr: 1,2-Dichloroethane-d4	*70.8*			*70-126*	*%REC*	*1*	*20-Feb-2020 12:18*
Surr: 4-Bromofluorobenzene	*94.3*			*70-130*	*%REC*	*1*	*20-Feb-2020 12:18*
Surr: Dibromofluoromethane	*83.0*			*70-130*	*%REC*	*1*	*20-Feb-2020 12:18*
Surr: Toluene-d8	*110*			*70-130*	*%REC*	*1*	*20-Feb-2020 12:18*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 20-Feb-2020		Analyst: LG
Naphthalene		U	0.00072	0.0040	mg/Kg-dry	1	24-Feb-2020 12:11
Surr: 2-Fluorobiphenyl	*78.0*			*43-125*	*%REC*	*1*	*24-Feb-2020 12:11*
Surr: 4-Terphenyl-d14	*85.4*			*32-125*	*%REC*	*1*	*24-Feb-2020 12:11*
Surr: Nitrobenzene-d5	*65.1*			*37-125*	*%REC*	*1*	*24-Feb-2020 12:11*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**16.8**		**0.0100**	**0.0100**	**wt%**	1	24-Feb-2020 09:04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG06(0.5-1)20200217
Collection Date: 17-Feb-2020 14:00

ANALYTICAL REPORT
WorkOrder:HS20020741
Lab ID:HS20020741-05
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00065	0.0065	mg/Kg-dry	1	20-Feb-2020 12:41
Ethylbenzene		U	0.00091	0.0065	mg/Kg-dry	1	20-Feb-2020 12:41
Xylenes, Total		U	0.0013	0.0065	mg/Kg-dry	1	20-Feb-2020 12:41
Surr: 1,2-Dichloroethane-d4	*70.7*			*70-126*	*%REC*	*1*	*20-Feb-2020 12:41*
Surr: 4-Bromofluorobenzene	*91.2*			*70-130*	*%REC*	*1*	*20-Feb-2020 12:41*
Surr: Dibromofluoromethane	*82.2*			*70-130*	*%REC*	*1*	*20-Feb-2020 12:41*
Surr: Toluene-d8	*110*			*70-130*	*%REC*	*1*	*20-Feb-2020 12:41*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 20-Feb-2020		Analyst: LG
Naphthalene		U	0.0067	0.037	mg/Kg-dry	10	24-Feb-2020 18:52
Surr: 2-Fluorobiphenyl	*69.7*			*43-125*	*%REC*	*10*	*24-Feb-2020 18:52*
Surr: 4-Terphenyl-d14	*74.4*			*32-125*	*%REC*	*10*	*24-Feb-2020 18:52*
Surr: Nitrobenzene-d5	*56.0*			*37-125*	*%REC*	*10*	*24-Feb-2020 18:52*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**10.3**		**0.0100**	**0.0100**	**wt%**	1	24-Feb-2020 09:04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG06(5.5-6)20200217
Collection Date: 17-Feb-2020 14:15

ANALYTICAL REPORT
WorkOrder:HS20020741
Lab ID:HS20020741-06
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00042	0.0042	mg/Kg-dry	1	20-Feb-2020 13:04
Ethylbenzene		U	0.00059	0.0042	mg/Kg-dry	1	20-Feb-2020 13:04
Xylenes, Total		U	0.00084	0.0042	mg/Kg-dry	1	20-Feb-2020 13:04
Surr: 1,2-Dichloroethane-d4	*71.9*			*70-126*	*%REC*	*1*	*20-Feb-2020 13:04*
Surr: 4-Bromofluorobenzene	*93.9*			*70-130*	*%REC*	*1*	*20-Feb-2020 13:04*
Surr: Dibromofluoromethane	*83.9*			*70-130*	*%REC*	*1*	*20-Feb-2020 13:04*
Surr: Toluene-d8	*110*			*70-130*	*%REC*	*1*	*20-Feb-2020 13:04*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 20-Feb-2020		Analyst: LG
Naphthalene		U	0.00071	0.0039	mg/Kg-dry	1	24-Feb-2020 12:30
Surr: 2-Fluorobiphenyl	*69.7*			*43-125*	*%REC*	*1*	*24-Feb-2020 12:30*
Surr: 4-Terphenyl-d14	*77.5*			*32-125*	*%REC*	*1*	*24-Feb-2020 12:30*
Surr: Nitrobenzene-d5	*56.2*			*37-125*	*%REC*	*1*	*24-Feb-2020 12:30*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**15.5**		**0.0100**	**0.0100**	**wt%**	1	24-Feb-2020 09:04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG14(0.5-1)20200217
Collection Date: 17-Feb-2020 16:15

ANALYTICAL REPORT
WorkOrder:HS20020741
Lab ID:HS20020741-07
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene	U		0.00030	0.0030	mg/Kg-dry	1	20-Feb-2020 13:27
Ethylbenzene	U		0.00042	0.0030	mg/Kg-dry	1	20-Feb-2020 13:27
Xylenes, Total	U		0.00061	0.0030	mg/Kg-dry	1	20-Feb-2020 13:27
Surr: 1,2-Dichloroethane-d4	*73.0*			*70-126*	*%REC*	*1*	*20-Feb-2020 13:27*
Surr: 4-Bromofluorobenzene	*91.5*			*70-130*	*%REC*	*1*	*20-Feb-2020 13:27*
Surr: Dibromofluoromethane	*84.1*			*70-130*	*%REC*	*1*	*20-Feb-2020 13:27*
Surr: Toluene-d8	*110*			*70-130*	*%REC*	*1*	*20-Feb-2020 13:27*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 20-Feb-2020		Analyst: LG
Naphthalene	**0.0027**	J	**0.00069**	**0.0038**	**mg/Kg-dry**	1	24-Feb-2020 19:11
Surr: 2-Fluorobiphenyl	*67.9*			*43-125*	*%REC*	*1*	*24-Feb-2020 19:11*
Surr: 4-Terphenyl-d14	*82.2*			*32-125*	*%REC*	*1*	*24-Feb-2020 19:11*
Surr: Nitrobenzene-d5	*49.2*			*37-125*	*%REC*	*1*	*24-Feb-2020 19:11*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**14.1**		**0.0100**	**0.0100**	**wt%**	1	24-Feb-2020 09:04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG14(5.5-6)20200217
Collection Date: 17-Feb-2020 16:30

ANALYTICAL REPORT
WorkOrder:HS20020741
Lab ID:HS20020741-08
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00037	0.0037	mg/Kg-dry	1	20-Feb-2020 13:50
Ethylbenzene		U	0.00051	0.0037	mg/Kg-dry	1	20-Feb-2020 13:50
Xylenes, Total		U	0.00073	0.0037	mg/Kg-dry	1	20-Feb-2020 13:50
Surr: 1,2-Dichloroethane-d4	*83.5*			*70-126*	*%REC*	*1*	*20-Feb-2020 13:50*
Surr: 4-Bromofluorobenzene	*96.3*			*70-130*	*%REC*	*1*	*20-Feb-2020 13:50*
Surr: Dibromofluoromethane	*86.8*			*70-130*	*%REC*	*1*	*20-Feb-2020 13:50*
Surr: Toluene-d8	*107*			*70-130*	*%REC*	*1*	*20-Feb-2020 13:50*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 20-Feb-2020		Analyst: LG
Naphthalene		U	0.00077	0.0042	mg/Kg-dry	1	24-Feb-2020 12:50
Surr: 2-Fluorobiphenyl	*73.7*			*43-125*	*%REC*	*1*	*24-Feb-2020 12:50*
Surr: 4-Terphenyl-d14	*80.2*			*32-125*	*%REC*	*1*	*24-Feb-2020 12:50*
Surr: Nitrobenzene-d5	*58.7*			*37-125*	*%REC*	*1*	*24-Feb-2020 12:50*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**22.0**		**0.0100**	**0.0100**	**wt%**	1	24-Feb-2020 09:04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020741

Batch ID: 3620 **Start Date:** 19 Feb 2020 09:43 **End Date:** 19 Feb 2020 09:43
Method: VOLATILES BY SW8260C

Sample ID	Container	Sample Wt/Vol	Final Volume	Weight Factor	Container Type
HS20020741-01	1	4.471 (g)	5 (mL)	1.12	TerraCore (5035A)
HS20020741-02	1	4.941 (g)	5 (mL)	1.01	TerraCore (5035A)
HS20020741-03	1	4.928 (g)	5 (mL)	1.01	TerraCore (5035A)
HS20020741-04	1	8.391 (g)	5 (mL)	0.6	TerraCore (5035A)
HS20020741-05	1	4.269 (g)	5 (mL)	1.17	TerraCore (5035A)
HS20020741-06	1	7.075 (g)	5 (mL)	0.71	TerraCore (5035A)
HS20020741-07	1	9.694 (g)	5 (mL)	0.52	TerraCore (5035A)
HS20020741-08	1	8.796 (g)	5 (mL)	0.57	TerraCore (5035A)

Batch ID: 150835 **Start Date:** 21 Feb 2020 09:00 **End Date:** 21 Feb 2020 11:30
Method: SV SOXHLET EXTRACT-LOWLEVEL-SW3541 **Prep Code:** 3541_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20020741-01		30.05 (g)	1 (mL)	0.03328
HS20020741-02		30.15 (g)	1 (mL)	0.03317
HS20020741-03		30.22 (g)	1 (mL)	0.03309
HS20020741-04		30.01 (g)	1 (mL)	0.03332
HS20020741-05		30.09 (g)	1 (mL)	0.03323
HS20020741-06		30.1 (g)	1 (mL)	0.03322
HS20020741-07		30.24 (g)	1 (mL)	0.03307
HS20020741-08		30.16 (g)	1 (mL)	0.03316

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020741

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 150835 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Soil	
HS20020741-01	SO-1620-SG12(0.5-1) 20200217	17 Feb 2020 09:11		20 Feb 2020 14:27	21 Feb 2020 22:53	1
HS20020741-02	SO-1620-SG12(5.5-6) 20200217	17 Feb 2020 09:30		20 Feb 2020 14:27	21 Feb 2020 23:13	1
HS20020741-03	SO-1620-SG07(0.5-1) 20200217	17 Feb 2020 10:50		20 Feb 2020 14:27	21 Feb 2020 23:32	5
HS20020741-04	SO-1620-SG07(5.5-6) 20200217	17 Feb 2020 11:10		20 Feb 2020 14:27	24 Feb 2020 12:11	1
HS20020741-05	SO-1620-SG06(0.5-1) 20200217	17 Feb 2020 14:00		20 Feb 2020 14:27	24 Feb 2020 18:52	10
HS20020741-06	SO-1620-SG06(5.5-6) 20200217	17 Feb 2020 14:15		20 Feb 2020 14:27	24 Feb 2020 12:30	1
HS20020741-07	SO-1620-SG14(0.5-1) 20200217	17 Feb 2020 16:15		20 Feb 2020 14:27	24 Feb 2020 19:11	1
HS20020741-08	SO-1620-SG14(5.5-6) 20200217	17 Feb 2020 16:30		20 Feb 2020 14:27	24 Feb 2020 12:50	1
Batch ID: R356625 (0)	**Test Name :** VOLATILES BY SW8260C				**Matrix:** Soil	
HS20020741-01	SO-1620-SG12(0.5-1) 20200217	17 Feb 2020 09:11			20 Feb 2020 10:54	1
HS20020741-02	SO-1620-SG12(5.5-6) 20200217	17 Feb 2020 09:30			20 Feb 2020 11:32	1
HS20020741-03	SO-1620-SG07(0.5-1) 20200217	17 Feb 2020 10:50			20 Feb 2020 11:55	1
HS20020741-04	SO-1620-SG07(5.5-6) 20200217	17 Feb 2020 11:10			20 Feb 2020 12:18	1
HS20020741-05	SO-1620-SG06(0.5-1) 20200217	17 Feb 2020 14:00			20 Feb 2020 12:41	1
HS20020741-06	SO-1620-SG06(5.5-6) 20200217	17 Feb 2020 14:15			20 Feb 2020 13:04	1
HS20020741-07	SO-1620-SG14(0.5-1) 20200217	17 Feb 2020 16:15			20 Feb 2020 13:27	1
HS20020741-08	SO-1620-SG14(5.5-6) 20200217	17 Feb 2020 16:30			20 Feb 2020 13:50	1
Batch ID: R356904 (0)	**Test Name :** MOISTURE - ASTM D2216				**Matrix:** Soil	
HS20020741-01	SO-1620-SG12(0.5-1) 20200217	17 Feb 2020 09:11			24 Feb 2020 09:04	1
HS20020741-02	SO-1620-SG12(5.5-6) 20200217	17 Feb 2020 09:30			24 Feb 2020 09:04	1
HS20020741-03	SO-1620-SG07(0.5-1) 20200217	17 Feb 2020 10:50			24 Feb 2020 09:04	1
HS20020741-04	SO-1620-SG07(5.5-6) 20200217	17 Feb 2020 11:10			24 Feb 2020 09:04	1
HS20020741-05	SO-1620-SG06(0.5-1) 20200217	17 Feb 2020 14:00			24 Feb 2020 09:04	1
HS20020741-06	SO-1620-SG06(5.5-6) 20200217	17 Feb 2020 14:15			24 Feb 2020 09:04	1
HS20020741-07	SO-1620-SG14(0.5-1) 20200217	17 Feb 2020 16:15			24 Feb 2020 09:04	1
HS20020741-08	SO-1620-SG14(5.5-6) 20200217	17 Feb 2020 16:30			24 Feb 2020 09:04	1

WorkOrder: HS20020741
InstrumentID: SV-6
Test Code: 8270_LOW_S
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Naphthalene	91-20-3	0.0017	0.0019	0.00060	0.0033
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	4-Terphenyl-d14	1718-51-0	0	0	0	0
S	Nitrobenzene-d5	4165-60-0	0	0	0	0

WorkOrder: HS20020741
InstrumentID: VOA8
Test Code: 8260_S
Test Number: SW8260
Test Name: Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Benzene	71-43-2	0.0012	0.0013	0.00050	0.0050
A	Ethylbenzene	100-41-4	0.0012	0.0014	0.00070	0.0050
A	Xylenes, Total	1330-20-7	0.0012	0.0014	0.0010	0.0050
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0
S	4-Bromofluorobenzene	460-00-4	0	0	0	0
S	Dibromofluoromethane	1868-53-7	0	0	0	0
S	Toluene-d8	2037-26-5	0	0	0	0

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020741

QC BATCH REPORT

Batch ID: 150835 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-150835** Units: **ug/Kg** Analysis Date: **21-Feb-2020 12:39**
Client ID: Run ID: **SV-6_356813** SeqNo: **5483518** PrepDate: **20-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	U	3.3								
Surr: 2-Fluorobiphenyl	*133.5*	*0*	*167*	*0*	*79.9*	*43 - 125*				
Surr: 4-Terphenyl-d14	*142.1*	*0*	*167*	*0*	*85.1*	*32 - 125*				
Surr: Nitrobenzene-d5	*99.1*	*0*	*167*	*0*	*59.3*	*37 - 125*				

LCS Sample ID: **LCS-150835** Units: **ug/Kg** Analysis Date: **21-Feb-2020 12:58**
Client ID: Run ID: **SV-6_356813** SeqNo: **5483519** PrepDate: **20-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	134.3	3.3	167	0	80.4	50 - 125				
Surr: 2-Fluorobiphenyl	*117.3*	*0*	*167*	*0*	*70.3*	*43 - 125*				
Surr: 4-Terphenyl-d14	*128.5*	*0*	*167*	*0*	*77.0*	*32 - 125*				
Surr: Nitrobenzene-d5	*88.94*	*0*	*167*	*0*	*53.3*	*37 - 125*				

MS Sample ID: **HS20020747-03MS** Units: **ug/Kg** Analysis Date: **21-Feb-2020 14:53**
Client ID: Run ID: **SV-6_356813** SeqNo: **5483525** PrepDate: **20-Feb-2020** DF: **10**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	98.19	33	166.5	0	59.0	50 - 125				
Surr: 2-Fluorobiphenyl	*78.99*	*0*	*166.5*	*0*	*47.4*	*43 - 125*				
Surr: 4-Terphenyl-d14	*113.2*	*0*	*166.5*	*0*	*68.0*	*32 - 125*				
Surr: Nitrobenzene-d5	*88.58*	*0*	*166.5*	*0*	*53.2*	*37 - 125*				

MSD Sample ID: **HS20020747-03MSD** Units: **ug/Kg** Analysis Date: **21-Feb-2020 15:13**
Client ID: Run ID: **SV-6_356813** SeqNo: **5483526** PrepDate: **20-Feb-2020** DF: **10**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	120.4	33	166.8	0	72.2	50 - 125	98.19	20.3	30	
Surr: 2-Fluorobiphenyl	*105.1*	*0*	*166.8*	*0*	*63.0*	*43 - 125*	*78.99*	*28.4*	*30*	
Surr: 4-Terphenyl-d14	*157.7*	*0*	*166.8*	*0*	*94.6*	*32 - 125*	*113.2*	*32.9*	*30*	R
Surr: Nitrobenzene-d5	*80.46*	*0*	*166.8*	*0*	*48.2*	*37 - 125*	*88.58*	*9.6*	*30*	

The following samples were analyzed in this batch:

HS20020741-01	HS20020741-02	HS20020741-03	HS20020741-04
HS20020741-05	HS20020741-06	HS20020741-07	HS20020741-08

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020741

QC BATCH REPORT

Batch ID: R356625 (0) **Instrument: VOA8** **Method: VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKS1-022020** Units: **ug/Kg** Analysis Date: **20-Feb-2020 08:59**
Client ID: Run ID: **VOA8_356625** SeqNo: **5480014** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	5.0								
Ethylbenzene	U	5.0								
Xylenes, Total	U	5.0								
Surr: 1,2-Dichloroethane-d4	*38.11*	*0*	*50*	*0*	*76.2*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*47.13*	*0*	*50*	*0*	*94.3*	*80 - 120*				
Surr: Dibromofluoromethane	*40.47*	*0*	*50*	*0*	*80.9*	*80 - 119*				
Surr: Toluene-d8	*54.37*	*0*	*50*	*0*	*109*	*81 - 118*				

LCS Sample ID: **VLCSS1-022020** Units: **ug/Kg** Analysis Date: **20-Feb-2020 08:13**
Client ID: Run ID: **VOA8_356625** SeqNo: **5480013** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	51.78	5.0	50	0	104	75 - 124				
Ethylbenzene	58.4	5.0	50	0	117	70 - 123				
Xylenes, Total	167.2	5.0	150	0	111	77 - 128				
Surr: 1,2-Dichloroethane-d4	*41.73*	*0*	*50*	*0*	*83.5*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*48.42*	*0*	*50*	*0*	*96.8*	*80 - 120*				
Surr: Dibromofluoromethane	*43.09*	*0*	*50*	*0*	*86.2*	*80 - 119*				
Surr: Toluene-d8	*54.62*	*0*	*50*	*0*	*109*	*81 - 118*				

MS Sample ID: **HS20020791-01MS** Units: **ug/Kg** Analysis Date: **20-Feb-2020 10:08**
Client ID: Run ID: **VOA8_356625** SeqNo: **5480017** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	42.4	5.0	50	0	84.8	70 - 130				
Ethylbenzene	44.02	5.0	50	0	88.0	70 - 130				
Xylenes, Total	131.4	5.0	150	0	87.6	70 - 130				
Surr: 1,2-Dichloroethane-d4	*43.44*	*0*	*50*	*0*	*86.9*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*46.9*	*0*	*50*	*0*	*93.8*	*70 - 130*				
Surr: Dibromofluoromethane	*45.81*	*0*	*50*	*0*	*91.6*	*70 - 130*				
Surr: Toluene-d8	*49.23*	*0*	*50*	*0*	*98.5*	*70 - 130*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020741

QC BATCH REPORT

Batch ID: R356625 (0) **Instrument: VOA8** **Method: VOLATILES BY SW8260C**

MSD Sample ID: **HS20020791-01MSD** Units: **ug/Kg** Analysis Date: **20-Feb-2020 10:31**
Client ID: Run ID: **VOA8_356625** SeqNo: **5480018** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Benzene	48.19	5.0	50	0	96.4	70 - 130	42.4	12.8	30	
Ethylbenzene	50.92	5.0	50	0	102	70 - 130	44.02	14.5	30	
Xylenes, Total	150.2	5.0	150	0	100	70 - 130	131.4	13.4	30	
Surr: 1,2-Dichloroethane-d4	*42.11*	*0*	*50*	*0*	*84.2*	*70 - 126*	*43.44*	*3.11*	*30*	
Surr: 4-Bromofluorobenzene	*48.87*	*0*	*50*	*0*	*97.7*	*70 - 130*	*46.9*	*4.12*	*30*	
Surr: Dibromofluoromethane	*47.03*	*0*	*50*	*0*	*94.1*	*70 - 130*	*45.81*	*2.61*	*30*	
Surr: Toluene-d8	*53.14*	*0*	*50*	*0*	*106*	*70 - 130*	*49.23*	*7.64*	*30*	

The following samples were analyzed in this batch: HS20020741-01 HS20020741-02 HS20020741-03 HS20020741-04
HS20020741-05 HS20020741-06 HS20020741-07 HS20020741-08

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020741

QC BATCH REPORT

Batch ID: R356904 (0) **Instrument: Balance1** **Method: MOISTURE - ASTM D2216**

DUP Sample ID: **HS20020770-05DUP** Units: **wt%** Analysis Date: **24-Feb-2020 09:04**
Client ID: Run ID: **Balance1_356904** SeqNo: **5485414** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	10.4	0.0100					10.4	0	20	

The following samples were analyzed in this batch:

HS20020741-01	HS20020741-02	HS20020741-03	HS20020741-04
HS20020741-05	HS20020741-06	HS20020741-07	HS20020741-08

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20020741**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/Kg-dry	Milligrams per Kilogram- Dry weight corrected

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20020741

Date/Time Received: **18-Feb-2020 17:40**
Received by: **DDG**

Checklist completed by: *Jared R. Makan* eSignature — 18-Feb-2020 Date

Reviewed by: *Dane J. Wacasey* eSignature — 19-Feb-2020 Date

Matrices: **Soil**

Carrier name: **ALS Courier**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☑	No ☐	Not Present ☐
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:214099
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	0.7°C/0.7°C UC/C	IR25
Cooler(s)/Kit(s):	45571	
Date/Time sample(s) sent to storage:	02/18/2020 18:55	

Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes: All sample bottle count differ - COC = 5, received 4 bottles.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Forr

Page 1 of 1

COC ID: 214099

HS20020741

Golder Associates Inc.
Houston TX-Wood Preserving Works

Customer Information		Project Information		ALS Project Manager:
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A 8260_S (5652652 B,E,X)
Work Order		Project Number	1620-11-Rev0 SR 92688	B 8270_LOW_S (5632532 SVOC - Naphthalene only)
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P	C MOIST_ASTM (5631931 Gen.Chem. MOIST%)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	F
Phone	(512) 671-3434	Phone		G
Fax	(512) 671-3446	Fax		H
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address		I
				J

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SG-1620-SG12 (0.5-1) 20200217	2-17-20	0911	Soil	0,9	5	X	X	X								
2	SG12 (5.5-6)		0930														
3	SG07 (0.5-1)		1050														
4	SG07 (5.5-6)		1110														
5	SG06 (0.5-1)		1400														
6	SG06 (5.5-6)		1415														
7	SG14 (0.5-1)		1615														
8	SG14 (5.5-6)		1630														
9																	
10																	

Sampler(s) Please Print & Sign: Anthony Reid

Shipment Method:

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: | Date: 2-18-20 | Time: 16:50 | Received by:

Relinquished by: | Date: | Time: | Received by (Laboratory): DG 02/18/20 17:45

Logged by (Laboratory): | Date: | Time: | Checked by (Laboratory):

Notes: UPRR HWPW 1620-11

Cooler ID	Cooler Temp.
2155-11	0-7

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[X] TRRP Checklist
[ ] TRRP Level IV
[ ] Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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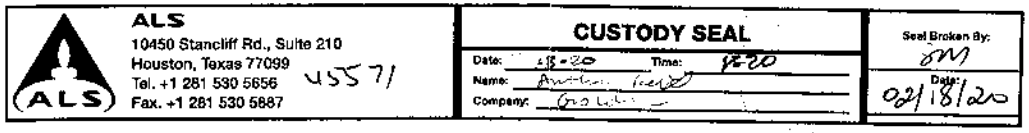

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
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Fax. +1 281 530 5887

45571

CUSTODY SEAL

Date: 18-20 Time: 1520
Name: [illegible]
Company: [illegible]

Seal Broken By: SM
Date: 02/18/20

45571 FEB 18 2020

ATTACHMENT 2

Soil Gas Samples - Data Usability Summary and Laboratory Analytical Reports

Memorandum

March 27, 2020

To:	Eric Matzner	Ref. No.:	11183954-1620
From:	Chris G. Knight/eew/577-NF	Tel:	512-506-8803
cc:	Jesse Orth, Jon Lang; Julie Lidstone		

Subject: **Data Usability Summary**
Soil Gas Sampling Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
February 2020

1. Scope of Data Usability Study

This document details a Data Usability Summary (DUS) of analytical results for soil gas samples collected in support of the Soil Gas Sampling Event at the Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works site during February 2020. Samples were submitted to Pace Analytical Services, Inc., located in Minneapolis, Minnesota and are reported in data packages 10509381 and 10510405. The intended use of the data is to support the Soil Gas Sampling Event at the site by providing current concentration of chemicals of concern.

Data were reviewed and validated by Chris G. Knight of GHD, in accordance with Title 30 of the Texas Administrative Code Section 350.54 (30 TAC 350.54) as described in the Texas Commission on Environmental Quality (TCEQ) Regulatory Guidance document entitled "Review and Reporting of COC Concentration Data under TRRP", (RG-366/TRRP-13), revised May 2010, herein referred to as "TRRP-13 Guidance". Evaluation of the data was based on information obtained from the chain of custody forms, the finished report forms, method blank data, recovery data from laboratory control samples (LCS)/ duplicate analyses (DUP), field quality assurance/quality control samples (QA/QC), the laboratory review checklists (LRC), and the laboratory exception reports (ER).

A sample collection and analysis summary is presented in Table 1. This summary provides a cross-reference of field sample identification numbers and location identification. Each sample is assigned a unique field identification number.

The validated sample results are presented in Table 2. A summary of the analytical methodology is presented in Table 3.

2. Laboratory Qualifications

The Laboratory's quality assurance program is consistent with the quality standards outlined in the National Environmental Laboratory Accreditation Program (NELAP). This laboratory was accredited under Texas Certification number # TX104704192 at the time the analysis was performed and the certificate is included in Attachment A.

3. Project Objectives

3.1 Sampling/Analytical QA/QC Objectives

The QA/QC program was designed to identify contamination resulting from the sampling, sample transport and analytical process through the analysis of field duplicate sample sets and method blanks. The QA/QC program was designed to evaluate the quality of the resulting data with respect to bias and precision through analysis of LCS and duplicate analyses.

4. Data Review/Validation Results

4.1 Sample Holding Time

Samples were shipped with a chain of custody and the paper work was filled out properly.

The sample chain of custody documents and the analytical reports were used to determine sample holding times. All samples were prepared and analyzed within the required holding times.

4.2 Sample Containers

All sample canisters were received at the laboratory in good condition and within acceptable canister pressure range of –1 inch of mercury (Hg) to –10 inches of Hg, indicating samples were still under vacuum upon receipt.

4.3 Calibrations

According to the LRC, initial calibration and continuing calibration data met the criteria for the selected method.

4.4 Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures. As these were not discrete samples handled in the field, these blanks are not listed on the sample identification cross-reference list found in the data packages.

For this study, laboratory method blanks were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch and results are reported in the laboratory data packages.

The method blank results were non-detect or below the method quantitation limit (MQL), indicating that laboratory contamination was not a factor for this investigation with the following exception (see Table 4):

i) One method blank yielded a low level detection for naphthalene. Associated non-detect sample results were not affected. No further action was required. Associated sample results with similar detections to the method blank were qualified as non-detect.

4.5 Laboratory Control Sample Analysis

LCS are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project.

For this study, LCS were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch.

The LCS contained all compounds specified in the method. All LCS recoveries were within the laboratory control limits, demonstrating acceptable analytical accuracy.

4.6 Duplicate Sample Analyses

Analytical precision is evaluated based on the analysis of laboratory duplicate samples. For this study, a duplicate analysis was prepared and analyzed by the laboratory as specified in Table 1. The relative percent differences (RPD) established by the laboratory are adopted as the acceptance criteria for the project.

The duplicate analysis performed was acceptable, demonstrating acceptable analytical precision.

The laboratory also performed am additional duplicate analysis on a non-site sample. This cannot be used to assess precision for the site samples.

4.7 Field QA/QC Samples

The field QA/QC consisted of two field duplicate sample sets.

To assess the analytical and sampling protocol precision, two field duplicate sample sets were collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples must be less than fifty percent for soil samples. The RPDs are only used when sample concentrations are above the estimated regions of detection.

Field duplicate summary data are presented in Table 2. All field duplicate results were within acceptable agreement, demonstrating acceptable sampling and analytical precision.

4.8 Field Procedures

Golder Associates, Inc. collected soil gas samples in accordance with their Standard Operating Procedures (SOP) for sample collection.

4.9 Analyte Reporting

The laboratory reported detected results for each analyte down to the sample detection limit (SDL), which is defined as the method detection limit (MDL) with sample-specific adjustments for dilutions, aliquot size, volumes, etc. Positive analyte detections less than the MQL but greater than the SDL were qualified as estimated (J) in Table 2 unless qualified elsewhere in this memorandum.

The detectability check standard (DCS) results supported the laboratory MDLs.

5. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are usable for the purpose of supporting the Soil Gas Sampling Event at the site by providing current concentration of chemicals of concern in soil gas samples with the specific qualifications noted herein.

Table 1

Sample Collection and Analysis Summary
Soil Gas Sampling Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
February 2020

						Analysis/Parameters	
Work Order	**Sample Identification**	**Location**	**Matrix**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**VOCs**	**Comments**
10509381	GS-1620-SG-22-20200219	SG22	Soil Gas	02/19/2020	08:24	X	
	GS-1620-SG-22-20200219 CERT#31	SG22	Soil Gas	02/19/2020	08:24	X	
	GS-1620-DUP-1-20200219	SG21	Soil Gas	02/19/2020	08:30	X	Field duplicate of SG-21
	GS-1620-DUP-1-20200219 CERT#24	SG21	Soil Gas	02/19/2020	08:30	X	
	GS-1620-SG-21-20200219	SG21	Soil Gas	02/19/2020	08:40	X	
	GS-1620-SG-21-20200219 CERT#20	SG21	Soil Gas	02/19/2020	08:40	X	
	GS-1620-SG-18-20200219	SG18	Soil Gas	02/19/2020	09:16	X	
	GS-1620-SG-18-20200219 CERT#25	SG18	Soil Gas	02/19/2020	09:16	X	
	GS-1620-AA-1-20200219	AA01	Soil Gas	02/19/2020	09:50	X	
	GS-1620-AA-1-20200219 CERT#008	AA01	Soil Gas	02/19/2020	09:50	X	
	GS-1620-SG-11-20200219	SG11	Soil Gas	02/19/2020	10:07	X	
	GS-1620-SG-11-20200219 CERT#30	SG11	Soil Gas	02/19/2020	10:07	X	
	GS-1620-SG-10-20200219	SG10	Soil Gas	02/19/2020	10:22	X	
	GS-1620-SG-10-20200219 CERT#29	SG10	Soil Gas	02/19/2020	10:22	X	
	GS-1620-SG-8-20200219	SG08	Soil Gas	02/19/2020	10:44	X	
	GS-1620-SG-8-20200219 CERT#328	SG08	Soil Gas	02/19/2020	10:44	X	
	GS-1620-HE-1-20200219	HE01	Soil Gas	02/19/2020	11:10	X	
	GS-1620-HE-1-20200219 CERT#251	HE01	Soil Gas	02/19/2020	11:10	X	

Table 1

Sample Collection and Analysis Summary
Soil Gas Sampling Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
February 2020

						Analysis/Parameters	
Work Order	**Sample Identification**	**Location**	**Matrix**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**VOCs**	**Comments**
10510405	GS-1620-SG20-20200227	SG20	Soil Gas	02/27/2020	09:23	X	
	GS-1620-SG20-20200227Cert#1329	SG20	Soil Gas	02/27/2020	09:23	X	
	GS-1620-SG19-20200227	SG19	Soil Gas	02/27/2020	09:45	X	
	GS-1620-SG19-20200227Cert#2897	SG19	Soil Gas	02/27/2020	09:45	X	
	AA-1620-AA-2-20200227	AA02	Soil Gas	02/27/2020	09:49	X	DUP
	AA-1620-AA-2-20200227Cert#2829	AA02	Soil Gas	02/27/2020	09:49	X	
	GS-1620-SG17-20200227	SG17	Soil Gas	02/27/2020	10:11	X	
	GS-1620-SG17-20200227Cert#2597	SG17	Soil Gas	02/27/2020	10:11	X	
	GS-1620-SG16-20200227	SG16	Soil Gas	02/27/2020	10:49	X	
	GS-1620-DUP-2-20200227	SG16	Soil Gas	02/27/2020	10:49	X	Field duplicate of SG16
	GS-1620-SG16-20200227Cert#2922	SG16	Soil Gas	02/27/2020	10:49	X	
	GS-1620-DUP2-20200227Cert#0882	SG16	Soil Gas	02/27/2020	10:49	X	
	GS-1620-SG15-20200227	SG15	Soil Gas	02/27/2020	11:20	X	
	GS-1620-SG15-20200227Cert#2937	SG15	Soil Gas	02/27/2020	11:20	X	
	GS-1620-SG14-20200227	SG14	Soil Gas	02/27/2020	11:39	X	
	GS-1620-SG14-20200227Cert#3239	SG14	Soil Gas	02/27/2020	11:39	X	
	GS-1620-SG12-20200227	SG12	Soil Gas	02/27/2020	12:21	X	
	GS-1620-SG12-20200227Cert#3264	SG12	Soil Gas	02/27/2020	12:27	X	

Notes:

VOCs - Volatile Organic Compounds
DUP - Laboratory Duplicate

Table 2

Analytical Results Summary
Soil Gas Sampling Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
February 2020

Location ID:		AA01	AA01	AA02	AA02	HE01
Sample Name:		GS-1620-AA-1-20200219	GS-1620-AA-1-20200219 CERT#008	AA-1620-AA-2-20200227	AA-1620-AA-2-20200227Cert#2829	GS-1620-HE-1-20200219
Sample Date:		02/19/2020	02/19/2020	02/27/2020	02/27/2020	02/19/2020
Parameters	**Unit**					
Volatile Organic Compounds						
Benzene	µg/m3	0.73	<0.076	1.1	<0.076	5.6
Ethylbenzene	µg/m3	<0.38	<0.15	<0.37	<0.15	3.8
m&p-Xylenes	µg/m3	<0.88	<0.35	0.99 J	<0.35	22.0
Naphthalene	µg/m3	<1.7	<0.66	<1.6	<0.66	<1.3
o-Xylene	µg/m3	<0.43	<0.17	<0.42	<0.17	21.2

Table 2

Analytical Results Summary
Soil Gas Sampling Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
February 2020

Location ID:		HE01	SG08	SG08	SG10	SG10
Sample Name:		GS-1620-HE-1-20200219 CERT#251	GS-1620-SG-8-20200219	GS-1620-SG-8-20200219 CERT#328	GS-1620-SG-10-20200219	GS-1620-SG-10-20200219 CERT#29
Sample Date:		02/19/2020	02/19/2020	02/19/2020	02/19/2020	02/19/2020
Parameters	**Unit**					
Volatile Organic Compounds						
Benzene	µg/m3	<0.15	0.31 J	<0.15	<0.26	<0.15
Ethylbenzene	µg/m3	<0.30	0.63 J	<0.30	0.54 J	<0.30
m&p-Xylenes	µg/m3	<0.70	2.4 J	<0.70	2.1 J	<0.70
Naphthalene	µg/m3	<1.3	<2.3	<1.3	<2.2	<1.3
o-Xylene	µg/m3	<0.34	0.81 J	<0.34	0.69 J	<0.34

Table 2

Analytical Results Summary
Soil Gas Sampling Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
February 2020

Location ID:		SG11	SG11	SG12	SG12	SG14
Sample Name:		GS-1620-SG-11-20200219	GS-1620-SG-11-20200219 CERT#30	GS-1620-SG12-20200227	GS-1620-SG12-20200227Cert#3264	GS-1620-SG14-20200227
Sample Date:		02/19/2020	02/19/2020	02/27/2020	02/27/2020	02/27/2020
Parameters	**Unit**					
Volatile Organic Compounds						
Benzene	µg/m3	0.87	<0.15	0.28 J	<0.15	<0.27
Ethylbenzene	µg/m3	5.1	<0.30	<0.54	<0.30	<0.54
m&p-Xylenes	µg/m3	13.1	<0.70	1.3 J	<0.70	<1.2
Naphthalene	µg/m3	3.8 J	<1.3	<3.1	<1.3	<2.3
o-Xylene	µg/m3	7.6	<0.34	<0.61	<0.34	<0.61

Table 2

Analytical Results Summary
Soil Gas Sampling Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
February 2020

Location ID:		SG14	SG15	SG15	SG16	SG16
Sample Name:		GS-1620-SG14-20200227Cert#3239	GS-1620-SG15-20200227	GS-1620-SG15-20200227Cert#2937	GS-1620-SG16-20200227	GS-1620-SG16-20200227Cert#2922
Sample Date:		02/27/2020	02/27/2020	02/27/2020	02/27/2020	02/27/2020
Parameters	**Unit**					
Volatile Organic Compounds						
Benzene	µg/m3	<0.15	<0.26	<0.15	<0.26	<0.15
Ethylbenzene	µg/m3	<0.30	<0.51	<0.30	13.4	<0.30
m&p-Xylenes	µg/m3	<0.70	<1.2	<0.70	46.9	<0.70
Naphthalene	µg/m3	<1.3	<3.4	<1.3	<3.1	<1.3
o-Xylene	µg/m3	<0.34	<0.58	<0.34	20.9	<0.34

Table 2

Analytical Results Summary
Soil Gas Sampling Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
February 2020

Location ID:		SG16	SG16	SG17	SG17	SG18
Sample Name:		GS-1620-DUP-2-20200227	GS-1620-DUP2-20200227Cert#0882	GS-1620-SG17-20200227	GS-1620-SG17-20200227Cert#2597	GS-1620-SG-18-20200219
Sample Date:		02/27/2020	02/27/2020	02/27/2020	02/27/2020	02/19/2020
		Duplicate				
Parameters	**Unit**					
Volatile Organic Compounds						
Benzene	µg/m3	0.58	<0.15	0.25 J	<0.15	1.0
Ethylbenzene	µg/m3	14.0	<0.30	<0.48	<0.30	3.9
m&p-Xylenes	µg/m3	50.6	<0.70	1.1 J	<0.70	8.0
Naphthalene	µg/m3	<3.2	<1.3	<3.0	<1.3	<2.2
o-Xylene	µg/m3	21.5	<0.34	<0.54	<0.34	3.7

Table 2

Analytical Results Summary
Soil Gas Sampling Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
February 2020

Location ID:		SG18	SG19	SG19	SG20
Sample Name:		GS-1620-SG-18-20200219 CERT#25	GS-1620-SG19-20200227	GS-1620-SG19-20200227Cert#2897	GS-1620-SG20-20200227
Sample Date:		02/19/2020	02/27/2020	02/27/2020	02/27/2020
Parameters	**Unit**				
Volatile Organic Compounds					
Benzene	µg/m3	<0.15	0.46 J	<0.15	0.27 J
Ethylbenzene	µg/m3	<0.30	<0.51	<0.30	<0.53
m&p-Xylenes	µg/m3	<0.70	1.6 J	<0.70	1.7 J
Naphthalene	µg/m3	<1.3	<3.5	<1.3	<3.1
o-Xylene	µg/m3	<0.34	0.91 J	<0.34	<0.60

Table 2

Analytical Results Summary
Soil Gas Sampling Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
February 2020

Location ID:		SG20	SG21	SG21	SG21
Sample Name:		GS-1620-SG20-20200227Cert#1329	GS-1620-SG-21-20200219	GS-1620-SG-21-20200219 CERT#20	GS-1620-DUP-1-20200219
Sample Date:		02/27/2020	02/19/2020	02/19/2020	02/19/2020 Duplicate
Parameters	**Unit**				
Volatile Organic Compounds					
Benzene	µg/m3	0.21 J	<0.26	<0.15	<0.26
Ethylbenzene	µg/m3	<0.30	<0.51	<0.30	<0.51
m&p-Xylenes	µg/m3	<0.70	<1.2	<0.70	<1.2
Naphthalene	µg/m3	<1.3	<2.2	<1.3	<2.2
o-Xyne	µg/m3	<0.34	<0.58	<0.34	<0.58

Table 2

Analytical Results Summary
Soil Gas Sampling Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
February 2020

Location ID:		**SG21**	**SG22**	**SG22**
Sample Name:		**GS-1620-DUP-1-20200219 CERT#24**	**GS-1620-SG-22-20200219**	**GS-1620-SG-22-20200219 CERT#31**
Sample Date:		**02/19/2020**	**02/19/2020**	**02/19/2020**
Parameters	**Unit**			
Volatile Organic Compounds				
Benzene	µg/m3	<0.15	<0.26	<0.15
Ethylbenzene	µg/m3	<0.30	0.82 J	<0.30
m&p-Xylenes	µg/m3	<0.70	2.5 J	<0.70
Naphthalene	µg/m3	<1.3	<2.2	<1.3
o-Xylene	µg/m3	<0.34	0.81 J	<0.34

Notes:

< - Not detected at the associated reporting limit
J - Estimated concentration

Table 3

Analytical Methods
Soil Gas Sampling Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
February 2020

Parameter	Method	Matrix	Holding Time Collection to Analysis (Days)
VOCs	TO-15 [(1)]	Soil Gas	30

Notes:

VOCs - Volatile Organic Compounds

Method References:

(1) - Referenced from "Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air", January 1999

Table 4

Qualified Sample Results Due to Analyte Concentrations in the Method Blank
Soil Gas Sampling Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
February 2020

Parameter	Analyte	Analysis Date (mm/dd/yyyy)	Blank Result	Sample ID	Original Result	Qualified Result	Units
VOCs	Naphthalene	03/08/2020	1.7 J	GS-1620-SG12-20200227	3.1 J	<3.1	µg/m3
				GS-1620-SG15-20200227	3.4 J	<3.4	µg/m3
				GS-1620-SG16-20200227	3.1 J	<3.1	µg/m3
				GS-1620-DUP-2-20200227	3.2 J	<3.2	µg/m3
				GS-1620-SG17-20200227	3.0 J	<3.0	µg/m3
				GS-1620-SG19-20200227	3.5 J	<3.5	µg/m3
				GS-1620-SG20-20200227	3.1 J	<3.1	µg/m3

Notes:

VOCs - Volatile Organic Compounds
J - Estimated concentration
< - Not detected at the associated reporting limit

Attachment A
Laboratory NELAP Certificate

Texas Commission on Environmental Quality

NELAP-Recognized Laboratory Accreditation is hereby awarded to

Pace Analytical Services, LLC - Minneapolis MN

1700 Elm Street SE Suite 200
Minneapolis, MN 55414-2485

in accordance with Texas Water Code Chapter 5, Subchapter R, Title 30 Texas Administrative Code Chapter 25, and the National Environmental Laboratory Accreditation Program.

The laboratory's scope of accreditation includes the fields of accreditation that accompany this certificate. Continued accreditation depends upon successful ongoing participation in the program. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current location(s) and accreditation status for particular methods and analyses (www.tceq.texas.gov/goto/lab). Accreditation does not imply that a product, process, system or person is approved by the Texas Commission on Environmental Quality.

Certificate Number: T104704192-20-15
Effective Date: 3/1/2020
Expiration Date: 2/28/2021

Executive Director Texas Commission on Environmental Quality

Pace Analytical Services, Inc.
1700 Elm St SE, Suite 200
Minneapolis, MN 55414
(612) 607-1700

March 13, 2020

Michelle Hermiston
Golder
2201 Double Creek Dr
Suite 4004
Round Rock, TX 78664

RE: Pace Project 10509381
Project ID: Houston TX-Wood: 1620-01-Rev1

Dear Michelle Hermiston:

Enclosed are the analytical results for sample(s) received by the laboratory on February 21, 2020. Results reported herin conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

This report was revised on March, 13, 2020 to create TRRP report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Nathan Boberg
nathan.boberg@pacelabs.com
(612)360-0728

Laboratory Certifications

Pace Analytical Minnesota : Texas Certification #: T104704192

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

Pace Analytical Services, Inc.
1700 Elm St SE, Suite 200
Minneapolis, MN 55414
(612) 607-1700

Sample Cross Reference

Pace Project 10509381

Client: UPRR_Golder
Project ID: Houston TX-Wood: 1620-01-Rev1

Client Sample ID	Lab ID	Matrix	Collection Date/Time	Received Date/Time
GS-1620-SG-8-20200219	10509381001	Air	02/19/2020 10:44	02/21/2020 10:00
GS-1620-SG-8-20200219 CERT#328	10509381002	Air	02/19/2020 10:44	02/21/2020 10:00
GS-1620-SG-10-20200219	10509381003	Air	02/19/2020 10:22	02/21/2020 10:00
GS-1620-SG-10-20200219 CERT#29	10509381004	Air	02/19/2020 10:22	02/21/2020 10:00
GS-1620-SG-11-20200219	10509381005	Air	02/19/2020 10:07	02/21/2020 10:00
GS-1620-SG-11-20200219 CERT#30	10509381006	Air	02/19/2020 10:07	02/21/2020 10:00
GS-1620-SG-18-20200219	10509381007	Air	02/19/2020 09:16	02/21/2020 10:00
GS-1620-SG-18-20200219 CERT#25	10509381008	Air	02/19/2020 09:16	02/21/2020 10:00
GS-1620-SG-21-20200219	10509381009	Air	02/19/2020 08:40	02/21/2020 10:00
GS-1620-SG-21-20200219 CERT#20	10509381010	Air	02/19/2020 08:40	02/21/2020 10:00
GS-1620-SG-22-20200219	10509381011	Air	02/19/2020 08:24	02/21/2020 10:00
GS-1620-SG-22-20200219 CERT#31	10509381012	Air	02/19/2020 08:24	02/21/2020 10:00
GS-1620-AA-1-20200219	10509381013	Air	02/19/2020 09:50	02/21/2020 10:00
GS-1620-AA-1-20200219 CERT#008	10509381014	Air	02/19/2020 09:50	02/21/2020 10:00
GS-1620-HE-1-20200219	10509381015	Air	02/19/2020 11:10	02/21/2020 10:00
GS-1620-HE-1-20200219 CERT#251	10509381016	Air	02/19/2020 11:10	02/21/2020 10:00
GS-1620-DUP-1-20200219	10509381017	Air	02/19/2020 08:30	02/21/2020 10:00
GS-1620-DUP-1-20200219 CERT#24	10509381018	Air	02/19/2020 08:30	02/21/2020 10:00

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Pace Project 10509381

Holding Times:

All holding times were met.

Blanks:

All blank results were below reporting limits.

Laboratory Control Samples:

All LCS recoveries were within QC limits.

Matrix Spikes and Duplicates:

All MS or MSD recoveries were within QC limits.

Surrogate:

All surrogate recoveries were within QC limits.

Appendix A
LABORATORY DATA PACKAGE COVER PAGE

This data package is for Job No. 10509381 and consists of:

This signature page, the laboratory review checklist, and the following reportable data:

- [X] R1 - Field chain-of-custody documentation;
- [X] R2 - Sample identification cross-reference;
- [X] R3 - Test reports (analytical data sheets) for each environmental sample that includes:
  - a. Items consistent with NELAC Chapter 5,
  - b. Dilution factors,
  - c. Preparation methods,
  - d. Cleanup methods, and
  - e. If required for the project, tentatively identified compounds (TICs).
- [X] R4 - Surrogate recovery data including:
  - a. Calculated recovery (%R), and
  - b. The laboratory's surrogate QC limits.
- [X] R5 - Test reports/summary forms for blank samples;
- [X] R6 - Test reports/summary forms for laboratory control samples (LCSs) including:
  - a. LCS spiking amounts,
  - b. Calculated %R for each analyte, and
  - c. The laboratory's LCS QC limits.
- [X] R7 - Test reports/summary forms for matrix spike/matrix spike duplicates (MS/MSDs) including:
  - a. Samples associated with the MS/MSD clearly identified,
  - b. MS/MSD spiking amounts,
  - c. Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  - d. Calculated %Rs and relative percent differences, and
  - e. The laboratory's MS/MSD QC limits.
- [X] R8 - Laboratory analytical duplicate (if applicable) recovery and precision:
  - a. The amount of analyte measured in the duplicate,
  - b. The calculated RPD, and,
  - c. The laboratory's QC limits for analytical duplicated.
- [X] R9 - List of method quantitation limits (MQLs) and detectability check sample results for each analyte and
- [X] R10 - Other problems or anomalies.

  The exception Report for each "No" or "Not Reviewed (NR) " item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accredidation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [ ] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [X] MDH on 04/12/2011

Any findings affecting the data in this laboratory data package are noted in the Exception Reports herin. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name (Printed)	Signature	Official Title (Printed)	Date
Nathan Boberg		Project Manager	03/13/2020

Sample Results

Pace Analytical Services, Inc.
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Client: UPRR_Golder

Client ID: GS-1620-SG-8-20200219 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10509381001 **Moisture:** N/A **Pace Project** 10509381
Collected: 02/19/2020 10:44 **Received** 02/21/2020 10:00 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.74	**0.31**	J	ug/m3	0.57	0.27	02/22/2020 02:27		661381	10AIRD
Ethylbenzene	1.74	**0.63**	J	ug/m3	1.5	0.53	02/22/2020 02:27		661381	10AIRD
Naphthalene	1.74	< 2.3	U	ug/m3	4.6	2.3	02/22/2020 02:27		661381	10AIRD
m&p-Xylene	1.74	**2.4**	J	ug/m3	3.1	1.2	02/22/2020 02:27		661381	10AIRD
o-Xylene	1.74	**0.81**	J	ug/m3	1.5	0.60	02/22/2020 02:27		661381	10AIRD

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Client: UPRR_Golder

Client ID: GS-1620-SG-8-20200219 CERT#328 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10509381002 **Moisture:** N/A **Pace Project** 10509381
Collected: 02/19/2020 10:44 **Received** 02/21/2020 10:00 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	1	< 0.15	U	ug/m3	0.32	0.15	01/15/2020 17:12		662198	10AIRI
Ethylbenzene	1	< 0.30	U	ug/m3	0.88	0.30	01/15/2020 17:12		662198	10AIRI
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	01/15/2020 17:12		662198	10AIRI
m&p-Xylene	1	< 0.70	U	ug/m3	1.8	0.70	01/15/2020 17:12		662198	10AIRI
o-Xylene	1	< 0.34	U	ug/m3	0.88	0.34	01/15/2020 17:12		662198	10AIRI

Sample Results

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Client: UPRR_Golder

Client ID: GS-1620-SG-10-20200219 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10509381003 **Moisture:** N/A **Pace Project** 10509381
Collected: 02/19/2020 10:22 **Received** 02/21/2020 10:00 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.68	< 0.26	U	ug/m3	0.55	0.26	02/22/2020 00:04		661381	10AIRD
Ethylbenzene	1.68	**0.54**	J	ug/m3	1.5	0.51	02/22/2020 00:04		661381	10AIRD
Naphthalene	1.68	< 2.2	U	ug/m3	4.5	2.2	02/22/2020 00:04		661381	10AIRD
m&p-Xylene	1.68	**2.1**	J	ug/m3	3.0	1.2	02/22/2020 00:04		661381	10AIRD
o-Xylene	1.68	**0.69**	J	ug/m3	1.5	0.58	02/22/2020 00:04		661381	10AIRD

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Client: UPRR_Golder

Client ID: GS-1620-SG-10-20200219 CERT#29 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10509381004 **Moisture:** N/A **Pace Project** 10509381
Collected: 02/19/2020 10:22 **Received** 02/21/2020 10:00 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	1	< 0.15	U	ug/m3	0.32	0.15	01/15/2020 23:46		662198	10AIRI
Ethylbenzene	1	< 0.30	U	ug/m3	0.88	0.30	01/15/2020 23:46		662198	10AIRI
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	01/15/2020 23:46		662198	10AIRI
m&p-Xylene	1	< 0.70	U	ug/m3	1.8	0.70	01/15/2020 23:46		662198	10AIRI
o-Xylene	1	< 0.34	U	ug/m3	0.88	0.34	01/15/2020 23:46		662198	10AIRI

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Client: UPRR_Golder

Client ID: GS-1620-SG-11-20200219 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10509381005 **Moisture:** N/A **Pace Project** 10509381
Collected: 02/19/2020 10:07 **Received** 02/21/2020 10:00 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.74	**0.87**		ug/m3	0.57	0.27	02/22/2020 01:59		661381	10AIRD
Ethylbenzene	1.74	**5.1**		ug/m3	1.5	0.53	02/22/2020 01:59		661381	10AIRD
Naphthalene	1.74	**3.8**	J	ug/m3	4.6	2.3	02/22/2020 01:59		661381	10AIRD
m&p-Xylene	1.74	**13.1**		ug/m3	3.1	1.2	02/22/2020 01:59		661381	10AIRD
o-Xylene	1.74	**7.6**		ug/m3	1.5	0.60	02/22/2020 01:59		661381	10AIRD

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Client: UPRR_Golder

Client ID: GS-1620-SG-11-20200219 CERT#30 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10509381006 **Moisture:** N/A **Pace Project** 10509381
Collected: 02/19/2020 10:07 **Received** 02/21/2020 10:00 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	1	< 0.15	U	ug/m3	0.32	0.15	01/17/2020 20:50		662198	10AIR0
Ethylbenzene	1	< 0.30	U	ug/m3	0.88	0.30	01/17/2020 20:50		662198	10AIR0
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	01/17/2020 20:50		662198	10AIR0
m&p-Xylene	1	< 0.70	U	ug/m3	1.8	0.70	01/17/2020 20:50		662198	10AIR0
o-Xylene	1	< 0.34	U	ug/m3	0.88	0.34	01/17/2020 20:50		662198	10AIR0

Sample Results

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Client: UPRR_Golder

Client ID: GS-1620-SG-18-20200219 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10509381007 **Moisture:** N/A **Pace Project** 10509381
Collected: 02/19/2020 09:16 **Received** 02/21/2020 10:00 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.68	**1.0**		ug/m3	0.55	0.26	02/22/2020 02:56		661381	10AIRD
Ethylbenzene	1.68	**3.9**		ug/m3	1.5	0.51	02/22/2020 02:56		661381	10AIRD
Naphthalene	1.68	< 2.2	U	ug/m3	4.5	2.2	02/22/2020 02:56		661381	10AIRD
m&p-Xylene	1.68	**8.0**		ug/m3	3.0	1.2	02/22/2020 02:56		661381	10AIRD
o-Xylene	1.68	**3.7**		ug/m3	1.5	0.58	02/22/2020 02:56		661381	10AIRD

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Client: UPRR_Golder

Client ID: GS-1620-SG-18-20200219 CERT#25 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10509381008 **Moisture:** N/A **Pace Project** 10509381
Collected: 02/19/2020 09:16 **Received** 02/21/2020 10:00 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	1	< 0.15	U	ug/m3	0.32	0.15	01/17/2020 19:25		662198	10AIR0
Ethylbenzene	1	< 0.30	U	ug/m3	0.88	0.30	01/17/2020 19:25		662198	10AIR0
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	01/17/2020 19:25		662198	10AIR0
m&p-Xylene	1	< 0.70	U	ug/m3	1.8	0.70	01/17/2020 19:25		662198	10AIR0
o-Xylene	1	< 0.34	U	ug/m3	0.88	0.34	01/17/2020 19:25		662198	10AIR0

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Client: UPRR_Golder

Client ID: GS-1620-SG-21-20200219 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10509381009 **Moisture:** N/A **Pace Project** 10509381
Collected: 02/19/2020 08:40 **Received** 02/21/2020 10:00 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.68	< 0.26	U	ug/m3	0.55	0.26	02/22/2020 01:01		661381	10AIRD
Ethylbenzene	1.68	< 0.51	U	ug/m3	1.5	0.51	02/22/2020 01:01		661381	10AIRD
Naphthalene	1.68	< 2.2	U	ug/m3	4.5	2.2	02/22/2020 01:01		661381	10AIRD
m&p-Xylene	1.68	< 1.2	U	ug/m3	3.0	1.2	02/22/2020 01:01		661381	10AIRD
o-Xylene	1.68	< 0.58	U	ug/m3	1.5	0.58	02/22/2020 01:01		661381	10AIRD

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Client: UPRR_Golder

Client ID: GS-1620-SG-21-20200219 CERT#20 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10509381010 **Moisture:** N/A **Pace Project** 10509381
Collected: 02/19/2020 08:40 **Received** 02/21/2020 10:00 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	1	< 0.15	U	ug/m3	0.32	0.15	01/18/2020 01:09		662198	10AIR0
Ethylbenzene	1	< 0.30	U	ug/m3	0.88	0.30	01/18/2020 01:09		662198	10AIR0
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	01/18/2020 01:09		662198	10AIR0
m&p-Xylene	1	< 0.70	U	ug/m3	1.8	0.70	01/18/2020 01:09		662198	10AIR0
o-Xylene	1	< 0.34	U	ug/m3	0.88	0.34	01/18/2020 01:09		662198	10AIR0

Sample Results

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Client: UPRR_Golder

Client ID: GS-1620-SG-22-20200219 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10509381011 **Moisture:** N/A **Pace Project** 10509381
Collected: 02/19/2020 08:24 **Received** 02/21/2020 10:00 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.68	< 0.26	U	ug/m3	0.55	0.26	02/22/2020 01:30		661381	10AIRD
Ethylbenzene	1.68	**0.82**	J	ug/m3	1.5	0.51	02/22/2020 01:30		661381	10AIRD
Naphthalene	1.68	< 2.2	U	ug/m3	4.5	2.2	02/22/2020 01:30		661381	10AIRD
m&p-Xylene	1.68	**2.5**	J	ug/m3	3.0	1.2	02/22/2020 01:30		661381	10AIRD
o-Xylene	1.68	**0.81**	J	ug/m3	1.5	0.58	02/22/2020 01:30		661381	10AIRD

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Client: UPRR_Golder

Client ID: GS-1620-SG-22-20200219 CERT#31 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10509381012 **Moisture:** N/A **Pace Project** 10509381
Collected: 02/19/2020 08:24 **Received** 02/21/2020 10:00 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	1	< 0.15	U	ug/m3	0.32	0.15	01/24/2020 01:11		662198	10AIR7
Ethylbenzene	1	< 0.30	U	ug/m3	0.88	0.30	01/24/2020 01:11		662198	10AIR7
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	01/24/2020 01:11		662198	10AIR7
m&p-Xylene	1	< 0.70	U	ug/m3	1.8	0.70	01/24/2020 01:11		662198	10AIR7
o-Xylene	1	< 0.34	U	ug/m3	0.88	0.34	01/24/2020 01:11		662198	10AIR7

Sample Results

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Client: UPRR_Golder

Client ID: GS-1620-AA-1-20200219 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10509381013 **Moisture:** N/A **Pace Project** 10509381
Collected: 02/19/2020 09:50 **Received** 02/21/2020 10:00 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.26	**0.73**		ug/m3	0.41	0.19	02/21/2020 23:08		661381	10AIRD
Ethylbenzene	1.26	< 0.38	U	ug/m3	1.1	0.38	02/21/2020 23:08		661381	10AIRD
Naphthalene	1.26	< 1.7	U	ug/m3	3.4	1.7	02/21/2020 23:08		661381	10AIRD
m&p-Xylene	1.26	< 0.88	U	ug/m3	2.2	0.88	02/21/2020 23:08		661381	10AIRD
o-Xylene	1.26	< 0.43	U	ug/m3	1.1	0.43	02/21/2020 23:08		661381	10AIRD

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Client: UPRR_Golder

Client ID: GS-1620-AA-1-20200219 CERT#008 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10509381014 **Moisture:** N/A **Pace Project** 10509381
Collected: 02/19/2020 09:50 **Received** 02/21/2020 10:00 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	0.5	< 0.076	U	ug/m3	0.16	0.076	01/22/2020 09:47		662198	10AIRI
Ethylbenzene	0.5	< 0.15	U	ug/m3	0.44	0.15	01/22/2020 09:47		662198	10AIRI
Naphthalene	0.5	< 0.66	U	ug/m3	1.3	0.66	01/22/2020 09:47		662198	10AIRI
m&p-Xylene	0.5	< 0.35	U	ug/m3	0.88	0.35	01/22/2020 09:47		662198	10AIRI
o-Xylene	0.5	< 0.17	U	ug/m3	0.44	0.17	01/22/2020 09:47		662198	10AIRI

Sample Results

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Client: UPRR_Golder

Client ID: GS-1620-HE-1-20200219 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10509381015 **Moisture:** N/A **Pace Project** 10509381
Collected: 02/19/2020 11:10 **Received** 02/21/2020 10:00 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1	**5.6**		ug/m3	0.32	0.15	02/21/2020 23:36		661381	10AIRD
Ethylbenzene	1	**3.8**		ug/m3	0.88	0.30	02/21/2020 23:36		661381	10AIRD
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	02/21/2020 23:36		661381	10AIRD
m&p-Xylene	1	**22.0**		ug/m3	1.8	0.70	02/21/2020 23:36		661381	10AIRD
o-Xylene	1	**21.2**		ug/m3	0.88	0.34	02/21/2020 23:36		661381	10AIRD

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Client: UPRR_Golder

Client ID: GS-1620-HE-1-20200219 CERT#251 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10509381016 **Moisture:** N/A **Pace Project** 10509381
Collected: 02/19/2020 11:10 **Received** 02/21/2020 10:00 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	1	< 0.15	U	ug/m3	0.32	0.15	01/17/2020 22:45		662198	10AIR0
Ethylbenzene	1	< 0.30	U	ug/m3	0.88	0.30	01/17/2020 22:45		662198	10AIR0
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	01/17/2020 22:45		662198	10AIR0
m&p-Xylene	1	< 0.70	U	ug/m3	1.8	0.70	01/17/2020 22:45		662198	10AIR0
o-Xylene	1	< 0.34	U	ug/m3	0.88	0.34	01/17/2020 22:45		662198	10AIR0

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Client: UPRR_Golder

Client ID: GS-1620-DUP-1-20200219 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10509381017 **Moisture:** N/A **Pace Project** 10509381
Collected: 02/19/2020 08:30 **Received** 02/21/2020 10:00 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.68	< 0.26	U	ug/m3	0.55	0.26	02/22/2020 00:33		661381	10AIRD
Ethylbenzene	1.68	< 0.51	U	ug/m3	1.5	0.51	02/22/2020 00:33		661381	10AIRD
Naphthalene	1.68	< 2.2	U	ug/m3	4.5	2.2	02/22/2020 00:33		661381	10AIRD
m&p-Xylene	1.68	< 1.2	U	ug/m3	3.0	1.2	02/22/2020 00:33		661381	10AIRD
o-Xylene	1.68	< 0.58	U	ug/m3	1.5	0.58	02/22/2020 00:33		661381	10AIRD

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Client: UPRR_Golder

Client ID: GS-1620-DUP-1-20200219 CERT#24 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10509381018 **Moisture:** N/A **Pace Project** 10509381
Collected: 02/19/2020 08:30 **Received** 02/21/2020 10:00 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	1	< 0.15	U	ug/m3	0.32	0.15	01/17/2020 18:56		662198	10AIR0
Ethylbenzene	1	< 0.30	U	ug/m3	0.88	0.30	01/17/2020 18:56		662198	10AIR0
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	01/17/2020 18:56		662198	10AIR0
m&p-Xylene	1	< 0.70	U	ug/m3	1.8	0.70	01/17/2020 18:56		662198	10AIR0
o-Xylene	1	< 0.34	U	ug/m3	0.88	0.34	01/17/2020 18:56		662198	10AIR0

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Batch: 661381
Method: TO-15

Pace Project No.: 10509381
Instrument ID: 10AIRD

Blank: 3549644

Parameters	Dilutio	Quals	Result	Units	MQL	SDL	Analysis Date	Prep Date
Benzene	1	U	<0.15	ug/m3	0.32	0.15	02/21/2020 14:01	
Ethylbenzene	1	U	<0.30	ug/m3	0.88	0.30	02/21/2020 14:01	
Naphthalene	1	U	<1.3	ug/m3	2.7	1.3	02/21/2020 14:01	
m&p-Xylene	1	U	<0.70	ug/m3	1.8	0.70	02/21/2020 14:01	
o-Xylene	1	U	<0.34	ug/m3	0.88	0.34	02/21/2020 14:01	

Laboratory Control Sample: 3549645

Parameters	Spk Amt	LCS Result	Units	LCS %Rec	% Rec Limits	LCS Quals
Benzene	34.4	29.9	ug/m3	87	70-133	
Ethylbenzene	46.3	47.6	ug/m3	103	70-142	
Naphthalene	58.3	39.9	ug/m3	68	63-130	
m&p-Xylene	46	47.2	ug/m3	102	70-141	
o-Xylene	46.5	44.4	ug/m3	96	70-135	

Unadjusted MQL

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Pace Project 10509381

Analyte	Method	Unadjusted MQL	Reporting Units
Benzene	TO-15	0.33	ug/m3
Ethylbenzene	TO-15	0.88	ug/m3
Naphthalene	TO-15	2.7	ug/m3
m&p-Xylene	TO-15	1.8	ug/m3
o-Xylene	TO-15	0.88	ug/m3

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Pace Project 10509381

DEFINITIONS

DF	Dilution Factor
J	Estimated concentration above the adjusted method detection limit and below the adjusted reporting
U	Indicates the compound was analyzed for, but not detected.
SDL	Sample Detection Limit
MQL	Method Quantitation Limit
LCS(D)	Laboratory Control Sample (Duplicate)
MS(D)	Matrix Spike (Duplicate)
DUP	Sample Duplicate
RPD	Relative Percent Difference
TNI	The Nelac Institute

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

Quality Control Data
Cross Reference Table

Pace Analytical Services, Inc.
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Minneapolis, MN 55414
(612) 607-1700

Pace Project 10509381

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Analytical
10509381001	**GS-1620-SG-8-20200219**	TO-15	661381	
10509381003	**GS-1620-SG-10-20200219**	TO-15	661381	
10509381005	**GS-1620-SG-11-20200219**	TO-15	661381	
10509381007	**GS-1620-SG-18-20200219**	TO-15	661381	
10509381009	**GS-1620-SG-21-20200219**	TO-15	661381	
10509381011	**GS-1620-SG-22-20200219**	TO-15	661381	
10509381013	**GS-1620-AA-1-20200219**	TO-15	661381	
10509381015	**GS-1620-HE-1-20200219**	TO-15	661381	
10509381017	**GS-1620-DUP-1-20200219**	TO-15	661381	
10509381002	**GS-1620-SG-8-20200219**	TO-15	662198	
10509381004	**GS-1620-SG-10-20200219**	TO-15	662198	
10509381006	**GS-1620-SG-11-20200219**	TO-15	662198	
10509381008	**GS-1620-SG-18-20200219**	TO-15	662198	
10509381010	**GS-1620-SG-21-20200219**	TO-15	662198	
10509381012	**GS-1620-SG-22-20200219**	TO-15	662198	
10509381014	**GS-1620-AA-1-20200219**	TO-15	662198	
10509381016	**GS-1620-HE-1-20200219**	TO-15	662198	
10509381018	**GS-1620-DUP-1-20200219**	TO-15	662198	

TRRP LABORATORY REVIEW CHECKLIST								
Laboratory	Pace Analytical Services, Inc.		**LRC Date:**	03/13/2020				
Project Name:	Houston TX-Wood: 1620-01-Rev1		**Laboratory Job**	10509381				
Reviewer	Nathan Boberg		**Prep Batch Number**	See exception report.				
#[1]	**A[2]**	**Description**		**Yes**	**No**	**NA[3]**	**NR[4]**	**ER #[5]**
R1	**OI**	**Chain-of-custody (C-O-C)**						
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?		X				
		Were all departures from standard conditions described in an exception report?		X				
R2	**OI**	**Sample and quality control (QC) identification**						
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?		X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?		X				
R3	**OI**	**Test reports**						
		Were all samples prepared and analyzed within holding times?		X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?		X				
		Were calculations checked by a peer or supervisor?		X				
		Were all analyte identifications checked by a peer or supervisor?		X				
		Were sample detection limits reported for all analytes not detected?		X				
		Were all results for soil and sediment samples reported on a dry weight basis?				X		
		Were % moisture (or solids) reported for all soil and sediment samples?				X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?				X		
		If required for the project, are TICs reported?				X		
R4	**O**	**Surrogate recovery data**						
		Were surrogates added prior to extraction?				X		
		Were surrogate percent recoveries in all samples within the laboratory QC limits?				X		
R5	**OI**	**Test reports/summary forms for blank samples**						
		Were appropriate type(s) of blanks analyzed?		X				
		Were blanks analyzed at the appropriate frequency?		X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?		X				
		Were blank concentrations < MQL?		X				
R6	**OI**	**Laboratory control samples (LCS):**						
		Were all COCs included in the LCS?		X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?		X				
		Were LCSs analyzed at the required frequency?		X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?		X				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?		X				
		Was the LCSD RPD within QC limits?				X		
R7	**OI**	**Matrix spike (MS) and matrix spike duplicate (MSD) data**						
		Were the project/method specified analytes included in the MS and MSD?				X		
		Were MS/MSD analyzed at the appropriate frequency?				X		
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?				X		
		Were MS/MSD RPDs within laboratory QC limits?				X		
R8	**OI**	**Analytical duplicate data**						
		Were appropriate analytical duplicates analyzed for each matrix?				X		
		Were analytical duplicates analyzed at the appropriate frequency?				X		
		Were RPDs or relative standard deviations within the laboratory QC limits?				X		
R9	**OI**	**Method quantitation limits (MQLs):**						
		Are the MQLs for each method analyte included in the laboratory data package?		X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?		X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?		X				
R10	**OI**	**Other problems/anomalies**						
		Are all known problems/anomalies/special conditions noted in this LRC and ER?		X				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?		X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?		X				

TRRP LABORATORY REVIEW CHECKLIST			
Laboratory	Pace Analytical Services, Inc.	**LRC Date:**	03/13/2020
Project Name:	Houston TX-Wood: 1620-01-Rev1	**Laboratory Job**	10509381
Reviewer	Nathan Boberg	**Prep Batch Number**	See exception report.

1. Items identified by the letter "R" must be included in the laboratory in the laboratory data package submitted in the TRRP-required reports(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period;
2. O = Organic analyses; I = inorganic analysises (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

TRRP LABORATORY REVIEW CHECKLIST				
Laboratory	Pace Analytical Services, Inc.	**LRC Date:**	03/13/2020	
Project Name:	Houston TX-Wood: 1620-01-Rev1	**Laboratory Job**	10509381	
Reviewer	Nathan Boberg	**Prep Batch Number**	See exception report.	

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER #[5]
S1	**OI**	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	**OI**	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were precent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	**O**	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?			X		
		Were ion abundance data within the method-required QC limits?			X		
S4	**O**	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?			X		
S5	**OI**	**Raw data (NELAC Section 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	**O**	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	**O**	**Tentatively identified compounds (TICs)**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	**I**	**Interference Check Sample (ICS) results**					
		Were percent recoveries within method QC limits?			X		
S9	**I**	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	**OI**	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	**OI**	**Proficiency test reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	**OI**	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	**OI**	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	**OI**	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	**OI**	**Verification/validation documentation for methods (NELAC Chapter 5)**					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	**OI**	**Laboratory standard operating procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	X				

1. Items identified by the letter "R" must be included in the laboratory in the laboratory data package submitted in the TRRP-required reports(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period;
2. O = Organic analyses; I = inorganic analysises (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

TRRP LABORATORY REVIEW CHECKLIST			
Laboratory	Pace Analytical Services, Inc.	**LRC Date:**	03/13/2020
Project Name:	Houston TX-Wood: 1620-01-Rev1	**Laboratory Job**	10509381
Reviewer	Nathan Boberg	**Prep Batch Number**	661381,662198

ER #[1]	Description

1. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

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WO# : 10509381

10509381

AIR: CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

43632

Page: 1 of 1

Section A Required Client Information:

Company: Golder Associates
Address: 2201 Double Creek Dr. Suite 4004 RR, TX 78664
Email To: Michelle Hermiston
Phone: 512-671 3434 Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To:
Copy To:
Purchase Order No.:
Project Name:
Project Number:

Section C Invoice Information:

Attention: Same as A
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager/Sales Rep.
Pace Profile #:

Program: ☐ UST ☐ Superfund ☐ Emissions ☐ Clean Air Act ☐ Voluntary Clean Up ☐ Dry Clean ☐ RCRA ☐ Other

Location of Sampling by State:

Reporting Units: ug/m³ X mg/m³ PPBV X PPMV Other

Report Level: II. III. IV. Other

'Section D Required Client Information

AIR SAMPLE ID
Sample IDs MUST BE UNIQUE

Valid Media Codes

MEDIA	CODE
Tedlar Bag	TB
1 Liter Summa Can	1LC
6 Liter Summa Can	6LC
Low Volume Puff	LVP
High Volume Puff	HVP
Other	PM10

ITEM #	AIR SAMPLE ID	MEDIA CODE	PID Reading (Client only)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	Canister Pressure (Initial Field - in Hg)	Canister Pressure (Final Field - in Hg)	Summa Can Number	Flow Control Number	Method: PM10	3C - Fixed Gas (%)	TO-3 BTEX	TO-3M (Methane)	TO-14	TO-15 Full List VOCs	TO-15 Short List BTEX	TO-15 Short List Chlorinated	TO-15 Short List (other)	Pace Lab ID
1	GS-1620-SG-8-20200219	1LC				2/19/20	1044	30	2	3285									X		
2	SG-10						1022	29	2	2912											
3	SG-11						1007	30	2	3030											
4	SG-18						0916	30	0	2567											
5	SG-21						0840	30	2	2009											
6	SG-22						0824	30	2	3179											
7	AA-1620-AA-1-20200219	6LC			0810		0950	30	4	0088											
8	AA-1620-HE-1-20200219	1LC					1110	30	0	2519						X					
9	GS-1620-Dup-1-20200219	↓					0830	30	2	2466									X		
10																					
11	Can 2452 has water in it from Sample port																				
12																					

Comments :

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Tim Nickels Golder	2/20/20	0940	Anthony Kacal	2-20-20	0940
	2/20	0945	Mark Kacal / Pace	2/21/20	10:00

SAMPLE CONDITIONS

	Temp in °C	Received on Ice Y/N	Custody Sealed Cooler Y/N	Samples Intact Y/N
	AMB	(Y)	(Y)	(Y)
		Y/N	Y/N	Y/N
		Y/N	Y/N	Y/N

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Tim Nickels

SIGNATURE of SAMPLER:

DATE Signed (MM / DD / YY): 2/19/20

ORIGINAL

1700 Elm Street SE, Suite 200, Minneapolis, MN 55414 Air Technical Phone: 612.607.6386

Pace Analytical®	Document Name: Air Sample Condition Upon Receipt	Document Revised: 19Nov2019 Page 1 of 1
	Document No.: F-MN-A-106-rev.20	Pace Analytical Services - Minneapolis

Air Sample Condition Upon Receipt

Client Name: GOLDER-TX

Project #: **WO#: 10509381**

PM: NB3 **Due Date: 02/28/20**

CLIENT: UPRR_Golder

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Pace ☐ SpeeDee ☐ Commercial See Exception ☐

Tracking Number: 493437371155, 493437371166

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No **Seals Intact?** ☒ Yes ☐ No

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ Foam ☐ None ☐ Tin Can ☐ Other: _____ **Temp Blank rec:** ☐ Yes ☒ No

Temp. (TO17 and TO13 samples only) (°C): — **Corrected Temp (°C):** — **Thermometer Used:** ☐ G87A9170600254 ☐ G87A9155100842

Temp should be above freezing to 6°C **Correction Factor:** — **Date & Initials of Person Examining Contents:** 2/21/20 MI

Type of ice Received ☐ Blue ☐ Wet ☒ None

		Comments:
Chain of Custody Present?	☒ Yes ☐ No	1.
Chain of Custody Filled Out?	☒ Yes ☐ No	2.
Chain of Custody Relinquished?	☒ Yes ☐ No	3.
Sampler Name and/or Signature on COC?	☒ Yes ☐ No ☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes ☐ No	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes ☒ No	6.
Rush Turn Around Time Requested?	☒ Yes ☐ No	7.
Sufficient Volume?	☒ Yes ☐ No	8.
Correct Containers Used? **(Tedlar bags not acceptable container for TO-14, TO-15 or APH)** -Pace Containers Used?	☒ Yes ☐ No ☒ Yes ☐ No	9.
Containers Intact? **(visual inspection/no leaks when pressurized)**	☒ Yes ☐ No	10.
Media: (Air Can) Airbag Filter TDT Passive		11. Individually Certified Cans (Y) N (list which samples)
Is sufficient information available to reconcile samples to the COC?	☒ Yes ☐ No	12. Sample SG-8 on COC has SG-9 on can tag
Do cans need to be pressurized? **(DO NOT PRESSURIZE 3C or ASTM 1946!!!)**	☒ Yes ☐ No	13.

Gauge # ☐ 10AIR26 ☒ 10AIR34 ☐ 10AIR35 ☐ 4097

Canisters					Canisters				
Sample Number	Can ID	Flow Controller	Initial Pressure	Final Pressure	Sample Number	Can ID	Flow Controller	Initial Pressure	Final Pressure
SG-8	3285	1655	-1	+10	DUP-1	2466	696	0	+10
SG-10	2912	2807	0	+10	Unused 3092	3092	2192	-23	—
SG-11	3030	1003	-1	+10	Unused 2452	2452	1668	—	—
SG-18	2567	2230	0	+10					
SG-21	2009	696	0	+10					
SG-22	3179	804	0	+10					
AA-1	88	2302	~~+10~~ NP 2/21/20	—					
HE-1	2519	1818	0 +19	+10					

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: Nathan Boberg **Date:** 2/21/20

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical Services, Inc.
1700 Elm St SE, Suite 200
Minneapolis, MN 55414
(612) 607-1700

March 13, 2020

Michelle Hermiston
Golder
2201 Double Creek Dr
Suite 4004
Round Rock, TX 78664

RE: Pace Project 10510405
Project ID: Houston TX-Wood: 1620-01-Rev1

Dear Michelle Hermiston:

Enclosed are the analytical results for sample(s) received by the laboratory on March 03, 2020. Results reported herin conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

This report was revised on March, 13, 2020 to create TRRP report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Nathan Boberg
nathan.boberg@pacelabs.com
(612)360-0728

Laboratory Certifications

Pace Analytical Minnesota : Texas Certification #: T104704192

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

Sample Cross Reference

Pace Analytical Services, Inc.
1700 Elm St SE, Suite 200
Minneapolis, MN 55414
(612) 607-1700

Pace Project 10510405

Client: UPRR_Golder
Project ID: Houston TX-Wood: 1620-01-Rev1

Client Sample ID	Lab ID	Matrix	Collection Date/Time	Received Date/Time
GS-1620-SG20-20200227	10510405001	Air	02/27/2020 09:23	03/03/2020 09:45
GS-1620-SG19-20200227	10510405002	Air	02/27/2020 09:45	03/03/2020 09:45
GS-1620-SG17-20200227	10510405003	Air	02/27/2020 10:11	03/03/2020 09:45
GS-1620-SG16-20200227	10510405004	Air	02/27/2020 10:49	03/03/2020 09:45
GS-1620-SG15-20200227	10510405005	Air	02/27/2020 11:20	03/03/2020 09:45
GS-1620-SG14-20200227	10510405006	Air	02/27/2020 11:39	03/03/2020 09:45
GS-1620-SG12-20200227	10510405007	Air	02/27/2020 12:21	03/03/2020 09:45
AA-1620-AA-2-20200227	10510405008	Air	02/27/2020 09:49	03/03/2020 09:45
GS-1620-DUP-2-20200227	10510405009	Air	02/27/2020 10:49	03/03/2020 09:45
GS-1620-SG20-20200227Cert#1329	10510405012	Air	02/27/2020 09:23	03/03/2020 09:45
GS-1620-SG19-20200227Cert#2897	10510405013	Air	02/27/2020 09:45	03/03/2020 09:45
GS-1620-SG17-20200227Cert#2597	10510405014	Air	02/27/2020 10:11	03/03/2020 09:45
GS-1620-SG16-20200227Cert#2922	10510405015	Air	02/27/2020 10:49	03/03/2020 09:45
GS-1620-SG15-20200227Cert#2937	10510405016	Air	02/27/2020 11:20	03/03/2020 09:45
GS-1620-SG14-20200227Cert#3239	10510405017	Air	02/27/2020 11:39	03/03/2020 09:45
GS-1620-SG12-20200227Cert#3264	10510405018	Air	02/27/2020 12:27	03/03/2020 09:45
AA-1620-AA-2-20200227Cert#2829	10510405019	Air	02/27/2020 09:49	03/03/2020 09:45
GS-1620-DUP2-20200227Cert#0882	10510405020	Air	02/27/2020 10:49	03/03/2020 09:45

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Pace Project 10510405

Holding Times:

All holding times were met.

Blanks:

All blank results were below reporting limits.

Laboratory Control Samples:

All LCS recoveries were within QC limits.

Matrix Spikes and Duplicates:

All MS or MSD recoveries were within QC limits.

Surrogate:

All surrogate recoveries were within QC limits.

Appendix A
LABORATORY DATA PACKAGE COVER PAGE

This data package is for Job No. 10510405 and consists of:

This signature page, the laboratory review checklist, and the following reportable data:

- [X] R1 - Field chain-of-custody documentation;
- [X] R2 - Sample identification cross-reference;
- [X] R3 - Test reports (analytical data sheets) for each environmental sample that includes:
  - a. Items consistent with NELAC Chapter 5,
  - b. Dilution factors,
  - c. Preparation methods,
  - d. Cleanup methods, and
  - e. If required for the project, tentatively identified compounds (TICs).
- [X] R4 - Surrogate recovery data including:
  - a. Calculated recovery (%R), and
  - b. The laboratory's surrogate QC limits.
- [X] R5 - Test reports/summary forms for blank samples;
- [X] R6 - Test reports/summary forms for laboratory control samples (LCSs) including:
  - a. LCS spiking amounts,
  - b. Calculated %R for each analyte, and
  - c. The laboratory's LCS QC limits.
- [X] R7 - Test reports/summary forms for matrix spike/matrix spike duplicates (MS/MSDs) including:
  - a. Samples associated with the MS/MSD clearly identified,
  - b. MS/MSD spiking amounts,
  - c. Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  - d. Calculated %Rs and relative percent differences, and
  - e. The laboratory's MS/MSD QC limits.
- [X] R8 - Laboratory analytical duplicate (if applicable) recovery and precision:
  - a. The amount of analyte measured in the duplicate,
  - b. The calculated RPD, and,
  - c. The laboratory's QC limits for analytical duplicated.
- [X] R9 - List of method quantitation limits (MQLs) and detectability check sample results for each analyte and
- [X] R10 - Other problems or anomalies.

  The exception Report for each "No" or "Not Reviewed (NR) " item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accredidation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [ ] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [X] MDH on 04/12/2011

Any findings affecting the data in this laboratory data package are noted in the Exception Reports herin. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name (Printed)	Signature	Official Title (Printed)	Date
Nathan Boberg		Project Manager	03/13/2020

Sample Results

Pace Analytical Services, Inc.
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(612) 607-1700

Client: UPRR_Golder

Client ID: GS-1620-SG20-20200227 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10510405001 **Moisture:** N/A **Pace Project** 10510405
Collected: 02/27/2020 09:23 **Received** 03/03/2020 09:45 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.74	**0.27**	J	ug/m3	0.57	0.27	03/08/2020 20:49		663855	10AIRJ
Ethylbenzene	1.74	< 0.53	U	ug/m3	1.5	0.53	03/08/2020 20:49		663855	10AIRJ
Naphthalene	1.74	**3.1**	J	ug/m3	4.6	2.3	03/08/2020 20:49		663855	10AIRJ
m&p-Xylene	1.74	**1.7**	J	ug/m3	3.1	1.2	03/08/2020 20:49		663855	10AIRJ
o-Xylene	1.74	< 0.60	U	ug/m3	1.5	0.60	03/08/2020 20:49		663855	10AIRJ

Sample Results

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Client: UPRR_Golder

Client ID: GS-1620-SG19-20200227 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10510405002 **Moisture:** N/A **Pace Project** 10510405
Collected: 02/27/2020 09:45 **Received** 03/03/2020 09:45 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.68	**0.46**	J	ug/m3	0.55	0.26	03/08/2020 20:14		663855	10AIRJ
Ethylbenzene	1.68	< 0.51	U	ug/m3	1.5	0.51	03/08/2020 20:14		663855	10AIRJ
Naphthalene	1.68	**3.5**	J	ug/m3	4.5	2.2	03/08/2020 20:14		663855	10AIRJ
m&p-Xylene	1.68	**1.6**	J	ug/m3	3.0	1.2	03/08/2020 20:14		663855	10AIRJ
o-Xylene	1.68	**0.91**	J	ug/m3	1.5	0.58	03/08/2020 20:14		663855	10AIRJ

Sample Results

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Client: UPRR_Golder

Client ID: GS-1620-SG17-20200227 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10510405003 **Moisture:** N/A **Pace Project** 10510405
Collected: 02/27/2020 10:11 **Received** 03/03/2020 09:45 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.57	**0.25**	J	ug/m3	0.51	0.24	03/08/2020 19:39		663855	10AIRJ
Ethylbenzene	1.57	< 0.48	U	ug/m3	1.4	0.48	03/08/2020 19:39		663855	10AIRJ
Naphthalene	1.57	**3.0**	J	ug/m3	4.2	2.1	03/08/2020 19:39		663855	10AIRJ
m&p-Xylene	1.57	**1.1**	J	ug/m3	2.8	1.1	03/08/2020 19:39		663855	10AIRJ
o-Xylene	1.57	< 0.54	U	ug/m3	1.4	0.54	03/08/2020 19:39		663855	10AIRJ

Sample Results

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Client: UPRR_Golder

Client ID: GS-1620-SG16-20200227 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10510405004 **Moisture:** N/A **Pace Project** 10510405
Collected: 02/27/2020 10:49 **Received** 03/03/2020 09:45 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.68	< 0.26	U	ug/m3	0.55	0.26	03/08/2020 19:03		663855	10AIRJ
Ethylbenzene	1.68	**13.4**		ug/m3	1.5	0.51	03/08/2020 19:03		663855	10AIRJ
Naphthalene	1.68	**3.1**	J	ug/m3	4.5	2.2	03/08/2020 19:03		663855	10AIRJ
m&p-Xylene	1.68	**46.9**		ug/m3	3.0	1.2	03/08/2020 19:03		663855	10AIRJ
o-Xylene	1.68	**20.9**		ug/m3	1.5	0.58	03/08/2020 19:03		663855	10AIRJ

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Client: UPRR_Golder

Client ID: GS-1620-SG15-20200227 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10510405005 **Moisture:** N/A **Pace Project** 10510405
Collected: 02/27/2020 11:20 **Received** 03/03/2020 09:45 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.68	< 0.26	U	ug/m3	0.55	0.26	03/08/2020 18:28		663855	10AIRJ
Ethylbenzene	1.68	< 0.51	U	ug/m3	1.5	0.51	03/08/2020 18:28		663855	10AIRJ
Naphthalene	1.68	**3.4**	J	ug/m3	4.5	2.2	03/08/2020 18:28		663855	10AIRJ
m&p-Xylene	1.68	< 1.2	U	ug/m3	3.0	1.2	03/08/2020 18:28		663855	10AIRJ
o-Xylene	1.68	< 0.58	U	ug/m3	1.5	0.58	03/08/2020 18:28		663855	10AIRJ

Sample Results

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Client: UPRR_Golder

Client ID: GS-1620-SG14-20200227 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10510405006 **Moisture:** N/A **Pace Project** 10510405
Collected: 02/27/2020 11:39 **Received** 03/03/2020 09:45 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.77	< 0.27	U	ug/m3	0.58	0.27	03/08/2020 17:53		663855	10AIRJ
Ethylbenzene	1.77	< 0.54	U	ug/m3	1.6	0.54	03/08/2020 17:53		663855	10AIRJ
Naphthalene	1.77	< 2.3	U	ug/m3	4.7	2.3	03/08/2020 17:53		663855	10AIRJ
m&p-Xylene	1.77	< 1.2	U	ug/m3	3.1	1.2	03/08/2020 17:53		663855	10AIRJ
o-Xylene	1.77	< 0.61	U	ug/m3	1.6	0.61	03/08/2020 17:53		663855	10AIRJ

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Client: UPRR_Golder

Client ID: GS-1620-SG12-20200227 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10510405007 **Moisture:** N/A **Pace Project** 10510405
Collected: 02/27/2020 12:21 **Received** 03/03/2020 09:45 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.77	**0.28**	J	ug/m3	0.58	0.27	03/08/2020 17:18		663855	10AIRJ
Ethylbenzene	1.77	< 0.54	U	ug/m3	1.6	0.54	03/08/2020 17:18		663855	10AIRJ
Naphthalene	1.77	**3.1**	J	ug/m3	4.7	2.3	03/08/2020 17:18		663855	10AIRJ
m&p-Xylene	1.77	**1.3**	J	ug/m3	3.1	1.2	03/08/2020 17:18		663855	10AIRJ
o-Xylene	1.77	< 0.61	U	ug/m3	1.6	0.61	03/08/2020 17:18		663855	10AIRJ

Sample Results

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Client: UPRR_Golder

Client ID: AA-1620-AA-2-20200227 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10510405008 **Moisture:** N/A **Pace Project** 10510405
Collected: 02/27/2020 09:49 **Received** 03/03/2020 09:45 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.22	**1.1**		ug/m3	0.40	0.19	03/08/2020 16:07		663855	10AIRJ
Ethylbenzene	1.22	< 0.37	U	ug/m3	1.1	0.37	03/08/2020 16:07		663855	10AIRJ
Naphthalene	1.22	< 1.6	U	ug/m3	3.2	1.6	03/08/2020 16:07		663855	10AIRJ
m&p-Xylene	1.22	**0.99**	J	ug/m3	2.2	0.85	03/08/2020 16:07		663855	10AIRJ
o-Xylene	1.22	< 0.42	U	ug/m3	1.1	0.42	03/08/2020 16:07		663855	10AIRJ

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Client: UPRR_Golder

Client ID: GS-1620-DUP-2-20200227 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10510405009 **Moisture:** N/A **Pace Project** 10510405
Collected: 02/27/2020 10:49 **Received** 03/03/2020 09:45 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.71	**0.58**		ug/m3	0.56	0.26	03/08/2020 21:24		663855	10AIRJ
Ethylbenzene	1.71	**14.0**		ug/m3	1.5	0.52	03/08/2020 21:24		663855	10AIRJ
Naphthalene	1.71	**3.2**	J	ug/m3	4.5	2.2	03/08/2020 21:24		663855	10AIRJ
m&p-Xylene	1.71	**50.6**		ug/m3	3.0	1.2	03/08/2020 21:24		663855	10AIRJ
o-Xylene	1.71	**21.5**		ug/m3	1.5	0.59	03/08/2020 21:24		663855	10AIRJ

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Client: UPRR_Golder

Client ID: GS-1620-SG20-20200227Cert#1329 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10510405012 **Moisture:** N/A **Pace Project** 10510405
Collected: 02/27/2020 09:23 **Received** 03/03/2020 09:45 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	1	**0.21**	J	ug/m3	0.32	0.15	01/24/2020 01:41		663943	10AIR7
Ethylbenzene	1	< 0.30	U	ug/m3	0.88	0.30	01/24/2020 01:41		663943	10AIR7
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	01/24/2020 01:41		663943	10AIR7
m&p-Xylene	1	< 0.70	U	ug/m3	1.8	0.70	01/24/2020 01:41		663943	10AIR7
o-Xylene	1	< 0.34	U	ug/m3	0.88	0.34	01/24/2020 01:41		663943	10AIR7

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Client: UPRR_Golder

Client ID: GS-1620-SG19-20200227Cert#2897 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10510405013 **Moisture:** N/A **Pace Project** 10510405
Collected: 02/27/2020 09:45 **Received** 03/03/2020 09:45 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	1	< 0.15	U	ug/m3	0.32	0.15	01/23/2020 11:08		663943	10AIRD
Ethylbenzene	1	< 0.30	U	ug/m3	0.88	0.30	01/23/2020 11:08		663943	10AIRD
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	01/23/2020 11:08		663943	10AIRD
m&p-Xylene	1	< 0.70	U	ug/m3	1.8	0.70	01/23/2020 11:08		663943	10AIRD
o-Xylene	1	< 0.34	U	ug/m3	0.88	0.34	01/23/2020 11:08		663943	10AIRD

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Client: UPRR_Golder

Client ID: GS-1620-SG17-20200227Cert#2597 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10510405014 **Moisture:** N/A **Pace Project** 10510405
Collected: 02/27/2020 10:11 **Received** 03/03/2020 09:45 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	1	< 0.15	U	ug/m3	0.32	0.15	01/18/2020 01:38		663943	10AIR0
Ethylbenzene	1	< 0.30	U	ug/m3	0.88	0.30	01/18/2020 01:38		663943	10AIR0
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	01/18/2020 01:38		663943	10AIR0
m&p-Xylene	1	< 0.70	U	ug/m3	1.8	0.70	01/18/2020 01:38		663943	10AIR0
o-Xylene	1	< 0.34	U	ug/m3	0.88	0.34	01/18/2020 01:38		663943	10AIR0

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Client: UPRR_Golder

Client ID: GS-1620-SG16-20200227Cert#2922 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10510405015 **Moisture:** N/A **Pace Project** 10510405
Collected: 02/27/2020 10:49 **Received** 03/03/2020 09:45 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	1	< 0.15	U	ug/m3	0.32	0.15	01/15/2020 22:50		663943	10AIRI
Ethylbenzene	1	< 0.30	U	ug/m3	0.88	0.30	01/15/2020 22:50		663943	10AIRI
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	01/15/2020 22:50		663943	10AIRI
m&p-Xylene	1	< 0.70	U	ug/m3	1.8	0.70	01/15/2020 22:50		663943	10AIRI
o-Xylene	1	< 0.34	U	ug/m3	0.88	0.34	01/15/2020 22:50		663943	10AIRI

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Client: UPRR_Golder

Client ID: GS-1620-SG15-20200227Cert#2937 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10510405016 **Moisture:** N/A **Pace Project** 10510405
Collected: 02/27/2020 11:20 **Received** 03/03/2020 09:45 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	1	< 0.15	U	ug/m3	0.32	0.15	01/24/2020 00:12		663943	10AIR7
Ethylbenzene	1	< 0.30	U	ug/m3	0.88	0.30	01/24/2020 00:12		663943	10AIR7
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	01/24/2020 00:12		663943	10AIR7
m&p-Xylene	1	< 0.70	U	ug/m3	1.8	0.70	01/24/2020 00:12		663943	10AIR7
o-Xylene	1	< 0.34	U	ug/m3	0.88	0.34	01/24/2020 00:12		663943	10AIR7

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Client: UPRR_Golder

Client ID: GS-1620-SG14-20200227Cert#3239 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10510405017 **Moisture:** N/A **Pace Project** 10510405
Collected: 02/27/2020 11:39 **Received** 03/03/2020 09:45 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	1	< 0.15	U	ug/m3	0.32	0.15	01/25/2020 03:58		663943	10AIR7
Ethylbenzene	1	< 0.30	U	ug/m3	0.88	0.30	01/25/2020 03:58		663943	10AIR7
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	01/25/2020 03:58		663943	10AIR7
m&p-Xylene	1	< 0.70	U	ug/m3	1.8	0.70	01/25/2020 03:58		663943	10AIR7
o-Xylene	1	< 0.34	U	ug/m3	0.88	0.34	01/25/2020 03:58		663943	10AIR7

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Client: UPRR_Golder

Client ID: GS-1620-SG12-20200227Cert#3264 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10510405018 **Moisture:** N/A **Pace Project** 10510405
Collected: 02/27/2020 12:27 **Received** 03/03/2020 09:45 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	1	< 0.15	U	ug/m3	0.32	0.15	01/15/2020 12:24		663943	10AIR7
Ethylbenzene	1	< 0.30	U	ug/m3	0.88	0.30	01/15/2020 12:24		663943	10AIR7
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	01/15/2020 12:24		663943	10AIR7
m&p-Xylene	1	< 0.70	U	ug/m3	1.8	0.70	01/15/2020 12:24		663943	10AIR7
o-Xylene	1	< 0.34	U	ug/m3	0.88	0.34	01/15/2020 12:24		663943	10AIR7

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Client: UPRR_Golder

Client ID: AA-1620-AA-2-20200227Cert#2829 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10510405019 **Moisture:** N/A **Pace Project** 10510405
Collected: 02/27/2020 09:49 **Received** 03/03/2020 09:45 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	0.5	< 0.076	U	ug/m3	0.16	0.076	01/16/2020 04:45		663943	10AIRI
Ethylbenzene	0.5	< 0.15	U	ug/m3	0.44	0.15	01/16/2020 04:45		663943	10AIRI
Naphthalene	0.5	< 0.66	U	ug/m3	1.3	0.66	01/16/2020 04:45		663943	10AIRI
m&p-Xylene	0.5	< 0.35	U	ug/m3	0.88	0.35	01/16/2020 04:45		663943	10AIRI
o-Xylene	0.5	< 0.17	U	ug/m3	0.44	0.17	01/16/2020 04:45		663943	10AIRI

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1700 Elm St SE, Suite 200
Minneapolis, MN 55414
(612) 607-1700

Client: UPRR_Golder

Client ID: GS-1620-DUP2-20200227Cert#0882 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10510405020 **Moisture:** N/A **Pace Project** 10510405
Collected: 02/27/2020 10:49 **Received** 03/03/2020 09:45 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	1	< 0.15	U	ug/m3	0.32	0.15	01/18/2020 12:34		663943	10AIRI
Ethylbenzene	1	< 0.30	U	ug/m3	0.88	0.30	01/18/2020 12:34		663943	10AIRI
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	01/18/2020 12:34		663943	10AIRI
m&p-Xylene	1	< 0.70	U	ug/m3	1.8	0.70	01/18/2020 12:34		663943	10AIRI
o-Xylene	1	< 0.34	U	ug/m3	0.88	0.34	01/18/2020 12:34		663943	10AIRI

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Batch: 663855
Method: TO-15

Pace Project No.: 10510405
Instrument ID: 10AIRJ

Blank: 3561585

Parameters	Dilutio	Quals	Result	Units	MQL	SDL	Analysis Date	Prep Date
Benzene	1	U	<0.15	ug/m3	0.32	0.15	03/08/2020 09:37	
Ethylbenzene	1	U	<0.30	ug/m3	0.88	0.30	03/08/2020 09:37	
Naphthalene	1	J	1.7	ug/m3	2.7	1.3	03/08/2020 09:37	
m&p-Xylene	1	U	<0.70	ug/m3	1.8	0.70	03/08/2020 09:37	
o-Xylene	1	U	<0.34	ug/m3	0.88	0.34	03/08/2020 09:37	

Laboratory Control Sample: 3561586

Parameters	Spk Amt	LCS Result	Units	LCS %Rec	% Rec Limits	LCS Quals
Benzene	33.5	33.2	ug/m3	99	70-133	
Ethylbenzene	45.6	50.5	ug/m3	111	70-142	
Naphthalene	57.7	62.8	ug/m3	109	63-130	
m&p-Xylene	91.2	108	ug/m3	119	70-141	
o-Xylene	45.5	51.2	ug/m3	113	70-135	

Duplicate: 3561843

Original for Sample: Project sample AA-1620-AA-2-20200227

Parameters	Original Result	Dup Result	Units	RPD	Max RPD	Quals
Benzene	1.1	1.1	ug/m3	1	25	
Ethylbenzene	<0.37	<0.37	ug/m3		25	
Naphthalene	<1.6	<1.6	ug/m3		25	
m&p-Xylene	0.99J	0.97	ug/m3		25	
o-Xylene	<0.42	<0.42	ug/m3		25	

Unadjusted MQL

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Minneapolis, MN 55414
(612) 607-1700

Pace Project 10510405

Analyte	Method	Unadjusted MQL	Reporting Units
Benzene	TO-15	0.33	ug/m3
Ethylbenzene	TO-15	0.88	ug/m3
Naphthalene	TO-15	2.7	ug/m3
m&p-Xylene	TO-15	1.8	ug/m3
o-Xylene	TO-15	0.88	ug/m3

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Pace Project 10510405

DEFINITIONS

DF	Dilution Factor
J	Estimated concentration above the adjusted method detection limit and below the adjusted reporting
U	Indicates the compound was analyzed for, but not detected.
SDL	Sample Detection Limit
MQL	Method Quantitation Limit
LCS(D)	Laboratory Control Sample (Duplicate)
MS(D)	Matrix Spike (Duplicate)
DUP	Sample Duplicate
RPD	Relative Percent Difference
TNI	The Nelac Institute

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

Pace Analytical Services, Inc.
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Minneapolis, MN 55414
(612) 607-1700

Quality Control Data
Cross Reference Table

Pace Project 10510405

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Analytical
10510405001	**GS-1620-SG20-20200227**	TO-15	663855	
10510405002	**GS-1620-SG19-20200227**	TO-15	663855	
10510405003	**GS-1620-SG17-20200227**	TO-15	663855	
10510405004	**GS-1620-SG16-20200227**	TO-15	663855	
10510405005	**GS-1620-SG15-20200227**	TO-15	663855	
10510405006	**GS-1620-SG14-20200227**	TO-15	663855	
10510405007	**GS-1620-SG12-20200227**	TO-15	663855	
10510405008	**AA-1620-AA-2-20200227**	TO-15	663855	
10510405009	**GS-1620-DUP-2-20200227**	TO-15	663855	
10510405012	**GS-1620-SG20-**	TO-15	663943	
10510405013	**GS-1620-SG19-**	TO-15	663943	
10510405014	**GS-1620-SG17-**	TO-15	663943	
10510405015	**GS-1620-SG16-**	TO-15	663943	
10510405016	**GS-1620-SG15-**	TO-15	663943	
10510405017	**GS-1620-SG14-**	TO-15	663943	
10510405018	**GS-1620-SG12-**	TO-15	663943	
10510405019	**AA-1620-AA-2-**	TO-15	663943	
10510405020	**GS-1620-DUP2-**	TO-15	663943	

TRRP LABORATORY REVIEW CHECKLIST								
Laboratory	Pace Analytical Services, Inc.		**LRC Date:**	03/13/2020				
Project Name:	Houston TX-Wood: 1620-01-Rev1		**Laboratory Job**	10510405				
Reviewer	Nathan Boberg		**Prep Batch Number**	See exception report.				
#[1]	**A[2]**	**Description**		**Yes**	**No**	**NA[3]**	**NR[4]**	**ER #[5]**
R1	**OI**	**Chain-of-custody (C-O-C)**						
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?		X				
		Were all departures from standard conditions described in an exception report?		X				
R2	**OI**	**Sample and quality control (QC) identification**						
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?		X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?		X				
R3	**OI**	**Test reports**						
		Were all samples prepared and analyzed within holding times?		X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?		X				
		Were calculations checked by a peer or supervisor?		X				
		Were all analyte identifications checked by a peer or supervisor?		X				
		Were sample detection limits reported for all analytes not detected?		X				
		Were all results for soil and sediment samples reported on a dry weight basis?				X		
		Were % moisture (or solids) reported for all soil and sediment samples?				X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?				X		
		If required for the project, are TICs reported?				X		
R4	**O**	**Surrogate recovery data**						
		Were surrogates added prior to extraction?				X		
		Were surrogate percent recoveries in all samples within the laboratory QC limits?				X		
R5	**OI**	**Test reports/summary forms for blank samples**						
		Were appropriate type(s) of blanks analyzed?		X				
		Were blanks analyzed at the appropriate frequency?		X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?		X				
		Were blank concentrations < MQL?		X				
R6	**OI**	**Laboratory control samples (LCS):**						
		Were all COCs included in the LCS?		X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?		X				
		Were LCSs analyzed at the required frequency?		X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?		X				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?		X				
		Was the LCSD RPD within QC limits?				X		
R7	**OI**	**Matrix spike (MS) and matrix spike duplicate (MSD) data**						
		Were the project/method specified analytes included in the MS and MSD?				X		
		Were MS/MSD analyzed at the appropriate frequency?				X		
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?				X		
		Were MS/MSD RPDs within laboratory QC limits?				X		
R8	**OI**	**Analytical duplicate data**						
		Were appropriate analytical duplicates analyzed for each matrix?		X				
		Were analytical duplicates analyzed at the appropriate frequency?		X				
		Were RPDs or relative standard deviations within the laboratory QC limits?		X				
R9	**OI**	**Method quantitation limits (MQLs):**						
		Are the MQLs for each method analyte included in the laboratory data package?		X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?		X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?		X				
R10	**OI**	**Other problems/anomalies**						
		Are all known problems/anomalies/special conditions noted in this LRC and ER?		X				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?		X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?		X				

TRRP LABORATORY REVIEW CHECKLIST			
Laboratory	Pace Analytical Services, Inc.	**LRC Date:**	03/13/2020
Project Name:	Houston TX-Wood: 1620-01-Rev1	**Laboratory Job**	10510405
Reviewer	Nathan Boberg	**Prep Batch Number**	See exception report.

1. Items identified by the letter "R" must be included in the laboratory in the laboratory data package submitted in the TRRP-required reports(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period;
2. O = Organic analyses; I = inorganic analysises (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

TRRP LABORATORY REVIEW CHECKLIST								
Laboratory	Pace Analytical Services, Inc.		**LRC Date:**	03/13/2020				
Project Name:	Houston TX-Wood: 1620-01-Rev1		**Laboratory Job**	10510405				
Reviewer	Nathan Boberg		**Prep Batch Number**	See exception report.				
#[1]	**A[2]**	**Description**		**Yes**	**No**	**NA[3]**	**NR[4]**	**ER #[5]**
S1	**OI**	**Initial calibration (ICAL)**						
		Were response factors and/or relative response factors for each analyte within QC limits?		X				
		Were percent RSDs or correlation coefficient criteria met?		X				
		Was the number of standards recommended in the method used for all analytes?		X				
		Were all points generated between the lowest and highest standard used to calculate the curve?		X				
		Are ICAL data available for all instruments used?		X				
		Has the initial calibration curve been verified using an appropriate second source standard?		X				
S2	**OI**	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):**						
		Was the CCV analyzed at the method-required frequency?		X				
		Were precent differences for each analyte within the method-required QC limits?		X				
		Was the ICAL curve verified for each analyte?		X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?				X		
S3	**O**	**Mass spectral tuning**						
		Was the appropriate compound for the method used for tuning?				X		
		Were ion abundance data within the method-required QC limits?				X		
S4	**O**	**Internal standards (IS)**						
		Were IS area counts and retention times within the method-required QC limits?				X		
S5	**OI**	**Raw data (NELAC Section 5.5.10)**						
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?		X				
		Were data associated with manual integrations flagged on the raw data?		X				
S6	**O**	**Dual column confirmation**						
		Did dual column confirmation results meet the method-required QC?				X		
S7	**O**	**Tentatively identified compounds (TICs)**						
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?				X		
S8	**I**	**Interference Check Sample (ICS) results**						
		Were percent recoveries within method QC limits?				X		
S9	**I**	**Serial dilutions, post digestion spikes, and method of standard additions**						
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?				X		
S10	**OI**	**Method detection limit (MDL) studies**						
		Was a MDL study performed for each reported analyte?		X				
		Is the MDL either adjusted or supported by the analysis of DCSs?		X				
S11	**OI**	**Proficiency test reports**						
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?		X				
S12	**OI**	**Standards documentation**						
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?		X				
S13	**OI**	**Compound/analyte identification procedures**						
		Are the procedures for compound/analyte identification documented?		X				
S14	**OI**	**Demonstration of analyst competency (DOC)**						
		Was DOC conducted consistent with NELAC Chapter 5?		X				
		Is documentation of the analyst's competency up-to-date and on file?		X				
S15	**OI**	**Verification/validation documentation for methods (NELAC Chapter 5)**						
		Are all the methods used to generate the data documented, verified, and validated, where applicable?		X				
S16	**OI**	**Laboratory standard operating procedures (SOPs)**						
		Are laboratory SOPs current and on file for each method performed?		X				

1. Items identified by the letter "R" must be included in the laboratory in the laboratory data package submitted in the TRRP-required reports(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period;
2. O = Organic analyses; I = inorganic analysises (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

TRRP LABORATORY REVIEW CHECKLIST			
Laboratory	Pace Analytical Services, Inc.	**LRC Date:**	03/13/2020
Project Name:	Houston TX-Wood: 1620-01-Rev1	**Laboratory Job**	10510405
Reviewer	Nathan Boberg	**Prep Batch Number**	663855,663943

ER #[1]	Description

1. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

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AIR: CHAIN-OF-CUSTODY

The Chain-of-Custody is a LEGAL DOCUMENT. All relev

WO# : 10510405

10510405

43633

Page: 1 of 1

Section A Required Client Information:

Company: Golder Associate Inc.
Address: 2201 Doublecreek Dr. Suite 4004 Round Rock Tx 78664
Email To: Eric_Matzner@Golder.com
Phone: 512 671 3434 Fax:
Requested Due Date/TAT: 5 days

Section B Required Project Information:

Report To: Anthon_Reid@Golder.com
Copy To:
Purchase Order No.:
Project Name: Houston Tx - Wood Processing Works
Project Number: 1620-01-Rev 0

Section C Invoice Information:

Attention: UPRR/Keith Peterbors
Company Name: Union Pacific Railroad-AP
Address: 1400 Douglas street Stop 0750 Omaha NE 68179-0750
Pace Quote Reference:
Pace Project Manager/Sales Rep.
Pace Profile #:

Program: ☐ UST ☐ Superfund ☐ Emissions ☐ Clean Air Act ☐ Voluntary Clean Up ☐ Dry Clean ☐ RCRA ☐ Other

Location of Sampling by State: Tx

Reporting Units: ug/m³ mg/m³ PPBV PPMV Other

Report Level: II. III. IV. Other

'Section D Required Client Information

AIR SAMPLE ID
Sample IDs MUST BE UNIQUE

Valid Media Codes

MEDIA	CODE
Tedlar Bag	TB
1 Liter Summa Can	1LC
6 Liter Summa Can	6LC
Low Volume Puff	LVP
High Volume Puff	HVP
Other	PM10

92688 COLLECTED

ITEM #	'Section D Required Client Information AIR SAMPLE ID (Sample IDs MUST BE UNIQUE)	MEDIA CODE	PID Reading (Client only)	COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	Canister Pressure (Initial Field - in Hg)	Canister Pressure (Final Field - in Hg)	Summa Can Number	Flow Control Number	Method: TO-15 Short List (other)	Pace Lab ID
1	GS-1620-SG20-20200227			2-27-20	0916	2-27-20	0923	28	1	1329		X	001 012
2	SG19				0938		0945	30	1	2897			002 013
3	SG17				1003		1011	30	2	2597			003 014
4	SG16				1036		1049	29	1	2922			004 015
5	SG15				1114		1120	30	2	2937			005 016
6	SG14				1133		1139	30	2	3239			006 017
7	SG12				1221		1227	30	2	3264			007 018
8	AA-1620-AA-2-20200227				0900		0949	29.5	0	2829			008 019
9	GS-1620-Dup-2-20200227				1036		1049	29	1	0882			009 020
10													
11													
12													

Comments :

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Tedlar	2-28-20	1030	Pace	3/3/20	0945

SAMPLE CONDITIONS

-	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N

Temp in °C | Received on Ice | Custody Sealed Cooler | Samples Intact

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Anthony Reid

SIGNATURE of SAMPLER: DATE Signed (MM / DD / YY): 02/28/20

ORIGINAL

Pace Analytical®	Document Name: Air Sample Condition Upon Receipt	Document Revised: 19Nov2019 Page 1 of 1
	Document No.: F-MN-A-106-rev.20	Pace Analytical Services - Minneapolis

Air Sample Condition Upon Receipt

Client Name: Golder Assoc. **Project #:** **WO#: 10510405**

PM: NB3 **Due Date: 03/10/20**

CLIENT: UPRR_Golder

Courier: ☒Fed Ex ☐UPS ☐USPS ☐Client ☐Pace ☐SpeeDee ☐Commercial See Exception ☐

Tracking Number: 1083 0284 3954/3948

Custody Seal on Cooler/Box Present? ☒Yes ☐No **Seals Intact?** ☒Yes ☐No

Packing Material: ☒Bubble Wrap ☐Bubble Bags ☒Foam ☐None ☐Tin Can ☐Other:_____ **Temp Blank rec:** ☐Yes ☐No

Temp. (TO17 and TO13 samples only) (°C): - **Corrected Temp (°C):** - **Thermometer Used:** ☐G87A9170600254 ☐G87A9155100842

Temp should be above freezing to 6°C **Correction Factor:** - **Date & Initials of Person Examining Contents:** _____

Type of ice Received ☐Blue ☐Wet ☒None

		Comments:
Chain of Custody Present?	☐Yes ☐No	1.
Chain of Custody Filled Out?	☐Yes ☐No	2.
Chain of Custody Relinquished?	☐Yes ☐No	3.
Sampler Name and/or Signature on COC?	☐Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time?	☐Yes ☐No	5.
Short Hold Time Analysis (<72 hr)?	☐Yes ☐No	6.
Rush Turn Around Time Requested?	☐Yes ☐No	7.
Sufficient Volume?	☐Yes ☐No	8.
Correct Containers Used? **(Tedlar bags not acceptable container for TO-14, TO-15 or APH)** -Pace Containers Used?	☐Yes ☐No ☐Yes ☐No	9.
Containers Intact? **(visual inspection/no leaks when pressurized)**	☐Yes ☐No	10.
Media: Air Can Airbag Filter TDT Passive		11. Individually Certified Cans Y N (list which samples)
Is sufficient information available to reconcile samples to the COC?	☐Yes ☐No	12.
Do cans need to be pressurized? **(DO NOT PRESSURIZE 3C or ASTM 1946!!!)**	☐Yes ☐No	13.

Gauge # ☐10AIR26 ☐10AIR34 ☐10AIR35 ☐4097

Canisters					Canisters				
Sample Number	Can ID	Flow Controller	Initial Pressure	Final Pressure	Sample Number	Can ID	Flow Controller	Initial Pressure	Final Pressure
SG-20	1329	2833	-1	10	Dup-2	0882	0793	-0.5	10
SG 19	2897	2304	0	10	Unused	2492	1630	-27	-
SG 17	2597	2441	1	10	Unused	2906	1762	-27.5	-
SG 16	2922	0793	0	10					
SG 15	2937	1982	0	10					
SG 14	3239	2368	-1.5	10					
SG 12	3264	1508	-1.5	10					
AA-2	2829	1503	1.5	10					

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐Yes ☐No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: Nathan Boberg **Date:** 3/4/20

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

August 4, 2020 Project No. 19119232

Ms. Maureen Hatfield
Texas Commission on Environmental Quality
VCP-CA Section, Team 1, Remediation Division, MC-127
P.O. Box 13087
Austin, Texas 78711-3087

UPDATED SOIL VAPOR INTRUSION ASSESSMENT INTERIM REPORT
UNION PACIFIC RAILROAD HOUSTON WOOD PRESERVING WORKS FACILITY
4910 LIBERTY ROAD, HOUSTON, TEXAS
POST-CLOSURE CARE PERMIT NO. HW-50343; INDUSTRIAL SWR NO. 31547

Dear Ms. Hatfield,

Golder Associates Inc (Golder) is pleased to provide, on behalf of Union Pacific Railroad (UPRR), this updated Soil Vapor Intrusion Assessment Interim Report summarizing the vapor intrusion (VI) evaluation conducted at the UPRR Houston Wood Preserving Works (HWPW) site (the Site). This letter details the VI evaluation background, overview of potential vapor migration processes, field procedures, soil and soil gas sample collection, quality control/quality assurance, and data evaluation, as discussed below. This letter report serves as an update to the Soil Vapor Intrusion Assessment Interim Report dated March 31, 2020. The information that was provided in the March 31, 2020 report is also provided in this letter report to aid in the review of the overall VI assessment.

Background

The Texas Commission on Environmental Quality (TCEQ) issued the 4th Technical Notice of Deficiency (TNOD) dated April 11, 2019 requesting UPRR conduct a supplemental groundwater evaluation for potential VI from the A-Transmissive Zone (A-TZ) in the residential area north of the Site near monitoring well MW-68B (detailed in TCEQ Deficiency ID T59). UPRR completed the agreed upon groundwater evaluation in May 2019 and submitted the results of the evaluation in a letter dated July 3, 2019 that was included in Appendix 3 of the Conceptual Response Action Plan – Revision No. 4 dated July 9, 2019. The results of the groundwater evaluation documented that concentrations of chemicals of concern (COC) in the groundwater sample from the May 2019 sampling event at A-TZ monitoring well MW-68A (installed next to MW-68B) were below the conservative screening values estimated by U.S. Environmental Protection Agency's (EPA's) VI Screening Level (VISL) calculator (EPA, 2019) and indicated the VI pathway was incomplete.

The TCEQ acknowledged the July 3, 2019 letter and requested further evaluation of the VI pathway in a letter dated September 6, 2019. UPRR, Golder and TCEQ met on September 23, 2019 at the TCEQ Austin Office to discuss options to further evaluate the VI pathway. Based on those discussions, Golder, on behalf of UPRR, submitted a response letter dated October 23, 2019 to the TCEQ comment letter dated September 6, 2019

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detailing the proposed VI assessment through a soil gas evaluation north of the Site. The TCEQ issued a letter dated December 13, 2019 requesting a meeting to discuss the proposed VI field activities. The proposed VI assessment field activities were discussed during the meeting on December 19, 2019 between UPRR, Golder, and TCEQ. Based on that meeting, Golder, on behalf of UPRR, submitted the Proposed Vapor Intrusion Assessment Work Plan (Work Plan) dated December 20, 2019 to the TCEQ for review. The TCEQ issued a comment letter on the Work Plan dated December 23, 2019. A revised Work Plan was submitted to the TCEQ on January 2, 2020 and was approved by the TCEQ in a letter dated January 3, 2020 and field activities were initiated on January 29, 2020. A change in soil gas probe installation procedures was needed due to field conditions, and an updated Work Plan dated January 31, 2020 was submitted following a conference call with the TCEQ on January 30, 2020 to document the modified installation procedures. The updated plan was approved via e-mail from the TCEQ on January 31, 2020 with the request that soil gas probes be allowed to equilibrate for 10 days after installation prior to soil gas sample collection.

In January and February 2020, 22 shallow, single-depth soil gas probes were installed off-site in the City of Houston Right-of-Way (ROW). Nine of the 22 locations were not sampled for soil gas due to the presence of water in the probes. Golder submitted to the TCEQ the Soil Vapor Intrusion Assessment Interim Report dated March 31, 2020 summarizing the preliminary assessment. The TCEQ issued an Approval with Comments letter dated April 23, 2020, requesting installation of alternate soil gas probe sampling locations in the general vicinity of the existing probes that contained water. Golder, on behalf of UPRR, proposed alternate soil gas probe locations in the City of Houston ROW and on private property in a response letter dated May 1, 2020. The TCEQ issued an Approval with Comments letter dated May 19, 2020. UPRR obtained an access agreement with the private property owner and six additional soil gas probes were installed and soil gas sample collection was attempted in June 2020. The following discussion includes the January-February 2020 soil gas sampling results supplemented with the June 2020 alternate soil gas probe sampling results.

Overview of Potential Vapor Migration Processes

Vapor intrusion describes the migration of volatile organic vapors from a subsurface source, such as impacted soil or groundwater, into an overlying building. This migration may occur through subsurface soils and then through foundations and basements, or through preferential pathways such as utility conduits or other openings in the buildings. As outlined in the EPA's guidance document, *OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air*, VI is considered a potential human exposure pathway, with the pathway only considered complete when all of the following conditions are met (EPA, 2015a):

- A source of vapors is present underneath or near the buildings;
- Vapor migration from the source to the building (receptor) can occur;
- The vapors can enter the building;
- Chemicals associated with the vapor source are found in the building; and
- The buildings are occupied when the chemicals associated with the vapor source are present.

If all of these conditions are met, then the VI pathway may be complete and there may be an opportunity for human exposure, which indicates additional analysis may be required to determine if an exposure condition exists. If one or more of these conditions are not present and are not reasonably expected to be present in the

future, the VI pathway is considered “incomplete”. An example of a condition that would render the pathway incomplete is if vapor migration is impeded by the geology, hydrogeology, or biochemical (biodegradation) conditions present at a site. A determination that the VI pathway is incomplete should be supported by site-specific information that shows the nature and extent of the vapor source in the subsurface is well understood, and that the vapor sources, vadose zone conditions, and surrounding infrastructure would not allow for the unattenuated or enhanced migration of vapors. If the VI pathway is shown to be incomplete, additional VI investigation and mitigation is typically not necessary (EPA, 2015b).

In addition to the general guidance for addressing vapor intrusion, EPA has developed a companion guide to address VI specifically associated with petroleum hydrocarbons (*Technical Guide for Addressing Petroleum Vapor Intrusion at Leaking Underground Storage Tank Sites*). This guidance recognizes the difference between petroleum hydrocarbon vapor intrusion (PVI) and VI associated with other volatile chemicals. While the PVI guidance is primarily intended to address releases associated with underground storage tank (UST) releases, the guidance is also appropriate for evaluating non-UST sites that may have similar characteristics (i.e., size, chemicals of concern) (EPA, 2015a). PVI is a sub-category of VI that occurs when volatile petroleum hydrocarbons released as vapors from various subsurface sources (free product, soil, groundwater) migrate into buildings through the vadose zone. The migration of petroleum hydrocarbon vapors can be highly limited by biodegradation occurring in the vadose zone. The amount of biodegradation is dependent on the strength of the vapor source, the distance the vapors travel through the soil of the vadose zone, and availability of oxygen (O_2) in the vadose zone (ITRC, 2014).

Field Procedures

Golder installed 22 shallow, single-depth soil gas probes off-site within the City of Houston ROW in January and February 2020 and 6 additional probes on private property and in the City of Houston ROW in June 2020 to evaluate the VI pathway at the Site (Figure 1). Prior to the start of activities, Golder obtained required permits from the City of Houston, conducted the necessary utility notifications (i.e. 811 One Call and reviewed City of Houston utility maps), and used a private utility locator using ground penetrating radar (GPR) to scan each proposed location. UPRR obtained an access agreement with a private landowner (Greater Mount Nebo Baptist Church) to install 5 soil gas probes on the private property located at 5005 Liberty Road in June 2020. Boreholes and soil gas point installation were completed by Cascade Environmental, a Texas-licensed drilling firm subcontracted by Golder.

On January 29, 2020, soil gas points were advanced using a hand-auger. During installation of the second soil gas probe, the field crew encountered material at a depth of around 5.5 feet below ground surface that was suspected to potentially be a buried utility pipe. Upon further investigation, the material encountered was identified as buried brick and concrete debris within general fill material and not associated with an underground utility. The depth of the debris (approximately 3 to 4 feet bgs) and other environmental variables, such as soil moisture, prevented GPR from locating anomalies deeper than 2 feet with confidence. Therefore, in consideration of this encounter and given the high potential for the presence of underground utilities in the area that could not be located using GPR or identified on city utility maps (i.e., private sanitary sewer service lines), Golder proposed modifying the soil gas probe installation procedures to use hydrovac excavation methods (i.e., excavation using a high-pressure water probe and vacuum) to advance the remaining boreholes. This modification to the Work Plan was approved by the TCEQ via e-mail on January 31, 2020. The remaining 21 soil gas probes were installed in February 2020 and six additional soil gas probes were installed in June 2020 in

accordance with the methods outlined in the modified approved Work Plan (using hydrovac excavation) with the following exception: three soil gas probes (SG-25, SG-26, and SG-27) located on private property were advanced using a hand-auger due to the low potential for underground utilities in the area.

The general lithology of the borings consisted of brown sandy clay from the surface to a depth of approximately 4 feet below ground surface (bgs) with a light grey clay with sand present from approximately 4 to 6 feet bgs. Except at locations SG-21 through SG-27, historical debris such as brick, concrete, and glass were found in the boreholes at a depth interval from approximately 2 to 3.5 feet bgs.

Soil gas points were constructed in accordance with EPA guidance and the approved Work Plan procedures (Figure 2). First, the boreholes for the soil gas points were backfilled from the bottom of the hole (6 feet bgs) to 5.5 feet bgs with a filter pack of industrial silica sand. Next, a 6-inch long by 0.5-inch in diameter soil vapor implant, composed of a stainless-steel mesh screen with a 0.15 mm pore size, was connected to ¼-inch outer diameter Teflon tubing with a Swagelok compression fitting and placed into the borehole. Filter pack material was backfilled around the soil vapor implant to a depth of 5 feet bgs. The borehole was then backfilled with bentonite by hydrating bentonite granules from 5 feet bgs to 1 feet bgs. The upper foot of the borehole was sealed with cement and the tubing housed in a 5-inch diameter flush-mount vault centered in a concrete pad (SG-06, SG-14, SG-20, SG-21, SG-22, SG-25, SG-26, and SG-27) or concrete/asphalt road/sidewalk. The sample tubing extending from the sample point was sealed and coiled inside the vault.

The approximate location of each soil gas point was surveyed in the field using a Trimble handheld GPS unit.

Soil Sample Collection

During the installation of the soil gas points, advancement of the borings was halted to collect an undisturbed soil sample from the 0.5 to 1 feet interval and the 5.5 to 6 feet interval at each location according to Method 5035A. The undisturbed soil sample was collected using a 1-inch diameter soil probe with a 12-inch long plastic liner within the collection chamber. The samples were field screened with a MiniRAE Photoionization Detector (PID) for the presence of VOCs. Prior to sampling, the PID was calibrated using 100 parts per million by volume (ppmV) isobutylene standard. The soil probe was decontaminated after each sample collection and a new plastic sleeve replaced the used one.

Soil samples were placed in laboratory-supplied containers, stored on ice in an insulated cooler, and delivered to ALS Environmental in Houston, Texas for analysis of benzene, ethylbenzene, and xylenes by EPA Method 8260 and naphthalene by EPA Method 8270. A completed chain-of-custody accompanied the samples through receipt at the analytical laboratory. Copies of the laboratory reports and data usability summaries for the soil sample data prepared pursuant to Texas Risk Reduction Program (TRRP)-13 Guidance are included in Attachment 1. A summary of the soil analytical results and PID readings is provided in Table 1.

Soil Gas Sample Collection

Soil gas samples were collected a minimum of 10 days after the installation of the sample points using the procedures described in the approved Work Plan. A leak check was performed at each sample point using helium gas as a tracer. The leak check was conducted by introducing helium gas into a shroud over the sample point and measuring the concentration of helium in the shroud, around 20% to 50% during this check, and then measuring the concentration of helium in vapor from the sampling point. An MGD-2002 helium detector was used to measure the initial tracer gas concentration in the shroud and in the soil gas point. Helium was not

detected in any of the soil gas points during the leak check, indicating that the sample points were adequately sealed from ambient air.

Prior to sample collection, each sample point was purged of approximately 90 milliliters (ml) of air. Soil gas samples were collected using laboratory certified-clean 1-L summa canisters. The vacuum on each canister was verified prior to sample collection and the sample train was checked for leaks using a shut-in/vacuum test prior to sampling. The canister was connected to a sampling train consisting of a “T” fitting and two valves. A shut-in/vacuum test was performed on the sampling train to check for leaks. To collect the sample, the sample tubing was connected to the sampling train with compression fittings, which were then connected to the summa canister. The sample was collected by opening the valve on the summa canister and monitoring the vacuum as the sample was collected. Samples were collected at a flow rate of 200 ml/minute using flow controllers set and provided by the laboratory. Based on the vacuum readings observed during sample collection, the sample collection rate was consistent with a flow rate of 200 ml/minute. To collect the duplicate sample, a “T” fitting was added to the sample train and the parent and duplicate sample collected concurrently.

Soil gas sample collection began on February 19, 2020 at the locations installed in January-February 2020. During this sampling event, it was observed that water had infiltrated sample points SG-03, SG-09, and SG-13. Another sampling event was scheduled for February 27, 2020 to meet the minimum 10 days after installation requirement for the remaining locations that were installed in mid-February 2020. On February 25, 2020, the remaining soil gas sample points were checked for water by connecting a peristaltic pump to the installation tubing. If water was discovered, the soil gas points were purged until dry. Water had infiltrated 9 of the 22 soil gas points (SG-01 through SG-07, SG-09, and SG-13) and they were purged dry, except for SG-03. Water recharged in SG-03 at a rate equal to the pump rate. On February 27, 2020, Golder representatives were on-site to collect the remaining soil gas samples with oversight from TCEQ representatives. Water had re-infiltrated the soil gas points (SG-01 through SG-07, SG-09, and SG-13) that had been purged dry two days prior and were not able to be sampled. A review of various state and federal guidance documents did not reveal any corrective measures to be implemented when soil gas points become saturated with water. However, per the analytical laboratory, a vapor sample would be compromised if water were to enter the summa canister during sampling, and the water would likely cause damage to the summa canister. Based on discussions with TCEQ staff, the TCEQ agreed that these water saturated soil gas probes would not be sampled.

Another sampling event was conducted on June 30, 2020 to collect soil gas samples from the six additional soil gas probe locations that were installed on June 18 and 19, 2020. Water had infiltrated four of the six soil gas points, including three of the five installed on the Greater Mount Nebo Baptist Church Property (SG-23, SG-24, and SG-26) and the replacement location for SG-13 (SG-13R). Soil gas samples were collected at SG-25 and SG-27 in June 2020. The initial soil gas points that were saturated with water in February 2020 were checked, and those points continued to be saturated with water. Even though three of the five additional soil gas probes installed on the Greater Mount Nebo Baptist Church property had water in them, soil gas samples were collected from three locations (SG-08 (in February), SG-25, and SG-27) on the property between Lavender Street and Clementine Street.

Following collection, soil gas samples were shipped to Pace Analytical in Minneapolis, Minnesota for analysis of benzene, ethylbenzene, naphthalene, and xylenes by EPA Method TO-15. A completed chain-of-custody accompanied the samples through receipt at the analytical laboratory. Copies of the laboratory reports and data

usability summaries for the soil gas sample data prepared pursuant to TRRP-13 Guidance are included in Attachment 2. A summary of the soil gas analytical results is provided in Table 2.

Quality Assurance/Quality Control

Sampling activities were conducted in accordance with general industry standard practices and as specified in the approved Work Plan. Samples were handled under appropriate chain-of-custody documentation. To confirm the accuracy and reproducibility of the laboratory analytical results, the analytical laboratory implements a program that includes laboratory replicate samples, method blanks and control standards. The laboratory QA/QC data generated during the sample analysis are included in the laboratory analytical report provided to Golder (provided as Attachments 1 (soil samples) and 2 (soil gas samples) to this letter report). Field QA/QC protocols included field duplicate samples and ambient air control samples AA-1 (2/19/2020), AA-2 (2/27/2020), and AA-3 (6/30/20) that were collected during sampling events to assess background conditions. The ambient air control samples were collected within the vicinity of the soil gas points in 6-liter summa canisters with a 200 ml/minute flow regulator. A sample of the helium used for the leak test procedure, HE-1, was also collected by providing a constant flow of helium gas to the summa canister inlet. Duplicate soil gas samples were collected during each soil gas sampling event following the procedures outlined above. Analytical results of the control samples are summarized in Table 2.

The analytical data were validated pursuant to TRRP-13 Guidance. Data usability summaries are included in Attachments 1 and 2.

Data Evaluation

Pursuant to TRRP procedures, analytical data for the soil samples collected from each soil gas boring were compared to the lesser value between the TRRP Residential (30 acre) $^{Tot}Soil_{Comb}$ Protective Concentration Level (PCL) and the $^{GW}Soil_{Ing}$ PCL for surface soils, which is the Residential Assessment Level (RAL). Benzene, ethylbenzene, xylene, and naphthalene concentrations in the soil samples collected during the soil gas probe installation were generally not detected and in all cases were below applicable RALs (Table 1). These data support a conclusion that the vertical separation distance consisting of clean soil between potential receptors at the ground surface, and the potential source of contamination (groundwater), is greater than 6 feet (the base depth of the deeper soil samples collected for this evaluation).

Consistent with the approved Work Plan, soil gas analytical results were compared to the target soil gas assessment levels which are calculated by dividing the TRRP Residential Risk-Based Exposure Limits (RBELs) for inhalation ($^{Air}RBEL_{Inh}$) by an attenuation factor of 0.03 (US EPA, 2015b) for soil gas. The inhalation RBELs apply to sites under TRRP and are considered protective concentrations for a COC in air at the point of exposure (POE) for human inhalation. The RBEL is adjusted using the specified attenuation factor to account for the following: (1) the soil gas sample does not represent an indoor air concentration (i.e. in a POE sample) and (2) that COC attenuation through multiple processes (e.g., dispersion, biodegradation, etc.) is anticipated if vapors were to migrate from the vadose zone to an indoor air receptor. As shown in Table 2, benzene, ethylbenzene, naphthalene, and xylene concentrations in all of the soil gas samples were orders of magnitude less than their respective target soil gas assessment levels.

Other Lines of Evidence

As discussed in the Background section of this letter report, the analytical results of the A-TZ groundwater from MW-68A were below the conservative screening values estimated by EPA's VISL calculator (EPA, 2019) and indicated the VI pathway was incomplete. To further evaluate the groundwater as a potential source for the VI pathway, the A-TZ groundwater analytical data from the July 2019 and January-March 2020 sampling events from the off-site monitoring wells presented in the Interim Groundwater Monitoring Report (2019-2020) dated April 30, 2020 were compared to VISL calculator values (EPA, 2015, EPA, 2019). The VISL calculator (EPA, 2019) provides a screening level based on several basic inputs, including a residential or commercial exposure scenario, target hazard quotient, target carcinogenic risk, and groundwater temperature. For this evaluation, the selected inputs were residential scenario, hazard quotient of 0.1, carcinogenic risk of 10^{-5} (consistent with the TRRP criteria), and groundwater temperature of 25°C. A summary of the VISL values relative to the maximum detected COC concentrations from the two recent sampling events are provided in the following table.

COC	VISL Screening Level for Elimination from Further Consideration (mg/L)*	Maximum Detected COC Concentrations in Off-Site A-TZ Wells July 2019 & January-March 2020 Samples (mg/L)
Benzene	0.014	0.00036J (MW-26A-July 2019)
Chlorobenzene	0.041	<0.0003
Ethylbenzene	0.035	<0.0003
Methylene Chloride	0.471	<0.001
Toluene	1.92	<0.0002
Xylenes	0.0385	<0.0003
Benzo(a)anthracene	0.344	0.00012 (MW-25A-Jan 2020)
Naphthalene	0.0174	0.0026 (MW-27A – July 2019)
Nitrobenzene	0.715	<0.000025

* - VISL calculator values (EPA, 2015, EPA, 2019).

Groundwater COC concentrations from the July 2019 and January-March 2020 off-site A-TZ wells were below the conservative EPA VISL-calculated screening levels by orders of magnitude, providing an additional line of evidence that the VI pathway from the shallow groundwater is incomplete (Golder, 2020).

Conclusion

Based on the vertical separation distance, groundwater COC concentrations in the off-site A-TZ wells, lateral distribution of the soil gas sample locations, and benzene, ethylbenzene, xylenes, and naphthalene concentrations in soil gas samples collected for this evaluation, the lines of evidence support that the vapor intrusion pathway off-site is incomplete.

However, UPRR will submit a follow-up letter to the TCEQ with proposed steps forward to confirm that the vapor intrusion pathway is incomplete as requested during a conference call between TCEQ, UPRR, and Golder on July 30, 2020.

If you have any questions or comments, please feel free to give Mr. Kevin Peterburs of UPRR (414-267-4164) or us a call.

Sincerely,

Golder Associates Inc.

Tim Nickels
Senior Consultant

Eric Matzner, P.G.
Principal Hydrogeologist

CC: TCEQ Region 12, Houston Texas

Attachments:
Table 1 – Summary of Soil Analytical Results
Table 2 – Summary of Soil Gas Analytical Results
Figure 1 – Soil Gas & Surface Soil Sampling Locations
Figure 2 – Soil Gas Probe Construction Diagram
Attachment 1 – Soil Samples – Data Usability Summary and Laboratory Analytical Reports
Attachment 2 – Soil Gas Samples – Data Usability Summary and Laboratory Analytical Reports

References

United States Environmental Protection Agency (EPA), 2015a. *Technical Guide for Addressing Petroleum Vapor Intrusion at Leaking Underground Storage Tank Sites* (EPA 510-R-15-001), June.

EPA, 2015b. *OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air* (OSWER Publication 9200.2-154), June.

EPA, 2019. Vapor Intrusion Screening Level (VISL) calculator, https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator. Accessed April 2019.

Golder Associates Inc (Golder), 2020, *Interim Groundwater Monitoring Report (2019-2020),* Union Pacific Railroad Houston Wood Preserving Works Facility, Houston, Texas, Dated April 30.

Interstate Technology & Regulatory Council (ITRC), 2014. *Petroleum Vapor Intrusion: Fundamentals of Screening, Investigation, and Management*.

TABLES

Table 1

Summary of Soil Analytical Results
UPRR Houston Wood Preserving Works

Sample Location	Sample Depth (ft BGS)	Field PID	Sample Date	Benzene	Ethylbenzene	Xylenes	Naphthalene
TRRP Tier 1 Residential Assessment Level (mg/kg)				*0.013*	*3.8*	*61*	*16*
SG-01	0.5-1	0	2/11/2020	<0.00059	<0.00082	<0.0012	<0.00070
SG-01	5.5-6	0	2/11/2020	<0.00082	<0.0011	<0.0016	<0.00073
SG-02	0.5-1	0	2/10/2020	<0.00053	<0.00075	<0.0011	**0.0024 J**
SG-02	5.5-6	0	2/10/2020	<0.00037	<0.00051	<0.00073	<0.00079
SG-03	0.5-1	0.3	2/5/2020	<0.00037	<0.00052	**0.0066**	**0.0018 J**
SG-03	5.5-6	0.1	2/5/2020	<0.00071	<0.0010	<0.0014	**0.0017 J**
SG-04	0.5-1	0	2/10/2020	<0.00044	<0.00061	<0.00087	<0.00071
SG-04	5.5-6	0.1	2/10/2020	<0.00068	<0.00096	<0.0014	<0.00072
SG-05	0.5-1	0.5	2/10/2020	<0.00037	<0.00051	<0.00073	**0.0049**
SG-05	5.5-6	0	2/10/2020	<0.00078	<0.0011	<0.0016	<0.00074
SG-06	0.5-1	0.1	2/17/2020	<0.00065	<0.00091	<0.0013	<0.0067
SG-06	5.5-6	0	2/17/2020	<0.00042	<0.00059	<0.00084	<0.00071
SG-07	0.5-1	0	2/17/2020	<0.00058	<0.00082	<0.0012	**0.0071 J**
SG-07	5.5-6	0	2/17/2020	<0.00036	<0.00050	<0.00072	<0.00072
SG-08	0.5-1	0.8	2/7/2020	<0.00062	<0.00087	<0.0012	**0.0034 J**
SG-08	5.5-6	1.8	2/7/2020	<0.00038	<0.00053	<0.00075	**0.0014 J**
SG-09	0.5-1	--	2/3/2020	<0.00052	<0.00074	<0.0010	**0.0042**
SG-09	5.5-6	0.5	2/3/2020	<0.00082	<0.0012	<0.0016	<0.00072
SG-10	0.5-1	0.3	2/7/2020	<0.00052	<0.00072	<0.0010	**0.0056**
SG-10	5.5-6	1.1	2/7/2020	<0.00039	<0.00054	<0.00077	<0.00072
SG-11	0.5-1	0.4	2/6/2020	<0.00070	<0.00098	<0.0014	**0.0084 J**
SG-11	5.5-6	0.5	2/6/2020	<0.00032	<0.00045	<0.00064	**0.0011 J**
SG-12	0.5-1	0	2/17/2020	<0.00062	<0.00087	<0.0012	**0.0039**
SG-12	5.5-6	0	2/17/2020	<0.00060	<0.00084	<0.0012	<0.00071
SG-13	0.5-1	--	2/3/2020	<0.00076	<0.0011	<0.0015	<0.00075
SG-13	5.5-6	--	2/3/2020	<0.00049	<0.00068	<0.00097	<0.00071
SG-14	0.5-1	0	2/17/2020	<0.00030	<0.00042	<0.00061	**0.0027 J**
SG-14	5.5-6	0	2/17/2020	<0.00037	<0.00051	<0.00073	<0.00077
SG-15	0.5-1	0.2	2/13/2020	<0.00050	<0.00070	<0.0010	**0.014**
SG-15	5.5-6	0.1	2/13/2020	<0.00032	<0.00045	<0.00065	<0.00071
SG-16	0.5-1	0.1	2/13/2020	<0.00066	<0.00093	<0.0013	**0.0099**
SG-16	5.5-6	0	2/13/2020	<0.00068	<0.00095	<0.0014	<0.00071
SG-17	0.5-1	0	2/12/2020	<0.00071	<0.0010	<0.0014	**0.0095**
SG-17	5.5-6	0	2/12/2020	<0.00079	<0.0011	<0.0016	**0.0015 J**
SG-18	0.5-1	--	2/3/2020	**0.0034 J**	**0.0034 J**	**0.0056**	<0.00069
SG-18	5.5-6	--	2/3/2020	<0.00054	<0.00076	<0.0011	**0.0041**
SG-19	0.5-1	0	2/12/2020	<0.00059	<0.00082	<0.0012	<0.00069
SG-19 (DUP)	0.5-1	0	2/12/2020	<0.00060	<0.00083	<0.0012	**0.0053**
SG-19	5.5-6	0	2/12/2020	<0.00062	<0.00087	<0.0012	<0.00071
SG-20	0.5-1	0	2/11/2020	<0.00080	<0.0011	<0.0016	<0.00069
SG-20	5.5-6	0	2/11/2020	<0.00072	<0.0010	<0.0014	<0.00071
SG-21	0.5-1	0	1/29/2020	<0.00088	<0.0012	<0.0018	**0.022**
SG-21	5.5-6	0	1/29/2020	<0.00053	<0.00074	<0.0011	**0.01**
SG-22	0.5-1	0	1/29/2020	<0.00061	<0.00085	<0.0012	**0.14**
SG-22	5.5-6	0	1/29/2020	<0.00056	<0.00079	<0.0011	<0.00072
SG-13R	0.5-1	0	6/18/2020	<0.00053	<0.00075	<0.0011	<0.00074
SG-13R	5.5-6	0	6/18/2020	<0.00044	<0.00062	<0.00089	<0.00073
SG-23	0.5-1	0.1	6/18/2020	<0.00031	<0.00044	<0.00062	**0.00071 J**
SG-23	5.5-6	0	6/18/2020	<0.00032	<0.00044	<0.00064	<0.00071
SG-24	0.5-1	0	6/18/2020	<0.00038	<0.00053	<0.00076	**0.001 J**
SG-24	5.5-6	0	6/18/2020	<0.00030	<0.00043	<0.00061	<0.00069
SG-25	0.5-1	0.1	6/18/2020	<0.00068	<0.00095	<0.0014	**0.0046**
SG-25	5.5-6	0	6/18/2020	<0.00030	<0.00042	<0.00059	<0.0070
SG-26	0.5-1	0	6/19/2020	<0.00046	<0.00064	<0.00092	**0.0039**
SG-26	5.5-6	0	6/19/2020	<0.00039	<0.00054	<0.00077	<0.00069
SG-27	0.5-1	0	6/19/2020	<0.00039	<0.00054	<0.00077	**0.0018 J**
SG-27	5.5-6	0	6/19/2020	<0.00069	<0.00097	<0.0014	**0.0022 J**

Notes:
1. TCEQ Texas Risk Reduction Program (TRRP) Tier 1 Residential Assessment level (RAL) based on lowest of Soil PCLs $^{GW}Soil_{Ina}$ or $^{Tot}Soil_{Comb}$ (assuming 30 acre source area).
2. Bolded concentrations are greater than the sample detection limit (SDL).
3. J = Result is estimated due to a detected concentration that is less than the MQL but greater than or equal to the SDL.
4. -- = Not Applicable / Not Analyzed.
5. Concentrations in milligrams per kilogram (mg/kg).

Table 2

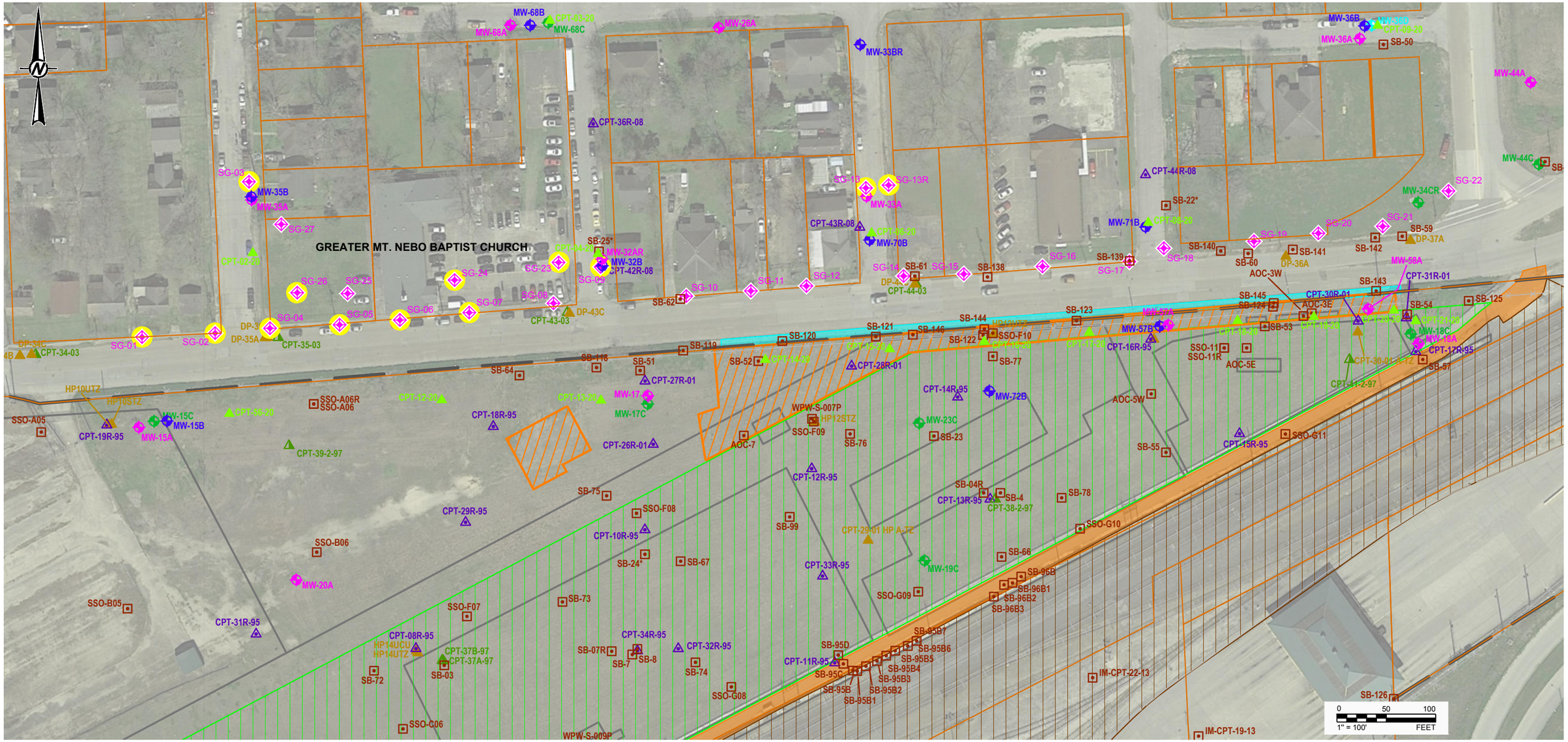
Summary of Soil Gas Analytical Results
UPRR Houston Wood Preserving Works

Sample Location	Sample Date	Benzene	Ethylbenzene	m&p-Xylene	o-Xylene	Naphthalene
	$^{Air}RBEL_{Inh}$ (ug/m^3)	11	2000	640	640	3.1
Target Soil Gas Assessment Level** (ug/m^3)		*367*	*66,667*	*21,333*	*21,333*	*103*
Soil Gas Samples						
SG-08	2/19/2020	**0.31 J**	**0.63 J**	**2.4 J**	**0.81 J**	<2.3
SG-10	2/19/2020	<0.26	**0.54 J**	**2.1 J**	**0.69 J**	<2.2
SG-11	2/19/2020	**0.87**	**5.1**	**13.1**	**7.6**	**3.8 J**
SG-12	2/27/2020	**0.28 J**	<0.54	**1.3 J**	<0.61	<3.1
SG-14	2/27/2020	<0.27	<0.54	<1.2	<0.61	<2.3
SG-15	2/27/2020	<0.26	<0.51	<1.2	<0.58	<3.4
SG-16	2/27/2020	<0.26	**13.4**	**46.9**	**20.9**	<3.1
SG-16 (DUP)	2/27/2020	**0.58**	**14**	**50.6**	**21.5**	<3.2
SG-17	2/27/2020	**0.25 J**	<0.48	**1.1 J**	<0.54	<3.0
SG-18	2/19/2020	**1**	**3.9**	**8**	**3.7**	<2.2
SG-19	2/27/2020	**0.46 J**	<0.51	**1.6 J**	**0.91 J**	<3.5
SG-20	2/27/2020	**0.27 J**	<0.53	**1.7 J**	<0.60	<3.1
SG-21	2/19/2020	<0.26	<0.51	<1.2	<0.58	<2.2
SG-21 (DUP)	2/19/2020	<0.26	<0.51	<1.2	<0.58	<2.2
SG-22	2/19/2020	<0.26	**0.82 J**	**2.5 J**	**0.81 J**	<2.2
SG-25	6/30/2020	<0.25	<0.32	<0.74	<0.34	<2.4
SG-27	6/30/2020	**12.4 J**	**7.9 J**	**21.2 J**	**6.2 J**	<2.3
SG-27 (DUP)	6/30/2020	**1.5 J**	**2.2 J**	**7.7 J**	**3.1 J**	<2.3
Control Samples						
AA-1	2/19/2020	**0.73**	<0.38	<0.88	<0.43	<1.7
AA-2	2/27/2020	**1.1**	<0.37	**0.99 J**	<0.42	<1.6
HE-1	2/19/2020	**5.6**	**3.8**	**22**	**21.2**	<1.3
AA-3	6/30/2020	<0.18	<0.23	<0.53	<0.24	<1.7

Notes:

1. Bolded concentrations are greater than the method detection limit (MDL).
2. ** Target soil gas assessment levels calculated by dividing the $^{Air}RBEL_{Inh}$ (Table 9 TRRP PCL Tables last revised November 8, 2019) by the soil gas attenuation factor of 0.03 (EPA, 2015b)
3. J = Result is estimated due to a detected concentration that is less than the MQL but greater than or equal to the SDL or as indicated in data usability summaries.
4. One method blank yielded a low level detection for naphthalene in lab report 10510405. Associated sample results with similar detections to the method blank were qualified as non-detect (see Data Usability Summary in Attachment 2 for details).
5. Concentrations in micrograms per cubic meter (ug/m^3).

FIGURES


GREATER MT. NEBO BAPTIST CHURCH
MW-68B
MW-68A
CPT-03-20
MW-68C
MW-26A
MW-33BR
CPT-36R-08
MW-36B
MW-36D
CPT-09-20
MW-36A
SB-50
MW-44A
MW-44C
SB-
CPT-44R-08
SB-22*
MW-34CR
SG-22
SG-21
SG-20
SG-19
SG-18
SB-59
DP-37A
SB-140
SB-141
SB-142
SB-60
DP-36A
AOC-3W
MW-58A
CPT-31R-01
SB-143
CPT-30R-01
AOC-3E
SB-54
SB-125
SB-145
SB-124
SB-53
MW-18C
MW-18A
CPT-17R-95
SB-57
SSO-11
SSO-11R
AOC-5E
CPT-30-01-17Z
CPT-11-2-97
AOC-5W
SB-55
CPT-15R-95
SSO-G11
SB-78
SSO-G10
SB-66
SB-96B
SB-96B1
SB-96B2
SB-96B3
SSO-G09
MW-19C
CPT-33R-95
SB-67
SB-24*
CPT-10R-95
SSO-F08
SB-99
CPT-29-01 HP A-TZ
CPT-04R-95
SB-4
CPT-38-2-97
SB-75
CPT-29R-95
SSO-B06
MW-20A
SSO-B05
CPT-31R-95
SSO-F07
SB-73
CPT-08R-95
HP14UCU
HP14UTZ
CPT-37B-97
CPT-37A-97
SB-03
SB-72
SSO-C06
SB-07R
SB-7
SB-8
CPT-34R-95
CPT-32R-95
SB-74
SSO-G08
WPW-S-009P
CPT-11R-95
SB-95D
SB-95C
SB-95B
SB-95B1
SB-95B2
SB-95B3
SB-95B4
SB-95B5
SB-95B6
SB-95B7
IM-CPT-22-13
SB-126
IM-CPT-19-13
SG-03
MW-35B
MW-35A
SG-27
CPT-02-20
SG-26
SG-25
SG-24
SG-04
SG-05
SG-06
SG-07
SG-08
SG-23
CPT-04-20
SB-25*
MW-32AR
MW-32B
CPT-42R-08
SG-09
CPT-43-03
DP-43C
SG-01
SG-02
DP-34C
CPT-34-03
DP-35A
CPT-35-03
SB-62
SG-10
SG-11
SG-12
SG-13
SG-13R
MW-33A
CPT-43R-08
MW-70B
SG-14
SB-61
SG-15
SB-138
SG-16
SB-139
SG-17
DP-
CPT-44-03
SB-64
SB-116
SB-51
CPT-27R-01
SB-119
SB-120
SB-121
SB-146
SB-144
SB-122
SB-123
SSO-F10
SB-77
SB-52
CPT-28R-01
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MW-57B
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MW-17
MW-17C
CPT-18R-95
WPW-S-007P
HP12STZ
SSO-F09
AOC-7
SB-76
CPT-14R-95
MW-72B
MW-23C
SB-23
CPT-26R-01
CPT-12R-95
SSO-A06R
SSO-A06
CPT-39-2-97
SSO-A05
CPT-19R-95
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MW-15B
MW-15A
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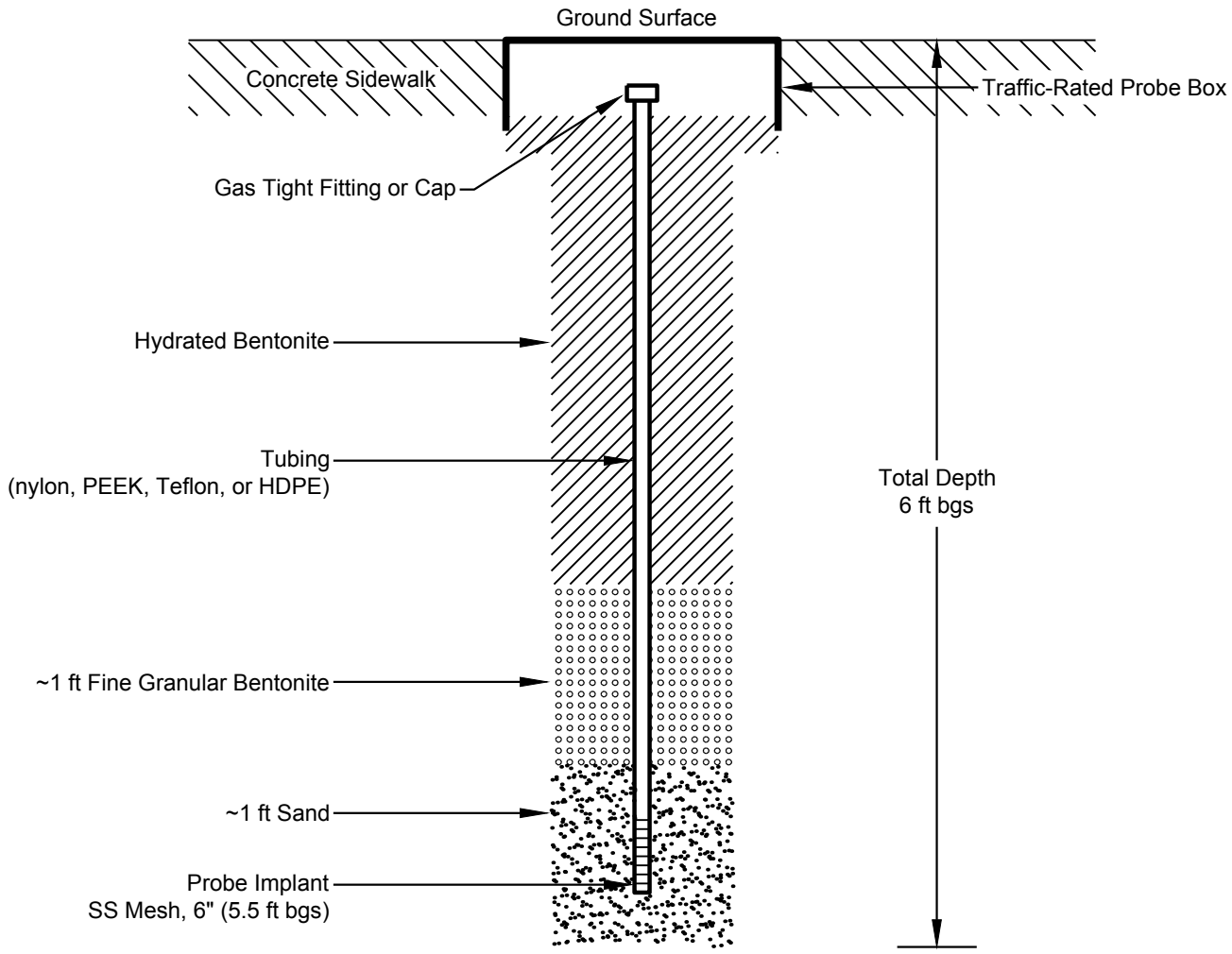
HP10STZ
CPT-36-20
SB-
CPT-
CPT-
CPT



CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
SOIL GAS PROBE CONSTRUCTION DIAGRAM

CONSULTANT
GOLDER

YYYY-MM-DD	2019-12-20
DESIGNED	AJD
PREPARED	AJD
REVIEWED	ECM
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A

0 1 in

Last Edited By: adiamond Date: 2019-12-20 Time:8:26:38 AM | Printed By: adiamond Date: 2019-12-20 Time:3:05:23 PM
Path: \\texarkanadata\Projects - Round Rock_2019\19119232 - HWPW\2019-9 Sept\ | File Name: FIG 2 - Soil Gas Probe Diagram.dwg

ATTACHMENT 1

Soil Samples - Data Usability Summary and Laboratory Analytical Reports

Memorandum

March 5, 2020
Revision: March 31, 2020

To:	Eric Matzner	Ref. No.:	11183954-1620
From:	Chris G. Knight/eew/554-NF	Tel:	512-506-8803
cc:	Jesse Orth, Jon Lang; Julie Lidstone		

Subject: **Data Usability Summary**
Soil Gas Probes
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2020

1. Scope of Data Usability Study

This document details a Data Usability Summary (DUS) of analytical results for soil samples collected in support of the Soil Gas Probes at the Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works site during January-February 2020. Samples were submitted to ALS Environmental (ALS), located in Houston, Texas and are reported in data packages HS20011451, HS20020120, HS20020243, HS20020308, HS20020445, HS20020506, HS20020571, and HS20020741. The intended use of the data is to support the Soil Gas Probes at the site by providing current concentration of chemicals of concern.

Data were reviewed and validated by Chris G. Knight of GHD, in accordance with Title 30 of the Texas Administrative Code Section 350.54 (30 TAC 350.54) as described in the Texas Commission on Environmental Quality (TCEQ) Regulatory Guidance document entitled "Review and Reporting of COC Concentration Data under TRRP", (RG-366/TRRP-13), revised May 2010, herein referred to as "TRRP-13 Guidance". Evaluation of the data was based on information obtained from the chain of custody forms, the finished report forms, method blank data, recovery data from surrogate spikes/laboratory control samples (LCS)/matrix spikes (MS), field quality assurance/quality control samples (QA/QC), the laboratory review checklists (LRC), and the laboratory exception reports (ER).

A sample collection and analysis summary is presented in Table 1. This summary provides a cross-reference of field sample identification numbers and location identification. Each sample is assigned a unique field identification number.

The validated sample results are presented in Table 2. A summary of the analytical methodology is presented in Table 3.

2. Laboratory Qualifications

The Laboratory's quality assurance program is consistent with the quality standards outlined in the National Environmental Laboratory Accreditation Program (NELAP). This laboratory was accredited under Texas Certification number # TX104704231 at the time the analysis was performed and the certificate is included in Attachment A.

3. Project Objectives

3.1 Sampling/Analytical QA/QC Objectives

The QA/QC program was designed to identify contamination resulting from the sampling, sample transport and analytical process through the analysis of field duplicate sample sets and method blanks. The QA/QC program was designed to evaluate the quality of the resulting data with respect to bias and precision through analysis of LCS and MS analyses.

4. Data Review/Validation Results

4.1 Sample Holding Time and Preservation

Samples were shipped with a chain of custody and the paper work was filled out properly with the following exceptions:

i) HS20011451 - Sample container count differs. The chain of custody states 5 sample containers were submitted, but the laboratory only received 4 sample containers. All 2 oz. amber bottles were received empty. No further action was required.

ii) HS20020120 - Sample container count differs. The chain of custody states 5 sample containers were submitted, but the laboratory only received 4 sample containers. All 2 oz. amber bottles were received empty. No further action was required. Per M. Hermiston, SG-3 samples were placed on hold; and will be re-collected.

iii) HS20020243 - Sample container count differs. The chain of custody states 5 sample containers were submitted, but the laboratory only received 4 sample containers. All 2 oz. amber bottles were received empty. No further action was required.

iv) HS20020445 - Sample container count differs. The chain of custody states 5 sample containers were submitted, but the laboratory only received 4 sample containers. All 2 oz. amber bottles were received empty. No further action was required.

v) HS20020506 - This report was revised. The sample collection date for the field duplicate sample was changed from 2/11/2020 to 2/12/2020. No further action was required.

vi) HS20020741 - Sample container count differs. The chain of custody states 5 sample containers were submitted, but the laboratory only received 4 sample containers. All 2 oz. amber bottles were received empty. No further action was required.

All samples were delivered on ice and stored by the laboratory at the required temperature (0-6°C).

The sample chain of custody documents and the analytical reports were used to determine sample holding times. All samples were prepared and analyzed within the required holding times.

4.2 Sample Containers

Sample containers used were certified pre-cleaned glass containers provided by the laboratory. These containers meet or exceed analyte specifications established in the United States Environmental Protection Agency (USEPA) *Specifications and Guidance for Contaminant-free Sample Containers*.

4.3 Calibrations

According to the LRC, initial calibration and continuing calibration data met the criteria for the selected method.

4.4 Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures. As these were not discrete samples handled in the field, these blanks are not listed on the sample identification cross-reference list found in the data packages.

For this study, laboratory method blanks were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch and results are reported in the laboratory data packages.

The method blank results were non-detect or below the method quantitation limit (MQL), indicating that laboratory contamination was not a factor for this investigation.

4.5 Internal Standard and Surrogate Spike Recoveries

Recoveries of internal standards are addressed in the LRC of the data packages. All internal standard recoveries associated with the compounds of interest were acceptable per the LRC with the following exceptions:

i) SO-1620-SG10(0.5-1)20200207 was reported with one or more of the semi-volatile organic compounds (SVOCs) internal standards were recovered at less than fifty percent. The target compound naphthalene was not associated with the failing internal standards. No further action was required.

ii) SO-1620-SG02(0.5-1) 20200210 and SO-1620-FD01-20200212 were reported with the internal standard Perylene-d12 shifted due to possible matrix effect. The target compound naphthalene was not associated with the failing internal standards. No further action was required.

In accordance with the methods employed, all samples, blanks, and QC samples analyzed for volatile organic compounds (VOCs) and naphthalene are spiked with surrogate compounds prior to sample analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample

matrices. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project. Each individual surrogate compound is expected to meet the laboratory control limits. According to the TRRP-13 Guidelines, one outlying surrogate is acceptable for methods with multiple surrogate spike compounds as long as the recovery is at least ten percent. Sample analyzed at elevated sample dilutions (five times or greater) were not assessed.

Surrogate recoveries were assessed against laboratory control limits and/or the guidance in TRRP-13. All surrogate recoveries met the above criteria.

4.6 Laboratory Control Sample Analysis

LCS are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project.

For this study, LCS were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch.

The LCS contained all compounds specified in the methods. All LCS recoveries were within the laboratory control limits, demonstrating acceptable analytical accuracy.

4.7 Matrix Spike Analysis

To evaluate the effects of sample matrices on the preparation process, measurement procedures, and accuracy of a particular analysis, samples are spiked with known concentrations of the analytes of interest and analyzed as MS/matrix spike duplicate (MSD) samples. The RPD between the MS and MSD is used to assess analytical precision.

An MS/MSD analysis was performed as specified in Table 1. The recovery ranges established by the laboratory is adopted as the acceptance criteria for the project.

The MS/MSD samples were spiked with all compounds specified in the methods. All percent recoveries and the RPD value were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision.

The laboratory also performed additional MS/MSD on non-site samples. These cannot be used to assess accuracy and precision for the site samples.

4.8 Field QA/QC Samples

The field QA/QC consisted of two field duplicate sample sets.

To assess the analytical and sampling protocol precision, two field duplicate sample sets were collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples must be less than fifty percent for soil samples. The RPDs are only used when sample concentrations are above the estimated regions of detection.

Field duplicate summary data are presented in Table 2. All field duplicate results were within acceptable agreement, demonstrating acceptable sampling and analytical precision. SO-1620-DUP1-2020203 was not assessed; the parent sample was not analyzed. No further action was required.

4.9 Field Procedures

Golder Associates, Inc. collected soil samples in accordance with their Standard Operating Procedures (SOP) for sample collection.

4.10 Analyte Reporting

The laboratory reported detected results for each analyte down to the sample detection limit (SDL), which is defined as the method detection limit (MDL) with sample-specific adjustments for dilutions, aliquot size, volumes, etc. Positive analyte detections less than the MQL but greater than the SDL were qualified as estimated (J) in Table 2.

i) The following sample extracts were analyzed at an elevated sample dilution for naphthalene due to a high level of matrix interference: SO-1620-SG11(0.5-1) 20200206, SO-1620-SG07(0.5-1)20200217 and SO-1620-SG06(0.5-1)20200217. No further action was required.

The detectability check standard (DCS) results supported the laboratory MDLs.

All soil results were reported on a dry weight basis.

5. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are usable for the purpose of supporting the Soil Gas Probes at the site by providing current concentration of chemicals of concern in soil samples without qualification.

Table 1

Sample Collection and Analysis Summary
Soil Gas Probes
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

								Analysis/Parameters		
Work Order	**Sample Identification**	**Location**	**Matrix**	**Initial Sample Depth (ft bgs)**	**Final Sample Depth (ft bgs)**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**VOCs**	**Naphthalene**	**Comments**
HS20011451	SO-1620-SG22 (0.5-1) 20200129	SG22	Soil	0.5	1	01/29/2020	09:45	X	X	
	SO-1620-SG22 (5.5-6) 20200129	SG22	Soil	5.5	6	01/29/2020	10:30	X	X	
	SO-1620-SG21 (0.5-1) 20200129	SG21	Soil	0.5	1	01/29/2020	11:30	X	X	
	SO-1620-SG21 (5.5-6) 20200129	SG21	Soil	5.5	6	01/29/2020	14:15	X	X	
HS20020120	SO-1620-SG-18(0.5-1)-2020203	SG18	Soil	0.5	1	02/03/2020	09:45	X	X	
	SO-1620-SG-18(5.5-6)-2020203	SG18	Soil	5.5	6	02/03/2020	10:00	X	X	
	SO-1620-SG-9(0.5-1)-2020203	SG09	Soil	0.5	1	02/03/2020	11:00	X	X	
	SO-1620-SG-9(5.5-6)-2020203	SG09	Soil	5.5	6	02/03/2020	11:35	X	X	
	SO-1620-SG-13(0.5-1)-2020203	SG13	Soil	0.5	1	02/03/2020	14:15	X	X	
	SO-1620-SG-13(5.5-6)-2020203	SG13	Soil	5.5	6	02/03/2020	14:45	X	X	
	SO-1620-DUP1-2020203	SG03	Soil	5.5	6	02/03/2020	12:40	X	X	
HS20020243	SO-1620-SG03(0.5-1) 20200205	SG03	Soil	0.5	1	02/05/2020	10:30	X	X	
	SO-1620-SG03(5.5-6) 20200205	SG03	Soil	5.5	6	02/05/2020	10:45	X	X	
	SO-1620-SG11(0.5-1) 20200206	SG11	Soil	0.5	1	02/06/2020	13:40	X	X	
	SO-1620-SG11(5.5-6) 20200206	SG11	Soil	5.5	6	02/06/2020	14:00	X	X	MS/MSD-P
HS20020308	SO-1620-SG10(0.5-1)20200207	SG10	Soil	0.5	1	02/07/2020	11:10	X	X	
	SO-1620-SG10(5.5-6)20200207	SG10	Soil	5.5	6	02/07/2020	11:30	X	X	
	SO-1620-SG08(0.5-1)20200207	SG08	Soil	0.5	1	02/07/2020	14:00	X	X	
	SO-1620-SG08(5.5-6)20200207	SG08	Soil	5.5	6	02/07/2020	14:20	X	X	

Table 1

Sample Collection and Analysis Summary
Soil Gas Probes
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

								Analysis/Parameters		
Work Order	**Sample Identification**	**Location**	**Matrix**	**Initial Sample Depth (ft bgs)**	**Final Sample Depth (ft bgs)**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**VOCs**	**Naphthalene**	**Comments**
HS20020445	SO-1620-SG05(0.5-1) 20200210	SG05	Soil	0.5	1	02/10/2020	09:50	X	X	
	SO-1620-SG05(5.5-6) 20200210	SG05	Soil	5.5	6	02/10/2020	10:10	X	X	
	SO-1620-SG04(0.5-1) 20200210	SG04	Soil	0.5	1	02/10/2020	13:20	X	X	
	SO-1620-SG04(5.5-6) 20200210	SG04	Soil	5.5	6	02/10/2020	13:30	X	X	
	SO-1620-SG02(0.5-1) 20200210	SG02	Soil	0.5	1	02/10/2020	15:50	X	X	
	SO-1620-SG02(5.5-6) 20200210	SG02	Soil	5.5	6	02/10/2020	16:00	X	X	
HS20020506	SO-1620-SG01(0.5-1)-20200211	SG01	Soil	0.5	1	02/11/2020	11:50	X	X	
	SO-1620-SG01(5.5-6)-20200211	SG01	Soil	5.5	6	02/11/2020	12:10	X	X	
	SO-1620-SG20(0.5-1)-20200211	SG20	Soil	0.5	1	02/11/2020	15:00	X	X	
	SO-1620-SG20(5.5-6)-20200211	SG20	Soil	5.5	6	02/11/2020	15:20	X	X	
	SO-1620-SG19(0.5-1)-20200212	SG19	Soil	0.5	1	02/12/2020	11:20	X	X	
	SO-1620-FD01-20200212	SG19	Soil	5.5	6	02/12/2020	11:20	X	X	Field duplicate of SG19 (0.5-1)
	SO-1620-SG19(5.5-6)-20200212	SG19	Soil	5.5	6	02/12/2020	11:35	X	X	
HS20020571	SO-1620-SG17(0.5-1)20200212	SG17	Soil	0.5	1	02/12/2020	15:40	X	X	
	SO-1620-SG17(5.5-6)20200212	SG17	Soil	5.5	6	02/12/2020	15:50	X	X	
	SO-1620-SG16(0.5-1)20200213	SG16	Soil	0.5	1	02/13/2020	12:15	X	X	
	SO-1620-SG16(5.5-6)20200213	SG16	Soil	5.5	6	02/13/2020	12:30	X	X	
	SO-1620-SG15(0.5-1)20200213	SG15	Soil	0.5	1	02/13/2020	14:30	X	X	
	SO-1620-SG15(5.5-6)20200213	SG15	Soil	5.5	6	02/13/2020	14:40	X	X	

Table 1

Sample Collection and Analysis Summary
Soil Gas Probes
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

								Analysis/Parameters		
Work Order	**Sample Identification**	**Location**	**Matrix**	**Initial Sample Depth (ft bgs)**	**Final Sample Depth (ft bgs)**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**VOCs**	**Naphthalene**	**Comments**
HS20020741	SO-1620-SG12(0.5-1)20200217	SG12	Soil	0.5	1	02/17/2020	09:11	X	X	
	SO-1620-SG12(5.5-6)20200217	SG12	Soil	5.5	6	02/17/2020	09:30	X	X	
	SO-1620-SG07(0.5-1)20200217	SG07	Soil	0.5	1	02/17/2020	10:50	X	X	
	SO-1620-SG07(5.5-6)20200217	SG07	Soil	5.5	6	02/17/2020	11:10	X	X	
	SO-1620-SG06(0.5-1)20200217	SG06	Soil	0.5	1	02/17/2020	14:00	X	X	
	SO-1620-SG06(5.5-6)20200217	SG06	Soil	5.5	6	02/17/2020	14:15	X	X	
	SO-1620-SG14(0.5-1)20200217	SG14	Soil	0.5	1	02/17/2020	16:15	X	X	
	SO-1620-SG14(5.5-6)20200217	SG14	Soil	5.5	6	02/17/2020	16:30	X	X	

Notes:

ft bgs - Feet Below Ground Surface
VOCs - Volatile Organic Compounds
MS/MSD-P - Matrix Spike/ Matrix Spike Duplicate (partial parameters)

Table 2

Analytical Results Summary
Soil Gas Probes
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		**SG01**	**SG01**	**SG02**	**SG02**	**SG03**
Sample Name:		**SO-1620-SG01(0.5-1)-20200211**	**SO-1620-SG01(5.5-6)-20200211**	**SO-1620-SG02(0.5-1) 20200210**	**SO-1620-SG02(5.5-6) 20200210**	**SO-1620-DUP1-2020203**
Sample Date:		**02/11/2020**	**02/11/2020**	**02/10/2020**	**02/10/2020**	**02/03/2020**
Depth:		**0.5-1 ft bgs**	**5.5-6 ft bgs**	**0.5-1 ft bgs**	**5.5-6 ft bgs**	**5.5-6 ft bgs**
Parameters	**Unit**					
Volatile Organic Compounds						
Benzene	mg/kg	<0.00059	<0.00082	<0.00053	<0.00037	<0.00040
Ethylbenzene	mg/kg	<0.00082	<0.0011	<0.00075	<0.00051	<0.00056
Xylenes (total)	mg/kg	<0.0012	<0.0016	<0.0011	<0.00073	<0.00080
Semivolatile Organic Compounds						
Naphthalene	mg/kg	<0.00070	<0.00073	0.0024 J	<0.00079	<0.00069

Table 2

Analytical Results Summary
Soil Gas Probes
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		**SG03**	**SG03**	**SG04**	**SG04**
Sample Name:		**SO-1620-SG03(0.5-1) 20200205**	**SO-1620-SG03(5.5-6) 20200205**	**SO-1620-SG04(0.5-1) 20200210**	**SO-1620-SG04(5.5-6) 20200210**
Sample Date:		**02/05/2020**	**02/05/2020**	**02/10/2020**	**02/10/2020**
Depth:		**0.5-1 ft bgs**	**5.5-6 ft bgs**	**0.5-1 ft bgs**	**5.5-6 ft bgs**
Parameters	**Unit**				
Volatile Organic Compounds					
Benzene	mg/kg	<0.00037	<0.00071	<0.00044	<0.00068
Ethylbenzene	mg/kg	<0.00052	<0.0010	<0.00061	<0.00096
Xylenes (total)	mg/kg	0.0066	<0.0014	<0.00087	<0.0014
Semivolatile Organic Compounds					
Naphthalene	mg/kg	0.0018 J	0.0017 J	<0.00071	<0.00072

Table 2

Analytical Results Summary
Soil Gas Probes
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		SG05	SG05	SG06	SG06	SG07
Sample Name:		SO-1620-SG05(0.5-1) 20200210	SO-1620-SG05(5.5-6) 20200210	SO-1620-SG06(0.5-1)20200217	SO-1620-SG06(5.5-6)20200217	SO-1620-SG07(0.5-1)20200217
Sample Date:		02/10/2020	02/10/2020	02/17/2020	02/17/2020	02/17/2020
Depth:		0.5-1 ft bgs	5.5-6 ft bgs	0.5-1 ft bgs	5.5-6 ft bgs	0.5-1 ft bgs
Parameters	**Unit**					
Volatile Organic Compounds						
Benzene	mg/kg	<0.00037	<0.00078	<0.00065	<0.00042	<0.00058
Ethylbenzene	mg/kg	<0.00051	<0.0011	<0.00091	<0.00059	<0.00082
Xylenes (total)	mg/kg	<0.00073	<0.0016	<0.0013	<0.00084	<0.0012
Semivolatile Organic Compounds						
Naphthalene	mg/kg	0.0049	<0.00074	<0.0067	<0.00071	0.0071 J

Table 2

Analytical Results Summary
Soil Gas Probes
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		**SG07**	**SG08**	**SG08**	**SG09**
Sample Name:		**SO-1620-SG07(5.5-6)20200217**	**SO-1620-SG08(0.5-1)20200207**	**SO-1620-SG08(5.5-6)20200207**	**SO-1620-SG-9(0.5-1)-2020203**
Sample Date:		**02/17/2020**	**02/07/2020**	**02/07/2020**	**02/03/2020**
Depth:		**5.5-6 ft bgs**	**0.5-1 ft bgs**	**5.5-6 ft bgs**	**0.5-1 ft bgs**
Parameters	**Unit**				
Volatile Organic Compounds					
Benzene	mg/kg	<0.00036	<0.00062	<0.00038	<0.00052
Ethylbenzene	mg/kg	<0.00050	<0.00087	<0.00053	<0.00074
Xylenes (total)	mg/kg	<0.00072	<0.0012	<0.00075	<0.0010
Semivolatile Organic Compounds					
Naphthalene	mg/kg	<0.00072	0.0034 J	0.0014 J	0.0042

Table 2

Analytical Results Summary
Soil Gas Probes
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		**SG09**	**SG10**	**SG10**	**SG11**
Sample Name:		**SO-1620-SG-9(5.5-6)-2020203**	**SO-1620-SG10(0.5-1)20200207**	**SO-1620-SG10(5.5-6)20200207**	**SO-1620-SG11(0.5-1) 20200206**
Sample Date:		**02/03/2020**	**02/07/2020**	**02/07/2020**	**02/06/2020**
Depth:		**5.5-6 ft bgs**	**0.5-1 ft bgs**	**5.5-6 ft bgs**	**0.5-1 ft bgs**
Parameters	**Unit**				
Volatile Organic Compounds					
Benzene	mg/kg	<0.00082	<0.00052	<0.00039	<0.00070
Ethylbenzene	mg/kg	<0.0012	<0.00072	<0.00054	<0.00098
Xylenes (total)	mg/kg	<0.0016	<0.0010	<0.00077	<0.0014
Semivolatile Organic Compounds					
Naphthalene	mg/kg	<0.00072	0.0056	<0.00072	0.0084 J

Notes:

ft bgs - Feet below ground surface
< - Not detected at the associated reporting lim
J - Estimated concentration

Table 2

Analytical Results Summary
Soil Gas Probes
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		**SG11**	**SG12**	**SG12**	**SG13**
Sample Name:		**SO-1620-SG11(5.5-6) 20200206**	**SO-1620-SG12(0.5-1)20200217**	**SO-1620-SG12(5.5-6)20200217**	**SO-1620-SG-13(0.5-1)-2020203**
Sample Date:		**02/06/2020**	**02/17/2020**	**02/17/2020**	**02/03/2020**
Depth:		**5.5-6 ft bgs**	**0.5-1 ft bgs**	**5.5-6 ft bgs**	**0.5-1 ft bgs**
Parameters	**Unit**				
Volatile Organic Compounds					
Benzene	mg/kg	<0.00032	<0.00062	<0.00060	<0.00076
Ethylbenzene	mg/kg	<0.00045	<0.00087	<0.00084	<0.0011
Xylenes (total)	mg/kg	<0.00064	<0.0012	<0.0012	<0.0015
Semivolatile Organic Compounds					
Naphthalene	mg/kg	0.0011 J	0.0039	<0.00071	<0.00075

Table 2

Analytical Results Summary
Soil Gas Probes
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		**SG13**	**SG14**	**SG14**	**SG15**	**SG15**
Sample Name:		**SO-1620-SG-13(5.5-6)-2020203**	**SO-1620-SG14(0.5-1)20200217**	**SO-1620-SG14(5.5-6)20200217**	**SO-1620-SG15(0.5-1)20200213**	**SO-1620-SG15(5.5-6)20200213**
Sample Date:		**02/03/2020**	**02/17/2020**	**02/17/2020**	**02/13/2020**	**02/13/2020**
Depth:		**5.5-6 ft bgs**	**0.5-1 ft bgs**	**5.5-6 ft bgs**	**0.5-1 ft bgs**	**5.5-6 ft bgs**
Parameters	**Unit**					
Volatile Organic Compounds						
Benzene	mg/kg	<0.00049	<0.00030	<0.00037	<0.00050	<0.00032
Ethylbenzene	mg/kg	<0.00068	<0.00042	<0.00051	<0.00070	<0.00045
Xylenes (total)	mg/kg	<0.00097	<0.00061	<0.00073	<0.0010	<0.00065
Semivolatile Organic Compounds						
Naphthalene	mg/kg	<0.00071	0.0027 J	<0.00077	0.014	<0.00071

Table 2

Analytical Results Summary
Soil Gas Probes
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		SG16	SG16	SG17	SG17	SG18
Sample Name:		SO-1620-SG16(0.5-1)20200213	SO-1620-SG16(5.5-6)20200213	SO-1620-SG17(0.5-1)20200212	SO-1620-SG17(5.5-6)20200212	SO-1620-SG-18(0.5-1)-2020203
Sample Date:		02/13/2020	02/13/2020	02/12/2020	02/12/2020	02/03/2020
Depth:		0.5-1 ft bgs	5.5-6 ft bgs	0.5-1 ft bgs	5.5-6 ft bgs	0.5-1 ft bgs
Parameters	**Unit**					
Volatile Organic Compounds						
Benzene	mg/kg	<0.00066	<0.00068	<0.00071	<0.00079	0.0034 J
Ethylbenzene	mg/kg	<0.00093	<0.00095	<0.0010	<0.0011	0.0034 J
Xylenes (total)	mg/kg	<0.0013	<0.0014	<0.0014	<0.0016	0.0056
Semivolatile Organic Compounds						
Naphthalene	mg/kg	0.0099	<0.00071	0.0095	0.0015 J	<0.00069

Table 2

Analytical Results Summary
Soil Gas Probes
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		SG18	SG19	SG19	SG19	SG20
Sample Name:		SO-1620-SG-18(5.5-6)-2020203	SO-1620-SG19(0.5-1)-20200212	SO-1620-FD01-20200212	SO-1620-SG19(5.5-6)-20200212	SO-1620-SG20(0.5-1)-20200211
Sample Date:		02/03/2020	02/12/2020	02/12/2020	02/12/2020	02/11/2020
Depth:		5.5-6 ft bgs	0.5-1 ft bgs	0.5-1 ft bgs Duplicate	5.5-6 ft bgs	0.5-1 ft bgs
Parameters	**Unit**					
Volatile Organic Compounds						
Benzene	mg/kg	<0.00054	<0.00059	<0.00060	<0.00062	<0.00080
Ethylbenzene	mg/kg	<0.00076	<0.00082	<0.00083	<0.00087	<0.0011
Xylenes (total)	mg/kg	<0.0011	<0.0012	<0.0012	<0.0012	<0.0016
Semivolatile Organic Compounds						
Naphthalene	mg/kg	0.0041	<0.00069	0.0053	<0.00071	<0.00069

Table 2

Analytical Results Summary
Soil Gas Probes
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		SG20	SG21	SG21	SG22	SG22
Sample Name:		SO-1620-SG20(5.5-6)-20200211	SO-1620-SG21 (0.5-1) 20200129	SO-1620-SG21 (5.5-6) 20200129	SO-1620-SG22 (0.5-1) 20200129	SO-1620-SG22 (5.5-6) 20200129
Sample Date:		02/11/2020	01/29/2020	01/29/2020	01/29/2020	01/29/2020
Depth:		5.5-6 ft bgs	0.5-1 ft bgs	5.5-6 ft bgs	0.5-1 ft bgs	5.5-6 ft bgs
Parameters	**Unit**					
Volatile Organic Compounds						
Benzene	mg/kg	<0.00072	<0.00088	<0.00053	<0.00061	<0.00056
Ethylbenzene	mg/kg	<0.0010	<0.0012	<0.00074	<0.00085	<0.00079
Xylenes (total)	mg/kg	<0.0014	<0.0018	<0.0011	<0.0012	<0.0011
Semivolatile Organic Compounds						
Naphthalene	mg/kg	<0.00071	0.022	0.010	0.14	<0.00072

Notes:

ft bgs - Feet below ground surface
< - Not detected at the associated reporting limit
J - Estimated concentration

Table 3

Analytical Methods
Soil Gas Probes
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

			Holding Time	
Parameter	**Method**	**Matrix**	**Collection to Extraction (Days)**	**Extraction to Analysis (Days)**
VOCs	SW-846 8260C	Soil	-	14
Naphthalene	SW-846 8270D	Soil	14	40

Notes:

VOCs - Volatile Organic Compounds
"-" - Not Applicable

Method References:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions

Attachment A
Laboratory NELAP Certificate

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-19-23

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

Expiration Date: 4/30/2020

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2019

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: ***Drinking Water***

Method EPA 1613

Analyte	AB	Analyte ID	Method ID
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10120408

Method EPA 200.8

Analyte	AB	Analyte ID	Method ID
Copper	TX	1055	10014605
Lead	TX	1075	10014605

Texas Commission on Environmental Quality

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Matrix: ***Non-Potable Water***

Method EPA 1010

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10116606

Method EPA 120.1

Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	10006403

Method EPA 1311

Analyte	AB	Analyte ID	Method ID
TCLP	TX	849	10118806

Method EPA 1312

Analyte	AB	Analyte ID	Method ID
SPLP	TX	850	10119003

Method EPA 160.4

Analyte	AB	Analyte ID	Method ID
Residue-volatile	TX	1970	10010409

Method EPA 1613

Analyte	AB	Analyte ID	Method ID
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10120408
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10120408
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10120408
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10120408
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10120408
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10120408
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10120408
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10120408
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10120408
1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10120408
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10120408
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10120408
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10120408
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10120408

Texas Commission on Environmental Quality

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Matrix: ***Non-Potable Water***

2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10120408
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10120408
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10120408
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10120408
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10120408
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10120408
Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10120408
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10120408
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10120408
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10120408
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10120408

Method EPA 1664

Analyte	**AB**	**Analyte ID**	**Method ID**
n-Hexane Extractable Material (HEM) (O&G)	TX	1803	10127807

Method EPA 180.1

Analyte	**AB**	**Analyte ID**	**Method ID**
Turbidity	TX	2055	10011606

Method EPA 200.8

Analyte	**AB**	**Analyte ID**	**Method ID**
Aluminum	TX	1000	10014605
Antimony	TX	1005	10014605
Arsenic	TX	1010	10014605
Barium	TX	1015	10014605
Beryllium	TX	1020	10014605
Boron	TX	1025	10014605
Cadmium	TX	1030	10014605
Calcium	TX	1035	10014605
Chromium	TX	1040	10014605
Cobalt	TX	1050	10014605
Copper	TX	1055	10014605
Iron	TX	1070	10014605

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Matrix: ***Non-Potable Water***

Lead	TX	1075	10014605
Magnesium	TX	1085	10014605
Manganese	TX	1090	10014605
Molybdenum	TX	1100	10014605
Nickel	TX	1105	10014605
Potassium	TX	1125	10014605
Selenium	TX	1140	10014605
Silver	TX	1150	10014605
Sodium	TX	1155	10014605
Strontium	TX	1160	10014605
Thallium	TX	1165	10014605
Tin	TX	1175	10014605
Titanium	TX	1180	10014605
Uranium	TX	3035	10014605
Vanadium	TX	1185	10014605
Zinc	TX	1190	10014605

Method EPA 245.1

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10036609

Method EPA 300.0

Analyte	**AB**	**Analyte ID**	**Method ID**
Bromide	TX	1540	10053200
Chloride	TX	1575	10053200
Fluoride	TX	1730	10053200
Nitrate as N	TX	1810	10053200
Nitrate-nitrite	TX	1820	10053200
Nitrite as N	TX	1840	10053200
Orthophosphate as P	TX	1870	10053200
Sulfate	TX	2000	10053200

Method EPA 325.1

Analyte	**AB**	**Analyte ID**	**Method ID**

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Matrix: ***Non-Potable Water***

Chloride	TX	1575	10056801

Method EPA 335.1

Analyte	AB	Analyte ID	Method ID
Amenable cyanide	TX	1510	10060001

Method EPA 335.2

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	10278203

Method EPA 335.4

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	10061402

Method EPA 350.3

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	10064401

Method EPA 365.3

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	10070801
Phosphorus	TX	1910	10070801

Method EPA 375.4

Analyte	AB	Analyte ID	Method ID
Sulfate	TX	2000	10073800

Method EPA 376.1

Analyte	AB	Analyte ID	Method ID
Sulfide	TX	2005	10074201

Method EPA 410.4

Analyte	AB	Analyte ID	Method ID
Chemical oxygen demand (COD)	TX	1565	10077404

Method EPA 415.1

Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	10078407

Method EPA 420.1

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10079400

Texas Commission on Environmental Quality

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Matrix: ***Non-Potable Water***

Method EPA 420.4

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10080203

Method EPA 6020

Analyte	AB	Analyte ID	Method ID
Aluminum	TX	1000	10156419
Antimony	TX	1005	10156419
Arsenic	TX	1010	10156419
Barium	TX	1015	10156419
Beryllium	TX	1020	10156419
Boron	TX	1025	10156419
Cadmium	TX	1030	10156419
Calcium	TX	1035	10156419
Chromium	TX	1040	10156419
Cobalt	TX	1050	10156419
Copper	TX	1055	10156419
Iron	TX	1070	10156419
Lead	TX	1075	10156419
Lithium	TX	1080	10156419
Magnesium	TX	1085	10156419
Manganese	TX	1090	10156419
Molybdenum	TX	1100	10156419
Nickel	TX	1105	10156419
Potassium	TX	1125	10156419
Selenium	TX	1140	10156419
Silver	TX	1150	10156419
Sodium	TX	1155	10156419
Strontium	TX	1160	10156419
Thallium	TX	1165	10156419
Tin	TX	1175	10156419
Titanium	TX	1180	10156419

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Certificate: T104704231-19-23

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

Expiration Date: 4/30/2020

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2019

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Matrix: ***Non-Potable Water***

Vanadium	TX	1185	10156419
Zinc	TX	1190	10156419

Method EPA 608

Analyte	AB	Analyte ID	Method ID
4,4'-DDD	TX	7355	10103603
4,4'-DDE	TX	7360	10103603
4,4'-DDT	TX	7365	10103603
Aldrin	TX	7025	10103603
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10103603
alpha-Chlordane	TX	7240	10103603
Aroclor-1016 (PCB-1016)	TX	8880	10103603
Aroclor-1221 (PCB-1221)	TX	8885	10103603
Aroclor-1232 (PCB-1232)	TX	8890	10103603
Aroclor-1242 (PCB-1242)	TX	8895	10103603
Aroclor-1248 (PCB-1248)	TX	8900	10103603
Aroclor-1254 (PCB-1254)	TX	8905	10103603
Aroclor-1260 (PCB-1260)	TX	8910	10103603
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10103603
Chlordane (tech.)	TX	7250	10103603
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10103603
Dieldrin	TX	7470	10103603
Endosulfan I	TX	7510	10103603
Endosulfan II	TX	7515	10103603
Endosulfan sulfate	TX	7520	10103603
Endrin	TX	7540	10103603
Endrin aldehyde	TX	7530	10103603
Endrin ketone	TX	7535	10103603
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10103603
gamma-Chlordane	TX	7245	10103603
Heptachlor	TX	7685	10103603

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Matrix: ***Non-Potable Water***

Heptachlor epoxide	TX	7690	10103603
Methoxychlor	TX	7810	10103603
Toxaphene (Chlorinated camphene)	TX	8250	10103603

Method EPA 624

Analyte	AB	Analyte ID	Method ID
1,1,1-Trichloroethane	TX	5160	10107207
1,1,2,2-Tetrachloroethane	TX	5110	10107207
1,1,2-Trichloroethane	TX	5165	10107207
1,1-Dichloroethane	TX	4630	10107207
1,1-Dichloroethylene	TX	4640	10107207
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10107207
1,2-Dichlorobenzene	TX	4610	10107207
1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10107207
1,2-Dichloropropane	TX	4655	10107207
1,3-Dichlorobenzene	TX	4615	10107207
1,4-Dichlorobenzene	TX	4620	10107207
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10107207
2-Chloroethyl vinyl ether	TX	4500	10107207
Acetone (2-Propanone)	TX	4315	10107207
Acrolein (Propenal)	TX	4325	10107207
Acrylonitrile	TX	4340	10107207
Benzene	TX	4375	10107207
Bromodichloromethane	TX	4395	10107207
Bromoform	TX	4400	10107207
Carbon tetrachloride	TX	4455	10107207
Chlorobenzene	TX	4475	10107207
Chlorodibromomethane	TX	4575	10107207
Chloroethane (Ethyl chloride)	TX	4485	10107207
Chloroform	TX	4505	10107207
cis-1,2-Dichloroethylene	TX	4645	10107207

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Matrix: ***Non-Potable Water***

cis-1,3-Dichloropropene	TX	4680	10107207
Ethylbenzene	TX	4765	10107207
m+p-xylene	TX	5240	10107207
Methyl bromide (Bromomethane)	TX	4950	10107207
Methyl chloride (Chloromethane)	TX	4960	10107207
Methyl tert-butyl ether (MTBE)	TX	5000	10107207
Methylene chloride (Dichloromethane)	TX	4975	10107207
Naphthalene	TX	5005	10107207
o-Xylene	TX	5250	10107207
Tetrachloroethylene (Perchloroethylene)	TX	5115	10107207
Toluene	TX	5140	10107207
trans-1,2-Dichloroethylene	TX	4700	10107207
trans-1,3-Dichloropropylene	TX	4685	10107207
Trichloroethene (Trichloroethylene)	TX	5170	10107207
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10107207
Vinyl chloride	TX	5235	10107207
Xylene (total)	TX	5260	10107207

Method EPA 625

Analyte	**AB**	**Analyte ID**	**Method ID**
1,2,4,5-Tetrachlorobenzene	TX	6715	10107401
1,2,4-Trichlorobenzene	TX	5155	10107401
1,2-Dichlorobenzene	TX	4610	10107401
1,2-Diphenylhydrazine	TX	6220	10107401
1,3-Dichlorobenzene	TX	4615	10107401
1,4-Dichlorobenzene	TX	4620	10107401
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10107401
2,4,5-Trichlorophenol	TX	6835	10107401
2,4,6-Trichlorophenol	TX	6840	10107401
2,4-Dichlorophenol	TX	6000	10107401
2,4-Dimethylphenol	TX	6130	10107401

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Matrix: ***Non-Potable Water***

2,4-Dinitrophenol	TX	6175	10107401
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10107401
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10107401
2-Chloronaphthalene	TX	5795	10107401
2-Chlorophenol	TX	5800	10107401
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10107401
2-Methylphenol (o-Cresol)	TX	6400	10107401
2-Nitrophenol	TX	6490	10107401
3,3'-Dichlorobenzidine	TX	5945	10107401
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10107401
4-Chloro-3-methylphenol	TX	5700	10107401
4-Chlorophenyl phenylether	TX	5825	10107401
4-Methylphenol (p-Cresol)	TX	6410	10107401
4-Nitrophenol	TX	6500	10107401
Acenaphthene	TX	5500	10107401
Acenaphthylene	TX	5505	10107401
Anthracene	TX	5555	10107401
Benzidine	TX	5595	10107401
Benzo(a)anthracene	TX	5575	10107401
Benzo(a)pyrene	TX	5580	10107401
Benzo(b)fluoranthene	TX	5585	10107401
Benzo(g,h,i)perylene	TX	5590	10107401
Benzo(k)fluoranthene	TX	5600	10107401
bis(2-Chloroethoxy)methane	TX	5760	10107401
bis(2-Chloroethyl) ether	TX	5765	10107401
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10107401
Butyl benzyl phthalate	TX	5670	10107401
Chrysene	TX	5855	10107401
Dibenz(a,h) anthracene	TX	5895	10107401
Diethyl phthalate	TX	6070	10107401

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Dimethyl phthalate	TX	6135	10107401
Di-n-butyl phthalate	TX	5925	10107401
Di-n-octyl phthalate	TX	6200	10107401
Fluoranthene	TX	6265	10107401
Fluorene	TX	6270	10107401
Hexachlorobenzene	TX	6275	10107401
Hexachlorobutadiene	TX	4835	10107401
Hexachlorocyclopentadiene	TX	6285	10107401
Hexachloroethane	TX	4840	10107401
Indeno(1,2,3-cd) pyrene	TX	6315	10107401
Isophorone	TX	6320	10107401
Naphthalene	TX	5005	10107401
Nitrobenzene	TX	5015	10107401
n-Nitrosodiethylamine	TX	6525	10107401
n-Nitrosodimethylamine	TX	6530	10107401
n-Nitrosodi-n-butylamine	TX	5025	10107401
n-Nitrosodi-n-propylamine	TX	6545	10107401
n-Nitrosodiphenylamine	TX	6535	10107401
Pentachlorobenzene	TX	6590	10107401
Pentachlorophenol	TX	6605	10107401
Phenanthrene	TX	6615	10107401
Phenol	TX	6625	10107401
Pyrene	TX	6665	10107401
Pyridine	TX	5095	10107401

Method EPA 7196

Analyte	**AB**	**Analyte ID**	**Method ID**
Chromium (VI)	TX	1045	10162206

Method EPA 7470

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10165603

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Matrix: ***Non-Potable Water***

Method EPA 8011

Analyte	AB	Analyte ID	Method ID
1,2,3-Trichloropropane	TX	5180	10173009
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10173009
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10173009

Method EPA 8015

Analyte	AB	Analyte ID	Method ID
Diesel range organics (DRO)	TX	9369	10173203
Ethanol	TX	4750	10173203
Ethylene glycol	TX	4785	10173203
Gasoline range organics (GRO)	TX	9408	10173203
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10173203
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10173203
Methanol	TX	4930	10173203
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10173203
n-Propanol (1-Propanol)	TX	5055	10173203
Propylene Glycol	TX	6657	10173203
tert-Butyl alcohol	TX	4420	10173203

Method EPA 8021

Analyte	AB	Analyte ID	Method ID
Benzene	TX	4375	10174400
Ethylbenzene	TX	4765	10174400
m+p-xylene	TX	5240	10174400
Methyl tert-butyl ether (MTBE)	TX	5000	10174400
o-Xylene	TX	5250	10174400
Toluene	TX	5140	10174400
Xylene (total)	TX	5260	10174400

Method EPA 8081

Analyte	AB	Analyte ID	Method ID
4,4'-DDD	TX	7355	10178402
4,4'-DDE	TX	7360	10178402

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Matrix: ***Non-Potable Water***

4,4'-DDT	TX	7365	10178402
Aldrin	TX	7025	10178402
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10178402
alpha-Chlordane	TX	7240	10178402
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10178402
Chlordane (tech.)	TX	7250	10178402
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10178402
Dieldrin	TX	7470	10178402
Endosulfan I	TX	7510	10178402
Endosulfan II	TX	7515	10178402
Endosulfan sulfate	TX	7520	10178402
Endrin	TX	7540	10178402
Endrin aldehyde	TX	7530	10178402
Endrin ketone	TX	7535	10178402
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10178402
gamma-Chlordane	TX	7245	10178402
Heptachlor	TX	7685	10178402
Heptachlor epoxide	TX	7690	10178402
Hexachlorobenzene	TX	6275	10178402
Methoxychlor	TX	7810	10178402
Mirex	TX	7870	10178402
Toxaphene (Chlorinated camphene)	TX	8250	10178402

Method EPA 8082

Analyte	**AB**	**Analyte ID**	**Method ID**
Aroclor-1016 (PCB-1016)	TX	8880	10179201
Aroclor-1221 (PCB-1221)	TX	8885	10179201
Aroclor-1232 (PCB-1232)	TX	8890	10179201
Aroclor-1242 (PCB-1242)	TX	8895	10179201
Aroclor-1248 (PCB-1248)	TX	8900	10179201
Aroclor-1254 (PCB-1254)	TX	8905	10179201

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Matrix: ***Non-Potable Water***

Aroclor-1260 (PCB-1260)	TX	8910	10179201
PCBs (total)	TX	8870	10179201

Method EPA 8151

Analyte	AB	Analyte ID	Method ID
2,4,5-T	TX	8655	10183003
2,4-D	TX	8545	10183003
2,4-DB	TX	8560	10183003
Dalapon	TX	8555	10183003
Dicamba	TX	8595	10183003
Dichloroprop (Dichlorprop, Weedone)	TX	8605	10183003
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10183003
MCPA	TX	7775	10183003
MCPP	TX	7780	10183003
Silvex (2,4,5-TP)	TX	8650	10183003

Method EPA 8260

Analyte	AB	Analyte ID	Method ID
1,1,1,2-Tetrachloroethane	TX	5105	10184404
1,1,1-Trichloroethane	TX	5160	10184404
1,1,2,2-Tetrachloroethane	TX	5110	10184404
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	TX	5195	10184404
1,1,2-Trichloroethane	TX	5165	10184404
1,1-Dichloroethane	TX	4630	10184404
1,1-Dichloroethylene	TX	4640	10184404
1,1-Dichloropropene	TX	4670	10184404
1,2,3-Trichlorobenzene	TX	5150	10184404
1,2,3-Trichloropropane	TX	5180	10184404
1,2,4-Trichlorobenzene	TX	5155	10184404
1,2,4-Trimethylbenzene	TX	5210	10184404
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10184404
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10184404
1,2-Dichlorobenzene	TX	4610	10184404

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Matrix: ***Non-Potable Water***

1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10184404
1,2-Dichloropropane	TX	4655	10184404
1,3,5-Trimethylbenzene	TX	5215	10184404
1,3-Dichlorobenzene	TX	4615	10184404
1,3-Dichloropropane	TX	4660	10184404
1,4-Dichlorobenzene	TX	4620	10184404
1,4-Dioxane (1,4-Diethyleneoxide)	TX	4735	10184404
1-Chlorohexane	TX	4510	10184404
1-Propanol	TX	5060	10184404
2,2-Dichloropropane	TX	4665	10184404
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10184404
2-Chloroethyl vinyl ether	TX	4500	10184404
2-Chlorotoluene	TX	4535	10184404
2-Hexanone (MBK)	TX	4860	10184404
2-Pentanone	TX	5045	10184404
4-Chlorotoluene	TX	4540	10184404
4-Isopropyltoluene (p-Cymene)	TX	4915	10184404
4-Methyl-2-pentanone (MIBK)	TX	4995	10184404
Acetone (2-Propanone)	TX	4315	10184404
Acetonitrile	TX	4320	10184404
Acrolein (Propenal)	TX	4325	10184404
Acrylonitrile	TX	4340	10184404
Allyl alcohol	TX	4350	10184404
Allyl chloride (3-Chloropropene)	TX	4355	10184404
Benzene	TX	4375	10184404
Benzyl chloride	TX	5635	10184404
Bromobenzene	TX	4385	10184404
Bromochloromethane	TX	4390	10184404
Bromodichloromethane	TX	4395	10184404
Bromoform	TX	4400	10184404

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Matrix: ***Non-Potable Water***

Carbon disulfide	TX	4450	10184404
Carbon tetrachloride	TX	4455	10184404
Chlorobenzene	TX	4475	10184404
Chlorodibromomethane	TX	4575	10184404
Chloroethane (Ethyl chloride)	TX	4485	10184404
Chloroform	TX	4505	10184404
Chloroprene (2-Chloro-1,3-butadiene)	TX	4525	10184404
cis-1,2-Dichloroethylene	TX	4645	10184404
cis-1,3-Dichloropropene	TX	4680	10184404
Dibromofluoromethane	TX	4590	10184404
Dibromomethane (Methylene bromide)	TX	4595	10184404
Dichlorodifluoromethane (Freon-12)	TX	4625	10184404
Diethyl ether	TX	4725	10184404
Di-isopropylether (DIPE)	TX	9375	10184404
Epichlorohydrin (1-Chloro-2,3-epoxypropane)	TX	4745	10184404
Ethanol	TX	4750	10184404
Ethyl acetate	TX	4755	10184404
Ethyl methacrylate	TX	4810	10184404
Ethylbenzene	TX	4765	10184404
Ethylene oxide	TX	4795	10184404
Ethyl-t-butylether (ETBE) (2-Ethoxy-2-methylpropane)	TX	4770	10184404
Hexachlorobutadiene	TX	4835	10184404
Iodomethane (Methyl iodide)	TX	4870	10184404
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10184404
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10184404
Isopropylbenzene (Cumene)	TX	4900	10184404
m+p-xylene	TX	5240	10184404
Methacrylonitrile	TX	4925	10184404
Methyl acetate	TX	4940	10184404
Methyl acrylate	TX	4945	10184404

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Matrix: ***Non-Potable Water***

Methyl bromide (Bromomethane)	TX	4950	10184404
Methyl chloride (Chloromethane)	TX	4960	10184404
Methyl methacrylate	TX	4990	10184404
Methyl tert-butyl ether (MTBE)	TX	5000	10184404
Methylcyclohexane	TX	4965	10184404
Methylene chloride (Dichloromethane)	TX	4975	10184404
Naphthalene	TX	5005	10184404
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10184404
n-Butylbenzene	TX	4435	10184404
n-Propylbenzene	TX	5090	10184404
o-Xylene	TX	5250	10184404
Pentachloroethane	TX	5035	10184404
Propionitrile (Ethyl cyanide)	TX	5080	10184404
Pyridine	TX	5095	10184404
sec-Butylbenzene	TX	4440	10184404
Styrene	TX	5100	10184404
T-amylmethylether (TAME)	TX	4370	10184404
tert-Butyl alcohol	TX	4420	10184404
tert-Butylbenzene	TX	4445	10184404
Tetrachloroethylene (Perchloroethylene)	TX	5115	10184404
Toluene	TX	5140	10184404
trans-1,2-Dichloroethylene	TX	4700	10184404
trans-1,3-Dichloropropylene	TX	4685	10184404
trans-1,4-Dichloro-2-butene	TX	4605	10184404
Trichloroethene (Trichloroethylene)	TX	5170	10184404
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10184404
Vinyl acetate	TX	5225	10184404
Vinyl chloride	TX	5235	10184404
Xylene (total)	TX	5260	10184404

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Matrix: ***Non-Potable Water***

Method EPA 8270

Analyte	AB	Analyte ID	Method ID
1,2,4,5-Tetrachlorobenzene	TX	6715	10185203
1,2,4-Trichlorobenzene	TX	5155	10185203
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10185203
1,2-Dichlorobenzene	TX	4610	10185203
1,2-Dinitrobenzene	TX	6155	10185203
1,2-Diphenylhydrazine	TX	6220	10185203
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10185203
1,3-Dichlorobenzene	TX	4615	10185203
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10185203
1,4-Dichlorobenzene	TX	4620	10185203
1,4-Dinitrobenzene	TX	6165	10185203
1,4-Naphthoquinone	TX	6420	10185203
1,4-Phenylenediamine	TX	6630	10185203
1-Chloronaphthalene	TX	5790	10185203
1-Naphthylamine	TX	6425	10185203
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10185203
2,3,4,6-Tetrachlorophenol	TX	6735	10185203
2,4,5-Trichlorophenol	TX	6835	10185203
2,4,5-Trimethylaniline	TX	6880	10185203
2,4,6-Trichlorophenol	TX	6840	10185203
2,4-Diaminotoluene	TX	5880	10185203
2,4-Dichlorophenol	TX	6000	10185203
2,4-Dimethylphenol	TX	6130	10185203
2,4-Dinitrophenol	TX	6175	10185203
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10185203
2,6-Dichlorophenol	TX	6005	10185203
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10185203
2-Acetylaminofluorene	TX	5515	10185203

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

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ALS Laboratory Group, Environmental Services Division (Houston, Texas)

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10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2019

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Matrix: ***Non-Potable Water***

2-Chloronaphthalene	TX	5795	10185203
2-Chlorophenol	TX	5800	10185203
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10185203
2-Methylaniline (o-Toluidine)	TX	5145	10185203
2-Methylnaphthalene	TX	6385	10185203
2-Methylphenol (o-Cresol)	TX	6400	10185203
2-Naphthylamine	TX	6430	10185203
2-Nitroaniline	TX	6460	10185203
2-Nitrophenol	TX	6490	10185203
2-Picoline (2-Methylpyridine)	TX	5050	10185203
3,3'-Dichlorobenzidine	TX	5945	10185203
3,3'-Dimethylbenzidine	TX	6120	10185203
3-Methylcholanthrene	TX	6355	10185203
3-Methylphenol (m-Cresol)	TX	6405	10185203
3-Nitroaniline	TX	6465	10185203
4-Aminobiphenyl	TX	5540	10185203
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10185203
4-Chloro-3-methylphenol	TX	5700	10185203
4-Chloroaniline	TX	5745	10185203
4-Chlorophenyl phenylether	TX	5825	10185203
4-Dimethyl aminoazobenzene	TX	6105	10185203
4-Methylphenol (p-Cresol)	TX	6410	10185203
4-Nitroaniline	TX	6470	10185203
4-Nitrobiphenyl	TX	6480	10185203
4-Nitrophenol	TX	6500	10185203
4-Nitroquinoline-1-oxide	TX	6510	10185203
5-Chloro-2-methylaniline	TX	5695	10185203
5-Nitro-o-toluidine	TX	6570	10185203
7,12-Dimethylbenz(a) anthracene	TX	6115	10185203
a-a-Dimethylphenethylamine	TX	6125	10185203

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Matrix: ***Non-Potable Water***

Acenaphthene	TX	5500	10185203
Acenaphthylene	TX	5505	10185203
Acetophenone	TX	5510	10185203
Aniline	TX	5545	10185203
Anthracene	TX	5555	10185203
Aramite	TX	5560	10185203
Atrazine	TX	7065	10185203
Azinphos-methyl (Guthion)	TX	7075	10185203
Azobenzene	TX	5562	10185203
Benzenethiol (Thiophenol)	TX	6750	10185203
Benzidine	TX	5595	10185203
Benzo(a)anthracene	TX	5575	10185203
Benzo(a)pyrene	TX	5580	10185203
Benzo(b)fluoranthene	TX	5585	10185203
Benzo(e)pyrene	TX	5605	10185203
Benzo(g,h,i)perylene	TX	5590	10185203
Benzo(k)fluoranthene	TX	5600	10185203
Benzoic acid	TX	5610	10185203
Benzyl alcohol	TX	5630	10185203
Biphenyl	TX	5640	10185203
bis(2-Chloroethoxy)methane	TX	5760	10185203
bis(2-Chloroethyl) ether	TX	5765	10185203
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10185203
Butyl benzyl phthalate	TX	5670	10185203
Caprolactam	TX	7180	10185203
Captan	TX	7190	10185203
Carbaryl (Sevin)	TX	7195	10185203
Carbazole	TX	5680	10185203
Carbophenothion	TX	7220	10185203
Chlorobenzilate	TX	7260	10185203

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Matrix: ***Non-Potable Water***

Chrysene	TX	5855	10185203
Coumaphos	TX	7315	10185203
Demeton	TX	7390	10185203
Demeton	TX	7390	10185203
Demeton-o	TX	7395	10185203
Demeton-s	TX	7385	10185203
Diallate	TX	7405	10185203
Dibenz(a,h) anthracene	TX	5895	10185203
Dibenz(a,j) acridine	TX	5900	10185203
Dibenzofuran	TX	5905	10185203
Dichlorovos (DDVP, Dichlorvos)	TX	8610	10185203
Diethyl phthalate	TX	6070	10185203
Dimethoate	TX	7475	10185203
Dimethoate	TX	7475	10185203
Dimethyl phthalate	TX	6135	10185203
Di-n-butyl phthalate	TX	5925	10185203
Di-n-octyl phthalate	TX	6200	10185203
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10185203
Dioxathion	TX	7495	10185203
Diphenylamine	TX	6205	10185203
Disulfoton	TX	8625	10185203
Ethion	TX	7565	10185203
Ethyl methanesulfonate	TX	6260	10185203
Famphur	TX	7580	10185203
Fluoranthene	TX	6265	10185203
Fluorene	TX	6270	10185203
Hexachlorobenzene	TX	6275	10185203
Hexachlorobutadiene	TX	4835	10185203
Hexachlorocyclopentadiene	TX	6285	10185203
Hexachloroethane	TX	4840	10185203

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Matrix: ***Non-Potable Water***

Hexachlorophene	TX	6290	10185203
Hexachloropropene	TX	6295	10185203
Indeno(1,2,3-cd) pyrene	TX	6315	10185203
Isodrin	TX	7725	10185203
Isophorone	TX	6320	10185203
Isosafrole	TX	6325	10185203
Kepone	TX	7740	10185203
Maleic anhydride	TX	6335	10185203
Methapyrilene	TX	6345	10185203
Methyl methanesulfonate	TX	6375	10185203
Methyl parathion (Parathion, methyl)	TX	7825	10185203
Mevinphos	TX	7850	10185203
Naled	TX	7905	10185203
Naphthalene	TX	5005	10185203
Nitrobenzene	TX	5015	10185203
n-Nitrosodiethylamine	TX	6525	10185203
n-Nitrosodimethylamine	TX	6530	10185203
n-Nitrosodi-n-butylamine	TX	5025	10185203
n-Nitrosodi-n-propylamine	TX	6545	10185203
n-Nitrosodiphenylamine	TX	6535	10185203
n-Nitrosomethylethylamine	TX	6550	10185203
n-Nitrosomorpholine	TX	6555	10185203
n-Nitrosopiperidine	TX	6560	10185203
n-Nitrosopyrrolidine	TX	6565	10185203
o,o,o-Triethyl phosphorothioate	TX	8290	10185203
o-Anisidine	TX	5550	10185203
Parathion, ethyl	TX	7955	10185203
p-Cresidine	TX	5860	10185203
Pentachlorobenzene	TX	6590	10185203
Pentachloronitrobenzene (PCNB)	TX	6600	10185203

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Matrix: ***Non-Potable Water***

Pentachlorophenol	TX	6605	10185203
Phenacetin	TX	6610	10185203
Phenanthrene	TX	6615	10185203
Phenol	TX	6625	10185203
Phorate	TX	7985	10185203
Phosmet (Imidan)	TX	8000	10185203
Phthalic anhydride	TX	6640	10185203
Pronamide (Kerb)	TX	6650	10185203
Pyrene	TX	6665	10185203
Pyridine	TX	5095	10185203
Quinoline	TX	6670	10185203
Resorcinol	TX	6680	10185203
Safrole	TX	6685	10185203
Sulfotepp	TX	8155	10185203
Terbufos	TX	8185	10185203
Tetrachlorvinphos (Stirophos, Gardona)	TX	8197	10185203
Thionazin (Zinophos)	TX	8235	10185203
Toluene diisocyanate	TX	6775	10185203
Trifluralin (Treflan)	TX	8295	10185203

Method EPA 8290

Analyte	**AB**	**Analyte ID**	**Method ID**
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10187209
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10187209
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10187209
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10187209
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10187209
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10187209
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10187209
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10187209
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10187209

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Matrix: ***Non-Potable Water***

1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10187209
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10187209
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10187209
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10187209
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10187209
2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10187209
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10187209
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10187209
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10187209
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10187209
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10187209
Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10187209
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10187209
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10187209
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10187209
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10187209

Method EPA 8316

Analyte	**AB**	**Analyte ID**	**Method ID**
Acrylamide	TX	4330	10188202

Method EPA 8330

Analyte	**AB**	**Analyte ID**	**Method ID**
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10189807
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10189807
2,4,6-Trinitrotoluene (2,4,6-TNT)	TX	9651	10189807
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10189807
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10189807
2-Amino-4,6-dinitrotoluene (2-am-dnt)	TX	9303	10189807
2-Nitrotoluene	TX	9507	10189807
3-Nitrotoluene	TX	9510	10189807
4-Amino-2,6-dinitrotoluene (4-am-dnt)	TX	9306	10189807
4-Nitrotoluene	TX	9513	10189807

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Matrix: ***Non-Potable Water***

Methyl-2,4,6-trinitrophenylnitramine (tetryl)	TX	6415	10189807
Nitrobenzene	TX	5015	10189807
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	TX	9522	10189807
RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine)	TX	9432	10189807

Method EPA 9014

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	10193803
Total cyanide	TX	1645	10193803

Method EPA 9038

Analyte	**AB**	**Analyte ID**	**Method ID**
Sulfate	TX	2000	10196608

Method EPA 9040

Analyte	**AB**	**Analyte ID**	**Method ID**
pH	TX	1900	10196802

Method EPA 9050

Analyte	**AB**	**Analyte ID**	**Method ID**
Conductivity	TX	1610	10198604

Method EPA 9056

Analyte	**AB**	**Analyte ID**	**Method ID**
Bromide	TX	1540	10199209
Chloride	TX	1575	10199209
Fluoride	TX	1730	10199209
Nitrate as N	TX	1810	10199209
Nitrate-nitrite	TX	1820	10199209
Nitrite as N	TX	1840	10199209
Orthophosphate as P	TX	1870	10199209
Sulfate	TX	2000	10199209

Method EPA 9060

Analyte	**AB**	**Analyte ID**	**Method ID**
Total Organic Carbon (TOC)	TX	2040	10200201

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Matrix: ***Non-Potable Water***

Method EPA 9065

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200405

Method EPA 9066

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200609

Method EPA 9250

Analyte	AB	Analyte ID	Method ID
Chloride	TX	1575	10207202

Method EPA RSK 175

Analyte	AB	Analyte ID	Method ID
2-methylpropane (Isobutane)	TX	4942	10212905
Ethane	TX	4747	10212905
Ethene	TX	4752	10212905
Methane	TX	4926	10212905
n-Butane	TX	5007	10212905
n-Propane	TX	5029	10212905

Method HACH 8000

Analyte	AB	Analyte ID	Method ID
Chemical oxygen demand (COD)	TX	1565	60003001

Method SM 2120 B

Analyte	AB	Analyte ID	Method ID
Color	TX	1605	20223807

Method SM 2310 B (4a)

Analyte	AB	Analyte ID	Method ID
Acidity, as CaCO3	TX	1500	20002806

Method SM 2320 B

Analyte	AB	Analyte ID	Method ID
Alkalinity as CaCO3	TX	1505	20045005

Method SM 2340 B

Analyte	AB	Analyte ID	Method ID

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Matrix: ***Non-Potable Water***

Total hardness as CaCO3	TX	1755	20046008

Method SM 2510 B

Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	20048004

Method SM 2540 B

Analyte	AB	Analyte ID	Method ID
Residue-total (total solids)	TX	1950	20004608

Method SM 2540 C

Analyte	AB	Analyte ID	Method ID
Residue-filterable (TDS)	TX	1955	20049803

Method SM 2540 D

Analyte	AB	Analyte ID	Method ID
Residue-nonfilterable (TSS)	TX	1960	20004802

Method SM 3500-Cr B

Analyte	AB	Analyte ID	Method ID
Chromium (VI)	TX	1045	20065809

Method SM 4500-Cl F

Analyte	AB	Analyte ID	Method ID
Total residual chlorine	TX	1940	20080482

Method SM 4500-Cl^- E

Analyte	AB	Analyte ID	Method ID
Chloride	TX	1575	20019209

Method SM 4500-CN^- C

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	20020808

Method SM 4500-CN^- E

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	20021209

Method SM 4500-CN^- G

Analyte	AB	Analyte ID	Method ID
Amenable cyanide	TX	1510	20021607

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Matrix: ***Non-Potable Water***

Method SM 4500-H+ B

Analyte	AB	Analyte ID	Method ID
pH	TX	1900	20104603

Method SM 4500-NH3 D

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	20108809
Kjeldahl Nitrogen (Total Kjeldahl Nitrogen-TKN)	TX	1790	20108809

Method SM 4500-NH3 F

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	20023001

Method SM 4500-O G

Analyte	AB	Analyte ID	Method ID
Oxygen, dissolved	TX	1880	20025405

Method SM 4500-P E

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	20025803
Phosphorus	TX	1910	20025803

Method SM 4500-$S2^{-}$ F

Analyte	AB	Analyte ID	Method ID
Sulfide	TX	2005	20126209

Method SM 4500-SiO2 D

Analyte	AB	Analyte ID	Method ID
Silica as SiO2	TX	1990	20127202

Method SM 4500-$SO3^{-}$ B

Analyte	AB	Analyte ID	Method ID
Sulfite	TX	2015	20026806

Method SM 5210 B

Analyte	AB	Analyte ID	Method ID
Biochemical oxygen demand (BOD)	TX	1530	20027401
Carbonaceous BOD, CBOD	TX	1555	20027401

Method SM 5310 B

Analyte	AB	Analyte ID	Method ID

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Matrix: ***Non-Potable Water***

Total Organic Carbon (TOC)	TX	2040	20137206

Method SM 5310 C

Analyte	**AB**	**Analyte ID**	**Method ID**
Total Organic Carbon (TOC)	TX	2040	20138209

Method SM 5540 C

Analyte	**AB**	**Analyte ID**	**Method ID**
Surfactants - MBAS	TX	2025	20144405

Method TCEQ 1005

Analyte	**AB**	**Analyte ID**	**Method ID**
Total Petroleum Hydrocarbons (TPH)	TX	2050	90019208

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Matrix: ***Solid & Chemical Materials***

Method ASTM D2216

Analyte	AB	Analyte ID	Method ID
Moisture	TX	10337	ASTM D2216-05

Method EPA 1010

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10116606

Method EPA 1030

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10117201

Method EPA 1311

Analyte	AB	Analyte ID	Method ID
TCLP	TX	849	10118806

Method EPA 1312

Analyte	AB	Analyte ID	Method ID
SPLP	TX	850	10119003

Method EPA 1668

Analyte	AB	Analyte ID	Method ID
Decachlorobiphenyls	TX	10332	10262007
Dichlorobiphenyls	TX	464	10262007
Heptachlorobiphenyls	TX	486	10262007
Hexachlorobiphenyls	TX	487	10262007
Monochlorobiphenyls	TX	501	10262007
Nonachlorobiphenyls	TX	507	10262007
Octachlorobiphenyls	TX	508	10262007
Pentachlorobiphenyls	TX	515	10262007
Tetrachlorobiphenyls	TX	528	10262007
Trichlorobiphenyls	TX	541	10262007

Method EPA 200.8

Analyte	AB	Analyte ID	Method ID
Uranium	TX	3035	10014605

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Issue Date: 5/1/2019

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Matrix: ***Solid & Chemical Materials***

Method EPA 300.0

Analyte	AB	Analyte ID	Method ID
Bromide	TX	1540	10053200
Chloride	TX	1575	10053200
Fluoride	TX	1730	10053200
Nitrate as N	TX	1810	10053200
Nitrate-nitrite	TX	1820	10053200
Nitrite as N	TX	1840	10053200
Orthophosphate as P	TX	1870	10053200
Sulfate	TX	2000	10053200

Method EPA 310.1

Analyte	AB	Analyte ID	Method ID
Alkalinity as CaCO3	TX	1505	10054805

Method EPA 350.3

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	10064401

Method EPA 365.3

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	10070801
Phosphorus	TX	1910	10070801

Method EPA 6020

Analyte	AB	Analyte ID	Method ID
Aluminum	TX	1000	10156204
Antimony	TX	1005	10156204
Arsenic	TX	1010	10156204
Barium	TX	1015	10156204
Beryllium	TX	1020	10156204
Boron	TX	1025	10156204
Cadmium	TX	1030	10156204
Calcium	TX	1035	10156204
Chromium	TX	1040	10156204

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Matrix: ***Solid & Chemical Materials***

Cobalt	TX	1050	10156204
Copper	TX	1055	10156204
Iron	TX	1070	10156204
Lead	TX	1075	10156204
Lithium	TX	1080	10156204
Magnesium	TX	1085	10156204
Manganese	TX	1090	10156204
Molybdenum	TX	1100	10156204
Nickel	TX	1105	10156204
Potassium	TX	1125	10156204
Selenium	TX	1140	10156204
Silver	TX	1150	10156204
Sodium	TX	1155	10156204
Strontium	TX	1160	10156204
Thallium	TX	1165	10156204
Tin	TX	1175	10156204
Titanium	TX	1180	10156204
Vanadium	TX	1185	10156204
Zinc	TX	1190	10156204

Method EPA 7196

Analyte	**AB**	**Analyte ID**	**Method ID**
Chromium (VI)	TX	1045	10162206

Method EPA 7470

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10165603

Method EPA 7471

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10166004

Method EPA 8015

Analyte	**AB**	**Analyte ID**	**Method ID**
Diesel range organics (DRO)	TX	9369	10173203

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Matrix: ***Solid & Chemical Materials***

Ethanol	TX	4750	10173203
Ethylene glycol	TX	4785	10173203
Gasoline range organics (GRO)	TX	9408	10173203
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10173203
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10173203
Methanol	TX	4930	10173203
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10173203
n-Propanol (1-Propanol)	TX	5055	10173203
Propylene Glycol	TX	6657	10173203
tert-Butyl alcohol	TX	4420	10173203

Method EPA 8021

Analyte	**AB**	**Analyte ID**	**Method ID**
Benzene	TX	4375	10174400
Ethylbenzene	TX	4765	10174400
m+p-xylene	TX	5240	10174400
Methyl tert-butyl ether (MTBE)	TX	5000	10174400
o-Xylene	TX	5250	10174400
Toluene	TX	5140	10174400
Xylene (total)	TX	5260	10174400

Method EPA 8081

Analyte	**AB**	**Analyte ID**	**Method ID**
4,4'-DDD	TX	7355	10178402
4,4'-DDE	TX	7360	10178402
4,4'-DDT	TX	7365	10178402
Aldrin	TX	7025	10178402
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10178402
alpha-Chlordane	TX	7240	10178402
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10178402
Chlordane (tech.)	TX	7250	10178402
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10178402
Dieldrin	TX	7470	10178402

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Matrix: ***Solid & Chemical Materials***

Endosulfan I	TX	7510	10178402
Endosulfan II	TX	7515	10178402
Endosulfan sulfate	TX	7520	10178402
Endrin	TX	7540	10178402
Endrin aldehyde	TX	7530	10178402
Endrin ketone	TX	7535	10178402
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10178402
gamma-Chlordane	TX	7245	10178402
Heptachlor	TX	7685	10178402
Heptachlor epoxide	TX	7690	10178402
Methoxychlor	TX	7810	10178402
Mirex	TX	7870	10178402
Toxaphene (Chlorinated camphene)	TX	8250	10178402

Method EPA 8082

Analyte	**AB**	**Analyte ID**	**Method ID**
Aroclor-1016 (PCB-1016)	TX	8880	10179201
Aroclor-1221 (PCB-1221)	TX	8885	10179201
Aroclor-1232 (PCB-1232)	TX	8890	10179201
Aroclor-1242 (PCB-1242)	TX	8895	10179201
Aroclor-1248 (PCB-1248)	TX	8900	10179201
Aroclor-1254 (PCB-1254)	TX	8905	10179201
Aroclor-1260 (PCB-1260)	TX	8910	10179201
PCBs (total)	TX	8870	10179201

Method EPA 8260

Analyte	**AB**	**Analyte ID**	**Method ID**
1,1,1,2-Tetrachloroethane	TX	5105	10184404
1,1,1-Trichloroethane	TX	5160	10184404
1,1,2,2-Tetrachloroethane	TX	5110	10184404
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	TX	5195	10184404
1,1,2-Trichloroethane	TX	5165	10184404
1,1-Dichloroethane	TX	4630	10184404

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Matrix: ***Solid & Chemical Materials***

1,1-Dichloroethylene	TX	4640	10184404
1,1-Dichloropropene	TX	4670	10184404
1,2,3-Trichlorobenzene	TX	5150	10184404
1,2,3-Trichloropropane	TX	5180	10184404
1,2,4-Trichlorobenzene	TX	5155	10184404
1,2,4-Trimethylbenzene	TX	5210	10184404
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10184404
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10184404
1,2-Dichlorobenzene	TX	4610	10184404
1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10184404
1,2-Dichloropropane	TX	4655	10184404
1,3,5-Trimethylbenzene	TX	5215	10184404
1,3-Dichlorobenzene	TX	4615	10184404
1,3-Dichloropropane	TX	4660	10184404
1,4-Dichlorobenzene	TX	4620	10184404
1,4-Dioxane (1,4-Diethyleneoxide)	TX	4735	10184404
1-Chlorohexane	TX	4510	10184404
1-Propanol	TX	5060	10184404
2,2-Dichloropropane	TX	4665	10184404
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10184404
2-Chloroethyl vinyl ether	TX	4500	10184404
2-Chlorotoluene	TX	4535	10184404
2-Hexanone (MBK)	TX	4860	10184404
4-Chlorotoluene	TX	4540	10184404
4-Isopropyltoluene (p-Cymene)	TX	4915	10184404
4-Methyl-2-pentanone (MIBK)	TX	4995	10184404
Acetone (2-Propanone)	TX	4315	10184404
Acetonitrile	TX	4320	10184404
Acrolein (Propenal)	TX	4325	10184404
Acrylonitrile	TX	4340	10184404

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Matrix: ***Solid & Chemical Materials***

Allyl chloride (3-Chloropropene)	TX	4355	10184404
Benzene	TX	4375	10184404
Benzyl chloride	TX	5635	10184404
Bromobenzene	TX	4385	10184404
Bromochloromethane	TX	4390	10184404
Bromodichloromethane	TX	4395	10184404
Bromoform	TX	4400	10184404
Carbon disulfide	TX	4450	10184404
Carbon tetrachloride	TX	4455	10184404
Chlorobenzene	TX	4475	10184404
Chlorodibromomethane	TX	4575	10184404
Chloroethane (Ethyl chloride)	TX	4485	10184404
Chloroform	TX	4505	10184404
Chloroprene (2-Chloro-1,3-butadiene)	TX	4525	10184404
cis-1,2-Dichloroethylene	TX	4645	10184404
cis-1,3-Dichloropropene	TX	4680	10184404
Dibromofluoromethane	TX	4590	10184404
Dibromomethane (Methylene bromide)	TX	4595	10184404
Dichlorodifluoromethane (Freon-12)	TX	4625	10184404
Diethyl ether	TX	4725	10184404
Epichlorohydrin (1-Chloro-2,3-epoxypropane)	TX	4745	10184404
Ethanol	TX	4750	10184404
Ethyl acetate	TX	4755	10184404
Ethyl methacrylate	TX	4810	10184404
Ethylbenzene	TX	4765	10184404
Ethylene oxide	TX	4795	10184404
Hexachlorobutadiene	TX	4835	10184404
Iodomethane (Methyl iodide)	TX	4870	10184404
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10184404
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10184404

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Matrix: ***Solid & Chemical Materials***

Isopropylbenzene (Cumene)	TX	4900	10184404
m+p-xylene	TX	5240	10184404
Methacrylonitrile	TX	4925	10184404
Methyl acetate	TX	4940	10184404
Methyl acrylate	TX	4945	10184404
Methyl bromide (Bromomethane)	TX	4950	10184404
Methyl chloride (Chloromethane)	TX	4960	10184404
Methyl methacrylate	TX	4990	10184404
Methyl tert-butyl ether (MTBE)	TX	5000	10184404
Methylcyclohexane	TX	4965	10184404
Methylene chloride (Dichloromethane)	TX	4975	10184404
Naphthalene	TX	5005	10184404
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10184404
n-Butylbenzene	TX	4435	10184404
n-Propylbenzene	TX	5090	10184404
o-Xylene	TX	5250	10184404
Pentachloroethane	TX	5035	10184404
Propionitrile (Ethyl cyanide)	TX	5080	10184404
Pyridine	TX	5095	10184404
sec-Butylbenzene	TX	4440	10184404
Styrene	TX	5100	10184404
tert-Butyl alcohol	TX	4420	10184404
tert-Butylbenzene	TX	4445	10184404
Tetrachloroethylene (Perchloroethylene)	TX	5115	10184404
Toluene	TX	5140	10184404
trans-1,2-Dichloroethylene	TX	4700	10184404
trans-1,3-Dichloropropylene	TX	4685	10184404
trans-1,4-Dichloro-2-butene	TX	4605	10184404
Trichloroethene (Trichloroethylene)	TX	5170	10184404
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10184404

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Matrix: ***Solid & Chemical Materials***

Vinyl acetate	TX	5225	10184404
Vinyl chloride	TX	5235	10184404
Xylene (total)	TX	5260	10184404

Method EPA 8270

Analyte	AB	Analyte ID	Method ID
1,2,4,5-Tetrachlorobenzene	TX	6715	10185203
1,2,4-Trichlorobenzene	TX	5155	10185203
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10185203
1,2-Dichlorobenzene	TX	4610	10185203
1,2-Dinitrobenzene	TX	6155	10185203
1,2-Diphenylhydrazine	TX	6220	10185203
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10185203
1,3-Dichlorobenzene	TX	4615	10185203
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10185203
1,4-Dichlorobenzene	TX	4620	10185203
1,4-Dinitrobenzene	TX	6165	10185203
1,4-Naphthoquinone	TX	6420	10185203
1,4-Phenylenediamine	TX	6630	10185203
1-Chloronaphthalene	TX	5790	10185203
1-Naphthylamine	TX	6425	10185203
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10185203
2,3,4,6-Tetrachlorophenol	TX	6735	10185203
2,4,5-Trichlorophenol	TX	6835	10185203
2,4,5-Trimethylaniline	TX	6880	10185203
2,4,6-Trichlorophenol	TX	6840	10185203
2,4-Diaminotoluene	TX	5880	10185203
2,4-Dichlorophenol	TX	6000	10185203
2,4-Dimethylphenol	TX	6130	10185203
2,4-Dinitrophenol	TX	6175	10185203
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10185203

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Matrix: ***Solid & Chemical Materials***

2,6-Dichlorophenol	TX	6005	10185203
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10185203
2-Acetylaminofluorene	TX	5515	10185203
2-Chloronaphthalene	TX	5795	10185203
2-Chlorophenol	TX	5800	10185203
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10185203
2-Methylaniline (o-Toluidine)	TX	5145	10185203
2-Methylnaphthalene	TX	6385	10185203
2-Methylphenol (o-Cresol)	TX	6400	10185203
2-Naphthylamine	TX	6430	10185203
2-Nitroaniline	TX	6460	10185203
2-Nitrophenol	TX	6490	10185203
2-Picoline (2-Methylpyridine)	TX	5050	10185203
3,3'-Dichlorobenzidine	TX	5945	10185203
3,3'-Dimethylbenzidine	TX	6120	10185203
3-Methylcholanthrene	TX	6355	10185203
3-Methylphenol (m-Cresol)	TX	6405	10185203
3-Nitroaniline	TX	6465	10185203
4-Aminobiphenyl	TX	5540	10185203
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10185203
4-Chloro-3-methylphenol	TX	5700	10185203
4-Chloroaniline	TX	5745	10185203
4-Chlorophenyl phenylether	TX	5825	10185203
4-Methylphenol (p-Cresol)	TX	6410	10185203
4-Nitroaniline	TX	6470	10185203
4-Nitrophenol	TX	6500	10185203
4-Nitroquinoline-1-oxide	TX	6510	10185203
5-Nitro-o-toluidine	TX	6570	10185203
7,12-Dimethylbenz(a) anthracene	TX	6115	10185203
a-a-Dimethylphenethylamine	TX	6125	10185203

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Matrix: ***Solid & Chemical Materials***

Acenaphthene	TX	5500	10185203
Acenaphthylene	TX	5505	10185203
Acetophenone	TX	5510	10185203
Aniline	TX	5545	10185203
Anthracene	TX	5555	10185203
Aramite	TX	5560	10185203
Atrazine	TX	7065	10185203
Azinphos-methyl (Guthion)	TX	7075	10185203
Azobenzene	TX	5562	10185203
Benzenethiol (Thiophenol)	TX	6750	10185203
Benzidine	TX	5595	10185203
Benzo(a)anthracene	TX	5575	10185203
Benzo(a)pyrene	TX	5580	10185203
Benzo(b)fluoranthene	TX	5585	10185203
Benzo(e)pyrene	TX	5605	10185203
Benzo(g,h,i)perylene	TX	5590	10185203
Benzo(k)fluoranthene	TX	5600	10185203
Benzoic acid	TX	5610	10185203
Benzyl alcohol	TX	5630	10185203
Biphenyl	TX	5640	10185203
bis(2-Chloroethoxy)methane	TX	5760	10185203
bis(2-Chloroethyl) ether	TX	5765	10185203
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10185203
Butyl benzyl phthalate	TX	5670	10185203
Caprolactam	TX	7180	10185203
Carbaryl (Sevin)	TX	7195	10185203
Carbazole	TX	5680	10185203
Carbophenothion	TX	7220	10185203
Chlorobenzilate	TX	7260	10185203
Chrysene	TX	5855	10185203

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Demeton	TX	7390	10185203
Demeton-o	TX	7395	10185203
Demeton-s	TX	7385	10185203
Diallate	TX	7405	10185203
Dibenz(a,h) anthracene	TX	5895	10185203
Dibenz(a,j) acridine	TX	5900	10185203
Dibenzo(a,e) pyrene	TX	5890	10185203
Dibenzofuran	TX	5905	10185203
Dichlorovos (DDVP, Dichlorvos)	TX	8610	10185203
Diethyl phthalate	TX	6070	10185203
Dimethoate	TX	7475	10185203
Dimethyl phthalate	TX	6135	10185203
Di-n-butyl phthalate	TX	5925	10185203
Di-n-octyl phthalate	TX	6200	10185203
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10185203
Diphenylamine	TX	6205	10185203
Disulfoton	TX	8625	10185203
Ethyl methanesulfonate	TX	6260	10185203
Fluoranthene	TX	6265	10185203
Fluorene	TX	6270	10185203
Hexachlorobenzene	TX	6275	10185203
Hexachlorobutadiene	TX	4835	10185203
Hexachlorocyclopentadiene	TX	6285	10185203
Hexachloroethane	TX	4840	10185203
Hexachlorophene	TX	6290	10185203
Hexachloropropene	TX	6295	10185203
Indeno(1,2,3-cd) pyrene	TX	6315	10185203
Isodrin	TX	7725	10185203
Isophorone	TX	6320	10185203
Isosafrole	TX	6325	10185203

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Matrix: ***Solid & Chemical Materials***

Kepone	TX	7740	10185203
Malathion	TX	7770	10185203
Methapyrilene	TX	6345	10185203
Methyl methanesulfonate	TX	6375	10185203
Methyl parathion (Parathion, methyl)	TX	7825	10185203
Mevinphos	TX	7850	10185203
Naphthalene	TX	5005	10185203
Nitrobenzene	TX	5015	10185203
n-Nitrosodiethylamine	TX	6525	10185203
n-Nitrosodimethylamine	TX	6530	10185203
n-Nitrosodi-n-butylamine	TX	5025	10185203
n-Nitrosodi-n-propylamine	TX	6545	10185203
n-Nitrosodiphenylamine	TX	6535	10185203
n-Nitrosomethylethylamine	TX	6550	10185203
n-Nitrosomorpholine	TX	6555	10185203
n-Nitrosopiperidine	TX	6560	10185203
n-Nitrosopyrrolidine	TX	6565	10185203
o,o,o-Triethyl phosphorothioate	TX	8290	10185203
o-Anisidine	TX	5550	10185203
Parathion, ethyl	TX	7955	10185203
p-Cresidine	TX	5860	10185203
Pentachlorobenzene	TX	6590	10185203
Pentachloronitrobenzene (PCNB)	TX	6600	10185203
Pentachlorophenol	TX	6605	10185203
Phenacetin	TX	6610	10185203
Phenanthrene	TX	6615	10185203
Phenol	TX	6625	10185203
Phorate	TX	7985	10185203
Pronamide (Kerb)	TX	6650	10185203
Pyrene	TX	6665	10185203

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-19-23

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

Expiration Date: 4/30/2020

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2019

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: ***Solid & Chemical Materials***

Pyridine	TX	5095	10185203
Quinoline	TX	6670	10185203
Safrole	TX	6685	10185203
Sulfotepp	TX	8155	10185203
Terbufos	TX	8185	10185203
Tetrachlorvinphos (Stirophos, Gardona)	TX	8197	10185203
Thionazin (Zinophos)	TX	8235	10185203
Toluene diisocyanate	TX	6775	10185203

Method EPA 8290

Analyte	**AB**	**Analyte ID**	**Method ID**
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10187209
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10187209
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10187209
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10187209
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10187209
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10187209
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10187209
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10187209
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10187209
1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10187209
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10187209
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10187209
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10187209
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10187209
2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10187209
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10187209
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10187209
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10187209
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10187209
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10187209

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Matrix: ***Solid & Chemical Materials***

Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10187209
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10187209
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10187209
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10187209
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10187209

Method EPA 8316

Analyte	**AB**	**Analyte ID**	**Method ID**
Acrylamide	TX	4330	10188202

Method EPA 8330

Analyte	**AB**	**Analyte ID**	**Method ID**
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10189807
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10189807
2,4,6-Trinitrotoluene (2,4,6-TNT)	TX	9651	10189807
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10189807
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10189807
2-Amino-4,6-dinitrotoluene (2-am-dnt)	TX	9303	10189807
2-Nitrotoluene	TX	9507	10189807
3-Nitrotoluene	TX	9510	10189807
4-Amino-2,6-dinitrotoluene (4-am-dnt)	TX	9306	10189807
4-Nitrotoluene	TX	9513	10189807
Methyl-2,4,6-trinitrophenylnitramine (tetryl)	TX	6415	10189807
Nitrobenzene	TX	5015	10189807
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	TX	9522	10189807
RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine)	TX	9432	10189807

Method EPA 9014

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	10193803
Total cyanide	TX	1645	10193803

Method EPA 9038

Analyte	**AB**	**Analyte ID**	**Method ID**
Sulfate	TX	2000	10196608

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Matrix: ***Solid & Chemical Materials***

Method EPA 9040

Analyte	AB	Analyte ID	Method ID
Corrosivity	TX	1615	10197203
pH	TX	1900	10196802

Method EPA 9045

Analyte	AB	Analyte ID	Method ID
Corrosivity	TX	1615	10197805
pH	TX	1900	10197805

Method EPA 9050

Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	10198604

Method EPA 9056

Analyte	AB	Analyte ID	Method ID
Bromide	TX	1540	10199209
Chloride	TX	1575	10199209
Fluoride	TX	1730	10199209
Nitrate as N	TX	1810	10199209
Nitrate-nitrite	TX	1820	10199209
Nitrite as N	TX	1840	10199209
Orthophosphate as P	TX	1870	10199209
Sulfate	TX	2000	10199209

Method EPA 9060

Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	10200201

Method EPA 9065

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200405

Method EPA 9071

Analyte	AB	Analyte ID	Method ID
n-Hexane Extractable Material (HEM) (O&G)	TX	1803	10201204

Texas Commission on Environmental Quality

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Issue Date: 5/1/2019

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Matrix: ***Solid & Chemical Materials***

Method	Analyte	AB	Analyte ID	Method ID
EPA 9095	Paint Filter Liquids Test	TX	10312	10204009
EPA 9250	Chloride	TX	1575	10207202
SM 2320 B	Alkalinity as CaCO3	TX	1505	20045005
SM 2510 B	Conductivity	TX	1610	20048004
SM 2540 G	Residue-total (total solids)	TX	1950	20005203
SSA/ASA Part 3:34	Carbon, organic (Walkley-Black)	TX	10340	SSA/ASA Pt 3:34
TCEQ 1005	Total Petroleum Hydrocarbons (TPH)	TX	2050	90019208

10450 Stancliff Rd. Suite 210
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T: +1 281 530 5656
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February 10, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20011451**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 5 sample(s) on Jan 30, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20011451**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS20011451**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data								
Laboratory Name: ALS Laboratory Group			LRC Date: 02/10/2020					
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20011451					
Reviewer Name: Bernadette Fini			Prep Batch Number(s): 150183,R355572,R355975					
#[1]	A[2]	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?	X				
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			1
		Were MS/MSD RPDs within laboratory QC limits?		X			2
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/10/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20011451				
Reviewer Name: Bernadette Fini			Prep Batch Number(s): 150183,R355572,R355975				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 02/10/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20011451
Reviewer Name: Bernadette Fini	Prep Batch Number(s): 150183,R355572,R355975

ER#[5]	Description
1	Batch 150183, Semivolatile Organics Method SW8270, sample HS20011422-01, MSD was performed on unrelated sample. Batch zzr355572, Volatile Organics Method SW8260, sample HS20011456-02, MS and MSD were performed on unrelated sample.
2	Batch 150183, Semivolatile Organics Method SW8270, sample HS20011422-01, MS/MSD RPD is for an unrelated sample.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
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R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20011451

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20011451-01	SO-1620-SG22 (0.5-1) 20200129	Soil		29-Jan-2020 09:45	30-Jan-2020 16:40	☐
HS20011451-02	SO-1620-SG22 (5.5-6) 20200129	Soil		29-Jan-2020 10:30	30-Jan-2020 16:40	☐
HS20011451-03	SO-1620-SG21 (0.5-1) 20200129	Soil		29-Jan-2020 11:30	30-Jan-2020 16:40	☐
HS20011451-04	SO-1620-SG21 (5.5-6) 20200129	Soil		29-Jan-2020 14:15	30-Jan-2020 16:40	☐
HS20011451-05	SO-1620-SG20 (0.5-1) 20200129	Soil		29-Jan-2020 15:00	30-Jan-2020 16:40	☑

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG22 (0.5-1) 20200129
Collection Date: 29-Jan-2020 09:45

ANALYTICAL REPORT
WorkOrder:HS20011451
Lab ID:HS20011451-01
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00061	0.0061	mg/Kg-dry	1	04-Feb-2020 03:37
Ethylbenzene		U	0.00085	0.0061	mg/Kg-dry	1	04-Feb-2020 03:37
Xylenes, Total		U	0.0012	0.0061	mg/Kg-dry	1	04-Feb-2020 03:37
Surr: 1,2-Dichloroethane-d4	*114*			*70-126*	*%REC*	*1*	*04-Feb-2020 03:37*
Surr: 4-Bromofluorobenzene	*105*			*70-130*	*%REC*	*1*	*04-Feb-2020 03:37*
Surr: Dibromofluoromethane	*109*			*70-130*	*%REC*	*1*	*04-Feb-2020 03:37*
Surr: Toluene-d8	*104*			*70-130*	*%REC*	*1*	*04-Feb-2020 03:37*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 31-Jan-2020		Analyst: GEY
Naphthalene	**0.14**		**0.00072**	**0.0039**	**mg/Kg-dry**	1	03-Feb-2020 19:59
Surr: 2-Fluorobiphenyl	*89.1*			*43-125*	*%REC*	*1*	*03-Feb-2020 19:59*
Surr: 4-Terphenyl-d14	*98.1*			*32-125*	*%REC*	*1*	*03-Feb-2020 19:59*
Surr: Nitrobenzene-d5	*72.7*			*37-125*	*%REC*	*1*	*03-Feb-2020 19:59*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: MZD
Percent Moisture	**16.9**		**0.0100**	**0.0100**	**wt%**	1	10-Feb-2020 08:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG22 (5.5-6) 20200129
Collection Date: 29-Jan-2020 10:30

ANALYTICAL REPORT
WorkOrder:HS20011451
Lab ID:HS20011451-02
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00056	0.0056	mg/Kg-dry	1	04-Feb-2020 03:59
Ethylbenzene		U	0.00079	0.0056	mg/Kg-dry	1	04-Feb-2020 03:59
Xylenes, Total		U	0.0011	0.0056	mg/Kg-dry	1	04-Feb-2020 03:59
Surr: 1,2-Dichloroethane-d4	*112*			*70-126*	*%REC*	*1*	*04-Feb-2020 03:59*
Surr: 4-Bromofluorobenzene	*104*			*70-130*	*%REC*	*1*	*04-Feb-2020 03:59*
Surr: Dibromofluoromethane	*106*			*70-130*	*%REC*	*1*	*04-Feb-2020 03:59*
Surr: Toluene-d8	*102*			*70-130*	*%REC*	*1*	*04-Feb-2020 03:59*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 31-Jan-2020		Analyst: GEY
Naphthalene		U	0.00072	0.0039	mg/Kg-dry	1	31-Jan-2020 20:29
Surr: 2-Fluorobiphenyl	*86.4*			*43-125*	*%REC*	*1*	*31-Jan-2020 20:29*
Surr: 4-Terphenyl-d14	*95.7*			*32-125*	*%REC*	*1*	*31-Jan-2020 20:29*
Surr: Nitrobenzene-d5	*72.0*			*37-125*	*%REC*	*1*	*31-Jan-2020 20:29*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: MZD
Percent Moisture	**16.4**		**0.0100**	**0.0100**	**wt%**	1	10-Feb-2020 08:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG21 (0.5-1) 20200129
Collection Date: 29-Jan-2020 11:30

ANALYTICAL REPORT
WorkOrder:HS20011451
Lab ID:HS20011451-03
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00088	0.0088	mg/Kg-dry	1	04-Feb-2020 04:22
Ethylbenzene		U	0.0012	0.0088	mg/Kg-dry	1	04-Feb-2020 04:22
Xylenes, Total		U	0.0018	0.0088	mg/Kg-dry	1	04-Feb-2020 04:22
Surr: 1,2-Dichloroethane-d4	*109*			*70-126*	*%REC*	*1*	*04-Feb-2020 04:22*
Surr: 4-Bromofluorobenzene	*104*			*70-130*	*%REC*	*1*	*04-Feb-2020 04:22*
Surr: Dibromofluoromethane	*105*			*70-130*	*%REC*	*1*	*04-Feb-2020 04:22*
Surr: Toluene-d8	*103*			*70-130*	*%REC*	*1*	*04-Feb-2020 04:22*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 31-Jan-2020		Analyst: GEY
Naphthalene	**0.022**		**0.00068**	**0.0038**	**mg/Kg-dry**	1	03-Feb-2020 20:18
Surr: 2-Fluorobiphenyl	*83.7*			*43-125*	*%REC*	*1*	*03-Feb-2020 20:18*
Surr: 4-Terphenyl-d14	*97.1*			*32-125*	*%REC*	*1*	*03-Feb-2020 20:18*
Surr: Nitrobenzene-d5	*72.5*			*37-125*	*%REC*	*1*	*03-Feb-2020 20:18*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: MZD
Percent Moisture	**12.4**		**0.0100**	**0.0100**	**wt%**	1	10-Feb-2020 08:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG21 (5.5-6) 20200129
Collection Date: 29-Jan-2020 14:15

ANALYTICAL REPORT
WorkOrder:HS20011451
Lab ID:HS20011451-04
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00053	0.0053	mg/Kg-dry	1	04-Feb-2020 04:45
Ethylbenzene		U	0.00074	0.0053	mg/Kg-dry	1	04-Feb-2020 04:45
Xylenes, Total		U	0.0011	0.0053	mg/Kg-dry	1	04-Feb-2020 04:45
Surr: 1,2-Dichloroethane-d4	*106*			*70-126*	*%REC*	*1*	*04-Feb-2020 04:45*
Surr: 4-Bromofluorobenzene	*103*			*70-130*	*%REC*	*1*	*04-Feb-2020 04:45*
Surr: Dibromofluoromethane	*105*			*70-130*	*%REC*	*1*	*04-Feb-2020 04:45*
Surr: Toluene-d8	*104*			*70-130*	*%REC*	*1*	*04-Feb-2020 04:45*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 31-Jan-2020		Analyst: GEY
Naphthalene	**0.010**		**0.00071**	**0.0039**	**mg/Kg-dry**	1	31-Jan-2020 21:07
Surr: 2-Fluorobiphenyl	*93.4*			*43-125*	*%REC*	*1*	*31-Jan-2020 21:07*
Surr: 4-Terphenyl-d14	*101*			*32-125*	*%REC*	*1*	*31-Jan-2020 21:07*
Surr: Nitrobenzene-d5	*76.5*			*37-125*	*%REC*	*1*	*31-Jan-2020 21:07*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: MZD
Percent Moisture	**16.2**		**0.0100**	**0.0100**	**wt%**	1	10-Feb-2020 08:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011451

Batch ID: 3589 **Start Date:** 31 Jan 2020 09:41 **End Date:** 31 Jan 2020 09:41
Method: VOLATILES BY SW8260C

Sample ID	Container	Sample Wt/Vol	Final Volume	Weight Factor	Container Type
HS20011451-01	1	4.941 (g)	5 (mL)	1.01	TerraCore (5035A)
HS20011451-02	1	5.297 (g)	5 (mL)	0.94	TerraCore (5035A)
HS20011451-03	1	3.243 (g)	5 (mL)	1.54	TerraCore (5035A)
HS20011451-04	1	5.707 (g)	5 (mL)	0.88	TerraCore (5035A)

Batch ID: 150183 **Start Date:** 31 Jan 2020 07:28 **End Date:** 31 Jan 2020 14:00
Method: SV SOXHLET EXTRACT-LOWLEVEL-SW3541 **Prep Code:** 3541_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20011451-01	1	30.19 (g)	1 (mL)	0.03312
HS20011451-02	1	30.11 (g)	1 (mL)	0.03321
HS20011451-03	1	30.04 (g)	1 (mL)	0.03329
HS20011451-04	1	30.21 (g)	1 (mL)	0.0331

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011451

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 150183 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Soil	
HS20011451-01	SO-1620-SG22 (0.5-1) 20200129	29 Jan 2020 09:45		31 Jan 2020 07:28	03 Feb 2020 19:59	1
HS20011451-02	SO-1620-SG22 (5.5-6) 20200129	29 Jan 2020 10:30		31 Jan 2020 07:28	31 Jan 2020 20:29	1
HS20011451-03	SO-1620-SG21 (0.5-1) 20200129	29 Jan 2020 11:30		31 Jan 2020 07:28	03 Feb 2020 20:18	1
HS20011451-04	SO-1620-SG21 (5.5-6) 20200129	29 Jan 2020 14:15		31 Jan 2020 07:28	31 Jan 2020 21:07	1
Batch ID: R355572 (0)	**Test Name :** VOLATILES BY SW8260C				**Matrix:** Soil	
HS20011451-01	SO-1620-SG22 (0.5-1) 20200129	29 Jan 2020 09:45			04 Feb 2020 03:37	1
HS20011451-02	SO-1620-SG22 (5.5-6) 20200129	29 Jan 2020 10:30			04 Feb 2020 03:59	1
HS20011451-03	SO-1620-SG21 (0.5-1) 20200129	29 Jan 2020 11:30			04 Feb 2020 04:22	1
HS20011451-04	SO-1620-SG21 (5.5-6) 20200129	29 Jan 2020 14:15			04 Feb 2020 04:45	1
Batch ID: R355975 (0)	**Test Name :** MOISTURE - ASTM D2216				**Matrix:** Soil	
HS20011451-01	SO-1620-SG22 (0.5-1) 20200129	29 Jan 2020 09:45			10 Feb 2020 08:28	1
HS20011451-02	SO-1620-SG22 (5.5-6) 20200129	29 Jan 2020 10:30			10 Feb 2020 08:28	1
HS20011451-03	SO-1620-SG21 (0.5-1) 20200129	29 Jan 2020 11:30			10 Feb 2020 08:28	1
HS20011451-04	SO-1620-SG21 (5.5-6) 20200129	29 Jan 2020 14:15			10 Feb 2020 08:28	1

WorkOrder: HS20011451
InstrumentID: SV-7
Test Code: 8270_LOW_S
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Naphthalene	91-20-3	0.0017	0.0018	0.00060	0.0033
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	4-Terphenyl-d14	1718-51-0	0	0	0	0
S	Nitrobenzene-d5	4165-60-0	0	0	0	0

WorkOrder: HS20011451
InstrumentID: VOA8
Test Code: 8260_S
Test Number: SW8260
Test Name: Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Benzene	71-43-2	0.0012	0.0013	0.00050	0.0050
A	Ethylbenzene	100-41-4	0.0012	0.0014	0.00070	0.0050
A	Xylenes, Total	1330-20-7	0.0012	0.0014	0.0010	0.0050
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0
S	4-Bromofluorobenzene	460-00-4	0	0	0	0
S	Dibromofluoromethane	1868-53-7	0	0	0	0
S	Toluene-d8	2037-26-5	0	0	0	0

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011451

QC BATCH REPORT

Batch ID: 150183 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-150183** Units: **ug/Kg** Analysis Date: **31-Jan-2020 10:33**
Client ID: Run ID: **SV-7_355477** SeqNo: **5455791** PrepDate: **31-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	U	3.3								
Surr: 2-Fluorobiphenyl	*154.1*	*0*	*167*	*0*	*92.3*	*43 - 125*				
Surr: 4-Terphenyl-d14	*171.7*	*0*	*167*	*0*	*103*	*32 - 125*				
Surr: Nitrobenzene-d5	*156.1*	*0*	*167*	*0*	*93.5*	*37 - 125*				

LCS Sample ID: **LCS-150183** Units: **ug/Kg** Analysis Date: **31-Jan-2020 10:52**
Client ID: Run ID: **SV-7_355477** SeqNo: **5455792** PrepDate: **31-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	153	3.3	167	0	91.6	50 - 125				
Surr: 2-Fluorobiphenyl	*151.2*	*0*	*167*	*0*	*90.6*	*43 - 125*				
Surr: 4-Terphenyl-d14	*157.9*	*0*	*167*	*0*	*94.5*	*32 - 125*				
Surr: Nitrobenzene-d5	*157.8*	*0*	*167*	*0*	*94.5*	*37 - 125*				

MS Sample ID: **HS20011422-01MS** Units: **ug/Kg** Analysis Date: **31-Jan-2020 12:28**
Client ID: Run ID: **SV-7_355477** SeqNo: **5455797** PrepDate: **31-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	132.7	3.3	166.9	5.281	76.3	50 - 125				
Surr: 2-Fluorobiphenyl	*135.6*	*0*	*166.9*	*0*	*81.2*	*43 - 125*				
Surr: 4-Terphenyl-d14	*161.8*	*0*	*166.9*	*0*	*96.9*	*32 - 125*				
Surr: Nitrobenzene-d5	*118.8*	*0*	*166.9*	*0*	*71.2*	*37 - 125*				

MSD Sample ID: **HS20011422-01MSD** Units: **ug/Kg** Analysis Date: **31-Jan-2020 12:47**
Client ID: Run ID: **SV-7_355477** SeqNo: **5455798** PrepDate: **31-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	83.57	3.3	166.8	5.281	46.9	50 - 125	132.7	45.4	30	SR
Surr: 2-Fluorobiphenyl	*80.37*	*0*	*166.8*	*0*	*48.2*	*43 - 125*	*135.6*	*51.1*	*30*	R
Surr: 4-Terphenyl-d14	*154.8*	*0*	*166.8*	*0*	*92.8*	*32 - 125*	*161.8*	*4.43*	*30*	
Surr: Nitrobenzene-d5	*79.51*	*0*	*166.8*	*0*	*47.7*	*37 - 125*	*118.8*	*39.7*	*30*	R

The following samples were analyzed in this batch: HS20011451-01 HS20011451-02 HS20011451-03 HS20011451-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011451

QC BATCH REPORT

Batch ID: R355572 (0) **Instrument: VOA8** **Method: VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKS2-020320** Units: **ug/Kg** Analysis Date: **03-Feb-2020 21:08**
Client ID: Run ID: **VOA8_355572** SeqNo: **5457712** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	5.0								
Ethylbenzene	U	5.0								
Xylenes, Total	U	5.0								
Surr: 1,2-Dichloroethane-d4	*55.45*	*0*	*50*	*0*	*111*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*53*	*0*	*50*	*0*	*106*	*80 - 120*				
Surr: Dibromofluoromethane	*54.1*	*0*	*50*	*0*	*108*	*80 - 119*				
Surr: Toluene-d8	*52.29*	*0*	*50*	*0*	*105*	*81 - 118*				

LCS Sample ID: **VLCSS2-020320** Units: **ug/Kg** Analysis Date: **03-Feb-2020 20:22**
Client ID: Run ID: **VOA8_355572** SeqNo: **5457711** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	49.8	5.0	50	0	99.6	75 - 124				
Ethylbenzene	48.47	5.0	50	0	96.9	70 - 123				
Xylenes, Total	149.3	5.0	150	0	99.5	77 - 128				
Surr: 1,2-Dichloroethane-d4	*60.1*	*0*	*50*	*0*	*120*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*53.76*	*0*	*50*	*0*	*108*	*80 - 120*				
Surr: Dibromofluoromethane	*55.9*	*0*	*50*	*0*	*112*	*80 - 119*				
Surr: Toluene-d8	*50.9*	*0*	*50*	*0*	*102*	*81 - 118*				

MS Sample ID: **HS20011456-02MS** Units: **ug/Kg** Analysis Date: **03-Feb-2020 21:54**
Client ID: Run ID: **VOA8_355572** SeqNo: **5457714** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	33.22	4.9	49	0	67.8	70 - 130				S
Ethylbenzene	29.37	4.9	49	0	59.9	70 - 130				S
Xylenes, Total	82.6	4.9	147	0	56.2	70 - 130				S
Surr: 1,2-Dichloroethane-d4	*61.13*	*0*	*49*	*0*	*125*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*55.77*	*0*	*49*	*0*	*114*	*70 - 130*				
Surr: Dibromofluoromethane	*55.83*	*0*	*49*	*0*	*114*	*70 - 130*				
Surr: Toluene-d8	*43.91*	*0*	*49*	*0*	*89.6*	*70 - 130*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011451

QC BATCH REPORT

Batch ID: R355572 (0) **Instrument: VOA8** **Method: VOLATILES BY SW8260C**

MSD Sample ID: **HS20011456-02MSD** Units: **ug/Kg** Analysis Date: **03-Feb-2020 22:16**
Client ID: Run ID: **VOA8_355572** SeqNo: **5457715** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	32.95	5.0	50	0	65.9	70 - 130	33.22	0.823	30	S
Ethylbenzene	30.67	5.0	50	0	61.3	70 - 130	29.37	4.34	30	S
Xylenes, Total	89.52	5.0	150	0	59.7	70 - 130	82.6	8.04	30	S
Surr: 1,2-Dichloroethane-d4	*61.26*	*0*	*50*	*0*	*123*	*70 - 126*	*61.13*	*0.221*	*30*	
Surr: 4-Bromofluorobenzene	*54.06*	*0*	*50*	*0*	*108*	*70 - 130*	*55.77*	*3.11*	*30*	
Surr: Dibromofluoromethane	*58.31*	*0*	*50*	*0*	*117*	*70 - 130*	*55.83*	*4.35*	*30*	
Surr: Toluene-d8	*52.29*	*0*	*50*	*0*	*105*	*70 - 130*	*43.91*	*17.4*	*30*	

The following samples were analyzed in this batch: HS20011451-01 HS20011451-02 HS20011451-03 HS20011451-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011451

QC BATCH REPORT

Batch ID: **R355975 (0)** **Instrument:** **Balance1** **Method:** **MOISTURE - ASTM D2216**

DUP Sample ID: **HS20011451-04DUP** Units: **wt%** Analysis Date: **10-Feb-2020 08:28**
Client ID: **SO-1620-SG21 (5.5-6) 20200129** Run ID: **Balance1_355975** SeqNo: **5466359** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	17.3	0.0100					16.2	6.57	20	

The following samples were analyzed in this batch: HS20011451-01 HS20011451-02 HS20011451-03 HS20011451-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20011451**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/Kg-dry	Milligrams per Kilogram- Dry weight corrected

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20011451

Date/Time Received: **30-Jan-2020 16:40**
Received by: **JRM**

Checklist completed by: *Nilesh D. Ranchod* eSignature — 30-Jan-2020 Date

Reviewed by: *Dane J. Wacasey* eSignature — 5-Feb-2020 Date

Matrices: **Soil**

Carrier name: **Client**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☑	No ☐	Not Present ☐
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:214102
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	0.4C UC/C	IR # 25
Cooler(s)/Kit(s):	44381	
Date/Time sample(s) sent to storage:	01/30/2020 21:00	

Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes: Sample count differ COC=5 Rec'd 4 containers; all 2oz amber bottles empty

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody For

Page 1 of 1

COC ID: 214102

HS20011451

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-11-Rev0 SR 92688
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address	

A: 8260_S (5652652 B,E,X)
B: 8270_LOW_S (5632532 SVOC - Naphthalene only)
C: MOIST_ASTM (5631931 Gen.Chem. MOIST%)
D:
E:
F:
G:
H:
I:
J:

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620-SG22 (0.5-1) 20200129	1-29-20	0945	Soil	8,9	5	X	X	X								
2	SG22 (5.5-6)		1030														
3	SG21 (0.5-1)		1130														
4	SG21 (5.5-6)		1415														
5	SG20 (0.5-1)		1500														
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Anthony Reid

Shipment Method: Hand Delivered

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

	Date:	Time:	
Relinquished by:	1-30-20	1640	Received by:
Relinquished by:	1/30/20	16:40	Received by (Laboratory): J. Mussman
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: UPRR HWPW 1620-11

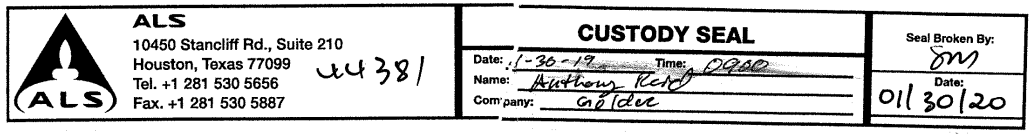
Cooler ID	Cooler Temp.
	UC
44381	2.4
	IR25
	1.0-0

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[X] TRRP Checklist
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

Copyright 2011 by ALS Environmental.



ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

u4381

CUSTODY SEAL

Date: 1-30-19 Time: 0950
Name: Anthony Reid
Company: Golder

Seal Broken By: DM
Date: 01/30/20

u4381 JAN 30 2020

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

February 14, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20020120**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 9 sample(s) on Feb 04, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: DAYNA.FISHER
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20020120**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS20020120**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/14/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020120				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150335, R355926, R356283				
#[1]	A[2]	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?	X				
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			1
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/14/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020120				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150335, R355926, R356283				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 02/14/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20020120
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 150335, R355926, R356283

ER#[5]	Description
1	Batch R355926, Volatiles by Method SW8260, Sample HS20020179-09, MS and MSD were performed on an unrelated sample.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20020120

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20020120-01	SO-1620-SG-18(0.5-1)-2020203	Soil		03-Feb-2020 09:45	04-Feb-2020 13:00	☐
HS20020120-02	SO-1620-SG-18(5.5-6)-2020203	Soil		03-Feb-2020 10:00	04-Feb-2020 13:00	☐
HS20020120-03	SO-1620-SG-9(0.5-1)-2020203	Soil		03-Feb-2020 11:00	04-Feb-2020 13:00	☐
HS20020120-04	SO-1620-SG-9(5.5-6)-2020203	Soil		03-Feb-2020 11:35	04-Feb-2020 13:00	☐
HS20020120-05	SO-1620-SG-13(0.5-1)-2020203	Soil		03-Feb-2020 14:15	04-Feb-2020 13:00	☐
HS20020120-06	SO-1620-SG-13(5.5-6)-2020203	Soil		03-Feb-2020 14:45	04-Feb-2020 13:00	☐
HS20020120-07	SO-1620-SG-3(0.5-1)-2020203	Soil		03-Feb-2020 12:10	04-Feb-2020 13:00	☑
HS20020120-08	SO-1620-SG-3(5.5-6)-2020203	Soil		03-Feb-2020 12:40	04-Feb-2020 13:00	☑
HS20020120-09	SO-1620-DUP1-2020203	Soil		03-Feb-2020 12:40	04-Feb-2020 13:00	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG-18(0.5-1)-2020203
Collection Date: 03-Feb-2020 09:45

ANALYTICAL REPORT
WorkOrder:HS20020120
Lab ID:HS20020120-01
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	**0.0034**	J	**0.00048**	**0.0048**	**mg/Kg-dry**	1	08-Feb-2020 18:34
Ethylbenzene	**0.0034**	J	**0.00067**	**0.0048**	**mg/Kg-dry**	1	08-Feb-2020 18:34
Xylenes, Total	**0.0056**		**0.00095**	**0.0048**	**mg/Kg-dry**	1	08-Feb-2020 18:34
Surr: 1,2-Dichloroethane-d4	*88.2*			*70-126*	*%REC*	*1*	*08-Feb-2020 18:34*
Surr: 4-Bromofluorobenzene	*96.3*			*70-130*	*%REC*	*1*	*08-Feb-2020 18:34*
Surr: Dibromofluoromethane	*89.4*			*70-130*	*%REC*	*1*	*08-Feb-2020 18:34*
Surr: Toluene-d8	*97.7*			*70-130*	*%REC*	*1*	*08-Feb-2020 18:34*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 05-Feb-2020		Analyst: LG
Naphthalene	U		0.00069	0.0038	mg/Kg-dry	1	06-Feb-2020 17:00
Surr: 2-Fluorobiphenyl	*87.0*			*43-125*	*%REC*	*1*	*06-Feb-2020 17:00*
Surr: 4-Terphenyl-d14	*84.2*			*32-125*	*%REC*	*1*	*06-Feb-2020 17:00*
Surr: Nitrobenzene-d5	*75.9*			*37-125*	*%REC*	*1*	*06-Feb-2020 17:00*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: MWG
Percent Moisture	**13.7**		**0.0100**	**0.0100**	**wt%**	1	13-Feb-2020 11:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG-18(5.5-6)-2020203
Collection Date: 03-Feb-2020 10:00

ANALYTICAL REPORT
WorkOrder:HS20020120
Lab ID:HS20020120-02
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene		U	0.00054	0.0054	mg/Kg-dry	1	08-Feb-2020 18:59
Ethylbenzene		U	0.00076	0.0054	mg/Kg-dry	1	08-Feb-2020 18:59
Xylenes, Total		U	0.0011	0.0054	mg/Kg-dry	1	08-Feb-2020 18:59
Surr: 1,2-Dichloroethane-d4	*87.5*			*70-126*	*%REC*	*1*	*08-Feb-2020 18:59*
Surr: 4-Bromofluorobenzene	*96.8*			*70-130*	*%REC*	*1*	*08-Feb-2020 18:59*
Surr: Dibromofluoromethane	*90.7*			*70-130*	*%REC*	*1*	*08-Feb-2020 18:59*
Surr: Toluene-d8	*101*			*70-130*	*%REC*	*1*	*08-Feb-2020 18:59*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 05-Feb-2020		Analyst: LG
Naphthalene	**0.0041**		**0.00070**	**0.0038**	**mg/Kg-dry**	1	06-Feb-2020 17:19
Surr: 2-Fluorobiphenyl	*79.2*			*43-125*	*%REC*	*1*	*06-Feb-2020 17:19*
Surr: 4-Terphenyl-d14	*88.4*			*32-125*	*%REC*	*1*	*06-Feb-2020 17:19*
Surr: Nitrobenzene-d5	*77.3*			*37-125*	*%REC*	*1*	*06-Feb-2020 17:19*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: MWG
Percent Moisture	**14.8**		**0.0100**	**0.0100**	**wt%**	1	13-Feb-2020 11:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG-9(0.5-1)-2020203
Collection Date: 03-Feb-2020 11:00

ANALYTICAL REPORT
WorkOrder:HS20020120
Lab ID:HS20020120-03
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene		U	0.00052	0.0052	mg/Kg-dry	1	08-Feb-2020 19:24
Ethylbenzene		U	0.00074	0.0052	mg/Kg-dry	1	08-Feb-2020 19:24
Xylenes, Total		U	0.0010	0.0052	mg/Kg-dry	1	08-Feb-2020 19:24
Surr: 1,2-Dichloroethane-d4	*88.2*			*70-126*	*%REC*	*1*	*08-Feb-2020 19:24*
Surr: 4-Bromofluorobenzene	*95.6*			*70-130*	*%REC*	*1*	*08-Feb-2020 19:24*
Surr: Dibromofluoromethane	*90.9*			*70-130*	*%REC*	*1*	*08-Feb-2020 19:24*
Surr: Toluene-d8	*99.9*			*70-130*	*%REC*	*1*	*08-Feb-2020 19:24*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 05-Feb-2020		Analyst: LG
Naphthalene	**0.0042**		**0.00074**	**0.0041**	**mg/Kg-dry**	1	06-Feb-2020 17:38
Surr: 2-Fluorobiphenyl	*81.0*			*43-125*	*%REC*	*1*	*06-Feb-2020 17:38*
Surr: 4-Terphenyl-d14	*88.8*			*32-125*	*%REC*	*1*	*06-Feb-2020 17:38*
Surr: Nitrobenzene-d5	*81.0*			*37-125*	*%REC*	*1*	*06-Feb-2020 17:38*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: MWG
Percent Moisture	**20.0**		**0.0100**	**0.0100**	**wt%**	1	13-Feb-2020 11:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG-9(5.5-6)-2020203
Collection Date: 03-Feb-2020 11:35

ANALYTICAL REPORT
WorkOrder:HS20020120
Lab ID:HS20020120-04
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene		U	0.00082	0.0082	mg/Kg-dry	1	08-Feb-2020 19:49
Ethylbenzene		U	0.0012	0.0082	mg/Kg-dry	1	08-Feb-2020 19:49
Xylenes, Total		U	0.0016	0.0082	mg/Kg-dry	1	08-Feb-2020 19:49
Surr: 1,2-Dichloroethane-d4	*86.6*			*70-126*	*%REC*	*1*	*08-Feb-2020 19:49*
Surr: 4-Bromofluorobenzene	*95.2*			*70-130*	*%REC*	*1*	*08-Feb-2020 19:49*
Surr: Dibromofluoromethane	*92.6*			*70-130*	*%REC*	*1*	*08-Feb-2020 19:49*
Surr: Toluene-d8	*100.0*			*70-130*	*%REC*	*1*	*08-Feb-2020 19:49*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 05-Feb-2020		Analyst: LG
Naphthalene		U	0.00072	0.0039	mg/Kg-dry	1	06-Feb-2020 17:58
Surr: 2-Fluorobiphenyl	*82.1*			*43-125*	*%REC*	*1*	*06-Feb-2020 17:58*
Surr: 4-Terphenyl-d14	*80.5*			*32-125*	*%REC*	*1*	*06-Feb-2020 17:58*
Surr: Nitrobenzene-d5	*74.4*			*37-125*	*%REC*	*1*	*06-Feb-2020 17:58*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: MWG
Percent Moisture	**17.3**		**0.0100**	**0.0100**	**wt%**	1	13-Feb-2020 11:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG-13(0.5-1)-2020203
Collection Date: 03-Feb-2020 14:15

ANALYTICAL REPORT
WorkOrder:HS20020120
Lab ID:HS20020120-05
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene		U	0.00076	0.0076	mg/Kg-dry	1	08-Feb-2020 20:14
Ethylbenzene		U	0.0011	0.0076	mg/Kg-dry	1	08-Feb-2020 20:14
Xylenes, Total		U	0.0015	0.0076	mg/Kg-dry	1	08-Feb-2020 20:14
Surr: 1,2-Dichloroethane-d4	*87.1*			*70-126*	*%REC*	*1*	*08-Feb-2020 20:14*
Surr: 4-Bromofluorobenzene	*97.1*			*70-130*	*%REC*	*1*	*08-Feb-2020 20:14*
Surr: Dibromofluoromethane	*89.2*			*70-130*	*%REC*	*1*	*08-Feb-2020 20:14*
Surr: Toluene-d8	*102*			*70-130*	*%REC*	*1*	*08-Feb-2020 20:14*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 05-Feb-2020		Analyst: LG
Naphthalene		U	0.00075	0.0041	mg/Kg-dry	1	06-Feb-2020 18:17
Surr: 2-Fluorobiphenyl	*78.0*			*43-125*	*%REC*	*1*	*06-Feb-2020 18:17*
Surr: 4-Terphenyl-d14	*80.9*			*32-125*	*%REC*	*1*	*06-Feb-2020 18:17*
Surr: Nitrobenzene-d5	*72.2*			*37-125*	*%REC*	*1*	*06-Feb-2020 18:17*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: MWG
Percent Moisture	**20.0**		**0.0100**	**0.0100**	**wt%**	1	13-Feb-2020 11:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG-13(5.5-6)-2020203
Collection Date: 03-Feb-2020 14:45

ANALYTICAL REPORT
WorkOrder:HS20020120
Lab ID:HS20020120-06
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene		U	0.00049	0.0049	mg/Kg-dry	1	08-Feb-2020 20:39
Ethylbenzene		U	0.00068	0.0049	mg/Kg-dry	1	08-Feb-2020 20:39
Xylenes, Total		U	0.00097	0.0049	mg/Kg-dry	1	08-Feb-2020 20:39
Surr: 1,2-Dichloroethane-d4	*88.2*			*70-126*	*%REC*	*1*	*08-Feb-2020 20:39*
Surr: 4-Bromofluorobenzene	*96.6*			*70-130*	*%REC*	*1*	*08-Feb-2020 20:39*
Surr: Dibromofluoromethane	*92.8*			*70-130*	*%REC*	*1*	*08-Feb-2020 20:39*
Surr: Toluene-d8	*98.8*			*70-130*	*%REC*	*1*	*08-Feb-2020 20:39*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 05-Feb-2020		Analyst: LG
Naphthalene		U	0.00071	0.0039	mg/Kg-dry	1	06-Feb-2020 18:36
Surr: 2-Fluorobiphenyl	*69.5*			*43-125*	*%REC*	*1*	*06-Feb-2020 18:36*
Surr: 4-Terphenyl-d14	*83.0*			*32-125*	*%REC*	*1*	*06-Feb-2020 18:36*
Surr: Nitrobenzene-d5	*71.5*			*37-125*	*%REC*	*1*	*06-Feb-2020 18:36*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: MWG
Percent Moisture	**15.7**		**0.0100**	**0.0100**	**wt%**	1	13-Feb-2020 11:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-DUP1-2020203
Collection Date: 03-Feb-2020 12:40

ANALYTICAL REPORT
WorkOrder:HS20020120
Lab ID:HS20020120-09
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene		U	0.00040	0.0040	mg/Kg-dry	1	08-Feb-2020 21:04
Ethylbenzene		U	0.00056	0.0040	mg/Kg-dry	1	08-Feb-2020 21:04
Xylenes, Total		U	0.00080	0.0040	mg/Kg-dry	1	08-Feb-2020 21:04
Surr: 1,2-Dichloroethane-d4	*88.7*			*70-126*	*%REC*	*1*	*08-Feb-2020 21:04*
Surr: 4-Bromofluorobenzene	*97.6*			*70-130*	*%REC*	*1*	*08-Feb-2020 21:04*
Surr: Dibromofluoromethane	*93.0*			*70-130*	*%REC*	*1*	*08-Feb-2020 21:04*
Surr: Toluene-d8	*101*			*70-130*	*%REC*	*1*	*08-Feb-2020 21:04*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 05-Feb-2020		Analyst: LG
Naphthalene		U	0.00069	0.0038	mg/Kg-dry	1	06-Feb-2020 18:55
Surr: 2-Fluorobiphenyl	*76.1*			*43-125*	*%REC*	*1*	*06-Feb-2020 18:55*
Surr: 4-Terphenyl-d14	*83.6*			*32-125*	*%REC*	*1*	*06-Feb-2020 18:55*
Surr: Nitrobenzene-d5	*75.4*			*37-125*	*%REC*	*1*	*06-Feb-2020 18:55*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: MWG
Percent Moisture	**14.2**		**0.0100**	**0.0100**	**wt%**	1	13-Feb-2020 11:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020120

Batch ID: 3597 **Start Date:** 05 Feb 2020 10:00 **End Date:** 05 Feb 2020 10:00
Method: VOLATILES BY SW8260C

Sample ID	Container	Sample Wt/Vol	Final Volume	Weight Factor	Container Type
HS20020120-01	1	6.133 (g)	5 (mL)	0.82	TerraCore (5035A)
HS20020120-02	1	5.413 (g)	5 (mL)	0.92	TerraCore (5035A)
HS20020120-03	1	5.923 (g)	5 (mL)	0.84	TerraCore (5035A)
HS20020120-04	1	3.683 (g)	5 (mL)	1.36	TerraCore (5035A)
HS20020120-05	1	4.14 (g)	5 (mL)	1.21	TerraCore (5035A)
HS20020120-06	1	6.075 (g)	5 (mL)	0.82	TerraCore (5035A)
HS20020120-09	1	7.218 (g)	5 (mL)	0.69	TerraCore (5035A)

Batch ID: 150335 **Start Date:** 05 Feb 2020 11:25 **End Date:** 05 Feb 2020 15:30
Method: SV SOXHLET EXTRACT-LOWLEVEL-SW3541 **Prep Code:** 3541_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20020120-01		30.02 (g)	1 (mL)	0.03331
HS20020120-02		30.34 (g)	1 (mL)	0.03296
HS20020120-03		30.22 (g)	1 (mL)	0.03309
HS20020120-04		30.39 (g)	1 (mL)	0.03291
HS20020120-05		30.15 (g)	1 (mL)	0.03317
HS20020120-06		30.12 (g)	1 (mL)	0.0332
HS20020120-09		30.2 (g)	1 (mL)	0.03311

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020120

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 150335 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Soil	
HS20020120-01	SO-1620-SG-18(0.5-1)-2020203	03 Feb 2020 09:45		05 Feb 2020 11:25	06 Feb 2020 17:00	1
HS20020120-02	SO-1620-SG-18(5.5-6)-2020203	03 Feb 2020 10:00		05 Feb 2020 11:25	06 Feb 2020 17:19	1
HS20020120-03	SO-1620-SG-9(0.5-1)-2020203	03 Feb 2020 11:00		05 Feb 2020 11:25	06 Feb 2020 17:38	1
HS20020120-04	SO-1620-SG-9(5.5-6)-2020203	03 Feb 2020 11:35		05 Feb 2020 11:25	06 Feb 2020 17:58	1
HS20020120-05	SO-1620-SG-13(0.5-1)-2020203	03 Feb 2020 14:15		05 Feb 2020 11:25	06 Feb 2020 18:17	1
HS20020120-06	SO-1620-SG-13(5.5-6)-2020203	03 Feb 2020 14:45		05 Feb 2020 11:25	06 Feb 2020 18:36	1
HS20020120-09	SO-1620-DUP1-2020203	03 Feb 2020 12:40		05 Feb 2020 11:25	06 Feb 2020 18:55	1
Batch ID: R355926 (0)	**Test Name :** VOLATILES BY SW8260C				**Matrix:** Soil	
HS20020120-01	SO-1620-SG-18(0.5-1)-2020203	03 Feb 2020 09:45			08 Feb 2020 18:34	1
HS20020120-02	SO-1620-SG-18(5.5-6)-2020203	03 Feb 2020 10:00			08 Feb 2020 18:59	1
HS20020120-03	SO-1620-SG-9(0.5-1)-2020203	03 Feb 2020 11:00			08 Feb 2020 19:24	1
HS20020120-04	SO-1620-SG-9(5.5-6)-2020203	03 Feb 2020 11:35			08 Feb 2020 19:49	1
HS20020120-05	SO-1620-SG-13(0.5-1)-2020203	03 Feb 2020 14:15			08 Feb 2020 20:14	1
HS20020120-06	SO-1620-SG-13(5.5-6)-2020203	03 Feb 2020 14:45			08 Feb 2020 20:39	1
HS20020120-09	SO-1620-DUP1-2020203	03 Feb 2020 12:40			08 Feb 2020 21:04	1
Batch ID: R356283 (0)	**Test Name :** MOISTURE - ASTM D2216				**Matrix:** Soil	
HS20020120-01	SO-1620-SG-18(0.5-1)-2020203	03 Feb 2020 09:45			13 Feb 2020 11:17	1
HS20020120-02	SO-1620-SG-18(5.5-6)-2020203	03 Feb 2020 10:00			13 Feb 2020 11:17	1
HS20020120-03	SO-1620-SG-9(0.5-1)-2020203	03 Feb 2020 11:00			13 Feb 2020 11:17	1
HS20020120-04	SO-1620-SG-9(5.5-6)-2020203	03 Feb 2020 11:35			13 Feb 2020 11:17	1
HS20020120-05	SO-1620-SG-13(0.5-1)-2020203	03 Feb 2020 14:15			13 Feb 2020 11:17	1
HS20020120-06	SO-1620-SG-13(5.5-6)-2020203	03 Feb 2020 14:45			13 Feb 2020 11:17	1
HS20020120-09	SO-1620-DUP1-2020203	03 Feb 2020 12:40			13 Feb 2020 11:17	1

WorkOrder: HS20020120
InstrumentID: SV-6
Test Code: 8270_LOW_S
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Naphthalene	91-20-3	0.0017	0.0019	0.00060	0.0033
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	4-Terphenyl-d14	1718-51-0	0	0	0	0
S	Nitrobenzene-d5	4165-60-0	0	0	0	0

WorkOrder: HS20020120
InstrumentID: VOA5
Test Code: 8260_S
Test Number: SW8260
Test Name: Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Benzene	71-43-2	0.0012	0.0016	0.00050	0.0050
A	Ethylbenzene	100-41-4	0.0012	0.0016	0.00070	0.0050
A	Xylenes, Total	1330-20-7	0.0012	0.0016	0.0010	0.0050
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0
S	4-Bromofluorobenzene	460-00-4	0	0	0	0
S	Dibromofluoromethane	1868-53-7	0	0	0	0
S	Toluene-d8	2037-26-5	0	0	0	0

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020120

QC BATCH REPORT

Batch ID: 150335 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-150335** Units: **ug/Kg** Analysis Date: **06-Feb-2020 08:25**
Client ID: Run ID: **SV-6_355779** SeqNo: **5463959** PrepDate: **05-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	U	3.3								
Surr: 2-Fluorobiphenyl	*127.7*	*0*	*167*	*0*	*76.5*	*43 - 125*				
Surr: 4-Terphenyl-d14	*129.2*	*0*	*167*	*0*	*77.4*	*32 - 125*				
Surr: Nitrobenzene-d5	*111.8*	*0*	*167*	*0*	*66.9*	*37 - 125*				

LCS Sample ID: **LCS-150335** Units: **ug/Kg** Analysis Date: **06-Feb-2020 08:44**
Client ID: Run ID: **SV-6_355779** SeqNo: **5463960** PrepDate: **05-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	135.8	3.3	167	0	81.3	50 - 125				
Surr: 2-Fluorobiphenyl	*135.7*	*0*	*167*	*0*	*81.2*	*43 - 125*				
Surr: 4-Terphenyl-d14	*133.2*	*0*	*167*	*0*	*79.8*	*32 - 125*				
Surr: Nitrobenzene-d5	*124.9*	*0*	*167*	*0*	*74.8*	*37 - 125*				

MS Sample ID: **HS20020018-24MS** Units: **ug/Kg** Analysis Date: **06-Feb-2020 15:02**
Client ID: Run ID: **SV-6_355779** SeqNo: **5463962** PrepDate: **05-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	108.8	3.3	166.8	2.438	63.8	50 - 125				
Surr: 2-Fluorobiphenyl	*106.2*	*0*	*166.8*	*0*	*63.7*	*43 - 125*				
Surr: 4-Terphenyl-d14	*113.2*	*0*	*166.8*	*0*	*67.8*	*32 - 125*				
Surr: Nitrobenzene-d5	*104.5*	*0*	*166.8*	*0*	*62.6*	*37 - 125*				

MSD Sample ID: **HS20020018-24MSD** Units: **ug/Kg** Analysis Date: **06-Feb-2020 15:21**
Client ID: Run ID: **SV-6_355779** SeqNo: **5463963** PrepDate: **05-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	109.2	3.3	166.1	2.438	64.2	50 - 125	108.8	0.295	30	
Surr: 2-Fluorobiphenyl	*109.2*	*0*	*166.1*	*0*	*65.8*	*43 - 125*	*106.2*	*2.78*	*30*	
Surr: 4-Terphenyl-d14	*112.8*	*0*	*166.1*	*0*	*67.9*	*32 - 125*	*113.2*	*0.348*	*30*	
Surr: Nitrobenzene-d5	*97.48*	*0*	*166.1*	*0*	*58.7*	*37 - 125*	*104.5*	*6.96*	*30*	

The following samples were analyzed in this batch: HS20020120-01 HS20020120-02 HS20020120-03 HS20020120-04 HS20020120-05 HS20020120-06 HS20020120-09

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020120

QC BATCH REPORT

Batch ID: R355926 (0) **Instrument: VOA5** **Method: VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKS1-020820** Units: **ug/Kg** Analysis Date: **08-Feb-2020 12:20**
Client ID: Run ID: **VOA5_355926** SeqNo: **5465160** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	5.0								
Ethylbenzene	U	5.0								
Xylenes, Total	U	5.0								
Surr: 1,2-Dichloroethane-d4	*44.68*	*0*	*50*	*0*	*89.4*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*48.29*	*0*	*50*	*0*	*96.6*	*80 - 120*				
Surr: Dibromofluoromethane	*46.86*	*0*	*50*	*0*	*93.7*	*80 - 119*				
Surr: Toluene-d8	*49.02*	*0*	*50*	*0*	*98.0*	*81 - 118*				

LCS Sample ID: **VLCSS1-020820** Units: **ug/Kg** Analysis Date: **08-Feb-2020 11:30**
Client ID: Run ID: **VOA5_355926** SeqNo: **5465159** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	51.97	5.0	50	0	104	75 - 124				
Ethylbenzene	56.35	5.0	50	0	113	70 - 123				
Xylenes, Total	151.2	5.0	150	0	101	77 - 128				
Surr: 1,2-Dichloroethane-d4	*47.79*	*0*	*50*	*0*	*95.6*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*49.74*	*0*	*50*	*0*	*99.5*	*80 - 120*				
Surr: Dibromofluoromethane	*50.68*	*0*	*50*	*0*	*101*	*80 - 119*				
Surr: Toluene-d8	*49.98*	*0*	*50*	*0*	*100.0*	*81 - 118*				

MS Sample ID: **HS20020179-09MS** Units: **ug/Kg** Analysis Date: **08-Feb-2020 13:10**
Client ID: Run ID: **VOA5_355926** SeqNo: **5465162** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	34.97	4.8	48.5	0	72.1	70 - 130				
Ethylbenzene	34.05	4.8	48.5	0	70.2	70 - 130				
Xylenes, Total	92.59	4.8	145.5	0	63.6	70 - 130				S
Surr: 1,2-Dichloroethane-d4	*47.1*	*0*	*48.5*	*0*	*97.1*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*48.18*	*0*	*48.5*	*0*	*99.3*	*70 - 130*				
Surr: Dibromofluoromethane	*48.78*	*0*	*48.5*	*0*	*101*	*70 - 130*				
Surr: Toluene-d8	*48.47*	*0*	*48.5*	*0*	*99.9*	*70 - 130*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020120

QC BATCH REPORT

Batch ID: R355926 (0) **Instrument: VOA5** **Method: VOLATILES BY SW8260C**

MSD Sample ID: **HS20020179-09MSD** Units: **ug/Kg** Analysis Date: **08-Feb-2020 13:35**
Client ID: Run ID: **VOA5_355926** SeqNo: **5465163** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	36.35	5.2	51.5	0	70.6	70 - 130	34.97	3.87	30	
Ethylbenzene	35.45	5.2	51.5	0	68.8	70 - 130	34.05	4.03	30	S
Xylenes, Total	96.33	5.2	154.5	0	62.4	70 - 130	92.59	3.97	30	S
Surr: 1,2-Dichloroethane-d4	*50.64*	*0*	*51.5*	*0*	*98.3*	*70 - 126*	*47.1*	*7.25*	*30*	
Surr: 4-Bromofluorobenzene	*51.32*	*0*	*51.5*	*0*	*99.6*	*70 - 130*	*48.18*	*6.3*	*30*	
Surr: Dibromofluoromethane	*52.29*	*0*	*51.5*	*0*	*102*	*70 - 130*	*48.78*	*6.95*	*30*	
Surr: Toluene-d8	*52.49*	*0*	*51.5*	*0*	*102*	*70 - 130*	*48.47*	*7.97*	*30*	

The following samples were analyzed in this batch: HS20020120-01 HS20020120-02 HS20020120-03 HS20020120-04 HS20020120-05 HS20020120-06 HS20020120-09

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020120

QC BATCH REPORT

Batch ID: **R356283 (0)** **Instrument:** **Balance1** **Method:** **MOISTURE - ASTM D2216**

DUP Sample ID: **HS20020120-09DUP** Units: **wt%** Analysis Date: **13-Feb-2020 11:17**
Client ID: **SO-1620-DUP1-2020203** Run ID: **Balance1_356283** SeqNo: **5473179** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	13.6	0.0100					14.2	4.32	20	

The following samples were analyzed in this batch:

HS20020120-01	HS20020120-02	HS20020120-03	HS20020120-04
HS20020120-05	HS20020120-06	HS20020120-09	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20020120**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/Kg-dry	Milligrams per Kilogram- Dry weight corrected

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20020120
Date/Time Received: **04-Feb-2020 13:00**
Received by: **PS**

Checklist completed by: *Nilesh D. Ranchod* eSignature — 4-Feb-2020 Date
Reviewed by: *Dane J. Wacasey* eSignature — 5-Feb-2020 Date

Matrices: **Soil**
Carrier name: **ALS Courier**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☑	No ☐	Not Present ☐
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:214093
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☐	No ☑	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.6°C UC/C	IR # 25	
Cooler(s)/Kit(s):	43453		
Date/Time sample(s) sent to storage:	02/04/2020 18:00		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes: Sample Count Differ all samples COC=5 Received 4.
Sample SG-3 (5.5-6) 2oz amber bulk received empty. (2/4/20: Per M. Hermiston, SG-3 samples will be re-collected. Place SG-3 samples on hold)

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336 | Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600 | Holland, MI +1 616 399 6070

Chain of Custody For

Page 1 of 1

COC ID: 214093

HS20020120

Golder Associates Inc.
Houston TX-Wood Preserving Works

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-11-Rev0 SR 92688
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address	

ALS Project Manager:

A	8260_S (5652652 B,E,X)
B	8270_LOW_S (5632532 SVOC - Naphthalene only)
C	MOIST_ASTM (5631931 Gen.Chem. MOIST%)
D	
E	
F	
G	
H	
I	
J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620-S6-18 (0.5-1)-20200203	2/3/20	0945	Soil	8,9	5	X	X	X								
2	S6-18 (5.5-6)		1006														
3	S6-9 (0.5-1)		1100														
4	S6-9 (5.5-6)		1135														
5	S6-13 (0.5-1)	1405	1415														
6	S6-13 (5.5-6)		1445														
7	S6-3 (0.5-1)		1210														
8	S6-3 (5.5-6		1240														
9	DUP-1		1240														
10																	

Sampler(s) Please Print & Sign: Tim Nichols

Shipment Method: Lab Courier

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

	Date:	Time:	
Relinquished by:	2/4/20	0800	Received by:
Relinquished by:	2-4-20	0830	Received by (Laboratory):
Logged by (Laboratory):	2-4-20	1300	Checked by (Laboratory):

Notes: UPRR HWPW 1620-11

Cooler ID	Cooler Temp.
43453	1.6

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[X] TRRP Checklist
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

Copyright 2011 by ALS Environmental.

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

February 14, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20020243**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 4 sample(s) on Feb 06, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: DAYNA.FISHER
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20020243**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20020243**	

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data								
Laboratory Name: ALS Laboratory Group			LRC Date: 02/14/2020					
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020243					
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150435, R355985, R356088, R356209, R356241					
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?	X				
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			1
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				2
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/14/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020243				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150435, R355985, R356088, R356209, R356241				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 02/14/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20020243
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 150435, R355985, R356088, R356209, R356241

ER#[5]	Description
1	Batch 150435, Semivolatiles by method SW8270, Sample HS20020244-01, MS was performed on an unrelated sample. Batch R355985, Volatiles by Method SW8260, Sample HS20020280-02, MS was performed on an unrelated sample.
2	Batch 150435, Semivolatiles by method SW8270, Sample SO-1620-SG11(0.5-1) 20200206, The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20020243

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20020243-01	SO-1620-SG03(0.5-1) 20200205	Soil		05-Feb-2020 10:30	06-Feb-2020 16:05	☐
HS20020243-02	SO-1620-SG03(5.5-6) 20200205	Soil		05-Feb-2020 10:45	06-Feb-2020 16:05	☐
HS20020243-03	SO-1620-SG11(0.5-1) 20200206	Soil		06-Feb-2020 13:40	06-Feb-2020 16:05	☐
HS20020243-04	SO-1620-SG11(5.5-6) 20200206	Soil		06-Feb-2020 14:00	06-Feb-2020 16:05	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG03(0.5-1) 20200205
Collection Date: 05-Feb-2020 10:30

ANALYTICAL REPORT
WorkOrder:HS20020243
Lab ID:HS20020243-01
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	U		0.00037	0.0037	mg/Kg-dry	1	10-Feb-2020 21:02
Ethylbenzene	U		0.00052	0.0037	mg/Kg-dry	1	10-Feb-2020 21:02
Xylenes, Total	**0.0066**		**0.00075**	**0.0037**	**mg/Kg-dry**	1	10-Feb-2020 21:02
Surr: 1,2-Dichloroethane-d4	*102*			*70-126*	*%REC*	*1*	*10-Feb-2020 21:02*
Surr: 4-Bromofluorobenzene	*100*			*70-130*	*%REC*	*1*	*10-Feb-2020 21:02*
Surr: Dibromofluoromethane	*99.1*			*70-130*	*%REC*	*1*	*10-Feb-2020 21:02*
Surr: Toluene-d8	*101*			*70-130*	*%REC*	*1*	*10-Feb-2020 21:02*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 07-Feb-2020		Analyst: GEY
Naphthalene	**0.0018**	J	**0.00072**	**0.0040**	**mg/Kg-dry**	1	07-Feb-2020 20:28
Surr: 2-Fluorobiphenyl	*78.8*			*43-125*	*%REC*	*1*	*07-Feb-2020 20:28*
Surr: 4-Terphenyl-d14	*74.4*			*32-125*	*%REC*	*1*	*07-Feb-2020 20:28*
Surr: Nitrobenzene-d5	*56.9*			*37-125*	*%REC*	*1*	*07-Feb-2020 20:28*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**17.2**		**0.0100**	**0.0100**	**wt%**	1	12-Feb-2020 13:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG03(5.5-6) 20200205
Collection Date: 05-Feb-2020 10:45

ANALYTICAL REPORT
WorkOrder:HS20020243
Lab ID:HS20020243-02
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene	U		0.00071	0.0071	mg/Kg-dry	1	11-Feb-2020 15:54
Ethylbenzene	U		0.0010	0.0071	mg/Kg-dry	1	11-Feb-2020 15:54
Xylenes, Total	U		0.0014	0.0071	mg/Kg-dry	1	11-Feb-2020 15:54
Surr: 1,2-Dichloroethane-d4	*114*			*70-126*	*%REC*	*1*	*11-Feb-2020 15:54*
Surr: 4-Bromofluorobenzene	*105*			*70-130*	*%REC*	*1*	*11-Feb-2020 15:54*
Surr: Dibromofluoromethane	*106*			*70-130*	*%REC*	*1*	*11-Feb-2020 15:54*
Surr: Toluene-d8	*106*			*70-130*	*%REC*	*1*	*11-Feb-2020 15:54*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 07-Feb-2020		Analyst: GEY
Naphthalene	**0.0017**	J	**0.00069**	**0.0038**	**mg/Kg-dry**	1	07-Feb-2020 20:47
Surr: 2-Fluorobiphenyl	*67.4*			*43-125*	*%REC*	*1*	*07-Feb-2020 20:47*
Surr: 4-Terphenyl-d14	*72.1*			*32-125*	*%REC*	*1*	*07-Feb-2020 20:47*
Surr: Nitrobenzene-d5	*50.2*			*37-125*	*%REC*	*1*	*07-Feb-2020 20:47*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**13.7**		**0.0100**	**0.0100**	**wt%**	1	12-Feb-2020 13:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG11(0.5-1) 20200206
Collection Date: 06-Feb-2020 13:40

ANALYTICAL REPORT
WorkOrder:HS20020243
Lab ID:HS20020243-03
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: QX
Benzene		U	0.00070	0.0070	mg/Kg-dry	1	11-Feb-2020 16:19
Ethylbenzene		U	0.00098	0.0070	mg/Kg-dry	1	11-Feb-2020 16:19
Xylenes, Total		U	0.0014	0.0070	mg/Kg-dry	1	11-Feb-2020 16:19
Surr: 1,2-Dichloroethane-d4	*118*			*70-126*	*%REC*	*1*	*11-Feb-2020 16:19*
Surr: 4-Bromofluorobenzene	*103*			*70-130*	*%REC*	*1*	*11-Feb-2020 16:19*
Surr: Dibromofluoromethane	*108*			*70-130*	*%REC*	*1*	*11-Feb-2020 16:19*
Surr: Toluene-d8	*106*			*70-130*	*%REC*	*1*	*11-Feb-2020 16:19*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 07-Feb-2020		Analyst: GEY
Naphthalene	**0.0084**	J	**0.0065**	**0.036**	**mg/Kg-dry**	10	07-Feb-2020 21:06
Surr: 2-Fluorobiphenyl	*88.6*			*43-125*	*%REC*	*10*	*07-Feb-2020 21:06*
Surr: 4-Terphenyl-d14	*82.4*			*32-125*	*%REC*	*10*	*07-Feb-2020 21:06*
Surr: Nitrobenzene-d5	*61.4*			*37-125*	*%REC*	*10*	*07-Feb-2020 21:06*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**8.37**		**0.0100**	**0.0100**	**wt%**	1	12-Feb-2020 13:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG11(5.5-6) 20200206
Collection Date: 06-Feb-2020 14:00

ANALYTICAL REPORT
WorkOrder:HS20020243
Lab ID:HS20020243-04
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene	U		0.00032	0.0032	mg/Kg-dry	1	13-Feb-2020 16:56
Ethylbenzene	U		0.00045	0.0032	mg/Kg-dry	1	13-Feb-2020 16:56
Xylenes, Total	U		0.00064	0.0032	mg/Kg-dry	1	13-Feb-2020 16:56
Surr: 1,2-Dichloroethane-d4	*89.0*			*70-126*	*%REC*	*1*	*13-Feb-2020 16:56*
Surr: 4-Bromofluorobenzene	*96.5*			*70-130*	*%REC*	*1*	*13-Feb-2020 16:56*
Surr: Dibromofluoromethane	*93.9*			*70-130*	*%REC*	*1*	*13-Feb-2020 16:56*
Surr: Toluene-d8	*102*			*70-130*	*%REC*	*1*	*13-Feb-2020 16:56*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 07-Feb-2020		Analyst: GEY
Naphthalene	**0.0011**	J	**0.00069**	**0.0038**	**mg/Kg-dry**	1	07-Feb-2020 21:25
Surr: 2-Fluorobiphenyl	*73.2*			*43-125*	*%REC*	*1*	*07-Feb-2020 21:25*
Surr: 4-Terphenyl-d14	*59.3*			*32-125*	*%REC*	*1*	*07-Feb-2020 21:25*
Surr: Nitrobenzene-d5	*49.7*			*37-125*	*%REC*	*1*	*07-Feb-2020 21:25*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**12.8**		**0.0100**	**0.0100**	**wt%**	1	12-Feb-2020 13:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020243

Batch ID: 3602 **Start Date:** 07 Feb 2020 09:46 **End Date:** 07 Feb 2020 09:46
Method: VOLATILES BY SW8260C

Sample ID	Container	Sample Wt/Vol	Final Volume	Weight Factor	Container Type
HS20020243-01	1	8.032 (g)	5 (mL)	0.62	TerraCore (5035A)
HS20020243-02	1	4.05 (g)	5 (mL)	1.23	TerraCore (5035A)
HS20020243-03	1	3.902 (g)	5 (mL)	1.28	TerraCore (5035A)
HS20020243-04	1	8.912 (g)	5 (mL)	0.56	TerraCore (5035A)

Batch ID: 150435 **Start Date:** 07 Feb 2020 08:00 **End Date:** 07 Feb 2020 15:30
Method: SV SOXHLET EXTRACT-LOWLEVEL-SW3541 **Prep Code:** 3541_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20020243-01		30.01 (g)	1 (mL)	0.03332
HS20020243-02		30.05 (g)	1 (mL)	0.03328
HS20020243-03		30.04 (g)	1 (mL)	0.03329
HS20020243-04		30.09 (g)	1 (mL)	0.03323

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020243

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 150435 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Soil	
HS20020243-01	SO-1620-SG03(0.5-1) 20200205	05 Feb 2020 10:30		07 Feb 2020 08:00	07 Feb 2020 20:28	1
HS20020243-02	SO-1620-SG03(5.5-6) 20200205	05 Feb 2020 10:45		07 Feb 2020 08:00	07 Feb 2020 20:47	1
HS20020243-03	SO-1620-SG11(0.5-1) 20200206	06 Feb 2020 13:40		07 Feb 2020 08:00	07 Feb 2020 21:06	10
HS20020243-04	SO-1620-SG11(5.5-6) 20200206	06 Feb 2020 14:00		07 Feb 2020 08:00	07 Feb 2020 21:25	1
Batch ID: R355985 (0)	**Test Name :** VOLATILES BY SW8260C				**Matrix:** Soil	
HS20020243-01	SO-1620-SG03(0.5-1) 20200205	05 Feb 2020 10:30			10 Feb 2020 21:02	1
Batch ID: R356088 (0)	**Test Name :** VOLATILES BY SW8260C				**Matrix:** Soil	
HS20020243-02	SO-1620-SG03(5.5-6) 20200205	05 Feb 2020 10:45			11 Feb 2020 15:54	1
HS20020243-03	SO-1620-SG11(0.5-1) 20200206	06 Feb 2020 13:40			11 Feb 2020 16:19	1
Batch ID: R356209 (0)	**Test Name :** MOISTURE - ASTM D2216				**Matrix:** Soil	
HS20020243-01	SO-1620-SG03(0.5-1) 20200205	05 Feb 2020 10:30			12 Feb 2020 13:39	1
HS20020243-02	SO-1620-SG03(5.5-6) 20200205	05 Feb 2020 10:45			12 Feb 2020 13:39	1
HS20020243-03	SO-1620-SG11(0.5-1) 20200206	06 Feb 2020 13:40			12 Feb 2020 13:39	1
HS20020243-04	SO-1620-SG11(5.5-6) 20200206	06 Feb 2020 14:00			12 Feb 2020 13:39	1
Batch ID: R356241 (0)	**Test Name :** VOLATILES BY SW8260C				**Matrix:** Soil	
HS20020243-04	SO-1620-SG11(5.5-6) 20200206	06 Feb 2020 14:00			13 Feb 2020 16:56	1

WorkOrder: HS20020243
InstrumentID: SV-7
Test Code: 8270_LOW_S
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Naphthalene	91-20-3	0.0017	0.0018	0.00060	0.0033
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	4-Terphenyl-d14	1718-51-0	0	0	0	0
S	Nitrobenzene-d5	4165-60-0	0	0	0	0

WorkOrder: HS20020243
InstrumentID: VOA5
Test Code: 8260_S
Test Number: SW8260
Test Name: Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Benzene	71-43-2	0.0012	0.0016	0.00050	0.0050
A	Ethylbenzene	100-41-4	0.0012	0.0016	0.00070	0.0050
A	Xylenes, Total	1330-20-7	0.0012	0.0016	0.0010	0.0050
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0
S	4-Bromofluorobenzene	460-00-4	0	0	0	0
S	Dibromofluoromethane	1868-53-7	0	0	0	0
S	Toluene-d8	2037-26-5	0	0	0	0

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020243

QC BATCH REPORT

Batch ID: 150435 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-150435** Units: **ug/Kg** Analysis Date: **07-Feb-2020 11:34**
Client ID: Run ID: **SV-7_355905** SeqNo: **5464751** PrepDate: **07-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	U	3.3								
Surr: 2-Fluorobiphenyl	*103.6*	*0*	*167*	*0*	*62.1*	*43 - 125*				
Surr: 4-Terphenyl-d14	*123.6*	*0*	*167*	*0*	*74.0*	*32 - 125*				
Surr: Nitrobenzene-d5	*94.28*	*0*	*167*	*0*	*56.5*	*37 - 125*				

LCS Sample ID: **LCS-150435** Units: **ug/Kg** Analysis Date: **07-Feb-2020 11:53**
Client ID: Run ID: **SV-7_355905** SeqNo: **5464752** PrepDate: **07-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	120.9	3.3	167	0	72.4	50 - 125				
Surr: 2-Fluorobiphenyl	*129.4*	*0*	*167*	*0*	*77.5*	*43 - 125*				
Surr: 4-Terphenyl-d14	*135.5*	*0*	*167*	*0*	*81.1*	*32 - 125*				
Surr: Nitrobenzene-d5	*108.9*	*0*	*167*	*0*	*65.2*	*37 - 125*				

MS Sample ID: **HS20020244-01MS** Units: **ug/Kg** Analysis Date: **07-Feb-2020 16:39**
Client ID: Run ID: **SV-7_355905** SeqNo: **5465991** PrepDate: **07-Feb-2020** DF: **10**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	447.5	33	166.7	394	32.0	50 - 125				S
Surr: 2-Fluorobiphenyl	*150.4*	*0*	*166.7*	*0*	*90.2*	*43 - 125*				
Surr: 4-Terphenyl-d14	*105.7*	*0*	*166.7*	*0*	*63.4*	*32 - 125*				
Surr: Nitrobenzene-d5	*132*	*0*	*166.7*	*0*	*79.2*	*37 - 125*				

MSD Sample ID: **HS20020244-01MSD** Units: **ug/Kg** Analysis Date: **07-Feb-2020 16:58**
Client ID: Run ID: **SV-7_355905** SeqNo: **5465992** PrepDate: **07-Feb-2020** DF: **10**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	525.7	33	166.6	394	79.0	50 - 125	447.5	16.1	30	
Surr: 2-Fluorobiphenyl	*159.4*	*0*	*166.6*	*0*	*95.7*	*43 - 125*	*150.4*	*5.81*	*30*	
Surr: 4-Terphenyl-d14	*104.4*	*0*	*166.6*	*0*	*62.7*	*32 - 125*	*105.7*	*1.15*	*30*	
Surr: Nitrobenzene-d5	*158.3*	*0*	*166.6*	*0*	*95.0*	*37 - 125*	*132*	*18.1*	*30*	

The following samples were analyzed in this batch: HS20020243-01 HS20020243-02 HS20020243-03 HS20020243-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020243

QC BATCH REPORT

Batch ID: R355985 (0) **Instrument: VOA5** **Method: VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKS1-021020** Units: **ug/Kg** Analysis Date: **10-Feb-2020 12:43**
Client ID: Run ID: **VOA5_355985** SeqNo: **5466616** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	5.0								
Ethylbenzene	U	5.0								
Xylenes, Total	U	5.0								
Surr: 1,2-Dichloroethane-d4	*49.26*	*0*	*50*	*0*	*98.5*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*49.3*	*0*	*50*	*0*	*98.6*	*80 - 120*				
Surr: Dibromofluoromethane	*47.86*	*0*	*50*	*0*	*95.7*	*80 - 119*				
Surr: Toluene-d8	*49.84*	*0*	*50*	*0*	*99.7*	*81 - 118*				

LCS Sample ID: **VLCSS1-021020** Units: **ug/Kg** Analysis Date: **10-Feb-2020 11:53**
Client ID: Run ID: **VOA5_355985** SeqNo: **5466615** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	47.28	5.0	50	0	94.6	75 - 124				
Ethylbenzene	50.95	5.0	50	0	102	70 - 123				
Xylenes, Total	134.9	5.0	150	0	89.9	77 - 128				
Surr: 1,2-Dichloroethane-d4	*47.85*	*0*	*50*	*0*	*95.7*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*48.72*	*0*	*50*	*0*	*97.4*	*80 - 120*				
Surr: Dibromofluoromethane	*49.94*	*0*	*50*	*0*	*99.9*	*80 - 119*				
Surr: Toluene-d8	*48.92*	*0*	*50*	*0*	*97.8*	*81 - 118*				

MS Sample ID: **HS20020280-02MS** Units: **ug/Kg** Analysis Date: **10-Feb-2020 14:22**
Client ID: Run ID: **VOA5_355985** SeqNo: **5466619** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	33.09	4.8	48.5	0	68.2	70 - 130				S
Ethylbenzene	23.88	4.8	48.5	0	49.2	70 - 130				S
Xylenes, Total	61.38	4.8	145.5	4.78	38.9	70 - 130				S
Surr: 1,2-Dichloroethane-d4	*47.86*	*0*	*48.5*	*0*	*98.7*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*48.37*	*0*	*48.5*	*0*	*99.7*	*70 - 130*				
Surr: Dibromofluoromethane	*48.23*	*0*	*48.5*	*0*	*99.4*	*70 - 130*				
Surr: Toluene-d8	*48.16*	*0*	*48.5*	*0*	*99.3*	*70 - 130*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020243

QC BATCH REPORT

Batch ID: R355985 (0) **Instrument: VOA5** **Method: VOLATILES BY SW8260C**

MSD Sample ID: **HS20020280-02MSD** Units: **ug/Kg** Analysis Date: **10-Feb-2020 14:47**
Client ID: Run ID: **VOA5_355985** SeqNo: **5466620** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	44.38	5.0	50.5	0	87.9	70 - 130	33.09	29.1	30	
Ethylbenzene	31.59	5.0	50.5	0	62.6	70 - 130	23.88	27.8	30	S
Xylenes, Total	80.08	5.0	151.5	4.78	49.7	70 - 130	61.38	26.4	30	S
Surr: 1,2-Dichloroethane-d4	*49.11*	*0*	*50.5*	*0*	*97.3*	*70 - 126*	*47.86*	*2.58*	*30*	
Surr: 4-Bromofluorobenzene	*50.61*	*0*	*50.5*	*0*	*100*	*70 - 130*	*48.37*	*4.52*	*30*	
Surr: Dibromofluoromethane	*51.23*	*0*	*50.5*	*0*	*101*	*70 - 130*	*48.23*	*6.04*	*30*	
Surr: Toluene-d8	*50.91*	*0*	*50.5*	*0*	*101*	*70 - 130*	*48.16*	*5.54*	*30*	

The following samples were analyzed in this batch: HS20020243-01

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020243

QC BATCH REPORT

Batch ID: R356088 (0) **Instrument: VOA5** **Method: VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKS1-022011** Units: **ug/Kg** Analysis Date: **11-Feb-2020 13:24**
Client ID: Run ID: **VOA5_356088** SeqNo: **5468643** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	5.0								
Ethylbenzene	U	5.0								
Xylenes, Total	U	5.0								
Surr: 1,2-Dichloroethane-d4	*59.86*	*0*	*50*	*0*	*120*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*52.54*	*0*	*50*	*0*	*105*	*80 - 120*				
Surr: Dibromofluoromethane	*53.86*	*0*	*50*	*0*	*108*	*80 - 119*				
Surr: Toluene-d8	*52.74*	*0*	*50*	*0*	*105*	*81 - 118*				

LCS Sample ID: **VLCSS1-022011** Units: **ug/Kg** Analysis Date: **11-Feb-2020 12:35**
Client ID: Run ID: **VOA5_356088** SeqNo: **5468642** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	59.21	5.0	50	0	118	75 - 124				
Ethylbenzene	59.17	5.0	50	0	118	70 - 123				
Xylenes, Total	157.5	5.0	150	0	105	77 - 128				
Surr: 1,2-Dichloroethane-d4	*57.36*	*0*	*50*	*0*	*115*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*53.37*	*0*	*50*	*0*	*107*	*80 - 120*				
Surr: Dibromofluoromethane	*56.8*	*0*	*50*	*0*	*114*	*80 - 119*				
Surr: Toluene-d8	*53.01*	*0*	*50*	*0*	*106*	*81 - 118*				

MS Sample ID: **HS20020288-11MS** Units: **ug/Kg** Analysis Date: **11-Feb-2020 14:39**
Client ID: Run ID: **VOA5_356088** SeqNo: **5468645** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	48.37	5.3	53	0	91.3	70 - 130				
Ethylbenzene	45.68	5.3	53	0	86.2	70 - 130				
Xylenes, Total	122.4	5.3	159	0	77.0	70 - 130				
Surr: 1,2-Dichloroethane-d4	*62.72*	*0*	*53*	*0*	*118*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*56.62*	*0*	*53*	*0*	*107*	*70 - 130*				
Surr: Dibromofluoromethane	*60.52*	*0*	*53*	*0*	*114*	*70 - 130*				
Surr: Toluene-d8	*56.29*	*0*	*53*	*0*	*106*	*70 - 130*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020243

QC BATCH REPORT

Batch ID: R356088 (0) **Instrument: VOA5** **Method: VOLATILES BY SW8260C**

MSD Sample ID: **HS20020288-11MSD** Units: **ug/Kg** Analysis Date: **11-Feb-2020 15:04**
Client ID: Run ID: **VOA5_356088** SeqNo: **5468646** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Benzene	50.5	5.3	53	0	95.3	70 - 130	48.37	4.32	30	
Ethylbenzene	47.93	5.3	53	0	90.4	70 - 130	45.68	4.81	30	
Xylenes, Total	128.6	5.3	159	0	80.9	70 - 130	122.4	4.94	30	
Surr: 1,2-Dichloroethane-d4	*63.79*	*0*	*53*	*0*	*120*	*70 - 126*	*62.72*	*1.69*	*30*	
Surr: 4-Bromofluorobenzene	*57.15*	*0*	*53*	*0*	*108*	*70 - 130*	*56.62*	*0.93*	*30*	
Surr: Dibromofluoromethane	*60.69*	*0*	*53*	*0*	*115*	*70 - 130*	*60.52*	*0.289*	*30*	
Surr: Toluene-d8	*56.37*	*0*	*53*	*0*	*106*	*70 - 130*	*56.29*	*0.149*	*30*	

The following samples were analyzed in this batch: HS20020243-02 HS20020243-03

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020243

QC BATCH REPORT

Batch ID: R356241 (0) **Instrument: VOA5** **Method: VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKS1-021320** Units: **ug/Kg** Analysis Date: **13-Feb-2020 14:52**
Client ID: Run ID: **VOA5_356241** SeqNo: **5472076** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	5.0								
Ethylbenzene	U	5.0								
Xylenes, Total	U	5.0								
Surr: 1,2-Dichloroethane-d4	*44.98*	*0*	*50*	*0*	*90.0*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*49.47*	*0*	*50*	*0*	*98.9*	*80 - 120*				
Surr: Dibromofluoromethane	*48.02*	*0*	*50*	*0*	*96.0*	*80 - 119*				
Surr: Toluene-d8	*51.05*	*0*	*50*	*0*	*102*	*81 - 118*				

LCS Sample ID: **VLCSS1-021320** Units: **ug/Kg** Analysis Date: **13-Feb-2020 14:02**
Client ID: Run ID: **VOA5_356241** SeqNo: **5472075** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	57	5.0	50	0	114	75 - 124				
Ethylbenzene	59.18	5.0	50	0	118	70 - 123				
Xylenes, Total	178.5	5.0	150	0	119	77 - 128				
Surr: 1,2-Dichloroethane-d4	*48.05*	*0*	*50*	*0*	*96.1*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*49.7*	*0*	*50*	*0*	*99.4*	*80 - 120*				
Surr: Dibromofluoromethane	*50.37*	*0*	*50*	*0*	*101*	*80 - 119*				
Surr: Toluene-d8	*49.56*	*0*	*50*	*0*	*99.1*	*81 - 118*				

MS Sample ID: **HS20020243-04MS** Units: **ug/Kg** Analysis Date: **13-Feb-2020 16:07**
Client ID: **SO-1620-SG11(5.5-6) 20200206** Run ID: **VOA5_356241** SeqNo: **5472463** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	57.37	5.0	50	0	115	70 - 130				
Ethylbenzene	58.66	5.0	50	0	117	70 - 130				
Xylenes, Total	175	5.0	150	0	117	70 - 130				
Surr: 1,2-Dichloroethane-d4	*47.79*	*0*	*50*	*0*	*95.6*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.77*	*0*	*50*	*0*	*99.5*	*70 - 130*				
Surr: Dibromofluoromethane	*50.12*	*0*	*50*	*0*	*100*	*70 - 130*				
Surr: Toluene-d8	*50.23*	*0*	*50*	*0*	*100*	*70 - 130*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020243

QC BATCH REPORT

Batch ID: R356241 (0) **Instrument:** VOA5 **Method:** VOLATILES BY SW8260C

MSD Sample ID: **HS20020243-04MSD** Units: **ug/Kg** Analysis Date: **13-Feb-2020 16:31**
Client ID: **SO-1620-SG11(5.5-6) 20200206** Run ID: **VOA5_356241** SeqNo: **5472464** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Benzene	54.71	5.2	52	0	105	70 - 130	57.37	4.74	30	
Ethylbenzene	54.49	5.2	52	0	105	70 - 130	58.66	7.38	30	
Xylenes, Total	166.4	5.2	156	0	107	70 - 130	175	5.07	30	
Surr: 1,2-Dichloroethane-d4	*49.83*	*0*	*52*	*0*	*95.8*	*70 - 126*	*47.79*	*4.17*	*30*	
Surr: 4-Bromofluorobenzene	*51.63*	*0*	*52*	*0*	*99.3*	*70 - 130*	*49.77*	*3.68*	*30*	
Surr: Dibromofluoromethane	*52.03*	*0*	*52*	*0*	*100*	*70 - 130*	*50.12*	*3.73*	*30*	
Surr: Toluene-d8	*52.62*	*0*	*52*	*0*	*101*	*70 - 130*	*50.23*	*4.64*	*30*	

The following samples were analyzed in this batch: HS20020243-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020243

QC BATCH REPORT

Batch ID: R356209 (0) **Instrument:** Balance1 **Method:** MOISTURE - ASTM D2216

DUP Sample ID: **HS20020243-04DUP** Units: **wt%** Analysis Date: **12-Feb-2020 13:39**
Client ID: **SO-1620-SG11(5.5-6) 20200206** Run ID: **Balance1_356209** SeqNo: **5471563** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	12.9	0.0100					12.8	0.778	20	

The following samples were analyzed in this batch: HS20020243-01 HS20020243-02 HS20020243-03 HS20020243-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20020243**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/Kg-dry	Milligrams per Kilogram- Dry weight corrected

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20020243

Date/Time Received: **06-Feb-2020 16:05**
Received by: **DDG**

Checklist completed by: *Nilesh D. Ranchod* eSignature — 6-Feb-2020 Date

Reviewed by: *Dane J. Wacasey* eSignature — 10-Feb-2020 Date

Matrices: **Soil**

Carrier name: **ALS Courier**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:214094
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	1.2C UC/C	IR # 25
Cooler(s)/Kit(s):	44839	
Date/Time sample(s) sent to storage:	02/06/2020 20:00	

Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes: Sample Count differ COC= 5 Rec'd = 4

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH
+1 513 733 5336

Everett, WA
+1 425 356 2600

Fort Collins, CO
+1 970 490 1511

Holland, MI
+1 616 399 6070

Chain of Custody Form

Page 1 of 1

COC ID: 214094

HS20020243

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information			
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A	8260_S (5652652 B,E,X)
Work Order		Project Number	1620-11-Rev0 SR 92688	B	8270_LOW_S (5632532 SVOC - Naphthalene only)
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P	C	MOIST_ASTM (5631931 Gen.Chem. MOIST%)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620-SG03 (0.5-1)20200205	2-5-2020	1030	Soil	8,9	5	X	X	X								
2	SG03 (5.5-6)20200205	1	1045	|	|	|	X	X	X								
3	SG11 (0.5-1)20200206	2-6-2020	1340	|	|	|	X	X	X								
4	SG11 (5.5-6)20200206	1	1400	|	|	|	X	X	X								
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Anthony Reed

Shipment Method:

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by:		Date: 2-6-20	Time: 1445	Received by:	
Relinquished by:		Date: 2.6.20	Time: 1605	Received by (Laboratory):	
Logged by (Laboratory):		Date:	Time:	Checked by (Laboratory):	

Notes: UPRR HWPW 1620-11

Cooler ID	Cooler Temp.
44837	1.2

QC Package: (Check One Box Below)

- [ ] Level II Std QC
- [ ] Level III Std QC/Raw Date
- [ ] Level IV SW846/CLP
- [ ] Other
- [X] TRRP Checklist
- [ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

February 17, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20020308**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 4 sample(s) on Feb 07, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: DAYNA.FISHER
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20020308**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS20020308**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/17/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020308				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150518, R356283, R356340				
#[1]	A[2]	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			1
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				2
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/17/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020308				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150518, R356283, R356340				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports		
Laboratory Name: ALS Laboratory Group		LRC Date: 02/17/2020
Project Name: Houston TX-Wood Preserving Works		Laboratory Job Number: HS20020308
Reviewer Name: Dane Wacasey		Prep Batch Number(s): 150518, R356283, R356340
ER#[5]	**Description**	
1	Batch 150518, Semivolatiles by Method SW8270, Sample HS20020315-01, MS and MSD were performed on an unrelated sample	
2	Batch 150518, Semivolatiles by Method SW8270, Sample SO-1620-SG10(0.5-1)20200207: One or more of the GCMS semi-volatile internal standards were recovered at <50%. There are no target analytes associated with the failing internal standards.	

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20020308

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20020308-01	SO-1620-SG10(0.5-1)20200207	Soil		07-Feb-2020 11:10	07-Feb-2020 16:40	☐
HS20020308-02	SO-1620-SG10(5.5-6)20200207	Soil		07-Feb-2020 11:30	07-Feb-2020 16:40	☐
HS20020308-03	SO-1620-SG08(0.5-1)20200207	Soil		07-Feb-2020 14:00	07-Feb-2020 16:40	☐
HS20020308-04	SO-1620-SG08(5.5-6)20200207	Soil		07-Feb-2020 14:20	07-Feb-2020 16:40	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG10(0.5-1)20200207
Collection Date: 07-Feb-2020 11:10

ANALYTICAL REPORT
WorkOrder:HS20020308
Lab ID:HS20020308-01
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00052	0.0052	mg/Kg-dry	1	15-Feb-2020 12:09
Ethylbenzene		U	0.00072	0.0052	mg/Kg-dry	1	15-Feb-2020 12:09
Xylenes, Total		U	0.0010	0.0052	mg/Kg-dry	1	15-Feb-2020 12:09
Surr: 1,2-Dichloroethane-d4	*73.8*			*70-126*	*%REC*	*1*	*15-Feb-2020 12:09*
Surr: 4-Bromofluorobenzene	*92.4*			*70-130*	*%REC*	*1*	*15-Feb-2020 12:09*
Surr: Dibromofluoromethane	*85.3*			*70-130*	*%REC*	*1*	*15-Feb-2020 12:09*
Surr: Toluene-d8	*109*			*70-130*	*%REC*	*1*	*15-Feb-2020 12:09*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 11-Feb-2020		Analyst: GEY
Naphthalene	**0.0056**		**0.00067**	**0.0037**	**mg/Kg-dry**	1	12-Feb-2020 00:24
Surr: 2-Fluorobiphenyl	*75.4*			*43-125*	*%REC*	*1*	*12-Feb-2020 00:24*
Surr: 4-Terphenyl-d14	*78.4*			*32-125*	*%REC*	*1*	*12-Feb-2020 00:24*
Surr: Nitrobenzene-d5	*42.3*			*37-125*	*%REC*	*1*	*12-Feb-2020 00:24*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: MWG
Percent Moisture	**11.1**		**0.0100**	**0.0100**	**wt%**	1	13-Feb-2020 11:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG10(5.5-6)20200207
Collection Date: 07-Feb-2020 11:30

ANALYTICAL REPORT
WorkOrder:HS20020308
Lab ID:HS20020308-02
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00039	0.0039	mg/Kg-dry	1	15-Feb-2020 12:32
Ethylbenzene		U	0.00054	0.0039	mg/Kg-dry	1	15-Feb-2020 12:32
Xylenes, Total		U	0.00077	0.0039	mg/Kg-dry	1	15-Feb-2020 12:32
Surr: 1,2-Dichloroethane-d4	*88.2*			*70-126*	*%REC*	*1*	*15-Feb-2020 12:32*
Surr: 4-Bromofluorobenzene	*94.6*			*70-130*	*%REC*	*1*	*15-Feb-2020 12:32*
Surr: Dibromofluoromethane	*90.9*			*70-130*	*%REC*	*1*	*15-Feb-2020 12:32*
Surr: Toluene-d8	*103*			*70-130*	*%REC*	*1*	*15-Feb-2020 12:32*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 11-Feb-2020		Analyst: GEY
Naphthalene		U	0.00072	0.0040	mg/Kg-dry	1	11-Feb-2020 20:36
Surr: 2-Fluorobiphenyl	*66.7*			*43-125*	*%REC*	*1*	*11-Feb-2020 20:36*
Surr: 4-Terphenyl-d14	*81.0*			*32-125*	*%REC*	*1*	*11-Feb-2020 20:36*
Surr: Nitrobenzene-d5	*59.6*			*37-125*	*%REC*	*1*	*11-Feb-2020 20:36*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: MWG
Percent Moisture	**17.0**		**0.0100**	**0.0100**	**wt%**	1	13-Feb-2020 11:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG08(0.5-1)20200207
Collection Date: 07-Feb-2020 14:00

ANALYTICAL REPORT
WorkOrder:HS20020308
Lab ID:HS20020308-03
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene	U		0.00062	0.0062	mg/Kg-dry	1	15-Feb-2020 12:55
Ethylbenzene	U		0.00087	0.0062	mg/Kg-dry	1	15-Feb-2020 12:55
Xylenes, Total	U		0.0012	0.0062	mg/Kg-dry	1	15-Feb-2020 12:55
Surr: 1,2-Dichloroethane-d4	*77.6*			*70-126*	*%REC*	*1*	*15-Feb-2020 12:55*
Surr: 4-Bromofluorobenzene	*93.0*			*70-130*	*%REC*	*1*	*15-Feb-2020 12:55*
Surr: Dibromofluoromethane	*88.5*			*70-130*	*%REC*	*1*	*15-Feb-2020 12:55*
Surr: Toluene-d8	*108*			*70-130*	*%REC*	*1*	*15-Feb-2020 12:55*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 11-Feb-2020		Analyst: GEY
Naphthalene	**0.0034**	J	**0.00068**	**0.0037**	**mg/Kg-dry**	1	11-Feb-2020 21:33
Surr: 2-Fluorobiphenyl	*68.7*			*43-125*	*%REC*	*1*	*11-Feb-2020 21:33*
Surr: 4-Terphenyl-d14	*69.0*			*32-125*	*%REC*	*1*	*11-Feb-2020 21:33*
Surr: Nitrobenzene-d5	*60.1*			*37-125*	*%REC*	*1*	*11-Feb-2020 21:33*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: MWG
Percent Moisture	**11.9**		**0.0100**	**0.0100**	**wt%**	1	13-Feb-2020 11:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG08(5.5-6)20200207
Collection Date: 07-Feb-2020 14:20

ANALYTICAL REPORT
WorkOrder:HS20020308
Lab ID:HS20020308-04
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene	U		0.00038	0.0038	mg/Kg-dry	1	15-Feb-2020 13:18
Ethylbenzene	U		0.00053	0.0038	mg/Kg-dry	1	15-Feb-2020 13:18
Xylenes, Total	U		0.00075	0.0038	mg/Kg-dry	1	15-Feb-2020 13:18
Surr: 1,2-Dichloroethane-d4	*77.6*			*70-126*	*%REC*	*1*	*15-Feb-2020 13:18*
Surr: 4-Bromofluorobenzene	*92.7*			*70-130*	*%REC*	*1*	*15-Feb-2020 13:18*
Surr: Dibromofluoromethane	*86.9*			*70-130*	*%REC*	*1*	*15-Feb-2020 13:18*
Surr: Toluene-d8	*107*			*70-130*	*%REC*	*1*	*15-Feb-2020 13:18*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 11-Feb-2020		Analyst: GEY
Naphthalene	**0.0014**	J	**0.00070**	**0.0039**	**mg/Kg-dry**	1	11-Feb-2020 20:55
Surr: 2-Fluorobiphenyl	*77.7*			*43-125*	*%REC*	*1*	*11-Feb-2020 20:55*
Surr: 4-Terphenyl-d14	*83.0*			*32-125*	*%REC*	*1*	*11-Feb-2020 20:55*
Surr: Nitrobenzene-d5	*67.9*			*37-125*	*%REC*	*1*	*11-Feb-2020 20:55*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: MWG
Percent Moisture	**15.1**		**0.0100**	**0.0100**	**wt%**	1	13-Feb-2020 11:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020308

Batch ID: 3601 **Start Date:** 07 Feb 2020 09:08 **End Date:** 07 Feb 2020 09:08
Method: VOLATILES BY SW8260C

Sample ID	Container	Sample Wt/Vol	Final Volume	Weight Factor	Container Type
HS20020308-01	1	5.418 (g)	5 (mL)	0.92	TerraCore (5035A)
HS20020308-02	1	7.784 (g)	5 (mL)	0.64	TerraCore (5035A)
HS20020308-03	1	4.594 (g)	5 (mL)	1.09	TerraCore (5035A)
HS20020308-04	1	7.789 (g)	5 (mL)	0.64	TerraCore (5035A)

Batch ID: 150518 **Start Date:** 11 Feb 2020 10:30 **End Date:** 11 Feb 2020 13:30
Method: SV SOXHLET EXTRACT-LOWLEVEL-SW3541 **Prep Code:** 3541_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20020308-01		30.11 (g)	1 (mL)	0.03321
HS20020308-02		30.09 (g)	1 (mL)	0.03323
HS20020308-03		30.04 (g)	1 (mL)	0.03329
HS20020308-04		30.2 (g)	1 (mL)	0.03311

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020308

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 150518 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Soil	
HS20020308-01	SO-1620-SG10(0.5-1) 20200207	07 Feb 2020 11:10		11 Feb 2020 10:30	12 Feb 2020 00:24	1
HS20020308-02	SO-1620-SG10(5.5-6) 20200207	07 Feb 2020 11:30		11 Feb 2020 10:30	11 Feb 2020 20:36	1
HS20020308-03	SO-1620-SG08(0.5-1) 20200207	07 Feb 2020 14:00		11 Feb 2020 10:30	11 Feb 2020 21:33	1
HS20020308-04	SO-1620-SG08(5.5-6) 20200207	07 Feb 2020 14:20		11 Feb 2020 10:30	11 Feb 2020 20:55	1
Batch ID: R356283 (0)	**Test Name :** MOISTURE - ASTM D2216				**Matrix:** Soil	
HS20020308-01	SO-1620-SG10(0.5-1) 20200207	07 Feb 2020 11:10			13 Feb 2020 11:17	1
HS20020308-02	SO-1620-SG10(5.5-6) 20200207	07 Feb 2020 11:30			13 Feb 2020 11:17	1
HS20020308-03	SO-1620-SG08(0.5-1) 20200207	07 Feb 2020 14:00			13 Feb 2020 11:17	1
HS20020308-04	SO-1620-SG08(5.5-6) 20200207	07 Feb 2020 14:20			13 Feb 2020 11:17	1
Batch ID: R356340 (0)	**Test Name :** VOLATILES BY SW8260C				**Matrix:** Soil	
HS20020308-01	SO-1620-SG10(0.5-1) 20200207	07 Feb 2020 11:10			15 Feb 2020 12:09	1
HS20020308-02	SO-1620-SG10(5.5-6) 20200207	07 Feb 2020 11:30			15 Feb 2020 12:32	1
HS20020308-03	SO-1620-SG08(0.5-1) 20200207	07 Feb 2020 14:00			15 Feb 2020 12:55	1
HS20020308-04	SO-1620-SG08(5.5-6) 20200207	07 Feb 2020 14:20			15 Feb 2020 13:18	1

WorkOrder: HS20020308
InstrumentID: SV-7
Test Code: 8270_LOW_S
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Naphthalene	91-20-3	0.0017	0.0018	0.00060	0.0033
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	4-Terphenyl-d14	1718-51-0	0	0	0	0
S	Nitrobenzene-d5	4165-60-0	0	0	0	0

WorkOrder: HS20020308
InstrumentID: VOA8
Test Code: 8260_S
Test Number: SW8260
Test Name: Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Benzene	71-43-2	0.0012	0.0013	0.00050	0.0050
A	Ethylbenzene	100-41-4	0.0012	0.0014	0.00070	0.0050
A	Xylenes, Total	1330-20-7	0.0012	0.0014	0.0010	0.0050
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0
S	4-Bromofluorobenzene	460-00-4	0	0	0	0
S	Dibromofluoromethane	1868-53-7	0	0	0	0
S	Toluene-d8	2037-26-5	0	0	0	0

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020308

QC BATCH REPORT

Batch ID: 150518 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-150518** Units: **ug/Kg** Analysis Date: **11-Feb-2020 14:16**
Client ID: Run ID: **SV-7_356089** SeqNo: **5468650** PrepDate: **11-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	U	3.3								
Surr: 2-Fluorobiphenyl	*88.44*	*0*	*167*	*0*	*53.0*	*43 - 125*				
Surr: 4-Terphenyl-d14	*118.8*	*0*	*167*	*0*	*71.1*	*32 - 125*				
Surr: Nitrobenzene-d5	*110*	*0*	*167*	*0*	*65.9*	*37 - 125*				

LCS Sample ID: **LCS-150518** Units: **ug/Kg** Analysis Date: **11-Feb-2020 14:35**
Client ID: Run ID: **SV-7_356089** SeqNo: **5468651** PrepDate: **11-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	91.52	3.3	167	0	54.8	50 - 125				
Surr: 2-Fluorobiphenyl	*108*	*0*	*167*	*0*	*64.7*	*43 - 125*				
Surr: 4-Terphenyl-d14	*111.2*	*0*	*167*	*0*	*66.6*	*32 - 125*				
Surr: Nitrobenzene-d5	*69.56*	*0*	*167*	*0*	*41.7*	*37 - 125*				

MS Sample ID: **HS20020315-01MS** Units: **ug/Kg** Analysis Date: **11-Feb-2020 16:29**
Client ID: Run ID: **SV-7_356089** SeqNo: **5468655** PrepDate: **11-Feb-2020** DF: **100**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	5995	990	166.4	6348	-212	50 - 125				SO
Surr: 2-Fluorobiphenyl	*U*	*0*	*166.4*	*0*	*0*	*43 - 125*				S
Surr: 4-Terphenyl-d14	*U*	*0*	*166.4*	*0*	*0*	*32 - 125*				S
Surr: Nitrobenzene-d5	*U*	*0*	*166.4*	*0*	*0*	*37 - 125*				S

MSD Sample ID: **HS20020315-01MSD** Units: **ug/Kg** Analysis Date: **11-Feb-2020 16:48**
Client ID: Run ID: **SV-7_356089** SeqNo: **5468656** PrepDate: **11-Feb-2020** DF: **100**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	7056	990	166.2	6348	426	50 - 125	5995	16.3	30	SO
Surr: 2-Fluorobiphenyl	*U*	*0*	*166.2*	*0*	*0*	*43 - 125*	*0*	*0*	*30*	S
Surr: 4-Terphenyl-d14	*U*	*0*	*166.2*	*0*	*0*	*32 - 125*	*0*	*0*	*30*	S
Surr: Nitrobenzene-d5	*U*	*0*	*166.2*	*0*	*0*	*37 - 125*	*0*	*0*	*30*	S

The following samples were analyzed in this batch: HS20020308-01 HS20020308-02 HS20020308-03 HS20020308-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020308

QC BATCH REPORT

Batch ID: R356340 (0) **Instrument: VOA8** **Method: VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKS1-021520** Units: **ug/Kg** Analysis Date: **15-Feb-2020 10:37**
Client ID: Run ID: **VOA8_356340** SeqNo: **5474381** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	5.0								
Ethylbenzene	U	5.0								
Xylenes, Total	U	5.0								
Surr: 1,2-Dichloroethane-d4	*38.39*	*0*	*50*	*0*	*76.8*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*47.41*	*0*	*50*	*0*	*94.8*	*80 - 120*				
Surr: Dibromofluoromethane	*41.87*	*0*	*50*	*0*	*83.7*	*80 - 119*				
Surr: Toluene-d8	*54.45*	*0*	*50*	*0*	*109*	*81 - 118*				

LCS Sample ID: **VLCSS1-021520** Units: **ug/Kg** Analysis Date: **15-Feb-2020 09:52**
Client ID: Run ID: **VOA8_356340** SeqNo: **5474380** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	49.89	5.0	50	0	99.8	75 - 124				
Ethylbenzene	54.19	5.0	50	0	108	70 - 123				
Xylenes, Total	157.2	5.0	150	0	105	77 - 128				
Surr: 1,2-Dichloroethane-d4	*40.31*	*0*	*50*	*0*	*80.6*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*47.65*	*0*	*50*	*0*	*95.3*	*80 - 120*				
Surr: Dibromofluoromethane	*45.8*	*0*	*50*	*0*	*91.6*	*80 - 119*				
Surr: Toluene-d8	*52.33*	*0*	*50*	*0*	*105*	*81 - 118*				

MS Sample ID: **HS20020334-01MS** Units: **ug/Kg** Analysis Date: **15-Feb-2020 19:24**
Client ID: Run ID: **VOA8_356340** SeqNo: **5474402** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	51.68	5.0	49.5	0	104	70 - 130				
Ethylbenzene	51.59	5.0	49.5	0	104	70 - 130				
Xylenes, Total	152.9	5.0	148.5	0	103	70 - 130				
Surr: 1,2-Dichloroethane-d4	*47.55*	*0*	*49.5*	*0*	*96.1*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*50.16*	*0*	*49.5*	*0*	*101*	*70 - 130*				
Surr: Dibromofluoromethane	*49.39*	*0*	*49.5*	*0*	*99.8*	*70 - 130*				
Surr: Toluene-d8	*49.98*	*0*	*49.5*	*0*	*101*	*70 - 130*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020308

QC BATCH REPORT

Batch ID: R356340 (0) **Instrument: VOA8** **Method: VOLATILES BY SW8260C**

MSD Sample ID: **HS20020334-01MSD** Units: **ug/Kg** Analysis Date: **15-Feb-2020 11:46**
Client ID: Run ID: **VOA8_356340** SeqNo: **5474383** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Benzene	49.35	5.0	50	0	98.7	70 - 130	51.68	4.61	30	
Ethylbenzene	50.79	5.0	50	0	102	70 - 130	51.59	1.58	30	
Xylenes, Total	148.4	5.0	150	0	99.0	70 - 130	152.9	2.96	30	
Surr: 1,2-Dichloroethane-d4	*44.94*	*0*	*50*	*0*	*89.9*	*70 - 126*	*47.55*	*5.64*	*30*	
Surr: 4-Bromofluorobenzene	*49.81*	*0*	*50*	*0*	*99.6*	*70 - 130*	*50.16*	*0.696*	*30*	
Surr: Dibromofluoromethane	*48.83*	*0*	*50*	*0*	*97.7*	*70 - 130*	*49.39*	*1.15*	*30*	
Surr: Toluene-d8	*51.03*	*0*	*50*	*0*	*102*	*70 - 130*	*49.98*	*2.08*	*30*	

The following samples were analyzed in this batch: HS20020308-01 HS20020308-02 HS20020308-03 HS20020308-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020308

QC BATCH REPORT

Batch ID: R356283 (0) **Instrument: Balance1** **Method: MOISTURE - ASTM D2216**

DUP Sample ID: **HS20020120-09DUP** Units: **wt%** Analysis Date: **13-Feb-2020 11:17**
Client ID: Run ID: **Balance1_356283** SeqNo: **5473179** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	13.6	0.0100					14.2	4.32	20	

The following samples were analyzed in this batch: HS20020308-01 HS20020308-02 HS20020308-03 HS20020308-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20020308**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/Kg-dry	Milligrams per Kilogram- Dry weight corrected

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20020308

Date/Time Received: **07-Feb-2020 16:40**
Received by: **DDG**

Checklist completed by: *Paresh M. Giga* eSignature — 7-Feb-2020 Date

Reviewed by: *Dane J. Wacasey* eSignature — 10-Feb-2020 Date

Matrices: **Soil**

Carrier name: **ALS Courier**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☑	No ☐	Not Present ☐
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:214095
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	0.8c U/c	IR25	
Cooler(s)/Kit(s):	25749		
Date/Time sample(s) sent to storage:	2/7/2020 17:30		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

Page 1 of 1

COC ID: 214095

HS20020308

Golder Associates Inc.
Houston TX-Wood Preserving Works

Customer Information		Project Information		ALS Project Manager:	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A	8260_S (5652652 B,E,X)
Work Order		Project Number	1620-11-Rev0 SR 92688	B	8270_LOW_S (5632532 SVOC - Naphthalene only)
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P	C	MOIST_ASTM (5631931 Gen.Chem. MOIST%)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620- SG10 (0.5-1) 20200207	2-7-20	1110	Soil	8,9	5	X	X	X								
2	SG10 (5.5-6) 20200207	2 7 20	1130	|	|	|	|	|	|								
3	SG08 (0.5-1) 20200207	|	1400														
4	SG08 (5.5-6) 20200207	|	1420														
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Anthony Retel

Shipment Method:

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

	Date	Time		
Relinquished by:	2-7-20	1540	Received by:	
Relinquished by:	2-7-20	1646	Received by (Laboratory):	
Logged by (Laboratory):			Checked by (Laboratory):	

Notes: UPRR HWPW 1620-11

Cooler ID	Cooler Temp.
25749	4.1C 0-8

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Date
[ ] Level IV SW846/CLP
[ ] Other
[X] TRRP Checklist
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

ote: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.

Copyright 2011 by ALS Environmental.

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

February 19, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20020445**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 6 sample(s) on Feb 11, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20020445**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20020445**	

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/19/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020445				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150597,R356342,R356458				
#[1]	A[2]	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?	X				
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				1
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/19/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020445				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150597,R356342,R356458				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 02/19/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20020445
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 150597,R356342,R356458

ER#[5]	Description
1	Semivolatile Organics Method SW2870, sample SO-1620-SG02(0.5-1) 20200210, Internal standard Perylene-d12 shifted due to possible matrix effect. There are no target analyte associated with this internal standard.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20020445

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20020445-01	SO-1620-SG05(0.5-1) 20200210	Soil		10-Feb-2020 09:50	11-Feb-2020 13:15	☐
HS20020445-02	SO-1620-SG05(5.5-6) 20200210	Soil		10-Feb-2020 10:10	11-Feb-2020 13:15	☐
HS20020445-03	SO-1620-SG04(0.5-1) 20200210	Soil		10-Feb-2020 13:20	11-Feb-2020 13:15	☐
HS20020445-04	SO-1620-SG04(5.5-6) 20200210	Soil		10-Feb-2020 13:30	11-Feb-2020 13:15	☐
HS20020445-05	SO-1620-SG02(0.5-1) 20200210	Soil		10-Feb-2020 15:50	11-Feb-2020 13:15	☐
HS20020445-06	SO-1620-SG02(5.5-6) 20200210	Soil		10-Feb-2020 16:00	11-Feb-2020 13:15	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG05(0.5-1) 20200210
Collection Date: 10-Feb-2020 09:50

ANALYTICAL REPORT
WorkOrder:HS20020445
Lab ID:HS20020445-01
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00037	0.0037	mg/Kg-dry	1	15-Feb-2020 16:01
Ethylbenzene		U	0.00051	0.0037	mg/Kg-dry	1	15-Feb-2020 16:01
Xylenes, Total		U	0.00073	0.0037	mg/Kg-dry	1	15-Feb-2020 16:01
Surr: 1,2-Dichloroethane-d4	*86.9*			*70-126*	*%REC*	*1*	*15-Feb-2020 16:01*
Surr: 4-Bromofluorobenzene	*93.5*			*70-130*	*%REC*	*1*	*15-Feb-2020 16:01*
Surr: Dibromofluoromethane	*92.3*			*70-130*	*%REC*	*1*	*15-Feb-2020 16:01*
Surr: Toluene-d8	*105*			*70-130*	*%REC*	*1*	*15-Feb-2020 16:01*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 13-Feb-2020		Analyst: GEY
Naphthalene	**0.0049**		**0.00066**	**0.0037**	**mg/Kg-dry**	1	13-Feb-2020 23:20
Surr: 2-Fluorobiphenyl	*69.2*			*43-125*	*%REC*	*1*	*13-Feb-2020 23:20*
Surr: 4-Terphenyl-d14	*75.0*			*32-125*	*%REC*	*1*	*13-Feb-2020 23:20*
Surr: Nitrobenzene-d5	*50.2*			*37-125*	*%REC*	*1*	*13-Feb-2020 23:20*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**9.74**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:26

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG05(5.5-6) 20200210
Collection Date: 10-Feb-2020 10:10

ANALYTICAL REPORT
WorkOrder:HS20020445
Lab ID:HS20020445-02
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00078	0.0078	mg/Kg-dry	1	15-Feb-2020 16:26
Ethylbenzene		U	0.0011	0.0078	mg/Kg-dry	1	15-Feb-2020 16:26
Xylenes, Total		U	0.0016	0.0078	mg/Kg-dry	1	15-Feb-2020 16:26
Surr: 1,2-Dichloroethane-d4	*81.9*			*70-126*	*%REC*	*1*	*15-Feb-2020 16:26*
Surr: 4-Bromofluorobenzene	*93.7*			*70-130*	*%REC*	*1*	*15-Feb-2020 16:26*
Surr: Dibromofluoromethane	*91.5*			*70-130*	*%REC*	*1*	*15-Feb-2020 16:26*
Surr: Toluene-d8	*102*			*70-130*	*%REC*	*1*	*15-Feb-2020 16:26*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 13-Feb-2020		Analyst: GEY
Naphthalene		U	0.00074	0.0041	mg/Kg-dry	1	13-Feb-2020 19:32
Surr: 2-Fluorobiphenyl	*90.5*			*43-125*	*%REC*	*1*	*13-Feb-2020 19:32*
Surr: 4-Terphenyl-d14	*79.8*			*32-125*	*%REC*	*1*	*13-Feb-2020 19:32*
Surr: Nitrobenzene-d5	*47.3*			*37-125*	*%REC*	*1*	*13-Feb-2020 19:32*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**19.0**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:26

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG04(0.5-1) 20200210
Collection Date: 10-Feb-2020 13:20

ANALYTICAL REPORT
WorkOrder:HS20020445
Lab ID:HS20020445-03
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00044	0.0044	mg/Kg-dry	1	15-Feb-2020 16:51
Ethylbenzene		U	0.00061	0.0044	mg/Kg-dry	1	15-Feb-2020 16:51
Xylenes, Total		U	0.00087	0.0044	mg/Kg-dry	1	15-Feb-2020 16:51
Surr: 1,2-Dichloroethane-d4	*83.5*			*70-126*	*%REC*	*1*	*15-Feb-2020 16:51*
Surr: 4-Bromofluorobenzene	*94.7*			*70-130*	*%REC*	*1*	*15-Feb-2020 16:51*
Surr: Dibromofluoromethane	*92.7*			*70-130*	*%REC*	*1*	*15-Feb-2020 16:51*
Surr: Toluene-d8	*101*			*70-130*	*%REC*	*1*	*15-Feb-2020 16:51*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 13-Feb-2020		Analyst: GEY
Naphthalene		U	0.00071	0.0039	mg/Kg-dry	1	14-Feb-2020 13:25
Surr: 2-Fluorobiphenyl	*89.3*			*43-125*	*%REC*	*1*	*14-Feb-2020 13:25*
Surr: 4-Terphenyl-d14	*76.5*			*32-125*	*%REC*	*1*	*14-Feb-2020 13:25*
Surr: Nitrobenzene-d5	*57.9*			*37-125*	*%REC*	*1*	*14-Feb-2020 13:25*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**15.3**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:26

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG04(5.5-6) 20200210
Collection Date: 10-Feb-2020 13:30

ANALYTICAL REPORT
WorkOrder:HS20020445
Lab ID:HS20020445-04
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00068	0.0068	mg/Kg-dry	1	15-Feb-2020 17:16
Ethylbenzene		U	0.00096	0.0068	mg/Kg-dry	1	15-Feb-2020 17:16
Xylenes, Total		U	0.0014	0.0068	mg/Kg-dry	1	15-Feb-2020 17:16
Surr: 1,2-Dichloroethane-d4	*82.9*			*70-126*	*%REC*	*1*	*15-Feb-2020 17:16*
Surr: 4-Bromofluorobenzene	*95.6*			*70-130*	*%REC*	*1*	*15-Feb-2020 17:16*
Surr: Dibromofluoromethane	*91.9*			*70-130*	*%REC*	*1*	*15-Feb-2020 17:16*
Surr: Toluene-d8	*103*			*70-130*	*%REC*	*1*	*15-Feb-2020 17:16*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 13-Feb-2020		Analyst: GEY
Naphthalene		U	0.00072	0.0040	mg/Kg-dry	1	13-Feb-2020 20:10
Surr: 2-Fluorobiphenyl	*80.6*			*43-125*	*%REC*	*1*	*13-Feb-2020 20:10*
Surr: 4-Terphenyl-d14	*84.1*			*32-125*	*%REC*	*1*	*13-Feb-2020 20:10*
Surr: Nitrobenzene-d5	*56.1*			*37-125*	*%REC*	*1*	*13-Feb-2020 20:10*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**17.2**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:26

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG02(0.5-1) 20200210
Collection Date: 10-Feb-2020 15:50

ANALYTICAL REPORT
WorkOrder:HS20020445
Lab ID:HS20020445-05
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene	U		0.00053	0.0053	mg/Kg-dry	1	15-Feb-2020 17:41
Ethylbenzene	U		0.00075	0.0053	mg/Kg-dry	1	15-Feb-2020 17:41
Xylenes, Total	U		0.0011	0.0053	mg/Kg-dry	1	15-Feb-2020 17:41
Surr: 1,2-Dichloroethane-d4	*83.5*			*70-126*	*%REC*	*1*	*15-Feb-2020 17:41*
Surr: 4-Bromofluorobenzene	*93.5*			*70-130*	*%REC*	*1*	*15-Feb-2020 17:41*
Surr: Dibromofluoromethane	*92.6*			*70-130*	*%REC*	*1*	*15-Feb-2020 17:41*
Surr: Toluene-d8	*102*			*70-130*	*%REC*	*1*	*15-Feb-2020 17:41*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 13-Feb-2020		Analyst: GEY
Naphthalene	**0.0024**	J	**0.00071**	**0.0039**	**mg/Kg-dry**	1	14-Feb-2020 20:41
Surr: 2-Fluorobiphenyl	*66.7*			*43-125*	*%REC*	*1*	*14-Feb-2020 20:41*
Surr: 4-Terphenyl-d14	*82.0*			*32-125*	*%REC*	*1*	*14-Feb-2020 20:41*
Surr: Nitrobenzene-d5	*51.3*			*37-125*	*%REC*	*1*	*14-Feb-2020 20:41*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**15.6**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:26

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG02(5.5-6) 20200210
Collection Date: 10-Feb-2020 16:00

ANALYTICAL REPORT
WorkOrder:HS20020445
Lab ID:HS20020445-06
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00037	0.0037	mg/Kg-dry	1	15-Feb-2020 18:06
Ethylbenzene		U	0.00051	0.0037	mg/Kg-dry	1	15-Feb-2020 18:06
Xylenes, Total		U	0.00073	0.0037	mg/Kg-dry	1	15-Feb-2020 18:06
Surr: 1,2-Dichloroethane-d4	*84.3*			*70-126*	*%REC*	*1*	*15-Feb-2020 18:06*
Surr: 4-Bromofluorobenzene	*94.2*			*70-130*	*%REC*	*1*	*15-Feb-2020 18:06*
Surr: Dibromofluoromethane	*89.3*			*70-130*	*%REC*	*1*	*15-Feb-2020 18:06*
Surr: Toluene-d8	*101*			*70-130*	*%REC*	*1*	*15-Feb-2020 18:06*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 13-Feb-2020		Analyst: GEY
Naphthalene		U	0.00079	0.0043	mg/Kg-dry	1	13-Feb-2020 20:29
Surr: 2-Fluorobiphenyl	*62.8*			*43-125*	*%REC*	*1*	*13-Feb-2020 20:29*
Surr: 4-Terphenyl-d14	*75.3*			*32-125*	*%REC*	*1*	*13-Feb-2020 20:29*
Surr: Nitrobenzene-d5	*58.3*			*37-125*	*%REC*	*1*	*13-Feb-2020 20:29*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**23.8**		**0.0100**	**0.0100**	**wt%**	1	17-Feb-2020 10:26

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020445

Batch ID: 3611 **Start Date:** 13 Feb 2020 12:33 **End Date:** 13 Feb 2020 12:33
Method: VOLATILES BY SW8260C

Sample ID	Container	Sample Wt/Vol	Final Volume	Weight Factor	Container Type
HS20020445-01	1	7.52 (g)	5 (mL)	0.66	TerraCore (5035A)
HS20020445-02	1	3.922 (g)	5 (mL)	1.27	TerraCore (5035A)
HS20020445-03	1	6.778 (g)	5 (mL)	0.74	TerraCore (5035A)
HS20020445-04	1	4.416 (g)	5 (mL)	1.13	TerraCore (5035A)
HS20020445-05	1	5.562 (g)	5 (mL)	0.9	TerraCore (5035A)
HS20020445-06	1	8.94 (g)	5 (mL)	0.56	TerraCore (5035A)

Batch ID: 150597 **Start Date:** 13 Feb 2020 11:26 **End Date:** 13 Feb 2020 16:00
Method: SV SOXHLET EXTRACT-LOWLEVEL-SW3541 **Prep Code:** 3541_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20020445-01		30.02 (g)	1 (mL)	0.03331
HS20020445-02		30.12 (g)	1 (mL)	0.0332
HS20020445-03		30.14 (g)	1 (mL)	0.03318
HS20020445-04		30.19 (g)	1 (mL)	0.03312
HS20020445-05		30.14 (g)	1 (mL)	0.03318
HS20020445-06		30.09 (g)	1 (mL)	0.03323

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020445

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 150597 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Soil	
HS20020445-01	SO-1620-SG05(0.5-1) 20200210	10 Feb 2020 09:50		13 Feb 2020 11:26	13 Feb 2020 23:20	1
HS20020445-02	SO-1620-SG05(5.5-6) 20200210	10 Feb 2020 10:10		13 Feb 2020 11:26	13 Feb 2020 19:32	1
HS20020445-03	SO-1620-SG04(0.5-1) 20200210	10 Feb 2020 13:20		13 Feb 2020 11:26	14 Feb 2020 13:25	1
HS20020445-04	SO-1620-SG04(5.5-6) 20200210	10 Feb 2020 13:30		13 Feb 2020 11:26	13 Feb 2020 20:10	1
HS20020445-05	SO-1620-SG02(0.5-1) 20200210	10 Feb 2020 15:50		13 Feb 2020 11:26	14 Feb 2020 20:41	1
HS20020445-06	SO-1620-SG02(5.5-6) 20200210	10 Feb 2020 16:00		13 Feb 2020 11:26	13 Feb 2020 20:29	1
Batch ID: R356342 (0)	**Test Name :** VOLATILES BY SW8260C				**Matrix:** Soil	
HS20020445-01	SO-1620-SG05(0.5-1) 20200210	10 Feb 2020 09:50			15 Feb 2020 16:01	1
HS20020445-02	SO-1620-SG05(5.5-6) 20200210	10 Feb 2020 10:10			15 Feb 2020 16:26	1
HS20020445-03	SO-1620-SG04(0.5-1) 20200210	10 Feb 2020 13:20			15 Feb 2020 16:51	1
HS20020445-04	SO-1620-SG04(5.5-6) 20200210	10 Feb 2020 13:30			15 Feb 2020 17:16	1
HS20020445-05	SO-1620-SG02(0.5-1) 20200210	10 Feb 2020 15:50			15 Feb 2020 17:41	1
HS20020445-06	SO-1620-SG02(5.5-6) 20200210	10 Feb 2020 16:00			15 Feb 2020 18:06	1
Batch ID: R356458 (0)	**Test Name :** MOISTURE - ASTM D2216				**Matrix:** Soil	
HS20020445-01	SO-1620-SG05(0.5-1) 20200210	10 Feb 2020 09:50			17 Feb 2020 10:26	1
HS20020445-02	SO-1620-SG05(5.5-6) 20200210	10 Feb 2020 10:10			17 Feb 2020 10:26	1
HS20020445-03	SO-1620-SG04(0.5-1) 20200210	10 Feb 2020 13:20			17 Feb 2020 10:26	1
HS20020445-04	SO-1620-SG04(5.5-6) 20200210	10 Feb 2020 13:30			17 Feb 2020 10:26	1
HS20020445-05	SO-1620-SG02(0.5-1) 20200210	10 Feb 2020 15:50			17 Feb 2020 10:26	1
HS20020445-06	SO-1620-SG02(5.5-6) 20200210	10 Feb 2020 16:00			17 Feb 2020 10:26	1

WorkOrder: HS20020445
InstrumentID: SV-7
Test Code: 8270_LOW_S
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Naphthalene	91-20-3	0.0017	0.0018	0.00060	0.0033
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	4-Terphenyl-d14	1718-51-0	0	0	0	0
S	Nitrobenzene-d5	4165-60-0	0	0	0	0

WorkOrder: HS20020445
InstrumentID: VOA5
Test Code: 8260_S
Test Number: SW8260
Test Name: Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Benzene	71-43-2	0.0012	0.0016	0.00050	0.0050
A	Ethylbenzene	100-41-4	0.0012	0.0016	0.00070	0.0050
A	Xylenes, Total	1330-20-7	0.0012	0.0016	0.0010	0.0050
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0
S	4-Bromofluorobenzene	460-00-4	0	0	0	0
S	Dibromofluoromethane	1868-53-7	0	0	0	0
S	Toluene-d8	2037-26-5	0	0	0	0

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020445

QC BATCH REPORT

Batch ID: 150597 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-150597** Units: **ug/Kg** Analysis Date: **13-Feb-2020 16:22**
Client ID: Run ID: **SV-7_356280** SeqNo: **5473119** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	U	3.3								
Surr: 2-Fluorobiphenyl	*128.7*	*0*	*167*	*0*	*77.1*	*43 - 125*				
Surr: 4-Terphenyl-d14	*146*	*0*	*167*	*0*	*87.4*	*32 - 125*				
Surr: Nitrobenzene-d5	*119.2*	*0*	*167*	*0*	*71.4*	*37 - 125*				

LCS Sample ID: **LCS-150597** Units: **ug/Kg** Analysis Date: **13-Feb-2020 16:41**
Client ID: Run ID: **SV-7_356280** SeqNo: **5473120** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	97.38	3.3	167	0	58.3	50 - 125				
Surr: 2-Fluorobiphenyl	*86.63*	*0*	*167*	*0*	*51.9*	*43 - 125*				
Surr: 4-Terphenyl-d14	*109.5*	*0*	*167*	*0*	*65.5*	*32 - 125*				
Surr: Nitrobenzene-d5	*117.4*	*0*	*167*	*0*	*70.3*	*37 - 125*				

MS Sample ID: **HS20020501-02MS** Units: **ug/Kg** Analysis Date: **14-Feb-2020 12:00**
Client ID: Run ID: **SV-7_356313** SeqNo: **5473790** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	150.7	3.3	166.6	3.15	88.6	50 - 125				
Surr: 2-Fluorobiphenyl	*147.3*	*0*	*166.6*	*0*	*88.5*	*43 - 125*				
Surr: 4-Terphenyl-d14	*144.9*	*0*	*166.6*	*0*	*87.0*	*32 - 125*				
Surr: Nitrobenzene-d5	*95.46*	*0*	*166.6*	*0*	*57.3*	*37 - 125*				

MSD Sample ID: **HS20020501-02MSD** Units: **ug/Kg** Analysis Date: **13-Feb-2020 19:13**
Client ID: Run ID: **SV-7_356280** SeqNo: **5473127** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	135.9	3.3	166.4	3.15	79.8	50 - 125	150.7	10.3	30	
Surr: 2-Fluorobiphenyl	*134.9*	*0*	*166.4*	*0*	*81.1*	*43 - 125*	*147.3*	*8.77*	*30*	
Surr: 4-Terphenyl-d14	*141*	*0*	*166.4*	*0*	*84.8*	*32 - 125*	*144.9*	*2.73*	*30*	
Surr: Nitrobenzene-d5	*109.9*	*0*	*166.4*	*0*	*66.0*	*37 - 125*	*95.46*	*14.1*	*30*	

The following samples were analyzed in this batch: HS20020445-01 HS20020445-02 HS20020445-03 HS20020445-04 HS20020445-05 HS20020445-06

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020445

QC BATCH REPORT

Batch ID: R356342 (0) **Instrument: VOA5** **Method: VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKS1-021520** Units: **ug/Kg** Analysis Date: **15-Feb-2020 10:38**
Client ID: Run ID: **VOA5_356342** SeqNo: **5474460** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	5.0								
Ethylbenzene	U	5.0								
Xylenes, Total	U	5.0								
Surr: 1,2-Dichloroethane-d4	*45.4*	*0*	*50*	*0*	*90.8*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*47.6*	*0*	*50*	*0*	*95.2*	*80 - 120*				
Surr: Dibromofluoromethane	*46.63*	*0*	*50*	*0*	*93.3*	*80 - 119*				
Surr: Toluene-d8	*49.33*	*0*	*50*	*0*	*98.7*	*81 - 118*				

LCS Sample ID: **VLCSS1-021520** Units: **ug/Kg** Analysis Date: **15-Feb-2020 09:48**
Client ID: Run ID: **VOA5_356342** SeqNo: **5474459** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	53.58	5.0	50	0	107	75 - 124				
Ethylbenzene	54.61	5.0	50	0	109	70 - 123				
Xylenes, Total	164.4	5.0	150	0	110	77 - 128				
Surr: 1,2-Dichloroethane-d4	*47.23*	*0*	*50*	*0*	*94.5*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*48.41*	*0*	*50*	*0*	*96.8*	*80 - 120*				
Surr: Dibromofluoromethane	*50.12*	*0*	*50*	*0*	*100*	*80 - 119*				
Surr: Toluene-d8	*49.87*	*0*	*50*	*0*	*99.7*	*81 - 118*				

MS Sample ID: **HS20020288-10MS** Units: **ug/Kg** Analysis Date: **15-Feb-2020 11:28**
Client ID: Run ID: **VOA5_356342** SeqNo: **5474462** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	45.6	4.8	48	0	95.0	70 - 130				
Ethylbenzene	42.51	4.8	48	0	88.6	70 - 130				
Xylenes, Total	129.8	4.8	144	0	90.1	70 - 130				
Surr: 1,2-Dichloroethane-d4	*44.43*	*0*	*48*	*0*	*92.6*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*47.23*	*0*	*48*	*0*	*98.4*	*70 - 130*				
Surr: Dibromofluoromethane	*46.9*	*0*	*48*	*0*	*97.7*	*70 - 130*				
Surr: Toluene-d8	*48.33*	*0*	*48*	*0*	*101*	*70 - 130*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020445

QC BATCH REPORT

Batch ID: R356342 (0) **Instrument: VOA5** **Method: VOLATILES BY SW8260C**

MSD Sample ID: **HS20020288-10MSD** Units: **ug/Kg** Analysis Date: **15-Feb-2020 11:53**
Client ID: Run ID: **VOA5_356342** SeqNo: **5474463** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Benzene	37.07	4.8	48	0	77.2	70 - 130	45.6	20.6	30	
Ethylbenzene	35.46	4.8	48	0	73.9	70 - 130	42.51	18.1	30	
Xylenes, Total	106.4	4.8	144	0	73.9	70 - 130	129.8	19.8	30	
Surr: 1,2-Dichloroethane-d4	*45.65*	*0*	*48*	*0*	*95.1*	*70 - 126*	*44.43*	*2.72*	*30*	
Surr: 4-Bromofluorobenzene	*46.55*	*0*	*48*	*0*	*97.0*	*70 - 130*	*47.23*	*1.45*	*30*	
Surr: Dibromofluoromethane	*48.59*	*0*	*48*	*0*	*101*	*70 - 130*	*46.9*	*3.54*	*30*	
Surr: Toluene-d8	*48.64*	*0*	*48*	*0*	*101*	*70 - 130*	*48.33*	*0.631*	*30*	

The following samples were analyzed in this batch: HS20020445-01 HS20020445-02 HS20020445-03 HS20020445-04 HS20020445-05 HS20020445-06

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020445

QC BATCH REPORT

Batch ID: R356458 (0) **Instrument:** Balance1 **Method:** MOISTURE - ASTM D2216

DUP Sample ID: **HS20020445-06DUP** Units: **wt%** Analysis Date: **17-Feb-2020 10:26**
Client ID: **SO-1620-SG02(5.5-6) 20200210** Run ID: **Balance1_356458** SeqNo: **5476887** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	22.2	0.0100					23.8	6.96	20	

The following samples were analyzed in this batch: HS20020445-01 HS20020445-02 HS20020445-03 HS20020445-04 HS20020445-05 HS20020445-06

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20020445**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/Kg-dry	Milligrams per Kilogram- Dry weight corrected

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20020445

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS20020445-01	SO-1620-SG05(0.5-1) 20200210	Login	2/11/2020 3:58:43 PM	NDR	SPA207
HS20020445-01	SO-1620-SG05(0.5-1) 20200210	Login	2/11/2020 3:58:43 PM	NDR	J036
HS20020445-02	SO-1620-SG05(5.5-6) 20200210	Login	2/11/2020 3:58:43 PM	NDR	SPA207
HS20020445-02	SO-1620-SG05(5.5-6) 20200210	Login	2/11/2020 3:58:43 PM	NDR	J036
HS20020445-03	SO-1620-SG04(0.5-1) 20200210	Login	2/11/2020 3:58:43 PM	NDR	SPA207
HS20020445-03	SO-1620-SG04(0.5-1) 20200210	Login	2/11/2020 3:58:43 PM	NDR	J036
HS20020445-04	SO-1620-SG04(5.5-6) 20200210	Login	2/11/2020 3:58:43 PM	NDR	SPA207
HS20020445-04	SO-1620-SG04(5.5-6) 20200210	Login	2/11/2020 3:58:43 PM	NDR	J036

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20020445

Date/Time Received: **11-Feb-2020 13:15**
Received by: **DDG**

Checklist completed by: *Nilesh D. Ranchod* eSignature — 11-Feb-2020 Date

Reviewed by: *Corey Grandits* eSignature — 11-Feb-2020 Date

Matrices: **Soil**

Carrier name: **ALS Courier**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:214096
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	1.8C UC/C	IR # 25
Cooler(s)/Kit(s):	43416	
Date/Time sample(s) sent to storage:	02/11/2020 17:00	

Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes: Sample Count differ COC= 5 Rec'd = 4

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH
+1 513 733 5336

Everett, WA
+1 425 356 2600

Fort Collins, CO
+1 970 490 1511

Holland, MI
+1 616 399 6070

Chain of Custody Form

Page _____ of _____

COC ID: 214096

HS20020445

Golder Associates Inc.

Houston TX-Wood Preserving Works

Customer Information		Project Information		ALS Project Manager:
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	
Work Order		Project Number	1620-11-Rev0 SR 92688	
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P	
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	
Phone	(512) 671-3434	Phone		
Fax	(512) 671-3446	Fax		
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address		

	A	B	C	D	E	F	G	H	I	J
A	8260_S (5652652 B,E,X)									
B	8270_LOW_S (5632532 SVOC - Naphthalene only)									
C	MOIST_ASTM (5631931 Gen.Chem. MOIST%)									
D										
E										
F										
G										
H										
I										
J										

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620-SG05 (0.5-1) 20200210	2-10-20	0950	Soil	8,9	5	X	X	X								
2	SG05 (5.5-6) 20200210		1010														
3	SG04 (0.5-1)		1320														
4	SG04 (5.5-6)		1330														
5	SG02 (0.5-1)		1550														
6	SG02 (5.5-6)		1600														
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Anthony Pastel

Shipment Method:

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other _____

Results Due Date:

Relinquished by: — Date: 2-11-20 Time: 1200 — Received by:

Relinquished by: — Date: 2/11/20 Time: 1315 — Received by (Laboratory):

Logged by (Laboratory): — Date: — Time: — Checked by (Laboratory):

Notes: UPRR HWPW 1620-11

Cooler ID	Cooler Temp.
U3416	1.3

QC Package: (Check One Box Below)

- [ ] Level II Std QC
- [ ] Level III Std QC/Raw Data
- [ ] Level IV SW846/CLP
- [ ] Other _____
- [X] TRRP Checklist
- [ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

Copyright 2011 by ALS Environmental.

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

February 24, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20020506**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 7 sample(s) on Feb 12, 2020 for the analysis presented in the following report.

This is a REVISED REPORT. Please see the Case Narrative for discussion concerning this revision.

Regards,

Generated By: DANE.WACASEY
Dane J. Wacasey

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20020506

CASE NARRATIVE

Work Order Comments

- This report was revised February 24, 2020 in order to adjust sample collection date for the field duplicate sample from 2/11/2020 to 2/12/2020.

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20020506**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS20020506**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data								
Laboratory Name: ALS Laboratory Group			LRC Date: 02/19/2020					
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020506					
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150608, 150621, R356340, R356342, R356347, R356526					
#[1]	A[2]	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?	X				
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				1
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/19/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020506				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150608, 150621, R356340, R356342, R356347, R356526				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports		
Laboratory Name: ALS Laboratory Group		LRC Date: 02/19/2020
Project Name: Houston TX-Wood Preserving Works		Laboratory Job Number: HS20020506
Reviewer Name: Dane Wacasey		Prep Batch Number(s): 150608, 150621, R356340, R356342, R356347, R356526
ER#[5]	**Description**	
1	Batch 150621, Semivolatiles by Method SW8270, Sample SO-1620-FD01-20200212: Internal standard Perylene-d12 shifted due to possible matrix effect. There are no target analytes associated with compound.	

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20020506

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20020506-01	SO-1620-SG01(0.5-1)-20200211	Soil		11-Feb-2020 11:50	12-Feb-2020 15:40	☐
HS20020506-02	SO-1620-SG01(5.5-6)-20200211	Soil		11-Feb-2020 12:10	12-Feb-2020 15:40	☐
HS20020506-03	SO-1620-SG20(0.5-1)-20200211	Soil		11-Feb-2020 15:00	12-Feb-2020 15:40	☐
HS20020506-04	SO-1620-SG20(5.5-6)-20200211	Soil		11-Feb-2020 15:20	12-Feb-2020 15:40	☐
HS20020506-05	SO-1620-SG19(0.5-1)-20200212	Soil		12-Feb-2020 11:20	12-Feb-2020 15:40	☐
HS20020506-06	SO-1620-SG19(5.5-6)-20200212	Soil		12-Feb-2020 11:35	12-Feb-2020 15:40	☐
HS20020506-07	SO-1620-FD01-20200212	Soil		12-Feb-2020 00:00	12-Feb-2020 15:40	☐

Revision:1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG01(0.5-1)-20200211
Collection Date: 11-Feb-2020 11:50

ANALYTICAL REPORT
WorkOrder:HS20020506
Lab ID:HS20020506-01
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00059	0.0059	mg/Kg-dry	1	15-Feb-2020 14:47
Ethylbenzene		U	0.00082	0.0059	mg/Kg-dry	1	15-Feb-2020 14:47
Xylenes, Total		U	0.0012	0.0059	mg/Kg-dry	1	15-Feb-2020 14:47
Surr: 1,2-Dichloroethane-d4	*82.9*			*70-126*	*%REC*	*1*	*15-Feb-2020 14:47*
Surr: 4-Bromofluorobenzene	*95.2*			*70-130*	*%REC*	*1*	*15-Feb-2020 14:47*
Surr: Dibromofluoromethane	*91.5*			*70-130*	*%REC*	*1*	*15-Feb-2020 14:47*
Surr: Toluene-d8	*103*			*70-130*	*%REC*	*1*	*15-Feb-2020 14:47*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 13-Feb-2020		Analyst: LG
Naphthalene		U	0.00070	0.0038	mg/Kg-dry	1	17-Feb-2020 17:34
Surr: 2-Fluorobiphenyl	*62.7*			*43-125*	*%REC*	*1*	*17-Feb-2020 17:34*
Surr: 4-Terphenyl-d14	*62.4*			*32-125*	*%REC*	*1*	*17-Feb-2020 17:34*
Surr: Nitrobenzene-d5	*41.5*			*37-125*	*%REC*	*1*	*17-Feb-2020 17:34*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**14.7**		**0.0100**	**0.0100**	**wt%**	1	18-Feb-2020 09:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG01(5.5-6)-20200211
Collection Date: 11-Feb-2020 12:10

ANALYTICAL REPORT
WorkOrder:HS20020506
Lab ID:HS20020506-02
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00082	0.0082	mg/Kg-dry	1	15-Feb-2020 15:12
Ethylbenzene		U	0.0011	0.0082	mg/Kg-dry	1	15-Feb-2020 15:12
Xylenes, Total		U	0.0016	0.0082	mg/Kg-dry	1	15-Feb-2020 15:12
Surr: 1,2-Dichloroethane-d4	*82.9*			*70-126*	*%REC*	*1*	*15-Feb-2020 15:12*
Surr: 4-Bromofluorobenzene	*96.0*			*70-130*	*%REC*	*1*	*15-Feb-2020 15:12*
Surr: Dibromofluoromethane	*91.0*			*70-130*	*%REC*	*1*	*15-Feb-2020 15:12*
Surr: Toluene-d8	*103*			*70-130*	*%REC*	*1*	*15-Feb-2020 15:12*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 13-Feb-2020		Analyst: LG
Naphthalene		U	0.00073	0.0040	mg/Kg-dry	1	17-Feb-2020 17:53
Surr: 2-Fluorobiphenyl	*92.9*			*43-125*	*%REC*	*1*	*17-Feb-2020 17:53*
Surr: 4-Terphenyl-d14	*80.1*			*32-125*	*%REC*	*1*	*17-Feb-2020 17:53*
Surr: Nitrobenzene-d5	*63.7*			*37-125*	*%REC*	*1*	*17-Feb-2020 17:53*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**17.8**		**0.0100**	**0.0100**	**wt%**	1	18-Feb-2020 09:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG20(0.5-1)-20200211
Collection Date: 11-Feb-2020 15:00

ANALYTICAL REPORT
WorkOrder:HS20020506
Lab ID:HS20020506-03
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00080	0.0080	mg/Kg-dry	1	15-Feb-2020 15:36
Ethylbenzene		U	0.0011	0.0080	mg/Kg-dry	1	15-Feb-2020 15:36
Xylenes, Total		U	0.0016	0.0080	mg/Kg-dry	1	15-Feb-2020 15:36
Surr: 1,2-Dichloroethane-d4	*83.8*			*70-126*	*%REC*	*1*	*15-Feb-2020 15:36*
Surr: 4-Bromofluorobenzene	*94.2*			*70-130*	*%REC*	*1*	*15-Feb-2020 15:36*
Surr: Dibromofluoromethane	*91.1*			*70-130*	*%REC*	*1*	*15-Feb-2020 15:36*
Surr: Toluene-d8	*102*			*70-130*	*%REC*	*1*	*15-Feb-2020 15:36*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 13-Feb-2020		Analyst: LG
Naphthalene		U	0.00069	0.0038	mg/Kg-dry	1	17-Feb-2020 18:12
Surr: 2-Fluorobiphenyl	*72.9*			*43-125*	*%REC*	*1*	*17-Feb-2020 18:12*
Surr: 4-Terphenyl-d14	*81.7*			*32-125*	*%REC*	*1*	*17-Feb-2020 18:12*
Surr: Nitrobenzene-d5	*58.8*			*37-125*	*%REC*	*1*	*17-Feb-2020 18:12*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**12.8**		**0.0100**	**0.0100**	**wt%**	1	18-Feb-2020 09:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG20(5.5-6)-20200211
Collection Date: 11-Feb-2020 15:20

ANALYTICAL REPORT
WorkOrder:HS20020506
Lab ID:HS20020506-04
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00072	0.0072	mg/Kg-dry	1	15-Feb-2020 13:41
Ethylbenzene		U	0.0010	0.0072	mg/Kg-dry	1	15-Feb-2020 13:41
Xylenes, Total		U	0.0014	0.0072	mg/Kg-dry	1	15-Feb-2020 13:41
Surr: 1,2-Dichloroethane-d4	*81.5*			*70-126*	*%REC*	*1*	*15-Feb-2020 13:41*
Surr: 4-Bromofluorobenzene	*94.9*			*70-130*	*%REC*	*1*	*15-Feb-2020 13:41*
Surr: Dibromofluoromethane	*89.2*			*70-130*	*%REC*	*1*	*15-Feb-2020 13:41*
Surr: Toluene-d8	*105*			*70-130*	*%REC*	*1*	*15-Feb-2020 13:41*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 13-Feb-2020		Analyst: LG
Naphthalene		U	0.00071	0.0039	mg/Kg-dry	1	17-Feb-2020 18:31
Surr: 2-Fluorobiphenyl	*87.8*			*43-125*	*%REC*	*1*	*17-Feb-2020 18:31*
Surr: 4-Terphenyl-d14	*83.9*			*32-125*	*%REC*	*1*	*17-Feb-2020 18:31*
Surr: Nitrobenzene-d5	*59.3*			*37-125*	*%REC*	*1*	*17-Feb-2020 18:31*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**16.8**		**0.0100**	**0.0100**	**wt%**	1	18-Feb-2020 09:20

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG19(0.5-1)-20200212
Collection Date: 12-Feb-2020 11:20

ANALYTICAL REPORT
WorkOrder:HS20020506
Lab ID:HS20020506-05
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00059	0.0059	mg/Kg-dry	1	17-Feb-2020 10:14
Ethylbenzene		U	0.00082	0.0059	mg/Kg-dry	1	17-Feb-2020 10:14
Xylenes, Total		U	0.0012	0.0059	mg/Kg-dry	1	17-Feb-2020 10:14
Surr: 1,2-Dichloroethane-d4	*81.6*			*70-126*	*%REC*	*1*	*17-Feb-2020 10:14*
Surr: 4-Bromofluorobenzene	*90.1*			*70-130*	*%REC*	*1*	*17-Feb-2020 10:14*
Surr: Dibromofluoromethane	*92.9*			*70-130*	*%REC*	*1*	*17-Feb-2020 10:14*
Surr: Toluene-d8	*100*			*70-130*	*%REC*	*1*	*17-Feb-2020 10:14*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 13-Feb-2020		Analyst: LG
Naphthalene		U	0.00069	0.0038	mg/Kg-dry	1	17-Feb-2020 18:50
Surr: 2-Fluorobiphenyl	*75.2*			*43-125*	*%REC*	*1*	*17-Feb-2020 18:50*
Surr: 4-Terphenyl-d14	*90.7*			*32-125*	*%REC*	*1*	*17-Feb-2020 18:50*
Surr: Nitrobenzene-d5	*67.0*			*37-125*	*%REC*	*1*	*17-Feb-2020 18:50*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**14.1**		**0.0100**	**0.0100**	**wt%**	1	18-Feb-2020 09:20

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG19(5.5-6)-20200212
Collection Date: 12-Feb-2020 11:35

ANALYTICAL REPORT
WorkOrder:HS20020506
Lab ID:HS20020506-06
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00062	0.0062	mg/Kg-dry	1	15-Feb-2020 14:27
Ethylbenzene		U	0.00087	0.0062	mg/Kg-dry	1	15-Feb-2020 14:27
Xylenes, Total		U	0.0012	0.0062	mg/Kg-dry	1	15-Feb-2020 14:27
Surr: 1,2-Dichloroethane-d4	*81.7*			*70-126*	*%REC*	*1*	*15-Feb-2020 14:27*
Surr: 4-Bromofluorobenzene	*96.8*			*70-130*	*%REC*	*1*	*15-Feb-2020 14:27*
Surr: Dibromofluoromethane	*89.3*			*70-130*	*%REC*	*1*	*15-Feb-2020 14:27*
Surr: Toluene-d8	*108*			*70-130*	*%REC*	*1*	*15-Feb-2020 14:27*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 13-Feb-2020		Analyst: LG
Naphthalene		U	0.00071	0.0039	mg/Kg-dry	1	17-Feb-2020 19:10
Surr: 2-Fluorobiphenyl	*51.8*			*43-125*	*%REC*	*1*	*17-Feb-2020 19:10*
Surr: 4-Terphenyl-d14	*65.3*			*32-125*	*%REC*	*1*	*17-Feb-2020 19:10*
Surr: Nitrobenzene-d5	*43.9*			*37-125*	*%REC*	*1*	*17-Feb-2020 19:10*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**15.1**		**0.0100**	**0.0100**	**wt%**	1	18-Feb-2020 09:20

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-FD01-20200212
Collection Date: 12-Feb-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20020506
Lab ID:HS20020506-07
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00060	0.0060	mg/Kg-dry	1	15-Feb-2020 14:49
Ethylbenzene		U	0.00083	0.0060	mg/Kg-dry	1	15-Feb-2020 14:49
Xylenes, Total		U	0.0012	0.0060	mg/Kg-dry	1	15-Feb-2020 14:49
Surr: 1,2-Dichloroethane-d4	*86.9*			*70-126*	*%REC*	*1*	*15-Feb-2020 14:49*
Surr: 4-Bromofluorobenzene	*92.6*			*70-130*	*%REC*	*1*	*15-Feb-2020 14:49*
Surr: Dibromofluoromethane	*91.9*			*70-130*	*%REC*	*1*	*15-Feb-2020 14:49*
Surr: Toluene-d8	*105*			*70-130*	*%REC*	*1*	*15-Feb-2020 14:49*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 13-Feb-2020		Analyst: GEY
Naphthalene	**0.0053**		**0.00071**	**0.0039**	**mg/Kg-dry**	1	14-Feb-2020 20:22
Surr: 2-Fluorobiphenyl	*76.4*			*43-125*	*%REC*	*1*	*14-Feb-2020 20:22*
Surr: 4-Terphenyl-d14	*98.9*			*32-125*	*%REC*	*1*	*14-Feb-2020 20:22*
Surr: Nitrobenzene-d5	*71.3*			*37-125*	*%REC*	*1*	*14-Feb-2020 20:22*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**15.3**		**0.0100**	**0.0100**	**wt%**	1	18-Feb-2020 09:20

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020506

Batch ID: 3612 **Start Date:** 13 Feb 2020 14:50 **End Date:** 13 Feb 2020 14:50
Method: VOLATILES BY SW8260C

Sample ID	Container	Sample Wt/Vol	Final Volume	Weight Factor	Container Type
HS20020506-01	1	4.978 (g)	5 (mL)	1	TerraCore (5035A)
HS20020506-02	1	3.722 (g)	5 (mL)	1.34	TerraCore (5035A)
HS20020506-03	1	3.579 (g)	5 (mL)	1.4	TerraCore (5035A)
HS20020506-04	1	4.215 (g)	5 (mL)	1.19	TerraCore (5035A)
HS20020506-05	1	4.974 (g)	5 (mL)	1.01	TerraCore (5035A)
HS20020506-06	1	4.771 (g)	5 (mL)	1.05	TerraCore (5035A)
HS20020506-07	1	4.955 (g)	5 (mL)	1.01	TerraCore (5035A)

Batch ID: 150608 **Start Date:** 13 Feb 2020 13:39 **End Date:** 13 Feb 2020 18:00
Method: SV SOXHLET EXTRACT-LOWLEVEL-SW3541 **Prep Code:** 3541_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20020506-01		30.35 (g)	1 (mL)	0.03295
HS20020506-02		30.14 (g)	1 (mL)	0.03318
HS20020506-03		30.1 (g)	1 (mL)	0.03322
HS20020506-04		30.27 (g)	1 (mL)	0.03304
HS20020506-05		30.16 (g)	1 (mL)	0.03316
HS20020506-06		30.02 (g)	1 (mL)	0.03331

Batch ID: 150621 **Start Date:** 13 Feb 2020 16:41 **End Date:** 13 Feb 2020 20:00
Method: SV SOXHLET EXTRACT-LOWLEVEL-SW3541 **Prep Code:** 3541_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20020506-07		30 (g)	1 (mL)	0.03333

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020506

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 150608 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Soil	
HS20020506-01	SO-1620-SG01(0.5-1)-20200211	11 Feb 2020 11:50		13 Feb 2020 13:39	17 Feb 2020 17:34	1
HS20020506-02	SO-1620-SG01(5.5-6)-20200211	11 Feb 2020 12:10		13 Feb 2020 13:39	17 Feb 2020 17:53	1
HS20020506-03	SO-1620-SG20(0.5-1)-20200211	11 Feb 2020 15:00		13 Feb 2020 13:39	17 Feb 2020 18:12	1
HS20020506-04	SO-1620-SG20(5.5-6)-20200211	11 Feb 2020 15:20		13 Feb 2020 13:39	17 Feb 2020 18:31	1
HS20020506-05	SO-1620-SG19(0.5-1)-20200212	12 Feb 2020 11:20		13 Feb 2020 13:39	17 Feb 2020 18:50	1
HS20020506-06	SO-1620-SG19(5.5-6)-20200212	12 Feb 2020 11:35		13 Feb 2020 13:39	17 Feb 2020 19:10	1
Batch ID: 150621 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Soil	
HS20020506-07	SO-1620-FD01-20200212	12 Feb 2020 00:00		13 Feb 2020 16:41	14 Feb 2020 20:22	1
Batch ID: R356340 (0)	**Test Name :** VOLATILES BY SW8260C				**Matrix:** Soil	
HS20020506-04	SO-1620-SG20(5.5-6)-20200211	11 Feb 2020 15:20			15 Feb 2020 13:41	1
HS20020506-06	SO-1620-SG19(5.5-6)-20200212	12 Feb 2020 11:35			15 Feb 2020 14:27	1
HS20020506-07	SO-1620-FD01-20200212	12 Feb 2020 00:00			15 Feb 2020 14:49	1
Batch ID: R356342 (0)	**Test Name :** VOLATILES BY SW8260C				**Matrix:** Soil	
HS20020506-01	SO-1620-SG01(0.5-1)-20200211	11 Feb 2020 11:50			15 Feb 2020 14:47	1
HS20020506-02	SO-1620-SG01(5.5-6)-20200211	11 Feb 2020 12:10			15 Feb 2020 15:12	1
HS20020506-03	SO-1620-SG20(0.5-1)-20200211	11 Feb 2020 15:00			15 Feb 2020 15:36	1
Batch ID: R356347 (0)	**Test Name :** VOLATILES BY SW8260C				**Matrix:** Soil	
HS20020506-05	SO-1620-SG19(0.5-1)-20200212	12 Feb 2020 11:20			17 Feb 2020 10:14	1
Batch ID: R356526 (0)	**Test Name :** MOISTURE - ASTM D2216				**Matrix:** Soil	
HS20020506-01	SO-1620-SG01(0.5-1)-20200211	11 Feb 2020 11:50			18 Feb 2020 09:20	1
HS20020506-02	SO-1620-SG01(5.5-6)-20200211	11 Feb 2020 12:10			18 Feb 2020 09:20	1
HS20020506-03	SO-1620-SG20(0.5-1)-20200211	11 Feb 2020 15:00			18 Feb 2020 09:20	1
HS20020506-04	SO-1620-SG20(5.5-6)-20200211	11 Feb 2020 15:20			18 Feb 2020 09:20	1
HS20020506-05	SO-1620-SG19(0.5-1)-20200212	12 Feb 2020 11:20			18 Feb 2020 09:20	1
HS20020506-06	SO-1620-SG19(5.5-6)-20200212	12 Feb 2020 11:35			18 Feb 2020 09:20	1
HS20020506-07	SO-1620-FD01-20200212	12 Feb 2020 00:00			18 Feb 2020 09:20	1

Revision: 1

WorkOrder: HS20020506
InstrumentID: SV-6
Test Code: 8270_LOW_S
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Naphthalene	91-20-3	0.0017	0.0019	0.00060	0.0033
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	4-Terphenyl-d14	1718-51-0	0	0	0	0
S	Nitrobenzene-d5	4165-60-0	0	0	0	0

Revision:1

WorkOrder: HS20020506
InstrumentID: SV-7
Test Code: 8270_LOW_S
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Naphthalene	91-20-3	0.0017	0.0018	0.00060	0.0033
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	4-Terphenyl-d14	1718-51-0	0	0	0	0
S	Nitrobenzene-d5	4165-60-0	0	0	0	0

Revision:1

WorkOrder: HS20020506
InstrumentID: VOA5
Test Code: 8260_S
Test Number: SW8260
Test Name: Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Benzene	71-43-2	0.0012	0.0016	0.00050	0.0050
A	Ethylbenzene	100-41-4	0.0012	0.0016	0.00070	0.0050
A	Xylenes, Total	1330-20-7	0.0012	0.0016	0.0010	0.0050
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0
S	4-Bromofluorobenzene	460-00-4	0	0	0	0
S	Dibromofluoromethane	1868-53-7	0	0	0	0
S	Toluene-d8	2037-26-5	0	0	0	0

Revision:1

WorkOrder: HS20020506
InstrumentID: VOA8
Test Code: 8260_S
Test Number: SW8260
Test Name: Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Benzene	71-43-2	0.0012	0.0013	0.00050	0.0050
A	Ethylbenzene	100-41-4	0.0012	0.0014	0.00070	0.0050
A	Xylenes, Total	1330-20-7	0.0012	0.0014	0.0010	0.0050
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0
S	4-Bromofluorobenzene	460-00-4	0	0	0	0
S	Dibromofluoromethane	1868-53-7	0	0	0	0
S	Toluene-d8	2037-26-5	0	0	0	0

Revision:1

WorkOrder: HS20020506
InstrumentID: Balance1
Test Code: MOIST_ASTM
Test Number: ASTM D2216
Test Name: Moisture - ASTM D2216

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** wt%

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Percent Moisture	MOIST	0.0100	0.0100	0.0100	0.0100

Revision:1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020506

QC BATCH REPORT

Batch ID: 150608 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-150608** Units: **ug/Kg** Analysis Date: **13-Feb-2020 17:29**
Client ID: Run ID: **SV-6_356229** SeqNo: **5472906** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	U	3.3								
Surr: 2-Fluorobiphenyl	*127.4*	*0*	*167*	*0*	*76.3*	*43 - 125*				
Surr: 4-Terphenyl-d14	*123.1*	*0*	*167*	*0*	*73.7*	*32 - 125*				
Surr: Nitrobenzene-d5	*118.2*	*0*	*167*	*0*	*70.8*	*37 - 125*				

LCS Sample ID: **LCS-150608** Units: **ug/Kg** Analysis Date: **13-Feb-2020 17:48**
Client ID: Run ID: **SV-6_356229** SeqNo: **5472907** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	133.9	3.3	167	0	80.2	50 - 125				
Surr: 2-Fluorobiphenyl	*139.8*	*0*	*167*	*0*	*83.7*	*43 - 125*				
Surr: 4-Terphenyl-d14	*142.8*	*0*	*167*	*0*	*85.5*	*32 - 125*				
Surr: Nitrobenzene-d5	*127.2*	*0*	*167*	*0*	*76.2*	*37 - 125*				

MS Sample ID: **HS20020449-01MS** Units: **ug/Kg** Analysis Date: **14-Feb-2020 11:51**
Client ID: Run ID: **SV-6_356287** SeqNo: **5473656** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	116.6	3.3	166.7	0	70.0	50 - 125				
Surr: 2-Fluorobiphenyl	*127.2*	*0*	*166.7*	*0*	*76.3*	*43 - 125*				
Surr: 4-Terphenyl-d14	*129.4*	*0*	*166.7*	*0*	*77.6*	*32 - 125*				
Surr: Nitrobenzene-d5	*107*	*0*	*166.7*	*0*	*64.2*	*37 - 125*				

MSD Sample ID: **HS20020449-01MSD** Units: **ug/Kg** Analysis Date: **14-Feb-2020 12:10**
Client ID: Run ID: **SV-6_356287** SeqNo: **5473657** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	115.5	3.3	165	0	70.0	50 - 125	116.6	0.905	30	
Surr: 2-Fluorobiphenyl	*124.1*	*0*	*165*	*0*	*75.2*	*43 - 125*	*127.2*	*2.46*	*30*	
Surr: 4-Terphenyl-d14	*118.8*	*0*	*165*	*0*	*72.0*	*32 - 125*	*129.4*	*8.49*	*30*	
Surr: Nitrobenzene-d5	*106.2*	*0*	*165*	*0*	*64.4*	*37 - 125*	*107*	*0.758*	*30*	

The following samples were analyzed in this batch: HS20020506-01 HS20020506-02 HS20020506-03 HS20020506-04 HS20020506-05 HS20020506-06

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020506

QC BATCH REPORT

Batch ID: 150621 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-150621** Units: **ug/Kg** Analysis Date: **14-Feb-2020 11:22**
Client ID: Run ID: **SV-7_356313** SeqNo: **5475049** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	U	3.3								
Surr: 2-Fluorobiphenyl	*108.8*	*0*	*167*	*0*	*65.1*	*43 - 125*				
Surr: 4-Terphenyl-d14	*120.7*	*0*	*167*	*0*	*72.3*	*32 - 125*				
Surr: Nitrobenzene-d5	*90.27*	*0*	*167*	*0*	*54.1*	*37 - 125*				

LCS Sample ID: **LCS-150621** Units: **ug/Kg** Analysis Date: **14-Feb-2020 11:41**
Client ID: Run ID: **SV-7_356313** SeqNo: **5475050** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	123	3.3	167	0	73.6	50 - 125				
Surr: 2-Fluorobiphenyl	*122*	*0*	*167*	*0*	*73.1*	*43 - 125*				
Surr: 4-Terphenyl-d14	*133.5*	*0*	*167*	*0*	*79.9*	*32 - 125*				
Surr: Nitrobenzene-d5	*108.7*	*0*	*167*	*0*	*65.1*	*37 - 125*				

MS Sample ID: **HS20020518-01MS** Units: **ug/Kg** Analysis Date: **14-Feb-2020 12:47**
Client ID: Run ID: **SV-7_356313** SeqNo: **5475052** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	117.8	3.3	167	0.6599	70.2	50 - 125				
Surr: 2-Fluorobiphenyl	*110.4*	*0*	*167*	*0*	*66.1*	*43 - 125*				
Surr: 4-Terphenyl-d14	*130.2*	*0*	*167*	*0*	*78.0*	*32 - 125*				
Surr: Nitrobenzene-d5	*89.84*	*0*	*167*	*0*	*53.8*	*37 - 125*				

MSD Sample ID: **HS20020518-01MSD** Units: **ug/Kg** Analysis Date: **18-Feb-2020 00:44**
Client ID: Run ID: **SV-7_356439** SeqNo: **5476514** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	120.3	3.3	167	0.6599	71.6	50 - 125	117.8	2.08	30	
Surr: 2-Fluorobiphenyl	*108.4*	*0*	*167*	*0*	*64.9*	*43 - 125*	*110.4*	*1.8*	*30*	
Surr: 4-Terphenyl-d14	*126.5*	*0*	*167*	*0*	*75.8*	*32 - 125*	*130.2*	*2.89*	*30*	
Surr: Nitrobenzene-d5	*97.75*	*0*	*167*	*0*	*58.5*	*37 - 125*	*89.84*	*8.43*	*30*	

The following samples were analyzed in this batch: HS20020506-07

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020506

QC BATCH REPORT

Batch ID: R356340 (0) **Instrument: VOA8** **Method: VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKS1-021520** Units: **ug/Kg** Analysis Date: **15-Feb-2020 10:37**
Client ID: Run ID: **VOA8_356340** SeqNo: **5474381** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	5.0								
Ethylbenzene	U	5.0								
Xylenes, Total	U	5.0								
Surr: 1,2-Dichloroethane-d4	*38.39*	*0*	*50*	*0*	*76.8*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*47.41*	*0*	*50*	*0*	*94.8*	*80 - 120*				
Surr: Dibromofluoromethane	*41.87*	*0*	*50*	*0*	*83.7*	*80 - 119*				
Surr: Toluene-d8	*54.45*	*0*	*50*	*0*	*109*	*81 - 118*				

LCS Sample ID: **VLCSS1-021520** Units: **ug/Kg** Analysis Date: **15-Feb-2020 09:52**
Client ID: Run ID: **VOA8_356340** SeqNo: **5474380** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	49.89	5.0	50	0	99.8	75 - 124				
Ethylbenzene	54.19	5.0	50	0	108	70 - 123				
Xylenes, Total	157.2	5.0	150	0	105	77 - 128				
Surr: 1,2-Dichloroethane-d4	*40.31*	*0*	*50*	*0*	*80.6*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*47.65*	*0*	*50*	*0*	*95.3*	*80 - 120*				
Surr: Dibromofluoromethane	*45.8*	*0*	*50*	*0*	*91.6*	*80 - 119*				
Surr: Toluene-d8	*52.33*	*0*	*50*	*0*	*105*	*81 - 118*				

MS Sample ID: **HS20020334-01MS** Units: **ug/Kg** Analysis Date: **15-Feb-2020 19:24**
Client ID: Run ID: **VOA8_356340** SeqNo: **5474402** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	51.68	5.0	49.5	0	104	70 - 130				
Ethylbenzene	51.59	5.0	49.5	0	104	70 - 130				
Xylenes, Total	152.9	5.0	148.5	0	103	70 - 130				
Surr: 1,2-Dichloroethane-d4	*47.55*	*0*	*49.5*	*0*	*96.1*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*50.16*	*0*	*49.5*	*0*	*101*	*70 - 130*				
Surr: Dibromofluoromethane	*49.39*	*0*	*49.5*	*0*	*99.8*	*70 - 130*				
Surr: Toluene-d8	*49.98*	*0*	*49.5*	*0*	*101*	*70 - 130*				

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020506

QC BATCH REPORT

Batch ID: R356340 (0) **Instrument: VOA8** **Method: VOLATILES BY SW8260C**

MSD Sample ID: **HS20020334-01MSD** Units: **ug/Kg** Analysis Date: **15-Feb-2020 11:46**
Client ID: Run ID: **VOA8_356340** SeqNo: **5474383** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Benzene	49.35	5.0	50	0	98.7	70 - 130	51.68	4.61	30	
Ethylbenzene	50.79	5.0	50	0	102	70 - 130	51.59	1.58	30	
Xylenes, Total	148.4	5.0	150	0	99.0	70 - 130	152.9	2.96	30	
Surr: 1,2-Dichloroethane-d4	*44.94*	*0*	*50*	*0*	*89.9*	*70 - 126*	*47.55*	*5.64*	*30*	
Surr: 4-Bromofluorobenzene	*49.81*	*0*	*50*	*0*	*99.6*	*70 - 130*	*50.16*	*0.696*	*30*	
Surr: Dibromofluoromethane	*48.83*	*0*	*50*	*0*	*97.7*	*70 - 130*	*49.39*	*1.15*	*30*	
Surr: Toluene-d8	*51.03*	*0*	*50*	*0*	*102*	*70 - 130*	*49.98*	*2.08*	*30*	

The following samples were analyzed in this batch: HS20020506-04 HS20020506-06 HS20020506-07

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020506

QC BATCH REPORT

Batch ID: R356342 (0) **Instrument: VOA5** **Method: VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKS1-021520** Units: **ug/Kg** Analysis Date: **15-Feb-2020 10:38**
Client ID: Run ID: **VOA5_356342** SeqNo: **5474460** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	5.0								
Ethylbenzene	U	5.0								
Xylenes, Total	U	5.0								
Surr: 1,2-Dichloroethane-d4	*45.4*	*0*	*50*	*0*	*90.8*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*47.6*	*0*	*50*	*0*	*95.2*	*80 - 120*				
Surr: Dibromofluoromethane	*46.63*	*0*	*50*	*0*	*93.3*	*80 - 119*				
Surr: Toluene-d8	*49.33*	*0*	*50*	*0*	*98.7*	*81 - 118*				

LCS Sample ID: **VLCSS1-021520** Units: **ug/Kg** Analysis Date: **15-Feb-2020 09:48**
Client ID: Run ID: **VOA5_356342** SeqNo: **5474459** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	53.58	5.0	50	0	107	75 - 124				
Ethylbenzene	54.61	5.0	50	0	109	70 - 123				
Xylenes, Total	164.4	5.0	150	0	110	77 - 128				
Surr: 1,2-Dichloroethane-d4	*47.23*	*0*	*50*	*0*	*94.5*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*48.41*	*0*	*50*	*0*	*96.8*	*80 - 120*				
Surr: Dibromofluoromethane	*50.12*	*0*	*50*	*0*	*100*	*80 - 119*				
Surr: Toluene-d8	*49.87*	*0*	*50*	*0*	*99.7*	*81 - 118*				

MS Sample ID: **HS20020288-10MS** Units: **ug/Kg** Analysis Date: **15-Feb-2020 11:28**
Client ID: Run ID: **VOA5_356342** SeqNo: **5474462** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	45.6	4.8	48	0	95.0	70 - 130				
Ethylbenzene	42.51	4.8	48	0	88.6	70 - 130				
Xylenes, Total	129.8	4.8	144	0	90.1	70 - 130				
Surr: 1,2-Dichloroethane-d4	*44.43*	*0*	*48*	*0*	*92.6*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*47.23*	*0*	*48*	*0*	*98.4*	*70 - 130*				
Surr: Dibromofluoromethane	*46.9*	*0*	*48*	*0*	*97.7*	*70 - 130*				
Surr: Toluene-d8	*48.33*	*0*	*48*	*0*	*101*	*70 - 130*				

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020506

QC BATCH REPORT

Batch ID: R356342 (0) **Instrument: VOA5** **Method: VOLATILES BY SW8260C**

MSD Sample ID: **HS20020288-10MSD** Units: **ug/Kg** Analysis Date: **15-Feb-2020 11:53**
Client ID: Run ID: **VOA5_356342** SeqNo: **5474463** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	37.07	4.8	48	0	77.2	70 - 130	45.6	20.6	30	
Ethylbenzene	35.46	4.8	48	0	73.9	70 - 130	42.51	18.1	30	
Xylenes, Total	106.4	4.8	144	0	73.9	70 - 130	129.8	19.8	30	
Surr: 1,2-Dichloroethane-d4	*45.65*	*0*	*48*	*0*	*95.1*	*70 - 126*	*44.43*	*2.72*	*30*	
Surr: 4-Bromofluorobenzene	*46.55*	*0*	*48*	*0*	*97.0*	*70 - 130*	*47.23*	*1.45*	*30*	
Surr: Dibromofluoromethane	*48.59*	*0*	*48*	*0*	*101*	*70 - 130*	*46.9*	*3.54*	*30*	
Surr: Toluene-d8	*48.64*	*0*	*48*	*0*	*101*	*70 - 130*	*48.33*	*0.631*	*30*	

The following samples were analyzed in this batch: HS20020506-01 HS20020506-02 HS20020506-03

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020506

QC BATCH REPORT

Batch ID: R356347 (0) **Instrument: VOA5** **Method: VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKS1-021720** Units: **ug/Kg** Analysis Date: **17-Feb-2020 09:25**
Client ID: Run ID: **VOA5_356347** SeqNo: **5474687** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	5.0								
Ethylbenzene	U	5.0								
Xylenes, Total	U	5.0								
Surr: 1,2-Dichloroethane-d4	*43.64*	*0*	*50*	*0*	*87.3*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*46.48*	*0*	*50*	*0*	*93.0*	*80 - 120*				
Surr: Dibromofluoromethane	*47.05*	*0*	*50*	*0*	*94.1*	*80 - 119*				
Surr: Toluene-d8	*49.59*	*0*	*50*	*0*	*99.2*	*81 - 118*				

LCS Sample ID: **VLCSS1-021720** Units: **ug/Kg** Analysis Date: **17-Feb-2020 08:35**
Client ID: Run ID: **VOA5_356347** SeqNo: **5474686** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	55.18	5.0	50	0	110	75 - 124				
Ethylbenzene	55.2	5.0	50	0	110	70 - 123				
Xylenes, Total	166.1	5.0	150	0	111	77 - 128				
Surr: 1,2-Dichloroethane-d4	*46.03*	*0*	*50*	*0*	*92.1*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*47.82*	*0*	*50*	*0*	*95.6*	*80 - 120*				
Surr: Dibromofluoromethane	*50.21*	*0*	*50*	*0*	*100*	*80 - 119*				
Surr: Toluene-d8	*49.94*	*0*	*50*	*0*	*99.9*	*81 - 118*				

MS Sample ID: **HS20020533-09MS** Units: **ug/Kg** Analysis Date: **17-Feb-2020 11:29**
Client ID: Run ID: **VOA5_356347** SeqNo: **5475037** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	48.07	5.1	51	0	94.3	70 - 130				
Ethylbenzene	48.17	5.1	51	0	94.5	70 - 130				
Xylenes, Total	143.4	5.1	153	0	93.7	70 - 130				
Surr: 1,2-Dichloroethane-d4	*46.89*	*0*	*51*	*0*	*91.9*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*48.14*	*0*	*51*	*0*	*94.4*	*70 - 130*				
Surr: Dibromofluoromethane	*51.35*	*0*	*51*	*0*	*101*	*70 - 130*				
Surr: Toluene-d8	*51.16*	*0*	*51*	*0*	*100*	*70 - 130*				

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020506

QC BATCH REPORT

Batch ID: R356347 (0) **Instrument: VOA5** **Method: VOLATILES BY SW8260C**

MSD Sample ID: **HS20020533-09MSD** Units: **ug/Kg** Analysis Date: **17-Feb-2020 11:54**
Client ID: Run ID: **VOA5_356347** SeqNo: **5475038** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	46.11	5.0	50	0	92.2	70 - 130	48.07	4.17	30	
Ethylbenzene	45.33	5.0	50	0	90.7	70 - 130	48.17	6.08	30	
Xylenes, Total	136.9	5.0	150	0	91.3	70 - 130	143.4	4.6	30	
Surr: 1,2-Dichloroethane-d4	*46.52*	*0*	*50*	*0*	*93.0*	*70 - 126*	*46.89*	*0.8*	*30*	
Surr: 4-Bromofluorobenzene	*47.95*	*0*	*50*	*0*	*95.9*	*70 - 130*	*48.14*	*0.404*	*30*	
Surr: Dibromofluoromethane	*50.78*	*0*	*50*	*0*	*102*	*70 - 130*	*51.35*	*1.12*	*30*	
Surr: Toluene-d8	*50.25*	*0*	*50*	*0*	*100*	*70 - 130*	*51.16*	*1.81*	*30*	

The following samples were analyzed in this batch: HS20020506-05

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020506

QC BATCH REPORT

Batch ID: R356526 (0) **Instrument:** Balance1 **Method:** MOISTURE - ASTM D2216

DUP Sample ID: **HS20020571-06DUP** Units: **wt%** Analysis Date: **18-Feb-2020 09:20**
Client ID: Run ID: **Balance1_356526** SeqNo: **5478088** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	15.1	0.0100					15.2	0.66	20	

The following samples were analyzed in this batch:

HS20020506-01	HS20020506-02	HS20020506-03	HS20020506-04
HS20020506-05	HS20020506-06	HS20020506-07	

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20020506**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/Kg-dry	Milligrams per Kilogram- Dry weight corrected

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20020506

Date/Time Received: **12-Feb-2020 15:40**
Received by: **DDG**

Checklist completed by: *Paresh M. Giga* eSignature — 12-Feb-2020 Date

Reviewed by: *Dane J. Wacasey* eSignature — 13-Feb-2020 Date

Matrices: **Soil**

Carrier name: **ALS Courier**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☑	No ☐	Not Present ☐
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:214097
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	0.9°C uc/c	IR25	
Cooler(s)/Kit(s):	45557		
Date/Time sample(s) sent to storage:	2/12/2020 18:25		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

Page _____ of _____

COC ID: 214097

HS20020506

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information			
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A	8260_S (5652652 B,E,X)
Work Order		Project Number	1620-11-Rev0 SR 92688	B	8270_LOW_S (5632532 SVOC - Naphthalene only)
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P	C	MOIST_ASTM (5631931 Gen.Chem. MOIST%)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620-SG01 (0.5-1) 20200211	2-11-20	1150	Soil	8,9	5	X	X	X								
2	SG01 (5.5-6) 20200211	"	1210	"	"	"	"	"	"								
3	SG20 (0.5-1) 20200211	"	1500	"	"	"	"	"	"								
4	SG20 (5.5-6) 20200211	"	1520	"	"	"	"	"	"								
5	SG19 (0.5-1) 20200212	2-12-20	1120	"	"	"	"	"	"								
6	SG19 (5.5-6) 20200212	"	1135	"	"	"	"	"	"								
7	Duplicate	—	—	"	"	"	X	X	X								
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Anthony Reid

Shipment Method:

Required Turnaround Time: (Check Box) ☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other _____

Results Due Date:

Relinquished by:	Date: 2-12-20	Time: 1400	Received by:	
Relinquished by:	Date: 2-12-20	Time: 1540	Received by (Laboratory):	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

Notes: UPRR HWPW 1620-11

Cooler ID	Cooler Temp.
45557	0.9

QC Package: (Check One Box Below)

☐ Level II Std QC
☐ Level III Std QC/Raw Data
☐ Level IV SW846/CLP
☐ Other _____
☒ TRRP Checklist
☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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February 20, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20020571**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 6 sample(s) on Feb 13, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20020571**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS20020571**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/20/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020571				
Reviewer Name: Corey Grandits			Prep Batch Number(s): 150668,150728,R356419,R356526				
#[1]	A[2]	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?	X				
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			1
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/20/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020571				
Reviewer Name: Corey Grandits			Prep Batch Number(s): 150668,150728,R356419,R356526				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 02/20/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20020571
Reviewer Name: Corey Grandits	Prep Batch Number(s): 150668,150728,R356419,R356526

ER#[5]	Description
1	Batch R354619, Volatile Organics Method SW8260, sample HS20020397-01, MS and MSD were performed on unrelated sample.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20020571

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20020571-01	SO-1620-SG17(0.5-1)20200212	Soil		12-Feb-2020 15:40	13-Feb-2020 18:01	☐
HS20020571-02	SO-1620-SG17(5.5-6)20200212	Soil		12-Feb-2020 15:50	13-Feb-2020 18:01	☐
HS20020571-03	SO-1620-SG16(0.5-1)20200213	Soil		13-Feb-2020 12:15	13-Feb-2020 18:01	☐
HS20020571-04	SO-1620-SG16(5.5-6)20200213	Soil		13-Feb-2020 12:30	13-Feb-2020 18:01	☐
HS20020571-05	SO-1620-SG15(0.5-1)20200213	Soil		13-Feb-2020 14:30	13-Feb-2020 18:01	☐
HS20020571-06	SO-1620-SG15(5.5-6)20200213	Soil		13-Feb-2020 14:40	13-Feb-2020 18:01	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG17(0.5-1)20200212
Collection Date: 12-Feb-2020 15:40

ANALYTICAL REPORT
WorkOrder:HS20020571
Lab ID:HS20020571-01
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00071	0.0071	mg/Kg-dry	1	18-Feb-2020 00:53
Ethylbenzene		U	0.0010	0.0071	mg/Kg-dry	1	18-Feb-2020 00:53
Xylenes, Total		U	0.0014	0.0071	mg/Kg-dry	1	18-Feb-2020 00:53
Surr: 1,2-Dichloroethane-d4	*79.2*			*70-126*	*%REC*	*1*	*18-Feb-2020 00:53*
Surr: 4-Bromofluorobenzene	*91.5*			*70-130*	*%REC*	*1*	*18-Feb-2020 00:53*
Surr: Dibromofluoromethane	*88.2*			*70-130*	*%REC*	*1*	*18-Feb-2020 00:53*
Surr: Toluene-d8	*109*			*70-130*	*%REC*	*1*	*18-Feb-2020 00:53*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 17-Feb-2020		Analyst: GEY
Naphthalene	**0.0095**		**0.00070**	**0.0038**	**mg/Kg-dry**	1	19-Feb-2020 15:55
Surr: 2-Fluorobiphenyl	*74.2*			*43-125*	*%REC*	*1*	*19-Feb-2020 15:55*
Surr: 4-Terphenyl-d14	*89.2*			*32-125*	*%REC*	*1*	*19-Feb-2020 15:55*
Surr: Nitrobenzene-d5	*60.6*			*37-125*	*%REC*	*1*	*19-Feb-2020 15:55*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**13.7**		**0.0100**	**0.0100**	**wt%**	1	18-Feb-2020 09:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG17(5.5-6)20200212
Collection Date: 12-Feb-2020 15:50

ANALYTICAL REPORT
WorkOrder:HS20020571
Lab ID:HS20020571-02
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene	U		0.00079	0.0079	mg/Kg-dry	1	18-Feb-2020 01:16
Ethylbenzene	U		0.0011	0.0079	mg/Kg-dry	1	18-Feb-2020 01:16
Xylenes, Total	U		0.0016	0.0079	mg/Kg-dry	1	18-Feb-2020 01:16
Surr: 1,2-Dichloroethane-d4	*83.9*			*70-126*	*%REC*	*1*	*18-Feb-2020 01:16*
Surr: 4-Bromofluorobenzene	*99.0*			*70-130*	*%REC*	*1*	*18-Feb-2020 01:16*
Surr: Dibromofluoromethane	*91.0*			*70-130*	*%REC*	*1*	*18-Feb-2020 01:16*
Surr: Toluene-d8	*109*			*70-130*	*%REC*	*1*	*18-Feb-2020 01:16*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 17-Feb-2020		Analyst: GEY
Naphthalene	**0.0015**	J	**0.00073**	**0.0040**	**mg/Kg-dry**	1	19-Feb-2020 16:14
Surr: 2-Fluorobiphenyl	*77.0*			*43-125*	*%REC*	*1*	*19-Feb-2020 16:14*
Surr: 4-Terphenyl-d14	*73.4*			*32-125*	*%REC*	*1*	*19-Feb-2020 16:14*
Surr: Nitrobenzene-d5	*52.0*			*37-125*	*%REC*	*1*	*19-Feb-2020 16:14*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**17.8**		**0.0100**	**0.0100**	**wt%**	1	18-Feb-2020 09:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG16(0.5-1)20200213
Collection Date: 13-Feb-2020 12:15

ANALYTICAL REPORT
WorkOrder:HS20020571
Lab ID:HS20020571-03
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00066	0.0066	mg/Kg-dry	1	18-Feb-2020 01:39
Ethylbenzene		U	0.00093	0.0066	mg/Kg-dry	1	18-Feb-2020 01:39
Xylenes, Total		U	0.0013	0.0066	mg/Kg-dry	1	18-Feb-2020 01:39
Surr: 1,2-Dichloroethane-d4	*80.6*			*70-126*	*%REC*	*1*	*18-Feb-2020 01:39*
Surr: 4-Bromofluorobenzene	*97.3*			*70-130*	*%REC*	*1*	*18-Feb-2020 01:39*
Surr: Dibromofluoromethane	*88.6*			*70-130*	*%REC*	*1*	*18-Feb-2020 01:39*
Surr: Toluene-d8	*108*			*70-130*	*%REC*	*1*	*18-Feb-2020 01:39*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 17-Feb-2020		Analyst: GEY
Naphthalene	**0.0099**		**0.00069**	**0.0038**	**mg/Kg-dry**	1	19-Feb-2020 16:34
Surr: 2-Fluorobiphenyl	*68.8*			*43-125*	*%REC*	*1*	*19-Feb-2020 16:34*
Surr: 4-Terphenyl-d14	*99.4*			*32-125*	*%REC*	*1*	*19-Feb-2020 16:34*
Surr: Nitrobenzene-d5	*64.2*			*37-125*	*%REC*	*1*	*19-Feb-2020 16:34*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**13.1**		**0.0100**	**0.0100**	**wt%**	1	18-Feb-2020 09:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG16(5.5-6)20200213
Collection Date: 13-Feb-2020 12:30

ANALYTICAL REPORT
WorkOrder:HS20020571
Lab ID:HS20020571-04
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00068	0.0068	mg/Kg-dry	1	18-Feb-2020 02:02
Ethylbenzene		U	0.00095	0.0068	mg/Kg-dry	1	18-Feb-2020 02:02
Xylenes, Total		U	0.0014	0.0068	mg/Kg-dry	1	18-Feb-2020 02:02
Surr: 1,2-Dichloroethane-d4	*76.0*			*70-126*	*%REC*	*1*	*18-Feb-2020 02:02*
Surr: 4-Bromofluorobenzene	*94.4*			*70-130*	*%REC*	*1*	*18-Feb-2020 02:02*
Surr: Dibromofluoromethane	*86.3*			*70-130*	*%REC*	*1*	*18-Feb-2020 02:02*
Surr: Toluene-d8	*105*			*70-130*	*%REC*	*1*	*18-Feb-2020 02:02*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 17-Feb-2020		Analyst: LG
Naphthalene		U	0.00071	0.0039	mg/Kg-dry	1	18-Feb-2020 20:21
Surr: 2-Fluorobiphenyl	*75.9*			*43-125*	*%REC*	*1*	*18-Feb-2020 20:21*
Surr: 4-Terphenyl-d14	*83.6*			*32-125*	*%REC*	*1*	*18-Feb-2020 20:21*
Surr: Nitrobenzene-d5	*58.1*			*37-125*	*%REC*	*1*	*18-Feb-2020 20:21*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**17.2**		**0.0100**	**0.0100**	**wt%**	1	18-Feb-2020 09:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG15(0.5-1)20200213
Collection Date: 13-Feb-2020 14:30

ANALYTICAL REPORT
WorkOrder:HS20020571
Lab ID:HS20020571-05
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00050	0.0050	mg/Kg-dry	1	18-Feb-2020 02:25
Ethylbenzene		U	0.00070	0.0050	mg/Kg-dry	1	18-Feb-2020 02:25
Xylenes, Total		U	0.0010	0.0050	mg/Kg-dry	1	18-Feb-2020 02:25
Surr: 1,2-Dichloroethane-d4	*80.7*			*70-126*	*%REC*	*1*	*18-Feb-2020 02:25*
Surr: 4-Bromofluorobenzene	*96.9*			*70-130*	*%REC*	*1*	*18-Feb-2020 02:25*
Surr: Dibromofluoromethane	*88.2*			*70-130*	*%REC*	*1*	*18-Feb-2020 02:25*
Surr: Toluene-d8	*107*			*70-130*	*%REC*	*1*	*18-Feb-2020 02:25*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 18-Feb-2020		Analyst: GEY
Naphthalene	**0.014**		**0.00067**	**0.0037**	**mg/Kg-dry**	1	19-Feb-2020 15:35
Surr: 2-Fluorobiphenyl	*45.0*			*43-125*	*%REC*	*1*	*19-Feb-2020 15:35*
Surr: 4-Terphenyl-d14	*60.0*			*32-125*	*%REC*	*1*	*19-Feb-2020 15:35*
Surr: Nitrobenzene-d5	*39.9*			*37-125*	*%REC*	*1*	*19-Feb-2020 15:35*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**10.6**		**0.0100**	**0.0100**	**wt%**	1	18-Feb-2020 09:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG15(5.5-6)20200213
Collection Date: 13-Feb-2020 14:40

ANALYTICAL REPORT
WorkOrder:HS20020571
Lab ID:HS20020571-06
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00032	0.0032	mg/Kg-dry	1	18-Feb-2020 02:48
Ethylbenzene		U	0.00045	0.0032	mg/Kg-dry	1	18-Feb-2020 02:48
Xylenes, Total		U	0.00065	0.0032	mg/Kg-dry	1	18-Feb-2020 02:48
Surr: 1,2-Dichloroethane-d4	*78.6*			*70-126*	*%REC*	*1*	*18-Feb-2020 02:48*
Surr: 4-Bromofluorobenzene	*97.5*			*70-130*	*%REC*	*1*	*18-Feb-2020 02:48*
Surr: Dibromofluoromethane	*88.1*			*70-130*	*%REC*	*1*	*18-Feb-2020 02:48*
Surr: Toluene-d8	*109*			*70-130*	*%REC*	*1*	*18-Feb-2020 02:48*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 18-Feb-2020		Analyst: GEY
Naphthalene		U	0.00071	0.0039	mg/Kg-dry	1	19-Feb-2020 13:38
Surr: 2-Fluorobiphenyl	*53.8*			*43-125*	*%REC*	*1*	*19-Feb-2020 13:38*
Surr: 4-Terphenyl-d14	*64.6*			*32-125*	*%REC*	*1*	*19-Feb-2020 13:38*
Surr: Nitrobenzene-d5	*48.4*			*37-125*	*%REC*	*1*	*19-Feb-2020 13:38*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**15.2**		**0.0100**	**0.0100**	**wt%**	1	18-Feb-2020 09:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020571

Batch ID: 3615 **Start Date:** 14 Feb 2020 14:41 **End Date:** 14 Feb 2020 14:41
Method: VOLATILES BY SW8260C

Sample ID	Container	Sample Wt/Vol	Final Volume	Weight Factor	Container Type
HS20020571-01	1	4.065 (g)	5 (mL)	1.23	TerraCore (5035A)
HS20020571-02	1	3.853 (g)	5 (mL)	1.3	TerraCore (5035A)
HS20020571-03	1	4.352 (g)	5 (mL)	1.15	TerraCore (5035A)
HS20020571-04	1	4.448 (g)	5 (mL)	1.12	TerraCore (5035A)
HS20020571-05	1	5.638 (g)	5 (mL)	0.89	TerraCore (5035A)
HS20020571-06	1	9.1 (g)	5 (mL)	0.55	TerraCore (5035A)

Batch ID: 150668 **Start Date:** 17 Feb 2020 07:30 **End Date:** 17 Feb 2020 10:15
Method: SV SOXHLET EXTRACT-LOWLEVEL-SW3541 **Prep Code:** 3541_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20020571-01		30.01 (g)	1 (mL)	0.03332
HS20020571-02		30.2 (g)	1 (mL)	0.03311
HS20020571-03		30.06 (g)	1 (mL)	0.03327
HS20020571-04		30.49 (g)	1 (mL)	0.0328

Batch ID: 150728 **Start Date:** 18 Feb 2020 11:34 **End Date:** 18 Feb 2020 17:30
Method: SV SOXHLET EXTRACT-LOWLEVEL-SW3541 **Prep Code:** 3541_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20020571-05		30.01 (g)	1 (mL)	0.03332
HS20020571-06		30.03 (g)	1 (mL)	0.0333

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020571

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 150668 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Soil	
HS20020571-01	SO-1620-SG17(0.5-1) 20200212	12 Feb 2020 15:40		17 Feb 2020 07:30	19 Feb 2020 15:55	1
HS20020571-02	SO-1620-SG17(5.5-6) 20200212	12 Feb 2020 15:50		17 Feb 2020 07:30	19 Feb 2020 16:14	1
HS20020571-03	SO-1620-SG16(0.5-1) 20200213	13 Feb 2020 12:15		17 Feb 2020 07:30	19 Feb 2020 16:34	1
HS20020571-04	SO-1620-SG16(5.5-6) 20200213	13 Feb 2020 12:30		17 Feb 2020 07:30	18 Feb 2020 20:21	1
Batch ID: 150728 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Soil	
HS20020571-05	SO-1620-SG15(0.5-1) 20200213	13 Feb 2020 14:30		18 Feb 2020 11:34	19 Feb 2020 15:35	1
HS20020571-06	SO-1620-SG15(5.5-6) 20200213	13 Feb 2020 14:40		18 Feb 2020 11:34	19 Feb 2020 13:38	1
Batch ID: R356419 (0)	**Test Name :** VOLATILES BY SW8260C				**Matrix:** Soil	
HS20020571-01	SO-1620-SG17(0.5-1) 20200212	12 Feb 2020 15:40			18 Feb 2020 00:53	1
HS20020571-02	SO-1620-SG17(5.5-6) 20200212	12 Feb 2020 15:50			18 Feb 2020 01:16	1
HS20020571-03	SO-1620-SG16(0.5-1) 20200213	13 Feb 2020 12:15			18 Feb 2020 01:39	1
HS20020571-04	SO-1620-SG16(5.5-6) 20200213	13 Feb 2020 12:30			18 Feb 2020 02:02	1
HS20020571-05	SO-1620-SG15(0.5-1) 20200213	13 Feb 2020 14:30			18 Feb 2020 02:25	1
HS20020571-06	SO-1620-SG15(5.5-6) 20200213	13 Feb 2020 14:40			18 Feb 2020 02:48	1
Batch ID: R356526 (0)	**Test Name :** MOISTURE - ASTM D2216				**Matrix:** Soil	
HS20020571-01	SO-1620-SG17(0.5-1) 20200212	12 Feb 2020 15:40			18 Feb 2020 09:20	1
HS20020571-02	SO-1620-SG17(5.5-6) 20200212	12 Feb 2020 15:50			18 Feb 2020 09:20	1
HS20020571-03	SO-1620-SG16(0.5-1) 20200213	13 Feb 2020 12:15			18 Feb 2020 09:20	1
HS20020571-04	SO-1620-SG16(5.5-6) 20200213	13 Feb 2020 12:30			18 Feb 2020 09:20	1
HS20020571-05	SO-1620-SG15(0.5-1) 20200213	13 Feb 2020 14:30			18 Feb 2020 09:20	1
HS20020571-06	SO-1620-SG15(5.5-6) 20200213	13 Feb 2020 14:40			18 Feb 2020 09:20	1

WorkOrder: HS20020571
InstrumentID: SV-7
Test Code: 8270_LOW_S
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Naphthalene	91-20-3	0.0017	0.0018	0.00060	0.0033
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	4-Terphenyl-d14	1718-51-0	0	0	0	0
S	Nitrobenzene-d5	4165-60-0	0	0	0	0

WorkOrder: HS20020571
InstrumentID: SV-6
Test Code: 8270_LOW_S
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Naphthalene	91-20-3	0.0017	0.0019	0.00060	0.0033
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	4-Terphenyl-d14	1718-51-0	0	0	0	0
S	Nitrobenzene-d5	4165-60-0	0	0	0	0

WorkOrder: HS20020571
InstrumentID: VOA8
Test Code: 8260_S
Test Number: SW8260
Test Name: Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Benzene	71-43-2	0.0012	0.0013	0.00050	0.0050
A	Ethylbenzene	100-41-4	0.0012	0.0014	0.00070	0.0050
A	Xylenes, Total	1330-20-7	0.0012	0.0014	0.0010	0.0050
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0
S	4-Bromofluorobenzene	460-00-4	0	0	0	0
S	Dibromofluoromethane	1868-53-7	0	0	0	0
S	Toluene-d8	2037-26-5	0	0	0	0

WorkOrder: HS20020571
InstrumentID: Balance1
Test Code: MOIST_ASTM
Test Number: ASTM D2216
Test Name: Moisture - ASTM D2216

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** wt%

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Percent Moisture	MOIST	0.0100	0.0100	0.0100	0.0100

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020571

QC BATCH REPORT

Batch ID: 150668 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-150668** Units: **ug/Kg** Analysis Date: **18-Feb-2020 10:47**
Client ID: Run ID: **SV-6_356483** SeqNo: **5477344** PrepDate: **17-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	U	3.3								
Surr: 2-Fluorobiphenyl	*149.5*	*0*	*167*	*0*	*89.5*	*43 - 125*				
Surr: 4-Terphenyl-d14	*162.8*	*0*	*167*	*0*	*97.5*	*32 - 125*				
Surr: Nitrobenzene-d5	*115.6*	*0*	*167*	*0*	*69.2*	*37 - 125*				

LCS Sample ID: **LCS-150668** Units: **ug/Kg** Analysis Date: **18-Feb-2020 11:06**
Client ID: Run ID: **SV-6_356483** SeqNo: **5477345** PrepDate: **17-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	152.4	3.3	167	0	91.3	50 - 125				
Surr: 2-Fluorobiphenyl	*144.9*	*0*	*167*	*0*	*86.8*	*43 - 125*				
Surr: 4-Terphenyl-d14	*157.4*	*0*	*167*	*0*	*94.2*	*32 - 125*				
Surr: Nitrobenzene-d5	*110.3*	*0*	*167*	*0*	*66.1*	*37 - 125*				

MS Sample ID: **HS20020618-01MS** Units: **ug/Kg** Analysis Date: **18-Feb-2020 13:01**
Client ID: Run ID: **SV-6_356483** SeqNo: **5477347** PrepDate: **17-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	154.2	3.3	165.7	2.907	91.3	50 - 125				
Surr: 2-Fluorobiphenyl	*150.4*	*0*	*165.7*	*0*	*90.8*	*43 - 125*				
Surr: 4-Terphenyl-d14	*155.6*	*0*	*165.7*	*0*	*93.9*	*32 - 125*				
Surr: Nitrobenzene-d5	*110.9*	*0*	*165.7*	*0*	*67.0*	*37 - 125*				

MSD Sample ID: **HS20020618-01MSD** Units: **ug/Kg** Analysis Date: **18-Feb-2020 13:20**
Client ID: Run ID: **SV-6_356483** SeqNo: **5477348** PrepDate: **17-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	143.4	3.3	165.8	2.907	84.7	50 - 125	154.2	7.27	30	
Surr: 2-Fluorobiphenyl	*139.8*	*0*	*165.8*	*0*	*84.3*	*43 - 125*	*150.4*	*7.31*	*30*	
Surr: 4-Terphenyl-d14	*147.3*	*0*	*165.8*	*0*	*88.8*	*32 - 125*	*155.6*	*5.5*	*30*	
Surr: Nitrobenzene-d5	*100.1*	*0*	*165.8*	*0*	*60.4*	*37 - 125*	*110.9*	*10.3*	*30*	

The following samples were analyzed in this batch: HS20020571-01 HS20020571-02 HS20020571-03 HS20020571-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020571

QC BATCH REPORT

Batch ID: 150728 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-150728** Units: **ug/Kg** Analysis Date: **19-Feb-2020 10:03**
Client ID: Run ID: **SV-7_356549** SeqNo: **5479049** PrepDate: **18-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	U	3.3								
Surr: 2-Fluorobiphenyl	*85.05*	*0*	*167*	*0*	*50.9*	*43 - 125*				
Surr: 4-Terphenyl-d14	*104.2*	*0*	*167*	*0*	*62.4*	*32 - 125*				
Surr: Nitrobenzene-d5	*78.83*	*0*	*167*	*0*	*47.2*	*37 - 125*				

LCS Sample ID: **LCS-150728** Units: **ug/Kg** Analysis Date: **19-Feb-2020 10:22**
Client ID: Run ID: **SV-7_356549** SeqNo: **5479050** PrepDate: **18-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	110.1	3.3	167	0	65.9	50 - 125				
Surr: 2-Fluorobiphenyl	*103.1*	*0*	*167*	*0*	*61.7*	*43 - 125*				
Surr: 4-Terphenyl-d14	*111.3*	*0*	*167*	*0*	*66.7*	*32 - 125*				
Surr: Nitrobenzene-d5	*103.7*	*0*	*167*	*0*	*62.1*	*37 - 125*				

MS Sample ID: **HS20020646-08MS** Units: **ug/Kg** Analysis Date: **19-Feb-2020 14:17**
Client ID: Run ID: **SV-7_356549** SeqNo: **5479109** PrepDate: **18-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	112.9	3.3	165	0	68.4	50 - 125				
Surr: 2-Fluorobiphenyl	*92.79*	*0*	*165*	*0*	*56.2*	*43 - 125*				
Surr: 4-Terphenyl-d14	*112.9*	*0*	*165*	*0*	*68.4*	*32 - 125*				
Surr: Nitrobenzene-d5	*92.08*	*0*	*165*	*0*	*55.8*	*37 - 125*				

MSD Sample ID: **HS20020646-08MSD** Units: **ug/Kg** Analysis Date: **19-Feb-2020 14:37**
Client ID: Run ID: **SV-7_356549** SeqNo: **5479110** PrepDate: **18-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	103.5	3.3	166.6	0	62.1	50 - 125	112.9	8.7	30	
Surr: 2-Fluorobiphenyl	*84.78*	*0*	*166.6*	*0*	*50.9*	*43 - 125*	*92.79*	*9.02*	*30*	
Surr: 4-Terphenyl-d14	*111.3*	*0*	*166.6*	*0*	*66.8*	*32 - 125*	*112.9*	*1.4*	*30*	
Surr: Nitrobenzene-d5	*74.44*	*0*	*166.6*	*0*	*44.7*	*37 - 125*	*92.08*	*21.2*	*30*	

The following samples were analyzed in this batch: HS20020571-05 HS20020571-06

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020571

QC BATCH REPORT

Batch ID: R356419 (0) **Instrument: VOA8** **Method: VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKS2-021720** Units: **ug/Kg** Analysis Date: **17-Feb-2020 21:04**
Client ID: Run ID: **VOA8_356419** SeqNo: **5475882** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	5.0								
Ethylbenzene	U	5.0								
Xylenes, Total	U	5.0								
Surr: 1,2-Dichloroethane-d4	*40.58*	*0*	*50*	*0*	*81.2*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*45.93*	*0*	*50*	*0*	*91.9*	*80 - 120*				
Surr: Dibromofluoromethane	*45.06*	*0*	*50*	*0*	*90.1*	*80 - 119*				
Surr: Toluene-d8	*50.63*	*0*	*50*	*0*	*101*	*81 - 118*				

LCS Sample ID: **VLCSS2-021720** Units: **ug/Kg** Analysis Date: **17-Feb-2020 20:18**
Client ID: Run ID: **VOA8_356419** SeqNo: **5475881** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	49.93	5.0	50	0	99.9	75 - 124				
Ethylbenzene	49.66	5.0	50	0	99.3	70 - 123				
Xylenes, Total	146.1	5.0	150	0	97.4	77 - 128				
Surr: 1,2-Dichloroethane-d4	*46.26*	*0*	*50*	*0*	*92.5*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*49.67*	*0*	*50*	*0*	*99.3*	*80 - 120*				
Surr: Dibromofluoromethane	*49.24*	*0*	*50*	*0*	*98.5*	*80 - 119*				
Surr: Toluene-d8	*49.65*	*0*	*50*	*0*	*99.3*	*81 - 118*				

MS Sample ID: **HS20020397-01MS** Units: **ug/Kg** Analysis Date: **17-Feb-2020 21:50**
Client ID: Run ID: **VOA8_356419** SeqNo: **5475884** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	35.15	4.9	49	0	71.7	70 - 130				
Ethylbenzene	26.61	4.9	49	0	54.3	70 - 130				S
Xylenes, Total	77.68	4.9	147	0	52.8	70 - 130				S
Surr: 1,2-Dichloroethane-d4	*47.61*	*0*	*49*	*0*	*97.2*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.55*	*0*	*49*	*0*	*101*	*70 - 130*				
Surr: Dibromofluoromethane	*49.43*	*0*	*49*	*0*	*101*	*70 - 130*				
Surr: Toluene-d8	*49.45*	*0*	*49*	*0*	*101*	*70 - 130*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020571

QC BATCH REPORT

Batch ID: R356419 (0) **Instrument: VOA8** **Method: VOLATILES BY SW8260C**

MSD Sample ID: **HS20020397-01MSD** Units: **ug/Kg** Analysis Date: **17-Feb-2020 22:13**
Client ID: Run ID: **VOA8_356419** SeqNo: **5475885** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	41.85	4.9	49	0	85.4	70 - 130	35.15	17.4	30	
Ethylbenzene	26.7	4.9	49	0	54.5	70 - 130	26.61	0.348	30	S
Xylenes, Total	75.56	4.9	147	0	51.4	70 - 130	77.68	2.77	30	S
Surr: 1,2-Dichloroethane-d4	*61.16*	*0*	*49*	*0*	*125*	*70 - 126*	*47.61*	*24.9*	*30*	
Surr: 4-Bromofluorobenzene	*50.78*	*0*	*49*	*0*	*104*	*70 - 130*	*49.55*	*2.45*	*30*	
Surr: Dibromofluoromethane	*59.17*	*0*	*49*	*0*	*121*	*70 - 130*	*49.43*	*17.9*	*30*	
Surr: Toluene-d8	*48.03*	*0*	*49*	*0*	*98.0*	*70 - 130*	*49.45*	*2.91*	*30*	

The following samples were analyzed in this batch: HS20020571-01 HS20020571-02 HS20020571-03 HS20020571-04 HS20020571-05 HS20020571-06

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020571

QC BATCH REPORT

Batch ID: **R356526 (0)** **Instrument:** **Balance1** **Method:** **MOISTURE - ASTM D2216**

DUP Sample ID: **HS20020571-06DUP** Units: **wt%** Analysis Date: **18-Feb-2020 09:20**
Client ID: **SO-1620-SG15(5.5-6)20200213** Run ID: **Balance1_356526** SeqNo: **5478088** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	15.1	0.0100					15.2	0.66	20	

The following samples were analyzed in this batch: HS20020571-01 HS20020571-02 HS20020571-03 HS20020571-04 HS20020571-05 HS20020571-06

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20020571**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/Kg-dry	Milligrams per Kilogram- Dry weight corrected

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20020571

Date/Time Received: **13-Feb-2020 18:01**
Received by: **JRM**

Checklist completed by: *Paresh M. Giga* eSignature — 13-Feb-2020 Date

Reviewed by: *Dane J. Wacasey* eSignature — 14-Feb-2020 Date

Matrices: **Soil**

Carrier name: **Client**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☑	No ☐	Not Present ☐
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:214098
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.3°C UC/C	IR11	
Cooler(s)/Kit(s):	43057		
Date/Time sample(s) sent to storage:	2/13/2020 19:40		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

Page _____ of _____

COC ID: 214098

HS20020571

Golder Associates Inc.
Houston TX-Wood Preserving Works

n, WV

Customer Information		Project Information		ALS Project Manager:	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A	8260_S (5652652 B,E,X)
Work Order		Project Number	1620-11-Rev0 SR 92688	B	8270_LOW_S (5632532 SVOC - Naphthalene only)
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P	C	MOIST_ASTM (5631931 Gen.Chem. MOIST%)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620- SG17 (0.5-1) 20200212	2-12-20	1540	Soil	8,9	5	X	X	X								
2	SG17 (5.5-6)	2-12-20	1550														
3	SG16 (0.5-1) 20200213	2-13-20	1215														
4	SG16 (5.5-6)		1230														
5	SG15 (0.5-1)		1430														
6	SG15 (5.5-6)		1440														
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Anthony Repol

Shipment Method:

Required Turnaround Time: (Check Box) ☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other _____

Results Due Date:

Relinquished by: _____ Date: 2-13-20 Time: 1801 Received by: _____

Relinquished by: _____ Date: 2/13/20 Time: 18:01 Received by (Laboratory): J. McAleer

Logged by (Laboratory): _____ Date: _____ Time: _____ Checked by (Laboratory): _____

Notes: UPRR HWPW 1620-11

Cooler ID	Cooler Temp.
4.3057	2.3
	IR 11
	CF 0.0

QC Package: (Check One Box Below)

☐ Level II Std QC
☐ Level III Std QC/Raw Data
☐ Level IV SW846/CLP
☐ Other _____
☒ TRRP Checklist
☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

ote:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

Copyright 2011 by ALS Environmental.

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

February 26, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20020741**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 8 sample(s) on Feb 18, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20020741**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20020741**	

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/26/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020741				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150835,R356625,R356904				
#[1]	A[2]	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		Were MS/MSD RPDs within laboratory QC limits?		X			1
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				2
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/26/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020741				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150835,R356625,R356904				
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 02/26/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20020741
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 150835,R356625,R356904

ER#[5]	Description
1	Batch 150835, Semivolatile Organics Method SW8270, sample HS2020747-03, MS/MSD RPD is for an unrelated sample.
2	Batch 150835, Semivolatile Organics Method SW8270, samples SO-1620-SG07(0.5-1)20200217 and SO-1620-SG06(0.5-1)20200217: the GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20020741

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20020741-01	SO-1620-SG12(0.5-1)20200217	Soil		17-Feb-2020 09:11	18-Feb-2020 17:40	☐
HS20020741-02	SO-1620-SG12(5.5-6)20200217	Soil		17-Feb-2020 09:30	18-Feb-2020 17:40	☐
HS20020741-03	SO-1620-SG07(0.5-1)20200217	Soil		17-Feb-2020 10:50	18-Feb-2020 17:40	☐
HS20020741-04	SO-1620-SG07(5.5-6)20200217	Soil		17-Feb-2020 11:10	18-Feb-2020 17:40	☐
HS20020741-05	SO-1620-SG06(0.5-1)20200217	Soil		17-Feb-2020 14:00	18-Feb-2020 17:40	☐
HS20020741-06	SO-1620-SG06(5.5-6)20200217	Soil		17-Feb-2020 14:15	18-Feb-2020 17:40	☐
HS20020741-07	SO-1620-SG14(0.5-1)20200217	Soil		17-Feb-2020 16:15	18-Feb-2020 17:40	☐
HS20020741-08	SO-1620-SG14(5.5-6)20200217	Soil		17-Feb-2020 16:30	18-Feb-2020 17:40	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG12(0.5-1)20200217
Collection Date: 17-Feb-2020 09:11

ANALYTICAL REPORT
WorkOrder:HS20020741
Lab ID:HS20020741-01
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00062	0.0062	mg/Kg-dry	1	20-Feb-2020 10:54
Ethylbenzene		U	0.00087	0.0062	mg/Kg-dry	1	20-Feb-2020 10:54
Xylenes, Total		U	0.0012	0.0062	mg/Kg-dry	1	20-Feb-2020 10:54
Surr: 1,2-Dichloroethane-d4	*84.1*			*70-126*	*%REC*	*1*	*20-Feb-2020 10:54*
Surr: 4-Bromofluorobenzene	*97.1*			*70-130*	*%REC*	*1*	*20-Feb-2020 10:54*
Surr: Dibromofluoromethane	*88.9*			*70-130*	*%REC*	*1*	*20-Feb-2020 10:54*
Surr: Toluene-d8	*107*			*70-130*	*%REC*	*1*	*20-Feb-2020 10:54*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 20-Feb-2020		Analyst: LG
Naphthalene	**0.0039**		**0.00067**	**0.0037**	**mg/Kg-dry**	1	21-Feb-2020 22:53
Surr: 2-Fluorobiphenyl	*58.3*			*43-125*	*%REC*	*1*	*21-Feb-2020 22:53*
Surr: 4-Terphenyl-d14	*70.0*			*32-125*	*%REC*	*1*	*21-Feb-2020 22:53*
Surr: Nitrobenzene-d5	*44.2*			*37-125*	*%REC*	*1*	*21-Feb-2020 22:53*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**10.2**		**0.0100**	**0.0100**	**wt%**	1	24-Feb-2020 09:04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG12(5.5-6)20200217
Collection Date: 17-Feb-2020 09:30

ANALYTICAL REPORT
WorkOrder:HS20020741
Lab ID:HS20020741-02
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00060	0.0060	mg/Kg-dry	1	20-Feb-2020 11:32
Ethylbenzene		U	0.00084	0.0060	mg/Kg-dry	1	20-Feb-2020 11:32
Xylenes, Total		U	0.0012	0.0060	mg/Kg-dry	1	20-Feb-2020 11:32
Surr: 1,2-Dichloroethane-d4	*76.1*			*70-126*	*%REC*	*1*	*20-Feb-2020 11:32*
Surr: 4-Bromofluorobenzene	*96.3*			*70-130*	*%REC*	*1*	*20-Feb-2020 11:32*
Surr: Dibromofluoromethane	*86.6*			*70-130*	*%REC*	*1*	*20-Feb-2020 11:32*
Surr: Toluene-d8	*108*			*70-130*	*%REC*	*1*	*20-Feb-2020 11:32*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 20-Feb-2020		Analyst: LG
Naphthalene		U	0.00071	0.0039	mg/Kg-dry	1	21-Feb-2020 23:13
Surr: 2-Fluorobiphenyl	*74.4*			*43-125*	*%REC*	*1*	*21-Feb-2020 23:13*
Surr: 4-Terphenyl-d14	*86.6*			*32-125*	*%REC*	*1*	*21-Feb-2020 23:13*
Surr: Nitrobenzene-d5	*52.7*			*37-125*	*%REC*	*1*	*21-Feb-2020 23:13*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**16.2**		**0.0100**	**0.0100**	**wt%**	1	24-Feb-2020 09:04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG07(0.5-1)20200217
Collection Date: 17-Feb-2020 10:50

ANALYTICAL REPORT
WorkOrder:HS20020741
Lab ID:HS20020741-03
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene	U		0.00058	0.0058	mg/Kg-dry	1	20-Feb-2020 11:55
Ethylbenzene	U		0.00082	0.0058	mg/Kg-dry	1	20-Feb-2020 11:55
Xylenes, Total	U		0.0012	0.0058	mg/Kg-dry	1	20-Feb-2020 11:55
Surr: 1,2-Dichloroethane-d4	*71.8*			*70-126*	*%REC*	*1*	*20-Feb-2020 11:55*
Surr: 4-Bromofluorobenzene	*91.4*			*70-130*	*%REC*	*1*	*20-Feb-2020 11:55*
Surr: Dibromofluoromethane	*82.9*			*70-130*	*%REC*	*1*	*20-Feb-2020 11:55*
Surr: Toluene-d8	*108*			*70-130*	*%REC*	*1*	*20-Feb-2020 11:55*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 20-Feb-2020		Analyst: LG
Naphthalene	**0.0071**	J	**0.0034**	**0.019**	**mg/Kg-dry**	5	21-Feb-2020 23:32
Surr: 2-Fluorobiphenyl	*75.1*			*43-125*	*%REC*	*5*	*21-Feb-2020 23:32*
Surr: 4-Terphenyl-d14	*94.4*			*32-125*	*%REC*	*5*	*21-Feb-2020 23:32*
Surr: Nitrobenzene-d5	*51.8*			*37-125*	*%REC*	*5*	*21-Feb-2020 23:32*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**13.4**		**0.0100**	**0.0100**	**wt%**	1	24-Feb-2020 09:04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG07(5.5-6)20200217
Collection Date: 17-Feb-2020 11:10

ANALYTICAL REPORT
WorkOrder:HS20020741
Lab ID:HS20020741-04
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00036	0.0036	mg/Kg-dry	1	20-Feb-2020 12:18
Ethylbenzene		U	0.00050	0.0036	mg/Kg-dry	1	20-Feb-2020 12:18
Xylenes, Total		U	0.00072	0.0036	mg/Kg-dry	1	20-Feb-2020 12:18
Surr: 1,2-Dichloroethane-d4	*70.8*			*70-126*	*%REC*	*1*	*20-Feb-2020 12:18*
Surr: 4-Bromofluorobenzene	*94.3*			*70-130*	*%REC*	*1*	*20-Feb-2020 12:18*
Surr: Dibromofluoromethane	*83.0*			*70-130*	*%REC*	*1*	*20-Feb-2020 12:18*
Surr: Toluene-d8	*110*			*70-130*	*%REC*	*1*	*20-Feb-2020 12:18*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 20-Feb-2020		Analyst: LG
Naphthalene		U	0.00072	0.0040	mg/Kg-dry	1	24-Feb-2020 12:11
Surr: 2-Fluorobiphenyl	*78.0*			*43-125*	*%REC*	*1*	*24-Feb-2020 12:11*
Surr: 4-Terphenyl-d14	*85.4*			*32-125*	*%REC*	*1*	*24-Feb-2020 12:11*
Surr: Nitrobenzene-d5	*65.1*			*37-125*	*%REC*	*1*	*24-Feb-2020 12:11*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**16.8**		**0.0100**	**0.0100**	**wt%**	1	24-Feb-2020 09:04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG06(0.5-1)20200217
Collection Date: 17-Feb-2020 14:00

ANALYTICAL REPORT
WorkOrder:HS20020741
Lab ID:HS20020741-05
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00065	0.0065	mg/Kg-dry	1	20-Feb-2020 12:41
Ethylbenzene		U	0.00091	0.0065	mg/Kg-dry	1	20-Feb-2020 12:41
Xylenes, Total		U	0.0013	0.0065	mg/Kg-dry	1	20-Feb-2020 12:41
Surr: 1,2-Dichloroethane-d4	*70.7*			*70-126*	*%REC*	*1*	*20-Feb-2020 12:41*
Surr: 4-Bromofluorobenzene	*91.2*			*70-130*	*%REC*	*1*	*20-Feb-2020 12:41*
Surr: Dibromofluoromethane	*82.2*			*70-130*	*%REC*	*1*	*20-Feb-2020 12:41*
Surr: Toluene-d8	*110*			*70-130*	*%REC*	*1*	*20-Feb-2020 12:41*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 20-Feb-2020		Analyst: LG
Naphthalene		U	0.0067	0.037	mg/Kg-dry	10	24-Feb-2020 18:52
Surr: 2-Fluorobiphenyl	*69.7*			*43-125*	*%REC*	*10*	*24-Feb-2020 18:52*
Surr: 4-Terphenyl-d14	*74.4*			*32-125*	*%REC*	*10*	*24-Feb-2020 18:52*
Surr: Nitrobenzene-d5	*56.0*			*37-125*	*%REC*	*10*	*24-Feb-2020 18:52*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**10.3**		**0.0100**	**0.0100**	**wt%**	1	24-Feb-2020 09:04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG06(5.5-6)20200217
Collection Date: 17-Feb-2020 14:15

ANALYTICAL REPORT
WorkOrder:HS20020741
Lab ID:HS20020741-06
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00042	0.0042	mg/Kg-dry	1	20-Feb-2020 13:04
Ethylbenzene		U	0.00059	0.0042	mg/Kg-dry	1	20-Feb-2020 13:04
Xylenes, Total		U	0.00084	0.0042	mg/Kg-dry	1	20-Feb-2020 13:04
Surr: 1,2-Dichloroethane-d4	*71.9*			*70-126*	*%REC*	*1*	*20-Feb-2020 13:04*
Surr: 4-Bromofluorobenzene	*93.9*			*70-130*	*%REC*	*1*	*20-Feb-2020 13:04*
Surr: Dibromofluoromethane	*83.9*			*70-130*	*%REC*	*1*	*20-Feb-2020 13:04*
Surr: Toluene-d8	*110*			*70-130*	*%REC*	*1*	*20-Feb-2020 13:04*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 20-Feb-2020		Analyst: LG
Naphthalene		U	0.00071	0.0039	mg/Kg-dry	1	24-Feb-2020 12:30
Surr: 2-Fluorobiphenyl	*69.7*			*43-125*	*%REC*	*1*	*24-Feb-2020 12:30*
Surr: 4-Terphenyl-d14	*77.5*			*32-125*	*%REC*	*1*	*24-Feb-2020 12:30*
Surr: Nitrobenzene-d5	*56.2*			*37-125*	*%REC*	*1*	*24-Feb-2020 12:30*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**15.5**		**0.0100**	**0.0100**	**wt%**	1	24-Feb-2020 09:04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG14(0.5-1)20200217
Collection Date: 17-Feb-2020 16:15

ANALYTICAL REPORT
WorkOrder:HS20020741
Lab ID:HS20020741-07
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene	U		0.00030	0.0030	mg/Kg-dry	1	20-Feb-2020 13:27
Ethylbenzene	U		0.00042	0.0030	mg/Kg-dry	1	20-Feb-2020 13:27
Xylenes, Total	U		0.00061	0.0030	mg/Kg-dry	1	20-Feb-2020 13:27
Surr: 1,2-Dichloroethane-d4	*73.0*			*70-126*	*%REC*	*1*	*20-Feb-2020 13:27*
Surr: 4-Bromofluorobenzene	*91.5*			*70-130*	*%REC*	*1*	*20-Feb-2020 13:27*
Surr: Dibromofluoromethane	*84.1*			*70-130*	*%REC*	*1*	*20-Feb-2020 13:27*
Surr: Toluene-d8	*110*			*70-130*	*%REC*	*1*	*20-Feb-2020 13:27*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 20-Feb-2020		Analyst: LG
Naphthalene	**0.0027**	J	**0.00069**	**0.0038**	**mg/Kg-dry**	1	24-Feb-2020 19:11
Surr: 2-Fluorobiphenyl	*67.9*			*43-125*	*%REC*	*1*	*24-Feb-2020 19:11*
Surr: 4-Terphenyl-d14	*82.2*			*32-125*	*%REC*	*1*	*24-Feb-2020 19:11*
Surr: Nitrobenzene-d5	*49.2*			*37-125*	*%REC*	*1*	*24-Feb-2020 19:11*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**14.1**		**0.0100**	**0.0100**	**wt%**	1	24-Feb-2020 09:04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG14(5.5-6)20200217
Collection Date: 17-Feb-2020 16:30

ANALYTICAL REPORT
WorkOrder:HS20020741
Lab ID:HS20020741-08
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00037	0.0037	mg/Kg-dry	1	20-Feb-2020 13:50
Ethylbenzene		U	0.00051	0.0037	mg/Kg-dry	1	20-Feb-2020 13:50
Xylenes, Total		U	0.00073	0.0037	mg/Kg-dry	1	20-Feb-2020 13:50
Surr: 1,2-Dichloroethane-d4	*83.5*			*70-126*	*%REC*	*1*	*20-Feb-2020 13:50*
Surr: 4-Bromofluorobenzene	*96.3*			*70-130*	*%REC*	*1*	*20-Feb-2020 13:50*
Surr: Dibromofluoromethane	*86.8*			*70-130*	*%REC*	*1*	*20-Feb-2020 13:50*
Surr: Toluene-d8	*107*			*70-130*	*%REC*	*1*	*20-Feb-2020 13:50*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 20-Feb-2020		Analyst: LG
Naphthalene		U	0.00077	0.0042	mg/Kg-dry	1	24-Feb-2020 12:50
Surr: 2-Fluorobiphenyl	*73.7*			*43-125*	*%REC*	*1*	*24-Feb-2020 12:50*
Surr: 4-Terphenyl-d14	*80.2*			*32-125*	*%REC*	*1*	*24-Feb-2020 12:50*
Surr: Nitrobenzene-d5	*58.7*			*37-125*	*%REC*	*1*	*24-Feb-2020 12:50*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**22.0**		**0.0100**	**0.0100**	**wt%**	1	24-Feb-2020 09:04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020741

Batch ID: 3620 **Start Date:** 19 Feb 2020 09:43 **End Date:** 19 Feb 2020 09:43
Method: VOLATILES BY SW8260C

Sample ID	Container	Sample Wt/Vol	Final Volume	Weight Factor	Container Type
HS20020741-01	1	4.471 (g)	5 (mL)	1.12	TerraCore (5035A)
HS20020741-02	1	4.941 (g)	5 (mL)	1.01	TerraCore (5035A)
HS20020741-03	1	4.928 (g)	5 (mL)	1.01	TerraCore (5035A)
HS20020741-04	1	8.391 (g)	5 (mL)	0.6	TerraCore (5035A)
HS20020741-05	1	4.269 (g)	5 (mL)	1.17	TerraCore (5035A)
HS20020741-06	1	7.075 (g)	5 (mL)	0.71	TerraCore (5035A)
HS20020741-07	1	9.694 (g)	5 (mL)	0.52	TerraCore (5035A)
HS20020741-08	1	8.796 (g)	5 (mL)	0.57	TerraCore (5035A)

Batch ID: 150835 **Start Date:** 21 Feb 2020 09:00 **End Date:** 21 Feb 2020 11:30
Method: SV SOXHLET EXTRACT-LOWLEVEL-SW3541 **Prep Code:** 3541_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20020741-01		30.05 (g)	1 (mL)	0.03328
HS20020741-02		30.15 (g)	1 (mL)	0.03317
HS20020741-03		30.22 (g)	1 (mL)	0.03309
HS20020741-04		30.01 (g)	1 (mL)	0.03332
HS20020741-05		30.09 (g)	1 (mL)	0.03323
HS20020741-06		30.1 (g)	1 (mL)	0.03322
HS20020741-07		30.24 (g)	1 (mL)	0.03307
HS20020741-08		30.16 (g)	1 (mL)	0.03316

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020741

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 150835 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Soil	
HS20020741-01	SO-1620-SG12(0.5-1) 20200217	17 Feb 2020 09:11		20 Feb 2020 14:27	21 Feb 2020 22:53	1
HS20020741-02	SO-1620-SG12(5.5-6) 20200217	17 Feb 2020 09:30		20 Feb 2020 14:27	21 Feb 2020 23:13	1
HS20020741-03	SO-1620-SG07(0.5-1) 20200217	17 Feb 2020 10:50		20 Feb 2020 14:27	21 Feb 2020 23:32	5
HS20020741-04	SO-1620-SG07(5.5-6) 20200217	17 Feb 2020 11:10		20 Feb 2020 14:27	24 Feb 2020 12:11	1
HS20020741-05	SO-1620-SG06(0.5-1) 20200217	17 Feb 2020 14:00		20 Feb 2020 14:27	24 Feb 2020 18:52	10
HS20020741-06	SO-1620-SG06(5.5-6) 20200217	17 Feb 2020 14:15		20 Feb 2020 14:27	24 Feb 2020 12:30	1
HS20020741-07	SO-1620-SG14(0.5-1) 20200217	17 Feb 2020 16:15		20 Feb 2020 14:27	24 Feb 2020 19:11	1
HS20020741-08	SO-1620-SG14(5.5-6) 20200217	17 Feb 2020 16:30		20 Feb 2020 14:27	24 Feb 2020 12:50	1
Batch ID: R356625 (0)	**Test Name :** VOLATILES BY SW8260C				**Matrix:** Soil	
HS20020741-01	SO-1620-SG12(0.5-1) 20200217	17 Feb 2020 09:11			20 Feb 2020 10:54	1
HS20020741-02	SO-1620-SG12(5.5-6) 20200217	17 Feb 2020 09:30			20 Feb 2020 11:32	1
HS20020741-03	SO-1620-SG07(0.5-1) 20200217	17 Feb 2020 10:50			20 Feb 2020 11:55	1
HS20020741-04	SO-1620-SG07(5.5-6) 20200217	17 Feb 2020 11:10			20 Feb 2020 12:18	1
HS20020741-05	SO-1620-SG06(0.5-1) 20200217	17 Feb 2020 14:00			20 Feb 2020 12:41	1
HS20020741-06	SO-1620-SG06(5.5-6) 20200217	17 Feb 2020 14:15			20 Feb 2020 13:04	1
HS20020741-07	SO-1620-SG14(0.5-1) 20200217	17 Feb 2020 16:15			20 Feb 2020 13:27	1
HS20020741-08	SO-1620-SG14(5.5-6) 20200217	17 Feb 2020 16:30			20 Feb 2020 13:50	1
Batch ID: R356904 (0)	**Test Name :** MOISTURE - ASTM D2216				**Matrix:** Soil	
HS20020741-01	SO-1620-SG12(0.5-1) 20200217	17 Feb 2020 09:11			24 Feb 2020 09:04	1
HS20020741-02	SO-1620-SG12(5.5-6) 20200217	17 Feb 2020 09:30			24 Feb 2020 09:04	1
HS20020741-03	SO-1620-SG07(0.5-1) 20200217	17 Feb 2020 10:50			24 Feb 2020 09:04	1
HS20020741-04	SO-1620-SG07(5.5-6) 20200217	17 Feb 2020 11:10			24 Feb 2020 09:04	1
HS20020741-05	SO-1620-SG06(0.5-1) 20200217	17 Feb 2020 14:00			24 Feb 2020 09:04	1
HS20020741-06	SO-1620-SG06(5.5-6) 20200217	17 Feb 2020 14:15			24 Feb 2020 09:04	1
HS20020741-07	SO-1620-SG14(0.5-1) 20200217	17 Feb 2020 16:15			24 Feb 2020 09:04	1
HS20020741-08	SO-1620-SG14(5.5-6) 20200217	17 Feb 2020 16:30			24 Feb 2020 09:04	1

WorkOrder: HS20020741
InstrumentID: SV-6
Test Code: 8270_LOW_S
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Naphthalene	91-20-3	0.0017	0.0019	0.00060	0.0033
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	4-Terphenyl-d14	1718-51-0	0	0	0	0
S	Nitrobenzene-d5	4165-60-0	0	0	0	0

WorkOrder: HS20020741
InstrumentID: VOA8
Test Code: 8260_S
Test Number: SW8260
Test Name: Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Benzene	71-43-2	0.0012	0.0013	0.00050	0.0050
A	Ethylbenzene	100-41-4	0.0012	0.0014	0.00070	0.0050
A	Xylenes, Total	1330-20-7	0.0012	0.0014	0.0010	0.0050
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0
S	4-Bromofluorobenzene	460-00-4	0	0	0	0
S	Dibromofluoromethane	1868-53-7	0	0	0	0
S	Toluene-d8	2037-26-5	0	0	0	0

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020741

QC BATCH REPORT

Batch ID: 150835 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-150835** Units: **ug/Kg** Analysis Date: **21-Feb-2020 12:39**
Client ID: Run ID: **SV-6_356813** SeqNo: **5483518** PrepDate: **20-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	U	3.3								
Surr: 2-Fluorobiphenyl	*133.5*	*0*	*167*	*0*	*79.9*	*43 - 125*				
Surr: 4-Terphenyl-d14	*142.1*	*0*	*167*	*0*	*85.1*	*32 - 125*				
Surr: Nitrobenzene-d5	*99.1*	*0*	*167*	*0*	*59.3*	*37 - 125*				

LCS Sample ID: **LCS-150835** Units: **ug/Kg** Analysis Date: **21-Feb-2020 12:58**
Client ID: Run ID: **SV-6_356813** SeqNo: **5483519** PrepDate: **20-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	134.3	3.3	167	0	80.4	50 - 125				
Surr: 2-Fluorobiphenyl	*117.3*	*0*	*167*	*0*	*70.3*	*43 - 125*				
Surr: 4-Terphenyl-d14	*128.5*	*0*	*167*	*0*	*77.0*	*32 - 125*				
Surr: Nitrobenzene-d5	*88.94*	*0*	*167*	*0*	*53.3*	*37 - 125*				

MS Sample ID: **HS20020747-03MS** Units: **ug/Kg** Analysis Date: **21-Feb-2020 14:53**
Client ID: Run ID: **SV-6_356813** SeqNo: **5483525** PrepDate: **20-Feb-2020** DF: **10**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	98.19	33	166.5	0	59.0	50 - 125				
Surr: 2-Fluorobiphenyl	*78.99*	*0*	*166.5*	*0*	*47.4*	*43 - 125*				
Surr: 4-Terphenyl-d14	*113.2*	*0*	*166.5*	*0*	*68.0*	*32 - 125*				
Surr: Nitrobenzene-d5	*88.58*	*0*	*166.5*	*0*	*53.2*	*37 - 125*				

MSD Sample ID: **HS20020747-03MSD** Units: **ug/Kg** Analysis Date: **21-Feb-2020 15:13**
Client ID: Run ID: **SV-6_356813** SeqNo: **5483526** PrepDate: **20-Feb-2020** DF: **10**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	120.4	33	166.8	0	72.2	50 - 125	98.19	20.3	30	
Surr: 2-Fluorobiphenyl	*105.1*	*0*	*166.8*	*0*	*63.0*	*43 - 125*	*78.99*	*28.4*	*30*	
Surr: 4-Terphenyl-d14	*157.7*	*0*	*166.8*	*0*	*94.6*	*32 - 125*	*113.2*	*32.9*	*30*	R
Surr: Nitrobenzene-d5	*80.46*	*0*	*166.8*	*0*	*48.2*	*37 - 125*	*88.58*	*9.6*	*30*	

The following samples were analyzed in this batch:

HS20020741-01	HS20020741-02	HS20020741-03	HS20020741-04
HS20020741-05	HS20020741-06	HS20020741-07	HS20020741-08

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020741

QC BATCH REPORT

Batch ID: R356625 (0) **Instrument: VOA8** **Method: VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKS1-022020** Units: **ug/Kg** Analysis Date: **20-Feb-2020 08:59**
Client ID: Run ID: **VOA8_356625** SeqNo: **5480014** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	5.0								
Ethylbenzene	U	5.0								
Xylenes, Total	U	5.0								
Surr: 1,2-Dichloroethane-d4	*38.11*	*0*	*50*	*0*	*76.2*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*47.13*	*0*	*50*	*0*	*94.3*	*80 - 120*				
Surr: Dibromofluoromethane	*40.47*	*0*	*50*	*0*	*80.9*	*80 - 119*				
Surr: Toluene-d8	*54.37*	*0*	*50*	*0*	*109*	*81 - 118*				

LCS Sample ID: **VLCSS1-022020** Units: **ug/Kg** Analysis Date: **20-Feb-2020 08:13**
Client ID: Run ID: **VOA8_356625** SeqNo: **5480013** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	51.78	5.0	50	0	104	75 - 124				
Ethylbenzene	58.4	5.0	50	0	117	70 - 123				
Xylenes, Total	167.2	5.0	150	0	111	77 - 128				
Surr: 1,2-Dichloroethane-d4	*41.73*	*0*	*50*	*0*	*83.5*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*48.42*	*0*	*50*	*0*	*96.8*	*80 - 120*				
Surr: Dibromofluoromethane	*43.09*	*0*	*50*	*0*	*86.2*	*80 - 119*				
Surr: Toluene-d8	*54.62*	*0*	*50*	*0*	*109*	*81 - 118*				

MS Sample ID: **HS20020791-01MS** Units: **ug/Kg** Analysis Date: **20-Feb-2020 10:08**
Client ID: Run ID: **VOA8_356625** SeqNo: **5480017** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	42.4	5.0	50	0	84.8	70 - 130				
Ethylbenzene	44.02	5.0	50	0	88.0	70 - 130				
Xylenes, Total	131.4	5.0	150	0	87.6	70 - 130				
Surr: 1,2-Dichloroethane-d4	*43.44*	*0*	*50*	*0*	*86.9*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*46.9*	*0*	*50*	*0*	*93.8*	*70 - 130*				
Surr: Dibromofluoromethane	*45.81*	*0*	*50*	*0*	*91.6*	*70 - 130*				
Surr: Toluene-d8	*49.23*	*0*	*50*	*0*	*98.5*	*70 - 130*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020741

QC BATCH REPORT

Batch ID: R356625 (0) **Instrument: VOA8** **Method: VOLATILES BY SW8260C**

MSD Sample ID: **HS20020791-01MSD** Units: **ug/Kg** Analysis Date: **20-Feb-2020 10:31**
Client ID: Run ID: **VOA8_356625** SeqNo: **5480018** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	48.19	5.0	50	0	96.4	70 - 130	42.4	12.8	30	
Ethylbenzene	50.92	5.0	50	0	102	70 - 130	44.02	14.5	30	
Xylenes, Total	150.2	5.0	150	0	100	70 - 130	131.4	13.4	30	
Surr: 1,2-Dichloroethane-d4	*42.11*	*0*	*50*	*0*	*84.2*	*70 - 126*	*43.44*	*3.11*	*30*	
Surr: 4-Bromofluorobenzene	*48.87*	*0*	*50*	*0*	*97.7*	*70 - 130*	*46.9*	*4.12*	*30*	
Surr: Dibromofluoromethane	*47.03*	*0*	*50*	*0*	*94.1*	*70 - 130*	*45.81*	*2.61*	*30*	
Surr: Toluene-d8	*53.14*	*0*	*50*	*0*	*106*	*70 - 130*	*49.23*	*7.64*	*30*	

The following samples were analyzed in this batch: HS20020741-01 HS20020741-02 HS20020741-03 HS20020741-04
HS20020741-05 HS20020741-06 HS20020741-07 HS20020741-08

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020741

QC BATCH REPORT

Batch ID: R356904 (0) **Instrument: Balance1** **Method: MOISTURE - ASTM D2216**

DUP Sample ID: **HS20020770-05DUP** Units: **wt%** Analysis Date: **24-Feb-2020 09:04**
Client ID: Run ID: **Balance1_356904** SeqNo: **5485414** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	10.4	0.0100					10.4	0	20	

The following samples were analyzed in this batch:

HS20020741-01	HS20020741-02	HS20020741-03	HS20020741-04
HS20020741-05	HS20020741-06	HS20020741-07	HS20020741-08

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20020741**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/Kg-dry	Milligrams per Kilogram- Dry weight corrected

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20020741

Date/Time Received: **18-Feb-2020 17:40**
Received by: **DDG**

Checklist completed by: *Jared R. Makan* eSignature — 18-Feb-2020 Date

Reviewed by: *Dane J. Wacasey* eSignature — 19-Feb-2020 Date

Matrices: **Soil**

Carrier name: **ALS Courier**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☑	No ☐	Not Present ☐
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:214099
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	0.7°C/0.7°C UC/C	IR25
Cooler(s)/Kit(s):	45571	
Date/Time sample(s) sent to storage:	02/18/2020 18:55	

Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes: All sample bottle count differ - COC = 5, received 4 bottles.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Forr

Page 1 of 1

COC ID: 214099

HS20020741

Golder Associates Inc.
Houston TX-Wood Preserving Works

Customer Information		Project Information		ALS Project Manager:	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A	8260_S (5652652 B,E,X)
Work Order		Project Number	1620-11-Rev0 SR 92688	B	8270_LOW_S (5632532 SVOC - Naphthalene only)
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P	C	MOIST_ASTM (5631931 Gen.Chem. MOIST%)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	F	
Phone	(512) 671-3434	Phone		G	
Fax	(512) 671-3446	Fax		H	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address		I	
				J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620-SG12 (0,5-1) 20200217	2-17-20	0911	Soil	8,9	5	X	X	X								
2	SG12 (5,5-6)		0930														
3	SG07 (0,5-1)		1050														
4	SG07 (5,5-6)		1110														
5	SG06 (0,5-1)		1400														
6	SG06 (5,5-6)		1415														
7	SG14 (0,5-1)		1615														
8	SG14 (5,5-6)		1630														
9																	
10																	

Sampler(s) Please Print & Sign: Anthony Reid

Shipment Method:

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

	Date:	Time:	
Relinquished by:	2-18-20	1650	Received by:
Relinquished by:			Received by (Laboratory): DG 02/18/20 17:40
Logged by (Laboratory):			Checked by (Laboratory):

Notes: UPRR HWPW 1620-11

Cooler ID	Cooler Temp.
45571	0-7

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[X] TRRP Checklist
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

45571

CUSTODY SEAL

Date: 2-18-20 Time: 1820
Name: Anthony Reed
Company: Groundes

Seal Broken By: SM
Date: 02/18/20

45571 FEB 18 2020

Memorandum

July 10, 2020

To:	Eric Matzner	Ref. No.:	11183954-1620
From:	Chris G. Knight/eew/674-NF	Tel:	512-506-8803
cc:	Jesse Orth, Jon Lang; Julie Lidstone		

Subject: **Data Usability Summary**
Soil Gas Probes
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
June 2020

1. Scope of Data Usability Study

This document details a Data Usability Summary (DUS) of analytical results for soil samples collected in support of the Soil Gas Probes at the Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works site during June 2020. Samples were submitted to ALS Environmental (ALS), located in Houston, Texas and are reported in data package HS20060975. The intended use of the data is to support the Soil Gas Probes at the site by providing current concentration of chemicals of concern.

Data were reviewed and validated by Chris G. Knight of GHD, in accordance with Title 30 of the Texas Administrative Code Section 350.54 (30 TAC 350.54) as described in the Texas Commission on Environmental Quality (TCEQ) Regulatory Guidance document entitled "Review and Reporting of COC Concentration Data under TRRP", (RG-366/TRRP-13), revised May 2010, herein referred to as "TRRP-13 Guidance". Evaluation of the data was based on information obtained from the chain of custody forms, the finished report forms, method blank data, recovery data from surrogate spikes/laboratory control samples (LCS)/matrix spikes (MS), field quality assurance/quality control samples (QA/QC), the laboratory review checklists (LRC), and the laboratory exception report (ER).

A sample collection and analysis summary is presented in Table 1. This summary provides a cross-reference of field sample identification numbers and location identification. Each sample is assigned a unique field identification number.

The validated sample results are presented in Table 2. A summary of the analytical methodology is presented in Table 3.

2. Laboratory Qualifications

The Laboratory's quality assurance program is consistent with the quality standards outlined in the National Environmental Laboratory Accreditation Program (NELAP). This laboratory was accredited under Texas Certification number # TX104704231 at the time the analysis was performed and the certificate is included in Attachment A.

3. Project Objectives

3.1 Sampling/Analytical QA/QC Objectives

The QA/QC program was designed to identify contamination resulting from the sampling, sample transport and analytical process through the analysis of method blanks. The QA/QC program was designed to evaluate the quality of the resulting data with respect to bias and precision through analysis of LCS and MS analyses.

4. Data Review/Validation Results

4.1 Sample Holding Time and Preservation

Samples were shipped with a chain of custody and the paper work was filled out properly with the following exceptions:

i) SG-24(5.5-6) – The sample time on the container labels (15:00) differs from the chain of custody (15:50). The sample was logged in using the sample time listed on the chain of custody. No further action was required.

ii) SG25(0.5-1) – The methanol preserved method 5035 volatile organic compounds (VOCs) container was received empty. No further action was required.

All samples were delivered on ice and stored by the laboratory at the required temperature (0-6°C).

The sample chain of custody documents and the analytical report were used to determine sample holding times. All samples were prepared and analyzed within the required holding times.

4.2 Sample Containers

Sample containers used were certified pre-cleaned glass containers provided by the laboratory. These containers meet or exceed analyte specifications established in the United States Environmental Protection Agency (USEPA) *Specifications and Guidance for Contaminant-free Sample Containers*.

4.3 Calibrations

According to the LRC, initial calibration and continuing calibration data met the criteria for the selected method.

4.4 Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures. As these were not discrete samples handled in the field, these blanks are not listed on the sample identification cross-reference list found in the data package.

For this study, laboratory method blanks were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch and results are reported in the laboratory data package.

The method blank results were non-detect or below the method quantitation limit (MQL), indicating that laboratory contamination was not a factor for this investigation.

4.5 Internal Standard and Surrogate Spike Recoveries

Recoveries of internal standards are addressed in the LRC of the data package. All internal standard recoveries associated with the compounds of interest were acceptable per the LRC.

In accordance with the methods employed, all samples, blanks, and QC samples analyzed for VOCs and naphthalene are spiked with surrogate compounds prior to sample analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project. Each individual surrogate compound is expected to meet the laboratory control limits. According to the TRRP-13 Guidelines, one outlying surrogate is acceptable for methods with multiple surrogate spike compounds as long as the recovery is at least ten percent.

Surrogate recoveries were assessed against laboratory control limits and/or the guidance in TRRP-13. All surrogate recoveries met the above criteria.

4.6 Laboratory Control Sample Analysis

LCS are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project.

For this study, LCS were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch.

The LCS contained all compounds specified in the methods. All LCS recoveries were within the laboratory control limits, demonstrating acceptable analytical accuracy.

4.7 Matrix Spike Analysis

To evaluate the effects of sample matrices on the preparation process, measurement procedures, and accuracy of a particular analysis, samples are spiked with known concentrations of the analytes of interest and analyzed as MS/matrix spike duplicate (MSD) samples. The relative percent difference (RPD) between the MS and MSD is used to assess analytical precision.

The laboratory performed MS/MSD analyses on non-site samples. These cannot be used to assess accuracy and precision for the site samples.

4.8 Field Procedures

Golder Associates, Inc. collected soil samples in accordance with their Standard Operating Procedures (SOP) for sample collection.

4.9 Analyte Reporting

The laboratory reported detected results for each analyte down to the sample detection limit (SDL), which is defined as the method detection limit (MDL) with sample-specific adjustments for dilutions, aliquot size, volumes, etc. Positive analyte detections less than the MQL but greater than the SDL were qualified as estimated (J) in Table 2.

The detectability check standard (DCS) results supported the laboratory MDLs.

All soil results were reported on a dry weight basis.

5. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are usable for the purpose of supporting the Soil Gas Probes at the site by providing current concentration of chemicals of concern in soil samples without qualification.

Table 1

Sample Collection and Analysis Summary
Soil Gas Probes
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
June 2020

							Analysis/Parameters	
Sample Identification	**Location**	**Matrix**	**Initial Sample Depth (ft bgs)**	**Final Sample Depth (ft bgs)**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**VOCs**	**Naphthalene**
SO-1620-SG25(0.5-1)20200618	SG-25	Soil	0.5	1	06/18/2020	08:30	X	X
SO-1620-SG25(5.5-6)20200618	SG-25	Soil	5.5	6	06/18/2020	08:58	X	X
SO-1620-SG13R(0.5-1)20200618	SG-13R	Soil	0.5	1	06/18/2020	10:00	X	X
SO-1620-SG13R(5.5-6)20200618	SG-13R	Soil	5.5	6	06/18/2020	10:30	X	X
SO-1620-SG27(5.5-6)20200618	SG-27	Soil	5.5	6	06/18/2020	10:30	X	X
SO-1620-SG23(0.5-1)20200618	SG-23	Soil	0.5	1	06/18/2020	13:08	X	X
SO-1620-SG23(5.5-6)20200618	SG-23	Soil	5.5	6	06/18/2020	13:30	X	X
SO-1620-SG24(0.5-1)20200618	SG-24	Soil	0.5	1	06/18/2020	14:49	X	X
SO-1620-SG24(5.5-6)20200618	SG-24	Soil	5.5	6	06/18/2020	15:50	X	X
SO-1620-SG26(0.5-1)20200619	SG-26	Soil	0.5	1	06/19/2020	09:15	X	X
SO-1620-SG26(5.5-6)20200619	SG-26	Soil	5.5	6	06/19/2020	09:52	X	X
SO-1620-SG27(0.5-1)20200619	SG-27	Soil	0.5	1	06/19/2020	10:10	X	X

Notes:

ft bgs - Feet Below Ground Surface
VOCs - Volatile Organic Compounds

Table 2

Analytical Results Summary
Soil Gas Probes
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
June 2020

Location ID:		**SG-13R**	**SG-13R**	**SG-23**	**SG-23**
Sample Name:		**SO-1620-SG13R(0.5-1)20200618**	**SO-1620-SG13R(5.5-6)20200618**	**SO-1620-SG23(0.5-1)20200618**	**SO-1620-SG23(5.5-6)20200618**
Sample Date:		**06/18/2020**	**06/18/2020**	**06/18/2020**	**06/18/2020**
Depth:		**0.5-1 ft bgs**	**5.5-6 ft bgs**	**0.5-1 ft bgs**	**5.5-6 ft bgs**
Parameters	**Unit**				
Volatile Organic Compounds					
Benzene	mg/kg	<0.00053	<0.00044	<0.00031	<0.00032
Ethylbenzene	mg/kg	<0.00075	<0.00062	<0.00044	<0.00044
Xylenes (total)	mg/kg	<0.0011	<0.00089	<0.00062	<0.00064
Semi-volatile Organic Compounds					
Naphthalene	mg/kg	<0.00074	<0.00073	0.00071 J	<0.00071

Table 2

Analytical Results Summary
Soil Gas Probes
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
June 2020

Location ID:		**SG-24**	**SG-24**	**SG-25**	**SG-25**
Sample Name:		**SO-1620-SG24(0.5-1)20200618**	**SO-1620-SG24(5.5-6)20200618**	**SO-1620-SG25(0.5-1)20200618**	**SO-1620-SG25(5.5-6)20200618**
Sample Date:		**06/18/2020**	**06/18/2020**	**06/18/2020**	**06/18/2020**
Depth:		**0.5-1 ft bgs**	**5.5-6 ft bgs**	**0.5-1 ft bgs**	**5.5-6 ft bgs**
Parameters	**Unit**				
Volatile Organic Compounds					
Benzene	mg/kg	<0.00038	<0.00030	<0.00068	<0.00030
Ethylbenzene	mg/kg	<0.00053	<0.00043	<0.00095	<0.00042
Xylenes (total)	mg/kg	<0.00076	<0.00061	<0.0014	<0.00059
Semi-volatile Organic Compounds					
Naphthalene	mg/kg	0.0010 J	<0.00069	0.0046	<0.00070

Table 2

Analytical Results Summary
Soil Gas Probes
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
June 2020

Location ID:		**SG-26**	**SG-26**	**SG-27**	**SG-27**
Sample Name:		**SO-1620-SG26(0.5-1)20200619**	**SO-1620-SG26(5.5-6)20200619**	**SO-1620-SG27(5.5-6)20200618**	**SO-1620-SG27(0.5-1)20200619**
Sample Date:		**06/19/2020**	**06/19/2020**	**06/18/2020**	**06/19/2020**
Depth:		**0.5-1 ft bgs**	**5.5-6 ft bgs**	**5.5-6 ft bgs**	**0.5-1 ft bgs**
Parameters	**Unit**				
Volatile Organic Compounds					
Benzene	mg/kg	<0.00046	<0.00039	<0.00039	<0.00069
Ethylbenzene	mg/kg	<0.00064	<0.00054	<0.00054	<0.00097
Xylenes (total)	mg/kg	<0.00092	<0.00077	<0.00077	<0.0014
Semi-volatile Organic Compounds					
Naphthalene	mg/kg	0.0039	<0.00069	0.0018 J	0.0022 J

Notes:

ft bgs - Feet below ground surface
< - Not detected at the associated reporting limit
J - Estimated concentration

Table 3

Analytical Methods
Soil Gas Probes
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
June 2020

Parameter	Method	Matrix	Holding Time	
			Collection to Extraction (Days)	Extraction to Analysis (Days)
VOCs	SW-846 8260C	Soil	-	14
Naphthalene	SW-846 8270D	Soil	14	40

Notes:

VOCs - Volatile Organic Compounds
"-" - Not Applicable

Method References:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions

Attachment A
Laboratory NELAP Certificate

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-20-26

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

Expiration Date: 4/30/2021

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2020

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: ***Drinking Water***

Method EPA 1613

Analyte	AB	Analyte ID	Method ID
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10120408

Method EPA 200.8

Analyte	AB	Analyte ID	Method ID
Copper	TX	1055	10014605
Lead	TX	1075	10014605

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-20-26

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

Expiration Date: 4/30/2021

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2020

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: ***Non-Potable Water***

Method EPA 1010

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10116606

Method EPA 120.1

Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	10006403

Method EPA 1311

Analyte	AB	Analyte ID	Method ID
TCLP	TX	849	10118806

Method EPA 1312

Analyte	AB	Analyte ID	Method ID
SPLP	TX	850	10119003

Method EPA 160.4

Analyte	AB	Analyte ID	Method ID
Residue-volatile	TX	1970	10010409

Method EPA 1613

Analyte	AB	Analyte ID	Method ID
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10120408
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10120408
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10120408
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10120408
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10120408
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10120408
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10120408
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10120408
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10120408
1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10120408
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10120408
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10120408
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10120408
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10120408

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10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2020

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Matrix: ***Non-Potable Water***

2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10120408
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10120408
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10120408
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10120408
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10120408
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10120408
Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10120408
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10120408
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10120408
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10120408
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10120408

Method EPA 1664

Analyte	**AB**	**Analyte ID**	**Method ID**
n-Hexane Extractable Material (HEM) (O&G)	TX	1803	10127807

Method EPA 180.1

Analyte	**AB**	**Analyte ID**	**Method ID**
Turbidity	TX	2055	10011606

Method EPA 200.8

Analyte	**AB**	**Analyte ID**	**Method ID**
Aluminum	TX	1000	10014605
Antimony	TX	1005	10014605
Arsenic	TX	1010	10014605
Barium	TX	1015	10014605
Beryllium	TX	1020	10014605
Boron	TX	1025	10014605
Cadmium	TX	1030	10014605
Calcium	TX	1035	10014605
Chromium	TX	1040	10014605
Cobalt	TX	1050	10014605
Copper	TX	1055	10014605
Iron	TX	1070	10014605

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Matrix: ***Non-Potable Water***

Lead	TX	1075	10014605
Magnesium	TX	1085	10014605
Manganese	TX	1090	10014605
Molybdenum	TX	1100	10014605
Nickel	TX	1105	10014605
Potassium	TX	1125	10014605
Selenium	TX	1140	10014605
Silver	TX	1150	10014605
Sodium	TX	1155	10014605
Strontium	TX	1160	10014605
Thallium	TX	1165	10014605
Tin	TX	1175	10014605
Titanium	TX	1180	10014605
Uranium	TX	3035	10014605
Vanadium	TX	1185	10014605
Zinc	TX	1190	10014605

Method EPA 245.1

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10036609

Method EPA 300.0

Analyte	**AB**	**Analyte ID**	**Method ID**
Bromide	TX	1540	10053200
Chloride	TX	1575	10053200
Fluoride	TX	1730	10053200
Nitrate as N	TX	1810	10053200
Nitrate-nitrite	TX	1820	10053200
Nitrite as N	TX	1840	10053200
Orthophosphate as P	TX	1870	10053200
Sulfate	TX	2000	10053200

Method EPA 325.1

Analyte	**AB**	**Analyte ID**	**Method ID**

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Matrix: ***Non-Potable Water***

Chloride	TX	1575	10056801

Method EPA 335.1

Analyte	AB	Analyte ID	Method ID
Amenable cyanide	TX	1510	10060001

Method EPA 335.2

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	10278203

Method EPA 335.4

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	10061402

Method EPA 350.3

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	10064401

Method EPA 365.3

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	10070801
Phosphorus	TX	1910	10070801

Method EPA 375.4

Analyte	AB	Analyte ID	Method ID
Sulfate	TX	2000	10073800

Method EPA 376.1

Analyte	AB	Analyte ID	Method ID
Sulfide	TX	2005	10074201

Method EPA 410.4

Analyte	AB	Analyte ID	Method ID
Chemical oxygen demand (COD)	TX	1565	10077404

Method EPA 415.1

Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	10078407

Method EPA 420.1

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10079400

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Matrix: ***Non-Potable Water***

Method EPA 420.4

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10080203

Method EPA 6020

Analyte	AB	Analyte ID	Method ID
Aluminum	TX	1000	10156419
Antimony	TX	1005	10156419
Arsenic	TX	1010	10156419
Barium	TX	1015	10156419
Beryllium	TX	1020	10156419
Boron	TX	1025	10156419
Cadmium	TX	1030	10156419
Calcium	TX	1035	10156419
Chromium	TX	1040	10156419
Cobalt	TX	1050	10156419
Copper	TX	1055	10156419
Iron	TX	1070	10156419
Lead	TX	1075	10156419
Lithium	TX	1080	10156419
Magnesium	TX	1085	10156419
Manganese	TX	1090	10156419
Molybdenum	TX	1100	10156419
Nickel	TX	1105	10156419
Potassium	TX	1125	10156419
Selenium	TX	1140	10156419
Silver	TX	1150	10156419
Sodium	TX	1155	10156419
Strontium	TX	1160	10156419
Thallium	TX	1165	10156419
Tin	TX	1175	10156419
Titanium	TX	1180	10156419

Matrix: ***Non-Potable Water***

Vanadium	TX	1185	10156419
Zinc	TX	1190	10156419

Method EPA 608

Analyte	AB	Analyte ID	Method ID
4,4'-DDD	TX	7355	10103603
4,4'-DDE	TX	7360	10103603
4,4'-DDT	TX	7365	10103603
Aldrin	TX	7025	10103603
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10103603
alpha-Chlordane	TX	7240	10103603
Aroclor-1016 (PCB-1016)	TX	8880	10103603
Aroclor-1221 (PCB-1221)	TX	8885	10103603
Aroclor-1232 (PCB-1232)	TX	8890	10103603
Aroclor-1242 (PCB-1242)	TX	8895	10103603
Aroclor-1248 (PCB-1248)	TX	8900	10103603
Aroclor-1254 (PCB-1254)	TX	8905	10103603
Aroclor-1260 (PCB-1260)	TX	8910	10103603
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10103603
Chlordane (tech.)	TX	7250	10103603
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10103603
Dieldrin	TX	7470	10103603
Endosulfan I	TX	7510	10103603
Endosulfan II	TX	7515	10103603
Endosulfan sulfate	TX	7520	10103603
Endrin	TX	7540	10103603
Endrin aldehyde	TX	7530	10103603
Endrin ketone	TX	7535	10103603
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10103603
gamma-Chlordane	TX	7245	10103603
Heptachlor	TX	7685	10103603

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Matrix: ***Non-Potable Water***

Heptachlor epoxide	TX	7690	10103603
Methoxychlor	TX	7810	10103603
Toxaphene (Chlorinated camphene)	TX	8250	10103603

Method EPA 624

Analyte	AB	Analyte ID	Method ID
1,1,1-Trichloroethane	TX	5160	10107207
1,1,2,2-Tetrachloroethane	TX	5110	10107207
1,1,2-Trichloroethane	TX	5165	10107207
1,1-Dichloroethane	TX	4630	10107207
1,1-Dichloroethylene	TX	4640	10107207
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10107207
1,2-Dichlorobenzene	TX	4610	10107207
1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10107207
1,2-Dichloropropane	TX	4655	10107207
1,3-Dichlorobenzene	TX	4615	10107207
1,4-Dichlorobenzene	TX	4620	10107207
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10107207
2-Chloroethyl vinyl ether	TX	4500	10107207
Acetone (2-Propanone)	TX	4315	10107207
Acrolein (Propenal)	TX	4325	10107207
Acrylonitrile	TX	4340	10107207
Benzene	TX	4375	10107207
Bromodichloromethane	TX	4395	10107207
Bromoform	TX	4400	10107207
Carbon tetrachloride	TX	4455	10107207
Chlorobenzene	TX	4475	10107207
Chlorodibromomethane	TX	4575	10107207
Chloroethane (Ethyl chloride)	TX	4485	10107207
Chloroform	TX	4505	10107207
cis-1,2-Dichloroethylene	TX	4645	10107207

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Matrix: ***Non-Potable Water***

cis-1,3-Dichloropropene	TX	4680	10107207
Ethylbenzene	TX	4765	10107207
m+p-xylene	TX	5240	10107207
Methyl bromide (Bromomethane)	TX	4950	10107207
Methyl chloride (Chloromethane)	TX	4960	10107207
Methyl tert-butyl ether (MTBE)	TX	5000	10107207
Methylene chloride (Dichloromethane)	TX	4975	10107207
Naphthalene	TX	5005	10107207
o-Xylene	TX	5250	10107207
Tetrachloroethylene (Perchloroethylene)	TX	5115	10107207
Toluene	TX	5140	10107207
trans-1,2-Dichloroethylene	TX	4700	10107207
trans-1,3-Dichloropropylene	TX	4685	10107207
Trichloroethene (Trichloroethylene)	TX	5170	10107207
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10107207
Vinyl chloride	TX	5235	10107207
Xylene (total)	TX	5260	10107207

Method EPA 625

Analyte	**AB**	**Analyte ID**	**Method ID**
1,2,4,5-Tetrachlorobenzene	TX	6715	10107401
1,2,4-Trichlorobenzene	TX	5155	10107401
1,2-Dichlorobenzene	TX	4610	10107401
1,2-Diphenylhydrazine	TX	6220	10107401
1,3-Dichlorobenzene	TX	4615	10107401
1,4-Dichlorobenzene	TX	4620	10107401
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10107401
2,4,5-Trichlorophenol	TX	6835	10107401
2,4,6-Trichlorophenol	TX	6840	10107401
2,4-Dichlorophenol	TX	6000	10107401
2,4-Dimethylphenol	TX	6130	10107401

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Matrix: ***Non-Potable Water***

2,4-Dinitrophenol	TX	6175	10107401
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10107401
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10107401
2-Chloronaphthalene	TX	5795	10107401
2-Chlorophenol	TX	5800	10107401
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10107401
2-Methylphenol (o-Cresol)	TX	6400	10107401
2-Nitrophenol	TX	6490	10107401
3,3'-Dichlorobenzidine	TX	5945	10107401
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10107401
4-Chloro-3-methylphenol	TX	5700	10107401
4-Chlorophenyl phenylether	TX	5825	10107401
4-Methylphenol (p-Cresol)	TX	6410	10107401
4-Nitrophenol	TX	6500	10107401
Acenaphthene	TX	5500	10107401
Acenaphthylene	TX	5505	10107401
Anthracene	TX	5555	10107401
Benzidine	TX	5595	10107401
Benzo(a)anthracene	TX	5575	10107401
Benzo(a)pyrene	TX	5580	10107401
Benzo(b)fluoranthene	TX	5585	10107401
Benzo(g,h,i)perylene	TX	5590	10107401
Benzo(k)fluoranthene	TX	5600	10107401
bis(2-Chloroethoxy)methane	TX	5760	10107401
bis(2-Chloroethyl) ether	TX	5765	10107401
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10107401
Butyl benzyl phthalate	TX	5670	10107401
Chrysene	TX	5855	10107401
Dibenz(a,h) anthracene	TX	5895	10107401
Diethyl phthalate	TX	6070	10107401

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Matrix: ***Non-Potable Water***

Dimethyl phthalate	TX	6135	10107401
Di-n-butyl phthalate	TX	5925	10107401
Di-n-octyl phthalate	TX	6200	10107401
Fluoranthene	TX	6265	10107401
Fluorene	TX	6270	10107401
Hexachlorobenzene	TX	6275	10107401
Hexachlorobutadiene	TX	4835	10107401
Hexachlorocyclopentadiene	TX	6285	10107401
Hexachloroethane	TX	4840	10107401
Indeno(1,2,3-cd) pyrene	TX	6315	10107401
Isophorone	TX	6320	10107401
Naphthalene	TX	5005	10107401
Nitrobenzene	TX	5015	10107401
n-Nitrosodiethylamine	TX	6525	10107401
n-Nitrosodimethylamine	TX	6530	10107401
n-Nitrosodi-n-butylamine	TX	5025	10107401
n-Nitrosodi-n-propylamine	TX	6545	10107401
n-Nitrosodiphenylamine	TX	6535	10107401
Pentachlorobenzene	TX	6590	10107401
Pentachlorophenol	TX	6605	10107401
Phenanthrene	TX	6615	10107401
Phenol	TX	6625	10107401
Pyrene	TX	6665	10107401
Pyridine	TX	5095	10107401

Method EPA 7196

Analyte	**AB**	**Analyte ID**	**Method ID**
Chromium (VI)	TX	1045	10162206

Method EPA 7470

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10165603

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Matrix: ***Non-Potable Water***

Method EPA 8011

Analyte	AB	Analyte ID	Method ID
1,2,3-Trichloropropane	TX	5180	10173009
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10173009
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10173009

Method EPA 8015

Analyte	AB	Analyte ID	Method ID
Diesel range organics (DRO)	TX	9369	10173203
Ethanol	TX	4750	10173203
Ethylene glycol	TX	4785	10173203
Gasoline range organics (GRO)	TX	9408	10173203
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10173203
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10173203
Methanol	TX	4930	10173203
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10173203
n-Propanol (1-Propanol)	TX	5055	10173203
Propylene Glycol	TX	6657	10173203
tert-Butyl alcohol	TX	4420	10173203

Method EPA 8081

Analyte	AB	Analyte ID	Method ID
4,4'-DDD	TX	7355	10178402
4,4'-DDE	TX	7360	10178402
4,4'-DDT	TX	7365	10178402
Aldrin	TX	7025	10178402
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10178402
alpha-Chlordane	TX	7240	10178402
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10178402
Chlordane (tech.)	TX	7250	10178402
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10178402
Dieldrin	TX	7470	10178402
Endosulfan I	TX	7510	10178402

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Matrix: ***Non-Potable Water***

Endosulfan II	TX	7515	10178402
Endosulfan sulfate	TX	7520	10178402
Endrin	TX	7540	10178402
Endrin aldehyde	TX	7530	10178402
Endrin ketone	TX	7535	10178402
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10178402
gamma-Chlordane	TX	7245	10178402
Heptachlor	TX	7685	10178402
Heptachlor epoxide	TX	7690	10178402
Hexachlorobenzene	TX	6275	10178402
Methoxychlor	TX	7810	10178402
Mirex	TX	7870	10178402
Toxaphene (Chlorinated camphene)	TX	8250	10178402

Method EPA 8082

Analyte	**AB**	**Analyte ID**	**Method ID**
Aroclor-1016 (PCB-1016)	TX	8880	10179201
Aroclor-1221 (PCB-1221)	TX	8885	10179201
Aroclor-1232 (PCB-1232)	TX	8890	10179201
Aroclor-1242 (PCB-1242)	TX	8895	10179201
Aroclor-1248 (PCB-1248)	TX	8900	10179201
Aroclor-1254 (PCB-1254)	TX	8905	10179201
Aroclor-1260 (PCB-1260)	TX	8910	10179201
PCBs (total)	TX	8870	10179201

Method EPA 8151

Analyte	**AB**	**Analyte ID**	**Method ID**
2,4,5-T	TX	8655	10183003
2,4-D	TX	8545	10183003
2,4-DB	TX	8560	10183003
Dalapon	TX	8555	10183003
Dicamba	TX	8595	10183003
Dichloroprop (Dichlorprop, Weedone)	TX	8605	10183003

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Matrix: ***Non-Potable Water***

Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10183003
MCPA	TX	7775	10183003
MCPP	TX	7780	10183003
Silvex (2,4,5-TP)	TX	8650	10183003

Method EPA 8260

Analyte	AB	Analyte ID	Method ID
1,1,1,2-Tetrachloroethane	TX	5105	10184404
1,1,1-Trichloroethane	TX	5160	10184404
1,1,2,2-Tetrachloroethane	TX	5110	10184404
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	TX	5195	10184404
1,1,2-Trichloroethane	TX	5165	10184404
1,1-Dichloroethane	TX	4630	10184404
1,1-Dichloroethylene	TX	4640	10184404
1,1-Dichloropropene	TX	4670	10184404
1,2,3-Trichlorobenzene	TX	5150	10184404
1,2,3-Trichloropropane	TX	5180	10184404
1,2,4-Trichlorobenzene	TX	5155	10184404
1,2,4-Trimethylbenzene	TX	5210	10184404
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10184404
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10184404
1,2-Dichlorobenzene	TX	4610	10184404
1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10184404
1,2-Dichloropropane	TX	4655	10184404
1,3,5-Trimethylbenzene	TX	5215	10184404
1,3-Dichlorobenzene	TX	4615	10184404
1,3-Dichloropropane	TX	4660	10184404
1,4-Dichlorobenzene	TX	4620	10184404
1,4-Dioxane (1,4-Diethyleneoxide)	TX	4735	10184404
1-Chlorohexane	TX	4510	10184404
1-Propanol	TX	5060	10184404

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-20-26

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

Expiration Date: 4/30/2021

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2020

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Matrix: ***Non-Potable Water***

2,2-Dichloropropane	TX	4665	10184404
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10184404
2-Chloroethyl vinyl ether	TX	4500	10184404
2-Chlorotoluene	TX	4535	10184404
2-Hexanone (MBK)	TX	4860	10184404
2-Pentanone	TX	5045	10184404
4-Chlorotoluene	TX	4540	10184404
4-Isopropyltoluene (p-Cymene)	TX	4915	10184404
4-Methyl-2-pentanone (MIBK)	TX	4995	10184404
Acetone (2-Propanone)	TX	4315	10184404
Acetonitrile	TX	4320	10184404
Acrolein (Propenal)	TX	4325	10184404
Acrylonitrile	TX	4340	10184404
Allyl alcohol	TX	4350	10184404
Allyl chloride (3-Chloropropene)	TX	4355	10184404
Benzene	TX	4375	10184404
Benzyl chloride	TX	5635	10184404
Bromobenzene	TX	4385	10184404
Bromochloromethane	TX	4390	10184404
Bromodichloromethane	TX	4395	10184404
Bromoform	TX	4400	10184404
Carbon disulfide	TX	4450	10184404
Carbon tetrachloride	TX	4455	10184404
Chlorobenzene	TX	4475	10184404
Chlorodibromomethane	TX	4575	10184404
Chloroethane (Ethyl chloride)	TX	4485	10184404
Chloroform	TX	4505	10184404
Chloroprene (2-Chloro-1,3-butadiene)	TX	4525	10184404
cis-1,2-Dichloroethylene	TX	4645	10184404
cis-1,3-Dichloropropene	TX	4680	10184404

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Matrix: ***Non-Potable Water***

Dibromofluoromethane	TX	4590	10184404
Dibromomethane (Methylene bromide)	TX	4595	10184404
Dichlorodifluoromethane (Freon-12)	TX	4625	10184404
Diethyl ether	TX	4725	10184404
Di-isopropylether (DIPE)	TX	9375	10184404
Epichlorohydrin (1-Chloro-2,3-epoxypropane)	TX	4745	10184404
Ethanol	TX	4750	10184404
Ethyl acetate	TX	4755	10184404
Ethyl methacrylate	TX	4810	10184404
Ethylbenzene	TX	4765	10184404
Ethyl-t-butylether (ETBE) (2-Ethoxy-2-methylpropane)	TX	4770	10184404
Hexachlorobutadiene	TX	4835	10184404
Iodomethane (Methyl iodide)	TX	4870	10184404
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10184404
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10184404
Isopropylbenzene (Cumene)	TX	4900	10184404
m+p-xylene	TX	5240	10184404
Methacrylonitrile	TX	4925	10184404
Methyl acetate	TX	4940	10184404
Methyl acrylate	TX	4945	10184404
Methyl bromide (Bromomethane)	TX	4950	10184404
Methyl chloride (Chloromethane)	TX	4960	10184404
Methyl methacrylate	TX	4990	10184404
Methyl tert-butyl ether (MTBE)	TX	5000	10184404
Methylcyclohexane	TX	4965	10184404
Methylene chloride (Dichloromethane)	TX	4975	10184404
Naphthalene	TX	5005	10184404
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10184404
n-Butylbenzene	TX	4435	10184404
n-Propylbenzene	TX	5090	10184404

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Matrix: ***Non-Potable Water***

o-Xylene	TX	5250	10184404
Propionitrile (Ethyl cyanide)	TX	5080	10184404
Pyridine	TX	5095	10184404
sec-Butylbenzene	TX	4440	10184404
Styrene	TX	5100	10184404
T-amylmethylether (TAME)	TX	4370	10184404
tert-Butyl alcohol	TX	4420	10184404
tert-Butylbenzene	TX	4445	10184404
Tetrachloroethylene (Perchloroethylene)	TX	5115	10184404
Toluene	TX	5140	10184404
trans-1,2-Dichloroethylene	TX	4700	10184404
trans-1,3-Dichloropropylene	TX	4685	10184404
trans-1,4-Dichloro-2-butene	TX	4605	10184404
Trichloroethene (Trichloroethylene)	TX	5170	10184404
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10184404
Vinyl acetate	TX	5225	10184404
Vinyl chloride	TX	5235	10184404
Xylene (total)	TX	5260	10184404

Method EPA 8270

Analyte	**AB**	**Analyte ID**	**Method ID**
1,2,4,5-Tetrachlorobenzene	TX	6715	10185203
1,2,4-Trichlorobenzene	TX	5155	10185203
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10185203
1,2-Dichlorobenzene	TX	4610	10185203
1,2-Dinitrobenzene	TX	6155	10185203
1,2-Diphenylhydrazine	TX	6220	10185203
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10185203
1,3-Dichlorobenzene	TX	4615	10185203
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10185203
1,4-Dichlorobenzene	TX	4620	10185203

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Matrix: ***Non-Potable Water***

1,4-Dinitrobenzene	TX	6165	10185203
1,4-Naphthoquinone	TX	6420	10185203
1,4-Phenylenediamine	TX	6630	10185203
1-Chloronaphthalene	TX	5790	10185203
1-Naphthylamine	TX	6425	10185203
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10185203
2,3,4,6-Tetrachlorophenol	TX	6735	10185203
2,4,5-Trichlorophenol	TX	6835	10185203
2,4,5-Trimethylaniline	TX	6880	10185203
2,4,6-Trichlorophenol	TX	6840	10185203
2,4-Diaminotoluene	TX	5880	10185203
2,4-Dichlorophenol	TX	6000	10185203
2,4-Dimethylphenol	TX	6130	10185203
2,4-Dinitrophenol	TX	6175	10185203
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10185203
2,6-Dichlorophenol	TX	6005	10185203
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10185203
2-Acetylaminofluorene	TX	5515	10185203
2-Chloronaphthalene	TX	5795	10185203
2-Chlorophenol	TX	5800	10185203
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10185203
2-Methylaniline (o-Toluidine)	TX	5145	10185203
2-Methylnaphthalene	TX	6385	10185203
2-Methylphenol (o-Cresol)	TX	6400	10185203
2-Naphthylamine	TX	6430	10185203
2-Nitroaniline	TX	6460	10185203
2-Nitrophenol	TX	6490	10185203
2-Picoline (2-Methylpyridine)	TX	5050	10185203
3,3'-Dichlorobenzidine	TX	5945	10185203
3,3'-Dimethylbenzidine	TX	6120	10185203

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Matrix: ***Non-Potable Water***

3-Methylcholanthrene	TX	6355	10185203
3-Methylphenol (m-Cresol)	TX	6405	10185203
3-Nitroaniline	TX	6465	10185203
4-Aminobiphenyl	TX	5540	10185203
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10185203
4-Chloro-3-methylphenol	TX	5700	10185203
4-Chloroaniline	TX	5745	10185203
4-Chlorophenyl phenylether	TX	5825	10185203
4-Dimethyl aminoazobenzene	TX	6105	10185203
4-Methylphenol (p-Cresol)	TX	6410	10185203
4-Nitroaniline	TX	6470	10185203
4-Nitrobiphenyl	TX	6480	10185203
4-Nitrophenol	TX	6500	10185203
4-Nitroquinoline-1-oxide	TX	6510	10185203
5-Chloro-2-methylaniline	TX	5695	10185203
5-Nitro-o-toluidine	TX	6570	10185203
7,12-Dimethylbenz(a) anthracene	TX	6115	10185203
a-a-Dimethylphenethylamine	TX	6125	10185203
Acenaphthene	TX	5500	10185203
Acenaphthylene	TX	5505	10185203
Acetophenone	TX	5510	10185203
Aniline	TX	5545	10185203
Anthracene	TX	5555	10185203
Aramite	TX	5560	10185203
Atrazine	TX	7065	10185203
Azinphos-methyl (Guthion)	TX	7075	10185203
Azobenzene	TX	5562	10185203
Benzenethiol (Thiophenol)	TX	6750	10185203
Benzidine	TX	5595	10185203
Benzo(a)anthracene	TX	5575	10185203

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Matrix: ***Non-Potable Water***

Benzo(a)pyrene	TX	5580	10185203
Benzo(b)fluoranthene	TX	5585	10185203
Benzo(e)pyrene	TX	5605	10185203
Benzo(g,h,i)perylene	TX	5590	10185203
Benzo(k)fluoranthene	TX	5600	10185203
Benzoic acid	TX	5610	10185203
Benzyl alcohol	TX	5630	10185203
Biphenyl	TX	5640	10185203
bis(2-Chloroethoxy)methane	TX	5760	10185203
bis(2-Chloroethyl) ether	TX	5765	10185203
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10185203
Butyl benzyl phthalate	TX	5670	10185203
Caprolactam	TX	7180	10185203
Captan	TX	7190	10185203
Carbaryl (Sevin)	TX	7195	10185203
Carbazole	TX	5680	10185203
Carbophenothion	TX	7220	10185203
Chlorobenzilate	TX	7260	10185203
Chrysene	TX	5855	10185203
Coumaphos	TX	7315	10185203
Demeton	TX	7390	10185203
Demeton	TX	7390	10185203
Demeton-o	TX	7395	10185203
Demeton-s	TX	7385	10185203
Diallate	TX	7405	10185203
Dibenz(a,h) anthracene	TX	5895	10185203
Dibenz(a,j) acridine	TX	5900	10185203
Dibenzofuran	TX	5905	10185203
Dichlorovos (DDVP, Dichlorvos)	TX	8610	10185203
Diethyl phthalate	TX	6070	10185203

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Matrix: ***Non-Potable Water***

Dimethoate	TX	7475	10185203
Dimethoate	TX	7475	10185203
Dimethyl phthalate	TX	6135	10185203
Di-n-butyl phthalate	TX	5925	10185203
Di-n-octyl phthalate	TX	6200	10185203
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10185203
Dioxathion	TX	7495	10185203
Diphenylamine	TX	6205	10185203
Disulfoton	TX	8625	10185203
Ethion	TX	7565	10185203
Ethyl methanesulfonate	TX	6260	10185203
Famphur	TX	7580	10185203
Fluoranthene	TX	6265	10185203
Fluorene	TX	6270	10185203
Hexachlorobenzene	TX	6275	10185203
Hexachlorobutadiene	TX	4835	10185203
Hexachlorocyclopentadiene	TX	6285	10185203
Hexachloroethane	TX	4840	10185203
Hexachlorophene	TX	6290	10185203
Hexachloropropene	TX	6295	10185203
Indeno(1,2,3-cd) pyrene	TX	6315	10185203
Isodrin	TX	7725	10185203
Isophorone	TX	6320	10185203
Isosafrole	TX	6325	10185203
Kepone	TX	7740	10185203
Maleic anhydride	TX	6335	10185203
Methapyrilene	TX	6345	10185203
Methyl methanesulfonate	TX	6375	10185203
Methyl parathion (Parathion, methyl)	TX	7825	10185203
Mevinphos	TX	7850	10185203

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Matrix: ***Non-Potable Water***

Naled	TX	7905	10185203
Naphthalene	TX	5005	10185203
Nitrobenzene	TX	5015	10185203
n-Nitrosodiethylamine	TX	6525	10185203
n-Nitrosodimethylamine	TX	6530	10185203
n-Nitrosodi-n-butylamine	TX	5025	10185203
n-Nitrosodi-n-propylamine	TX	6545	10185203
n-Nitrosodiphenylamine	TX	6535	10185203
n-Nitrosomethylethylamine	TX	6550	10185203
n-Nitrosomorpholine	TX	6555	10185203
n-Nitrosopiperidine	TX	6560	10185203
n-Nitrosopyrrolidine	TX	6565	10185203
o,o,o-Triethyl phosphorothioate	TX	8290	10185203
o-Anisidine	TX	5550	10185203
Parathion, ethyl	TX	7955	10185203
p-Cresidine	TX	5860	10185203
Pentachlorobenzene	TX	6590	10185203
Pentachloronitrobenzene (PCNB)	TX	6600	10185203
Pentachlorophenol	TX	6605	10185203
Phenacetin	TX	6610	10185203
Phenanthrene	TX	6615	10185203
Phenol	TX	6625	10185203
Phorate	TX	7985	10185203
Phosmet (Imidan)	TX	8000	10185203
Phthalic anhydride	TX	6640	10185203
Pronamide (Kerb)	TX	6650	10185203
Pyrene	TX	6665	10185203
Pyridine	TX	5095	10185203
Quinoline	TX	6670	10185203
Resorcinol	TX	6680	10185203

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Matrix: ***Non-Potable Water***

Safrole	TX	6685	10185203
Sulfotepp	TX	8155	10185203
Terbufos	TX	8185	10185203
Tetrachlorvinphos (Stirophos, Gardona)	TX	8197	10185203
Thionazin (Zinophos)	TX	8235	10185203
Toluene diisocyanate	TX	6775	10185203
Trifluralin (Treflan)	TX	8295	10185203

Method EPA 8290

Analyte	AB	Analyte ID	Method ID
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10187209
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10187209
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10187209
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10187209
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10187209
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10187209
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10187209
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10187209
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10187209
1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10187209
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10187209
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10187209
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10187209
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10187209
2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10187209
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10187209
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10187209
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10187209
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10187209
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10187209
Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10187209

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Matrix: ***Non-Potable Water***

Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10187209
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10187209
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10187209
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10187209

Method EPA 8316

Analyte	**AB**	**Analyte ID**	**Method ID**
Acrylamide	TX	4330	10188202

Method EPA 8330

Analyte	**AB**	**Analyte ID**	**Method ID**
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10189807
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10189807
2,4,6-Trinitrotoluene (2,4,6-TNT)	TX	9651	10189807
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10189807
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10189807
2-Amino-4,6-dinitrotoluene (2-am-dnt)	TX	9303	10189807
2-Nitrotoluene	TX	9507	10189807
3-Nitrotoluene	TX	9510	10189807
4-Amino-2,6-dinitrotoluene (4-am-dnt)	TX	9306	10189807
4-Nitrotoluene	TX	9513	10189807
Methyl-2,4,6-trinitrophenylnitramine (tetryl)	TX	6415	10189807
Nitrobenzene	TX	5015	10189807
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	TX	9522	10189807
RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine)	TX	9432	10189807

Method EPA 9014

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	10193803
Total cyanide	TX	1645	10193803

Method EPA 9038

Analyte	**AB**	**Analyte ID**	**Method ID**
Sulfate	TX	2000	10196608

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Expiration Date: 4/30/2021

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2020

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Matrix: ***Non-Potable Water***

Method EPA 9040

Analyte	AB	Analyte ID	Method ID
pH	TX	1900	10196802

Method EPA 9050

Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	10198604

Method EPA 9056

Analyte	AB	Analyte ID	Method ID
Bromide	TX	1540	10199209
Chloride	TX	1575	10199209
Fluoride	TX	1730	10199209
Nitrate as N	TX	1810	10199209
Nitrate-nitrite	TX	1820	10199209
Nitrite as N	TX	1840	10199209
Orthophosphate as P	TX	1870	10199209
Sulfate	TX	2000	10199209

Method EPA 9060

Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	10200201

Method EPA 9065

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200405

Method EPA 9066

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200609

Method EPA 9250

Analyte	AB	Analyte ID	Method ID
Chloride	TX	1575	10207202

Method EPA RSK 175

Analyte	AB	Analyte ID	Method ID
2-methylpropane (Isobutane)	TX	4942	10212905

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Matrix: ***Non-Potable Water***

Ethane	TX	4747	10212905
Ethene	TX	4752	10212905
Methane	TX	4926	10212905
n-Butane	TX	5007	10212905
n-Propane	TX	5029	10212905

Method HACH 8000

Analyte	**AB**	**Analyte ID**	**Method ID**
Chemical oxygen demand (COD)	TX	1565	60003001

Method SM 2120 B

Analyte	**AB**	**Analyte ID**	**Method ID**
Color	TX	1605	20223807

Method SM 2310 B (4a)

Analyte	**AB**	**Analyte ID**	**Method ID**
Acidity, as CaCO3	TX	1500	20002806

Method SM 2320 B

Analyte	**AB**	**Analyte ID**	**Method ID**
Alkalinity as CaCO3	TX	1505	20045005

Method SM 2340 B

Analyte	**AB**	**Analyte ID**	**Method ID**
Total hardness as CaCO3	TX	1755	20046008

Method SM 2510 B

Analyte	**AB**	**Analyte ID**	**Method ID**
Conductivity	TX	1610	20048004

Method SM 2540 B

Analyte	**AB**	**Analyte ID**	**Method ID**
Residue-total (total solids)	TX	1950	20004608

Method SM 2540 C

Analyte	**AB**	**Analyte ID**	**Method ID**
Residue-filterable (TDS)	TX	1955	20049803

Method SM 2540 D

Analyte	**AB**	**Analyte ID**	**Method ID**

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Matrix: ***Non-Potable Water***

Residue-nonfilterable (TSS)	TX	1960	20004802

Method SM 3500-Cr B

Analyte	**AB**	**Analyte ID**	**Method ID**
Chromium (VI)	TX	1045	20065809

Method SM 4500-Cl F

Analyte	**AB**	**Analyte ID**	**Method ID**
Total residual chlorine	TX	1940	20080482

Method SM 4500-Cl⁻ E

Analyte	**AB**	**Analyte ID**	**Method ID**
Chloride	TX	1575	20019209

Method SM 4500-CN⁻ C

Analyte	**AB**	**Analyte ID**	**Method ID**
Total cyanide	TX	1645	20020808

Method SM 4500-CN⁻ E

Analyte	**AB**	**Analyte ID**	**Method ID**
Total cyanide	TX	1645	20021209

Method SM 4500-CN⁻ G

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	20021607

Method SM 4500-H+ B

Analyte	**AB**	**Analyte ID**	**Method ID**
pH	TX	1900	20104603

Method SM 4500-NH3 D

Analyte	**AB**	**Analyte ID**	**Method ID**
Ammonia as N	TX	1515	20108809
Kjeldahl Nitrogen (Total Kjeldahl Nitrogen-TKN)	TX	1790	20108809

Method SM 4500-NH3 F

Analyte	**AB**	**Analyte ID**	**Method ID**
Ammonia as N	TX	1515	20023001

Method SM 4500-O G

Analyte	**AB**	**Analyte ID**	**Method ID**
Oxygen, dissolved	TX	1880	20025405

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Matrix: ***Non-Potable Water***

Method SM 4500-P E

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	20025803
Phosphorus	TX	1910	20025803

Method SM 4500-$S2^{-}$ D

Analyte	AB	Analyte ID	Method ID
Sulfide	TX	2005	20125400

Method SM 4500-$S2^{-}$ F

Analyte	AB	Analyte ID	Method ID
Sulfide	TX	2005	20126209

Method SM 4500-SiO2 D

Analyte	AB	Analyte ID	Method ID
Silica as SiO2	TX	1990	20127202

Method SM 4500-$SO3^{-}$ B

Analyte	AB	Analyte ID	Method ID
Sulfite	TX	2015	20026806

Method SM 5210 B

Analyte	AB	Analyte ID	Method ID
Biochemical oxygen demand (BOD)	TX	1530	20027401
Carbonaceous BOD, CBOD	TX	1555	20027401

Method SM 5310 B

Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	20137206

Method SM 5310 C

Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	20138209

Method SM 5540 C

Analyte	AB	Analyte ID	Method ID
Surfactants - MBAS	TX	2025	20144405

Method TCEQ 1005

Analyte	AB	Analyte ID	Method ID
Total Petroleum Hydrocarbons (TPH)	TX	2050	90019208

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Matrix: ***Solid & Chemical Materials***

Method ASTM D2216

Analyte	AB	Analyte ID	Method ID
Moisture	TX	10337	ASTM D2216-05

Method EPA 1010

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10116606

Method EPA 1030

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10117201

Method EPA 1311

Analyte	AB	Analyte ID	Method ID
TCLP	TX	849	10118806

Method EPA 1312

Analyte	AB	Analyte ID	Method ID
SPLP	TX	850	10119003

Method EPA 200.8

Analyte	AB	Analyte ID	Method ID
Uranium	TX	3035	10014605

Method EPA 300.0

Analyte	AB	Analyte ID	Method ID
Bromide	TX	1540	10053200
Chloride	TX	1575	10053200
Fluoride	TX	1730	10053200
Nitrate as N	TX	1810	10053200
Nitrate-nitrite	TX	1820	10053200
Nitrite as N	TX	1840	10053200
Orthophosphate as P	TX	1870	10053200
Sulfate	TX	2000	10053200

Method EPA 310.1

Analyte	AB	Analyte ID	Method ID
Alkalinity as CaCO3	TX	1505	10054805

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Matrix: ***Solid & Chemical Materials***

Method EPA 350.3

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	10064401

Method EPA 365.3

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	10070801
Phosphorus	TX	1910	10070801

Method EPA 6020

Analyte	AB	Analyte ID	Method ID
Aluminum	TX	1000	10156204
Antimony	TX	1005	10156204
Arsenic	TX	1010	10156204
Barium	TX	1015	10156204
Beryllium	TX	1020	10156204
Boron	TX	1025	10156204
Cadmium	TX	1030	10156204
Calcium	TX	1035	10156204
Chromium	TX	1040	10156204
Cobalt	TX	1050	10156204
Copper	TX	1055	10156204
Iron	TX	1070	10156204
Lead	TX	1075	10156204
Lithium	TX	1080	10156204
Magnesium	TX	1085	10156204
Manganese	TX	1090	10156204
Molybdenum	TX	1100	10156204
Nickel	TX	1105	10156204
Potassium	TX	1125	10156204
Selenium	TX	1140	10156204
Silver	TX	1150	10156204
Sodium	TX	1155	10156204

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Matrix: ***Solid & Chemical Materials***

Strontium	TX	1160	10156204
Thallium	TX	1165	10156204
Tin	TX	1175	10156204
Titanium	TX	1180	10156204
Vanadium	TX	1185	10156204
Zinc	TX	1190	10156204

Method EPA 7196

Analyte	**AB**	**Analyte ID**	**Method ID**
Chromium (VI)	TX	1045	10162206

Method EPA 7470

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10165603

Method EPA 7471

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10166004

Method EPA 8015

Analyte	**AB**	**Analyte ID**	**Method ID**
Diesel range organics (DRO)	TX	9369	10173203
Ethanol	TX	4750	10173203
Ethylene glycol	TX	4785	10173203
Gasoline range organics (GRO)	TX	9408	10173203
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10173203
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10173203
Methanol	TX	4930	10173203
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10173203
n-Propanol (1-Propanol)	TX	5055	10173203
Propylene Glycol	TX	6657	10173203
tert-Butyl alcohol	TX	4420	10173203

Method EPA 8081

Analyte	**AB**	**Analyte ID**	**Method ID**
4,4'-DDD	TX	7355	10178402

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Matrix: ***Solid & Chemical Materials***

4,4'-DDE	TX	7360	10178402
4,4'-DDT	TX	7365	10178402
Aldrin	TX	7025	10178402
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10178402
alpha-Chlordane	TX	7240	10178402
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10178402
Chlordane (tech.)	TX	7250	10178402
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10178402
Dieldrin	TX	7470	10178402
Endosulfan I	TX	7510	10178402
Endosulfan II	TX	7515	10178402
Endosulfan sulfate	TX	7520	10178402
Endrin	TX	7540	10178402
Endrin aldehyde	TX	7530	10178402
Endrin ketone	TX	7535	10178402
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10178402
gamma-Chlordane	TX	7245	10178402
Heptachlor	TX	7685	10178402
Heptachlor epoxide	TX	7690	10178402
Methoxychlor	TX	7810	10178402
Mirex	TX	7870	10178402
Toxaphene (Chlorinated camphene)	TX	8250	10178402

Method EPA 8082

Analyte	**AB**	**Analyte ID**	**Method ID**
Aroclor-1016 (PCB-1016)	TX	8880	10179201
Aroclor-1221 (PCB-1221)	TX	8885	10179201
Aroclor-1232 (PCB-1232)	TX	8890	10179201
Aroclor-1242 (PCB-1242)	TX	8895	10179201
Aroclor-1248 (PCB-1248)	TX	8900	10179201
Aroclor-1254 (PCB-1254)	TX	8905	10179201

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Matrix: ***Solid & Chemical Materials***

Aroclor-1260 (PCB-1260)	TX	8910	10179201
PCBs (total)	TX	8870	10179201

Method EPA 8260

Analyte	AB	Analyte ID	Method ID
1,1,1,2-Tetrachloroethane	TX	5105	10184404
1,1,1-Trichloroethane	TX	5160	10184404
1,1,2,2-Tetrachloroethane	TX	5110	10184404
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	TX	5195	10184404
1,1,2-Trichloroethane	TX	5165	10184404
1,1-Dichloroethane	TX	4630	10184404
1,1-Dichloroethylene	TX	4640	10184404
1,1-Dichloropropene	TX	4670	10184404
1,2,3-Trichlorobenzene	TX	5150	10184404
1,2,3-Trichloropropane	TX	5180	10184404
1,2,4-Trichlorobenzene	TX	5155	10184404
1,2,4-Trimethylbenzene	TX	5210	10184404
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10184404
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10184404
1,2-Dichlorobenzene	TX	4610	10184404
1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10184404
1,2-Dichloropropane	TX	4655	10184404
1,3,5-Trimethylbenzene	TX	5215	10184404
1,3-Dichlorobenzene	TX	4615	10184404
1,3-Dichloropropane	TX	4660	10184404
1,4-Dichlorobenzene	TX	4620	10184404
1,4-Dioxane (1,4-Diethyleneoxide)	TX	4735	10184404
1-Chlorohexane	TX	4510	10184404
1-Propanol	TX	5060	10184404
2,2-Dichloropropane	TX	4665	10184404
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10184404

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Matrix: ***Solid & Chemical Materials***

2-Chloroethyl vinyl ether	TX	4500	10184404
2-Chlorotoluene	TX	4535	10184404
2-Hexanone (MBK)	TX	4860	10184404
4-Chlorotoluene	TX	4540	10184404
4-Isopropyltoluene (p-Cymene)	TX	4915	10184404
4-Methyl-2-pentanone (MIBK)	TX	4995	10184404
Acetone (2-Propanone)	TX	4315	10184404
Acetonitrile	TX	4320	10184404
Acrolein (Propenal)	TX	4325	10184404
Acrylonitrile	TX	4340	10184404
Allyl chloride (3-Chloropropene)	TX	4355	10184404
Benzene	TX	4375	10184404
Benzyl chloride	TX	5635	10184404
Bromobenzene	TX	4385	10184404
Bromochloromethane	TX	4390	10184404
Bromodichloromethane	TX	4395	10184404
Bromoform	TX	4400	10184404
Carbon disulfide	TX	4450	10184404
Carbon tetrachloride	TX	4455	10184404
Chlorobenzene	TX	4475	10184404
Chlorodibromomethane	TX	4575	10184404
Chloroethane (Ethyl chloride)	TX	4485	10184404
Chloroform	TX	4505	10184404
Chloroprene (2-Chloro-1,3-butadiene)	TX	4525	10184404
cis-1,2-Dichloroethylene	TX	4645	10184404
cis-1,3-Dichloropropene	TX	4680	10184404
Dibromofluoromethane	TX	4590	10184404
Dibromomethane (Methylene bromide)	TX	4595	10184404
Dichlorodifluoromethane (Freon-12)	TX	4625	10184404
Diethyl ether	TX	4725	10184404

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Matrix: ***Solid & Chemical Materials***

Epichlorohydrin (1-Chloro-2,3-epoxypropane)	TX	4745	10184404
Ethanol	TX	4750	10184404
Ethyl acetate	TX	4755	10184404
Ethyl methacrylate	TX	4810	10184404
Ethylbenzene	TX	4765	10184404
Ethylene oxide	TX	4795	10184404
Hexachlorobutadiene	TX	4835	10184404
Iodomethane (Methyl iodide)	TX	4870	10184404
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10184404
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10184404
Isopropylbenzene (Cumene)	TX	4900	10184404
m+p-xylene	TX	5240	10184404
Methacrylonitrile	TX	4925	10184404
Methyl acetate	TX	4940	10184404
Methyl acrylate	TX	4945	10184404
Methyl bromide (Bromomethane)	TX	4950	10184404
Methyl chloride (Chloromethane)	TX	4960	10184404
Methyl methacrylate	TX	4990	10184404
Methyl tert-butyl ether (MTBE)	TX	5000	10184404
Methylcyclohexane	TX	4965	10184404
Methylene chloride (Dichloromethane)	TX	4975	10184404
Naphthalene	TX	5005	10184404
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10184404
n-Butylbenzene	TX	4435	10184404
n-Propylbenzene	TX	5090	10184404
o-Xylene	TX	5250	10184404
Pentachloroethane	TX	5035	10184404
Propionitrile (Ethyl cyanide)	TX	5080	10184404
Pyridine	TX	5095	10184404
sec-Butylbenzene	TX	4440	10184404

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Matrix: ***Solid & Chemical Materials***

Styrene	TX	5100	10184404
tert-Butyl alcohol	TX	4420	10184404
tert-Butylbenzene	TX	4445	10184404
Tetrachloroethylene (Perchloroethylene)	TX	5115	10184404
Toluene	TX	5140	10184404
trans-1,2-Dichloroethylene	TX	4700	10184404
trans-1,3-Dichloropropylene	TX	4685	10184404
trans-1,4-Dichloro-2-butene	TX	4605	10184404
Trichloroethene (Trichloroethylene)	TX	5170	10184404
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10184404
Vinyl acetate	TX	5225	10184404
Vinyl chloride	TX	5235	10184404
Xylene (total)	TX	5260	10184404

Method EPA 8270

Analyte	**AB**	**Analyte ID**	**Method ID**
1,2,4,5-Tetrachlorobenzene	TX	6715	10185203
1,2,4-Trichlorobenzene	TX	5155	10185203
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10185203
1,2-Dichlorobenzene	TX	4610	10185203
1,2-Dinitrobenzene	TX	6155	10185203
1,2-Diphenylhydrazine	TX	6220	10185203
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10185203
1,3-Dichlorobenzene	TX	4615	10185203
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10185203
1,4-Dichlorobenzene	TX	4620	10185203
1,4-Dinitrobenzene	TX	6165	10185203
1,4-Naphthoquinone	TX	6420	10185203
1,4-Phenylenediamine	TX	6630	10185203
1-Chloronaphthalene	TX	5790	10185203
1-Naphthylamine	TX	6425	10185203

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Matrix: ***Solid & Chemical Materials***

2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10185203
2,3,4,6-Tetrachlorophenol	TX	6735	10185203
2,4,5-Trichlorophenol	TX	6835	10185203
2,4,5-Trimethylaniline	TX	6880	10185203
2,4,6-Trichlorophenol	TX	6840	10185203
2,4-Diaminotoluene	TX	5880	10185203
2,4-Dichlorophenol	TX	6000	10185203
2,4-Dimethylphenol	TX	6130	10185203
2,4-Dinitrophenol	TX	6175	10185203
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10185203
2,6-Dichlorophenol	TX	6005	10185203
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10185203
2-Acetylaminofluorene	TX	5515	10185203
2-Chloronaphthalene	TX	5795	10185203
2-Chlorophenol	TX	5800	10185203
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10185203
2-Methylaniline (o-Toluidine)	TX	5145	10185203
2-Methylnaphthalene	TX	6385	10185203
2-Methylphenol (o-Cresol)	TX	6400	10185203
2-Naphthylamine	TX	6430	10185203
2-Nitroaniline	TX	6460	10185203
2-Nitrophenol	TX	6490	10185203
2-Picoline (2-Methylpyridine)	TX	5050	10185203
3,3'-Dichlorobenzidine	TX	5945	10185203
3,3'-Dimethylbenzidine	TX	6120	10185203
3-Methylcholanthrene	TX	6355	10185203
3-Methylphenol (m-Cresol)	TX	6405	10185203
3-Nitroaniline	TX	6465	10185203
4-Aminobiphenyl	TX	5540	10185203
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10185203

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-20-26

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

Expiration Date: 4/30/2021

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2020

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Matrix: ***Solid & Chemical Materials***

4-Chloro-3-methylphenol	TX	5700	10185203
4-Chloroaniline	TX	5745	10185203
4-Chlorophenyl phenylether	TX	5825	10185203
4-Methylphenol (p-Cresol)	TX	6410	10185203
4-Nitroaniline	TX	6470	10185203
4-Nitrophenol	TX	6500	10185203
4-Nitroquinoline-1-oxide	TX	6510	10185203
5-Nitro-o-toluidine	TX	6570	10185203
7,12-Dimethylbenz(a) anthracene	TX	6115	10185203
a-a-Dimethylphenethylamine	TX	6125	10185203
Acenaphthene	TX	5500	10185203
Acenaphthylene	TX	5505	10185203
Acetophenone	TX	5510	10185203
Aniline	TX	5545	10185203
Anthracene	TX	5555	10185203
Aramite	TX	5560	10185203
Atrazine	TX	7065	10185203
Azinphos-methyl (Guthion)	TX	7075	10185203
Azobenzene	TX	5562	10185203
Benzenethiol (Thiophenol)	TX	6750	10185203
Benzidine	TX	5595	10185203
Benzo(a)anthracene	TX	5575	10185203
Benzo(a)pyrene	TX	5580	10185203
Benzo(b)fluoranthene	TX	5585	10185203
Benzo(e)pyrene	TX	5605	10185203
Benzo(g,h,i)perylene	TX	5590	10185203
Benzo(k)fluoranthene	TX	5600	10185203
Benzoic acid	TX	5610	10185203
Benzyl alcohol	TX	5630	10185203
Biphenyl	TX	5640	10185203

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Matrix: ***Solid & Chemical Materials***

bis(2-Chloroethoxy)methane	TX	5760	10185203
bis(2-Chloroethyl) ether	TX	5765	10185203
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10185203
Butyl benzyl phthalate	TX	5670	10185203
Caprolactam	TX	7180	10185203
Carbaryl (Sevin)	TX	7195	10185203
Carbazole	TX	5680	10185203
Carbophenothion	TX	7220	10185203
Chlorobenzilate	TX	7260	10185203
Chrysene	TX	5855	10185203
Demeton	TX	7390	10185203
Demeton-o	TX	7395	10185203
Demeton-s	TX	7385	10185203
Diallate	TX	7405	10185203
Dibenz(a,h) anthracene	TX	5895	10185203
Dibenz(a,j) acridine	TX	5900	10185203
Dibenzo(a,e) pyrene	TX	5890	10185203
Dibenzofuran	TX	5905	10185203
Dichlorovos (DDVP, Dichlorvos)	TX	8610	10185203
Diethyl phthalate	TX	6070	10185203
Dimethoate	TX	7475	10185203
Dimethyl phthalate	TX	6135	10185203
Di-n-butyl phthalate	TX	5925	10185203
Di-n-octyl phthalate	TX	6200	10185203
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10185203
Diphenylamine	TX	6205	10185203
Disulfoton	TX	8625	10185203
Ethyl methanesulfonate	TX	6260	10185203
Fluoranthene	TX	6265	10185203
Fluorene	TX	6270	10185203

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Matrix: ***Solid & Chemical Materials***

Hexachlorobenzene	TX	6275	10185203
Hexachlorobutadiene	TX	4835	10185203
Hexachlorocyclopentadiene	TX	6285	10185203
Hexachloroethane	TX	4840	10185203
Hexachlorophene	TX	6290	10185203
Hexachloropropene	TX	6295	10185203
Indeno(1,2,3-cd) pyrene	TX	6315	10185203
Isodrin	TX	7725	10185203
Isophorone	TX	6320	10185203
Isosafrole	TX	6325	10185203
Kepone	TX	7740	10185203
Malathion	TX	7770	10185203
Methapyrilene	TX	6345	10185203
Methyl methanesulfonate	TX	6375	10185203
Methyl parathion (Parathion, methyl)	TX	7825	10185203
Mevinphos	TX	7850	10185203
Naphthalene	TX	5005	10185203
Nitrobenzene	TX	5015	10185203
n-Nitrosodiethylamine	TX	6525	10185203
n-Nitrosodimethylamine	TX	6530	10185203
n-Nitrosodi-n-butylamine	TX	5025	10185203
n-Nitrosodi-n-propylamine	TX	6545	10185203
n-Nitrosodiphenylamine	TX	6535	10185203
n-Nitrosomethylethylamine	TX	6550	10185203
n-Nitrosomorpholine	TX	6555	10185203
n-Nitrosopiperidine	TX	6560	10185203
n-Nitrosopyrrolidine	TX	6565	10185203
o,o,o-Triethyl phosphorothioate	TX	8290	10185203
o-Anisidine	TX	5550	10185203
Parathion, ethyl	TX	7955	10185203

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Matrix: ***Solid & Chemical Materials***

p-Cresidine	TX	5860	10185203
Pentachlorobenzene	TX	6590	10185203
Pentachloronitrobenzene (PCNB)	TX	6600	10185203
Pentachlorophenol	TX	6605	10185203
Phenacetin	TX	6610	10185203
Phenanthrene	TX	6615	10185203
Phenol	TX	6625	10185203
Phorate	TX	7985	10185203
Pronamide (Kerb)	TX	6650	10185203
Pyrene	TX	6665	10185203
Pyridine	TX	5095	10185203
Quinoline	TX	6670	10185203
Safrole	TX	6685	10185203
Sulfotepp	TX	8155	10185203
Terbufos	TX	8185	10185203
Tetrachlorvinphos (Stirophos, Gardona)	TX	8197	10185203
Thionazin (Zinophos)	TX	8235	10185203
Toluene diisocyanate	TX	6775	10185203

Method EPA 8290

Analyte	AB	Analyte ID	Method ID
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10187209
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10187209
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10187209
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10187209
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10187209
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10187209
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10187209
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10187209
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10187209
1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10187209

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Matrix: ***Solid & Chemical Materials***

1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10187209
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10187209
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10187209
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10187209
2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10187209
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10187209
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10187209
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10187209
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10187209
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10187209
Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10187209
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10187209
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10187209
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10187209
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10187209

Method EPA 8316

Analyte	**AB**	**Analyte ID**	**Method ID**
Acrylamide	TX	4330	10188202

Method EPA 8330

Analyte	**AB**	**Analyte ID**	**Method ID**
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10189807
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10189807
2,4,6-Trinitrotoluene (2,4,6-TNT)	TX	9651	10189807
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10189807
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10189807
2-Amino-4,6-dinitrotoluene (2-am-dnt)	TX	9303	10189807
2-Nitrotoluene	TX	9507	10189807
3-Nitrotoluene	TX	9510	10189807
4-Amino-2,6-dinitrotoluene (4-am-dnt)	TX	9306	10189807
4-Nitrotoluene	TX	9513	10189807
Methyl-2,4,6-trinitrophenylnitramine (tetryl)	TX	6415	10189807

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Matrix: ***Solid & Chemical Materials***

Nitrobenzene	TX	5015	10189807
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	TX	9522	10189807
RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine)	TX	9432	10189807

Method EPA 9014

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	10193803
Total cyanide	TX	1645	10193803

Method EPA 9038

Analyte	**AB**	**Analyte ID**	**Method ID**
Sulfate	TX	2000	10196608

Method EPA 9040

Analyte	**AB**	**Analyte ID**	**Method ID**
Corrosivity	TX	1615	10197203
pH	TX	1900	10196802

Method EPA 9045

Analyte	**AB**	**Analyte ID**	**Method ID**
Corrosivity	TX	1615	10197805
pH	TX	1900	10197805

Method EPA 9050

Analyte	**AB**	**Analyte ID**	**Method ID**
Conductivity	TX	1610	10198604

Method EPA 9056

Analyte	**AB**	**Analyte ID**	**Method ID**
Bromide	TX	1540	10199209
Chloride	TX	1575	10199209
Fluoride	TX	1730	10199209
Nitrate as N	TX	1810	10199209
Nitrate-nitrite	TX	1820	10199209
Nitrite as N	TX	1840	10199209
Orthophosphate as P	TX	1870	10199209
Sulfate	TX	2000	10199209

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Matrix: ***Solid & Chemical Materials***

Method	Analyte	AB	Analyte ID	Method ID
EPA 9060	Total Organic Carbon (TOC)	TX	2040	10200201
EPA 9065	Total phenolics	TX	1905	10200405
EPA 9071	n-Hexane Extractable Material (HEM) (O&G)	TX	1803	10201204
EPA 9095	Paint Filter Liquids Test	TX	10312	10204009
EPA 9250	Chloride	TX	1575	10207202
SM 2320 B	Alkalinity as CaCO3	TX	1505	20045005
SM 2510 B	Conductivity	TX	1610	20048004
SM 2540 G	Residue-total (total solids)	TX	1950	20005203
SSA/ASA Part 3:34	Carbon, organic (Walkley-Black)	TX	10340	SSA/ASA Pt 3:34
TCEQ 1005	Total Petroleum Hydrocarbons (TPH)	TX	2050	90019208

10450 Stancliff Rd. Suite 210
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June 29, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20060975**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric Matzner,

ALS Environmental received 12 sample(s) on Jun 19, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20060975**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS20060975**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 06/29/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20060975				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 154767,R363651,R363717,R364091				
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?	X				
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 06/29/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20060975				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 154767,R363651,R363717,R364091				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 06/29/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20060975
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 154767,R363651,R363717,R364091

ER#[5]	Description
	No exceptions

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20060975

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20060975-01	SO-1620-SG25(0.5-1)20200618	Soil		18-Jun-2020 08:30	19-Jun-2020 13:00	☐
HS20060975-02	SO-1620-SG25(5.5-6)20200618	Soil		18-Jun-2020 08:58	19-Jun-2020 13:00	☐
HS20060975-03	SO-1620-SG13R(0.5-1)20200618	Soil		18-Jun-2020 10:00	19-Jun-2020 13:00	☐
HS20060975-04	SO-1620-SG13R(5.5-6)20200618	Soil		18-Jun-2020 10:30	19-Jun-2020 13:00	☐
HS20060975-05	SO-1620-SG23(0.5-1)20200618	Soil		18-Jun-2020 13:08	19-Jun-2020 13:00	☐
HS20060975-06	SO-1620-SG23(5.5-6)20200618	Soil		18-Jun-2020 13:30	19-Jun-2020 13:00	☐
HS20060975-07	SO-1620-SG24(0.5-1)20200618	Soil		18-Jun-2020 14:49	19-Jun-2020 13:00	☐
HS20060975-08	SO-1620-SG24(5.5-6)20200618	Soil		18-Jun-2020 15:50	19-Jun-2020 13:00	☐
HS20060975-09	SO-1620-SG26(0.5-1)20200619	Soil		19-Jun-2020 09:15	19-Jun-2020 13:00	☐
HS20060975-10	SO-1620-SG26(5.5-6)20200619	Soil		19-Jun-2020 09:52	19-Jun-2020 13:00	☐
HS20060975-11	SO-1620-SG27(0.5-1)20200619	Soil		19-Jun-2020 10:10	19-Jun-2020 13:00	☐
HS20060975-12	SO-1620-SG27(5.5-6)20200618	Soil		18-Jun-2020 10:30	19-Jun-2020 13:00	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG25(0.5-1)20200618
Collection Date: 18-Jun-2020 08:30

ANALYTICAL REPORT
WorkOrder:HS20060975
Lab ID:HS20060975-01
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00068	0.0068	mg/Kg-dry	1	22-Jun-2020 16:09
Ethylbenzene		U	0.00095	0.0068	mg/Kg-dry	1	22-Jun-2020 16:09
Xylenes, Total		U	0.0014	0.0068	mg/Kg-dry	1	22-Jun-2020 16:09
Surr: 1,2-Dichloroethane-d4	*83.4*			*70-126*	*%REC*	*1*	*22-Jun-2020 16:09*
Surr: 4-Bromofluorobenzene	*97.2*			*70-130*	*%REC*	*1*	*22-Jun-2020 16:09*
Surr: Dibromofluoromethane	*91.9*			*70-130*	*%REC*	*1*	*22-Jun-2020 16:09*
Surr: Toluene-d8	*102*			*70-130*	*%REC*	*1*	*22-Jun-2020 16:09*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 23-Jun-2020		Analyst: GEY
Naphthalene	**0.0046**		**0.00066**	**0.0036**	**mg/Kg-dry**	1	27-Jun-2020 23:39
Surr: 2-Fluorobiphenyl	*52.6*			*43-125*	*%REC*	*1*	*27-Jun-2020 23:39*
Surr: 4-Terphenyl-d14	*59.9*			*32-125*	*%REC*	*1*	*27-Jun-2020 23:39*
Surr: Nitrobenzene-d5	*66.0*			*37-125*	*%REC*	*1*	*27-Jun-2020 23:39*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: JAC
Percent Moisture	**8.93**		**0.0100**	**0.0100**	**wt%**	1	27-Jun-2020 09:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG25(5.5-6)20200618
Collection Date: 18-Jun-2020 08:58

ANALYTICAL REPORT
WorkOrder:HS20060975
Lab ID:HS20060975-02
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00030	0.0030	mg/Kg-dry	1	22-Jun-2020 16:34
Ethylbenzene		U	0.00042	0.0030	mg/Kg-dry	1	22-Jun-2020 16:34
Xylenes, Total		U	0.00059	0.0030	mg/Kg-dry	1	22-Jun-2020 16:34
Surr: 1,2-Dichloroethane-d4	*84.0*			*70-126*	*%REC*	*1*	*22-Jun-2020 16:34*
Surr: 4-Bromofluorobenzene	*97.8*			*70-130*	*%REC*	*1*	*22-Jun-2020 16:34*
Surr: Dibromofluoromethane	*91.6*			*70-130*	*%REC*	*1*	*22-Jun-2020 16:34*
Surr: Toluene-d8	*102*			*70-130*	*%REC*	*1*	*22-Jun-2020 16:34*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 23-Jun-2020		Analyst: GEY
Naphthalene		U	0.00070	0.0038	mg/Kg-dry	1	27-Jun-2020 20:03
Surr: 2-Fluorobiphenyl	*65.1*			*43-125*	*%REC*	*1*	*27-Jun-2020 20:03*
Surr: 4-Terphenyl-d14	*75.1*			*32-125*	*%REC*	*1*	*27-Jun-2020 20:03*
Surr: Nitrobenzene-d5	*64.4*			*37-125*	*%REC*	*1*	*27-Jun-2020 20:03*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: JAC
Percent Moisture	**14.0**		**0.0100**	**0.0100**	**wt%**	1	27-Jun-2020 09:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG13R(0.5-1)20200618
Collection Date: 18-Jun-2020 10:00

ANALYTICAL REPORT
WorkOrder:HS20060975
Lab ID:HS20060975-03
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00053	0.0053	mg/Kg-dry	1	22-Jun-2020 16:59
Ethylbenzene		U	0.00075	0.0053	mg/Kg-dry	1	22-Jun-2020 16:59
Xylenes, Total		U	0.0011	0.0053	mg/Kg-dry	1	22-Jun-2020 16:59
Surr: 1,2-Dichloroethane-d4	*84.5*			*70-126*	*%REC*	*1*	*22-Jun-2020 16:59*
Surr: 4-Bromofluorobenzene	*97.3*			*70-130*	*%REC*	*1*	*22-Jun-2020 16:59*
Surr: Dibromofluoromethane	*89.9*			*70-130*	*%REC*	*1*	*22-Jun-2020 16:59*
Surr: Toluene-d8	*102*			*70-130*	*%REC*	*1*	*22-Jun-2020 16:59*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 23-Jun-2020		Analyst: GEY
Naphthalene		U	0.00074	0.0041	mg/Kg-dry	1	27-Jun-2020 20:23
Surr: 2-Fluorobiphenyl	*49.4*			*43-125*	*%REC*	*1*	*27-Jun-2020 20:23*
Surr: 4-Terphenyl-d14	*65.2*			*32-125*	*%REC*	*1*	*27-Jun-2020 20:23*
Surr: Nitrobenzene-d5	*51.4*			*37-125*	*%REC*	*1*	*27-Jun-2020 20:23*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: JAC
Percent Moisture	**19.4**		**0.0100**	**0.0100**	**wt%**	1	27-Jun-2020 09:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG13R(5.5-6)20200618
Collection Date: 18-Jun-2020 10:30

ANALYTICAL REPORT
WorkOrder:HS20060975
Lab ID:HS20060975-04
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00044	0.0044	mg/Kg-dry	1	22-Jun-2020 17:24
Ethylbenzene		U	0.00062	0.0044	mg/Kg-dry	1	22-Jun-2020 17:24
Xylenes, Total		U	0.00089	0.0044	mg/Kg-dry	1	22-Jun-2020 17:24
Surr: 1,2-Dichloroethane-d4	*82.9*			*70-126*	*%REC*	*1*	*22-Jun-2020 17:24*
Surr: 4-Bromofluorobenzene	*97.5*			*70-130*	*%REC*	*1*	*22-Jun-2020 17:24*
Surr: Dibromofluoromethane	*89.8*			*70-130*	*%REC*	*1*	*22-Jun-2020 17:24*
Surr: Toluene-d8	*101*			*70-130*	*%REC*	*1*	*22-Jun-2020 17:24*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 23-Jun-2020		Analyst: GEY
Naphthalene		U	0.00073	0.0040	mg/Kg-dry	1	27-Jun-2020 20:43
Surr: 2-Fluorobiphenyl	*47.7*			*43-125*	*%REC*	*1*	*27-Jun-2020 20:43*
Surr: 4-Terphenyl-d14	*79.4*			*32-125*	*%REC*	*1*	*27-Jun-2020 20:43*
Surr: Nitrobenzene-d5	*69.2*			*37-125*	*%REC*	*1*	*27-Jun-2020 20:43*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: JAC
Percent Moisture	**17.7**		**0.0100**	**0.0100**	**wt%**	1	27-Jun-2020 09:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG23(0.5-1)20200618
Collection Date: 18-Jun-2020 13:08

ANALYTICAL REPORT
WorkOrder:HS20060975
Lab ID:HS20060975-05
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene	U		0.00031	0.0031	mg/Kg-dry	1	22-Jun-2020 17:49
Ethylbenzene	U		0.00044	0.0031	mg/Kg-dry	1	22-Jun-2020 17:49
Xylenes, Total	U		0.00062	0.0031	mg/Kg-dry	1	22-Jun-2020 17:49
Surr: 1,2-Dichloroethane-d4	*85.0*			*70-126*	*%REC*	*1*	*22-Jun-2020 17:49*
Surr: 4-Bromofluorobenzene	*96.9*			*70-130*	*%REC*	*1*	*22-Jun-2020 17:49*
Surr: Dibromofluoromethane	*90.5*			*70-130*	*%REC*	*1*	*22-Jun-2020 17:49*
Surr: Toluene-d8	*101*			*70-130*	*%REC*	*1*	*22-Jun-2020 17:49*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 23-Jun-2020		Analyst: GEY
Naphthalene	**0.00071**	J	**0.00070**	**0.0038**	**mg/Kg-dry**	1	27-Jun-2020 21:02
Surr: 2-Fluorobiphenyl	*59.2*			*43-125*	*%REC*	*1*	*27-Jun-2020 21:02*
Surr: 4-Terphenyl-d14	*73.0*			*32-125*	*%REC*	*1*	*27-Jun-2020 21:02*
Surr: Nitrobenzene-d5	*57.9*			*37-125*	*%REC*	*1*	*27-Jun-2020 21:02*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: JAC
Percent Moisture	**15.0**		**0.0100**	**0.0100**	**wt%**	1	27-Jun-2020 09:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG23(5.5-6)20200618
Collection Date: 18-Jun-2020 13:30

ANALYTICAL REPORT
WorkOrder:HS20060975
Lab ID:HS20060975-06
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00032	0.0032	mg/Kg-dry	1	23-Jun-2020 02:08
Ethylbenzene		U	0.00044	0.0032	mg/Kg-dry	1	23-Jun-2020 02:08
Xylenes, Total		U	0.00064	0.0032	mg/Kg-dry	1	23-Jun-2020 02:08
Surr: 1,2-Dichloroethane-d4	*85.8*			*70-126*	*%REC*	*1*	*23-Jun-2020 02:08*
Surr: 4-Bromofluorobenzene	*98.1*			*70-130*	*%REC*	*1*	*23-Jun-2020 02:08*
Surr: Dibromofluoromethane	*88.5*			*70-130*	*%REC*	*1*	*23-Jun-2020 02:08*
Surr: Toluene-d8	*101*			*70-130*	*%REC*	*1*	*23-Jun-2020 02:08*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 23-Jun-2020		Analyst: GEY
Naphthalene		U	0.00071	0.0039	mg/Kg-dry	1	27-Jun-2020 21:22
Surr: 2-Fluorobiphenyl	*67.8*			*43-125*	*%REC*	*1*	*27-Jun-2020 21:22*
Surr: 4-Terphenyl-d14	*70.6*			*32-125*	*%REC*	*1*	*27-Jun-2020 21:22*
Surr: Nitrobenzene-d5	*68.1*			*37-125*	*%REC*	*1*	*27-Jun-2020 21:22*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: JAC
Percent Moisture	**16.6**		**0.0100**	**0.0100**	**wt%**	1	27-Jun-2020 09:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG24(0.5-1)20200618
Collection Date: 18-Jun-2020 14:49

ANALYTICAL REPORT
WorkOrder:HS20060975
Lab ID:HS20060975-07
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene	U		0.00038	0.0038	mg/Kg-dry	1	23-Jun-2020 02:33
Ethylbenzene	U		0.00053	0.0038	mg/Kg-dry	1	23-Jun-2020 02:33
Xylenes, Total	U		0.00076	0.0038	mg/Kg-dry	1	23-Jun-2020 02:33
Surr: 1,2-Dichloroethane-d4	*84.2*			*70-126*	*%REC*	*1*	*23-Jun-2020 02:33*
Surr: 4-Bromofluorobenzene	*98.3*			*70-130*	*%REC*	*1*	*23-Jun-2020 02:33*
Surr: Dibromofluoromethane	*88.7*			*70-130*	*%REC*	*1*	*23-Jun-2020 02:33*
Surr: Toluene-d8	*103*			*70-130*	*%REC*	*1*	*23-Jun-2020 02:33*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 23-Jun-2020		Analyst: GEY
Naphthalene	**0.0010**	J	**0.00069**	**0.0038**	**mg/Kg-dry**	1	27-Jun-2020 21:41
Surr: 2-Fluorobiphenyl	*45.5*			*43-125*	*%REC*	*1*	*27-Jun-2020 21:41*
Surr: 4-Terphenyl-d14	*63.5*			*32-125*	*%REC*	*1*	*27-Jun-2020 21:41*
Surr: Nitrobenzene-d5	*51.6*			*37-125*	*%REC*	*1*	*27-Jun-2020 21:41*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: JAC
Percent Moisture	**14.4**		**0.0100**	**0.0100**	**wt%**	1	27-Jun-2020 09:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG24(5.5-6)20200618
Collection Date: 18-Jun-2020 15:50

ANALYTICAL REPORT
WorkOrder:HS20060975
Lab ID:HS20060975-08
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00030	0.0030	mg/Kg-dry	1	23-Jun-2020 02:58
Ethylbenzene		U	0.00043	0.0030	mg/Kg-dry	1	23-Jun-2020 02:58
Xylenes, Total		U	0.00061	0.0030	mg/Kg-dry	1	23-Jun-2020 02:58
Surr: 1,2-Dichloroethane-d4	*83.9*			*70-126*	*%REC*	*1*	*23-Jun-2020 02:58*
Surr: 4-Bromofluorobenzene	*98.7*			*70-130*	*%REC*	*1*	*23-Jun-2020 02:58*
Surr: Dibromofluoromethane	*88.5*			*70-130*	*%REC*	*1*	*23-Jun-2020 02:58*
Surr: Toluene-d8	*102*			*70-130*	*%REC*	*1*	*23-Jun-2020 02:58*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 23-Jun-2020		Analyst: GEY
Naphthalene		U	0.00069	0.0038	mg/Kg-dry	1	27-Jun-2020 22:01
Surr: 2-Fluorobiphenyl	*52.8*			*43-125*	*%REC*	*1*	*27-Jun-2020 22:01*
Surr: 4-Terphenyl-d14	*65.6*			*32-125*	*%REC*	*1*	*27-Jun-2020 22:01*
Surr: Nitrobenzene-d5	*52.9*			*37-125*	*%REC*	*1*	*27-Jun-2020 22:01*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: JAC
Percent Moisture	**14.7**		**0.0100**	**0.0100**	**wt%**	1	27-Jun-2020 09:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG26(0.5-1)20200619
Collection Date: 19-Jun-2020 09:15

ANALYTICAL REPORT
WorkOrder:HS20060975
Lab ID:HS20060975-09
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00046	0.0046	mg/Kg-dry	1	23-Jun-2020 03:23
Ethylbenzene		U	0.00064	0.0046	mg/Kg-dry	1	23-Jun-2020 03:23
Xylenes, Total		U	0.00092	0.0046	mg/Kg-dry	1	23-Jun-2020 03:23
Surr: 1,2-Dichloroethane-d4	*86.1*			*70-126*	*%REC*	*1*	*23-Jun-2020 03:23*
Surr: 4-Bromofluorobenzene	*95.2*			*70-130*	*%REC*	*1*	*23-Jun-2020 03:23*
Surr: Dibromofluoromethane	*89.8*			*70-130*	*%REC*	*1*	*23-Jun-2020 03:23*
Surr: Toluene-d8	*102*			*70-130*	*%REC*	*1*	*23-Jun-2020 03:23*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 23-Jun-2020		Analyst: GEY
Naphthalene	**0.0039**		**0.00064**	**0.0035**	**mg/Kg-dry**	1	27-Jun-2020 23:20
Surr: 2-Fluorobiphenyl	*63.5*			*43-125*	*%REC*	*1*	*27-Jun-2020 23:20*
Surr: 4-Terphenyl-d14	*68.5*			*32-125*	*%REC*	*1*	*27-Jun-2020 23:20*
Surr: Nitrobenzene-d5	*58.2*			*37-125*	*%REC*	*1*	*27-Jun-2020 23:20*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: JAC
Percent Moisture	**7.56**		**0.0100**	**0.0100**	**wt%**	1	27-Jun-2020 09:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG26(5.5-6)20200619
Collection Date: 19-Jun-2020 09:52

ANALYTICAL REPORT
WorkOrder:HS20060975
Lab ID:HS20060975-10
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene		U	0.00039	0.0039	mg/Kg-dry	1	23-Jun-2020 03:48
Ethylbenzene		U	0.00054	0.0039	mg/Kg-dry	1	23-Jun-2020 03:48
Xylenes, Total		U	0.00077	0.0039	mg/Kg-dry	1	23-Jun-2020 03:48
Surr: 1,2-Dichloroethane-d4	*84.8*			*70-126*	*%REC*	*1*	*23-Jun-2020 03:48*
Surr: 4-Bromofluorobenzene	*97.7*			*70-130*	*%REC*	*1*	*23-Jun-2020 03:48*
Surr: Dibromofluoromethane	*89.5*			*70-130*	*%REC*	*1*	*23-Jun-2020 03:48*
Surr: Toluene-d8	*101*			*70-130*	*%REC*	*1*	*23-Jun-2020 03:48*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 23-Jun-2020		Analyst: GEY
Naphthalene		U	0.00069	0.0038	mg/Kg-dry	1	27-Jun-2020 22:21
Surr: 2-Fluorobiphenyl	*46.5*			*43-125*	*%REC*	*1*	*27-Jun-2020 22:21*
Surr: 4-Terphenyl-d14	*71.5*			*32-125*	*%REC*	*1*	*27-Jun-2020 22:21*
Surr: Nitrobenzene-d5	*42.5*			*37-125*	*%REC*	*1*	*27-Jun-2020 22:21*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: JAC
Percent Moisture	**13.3**		**0.0100**	**0.0100**	**wt%**	1	27-Jun-2020 09:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG27(0.5-1)20200619
Collection Date: 19-Jun-2020 10:10

ANALYTICAL REPORT
WorkOrder:HS20060975
Lab ID:HS20060975-11
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene	U		0.00069	0.0069	mg/Kg-dry	1	23-Jun-2020 04:13
Ethylbenzene	U		0.00097	0.0069	mg/Kg-dry	1	23-Jun-2020 04:13
Xylenes, Total	U		0.0014	0.0069	mg/Kg-dry	1	23-Jun-2020 04:13
Surr: 1,2-Dichloroethane-d4	*81.2*			*70-126*	*%REC*	*1*	*23-Jun-2020 04:13*
Surr: 4-Bromofluorobenzene	*95.3*			*70-130*	*%REC*	*1*	*23-Jun-2020 04:13*
Surr: Dibromofluoromethane	*88.0*			*70-130*	*%REC*	*1*	*23-Jun-2020 04:13*
Surr: Toluene-d8	*104*			*70-130*	*%REC*	*1*	*23-Jun-2020 04:13*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 23-Jun-2020		Analyst: GEY
Naphthalene	**0.0022**	J	**0.00064**	**0.0035**	**mg/Kg-dry**	1	27-Jun-2020 22:40
Surr: 2-Fluorobiphenyl	*51.2*			*43-125*	*%REC*	*1*	*27-Jun-2020 22:40*
Surr: 4-Terphenyl-d14	*54.1*			*32-125*	*%REC*	*1*	*27-Jun-2020 22:40*
Surr: Nitrobenzene-d5	*52.3*			*37-125*	*%REC*	*1*	*27-Jun-2020 22:40*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: JAC
Percent Moisture	**6.33**		**0.0100**	**0.0100**	**wt%**	1	27-Jun-2020 09:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SG27(5.5-6)20200618
Collection Date: 18-Jun-2020 10:30

ANALYTICAL REPORT
WorkOrder:HS20060975
Lab ID:HS20060975-12
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene	U		0.00039	0.0039	mg/Kg-dry	1	23-Jun-2020 04:38
Ethylbenzene	U		0.00054	0.0039	mg/Kg-dry	1	23-Jun-2020 04:38
Xylenes, Total	U		0.00077	0.0039	mg/Kg-dry	1	23-Jun-2020 04:38
Surr: 1,2-Dichloroethane-d4	*86.4*			*70-126*	*%REC*	*1*	*23-Jun-2020 04:38*
Surr: 4-Bromofluorobenzene	*97.9*			*70-130*	*%REC*	*1*	*23-Jun-2020 04:38*
Surr: Dibromofluoromethane	*88.8*			*70-130*	*%REC*	*1*	*23-Jun-2020 04:38*
Surr: Toluene-d8	*103*			*70-130*	*%REC*	*1*	*23-Jun-2020 04:38*
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3541 / 23-Jun-2020		Analyst: GEY
Naphthalene	**0.0018**	J	**0.00070**	**0.0038**	**mg/Kg-dry**	1	27-Jun-2020 23:00
Surr: 2-Fluorobiphenyl	*45.3*			*43-125*	*%REC*	*1*	*27-Jun-2020 23:00*
Surr: 4-Terphenyl-d14	*53.8*			*32-125*	*%REC*	*1*	*27-Jun-2020 23:00*
Surr: Nitrobenzene-d5	*40.1*			*37-125*	*%REC*	*1*	*27-Jun-2020 23:00*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: JAC
Percent Moisture	**14.8**		**0.0100**	**0.0100**	**wt%**	1	27-Jun-2020 09:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060975

Batch ID: 3787 **Start Date:** 22 Jun 2020 06:57 **End Date:** 22 Jun 2020 06:57
Method: VOLATILES BY SW8260C

Sample ID	Container	Sample Wt/Vol	Final Volume	Weight Factor	Container Type
HS20060975-01	1	4.04 (g)	5 (mL)	1.24	TerraCore (5035A)
HS20060975-02	1	9.72 (g)	5 (mL)	0.51	TerraCore (5035A)
HS20060975-03	1	5.805 (g)	5 (mL)	0.86	TerraCore (5035A)
HS20060975-04	1	6.83 (g)	5 (mL)	0.73	TerraCore (5035A)
HS20060975-05	1	9.468 (g)	5 (mL)	0.53	TerraCore (5035A)
HS20060975-06	1	9.428 (g)	5 (mL)	0.53	TerraCore (5035A)
HS20060975-07	1	7.732 (g)	5 (mL)	0.65	TerraCore (5035A)
HS20060975-08	1	9.68 (g)	5 (mL)	0.52	TerraCore (5035A)
HS20060975-09	1	5.886 (g)	5 (mL)	0.85	TerraCore (5035A)
HS20060975-10	1	7.412 (g)	5 (mL)	0.67	TerraCore (5035A)
HS20060975-11	1	3.861 (g)	5 (mL)	1.3	TerraCore (5035A)
HS20060975-12	1	7.61 (g)	5 (mL)	0.66	TerraCore (5035A)

Batch ID: 154767 **Start Date:** 23 Jun 2020 10:30 **End Date:** 23 Jun 2020 18:00
Method: SV SOXHLET EXTRACT-LOWLEVEL-SW3541 **Prep Code:** 3541_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20060975-01		30.15 (g)	1 (mL)	0.03317
HS20060975-02		30.01 (g)	1 (mL)	0.03332
HS20060975-03		30.1 (g)	1 (mL)	0.03322
HS20060975-04		30.09 (g)	1 (mL)	0.03323
HS20060975-05		30.27 (g)	1 (mL)	0.03304
HS20060975-06		30.19 (g)	1 (mL)	0.03312
HS20060975-07		30.3 (g)	1 (mL)	0.033
HS20060975-08		30.49 (g)	1 (mL)	0.0328
HS20060975-09		30.28 (g)	1 (mL)	0.03303
HS20060975-10		30.1 (g)	1 (mL)	0.03322
HS20060975-11		30.09 (g)	1 (mL)	0.03323
HS20060975-12		30.29 (g)	1 (mL)	0.03301

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060975

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 154767 (1)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Soil	
HS20060975-01	SO-1620-SG25(0.5-1) 20200618	18 Jun 2020 08:30		23 Jun 2020 10:30	27 Jun 2020 23:39	1
HS20060975-02	SO-1620-SG25(5.5-6) 20200618	18 Jun 2020 08:58		23 Jun 2020 10:30	27 Jun 2020 20:03	1
HS20060975-03	SO-1620-SG13R(0.5-1) 20200618	18 Jun 2020 10:00		23 Jun 2020 10:30	27 Jun 2020 20:23	1
HS20060975-04	SO-1620-SG13R(5.5-6) 20200618	18 Jun 2020 10:30		23 Jun 2020 10:30	27 Jun 2020 20:43	1
HS20060975-05	SO-1620-SG23(0.5-1) 20200618	18 Jun 2020 13:08		23 Jun 2020 10:30	27 Jun 2020 21:02	1
HS20060975-06	SO-1620-SG23(5.5-6) 20200618	18 Jun 2020 13:30		23 Jun 2020 10:30	27 Jun 2020 21:22	1
HS20060975-07	SO-1620-SG24(0.5-1) 20200618	18 Jun 2020 14:49		23 Jun 2020 10:30	27 Jun 2020 21:41	1
HS20060975-08	SO-1620-SG24(5.5-6) 20200618	18 Jun 2020 15:50		23 Jun 2020 10:30	27 Jun 2020 22:01	1
HS20060975-09	SO-1620-SG26(0.5-1) 20200619	19 Jun 2020 09:15		23 Jun 2020 10:30	27 Jun 2020 23:20	1
HS20060975-10	SO-1620-SG26(5.5-6) 20200619	19 Jun 2020 09:52		23 Jun 2020 10:30	27 Jun 2020 22:21	1
HS20060975-11	SO-1620-SG27(0.5-1) 20200619	19 Jun 2020 10:10		23 Jun 2020 10:30	27 Jun 2020 22:40	1
HS20060975-12	SO-1620-SG27(5.5-6) 20200618	18 Jun 2020 10:30		23 Jun 2020 10:30	27 Jun 2020 23:00	1
Batch ID: R363651 (0)	**Test Name :** VOLATILES BY SW8260C				**Matrix:** Soil	
HS20060975-01	SO-1620-SG25(0.5-1) 20200618	18 Jun 2020 08:30			22 Jun 2020 16:09	1
HS20060975-02	SO-1620-SG25(5.5-6) 20200618	18 Jun 2020 08:58			22 Jun 2020 16:34	1
HS20060975-03	SO-1620-SG13R(0.5-1) 20200618	18 Jun 2020 10:00			22 Jun 2020 16:59	1
HS20060975-04	SO-1620-SG13R(5.5-6) 20200618	18 Jun 2020 10:30			22 Jun 2020 17:24	1
HS20060975-05	SO-1620-SG23(0.5-1) 20200618	18 Jun 2020 13:08			22 Jun 2020 17:49	1
Batch ID: R363717 (0)	**Test Name :** VOLATILES BY SW8260C				**Matrix:** Soil	
HS20060975-06	SO-1620-SG23(5.5-6) 20200618	18 Jun 2020 13:30			23 Jun 2020 02:08	1
HS20060975-07	SO-1620-SG24(0.5-1) 20200618	18 Jun 2020 14:49			23 Jun 2020 02:33	1
HS20060975-08	SO-1620-SG24(5.5-6) 20200618	18 Jun 2020 15:50			23 Jun 2020 02:58	1
HS20060975-09	SO-1620-SG26(0.5-1) 20200619	19 Jun 2020 09:15			23 Jun 2020 03:23	1
HS20060975-10	SO-1620-SG26(5.5-6) 20200619	19 Jun 2020 09:52			23 Jun 2020 03:48	1
HS20060975-11	SO-1620-SG27(0.5-1) 20200619	19 Jun 2020 10:10			23 Jun 2020 04:13	1
HS20060975-12	SO-1620-SG27(5.5-6) 20200618	18 Jun 2020 10:30			23 Jun 2020 04:38	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060975

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R364091 (0)	**Test Name :** MOISTURE - ASTM D2216				**Matrix:** Soil	
HS20060975-01	SO-1620-SG25(0.5-1) 20200618	18 Jun 2020 08:30			27 Jun 2020 09:00	1
HS20060975-02	SO-1620-SG25(5.5-6) 20200618	18 Jun 2020 08:58			27 Jun 2020 09:00	1
HS20060975-03	SO-1620-SG13R(0.5-1) 20200618	18 Jun 2020 10:00			27 Jun 2020 09:00	1
HS20060975-04	SO-1620-SG13R(5.5-6) 20200618	18 Jun 2020 10:30			27 Jun 2020 09:00	1
HS20060975-05	SO-1620-SG23(0.5-1) 20200618	18 Jun 2020 13:08			27 Jun 2020 09:00	1
HS20060975-06	SO-1620-SG23(5.5-6) 20200618	18 Jun 2020 13:30			27 Jun 2020 09:00	1
HS20060975-07	SO-1620-SG24(0.5-1) 20200618	18 Jun 2020 14:49			27 Jun 2020 09:00	1
HS20060975-08	SO-1620-SG24(5.5-6) 20200618	18 Jun 2020 15:50			27 Jun 2020 09:00	1
HS20060975-09	SO-1620-SG26(0.5-1) 20200619	19 Jun 2020 09:15			27 Jun 2020 09:00	1
HS20060975-10	SO-1620-SG26(5.5-6) 20200619	19 Jun 2020 09:52			27 Jun 2020 09:00	1
HS20060975-11	SO-1620-SG27(0.5-1) 20200619	19 Jun 2020 10:10			27 Jun 2020 09:00	1
HS20060975-12	SO-1620-SG27(5.5-6) 20200618	18 Jun 2020 10:30			27 Jun 2020 09:00	1

WorkOrder: HS20060975
InstrumentID: SV-7
Test Code: 8270_LOW_S
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Naphthalene	91-20-3	0.0017	0.0020	0.00060	0.0033
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	4-Terphenyl-d14	1718-51-0	0	0	0	0
S	Nitrobenzene-d5	4165-60-0	0	0	0	0

WorkOrder: HS20060975
InstrumentID: VOA5
Test Code: 8260_S
Test Number: SW8260
Test Name: Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Benzene	71-43-2	0.0012	0.0012	0.00050	0.0050
A	Ethylbenzene	100-41-4	0.0012	0.0013	0.00070	0.0050
A	Xylenes, Total	1330-20-7	0.0012	0.0016	0.0010	0.0050
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0
S	4-Bromofluorobenzene	460-00-4	0	0	0	0
S	Dibromofluoromethane	1868-53-7	0	0	0	0
S	Toluene-d8	2037-26-5	0	0	0	0

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060975

QC BATCH REPORT

Batch ID: 154767 (1) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-154767** Units: **ug/Kg** Analysis Date: **25-Jun-2020 11:55**
Client ID: Run ID: **SV-7_363901** SeqNo: **5637804** PrepDate: **23-Jun-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	U	3.3								
Surr: 2-Fluorobiphenyl	*111.6*	*0*	*167*	*0*	*66.8*	*43 - 125*				
Surr: 4-Terphenyl-d14	*131.5*	*0*	*167*	*0*	*78.8*	*32 - 125*				
Surr: Nitrobenzene-d5	*126.4*	*0*	*167*	*0*	*75.7*	*37 - 125*				

LCS Sample ID: **LCS-154767** Units: **ug/Kg** Analysis Date: **25-Jun-2020 12:15**
Client ID: Run ID: **SV-7_363901** SeqNo: **5637805** PrepDate: **23-Jun-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	135.9	3.3	167	0	81.4	50 - 125				
Surr: 2-Fluorobiphenyl	*156.5*	*0*	*167*	*0*	*93.7*	*43 - 125*				
Surr: 4-Terphenyl-d14	*134.3*	*0*	*167*	*0*	*80.4*	*32 - 125*				
Surr: Nitrobenzene-d5	*110.6*	*0*	*167*	*0*	*66.3*	*37 - 125*				

MS Sample ID: **HS20061011-02MS** Units: **ug/Kg** Analysis Date: **25-Jun-2020 13:53**
Client ID: Run ID: **SV-7_363901** SeqNo: **5637807** PrepDate: **23-Jun-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	180.2	3.3	164.9	66.09	69.2	50 - 125				
Surr: 2-Fluorobiphenyl	*111*	*0*	*164.9*	*0*	*67.3*	*43 - 125*				
Surr: 4-Terphenyl-d14	*111.1*	*0*	*164.9*	*0*	*67.4*	*32 - 125*				
Surr: Nitrobenzene-d5	*133.5*	*0*	*164.9*	*0*	*81.0*	*37 - 125*				

MSD Sample ID: **HS20061011-02MSD** Units: **ug/Kg** Analysis Date: **25-Jun-2020 14:13**
Client ID: Run ID: **SV-7_363901** SeqNo: **5637808** PrepDate: **23-Jun-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	186.5	3.3	165.9	66.09	72.6	50 - 125	180.2	3.39	30	
Surr: 2-Fluorobiphenyl	*98.02*	*0*	*165.9*	*0*	*59.1*	*43 - 125*	*111*	*12.4*	*30*	
Surr: 4-Terphenyl-d14	*96.12*	*0*	*165.9*	*0*	*57.9*	*32 - 125*	*111.1*	*14.5*	*30*	
Surr: Nitrobenzene-d5	*171.5*	*0*	*165.9*	*0*	*103*	*37 - 125*	*133.5*	*24.9*	*30*	

The following samples were analyzed in this batch:

HS20060975-01	HS20060975-02	HS20060975-03	HS20060975-04
HS20060975-05	HS20060975-06	HS20060975-07	HS20060975-08
HS20060975-09	HS20060975-10	HS20060975-11	HS20060975-12

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060975

QC BATCH REPORT

Batch ID: R363651 (0) **Instrument: VOA5** **Method: VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKS1-062220** Units: **ug/Kg** Analysis Date: **22-Jun-2020 09:05**
Client ID: Run ID: **VOA5_363651** SeqNo: **5629085** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	5.0								
Ethylbenzene	U	5.0								
Xylenes, Total	U	5.0								
Surr: 1,2-Dichloroethane-d4	*42.07*	*0*	*50*	*0*	*84.1*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*49.24*	*0*	*50*	*0*	*98.5*	*80 - 120*				
Surr: Dibromofluoromethane	*44.44*	*0*	*50*	*0*	*88.9*	*80 - 119*				
Surr: Toluene-d8	*49.12*	*0*	*50*	*0*	*98.2*	*81 - 118*				

LCS Sample ID: **VLCSS1-062220** Units: **ug/Kg** Analysis Date: **22-Jun-2020 08:14**
Client ID: Run ID: **VOA5_363651** SeqNo: **5629084** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	50.67	5.0	50	0	101	75 - 124				
Ethylbenzene	51.23	5.0	50	0	102	70 - 123				
Xylenes, Total	154.1	5.0	150	0	103	77 - 128				
Surr: 1,2-Dichloroethane-d4	*44.11*	*0*	*50*	*0*	*88.2*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*50.24*	*0*	*50*	*0*	*100*	*80 - 120*				
Surr: Dibromofluoromethane	*47.24*	*0*	*50*	*0*	*94.5*	*80 - 119*				
Surr: Toluene-d8	*48.96*	*0*	*50*	*0*	*97.9*	*81 - 118*				

MS Sample ID: **HS20060930-04MS** Units: **ug/Kg** Analysis Date: **22-Jun-2020 12:00**
Client ID: Run ID: **VOA5_363651** SeqNo: **5629560** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	39.11	4.9	49	0	79.8	70 - 130				
Ethylbenzene	39.3	4.9	49	0	80.2	70 - 130				
Xylenes, Total	117.7	4.9	147	0	80.1	70 - 130				
Surr: 1,2-Dichloroethane-d4	*43.57*	*0*	*49*	*0*	*88.9*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.22*	*0*	*49*	*0*	*100*	*70 - 130*				
Surr: Dibromofluoromethane	*47.37*	*0*	*49*	*0*	*96.7*	*70 - 130*				
Surr: Toluene-d8	*48.8*	*0*	*49*	*0*	*99.6*	*70 - 130*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060975

QC BATCH REPORT

Batch ID: R363651 (0) **Instrument: VOA5** **Method: VOLATILES BY SW8260C**

MSD Sample ID: **HS20060930-04MSD** Units: **ug/Kg** Analysis Date: **22-Jun-2020 12:25**
Client ID: Run ID: **VOA5_363651** SeqNo: **5629561** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Benzene	40.6	4.8	48.5	0	83.7	70 - 130	39.11	3.72	30	
Ethylbenzene	40.81	4.8	48.5	0	84.1	70 - 130	39.3	3.76	30	
Xylenes, Total	122.4	4.8	145.5	0	84.1	70 - 130	117.7	3.94	30	
Surr: 1,2-Dichloroethane-d4	*43.93*	*0*	*48.5*	*0*	*90.6*	*70 - 126*	*43.57*	*0.825*	*30*	
Surr: 4-Bromofluorobenzene	*48.99*	*0*	*48.5*	*0*	*101*	*70 - 130*	*49.22*	*0.471*	*30*	
Surr: Dibromofluoromethane	*46.85*	*0*	*48.5*	*0*	*96.6*	*70 - 130*	*47.37*	*1.1*	*30*	
Surr: Toluene-d8	*47.88*	*0*	*48.5*	*0*	*98.7*	*70 - 130*	*48.8*	*1.9*	*30*	

The following samples were analyzed in this batch: HS20060975-01 HS20060975-02 HS20060975-03 HS20060975-04 HS20060975-05

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060975

QC BATCH REPORT

Batch ID: R363717 (0) **Instrument: VOA5** **Method: VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKS2-062220** Units: **ug/Kg** Analysis Date: **22-Jun-2020 21:33**
Client ID: Run ID: **VOA5_363717** SeqNo: **5630483** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	5.0								
Ethylbenzene	U	5.0								
Xylenes, Total	U	5.0								
Surr: 1,2-Dichloroethane-d4	*42.45*	*0*	*50*	*0*	*84.9*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*49.52*	*0*	*50*	*0*	*99.0*	*80 - 120*				
Surr: Dibromofluoromethane	*45.44*	*0*	*50*	*0*	*90.9*	*80 - 119*				
Surr: Toluene-d8	*50.86*	*0*	*50*	*0*	*102*	*81 - 118*				

LCS Sample ID: **VLCSS2-062220** Units: **ug/Kg** Analysis Date: **22-Jun-2020 20:43**
Client ID: Run ID: **VOA5_363717** SeqNo: **5630482** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	54.69	5.0	50	0	109	75 - 124				
Ethylbenzene	54.34	5.0	50	0	109	70 - 123				
Xylenes, Total	162	5.0	150	0	108	77 - 128				
Surr: 1,2-Dichloroethane-d4	*46.7*	*0*	*50*	*0*	*93.4*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*50.61*	*0*	*50*	*0*	*101*	*80 - 120*				
Surr: Dibromofluoromethane	*49.48*	*0*	*50*	*0*	*99.0*	*80 - 119*				
Surr: Toluene-d8	*49.76*	*0*	*50*	*0*	*99.5*	*81 - 118*				

MS Sample ID: **HS20060992-02MS** Units: **ug/Kg** Analysis Date: **22-Jun-2020 23:13**
Client ID: Run ID: **VOA5_363717** SeqNo: **5630487** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	43.55	4.9	49	0	88.9	70 - 130				
Ethylbenzene	40.23	4.9	49	0	82.1	70 - 130				
Xylenes, Total	117.4	4.9	147	0	79.9	70 - 130				
Surr: 1,2-Dichloroethane-d4	*43.57*	*0*	*49*	*0*	*88.9*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.53*	*0*	*49*	*0*	*101*	*70 - 130*				
Surr: Dibromofluoromethane	*46.6*	*0*	*49*	*0*	*95.1*	*70 - 130*				
Surr: Toluene-d8	*49.92*	*0*	*49*	*0*	*102*	*70 - 130*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060975

QC BATCH REPORT

Batch ID: R363717 (0) **Instrument: VOA5** **Method: VOLATILES BY SW8260C**

MSD Sample ID: **HS20060992-02MSD** Units: **ug/Kg** Analysis Date: **22-Jun-2020 23:38**
Client ID: Run ID: **VOA5_363717** SeqNo: **5630488** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Benzene	40.53	4.8	48.5	0	83.6	70 - 130	43.55	7.19	30	
Ethylbenzene	36.69	4.8	48.5	0	75.7	70 - 130	40.23	9.2	30	
Xylenes, Total	107.1	4.8	145.5	0	73.6	70 - 130	117.4	9.19	30	
Surr: 1,2-Dichloroethane-d4	*43.1*	*0*	*48.5*	*0*	*88.9*	*70 - 126*	*43.57*	*1.08*	*30*	
Surr: 4-Bromofluorobenzene	*48.7*	*0*	*48.5*	*0*	*100*	*70 - 130*	*49.53*	*1.68*	*30*	
Surr: Dibromofluoromethane	*46.76*	*0*	*48.5*	*0*	*96.4*	*70 - 130*	*46.6*	*0.336*	*30*	
Surr: Toluene-d8	*49.42*	*0*	*48.5*	*0*	*102*	*70 - 130*	*49.92*	*1*	*30*	

The following samples were analyzed in this batch: HS20060975-06 HS20060975-07 HS20060975-08 HS20060975-09
HS20060975-10 HS20060975-11 HS20060975-12

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060975

QC BATCH REPORT

Batch ID: **R364091 (0)** **Instrument:** **Balance1** **Method:** **MOISTURE - ASTM D2216**

DUP Sample ID: **HS20060975-07DUP** Units: **wt%** Analysis Date: **27-Jun-2020 09:00**
Client ID: **SO-1620-SG24(0.5-1)20200618** Run ID: **Balance1_364091** SeqNo: **5640593** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	14	0.0100					14.4	2.82	20	

The following samples were analyzed in this batch:

HS20060975-01	HS20060975-02	HS20060975-03	HS20060975-04
HS20060975-05	HS20060975-06	HS20060975-07	HS20060975-08
HS20060975-09	HS20060975-10	HS20060975-11	HS20060975-12

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20060975**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/Kg-dry	Milligrams per Kilogram- Dry weight corrected

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	20-030-0	26-Mar-2021
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322020-4	09-May-2021
Kansas	E-10352 2019-2020	31-Jul-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
Oklahoma	2019-141	31-Aug-2020
Texas	T104704231-20-26	30-Apr-2021

Sample Receipt Checklist

Work Order ID: HS20060975 **Date/Time Received:** **19-Jun-2020 13:00**

Client Name: PBW **Received by:** **Patrick Salome**

Completed By: */S/ Paresh M. Giga* 19-Jun-2020 16:12 **Reviewed by:** */S/ Dane J. Wacasey* 26-Jun-2020 18:28

eSignature Date/Time eSignature Date/Time

Matrices: **Soil** Carrier name: **ALS Courier**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☑	No ☐	Not Present ☐
Chain of custody present?	Yes ☑	No ☐	2 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:218812/218809
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	1.5°C; 1.1°C uc/c	IR25
Cooler(s)/Kit(s):	45140/46069	
Date/Time sample(s) sent to storage:	6/19/2020 16:30	

Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes: Times Differ : SG-24(5.5-6): COC = 15:50 Labels = 15:00; logged per COC.
SG25(0.5-1): 5035 VOC methanol vial received empty

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070
Houston, TX +1 281 530 5656
Middletown, PA +1 717 944 5541
Spring City, PA +1 610 948 4903
Salt Lake City, UT +1 801 266 7700
South Charleston, WV +1 304 356 3168
York, PA +1 717 505 5280

Chain of Custody Form

Page _____ of _____

COC ID: 218812

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A	8260_S (5652652 *5035*8260 - B,E,X)
Work Order		Project Number	1620-18-Rev0 SR 92688	B	8270_LOW_S (5635942 SVOC - Naphthalene only)
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P	C	MOIST_ASTM (5631931 Gen.Chem. MOIST%)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address		J	

ALS Project Manager: | ALS Work Order #:

HS20060975
Golder Associates Inc.
Houston TX-Wood Preserving Works

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620-SG125(0.5-1')20200618	6-18-20	0830	Soil	8.9	5	X	X	X								
2	SG125(5.5-6')		0858														
3	SG13R(0.5-1)		1000														
4	SG13R(5.5-6)		1030														
5	SG23(0.5-1)		1308														
6	SG23(5.5-6)		1330														
7	SG24(0.5-1)		1449														
8	SG24(5.5-6)		1550														
9	SG26(0.5-1)20200619	6-19-20	0915														
10	SG26(5.5-6)		0752														

Sampler(s) Please Print & Sign: Anthony Reid

Shipment Method:

Required Turnaround Time: (Check Box) ☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other _____

Results Due Date:

	Date:	Time:	
Relinquished by:	6-19-20	1215	Received by:
Relinquished by:	6-19-20	1300	Received by (Laboratory):
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: UPRR HWPW 1620-18

Cooler ID	Cooler Temp.
45140	1.5
46069	1.1

QC Package: (Check One Box Below)
☐ Level II Std QC
☐ Level III Std QC/Raw Data
☐ Level IV SW846/CLP
☐ Other
☒ TRRP Checklist
☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Spring City, PA +1 610 948 4903
Salt Lake City, UT +1 801 266 7700
South Charleston, WV +1 304 356 3168
York, PA +1 717 505 5280

Chain of Custody Form

Page _____ of _____

COC ID: 218809

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-18-Rev0 SR 92688
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address	

Parameter/Method Request for Analysis

A: 8260_S (5652652 *5035*8260 - B,E,X)
B: 8270_LOW_S (5635942 SVOC - Naphthalene only)
C: MOIST_ASTM (5631931 Gen.Chem. MOIST%)
D:
E:
F:
G:
H:
I:
J:

HS20060975
Golder Associates Inc.
Houston TX-Wood Preserving Works

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620- SG27(0.5-1)20200619	6-19-20	1010	Soil	8,9	5	X	X	X								
2	1 1 SG27(5.5-6)20200619	1	1030	1	1	1	X	X	X								
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Anthony Reed

Shipment Method:

Required Turnaround Time: (Check Box) [ ] Other _____ [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour

Results Due Date:

Relinquished by:	Date: 6-19-20	Time: 1213	Received by:	
Relinquished by:	Date: 6-19-20	Time: 1300	Received by (Laboratory):	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

Notes: UPRR HWPW 1620-18

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[X] TRRP Checklist
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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ATTACHMENT 2

Soil Gas Samples - Data Usability Summary and Laboratory Analytical Reports

Memorandum

March 27, 2020

To:	Eric Matzner	Ref. No.:	11183954-1620
From:	Chris G. Knight/eew/577-NF	Tel:	512-506-8803
cc:	Jesse Orth, Jon Lang; Julie Lidstone		

Subject: **Data Usability Summary**
Soil Gas Sampling Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
February 2020

1. Scope of Data Usability Study

This document details a Data Usability Summary (DUS) of analytical results for soil gas samples collected in support of the Soil Gas Sampling Event at the Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works site during February 2020. Samples were submitted to Pace Analytical Services, Inc., located in Minneapolis, Minnesota and are reported in data packages 10509381 and 10510405. The intended use of the data is to support the Soil Gas Sampling Event at the site by providing current concentration of chemicals of concern.

Data were reviewed and validated by Chris G. Knight of GHD, in accordance with Title 30 of the Texas Administrative Code Section 350.54 (30 TAC 350.54) as described in the Texas Commission on Environmental Quality (TCEQ) Regulatory Guidance document entitled "Review and Reporting of COC Concentration Data under TRRP", (RG-366/TRRP-13), revised May 2010, herein referred to as "TRRP-13 Guidance". Evaluation of the data was based on information obtained from the chain of custody forms, the finished report forms, method blank data, recovery data from laboratory control samples (LCS)/ duplicate analyses (DUP), field quality assurance/quality control samples (QA/QC), the laboratory review checklists (LRC), and the laboratory exception reports (ER).

A sample collection and analysis summary is presented in Table 1. This summary provides a cross-reference of field sample identification numbers and location identification. Each sample is assigned a unique field identification number.

The validated sample results are presented in Table 2. A summary of the analytical methodology is presented in Table 3.

2. Laboratory Qualifications

The Laboratory's quality assurance program is consistent with the quality standards outlined in the National Environmental Laboratory Accreditation Program (NELAP). This laboratory was accredited under Texas Certification number # TX104704192 at the time the analysis was performed and the certificate is included in Attachment A.

3. Project Objectives

3.1 Sampling/Analytical QA/QC Objectives

The QA/QC program was designed to identify contamination resulting from the sampling, sample transport and analytical process through the analysis of field duplicate sample sets and method blanks. The QA/QC program was designed to evaluate the quality of the resulting data with respect to bias and precision through analysis of LCS and duplicate analyses.

4. Data Review/Validation Results

4.1 Sample Holding Time

Samples were shipped with a chain of custody and the paper work was filled out properly.

The sample chain of custody documents and the analytical reports were used to determine sample holding times. All samples were prepared and analyzed within the required holding times.

4.2 Sample Containers

All sample canisters were received at the laboratory in good condition and within acceptable canister pressure range of –1 inch of mercury (Hg) to –10 inches of Hg, indicating samples were still under vacuum upon receipt.

4.3 Calibrations

According to the LRC, initial calibration and continuing calibration data met the criteria for the selected method.

4.4 Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures. As these were not discrete samples handled in the field, these blanks are not listed on the sample identification cross-reference list found in the data packages.

For this study, laboratory method blanks were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch and results are reported in the laboratory data packages.

The method blank results were non-detect or below the method quantitation limit (MQL), indicating that laboratory contamination was not a factor for this investigation with the following exception (see Table 4):

i) One method blank yielded a low level detection for naphthalene. Associated non-detect sample results were not affected. No further action was required. Associated sample results with similar detections to the method blank were qualified as non-detect.

4.5 Laboratory Control Sample Analysis

LCS are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project.

For this study, LCS were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch.

The LCS contained all compounds specified in the method. All LCS recoveries were within the laboratory control limits, demonstrating acceptable analytical accuracy.

4.6 Duplicate Sample Analyses

Analytical precision is evaluated based on the analysis of laboratory duplicate samples. For this study, a duplicate analysis was prepared and analyzed by the laboratory as specified in Table 1. The relative percent differences (RPD) established by the laboratory are adopted as the acceptance criteria for the project.

The duplicate analysis performed was acceptable, demonstrating acceptable analytical precision.

The laboratory also performed am additional duplicate analysis on a non-site sample. This cannot be used to assess precision for the site samples.

4.7 Field QA/QC Samples

The field QA/QC consisted of two field duplicate sample sets.

To assess the analytical and sampling protocol precision, two field duplicate sample sets were collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples must be less than fifty percent for soil samples. The RPDs are only used when sample concentrations are above the estimated regions of detection.

Field duplicate summary data are presented in Table 2. All field duplicate results were within acceptable agreement, demonstrating acceptable sampling and analytical precision.

4.8 Field Procedures

Golder Associates, Inc. collected soil gas samples in accordance with their Standard Operating Procedures (SOP) for sample collection.

4.9 Analyte Reporting

The laboratory reported detected results for each analyte down to the sample detection limit (SDL), which is defined as the method detection limit (MDL) with sample-specific adjustments for dilutions, aliquot size, volumes, etc. Positive analyte detections less than the MQL but greater than the SDL were qualified as estimated (J) in Table 2 unless qualified elsewhere in this memorandum.

The detectability check standard (DCS) results supported the laboratory MDLs.

5. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are usable for the purpose of supporting the Soil Gas Sampling Event at the site by providing current concentration of chemicals of concern in soil gas samples with the specific qualifications noted herein.

Table 1

Sample Collection and Analysis Summary
Soil Gas Sampling Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
February 2020

						Analysis/Parameters	
Work Order	**Sample Identification**	**Location**	**Matrix**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**VOCs**	**Comments**
10509381	GS-1620-SG-22-20200219	SG22	Soil Gas	02/19/2020	08:24	X	
	GS-1620-SG-22-20200219 CERT#31	SG22	Soil Gas	02/19/2020	08:24	X	
	GS-1620-DUP-1-20200219	SG21	Soil Gas	02/19/2020	08:30	X	Field duplicate of SG-21
	GS-1620-DUP-1-20200219 CERT#24	SG21	Soil Gas	02/19/2020	08:30	X	
	GS-1620-SG-21-20200219	SG21	Soil Gas	02/19/2020	08:40	X	
	GS-1620-SG-21-20200219 CERT#20	SG21	Soil Gas	02/19/2020	08:40	X	
	GS-1620-SG-18-20200219	SG18	Soil Gas	02/19/2020	09:16	X	
	GS-1620-SG-18-20200219 CERT#25	SG18	Soil Gas	02/19/2020	09:16	X	
	GS-1620-AA-1-20200219	AA01	Soil Gas	02/19/2020	09:50	X	
	GS-1620-AA-1-20200219 CERT#008	AA01	Soil Gas	02/19/2020	09:50	X	
	GS-1620-SG-11-20200219	SG11	Soil Gas	02/19/2020	10:07	X	
	GS-1620-SG-11-20200219 CERT#30	SG11	Soil Gas	02/19/2020	10:07	X	
	GS-1620-SG-10-20200219	SG10	Soil Gas	02/19/2020	10:22	X	
	GS-1620-SG-10-20200219 CERT#29	SG10	Soil Gas	02/19/2020	10:22	X	
	GS-1620-SG-8-20200219	SG08	Soil Gas	02/19/2020	10:44	X	
	GS-1620-SG-8-20200219 CERT#328	SG08	Soil Gas	02/19/2020	10:44	X	
	GS-1620-HE-1-20200219	HE01	Soil Gas	02/19/2020	11:10	X	
	GS-1620-HE-1-20200219 CERT#251	HE01	Soil Gas	02/19/2020	11:10	X	

Table 1

Sample Collection and Analysis Summary
Soil Gas Sampling Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
February 2020

						Analysis/Parameters	
Work Order	**Sample Identification**	**Location**	**Matrix**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**VOCs**	**Comments**
10510405	GS-1620-SG20-20200227	SG20	Soil Gas	02/27/2020	09:23	X	
	GS-1620-SG20-20200227Cert#1329	SG20	Soil Gas	02/27/2020	09:23	X	
	GS-1620-SG19-20200227	SG19	Soil Gas	02/27/2020	09:45	X	
	GS-1620-SG19-20200227Cert#2897	SG19	Soil Gas	02/27/2020	09:45	X	
	AA-1620-AA-2-20200227	AA02	Soil Gas	02/27/2020	09:49	X	DUP
	AA-1620-AA-2-20200227Cert#2829	AA02	Soil Gas	02/27/2020	09:49	X	
	GS-1620-SG17-20200227	SG17	Soil Gas	02/27/2020	10:11	X	
	GS-1620-SG17-20200227Cert#2597	SG17	Soil Gas	02/27/2020	10:11	X	
	GS-1620-SG16-20200227	SG16	Soil Gas	02/27/2020	10:49	X	
	GS-1620-DUP-2-20200227	SG16	Soil Gas	02/27/2020	10:49	X	Field duplicate of SG16
	GS-1620-SG16-20200227Cert#2922	SG16	Soil Gas	02/27/2020	10:49	X	
	GS-1620-DUP2-20200227Cert#0882	SG16	Soil Gas	02/27/2020	10:49	X	
	GS-1620-SG15-20200227	SG15	Soil Gas	02/27/2020	11:20	X	
	GS-1620-SG15-20200227Cert#2937	SG15	Soil Gas	02/27/2020	11:20	X	
	GS-1620-SG14-20200227	SG14	Soil Gas	02/27/2020	11:39	X	
	GS-1620-SG14-20200227Cert#3239	SG14	Soil Gas	02/27/2020	11:39	X	
	GS-1620-SG12-20200227	SG12	Soil Gas	02/27/2020	12:21	X	
	GS-1620-SG12-20200227Cert#3264	SG12	Soil Gas	02/27/2020	12:27	X	

Notes:

VOCs - Volatile Organic Compounds
DUP - Laboratory Duplicate

Table 2

Analytical Results Summary
Soil Gas Sampling Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
February 2020

Location ID:		AA01	AA01	AA02	AA02	HE01
Sample Name:		GS-1620-AA-1-20200219	GS-1620-AA-1-20200219 CERT#008	AA-1620-AA-2-20200227	AA-1620-AA-2-20200227Cert#2829	GS-1620-HE-1-20200219
Sample Date:		02/19/2020	02/19/2020	02/27/2020	02/27/2020	02/19/2020
Parameters	**Unit**					
Volatile Organic Compounds						
Benzene	µg/m3	0.73	<0.076	1.1	<0.076	5.6
Ethylbenzene	µg/m3	<0.38	<0.15	<0.37	<0.15	3.8
m&p-Xylenes	µg/m3	<0.88	<0.35	0.99 J	<0.35	22.0
Naphthalene	µg/m3	<1.7	<0.66	<1.6	<0.66	<1.3
o-Xylene	µg/m3	<0.43	<0.17	<0.42	<0.17	21.2

Table 2

Analytical Results Summary
Soil Gas Sampling Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
February 2020

Location ID:		HE01	SG08	SG08	SG10	SG10
Sample Name:		GS-1620-HE-1-20200219 CERT#251	GS-1620-SG-8-20200219	GS-1620-SG-8-20200219 CERT#328	GS-1620-SG-10-20200219	GS-1620-SG-10-20200219 CERT#29
Sample Date:		02/19/2020	02/19/2020	02/19/2020	02/19/2020	02/19/2020
Parameters	**Unit**					
Volatile Organic Compounds						
Benzene	µg/m3	<0.15	0.31 J	<0.15	<0.26	<0.15
Ethylbenzene	µg/m3	<0.30	0.63 J	<0.30	0.54 J	<0.30
m&p-Xylenes	µg/m3	<0.70	2.4 J	<0.70	2.1 J	<0.70
Naphthalene	µg/m3	<1.3	<2.3	<1.3	<2.2	<1.3
o-Xylene	µg/m3	<0.34	0.81 J	<0.34	0.69 J	<0.34

Table 2

Analytical Results Summary
Soil Gas Sampling Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
February 2020

Location ID:		SG11	SG11	SG12	SG12	SG14
Sample Name:		GS-1620-SG-11-20200219	GS-1620-SG-11-20200219 CERT#30	GS-1620-SG12-20200227	GS-1620-SG12-20200227Cert#3264	GS-1620-SG14-20200227
Sample Date:		02/19/2020	02/19/2020	02/27/2020	02/27/2020	02/27/2020
Parameters	**Unit**					
Volatile Organic Compounds						
Benzene	µg/m3	0.87	<0.15	0.28 J	<0.15	<0.27
Ethylbenzene	µg/m3	5.1	<0.30	<0.54	<0.30	<0.54
m&p-Xylenes	µg/m3	13.1	<0.70	1.3 J	<0.70	<1.2
Naphthalene	µg/m3	3.8 J	<1.3	<3.1	<1.3	<2.3
o-Xylene	µg/m3	7.6	<0.34	<0.61	<0.34	<0.61

Table 2

Analytical Results Summary
Soil Gas Sampling Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
February 2020

Location ID:		SG14	SG15	SG15	SG16	SG16
Sample Name:		GS-1620-SG14-20200227Cert#3239	GS-1620-SG15-20200227	GS-1620-SG15-20200227Cert#2937	GS-1620-SG16-20200227	GS-1620-SG16-20200227Cert#2922
Sample Date:		02/27/2020	02/27/2020	02/27/2020	02/27/2020	02/27/2020
Parameters	**Unit**					
Volatile Organic Compounds						
Benzene	µg/m3	<0.15	<0.26	<0.15	<0.26	<0.15
Ethylbenzene	µg/m3	<0.30	<0.51	<0.30	13.4	<0.30
m&p-Xylenes	µg/m3	<0.70	<1.2	<0.70	46.9	<0.70
Naphthalene	µg/m3	<1.3	<3.4	<1.3	<3.1	<1.3
o-Xylene	µg/m3	<0.34	<0.58	<0.34	20.9	<0.34

Table 2

Analytical Results Summary
Soil Gas Sampling Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
February 2020

Location ID:		SG16	SG16	SG17	SG17	SG18
Sample Name:		GS-1620-DUP-2-20200227	GS-1620-DUP2-20200227Cert#0882	GS-1620-SG17-20200227	GS-1620-SG17-20200227Cert#2597	GS-1620-SG-18-20200219
Sample Date:		02/27/2020	02/27/2020	02/27/2020	02/27/2020	02/19/2020
		Duplicate				
Parameters	**Unit**					
Volatile Organic Compounds						
Benzene	µg/m3	0.58	<0.15	0.25 J	<0.15	1.0
Ethylbenzene	µg/m3	14.0	<0.30	<0.48	<0.30	3.9
m&p-Xylenes	µg/m3	50.6	<0.70	1.1 J	<0.70	8.0
Naphthalene	µg/m3	<3.2	<1.3	<3.0	<1.3	<2.2
o-Xylene	µg/m3	21.5	<0.34	<0.54	<0.34	3.7

Table 2

Analytical Results Summary
Soil Gas Sampling Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
February 2020

Location ID:		**SG18**	**SG19**	**SG19**	**SG20**
Sample Name:		**GS-1620-SG-18-20200219 CERT#25**	**GS-1620-SG19-20200227**	**GS-1620-SG19-20200227Cert#2897**	**GS-1620-SG20-20200227**
Sample Date:		**02/19/2020**	**02/27/2020**	**02/27/2020**	**02/27/2020**
Parameters	**Unit**				
Volatile Organic Compounds					
Benzene	µg/m3	<0.15	0.46 J	<0.15	0.27 J
Ethylbenzene	µg/m3	<0.30	<0.51	<0.30	<0.53
m&p-Xylenes	µg/m3	<0.70	1.6 J	<0.70	1.7 J
Naphthalene	µg/m3	<1.3	<3.5	<1.3	<3.1
o-Xylene	µg/m3	<0.34	0.91 J	<0.34	<0.60

Table 2

Analytical Results Summary
Soil Gas Sampling Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
February 2020

Location ID:		**SG20**	**SG21**	**SG21**	**SG21**
Sample Name:		**GS-1620-SG20-20200227Cert#1329**	**GS-1620-SG-21-20200219**	**GS-1620-SG-21-20200219 CERT#20**	**GS-1620-DUP-1-20200219**
Sample Date:		**02/27/2020**	**02/19/2020**	**02/19/2020**	**02/19/2020**
					Duplicate
Parameters	**Unit**				
Volatile Organic Compounds					
Benzene	µg/m3	0.21 J	<0.26	<0.15	<0.26
Ethylbenzene	µg/m3	<0.30	<0.51	<0.30	<0.51
m&p-Xylenes	µg/m3	<0.70	<1.2	<0.70	<1.2
Naphthalene	µg/m3	<1.3	<2.2	<1.3	<2.2
o-Xyne	µg/m3	<0.34	<0.58	<0.34	<0.58

Table 2

Analytical Results Summary
Soil Gas Sampling Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
February 2020

Location ID:		**SG21**	**SG22**	**SG22**
Sample Name:		**GS-1620-DUP-1-20200219 CERT#24**	**GS-1620-SG-22-20200219**	**GS-1620-SG-22-20200219 CERT#31**
Sample Date:		**02/19/2020**	**02/19/2020**	**02/19/2020**
Parameters	**Unit**			
Volatile Organic Compounds				
Benzene	µg/m3	<0.15	<0.26	<0.15
Ethylbenzene	µg/m3	<0.30	0.82 J	<0.30
m&p-Xylenes	µg/m3	<0.70	2.5 J	<0.70
Naphthalene	µg/m3	<1.3	<2.2	<1.3
o-Xylene	µg/m3	<0.34	0.81 J	<0.34

Notes:

< - Not detected at the associated reporting limit
J - Estimated concentration

Table 3

Analytical Methods
Soil Gas Sampling Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
February 2020

Parameter	Method	Matrix	Holding Time Collection to Analysis (Days)
VOCs	TO-15 [(1)]	Soil Gas	30

Notes:

VOCs - Volatile Organic Compounds

Method References:

(1) - Referenced from "Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air", January 1999

Table 4

Qualified Sample Results Due to Analyte Concentrations in the Method Blank
Soil Gas Sampling Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
February 2020

Parameter	Analyte	Analysis Date (mm/dd/yyyy)	Blank Result	Sample ID	Original Result	Qualified Result	Units
VOCs	Naphthalene	03/08/2020	1.7 J	GS-1620-SG12-20200227	3.1 J	<3.1	µg/m3
				GS-1620-SG15-20200227	3.4 J	<3.4	µg/m3
				GS-1620-SG16-20200227	3.1 J	<3.1	µg/m3
				GS-1620-DUP-2-20200227	3.2 J	<3.2	µg/m3
				GS-1620-SG17-20200227	3.0 J	<3.0	µg/m3
				GS-1620-SG19-20200227	3.5 J	<3.5	µg/m3
				GS-1620-SG20-20200227	3.1 J	<3.1	µg/m3

Notes:

VOCs - Volatile Organic Compounds
J - Estimated concentration
< - Not detected at the associated reporting limit

Attachment A
Laboratory NELAP Certificate

Texas Commission on Environmental Quality

NELAP-Recognized Laboratory Accreditation is hereby awarded to

Pace Analytical Services, LLC - Minneapolis MN

1700 Elm Street SE Suite 200
Minneapolis, MN 55414-2485

in accordance with Texas Water Code Chapter 5, Subchapter R, Title 30 Texas Administrative Code Chapter 25, and the National Environmental Laboratory Accreditation Program.

The laboratory's scope of accreditation includes the fields of accreditation that accompany this certificate. Continued accreditation depends upon successful ongoing participation in the program. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current location(s) and accreditation status for particular methods and analyses (www.tceq.texas.gov/goto/lab). Accreditation does not imply that a product, process, system or person is approved by the Texas Commission on Environmental Quality.

Certificate Number: T104704192-20-15
Effective Date: 3/1/2020
Expiration Date: 2/28/2021

Executive Director Texas Commission on Environmental Quality

Pace Analytical Services, Inc.
1700 Elm St SE, Suite 200
Minneapolis, MN 55414
(612) 607-1700

March 13, 2020

Michelle Hermiston
Golder
2201 Double Creek Dr
Suite 4004
Round Rock, TX 78664

RE: Pace Project 10509381
Project ID: Houston TX-Wood: 1620-01-Rev1

Dear Michelle Hermiston:

Enclosed are the analytical results for sample(s) received by the laboratory on February 21, 2020. Results reported herin conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

This report was revised on March, 13, 2020 to create TRRP report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Nathan Boberg
nathan.boberg@pacelabs.com
(612)360-0728

Laboratory Certifications

Pace Analytical Minnesota : Texas Certification #: T104704192

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

03/13/2020 11:19:06

Sample Cross Reference

Pace Analytical Services, Inc.
1700 Elm St SE, Suite 200
Minneapolis, MN 55414
(612) 607-1700

Pace Project 10509381

Client: UPRR_Golder
Project ID: Houston TX-Wood: 1620-01-Rev1

Client Sample ID	Lab ID	Matrix	Collection Date/Time	Received Date/Time
GS-1620-SG-8-20200219	10509381001	Air	02/19/2020 10:44	02/21/2020 10:00
GS-1620-SG-8-20200219 CERT#328	10509381002	Air	02/19/2020 10:44	02/21/2020 10:00
GS-1620-SG-10-20200219	10509381003	Air	02/19/2020 10:22	02/21/2020 10:00
GS-1620-SG-10-20200219 CERT#29	10509381004	Air	02/19/2020 10:22	02/21/2020 10:00
GS-1620-SG-11-20200219	10509381005	Air	02/19/2020 10:07	02/21/2020 10:00
GS-1620-SG-11-20200219 CERT#30	10509381006	Air	02/19/2020 10:07	02/21/2020 10:00
GS-1620-SG-18-20200219	10509381007	Air	02/19/2020 09:16	02/21/2020 10:00
GS-1620-SG-18-20200219 CERT#25	10509381008	Air	02/19/2020 09:16	02/21/2020 10:00
GS-1620-SG-21-20200219	10509381009	Air	02/19/2020 08:40	02/21/2020 10:00
GS-1620-SG-21-20200219 CERT#20	10509381010	Air	02/19/2020 08:40	02/21/2020 10:00
GS-1620-SG-22-20200219	10509381011	Air	02/19/2020 08:24	02/21/2020 10:00
GS-1620-SG-22-20200219 CERT#31	10509381012	Air	02/19/2020 08:24	02/21/2020 10:00
GS-1620-AA-1-20200219	10509381013	Air	02/19/2020 09:50	02/21/2020 10:00
GS-1620-AA-1-20200219 CERT#008	10509381014	Air	02/19/2020 09:50	02/21/2020 10:00
GS-1620-HE-1-20200219	10509381015	Air	02/19/2020 11:10	02/21/2020 10:00
GS-1620-HE-1-20200219 CERT#251	10509381016	Air	02/19/2020 11:10	02/21/2020 10:00
GS-1620-DUP-1-20200219	10509381017	Air	02/19/2020 08:30	02/21/2020 10:00
GS-1620-DUP-1-20200219 CERT#24	10509381018	Air	02/19/2020 08:30	02/21/2020 10:00

Pace Analytical Services, Inc.
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Minneapolis, MN 55414
(612) 607-1700

Pace Project 10509381

Holding Times:

All holding times were met.

Blanks:

All blank results were below reporting limits.

Laboratory Control Samples:

All LCS recoveries were within QC limits.

Matrix Spikes and Duplicates:

All MS or MSD recoveries were within QC limits.

Surrogate:

All surrogate recoveries were within QC limits.

Appendix A
LABORATORY DATA PACKAGE COVER PAGE

This data package is for Job No. 10509381 and consists of:

This signature page, the laboratory review checklist, and the following reportable data:

- [X] R1 - Field chain-of-custody documentation;
- [X] R2 - Sample identification cross-reference;
- [X] R3 - Test reports (analytical data sheets) for each environmental sample that includes:
  - a. Items consistent with NELAC Chapter 5,
  - b. Dilution factors,
  - c. Preparation methods,
  - d. Cleanup methods, and
  - e. If required for the project, tentatively identified compounds (TICs).
- [X] R4 - Surrogate recovery data including:
  - a. Calculated recovery (%R), and
  - b. The laboratory's surrogate QC limits.
- [X] R5 - Test reports/summary forms for blank samples;
- [X] R6 - Test reports/summary forms for laboratory control samples (LCSs) including:
  - a. LCS spiking amounts,
  - b. Calculated %R for each analyte, and
  - c. The laboratory's LCS QC limits.
- [X] R7 - Test reports/summary forms for matrix spike/matrix spike duplicates (MS/MSDs) including:
  - a. Samples associated with the MS/MSD clearly identified,
  - b. MS/MSD spiking amounts,
  - c. Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  - d. Calculated %Rs and relative percent differences, and
  - e. The laboratory's MS/MSD QC limits.
- [X] R8 - Laboratory analytical duplicate (if applicable) recovery and precision:
  - a. The amount of analyte measured in the duplicate,
  - b. The calculated RPD, and,
  - c. The laboratory's QC limits for analytical duplicated.
- [X] R9 - List of method quantitation limits (MQLs) and detectability check sample results for each analyte and
- [X] R10 - Other problems or anomalies.

  The exception Report for each "No" or "Not Reviewed (NR) " item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accredidation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [ ] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [X] MDH on 04/12/2011

Any findings affecting the data in this laboratory data package are noted in the Exception Reports herin. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name (Printed)	Signature	Official Title (Printed)	Date
Nathan Boberg		Project Manager	03/13/2020

Pace Analytical Services, Inc.
1700 Elm St SE, Suite 200
Minneapolis, MN 55414
(612) 607-1700

Client: UPRR_Golder

Client ID: GS-1620-SG-8-20200219 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10509381001 **Moisture:** N/A **Pace Project** 10509381
Collected: 02/19/2020 10:44 **Received** 02/21/2020 10:00 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.74	**0.31**	J	ug/m3	0.57	0.27	02/22/2020 02:27		661381	10AIRD
Ethylbenzene	1.74	**0.63**	J	ug/m3	1.5	0.53	02/22/2020 02:27		661381	10AIRD
Naphthalene	1.74	< 2.3	U	ug/m3	4.6	2.3	02/22/2020 02:27		661381	10AIRD
m&p-Xylene	1.74	**2.4**	J	ug/m3	3.1	1.2	02/22/2020 02:27		661381	10AIRD
o-Xylene	1.74	**0.81**	J	ug/m3	1.5	0.60	02/22/2020 02:27		661381	10AIRD

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1700 Elm St SE, Suite 200
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Client: UPRR_Golder

Client ID: GS-1620-SG-8-20200219 CERT#328 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10509381002 **Moisture:** N/A **Pace Project** 10509381
Collected: 02/19/2020 10:44 **Received** 02/21/2020 10:00 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	1	< 0.15	U	ug/m3	0.32	0.15	01/15/2020 17:12		662198	10AIRI
Ethylbenzene	1	< 0.30	U	ug/m3	0.88	0.30	01/15/2020 17:12		662198	10AIRI
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	01/15/2020 17:12		662198	10AIRI
m&p-Xylene	1	< 0.70	U	ug/m3	1.8	0.70	01/15/2020 17:12		662198	10AIRI
o-Xylene	1	< 0.34	U	ug/m3	0.88	0.34	01/15/2020 17:12		662198	10AIRI

Pace Analytical Services, Inc.
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(612) 607-1700

Client: UPRR_Golder

Client ID: GS-1620-SG-10-20200219 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10509381003 **Moisture:** N/A **Pace Project** 10509381
Collected: 02/19/2020 10:22 **Received** 02/21/2020 10:00 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.68	< 0.26	U	ug/m3	0.55	0.26	02/22/2020 00:04		661381	10AIRD
Ethylbenzene	1.68	**0.54**	J	ug/m3	1.5	0.51	02/22/2020 00:04		661381	10AIRD
Naphthalene	1.68	< 2.2	U	ug/m3	4.5	2.2	02/22/2020 00:04		661381	10AIRD
m&p-Xylene	1.68	**2.1**	J	ug/m3	3.0	1.2	02/22/2020 00:04		661381	10AIRD
o-Xylene	1.68	**0.69**	J	ug/m3	1.5	0.58	02/22/2020 00:04		661381	10AIRD

Pace Analytical Services, Inc.
1700 Elm St SE, Suite 200
Minneapolis, MN 55414
(612) 607-1700

Client: UPRR_Golder

Client ID: GS-1620-SG-10-20200219 CERT#29 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10509381004 **Moisture:** N/A **Pace Project** 10509381
Collected: 02/19/2020 10:22 **Received** 02/21/2020 10:00 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	1	< 0.15	U	ug/m3	0.32	0.15	01/15/2020 23:46		662198	10AIRI
Ethylbenzene	1	< 0.30	U	ug/m3	0.88	0.30	01/15/2020 23:46		662198	10AIRI
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	01/15/2020 23:46		662198	10AIRI
m&p-Xylene	1	< 0.70	U	ug/m3	1.8	0.70	01/15/2020 23:46		662198	10AIRI
o-Xylene	1	< 0.34	U	ug/m3	0.88	0.34	01/15/2020 23:46		662198	10AIRI

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Client: UPRR_Golder

Client ID: GS-1620-SG-11-20200219 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10509381005 **Moisture:** N/A **Pace Project** 10509381
Collected: 02/19/2020 10:07 **Received** 02/21/2020 10:00 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.74	**0.87**		ug/m3	0.57	0.27	02/22/2020 01:59		661381	10AIRD
Ethylbenzene	1.74	**5.1**		ug/m3	1.5	0.53	02/22/2020 01:59		661381	10AIRD
Naphthalene	1.74	**3.8**	J	ug/m3	4.6	2.3	02/22/2020 01:59		661381	10AIRD
m&p-Xylene	1.74	**13.1**		ug/m3	3.1	1.2	02/22/2020 01:59		661381	10AIRD
o-Xylene	1.74	**7.6**		ug/m3	1.5	0.60	02/22/2020 01:59		661381	10AIRD

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Client: UPRR_Golder

Client ID: GS-1620-SG-11-20200219 CERT#30 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10509381006 **Moisture:** N/A **Pace Project** 10509381
Collected: 02/19/2020 10:07 **Received** 02/21/2020 10:00 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	1	< 0.15	U	ug/m3	0.32	0.15	01/17/2020 20:50		662198	10AIR0
Ethylbenzene	1	< 0.30	U	ug/m3	0.88	0.30	01/17/2020 20:50		662198	10AIR0
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	01/17/2020 20:50		662198	10AIR0
m&p-Xylene	1	< 0.70	U	ug/m3	1.8	0.70	01/17/2020 20:50		662198	10AIR0
o-Xylene	1	< 0.34	U	ug/m3	0.88	0.34	01/17/2020 20:50		662198	10AIR0

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Client: UPRR_Golder

Client ID: GS-1620-SG-18-20200219 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10509381007 **Moisture:** N/A **Pace Project** 10509381
Collected: 02/19/2020 09:16 **Received** 02/21/2020 10:00 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.68	**1.0**		ug/m3	0.55	0.26	02/22/2020 02:56		661381	10AIRD
Ethylbenzene	1.68	**3.9**		ug/m3	1.5	0.51	02/22/2020 02:56		661381	10AIRD
Naphthalene	1.68	< 2.2	U	ug/m3	4.5	2.2	02/22/2020 02:56		661381	10AIRD
m&p-Xylene	1.68	**8.0**		ug/m3	3.0	1.2	02/22/2020 02:56		661381	10AIRD
o-Xylene	1.68	**3.7**		ug/m3	1.5	0.58	02/22/2020 02:56		661381	10AIRD

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Client: UPRR_Golder

Client ID: GS-1620-SG-18-20200219 CERT#25 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10509381008 **Moisture:** N/A **Pace Project** 10509381
Collected: 02/19/2020 09:16 **Received** 02/21/2020 10:00 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	1	< 0.15	U	ug/m3	0.32	0.15	01/17/2020 19:25		662198	10AIR0
Ethylbenzene	1	< 0.30	U	ug/m3	0.88	0.30	01/17/2020 19:25		662198	10AIR0
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	01/17/2020 19:25		662198	10AIR0
m&p-Xylene	1	< 0.70	U	ug/m3	1.8	0.70	01/17/2020 19:25		662198	10AIR0
o-Xylene	1	< 0.34	U	ug/m3	0.88	0.34	01/17/2020 19:25		662198	10AIR0

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Client: UPRR_Golder

Client ID: GS-1620-SG-21-20200219 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10509381009 **Moisture:** N/A **Pace Project** 10509381
Collected: 02/19/2020 08:40 **Received** 02/21/2020 10:00 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.68	< 0.26	U	ug/m3	0.55	0.26	02/22/2020 01:01		661381	10AIRD
Ethylbenzene	1.68	< 0.51	U	ug/m3	1.5	0.51	02/22/2020 01:01		661381	10AIRD
Naphthalene	1.68	< 2.2	U	ug/m3	4.5	2.2	02/22/2020 01:01		661381	10AIRD
m&p-Xylene	1.68	< 1.2	U	ug/m3	3.0	1.2	02/22/2020 01:01		661381	10AIRD
o-Xylene	1.68	< 0.58	U	ug/m3	1.5	0.58	02/22/2020 01:01		661381	10AIRD

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Client: UPRR_Golder

Client ID: GS-1620-SG-21-20200219 CERT#20 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10509381010 **Moisture:** N/A **Pace Project** 10509381
Collected: 02/19/2020 08:40 **Received** 02/21/2020 10:00 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	1	< 0.15	U	ug/m3	0.32	0.15	01/18/2020 01:09		662198	10AIR0
Ethylbenzene	1	< 0.30	U	ug/m3	0.88	0.30	01/18/2020 01:09		662198	10AIR0
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	01/18/2020 01:09		662198	10AIR0
m&p-Xylene	1	< 0.70	U	ug/m3	1.8	0.70	01/18/2020 01:09		662198	10AIR0
o-Xylene	1	< 0.34	U	ug/m3	0.88	0.34	01/18/2020 01:09		662198	10AIR0

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Client: UPRR_Golder

Client ID: GS-1620-SG-22-20200219 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10509381011 **Moisture:** N/A **Pace Project** 10509381
Collected: 02/19/2020 08:24 **Received** 02/21/2020 10:00 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.68	< 0.26	U	ug/m3	0.55	0.26	02/22/2020 01:30		661381	10AIRD
Ethylbenzene	1.68	**0.82**	J	ug/m3	1.5	0.51	02/22/2020 01:30		661381	10AIRD
Naphthalene	1.68	< 2.2	U	ug/m3	4.5	2.2	02/22/2020 01:30		661381	10AIRD
m&p-Xylene	1.68	**2.5**	J	ug/m3	3.0	1.2	02/22/2020 01:30		661381	10AIRD
o-Xylene	1.68	**0.81**	J	ug/m3	1.5	0.58	02/22/2020 01:30		661381	10AIRD

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Client: UPRR_Golder

Client ID: GS-1620-SG-22-20200219 CERT#31 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10509381012 **Moisture:** N/A **Pace Project** 10509381
Collected: 02/19/2020 08:24 **Received** 02/21/2020 10:00 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	1	< 0.15	U	ug/m3	0.32	0.15	01/24/2020 01:11		662198	10AIR7
Ethylbenzene	1	< 0.30	U	ug/m3	0.88	0.30	01/24/2020 01:11		662198	10AIR7
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	01/24/2020 01:11		662198	10AIR7
m&p-Xylene	1	< 0.70	U	ug/m3	1.8	0.70	01/24/2020 01:11		662198	10AIR7
o-Xylene	1	< 0.34	U	ug/m3	0.88	0.34	01/24/2020 01:11		662198	10AIR7

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Client: UPRR_Golder

Client ID: GS-1620-AA-1-20200219 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10509381013 **Moisture:** N/A **Pace Project** 10509381
Collected: 02/19/2020 09:50 **Received** 02/21/2020 10:00 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.26	**0.73**		ug/m3	0.41	0.19	02/21/2020 23:08		661381	10AIRD
Ethylbenzene	1.26	< 0.38	U	ug/m3	1.1	0.38	02/21/2020 23:08		661381	10AIRD
Naphthalene	1.26	< 1.7	U	ug/m3	3.4	1.7	02/21/2020 23:08		661381	10AIRD
m&p-Xylene	1.26	< 0.88	U	ug/m3	2.2	0.88	02/21/2020 23:08		661381	10AIRD
o-Xylene	1.26	< 0.43	U	ug/m3	1.1	0.43	02/21/2020 23:08		661381	10AIRD

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Client: UPRR_Golder

Client ID: GS-1620-AA-1-20200219 CERT#008 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10509381014 **Moisture:** N/A **Pace Project** 10509381
Collected: 02/19/2020 09:50 **Received** 02/21/2020 10:00 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	0.5	< 0.076	U	ug/m3	0.16	0.076	01/22/2020 09:47		662198	10AIRI
Ethylbenzene	0.5	< 0.15	U	ug/m3	0.44	0.15	01/22/2020 09:47		662198	10AIRI
Naphthalene	0.5	< 0.66	U	ug/m3	1.3	0.66	01/22/2020 09:47		662198	10AIRI
m&p-Xylene	0.5	< 0.35	U	ug/m3	0.88	0.35	01/22/2020 09:47		662198	10AIRI
o-Xylene	0.5	< 0.17	U	ug/m3	0.44	0.17	01/22/2020 09:47		662198	10AIRI

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Client: UPRR_Golder

Client ID: GS-1620-HE-1-20200219 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10509381015 **Moisture:** N/A **Pace Project** 10509381
Collected: 02/19/2020 11:10 **Received** 02/21/2020 10:00 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1	**5.6**		ug/m3	0.32	0.15	02/21/2020 23:36		661381	10AIRD
Ethylbenzene	1	**3.8**		ug/m3	0.88	0.30	02/21/2020 23:36		661381	10AIRD
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	02/21/2020 23:36		661381	10AIRD
m&p-Xylene	1	**22.0**		ug/m3	1.8	0.70	02/21/2020 23:36		661381	10AIRD
o-Xylene	1	**21.2**		ug/m3	0.88	0.34	02/21/2020 23:36		661381	10AIRD

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Client: UPRR_Golder

Client ID: GS-1620-HE-1-20200219 CERT#251 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10509381016 **Moisture:** N/A **Pace Project** 10509381
Collected: 02/19/2020 11:10 **Received** 02/21/2020 10:00 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	1	< 0.15	U	ug/m3	0.32	0.15	01/17/2020 22:45		662198	10AIR0
Ethylbenzene	1	< 0.30	U	ug/m3	0.88	0.30	01/17/2020 22:45		662198	10AIR0
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	01/17/2020 22:45		662198	10AIR0
m&p-Xylene	1	< 0.70	U	ug/m3	1.8	0.70	01/17/2020 22:45		662198	10AIR0
o-Xylene	1	< 0.34	U	ug/m3	0.88	0.34	01/17/2020 22:45		662198	10AIR0

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Client: UPRR_Golder

Client ID: GS-1620-DUP-1-20200219 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10509381017 **Moisture:** N/A **Pace Project** 10509381
Collected: 02/19/2020 08:30 **Received** 02/21/2020 10:00 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.68	< 0.26	U	ug/m3	0.55	0.26	02/22/2020 00:33		661381	10AIRD
Ethylbenzene	1.68	< 0.51	U	ug/m3	1.5	0.51	02/22/2020 00:33		661381	10AIRD
Naphthalene	1.68	< 2.2	U	ug/m3	4.5	2.2	02/22/2020 00:33		661381	10AIRD
m&p-Xylene	1.68	< 1.2	U	ug/m3	3.0	1.2	02/22/2020 00:33		661381	10AIRD
o-Xylene	1.68	< 0.58	U	ug/m3	1.5	0.58	02/22/2020 00:33		661381	10AIRD

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Client: UPRR_Golder

Client ID: GS-1620-DUP-1-20200219 CERT#24 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10509381018 **Moisture:** N/A **Pace Project** 10509381
Collected: 02/19/2020 08:30 **Received** 02/21/2020 10:00 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	1	< 0.15	U	ug/m3	0.32	0.15	01/17/2020 18:56		662198	10AIR0
Ethylbenzene	1	< 0.30	U	ug/m3	0.88	0.30	01/17/2020 18:56		662198	10AIR0
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	01/17/2020 18:56		662198	10AIR0
m&p-Xylene	1	< 0.70	U	ug/m3	1.8	0.70	01/17/2020 18:56		662198	10AIR0
o-Xylene	1	< 0.34	U	ug/m3	0.88	0.34	01/17/2020 18:56		662198	10AIR0

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Batch: 661381
Method: TO-15

Pace Project No.: 10509381
Instrument ID: 10AIRD

Blank: 3549644

Parameters	Dilutio	Quals	Result	Units	MQL	SDL	Analysis Date	Prep Date
Benzene	1	U	<0.15	ug/m3	0.32	0.15	02/21/2020 14:01	
Ethylbenzene	1	U	<0.30	ug/m3	0.88	0.30	02/21/2020 14:01	
Naphthalene	1	U	<1.3	ug/m3	2.7	1.3	02/21/2020 14:01	
m&p-Xylene	1	U	<0.70	ug/m3	1.8	0.70	02/21/2020 14:01	
o-Xylene	1	U	<0.34	ug/m3	0.88	0.34	02/21/2020 14:01	

Laboratory Control Sample: 3549645

Parameters	Spk Amt	LCS Result	Units	LCS %Rec	% Rec Limits	LCS Quals
Benzene	34.4	29.9	ug/m3	87	70-133	
Ethylbenzene	46.3	47.6	ug/m3	103	70-142	
Naphthalene	58.3	39.9	ug/m3	68	63-130	
m&p-Xylene	46	47.2	ug/m3	102	70-141	
o-Xylene	46.5	44.4	ug/m3	96	70-135	

Unadjusted MQL

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Pace Project 10509381

Analyte	Method	Unadjusted MQL	Reporting Units
Benzene	TO-15	0.33	ug/m3
Ethylbenzene	TO-15	0.88	ug/m3
Naphthalene	TO-15	2.7	ug/m3
m&p-Xylene	TO-15	1.8	ug/m3
o-Xylene	TO-15	0.88	ug/m3

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Pace Project 10509381

DEFINITIONS

DF	Dilution Factor
J	Estimated concentration above the adjusted method detection limit and below the adjusted reporting
U	Indicates the compound was analyzed for, but not detected.
SDL	Sample Detection Limit
MQL	Method Quantitation Limit
LCS(D)	Laboratory Control Sample (Duplicate)
MS(D)	Matrix Spike (Duplicate)
DUP	Sample Duplicate
RPD	Relative Percent Difference
TNI	The Nelac Institute

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

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Quality Control Data
Cross Reference Table

Pace Project 10509381

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical
10509381001	**GS-1620-SG-8-20200219**	TO-15	661381	
10509381003	**GS-1620-SG-10-20200219**	TO-15	661381	
10509381005	**GS-1620-SG-11-20200219**	TO-15	661381	
10509381007	**GS-1620-SG-18-20200219**	TO-15	661381	
10509381009	**GS-1620-SG-21-20200219**	TO-15	661381	
10509381011	**GS-1620-SG-22-20200219**	TO-15	661381	
10509381013	**GS-1620-AA-1-20200219**	TO-15	661381	
10509381015	**GS-1620-HE-1-20200219**	TO-15	661381	
10509381017	**GS-1620-DUP-1-20200219**	TO-15	661381	
10509381002	**GS-1620-SG-8-20200219**	TO-15	662198	
10509381004	**GS-1620-SG-10-20200219**	TO-15	662198	
10509381006	**GS-1620-SG-11-20200219**	TO-15	662198	
10509381008	**GS-1620-SG-18-20200219**	TO-15	662198	
10509381010	**GS-1620-SG-21-20200219**	TO-15	662198	
10509381012	**GS-1620-SG-22-20200219**	TO-15	662198	
10509381014	**GS-1620-AA-1-20200219**	TO-15	662198	
10509381016	**GS-1620-HE-1-20200219**	TO-15	662198	
10509381018	**GS-1620-DUP-1-20200219**	TO-15	662198	

TRRP LABORATORY REVIEW CHECKLIST								
Laboratory	Pace Analytical Services, Inc.		**LRC Date:**	03/13/2020				
Project Name:	Houston TX-Wood: 1620-01-Rev1		**Laboratory Job**	10509381				
Reviewer	Nathan Boberg		**Prep Batch Number**	See exception report.				
#[1]	**A[2]**	**Description**		**Yes**	**No**	**NA[3]**	**NR[4]**	**ER #[5]**
R1	**OI**	**Chain-of-custody (C-O-C)**						
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?		X				
		Were all departures from standard conditions described in an exception report?		X				
R2	**OI**	**Sample and quality control (QC) identification**						
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?		X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?		X				
R3	**OI**	**Test reports**						
		Were all samples prepared and analyzed within holding times?		X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?		X				
		Were calculations checked by a peer or supervisor?		X				
		Were all analyte identifications checked by a peer or supervisor?		X				
		Were sample detection limits reported for all analytes not detected?		X				
		Were all results for soil and sediment samples reported on a dry weight basis?				X		
		Were % moisture (or solids) reported for all soil and sediment samples?				X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?				X		
		If required for the project, are TICs reported?				X		
R4	**O**	**Surrogate recovery data**						
		Were surrogates added prior to extraction?				X		
		Were surrogate percent recoveries in all samples within the laboratory QC limits?				X		
R5	**OI**	**Test reports/summary forms for blank samples**						
		Were appropriate type(s) of blanks analyzed?		X				
		Were blanks analyzed at the appropriate frequency?		X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?		X				
		Were blank concentrations < MQL?		X				
R6	**OI**	**Laboratory control samples (LCS):**						
		Were all COCs included in the LCS?		X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?		X				
		Were LCSs analyzed at the required frequency?		X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?		X				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?		X				
		Was the LCSD RPD within QC limits?				X		
R7	**OI**	**Matrix spike (MS) and matrix spike duplicate (MSD) data**						
		Were the project/method specified analytes included in the MS and MSD?				X		
		Were MS/MSD analyzed at the appropriate frequency?				X		
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?				X		
		Were MS/MSD RPDs within laboratory QC limits?				X		
R8	**OI**	**Analytical duplicate data**						
		Were appropriate analytical duplicates analyzed for each matrix?				X		
		Were analytical duplicates analyzed at the appropriate frequency?				X		
		Were RPDs or relative standard deviations within the laboratory QC limits?				X		
R9	**OI**	**Method quantitation limits (MQLs):**						
		Are the MQLs for each method analyte included in the laboratory data package?		X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?		X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?		X				
R10	**OI**	**Other problems/anomalies**						
		Are all known problems/anomalies/special conditions noted in this LRC and ER?		X				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?		X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?		X				

TRRP LABORATORY REVIEW CHECKLIST			
Laboratory	Pace Analytical Services, Inc.	**LRC Date:**	03/13/2020
Project Name:	Houston TX-Wood: 1620-01-Rev1	**Laboratory Job**	10509381
Reviewer	Nathan Boberg	**Prep Batch Number**	See exception report.

1. Items identified by the letter "R" must be included in the laboratory in the laboratory data package submitted in the TRRP-required reports(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period;
2. O = Organic analyses; I = inorganic analysises (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

TRRP LABORATORY REVIEW CHECKLIST				
Laboratory	Pace Analytical Services, Inc.	**LRC Date:**	03/13/2020	
Project Name:	Houston TX-Wood: 1620-01-Rev1	**Laboratory Job**	10509381	
Reviewer	Nathan Boberg	**Prep Batch Number**	See exception report.	

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER #[5]
S1	**OI**	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	**OI**	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were precent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	**O**	**Mass spectral tuning**					
		Was the appropriate compound for the method used for tuning?			X		
		Were ion abundance data within the method-required QC limits?			X		
S4	**O**	**Internal standards (IS)**					
		Were IS area counts and retention times within the method-required QC limits?			X		
S5	**OI**	**Raw data (NELAC Section 5.5.10)**					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	**O**	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	**O**	**Tentatively identified compounds (TICs)**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	**I**	**Interference Check Sample (ICS) results**					
		Were percent recoveries within method QC limits?			X		
S9	**I**	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	**OI**	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	**OI**	**Proficiency test reports**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	**OI**	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	**OI**	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	**OI**	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	**OI**	**Verification/validation documentation for methods (NELAC Chapter 5)**					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	**OI**	**Laboratory standard operating procedures (SOPs)**					
		Are laboratory SOPs current and on file for each method performed?	X				

1. Items identified by the letter "R" must be included in the laboratory in the laboratory data package submitted in the TRRP-required reports(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period;
2. O = Organic analyses; I = inorganic analysises (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

TRRP LABORATORY REVIEW CHECKLIST			
Laboratory	Pace Analytical Services, Inc.	**LRC Date:**	03/13/2020
Project Name:	Houston TX-Wood: 1620-01-Rev1	**Laboratory Job**	10509381
Reviewer	Nathan Boberg	**Prep Batch Number**	661381,662198

ER #[1]	Description

1. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Pace Analytical®
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WO# : 10509381

10509381

AIR: CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

43632

Page: 1 of 1

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Golder Associates	Report To:	Attention: Same as A
Address: 2201 Double Creek Dr. Suite 4004 RR, TX 78664	Copy To:	Company Name:
Email To: Michelle Hermisson	Purchase Order No.:	Address:
Phone: 512-671 3454 Fax:	Project Name:	Pace Quote Reference:
Requested Due Date/TAT:	Project Number:	Pace Project Manager/Sales Rep.
		Pace Profile #:

Program: ☐ UST ☐ Superfund ☐ Emissions ☐ Clean Air Act ☐ Voluntary Clean Up ☐ Dry Clean ☐ RCRA ☐ Other

Location of Sampling by State: _____

Reporting Units: ug/m³ X mg/m³ ___ PPBV X PPMV ___ Other ___

Report Level II.___ III.___ IV.___ Other___

'Section D Required Client Information

AIR SAMPLE ID

Sample IDs MUST BE UNIQUE

Valid Media Codes

MEDIA	CODE
Tedlar Bag	TB
1 Liter Summa Can	1LC
6 Liter Summa Can	6LC
Low Volume Puff	LVP
High Volume Puff	HVP
Other	PM10

ITEM #	'Section D Required Client Information AIR SAMPLE ID (Sample IDs MUST BE UNIQUE)	MEDIA CODE	PID Reading (Client only)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE - END/GRAB DATE	COLLECTED COMPOSITE - END/GRAB TIME	Canister Pressure (Initial Field - in Hg)	Canister Pressure (Final Field - in Hg)	Summa Can Number	Flow Control Number	Method: PM10	3C - Fixed Gas (%)	TO-3 BTEX	TO-3M (Methane)	TO-14	TO-15 Full List VOCs	TO-15 Short List BTEX	TO-15 Short List Chlorinated	TO-15 Short List (other)	Pace Lab ID
1	GS-1620-SG-8-20200219	1LC				2/19/20	1044	30	2	3285	—								X		
2	SG-10						1022	29	2	2912	—										
3	SG-11						1007	30	2	3030	—										
4	SG-18						0916	30	Ø	2567	—										
5	SG-21						0840	30	2	2009	—										
6	SG-22						0824	30	2	3179	—										
7	AA-1620-AA-1-20200219	6LC			0810		0950	30	4	0088	—										
8	AA-1620-HE-1-20200219	1LC					1110	30	Ø	2519	—					X					
9	GS-1620-Dup-1-20200219	↓					0830	30	2	2466	—									X	
10																					
11	Can 2452 has water in it from Sample port																				
12																					

Comments :

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Tim Nickels Golder	2/20/20	0940	Anthony Koch	2-20-20	0940
[signature]	2/20	0945	[signature] Pace	2/21/20	10:00

SAMPLE CONDITIONS

	Temp in °C	Received on Ice Y/N	Custody Sealed Cooler Y/N	Samples Intact Y/N
	AMB	(Y)	(Y)	(Y)
		Y/N	Y/N	Y/N
		Y/N	Y/N	Y/N

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Tim Nickels

SIGNATURE of SAMPLER: [signature] DATE Signed (MM / DD / YY): 2/19/20

ORIGINAL

Pace Analytical®	Document Name: Air Sample Condition Upon Receipt	Document Revised: 19Nov2019 Page 1 of 1
	Document No.: F-MN-A-106-rev.20	Pace Analytical Services - Minneapolis

Air Sample Condition Upon Receipt

Client Name: GOLDER-TX

Project #: WO#: 10509381

PM: NB3 Due Date: 02/28/20

CLIENT: UPRR_Golder

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Pace ☐ SpeeDee ☐ Commercial ☐ See Exception

Tracking Number: 493437371155, 493437371166

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No **Seals Intact?** ☒ Yes ☐ No

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ Foam ☐ None ☐ Tin Can ☐ Other: _____ **Temp Blank rec:** ☐ Yes ☒ No

Temp. (TO17 and TO13 samples only) (°C): — **Corrected Temp (°C):** —

Thermometer Used: ☐ G87A9170600254 ☐ G87A9155100842

Temp should be above freezing to 6°C **Correction Factor:** —

Date & Initials of Person Examining Contents: 2/21/20 MI

Type of ice Received ☐ Blue ☐ Wet ☒ None

		Comments:
Chain of Custody Present?	☒ Yes ☐ No	1.
Chain of Custody Filled Out?	☒ Yes ☐ No	2.
Chain of Custody Relinquished?	☒ Yes ☐ No	3.
Sampler Name and/or Signature on COC?	☒ Yes ☐ No ☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes ☐ No	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes ☒ No	6.
Rush Turn Around Time Requested?	☒ Yes ☐ No	7.
Sufficient Volume?	☒ Yes ☐ No	8.
Correct Containers Used? **(Tedlar bags not acceptable container for TO-14, TO-15 or APH)** -Pace Containers Used?	☒ Yes ☐ No ☒ Yes ☐ No	9.
Containers Intact? **(visual inspection/no leaks when pressurized)**	☒ Yes ☐ No	10.
Media: (Air Can) Airbag Filter TDT Passive		11. Individually Certified Cans (Y) N (list which samples)
Is sufficient information available to reconcile samples to the COC?	☒ Yes ☐ No	12. Sample SG-8 on COC has SG-9 on can tag
Do cans need to be pressurized? **(DO NOT PRESSURIZE 3C or ASTM 1946!!!)**	☐ Yes ☐ No	13.

Gauge # ☐ 10AIR26 ☒ 10AIR34 ☐ 10AIR35 ☐ 4097

Canisters					Canisters				
Sample Number	Can ID	Flow Controller	Initial Pressure	Final Pressure	Sample Number	Can ID	Flow Controller	Initial Pressure	Final Pressure
SG-8	3285	1655	-1	+10	DUP-1	2466	696	0	+10
SG-10	2912	2807	0	+10	Unused 3092	3092	2192	-23	—
SG-11	3030	1003	-1	+10	Unused 2452	2452	1668	—	—
SG-18	2567	2230	0	+10					
SG-21	2009	696	0	+10					
SG-22	3179	804	0	+10					
AA-1	88	2302	+10	—					
HE-1	2519	1818	0 +9 NP 2/21/20	+10					

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: Nathan Boberg **Date:** 2/21/20

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical Services, Inc.
1700 Elm St SE, Suite 200
Minneapolis, MN 55414
(612) 607-1700

March 13, 2020

Michelle Hermiston
Golder
2201 Double Creek Dr
Suite 4004
Round Rock, TX 78664

RE: Pace Project 10510405
Project ID: Houston TX-Wood: 1620-01-Rev1

Dear Michelle Hermiston:

Enclosed are the analytical results for sample(s) received by the laboratory on March 03, 2020. Results reported herin conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

This report was revised on March, 13, 2020 to create TRRP report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Nathan Boberg
nathan.boberg@pacelabs.com
(612)360-0728

Laboratory Certifications

Pace Analytical Minnesota : Texas Certification #: T104704192

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

03/13/2020 10:40:03

Sample Cross Reference

Pace Analytical Services, Inc.
1700 Elm St SE, Suite 200
Minneapolis, MN 55414
(612) 607-1700

Pace Project 10510405

Client: UPRR_Golder
Project ID: Houston TX-Wood: 1620-01-Rev1

Client Sample ID	Lab ID	Matrix	Collection Date/Time	Received Date/Time
GS-1620-SG20-20200227	10510405001	Air	02/27/2020 09:23	03/03/2020 09:45
GS-1620-SG19-20200227	10510405002	Air	02/27/2020 09:45	03/03/2020 09:45
GS-1620-SG17-20200227	10510405003	Air	02/27/2020 10:11	03/03/2020 09:45
GS-1620-SG16-20200227	10510405004	Air	02/27/2020 10:49	03/03/2020 09:45
GS-1620-SG15-20200227	10510405005	Air	02/27/2020 11:20	03/03/2020 09:45
GS-1620-SG14-20200227	10510405006	Air	02/27/2020 11:39	03/03/2020 09:45
GS-1620-SG12-20200227	10510405007	Air	02/27/2020 12:21	03/03/2020 09:45
AA-1620-AA-2-20200227	10510405008	Air	02/27/2020 09:49	03/03/2020 09:45
GS-1620-DUP-2-20200227	10510405009	Air	02/27/2020 10:49	03/03/2020 09:45
GS-1620-SG20-20200227Cert#1329	10510405012	Air	02/27/2020 09:23	03/03/2020 09:45
GS-1620-SG19-20200227Cert#2897	10510405013	Air	02/27/2020 09:45	03/03/2020 09:45
GS-1620-SG17-20200227Cert#2597	10510405014	Air	02/27/2020 10:11	03/03/2020 09:45
GS-1620-SG16-20200227Cert#2922	10510405015	Air	02/27/2020 10:49	03/03/2020 09:45
GS-1620-SG15-20200227Cert#2937	10510405016	Air	02/27/2020 11:20	03/03/2020 09:45
GS-1620-SG14-20200227Cert#3239	10510405017	Air	02/27/2020 11:39	03/03/2020 09:45
GS-1620-SG12-20200227Cert#3264	10510405018	Air	02/27/2020 12:27	03/03/2020 09:45
AA-1620-AA-2-20200227Cert#2829	10510405019	Air	02/27/2020 09:49	03/03/2020 09:45
GS-1620-DUP2-20200227Cert#0882	10510405020	Air	02/27/2020 10:49	03/03/2020 09:45

Pace Analytical Services, Inc.
1700 Elm St SE, Suite 200
Minneapolis, MN 55414
(612) 607-1700

Pace Project 10510405

Holding Times:

All holding times were met.

Blanks:

All blank results were below reporting limits.

Laboratory Control Samples:

All LCS recoveries were within QC limits.

Matrix Spikes and Duplicates:

All MS or MSD recoveries were within QC limits.

Surrogate:

All surrogate recoveries were within QC limits.

Appendix A
LABORATORY DATA PACKAGE COVER PAGE

This data package is for Job No. 10510405 and consists of:

This signature page, the laboratory review checklist, and the following reportable data:

- [X] R1 - Field chain-of-custody documentation;
- [X] R2 - Sample identification cross-reference;
- [X] R3 - Test reports (analytical data sheets) for each environmental sample that includes:
  - a. Items consistent with NELAC Chapter 5,
  - b. Dilution factors,
  - c. Preparation methods,
  - d. Cleanup methods, and
  - e. If required for the project, tentatively identified compounds (TICs).
- [X] R4 - Surrogate recovery data including:
  - a. Calculated recovery (%R), and
  - b. The laboratory's surrogate QC limits.
- [X] R5 - Test reports/summary forms for blank samples;
- [X] R6 - Test reports/summary forms for laboratory control samples (LCSs) including:
  - a. LCS spiking amounts,
  - b. Calculated %R for each analyte, and
  - c. The laboratory's LCS QC limits.
- [X] R7 - Test reports/summary forms for matrix spike/matrix spike duplicates (MS/MSDs) including:
  - a. Samples associated with the MS/MSD clearly identified,
  - b. MS/MSD spiking amounts,
  - c. Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  - d. Calculated %Rs and relative percent differences, and
  - e. The laboratory's MS/MSD QC limits.
- [X] R8 - Laboratory analytical duplicate (if applicable) recovery and precision:
  - a. The amount of analyte measured in the duplicate,
  - b. The calculated RPD, and,
  - c. The laboratory's QC limits for analytical duplicated.
- [X] R9 - List of method quantitation limits (MQLs) and detectability check sample results for each analyte and
- [X] R10 - Other problems or anomalies.

  The exception Report for each "No" or "Not Reviewed (NR) " item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accredidation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [ ] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [X] MDH on 04/12/2011

Any findings affecting the data in this laboratory data package are noted in the Exception Reports herin. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name (Printed)	Signature	Official Title (Printed)	Date
Nathan Boberg		Project Manager	03/13/2020

Pace Analytical Services, Inc.
1700 Elm St SE, Suite 200
Minneapolis, MN 55414
(612) 607-1700

Client: UPRR_Golder

Client ID: GS-1620-SG20-20200227 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10510405001 **Moisture:** N/A **Pace Project** 10510405
Collected: 02/27/2020 09:23 **Received** 03/03/2020 09:45 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.74	**0.27**	J	ug/m3	0.57	0.27	03/08/2020 20:49		663855	10AIRJ
Ethylbenzene	1.74	< 0.53	U	ug/m3	1.5	0.53	03/08/2020 20:49		663855	10AIRJ
Naphthalene	1.74	**3.1**	J	ug/m3	4.6	2.3	03/08/2020 20:49		663855	10AIRJ
m&p-Xylene	1.74	**1.7**	J	ug/m3	3.1	1.2	03/08/2020 20:49		663855	10AIRJ
o-Xylene	1.74	< 0.60	U	ug/m3	1.5	0.60	03/08/2020 20:49		663855	10AIRJ

Pace Analytical Services, Inc.
1700 Elm St SE, Suite 200
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(612) 607-1700

Client: UPRR_Golder

Client ID: GS-1620-SG19-20200227 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10510405002 **Moisture:** N/A **Pace Project** 10510405
Collected: 02/27/2020 09:45 **Received** 03/03/2020 09:45 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.68	**0.46**	J	ug/m3	0.55	0.26	03/08/2020 20:14		663855	10AIRJ
Ethylbenzene	1.68	< 0.51	U	ug/m3	1.5	0.51	03/08/2020 20:14		663855	10AIRJ
Naphthalene	1.68	**3.5**	J	ug/m3	4.5	2.2	03/08/2020 20:14		663855	10AIRJ
m&p-Xylene	1.68	**1.6**	J	ug/m3	3.0	1.2	03/08/2020 20:14		663855	10AIRJ
o-Xylene	1.68	**0.91**	J	ug/m3	1.5	0.58	03/08/2020 20:14		663855	10AIRJ

Pace Analytical Services, Inc.
1700 Elm St SE, Suite 200
Minneapolis, MN 55414
(612) 607-1700

Client: UPRR_Golder

Client ID: GS-1620-SG17-20200227 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10510405003 **Moisture:** N/A **Pace Project** 10510405
Collected: 02/27/2020 10:11 **Received** 03/03/2020 09:45 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.57	**0.25**	J	ug/m3	0.51	0.24	03/08/2020 19:39		663855	10AIRJ
Ethylbenzene	1.57	< 0.48	U	ug/m3	1.4	0.48	03/08/2020 19:39		663855	10AIRJ
Naphthalene	1.57	**3.0**	J	ug/m3	4.2	2.1	03/08/2020 19:39		663855	10AIRJ
m&p-Xylene	1.57	**1.1**	J	ug/m3	2.8	1.1	03/08/2020 19:39		663855	10AIRJ
o-Xylene	1.57	< 0.54	U	ug/m3	1.4	0.54	03/08/2020 19:39		663855	10AIRJ

Pace Analytical Services, Inc.
1700 Elm St SE, Suite 200
Minneapolis, MN 55414
(612) 607-1700

Client: UPRR_Golder

Client ID: GS-1620-SG16-20200227 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10510405004 **Moisture:** N/A **Pace Project** 10510405
Collected: 02/27/2020 10:49 **Received** 03/03/2020 09:45 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.68	< 0.26	U	ug/m3	0.55	0.26	03/08/2020 19:03		663855	10AIRJ
Ethylbenzene	1.68	**13.4**		ug/m3	1.5	0.51	03/08/2020 19:03		663855	10AIRJ
Naphthalene	1.68	**3.1**	J	ug/m3	4.5	2.2	03/08/2020 19:03		663855	10AIRJ
m&p-Xylene	1.68	**46.9**		ug/m3	3.0	1.2	03/08/2020 19:03		663855	10AIRJ
o-Xylene	1.68	**20.9**		ug/m3	1.5	0.58	03/08/2020 19:03		663855	10AIRJ

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Client: UPRR_Golder

Client ID: GS-1620-SG15-20200227 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10510405005 **Moisture:** N/A **Pace Project** 10510405
Collected: 02/27/2020 11:20 **Received** 03/03/2020 09:45 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.68	< 0.26	U	ug/m3	0.55	0.26	03/08/2020 18:28		663855	10AIRJ
Ethylbenzene	1.68	< 0.51	U	ug/m3	1.5	0.51	03/08/2020 18:28		663855	10AIRJ
Naphthalene	1.68	**3.4**	J	ug/m3	4.5	2.2	03/08/2020 18:28		663855	10AIRJ
m&p-Xylene	1.68	< 1.2	U	ug/m3	3.0	1.2	03/08/2020 18:28		663855	10AIRJ
o-Xylene	1.68	< 0.58	U	ug/m3	1.5	0.58	03/08/2020 18:28		663855	10AIRJ

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Client: UPRR_Golder

Client ID: GS-1620-SG14-20200227 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10510405006 **Moisture:** N/A **Pace Project** 10510405
Collected: 02/27/2020 11:39 **Received** 03/03/2020 09:45 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.77	< 0.27	U	ug/m3	0.58	0.27	03/08/2020 17:53		663855	10AIRJ
Ethylbenzene	1.77	< 0.54	U	ug/m3	1.6	0.54	03/08/2020 17:53		663855	10AIRJ
Naphthalene	1.77	< 2.3	U	ug/m3	4.7	2.3	03/08/2020 17:53		663855	10AIRJ
m&p-Xylene	1.77	< 1.2	U	ug/m3	3.1	1.2	03/08/2020 17:53		663855	10AIRJ
o-Xylene	1.77	< 0.61	U	ug/m3	1.6	0.61	03/08/2020 17:53		663855	10AIRJ

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Client: UPRR_Golder

Client ID: GS-1620-SG12-20200227 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10510405007 **Moisture:** N/A **Pace Project** 10510405
Collected: 02/27/2020 12:21 **Received** 03/03/2020 09:45 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.77	**0.28**	J	ug/m3	0.58	0.27	03/08/2020 17:18		663855	10AIRJ
Ethylbenzene	1.77	< 0.54	U	ug/m3	1.6	0.54	03/08/2020 17:18		663855	10AIRJ
Naphthalene	1.77	**3.1**	J	ug/m3	4.7	2.3	03/08/2020 17:18		663855	10AIRJ
m&p-Xylene	1.77	**1.3**	J	ug/m3	3.1	1.2	03/08/2020 17:18		663855	10AIRJ
o-Xylene	1.77	< 0.61	U	ug/m3	1.6	0.61	03/08/2020 17:18		663855	10AIRJ

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Client: UPRR_Golder

Client ID: AA-1620-AA-2-20200227 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10510405008 **Moisture:** N/A **Pace Project** 10510405
Collected: 02/27/2020 09:49 **Received** 03/03/2020 09:45 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.22	**1.1**		ug/m3	0.40	0.19	03/08/2020 16:07		663855	10AIRJ
Ethylbenzene	1.22	< 0.37	U	ug/m3	1.1	0.37	03/08/2020 16:07		663855	10AIRJ
Naphthalene	1.22	< 1.6	U	ug/m3	3.2	1.6	03/08/2020 16:07		663855	10AIRJ
m&p-Xylene	1.22	**0.99**	J	ug/m3	2.2	0.85	03/08/2020 16:07		663855	10AIRJ
o-Xylene	1.22	< 0.42	U	ug/m3	1.1	0.42	03/08/2020 16:07		663855	10AIRJ

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Client: UPRR_Golder

Client ID: GS-1620-DUP-2-20200227 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10510405009 **Moisture:** N/A **Pace Project** 10510405
Collected: 02/27/2020 10:49 **Received** 03/03/2020 09:45 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.71	**0.58**		ug/m3	0.56	0.26	03/08/2020 21:24		663855	10AIRJ
Ethylbenzene	1.71	**14.0**		ug/m3	1.5	0.52	03/08/2020 21:24		663855	10AIRJ
Naphthalene	1.71	**3.2**	J	ug/m3	4.5	2.2	03/08/2020 21:24		663855	10AIRJ
m&p-Xylene	1.71	**50.6**		ug/m3	3.0	1.2	03/08/2020 21:24		663855	10AIRJ
o-Xylene	1.71	**21.5**		ug/m3	1.5	0.59	03/08/2020 21:24		663855	10AIRJ

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Client: UPRR_Golder

Client ID: GS-1620-SG20-20200227Cert#1329 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10510405012 **Moisture:** N/A **Pace Project** 10510405
Collected: 02/27/2020 09:23 **Received** 03/03/2020 09:45 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	1	**0.21**	J	ug/m3	0.32	0.15	01/24/2020 01:41		663943	10AIR7
Ethylbenzene	1	< 0.30	U	ug/m3	0.88	0.30	01/24/2020 01:41		663943	10AIR7
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	01/24/2020 01:41		663943	10AIR7
m&p-Xylene	1	< 0.70	U	ug/m3	1.8	0.70	01/24/2020 01:41		663943	10AIR7
o-Xylene	1	< 0.34	U	ug/m3	0.88	0.34	01/24/2020 01:41		663943	10AIR7

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Client: UPRR_Golder

Client ID: GS-1620-SG19-20200227Cert#2897 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10510405013 **Moisture:** N/A **Pace Project** 10510405
Collected: 02/27/2020 09:45 **Received** 03/03/2020 09:45 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	1	< 0.15	U	ug/m3	0.32	0.15	01/23/2020 11:08		663943	10AIRD
Ethylbenzene	1	< 0.30	U	ug/m3	0.88	0.30	01/23/2020 11:08		663943	10AIRD
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	01/23/2020 11:08		663943	10AIRD
m&p-Xylene	1	< 0.70	U	ug/m3	1.8	0.70	01/23/2020 11:08		663943	10AIRD
o-Xylene	1	< 0.34	U	ug/m3	0.88	0.34	01/23/2020 11:08		663943	10AIRD

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Client: UPRR_Golder

Client ID: GS-1620-SG17-20200227Cert#2597 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10510405014 **Moisture:** N/A **Pace Project** 10510405
Collected: 02/27/2020 10:11 **Received** 03/03/2020 09:45 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	1	< 0.15	U	ug/m3	0.32	0.15	01/18/2020 01:38		663943	10AIR0
Ethylbenzene	1	< 0.30	U	ug/m3	0.88	0.30	01/18/2020 01:38		663943	10AIR0
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	01/18/2020 01:38		663943	10AIR0
m&p-Xylene	1	< 0.70	U	ug/m3	1.8	0.70	01/18/2020 01:38		663943	10AIR0
o-Xylene	1	< 0.34	U	ug/m3	0.88	0.34	01/18/2020 01:38		663943	10AIR0

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Client: UPRR_Golder

Client ID: GS-1620-SG16-20200227Cert#2922 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10510405015 **Moisture:** N/A **Pace Project** 10510405
Collected: 02/27/2020 10:49 **Received** 03/03/2020 09:45 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	1	< 0.15	U	ug/m3	0.32	0.15	01/15/2020 22:50		663943	10AIRI
Ethylbenzene	1	< 0.30	U	ug/m3	0.88	0.30	01/15/2020 22:50		663943	10AIRI
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	01/15/2020 22:50		663943	10AIRI
m&p-Xylene	1	< 0.70	U	ug/m3	1.8	0.70	01/15/2020 22:50		663943	10AIRI
o-Xylene	1	< 0.34	U	ug/m3	0.88	0.34	01/15/2020 22:50		663943	10AIRI

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Client: UPRR_Golder

Client ID: GS-1620-SG15-20200227Cert#2937 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10510405016 **Moisture:** N/A **Pace Project** 10510405
Collected: 02/27/2020 11:20 **Received** 03/03/2020 09:45 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	1	< 0.15	U	ug/m3	0.32	0.15	01/24/2020 00:12		663943	10AIR7
Ethylbenzene	1	< 0.30	U	ug/m3	0.88	0.30	01/24/2020 00:12		663943	10AIR7
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	01/24/2020 00:12		663943	10AIR7
m&p-Xylene	1	< 0.70	U	ug/m3	1.8	0.70	01/24/2020 00:12		663943	10AIR7
o-Xylene	1	< 0.34	U	ug/m3	0.88	0.34	01/24/2020 00:12		663943	10AIR7

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Client: UPRR_Golder

Client ID: GS-1620-SG14-20200227Cert#3239 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10510405017 **Moisture:** N/A **Pace Project** 10510405
Collected: 02/27/2020 11:39 **Received** 03/03/2020 09:45 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	1	< 0.15	U	ug/m3	0.32	0.15	01/25/2020 03:58		663943	10AIR7
Ethylbenzene	1	< 0.30	U	ug/m3	0.88	0.30	01/25/2020 03:58		663943	10AIR7
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	01/25/2020 03:58		663943	10AIR7
m&p-Xylene	1	< 0.70	U	ug/m3	1.8	0.70	01/25/2020 03:58		663943	10AIR7
o-Xylene	1	< 0.34	U	ug/m3	0.88	0.34	01/25/2020 03:58		663943	10AIR7

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Client: UPRR_Golder

Client ID: GS-1620-SG12-20200227Cert#3264 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10510405018 **Moisture:** N/A **Pace Project** 10510405
Collected: 02/27/2020 12:27 **Received** 03/03/2020 09:45 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	1	< 0.15	U	ug/m3	0.32	0.15	01/15/2020 12:24		663943	10AIR7
Ethylbenzene	1	< 0.30	U	ug/m3	0.88	0.30	01/15/2020 12:24		663943	10AIR7
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	01/15/2020 12:24		663943	10AIR7
m&p-Xylene	1	< 0.70	U	ug/m3	1.8	0.70	01/15/2020 12:24		663943	10AIR7
o-Xylene	1	< 0.34	U	ug/m3	0.88	0.34	01/15/2020 12:24		663943	10AIR7

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Client: UPRR_Golder

Client ID: AA-1620-AA-2-20200227Cert#2829 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10510405019 **Moisture:** N/A **Pace Project** 10510405
Collected: 02/27/2020 09:49 **Received** 03/03/2020 09:45 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	0.5	< 0.076	U	ug/m3	0.16	0.076	01/16/2020 04:45		663943	10AIRI
Ethylbenzene	0.5	< 0.15	U	ug/m3	0.44	0.15	01/16/2020 04:45		663943	10AIRI
Naphthalene	0.5	< 0.66	U	ug/m3	1.3	0.66	01/16/2020 04:45		663943	10AIRI
m&p-Xylene	0.5	< 0.35	U	ug/m3	0.88	0.35	01/16/2020 04:45		663943	10AIRI
o-Xylene	0.5	< 0.17	U	ug/m3	0.44	0.17	01/16/2020 04:45		663943	10AIRI

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Client: UPRR_Golder

Client ID: GS-1620-DUP2-20200227Cert#0882 **Project ID:** Houston TX-Wood: 1620-01-
Lab ID: 10510405020 **Moisture:** N/A **Pace Project** 10510405
Collected: 02/27/2020 10:49 **Received** 03/03/2020 09:45 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	1	< 0.15	U	ug/m3	0.32	0.15	01/18/2020 12:34		663943	10AIRI
Ethylbenzene	1	< 0.30	U	ug/m3	0.88	0.30	01/18/2020 12:34		663943	10AIRI
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	01/18/2020 12:34		663943	10AIRI
m&p-Xylene	1	< 0.70	U	ug/m3	1.8	0.70	01/18/2020 12:34		663943	10AIRI
o-Xylene	1	< 0.34	U	ug/m3	0.88	0.34	01/18/2020 12:34		663943	10AIRI

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Batch: 663855
Method: TO-15

Pace Project No.: 10510405
Instrument ID: 10AIRJ

Blank: 3561585

Parameters	Dilutio	Quals	Result	Units	MQL	SDL	Analysis Date	Prep Date
Benzene	1	U	<0.15	ug/m3	0.32	0.15	03/08/2020 09:37	
Ethylbenzene	1	U	<0.30	ug/m3	0.88	0.30	03/08/2020 09:37	
Naphthalene	1	J	1.7	ug/m3	2.7	1.3	03/08/2020 09:37	
m&p-Xylene	1	U	<0.70	ug/m3	1.8	0.70	03/08/2020 09:37	
o-Xylene	1	U	<0.34	ug/m3	0.88	0.34	03/08/2020 09:37	

Laboratory Control Sample: 3561586

Parameters	Spk Amt	LCS Result	Units	LCS %Rec	% Rec Limits	LCS Quals
Benzene	33.5	33.2	ug/m3	99	70-133	
Ethylbenzene	45.6	50.5	ug/m3	111	70-142	
Naphthalene	57.7	62.8	ug/m3	109	63-130	
m&p-Xylene	91.2	108	ug/m3	119	70-141	
o-Xylene	45.5	51.2	ug/m3	113	70-135	

Duplicate: 3561843

Original for Sample: Project sample AA-1620-AA-2-20200227

Parameters	Original Result	Dup Result	Units	RPD	Max RPD	Quals
Benzene	1.1	1.1	ug/m3	1	25	
Ethylbenzene	<0.37	<0.37	ug/m3		25	
Naphthalene	<1.6	<1.6	ug/m3		25	
m&p-Xylene	0.99J	0.97	ug/m3		25	
o-Xylene	<0.42	<0.42	ug/m3		25	

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Pace Project 10510405

Analyte	Method	Unadjusted MQL	Reporting Units
Benzene	TO-15	0.33	ug/m3
Ethylbenzene	TO-15	0.88	ug/m3
Naphthalene	TO-15	2.7	ug/m3
m&p-Xylene	TO-15	1.8	ug/m3
o-Xylene	TO-15	0.88	ug/m3

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Pace Project 10510405

DEFINITIONS

DF	Dilution Factor
J	Estimated concentration above the adjusted method detection limit and below the adjusted reporting
U	Indicates the compound was analyzed for, but not detected.
SDL	Sample Detection Limit
MQL	Method Quantitation Limit
LCS(D)	Laboratory Control Sample (Duplicate)
MS(D)	Matrix Spike (Duplicate)
DUP	Sample Duplicate
RPD	Relative Percent Difference
TNI	The Nelac Institute

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

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Quality Control Data
Cross Reference Table

Pace Project 10510405

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Analytical
10510405001	**GS-1620-SG20-20200227**	TO-15	663855	
10510405002	**GS-1620-SG19-20200227**	TO-15	663855	
10510405003	**GS-1620-SG17-20200227**	TO-15	663855	
10510405004	**GS-1620-SG16-20200227**	TO-15	663855	
10510405005	**GS-1620-SG15-20200227**	TO-15	663855	
10510405006	**GS-1620-SG14-20200227**	TO-15	663855	
10510405007	**GS-1620-SG12-20200227**	TO-15	663855	
10510405008	**AA-1620-AA-2-20200227**	TO-15	663855	
10510405009	**GS-1620-DUP-2-20200227**	TO-15	663855	
10510405012	**GS-1620-SG20-**	TO-15	663943	
10510405013	**GS-1620-SG19-**	TO-15	663943	
10510405014	**GS-1620-SG17-**	TO-15	663943	
10510405015	**GS-1620-SG16-**	TO-15	663943	
10510405016	**GS-1620-SG15-**	TO-15	663943	
10510405017	**GS-1620-SG14-**	TO-15	663943	
10510405018	**GS-1620-SG12-**	TO-15	663943	
10510405019	**AA-1620-AA-2-**	TO-15	663943	
10510405020	**GS-1620-DUP2-**	TO-15	663943	

TRRP LABORATORY REVIEW CHECKLIST								
Laboratory	Pace Analytical Services, Inc.		**LRC Date:**	03/13/2020				
Project Name:	Houston TX-Wood: 1620-01-Rev1		**Laboratory Job**	10510405				
Reviewer	Nathan Boberg		**Prep Batch Number**	See exception report.				
#[1]	**A[2]**	**Description**		**Yes**	**No**	**NA[3]**	**NR[4]**	**ER #[5]**
R1	**OI**	**Chain-of-custody (C-O-C)**						
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?		X				
		Were all departures from standard conditions described in an exception report?		X				
R2	**OI**	**Sample and quality control (QC) identification**						
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?		X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?		X				
R3	**OI**	**Test reports**						
		Were all samples prepared and analyzed within holding times?		X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?		X				
		Were calculations checked by a peer or supervisor?		X				
		Were all analyte identifications checked by a peer or supervisor?		X				
		Were sample detection limits reported for all analytes not detected?		X				
		Were all results for soil and sediment samples reported on a dry weight basis?				X		
		Were % moisture (or solids) reported for all soil and sediment samples?				X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?				X		
		If required for the project, are TICs reported?				X		
R4	**O**	**Surrogate recovery data**						
		Were surrogates added prior to extraction?				X		
		Were surrogate percent recoveries in all samples within the laboratory QC limits?				X		
R5	**OI**	**Test reports/summary forms for blank samples**						
		Were appropriate type(s) of blanks analyzed?		X				
		Were blanks analyzed at the appropriate frequency?		X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?		X				
		Were blank concentrations < MQL?		X				
R6	**OI**	**Laboratory control samples (LCS):**						
		Were all COCs included in the LCS?		X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?		X				
		Were LCSs analyzed at the required frequency?		X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?		X				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?		X				
		Was the LCSD RPD within QC limits?				X		
R7	**OI**	**Matrix spike (MS) and matrix spike duplicate (MSD) data**						
		Were the project/method specified analytes included in the MS and MSD?				X		
		Were MS/MSD analyzed at the appropriate frequency?				X		
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?				X		
		Were MS/MSD RPDs within laboratory QC limits?				X		
R8	**OI**	**Analytical duplicate data**						
		Were appropriate analytical duplicates analyzed for each matrix?		X				
		Were analytical duplicates analyzed at the appropriate frequency?		X				
		Were RPDs or relative standard deviations within the laboratory QC limits?		X				
R9	**OI**	**Method quantitation limits (MQLs):**						
		Are the MQLs for each method analyte included in the laboratory data package?		X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?		X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?		X				
R10	**OI**	**Other problems/anomalies**						
		Are all known problems/anomalies/special conditions noted in this LRC and ER?		X				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?		X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices, and methods associated with this laboratory data package?		X				

TRRP LABORATORY REVIEW CHECKLIST			
Laboratory	Pace Analytical Services, Inc.	**LRC Date:**	03/13/2020
Project Name:	Houston TX-Wood: 1620-01-Rev1	**Laboratory Job**	10510405
Reviewer	Nathan Boberg	**Prep Batch Number**	See exception report.

1. Items identified by the letter "R" must be included in the laboratory in the laboratory data package submitted in the TRRP-required reports(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period;
2. O = Organic analyses; I = inorganic analysises (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

TRRP LABORATORY REVIEW CHECKLIST								
Laboratory	Pace Analytical Services, Inc.		**LRC Date:**	03/13/2020				
Project Name:	Houston TX-Wood: 1620-01-Rev1		**Laboratory Job**	10510405				
Reviewer	Nathan Boberg		**Prep Batch Number**	See exception report.				
#[1]	**A[2]**	**Description**		**Yes**	**No**	**NA[3]**	**NR[4]**	**ER #[5]**
S1	**OI**	**Initial calibration (ICAL)**						
		Were response factors and/or relative response factors for each analyte within QC limits?		X				
		Were percent RSDs or correlation coefficient criteria met?		X				
		Was the number of standards recommended in the method used for all analytes?		X				
		Were all points generated between the lowest and highest standard used to calculate the curve?		X				
		Are ICAL data available for all instruments used?		X				
		Has the initial calibration curve been verified using an appropriate second source standard?		X				
S2	**OI**	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):**						
		Was the CCV analyzed at the method-required frequency?		X				
		Were precent differences for each analyte within the method-required QC limits?		X				
		Was the ICAL curve verified for each analyte?		X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?				X		
S3	**O**	**Mass spectral tuning**						
		Was the appropriate compound for the method used for tuning?				X		
		Were ion abundance data within the method-required QC limits?				X		
S4	**O**	**Internal standards (IS)**						
		Were IS area counts and retention times within the method-required QC limits?				X		
S5	**OI**	**Raw data (NELAC Section 5.5.10)**						
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?		X				
		Were data associated with manual integrations flagged on the raw data?		X				
S6	**O**	**Dual column confirmation**						
		Did dual column confirmation results meet the method-required QC?				X		
S7	**O**	**Tentatively identified compounds (TICs)**						
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?				X		
S8	**I**	**Interference Check Sample (ICS) results**						
		Were percent recoveries within method QC limits?				X		
S9	**I**	**Serial dilutions, post digestion spikes, and method of standard additions**						
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?				X		
S10	**OI**	**Method detection limit (MDL) studies**						
		Was a MDL study performed for each reported analyte?		X				
		Is the MDL either adjusted or supported by the analysis of DCSs?		X				
S11	**OI**	**Proficiency test reports**						
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?		X				
S12	**OI**	**Standards documentation**						
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?		X				
S13	**OI**	**Compound/analyte identification procedures**						
		Are the procedures for compound/analyte identification documented?		X				
S14	**OI**	**Demonstration of analyst competency (DOC)**						
		Was DOC conducted consistent with NELAC Chapter 5?		X				
		Is documentation of the analyst's competency up-to-date and on file?		X				
S15	**OI**	**Verification/validation documentation for methods (NELAC Chapter 5)**						
		Are all the methods used to generate the data documented, verified, and validated, where applicable?		X				
S16	**OI**	**Laboratory standard operating procedures (SOPs)**						
		Are laboratory SOPs current and on file for each method performed?		X				

1. Items identified by the letter "R" must be included in the laboratory in the laboratory data package submitted in the TRRP-required reports(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period;
2. O = Organic analyses; I = inorganic analysises (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

TRRP LABORATORY REVIEW CHECKLIST			
Laboratory	Pace Analytical Services, Inc.	**LRC Date:**	03/13/2020
Project Name:	Houston TX-Wood: 1620-01-Rev1	**Laboratory Job**	10510405
Reviewer	Nathan Boberg	**Prep Batch Number**	663855,663943

ER #[1]	Description

1. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Pace Analytical®
www.pacelabs.com

AIR: CHAIN-OF-CUSTODY

The Chain-of-Custody is a LEGAL DOCUMENT. All relev

WO# : 10510405

10510405

43633

Page: 1 of 1

Section A Required Client Information:

Company: Golder Associate Inc.
Address: 2201 Double Creek Dr.
Suite 4004 Round Rock Tx 78664
Email To: Eric_Matzner@Golder.com
Phone: 512 671 3454 Fax:
Requested Due Date/TAT: 5 days

Section B Required Project Information:

Report To: Anthon_Reid@Golder.com
Copy To:
Purchase Order No.:
Project Name: Houston Tx - Wood Processing Work KS
Project Number: 1620-01-Rev 0

Section C Invoice Information:

Attention: UPRR/Keith Peterbors
Company Name: Union Pacific Railroad-AP
Address: 1400 Douglas street Stop 0750
Pace Quote Reference: Omaha NE 68179-0750
Pace Project Manager/Sales Rep.
Pace Profile #:

Program: ☐ UST ☐ Superfund ☐ Emissions ☐ Clean Air Act ☐ Voluntary Clean Up ☐ Dry Clean ☐ RCRA ☐ Other

Location of Sampling by State: Tx

Reporting Units: ug/m³ mg/m³ PPBV PPMV Other

Report Level: II. III. IV. Other

'Section D Required Client Information

AIR SAMPLE ID
Sample IDs MUST BE UNIQUE

Valid Media Codes

MEDIA	CODE
Tedlar Bag	TB
1 Liter Summa Can	1LC
6 Liter Summa Can	6LC
Low Volume Puff	LVP
High Volume Puff	HVP
Other	PM10

92688 COLLECTED

ITEM #	'Section D Required Client Information AIR SAMPLE ID	MEDIA CODE	PID Reading (Client only)	COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE - END/GRAB DATE	COMPOSITE - END/GRAB TIME	Canister Pressure (Initial Field - in Hg)	Canister Pressure (Final Field - in Hg)	Summa Can Number	Flow Control Number	Method: PM10	3C - Fixed Gas (%)	TO-3 BTEX	TO-3M (Methane)	TO-14	TO-15 Full List VOCs	TO-15 Short List BTEX	TO-15 Short List Chlorinated	TO-15 Short List (other)	Pace Lab ID
1	GS-1620-SG20-20200227			2-27-20	0916	2-27-20	0923	28	1	1329								X			001 012
2	SG19				0938		0945	30	1	2897											002 013
3	SG17				1003		1011	30	2	2597											003 014
4	SG16				1036		1049	29	1	2922											004 015
5	SG15				1114		1120	30	2	2937											005 016
6	SG14				1133		1139	30	2	3239											006 017
7	SG12				1221		1227	30	2	3264											007 018
8	AA-1620-AA-2-20200227				0900		0949	29.5	0	2829											008 019
9	GS-1620-Dup-2-20200227				1036		1049	29	1	0882											009 020
10																					
11																					
12																					

Comments :

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Tedlar	2-28-20	1030	Pace	3/3/20	0945

SAMPLE CONDITIONS

-	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N

Temp In °C | Received on Ice | Custody Sealed Cooler | Samples Intact

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Anthony Reid

SIGNATURE of SAMPLER: DATE Signed (MM / DD / YY): 02/28/20

ORIGINAL

Pace Analytical	Document Name: Air Sample Condition Upon Receipt	Document Revised: 19Nov2019 Page 1 of 1
	Document No.: F-MN-A-106-rev.20	Pace Analytical Services - Minneapolis

Air Sample Condition Upon Receipt

Client Name: Golder Assoc.

Project #: WO#: 10510405

PM: NB3 Due Date: 03/10/20

CLIENT: UPRR_Golder

Courier: ☒Fed Ex ☐UPS ☐USPS ☐Client ☐Pace ☐SpeeDee ☐Commercial See Exception ☐

Tracking Number: 1083 0284 3954/3948

Custody Seal on Cooler/Box Present? ☒Yes ☐No **Seals Intact?** ☒Yes ☐No

Packing Material: ☒Bubble Wrap ☐Bubble Bags ☒Foam ☐None ☐Tin Can ☐Other:_____ **Temp Blank rec:** ☐Yes ☐No

Temp. (TO17 and TO13 samples only) (°C): ~ **Corrected Temp (°C):** ~ **Thermometer Used:** ☐G87A9170600254 ☐G87A9155100842

Temp should be above freezing to 6°C **Correction Factor:** ~ **Date & Initials of Person Examining Contents:** _____

Type of ice Received ☐Blue ☐Wet ☒None

		Comments:
Chain of Custody Present?	☐Yes ☐No	1.
Chain of Custody Filled Out?	☐Yes ☐No	2.
Chain of Custody Relinquished?	☐Yes ☐No	3.
Sampler Name and/or Signature on COC?	☐Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time?	☐Yes ☐No	5.
Short Hold Time Analysis (<72 hr)?	☐Yes ☐No	6.
Rush Turn Around Time Requested?	☐Yes ☐No	7.
Sufficient Volume?	☐Yes ☐No	8.
Correct Containers Used? **(Tedlar bags not acceptable container for TO-14, TO-15 or APH)** -Pace Containers Used?	☐Yes ☐No ☐Yes ☐No	9.
Containers Intact? **(visual inspection/no leaks when pressurized)**	☐Yes ☐No	10.
Media: Air Can Airbag Filter TDT Passive		11. Individually Certified Cans Y N (list which samples)
Is sufficient information available to reconcile samples to the COC?	☐Yes ☐No	12.
Do cans need to be pressurized? **(DO NOT PRESSURIZE 3C or ASTM 1946!!!)**	☐Yes ☐No	13.

Gauge # ☐10AIR26 ☐10AIR34 ☐10AIR35 ☐4097

Canisters					Canisters				
Sample Number	Can ID	Flow Controller	Initial Pressure	Final Pressure	Sample Number	Can ID	Flow Controller	Initial Pressure	Final Pressure
SG-20	1329	2833	-1	10	Dup-2	0882	0793	-0.5	10
SG 19	2897	2304	0	16	Unused	2492	1630	-27	-
SG 17	2597	2441	1	10	Unused	2906	1762	-27.5	-
SG 16	2922	0793	0	10					
SG 15	2937	1982	0	16					
SG 14	3239	2368	-1.5	10					
SG 12	3264	1508	-1.5	10					
AA-2	2829	1503	1.5	10					

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐Yes ☐No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: Nathan Boberg **Date:** 3/4/20

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Memorandum

July 27, 2020

To:	Eric Matzner	Ref. No.:	11183954-1620
From:	Chris G. Knight/eew/694-NF	Tel:	512-506-8803
cc:	Jesse Orth, Jon Lang; Julie Lidstone		

Subject: **Data Usability Summary**
Soil Gas Sampling Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
June 2020

1. Scope of Data Usability Study

This document details a Data Usability Summary (DUS) of analytical results for soil gas samples collected in support of the Soil Gas Sampling Event at the Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works site during June 2020. Samples were submitted to Pace Analytical Services, Inc., located in Minneapolis, Minnesota and are reported in data package 10523718. The intended use of the data is to support the Soil Gas Sampling Event at the site by providing current concentration of chemicals of concern.

Data were reviewed and validated by Chris G. Knight of GHD, in accordance with Title 30 of the Texas Administrative Code Section 350.54 (30 TAC 350.54) as described in the Texas Commission on Environmental Quality (TCEQ) Regulatory Guidance document entitled "Review and Reporting of COC Concentration Data under TRRP", (RG-366/TRRP-13), revised May 2010, herein referred to as "TRRP-13 Guidance". Evaluation of the data was based on information obtained from the chain of custody forms, the finished report forms, method blank data, recovery data from laboratory control samples (LCS)/ duplicate analyses (DUP), field quality assurance/quality control samples (QA/QC), the laboratory review checklists (LRC), and the laboratory exception report (ER).

A sample collection and analysis summary is presented in Table 1. This summary provides a cross-reference of field sample identification numbers and location identification. Each sample is assigned a unique field identification number.

The validated sample results are presented in Table 2. A summary of the analytical methodology is presented in Table 3.

2. Laboratory Qualifications

The Laboratory's quality assurance program is consistent with the quality standards outlined in the National Environmental Laboratory Accreditation Program (NELAP). This laboratory was accredited under Texas Certification number # TX104704192 at the time the analysis was performed and the certificate is included in Attachment A.

3. Project Objectives

3.1 Sampling/Analytical QA/QC Objectives

The QA/QC program was designed to identify contamination resulting from the sampling, sample transport and analytical process through the analysis of field duplicate sample sets and method blanks. The QA/QC program was designed to evaluate the quality of the resulting data with respect to bias and precision through analysis of LCS and duplicate analyses.

4. Data Review/Validation Results

4.1 Sample Holding Time

Samples were shipped with a chain of custody and the paper work was filled out properly.

The sample chain of custody documents and the analytical report were used to determine sample holding times. All samples were prepared and analyzed within the required holding times.

4.2 Sample Containers

All sample canisters were received at the laboratory in good condition and within acceptable canister pressure range of –1 inch of mercury (Hg) to –10 inches of Hg, indicating samples were still under vacuum upon receipt.

4.3 Calibrations

According to the LRC, initial calibration and continuing calibration data met the criteria for the selected method.

4.4 Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures. As these were not discrete samples handled in the field, these blanks are not listed on the sample identification cross-reference list found in the data package.

For this study, laboratory method blanks were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch and results are reported in the laboratory data package.

The method blank results were non-detect or below the method quantitation limit (MQL), indicating that laboratory contamination was not a factor for this investigation.

4.5 Laboratory Control Sample Analysis

LCS are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project.

For this study, LCS were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch.

The LCS contained all compounds specified in the method. All LCS recoveries were within the laboratory control limits, demonstrating acceptable analytical accuracy.

4.6 Duplicate Sample Analyses

Analytical precision is evaluated based on the analysis of laboratory duplicate samples. The relative percent differences (RPD) established by the laboratory are adopted as the acceptance criteria for the project.

The laboratory performed a duplicate analysis on a non-site sample. This cannot be used to assess precision for the site samples.

4.7 Field QA/QC Samples

The field QA/QC consisted of one field duplicate sample set.

To assess the analytical and sampling protocol precision, one field duplicate sample set was collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples must be less than fifty percent for soil samples. The RPDs are only used when sample concentrations are above the estimated regions of detection.

Field duplicate summary data are presented in Table 2. All field duplicate results were within acceptable agreement, demonstrating acceptable sampling and analytical precision with the following exceptions (see Table 4):

i) GS-1620-SG27-20200630 and GS-1620-Dup-3-20200630 did show variability in the following compounds: benzene, ethylbenzene, m&p-xylenes, and o-xylene. All associated sample results were qualified as estimated.

4.8 Field Procedures

Golder Associates, Inc. collected soil gas samples in accordance with their Standard Operating Procedures (SOP) for sample collection.

4.9 Analyte Reporting

The laboratory reported detected results for each analyte down to the sample detection limit (SDL), which is defined as the method detection limit (MDL) with sample-specific adjustments for dilutions, aliquot size,

volumes, etc. Positive analyte detections less than the MQL but greater than the SDL were qualified as estimated (J) in Table 2 unless qualified elsewhere in this memorandum.

The detectability check standard (DCS) results supported the laboratory MDLs.

5. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are usable for the purpose of supporting the Soil Gas Sampling Event at the site by providing current concentration of chemicals of concern in soil gas samples with the specific qualifications noted herein.

Table 1

Sample Collection and Analysis Summary
Soil Gas Sampling Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
June 2020

					Analysis/Parameters	
Sample Identification	**Location**	**Matrix**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**VOCs**	**Comments**
GS-1620-SG25-20200630	SG-25	Soil Gas	06/30/2020	10:52	X	
GS-1620-SG25-20200630 CERT 306	SG-25	Soil Gas	06/30/2020	10:52	X	
AA-1620-AA-3-20200630	AA-3	Soil Gas	06/30/2020	11:07	X	
AA-1620-AA-3-20200630 CERT 351	AA-3	Soil Gas	06/30/2020	11:07	X	
GS-1620-SG27-20200630	SG-27	Soil Gas	06/30/2020	11:50	X	
GS-1620-SG27-20200630 CERT 362	SG-27	Soil Gas	06/30/2020	11:50	X	
GS-1620-Dup-3-20200630	SG-27	Soil Gas	06/30/2020	11:50	X	Field duplicate of GS-1620-SG27-20200630
GS-1620-Dup-3-20200630 CERT 28	SG-27	Soil Gas	06/30/2020	11:50	X	

Notes:

VOCs - Volatile Organic Compounds

Table 2

Analytical Results Summary
Soil Gas Sampling Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
June 2020

Location ID:		**AA-3**	**AA-3**	**SG-25**	**SG-25**
Sample Name:		**AA-1620-AA-3-20200630**	**AA-1620-AA-3-20200630 CERT 351**	**GS-1620-SG25-20200630**	**GS-1620-SG25-20200630 CERT 306**
Sample Date:		**06/30/2020**	**06/30/2020**	**06/30/2020**	**06/30/2020**
Parameters	**Unit**				
Volatile Organic Compounds					
Benzene	µg/m3	<0.18	<0.065	<0.25	<0.13
Ethylbenzene	µg/m3	<0.23	<0.069	<0.32	<0.14
m&p-Xylenes	µg/m3	<0.53	<0.17	<0.74	<0.34
Naphthalene	µg/m3	<1.7	<0.64	<2.4	<1.3
o-Xylene	µg/m3	<0.24	<0.074	<0.34	<0.15

Table 2

Analytical Results Summary
Soil Gas Sampling Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
June 2020

Location ID:		**SG-27**	**SG-27**	**SG-27**	**SG-27**
Sample Name:		**GS-1620-SG27-20200630**	**GS-1620-SG27-20200630 CERT 362**	**GS-1620-Dup-3-20200630**	**GS-1620-Dup-3-20200630 CERT 28**
Sample Date:		**06/30/2020**	**06/30/2020**	**06/30/2020**	**06/30/2020**
				Duplicate	
Parameters	**Unit**				
Volatile Organic Compounds					
Benzene	µg/m3	12.4 J	0.18 J	1.5 J	<0.13
Ethylbenzene	µg/m3	7.9 J	<0.14	2.2 J	<0.14
m&p-Xylenes	µg/m3	21.2 J	<0.34	7.7 J	<0.34
Naphthalene	µg/m3	<2.3	<1.3	<2.3	<1.3
o-Xylene	µg/m3	6.2 J	<0.15	3.1 J	<0.15

Notes:

< - Not detected at the associated reporting

J - Estimated concentration

Table 3

Analytical Methods
Soil Gas Sampling Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
June 2020

Parameter	Method	Matrix	Holding Time Collection to Analysis (Days)
VOCs	TO-15 (1)	Soil Gas	30

Notes:

VOCs - Volatile Organic Compounds

Method References:

(1) - Referenced from "Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air", January 1999

Table 4

Qualified Sample Data Due to Variability in Field Duplicate Results
Soil Gas Sampling Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
June 2020

Parameter	Analyte	RPD	Sample ID	Qualified Result	Field Duplicate Sample ID	Qualified Result	Units
VOCs	Benzene	156	GS-1620-SG27-20200630	12.4 J	GS-1620-Dup-3-20200630	1.5 J	µg/m3
	Ethylbenzene	112		7.9 J		2.2 J	µg/m3
	m&p-Xylenes	93.4		21.2 J		7.7 J	µg/m3
	o-Xylene	66.7		6.2 J		3.1 J	µg/m3

Notes:

RPD - Relative Percent Difference
VOCs - Volatile Organic Compounds
J - Estimated concentration

Attachment A
Laboratory NELAP Certificate

Texas Commission on Environmental Quality

NELAP-Recognized Laboratory Accreditation is hereby awarded to

Pace Analytical Services, LLC - Minneapolis MN

1700 Elm Street SE Suite 200
Minneapolis, MN 55414-2485

in accordance with Texas Water Code Chapter 5, Subchapter R, Title 30 Texas Administrative Code Chapter 25, and the National Environmental Laboratory Accreditation Program.

The laboratory's scope of accreditation includes the fields of accreditation that accompany this certificate. Continued accreditation depends upon successful ongoing participation in the program. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current location(s) and accreditation status for particular methods and analyses (www.tceq.texas.gov/goto/lab). Accreditation does not imply that a product, process, system or person is approved by the Texas Commission on Environmental Quality.

Certificate Number: T104704192-20-15
Effective Date: 3/1/2020
Expiration Date: 2/28/2021

Executive Director Texas Commission on Environmental Quality

Pace Analytical Services, LLC
1700 Elm St SE, Suite 200
Minneapolis, MN 55414
(612) 607-1700

July 10, 2020

Michelle Hermiston
Golder
2201 Double Creek Dr
Suite 4004
Round Rock, TX 78664

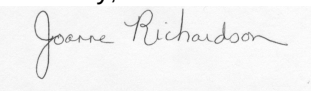
RE: Pace Project 10523718
Project ID: 19119232.440 HWPW

Dear Michelle Hermiston:

Enclosed are the analytical results for sample(s) received by the laboratory on July 03, 2020. Results reported herin conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Joanne Richardson
joanne.richardson@pacelabs.com
1(612)607-6453

Laboratory Certifications

Pace Analytical Minnesota : Texas Certification #: T104704192

REPORT OF LABORATORY ANALYSIS

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Sample Cross Reference

Pace Analytical Services, LLC
1700 Elm St SE, Suite 200
Minneapolis, MN 55414
(612) 607-1700

Pace Project 10523718

Client: UPRR_Golder
Project ID: 19119232.440 HWPW

Client Sample ID	Lab ID	Matrix	Collection Date/Time	Received Date/Time
AA-1620-AA-3-20200630	10523718001	Air	06/30/2020 11:07	07/03/2020 09:30
AA-1620-AA-3-20200630 CERT 351	10523718002	Air	06/30/2020 11:07	07/03/2020 09:30
GS-1620-SG25-20200630	10523718003	Air	06/30/2020 10:52	07/03/2020 09:30
GS-1620-SG25-20200630 CERT 306	10523718004	Air	06/30/2020 10:52	07/03/2020 09:30
GS-1620-SG27-20200630	10523718005	Air	06/30/2020 11:50	07/03/2020 09:30
GS-1620-SG27-20200630 CERT 362	10523718006	Air	06/30/2020 11:50	07/03/2020 09:30
GS-1620-Dup-3-20200630	10523718007	Air	06/30/2020 11:50	07/03/2020 09:30
GS-1620-Dup-3-20200630 CERT 28	10523718008	Air	06/30/2020 11:50	07/03/2020 09:30

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Pace Project 10523718

Holding Times:

All holding times were met.

Blanks:

All blank results were below reporting limits.

Laboratory Control Samples:

All LCS recoveries were within QC limits.

Matrix Spikes and Duplicates:

All MS or MSD recoveries were within QC limits.

Surrogate:

All surrogate recoveries were within QC limits.

Appendix A
LABORATORY DATA PACKAGE COVER PAGE

This data package is for Job No. 10523718 and consists of:

This signature page, the laboratory review checklist, and the following reportable data:

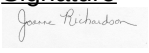
- [X] R1 - Field chain-of-custody documentation;
- [X] R2 - Sample identification cross-reference;
- [X] R3 - Test reports (analytical data sheets) for each environmental sample that includes:
  - a. Items consistent with NELAC Chapter 5,
  - b. Dilution factors,
  - c. Preparation methods,
  - d. Cleanup methods, and
  - e. If required for the project, tentatively identified compounds (TICs).
- [X] R4 - Surrogate recovery data including:
  - a. Calculated recovery (%R), and
  - b. The laboratory's surrogate QC limits.
- [X] R5 - Test reports/summary forms for blank samples;
- [X] R6 - Test reports/summary forms for laboratory control samples (LCSs) including:
  - a. LCS spiking amounts,
  - b. Calculated %R for each analyte, and
  - c. The laboratory's LCS QC limits.
- [X] R7 - Test reports/summary forms for matrix spike/matrix spike duplicates (MS/MSDs) including:
  - a. Samples associated with the MS/MSD clearly identified,
  - b. MS/MSD spiking amounts,
  - c. Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  - d. Calculated %Rs and relative percent differences, and
  - e. The laboratory's MS/MSD QC limits.
- [X] R8 - Laboratory analytical duplicate (if applicable) recovery and precision:
  - a. The amount of analyte measured in the duplicate,
  - b. The calculated RPD, and,
  - c. The laboratory's QC limits for analytical duplicated.
- [X] R9 - List of method quantitation limits (MQLs) and detectability check sample results for each analyte and
- [X] R10 - Other problems or anomalies.

  The exception Report for each "No" or "Not Reviewed (NR) " item in the Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accredidation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [ ] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [X] MDH on 04/12/2011

Any findings affecting the data in this laboratory data package are noted in the Exception Reports herin. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Name (Printed)	Signature	Official Title (Printed)	Date
Joanne Richardson		Project Manager	07/10/2020

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Client: UPRR_Golder

Client ID: AA-1620-AA-3-20200630 **Project ID:** 19119232.440 HWPW
Lab ID: 10523718001 **Moisture:** N/A **Pace Project** 10523718
Collected: 06/30/2020 11:07 **Received** 07/03/2020 09:30 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.39	< 0.18	U	ug/m3	0.45	0.18	07/09/2020 19:59		685781	10AIRJ
Ethylbenzene	1.39	< 0.23	U	ug/m3	1.2	0.23	07/09/2020 19:59		685781	10AIRJ
Naphthalene	1.39	< 1.7	U	ug/m3	3.7	1.7	07/09/2020 19:59		685781	10AIRJ
m&p-Xylene	1.39	< 0.53	U	ug/m3	2.5	0.53	07/09/2020 19:59		685781	10AIRJ
o-Xylene	1.39	< 0.24	U	ug/m3	1.2	0.24	07/09/2020 19:59		685781	10AIRJ

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Client: UPRR_Golder

Client ID: AA-1620-AA-3-20200630 CERT 351 **Project ID:** 19119232.440 HWPW
Lab ID: 10523718002 **Moisture:** N/A **Pace Project** 10523718
Collected: 06/30/2020 11:07 **Received** 07/03/2020 09:30 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	0.5	< 0.065	U	ug/m3	0.16	0.065	06/19/2020 08:25		685050	10AIRJ
Ethylbenzene	0.5	< 0.069	U	ug/m3	0.44	0.069	06/19/2020 08:25		685050	10AIRJ
Naphthalene	0.5	< 0.64	U	ug/m3	1.3	0.64	06/19/2020 08:25		685050	10AIRJ
m&p-Xylene	0.5	< 0.17	U	ug/m3	0.88	0.17	06/19/2020 08:25		685050	10AIRJ
o-Xylene	0.5	< 0.074	U	ug/m3	0.44	0.074	06/19/2020 08:25		685050	10AIRJ

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Client: UPRR_Golder

Client ID: GS-1620-SG25-20200630 **Project ID:** 19119232.440 HWPW
Lab ID: 10523718003 **Moisture:** N/A **Pace Project** 10523718
Collected: 06/30/2020 10:52 **Received** 07/03/2020 09:30 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.94	< 0.25	U	ug/m3	0.63	0.25	07/09/2020 20:34		685781	10AIRJ
Ethylbenzene	1.94	< 0.32	U	ug/m3	1.7	0.32	07/09/2020 20:34		685781	10AIRJ
Naphthalene	1.94	< 2.4	U	ug/m3	5.2	2.4	07/09/2020 20:34		685781	10AIRJ
m&p-Xylene	1.94	< 0.74	U	ug/m3	3.4	0.74	07/09/2020 20:34		685781	10AIRJ
o-Xylene	1.94	< 0.34	U	ug/m3	1.7	0.34	07/09/2020 20:34		685781	10AIRJ

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Client: UPRR_Golder

Client ID: GS-1620-SG25-20200630 CERT 306 **Project ID:** 19119232.440 HWPW
Lab ID: 10523718004 **Moisture:** N/A **Pace Project** 10523718
Collected: 06/30/2020 10:52 **Received** 07/03/2020 09:30 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	1	< 0.13	U	ug/m3	0.32	0.13	06/18/2020 08:56		685050	10AIRJ
Ethylbenzene	1	< 0.14	U	ug/m3	0.88	0.14	06/18/2020 08:56		685050	10AIRJ
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	06/18/2020 08:56		685050	10AIRJ
m&p-Xylene	1	< 0.34	U	ug/m3	1.8	0.34	06/18/2020 08:56		685050	10AIRJ
o-Xylene	1	< 0.15	U	ug/m3	0.88	0.15	06/18/2020 08:56		685050	10AIRJ

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Client: UPRR_Golder

Client ID: GS-1620-SG27-20200630 **Project ID:** 19119232.440 HWPW
Lab ID: 10523718005 **Moisture:** N/A **Pace Project** 10523718
Collected: 06/30/2020 11:50 **Received** 07/03/2020 09:30 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.87	**12.4**		ug/m3	0.61	0.24	07/09/2020 21:09		685781	10AIRJ
Ethylbenzene	1.87	**7.9**		ug/m3	1.7	0.30	07/09/2020 21:09		685781	10AIRJ
Naphthalene	1.87	< 2.3	U	ug/m3	5.0	2.3	07/09/2020 21:09		685781	10AIRJ
m&p-Xylene	1.87	**21.2**		ug/m3	3.3	0.72	07/09/2020 21:09		685781	10AIRJ
o-Xylene	1.87	**6.2**		ug/m3	1.7	0.33	07/09/2020 21:09		685781	10AIRJ

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Client: UPRR_Golder

Client ID: GS-1620-SG27-20200630 CERT 362 **Project ID:** 19119232.440 HWPW
Lab ID: 10523718006 **Moisture:** N/A **Pace Project** 10523718
Collected: 06/30/2020 11:50 **Received** 07/03/2020 09:30 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	1	**0.18**	J	ug/m3	0.32	0.13	06/17/2020 16:09		685050	10AIRH
Ethylbenzene	1	< 0.14	U	ug/m3	0.88	0.14	06/17/2020 16:09		685050	10AIRH
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	06/17/2020 16:09		685050	10AIRH
m&p-Xylene	1	< 0.34	U	ug/m3	1.8	0.34	06/17/2020 16:09		685050	10AIRH
o-Xylene	1	< 0.15	U	ug/m3	0.88	0.15	06/17/2020 16:09		685050	10AIRH

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Client: UPRR_Golder

Client ID: GS-1620-Dup-3-20200630 **Project ID:** 19119232.440 HWPW
Lab ID: 10523718007 **Moisture:** N/A **Pace Project** 10523718
Collected: 06/30/2020 11:50 **Received** 07/03/2020 09:30 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
TO15 MSV AIR	Analytical Method: TO-15									
Benzene	1.83	**1.5**		ug/m3	0.59	0.23	07/09/2020 21:45		685781	10AIRJ
Ethylbenzene	1.83	**2.2**		ug/m3	1.6	0.30	07/09/2020 21:45		685781	10AIRJ
Naphthalene	1.83	< 2.3	U	ug/m3	4.9	2.3	07/09/2020 21:45		685781	10AIRJ
m&p-Xylene	1.83	**7.7**		ug/m3	3.2	0.70	07/09/2020 21:45		685781	10AIRJ
o-Xylene	1.83	**3.1**		ug/m3	1.6	0.32	07/09/2020 21:45		685781	10AIRJ

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Client: UPRR_Golder

Client ID: GS-1620-Dup-3-20200630 CERT 28 **Project ID:** 19119232.440 HWPW
Lab ID: 10523718008 **Moisture:** N/A **Pace Project** 10523718
Collected: 06/30/2020 11:50 **Received** 07/03/2020 09:30 **Matrix:** Air

Parameters	DF	Results	Qual	Units	MQL	SDL	Analysis Date	Prep Date	Batch	Instr.
Individual Can Certification	Analytical Method: TO-15									
Benzene	1	< 0.13	U	ug/m3	0.32	0.13	06/19/2020 09:09		685050	10AIRD
Ethylbenzene	1	< 0.14	U	ug/m3	0.88	0.14	06/19/2020 09:09		685050	10AIRD
Naphthalene	1	< 1.3	U	ug/m3	2.7	1.3	06/19/2020 09:09		685050	10AIRD
m&p-Xylene	1	< 0.34	U	ug/m3	1.8	0.34	06/19/2020 09:09		685050	10AIRD
o-Xylene	1	< 0.15	U	ug/m3	0.88	0.15	06/19/2020 09:09		685050	10AIRD

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Batch: 685781
Method: TO-15

Pace Project No.: 10523718
Instrument ID: 10AIRJ

Blank: 3667712

Parameters	Dilutio	Quals	Result	Units	MQL	SDL	Analysis Date	Prep Date
Benzene	0.5	U	<0.064	ug/m3	0.16	0.064	07/09/2020 13:15	
Ethylbenzene	0.5	U	<0.082	ug/m3	0.44	0.082	07/09/2020 13:15	
Naphthalene	0.5	U	<0.62	ug/m3	1.3	0.62	07/09/2020 13:15	
m&p-Xylene	0.5	U	<0.19	ug/m3	0.88	0.19	07/09/2020 13:15	
o-Xylene	0.5	U	<0.088	ug/m3	0.44	0.088	07/09/2020 13:15	

Laboratory Control Sample: 3667713

Parameters	Spk Amt	LCS Result	Units	LCS %Rec	% Rec Limits	LCS Quals
Benzene	33.5	27.0	ug/m3	80	70-133	
Ethylbenzene	45.6	36.3	ug/m3	80	70-142	
Naphthalene	57.7	54.0	ug/m3	94	63-130	
m&p-Xylene	91.2	72.6	ug/m3	80	70-141	
o-Xylene	45.5	34.9	ug/m3	77	70-135	

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Pace Project 10523718

Analyte	Method	Unadjusted MQL	Reporting Units
Benzene	TO-15	0.33	ug/m3
Ethylbenzene	TO-15	0.88	ug/m3
Naphthalene	TO-15	2.7	ug/m3
m&p-Xylene	TO-15	1.8	ug/m3
o-Xylene	TO-15	0.88	ug/m3

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Pace Project 10523718

DEFINITIONS

DF	Dilution Factor
J	Estimated concentration above the adjusted method detection limit and below the adjusted reporting
U	Indicates the compound was analyzed for, but not detected.
SDL	Sample Detection Limit
MQL	Method Quantitation Limit
LCS(D)	Laboratory Control Sample (Duplicate)
MS(D)	Matrix Spike (Duplicate)
DUP	Sample Duplicate
RPD	Relative Percent Difference
TNI	The Nelac Institute

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

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Quality Control Data
Cross Reference Table

Pace Project 10523718

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Analytical
10523718002	**AA-1620-AA-3-20200630 CERT**	TO-15	685050	
10523718004	**GS-1620-SG25-20200630 CERT**	TO-15	685050	
10523718006	**GS-1620-SG27-20200630 CERT**	TO-15	685050	
10523718008	**GS-1620-Dup-3-20200630 CERT**	TO-15	685050	
10523718001	**AA-1620-AA-3-20200630**	TO-15	685781	
10523718003	**GS-1620-SG25-20200630**	TO-15	685781	
10523718005	**GS-1620-SG27-20200630**	TO-15	685781	
10523718007	**GS-1620-Dup-3-20200630**	TO-15	685781	

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AIR: CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

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Page: 1 of 1

Section A Required Client Information:

Company: Golder Associates
Address: 2201 Double Creek dr. Suite 4004
Email To: Eric Matzner
Phone: 5126713434 Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To: Eric Matzner
Copy To: Michelle Hermiston
Purchase Order No.:
Project Name: HWPW
Project Number: 19119232.440

Section C Invoice Information:

Attention: UPRR Kevin Petersburs
Company Name: Union Pacific Railroad
Address: 1400 Douglas street 0750
Pace Quote Reference:
Pace Project Manager/Sales Rep.
Pace Profile #: 40791

Program: ☐ UST ☐ Superfund ☐ Emissions ☐ Clean Air Act ☐ Voluntary Clean Up ☐ Dry Clean ☐ RCRA ☐ Other

Location of Sampling by State: TX

Reporting Units: ug/m³ ___ mg/m³ ___ PPBV ___ PPMV ___ Other ___

Report Level II.___ III.___ IV.___ Other___

'Section D Required Client Information

AIR SAMPLE ID
Sample IDs MUST BE UNIQUE

Valid Media Codes

MEDIA	CODE
Tedlar Bag	TB
1 Liter Summa Can	1LC
6 Liter Summa Can	6LC
Low Volume Puff	LVP
High Volume Puff	HVP
Other	PM10

ITEM #	'Section D Required Client Information / AIR SAMPLE ID	MEDIA CODE	PID Reading (Client only)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE - END/GRAB DATE	COMPOSITE - END/GRAB TIME	Canister Pressure (Initial Field - in Hg)	Canister Pressure (Final Field - in Hg)	Summa Can Number	Flow Control Number	Method: PM10	3C - Fixed Gas (%)	TO-3 BTEX	TO-3M (Methane)	TO-14	TO-15 Full List VOCs	TO-15 Short List BTEX	TO-15 Short List Chlorinated	TO-15 Short List (other)	Pace Lab ID
1	AA-1620-AA-3-20200630			6-30-20	1107	"	1107	30	0	3518	1130						X				Please 001/002
2	GS-1620-SG25-20200630				1043		1052	30	2	3067	0634						X				refer 003/004
3	SG27				1135		1150	30	2	3625	0775						X				to specific 005/006
4	Dup-3				1135		1150	30	2	2887	0725						X				Short list 007/008
5																					provided 009
6																					by the PM 010
7																					011
8																					012
9																					013
10																					014
11																					
12																					

WO#: 10523718

10523718

Comments :

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
[signature]	6-30-20	1800	[signature] Pace	7/3/20	0930

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Anthony Reid

SIGNATURE of SAMPLER: [signature]

DATE Signed (MM / DD / YY): 06 30 20

SAMPLE CONDITIONS				
-	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N
	Y/N	Y/N	Y/N
Temp in °C	Received on Ice	Custody Sealed Cooler	Samples Intact

ORIGINAL

Pace Analytical®	Document Name: Sample Condition Upon Receipt (SCUR) - Air	Document Revised: 24Mar2020 Page 1 of 1
	Document No.: ENV-FRM-MIN4-0113 Rev.00	Pace Analytical Services - Minneapolis

Air Sample Condition Upon Receipt **Client Name:** **Project #:** **WO#: 10523718**

PM: NB3 Due Date: 07/10/20
CLIENT: UPRR_Golder

Courier: ☐Fed Ex ☐UPS ☐USPS ☐Client ☐Pace ☐SpeeDee ☐Commercial **See Exception** ☐

Tracking Number: 1723 2543 5477/5488

Custody Seal on Cooler/Box Present? ☒Yes ☐No **Seals Intact?** ☒Yes ☐No

Packing Material: ☐Bubble Wrap ☐Bubble Bags ☒Foam ☐None ☐Tin Can ☐Other:_____ **Temp Blank rec:** ☐Yes ☒No

Temp. (TO17 and TO13 samples only) (°C): - **Corrected Temp (°C):** -

Thermometer Used: ☐G87A9170600254 ☐G87A9155100842

Temp should be above freezing to 6°C **Correction Factor:** - **Date & Initials of Person Examining Contents:** CEG 7/3/20

Type of ice Received ☐Blue ☐Wet ☒None

		Comments:
Chain of Custody Present?	☒Yes ☐No	1.
Chain of Custody Filled Out?	☒Yes ☐No	2.
Chain of Custody Relinquished?	☒Yes ☐No	3.
Sampler Name and/or Signature on COC?	☒Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time?	☒Yes ☐No	5.
Short Hold Time Analysis (<72 hr)?	☐Yes ☒No	6.
Rush Turn Around Time Requested?	☐Yes ☒No	7.
Sufficient Volume?	☒Yes ☐No	8.
Correct Containers Used? **(Tedlar bags not acceptable container for TO-14, TO-15 or APH)** -Pace Containers Used?	☒Yes ☐No ☒Yes ☐No	9.
Containers Intact? **(visual inspection/no leaks when pressurized)**	☒Yes ☐No	10.
Media: (Air Can) Airbag Filter TDT Passive		11. Individually Certified Cans (Y) N (list which samples)
Is sufficient information available to reconcile samples to the COC?	☒Yes ☐No	12.
Do cans need to be pressurized? **(DO NOT PRESSURIZE 3C or ASTM 1946!!!)**	☒Yes ☐No	13.

Gauge # ☒10AIR26 ☐10AIR34 ☐10AIR35 ☐4097

Canisters					Canisters				
Sample Number	Can ID	Flow Controller	Initial Pressure	Final Pressure	Sample Number	Can ID	Flow Controller	Initial Pressure	Final Pressure
AA3	3518	1130	-1	5	Unused	2731	1136	-27.5	-
SG-25	3067	0634	-4	10	"	3213	0779	-26	-
SG-27	3625	0775	-3	10					
Dup 3	2887	0775	-2.5	10					
Unused	2905	-	-28	-					
"	2864	1732	-24	-					
"	3127	1161	-28	-					
"	0999	0735	-27	-					

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐Yes ☐No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: Joanne Richardson **Date:** 7-7-20

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Appendix 3C

Interim Groundwater Monitoring Report (2019-2020) dated April 30, 2020

GOLDER

Interim Groundwater Monitoring Report (2019-2020)

Union Pacific Railroad Houston Wood Preserving Works Facility

Post-Closure Care Permit No HW-50343/Industrial SWR No. 31547

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1.0 INTRODUCTION

This Interim Groundwater Monitoring Report (IGMR) was prepared by Golder Associates Inc. (Golder) on behalf of Union Pacific Railroad (UPRR) to summarize the site-wide groundwater sampling activities conducted in July 2019 and the additional groundwater assessment activities and site-wide sampling event in January-March 2020 at the UPRR Houston Wood Preserving Works Facility (the Site) located at 4910 Liberty Road, Houston, Texas. The January-March 2020 site-wide groundwater sampling included the sampling of the additional monitoring wells that were installed in February through March 2020 to further assess groundwater at the Site, as discussed in Section 2.0 below. The analytical data from the recently installed wells are included in this IGMR.

Details on the additional groundwater investigations, groundwater monitoring activities, groundwater elevation data and analytical results are provided in the following sections. In addition, information regarding off-site property notification in accordance with Texas Risk Reduction Program (TRRP) Rules 350.55(a) is also provided.

2.0 ADDITIONAL GROUNDWATER INVESTIGATION ACTIVITIES

2.1 Assessment Methods

As detailed in the Conceptual Response Action Plan (RAP) dated July 9, 2019 (Golder, 2019b) in response to the TCEQ 4th Technical Notice of Deficiency (TNOD) dated April 11 2019, UPRR proposed to install additional monitoring wells to refine the lateral and vertical extent of the dissolved phase plume in the A-Transmissive Zone (A-TZ), B-Cohesive Zone/ B-Transmissive Zone (B-TZ/B-CZ), and C-Transmissive Zone (C-TZ). The TCEQ reviewed the proposed monitoring well locations and requested additional monitoring wells be installed as detailed in a TCEQ September 6, 2019 letter. Following a meeting with the TCEQ on September 23, 2019 discussing the proposed locations, UPRR prepared a response letter dated October 23, 2019 to the TCEQ confirming the number and location of monitoring wells to be installed. The TCEQ issued a letter dated December 13, 2019 approving UPRR to proceed with the planned monitoring well installation activities. The following monitoring wells were installed during the period from February through March 2020 and were sampled in March 2020 (locations shown on Figure 1):

- Nine A-TZ wells, MW-47A, MW-84A, MW-88A, MW-91A, MW-94A, MW-95A, MW-97A, MW-98A, and MW-60AR (replacement well);
- Ten B-TZ/B-CZ wells - MW-50B, MW-54B, MW-60B, MW-61B, MW-76B, MW-88B, MW-92B, MW-93B, MW-96B, and MW-98B; and
- Two C-TZ wells - MW-70C and MW 99C.

After each monitoring well was installed, the wells were developed to remove sediment from the wells. Permanent monitoring wells were surveyed by a licensed, professional surveyor to Texas State Plane coordinates (NAD 27, Texas South Central, U.S. Feet). A summary of the monitoring well construction for wells located at the Site is provided on Table A-1 of Attachment A. Monitoring well boring logs for the monitoring wells installed January through March 2020 are provided in Attachment A.

2.2 Data Quality

Samples collected from the Site were analyzed in accordance with the guidelines of U.S. Environmental Protection Agency (EPA) SW-846, Test Methods for Evaluating Solid Waste-Physical/Chemical Methods. The procedures for laboratory analysis, with any modifications, are further documented in the laboratory standard operating procedures, which are maintained at the laboratory, and are listed in the laboratory's quality assurance

plan. Analyses of groundwater samples for these sampling events were performed by ALS Laboratory Group in Houston, Texas. Data obtained from field and laboratory measurements were reviewed for conformance to project requirements, ensuring the lowest method quantitation limit (MQL) was used in the evaluation.

Analytical data from the groundwater samples collected during the groundwater investigations from 2019 through 2020 were reviewed for adherence to established quality assurance/quality control (QA/QC) criteria, and Data Usability Summaries (DUSs) were prepared following TCEQ publication RG-366/TRRP-13 (TCEQ, 2010) to demonstrate the quality of the laboratory analytical data and present any deviations from the established QA/QC criteria. Copies of the analytical data reports and details of the DUSs are provided in Attachment B. For data included in this IGMR, the groundwater data are considered usable for the purpose of evaluating chemicals of concern (COCs) in the environmental media to assess the affected property based on the COCs and establish TRRP protective concentration level exceedance (PCLE) zones.

3.0 GROUNDWATER MONITORING ACTIVITIES

Golder, on behalf of UPRR, conducted groundwater monitoring activities at the Site in July 2019 and January-March 2020 to further evaluate the lateral and vertical extent COCs in groundwater and continue to evaluate groundwater COC trends at the Site. Groundwater samples were collected using low-flow sampling techniques described in the EPA guidance document Low-Flow (Minimal Drawdown) Ground Water Sampling Procedures (EPA, 1996). Each sample was analyzed for the site-specific COC list (volatile organic compounds (VOCs) by EPA Method 8260, semi-volatile organic compounds (SVOCs) by EPA Method 8270C, and arsenic by EPA Method 6020).

Prior to sampling, the depth to water and the thickness or presence of non-aqueous phase liquids (NAPL) was measured using an oil-water interface probe. The wells were then purged at a low flow rate using a peristaltic pump with dedicated tubing with the pump intake near the lower portion of the screened interval, unless dense NAPL (DNAPL) was present. Purging was accomplished in such a way as to minimize disturbance of sediments at the bottom of the well, and therefore minimize turbidity of the water samples. During well purging, field parameters, including specific conductance, pH, temperature, dissolved oxygen, oxidation/reduction potential (redox), and turbidity were monitored with field meters. Field meters were calibrated before sampling each day, using the manufacturer's recommended procedures. Odor and color of the purge water were also noted on the groundwater sampling record. Each monitoring well was purged until the field parameters pH, specific conductance, and temperature had stabilized, or until the well purged dry. Groundwater sampling records from July 2019 through March 2020 are provided in Attachment C.

After purging, groundwater samples were collected from the discharge of the peristaltic pump following low-flow sampling techniques. In July 2019, none of the wells with detectable DNAPL were sampled. However, as requested by the TCEQ in a letter dated September 6, 2019 (Additional Comments to UPRR's July 10, 2019 Response to 4th TNOD), wells with detectable DNAPL were sampled during the January–March 2020 sampling event. For wells with DNAPL measured, the pump intake was raised to at least 2 to 3 feet above the top of the measured DNAPL.

Since dedicated tubing was used in each well, no equipment rinse sample was collected. Sampling information (i.e., sample time, bottle sets, sampler name, use of filter, etc.) was recorded on the groundwater sampling forms. Groundwater samples were placed in coolers and delivered to ALS Laboratory Group in Houston, Texas for analysis. The samples were analyzed in accordance with EPA protocol for the analytical methods requested.

Analytical laboratory reports and DUSs for both sampling events are provided in Attachment B.

3.1 July 2019 Site-Wide Sampling event

The July 2019 sampling event was conducted between July 9 and July 31, 2019, in which 97 groundwater monitoring wells were sampled from the following groundwater bearing units (GWBUs):

- Forty (40) A-TZ monitoring wells;
- Thirty-two (32) B-TZ/B-CZ monitoring wells;
- Twenty-one (21) C-TZ monitoring wells; and
- Four (4) D-TZ monitoring wells.

Monitoring wells containing detectable DNAPL were not sampled during this monitoring event.

3.2 January-March 2020 Site-Wide Sampling Event

The January-March 2020 sampling event was conducted between January 9 and March 20, 2020 (January-March 2020 sampling event), and included the sampling of monitoring wells installed in February and March 2020. During the January-March 2020 sampling event, 127 groundwater monitoring wells were sampled from the following GWBUs:

- Forty-eight (48) A-TZ monitoring wells;
- Forty-eight (48) B-TZ/B-CZ monitoring wells;
- Twenty-seven (27) C-TZ monitoring wells; and
- Four (4) D-TZ monitoring wells.

Monitoring wells containing detectable DNAPL were sampled during this monitoring event.

4.0 GROUNDWATER ELEVATION DATA

Prior to purging and sampling, the static depth to groundwater in wells was measured from the designated surveyed measuring point with an interface probe to the nearest one hundredth of one foot (0.01 ft). Groundwater elevations for the monitoring wells measured in July 2019 and January 2020 are summarized on Table 1. Potentiometric surface maps for each of the four transmissive zones, A-TZ, B-TZ/B-CZ, C-TZ, and D-TZ, are presented on Figures 5A-1a through and 5A-4a for the July 2019 sampling event, and on Figures 5A-1b through and 5A-4b for the January-March 2020 sampling event. Groundwater flow directions are described in the following sections.

4.1 A-TZ Wells

Groundwater in the A-TZ generally flows from southwest to east-northeast across the Site at a gradient ranging from approximately 0.002 ft/ft to 0.016 ft/ft (approximate average of 0.004 ft/ft), with a groundwater divide on the east side of the Site just west of the Lockwood Road Bridge (Figures 5A-1a and 5A-1b). As discussed in the Updated APAR Addendum (PBW, 2010), the 60-in wastewater line runs north to south just west of the Lockwood Bridge and appears to intersect the A-TZ. Groundwater flow in the A-TZ flows to the east on the west side of the wastewater line and flows to the west on the east side of the wastewater line.

The highest groundwater elevation in the A-TZ during the July 2019 and January 2020 event was near the west side of the Site at Solid Waste Management Unit (SWMU) 1 (45.35 feet relative to the City of Houston Vertical Datum (HVD) (MW-08, July 2019) and 45.47 ft HVD (MW-02, January 2020)), with the lowest elevations near the east side of the Site along Lockwood Drive (34.06 feet HVD (MW-18A, July 2019) and 33.86 ft HVD (MW-18A, January 2020)) near the area where the wastewater line is located.

4.2 B-CZ/B-TZ Wells

Groundwater in the B-TZ generally flows from west to east-northeast across the Site at gradients ranging from 0.003 ft/ft to 0.02 ft/ft, with an average of approximately 0.004 ft/ft. As shown on Figures 5A-2a and 5A-2b, there is a piezometric high near the west perimeter of the Site near SWMU 1, similar to the flow conditions in the A-TZ. Off-site to the north, the groundwater flow conditions in the B-TZ are more variable. In July 2019 and January 2020, groundwater flow was to the east, north, or northwest depending on the location. For the two monitoring events, the highest groundwater elevation in the B-TZ was 45.70 feet HVD (P-12 (July 2019), and lowest elevation in the B-TZ wells was 36.09 feet HVD (MW-80B, July 2019).

As discussed in the Response Action Plan (RAP) (Attachment 1A - APAR Addendum, PBW, 2014), there is a lateral change in the hydrogeology of the B-TZ as it pinches out from west to east into the B-CZ clay unit, where groundwater is encountered in very thin carbonate seams (typically less than 0.1 feet thick) within the clay unit at relatively the same elevation as the B-TZ. The B-CZ, where these thin carbonate seams are found, was classified as a Class 3 groundwater resource that was approved by the TCEQ in the 3rd TNOD letter dated April 10, 2017.

Groundwater flow in the B-CZ during the gauging events show variable flow direction with flow to the east-northeast on the east portion of the Site. Groundwater potentiometric elevations from the off-site wells north of the Site (i.e., MW-36B and MW-59B) indicate flow to the north toward MW-67B (Figures 5A-2a and 5A-2b). There is also a groundwater elevation high near off-site wells MW-36B and MW-71B showing flow radiating from that area (Figures 5A-2a and 5A-2b). The highest groundwater elevation in the B-CZ in July 2019 was 43.97 feet HVD (MW-71B), and the lowest elevation in the B-CZ wells was 34.20 feet HVD (MW-49B) (Figure 5A-2a)

4.3 C-TZ Wells

Groundwater flow direction in the C-TZ is generally from northeast to southwest across the Site (Figures 5A-3a and 5A-3b) with a gradient about 0.001 ft/ft. The flow direction is similar to previous gauging events in the C-TZ. Groundwater elevations measured in July 2019 and January 2020 events ranged from a high of approximately 29.72 feet HVD (MW-53C, July 2019) to 25.52 feet HVD (MW-86C, January 2020). There are two areas showing relatively low potentiometric elevations, near MW-23C and in the vicinity of MW-44C, MW-45C, and MW-46C. Both areas, where current DNAPL recovery efforts are being conducted (i.e., monthly recovery events), have potentiometric elevations about 1 to 3 feet lower than the surrounding potentiometric elevations (Figures 5A-3a (July 2019) and 5A-3b (January 2020)).

4.4 D-TZ Wells

Groundwater flow direction in the D-TZ appears to be from the southeast to northwest during the July 2019 event (Figure 5A-4a) and from the east to west during the January 2020 event (Figure 5A-4b) at gradients ranging from 0.0015 ft/ft to 0.0038 ft/ft. Groundwater elevations range from a high of -34.75 feet HVD (MW-66D (January 2020) to a low of -38.84 feet HVD (MW-59D, January 2020).

5.0 GROUNDWATER ANALYTICAL RESULTS

Groundwater analytical data were compared to the TCEQ TRRP Residential Groundwater PCLs or Residential Assessment Levels (RALs) (the lesser value between $^{GW}GW_{Ing}$ and $^{Air}GW_{Inh\text{-}V}$ PCLs), dated November 2019, assuming the source area greater than 0.5 acre in size (30-acre source area). Critical PCLs (cPCLs) to assess PCLE Zones were then established assuming residential or commercial/industrial (C/I) land use depending on the location of the monitoring well (i.e., on-site wells compared to C/I PCLs and off-site wells compared to residential PCLs). The PCLE Zones were established based on the COC concentrations for both the July 2019 and January-March 2020 sampling events. Semi-annual groundwater monitoring data from January 2009 through March 2020 were used to construct the following summary tables and evaluate trends in COC concentrations in groundwater:

- Table 1 – Groundwater Measurements
- Table 2 – Analytical Results Summary – Class 2 Groundwater
- Table 3 – Analytical Results Summary – Class 3 Groundwater
- Table 4 - Analytical Results Summary – A-TZ Wells – Vapor Intrusion Screening Level (VISL) Comparison (2019-2020)

COCs evaluated were the site-specific COCs identified in the RCRA Facility Investigation (RFI) Work Plan (IC, 1994) prepared for the Site. In addition to the 34 site-specific COCs, groundwater samples from selected wells were analyzed for vinyl chloride by EPA Method 8260 and samples from the site-wide monitoring wells were analyzed for arsenic by EPA Method 6020 based on previous groundwater sampling events. Comparing the maximum groundwater analytical data from the July 2019 and January 2020 groundwater sampling events to cPCLs, concentrations of 18 target COCs (plus arsenic) exceeded their respective RALs:

<u>Volatile Organic Compounds (VOCs)</u>

- Benzene (A-TZ, B-CZ/B-TZ, C-TZ)

<u>Semi-Volatile Organic Compounds (SVOCs)</u>

- 2,4-Dimethylphenol (A-TZ, B-TZ)
- 2,6-Dinitrotoluene (C-TZ)
- 2-Methylnaphthalene (A-TZ, B-CZ/B-TZ, & C-TZ)
- *Acenaphthene (B-CZ/B-TZ only*)*
- *Acenaphthylene (B-CZ/B-TZ only*)*
- *Anthracene (B-CZ only*)*
- Benzo(a)anthracene (B-CZ/B-TZ)
- Benzo(a)pyrene (A-TZ, B-CZ/B-TZ, & C-TZ)
- *Chrysene (B-TZ only*)*
- Dibenzofuran (A-TZ, B-CZ/B-TZ, & C-TZ)
- *Fluoranthene (B-CZ/B-TZ only*)*
- *Fluorene (B-CZ/B-TZ only*)*
- Naphthalene (A-TZ, B-CZ/B-TZ, & C-TZ)
- Pentachlorophenol (C-TZ)
- Phenanthrene (B-CZ/B-TZ only)

Volatile Organic Compounds (VOCs)

Semi-Volatile Organic Compounds (SVOCs)

- Phenol (A-TZ, B-CZ)
- *Pyrene (B-CZ/B-TZ only*)*

** - COC only detected in wells with DNAPL present*

As noted above, seven SVOC concentrations (acenaphthene, acenaphthylene, anthracene, chrysene, fluoranthene, fluorene, and pyrene) were detected above RALs in wells MW-12B, MW-32B, MW-49B, and MW-70B. Each of these wells contained detectable DNAPL during the sampling event. As a result, these concentrations would tend to overestimate the dissolved concentration in the groundwater if some DNAPL was entrained in the sample during sample collection. As an example, naphthalene concentrations were detected in MW-12B at 760 mg/L in January 2020, which is more than an order of magnitude greater than the solubility of naphthalene in water at 41 mg/L, thereby demonstrating the entrainment of some naphthalene-containing NAPL within the sample collected from this well.

5.1 July 2019 and January-March 2020 COC Concentrations

The spatial distribution of the COCs exceeding RALs in each GWBU from the July 2019 and January-March 2020 monitoring events are presented on the following figures (provided in Attachment D and E, respectively for each event):

- Figure 5B-1 for unit A-TZ,
- Figure 5B-2 for B-TZ/B-CZ,
- Figure 5B-3 for C-TZ, and
- Figure 5B-4 for D-TZ.

In addition to the figures listed above, individual COC concentration maps for the most commonly detected groundwater COCs at the Site (primary COCs –VOC benzene, and SVOCs 2,4-dimethylphenol, 2-methylnaphthalene, dibenzofuran, and naphthalene) were prepared for the A-TZ, B-CZ/B-TZ, and C-TZ units at the Site using the July 2019 (Attachment D) and January-March 2020 (Attachment E) data. The figures (Figure 5B-5 through 5B-19) are listed below:

GWBU	A-TZ	B-CZ/B-TZ	C-TZ
COC	**Figure Number**		
Benzene	5B-5	5B-10	5B-15
2,4 – Dimethylphenol	5B-6	5B-11	5B-16
2-Methylnaphthalene	5B-7	5B-12	5B-17
Dibenzofuran	5B-8	5B-13	5B-18
Naphthalene	5B-9	5B-14	5B-19

For each COC concentration map, a cumulative groundwater PCLE Zone based on the combined PCLE Zones for each individual COC in each GWBU is shown on the figures.

Monitoring wells in the four GWBUs were also sampled and analyzed for arsenic. Arsenic concentrations from the July 2019 and January-March 2020 sampling events were detected above the TCEQ TRRP RAL and cPCL in the A-TZ and B-CZ/B-CZ zones (Tables 2 and 3). Arsenic isopleth maps were generated for the A-TZ, B-CZ/B-TZ, and C-TZ based on the 2019 and 2020 data (Figure 5B-20 through Figure 5B-22 in Attachment D (July 2019) and E (January-March 2020)). Details of the distribution of the COCs detected in each transmissive zone are discussed below.

5.1.1 A-TZ Wells

VOCs

During the July 2019 and January-March 2020 groundwater monitoring events, benzene concentrations were the only VOCs that were detected above its RAL and cPCL of 0.005 mg/L in A-TZ wells. Benzene concentrations detected above the RAL were predominantly located on the eastern portion of the Site and in the northern portion of the Englewood Intermodal Yard (Figure 5B-5 (Attachments D and E)).

Except for the benzene concentration detected at off-site well MW-26A at 0.00036J mg/L (July 2019 event), an order of magnitude below the RAL, none of the off-site A-TZ wells to the north had benzene concentrations detected above the sample detection limit (SDL) during the two sampling events. Therefore, benzene concentrations are delineated to the RAL to the north. Benzene concentrations are also delineated to the RAL to the east of the Site in wells MW-47A, MW-59A, MW-60AR, and MW-61A; delineated to the RAL to the south at MW-50A, MW-51A, MW-97A, and MW-98A ; and delineated to the RAL to the west at wells MW-05, MW-09, MW-12A, MW-15A, and MW-88A based on the analytical data from both events. Based on the analytical results, the PCLE Zone for benzene in the A-TZ is within the Site boundary except to the north (along Liberty Road) and east in which it extends onto the City of Houston right-of-way (ROW) (Figure 5B-5, Attachments D and E)).

For the wells installed in February-March 2020, benzene concentrations were below SDLs in the eight new A-TZ wells MW-47A, MW-84A, MW-88A, MW-91A, MW-94A, MW-95A, MW-97A, MW-98A, and in replacement well MW-60AR sampled during the March 2020 sampling event.

Other VOCs (1,2-dichloroethane, chlorobenzene, ethylbenzene, toluene, vinyl chloride, and xylenes) were detected above SDLs in the A-TZ wells sampled during the July 2019 and January-March 2020 sampling events, however, none of the results exceeded their respective RALs.

SVOCs

Similar to the benzene detections, SVOCs were detected above the applicable RALs in A-TZ wells located generally on the eastern portion of the Site and in the northern portion of the Englewood Intermodal Yard. The primary SVOCs detected in the A-TZ above RALs included 2,4-dimethylphenol, 2-methylnaphthalene, dibenzofuran, and naphthalene (Figures 5B-6 through 5B-9, Attachments D and E). Analytical data from the July 2019 and January-March 2020 sampling events indicated that concentrations of SVOCs 2,4-dimethylphenol, 2-methylnaphthalene, dibenzofuran, and naphthalene were delineated in the A-TZ to the north, east, south and west below their respective RALs similar to the benzene concentrations. Dibenzofuran was detected above the RAL in one A-TZ well (MW-12A) on the western side of the Site during both sampling events but below the cPCL. Dibenzofuran concentrations were below RALs in the off-site well to the northwest (MW-38A) of MW-12A during both events.

For both sampling events, the groundwater PCLE Zone for the primary SVOCs that exceeded their cPCLs generally falls within the benzene PCLE Zone. Therefore, similar to the benzene PCLE Zone, none of the SVOC

concentrations detected in A-TZ wells offsite exceeded their respective RALs. The PCLE Zones for the individual SVOCs are predominately within the Site boundary except to the north (along Liberty Road) and east in which it extends onto the City of Houston ROW.

For the newly installed wells in February-March 2020, SVOCs 2,4-dimethylphenol, 2-methylnaphthalene, dibenzofuran, and naphthalene concentrations were below RALs in the eight new A-TZ wells MW-47A, MW-84A, MW-88A, MW-91A, MW-94A, MW-95A, MW-97A, MW-98A, and in replacement well MW-60AR during the March 2020 sampling event.

Except for benzo(a)pyrene and phenol, concentrations for the other SVOCs analyzed were either detected below RALs or below the SDL in the A-TZ wells during the July 2019 and January-March 2020 sampling events. Benzo(a)pyrene at MW-57A and phenol at MW-17 were detected at concentrations greater than the respective RALs in July 2019. Benzo(a)pyrene at MW-57A and MW-79A was detected at concentrations greater than the RAL in January-March 2020. Trace DNAPL was observed in MW-57A in early 2019 but has not been detected since then.

Arsenic

Arsenic concentrations have generally fluctuated in A-TZ wells between sampling events (Table 2). Of the A-TZ wells sampled in July 2019, arsenic concentrations in 13 A-TZ wells exceeded the RAL where only 7 of those same wells sampled in January 2020 had arsenic concentrations detected above the RAL. The July 2019 arsenic concentrations in A-TZ wells generally exceed the RAL along the northern boundary of the Site (MW-13, MW-15A, MW-17, and MW-18A), offsite to the north (MW-26A, MW-32AR, MW-33A, MW-35A, MW-44A, and MW-68A), in the southwestern portion of the Site (MW-04 and MW-05), and one well in the central portion of the Englewood Intermodal Yard (MW-77A) (Figure 5B-20, Attachment D). The January-March 2020 arsenic concentrations in A-TZ wells exceed the RAL along the northern boundary of the Site (MW-13, MW-15A, MW-18A, and MW-57A), offsite to the north (MW-26A, MW-35A, and MW-68A), one well offsite to the west (MW-38A), and at one well in the central portion of the Englewood intermodal yard (MW-77A) (Figure 5B-20, Attachment E). For the newly installed wells in February-March 2020, arsenic concentrations were below the RAL in the eight new A-TZ wells MW-47A, MW-84A, MW-88A, MW-91A, MW-94A, MW-95A, MW-97A, MW-98A, and in replacement well MW-60AR during the March 2020 sampling event. Based on the January-March 2020 groundwater data with the newly installed wells, the arsenic concentrations are delineated to the RAL in the A-TZ except near MW-13 on the northwest corner of the Site.

Arsenic concentrations in the A-TZ wells do not appear to correlate with the elevated concentrations of the primary COCs. Many wells with elevated arsenic concentrations (exceeding RAL) do not have exceedances of other COC concentrations, especially north of the Site. For example, arsenic concentrations were highest at MW-26A and MW-13 in July 2019, but all other COC concentrations were detected below RALs at MW-26A and at MW-13 (Table 2). Similar to July 2019, January-March 2020 arsenic concentrations were highest at MW-13, and all other COC concentrations in MW-13 were below RALs (Table 2). Dissolved concentrations of arsenic in groundwater at the Site are likely associated with naturally-occurring arsenic in the aquifer matrix that is reduced from less mobile arsenate species to more mobile arsenite species under reducing conditions caused by the natural degradation of petroleum hydrocarbons (Cozzarelli, et al., 2015).

EPA Vapor Intrusion Screening Level Evaluation

Groundwater analytical data from July 2019 and January-March 2020 for the off-site monitoring wells completed in the A-TZ north, west and east of the Site were also compared to values developed using the U.S. Environmental Protection Agency's (EPA's) vapor intrusion screening level (VISL) calculator (EPA, 2015, EPA,

2019). The VISL calculator was used to calculate conservative, non-site specific, risk-based potential vapor intrusion (VI) screening values for the identified COCs in the A-TZ. The EPA tool calculates the COC concentration in groundwater, based on certain default conditions, at which the COC is not expected to pose an unacceptable VI risk and, as such, can be eliminated from further consideration.

EPA VISL Calculator

The VISL calculator (EPA, 2019) provides a screening level based on several basic inputs, including a residential or commercial exposure scenario, target hazard quotient, target carcinogenic risk, and groundwater temperature. For this evaluation, the selected inputs were – residential scenario, hazard quotient of 0.1, carcinogenic risk of 10^{-5} (consistent with the TRRP criteria), and groundwater temperature of 25°C. Based on these inputs, the calculated groundwater screening concentrations were estimated. These values were compared with the July 2019 and January-March 2020 groundwater sample COC concentrations for the Site-specific COCs (Table 4). A summary of the VISL values relative to the maximum detected COC concentrations from the two sampling events are provided in the following table.

COC	VISL Screening Level for Elimination from Further Consideration (mg/L)	Maximum Detected COC Concentrations in Off-Site A-TZ Wells July 2019 & January-March 2020 Samples (mg/L)
Benzene	0.014	0.00036J (MW-26A-July 2019)
Chlorobenzene	0.041	<0.0003
Ethylbenzene	0.035	<0.0003
Methylene Chloride	0.471	<0.001
Toluene	1.92	<0.0002
Xylenes	0.0385	<0.0003
Benzo(a)anthracene	0.344	0.00012 (MW-25A-Jan 2020)
Naphthalene	0.0174	0.0026 (MW-27A – July 2019)
Nitrobenzene	0.715	<0.000025

EPA's VISL calculator uses a conservative default attenuation factor of 0.001 for the attenuation of vapors between the groundwater source and the overlying receptor. This attenuation factor is not adjusted for the more rapid attenuation observed in petroleum hydrocarbon vapors and is therefore likely overly conservative for these compounds. Nevertheless, as indicated above, the COC concentrations from the July 2019 and January-March 2020 off-site A-TZ wells were below the conservative EPA VISL-calculated screening levels by orders of magnitude indicating the VI pathway from the shallow groundwater is incomplete.

5.1.2 B-CZ/B-TZ Wells

VOCs

During the July 2019 and January-March 2020 groundwater monitoring events, benzene concentrations were the only VOCs that were detected above its RAL of 0.005 mg/L (Class 2 groundwater PCL) in B-TZ wells and 0.5 mg/L (Class 3 groundwater PCL) in the B-CZ wells. Benzene concentrations detected above the two RALs in July 2019 and January-March 2020 were predominantly located in area extending from the northeastern portion of the Englewood Intermodal Yard, through the eastern portion of the Site, and off-site to the north (Figure 5B-10 (Attachment D and E)). There is also a smaller area where benzene concentrations exceed the RAL on the western portion of the Site.

Benzene concentrations in the B-CZ are delineated to the Class 3 groundwater RAL to the north and east by MW-33BR, MW-59B, MW-60B, MW-61B, MW-63B, MW-67B, and MW-71B (also shown on Figure 5B-10 (Attachment D and E). Benzene concentrations in the B-TZ in the eastern portion of the Site are delineated to the RAL to the west by MW-15B, MW-82B, MW-88B, MW-89B, MW-90B, MW-92B, and MW-93B and to the south by MW-50B, MW-76B, MW-80B, MW-81B, and MW-98B. Benzene concentrations in the smaller area on the west side of the Site are delineated to the RAL to the north by MW-39B, to the east by MW-42B, to the south by P-11, and to the east by MW-62B, TW-41B, and MW-38B. Benzene concentrations were below RALs in the ten new B-CZ/B-TZ wells during the March 2020 sampling event: MW-50B, MW-54B, MW-60B, MW-61B, MW-76B, MW-88B, MW-92B, MW-93B, MW-96B, and MW-98B.

The PCLE Zone for benzene based on land use (i.e., C/I for on-Site wells and Residential for off-Site wells) in the B-CZ/B-TZ (Class 3 and 2 groundwater, respectively) for both the July 2019 and January-March 2020 events encompasses the northeastern portion of the Englewood Intermodal Yard, eastern portion of the Site, and extends off-site to the north of the Site (referred to as the “Main” PCLE Zone). The PCLE Zone for the smaller area on the west side of the Site appears to be within the Site property boundary (referred to as the “West” PCLE Zone).

Other VOCs (ethylbenzene, toluene, vinyl chloride, and xylenes) were detected above SDLs in the B-CZ/B-TZ wells sampled during the July 2019 and January-March 2020 sampling events; however, none of the results exceeded their respective RALs.

SVOCS

Similar to the benzene concentrations, primary SVOCs 2,4-dimethylphenol, 2-methylnaphthalene, dibenzofuran, and naphthalene were detected above their respective RALs in B-CZ/B-TZ wells located generally in the area extending from the northeastern portion of the Englewood Intermodal Yard, through the eastern portion of the Site, and off-site to the north (Figures 5B-11 through 5B-14 (Attachment D and E)). A smaller area on the western portion of the Site also had RAL exceedances for 2-methylnaphthalene, dibenzofuran, and naphthalene.

Analytical data from the July 2019 and January-March 2020 sampling events indicated that concentrations of SVOCs 2,4-dimethylphenol, 2-methylnaphthalene, dibenzofuran, and naphthalene were delineated in the B-CZ/B-TZ to the north, east, south and west below their respective RALs for both areas. For the newly installed wells in February-March 2020, 2,4-dimethylphenol, 2-methylnaphthalene, dibenzofuran, and naphthalene concentrations were below RALs in the ten new B-CZ/B-TZ wells during the March 2020 sampling event: MW-50B, MW-54B, MW-60B, MW-61B, MW-76B, MW-88B, MW-92B, MW-93B, MW-96B, and MW-98B.

For both sampling events, the groundwater PCLE Zones based on the land use and groundwater classification cPCLs for the primary SVOCs either fall within or are very similar to the benzene PCLE Zones for both the Main and West PCLE Zones.

Except for benzo(a)pyrene in MW-68B and phenol in MW-74B, all other SVOCs were either detected below RALs or below the SDL in the B-CZ/B-TZ wells sampled in July 2019. During the January-March 2020 sampling event, wells with DNAPL were sampled as requested by the TCEQ in a letter dated September 6, 2019. The following other SVOCs were detected above RALs in January-March 2020 in MW-12B, MW-32B, MW-41B, MW-49B, MW-68B, MW-70B, MW-74B, and MW-75B: acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, chrysene, fluoranthene, fluorene, phenanthrene, phenol, and pyrene. Except for MW-74B, DNAPL was detected in each of these B-CZ/B-TZ wells that had SVOC exceedances during the January-March 2020 sampling event. Well MW-74B has not had detectable DNAPL since installation; however, DNAPL was noted in the boring log for this well in the B-CZ/B-TZ interval during monitoring well installation.

Arsenic

Arsenic concentrations in the B-TZ in July 2019 exceeded the Class 2 groundwater RAL (0.01 mg/L) in seven wells at the Site in two areas: the western portion of the Site (MW-40B, TW-41B, and P-11) and offsite north of the Site (MW-15B, MW-68B, MW-83B, and MW-84B). Arsenic concentrations in the B-TZ in January-March 2020 exceeded the RAL in the same two areas but in 11 wells: western portion of the Site (MW-40B, TW-41B, and P-11, MW-12B, MW-41B, and MW-62B) but also extended offsite to the west (MW-22BR and MW-38B), and offsite to the north (MW-35B and MW-83B).

Arsenic levels in B-CZ/B-TZ wells north of the Site do not appear to correlate with the elevated concentrations of the primary COCs in the B-CZ/B-TZ in the same area. Concentrations of primary COCs (benzene and SVOCs) were above RALs in July 2019 and January-March 2020 in the eastern portion of the Site, where arsenic concentrations were below the arsenic RAL in that same area. The arsenic concentrations to the north of the Site from the January-March 2020 sampling event are delineated to the RAL to the north, east, south, and west (Figure 5B-21 (Attachment E)).

B-TZ wells on the western side of the Site had both primary COC and arsenic concentrations above the RALs. Based on the groundwater data from the January-March 2020 sampling event, arsenic concentrations are delineated to the RAL in the B-TZ except to the west near MW-38B and MW-62B (Figure 5B-21 (Attachment E)). Arsenic concentrations in MW-38B and MW-62B have fluctuated above and below the RAL over the past two years. In June 2018, arsenic concentrations in MW-38B (0.0386 mg/L) and MW-68B (0.0112 mg/L) exceeded the RAL, whereas in January and July 2019, arsenic concentrations in MW-38B (<0.0004 mg/L and 0.000553 mg/L J, respectively) and MW-62B (<0.0004 mg/L and 0.00194 mg/L J, respectively) were below the RAL. All other site-related COC concentrations were below respective RALs in MW-38B and MW-62B during the past two years.

Arsenic concentrations were below RALs in the ten new B-CZ/B-TZ wells sampled during the March 2020 sampling event: MW-50B, MW-54B, MW-60B, MW-61B, MW-76B, MW-88B, MW-92B, MW-93B, MW-96B, and MW-98B.

5.1.3 C-TZ Wells

VOCs

During July 2019 and January-March 2020 groundwater monitoring events, benzene was the only VOC that had concentrations detected above its RAL in C-TZ wells. Benzene concentrations were detected above the RAL in wells located in the northeast portion of the Site (MW-17C and MW-18C (July 2019), and MW-18C (Jan-Mar 2020)) and offsite to the north and northeast (only MW-46C and MW-70C in Jan-Mar 2020) (Figure 5B-15 (Attachment D and E). DNAPL was historically observed in wells MW-44C, MW-45C, and MW-46C, but has not been detected since June 2019 in MW-44C and MW-46C, and since October 2015 in MW-45C. These three wells were sampled in January 2020, and benzene was detected above the RAL in only MW-46C. Benzene was detected above the RAL in newly installed well MW-70C north of the Site and below the SDL in the other newly installed C-TZ well MW-99C northeast of the Site.

Benzene concentrations are delineated to the RAL to the east of the Site by MW-54C; to the north by MW-28C, MW-53C, MW-87C, and MW-99C; to the west by MW-15C, MW-17C and MW-68C; and to the south by MW-19C, MW-47C, MW-48C, and MW-88C. The PCLE Zone for benzene in the C-TZ is in the northeast portion of the Site and extends offsite to the north (along and across Liberty Road (MW-70C)) and east in which it extends onto the City of Houston ROW (MW-46C) (Figure 5B-15 (Attachments D and E)). The PCLE Zone is delineated based on the same wells listed above.

Other VOCs (chlorobenzene, ethylbenzene, toluene, and xylenes) were detected above SDLs in the C-TZ wells sampled during the July 2019 and January-March 2020 sampling events, however, none of the results exceeded their respective RALs.

SVOCs

Following a similar pattern for the benzene detections above its RAL in the C-TZ, SVOCs were detected above the applicable RALs in C-TZ wells located in the northeastern portion of the Site and offsite to the north and northeast. The primary SVOCs detected in the C-TZ above RALs include 2-methylnaphthalene, dibenzofuran, and naphthalene (Figures 5B-16 through 5B-19 (Attachment D and E)). Analytical data from the July 2019 and January-March 2020 sampling events indicated that concentrations of SVOCs 2-methylnaphthalene, dibenzofuran, and naphthalene were delineated in the C-TZ to the north (MW-53C, MW-87C, MW-28C, and MW-99C), east (MW-54C), south (MW-19C, MW-47C, MW-48C, and MW-88C), and west (MW-15C, MW-17C and MW-68C) below their respective RALs similar to the benzene concentrations.

For both sampling events, the groundwater PCLE Zone for the primary SVOCs generally falls within the extent of the benzene PCLE Zone. Therefore, similar to the benzene PCLE Zone, the PCLE Zones for the individual SVOCs are predominately within the Site boundary except to the north (along and across Liberty Road (MW-70C)) and east where it extends onto the City of Houston ROW (MW-25C and MW-46C).

For the newly installed wells in February-March 2020, SVOCs 2,4-dimethylphenol, 2-methylnaphthalene, and dibenzofuran concentrations were at or below RALs in the two new C-TZ wells, MW-70C and MW-99C, during the March 2020 sampling event. The naphthalene concentration in MW-70C was above the RAL in March 2020.

Other SVOCs (2,6-dinitrotoluene, benzo(a)pyrene, and pentachlorophenol) were detected at concentrations that exceeded their RALs in the C-TZ during the July 2019 and January-March 2020 sampling events. The 2,6-dinitrotoluene concentration in MW-53C was detected above the RAL (0.001 mg/L) in July 2019 but below the SDL during the January-March 2020 sampling event. The reported 2,6-dinitrotoluene concentration in MW-21C was below the SDL (0.00004 mg/L) during both sampling events but detected above the RAL at 0.003 mg/L in the

field duplicate collected at MW-21C during the January-March 2020 sampling event (qualified with a J-flag). Benzo(a)pyrene was detected above the RAL (0.0002 mg/L) at well MW-25C in July 2019, but below the SDL during the January-March 2020 sampling event. In January-March 2020, benzo(a)pyrene was detected above the RAL at wells MW-18C, MW-23C, MW-44C, MW-45C, and MW-46C. As previously mentioned, DNAPL was historically observed in wells MW-23C, MW-44C, MW-45C, and MW-46C, and these wells were not sampled in July 2019. Pentachlorophenol was detected above the RAL (0.001 mg/L) in well MW-18C in July 2019 and January 2020 and in off-Site well MW-25C in January 2020. Except for the unverified 2,6-dinitrotoluene concentration in MW-21C, the PCLE Zones for these additional SVOCs are within the benzene and primary SVOC PCLE Zones discussed above.

Arsenic

Arsenic was not detected above the RAL in any of the C-TZ wells in July 2019 or January-March 2020.

5.1.4 D-TZ Wells

VOCs

In July 2019 and January-March 2020, no VOCs were detected above RALs in D-TZ wells. All VOCs were below the SDL.

SVOCs

In July 2019 and January-March 2020, no SVOCs were detected above RALs in D-TZ wells. All SVOCs were either below the SDL or detected (estimated – J-flagged) multiple orders of magnitude below respective RALs.

Arsenic

Arsenic was not detected above the RAL in any of the D-TZ wells in July 2019 or January-March 2020.

5.2 COC Concentration Trends

Graphs of primary COC concentrations (benzene, 2,4-dimethylphenol, 2-methylnaphthalene, dibenzofuran, and naphthalene) over time at each monitoring well are provided in Attachment F. Trends of the primary COC concentrations at monitoring wells in each GWBU from 2009 (or date of installation) to 2020 with at least four sampling events, including samples collected from wells containing detectable DNAPL, were preliminarily evaluated by performing Mann-Kendall trend test. The Mann-Kendall test is a non-parametric statistical test that makes no distributional assumptions of data and is used to analyze linear increasing or decreasing trends in data over time (GSI, 2012). The temporal trend module of the Monitoring and Remediation Optimization System (MAROS) software (developed by GSI Environmental Inc. (GSI) on behalf of Air Force Civil Engineer Center (AFCEC)) was used to run the Mann-Kendall tests at individual wells over time (MAROS version 3 (GSI, 2012)). The Mann-Kendall test was applied to concentrations from each primary COC at each well, comprised of concentrations for detects and detection limits for non-detects.

Using the Mann-Kendall statistic (MK (S)), the trends in the data can then be evaluated. Increases in constituent concentrations over time are indicated by positive values, and decreases in constituent concentrations are indicated by negative values. The MK (S) indicates the direction of the trend and the confidence factor (p-value) indicates the strength of the trend.

- Mann-Kendall test results with a p-value less than 0.05 indicate a statistically significant increasing or decreasing trend (95% level of confidence).
- Results with a p-value greater than 0.05 but less than 0.1 indicate a “probably” increasing or “probably” decreasing trend. Mann-Kendall test results with a p-value greater than 0.10 indicate either a “stable” trend or “no trend”.
- A “stable” trend occurs when data from a constituent in a well has a coefficient of variation less than 1, appears to follow a decreasing trend, and has a p-value from the Mann-Kendall test greater than 0.10.
- In all other cases when the p-value from the Mann-Kendall test is greater than 0.10, the constituent and well is considered to have “no trend” (GSI, 2012).

The preliminary results of the Mann-Kendall analysis and output from the software are provided in Attachment G. The Mann-Kendall test results generally indicated that primary COC concentrations are either stable, decreasing, probably decreasing, or exhibit no trend in most of the monitoring wells at the Site. However, the following Mann-Kendall test results preliminarily indicate an increasing/probably increasing trend for certain primary COC concentrations in selected monitoring wells:

A-TZ:

- Results indicate a probably increasing trend in naphthalene in on-site well MW-51A and a probably increasing trend in 2-methynaphthalene concentrations in on-site well MW-03. However, in both these wells, primary COC concentrations are multiple orders of magnitude lower than applicable PCLs with a majority of the datasets comprising non-detects or estimate values (J-flagged).

B-CZ/B-TZ:

- Results indicate an increasing trend in benzene, 2,4-dimethylphenol, 2-methylnaphthalene, and dibenzofuran and probably increasing trends in naphthalene concentrations in on-site well MW-49B. DNAPL has been observed in well MW-49B.
- Results indicate an increasing trend in 2-methylnaphthalene and naphthalene in off-site well MW-70B. No trend was determined for the other primary COCs at MW-70B. DNAPL has also been observed in MW-70B.
- Results indicate an increasing trend in 2-methylnaphthalene, dibenzofuran, and naphthalene and probably increasing trend in benzene in on-site well TW-41B. Test well TW-41B is located between DNAPL recovery wells MW-12B and MW-41B, which both have had DNAPL in-depth thicknesses as thick as 15 to 26 feet. TW-41B is a 4-inch stainless steel well installed in 2009 to serve as a possible DNAPL recovery well given the relatively thick DNAPL noted in the two nearby wells. No DNAPL has been detected in TW-41 since installation.
- Results indicate a probably increasing trend in benzene concentrations in off-site well MW-83B. Since installation in 2018, the benzene concentration in MW-83B has been above the RAL and has ranged from 0.018 mg/L to 0.032 mg/L with a standard deviation of 0.006 mg/L. The highest concentration was detected in January 2019 at 0.032 mg/L, and has decreased to 0.021 mg/L in July 2019 and January 2020. None of the other primary COCs showed increasing trends in this well (decreasing or probably decreasing trends (2-methylnaphthalene, dibenzofuran, and naphthalene) and not trend (2,4-dimethylphenol).
- Results indicate an increasing trend and probably increasing trend in naphthalene concentrations in off-site well MW-90B and on-site well MW-81B, respectively. However, in both these wells, all primary COC concentrations are multiple orders of magnitude lower than applicable PCLs with a majority of the datasets comprising non-detects or estimates (J-flagged).

C-TZ:

- Results indicate an increasing trend in 2,4-dimethylphenol concentrations in on-site well MW-23C. DNAPL has been observed in well MW-23C. Mann-Kendall test results indicate no trend or a stable trend for the other primary COC concentrations in MW-23C.
- Results indicate an increasing trend in naphthalene concentrations in on-site MW-86C. However, primary COC concentrations are multiple orders of magnitude lower than applicable PCLs with a majority of the dataset comprising non-detects or estimated values (J-flagged).

Of the 104 wells evaluated, 10 wells listed above showed an increasing or probably increasing trend in primary COC concentrations. DNAPL has been observed in 3 of those 10 wells. For 5 of the 10 wells, the majority of the datasets comprised of non-detects or estimates (J-flagged).

5.3 Naphthalene Concentration in MW-11B

As detailed in the Corrective Action Monitoring Report - 2019 Second Semi-Annual Event dated January 17, 2020 (Golder, 2020), naphthalene concentrations were detected in point of compliance (POC) well MW-11B completed in the B-TZ above the Groundwater Protective Standards (GWPS) established in the approved Compliance Plan (CP) Table III for the Closed Surface Impoundment (Solid Waste Management Unit (SWMU) 1) during the second semi-annual monitoring period of 2019.

Based on the analytical results from the July 2019 monitoring event, naphthalene concentrations were detected at POC well MW-11B at 0.70 mg/L, above the GWPS of 0.49 mg/L. As allowed under the CP Section VI.D3, monitoring well MW-11B was resampled on July 30, 2019 for naphthalene to confirm the initial GWPS exceedance. The resampled results indicated that naphthalene concentrations were detected at 1.1 mg/L. Therefore, the initial GWPS exceedance at MW-11B for naphthalene was verified with the resampling event and the POC well was considered to be non-compliant. The TCEQ was notified of the verified exceedance in a letter dated September 5, 2019. An additional groundwater sample from POC well MW-11B was collected in October 2019. The naphthalene concentration in MW-11B in October 2019 was detected at 0.6 mg/L, also above the GWPS. Naphthalene concentrations in groundwater samples from all other SWMU 1 monitoring wells in A-TZ and B-TZ have not exceeded the established CP PCLs since July 2005 and are considered compliant. Following submittal of the Corrective Action Monitoring Report - 2019 Second Semi-Annual Event, the TCEQ issued a comment letter dated March 18, 2020 with the following comment:

> *"Based on our review of the above-referenced Report, the TCEQ concurs that the report generally fulfills the reporting requirements of Provision VII.C.2 of the above-referenced Permit with the following comment: UPRR should finish their evaluation of naphthalene concentration trends in well MW-11B, present their findings in the April 30, 2020 Initial Groundwater Sampling Interim Report, and assess whether WMU No. 1 remains in the corrective action program or switches to compliance monitoring."*

Since submittal of the Corrective Action Monitoring Report - 2019 Second Semi-Annual Event (Golder, 2020), UPRR conducted the first semi-annual corrective action monitoring event in January 2020. The groundwater analytical data from the January 2020 sampling event indicated that the naphthalene concentrations in POC well MW-11B decreased to less than the SDL (<0.002 mg/L). These results indicate that the well is now compliant since the analytical results are less than the GWSP established in CP Table III.

In response to the TCEQ comment, the historical naphthalene concentrations at MW-11B were evaluated. A summary table and a graph of historical naphthalene concentrations in MW-11B from 1994 through 2020 (including the January 2020 sample result) are provided in Attachment H. The historical naphthalene

concentrations show a relatively consistent seasonal pattern of higher naphthalene concentrations detected during the second semi-annual monitoring events typically conducted in July compared to the first semi-annual monitoring events typically conducted in January (Table 1 and Graph 1, Attachment H). From January 2009 through January 2020, naphthalene concentrations during the first semi-annual monitoring event for each year have been below SDLs at MW-11B except for January 2014 when naphthalene concentrations were detected slightly above the SDL at 0.000382J mg/L. In comparison, naphthalene concentrations in MW-11B have been detected above the SDL during each second semi-annual event dating back to 1994, with the recent GWPS exceedances detected in July and October 2019.

UPRR is scheduled to conduct the second semi-annual monitoring event in July 2020, and will assess if POC well MW-11B remains compliant under the current corrective action monitoring program. As detailed in the Section XI (CP) of the RCRA Permit Renewal application (initial submittal-December 2014 through Revision 4 -June 2017), UPRR proposed to revise the CP to move the SWMU 1 to compliance monitoring. UPRR will evaluate the proposed switch to compliance monitoring following review of the second semi-annual 2020 sampling event.

6.0 CONCLUSIONS

The following conclusions were made for each GWBU based on the groundwater sampling analytical events from the site-wide events conducted in July 2019 and January-March 2020:

- **A-TZ:**
  - Site-specific VOCs and SVOCs are delineated to applicable RALs in the A-TZ at the Site. The combined PCLE Zone in the A-TZ is within the Site boundary except to the north (along Liberty Road) and east in which it extends onto the City of Houston ROW.
  - Based on the January-March 2020 groundwater data including data from the wells installed in February-March 2020, arsenic concentrations are delineated to the RAL in the A-TZ on-site and off-site except near MW-13 on the northwest corner of the Site. Arsenic concentrations in the A-TZ wells do not appear to correlate with the elevated concentrations of the primary COCs, and are likely associated with naturally-occurring arsenic mobilizing under reducing conditions caused by the natural degradation of petroleum hydrocarbons.
  - Site-specific COC concentrations detected in the off-site A-TZ wells during the July 2019 and January-March 2020 sampling events were below the conservative EPA VISL-calculated screening levels, indicating the off-site VI pathway from groundwater is incomplete.
- **B-CZ/B-TZ:**
  - Site-specific VOCs and SVOCs are delineated to applicable RALs in the B-CZ and B-TZ at the Site. The combined PCLE Zone based on land use (i.e., C/I for on-Site wells and Residential for off-Site wells) in the B-CZ/B-TZ (Class 3 and 2 groundwater, respectively) for both the July 2019 and January-March 2020 events encompasses the northeastern portion of the Englewood Intermodal Yard, eastern portion of the Site, and extends off-site to the north of the Site (referred to as the “Main” PCLE Zone). The PCLE Zone for the smaller area on the west side of the Site appears to be within the Site property boundary (referred to as the “West” PCLE Zone).
  - Based on the January-March 2020 groundwater data, arsenic concentrations that exceeded the RAL in the wells to the north of the Site were delineated to the RAL based on the results of the wells nearby. The arsenic concentrations that exceed the RAL on the west side of the Site are delineated to the RAL in the B-TZ except to the west near MW-38B and MW-62B.

- **C-TZ:**
  - Site-specific VOCs and SVOCs are delineated to applicable RALs in the C-TZ at the Site. The combined PCLE Zone in the C-TZ is in the northeast portion of the Site and extends offsite to the north and to the east onto the City of Houston ROW.
  - Arsenic concentrations were not detected above the RAL in any of the C-TZ wells during the July 2019 or January-March 2020 sampling events.
- **D-TZ:**
  - No site-specific VOC, SVOC, or arsenic concentrations were detected above RALs in D-TZ wells.

7.0 ADDITIONAL GROUNDWATER SAMPLING EVENT

An additional groundwater sampling event will be conducted for the monitoring wells installed in February/March 2020 as agreed upon during the meeting with the TCEQ on December 19, 2019 and detailed in the UPRR response letter dated February 7, 2020. The second sampling event is scheduled for late May 2020. Data collected during the additional sampling event will be used to confirm initial results from the March 2020 sampling event.

8.0 NOTIFICATIONS

With the additional groundwater data collected in July 2019 and January-March 2020 being submitted to the TCEQ in this IGMR, property owners identified where the groundwater PCLE Zone extends off-site onto property not owned by UPRR and onto the City of Houston will be notified of the availability of information related to the groundwater monitoring at the Site as required under 30 Texas Administrative Code §350.55(b). The list and map showing the off-site property owners that will be notified is provided in Attachment I.

9.0 REFERENCES

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TABLES

GOLDER - DRAFT - FOR REVIEW ONLY

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-01A	47.92	9/2/1993	6.96			40.99
	47.92	12/21/1993	3.28			44.67
	47.92	3/24/1994	3.95			44
	47.92	6/22/1994	5.30			42.65
	47.92	9/28/1994	7.10			40.85
	47.92	10/13/1994	7.26			40.69
	47.92	1/24/1995	2.63			45.32
	47.92	4/11/1995	2.61			45.34
	47.92	7/11/1995	4.78			43.17
	47.92	1/23/1996	5.67			42.28
	47.92	7/19/1996	7.84			40.11
	47.92	9/17/1996	8.33			39.62
	47.92	10/31/1996	6.90			41.05
	47.92	11/22/1996	8.63			39.32
	47.92	12/27/1996	5.50			42.45
	47.92	1/22/1997	3.41			44.54
	47.92	2/21/1997	2.68			45.27
	47.92	3/25/1997	2.96			44.99
	47.92	4/23/1997	4.27			43.68
	47.92	4/24/1997	4.47			43.48
	47.92	5/13/1997	2.91			45.04
	47.92	6/20/1997	4.88			43.07
	47.92	6/25/1997	2.59			45.36
	47.92	7/1/1997	4.04			43.91
	47.92	7/24/1997	6.80			41.15
	47.92	8/16/1997	7.84			40.11
	47.92	8/22/1997	9.52			38.43
	47.92	9/25/1997	6.02			41.93
	47.92	10/22/1997	4.89			43.06
	47.92	11/25/1997	4.88			43.07
	47.92	12/19/1997	4.26			43.69
	47.92	1/20/1998	3.10			44.85
	47.92	3/3/1998	2.87			45.08
	47.92	3/18/1998	2.68			45.27
	47.92	4/24/1998	6.73			41.22
	47.92	5/21/1998	6.89			41.06
	47.92	7/30/1998	7.96			39.99
	47.92	8/25/1998	6.87			41.08
	47.92	9/21/1998	4.70			43.25
	47.92	10/26/1998	5.98			41.97
	47.92	11/23/1998	4.11			43.84
	47.92	1/29/1999	3.01			44.94
	47.92	2/26/1999	3.20			44.75
	47.92	3/16/1999	3.71			44.24
	47.92	4/29/1999	3.93			44.02
	47.92	6/1/1999	3.98			43.97
	47.92	7/30/1999	4.31			43.64
	47.92	8/27/1999	4.11			43.84
	47.92	9/27/1999	9.67			38.28
	47.92	10/29/1999	10.67			37.28
	47.92	12/29/1999	10.00			37.95
	47.92	2/4/2000	12.71			35.24
	47.92	2/25/2000	9.10			38.85
	47.92	3/27/2000	7.38			40.57
	47.92	4/7/2000	7.00			40.95
	47.92	5/31/2000	7.15			40.8
	47.92	6/1/2000	7.00			40.95
	47.92	7/28/2000	7.11			40.84
	47.92	8/30/2000	10.33			37.62
	47.92	9/19/2000	11.56			36.39
	47.92	10/27/2000	9.01			38.94
	47.92	11/21/2000	8.49			39.46
	47.92	5/1/2001	6.60			41.35
	47.92	10/1/2001	6.85			41.1
	47.92	3/11/2002	3.31			44.64
	47.92	9/23/2002	3.23			44.72
	47.92	3/10/2003	2.48			45.44
	47.92	9/23/2003	4.29			43.63

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-01A	47.92	3/15/2004	3.49			44.43
	47.92	9/13/2004	8.26			39.66
	47.92	7/18/2005	3.73			44.19
	47.92	1/4/2006	8.54			39.38
	47.92	7/27/2006	3.10			44.82
	47.92	1/23/2007	2.26			45.66
	47.92	3/7/2007	2.36			45.56
	47.92	7/27/2007	4.05			43.87
	47.92	1/28/2008	2.51			45.41
	47.92	7/16/2008	7.21			40.71
	47.92	1/22/2009	6.21			41.71
	47.92	7/22/2009	6.96			40.96
	47.92	1/8/2010	3.07			44.85
	47.92	7/12/2010	3.87			44.05
	47.88	1/12/2011	3.63			44.25
	47.88	7/13/2011	9.94			37.94
	47.88	1/27/2012	3.19			44.69
	47.88	7/10/2013	9.96			37.92
	47.88	1/8/2014	5.21			42.67
	47.88	7/2/2014	6.81			41.07
	47.88	1/7/2015	2.36			45.52
	47.88	8/10/2015	4.11			43.77
	47.90	1/12/2016	2.49			45.41
	47.90	7/7/2016	5.42			42.48
	47.90	1/12/2017	4.29			43.61
	47.90	7/12/2017	6.19			41.71
	47.90	1/3/2018	6.47			41.43
	47.90	7/18/2018	5.88			42.02
	47.90	1/3/2019	5.96			41.94
	47.90	7/1/2019	2.85			45.05
	47.90	1/14/2020	2.71			45.19
MW-02	47.97	9/2/1993	7.45			40.58
	47.97	12/21/1993	2.58			45.45
	47.97	3/24/1994	4.08			43.95
	47.97	6/22/1994	5.85			42.18
	47.97	9/28/1994	7.05			40.98
	47.97	10/13/1994	7.69			40.34
	47.97	1/24/1995	2.12			45.91
	47.97	4/11/1995	2.53			45.5
	47.97	7/11/1995	5.34			42.69
	47.97	1/23/1996	5.69			42.34
	47.97	7/19/1996	8.28			39.75
	47.97	9/17/1996	8.84			39.19
	47.97	10/31/1996	7.11			40.92
	47.97	11/22/1996	8.99			39.04
	47.97	12/27/1996	5.42			42.61
	47.97	1/22/1997	3.08			44.95
	47.97	2/21/1997	2.60			45.43
	47.97	3/25/1997	2.98			45.05
	47.97	4/23/1997	4.60			43.43
	47.97	4/24/1997	4.78			43.25
	47.97	5/13/1997	2.89			45.14
	47.97	6/20/1997	5.45			42.58
	47.97	6/25/1997	2.59			45.44
	47.97	7/1/1997	4.48			43.55
	47.97	7/24/1997	7.42			40.61
	47.97	8/16/1997	8.42			39.61
	47.97	8/22/1997	9.20			38.83
	47.97	9/25/1997	4.53			43.5
	47.97	10/22/1997	4.95			43.08
	47.97	11/25/1997	4.97			43.06
	47.97	12/19/1997	4.33			43.7
	47.97	1/20/1998	3.05			44.98
	47.97	3/3/1998	2.88			45.15
	47.97	3/18/1998	2.66			45.37
	47.97	4/24/1998	7.09			40.94
	47.97	5/21/1998	7.00			41.03
	47.97	7/30/1998	8.11			39.92

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-02	47.97	8/25/1998	7.33			40.7
	47.97	9/21/1998	4.18			43.85
	47.97	10/26/1998	6.85			41.18
	47.97	11/23/1998	4.63			43.4
	47.97	1/29/1999	3.51			44.52
	47.97	2/26/1999	3.61			44.42
	47.97	3/16/1999	3.55			44.48
	47.97	4/29/1999	3.76			44.27
	47.97	6/1/1999	3.76			44.27
	47.97	7/30/1999	4.61			43.42
	47.97	8/27/1999	3.96			44.07
	47.97	9/27/1999	10.12			37.91
	47.97	10/29/1999	11.33			36.7
	47.97	12/29/1999	10.66			37.37
	47.97	2/4/2000	13.19			34.84
	47.97	2/25/2000	9.57			38.46
	47.97	3/27/2000	7.73			40.3
	47.97	4/7/2000	7.30			40.73
	47.97	5/31/2000	7.33			40.7
	47.97	6/1/2000	7.31			40.72
	47.97	7/28/2000	7.35			40.68
	47.97	8/30/2000	10.55			37.48
	47.97	9/19/2000	11.93			36.1
	47.97	10/27/2000	9.04			38.99
	47.97	11/21/2000	8.66			39.37
	47.97	5/1/2001	6.91			41.12
	47.97	10/1/2001	8.22			39.81
	47.97	3/11/2002	3.33			44.7
	47.97	9/23/2002	3.16			44.87
	47.97	3/10/2003	2.54			45.43
	47.97	9/23/2003	3.29			44.68
	47.97	3/15/2004	2.87			45.1
	47.97	9/13/2004	8.71			39.26
	47.97	7/18/2005	2.98			44.99
	47.97	1/4/2006	8.77			39.2
	47.97	7/27/2006	2.87			45.1
	47.97	1/23/2007	2.34			45.63
	47.97	3/7/2007	2.23			45.74
	47.97	7/27/2007	4.40			43.57
	47.97	1/28/2008	2.42			45.55
	47.97	7/16/2008	7.72			40.25
	47.97	1/22/2009	6.31			41.66
	47.97	7/22/2009	7.56			40.41
	47.97	1/8/2010	3.91			44.06
	47.97	7/12/2010	4.37			43.6
	48.00	1/12/2011	3.63			44.37
	48.00	7/13/2011	10.28			37.72
	48.00	1/27/2012	2.67			45.33
	48.00	7/10/2013	10.58			37.42
	48.00	1/8/2014	5.47			42.53
	48.00	7/2/2014	7.51			40.49
	48.00	1/7/2015	2.41			45.59
	48.00	8/10/2015	4.96			43.04
	47.89	1/12/2016	2.91			44.98
	47.89	7/7/2016	6.12			41.77
	47.89	1/12/2017	4.62			43.27
	47.89	7/12/2017	6.82			41.07
	47.89	1/3/2018	6.87			41.02
	47.89	7/18/2018	6.62			
	47.89	1/3/2019	6.31			41.58
	47.89	7/1/2019	3.09			
	47.89	1/14/2020	2.42			45.47
MW-03	48.34	9/2/1993	8.17			40.17
	48.34	12/21/1993	3.81			44.53
	48.34	3/24/1994	4.74			43.6
	48.34	6/22/1994	6.35			41.99
	48.34	9/28/1994	7.56			40.78
	48.34	10/13/1994	8.21			40.13

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-03	48.34	1/24/1995	3.18			45.16
	48.34	4/11/1995	3.22			45.12
	48.34	7/11/1995	7.90			40.44
	48.34	1/23/1996	6.27			42.07
	48.34	7/19/1996	8.77			39.57
	48.34	9/17/1996	9.31			39.03
	48.34	10/31/1996	7.61			40.73
	48.34	11/22/1996	9.48			38.86
	48.34	12/27/1996	6.14			42.2
	48.34	1/22/1997	5.68			42.66
	48.34	2/21/1997	3.13			45.21
	48.34	3/25/1997	3.48			44.86
	48.34	4/23/1997	5.17			43.17
	48.34	4/24/1997	5.25			43.09
	48.34	5/13/1997	3.41			44.93
	48.34	6/20/1997	5.91			42.43
	48.34	6/25/1997	3.11			45.23
	48.34	7/1/1997	4.91			43.43
	48.34	7/24/1997	7.90			40.44
	48.34	8/16/1997	8.91			39.43
	48.34	8/22/1997	9.65			38.69
	48.34	9/25/1997	6.96			41.38
	48.34	10/22/1997	5.50			42.84
	48.34	11/25/1997	5.55			42.79
	48.34	12/19/1997	5.10			43.24
	48.34	1/20/1998	3.58			44.76
	48.34	3/3/1998	3.37			44.97
	48.34	3/18/1998	3.16			45.18
	48.34	4/24/1998	7.54			40.8
	48.34	5/21/1998	7.50			40.84
	48.34	7/30/1998	8.44			39.9
	48.34	8/25/1998	7.56			40.78
	48.34	9/21/1998	5.28			43.06
	48.34	10/26/1998	6.96			41.38
	48.34	11/23/1998	5.11			43.23
	48.34	1/29/1999	4.21			44.13
	48.34	2/26/1999	4.32			44.02
	48.34	3/16/1999	4.16			44.18
	48.34	4/29/1999	4.33			44.01
	48.34	6/1/1999	4.39			43.95
	48.34	7/30/1999	5.88			42.46
	48.34	8/27/1999	4.57			43.77
	48.34	9/27/1999	10.48			37.86
	48.34	10/29/1999	11.61			36.73
	48.34	12/29/1999	10.11			38.23
	48.34	2/4/2000	13.22			35.12
	48.34	2/25/2000	9.14			39.2
	48.34	3/27/2000	8.06			40.28
	48.34	4/7/2000	7.64			40.7
	48.34	5/31/2000	7.70			40.64
	48.34	6/1/2000	7.66			40.68
	48.34	7/28/2000	7.71			40.63
	48.34	8/30/2000	10.59			37.75
	48.34	9/19/2000	12.29			36.05
	48.34	10/27/2000	9.09			39.25
	48.34	11/21/2000	9.11			39.23
	48.34	5/1/2001	7.26			41.08
	48.34	10/1/2001	7.57			40.77
	48.34	3/11/2002	7.40			40.94
	48.34	9/23/2002	4.60			43.74
	48.34	3/10/2003	2.89			45.45
	48.34	9/23/2003	3.74			44.6
	48.34	3/15/2004	3.27			45.07
	48.34	9/13/2004	9.03			39.31
	48.34	7/18/2005	3.94			44.4
	48.34	1/4/2006	9.13			39.21
	48.34	7/27/2006	3.30			45.04
	48.34	3/7/2007	2.62			45.72

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-03	48.34	7/27/2007	3.74			44.6
	48.34	1/30/2008	2.85			45.49
	48.34	7/16/2008	7.96			40.38
	48.34	2/4/2009	7.18			41.16
	48.34	7/24/2009	7.63			40.71
	48.34	1/8/2010	5.06			43.28
	48.34	7/12/2010	3.86			44.48
	48.34	1/12/2011	3.71			44.63
	48.34	7/12/2011	6.42			41.92
	48.34	1/26/2012	--			
	48.34	7/9/2012	4.06			44.28
	48.34	1/7/2013	5.09			43.25
	48.34	7/22/2013	8.24			40.1
	48.34	1/7/2014	8.09			40.25
	48.34	7/15/2014	8.78			39.56
	48.34	1/5/2015	7.06			41.28
	48.34	2/11/2018	5.29			43.05
	48.34	3/11/2018	5.72			42.62
	48.34	5/14/2018	5.61			42.73
	48.34	7/2/2018	5.93			42.41
	48.34	1/3/2019	5.03			43.31
	48.34	7/9/2019	5.57			42.77
	48.34	1/8/2020	3.06			45.28
MW-04	49.85	9/2/1993	8.57			41.28
	49.85	12/21/1993	5.42			44.43
	49.85	3/24/1994	5.85			44
	49.85	6/22/1994	6.77			43.08
	49.85	9/28/1994	8.18			41.67
	49.85	10/13/1994	8.93			40.92
	49.85	1/24/1995	4.72			45.13
	49.85	4/11/1995	4.57			45.28
	49.85	7/11/1995	6.47			43.38
	49.85	1/23/1996	7.85			42
	49.85	7/19/1996	9.62			40.23
	49.85	9/17/1996	10.09			39.76
	49.85	10/31/1996	7.93			41.92
	49.85	11/22/1996	10.62			39.23
	49.85	12/27/1996	8.06			41.79
	49.85	1/22/1997	6.07			43.78
	49.85	2/21/1997	4.86			44.99
	49.85	3/25/1997	5.16			44.69
	49.85	4/23/1997	6.25			43.6
	49.85	4/24/1997	6.45			43.4
	49.85	5/13/1997	5.07			44.78
	49.85	6/20/1997	6.69			43.16
	49.85	6/25/1997	4.68			45.17
	49.85	7/1/1997	5.91			43.94
	49.85	7/24/1997	8.61			41.24
	49.85	8/16/1997	9.62			40.23
	49.85	8/22/1997	10.35			39.5
	49.85	9/25/1997	8.13			41.72
	49.85	10/22/1997	7.23			42.62
	49.85	11/25/1997	7.25			42.6
	49.85	12/19/1997	6.76			43.09
	49.85	1/20/1998	5.40			44.45
	49.85	3/3/1998	5.00			44.85
	49.85	3/18/1998	4.82			45.03
	49.85	4/24/1998	8.63			41.22
	49.85	5/21/1998	9.30			40.55
	49.85	7/30/1998	10.19			39.66
	49.85	8/25/1998	9.05			40.8
	49.85	9/21/1998	7.05			42.8
	49.85	10/26/1998	8.12			41.73
	49.85	11/23/1998	6.01			43.84
	49.85	1/29/1999	5.19			44.66
	49.85	2/26/1999	5.22			44.63
	49.85	3/16/1999	6.21			43.64
	49.85	4/29/1999	6.33			43.52

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-04	49.85	6/1/1999	6.39			43.46
	49.85	7/30/1999	7.79			42.06
	49.85	8/27/1999	6.51			43.34
	49.85	9/27/1999	11.32			38.53
	49.85	10/29/1999	12.21			37.64
	49.85	12/29/1999	11.52			38.33
	49.85	2/4/2000	14.33			35.52
	49.85	2/25/2000	10.63			39.22
	49.85	3/27/2000	9.38			40.47
	49.85	4/7/2000	9.09			40.76
	49.85	5/31/2000	9.13			40.72
	49.85	6/1/2000	9.10			40.75
	49.85	7/28/2000	9.18			40.67
	49.85	8/30/2000	12.17			37.68
	49.85	9/19/2000	13.39			36.46
	49.85	10/27/2000	10.69			39.16
	49.85	11/21/2000	9.61			40.24
	49.85	5/1/2001	8.41			41.44
	49.85	10/1/2001	8.68			41.17
	49.85	3/11/2002	5.41			44.44
	49.85	9/23/2002	5.29			44.56
	49.85	3/10/2003	4.36			45.49
	49.85	9/23/2003	5.28			44.57
	49.85	3/15/2004	4.80			45.05
	49.85	9/13/2004	9.80			40.05
	49.85	7/18/2005	5.84			44.01
	49.85	1/4/2006	10.48			39.37
	49.85	7/27/2006	5.30			44.55
	49.85	3/7/2007	4.10			45.75
	49.85	7/27/2007	5.36			44.49
	49.85	1/29/2008	4.18			45.67
	49.85	7/16/2008	8.66			41.19
	49.85	2/4/2009	8.93			40.92
	49.85	7/24/2009	9.27			40.58
	49.85	1/8/2010	6.34			43.51
	49.85	7/12/2010	5.02			44.83
	49.85	1/12/2011	5.26			44.59
	49.85	7/12/2011	8.06			41.79
	49.85	1/26/2012	--			
	49.85	7/9/2012	3.74			46.11
	49.85	1/7/2013	4.62			45.23
	49.85	7/22/2013	7.59			42.26
	49.85	1/7/2014	7.16			42.69
	49.85	7/15/2014	7.62			42.23
	49.85	1/5/2015	6.12			43.73
	49.85	8/10/2015	4.26			45.59
	49.85	1/13/2016	3.92			45.93
	49.85	7/6/2016	4.31			45.54
	49.85	1/12/2017	4.67			45.18
	49.85	7/6/2017	5.12			44.73
	49.85	9/5/2017	5.01			44.84
	49.85	2/11/2018	5.12			44.73
	49.85	3/11/2018	5.67			44.18
	49.85	5/14/2018	6.06			43.79
	49.85	7/2/2018	6.42			43.43
	49.85	1/3/2019	5.52			44.33
	49.85	7/9/2019	6.02			43.83
	49.85	1/8/2020	4.64			45.21
MW-05	49.24	9/2/1993	4.90			44.34
	49.24	12/21/1993	2.21			47.03
	49.24	3/24/1994	2.30			46.94
	49.24	6/22/1994	2.80			46.44
	49.24	9/28/1994	3.90			45.34
	49.24	10/13/1994	5.05			44.19
	49.24	1/24/1995	1.36			47.88
	49.24	4/11/1995	3.90			45.34
	49.24	7/11/1995	5.33			43.91
	49.24	1/23/1996	7.42			41.82

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-05	49.24	7/19/1996	8.61			40.63
	49.24	9/17/1996	9.01			40.23
	49.24	10/31/1996	7.84			41.4
	49.24	11/22/1996	9.68			39.56
	49.24	12/27/1996	7.66			41.58
	49.24	1/22/1997	5.89			43.35
	49.24	2/21/1997	4.45			44.79
	49.24	3/25/1997	4.65			44.59
	49.24	4/23/1997	5.53			43.71
	49.24	4/24/1997	5.68			43.56
	49.24	5/13/1997	4.39			44.85
	49.24	6/20/1997	5.67			43.57
	49.24	6/25/1997	3.97			45.27
	49.24	7/1/1997	5.06			44.18
	49.24	7/24/1997	7.46			41.78
	49.24	8/16/1997	8.57			40.67
	49.24	8/22/1997	9.20			40.04
	49.24	9/25/1997	7.28			41.96
	49.24	10/22/1997	6.70			42.54
	49.24	11/25/1997	6.70			42.54
	49.24	12/19/1997	6.26			42.98
	49.24	1/20/1998	5.05			44.19
	49.24	3/4/1998	4.54			44.7
	49.24	3/18/1998	4.36			44.88
	49.24	4/24/1998	7.67			41.57
	49.24	5/21/1998	8.80			40.44
	49.24	7/30/1998	9.90			39.34
	49.24	8/25/1998	8.86			40.38
	49.24	9/21/1998	6.59			42.65
	49.24	10/26/1998	7.77			41.47
	49.24	11/23/1998	5.79			43.45
	49.24	1/29/1999	4.88			44.36
	49.24	2/26/1999	4.96			44.28
	49.24	3/16/1999	5.81			43.43
	49.24	4/29/1999	5.91			43.33
	49.24	6/1/1999	5.99			43.25
	49.24	7/30/1999	7.00			42.24
	49.24	8/27/1999	6.13			43.11
	49.24	9/27/1999	10.17			39.07
	49.24	10/29/1999	11.65			37.59
	49.24	12/29/1999	10.90			38.34
	49.24	2/4/2000	13.77			35.47
	49.24	2/25/2000	9.46			39.78
	49.24	3/27/2000	8.62			40.62
	49.24	4/7/2000	8.20			41.04
	49.24	5/31/2000	8.26			40.98
	49.24	6/1/2000	8.21			41.03
	49.24	7/28/2000	8.26			40.98
	49.24	8/30/2000	11.33			37.91
	49.24	9/19/2000	12.33			36.91
	49.24	10/27/2000	9.94			39.3
	49.24	11/21/2000	9.21			40.03
	49.24	5/1/2001	7.47			41.77
	49.24	10/1/2001	7.79			41.45
	49.24	3/11/2002	4.92			44.32
	49.24	9/23/2002	4.76			44.48
	49.24	3/10/2003	3.77			45.47
	49.24	9/23/2003	4.61			44.63
	49.24	3/15/2004	4.22			45.02
	49.24	9/13/2004	8.58			40.66
	49.24	7/18/2005	5.61			43.63
	49.24	1/4/2006	9.76			39.48
	49.24	7/27/2006	4.85			44.39
	49.24	3/7/2007	5.94			43.3
	49.24	7/27/2007	4.53			44.71
	49.24	1/29/2008	3.71			45.53
	49.24	7/15/2008	7.77			41.47
	49.24	2/4/2009	8.33			40.91

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-05	49.24	7/24/2009	8.67			40.57
	49.24	1/8/2010	6.06			43.18
	49.24	7/12/2010	4.86			44.38
	49.24	1/12/2011	5.06			44.18
	49.24	7/12/2011	10.96			38.28
	49.24	2/2/2012	4.9			44.34
	49.24	7/9/2012	4.61			44.63
	49.24	1/7/2013	7.58			41.66
	49.24	7/22/2013	10.44			38.8
	49.24	1/7/2014	6.92			42.32
	49.24	7/16/2014	8.46			40.78
	49.24	1/5/2015	5.96			43.28
	49.24	8/10/2015	4.13			45.11
	49.24	1/13/2016	3.76			45.48
	49.24	7/7/2016	3.94			45.30
	49.24	1/12/2017	4.31			44.93
	49.24	7/6/2017	4.84			44.40
	49.24	9/5/2017	4.71			44.53
	49.24	2/11/2018	5.56			43.68
	49.24	3/11/2018	5.98			43.26
	49.24	5/14/2018	6.57			42.67
	49.24	7/2/2018	6.83			42.41
	49.24	1/3/2019	6.07			43.17
	49.24	7/9/2019	6.56			42.68
	49.24	1/7/2020	4.69			44.55
MW-07	48.86	9/2/1993	8.09			40.77
	48.86	12/21/1993	4.60			44.26
	48.86	3/24/1994	5.06			43.8
	48.86	6/22/1994	6.03			42.83
	48.86	9/28/1994	7.52			41.34
	48.86	10/13/1994	8.13			40.73
	48.86	1/24/1995	3.81			45.05
	48.86	4/11/1995	3.41			45.45
	48.86	7/11/1995	5.74			43.12
	48.86	1/23/1996	6.99			41.87
	48.86	7/19/1996	8.89			39.97
	48.86	9/17/1996	9.41			39.45
	48.86	10/31/1996	8.04			40.82
	48.86	11/22/1996	9.94			38.92
	48.86	12/27/1996	7.30			41.56
	48.86	1/22/1997	5.25			43.61
	48.86	2/21/1997	4.00			44.86
	48.86	3/25/1997	4.32			44.54
	48.86	4/23/1997	5.51			43.35
	48.86	4/24/1997	5.67			43.19
	48.86	5/13/1997	4.26			44.6
	48.86	6/20/1997	6.00			42.86
	48.86	6/25/1997	3.86			45
	48.86	7/1/1997	5.21			43.65
	48.86	7/24/1997	7.99			40.87
	48.86	8/16/1997	8.92			39.94
	48.86	8/22/1997	9.72			39.14
	48.86	9/25/1997	7.50			41.36
	48.86	10/22/1997	6.48			42.38
	48.86	11/25/1997	6.50			42.36
	48.86	12/19/1997	6.12			42.74
	48.86	1/20/1998	4.52			44.34
	48.86	3/4/1998	4.14			44.72
	48.86	3/18/1998	3.94			44.92
	48.86	4/24/1998	7.85			41.01
	48.86	5/21/1998	8.61			40.25
	48.86	7/30/1998	9.54			39.32
	48.86	8/25/1998	8.63			40.23
	48.86	9/21/1998	6.34			42.52
	48.86	10/26/1998	7.56			41.3
	48.86	11/23/1998	5.91			42.95
	48.86	1/29/1999	4.71			44.15
	48.86	2/26/1999	4.76			44.1

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-07	48.86	3/16/1999	5.32			43.54
	48.86	4/29/1999	5.41			43.45
	48.86	6/1/1999	5.49			43.37
	48.86	7/30/1999	6.98			41.88
	48.86	8/27/1999	5.61			43.25
	48.86	9/27/1999	10.64			38.22
	48.86	10/29/1999	11.56			37.3
	48.86	12/29/1999	9.90			38.96
	48.86	2/4/2000	14.21			34.65
	48.86	2/25/2000	8.86			40
	48.86	3/27/2000	8.62			40.24
	48.86	4/7/2000	8.15			40.71
	48.86	5/31/2000	8.21			40.65
	48.86	6/1/2000	8.22			40.64
	48.86	7/28/2000	8.29			40.57
	48.86	8/30/2000	11.55			37.31
	48.86	9/19/2000	12.65			36.21
	48.86	10/27/2000	10.00			38.86
	48.86	11/21/2000	9.46			39.4
	48.86	5/1/2001	7.64			41.22
	48.86	10/1/2001	8.00			40.86
	48.86	3/11/2002	4.56			44.3
	48.86	9/23/2002	4.69			44.17
	48.86	3/10/2003	3.52			45.34
	48.86	9/23/2003	4.70			44.16
	48.86	3/15/2004	3.89			44.97
	48.86	9/13/2004	9.04			39.82
	48.86	7/18/2005	5.27			43.59
	48.86	1/4/2006	9.91			38.95
	48.86	7/27/2006	4.60			44.26
	48.86	1/23/2007	3.46			45.4
	48.86	3/7/2007	3.82			45.04
	48.86	7/27/2007	4.94			43.92
	48.86	1/29/2008	3.39			45.47
	48.86	7/16/2008	7.94			40.92
	48.86	1/22/2009	7.49			41.37
	48.86	7/24/2009	NM			
	48.86	1/8/2010	4.02			44.84
	48.86	7/12/2010	4.72			44.14
	48.92	1/12/2011	4.56			44.36
	48.92	7/12/2011	10.91			38.01
	48.92	1/27/2012	3.86			45.06
	48.92	7/10/2013	10.62			38.30
	48.92	1/8/2014	6.42			42.50
	48.92	7/3/2014	7.61			41.31
	48.92	1/7/2015	3.46			45.46
	48.92	8/10/2015	5.01			43.91
	48.91	1/12/2016	3.09			45.82
	48.91	7/7/2016	6.72			42.19
	48.91	1/12/2017	5.81			43.10
	48.91	7/12/2017	7.71			41.20
	48.91	1/3/2018	7.87			41.04
	48.91	7/19/2018	6.93			41.98
	48.91	1/3/2019	7.32			41.59
	48.91	7/1/2019	3.93			44.98
	48.91	1/13/2020	4.29			44.62
MW-08	49.33	9/2/1993	8.18			41.19
	49.33	12/21/1993	5.02			44.35
	49.33	3/24/1994	5.53			43.84
	49.33	6/22/1994	6.38			42.99
	49.33	9/28/1994	7.72			41.65
	49.33	10/13/1994	8.43			40.94
	49.33	1/24/1995	4.15			45.22
	49.33	4/11/1995	4.02			45.35
	49.33	7/11/1995	5.95			43.42
	49.33	1/23/1996	7.20			42.17
	49.33	7/19/1996	9.06			40.31
	49.33	9/17/1996	9.51			39.86

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-08	49.33	10/31/1996	7.99			41.38
	49.33	11/22/1996	9.98			39.39
	49.33	12/27/1996	7.24			42.13
	49.33	1/22/1997	5.25			44.12
	49.33	2/21/1997	4.21			45.16
	49.33	3/25/1997	4.48			44.89
	49.33	4/23/1997	5.61			43.76
	49.33	4/24/1997	5.76			43.61
	49.33	5/13/1997	4.45			44.92
	49.33	6/20/1997	6.09			43.28
	49.33	6/25/1997	4.56			44.81
	49.33	7/1/1997	5.06			44.31
	49.33	7/24/1997	7.97			41.4
	49.33	8/16/1997	8.05			41.32
	49.33	8/22/1997	9.73			39.64
	49.33	9/25/1997	7.57			41.8
	49.33	10/22/1997	6.43			42.94
	49.33	11/25/1997	6.48			42.89
	49.33	12/19/1997	5.22			44.15
	49.33	1/20/1998	4.70			44.67
	49.33	3/4/1998	4.38			44.99
	49.33	3/18/1998	4.18			45.19
	49.33	4/24/1998	8.00			41.37
	49.33	5/21/1998	8.45			40.92
	49.33	7/30/1998	9.33			40.04
	49.33	8/25/1998	8.46			40.91
	49.33	9/21/1998	6.31			43.06
	49.33	10/26/1998	7.66			41.71
	49.33	11/23/1998	5.96			43.41
	49.33	1/29/1999	4.80			44.57
	49.33	2/26/1999	4.89			44.48
	49.33	3/16/1999	5.45			43.92
	49.33	4/29/1999	5.66			43.71
	49.33	6/1/1999	5.66			43.71
	49.33	7/30/1999	7.20			42.17
	49.33	8/27/1999	5.85			43.52
	49.33	9/27/1999	10.78			38.59
	49.33	10/29/1999	11.76			37.61
	49.33	12/29/1999	11.03			38.34
	49.33	2/4/2000	14.66			34.71
	49.33	2/25/2000	10.33			39.04
	49.33	3/27/2000	8.75			40.62
	49.33	4/7/2000	8.37			41
	49.33	5/31/2000	8.40			40.97
	49.33	6/1/2000	8.36			41.01
	49.33	7/28/2000	8.40			40.97
	49.33	8/30/2000	11.29			38.08
	49.33	9/19/2000	12.82			36.55
	49.33	10/27/2000	12.63			36.74
	49.33	11/21/2000	9.64			39.73
	49.33	5/1/2001	7.83			41.54
	49.33	10/1/2001	8.05			41.32
	49.33	3/11/2002	4.75			44.62
	49.33	9/23/2002	4.69			44.68
	49.33	3/10/2003	3.84			45.49
	49.33	9/23/2003	4.73			44.6
	49.33	3/15/2004	4.31			45.02
	49.33	9/13/2004	9.31			40.02
	49.33	7/18/2005	5.32			44.01
	49.33	1/4/2006	10.63			38.7
	49.33	7/27/2006	4.79			44.54
	49.33	1/22/2007	3.81			45.52
	49.33	3/7/2007	3.96			45.37
	49.33	7/27/2007	5.06			44.27
	49.33	1/29/2008	3.71			45.62
	49.33	7/16/2008	8.32			41.01
	49.33	1/22/2009	7.71			41.62
	49.33	7/24/2009	NM			

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-08	49.33	1/8/2010	4.17			45.16
	49.33	7/12/2010	4.96			44.37
	49.33	1/12/2011	5.32			44.01
	49.33	7/12/2011	11.24			38.09
	49.33	1/27/2012	4.68			44.65
	49.33	7/10/2013	11.07			38.26
	49.33	1/8/2014	6.87			42.46
	49.33	7/3/2014	8.16			41.17
	49.33	1/7/2015	3.82			45.51
	49.33	8/10/2015	5.06			44.27
	49.33	1/12/2016	3.87			45.46
	49.33	7/7/2016	6.44			42.89
	49.33	1/12/2017	5.82			43.51
	49.33	7/12/2017	7.92			41.41
	49.33	1/3/2018	8.02			41.31
	49.33	7/19/2018	7.22			42.11
	49.33	1/3/2019	7.52			41.81
	49.33	7/1/2019	3.98			45.35
	49.33	1/13/2020	4.45			44.88
MW-09	49.26	9/2/1993	7.43			41.86
	49.26	12/21/1993	4.89			44.4
	49.26	3/24/1994	4.92			44.37
	49.26	6/22/1994	5.51			43.78
	49.26	9/28/1994	6.90			42.39
	49.26	10/13/1994	7.66			41.63
	49.26	1/24/1995	4.10			45.19
	49.26	4/11/1995	3.74			45.55
	49.26	7/11/1995	5.08			44.21
	49.26	1/23/1996	7.09			42.2
	49.26	7/19/1996	8.27			41.02
	49.26	9/17/1996	8.58			40.71
	49.26	10/31/1996	7.27			42.02
	49.26	11/22/1996	9.17			40.12
	49.26	12/27/1996	7.05			42.24
	49.26	1/22/1997	5.42			43.87
	49.26	2/21/1997	4.09			45.2
	49.26	3/25/1997	4.17			45.12
	49.26	4/23/1997	5.05			44.24
	49.26	4/24/1997	5.21			44.08
	49.26	5/13/1997	4.16			45.13
	49.26	6/20/1997	5.32			43.97
	49.26	6/25/1997	3.80			45.49
	49.26	7/1/1997	4.57			44.72
	49.26	7/24/1997	7.03			42.26
	49.26	8/16/1997	8.26			41.03
	49.26	8/22/1997	8.67			40.62
	49.26	9/25/1997	6.99			42.3
	49.26	10/22/1997	6.10			43.19
	49.26	11/25/1997	6.12			43.17
	49.26	12/19/1997	5.62			43.67
	49.26	1/20/1998	4.60			44.69
	49.26	3/4/1998	4.15			45.14
	49.26	3/18/1998	4.02			45.27
	49.26	4/24/1998	7.32			41.97
	49.26	5/21/1998	8.10			41.19
	49.26	7/30/1998	9.12			40.17
	49.26	8/25/1998	8.41			40.88
	49.26	9/21/1998	6.11			43.18
	49.26	10/26/1998	7.61			41.68
	49.26	11/23/1998	5.43			43.86
	49.26	1/29/1999	4.60			44.69
	49.26	2/26/1999	4.68			44.61
	49.26	3/16/1999	5.46			43.83
	49.26	4/29/1999	5.66			43.63
	49.26	6/1/1999	5.66			43.63
	49.26	7/30/1999	7.11			42.18
	49.26	8/27/1999	5.86			43.43
	49.26	9/27/1999	9.81			39.48

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-09	49.26	10/29/1999	10.63			38.66
	49.26	12/29/1999	9.99			39.3
	49.26	2/4/2000	12.44			36.85
	49.26	2/25/2000	8.88			40.41
	49.26	3/27/2000	8.22			41.07
	49.26	4/7/2000	8.10			41.19
	49.26	5/31/2000	8.15			41.14
	49.26	6/1/2000	8.00			41.29
	49.26	7/28/2000	8.11			41.18
	49.26	8/30/2000	11.10			38.19
	49.26	9/19/2000	11.91			37.38
	49.26	10/27/2000	9.84			39.45
	49.26	11/21/2000	8.89			40.4
	49.26	5/1/2001	7.16			42.13
	49.26	10/1/2001	7.39			41.9
	49.26	3/11/2002	4.61			44.68
	49.26	9/23/2002	4.45			44.84
	49.26	3/10/2003	3.59			45.67
	49.26	9/23/2003	4.31			44.95
	49.26	3/15/2004	4.18			45.08
	49.26	9/13/2004	8.39			40.87
	49.26	7/18/2005	5.53			43.73
	49.26	1/4/2006	9.46			39.8
	49.26	7/27/2006	4.85			44.41
	49.26	3/7/2007	5.58			43.68
	49.26	7/27/2007	3.78			45.48
	49.26	1/29/2008	3.52			45.74
	49.26	7/15/2008	7.04			42.22
	49.26	2/4/2009	8.01			41.25
	49.26	7/24/2009	8.34			40.92
	49.26	1/8/2010	5.89			43.37
	49.26	7/12/2010	4.32			44.94
	49.26	1/12/2011	4.61			44.65
	49.26	7/12/2011	10.71			38.55
	49.26	1/26/2012	4.73			44.53
	49.26	7/9/2012	4.23			45.03
	49.26	1/7/2013	6.73			42.53
	49.26	7/22/2013	9.16			40.1
	49.26	1/7/2014	8.72			40.54
	49.26	7/16/2014	8.17			41.09
	49.26	1/5/2015	8.01			41.25
	49.26	8/10/2015	6.17			43.09
	49.26	1/13/2016	5.81			43.45
	49.26	7/6/2016	6.14			43.12
	49.26	1/12/2017	6.71			42.55
	49.26	7/6/2017	7.09			42.17
	49.26	9/5/2017	7.06			42.20
	49.26	2/11/2018	5.16			44.10
	49.26	3/11/2018	6.01			43.25
	49.26	5/14/2018	6.21			43.05
	49.26	7/2/2018	6.67			42.59
	49.26	1/3/2019	5.61			43.65
	49.26	7/9/2019	6.21			43.05
	49.26	1/7/2020	4.11			45.15
MW-10A	49.86	9/28/1994	8.69			41.21
	49.86	10/13/1994	9.36			40.54
	49.86	1/24/1995	4.62			45.28
	49.86	4/11/1995	4.60			45.3
	49.86	7/11/1995	7.00			42.9
	49.86	1/23/1996	7.74			42.16
	49.86	7/19/1996	9.98			39.92
	49.86	9/17/1996	10.54			39.36
	49.86	10/31/1996	7.94			41.96
	49.86	11/22/1996	10.82			39.08
	49.86	12/27/1996	7.81			42.09
	49.86	1/22/1997	5.45			44.45
	49.86	2/21/1997	4.63			45.27
	49.86	3/25/1997	5.01			44.89

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-10A	49.86	4/23/1997	6.39			43.51
	49.86	4/24/1997	6.58			43.32
	49.86	5/13/1997	4.93			44.97
	49.86	6/20/1997	7.08			42.82
	49.86	6/25/1997	4.58			45.32
	49.86	7/1/1997	6.13			43.77
	49.86	7/24/1997	9.11			40.79
	49.86	8/16/1997	10.10			39.8
	49.86	8/22/1997	10.81			39.09
	49.86	9/25/1997	8.47			41.43
	49.86	10/22/1997	7.02			42.88
	49.86	11/25/1997	7.05			42.85
	49.86	12/19/1997	6.89			43.01
	49.86	1/20/1998	5.10			44.8
	49.86	3/3/1998	4.87			45.03
	49.86	3/18/1998	4.65			45.25
	49.86	4/24/1998	8.84			41.06
	49.86	5/21/1998	9.10			40.8
	49.86	7/30/1998	10.23			39.67
	49.86	8/25/1998	9.11			40.79
	49.86	9/21/1998	6.82			43.08
	49.86	10/26/1998	8.19			41.71
	49.86	11/23/1998	6.12			43.78
	49.86	1/29/1999	5.61			44.29
	49.86	2/26/1999	5.69			44.21
	49.86	3/16/1999	5.91			43.99
	49.86	4/29/1999	6.11			43.79
	49.86	6/1/1999	6.10			43.8
	49.86	7/30/1999	7.70			42.2
	49.86	8/27/1999	6.31			43.59
	49.86	9/27/1999	11.73			38.17
	49.86	10/29/1999	12.69			37.21
	49.86	12/29/1999	12.00			37.9
	49.86	2/4/2000	14.30			35.6
	49.86	2/25/2000	11.44			38.46
	49.86	3/27/2000	9.57			40.33
	49.86	4/7/2000	9.27			40.63
	49.86	5/31/2000	9.31			40.59
	49.86	6/1/2000	9.10			40.8
	49.86	7/28/2000	9.30			40.6
	49.86	8/30/2000	12.09			37.81
	49.86	9/19/2000	13.70			36.2
	49.86	10/27/2000	10.69			39.21
	49.86	11/21/2000	10.49			39.41
	49.86	5/1/2001	8.64			41.26
	49.86	10/1/2001	8.93			40.97
	49.86	3/11/2002	5.30			44.6
	49.86	9/23/2002	5.19			44.71
	49.86	3/10/2003	4.43			45.43
	49.86	9/23/2003	5.31			44.55
	49.86	3/15/2004	4.69			45.17
	49.86	9/13/2004	10.30			39.56
	49.86	7/18/2005	5.57			44.29
	49.86	1/4/2006	9.68			40.18
	49.86	7/27/2006	5.01			44.85
	49.86	1/23/2007	4.29			45.57
	49.86	3/7/2007	4.13			45.73
	49.86	7/27/2007	6.03			43.83
	49.86	1/28/2008	4.22			45.64
	49.86	7/16/2008	9.31			40.55
	49.86	1/22/2009	8.27			41.59
	49.86	7/24/2009	NM			
	49.86	1/8/2010	4.64			45.22
	49.86	7/12/2010	5.23			44.63
	49.82	1/12/2011	5.72			44.10
	49.82	7/12/2011	12.07			37.75
	49.82	7/13/2011	11.96			37.86
	49.82	1/27/2012	4.88			44.94

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-10A	49.82	7/10/2013	12.07			37.75
	49.82	1/8/2014	7.33			42.49
	49.82	7/2/2014	8.92			40.90
	49.82	1/7/2015	4.26			45.56
	49.82	8/10/2015	6.02			43.80
	49.83	1/12/2016	4.41			45.42
	49.83	7/7/2016	7.36			42.47
	49.83	1/12/2017	6.69			43.14
	49.83	7/12/2017	8.23			41.60
	49.83	1/3/2018	8.63			41.20
	49.83	7/18/2018	7.97			41.86
	49.83	1/3/2019	8.09			41.74
	49.83	7/1/2019	4.69			45.14
	49.83	1/14/2020	4.68			45.15
MW-10B	49.94	9/28/1994	8.77			41.2
	49.94	10/13/1994	9.45			40.52
	49.94	1/24/1995	4.72			45.25
	49.94	4/11/1995	4.72			45.25
	49.94	7/11/1995	7.13			42.84
	49.94	1/23/1996	7.84			42.13
	49.94	7/19/1996	10.27			39.7
	49.94	9/17/1996	10.64			39.33
	49.94	10/31/1996	8.01			41.96
	49.94	11/22/1996	10.93			39.04
	49.94	12/27/1996	7.99			41.98
	49.94	1/22/1997	5.72			44.25
	49.94	2/21/1997	4.78			45.19
	49.94	3/25/1997	5.13			44.84
	49.94	4/23/1997	6.52			43.45
	49.94	4/24/1997	6.71			43.26
	49.94	5/13/1997	5.09			44.88
	49.94	6/20/1997	7.21			42.76
	49.94	6/25/1997	4.71			45.26
	49.94	7/1/1997	6.27			43.7
	49.94	7/24/1997	9.15			40.82
	49.94	8/16/1997	10.19			39.78
	49.94	8/22/1997	10.92			39.05
	49.94	9/25/1997	8.69			41.28
	49.94	10/22/1997	7.18			42.79
	49.94	11/25/1997	7.21			42.76
	49.94	12/19/1997	6.56			43.41
	49.94	1/20/1998	5.25			44.72
	49.94	3/3/1998	5.00			44.97
	49.94	3/18/1998	4.79			45.18
	49.94	4/24/1998	8.95			41.02
	49.94	5/21/1998	9.30			40.67
	49.94	7/30/1998	10.30			39.67
	49.94	8/25/1998	9.20			40.77
	49.94	9/21/1998	7.06			42.91
	49.94	10/26/1998	8.31			41.66
	49.94	11/23/1998	6.25			43.72
	49.94	1/29/1999	5.71			44.26
	49.94	2/26/1999	5.76			44.21
	49.94	3/16/1999	6.05			43.92
	49.94	4/29/1999	6.10			43.87
	49.94	6/1/1999	6.10			43.87
	49.94	7/30/1999	7.61			42.36
	49.94	8/27/1999	6.33			43.64
	49.94	9/27/1999	11.90			38.07
	49.94	10/29/1999	12.60			37.37
	49.94	12/29/1999	12.10			37.87
	49.94	2/4/2000	14.29			35.68
	49.94	2/25/2000	11.15			38.82
	49.94	3/27/2000	9.67			40.3
	49.94	4/7/2000	9.32			40.65
	49.94	5/31/2000	9.38			40.59
	49.94	6/1/2000	9.21			40.76
	49.94	7/28/2000	9.33			40.64

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-10B	49.94	8/30/2000	12.11			37.86
	49.94	9/19/2000	13.77			36.2
	49.94	10/27/2000	10.63			39.34
	49.94	11/21/2000	10.64			39.33
	49.94	5/1/2001	8.75			41.22
	49.94	10/1/2001	9.12			40.85
	49.94	3/11/2002	5.47			44.5
	49.94	9/23/2002	5.40			44.57
	49.94	3/10/2003	4.59			45.35
	49.94	9/23/2003	5.58			44.36
	49.94	3/15/2004	5.78			44.16
	49.94	9/13/2004	10.41			39.53
	49.94	7/18/2005	5.97			43.97
	49.94	1/4/2006	10.75			39.19
	49.94	7/27/2006	5.73			44.21
	49.94	1/23/2007	4.45			45.49
	49.94	3/7/2007	4.61			45.33
	49.94	7/27/2007	6.15			43.79
	49.94	1/28/2008	4.44			45.5
	49.94	7/16/2008	9.42			40.52
	49.94	1/22/2009	8.39			41.55
	49.94	7/24/2009	NM			
	49.94	1/8/2010	4.91			45.03
	49.94	7/12/2010	5.33			44.61
	49.95	1/12/2011	5.96			43.99
	49.95	7/13/2011	12.07			37.88
	49.95	1/27/2012	5.02			44.93
	49.95	7/10/2013	12.18			37.77
	49.95	1/8/2014	7.46			42.49
	49.95	7/2/2014	8.96			40.99
	49.95	1/7/2015	4.46			45.49
	49.95	8/10/2015	6.14			43.81
	49.96	1/12/2016	4.64			45.32
	49.96	7/7/2016	7.62			42.34
	49.96	1/12/2017	6.57			43.39
	49.96	7/12/2017	8.33			41.63
	49.96	1/3/2018	8.71			41.25
	49.96	7/18/2018	8.04			41.92
	49.96	1/3/2019	8.16			41.80
	49.96	7/1/2019	4.82			45.14
	49.96	1/14/2020	4.92			45.04
MW-11A	50.05	9/28/1994	8.66			41.38
	50.05	10/13/1994	9.35			40.69
	50.05	1/24/1995	4.88			45.16
	50.05	4/11/1995	4.81			45.23
	50.05	7/11/1995	6.67			43.37
	50.05	1/23/1996	8.01			42.03
	50.05	7/19/1996	10.09			39.95
	50.05	9/17/1996	10.56			39.48
	50.05	10/31/1996	8.16			41.88
	50.05	11/22/1996	10.98			39.06
	50.05	12/27/1996	8.21			41.83
	50.05	1/22/1997	6.06			43.98
	50.05	2/21/1997	4.98			45.06
	50.05	3/25/1997	5.32			44.72
	50.05	4/23/1997	6.59			43.45
	50.05	4/24/1997	6.77			43.27
	50.05	5/13/1997	5.31			44.73
	50.05	6/20/1997	7.15			42.89
	50.05	6/25/1997	4.88			45.16
	50.05	7/1/1997	6.29			43.75
	50.05	7/24/1997	9.12			40.92
	50.05	8/16/1997	10.11			39.93
	50.05	8/22/1997	10.82			39.22
	50.05	9/25/1997	8.70			41.34
	50.05	10/22/1997	7.40			42.64
	50.05	11/25/1997	7.41			42.63
	50.05	12/19/1997	6.10			43.94

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-11A	50.05	1/20/1998	5.49			44.55
	50.05	3/3/1998	5.16			44.88
	50.05	3/18/1998	4.96			45.08
	50.05	4/24/1998	8.98			41.06
	50.05	5/21/1998	9.40			40.64
	50.05	7/30/1998	10.56			39.48
	50.05	8/25/1998	9.32			40.72
	50.05	9/21/1998	7.28			42.76
	50.05	10/26/1998	8.43			41.61
	50.05	11/23/1998	6.41			43.63
	50.05	1/29/1999	5.31			44.73
	50.05	2/26/1999	5.39			44.65
	50.05	3/16/1999	6.32			43.72
	50.05	4/29/1999	6.51			43.53
	50.05	6/1/1999	6.57			43.47
	50.05	7/30/1999	8.00			42.04
	50.05	8/27/1999	6.79			43.25
	50.05	9/27/1999	11.73			38.31
	50.05	10/29/1999	12.81			37.23
	50.05	12/29/1999	12.11			37.93
	50.05	2/4/2000	14.33			35.71
	50.05	2/25/2000	11.10			38.94
	50.05	3/27/2000	9.66			40.38
	50.05	4/7/2000	9.40			40.64
	50.05	5/31/2000	9.50			40.54
	50.05	6/1/2000	9.30			40.74
	50.05	7/28/2000	9.47			40.57
	50.05	8/30/2000	12.44			37.6
	50.05	9/19/2000	13.74			36.3
	50.05	10/27/2000	11.01			39.03
	50.05	11/21/2000	10.69			39.35
	50.05	5/1/2001	8.78			41.26
	50.05	10/1/2001	9.12			40.93
	50.05	3/11/2002	5.59			44.45
	50.05	9/23/2002	5.60			44.44
	50.05	3/10/2003	4.66			45.39
	50.05	9/23/2003	5.73			44.32
	50.05	3/15/2004	4.99			45.06
	50.05	9/13/2004	10.28			39.77
	50.05	7/18/2005	6.66			43.39
	50.05	1/5/2006	10.85			39.2
	50.05	7/27/2006	5.02			45.03
	50.05	1/23/2007	4.54			45.51
	50.05	3/7/2007	4.26			45.79
	50.05	7/27/2007	6.09			43.96
	50.05	1/28/2008	4.46			45.59
	50.05	7/16/2008	9.25			40.8
	50.05	1/22/2009	8.57			41.48
	50.05	7/24/2009	NM			
	50.05	1/8/2010	4.97			45.08
	50.05	7/12/2010	5.51			44.54
	50.07	1/12/2011	6.21			43.86
	50.07	7/12/2011	12.02			38.05
	50.07	1/27/2012	5.31			44.76
	50.07	7/10/2013	12.01			38.06
	50.07	1/8/2014	7.46			42.61
	50.07	7/2/2014	9.02			41.05
	50.07	1/7/2015	4.58			45.49
	50.07	8/10/2015	6.11			43.96
	50.16	1/12/2016	4.71			45.45
	50.16	7/7/2016	7.61			42.55
	50.16	1/12/2017	8.47			41.69
	50.16	7/12/2017	8.46			41.70
	50.16	1/3/2018	8.94			41.22
	50.16	7/18/2018	8.09			42.07
	50.16	1/3/2019	8.48			41.68
	50.16	7/1/2019	5.06			45.10
	50.16	1/14/2020	5.11			45.05

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-11B	50.18	9/28/1994	8.92			41.27
	50.18	10/13/1994	9.59			40.6
	50.18	1/24/1995	5.04			45.15
	50.18	4/11/1995	5.01			45.18
	50.18	7/11/1995	7.23			42.96
	50.18	1/23/1996	8.20			41.99
	50.18	7/19/1996	8.92			41.27
	50.18	9/17/1996	10.83			39.36
	50.18	10/31/1996	9.34			40.85
	50.18	11/22/1996	11.23			38.96
	50.18	12/27/1996	8.45			41.74
	50.18	1/22/1997	6.28			43.91
	50.18	2/21/1997	5.16			45.03
	50.18	3/25/1997	5.51			44.68
	50.18	4/23/1997	6.81			43.38
	50.18	4/24/1997	6.99			43.2
	50.18	5/13/1997	5.46			44.73
	50.18	6/20/1997	7.40			42.79
	50.18	6/25/1997	5.06			45.13
	50.18	7/1/1997	6.52			43.67
	50.18	7/24/1997	9.36			40.83
	50.18	8/16/1997	10.36			39.83
	50.18	8/22/1997	11.11			39.08
	50.18	9/25/1997	8.96			41.23
	50.18	10/22/1997	7.61			42.58
	50.18	11/25/1997	7.63			42.56
	50.18	12/19/1997	7.11			43.08
	50.18	1/20/1998	5.70			44.49
	50.18	3/3/1998	5.35			44.84
	50.18	3/18/1998	5.14			45.05
	50.18	4/24/1998	9.19			41
	50.18	5/21/1998	9.61			40.58
	50.18	7/30/1998	10.72			39.47
	50.18	8/25/1998	9.48			40.71
	50.18	9/21/1998	7.49			42.7
	50.18	10/26/1998	8.57			41.62
	50.18	11/23/1998	6.32			43.87
	50.18	2/26/1999	5.32			44.87
	50.18	3/16/1999	6.49			43.7
	50.18	4/29/1999	6.66			43.53
	50.18	6/1/1999	6.66			43.53
	50.18	7/30/1999	8.12			42.07
	50.18	8/27/1999	6.88			43.31
	50.18	9/27/1999	12.04			38.15
	50.18	10/29/1999	13.00			37.19
	50.18	12/29/1999	12.33			37.86
	50.18	2/4/2000	15.61			34.58
	50.18	2/25/2000	11.49			38.7
	50.18	3/27/2000	9.93			40.26
	50.18	4/7/2000	9.54			40.65
	50.18	5/31/2000	9.61			40.58
	50.18	6/1/2000	9.51			40.68
	50.18	7/28/2000	9.60			40.59
	50.18	8/30/2000	12.76			37.43
	50.18	9/19/2000	13.97			36.22
	50.18	10/27/2000	11.23			38.96
	50.18	11/21/2000	10.88			39.31
	50.18	5/1/2001	5.97			44.22
	50.18	10/1/2001	9.33			40.86
	50.18	3/11/2002	5.80			44.39
	50.18	9/23/2002	5.79			44.4
	50.18	3/10/2003	4.85			45.33
	50.18	9/23/2003	5.95			44.23
	50.18	3/15/2004	5.16			45.02
	50.18	9/13/2004	10.53			39.65
	50.18	7/18/2005	5.45			44.73
	50.18	1/4/2006	11.01			39.17
	50.18	7/27/2006	5.26			44.92

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-11B	50.18	1/23/2007	4.13			46.05
	50.18	3/7/2007	4.42			45.76
	50.18	7/27/2007	6.29			43.89
	50.18	1/28/2008	4.69			45.49
	50.18	7/16/2008	9.49			40.69
	50.18	1/22/2009	8.72			41.46
	50.18	7/24/2009	NM			
	50.18	1/8/2010	5.15			45.03
	50.18	7/12/2010	5.67			44.51
	50.23	1/12/2011	6.37			43.86
	50.23	7/12/2011	12.23			38.00
	50.23	1/27/2012	5.38			44.85
	50.23	7/10/2013	12.22			38.01
	50.23	1/8/2014	7.82			42.41
	50.23	7/2/2014	9.14			41.09
	50.23	1/7/2015	4.79			45.44
	50.23	8/10/2015	6.27			43.96
	50.24	1/12/2016	4.99			45.25
	50.24	7/7/2016	7.59			42.65
	50.24	1/12/2017	8.54			41.70
	50.24	7/12/2017	8.49			41.75
	50.24	1/3/2018	9.04			41.20
	50.24	7/18/2018	8.24			42.00
	50.24	1/3/2019	8.57			41.67
	50.24	7/1/2019	5.21			45.03
	50.24	1/14/2020	5.3			44.94
MW-12A	49.96	3/25/1997	5.52			44.44
	49.96	4/23/1997	6.51			43.45
	49.96	4/24/1997	6.66			43.3
	49.96	5/13/1997	5.47			44.49
	49.96	6/20/1997	6.81			43.15
	49.96	9/25/1997	8.08			41.88
	49.96	10/22/1997	7.10			42.86
	49.96	11/25/1997	7.12			42.84
	49.96	12/19/1997	6.96			43
	49.96	1/20/1998	5.69			44.27
	49.96	3/4/1998	4.52			45.44
	49.96	3/18/1998	5.28			44.68
	49.96	4/24/1998	8.70			41.26
	49.96	5/21/1998	9.10			40.86
	49.96	8/25/1998	10.05			39.91
	49.96	9/21/1998	7.11			42.85
	49.96	10/26/1998	9.11			40.85
	49.96	11/23/1998	6.01			43.95
	49.96	1/29/1999	5.44			44.52
	49.96	2/26/1999	5.52			44.44
	49.96	3/16/1999	6.21			43.75
	49.96	4/29/1999	6.38			43.58
	49.96	6/1/1999	6.31			43.65
	49.96	7/30/1999	7.88			42.08
	49.96	8/27/1999	6.56			43.4
	49.96	9/27/1999	11.61			38.35
	49.96	10/29/1999	12.79			37.17
	49.96	11/18/1999	13.18			36.78
	49.96	12/29/1999	12.03			37.93
	49.96	2/4/2000	15.43			34.53
	49.96	2/25/2000	11.34			38.62
	49.96	3/27/2000	9.22			40.74
	49.96	4/7/2000	8.80			41.16
	49.96	5/31/2000	8.84			41.12
	49.96	6/1/2000	8.81			41.15
	49.96	7/28/2000	8.87			41.09
	49.96	8/30/2000	11.76			38.2
	49.96	9/19/2000	13.22			36.74
	49.96	10/27/2000	10.54			39.42
	49.96	11/21/2000	10.16			39.8
	49.96	5/1/2001	8.60			41.36
	49.96	10/1/2001	8.73			41.23

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-12A	49.96	3/11/2002	6.01			43.95
	49.96	9/23/2002	5.87			44.09
	49.96	3/10/2003	5.37			44.59
	49.96	9/23/2003	5.96			44
	49.96	3/15/2004	5.54			44.42
	49.96	9/13/2004	10.30			39.66
	49.96	7/18/2005	7.01			42.95
	49.96	1/4/2006	10.57			39.39
	49.96	7/27/2006	6.60			43.36
	49.96	3/7/2007	6.94			43.02
	49.96	7/27/2007	5.79			44.17
	49.96	1/30/2008	5.29			44.67
	49.96	7/15/2008	9.19			40.77
	49.96	2/4/2009	8.81			41.15
	49.96	7/24/2009	9.13			40.83
	49.96	1/8/2010	5.47			44.49
	49.96	7/12/2010	9.72			40.24
	49.96	1/12/2011	5.59			44.37
	49.96	7/12/2011	12.46			37.5
	49.96	1/26/2012	5.78			44.18
	49.96	7/9/2012	5.96			44
	49.96	1/7/2013	9.04			40.92
	49.96	7/22/2013	11.64			38.32
	49.96	1/7/2014	7.38			42.58
	49.96	7/16/2014	9.82			40.14
	49.96	1/5/2015	6.46			43.50
	49.96	8/10/2015	5.26			44.70
	49.96	1/13/2016	4.67			45.29
	49.96	7/6/2016	4.96			45.00
	49.96	1/12/2017	5.67			44.29
	49.96	7/6/2017	6.03			43.93
	49.96	9/5/2017	5.86			44.10
	49.96	2/11/2018	6.48			43.48
	49.96	3/11/2018	7.12			42.84
	49.96	5/14/2018	8.92			41.04
	49.96	1/3/2019	8.37			41.59
	49.96	7/9/2019	8.02			41.94
	49.96	1/7/2020	6.04			43.92
MW-12B	50.02	3/25/1997	5.60			44.42
	50.02	4/23/1997	6.64			43.38
	50.02	4/24/1997	6.74			43.28
	50.02	5/13/1997	5.55			44.47
	50.02	6/20/1997	7.01			43.01
	50.02	9/25/1997	8.32			41.7
	50.02	10/22/1997	7.25			42.77
	50.02	11/25/1997	7.29			42.73
	50.02	12/19/1997	6.86			43.16
	50.02	1/20/1998	5.88			44.14
	50.02	3/4/1998	5.64	44.08	1.72	44.38
	50.02	3/18/1998	5.38	44.07	1.73	44.64
	50.02	4/9/1998	7.87		0.98	42.15
	50.02	4/16/1998	8.31		1.35	41.71
	50.02	4/24/1998	8.72	43.82	1.98	41.3
	50.02	5/8/1998	NM		0.50	
	50.02	5/12/1998	NM		0.50	
	50.02	5/21/1998	10.48			39.54
	50.02	5/25/1998	NM		1.00	
	50.02	6/9/1998	NM		1.00	
	50.02	6/16/1998	NM		1.20	
	50.02	6/26/1998	NM		1.50	
	50.02	7/2/1998	NM		1.50	
	50.02	7/10/1998	NM		2.00	
	50.02	7/14/1998	NM		2.00	
	50.02	7/23/1998	NM		2.00	
	50.02	8/5/1998	NM		2.00	
	50.02	8/13/1998	NM		2.00	
	50.02	8/18/1998	NM		2.00	
	50.02	8/25/1998	10.22			39.8

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-12B	50.02	9/15/1998	NM		2.00	
	50.02	9/21/1998	7.73			42.29
	50.02	9/30/1998	NM		4.00	
	50.02	10/8/1998	NM		4.00	
	50.02	10/16/1998	NM		4.00	
	50.02	10/26/1998	8.88			41.14
	50.02	11/6/1998	NM		4.00	
	50.02	11/13/1998	NM		1.49	
	50.02	11/19/1998	NM		4.00	
	50.02	11/23/1998	6.11			43.91
	50.02	12/16/1998	NM		4.00	
	50.02	1/7/1999	NM		4.00	
	50.02	1/15/1999	NM		4.00	
	50.02	1/22/1999	NM		4.00	
	50.02	1/26/1999	NM		4.00	
	50.02	1/29/1999	5.70			44.32
	50.02	2/4/1999	NM		4.00	
	50.02	2/9/1999	NM		3.00	
	50.02	2/26/1999	5.83	39.95	5.85	44.19
	50.02	3/16/1999	6.30	43.60	2.20	43.72
	50.02	4/29/1999	6.44	38.90	6.90	43.58
	50.02	5/21/1999	7.40	36.90	8.90	42.62
	50.02	5/27/1999	7.38	36.90	8.90	42.64
	50.02	6/1/1999	6.40	37.90	7.90	43.62
	50.02	6/10/1999	7.36	36.90	8.90	42.66
	50.02	7/30/1999	7.98			42.04
	50.02	8/27/1999	6.61	38.90	6.90	43.41
	50.02	9/27/1999	11.71	42.34	3.46	38.31
	50.02	10/29/1999	12.76	41.84	3.96	37.26
	50.02	11/18/1999	13.22			36.8
	50.02	12/29/1999	12.01	41.84	3.96	38.01
	50.02	2/4/2000	13.22	41.84	3.96	36.8
	50.02	2/25/2000	11.44	41.84	3.96	38.58
	50.02	3/27/2000	NM			
	50.02	4/7/2000	8.73	41.81	3.99	41.29
	50.02	5/31/2000	8.77	41.81	3.99	41.25
	50.02	6/1/2000	8.73	41.81	3.99	41.29
	50.02	7/28/2000	8.77	41.89	3.91	41.25
	50.02	8/30/2000	11.66	41.82	3.98	38.36
	50.02	9/19/2000	13.33	40.89	4.91	36.69
	50.02	10/27/2000	11.75	41.80	4.00	38.27
	50.02	11/21/2000	10.64	43.48	2.32	39.38
	50.02	5/1/2001	8.71	43.46	2.34	41.31
	50.02	10/1/2001	8.37		15.00	41.65
	50.02	3/14/2002	6.37	36.99	8.81	43.65
	50.02	9/23/2002	6.10	40.03	5.77	43.92
	50.02	3/10/2003	5.45			44.57
	50.02	9/24/2003	6.29	39.85	5.95	43.73
	50.02	3/15/2004	5.63			44.39
	50.02	9/13/2004	10.44	38.72	7.08	39.58
	50.02	7/18/2005	7.14	38.40	7.40	42.88
	50.02	1/4/2006	10.75	35.98	9.82	39.27
	50.02	7/27/2006	6.07	35.74	10.06	43.95
	50.02	3/7/2007	6.96	34.60	11.20	43.06
	50.02	7/27/2007	5.36	33.45	12.35	44.66
	50.02	1/31/2008	5.75	33.34	12.46	44.27
	50.02	7/15/2008	9.38	38.88	6.92	40.64
	50.02	2/4/2009	8.89	38.14	7.66	41.13
	50.02	7/24/2009	9.18	38.51	7.29	40.84
	50.02	1/8/2010	6.81	37.46	8.34	43.21
	50.02	5/27/2010	7.29	39.5	6.30	42.73
	50.02	6/28/2010	7.39	44.1	1.70	42.63
	50.02	7/12/2010	7.47	44.25	1.55	42.55
	50.02	8/31/2010	7.26	45.42	0.38	42.76
	50.02	1/12/2011	7.01	45.39	0.41	43.01
	50.02	7/12/2011	10.09	45.39	0.41	39.93
	50.02	3/8/2012	6.87	40.2	5.60	43.15
	50.02	7/9/2012	7.16	40.1	5.70	42.86

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-12B	50.02	1/7/2013	9.17	39.86	5.94	40.85
	50.02	7/22/2013	11.16	39.04	6.76	38.86
	50.02	1/7/2014	11.34	45.12	0.68	38.68
	50.02	7/15/2014	10.59	44.89	0.91	39.43
	50.02	1/5/2015	10.06	44.91	1.29	39.96
	50.02	8/10/2015	7.39	46.1	0.10	42.63
	50.02	1/13/2016	6.06	45.79	0.41	43.96
	50.02	7/6/2016	6.29	45.72	0.48	43.73
	50.02	1/12/2017	7.02	45.81	0.39	43.00
	50.02	7/6/2017	7.01	45.71	1.89	43.01
	50.02	9/5/2017	7.03	45.6	2.00	42.99
	50.02	2/7/2018	7.13	45.87	0.33	42.89
	50.02	3/11/2018	7.42	45.96	0.24	42.6
	50.02	5/14/2018	8.59	45.91	0.29	41.43
	50.02	1/3/2019	7.96	45.87	0.33	42.06
	50.02	7/9/2019	6.67	45.06	1.14	43.35
	50.02	1/8/2020	5.66	27.12	19.08	44.36
MW-12C	50.14	5/13/1997	39.34			10.8
	50.14	6/20/1997	38.94			11.2
	50.14	9/25/1997	36.70			13.44
	50.14	10/22/1997	36.09			14.05
	50.14	11/25/1997	36.13			14.01
	50.14	12/19/1997	35.34			14.8
	50.14	1/20/1998	32.60			17.54
	50.14	3/4/1998	31.56			18.58
	50.14	3/18/1998	31.64			18.5
	50.14	4/24/1998	31.06			19.08
	50.14	5/21/1998	38.20			11.94
	50.14	8/25/1998	31.00			19.14
	50.14	9/21/1998	29.86			20.28
	50.14	10/26/1998	30.12			20.02
	50.14	11/23/1998	28.38			21.76
	50.14	1/29/1999	27.61			22.53
	50.14	2/26/1999	27.69			22.45
	50.14	3/16/1999	28.00			22.14
	50.14	4/29/1999	28.21			21.93
	50.14	6/1/1999	28.20			21.94
	50.14	7/30/1999	29.80			20.34
	50.14	8/27/1999	28.41			21.73
	50.14	9/27/1999	29.20			20.94
	50.14	10/29/1999	29.78			20.36
	50.14	11/18/1999	30.17			19.97
	50.14	12/29/1999	29.09			21.05
	50.14	2/4/2000	29.66			20.48
	50.14	2/25/2000	30.32			19.82
	50.14	3/27/2000	28.91			21.23
	50.14	4/7/2000	27.40			22.74
	50.14	5/31/2000	27.44			22.7
	50.14	6/1/2000	27.43			22.71
	50.14	7/28/2000	27.45			22.69
	50.14	8/30/2000	33.61			16.53
	50.14	9/19/2000	30.03			20.11
	50.14	10/27/2000	33.94			16.2
	50.14	11/21/2000	29.12			21.02
	50.14	5/1/2001	26.85			23.29
	50.14	10/1/2001	26.85			23.29
	50.14	3/11/2002	25.59			24.55
	50.14	9/23/2002	26.57			23.57
	50.14	3/10/2003	24.85			25.29
	50.14	9/23/2003	26.06			24.08
	50.14	3/15/2004	24.31			25.83
	50.14	9/13/2004	26.15			23.99
	50.14	7/18/2005	26.23			23.91
	50.14	1/4/2006	22.26			27.88
	50.14	7/27/2006	25.28			24.86
	50.14	3/7/2007	23.78			26.36
	50.14	7/27/2007	22.05			28.09
	50.14	1/30/2008	22.69			27.45

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-12C	50.14	7/15/2008	24.41			25.73
	50.14	2/4/2009	24.59			25.55
	50.14	7/24/2009	24.91			25.23
	50.14	1/8/2010	23.03			27.11
	50.14	7/12/2010	23.91			26.23
	50.14	1/12/2011	23.76			26.38
	50.14	7/12/2011	25.98			24.16
	50.14	1/26/2012	25.76			24.38
	50.14	7/9/2012	24.59			25.55
	50.14	1/7/2013	26.04			24.1
	50.14	7/22/2013	27.09			23.05
	50.14	1/7/2014	26.52			23.62
	50.14	7/16/2014	25.15			24.99
	50.14	1/5/2015	26.01			24.13
	50.14	8/10/2015	24.26			25.88
	50.14	1/13/2016	23.83			26.31
	50.14	7/6/2016	24.13			26.01
	50.14	1/12/2017	24.49			25.65
	50.14	7/6/2017	24.88			25.26
	50.14	9/5/2017	24.84			25.30
	50.14	2/11/2018	25.13			25.01
	50.14	3/11/2018	24.04			26.1
	50.14	4/14/2018	25.96			24.18
	50.14	1/3/2019	25.34			24.8
	50.14	7/9/2019	23.73			26.41
	50.14	1/7/2020	24.61			25.53
MW-13	50.65	3/25/1997	9.43			41.22
	50.65	4/23/1997	9.87			40.78
	50.65	4/24/1997	9.92			40.73
	50.65	5/13/1997	9.30			41.35
	50.65	6/20/1997	10.11			40.54
	50.65	9/25/1997	10.75			39.9
	50.65	10/22/1997	10.09			40.56
	50.65	11/25/1997	10.11			40.54
	50.65	12/19/1997	10.01			40.64
	50.65	1/20/1998	9.32			41.33
	50.65	3/4/1998	9.23			41.42
	50.65	3/18/1998	8.90			41.75
	50.65	4/24/1998	10.74			39.82
	50.65	5/21/1998	12.11			38.54
	50.65	8/25/1998	12.00			38.56
	50.65	9/21/1998	10.13			40.43
	50.65	10/26/1998	11.15			39.41
	50.65	11/23/1998	9.22			41.34
	50.65	1/29/1999	8.00			42.65
	50.65	2/26/1999	8.11			42.54
	50.65	3/16/1999	9.51			41.14
	50.65	4/29/1999	9.79			40.86
	50.65	6/1/1999	9.70			40.95
	50.65	7/30/1999	11.01			39.64
	50.65	8/27/1999	9.96			40.69
	50.65	9/27/1999	12.84			37.81
	50.65	10/29/1999	13.88			36.77
	50.65	11/17/1999	14.00			36.65
	50.65	12/29/1999	13.08			37.57
	50.65	2/4/2000	15.61			35.04
	50.65	2/25/2000	12.17			38.48
	50.65	3/27/2000	10.95			39.7
	50.65	4/7/2000	10.51			40.14
	50.65	5/31/2000	10.57			40.08
	50.65	6/1/2000	10.51			40.14
	50.65	7/28/2000	10.54			40.11
	50.65	8/30/2000	13.63			37.02
	50.65	9/19/2000	14.57			36.08
	50.65	10/27/2000	11.11			39.54
	50.65	11/21/2000	11.44			39.21
	50.65	5/1/2001	10.70			39.95
	50.65	10/1/2001	10.31			40.34

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-13	50.65	3/11/2002	9.62			41.03
	50.65	9/23/2002	9.17			41.48
	50.65	3/10/2003	9.17			41.48
	50.65	9/23/2003	9.14			41.51
	50.65	3/15/2004	9.30			41.35
	50.65	9/13/2004	11.98			38.67
	50.65	7/18/2005	10.25			40.4
	50.65	1/4/2006	12.03			38.62
	50.65	7/27/2006	8.82			41.83
	50.65	3/7/2007	9.95			40.7
	50.65	7/27/2007	8.90			41.75
	50.65	1/30/2008	8.85			41.8
	50.65	7/15/2008	10.89			39.76
	50.65	2/4/2009	10.59			40.06
	50.65	7/23/2009	11.07			39.58
	50.65	1/8/2010	9.22			41.43
	50.65	7/12/2010	11.12			39.53
	50.65	1/12/2011	8.89			41.76
	50.65	7/12/2011	12.96			37.69
	50.65	1/26/2012	9.31			41.34
	50.65	7/9/2012	9.14			41.51
	50.65	1/7/2013	10.68			39.97
	50.65	7/22/2013	12.13			38.52
	50.65	1/7/2014	10.13			40.52
	50.65	7/16/2014	11.04			39.61
	50.65	1/5/2015	9.34			41.31
	50.65	8/10/2015	7.67			42.98
	50.65	1/13/2016	7.01			43.64
	50.65	7/6/2016	7.39			43.26
	50.65	1/12/2017	7.81			42.84
	50.65	7/6/2017	7.96			42.69
	50.65	9/5/2017	9.01			41.64
	50.65	2/11/2018	9.58			41.07
	50.65	3/11/2018	10.09			40.56
	50.65	5/14/2018	10.96			39.69
	50.65	1/3/2019	10.52			40.13
	50.65	7/9/2019	10.63			40.02
	50.65	1/7/2020	9.42			41.23
MW-14	50.66	3/25/1997	7.71			42.95
	50.66	4/23/1997	8.31			42.35
	50.66	4/24/1997	8.34			42.32
	50.66	5/13/1997	7.83			42.83
	50.66	6/20/1997	8.64			42.02
	50.66	9/25/1997	9.95			40.71
	50.66	10/22/1997	8.89			41.77
	50.66	11/25/1997	8.86			41.8
	50.66	12/19/1997	8.62			42.04
	50.66	1/20/1998	8.08			42.58
	50.66	3/4/1998	7.72			42.94
	50.66	3/18/1998	7.66			43
	50.66	4/24/1998	9.75			40.91
	50.66	5/21/1998	11.00			39.66
	50.66	8/25/1998	12.00			38.66
	50.66	9/21/1998	9.41			41.25
	50.66	10/26/1998	11.10			39.56
	50.66	11/23/1998	8.08			42.58
	50.66	1/29/1999	7.10			43.56
	50.66	2/26/1999	7.21			43.45
	50.66	3/16/1999	8.74			41.92
	50.66	4/29/1999	8.93			41.73
	50.66	6/1/1999	8.92			41.74
	50.66	7/30/1999	10.44			40.22
	50.66	8/27/1999	9.21			41.45
	50.66	9/27/1999	12.56			38.1
	50.66	10/29/1999	13.56			37.1
	50.66	11/17/1999	13.63			37.03
	50.66	12/29/1999	12.88			37.78
	50.66	2/4/2000	14.22			36.44

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-14	50.66	2/25/2000	11.73			38.93
	50.66	3/27/2000	10.54			40.12
	50.66	4/7/2000	10.14			40.52
	50.66	5/31/2000	10.17			40.49
	50.66	6/1/2000	10.13			40.53
	50.66	7/28/2000	10.17			40.49
	50.66	8/30/2000	13.22			37.44
	50.66	9/19/2000	14.27			36.39
	50.66	10/27/2000	11.56			39.1
	50.66	11/21/2000	11.17			39.49
	50.66	5/1/2001	9.71			40.95
	50.66	10/1/2001	10.64			40.02
	50.66	3/11/2002	8.45			42.21
	50.66	9/23/2002	7.90			42.76
	50.66	3/10/2003	8.59			42.07
	50.66	9/23/2003	7.70			42.96
	50.66	3/15/2004	7.96			42.7
	50.66	9/13/2004	11.05			39.61
	50.66	7/18/2005	9.55			41.11
	50.66	1/4/2006	11.83			38.83
	50.66	7/27/2006	7.80			42.86
	50.66	3/7/2007	8.96			41.7
	50.66	7/27/2007	8.01			42.65
	50.66	1/30/2008	7.66			43
	50.66	7/15/2008	10.41			40.25
	50.66	2/4/2009	10.27			40.39
	50.66	7/23/2009	10.67			39.99
	50.66	1/8/2010	8.24			42.42
	50.66	7/12/2010	10.54			40.12
	50.66	1/12/2011	18.09			32.57
	50.66	7/12/2011	12.93			37.73
	50.66	1/26/2012	8.57			42.09
	50.66	7/9/2012	8.61			42.05
	50.66	1/7/2013	10.46			40.2
	50.66	7/22/2013	11.91			38.75
	50.66	1/7/2014	9.39			41.27
	50.66	7/16/2014	10.58			40.08
	50.66	1/5/2015	8.79			41.87
	50.66	8/10/2015	6.34			44.32
	50.66	1/13/2016	5.79			44.87
	50.66	7/6/2016	6.06			44.60
	50.66	1/12/2017	6.59			44.07
	50.66	7/6/2017	6.92			43.74
	50.66	9/5/2017	6.83			43.83
	50.66	2/11/2018	8.66			42.00
	50.66	3/11/2018	8.99			41.67
	50.66	5/14/2018	10.09			40.57
	50.66	1/3/2019	9.37			41.29
	50.66	7/9/2019	9.57			41.09
	50.66	1/7/2020	8.39			42.27
MW-15A	50.41	3/25/1997	8.22			42.19
	50.41	4/23/1997	8.28			42.13
	50.41	4/24/1997	8.51			41.9
	50.41	5/13/1997	8.06			42.35
	50.41	6/20/1997	8.64			41.77
	50.41	9/25/1997	9.75			40.66
	50.41	10/22/1997	9.09			41.32
	50.41	11/25/1997	9.13			41.28
	50.41	12/19/1997	8.89			41.52
	50.41	1/20/1998	8.35			42.06
	50.41	3/4/1998	8.09			42.32
	50.41	3/18/1998	7.98			42.43
	50.41	4/24/1998	9.57			40.84
	50.41	5/21/1998	11.10			39.31
	50.41	8/25/1998	11.78			38.63
	50.41	9/21/1998	9.59			40.82
	50.41	10/26/1998	10.69			39.72
	50.41	11/23/1998	8.46			41.95

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-15A	50.41	1/29/1999	7.11			43.3
	50.41	2/26/1999	7.23			43.18
	50.41	3/16/1999	9.17			41.24
	50.41	4/29/1999	9.29			41.12
	50.41	6/1/1999	9.29			41.12
	50.41	7/30/1999	10.83			39.58
	50.41	8/27/1999	9.39			41.02
	50.41	9/27/1999	12.02			38.39
	50.41	10/29/1999	13.11			37.3
	50.41	11/17/1999	13.44			36.97
	50.41	12/29/1999	12.49			37.92
	50.41	2/4/2000	15.71			34.7
	50.41	2/25/2000	11.34			39.07
	50.41	3/27/2000	10.66			39.75
	50.41	4/7/2000	10.20			40.21
	50.41	5/31/2000	10.23			40.18
	50.41	6/1/2000	10.22			40.19
	50.41	7/28/2000	10.23			40.18
	50.41	8/30/2000	13.34			37.07
	50.41	9/19/2000	14.01			36.4
	50.41	10/27/2000	11.77			38.64
	50.41	11/21/2000	11.09			39.32
	50.41	5/1/2001	9.85			40.56
	50.41	10/1/2001	9.73			40.68
	50.41	3/11/2002	8.81			41.6
	50.41	9/23/2002	8.21			42.2
	50.41	3/10/2003	7.76			42.65
	50.41	9/23/2003	7.87			42.54
	50.41	3/15/2004	7.94			42.47
	50.41	9/13/2004	10.72			39.69
	50.41	7/18/2005	9.33			41.08
	50.41	1/4/2006	11.66			38.75
	50.41	7/27/2006	7.92			42.49
	50.41	3/7/2007	9.19			41.22
	50.41	7/27/2007	7.88			42.53
	50.41	1/30/2008	8.02			42.39
	50.41	7/15/2008	10.26			40.15
	50.41	2/4/2009	10.59			39.82
	50.41	7/23/2009	11.01			39.4
	50.41	1/8/2010	8.64			41.77
	50.41	7/12/2010	10.81			39.6
	50.41	1/12/2011	8.77			41.64
	50.41	7/12/2011	12.78			37.63
	50.41	1/26/2012	9.29			41.12
	50.41	7/9/2012	5.92			44.49
	50.41	1/7/2013	10.77			39.64
	50.41	7/22/2013	12.21			38.2
	50.41	1/7/2014	9.85			40.56
	50.41	7/16/2014	10.65			39.76
	50.41	1/5/2015	9.07			41.34
	50.41	8/10/2015	6.49			43.92
	50.41	1/13/2016	5.79			44.62
	50.41	7/6/2016	6.21			44.20
	50.41	1/12/2017	6.82			43.59
	50.41	7/6/2017	7.47			42.94
	50.41	9/5/2017	7.43			42.98
	50.41	2/11/2018	8.89			41.52
	50.41	3/11/2018	9.23			41.18
	50.41	5/14/2018	10.18			40.23
	50.41	1/3/2019	9.41			41
	50.41	7/9/2019	9.03			41.38
	50.41	1/7/2020	8.57			41.84
MW-15B	50.20	1/26/2012	10.13			40.07
	50.20	7/9/2012	8.32			41.88
	50.20	1/7/2013	10.71			39.49
	50.20	7/22/2013	11.97			38.23
	50.20	1/7/2014	9.81			40.39
	50.20	7/15/2014	10.36			39.84

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-15B	50.20	1/5/2015	9.26			40.94
	50.20	8/10/2015	7.29			42.91
	50.20	1/13/2016	6.81			43.39
	50.20	7/6/2016	7.56			42.64
	50.20	1/12/2017	8.09			42.11
	50.20	7/6/2017	8.61			41.59
	50.20	9/5/2017	8.56			41.64
	50.20	2/11/2018	8.74			41.46
	50.20	3/11/2018	9.09			41.11
	50.20	5/14/2018	9.91			40.29
	50.20	1/3/2019	9.4			40.8
	50.20	7/9/2019	9.23			40.97
	50.20	1/7/2020	8.39			41.81
MW-15C	50.01	5/13/1997	33.46			16.55
	50.01	6/20/1997	34.18			15.83
	50.01	9/25/1997	33.77			16.24
	50.01	10/22/1997	32.89			17.12
	50.01	11/25/1997	32.95			17.06
	50.01	12/19/1997	32.01			18
	50.01	1/20/1998	29.90			20.11
	50.01	3/4/1998	28.56			21.45
	50.01	3/18/1998	28.53			21.48
	50.01	4/24/1998	28.46			21.55
	50.01	5/21/1998	35.00			15.01
	50.01	8/25/1998	29.30			20.71
	50.01	9/21/1998	28.15			21.86
	50.01	10/26/1998	28.11			21.9
	50.01	11/23/1998	26.50			23.51
	50.01	1/29/1999	25.44			24.57
	50.01	2/26/1999	25.51			24.5
	50.01	3/16/1999	26.11			23.9
	50.01	4/29/1999	26.33			23.68
	50.01	6/1/1999	26.39			23.62
	50.01	7/30/1999	27.99			22.02
	50.01	8/27/1999	26.51			23.5
	50.01	9/27/1999	27.46			22.55
	50.01	10/29/1999	28.26			21.75
	50.01	11/17/1999	28.55			21.46
	50.01	12/29/1999	27.61			22.4
	50.01	2/4/2000	28.11			21.9
	50.01	2/25/2000	28.23			21.78
	50.01	3/27/2000	27.45			22.56
	50.01	4/7/2000	26.11			23.9
	50.01	5/31/2000	26.13			23.88
	50.01	6/1/2000	26.03			23.98
	50.01	7/28/2000	26.14			23.87
	50.01	8/30/2000	29.11			20.9
	50.01	9/19/2000	28.67			21.34
	50.01	10/27/2000	27.64			22.37
	50.01	11/21/2000	27.56			22.45
	50.01	5/1/2001	25.24			24.77
	50.01	10/1/2001	25.40			24.61
	50.01	3/11/2002	24.17			25.84
	50.01	9/23/2002	25.35			24.66
	50.01	3/10/2003	23.52			26.49
	50.01	9/23/2003	24.88			25.13
	50.01	3/15/2004	22.97			27.04
	50.01	9/13/2004	24.80			25.21
	50.01	7/18/2005	25.17			24.84
	50.01	1/4/2006	26.23			23.78
	50.01	7/27/2006	24.31			25.7
	50.01	3/7/2007	22.76			27.25
	50.01	7/27/2007	21.03			28.98
	50.01	1/30/2008	21.80			28.21
	50.01	7/15/2008	23.63			26.38
	50.01	2/4/2009	23.73			26.28
	50.01	7/23/2009	23.96			26.05
	50.01	1/8/2010	21.88			28.13

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-15C	50.01	7/12/2010	23.08			26.93
	50.01	1/12/2011	23.04			26.97
	50.01	7/12/2011	25.09			24.92
	50.01	1/26/2012	24.37			25.64
	50.01	7/9/2012	24.41			25.6
	50.01	1/7/2013	25.21			24.8
	50.01	7/22/2013	26.10			23.91
	50.01	1/7/2014	25.26			24.75
	50.01	7/16/2014	24.15			25.86
	50.01	1/5/2015	25.34			24.67
	50.01	8/10/2015	22.74			27.27
	50.01	1/13/2016	21.92			28.09
	50.01	7/6/2016	22.26			27.75
	50.01	1/12/2017	22.69			27.32
	50.01	7/6/2017	23.31			26.70
	50.01	9/5/2017	23.29			26.72
	50.01	2/11/2018	23.63			26.38
	50.01	3/11/2018	22.47			27.54
	50.01	5/14/2018	23.33			26.68
	50.01	1/3/2019	23.87			26.14
	50.01	7/9/2019	22.38			27.63
	50.01	1/7/2020	23.12			26.89
MW-16	51.51	3/25/1997	7.41			44.1
	51.51	4/23/1997	8.44			43.07
	51.51	4/24/1997	8.52			42.99
	51.51	5/13/1997	8.29			43.22
	51.51	6/20/1997	8.41			43.1
	51.51	9/25/1997	10.71			40.8
	51.51	10/22/1997	9.53			41.98
	51.51	11/25/1997	9.55			41.96
	51.51	12/19/1997	9.10			42.41
	51.51	1/20/1998	8.60			42.91
	51.51	3/4/1998	8.13			43.38
	51.51	3/18/1998	8.59			42.92
	51.51	4/24/1998	9.96			41.55
	51.51	5/21/1998	11.43			40.08
	51.51	7/30/1998	12.56			38.95
	51.51	8/25/1998	11.53			39.98
	51.51	9/21/1998	9.81			41.7
	51.51	10/26/1998	10.44			41.07
	51.51	11/23/1998	8.98			42.53
	51.51	1/29/1999	7.12			44.39
	51.51	2/26/1999	7.23			44.28
	51.51	3/16/1999	10.06			41.45
	51.51	4/29/1999	10.16			41.35
	51.51	6/1/1999	10.16			41.35
	51.51	7/30/1999	11.76			39.75
	51.51	8/27/1999	10.33			41.18
	51.51	9/27/1999	11.79			39.72
	51.51	10/29/1999	12.93			38.58
	51.51	11/17/1999	13.71			37.8
	51.51	12/29/1999	12.20			39.31
	51.51	2/4/2000	15.11			36.4
	51.51	2/25/2000	11.10			40.41
	51.51	3/27/2000	11.48			40.03
	51.51	4/7/2000	11.09			40.42
	51.51	5/31/2000	11.11			40.4
	51.51	6/1/2000	11.00			40.51
	51.51	7/28/2000	11.11			40.4
	51.51	8/30/2000	13.10			38.41
	51.51	9/19/2000	14.83			36.68
	51.51	10/27/2000	11.66			39.85
	51.51	11/21/2000	11.29			40.22
	51.51	5/1/2001	9.92			41.59
	51.51	10/1/2001	9.93			41.58
	51.51	3/11/2002	9.12			42.39
	51.51	9/23/2002	8.65			42.86
	51.51	3/10/2003	7.74			43.77

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-16	51.51	9/23/2003	8.48			43.03
	51.51	3/15/2004	8.09			43.42
	51.51	9/13/2004	10.38			41.13
	51.51	7/18/2005	10.42			41.09
	51.51	1/4/2006	12.48			39.03
	51.51	7/27/2006	9.37			42.14
	51.51	3/7/2007	9.66			41.85
	51.51	7/27/2007	7.85			43.66
	51.51	1/31/2008	8.42	25.40	3.40	43.09
	51.51	7/15/2008	10.16			41.35
	51.51	2/5/2009	11.93			39.58
	51.51	7/23/2009	12.67			38.84
	51.51	1/8/2010	8.66			42.85
	51.51	7/12/2010	10.31			41.2
	51.51	1/12/2011	9.89			41.62
	51.51	7/12/2011	12.98			38.53
	51.51	1/26/2012	9.92			41.59
	51.51	7/9/2012	9.68			41.83
	51.51	1/7/2013	11.41			40.1
	51.51	7/22/2013	12.39			39.12
	51.51	1/7/2014	12.02			39.49
	51.51	7/15/2014	9.69			41.82
	51.51	1/5/2015	11.07			40.44
	51.51	8/10/2015	9.42			42.09
MW-17	50.92	3/25/1997	9.97			40.95
	50.92	4/23/1997	10.41			40.51
	50.92	4/24/1997	10.51			40.41
	50.92	5/13/1997	10.32			40.6
	50.92	6/20/1997	11.07			39.85
	50.92	9/25/1997	12.39			38.53
	50.92	10/22/1997	11.19			39.73
	50.92	11/25/1997	11.21			39.71
	50.92	12/19/1997	11.01			39.91
	50.92	1/20/1998	10.25			40.67
	50.92	3/4/1998	9.93			40.99
	50.92	3/18/1998	9.94			40.98
	50.92	4/9/1998	11.32			39.6
	50.92	4/16/1998	11.52			39.4
	50.92	4/24/1998	11.80			39.12
	50.92	5/8/1998	NM			
	50.92	5/12/1998	NM			
	50.92	5/21/1998	13.30			37.62
	50.92	5/25/1998	NM			
	50.92	6/9/1998	NM			
	50.92	6/16/1998	NM			
	50.92	6/26/1998	NM			
	50.92	7/2/1998	NM			
	50.92	7/10/1998	NM			
	50.92	7/14/1998	NM			
	50.92	7/23/1998	NM			
	50.92	8/5/1998	NM			
	50.92	8/13/1998	NM			
	50.92	8/25/1998	13.78			37.14
	50.92	9/15/1998	NM			
	50.92	9/21/1998	11.49			39.43
	50.92	9/30/1998	NM			
	50.92	10/8/1998	NM			
	50.92	10/16/1998	NM			
	50.92	10/26/1998	12.22			38.7
	50.92	11/6/1998	NM			
	50.92	11/13/1998	NM			
	50.92	11/19/1998	NM			
	50.92	11/23/1998	10.21			40.71
	50.92	12/16/1998	NM			
	50.92	1/7/1999	NM			
	50.92	1/15/1999	NM			
	50.92	1/22/1999	NM			
	50.92	1/26/1999	NM			

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-17	50.92	1/29/1999	10.88			40.04
	50.92	2/4/1999	NM			
	50.92	2/9/1999	NM			
	50.92	2/26/1999	10.93			39.99
	50.92	3/16/1999	11.18			39.74
	50.92	4/29/1999	11.00			39.92
	50.92	5/21/1999	11.25			39.67
	50.92	5/27/1999	11.31			39.61
	50.92	6/1/1999	11.07			39.85
	50.92	6/10/1999	11.28			39.64
	50.92	7/30/1999	12.67			38.25
	50.92	8/27/1999	11.27			39.65
	50.92	9/27/1999	14.67			36.25
	50.92	10/29/1999	15.11			35.81
	50.92	11/17/1999	16.08			34.84
	50.92	12/29/1999	14.43			36.49
	50.92	2/4/2000	17.21			33.71
	50.92	2/25/2000	13.63			37.29
	50.92	3/27/2000	13.08	32.60	0.70	37.84
	50.92	4/7/2000	12.63	32.30	1.00	38.29
	50.92	5/31/2000	12.67	32.30	1.00	38.25
	50.92	6/1/2000	12.61	32.30	1.00	38.31
	50.92	7/28/2000	12.69	32.30	1.00	38.23
	50.92	8/30/2000	15.56			35.36
	50.92	9/19/2000	16.24	32.20	1.10	34.68
	50.92	10/27/2000	14.10			36.82
	50.92	11/21/2000	13.12			37.8
	50.92	5/1/2001	11.82	32.44	0.86	39.1
	50.92	10/1/2001	12.55	32.30	1.00	38.37
	50.92	3/14/2002	10.91	31.79	1.51	40.01
	50.92	9/23/2002	10.48			40.44
	50.92	3/10/2003	9.76			41.16
	50.92	9/24/2003	10.59	32.85	0.45	40.33
	50.92	3/15/2004	10.15			40.77
	50.92	9/13/2004	13.09			37.83
	50.92	7/18/2005	12.06	32.90	0.40	38.86
	50.92	1/4/2006	13.90	32.90	0.40	37.02
	50.92	7/27/2006	10.71	33.28	0.02	40.21
	50.92	3/7/2007	10.91	33.00	0.30	40.01
	50.92	7/27/2007	9.33	33.02	0.28	41.59
	50.92	1/31/2008	10.00	31.17	2.13	40.92
	50.92	7/15/2008	12.95	33.08	0.23	37.97
	50.92	2/4/2009	12.64	Trace	Trace	38.28
	50.92	1/8/2010	10.62			40.3
	50.92	7/12/2010	12.96			37.96
	50.92	7/12/2010	12.96			37.96
	50.92	1/12/2011	11.06			39.86
	50.92	7/12/2011	14.93			35.99
	50.92	1/26/2012	11.2			39.72
	50.92	7/9/2012	11.02			39.9
	50.92	1/7/2013	13.14			37.78
	50.92	7/22/2013	14.62			36.3
	50.92	1/7/2014	12.36			38.56
	50.92	7/15/2014	12.54			38.38
	50.92	1/5/2015	11.71			39.21
	50.92	8/10/2015	9.61			41.31
	50.92	1/13/2016	9.02			41.90
	50.92	7/6/2016	9.47			41.45
	50.92	1/12/2017	10.06			40.86
	50.92	7/6/2017	10.62			40.30
	50.92	9/5/2017	10.51			40.41
	50.92	2/11/2018	10.76			40.16
	50.92	3/11/2018	11.21			39.71
	50.92	5/14/2018	12.21			38.71
	50.92	1/3/2019	11.72			39.2
	50.92	7/9/2019	11.66			39.26
	50.92	1/7/2020	8.23			42.69
MW-17C	50.17	3/15/2004	22.75			27.42

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-17C	50.17	9/13/2004	24.56			25.61
	50.17	7/18/2005	25.02			25.15
	50.17	1/4/2006	26.07			24.1
	50.17	7/27/2006	24.15			26.02
	50.17	3/7/2007	22.51			27.66
	50.17	7/27/2007	20.93			29.24
	50.17	1/30/2008	21.74			28.43
	50.17	7/15/2008	23.65			26.52
	50.17	2/4/2009	23.72			26.45
	50.17	7/23/2009	24.08			26.09
	50.17	1/8/2010	21.98			28.19
	50.17	7/12/2010	23.03			27.14
	50.17	1/12/2011	23.16			27.01
	50.17	7/12/2011	25.11			25.06
	50.17	1/26/2012	24.27			25.9
	50.17	7/9/2012	24.32			25.85
	50.17	1/7/2013	24.76			25.41
	50.17	7/22/2013	25.89			24.28
	50.17	1/7/2014	25.06			25.11
	50.17	7/15/2014	23.98			26.19
	50.17	1/5/2015	24.62			25.55
	50.17	8/10/2015	22.47			27.70
	50.17	1/13/2016	21.81			28.36
	50.17	7/6/2016	22.16			28.01
	50.17	1/12/2017	22.67			27.50
	50.17	7/6/2017	23.09			27.08
	50.17	9/5/2017	23.01			27.16
	50.17	2/11/2018	23.11			27.06
	50.17	3/11/2018	22.21			27.96
	50.17	5/14/2018	23.02			27.15
	50.17	1/3/2019	22.71			27.46
	50.17	7/9/2019	22.14			28.03
	50.17	1/7/2020	23.21			26.96
MW-18A	51.57	3/25/1997	15.41			36.16
	51.57	4/23/1997	15.80			35.77
	51.57	5/13/1997	14.92			36.65
	51.57	6/20/1997	16.02			35.55
	51.57	9/25/1997	15.15			36.42
	51.57	10/22/1997	16.38			35.19
	51.57	11/25/1997	16.37			35.2
	51.57	12/19/1997	16.11			35.46
	51.57	1/20/1998	15.49			36.08
	51.57	3/4/1998	15.19			36.38
	51.57	3/18/1998	14.28			37.29
	51.57	4/24/1998	17.53			34.04
	51.57	5/21/1998	18.41			33.16
	51.57	7/30/1998	18.59			32.98
	51.57	8/25/1998	16.95			34.62
	51.57	9/21/1998	16.39			35.18
	51.57	10/26/1998	15.77			35.8
	51.57	11/23/1998	16.26			35.31
	51.57	1/29/1999	17.02			34.55
	51.57	2/26/1999	17.11			34.46
	51.57	4/29/1999	16.01			35.56
	51.57	6/1/1999	16.11			35.46
	51.57	7/30/1999	17.55			34.02
	51.57	8/27/1999	16.39			35.18
	51.57	9/27/1999	19.13			32.44
	51.57	10/29/1999	20.50			31.07
	51.57	11/17/1999	21.63			29.94
	51.57	12/29/1999	19.83			31.74
	51.57	2/4/2000	23.71			27.86
	51.57	2/25/2000	18.80			32.77
	51.57	3/27/2000	17.98			33.59
	51.57	4/7/2000	17.61			33.96
	51.57	5/31/2000	17.65			33.92
	51.57	6/1/2000	17.60			33.97
	51.57	7/28/2000	17.67			33.9

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-18A	51.57	8/30/2000	20.30			31.27
	51.57	9/19/2000	19.54			32.03
	51.57	10/27/2000	18.75			32.82
	51.57	11/21/2000	16.52			35.05
	51.57	5/1/2001	17.91	27.85	7.94	33.66
	51.57	10/1/2001	17.47			34.1
	51.57	3/11/2002	16.68			34.89
	51.57	9/23/2002	15.30			36.27
	51.57	3/10/2003	15.77			35.8
	51.57	9/23/2003	25.08			26.49
	51.57	3/15/2004	15.58			35.99
	51.57	9/13/2004	18.32			33.25
	51.57	7/18/2005	14.88			36.69
	51.57	1/4/2006	17.96			33.61
	51.57	7/27/2006	14.15			37.42
	51.57	3/7/2007	17.32			34.25
	51.57	7/27/2007	15.22			36.35
	51.57	1/30/2008	15.63			35.94
	51.57	7/15/2008	17.43			34.14
	51.57	2/5/2009	18.67			32.9
	51.57	7/23/2009	19.03			32.54
	51.57	1/8/2010	16.51			35.06
	51.57	7/12/2010	18.11			33.46
	51.57	1/12/2011	15.82			35.75
	51.57	7/12/2011	19.02			32.55
	51.57	1/26/2012	16.9			34.67
	51.57	7/9/2012	15.06			36.51
	51.57	1/7/2013	18.39			33.18
	51.57	7/22/2013	18.74			32.83
	51.57	1/7/2014	18.06			33.51
	51.57	7/16/2014	18.14			33.43
	51.57	1/5/2015	17.39			34.18
	51.57	8/10/2015	15.02			36.55
	51.57	1/13/2016	14.36			37.21
	51.57	7/6/2016	14.71			36.86
	51.57	1/12/2017	15.09			36.48
	51.57	7/6/2017	15.59			35.98
	51.57	9/5/2017	15.49			36.08
	51.57	2/11/2018	16.62			34.95
	51.57	3/11/2018	17.12			34.45
	51.57	5/14/2018	17.71			33.86
	51.57	1/3/2019	17.52			34.05
	51.57	7/9/2019	17.51			34.06
	51.57	1/7/2020	17.71			33.86
MW-18C	51.47	5/13/1997	29.45			22.02
	51.47	6/20/1997	30.37			21.1
	51.47	9/25/1997	31.53			19.94
	51.47	10/22/1997	30.71			20.76
	51.47	11/25/1997	30.75			20.72
	51.47	12/19/1997	30.10			21.37
	51.47	1/20/1998	28.30			23.17
	51.47	3/4/1998	27.03			24.44
	51.47	3/18/1998	26.81			24.66
	51.47	4/9/1998	27.04			24.43
	51.47	4/16/1998	27.03			24.44
	51.47	4/24/1998	27.25			24.22
	51.47	5/8/1998	NM			
	51.47	5/12/1998	NM			
	51.47	5/21/1998	27.68			23.79
	51.47	5/25/1998	NM			
	51.47	6/9/1998	NM			
	51.47	6/16/1998	NM			
	51.47	6/26/1998	NM			
	51.47	7/2/1998	NM			
	51.47	7/10/1998	NM			
	51.47	7/14/1998	NM			
	51.47	7/23/1998	NM			
	51.47	7/30/1998	28.40			23.07

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-18C	51.47	8/5/1998	NM			
	51.47	8/13/1998	NM			
	51.47	8/25/1998	28.88			22.59
	51.47	9/15/1998	NM			
	51.47	9/21/1998	27.94			23.53
	51.47	9/30/1998	NM			
	51.47	10/8/1998	NM			
	51.47	10/16/1998	NM			
	51.47	10/26/1998	27.62			23.85
	51.47	11/6/1998	NM			
	51.47	11/11/1998	26.85		0.67	24.62
	51.47	11/19/1998	NM			
	51.47	11/23/1998	26.21			25.26
	51.47	12/16/1998	NM			
	51.47	1/7/1999	NM			
	51.47	1/15/1999	NM			
	51.47	1/22/1999	NM			
	51.47	1/26/1999	NM			
	51.47	1/29/1999	25.36			26.11
	51.47	2/4/1999	NM			
	51.47	2/9/1999	NM			
	51.47	2/26/1999	25.41			26.06
	51.47	4/29/1999	26.33			25.14
	51.47	5/21/1999	25.75			25.72
	51.47	5/27/1999	25.76			25.71
	51.47	6/1/1999	26.38			25.09
	51.47	6/10/1999	25.68			25.79
	51.47	7/30/1999	25.61			25.86
	51.47	8/27/1999	26.51			24.96
	51.47	9/27/1999	27.28			24.19
	51.47	10/29/1999	27.95			23.52
	51.47	11/17/1999	28.42			23.05
	51.47	12/29/1999	27.26			24.21
	51.47	2/4/2000	27.84			23.63
	51.47	2/25/2000	27.83			23.64
	51.47	3/27/2000	27.48			23.99
	51.47	4/7/2000	25.80			25.67
	51.47	5/31/2000	25.83			25.64
	51.47	6/1/2000	25.81			25.66
	51.47	7/28/2000	25.86			25.61
	51.47	8/30/2000	28.42			23.05
	51.47	9/19/2000	28.77	80.44	0.97	22.7
	51.47	10/27/2000	28.69			22.78
	51.47	11/21/2000	27.67			23.8
	51.47	5/1/2001	25.20			26.27
	51.47	10/1/2001	25.59			25.8
	51.47	3/14/2002	24.35			27.12
	51.47	9/25/2002	25.45			26.02
	51.47	3/10/2003	23.60			27.87
	51.47	9/24/2003	25.15			26.32
	51.47	3/15/2004	24.23			27.24
	51.47	9/13/2004	25.12	78.22	1.70	26.35
	51.47	7/18/2005	25.50	66.20	0.30	25.97
	51.47	1/4/2006	26.71			24.76
	51.47	7/27/2006	24.80			26.67
	51.47	3/7/2007	23.11			28.36
	51.47	7/27/2007	24.80			26.67
	51.47	1/30/2008	22.64			28.83
	51.47	7/15/2008	24.43			27.04
	51.47	2/5/2009	24.34			27.13
	51.47	7/23/2009	24.61			26.86
	51.47	1/8/2010	22.56			28.91
	51.47	7/12/2010	23.77			27.7
	51.47	1/12/2011	24.03			27.44
	51.47	7/12/2011	25.87			25.6
	51.47	1/26/2012	26.82			24.65
	51.47	7/9/2012	24.82			26.65
	51.47	1/7/2013	25.61			25.86

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-18C	51.47	7/22/2013	26.76			24.71
	51.47	1/7/2014	25.68			25.79
	51.47	7/16/2014	24.60			26.87
	51.47	1/5/2015	25.02			26.45
	51.47	8/10/2015	23.41			28.06
	51.47	1/13/2016	22.76			28.71
	51.47	7/6/2016	23.12			28.35
	51.47	1/12/2017	23.73			27.74
	51.47	7/6/2017	24.13			27.34
	51.47	9/5/2017	24.08			27.39
	51.47	2/11/2018	23.7			27.77
	51.47	3/11/2018	22.88			28.59
	51.47	5/14/2018	23.47			28.00
	51.47	1/3/2019	23.01			28.46
	51.47	7/9/2019	23.08			28.39
	51.47	1/7/2020	23.54			27.93
MW-19C	53.05	11/23/1998	28.84			24.21
	53.05	1/29/1999	28.21			24.84
	53.05	2/26/1999	28.28			24.77
	53.05	3/16/1999	28.31			24.74
	53.05	4/29/1999	28.56			24.49
	53.05	6/1/1999	28.48			24.57
	53.05	7/30/1999	30.00			23.05
	53.05	8/27/1999	28.61			24.44
	53.05	9/27/1999	29.72			23.33
	53.05	10/29/1999	30.46			22.59
	53.05	11/17/1999	30.76			22.29
	53.05	12/29/1999	29.44			23.61
	53.05	2/4/2000	30.22			22.83
	53.05	2/25/2000	29.93			23.12
	53.05	3/27/2000	29.80			23.25
	53.05	4/7/2000	28.40			24.65
	53.05	5/31/2000	28.44			24.61
	53.05	6/1/2000	28.33			24.72
	53.05	7/28/2000	28.37			24.68
	53.05	8/30/2000	29.99			23.06
	53.05	9/19/2000	30.97			22.08
	53.05	10/27/2000	28.49			24.56
	53.05	11/21/2000	29.88			23.17
	53.05	5/1/2001	27.61	71.55	3.56	25.44
	53.05	10/1/2001	27.84			25.21
	53.05	3/11/2002	26.68			26.37
	53.05	9/23/2002	27.66			25.39
	53.05	3/10/2003	25.77			27.28
	53.05	9/23/2003	27.21			25.84
	53.05	3/15/2004	25.36			27.69
	53.05	9/13/2004	27.20			25.85
	53.05	7/18/2005	27.71			25.34
	53.05	1/4/2006	28.78			24.27
	53.05	7/27/2006	26.91			26.14
	53.05	3/7/2007	25.22			27.83
	53.05	7/27/2007	23.71			29.34
	53.05	1/31/2008	24.57			28.48
	53.05	7/15/2008	26.38			26.67
	53.05	2/4/2009	26.44			26.61
	53.05	7/23/2009	26.81			26.24
	53.05	1/9/2010	24.47			28.58
	53.05	7/12/2010	25.67			27.38
	53.05	1/12/2011	25.86			27.19
	53.05	7/12/2011	27.81			25.24
	53.05	1/26/2012	26.74			26.31
	53.05	7/9/2012	27.26			25.79
	53.05	1/7/2013	27.73			25.32
	53.05	7/22/2013	28.58			24.47
	53.05	1/7/2014	27.71			25.34
	53.05	7/15/2014	26.65			26.40
	53.05	1/5/2015	27.34			25.71
	53.05	8/10/2015	25.21			27.84

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-19C	53.05	1/13/2016	24.68			28.37
	53.05	7/6/2016	NM			
	53.05	2/11/2018	21.74			31.31
	53.05	3/11/2018	24.74			28.31
	53.05	5/14/2018	25.72			27.33
	53.05	1/3/2019	25.03			28.02
	53.05	7/9/2019	24.58			28.47
	53.05	1/8/2020	25.71			27.34
MW-20A	50.43	11/23/1998	8.31			42.116
	50.43	1/29/1999	8.70			41.726
	50.43	2/26/1999	8.81			41.616
	50.43	3/16/1999	9.26			41.166
	50.43	4/29/1999	9.33			41.096
	50.43	6/1/1999	9.30			41.126
	50.43	7/30/1999	10.91			39.516
	50.43	8/27/1999	9.56			40.866
	50.43	9/27/1999	10.79			39.636
	50.43	10/29/1999	11.96			38.466
	50.43	11/17/1999	13.06			37.366
	50.43	12/29/1999	11.11			39.316
	50.43	2/4/2000	14.89			35.536
	50.43	2/25/2000	10.33			40.096
	50.43	3/27/2000	10.79			39.636
	50.43	4/7/2000	10.41			40.016
	50.43	5/31/2000	10.46			39.966
	50.43	6/1/2000	10.41			40.016
	50.43	7/28/2000	10.47			39.956
	50.43	8/30/2000	12.56			37.866
	50.43	9/19/2000	13.68			36.746
	50.43	10/27/2000	11.01			39.416
	50.43	11/21/2000	10.64			39.786
	50.43	5/1/2001	9.40			41.03
	50.43	10/1/2001	10.42			40.01
	50.43	3/11/2002	8.59			41.836
	50.43	9/23/2002	8.51			41.916
	50.43	3/10/2003	7.42			43.006
	50.43	9/23/2003	7.95			42.476
	50.43	3/15/2004	7.72			42.706
	50.43	9/13/2004	10.22			40.206
	50.43	7/18/2005	9.88			40.546
	50.43	1/4/2006	11.72			38.706
	50.43	7/27/2006	8.59			41.836
	50.43	3/7/2007	8.91			41.516
	50.43	7/27/2007	7.63			42.796
	50.43	1/30/2008	7.91			42.516
	50.43	7/15/2008	10.05			40.376
	50.43	2/4/2009	10.18			40.246
	50.43	7/23/2009	10.47			39.956
	50.43	1/9/2010	8.23			42.196
	50.43	7/12/2010	10.62			39.806
	50.43	1/12/2011	8.76			41.666
	50.43	7/12/2011	12.53			37.896
	50.43	1/26/2012	11.61			38.816
	50.43	7/9/2012	9.18			41.246
	50.43	1/7/2013	10.66			39.766
	50.43	7/22/2013	12.17			38.256
	50.43	1/7/2014	11.62			38.806
	50.43	7/15/2014	9.83			40.60
	50.43	1/5/2015	11.09			39.34
	50.43	8/10/2015	9.34			41.09
	50.43	7/6/2017	8.12			42.31
	50.43	9/6/2017	8.06			42.37
	50.43	2/11/2018	9.22			41.21
	50.43	3/11/2018	9.03			41.396
	50.43	5/14/2018	9.89			40.536
	50.43	1/3/2019	9.26			41.17
	50.43	7/9/2019	9.04			41.386
	50.43	1/7/2020	9.06			41.366

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-20A	50.43					50.426
	50.43					50.426
	50.43					50.426
MW-21C	49.05	11/23/1998	27.83			21.223
	49.05	1/29/1999	27.11			21.943
	49.05	2/26/1999	27.26			21.793
	49.05	3/16/1999	27.42			21.633
	49.05	4/29/1999	27.99			21.063
	49.05	6/1/1999	27.80			21.253
	49.05	7/30/1999	29.00			20.053
	49.05	8/27/1999	27.99			21.063
	49.05	9/27/1999	28.43			20.623
	49.05	10/29/1999	29.12			19.933
	49.05	11/18/1999	29.25			19.803
	49.05	12/29/1999	10.89			38.163
	49.05	2/4/2000	28.94			20.113
	49.05	2/25/2000	11.43			37.623
	49.05	3/27/2000	28.13			20.923
	49.05	4/7/2000	26.79			22.263
	49.05	5/31/2000	26.83			22.223
	49.05	6/1/2000	26.83			22.223
	49.05	7/28/2000	26.88			22.173
	49.05	8/30/2000	29.91			19.143
	49.05	9/19/2000	29.15			19.903
	49.05	10/27/2000	30.21			18.843
	49.05	11/21/2000	28.33			20.723
	49.05	5/1/2001	26.01			23.04
	49.05	10/1/2001	26.05			23
	49.05	3/11/2002	24.80			24.253
	49.05	9/23/2002	25.50			23.553
	49.05	3/10/2003	23.82			25.233
	49.05	9/23/2003	25.08			23.973
	49.05	3/15/2004	23.48			25.573
	49.05	9/13/2004	25.44			23.613
	49.05	7/18/2005	25.33			23.723
	49.05	1/4/2006	26.44			22.613
	49.05	7/27/2006	24.55			24.503
	49.05	3/7/2007	22.91			26.143
	49.05	7/27/2007	21.29			27.763
	49.05	1/29/2008	22.09			26.963
	49.05	7/15/2008	23.31			25.743
	49.05	2/4/2009	24.03			25.023
	49.05	7/24/2009	24.29			24.763
	49.05	1/9/2010	21.89			27.163
	49.05	7/12/2010	23.01			26.043
	49.05	1/12/2011	23.21			25.843
	49.05	7/12/2011	25.09			23.963
	49.05	1/26/2012	24.48			24.573
	49.05	7/9/2012	23.39			25.663
	49.05	1/7/2013	25.17			23.883
	49.05	7/22/2013	26.49			22.563
	49.05	1/7/2014	25.94			23.113
	49.05	7/15/2014	24.61			24.44
	49.05	1/5/2015	25.31			23.74
	49.05	8/10/2015	23.37			25.68
	49.05	1/13/2016	22.71			26.34
	49.05	7/6/2016	23.04			26.01
	49.05	1/12/2017	23.59			25.46
	49.05	7/6/2017	24.02			25.03
	49.05	9/5/2017	23.96			25.09
	49.05	2/11/2018	24.08			24.97
	49.05	3/11/2018	23.07			25.98
	49.05	5/14/2018	23.97			25.08
	49.05	1/3/2019	23.17			25.88
	49.05	7/9/2019	23.11			25.943
	49.05	1/7/2020	23.46			25.59
MW-22A	46.07	11/23/1998	NM			
	46.07	1/29/1999	2.10			43.969

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-22A	46.07	2/26/1999	2.21			43.859
	46.07	3/16/1999	2.65			43.419
	46.07	4/29/1999	2.71			43.359
	46.07	6/1/1999	2.68			43.389
	46.07	7/30/1999	4.12			41.949
	46.07	8/27/1999	2.81			43.259
	46.07	9/27/1999	8.53			37.539
	46.07	10/29/1999	10.23			35.839
	46.07	11/18/1999	9.92			36.149
	46.07	12/29/1999	9.56			36.509
	46.07	2/4/2000	12.31			33.759
	46.07	2/25/2000	8.72			37.349
	46.07	3/27/2000	6.30			39.769
	46.07	4/7/2000	6.03			40.039
	46.07	5/31/2000	6.12			39.949
	46.07	6/1/2000	6.00			40.069
	46.07	7/28/2000	6.13			39.939
	46.07	8/30/2000	9.09			36.979
	46.07	9/19/2000	10.12			35.949
	46.07	10/27/2000	8.64			37.429
	46.07	11/21/2000	7.69			38.379
	46.07	5/1/2001	5.15			40.92
	46.07	10/1/2001	5.49			40.58
	46.07	3/11/2002	2.34			43.729
	46.07	9/23/2002	2.11			43.959
	46.07	3/10/2003	1.68			44.389
	46.07	9/23/2003	2.30			43.769
	46.07	3/15/2004	2.05			44.019
	46.07	9/14/2004	6.89			39.179
	46.07	7/18/2005	3.65			42.419
	46.07	1/6/2006	7.29			38.779
	46.07	7/27/2006	1.65			44.419
	46.07	3/7/2007	NM			
	46.07	7/27/2007	2.84			43.229
	46.07	1/29/2008	1.05			45.019
	46.07	7/14/2008	5.33			40.739
	46.07	2/3/2009	5.24			40.829
	46.07	7/23/2009	5.91			40.159
	46.07	1/9/2010	1.32			44.749
	46.07	7/12/2010	6.52			39.549
	46.07	1/12/2011	3.21			42.859
	46.07	7/11/2011	8.39			37.679
	46.07	1/27/2012	0.98			45.089
	46.07	7/10/2012	1.74			44.326
	46.07	1/8/2013	3.09			42.979
	46.07	7/22/2013	NM			
	46.07	1/7/2014	3.81			42.26
	46.07	7/15/2014	3.22			42.85
	46.07	1/5/2015	NM			
	46.07	8/10/2015	NM			
	46.07	1/13/2016	NM			
	46.07	7/6/2016	NM			
	46.07	1/12/2017	NM			
	46.07	7/6/2017	NM			
	46.07	9/5/2017	NM	REPLACED		
MW-22AR	45.56	2/11/2018	3.43			42.13
	45.56	3/11/2018	2.24			43.32
	45.56	5/14/2018	4.41			41.15
	45.56	7/2/2018	4.48			41.08
	45.56	1/3/2019	3.67			41.89
	45.56	7/9/2019	3.96			41.60
	45.56	2/10/2020	1.55			44.01
MW-22B	45.86	11/23/1998	2.25			43.606
	45.86	1/29/1999	2.28			43.576
	45.86	2/26/1999	2.34			43.516
	45.86	3/16/1999	2.42			43.436
	45.86	4/29/1999	2.56			43.296

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-22B	45.86	6/1/1999	2.60			43.256
	45.86	7/30/1999	4.31			41.546
	45.86	8/27/1999	2.83			43.026
	45.86	9/27/1999	8.45			37.406
	45.86	10/29/1999	10.11			35.746
	45.86	11/18/1999	9.75			36.106
	45.86	12/29/1999	9.43			36.426
	45.86	2/4/2000	12.56			33.296
	45.86	2/25/2000	8.63			37.226
	45.86	3/27/2000	6.00			39.856
	45.86	4/7/2000	5.64			40.216
	45.86	5/31/2000	5.69			40.166
	45.86	6/1/2000	5.61			40.246
	45.86	7/28/2000	5.67			40.186
	45.86	8/30/2000	8.57			37.286
	45.86	9/19/2000	9.94			35.916
	45.86	10/27/2000	7.03			38.826
	45.86	11/21/2000	7.63			38.226
	45.86	5/1/2001	4.93			40.93
	45.86	10/1/2001	5.40			40.46
	45.86	3/11/2002	1.75			44.106
	45.86	9/23/2002	2.11			43.746
	45.86	3/10/2003	1.02			44.836
	45.86	9/23/2003	2.99			42.866
	45.86	3/15/2004	1.20			44.656
	45.86	9/14/2004	NM			
	45.86	7/18/2005	NM			
	45.86	1/6/2006	7.05			38.806
	45.86	7/27/2006	1.58			44.276
	45.86	3/7/2007	NM			
	45.86	7/27/2007	2.85			43.006
	45.86	1/29/2008	0.85			45.006
	45.86	7/14/2008	5.45			40.406
	45.86	2/3/2009	4.78			41.076
	45.86	7/23/2009	5.39			40.466
	45.86	1/9/2010	3.27			42.586
	45.86	7/12/2010	6.21			39.646
	45.86	1/12/2011	0.37			45.486
	45.86	7/11/2011	8.32			37.536
	45.86	1/27/2012	0.06			45.796
	45.86	7/10/2012	1.27			44.586
	45.86	1/8/2013	NM			
	45.86	7/22/2013	NM			
	45.86	1/7/2014	4.14			41.716
	45.86	7/15/2014	3.79			42.07
	45.86	1/5/2015	3.87			41.99
	45.86	8/10/2015	2.62			43.24
	45.86	1/13/2016	2.09			43.77
	45.86	7/6/2016	NM			
	45.86	1/12/2017	NM			
	45.86	7/6/2017	NM			
	45.86	9/5/2017	NM	REPLACED		
MW-22BR	45.71	2/11/2018	4.14			41.57
	45.71	3/12/2018	3.29			42.42
	45.71	5/14/2018	5.27			40.44
	45.71	7/2/2018	5.39			40.32
	45.71	1/3/2019	4.29			41.42
	45.71	7/9/2019	4.41			41.3
	45.71	2/10/2020	1.44			44.27
MW-23C	51.91	11/23/1998	27.41			24.504
	51.91	1/29/1999	26.80			25.114
	51.91	2/26/1999	26.88			25.034
	51.91	3/16/1999	26.93			24.984
	51.91	4/29/1999	27.09			24.824
	51.91	6/1/1999	27.00			24.914
	51.91	7/30/1999	29.55			22.364
	51.91	8/27/1999	27.29			24.624

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-23C	51.91	9/27/1999	28.40			23.514
	51.91	10/29/1999	29.11			22.804
	51.91	11/17/1999	29.49			22.424
	51.91	12/29/1999	28.46			23.454
	51.91	2/4/2000	28.96			22.954
	51.91	2/25/2000	28.96			22.954
	51.91	3/27/2000	28.61			23.304
	51.91	4/7/2000	27.10			24.814
	51.91	5/31/2000	27.15			24.764
	51.91	6/1/2000	27.11			24.804
	51.91	7/28/2000	27.15			24.764
	51.91	8/30/2000	29.96			21.954
	51.91	9/19/2000	29.77			22.144
	51.91	10/27/2000	28.44			23.474
	51.91	11/21/2000	28.61			23.304
	51.91	5/1/2001	26.26			25.65
	51.91	10/1/2001	26.50		0.60	25.41
	51.91	3/11/2002	25.33			26.584
	51.91	9/23/2002	26.43			25.484
	51.91	3/10/2003	24.53			27.384
	51.91	9/23/2003	25.95			25.964
	51.91	3/15/2004	24.15			27.764
	51.91	9/13/2004	25.97			25.944
	51.91	7/18/2005	26.46			25.454
	51.91	1/4/2006	27.53			24.384
	51.91	3/7/2007	23.96			27.954
	51.91	7/27/2007	22.41			29.504
	51.91	1/31/2008	23.22	75.98	1.71	28.694
	48.89[1]	2/4/2009	22.11	72.05	1.47	26.78
	48.89[1]	7/23/2009	22.93	73.01	0.51	25.961
	48.89[1]	1/9/2010	20.29	71.8	1.72	28.601
	48.89[1]	5/27/2010	22.81	71.5	2.02	26.081
	48.89[1]	6/28/2010	22.93	72.15	1.37	25.961
	48.89[1]	7/12/2010	21.41	72.4	1.12	27.481
	48.89[1]	8/31/2010	21.61	72.65	0.87	27.281
	48.89[1]	1/12/2011	21.7	71.25	1.45	27.191
	48.89	7/12/2011	23.11	70.65	2.05	25.782
	48.89	1/26/2012	22.81	71.57	1.13	26.082
	48.89	7/9/2012	22.31	71.45	1.25	26.582
	48.89	1/7/2013	23.32	71.06	1.64	25.572
	48.89	7/22/2013	24.38			24.512
	48.89	1/7/2014	23.51	70.8	2.30	25.38
	48.89	7/15/2014	24.06	70.96	2.14	24.83
	48.89	1/5/2015	22.47	71.72	1.08	26.42
	48.89	8/10/2015	19.34	72.17	0.63	29.55
	48.89	1/13/2016	23.16	71.91	0.89	25.73
	48.89	7/6/2016	23.09	71.56	1.24	25.80
	48.89	1/12/2017	23.74	71.81	0.99	25.15
	54.16	7/6/2017	23.61	77.27	0.53	30.55
	54.16	9/5/2017	23.67	77.29	0.51	30.49
	54.16	2/7/2018	23.86	77.46	0.34	30.30
	54.16	3/11/2018	23.99	77.41	0.39	30.17
	54.16	5/14/2018	25.02	77.49	0.31	29.14
	54.16	1/3/2019	24.29	77.31	0.49	29.87
	54.16	7/9/2019	24.42	76.99	0.81	29.74
	54.16	1/9/2020	26.59	75.3	1.50	27.57
MW-24A	45.79	3/27/2000	7.87			37.92
	45.79	4/7/2000	7.63			38.16
	45.79	5/31/2000	7.65			38.14
	45.79	6/1/2000	7.43			38.36
	45.79	7/28/2000	7.60			38.19
	45.79	8/30/2000	10.44			35.35
	45.79	9/19/2000	10.57			35.22
	45.79	10/27/2000	NM			NM
	45.79	11/21/2000	7.09			38.7
	45.79	5/1/2001	6.72			39.07
	45.79	10/1/2001	7.81			37.98
	45.79	3/11/2002	3.91			41.88

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-24A	45.79	9/23/2002	5.04			40.75
	45.79	3/10/2003	2.76			43.03
	45.79	9/23/2003	4.66			41.13
	45.79	3/15/2004	3.10			42.69
	45.79	9/14/2004	8.24			37.55
	45.79	7/18/2005	6.03			39.76
	45.79	1/6/2006	8.93			36.86
	45.79	7/27/2006	4.21			41.58
	45.79	3/7/2007	3.86			41.93
	45.79	1/30/2008	NM			NM
MW-24AR	45.65	2/5/2009	5.18			40.47
	45.65	7/23/2009	7.36			38.29
	45.65	1/9/2010	3.72			41.93
	45.65	7/12/2010	4.29			41.36
	45.65	1/13/2011	3.58			42.07
	45.65	7/11/2011	6.38			39.27
	45.65	1/27/2012	4.59			41.06
	45.65	7/10/2012	4.38			41.27
	45.65	1/8/2013	5.59			40.06
	45.65	7/23/2013	10.14	71.06		35.51
	45.65	1/8/2014	7.11			38.54
	45.65	1/5/2015	NM			NM
	45.65	7/6/2016	NM			NM
MW-24B	46.06	3/27/2000	11.91			34.15
	46.06	4/7/2000	11.60			34.46
	46.06	5/31/2000	11.63			34.43
	46.06	6/1/2000	11.51			34.55
	46.06	7/28/2000	11.69			34.37
	46.06	8/30/2000	13.91			32.15
	46.06	9/19/2000	14.72			31.34
	46.06	10/27/2000	12.44			33.62
	46.06	11/21/2000	11.38			34.68
	46.06	5/1/2001	10.71			35.35
	46.06	10/1/2001	11.75			34.31
	46.06	3/11/2002	9.01			37.05
	46.06	9/23/2002	9.69			36.37
	46.06	3/10/2003	7.83			38.23
	46.06	9/23/2003	8.98			37.08
	46.06	3/15/2004	7.33			38.73
	46.06	9/14/2004	9.24			36.82
	46.06	7/18/2005	9.54			36.52
	46.06	1/6/2006	11.86			34.2
	46.06	7/27/2006	10.50			35.56
	46.06	3/7/2007	8.88			37.18
	46.06	7/27/2007	9.85			36.21
	46.06	1/28/2008	7.37			38.69
	46.06	7/14/2008	11.41			34.65
	46.06	2/3/2009	11.18			34.88
	46.06	7/23/2009	12.26			33.8
	46.06	1/9/2010	9.89			36.17
	46.06	7/12/2010	12.82			33.24
	46.06	1/13/2011	11.1			34.96
	46.06	7/11/2011	14.09			31.97
	46.06	1/27/2012	11.36			34.7
	46.06	7/10/2012	10.49			35.57
	46.06	1/8/2013	12.96			33.1
	46.06	7/23/2013	8.49			37.57
	46.06	1/5/2015	NM			NM
MW-24C	46.05	3/27/2000	25.77			20.28
	46.05	4/7/2000	24.27			21.78
	46.05	5/31/2000	24.30			21.75
	46.05	6/1/2000	24.22			21.83
	46.05	7/28/2000	24.26			21.79
	46.05	8/30/2000	27.34			18.71
	46.05	9/19/2000	26.59			19.46
	46.05	10/27/2000	27.64			18.41
	46.05	11/21/2000	25.43			20.62
	46.05	5/1/2001	23.90			22.15

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-24C	46.05	10/1/2001	23.71			22.34
	46.05	3/11/2002	22.40			23.65
	46.05	9/23/2002	23.04			23.01
	46.05	3/10/2003	21.71			24.34
	46.05	9/23/2003	23.04			23.01
	46.05	3/15/2004	21.45			24.6
	46.05	9/14/2004	22.45			23.6
	46.05	7/18/2005	22.19			23.86
	46.05	1/6/2006	23.57			22.48
	46.05	7/27/2006	22.61			23.44
	46.05	3/7/2007	21.07			24.98
	46.05	7/27/2007	19.62			26.43
	46.05	1/28/2008	19.43			26.62
	46.05	7/14/2008	20.63			25.42
	46.05	2/3/2009	21.68			24.37
	46.05	7/23/2009	23.07			22.98
	46.05	1/9/2010	20.46			25.59
	46.05	7/12/2010	20.44			25.61
	46.05	1/13/2011	20.26			25.79
	46.05	7/11/2011	21.59			24.46
	46.05	1/27/2012	21.23			24.82
	46.05	7/10/2012	20.81			25.24
	46.05	1/8/2013	22.42			23.63
	46.05	7/23/2013	23.81			22.24
	46.05	1/5/2015	NM			
MW-25A	44.65	3/27/2000	9.15			35.5
	44.65	4/7/2000	8.79			35.86
	44.65	5/31/2000	8.81			35.84
	44.65	6/1/2000	8.86			35.79
	44.65	7/28/2000	8.84			35.81
	44.65	8/30/2000	11.43			33.22
	44.65	9/19/2000	11.12			33.53
	44.65	10/27/2000	10.09			34.56
	44.65	11/21/2000	8.10			36.55
	44.65	5/1/2001	8.94			35.71
	44.65	10/1/2001	8.81			35.84
	44.65	3/11/2002	7.23			37.42
	44.65	9/23/2002	5.65			39
	44.65	3/10/2003	5.84			38.81
	44.65	9/23/2003	5.35			39.3
	44.65	3/15/2004	5.75			38.9
	44.65	9/14/2004	7.00			37.65
	44.65	7/18/2005	6.42			38.23
	44.65	1/6/2006	9.29			35.36
	44.65	7/27/2006	5.10			39.55
	44.65	3/7/2007	4.76			39.89
	44.65	7/27/2007	4.22			40.43
	44.65	1/28/2008	4.25			40.4
	44.65	7/14/2008	8.59			36.06
	44.65	2/3/2009	8.90			35.75
	44.65	7/23/2009	8.71			35.94
	44.65	1/9/2010	6.84			37.81
	44.65	7/12/2010	7.78			36.87
	44.65	1/12/2011	6.26			38.39
	44.65	7/11/2011	10.22			34.43
	44.65	1/27/2012	5.24			39.41
	44.65	7/10/2012	4.56			40.09
	44.65	1/8/2013	8.62			36.03
	44.65	7/23/2013	9.37			35.28
	44.65	1/8/2014	8.92			35.73
	44.65	7/16/2014	8.61			36.04
	44.65	1/5/2015	8.71			35.94
	44.65	8/10/2015	6.94			37.71
	44.65	1/13/2016	6.07			38.58
	44.65	7/6/2016	6.62			38.03
	44.65	1/12/2017	6.98			37.67
	44.65	7/6/2017	7.31			37.34
	44.65	9/5/2017	7.16			37.49

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-25A	44.65	2/11/2018	5.71			38.94
	44.65	3/12/2018	6.06			38.59
	44.65	5/14/2018	7.49			37.16
	44.65	1/3/2019	6.84			37.81
	44.65	7/9/2019	6.77			37.88
	44.65	1/7/2020	8.01			36.64
MW-25C	44.49	3/27/2000	19.92			24.57
	44.49	4/7/2000	19.50			24.99
	44.49	5/31/2000	19.56			24.93
	44.49	6/1/2000	19.51			24.98
	44.49	7/28/2000	19.54			24.95
	44.49	8/30/2000	22.14			22.35
	44.49	9/19/2000	21.30	66.73	0.90	23.19
	44.49	10/27/2000	20.63			23.86
	44.49	11/21/2000	27.63			16.86
	44.49	5/1/2001	18.14			26.35
	44.49	10/1/2001	18.29		0.40	26.2
	44.49	3/14/2002	17.39	64.32	4.13	27.1
	44.49	9/23/2002	17.81	61.41	6.00	26.68
	44.49	3/10/2003	16.73			27.76
	44.49	9/23/2003	22.35			22.14
	44.49	3/15/2004	16.15			28.34
	44.49	9/14/2004	17.00	60.14	2.56	27.49
	44.49	7/18/2005	15.57			28.92
	44.49	1/6/2006	18.49			26
	44.49	7/27/2006	15.32	60.64	2.03	29.17
	44.49	3/7/2007	15.87	59.82	2.18	28.62
	44.49	7/27/2007	14.25	60.61	1.04	30.24
	44.49	1/28/2008	14.91	60.88	0.67	29.58
	44.49	7/14/2008	17.24	60.95	0.60	27.25
	44.49	2/3/2009	15.97	TRACE	TRACE	28.52
	44.49	7/23/2009	16.39			28.1
	44.49	1/9/2010	13.68	61.45	0.65	30.81
	44.49	5/27/2010	16.09			28.4
	44.49	6/28/2010	16.26			28.23
	44.49	7/12/2010	16.05			28.44
	44.49	8/31/2010	16.21			28.28
	44.49	1/12/2011	16.29			28.2
	44.49	7/11/2011	18.81			25.68
	44.49	1/27/2012	17.29			27.2
	44.49	7/10/2012	16.53			27.96
	44.49	1/8/2013	18.34			26.15
	44.49	7/23/2013	18.74			25.75
	44.49	1/8/2014	18.23			26.26
	44.49	7/16/2014	18.66			25.83
	44.49	1/5/2015	17.81			26.68
	44.49	8/10/2015	16.09			28.40
	44.49	1/13/2016	15.61			28.88
	44.49	7/6/2016	16.02			28.47
	44.49	1/12/2017	16.64			27.85
	44.49	7/5/2017	16.84			27.65
	44.49	9/5/2017	16.81			27.68
	44.49	2/11/2018	15.27			29.22
	44.49	3/12/2018	15.63			28.86
	44.49	5/14/2018	16.02			28.47
	44.49	1/3/2019	15.29			29.2
	44.49	7/9/2019	15.86			28.63
	44.49	1/7/2020	16.72			27.77
MW-26A	44.62	3/27/2000	7.40			37.22
	44.62	4/7/2000	6.99			37.63
	44.62	5/31/2000	7.10			37.52
	44.62	6/1/2000	7.00			37.62
	44.62	7/28/2000	7.11			37.51
	44.62	8/30/2000	9.69			34.93
	44.62	9/19/2000	11.43			33.19
	44.62	10/27/2000	8.11			36.51
	44.62	11/21/2000	8.24			36.38
	44.62	5/1/2001	6.01			38.61

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-26A	44.62	10/1/2001	6.34			38.28
	44.62	3/11/2002	4.05			40.57
	44.62	9/23/2002	4.29			40.33
	44.62	3/10/2003	2.84			41.78
	44.62	9/23/2003	4.84			39.78
	44.62	3/15/2004	3.30			41.32
	44.62	9/14/2004	6.80			37.82
	44.62	7/18/2005	6.72			37.9
	44.62	1/6/2006	9.34			35.28
	44.62	7/27/2006	4.42			40.2
	44.62	3/7/2007	4.70			39.92
	44.62	7/27/2007	3.98			40.64
	44.62	1/29/2008	2.37			42.25
	44.62	7/14/2008	7.87			36.75
	44.62	2/3/2009	6.89			37.73
	44.62	7/23/2009	7.88			36.74
	44.62	1/9/2010	4.31			40.31
	44.62	7/12/2010	8.12			36.5
	44.62	1/13/2011	2.38			42.24
	44.62	7/11/2011	10.27			34.35
	44.62	1/27/2012	3.09			41.53
	44.62	7/10/2012	2.77			41.85
	44.62	1/8/2013	7.27			37.35
	44.62	7/23/2013	9.72			34.9
	44.62	1/8/2014	6.33			38.29
	44.62	7/16/2014	7.64			36.98
	44.62	1/5/2015	5.74			38.88
	44.62	8/10/2015	4.03			40.59
	44.62	1/13/2016	3.41			41.21
	44.62	7/6/2016	3.72			40.90
	44.62	1/12/2017	4.92			39.70
	44.62	7/5/2017	5.34			39.28
	44.62	9/5/2017	5.27			39.35
	44.62	2/11/2018	4.43			40.19
	44.62	3/12/2018	4.77			39.85
	44.62	5/14/2018	6.61			38.01
	44.62	1/3/2019	6.06			38.56
	44.62	7/9/2019	6.31			38.31
	44.62	1/7/2020	4.78			39.84
MW-27A	44.90	5/1/2001	6.41			38.49
	44.90	10/1/2001	5.31			39.59
	44.90	3/11/2002	4.21			40.69
	44.90	9/23/2002	3.31			41.59
	44.90	3/10/2003	4.05			40.85
	44.90	9/23/2003	3.24			41.66
	44.90	3/15/2004	2.99			41.91
	44.90	9/14/2004	5.09			39.81
	44.90	7/18/2005	4.45			40.45
	44.90	1/6/2006	4.55			40.35
	44.90	7/27/2006	4.26			40.64
	44.90	3/7/2007	3.01			41.89
	44.90	7/27/2007	2.12			42.92
	44.90	1/28/2008	1.88			43.16
	44.90	7/14/2008	4.57			40.47
	44.90	2/3/2009	4.27			40.77
	44.90	7/23/2009	4.36			40.68
	44.90	1/9/2010	3.69			41.35
	44.90	7/12/2010	5.31			39.73
	44.90	1/12/2011	3.76			41.28
	44.90	7/12/2011	6.72			38.32
	44.90	1/26/2012				NM
	44.90	7/10/2012	well covered			NM
	44.90	1/7/2013	well covered			NM
	44.90	7/23/2013	NM			NM
	44.90	8/10/2015	NM			NM
	44.90	2/11/2018	4.21			40.69
	44.90	3/12/2018	4.59			40.31
	44.90	5/14/2018	5.06			39.84

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-27A	44.90	1/3/2019	NM			NM
	44.90	7/9/2019	7.21			37.69
	44.90	1/8/2020	7.22			37.68
MW-27C	45.04	5/1/2001	17.82			27.22
	45.04	10/1/2001	17.82			27.22
	45.04	3/11/2002	16.36			28.68
	45.04	9/23/2002	16.49			28.55
	45.04	3/10/2003	18.68			26.36
	45.04	9/23/2003	16.89			28.15
	45.04	3/15/2004	14.35			30.69
	45.04	9/14/2004	14.49			30.55
	45.04	7/18/2005	16.12			28.92
	45.04	1/6/2006	18.07			26.97
	45.04	7/27/2006	17.13			27.91
	45.04	3/7/2007	15.47			29.57
	44.90	7/27/2007	14.85			30.05
	45.04	1/28/2008	14.31			30.73
	45.04	7/14/2008	17.51			27.53
	45.04	2/3/2009	15.76			29.28
	45.04	7/23/2009	16.38			28.66
	45.04	1/9/2010	14.82			30.22
	45.04	7/12/2010	16.12			28.92
	45.04	1/12/2011	15.84			29.2
	45.04	7/11/2011	18.17			26.87
	45.04	1/27/2012	17.14			27.9
	45.04	7/10/2012	16.56			28.48
	45.04	1/8/2013	17.04			28
	45.04	7/23/2013	18.61			26.43
	45.04	1/8/2014	18.12			26.92
	45.04	7/16/2014	16.94			28.10
	45.04	1/5/2015	17.74			27.30
	45.04	8/10/2015	15.71			29.33
	45.04	1/13/2016	15.04			30.00
	45.04	7/6/2016	15.32			29.72
	45.04	1/12/2017	15.91			29.13
	45.04	7/5/2017	16.39			28.65
	45.04	9/5/2017	16.36			28.68
	45.04	2/11/2018	16.59			28.45
	45.04	3/12/2018	16.97			28.07
	45.04	5/14/2018	15.89			29.15
	45.04	1/3/2019	14.32			30.72
	45.04	7/9/2019	15.61			29.43
	45.04	1/8/2020	16.93			28.11
MW-28A	43.86	5/1/2001	7.45			36.41
	43.86	10/1/2001	8.26			35.6
	43.86	3/11/2002	4.90			38.96
	43.86	9/23/2002	5.71			38.15
	43.86	3/10/2003	3.11			40.75
	43.86	9/23/2003	5.81			38.05
	43.86	9/14/2004	9.34			34.52
	43.86	7/18/2005	7.52			36.34
	43.86	1/6/2006	9.32			34.54
	43.86	7/27/2006	5.54			38.32
	43.86	3/7/2007	5.06			38.8
	43.86	7/27/2007	2.86			41
	43.86	1/29/2008	2.61			41.25
	43.86	7/14/2008	8.74			35.12
	43.86	2/3/2009	8.36			35.5
	43.86	7/23/2009	8.94			34.92
	43.86	1/9/2010	4.54			39.32
	43.86	7/12/2010	8.66			35.2
	43.86	1/12/2011	3.87			39.99
	43.86	7/11/2011	11.43			32.43
	43.86	1/27/2012	2.66			41.2
	43.86	7/10/2012	4.52			39.34

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-28A	43.86	1/8/2013	8.11			35.75
	43.86	7/23/2013	10.78			33.08
	43.86	1/8/2014	7.71			36.15
	43.86	7/16/2014	8.19			35.67
	43.86	1/5/2015	7.21			36.65
	43.86	8/10/2015	5.72			38.14
	43.86	1/13/2016	5.09			38.77
	43.86	7/6/2016	5.42			38.44
	43.86	1/12/2017	5.89			37.97
	43.86	7/5/2017	6.13			37.73
	43.86	9/5/2017	6.06			37.80
	43.86	2/11/2018	5.31			38.55
	43.86	3/12/2018	5.61			38.25
	43.86	5/14/2018	6.02			37.84
	43.86	1/3/2019	5.41			38.45
	43.86	7/9/2019	6.52			37.34
	43.86	1/7/2020	6.68			37.18
MW-28C	43.96	5/1/2001	17.14			26.82
	43.96	10/1/2001	17.51			26.45
	43.96	3/11/2002	16.29			27.67
	43.96	9/23/2002	17.75			26.21
	43.96	3/10/2003	15.84			28.12
	43.96	9/23/2003	17.48			26.48
	43.96	3/15/2004	15.56			28.4
	43.96	9/14/2004	17.20			26.76
	43.96	7/18/2005	16.60			27.36
	43.96	1/6/2006	17.61			26.35
	43.96	7/27/2006	17.73			26.23
	43.96	3/7/2007	15.59			28.37
	43.96	7/27/2007	12.90			31.06
	43.96	1/29/2008	14.35			29.61
	43.96	7/14/2008	16.26			27.7
	43.96	2/3/2009	16.03			27.93
	43.96	7/23/2009	16.53			27.43
	43.96	1/9/2010	14.89			29.07
	43.96	7/12/2010	15.89			28.07
	43.96	1/12/2011	18.37			25.59
	43.96	7/11/2011	18.16			25.8
	43.96	1/27/2012	16.12			27.84
	43.96	7/10/2012	16.79			27.17
	43.96	1/8/2013	17.62			26.34
	43.96	7/23/2013	18.87			25.09
	43.96	1/8/2014	17.59			26.37
	43.96	7/16/2014	16.98			26.98
	43.96	1/5/2015	16.84			27.12
	43.96	8/10/2015	14.39			29.57
	43.96	1/13/2016	13.72			30.24
	43.96	7/6/2016	14.03			29.93
	43.96	1/12/2017	14.64			29.32
	43.96	7/5/2017	14.88			29.08
	43.96	9/5/2017	14.89			29.07
	43.96	2/11/2018	17.33			26.63
	43.96	3/12/2018	14.73			29.23
	43.96	5/14/2018	16.59			27.37
	43.96	1/3/2019	15.88			28.08
	43.96	7/9/2019	15.03			28.93
	43.96	1/7/2020	15.56			28.4
MW-29A	46.59	5/1/2001	5.01			41.58
	46.59	10/1/2001	5.38			41.21
	46.59	3/11/2002	1.51			45.08
	46.59	9/23/2002	1.65			44.94
	46.59	3/10/2003	1.42			45.17
	46.59	9/23/2003	1.50			45.09
	46.59	3/15/2004	1.85			44.74
	46.59	9/14/2004	6.35			40.24
	46.59	7/18/2005	3.12			43.47
	46.59	1/6/2006	6.57			40.02

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-29A	46.59	7/27/2006	1.44			45.15
	46.59	3/7/2007	1.95			44.64
	46.59	7/27/2007	2.49			44.1
	46.59	1/28/2008	1.28			45.31
	46.59	7/14/2008	4.14			42.45
	46.59	2/3/2009	3.50			43.09
	46.59	7/23/2009	4.09			42.5
	46.59	1/9/2010	1.76			44.83
	46.59	7/12/2010	3.62			42.97
	46.59	1/13/2011	3.07			43.52
	46.59	7/11/2011	7.14			39.45
	46.59	7/10/2012	4.17			42.42
	46.59	1/8/2013	4.91			41.68
	46.59	7/23/2013	--			--
	Plugged					NM
MW-29B	46.26	5/1/2001	19.01			27.25
	46.26	10/1/2001	19.41			26.85
	46.26	3/11/2002	18.04			28.22
	46.26	9/23/2002	18.82			27.44
	46.26	3/10/2003	17.21			29.05
	46.26	9/23/2003	18.09			28.17
	46.26	3/15/2004	17.10			29.16
	46.26	9/14/2004	17.76			28.5
	46.26	7/18/2005	18.11			28.15
	46.26	1/6/2006	18.83			27.43
	46.26	7/27/2006	18.41			27.85
	46.26	3/7/2007	17.21			29.05
	46.26	7/27/2007	15.49			30.77
	46.26	1/28/2008	15.32			30.94
	46.26	7/14/2008	18.23			28.03
	46.26	2/3/2009	17.72			28.54
	46.26	7/23/2009	16.19			30.07
	46.26	1/9/2010	16.02			30.24
	46.26	7/12/2010	19.29			26.97
	46.26	1/13/2011	17.73			28.53
	46.26	7/11/2011	20.06			26.2
	46.26	7/10/2012	9.71			36.55
	46.26	1/8/2013	9.92			36.34
	Plugged					
MW-29C	46.46	5/1/2001	25.51			20.95
	46.46	10/1/2001	25.04			21.42
	46.46	3/11/2002	23.51			22.95
	46.46	9/23/2002	24.10			22.36
	46.46	3/10/2003	22.71			23.75
	46.46	9/23/2003	23.48			22.98
	46.46	3/15/2004	22.24			24.22
	46.46	9/14/2004	24.12			22.34
	46.46	7/18/2005	23.75			22.71
	46.46	1/6/2006	25.12			21.34
	46.46	7/27/2006	23.35			23.11
	46.46	3/7/2007	22.38			24.08
	46.46	7/27/2007	20.42			26.04
	46.46	1/28/2008	21.08			25.38
	46.46	7/14/2008	22.38			24.08
	46.46	2/3/2009	22.86			23.6
	46.46	7/23/2009	22.81			23.65
	46.46	1/9/2010	20.71			25.75
	46.46	7/12/2010	21.32			25.14
	46.46	1/13/2011	20.39			26.07
	46.46	7/11/2011	23.17			23.29
	46.46	7/10/2012	20.69			25.77
	46.46	1/8/2013	21.27			25.19
	46.46	7/23/2013	--			--
	Plugged					
MW-30A	50.45	3/15/2004	9.71			40.74
	50.45	9/13/2004	12.76			37.69
	50.45	7/18/2005	11.80			38.65
	50.45	1/4/2006	13.52			36.93

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-30A	50.45	7/27/2006	10.45			40
	50.45	3/7/2007	10.98			39.47
	50.45	7/27/2007	9.49			40.96
	50.45	1/30/2008	9.62			40.83
	50.45	7/15/2008	12.52			37.93
	50.45	2/4/2009	13.01			37.44
	50.45	7/23/2009	13.71			36.74
	50.45	1/9/2010	10.87			39.58
	50.45	7/12/2010	12.61			37.84
	50.45	1/12/2011	10.06			40.39
	50.45	7/12/2011	14.76			35.69
	50.45	1/26/2012	10.78			39.67
	50.45	7/9/2012	11.13			39.32
	50.45	1/8/2013	12.91			37.54
	50.45	7/23/2013	14.16			36.29
	50.45	1/8/2014	13.81			36.64
	50.45	7/15/2014	12.10			38.35
	50.45	1/5/2015	13.22			37.23
	50.45	8/10/2015	12.16	Plugged and Abandoned		38.29
MW-31A	52.08	3/15/2004	10.97			41.11
	52.08	9/13/2004	13.00			39.08
	52.08	7/18/2005	13.05			39.03
	52.08	1/4/2006	14.77			37.31
	52.08	7/27/2006	11.83			40.25
	52.08	3/7/2007	12.43			39.65
	52.08	7/27/2007	10.83			41.25
	52.08	1/31/2008	10.99			41.09
	52.08	7/15/2008	13.68			38.4
	52.08	2/4/2009	14.23			37.85
	52.08	7/23/2009	14.73			37.35
	52.08	1/9/2010	12.31			39.77
	52.08	7/12/2010	14.06			38.02
	52.08	1/12/2011	11.62			40.46
	52.08	7/12/2011	15.92			36.16
	52.08	1/26/2012	12.24			39.84
	52.08	7/9/2012	12.79			39.29
	52.08	1/8/2013	14.14			37.94
	52.08	7/23/2013	16.24			35.84
	52.08	1/8/2014	15.96			36.12
	52.08	7/15/2014	13.19			38.89
	52.08	1/5/2015	15.16			36.92
	52.08	8/10/2015	12.76	Plugged and Abandoned		39.32
MW-32A	43.77	3/15/2004	1.00			42.77
	43.77	9/14/2004	6.03	29.00	3.48	37.74
	43.77	7/18/2005	5.82	26.56	5.92	37.95
	43.77	1/6/2006	6.93	24.92	7.57	36.84
	43.77	7/27/2006	12.96	25.71	6.74	30.81
	43.77	3/7/2007	4.03	25.26	7.19	39.74
	43.77	7/27/2007	1.95	30.76	1.70	41.82
	43.77	1/28/2008	2.18			41.59
	43.77	7/14/2008	6.14	26.25	6.20	37.63
	43.77	2/3/2009	5.71	26.29	6.16	38.06
	43.77	7/23/2009	6.29	26.51	5.94	37.48
	43.77	1/9/2010	3.55	25.41	7.04	40.22
	43.77	5/27/2010	5.86	26.2	6.25	37.91
	43.77	6/28/2010	6.02	29.1	3.35	37.75
	43.77	7/12/2010	6.12	29.45	3.00	37.65
	43.77	8/31/2010	5.43	30.67	1.78	38.34
	43.77	1/13/2011	2.63	29.15	3.30	41.14
	43.77	7/11/2011	5.92	28.82	3.63	37.85
	Plugged					37.85
MW-32AR	44.56	1/27/2012	3.22			41.34
	44.56	7/10/2012	3.73			40.83
	44.56	1/8/2013	6.64			37.92
	44.56	7/23/2013	9.42			35.14
	44.56	1/8/2014	5.64			38.92
	44.56	7/16/2014	6.74			37.82
	44.56	1/5/2015				

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-32AR	44.56	8/10/2015	3.18			41.38
	44.56	1/13/2016	2.66			41.90
	44.56	7/6/2016	3.14			41.42
	44.56	1/12/2017	3.67			40.89
	44.56	7/5/2017	4.16			40.40
	44.56	9/6/2017	4.03			40.53
	44.56	2/11/2018	4.06			40.50
	44.56	3/12/2018	5.02			39.54
	44.56	5/14/2018	5.91			38.65
	44.56	1/3/2019	5.42			39.14
	44.56	7/9/2019	6.41			38.15
	44.56	1/8/2020	3.88			40.68
MW-32B	44.41	1/27/2012	3.11	30.52	5.77	41.3
	44.41	7/10/2012	3.81	30.16	6.13	40.6
	44.41	1/8/2013	6.34	30.02	6.38	38.07
	44.41	7/23/2013	7.14			37.27
	44.41	1/8/2014	6.72	34.82	1.58	37.69
	44.41	7/16/2014	6.72	34.29	2.11	37.69
	44.41	1/5/2015	6.02	35.77	0.63	38.39
	44.41	8/10/2015	4.41	36.09	0.31	40.00
	44.41	1/13/2016	3.61	36.07	0.33	40.80
	44.41	7/6/2016	3.91	35.96	0.44	40.50
	44.41	1/12/2017	4.83	36.02	0.38	39.58
	44.41	7/5/2017	4.86	36.13	0.27	39.55
	44.41	9/6/2017	4.78	36.24	3.67	39.63
	44.41	2/7/2018	5.16	36.21	0.19	39.25
	44.41	3/12/2018	5.41	36.13	0.27	39.00
	44.41	5/15/2018	6.47	36.21	0.19	37.94
	44.41	1/3/2019	6.09	36.29	0.11	38.32
	44.41	7/9/2019	5.61	35.89	0.51	38.8
	44.41	1/8/2020	2.71			41.7
MW-33A	44.25	3/15/2004	3.90			40.35
	44.25	9/14/2004	7.85			36.4
	44.25	7/18/2005	6.35			37.9
	44.25	1/6/2006	8.00			36.25
	44.25	7/27/2006	4.73			39.52
	44.25	3/7/2007	5.22			39.03
	44.25	7/27/2007	3.48			40.77
	44.25	1/29/2008	3.34			40.91
	44.25	7/14/2008	7.42	25.19	0.03	36.83
	44.25	2/3/2009	7.28			36.97
	44.25	7/23/2009	7.63			36.62
	44.25	1/9/2010	4.79			39.46
	44.25	7/12/2010	7.61			36.64
	44.25	1/13/2011	3.19			41.06
	44.25	7/11/2011	9.87			34.38
	44.25	1/27/2012	2.69			41.56
	44.25	7/10/2012	3.86			40.39
	44.25	1/8/2013	6.76			37.49
	44.25	7/23/2013	9.83			34.42
	44.25	1/8/2014	6.71			37.54
	44.25	7/16/2014	7.09			37.16
	44.25	1/5/2015	5.02			39.23
	44.25	8/10/2015	4.09			40.16
	44.25	1/13/2016	3.51			40.74
	44.25	7/6/2016	3.89			40.36
	44.25	1/12/2017	5.01			39.24
	44.25	7/5/2017	5.59			38.66
	44.25	9/6/2017	5.51			38.74
	44.25	2/11/2018	4.38			39.87
	44.25	3/12/2018	4.86			39.39
	44.25	5/14/2018	6.42			37.83
	44.25	1/3/2019	5.77			38.48
	44.25	7/9/2019	5.09			39.16
	44.25	1/20/2020	4.41			39.84
MW-33B	44.35	3/7/2007	4.21			40.04
	44.35	7/27/2007	3.72			40.53
	44.35	1/29/2008	2.37	39.12	3.37	41.88

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-33B	44.35	7/14/2008	5.74	37.44	5.05	38.51
	44.35	2/3/2009	9.28	36.91	5.58	34.97
	44.35	7/23/2009	NM			NM
	44.35	1/9/2010	4.61	35.21	7.28	39.74
	44.35	5/27/2010	6.82			37.53
	44.35	6/28/2010	6.91			37.44
	44.35	7/12/2010	7.02			37.33
	44.35	8/31/2010	7.22			37.13
	44.35	1/13/2011	3.11	29.7	0.30	41.24
	44.35	7/11/2011	10.19	29.75	0.25	34.16
	44.35	1/5/2015	NM			NM
MW-33BR	44.35	1/27/2012	4.07			40.28
	44.35	7/10/2012	2.59			41.76
	44.35	1/8/2013	3.86			40.49
	44.35	7/23/2013	9.68			34.67
	44.35	1/8/2014	7.41			36.94
	44.35	7/16/2014	6.72			37.63
	44.35	1/5/2015	5.22			39.13
	44.35	8/10/2015	3.96			40.39
	44.35	1/13/2016	3.22			41.13
	44.35	7/6/2016	3.71			40.64
	44.35	1/12/2017	4.74			39.61
	44.35	7/5/2017	5.19			39.16
	44.35	9/6/2017	4.99			39.36
	44.35	2/11/2018	4.74			39.61
	44.35	3/12/2018	5.19			39.16
	44.35	5/14/2018	6.03			38.32
	44.35	1/3/2019	5.18			39.17
	44.35	7/9/2019	5.92			38.43
	44.35	1/8/2020	5.06			39.29
MW-34C	45.31	3/15/2004	17.40			27.91
	45.31	9/14/2004	18.82			26.49
	45.31	7/18/2005	19.41	65.29	7.19	25.9
	45.31	1/6/2006	20.54	65.27	8.38	24.77
	45.31	7/27/2006	18.55	63.84	8.61	26.76
	45.31	4/9/2007	16.34	62.06	10.39	28.97
	45.31	7/27/2007	NM			
	45.31	1/29/2008	16.32			28.99
	45.31	7/15/2008	18.13	43.49	29.01	27.18
	45.31	2/5/2009	18.08	61.79	10.71	27.23
	45.31	7/23/2009	NM			
	45.31	1/9/2010	16.41	69.20	3.30	28.9
	45.31	7/12/2010	NM			
	45.31	1/12/2011	16.41	64.90		28.9
	45.31	7/11/2011	19.08	65.26		26.23
	45.31	2/8/2012	18.41			26.9
	45.31	7/10/2012	NM			
	45.31	1/8/2013	NM			
	45.31	7/23/2013	NM			
MW-34CR	46.47	7/16/2014	19.17			27.30
	46.47	1/5/2015	19.01			27.46
	46.47	8/10/2015	17.39			29.08
	46.47	1/13/2016	15.99			30.48
	46.47	7/6/2016	16.06			30.41
	46.47	1/12/2017	16.94			29.53
	46.47	7/5/2017	17.01			29.46
	46.47	9/6/2017	17.11			29.36
	46.47	2/11/2018	18.19			28.28
	46.47	3/12/2018	18.52			27.95
	46.47	5/14/2018	18.26			28.21
	46.47	1/3/2019	18.26			28.21
	46.47	7/9/2019	NM			damaged
	46.47	3/31/2020	17.49			28.98
MW-35A	44.75	3/7/2007	3.49			41.82
	44.75	7/27/2007	3.05			42.26
	44.75	1/29/2008	1.82			43.49
	44.75	7/14/2008	6.21			39.1
	44.75	2/3/2009	5.54			39.77

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-35A	44.75	7/23/2009	5.76			39.55
	44.75	1/9/2010	4.14			41.17
	44.75	7/12/2010	6.04			39.27
	44.75	1/13/2011	2.46			42.85
	44.75	7/11/2011	8.44			36.87
	44.75	1/27/2012	1.35			43.96
	44.75	7/10/2012	2.33			42.98
	44.75	1/8/2013	5.37			39.94
	44.75	7/23/2013	9.18			36.13
	44.75	1/8/2014	5.06			40.25
	44.75	7/15/2014	6.51			38.24
	44.75	1/5/2015	4.22			40.53
	44.75	8/10/2015	3.68			41.07
	44.75	1/13/2016	3.08			41.67
	44.75	7/6/2016	3.34			41.41
	44.75	1/12/2017	3.87			40.88
	44.75	7/5/2017	4.41			40.34
	44.75	9/6/2017	NM			
	44.75	2/11/2018	3.69			41.06
	44.75	3/11/2018	4.06			40.69
	44.75	5/14/2018	8.71			36.04
	44.75	1/3/2019	8.06			36.69
	44.75	7/9/2019	7.92			36.83
	44.75	1/8/2020	4.41			40.34
MW-35B	44.83	3/7/2007	3.31			41.52
	44.83	7/27/2007	3.29			41.54
	44.83	1/29/2008	1.95			42.88
	44.83	7/14/2008	6.40			38.43
	44.83	2/3/2009	5.79			39.04
	44.83	7/23/2009	6.42			38.41
	44.83	1/9/2010	3.51			41.32
	44.83	7/12/2010	6.39			38.44
	44.83	1/13/2011	2.96			41.87
	44.83	7/11/2011	8.67			36.16
	44.83	1/27/2012	1.59			43.24
	44.83	7/10/2012	2.74			42.09
	44.83	1/8/2013	6.09			38.74
	44.83	7/23/2013	9.22			35.61
	44.83	1/8/2014	5.31			39.52
	44.83	7/15/2014	6.75			38.08
	44.83	1/5/2015	4.81			40.02
	44.83	8/10/2015	3.97			40.86
	44.83	1/13/2016	3.26			41.57
	44.83	7/6/2016	3.57			41.26
	44.83	1/12/2017	4.06			40.77
	44.83	7/5/2017	4.66			40.17
	44.83	9/6/2017	NM			
	44.83	2/11/2018	4.06			40.77
	44.83	3/11/2018	4.31			40.52
	44.83	5/14/2018	6.11			38.72
	44.83	1/3/2019	5.33			39.5
	44.83	7/9/2019	5.62			39.21
	44.83	1/8/2020	4.67			40.16
MW-36A	44.53	3/7/2007	8.71			35.82
	44.53	7/27/2007	6.54			37.99
	44.53	1/29/2008	5.59			38.94
	44.53	7/14/2008	9.33			35.2
	44.53	2/3/2009	10.69			33.84
	44.53	7/23/2009	12.03			32.5
	44.53	1/9/2010	9.23			35.3
	44.53	7/12/2010	9.14			35.39
	44.53	1/13/2011	8.62			35.91
	44.53	7/11/2011	12.16			32.37
	44.53	1/27/2012	6.82			37.71
	44.53	7/10/2012	6.68			37.85
	44.53	1/8/2013	7.61			36.92
	44.53	7/23/2013	11.36			33.17
	44.53	1/8/2014	9.23			35.3

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-36A	44.53	7/16/2014	8.62			35.91
	44.53	1/5/2015	8.67			35.86
	44.53	8/10/2015	6.47			38.06
	44.53	1/13/2016	5.79			38.74
	44.53	7/6/2016	6.13			38.40
	44.53	1/12/2017	6.58			37.95
	44.53	7/5/2017	7.01			37.52
	44.53	9/6/2017	6.92			37.61
	44.53	2/11/2018	7.77			36.76
	44.53	3/11/2018	8.06			36.47
	44.53	5/14/2018	8.92			35.61
	44.53	1/3/2019	8.22			36.31
	44.53	7/9/2019	8.32			36.21
	44.53	1/7/2020	8.83			35.7
MW-36B	44.07	7/12/2010	1.32			42.75
	44.07	1/13/2011	9.71			34.36
	44.07	7/11/2011	11.57			32.5
	44.07	1/27/2012	0.46			43.61
	44.07	7/10/2012	6.64			37.43
	44.07	1/8/2013	6.71			37.36
	44.07	7/23/2013	9.39			34.68
	44.07	1/8/2014	4.09			39.98
	44.07	7/16/2014	3.61			40.46
	44.07	1/5/2015	3.21			40.86
	44.07	8/10/2015	1.46			42.61
	44.07	1/13/2016	1.06			43.01
	44.07	7/6/2016	4.06			40.01
	44.07	1/12/2017	4.59			39.48
	44.07	7/5/2017	4.72			39.35
	44.07	9/6/2017	4.41			39.66
	44.07	2/11/2018	0.32			43.75
	44.07	3/11/2018	1.81			42.26
	44.07	5/14/2018	1.62			42.45
	44.07	1/3/2019	1.09			42.98
	44.07	7/9/2019	1.86			42.21
	44.07	1/7/2020	0.39			43.68
MW-36D	44.33	7/12/2010	85.39			-41.06
	44.33	1/13/2011	85.03			-40.7
	44.33	7/11/2011	85.33			-41
	44.33	1/27/2012	85.62			-41.29
	44.33	7/10/2012	85.17			-40.84
	44.33	1/8/2013	85.37			-41.04
	44.33	7/23/2013	85.93			-41.6
	44.33	1/8/2014	85.32			-40.99
	44.33	7/16/2014	84.77			-40.44
	44.33	1/5/2015	85.01			-40.68
	44.33	8/10/2015	84.67			-40.34
	44.33	1/13/2016	84.29			-39.96
	44.33	7/6/2016	84.42			-40.09
	44.33	1/12/2017	84.73			-40.40
	44.33	7/5/2017	84.89			-40.56
	44.33	9/6/2017	84.86			-40.53
	44.33	2/11/2018	82.59			-38.26
	44.33	3/11/2018	82.77			-38.44
	44.33	5/14/2018	83.09			-38.76
	44.33	1/3/2019	82.51			-38.18
	44.33	7/9/2019	82.91			-38.58
	44.33	1/7/2020	82.06			-37.73
MW-38A	46.39	3/7/2007	3.26			43.13
	46.39	7/27/2007	3.08			43.31
	46.39	1/29/2008	1.85			44.54
	46.39	7/14/2008	5.84			40.55
	46.39	2/3/2009	5.15			41.24
	46.39	7/23/2009	5.06			41.33
	46.39	1/9/2010	2.27			44.12
	46.39	7/12/2010	6.42			39.97
	46.39	1/13/2011	1.76			44.63
	46.39	7/11/2011	8.16			38.23

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-38A	46.39	1/27/2012	1.8			44.59
	46.39	7/10/2012	2.52			43.87
	46.39	1/8/2013	4.62			41.77
	46.39	7/23/2013	8.34			38.05
	46.39	1/8/2014	4.77			41.62
	46.39	7/15/2014	6.20			40.19
	46.39	1/5/2015	4.16			42.23
	46.39	8/10/2015	3.61			42.78
	46.39	1/13/2016	3.02			43.37
	46.39	7/6/2016	3.42			42.97
	46.39	1/12/2017	4.01			42.38
	46.39	7/5/2017	4.21			42.18
	46.39	9/6/2017	4.12			42.27
	46.39	2/11/2018	2.61			43.78
	46.39	3/11/2018	4.12			42.27
	46.39	5/14/2018	5.41			40.98
	46.39	1/3/2019	4.66			41.73
	46.39	7/9/2019	4.13			42.26
	46.39	1/8/2020	1.51			44.88
MW-38B	45.51	3/15/2004	1.07			44.44
	45.51	9/14/2004	6.10			39.41
	45.51	7/18/2005	2.41			43.1
	45.51	1/6/2006	6.33			39.18
	45.51	7/27/2006	1.27			44.24
	45.51	3/7/2007	2.38			43.13
	45.51	7/27/2007	2.25			43.26
	45.51	1/29/2008	0.61			44.9
	45.51	7/14/2008	4.86			40.65
	45.51	2/3/2009	4.33			41.18
	45.51	7/23/2009	4.47			41.04
	45.51	1/9/2010	1.44			44.07
	45.51	7/12/2010	5.72			39.79
	45.51	1/13/2011	0.68			44.83
	45.51	7/11/2011	7.82			37.69
	45.51	1/27/2012	0.85			44.66
	45.51	7/10/2012	0.74			44.77
	45.51	1/8/2013	3.97			41.54
	45.51	7/23/2013	7.51			38
	45.51	1/8/2014	3.47			42.04
	45.51	7/15/2014	5.50			40.01
	45.51	1/5/2015	3.07			42.44
	45.51	8/10/2015	2.17			43.34
	45.51	1/13/2016	2.41			43.10
	45.51	7/6/2016	2.96			42.55
	45.51	1/12/2017	3.81			41.70
	45.51	7/5/2017	4.07			41.44
	45.51	9/6/2017	3.91			41.60
	45.51	2/11/2018	2.02			43.49
	45.51	3/11/2018	3.22			42.29
	45.51	5/14/2018	4.62			40.89
	45.51	1/3/2019	3.79			41.72
	45.51	7/9/2019	3.26			42.25
	45.51	1/8/2020	3.79			41.72
MW-39B	49.58	3/15/2004	5.48			44.1
	49.58	9/13/2004	10.02			39.56
	49.58	7/18/2005	7.21			42.37
	49.58	1/4/2006	10.37			39.21
	49.58	7/27/2006	6.08			43.5
	49.58	3/7/2007	6.91			42.67
	49.58	7/27/2007	5.74			43.84
	49.58	1/30/2008	6.34			43.24
	49.58	7/15/2008	8.96			40.62
	49.58	2/4/2009	8.60			40.98
	49.58	7/24/2009	9.13			40.45
	49.58	1/8/2010	5.61			43.97
	49.58	7/12/2010	9.31			40.27
	49.58	1/12/2011	5.64			43.94
	49.58	7/12/2011	11.97			37.61

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-39B	49.58	1/26/2012	5.84			43.74
	49.58	7/9/2012	5.77			43.81
	49.58	1/7/2013	8.68			40.9
	49.58	7/22/2013	11.17			38.41
	49.58	1/7/2014	7.23			42.35
	49.58	7/16/2014	9.46			40.12
	49.58	1/5/2015	6.71			42.87
	49.58	8/10/2015	4.82			44.76
	49.58	1/13/2016	4.17			45.41
	49.58	7/6/2016	4.26			45.32
	49.58	1/12/2017	5.61			43.97
	49.58	7/5/2017	5.87			43.71
	49.58	9/6/2017	5.66			43.92
	49.58	2/11/2018	6.09			43.49
	49.58	3/11/2018	7.04			42.54
	49.58	5/14/2018	8.73			40.85
	49.58	1/3/2019	7.97			41.61
	49.58	7/9/2019	7.47			42.11
	49.58	1/7/2020	6.02			43.56
MW-40B	49.59	3/15/2004	5.46			44.13
	49.59	9/13/2004	9.72			39.87
	49.59	7/18/2005	7.19			42.4
	49.59	1/4/2006	10.25			39.34
	49.59	7/27/2006	6.18			43.41
	49.59	3/7/2007	6.81			42.78
	49.59	7/27/2007	5.00			44.59
	49.59	1/30/2008	5.23			44.36
	49.59	7/15/2008	8.76			40.83
	49.59	2/4/2009	8.57			41.02
	49.59	7/24/2009	9.06			40.53
	49.59	1/8/2010	5.37			44.22
	49.59	7/12/2010	9.17			40.42
	49.59	1/12/2011	5.81			43.78
	49.59	7/12/2011	11.46			38.13
	49.59	1/26/2012	5.68			43.91
	49.59	7/9/2012	5.74			43.85
	49.59	1/7/2013	8.63			40.96
	49.59	7/22/2013	11.06			38.53
	49.59	1/7/2014	7.24			42.35
	49.59	7/16/2014	9.27			40.32
	49.59	1/5/2015	7.02			42.57
	49.59	8/10/2015	5.02			44.57
	49.59	1/13/2016	4.39			45.20
	49.59	7/6/2016	4.67			44.92
	49.59	1/12/2017	5.22			44.37
	49.59	7/5/2017	5.77			43.82
	49.59	9/6/2017	5.71			43.88
	49.59	2/11/2018	6.21			43.38
	49.59	3/11/2018	6.82			42.77
	49.59	5/14/2018	8.44			41.15
	49.59	1/3/2019	7.91			41.68
	49.59	7/9/2019	7.23			42.36
	49.59	1/7/2020	6.17			43.42
MW-41B	49.37	3/15/2004	4.66			44.71
	49.37	9/13/2004	9.76	35.01	9.80	39.61
	49.37	7/18/2005	5.96	32.23	12.58	43.41
	49.37	1/4/2006	10.03	32.21	12.60	39.34
	49.37	7/27/2006	5.65	29.55	15.26	43.72
	49.37	3/7/2007	4.41	29.13	15.68	44.96
	49.37	7/27/2007	5.27	12.00	32.81	44.1
	49.37	2/22/2008	5.04	25.14	19.67	44.7
	49.37	7/15/2008	8.87	25.09	19.72	40.5
	49.37	2/4/2009	8.93	23.79	21.02	40.44
	49.37	7/24/2009	9.46	23.91	20.90	39.91
	49.37	1/8/2010	5.92	23.65	21.16	43.45
	49.37	5/27/2010	6.13	25.45	19.36	43.24
	49.37	6/28/2010	6.21	38.2	6.61	43.16
	49.37	7/12/2010	6.32	38.45	6.36	43.05

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-41B	49.37	8/31/2010	6.26	39.22	5.59	43.11
	49.37	1/12/2011	6.02	39.6	5.21	43.35
	49.37	7/12/2011	8.86	39.75	5.06	40.51
	49.37	3/8/2012	6.31	20.67	24.14	43.06
	49.37	7/9/2012	8.23			41.14
	49.37	1/7/2013	9.09	41.13	3.68	40.28
	49.37	7/22/2013	10.31	39.29	5.52	39.06
	49.37	1/7/2014	9.06	39.17	5.64	40.31
	49.37	7/15/2014	8.62	37.86	6.95	40.75
	49.37	1/5/2015	8.26	39.02	5.79	41.11
	49.37	8/10/2015	6.01	40.39	4.42	43.36
	49.37	1/13/2016	5.51	39.91	4.90	43.86
	49.37	7/6/2016	5.72	40.01	4.80	43.65
	49.37	1/12/2017	6.39	40.56	4.25	42.98
	49.37	7/6/2017	6.34	40.57	4.24	43.03
	49.37	9/6/2017	6.36	40.62	4.19	43.01
	49.37	2/7/2018	6.97	40.76	4.05	42.40
	49.37	3/11/2018	7.21	40.63	4.18	42.16
	49.37	5/14/2018	8.71	40.82	3.99	40.66
	49.37	7/2/2018	8.97	40.96	3.85	40.4
	49.37	1/3/2019	8.22	40.83	3.98	41.15
	49.37	7/9/2019	7.57	40.86	1.74	41.8
	49.37	8/1/2019	7.46	39.42	5.39	41.91
	49.37	1/8/2020	4.2	40.34	2.26	45.17
MW-42B	50.52	3/7/2007	7.31			43.21
	50.52	7/27/2007	5.74			44.78
	50.52	1/30/2008	6.62			43.9
	50.52	7/15/2008	8.73			41.79
	50.52	2/4/2009	9.32			41.2
	50.52	7/24/2009	9.61			40.91
	50.52	1/8/2010	6.02			44.5
	50.52	7/12/2010	7.13			43.39
	50.52	1/12/2011	6.33			44.19
	50.52	7/12/2011	11.76			38.76
	50.52	1/26/2012	6.62			43.9
	50.52	7/9/2012	6.81			43.71
	50.52	1/7/2013	9.23			41.29
	50.52	7/22/2013	11.08			39.44
	50.52	1/7/2014	8.02			42.5
	50.52	7/15/2014	7.37			43.15
	50.52	1/5/2015	7.31			43.21
	50.52	8/10/2015	5.67			44.85
	50.52	1/13/2016	4.92			45.60
	50.52	7/6/2016	5.36			45.16
	50.52	1/12/2017	5.94			44.58
	50.52	7/6/2017	6.27			44.25
	50.52	9/6/2017	6.39			44.13
	50.52	2/11/2018	6.84			43.68
	50.52	3/11/2018	7.12			43.40
	50.52	5/14/2018	8.76			41.76
	50.52	7/2/2018	8.99			41.53
	50.52	1/3/2019	8.02			42.50
	50.52	7/9/2019	7.42			43.1
	50.52	1/7/2020	6.97			43.55
MW-44A	45.11	3/7/2007	10.86			34.25
	45.11	7/27/2007	7.46			37.65
	45.11	1/30/2008	8.44			36.67
	45.11	7/14/2008	10.75			34.36
	45.11	2/3/2009	12.55			32.56
	45.11	7/23/2009	12.76			32.35
	45.11	1/9/2010	10.23			34.88
	45.11	7/12/2010	11.24			33.87
	45.11	1/12/2011	9.63			35.48
	45.11	7/11/2011	12.59			32.52
	45.11	1/27/2012	9.27			35.84
	45.11	7/10/2012	10.11			35
	45.11	1/8/2013	11.01			34.1
	45.11	7/23/2013	12.24			32.87

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-44A	45.11	1/8/2014	11.91			33.2
	45.11	7/16/2014	11.32			33.79
	45.11	1/5/2015	11.27			33.84
	45.11	8/10/2015	9.71			35.40
	45.11	1/13/2016	9.11			36.00
	45.11	7/6/2016	9.26			35.85
	45.11	1/12/2017	9.71			35.40
	45.11	7/5/2017	10.06			35.05
	45.11	9/6/2017	9.94			35.17
	45.11	2/11/2018	8.79			36.32
	45.11	3/11/2018	9.83			35.28
	45.11	5/14/2018	9.91			35.20
	45.11	1/3/2019	9.23			35.88
	45.11	7/9/2019	8.67			36.44
	45.11	1/8/2020	10.18			34.93
MW-44C	45.03	3/15/2004	17.54			27.49
	45.03	9/14/2004	18.35			26.68
	45.03	7/18/2005	18.90	64.77	5.35	26.13
	45.03	1/6/2006	20.03	66.50	5.37	25
	45.03	7/27/2006	18.47	63.35	6.75	26.56
	45.03	3/7/2007	16.02	62.30	7.75	29.01
	45.03	7/27/2007	14.83	65.45	5.50	30.2
	45.03	1/29/2008	15.95			29.08
	45.03	7/14/2008	17.91	64.95	6.18	27.12
	45.03	2/3/2009	16.72	64.15	6.98	28.31
	45.03	7/23/2009	17.12	64.05	6.75	27.91
	45.03	1/9/2010	15.57	63.81	6.99	29.46
	45.03	5/27/2010	16.67	64.7	6.10	28.36
	45.03	6/28/2010	16.77	67.85	2.95	28.26
	45.03	7/12/2010	16.91	70.35	0.45	28.12
	45.03	8/31/2010	16.89	70.63	0.17	28.14
	45.03	1/12/2011	16.77	70.05	0.75	28.26
	45.03	7/11/2011	19.31	70.05	0.75	25.72
	45.03	1/27/2012	17.91	63.88	6.92	27.12
	45.03	7/10/2012	17.61	63.7	7.10	27.42
	45.03	1/8/2013	19.02	62.94	7.86	26.01
	45.03	7/23/2013	20.36	70.26	0.54	24.67
	45.03	1/8/2014	19.67	70.42	0.38	25.36
	45.03	7/16/2014	18.72	69.31	1.49	26.31
	45.03	1/5/2015	18.67	69.82	0.98	26.36
	45.03	8/10/2015	16.31	70.29	0.51	28.72
	45.03	1/13/2016	16.26	69.93	0.87	28.77
	45.03	7/6/2016	16.47	69.71	1.09	28.56
	45.03	1/12/2017	17.22	70.11	0.69	27.81
	45.03	7/5/2017	17.33	70.34	0.46	27.70
	45.03	9/6/2017	17.36	70.43	-0.87	27.67
	45.03	2/8/2018	17.77	70.34	0.46	27.26
	45.03	5/15/2018	NM			
	45.13	1/4/2019	18.42	70.41	0.39	26.71
	45.13	7/9/2019	18.27			26.86
	45.13	1/8/2020	16.81			28.32
MW-45C	44.73	3/15/2004	17.15			27.58
	44.73	9/14/2004	17.82	61.66	9.02	26.91
	44.73	7/18/2005	18.38	60.76	9.89	26.35
	44.73	1/6/2006	19.51	62.87	8.87	25.22
	44.73	7/27/2006	17.92	61.64	8.94	26.81
	44.73	3/7/2007	15.95	60.81	9.79	28.78
	44.73	7/27/2007	14.38			30.35
	44.73	1/29/2008	14.86	61.39	9.46	29.87
	44.73	7/14/2008	17.22	61.25	9.88	27.51
	44.73	2/3/2009	17.00	61.24	9.61	27.73
	44.73	7/23/2009	17.46	61.30	9.55	27.27
	44.73	1/9/2010	14.98	61.56	9.29	29.75
	44.73	5/27/2010	16.31	61.1	9.75	28.42
	44.73	6/28/2010	16.42	63.45	7.40	28.31
	44.73	7/12/2010	16.61	68.8	2.05	28.12
	44.73	8/31/2010	16.46	69.62	1.23	28.27
	44.73	1/12/2011	16.31	69.1	1.75	28.42

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-45C	44.73	7/11/2011	18.29	69.3	1.55	26.44
	44.73	3/8/2012	16.31	70.6	0.25	28.42
	44.73	7/10/2012	20.69	70.21	0.64	24.04
	44.73	1/8/2013	21.39	69.91	0.69	23.34
	44.73	7/23/2013	22.72	70.39	0.21	22.01
	44.73	1/8/2014	22.13	70.35	0.25	22.6
	44.73	7/16/2014	21.32	69.91	0.69	23.41
	44.73	1/5/2015	20.19	70.55	0.05	24.54
	44.73	8/10/2015	18.61			26.12
	44.73	1/13/2016	17.49			27.24
	44.73	7/6/2016	17.62			27.11
	44.73	1/12/2017	18.22			26.51
	44.73	7/5/2017	17.96			26.77
	44.73	9/6/2017	18.16			26.57
	44.73	2/8/2018	18.62	70.6	0.00	26.11
	44.73	3/11/2018	18.83			25.9
	44.73	5/15/2018	19.61			25.12
	44.73	1/4/2019	19.02			25.71
	44.73	7/9/2019	18.39			26.34
	44.73	1/7/2020	16.24			28.49
MW-46C	44.94	3/15/2004	16.16	ND	ND	28.78
	44.94	9/14/2004	17.97	ND	ND	26.97
	44.94	7/18/2005	18.50	69.05	3.78	26.44
	44.94	1/13/2006	19.66	70.20	3.22	25.28
	44.94	7/27/2006	17.96	68.89	3.90	26.98
	44.94	3/7/2007	16.01	69.32	3.43	28.93
	44.94	7/27/2007	14.54	69.31	3.59	30.4
	44.94	1/30/2008	15.68	70.81	2.00	29.26
	44.94	7/14/2008	17.38	69.97	2.84	27.56
	44.94	2/3/2009	16.78	69.28	3.53	28.16
	44.94	7/23/2009	17.59	69.35	3.55	27.35
	44.94	1/9/2010	14.53	68.74	4.16	30.41
	44.94	5/27/2010	16.26	69.4	3.50	28.68
	44.94	6/28/2010	16.39	70.85	2.05	28.55
	44.94	7/12/2010	16.29	72.25	0.65	28.65
	44.94	8/31/2010	16.13	72.46	0.44	28.81
	44.94	1/12/2011	15.96	71.75	1.15	28.98
	44.94	7/11/2011	18.07	71.65	1.25	26.87
	44.94	1/26/2012	16.54	ND	ND	28.4
	44.94	7/10/2012	20.34	72.8	0.10	24.6
	44.94	1/8/2013	21.18	71.31	1.59	23.76
	44.94	7/23/2013	21.96	72.16	0.74	22.98
	44.94	1/8/2014	21.81	72.55	0.35	23.13
	44.94	7/16/2014	20.86	71.39	1.51	24.08
	44.94	1/5/2015	20.47	72.06	0.84	24.47
	44.94	8/10/2015	18.39	72.42	0.48	26.55
	44.94	1/13/2016	18.24	72.59	0.31	26.70
	44.94	7/6/2016	18.54	72.49	0.41	26.40
	44.94	1/12/2017	19.27	72.46	0.44	25.67
	44.94	7/5/2017	19.12	72.34	0.56	25.82
	44.94	9/6/2017	19.29	72.34	0.56	25.65
	44.94	2/8/2018	19.96	72.46	0.44	24.98
	44.94	3/11/2018	20.04	72.32	0.58	24.90
	44.94	5/15/2018	21.02	72.59	0.31	23.92
	44.94	1/4/2019	20.49	72.46	0.44	24.45
	44.94	7/9/2019	18.72			26.22
	44.94	1/7/2020	16.34			28.6
MW-47A	43.92	3/20/2020	9.26			34.66
MW-47C	45.61	7/27/2007	16.62			28.99
	45.61	1/29/2008	16.04			29.57
	45.61	7/14/2008	18.15			27.46
	45.61	2/4/2009	18.39			27.22
	45.61	7/23/2009	18.61			27
	45.61	1/9/2010	16.46			29.15
	45.61	7/12/2010	18.33			27.28
	45.61	1/12/2011	17.86			27.75
	45.61	7/11/2011	19.94			25.67
	45.61	1/26/2012	18.77			26.84

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-47C	45.61	7/9/2012	18.17			27.44
	45.61	1/8/2013	19.47			26.14
	45.61	7/23/2013	20.61			25
	45.61	1/8/2014	19.57			26.04
	45.61	7/16/2014	19.02			26.59
	45.61	1/5/2015	19.07			26.54
	45.61	8/10/2015	17.41			28.20
	45.61	1/13/2016	16.83			28.78
	45.61	7/6/2016	17.01			28.60
	45.61	1/12/2017	17.59			28.02
	45.52	7/5/2017	NM			
	45.52	9/6/2017	NM			
	45.52	1/7/2020	17.28			28.24
MW-48C	44.68	3/15/2004	17.31			27.37
	44.68	9/14/2004	18.60			26.08
	44.68	7/18/2005	19.17			25.51
	44.68	1/6/2006	20.33			24.35
	44.68	7/27/2006	18.73			25.95
	44.68	3/7/2007	16.52			28.16
	44.68	7/27/2007	15.22			29.46
	44.68	1/29/2008	16.32			28.36
	44.68	7/14/2008	17.63			27.05
	44.68	2/4/2009	17.97			26.71
	44.68	7/24/2009	18.39			26.29
	44.68	1/9/2010	15.81			28.87
	44.68	7/12/2010	17.42			27.26
	44.68	1/12/2011	17.52			27.16
	44.68	7/11/2011	19.58			25.1
	44.68	1/26/2012	18.52			26.16
	44.68	7/9/2012	17.12			27.56
	44.68	1/8/2013	18.26			26.42
	44.68	7/23/2013	20.17			24.51
	44.68	1/8/2014	19.19			25.49
	44.68	7/16/2014	18.38			26.30
	44.68	1/5/2015	18.76			25.92
	44.68	8/10/2015	16.34			28.34
	44.68	1/13/2016	15.72			28.96
	44.68	7/6/2016	16.16			28.52
	44.68	1/12/2017	16.71			27.97
	44.68	7/5/2017	17.17			27.51
	44.68	9/6/2017	17.15			27.53
	44.68	2/11/2018	17.36			27.32
	44.68	3/11/2018	16.74			27.94
	44.68	5/14/2018	17.33			27.35
	44.68	1/4/2019	16.67			28.01
	44.68	7/9/2019	18.23			26.45
	44.68	1/7/2020	17.09			27.59
MW-49A	46.18	3/7/2007	12.91			33.27
	46.18	7/27/2007	8.86			37.32
	46.18	1/31/2008	12.02			34.16
	46.18	7/15/2008	12.99			33.19
	46.18	2/4/2009	13.29			32.89
	46.18	7/24/2009	13.71			32.47
	46.18	1/9/2010	11.07			35.11
	46.18	7/12/2010	11.62			34.56
	46.18	1/12/2011	10.82			35.36
	46.18	7/11/2011	12.31			33.87
	46.18	1/26/2012	9.48			36.7
	46.18	7/9/2012	9.79			36.39
	46.18	1/8/2013	11.31			34.87
	46.18	7/23/2013	11.92			34.26
	46.18	1/8/2014	11.56			34.62
	46.18	7/16/2014	10.57			35.61
	46.18	1/5/2015	16.12			30.06
	46.18	8/10/2015	9.61			36.57
	46.18	1/13/2016	9.34			36.84
	46.18	7/6/2016	9.57			36.61
	46.18	1/12/2017	10.03			36.15
	46.18	7/5/2017	10.32			35.86
	46.18	9/6/2017	10.24			35.94
	46.18	2/11/2018	10.29			35.89

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-49A	46.18	3/11/2018	10.56			35.62
	46.18	5/14/2018	12.34			33.84
	46.18	1/4/2019	11.81			34.37
	46.18	7/9/2019	11.21			34.97
	46.18	1/7/2020	11.12			35.06
MW-49B	46.22	2/4/2009	11.65			34.57
	46.22	7/24/2009	11.93			34.29
	46.22	1/9/2010	9.73			36.49
	46.22	7/12/2010	11.36			34.86
	46.22	1/12/2011	8.04			38.18
	46.22	7/11/2011	12.29			33.93
	46.22	1/26/2012	10.74			35.48
	46.22	7/9/2012	7.38			38.84
	46.22	1/8/2013	11.27	33.56	1.19	34.95
	46.22	7/23/2013	11.83	33.91	0.84	34.39
	46.22	1/8/2014	11.24			34.98
	46.22	7/16/2014	9.62			36.60
	46.22	1/5/2015	10.74			35.48
	46.22	8/10/2015	8.17			38.05
	46.22	1/13/2016	7.74			38.48
	46.22	7/6/2016	8.02			38.20
	46.22	1/12/2017	8.46			37.76
	46.22	7/5/2017	8.72			37.50
	46.22	9/6/2017	8.67			37.55
	46.22	2/11/2018	10.03			36.19
	46.22	3/11/2018	10.64			35.58
	46.22	5/14/2018	13.27			32.95
	46.22	1/4/2019	12.59			33.63
	46.22	7/9/2019	12.02	34.62	0.24	34.2
	46.22	1/7/2020	11.51	20.09	12.96	34.71
MW-50A	46.96	3/7/2007	8.16			38.8
	46.96	7/27/2007	4.70			42.26
	46.96	1/31/2008	5.68			41.28
	46.96	7/16/2008	7.99			38.97
	46.96	2/4/2009	9.31			37.65
	46.96	7/24/2009	9.49			37.47
	46.96	1/9/2010	7.02			39.94
	46.96	7/12/2010	8.74			38.22
	46.96	1/12/2011	5.61			41.35
	46.96	7/11/2011	9.86			37.1
	46.96	1/26/2012	7.21			39.75
	46.96	7/9/2012	4.63			42.33
	46.96	1/8/2013	5.91			41.05
	46.96	7/23/2013	7.13			39.83
	46.96	1/8/2014	6.71			40.25
	46.96	7/16/2014	6.29			40.67
	46.96	1/5/2015	6.22			40.74
	46.96	8/10/2015	5.01			41.95
	46.96	1/13/2016	4.06			42.90
	46.96	7/6/2016	4.71			42.25
	46.96	1/12/2017	5.21			41.75
	46.96	7/5/2017	5.63			41.33
	46.96	9/6/2017	5.51			41.45
	46.96	2/11/2018	4.39			42.57
	46.96	3/11/2018	4.81			42.15
	46.96	5/15/2018	5.27			41.69
	46.96	1/3/2019	4.62			42.34
	46.96	7/9/2019	4.21			42.75
	46.96	1/7/2020	7.09			39.87
MW-50B	45.89	3/12/2020	8.37			37.52
MW-51A	47.80	3/7/2007	6.96			40.84
	47.80	7/27/2007	5.45			42.35
	47.80	1/31/2008	5.92			41.88
	47.80	7/15/2008	NM			
	47.80	2/4/2009	9.98			37.82
	47.80	7/24/2009	10.34			37.46
	47.80	1/9/2010	7.83			39.97
	47.80	7/12/2010	9.16			38.64
	47.80	1/12/2011	8.56			39.24
	47.80	7/11/2011	12.74			35.06
	47.80	1/26/2012	7.33			40.47

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-51A	47.80	7/9/2012	7.26			40.54
	47.80	1/8/2013	7.62			40.18
	47.80	7/23/2013	10.54			37.26
	47.80	1/8/2014	10.21			37.59
	47.80	7/16/2014	8.51			39.29
	47.80	1/5/2015	9.87			39.29
	47.80	8/10/2015	7.96			39.84
	47.80	1/13/2016	7.13			40.67
	47.80	7/6/2016	7.29			40.51
	47.80	1/12/2017	7.63			40.17
	47.80	7/5/2017	7.74			40.06
	47.80	9/6/2017	7.63			40.17
	47.80	2/11/2018	5.92			41.88
	47.80	3/12/2018	6.41			41.39
	47.80	5/15/2018	7.16			40.64
	47.80	1/4/2019	6.67			41.13
	47.80	7/9/2019	6.29			41.51
	47.80	1/7/2020	8.47			39.33
MW-51C	47.48	7/16/2014	22.21			25.27
	47.48	1/5/2015	NM			
	47.48	8/10/2015	18.79			28.69
	47.48	1/13/2016	18.06			29.42
	47.48	7/6/2016	18.26			29.22
	47.48	1/12/2017	18.68			28.80
	47.48	7/5/2017	19.12			28.36
	47.48	9/6/2017	19.02			28.46
	47.48	2/11/2018	17.63			29.85
	47.48	3/12/2018	18.03			29.45
	47.48	5/15/2018	20.83			26.65
	47.48	1/3/2019	20.17			27.31
	47.48	7/9/2019	20.39			27.09
	47.48	1/7/2020	20.34			27.14
MW-52A	51.91	3/7/2007	13.66			38.25
	51.91	7/27/2007	11.76			40.15
	51.91	1/31/2008	12.60			39.31
	51.91	7/15/2008	14.42			37.49
	51.91	2/5/2009	15.52			36.39
	51.91	7/23/2009	16.39			35.52
	51.91	1/9/2010	12.57			39.34
	51.91	7/12/2010	14.19			37.72
	51.91	1/12/2011	9.06			42.85
	51.91	7/12/2011	16.53			35.38
	51.91	1/26/2012	12.99			38.92
	51.91	7/9/2012	12.43			39.48
	51.91	1/7/2013	14.94			36.97
	51.91	7/22/2013	16.29			35.62
	51.91	1/7/2014	16.01			35.9
	51.91	7/15/2014	15.39			36.52
	51.91	1/5/2015	15.37			36.54
	51.91	8/10/2015	13.61			38.30
	51.91	1/13/2016	12.96			38.95
	51.91	7/6/2016	NM			NM
MW-53C	45.49	3/7/2007	16.12			29.37
	45.49	7/27/2007	14.55			30.94
	45.49	1/29/2008	15.12			30.37
	45.49	7/14/2008	16.86			28.63
	45.49	2/3/2009	16.69			28.8
	45.49	7/23/2009	17.62			27.87
	45.49	1/9/2010	15.19			30.3
	45.49	7/12/2010	15.71			29.78
	45.49	1/12/2011	16.58			28.91
	45.49	7/11/2011	18.61			26.88
	45.49	1/27/2012	17.54			27.95
	45.49	7/10/2012	17.73			27.76
	45.49	1/8/2013	18.14			27.35
	45.49	7/23/2013	19.28			26.21
	45.49	1/8/2014	21.12			24.37
	45.49	7/16/2014	17.37			28.12
	45.49	1/5/2015	20.71			24.78
	45.49	8/10/2015	18.72			26.77
	45.49	1/13/2016	18.06			27.43

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-53C	45.49	7/6/2016	18.42			27.07
	45.49	1/12/2017	18.89			26.60
	45.49	7/5/2017	19.16			26.33
	45.49	9/6/2017	19.13			26.36
	45.49	2/11/2018	16.43			29.06
	45.49	3/11/2018	15.54			29.95
	45.49	5/14/2018	16.56			28.93
	45.49	1/4/2019	15.93			29.56
	45.49	7/9/2019	15.86			29.63
	45.49	1/7/2020	16.72			28.77
MW-58B	43.59	3/11/2020	13.42			30.17
MW-54C	44.99	3/7/2007	15.74			29.25
	44.99	7/27/2007	14.63			30.36
	44.99	1/28/2008	15.28			29.71
	44.99	7/14/2008	16.68			28.31
	44.99	2/3/2009	16.87			28.12
	44.99	7/23/2009	17.84			27.15
	44.99	1/9/2010	15.46			29.53
	44.99	7/12/2010	16.49			28.5
	44.99	1/12/2011	16.46			28.53
	44.99	7/11/2011	18.23			26.76
	44.99	1/27/2012	17.42			27.57
	44.99	7/10/2012	17.36			27.63
	44.99	1/8/2013	17.81			27.18
	44.99	7/23/2013	18.89			26.1
	44.99	1/8/2014	18.14			26.85
	44.99	7/16/2014	17.49			27.50
	44.99	1/5/2015	17.86			27.13
	44.99	8/10/2015	16.02			28.97
	44.99	1/13/2016	15.33			29.66
	44.99	7/6/2016	15.66			29.33
	44.99	1/12/2017	16.17			28.82
	44.99	7/5/2017	16.61			28.38
	44.99	9/6/2017	16.59			28.40
	44.99	2/11/2018	15.4			29.59
	44.99	3/11/2018	15.68			29.31
	44.99	5/14/2018	16.31			28.68
	44.99	1/4/2019	15.71			29.28
	44.99	7/9/2019	15.27			29.72
	44.99	1/7/2020	15.59			29.4
MW-55A	52.01	2/4/2009	13.79			38.22
	52.01	7/23/2009	14.06			37.95
	52.01	1/9/2010	10.83			41.18
	52.01	7/12/2010	12.72			39.29
	52.01	1/12/2011	10.13			41.88
	52.01	7/12/2011	15.18			36.83
	52.01	1/26/2012	11.71			40.3
	52.01	7/9/2012	12.29			39.72
	52.01	1/7/2013	13.34			38.67
	52.01	7/22/2013	14.19			37.82
	52.01	1/7/2014	12.73			39.28
	52.01	7/15/2014	11.30			40.71
	52.01	1/5/2015	12.51			39.50
	52.01	8/10/2015	10.79			41.22
MW-55B	52.04	1/26/2012	13.28			38.76
	52.04	7/9/2012	13.93			38.11
	52.04	1/7/2013	13.73			38.31
	52.04	7/22/2013	14.59			37.45
	52.04	1/7/2014	12.89			39.15
	52.04	7/15/2014	12.49			39.55
	52.04	1/5/2015	12.41			39.63
	52.04	8/10/2015	10.19			41.85
MW-57A	47.72	2/5/2009	12.73		0.00	34.99
	47.72	7/23/2009	12.91		0.00	34.81
	47.72	1/9/2010	9.78		0.00	37.94
	47.72	7/12/2010	8.56	24.55	2.55	39.16
	47.72	1/12/2011	9.83	22.76	4.14	37.89
	47.72	7/12/2011	13.88	22.79	4.11	33.84
	47.72	1/26/2012	10.54	22.78	4.12	37.18
	47.72	7/9/2012	9.72	22.65	4.25	38
	47.72	1/7/2013	10.61	22.14	4.76	37.11

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-57A	47.72	7/22/2013	13.21	23.05	3.85	34.51
	47.72	1/7/2014	11.79	26.15	0.75	35.93
	47.72	7/15/2014	10.42	26.09	0.81	37.30
	47.72	1/5/2015	10.13	26.75	0.15	37.59
	47.72	8/10/2015	7.46	26.9	0.00	40.26
	47.72	7/6/2016	7.39			40.33
	47.72	1/12/2017	8.07			39.65
	47.72	7/6/2017	8.41			39.31
	47.72	9/6/2017	8.46			39.26
	47.72	2/7/2018	8.98			38.74
	47.72	3/11/2018	9.24			38.48
	47.72	5/14/2018	9.67			38.05
	47.72	1/4/2019	9.52			38.2
	47.72	7/9/2019	10.11			37.61
	47.72	1/8/2020	14.46			33.26
MW-57B	50.90	1/26/2012	28.83	42.51	0.44	22.07
	50.90	7/9/2012	27.93	42.45	0.50	22.97
	50.90	1/7/2013	28.63	41.36	1.59	22.27
	50.90	7/22/2013	16.34	41.67	1.28	34.56
	50.90	1/7/2014	15.04			35.86
	50.90	7/15/2014	15.71			35.19
	50.90	1/5/2015	14.32			36.58
	50.90	8/10/2015	12.42			38.48
	50.90	7/6/2016	12.44			38.46
	50.90	1/12/2017	13.24			37.66
	50.90	7/6/2017	13.57			37.33
	50.90	9/6/2017	13.79			37.11
	50.90	2/7/2018	12.42			38.48
	50.90	3/11/2018	12.62			38.28
	50.90	5/14/2018	13.29			37.61
	50.90	1/4/2019	13.03			37.87
	50.90	7/9/2019	13.71			37.19
	50.90	1/8/2020	13.73			37.17
MW-58A	47.76	2/5/2009	14.55			33.21
	47.76	7/23/2009	14.04			33.72
	47.76	1/9/2010	12.29			35.47
	47.76	7/12/2010	14.03			33.73
	47.76	1/12/2011	11.88			35.88
	47.76	7/12/2011	16.16			31.6
	47.76	1/26/2012	12.26			35.5
	47.76	7/9/2012	11.62			36.14
	47.76	1/7/2013	11.91			35.85
	47.76	7/22/2013	13.71			34.05
	47.76	1/7/2014	13.26			34.5
	47.76	7/15/2014	13.06			34.70
	47.76	1/5/2015	13.06			34.70
	47.76	8/10/2015	11.29			36.47
	47.76	7/6/2016	7.46			40.30
	47.76	1/12/2017	8.04			39.72
	47.76	7/6/2017	8.39			39.37
	47.76	9/6/2017	8.33			39.43
	47.76	2/11/2018	6.47			41.29
	47.76	3/11/2018	12.71			35.05
	47.76	5/14/2018	12.94			34.82
	47.76	1/4/2019	12.29			35.47
	47.76	7/9/2019	12.29			35.47
	47.76	1/7/2020	13.17			34.59
MW-59A	44.18	2/5/2009	10.71			33.47
	44.18	7/23/2009	9.96			34.22
	44.18	1/9/2010	8.62			35.56
	44.18	7/12/2010	9.97			34.21
	44.18	1/12/2011	8.06			36.12
	44.18	7/11/2011	10.54			33.64
	44.18	1/26/2012	6.36			37.82
	44.18	7/9/2012	7.63			36.55
	44.18	1/8/2013	9.09			35.09
	44.18	7/23/2013	9.76			34.42
	44.18	1/8/2014	9.34			34.84
	44.18	7/16/2014	9.17			35.01
	44.18	1/5/2015	8.71			35.47
	44.18	8/10/2015	5.76			38.42

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-59A	44.18	1/13/2016	5.01			39.17
	44.18	7/6/2016	5.26			38.92
	44.18	1/12/2017	5.81			38.37
	44.18	7/5/2017	6.14			38.04
	44.18	9/6/2017	6.09			38.09
	44.18	2/11/2018	6.26			37.92
	44.18	3/12/2018	9.13			35.05
	44.18	5/14/2018	8.81			35.37
	44.18	1/4/2019	8.12			36.06
	44.18	7/9/2019	8.92			35.26
	44.18	1/8/2020	9.21			34.97
MW-59B	44.36	7/12/2010	7.43			36.93
	44.36	1/12/2011	6.89			37.47
	44.36	7/11/2011	11.03			33.33
	44.36	1/26/2012	4.44			39.92
	44.36	7/9/2012	7.48			36.88
	44.36	1/8/2013	9.36			35
	44.36	7/23/2013	9.94			34.42
	44.36	1/8/2014	9.52			34.84
	44.36	7/16/2014	8.67			35.69
	44.36	1/5/2015	8.92			35.44
	44.36	8/10/2015	5.91			38.45
	44.36	1/13/2016	5.22			39.14
	44.36	7/6/2016	5.39			38.97
	44.36	1/12/2017	5.97			38.39
	44.36	7/5/2017	6.27			38.09
	44.36	9/6/2017	6.06			38.30
	44.36	2/11/2018	7.59			36.77
	44.36	3/12/2018	9.61			34.75
	44.36	5/14/2018	9.09			35.27
	44.36	1/4/2019	8.27			36.09
	44.36	7/9/2019	9.06			35.3
	44.36	1/8/2020	9.17			35.19
MW-59D	44.22	2/5/2009	84.17			-39.95
	44.22	7/23/2009	83.53			-39.31
	44.22	1/9/2010	81.73			-37.51
	44.22	7/12/2010	82.16			-37.94
	44.22	1/12/2011	82.83			-38.61
	44.22	7/11/2011	82.89			-38.67
	44.22	1/26/2012	82.93			-38.71
	44.22	7/9/2012	82.36			-38.14
	44.22	1/8/2013	82.81			-38.59
	44.22	7/23/2013	83.04			-38.82
	44.22	1/8/2014	83.14			-38.92
	44.22	7/16/2014	82.67			-38.45
	44.22	1/5/2015	82.07			-37.85
	44.22	8/10/2015	81.77			-37.55
	44.22	1/13/2016	81.03			-36.81
	44.22	7/6/2016	81.62			-37.40
	44.22	1/12/2017	82.09			-37.87
	44.22	7/5/2017	82.17			-37.95
	44.22	9/6/2017	82.16			-37.94
	44.22	2/11/2018	81.09			-36.87
	44.22	3/12/2018	81.17			-36.95
	44.22	5/14/2018	81.79			-37.57
	44.22	1/4/2019	81.02			-36.8
	44.22	7/9/2019	81.31			-37.09
	44.22	1/8/2020	83.06			-38.84
MW-60A	46.79	2/4/2009	9.56			37.23
	46.79	7/23/2009	9.71			37.08
	46.79	1/9/2010	7.72			39.07
	46.79	7/12/2010	8.61			38.18
	46.79	1/12/2011	5.82			40.97
	46.79	7/11/2011	9.86			36.93
	46.79	1/26/2012	4.34			42.45
	46.79	7/9/2012	5.42			41.37
	46.79	1/8/2013	6.91			39.88
	46.79	7/23/2013	10.42			36.37
	46.79	1/8/2014	8.06			38.73
	46.79	7/16/2014	7.29			39.50
	46.79	1/5/2015	7.39			39.40

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-60A	46.79	8/10/2015	6.32			40.47
	46.79	1/13/2016	5.67			41.12
	46.79	7/6/2016	6.13			40.66
	46.79	1/12/2017	--			
	46.79	9/6/2017	NM			
	46.79	2/11/2018	3.49			43.30
	46.79	3/12/2018	3.71			43.08
	46.79	5/14/2018	5.19			41.60
	46.79	1/4/2019	4.33			42.46
	46.79	7/9/2019	5.52			41.27
MW-60AR	45.43	3/20/2020	8.03			37.4
MW-60B	45.38	3/17/2020	24.91			20.47
MW-61A	44.67	2/3/2009	8.35			36.32
	44.67	7/23/2009	8.47			36.2
	44.67	1/9/2010	6.49			38.18
	44.67	7/12/2010	8.09			36.58
	44.67	1/12/2011	6.56			38.11
	44.67	7/11/2011	9.67			35
	44.67	1/26/2012	2.48			42.19
	44.67	7/9/2012	4.55			40.12
	44.67	1/8/2013	6.72			37.95
	44.67	7/23/2013	9.16			35.51
	44.67	1/8/2014	7.04			37.63
	44.67	7/16/2014	6.34			38.33
	44.67	1/5/2015	6.52			38.15
	44.67	8/10/2015	4.02			40.65
	44.67	1/13/2016	3.34			41.33
	44.67	7/6/2016	3.97			40.70
	44.67	1/12/2017	4.34			40.33
	44.67	7/5/2017	4.47			40.20
	44.67	9/6/2017	4.39			40.28
	44.67	2/11/2018	5.52			39.15
	44.67	3/12/2018	6.62			38.05
	44.67	5/14/2018	6.27			38.40
	44.67	1/4/2019	5.58			39.09
	44.67	7/9/2019	6.96			37.71
	44.67	1/8/2020	4.87			39.8
MW-61B	43.43	3/17/2020	8.31			35.12
MW-62B	48.16	2/4/2009	6.99			41.17
	48.16	7/24/2009	7.39			40.77
	48.16	1/8/2010	5.13			43.03
	48.16	7/12/2010	5.79			42.37
	48.16	1/12/2011	4.21			43.95
	48.16	7/12/2011	11.06			37.1
	48.16	1/26/2012	3.18			44.98
	48.16	7/9/2012	4.87			43.29
	48.16	1/8/2013	5.92			42.24
	48.16	7/23/2013	7.01			41.15
	48.16	1/8/2014	6.52			41.64
	48.16	7/15/2014	6.06			42.10
	48.16	1/5/2015	6.02			42.14
	48.16	8/10/2015	4.16			44.00
	48.16	1/13/2016	3.64			44.52
	48.16	7/6/2016	4.09			44.07
	48.16	1/12/2017	4.71			43.45
	48.16	7/6/2017	5.09			43.07
	48.16	9/6/2017	4.71			43.45
	48.16	2/11/2018	4.12			44.04
	48.16	3/11/2018	5.37			42.79
	48.16	5/14/2018	6.81			41.35
	48.16	7/2/2018	6.92			41.24
	48.16	1/4/2019	6.03			42.13
	48.16	7/9/2019	4.34			43.82
	48.16	1/8/2020	3.09			45.07
MW-63B	44.48	2/5/2009	31.54			12.94
	44.48	7/23/2009	9.52			34.96
	44.48	1/9/2010	1.34			43.14
	44.48	7/12/2010	5.71			38.77
	44.48	1/13/2011	7.13			37.35
	44.48	7/11/2011	4.21			40.27
	44.48	1/27/2012	2.96			41.52

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-63B	44.48	7/10/2012	1.32			43.16
	44.48	1/8/2013	8.54			35.94
	44.48	7/23/2013	9.43			35.05
	44.48	1/8/2014	7.72			36.76
	44.48	7/16/2014	7.03			37.45
	44.48	1/5/2015	7.09			37.39
	44.48	8/10/2015	5.34			39.14
	44.48	1/13/2016	4.69			39.79
	44.48	7/6/2016	5.01			39.47
	44.48	1/12/2017	5.84			38.64
	44.48	7/5/2017	6.19			38.29
	44.48	9/6/2017	6.12			38.36
	44.48	2/11/2018	5.31			39.17
	44.48	3/11/2018	6.39			38.09
	44.48	5/14/2018	7.19			37.29
	44.48	1/4/2019	6.47			38.01
	44.48	7/9/2019	3.96			40.52
	44.48	1/7/2020	4.34			40.14
MW-64A	48.31	2/4/2009	9.02			39.29
	48.31	7/24/2009	9.13			39.18
	48.31	1/9/2010	6.52			41.79
	48.31	7/12/2010	6.82			41.49
	48.31	1/12/2011	4.77			43.54
	48.31	7/12/2011	8.17			40.14
	48.31	1/26/2012	4.81			43.5
	48.31	7/9/2012	5.93			42.38
	48.31	1/7/2013	7.03			41.28
	48.31	7/22/2013	8.79			39.52
	48.31	1/7/2014	8.39			39.92
	48.31	7/15/2014	7.72			40.59
	48.31	1/5/2015	7.79			40.52
	48.31	8/10/2015	5.71			42.60
	48.31	1/13/2016	5.06			43.25
	48.31	7/6/2016	5.67			42.64
	48.31	1/12/2017	6.07			42.24
	48.31	7/6/2017	6.27			42.04
	48.31	9/6/2017	6.16			42.15
	48.31	2/11/2018	5.46			42.85
	48.31	3/12/2018	5.83			42.48
	48.31	5/14/2018	6.39			41.92
	48.31	1/4/2019	5.39			42.92
	44.55	7/9/2019	5.09			39.46
	44.55	1/8/2020	4.91			39.64
MW-65D	44.55	2/5/2009	86.72			-42.17
	44.55	7/23/2009	86.47			-41.92
	44.55	1/9/2010	84.39			-39.84
	44.55	7/12/2010	84.39			-39.84
	44.55	1/12/2011	83.96			-39.41
	44.55	7/11/2011	85.81			-41.26
	44.55	1/27/2012	85.76			-41.21
	44.55	1/8/2013	85.81			-41.26
	44.55	7/23/2013	85.83			-41.28
	44.55	1/8/2014	85.78			-41.23
	44.55	7/16/2014	84.91			-40.36
	44.55	1/5/2015	85.31			-40.76
	44.55	8/10/2015	85.06			-40.51
	44.55	1/13/2016	84.81			-40.26
	44.55	7/6/2016	85.09			-40.54
	44.55	1/12/2017	85.52			-40.97
	44.55	7/5/2017	85.72			-41.17
	44.55	9/6/2017	85.7			-41.15
	44.55	2/11/2018	83.42			-38.87
	44.55	3/12/2018	83.28			-38.73
	44.55	5/14/2018	83.74			-39.19
	44.55	1/4/2019	83.03			-38.48
	44.55	7/9/2019	82.71			-38.16
	44.55	1/8/2020	83.29			-38.74
MW-66D	46.51	2/5/2009	86.18			-39.67
	46.51	7/23/2009	85.82			-39.31
	46.51	1/9/2010	84.02			-37.51
	46.51	7/12/2010	84.86			-38.35

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-66D	46.51	1/12/2011	NM			
	46.51	7/11/2011	84.93			-38.42
	46.51	1/26/2012	84.88			-38.37
	46.51	7/9/2012	85.02			-38.51
	46.51	1/8/2013	86.09			-39.58
	46.51	7/23/2013	86.42			-39.91
	46.51	1/8/2014	86.09			-39.58
	46.51	7/16/2014	85.26			-38.75
	46.51	1/5/2015	85.42			-38.91
	46.51	8/10/2015	85.21			-38.70
	46.51	1/13/2016	84.71			-38.20
	46.51	7/6/2016	84.86			-38.35
	46.51	1/12/2017	85.26			-38.75
	46.51	7/5/2017	85.66			-39.15
	46.51	9/6/2017	85.67			-39.16
	46.51	2/11/2018	83.28			-36.77
	46.51	3/12/2018	83.37			-36.86
	46.51	5/14/2018	84.06			-37.55
	46.51	1/4/2019	83.36			-36.85
	46.51	7/9/2019	82.99			-36.48
	46.51	1/8/2020	81.26			-34.75
MW-67B	43.93	7/12/2010	5.76			38.17
	43.93	1/13/2011	10.62			33.31
	43.93	7/11/2011	17.64			26.29
	43.93	1/27/2012	9.87			34.06
	43.93	7/10/2012	11.19			32.74
	43.93	1/8/2013	11.72			32.21
	43.93	7/23/2013	10.69			33.24
	43.93	1/8/2014	10.64			33.29
	43.93	7/16/2014	11.22			32.71
	43.93	1/5/2015	10.22			33.71
	43.93	1/13/2016	6.17			37.76
	43.93	7/6/2016	6.39			37.54
	43.93	1/12/2017	7.04			36.89
	43.93	7/5/2017	7.14			36.79
	43.93	9/6/2017	6.97			36.96
	43.93	2/11/2018	8.89			35.04
	43.93	3/12/2018	9.13			34.80
	43.93	5/14/2018	10.16			33.77
	43.93	1/4/2019	9.42			34.51
	43.93	7/9/2019	9.09			34.84
	43.93	1/7/2020	9.02			34.91
MW-68A	43.24	05/29/219	5.33			37.91
	43.24	7/9/2019	5.01			38.23
	43.24	1/7/2020	4.28			38.96
MW-68B	44.63	1/27/2012	1.16			43.47
	44.63	7/10/2012	3.82			40.81
	44.63	1/8/2013	6.76			37.87
	44.63	7/23/2013	10.33			34.3
	44.63	1/8/2014	5.82			38.81
	44.63	7/16/2014	7.41			37.22
	44.63	1/5/2015	4.32			40.31
	44.63	8/10/2015	3.56			41.07
	44.63	1/13/2016	2.86			41.77
	44.63	7/6/2016	3.07			41.56
	44.63	1/12/2017	3.86			40.77
	44.63	7/5/2017	3.97			40.66
	44.63	9/6/2017	3.84			40.79
	44.63	2/11/2018	3.07			41.56
	44.63	3/12/2018	4.24			40.39
	44.63	5/14/2018	6.46			38.17
	44.63	1/4/2019	5.82			38.81
	44.63	7/9/2019	5.78			38.85
	44.63	1/7/2020	4.82	34.21	3.24	39.81
MW-68C	44.80	7/12/2010	16.52			28.28
	44.80	1/13/2011	16.92			27.88
	44.80	7/11/2011	19.34			25.46
	44.80	1/27/2012	17.66			27.14
	44.80	7/10/2012	17.96			26.84
	44.80	1/8/2013	19.39			25.41
	44.80	7/23/2013	19.87			24.93

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-68C	44.80	1/8/2014	19.29			25.51
	44.80	7/16/2014	18.39			26.41
	44.80	1/5/2015	18.71			26.09
	44.80	8/10/2015	16.29			28.51
	44.80	1/13/2016	15.74			29.06
	44.80	7/6/2016	15.94			28.86
	44.80	1/12/2017	16.54			28.26
	44.80	7/5/2017	17.02			27.78
	44.80	9/6/2017	17.01			27.79
	44.80	2/11/2018	16.21			28.59
	44.80	3/12/2018	16.88			27.92
	44.80	5/14/2018	17.35			27.45
	44.80	1/4/2019	16.74			28.06
	44.80	7/9/2019	16.39			28.41
	44.80	1/8/2020	16.54			28.26
MW-69A	45.71	7/12/2010	11.81			33.9
	45.71	1/12/2011	11.16			34.55
	45.71	7/11/2011	NM			
	45.71	1/26/2012	10.44			35.27
	45.71	7/9/2012	4.21			41.5
	45.71	1/8/2013	5.31			40.4
	45.71	7/23/2013	7.34			38.37
	45.71	1/8/2014	7.02			38.69
	45.71	7/16/2014	6.34			39.37
	45.71	1/5/2015	6.71			39.00
	45.71	8/10/2015	3.61			42.10
	45.71	1/13/2016	2.91			42.80
	45.71	7/6/2016	3.79			41.92
	45.71	1/12/2017	4.34			41.37
	45.71	7/5/2017	4.59			41.12
	45.71	9/6/2017	4.43			41.28
	45.71	2/11/2018	11.21			34.50
	45.71	3/11/2018	12.58			33.13
	45.71	5/14/2018	11.34			34.37
	45.71	1/4/2019	10.61			35.1
	45.71	7/9/2019	9.71			36
MW-70B	44.86	1/27/2012	6.51	34.26	1.21	38.35
	44.86	7/10/2012	6.06	34.17	1.30	38.8
	44.86	1/8/2013	6.67	34.02	1.68	38.19
	44.86	7/23/2013	8.22	34.07	1.63	36.64
	44.86	1/8/2014	7.89	35.51	0.14	36.97
	44.86	7/16/2014	6.16	34.71	0.94	38.70
	44.86	1/5/2015	7.07	35.26	0.39	37.79
	44.86	8/10/2015	5.26	35.49	0.16	39.60
	44.86	1/13/2016	4.96	35.39	0.26	39.90
	44.86	7/6/2016	5.34	35.31	0.34	39.52
	44.86	1/12/2017	6.17	35.09	0.56	38.69
	44.86	7/5/2017	6.39	35.14	0.51	38.47
	44.86	9/6/2017	6.56	35.34	0.31	38.30
	44.86	2/8/2018	6.42	35.31	0.34	38.44
	44.86	3/12/2018	6.69	35.21	0.44	38.17
	44.86	5/15/2018	7.52	35.39	0.26	37.34
	44.86	1/4/2019	6.96	35.31	0.34	37.9
	44.86	7/9/2019	6.57	35.01	0.64	38.29
MW-70C	43.41	3/12/2020	16.04			27.37
MW-71B	44.59	1/27/2012	7.08			37.51
	44.59	7/10/2012	8.16			36.43
	44.59	1/8/2013	4.09			40.5
	44.59	7/23/2013	8.61			35.98
	44.59	1/8/2014	16.36			28.23
	44.59	7/16/2014	16.02			28.57
	44.59	1/5/2015	15.83			28.76
	44.59	8/10/2015	13.76			30.83
	44.59	1/13/2016	13.09			31.50
	44.59	7/6/2016	13.31			31.28
	44.59	1/12/2017	13.94			30.65
	44.59	7/5/2017	14.34			30.25
	44.59	9/6/2017	14.21			30.38
	44.59	1/25/2018	0.76			43.83
	44.59	3/12/2018	1.61			42.98
	44.59	5/14/2018	2.26			42.33

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-71B	44.59	1/4/2019	1.58			43.01
	44.59	7/9/2019	0.62			43.97
	44.59	1/8/2020	1.12			43.47
MW-72B	51.97	1/26/2012	38.76			13.21
	51.97	7/9/2012	27.27			24.7
	51.97	1/7/2013	20.08			31.89
	51.97	7/22/2013	18.39			33.58
	51.97	1/7/2014	17.31			34.66
	51.97	7/15/2014	16.91			35.06
	51.97	1/5/2015	16.74			35.23
	51.97	8/10/2015	14.59			37.38
	51.97	1/13/2016	13.93			38.04
	51.97	7/6/2016	NM			
	51.97	2/11/2018	12.26			39.71
	51.97	3/12/2018	19.71			32.26
	51.97	5/14/2018	20.92			31.05
	51.97	1/4/2019	20.13			31.84
	51.97	7/9/2019	15.28			36.69
	51.97	1/8/2020	14.81			37.16
MW-73B	51.42	1/26/2012	25.48			25.94
	51.42	7/9/2012	25.03			26.39
	51.42	1/7/2013	26.11			25.31
	51.42	7/22/2013	26.87			24.55
	51.42	1/7/2014	26.19			25.23
	51.42	7/15/2014	25.14			26.28
	51.42	1/5/2015	25.81			25.61
	51.42	8/10/2015	22.46			28.96
			Plugged and Abandoned			
MW-74B	47.58	1/26/2012	7.63			39.95
	47.58	7/9/2012	7.15			40.43
	47.58	1/8/2013	9.62			37.96
	47.58	7/23/2013	11.72			35.86
	47.58	1/8/2014	9.59			37.99
	47.58	7/16/2014	9.01			38.57
	47.58	1/5/2015	9.07			38.51
	47.58	8/10/2015	7.36			40.22
	47.58	1/13/2016	6.86			40.72
	47.58	7/6/2016	7.39			40.19
	47.58	1/12/2017	7.84			39.74
	47.58	7/5/2017	8.17			39.41
	47.58	9/6/2017	8.02			39.56
	47.58	2/11/2018	6.91			40.67
	47.58	3/12/2018	7.22			40.36
	47.58	5/15/2018	8.33			39.25
	47.58	1/4/2019	7.62			39.96
	47.58	7/9/2019	8.59			38.99
	47.58	1/8/2020	8.29			39.29
MW-75B	46.78	1/26/2012	9.07	35.26	1.84	37.71
	46.78	7/9/2012	9.32	35.2	1.90	37.46
	46.78	1/8/2013	10.16	34.13	2.97	36.62
	46.78	7/23/2013	9.74	35.71	1.39	37.04
	46.78	1/8/2014	10.13	36.72	0.43	36.65
	46.78	7/16/2014	11.41	35.71	1.44	35.37
	46.78	1/5/2015	11.33	36.79	0.36	35.45
	46.78	8/10/2015	8.86	37.07	0.08	37.92
	46.78	1/13/2016	7.81	36.84	0.31	38.97
	46.78	7/6/2016	7.8	36.53	0.62	38.98
	46.78	1/12/2017	8.04	36.36	0.79	38.74
	46.78	7/5/2017	8.04	36.36	0.79	38.74
	46.78	9/6/2017	8.22	36.47	3.15	38.56
	46.78	2/8/2018	8.17	36.91	2.71	38.61
	46.78	3/12/2018	8.37	36.94	2.68	38.41
	46.78	5/15/2018	9.22	37.03	2.59	37.56
	46.78	1/4/2019	9.28	36.96	2.66	37.5
	46.78	7/9/2019	8.89			37.89
	46.78	1/8/2020	8.52	33.52	3.73	38.26
	46.32	3/12/2020	5.40			40.92
MW-76C	47.84	7/16/2014	22.68			25.16
	47.84	1/5/2015	23.41			24.43
	47.84	8/10/2015	21.19			26.65
	47.84	1/13/2016	20.81			27.03

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-76C	47.84	7/6/2016	21.09			26.75
	47.84	1/12/2017	21.67			26.17
	47.84	7/5/2017	21.99			25.85
	47.84	9/6/2017	21.93			25.91
	47.84	2/11/2018	20.74			27.10
	47.84	3/12/2018	21.02			26.82
	47.84	5/15/2018	21.46			26.38
	47.84	1/4/2019	20.67			27.17
	47.84	7/9/2019	20.18			27.66
	47.84	1/7/2020	20.68			27.16
MW-77A	49.05	7/16/2014	6.62			42.43
	49.05	1/5/2015	6.27			42.78
	49.05	8/10/2015	4.34			44.71
	49.05	1/13/2016	3.96			45.09
	49.05	7/6/2016	4.29			44.76
	49.05	1/12/2017	4.73			44.32
	49.05	7/5/2017	4.91			44.14
	49.05	9/6/2017	4.78			44.27
	49.05	2/11/2018	7.62			41.43
	49.05	3/12/2018	8.09			40.96
	49.05	5/15/2018	7.06			41.99
	49.05	1/4/2019	6.34			42.71
	49.05	7/9/2019	6.11			42.94
	49.05	1/7/2020	6.81			42.24
MW-78A	48.68	7/16/2014	8.02	28.72	1.38	40.66
	48.68	1/5/2015	9.17	21.17	8.93	39.51
	48.68	8/10/2015	7.34	23.71	6.39	41.34
	48.68	1/13/2016	6.63	21.77	3.58	42.05
	48.68	7/6/2016	6.71	21.97	3.38	41.97
	48.68	1/12/2017	7.42	22.74	2.61	41.26
	48.68	7/5/2017	7.79	23.59	1.76	40.89
	48.68	9/6/2017	7.81	23.48	6.19	40.87
	48.68	2/11/2018	8.29	23.97	1.38	40.39
	48.68	3/12/2018	8.46	23.91	1.44	40.22
	48.68	5/15/2018	9.28	24.07	1.28	39.4
	48.68	1/4/2019	8.78	24.39	0.96	39.9
	48.68	7/9/2019	9.17	24.67	0.68	39.51
	48.68	1/8/2020	7.96	24.9	0.45	40.72
MW-79A	48.95	7/16/2014	7.26			41.69
	48.95	1/5/2015	5.29			43.66
	48.95	8/10/2015	3.71			45.24
	48.95	1/13/2016	3.06			45.89
	48.95	7/6/2016	3.76			45.19
	48.95	1/12/2017	4.06			44.89
	48.95	7/5/2017	4.31			44.64
	48.95	9/6/2017	4.16			44.79
	48.95	2/11/2018	10.82			38.13
	48.95	3/12/2018	11.26			37.69
	48.95	5/15/2018	9.46			39.49
	48.95	1/4/2019	8.8			40.15
	48.95	7/9/2019	9.68			39.27
	48.95	1/8/2020	9.81			39.14
MW-80B	47.11	7/16/2014	5.29			41.82
	47.11	1/5/2015	6.17			40.94
	47.11	8/10/2015	4.33			42.78
	47.11	1/13/2016	3.96			43.15
	47.11	7/6/2016	4.56			42.55
	47.11	1/12/2017	5.06			42.05
	47.11	7/5/2017	5.34			41.77
	47.11	9/6/2017	5.26			41.85
	47.11	2/11/2018	11.34			35.77
	47.11	3/11/2018	11.77			35.34
	47.11	5/15/2018	11.36			35.75
	47.11	1/4/2019	10.71			36.4
	47.11	7/9/2019	11.02			36.09
	47.11	1/7/2020	10.87			36.24
MW-81B	46.77	7/16/2014	6.47			40.30
	46.77	1/5/2015	7.06			39.71
	46.77	8/10/2015	5.22			41.55
	46.77	1/13/2016	4.77			42.00
MW-81B	46.77	7/6/2016	5.16			41.61

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
	46.77	1/12/2017	5.72			41.05
	46.77	7/5/2017	5.96			40.81
	46.77	9/6/2017	5.71			41.06
	46.77	2/11/2018	7.04			39.73
	46.77	3/11/2018	7.51			39.26
	46.77	5/15/2018	8.23			38.54
	46.77	1/4/2019	7.67			39.1
	46.77	7/9/2019	7.91			38.86
	46.77	1/7/2020	7.12			39.65
MW-82B	44.64	2/11/2018	2.53			42.11
	44.64	3/11/2018	3.44			41.20
	44.64	5/14/2018	5.61			39.03
	44.64	1/4/2019	4.83			39.81
	44.64	7/9/2019	4.03			40.61
	44.64	1/8/2020	2.67			41.97
MW-83B	45.33	2/11/2018	4.06			41.27
	45.33	3/11/2018	4.69			40.64
	45.33	5/14/2018	7.47			37.86
	45.33	7/19/2018	5.87			39.46
	45.33	1/4/2019	6.82			38.51
	45.33	7/9/2019	6.11			39.22
	45.33	1/8/2020	5.33			40
MW-83C	45.42	2/11/2018	17.52			27.90
	45.42	3/11/2018	16.96			28.46
	45.42	5/14/2018	18.11			27.31
	45.42	1/4/2019	17.42			28.00
	45.42	7/9/2019	17.17			28.25
	45.42	1/8/2020	17.74			27.68
MW-84A	43.01	3/12/2020	4.19			38.82
MW-84B	44.50	2/11/2018	4.37			40.13
	44.50	3/11/2018	4.93			39.57
	44.50	5/14/2018	7.36			37.14
	44.50	7/19/2018	6.07			38.43
	44.50	1/4/2019	6.71			37.79
	44.50	7/9/2019	7.09			37.41
	44.50	1/7/2020	4.38			40.12
MW-85C	49.10	2/11/2018	22.51			26.59
	49.10	3/11/2018	22.77			26.33
	49.10	5/15/2018	22.61			26.49
	49.10	1/4/2019	21.92			27.18
	49.10	7/9/2019	21.78			27.32
	49.10	1/7/2020	22.70			26.4
MW-86C	46.61	2/11/2018	20.14			26.47
	46.61	3/11/2018	19.91			26.70
	46.61	5/15/2018	20.26			26.35
	46.61	1/4/2019	19.51			27.10
	46.61	7/9/2019	19.73			26.88
	46.61	1/8/2020	21.09			25.52
MW-87C	44.26	2/11/2018	15.86			28.40
	44.26	3/11/2018	16.29			27.97
	44.26	5/14/2018	16.26			28.00
	44.26	1/4/2019	15.52			28.74
	44.26	7/9/2019	15.83			28.43
	44.26	1/8/2020	15.79			28.47
MW-88A	49.83	3/17/2020	8.00			41.83
MW-88B	49.91	3/17/2020	7.82			42.09
MW-88C	51.17	2/11/2018	24.7			26.47
	51.17	3/11/2018	23.93			27.24
	51.17	5/14/2018	24.67			26.50
	51.17	1/4/2019	24.01			27.16
	51.17	7/9/2019	24.13			27.04
	51.17	1/7/2020	24.64			26.53
MW-89B	44.57	7/19/2018	6.78			37.79
	44.57	1/4/2019	8.21			36.36
	44.57	7/9/2019	7.74			36.83
	44.57	1/7/2020	6.24			38.33
MW-90B	44.39	7/19/2018	5.63			38.76
	44.39	1/4/2019	7.16			37.23
	44.39	7/9/2019	4.13			40.26
	44.39	1/7/2020	0.86			43.53
MW-91A	42.36	3/12/2020	5.21			37.15

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
MW-92B	43.25	3/12/2020	4.19			39.06
MW-93B	43.39	3/12/2020	4.06			39.33
MW-94A	43.55	3/12/2020	3.99			39.56
MW-95A	44.53	3/17/2020	3.88			40.65
MW-96B	45.36	3/17/2020	4.28			41.08
MW-97A	46.21	3/12/2020	5.20			41.01
MW-98A	46.69	3/12/2020	7.19			39.5
MW-98B	46.93	3/12/2020	8.30			38.63
MW-99C	43.67	3/11/2020	14.99			28.68
P-10	47.69	9/2/1993	6.87			40.85
	47.69	12/21/1993	3.32			44.4
	47.69	3/24/1994	3.88			43.84
	47.69	6/22/1994	4.98			42.74
	47.69	9/28/1994	6.38			41.34
	47.69	10/13/1994	7.07			40.65
	47.69	1/24/1995	2.67			45.05
	47.69	4/11/1995	2.59			45.13
	47.69	7/11/1995	4.69			43.03
	47.69	1/23/1996	5.84			41.88
	47.69	7/19/1996	10.04			37.68
	47.69	9/17/1996	8.34			39.38
	47.69	10/31/1996	6.97			40.75
	47.69	11/22/1996	8.84			38.88
	47.69	12/27/1996	6.20			41.52
	47.69	1/22/1997	4.10			43.62
	47.69	2/21/1997	2.86			44.86
	47.69	3/25/1997	3.19			44.53
	47.69	4/23/1997	4.42			43.3
	47.69	4/24/1997	4.57			43.15
	47.69	5/13/1997	3.14			44.58
	47.69	6/20/1997	4.94			42.78
	47.69	6/25/1997	2.74			44.98
	47.69	7/1/1997	4.13			43.59
	47.69	7/24/1997	7.91			39.81
	47.69	8/16/1997	7.86			39.86
	47.69	8/22/1997	8.67			39.05
	47.69	9/25/1997	6.54			41.18
	47.69	10/22/1997	5.36			42.36
	47.69	11/25/1997	5.36			42.36
	47.69	12/19/1997	4.72			43
	47.69	1/20/1998	3.40			44.32
	47.69	1/29/1998	3.11			44.61
	47.69	3/18/1998	2.84			44.88
	47.69	4/24/1998	6.80			40.92
	47.69	5/21/1998	7.35			40.37
	47.69	7/30/1998	8.23			39.49
	47.69	8/25/1998	7.34			40.38
	47.69	9/21/1998	5.25			42.47
	47.69	10/26/1998	6.11			41.61
	47.69	11/23/1998	4.10			43.62
	47.69	2/26/1999	3.21			44.51
	47.69	3/16/1999	4.21			43.51
	47.69	4/29/1999	4.53			43.19
	47.69	6/1/1999	4.53			43.19
	47.69	7/30/1999	6.00			41.72
	47.69	8/27/1999	4.72			43
	47.69	9/27/1999	9.58			38.14
	47.69	10/29/1999	10.61			37.11
	47.69	12/29/1999	11.55			36.17
	47.69	2/4/2000	13.71			34.01
	47.69	2/25/2000	10.44			37.28
	47.69	3/27/2000	7.53			40.19
	47.69	4/7/2000	7.09			40.63
	47.69	5/31/2000	7.14			40.58
	47.69	6/1/2000	7.11			40.61
	47.69	7/28/2000	7.15			40.57
	47.69	8/30/2000	10.15			37.57
	47.69	9/19/2000	11.56			36.16
	47.69	10/27/2000	8.66			39.06
	47.69	11/21/2000	9.64			38.08
P-10	47.69	5/1/2001	6.52			41.2

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
	47.69	10/1/2001	6.85			40.87
	47.69	3/11/2002	3.41			44.31
	47.69	9/23/2002	3.54			44.18
	47.69	3/10/2003	2.43			45.26
	47.69	9/23/2003	1.61			46.08
	47.69	3/15/2004	2.85			44.84
	47.69	9/13/2004	7.99			39.7
	47.69	7/18/2005	4.20			43.49
	47.69	1/4/2006	8.58			39.11
	47.69	7/27/2006	3.46			44.23
	47.69	1/23/2007	2.36			45.33
	47.69	3/7/2007	NM			
	47.69	7/27/2007	3.75			43.94
	47.69	1/29/2008	2.30			45.39
	47.69	7/16/2008	6.91			40.78
	47.69	1/22/2009	6.35			41.34
	47.69	7/23/2009	NM			
	47.69	1/8/2010	4.06			43.63
	47.69	7/12/2010	2.06			45.63
	47.73	1/12/2011	4.13			43.60
	47.73	7/12/2011	9.84			37.89
	47.73	1/27/2012	3.12			44.61
	47.73	7/10/2013	10.79			36.94
	47.73	1/8/2014	5.51			42.22
	47.73	7/2/2014	7.74			39.99
	47.73	1/7/2015	3.96			43.77
	47.73	8/10/2015	5.39			42.34
	47.71	1/12/2016	2.47			45.24
	47.71	7/6/2016	5.18			42.53
	47.71	1/12/2017	4.52			43.19
	47.71	7/12/2017	6.07			41.64
	47.71	1/3/2018	6.71			41.00
	47.71	7/19/2018	5.77			41.94
	47.71	1/3/2019	6.32			41.39
	47.71	7/1/2019	3.12			44.59
	47.71	1/13/2020	3.18			44.53
P-11	48.98	9/2/1993	7.87			41.15
	48.98	12/21/1993	4.57			44.45
	48.98	3/24/1994	5.04			43.98
	48.98	6/22/1994	6.19			42.83
	48.98	9/28/1994	7.40			41.62
	48.98	10/13/1994	8.14			40.88
	48.98	1/24/1995	3.90			45.12
	48.98	4/11/1995	3.77			45.25
	48.98	7/11/1995	5.69			43.33
	48.98	1/23/1996	6.81			42.21
	48.98	7/19/1996	7.81			41.21
	48.98	9/17/1996	9.15			39.87
	48.98	10/31/1996	7.52			41.5
	48.98	11/22/1996	9.46			39.56
	48.98	12/27/1996	6.64			42.38
	48.98	1/22/1997	4.70			44.32
	48.98	2/21/1997	3.88			45.14
	48.98	3/25/1997	4.09			44.93
	48.98	4/23/1997	5.27			43.75
	48.98	4/24/1997	5.41			43.61
	48.98	5/13/1997	4.12			44.9
	48.98	6/20/1997	5.79			43.23
	48.98	6/25/1997	3.83			45.19
	48.98	7/1/1997	5.01			44.01
	48.98	7/24/1997	7.56			41.46
	48.98	8/16/1997	8.74			40.28
	48.98	8/22/1997	9.37			39.65
	48.98	9/25/1997	7.24			41.78
	48.98	10/22/1997	5.98			43.04
	48.98	11/25/1997	6.00			43.02
	48.98	12/19/1997	5.52			43.5
	48.98	1/20/1998	4.30			44.72
	48.98	3/4/1998	4.08			44.94
	48.98	3/18/1998	3.92			45.1
P-11	48.98	4/24/1998	7.61			41.41

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
	48.98	5/21/1998	8.10			40.92
	48.98	7/30/1998	9.21			39.81
	48.98	8/25/1998	8.44			40.58
	48.98	9/21/1998	5.91			43.11
	48.98	10/26/1998	7.59			41.43
	48.98	11/23/1998	5.41			43.61
	48.98	1/29/1999	4.11			44.91
	48.98	2/26/1999	4.22			44.8
	48.98	3/16/1999	4.96			44.06
	48.98	4/29/1999	5.15			43.87
	48.98	6/1/1999	5.15			43.87
	48.98	7/30/1999	6.66			42.36
	48.98	8/27/1999	5.23			43.79
	48.98	9/27/1999	10.49			38.53
	48.98	10/29/1999	11.91			37.11
	48.98	12/29/1999	11.12			37.9
	48.98	2/4/2000	12.13			36.89
	48.98	2/25/2000	10.46			38.56
	48.98	3/27/2000	8.32			40.7
	48.98	4/7/2000	7.91			41.11
	48.98	5/31/2000	7.96			41.06
	48.98	6/1/2000	7.93			41.09
	48.98	7/28/2000	7.97			41.05
	48.98	8/30/2000	10.88			38.14
	48.98	9/19/2000	12.32			36.7
	48.98	10/27/2000	10.94			38.08
	48.98	11/21/2000	9.77			39.25
	48.98	5/1/2001	7.48			41.54
	48.98	10/1/2001	7.74			41.28
	48.98	3/11/2002	4.51			44.51
	48.98	9/23/2002	4.46			44.56
	48.98	3/10/2003	3.69			45.29
	48.98	9/23/2003	4.54			44.44
	48.98	3/15/2004	4.51			44.47
	48.98	9/13/2004	9.14			39.84
	48.98	7/18/2005	5.27			43.71
	48.98	1/4/2006	9.56			39.42
	48.98	7/27/2006	4.54			44.44
	48.98	3/7/2007	NM			
	48.98	7/27/2007	4.61			44.37
	48.98	1/30/2008	2.71			46.27
	48.98	7/15/2008	7.93			41.05
	48.98	2/4/2009	7.82			41.16
	48.98	7/24/2009	7.74			41.24
	48.98	1/8/2010	5.67			43.31
	48.98	7/12/2010	6.78			42.2
	48.98	1/12/2011	4.21			44.77
	48.98	7/12/2011	11.51			37.47
	48.98	1/26/2012	4.25			44.73
	48.98	1/7/2013	7.96			41.02
	48.98	7/22/2013	10.96			38.02
	48.98	1/7/2014	6.52			42.46
	48.98	7/16/2014	8.87			40.11
	48.98	1/5/2015	5.61			43.37
	48.98	8/10/2015	3.86			45.12
	48.98	1/13/2016	3.26			45.72
	48.98	7/6/2016	3.74			45.24
	48.98	1/12/2017	4.36			44.62
	48.98	7/6/2017	4.62			44.36
	48.98	9/6/2017	4.62			44.36
	48.98	2/11/2018	5.09			43.89
	48.98	3/11/2018	5.54			43.44
	48.98	5/14/2018	7.14			41.84
	48.98	7/2/2018	7.28			41.7
	48.98	1/4/2019	6.43			42.55
	48.98	7/9/2019	5.31			43.67
	48.98	1/7/2020	4.26			44.72
P-12	48.78	9/2/1993	7.02			41.8
	48.78	12/21/1993	4.30			44.52
	48.78	3/24/1994	4.45			44.37
P-12	48.78	6/22/1994	5.06			43.76

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
	48.78	9/28/1994	6.46			42.36
	48.78	10/13/1994	7.19			41.63
	48.78	1/24/1995	3.63			45.19
	48.78	4/11/1995	3.25			45.57
	48.78	7/11/1995	4.62			44.2
	48.78	1/23/1996	6.62			42.2
	48.78	7/19/1996	8.64			40.18
	48.78	9/17/1996	8.12			40.7
	48.78	10/31/1996	6.81			42.01
	48.78	11/22/1996	8.70			40.12
	48.78	12/27/1996	6.57			42.25
	48.78	1/22/1997	4.93			43.89
	48.78	2/21/1997	3.61			45.21
	48.78	3/25/1997	3.70			45.12
	48.78	4/23/1997	4.58			44.24
	48.78	4/24/1997	4.74			44.08
	48.78	5/13/1997	3.69			45.13
	48.78	6/20/1997	4.86			43.96
	48.78	6/25/1997	3.35			45.47
	48.78	7/1/1997	4.11			44.71
	48.78	7/24/1997	6.58			42.24
	48.78	8/16/1997	7.80			41.02
	48.78	8/22/1997	8.22			40.6
	48.78	9/25/1997	6.54			42.28
	48.78	10/22/1997	5.66			43.16
	48.78	11/25/1997	5.70			43.12
	48.78	12/19/1997	5.13			43.69
	48.78	1/20/1998	4.15			44.67
	48.78	3/4/1998	3.78			45.04
	48.78	3/18/1998	3.61			45.21
	48.78	4/24/1998	6.90			41.92
	48.78	5/21/1998	7.80			41.02
	48.78	7/30/1998	8.15			40.67
	48.78	8/25/1998	8.31			40.51
	48.78	9/21/1998	5.64			43.18
	48.78	10/26/1998	7.66			41.16
	48.78	11/23/1998	5.65			43.17
	48.78	1/29/1999	4.20			44.62
	48.78	2/26/1999	4.31			44.51
	48.78	3/16/1999	4.99			43.83
	48.78	4/29/1999	5.10			43.72
	48.78	6/1/1999	5.10			43.72
	48.78	7/30/1999	6.75			42.07
	48.78	8/27/1999	5.34			43.48
	48.78	9/27/1999	9.36			39.46
	48.78	10/29/1999	10.11			38.71
	48.78	12/29/1999	9.44			39.38
	48.78	2/4/2000	12.10			36.72
	48.78	2/25/2000	8.63			40.19
	48.78	3/27/2000	7.76			41.06
	48.78	4/7/2000	7.35			41.47
	48.78	5/31/2000	7.39			41.43
	48.78	6/1/2000	7.34			41.48
	48.78	7/28/2000	7.37			41.45
	48.78	8/30/2000	10.66			38.16
	48.78	9/19/2000	11.45			37.37
	48.78	10/27/2000	10.94			37.88
	48.78	11/21/2000	8.93			39.89
	48.78	5/1/2001	6.70			42.12
	48.78	10/1/2001	6.93			41.89
	48.78	3/11/2002	4.15			44.67
	48.78	9/23/2002	3.90			44.92
	48.78	3/10/2003	3.13			45.65
	48.78	9/23/2003	3.86			44.92
	48.78	3/15/2004	NM			
	48.78	9/13/2004	7.93			40.85
	48.78	7/18/2005	5.06			43.72
	48.78	1/4/2006	8.98			39.8
	48.78	7/27/2006	4.35			44.43
	48.78	1/22/2007	3.19			45.59
P-12	48.78	3/7/2007	NM			

Table 1
GROUNDWATER MEASUREMENTS
Houston, TX - Wood Preserving Works

Well ID	TOC Elevation (ft)	Date	Depth to Water (ft)	Depth to DNAPL (ft BTOC)	DNAPL Thickness (ft)	GW Elevation (ft)
	48.78	7/27/2007	4.22			44.56
	48.78	1/29/2008	3.03			45.75
	48.78	7/16/2008	6.78			42
	48.78	1/22/2009	6.99			41.79
	48.78	7/24/2009	NM			
	48.78	1/8/2010	4.13			44.65
	48.78	7/12/2010	3.93			44.85
	48.80	1/12/2011	4.83			43.97
	48.80	7/12/2011	10.02			38.78
	48.80	1/27/2012	4.52			44.28
	48.80	7/9/2012	5.15			43.65
	48.80	7/10/2013	9.73			39.07
	48.80	1/8/2014	6.41			42.39
	48.80	7/2/2014	6.46			42.34
	48.80	1/7/2015	3.19			45.61
	48.80	8/10/2015	4.06			44.74
	48.76	1/12/2016	3.26			45.50
	48.76	7/6/2016	5.09			43.67
	48.76	1/12/2017	5.11			43.65
	48.76	7/12/2017	6.39			42.37
	48.76	1/3/2018	7.14			41.62
	48.76	7/19/2018	6.31			42.45
	48.76	1/3/2019	6.69			42.07
	48.76	7/1/2019	3.06			45.70
	48.76	1/14/2020	3.96			44.80
TW-41B	49.67	2/4/2009	8.44			41.23
	49.67	7/24/2009	8.34			41.33
	49.67	1/8/2010	4.86			44.81
	49.67	7/12/2010	6.12			43.55
	49.67	1/12/2011	5.17			44.5
	49.67	7/12/2011	12.02			37.65
	49.67	1/26/2012	5.27			44.4
	49.67	7/9/2012	6.23			43.44
	49.67	1/7/2013	8.54			41.13
	49.67	7/22/2013	11.53			38.14
	49.67	1/7/2014	7.32			42.35
	49.67	7/16/2014	9.65			40.02
	49.67	1/5/2015	NM			
	49.67	8/10/2015	4.96			44.71
	49.67	1/13/2016	4.13			45.54
	49.67	7/6/2016	4.31			45.36
	49.67	1/12/2017	4.93			44.74
	49.67	7/6/2017	5.32			44.35
	49.67	9/6/2017	5.26			44.41
	49.67	2/11/2018	5.86			43.81
	49.67	3/11/2018	6.69			42.98
	49.67	5/14/2018	8.67			41.00
	49.67	7/2/2018	8.87			40.8
	49.67	1/4/2019	7.97			41.7
	49.67	7/9/2019	8.22			41.45
	49.67	1/7/2020	5.52			44.15
TW-55A	49.67	7/9/2012	13.44			36.23
TW-56A	51.89	2/5/2009	17.48			34.41
	51.89	7/23/2009	17.17			34.72
	51.89	1/8/2010	14.53			37.36
	51.89	7/12/2010	15.78			36.11
	51.89	1/12/2011	14.09			37.8
	51.89	7/12/2011	17.89			34
	51.89	1/26/2012	15.06			36.83
	51.89	1/7/2013	16.92			34.97
	51.89	7/22/2013	18.12			33.77
	51.89	1/7/2014	NM			
	51.89	7/15/2014	16.05			35.84
	51.89	1/5/2015	NM			
	51.89	8/10/2015	6.39			45.50

Notes:
1. The surface completion for MW-23C was repaired and resurveyed in January/February 2009.
2. NM = Not Measured

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-01A 01/28/2008	MW-01A 01/28/2008 Duplicate	MW-01A 07/16/2008	MW-01A 07/16/2008 Duplicate	MW-01A 01/22/2009	MW-01A 01/22/2009 Duplicate	MW-01A 07/22/2009	MW-01A 07/22/2009 Duplicate	MW-01A 01/22/2010	MW-01A 01/22/2010 Duplicate	MW-01A 07/14/2010	MW-01A 07/14/2010 Duplicate
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*			<0.00052	<0.00052								
Benzene	*0.005*	*0.005*			<0.00025	<0.00025								
Chlorobenzene	*0.1*	*0.1*			<0.00047	<0.00047								
Ethylbenzene	*0.7*	*0.7*			<0.00025	<0.00025								
Methylene chloride	*0.005*	*0.005*			<0.00054	<0.00054								
Toluene	*1*	*1*			<0.00041	<0.00041								
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*			<0.00127	<0.00127								
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*	<0.00044	0.000563	0.0109	0.00224	0.0069	0.0016 J	0.0017 J	0.0019 J	0.0019 J	0.0018 J	<0.0009	0.0026 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	0.0415	0.0409	0.126	0.119	0.054	0.038	0.085	0.091	0.04	0.039	0.068	0.075
Acenaphthylene	*1.5*	*4.4*	0.00099	0.000933	0.00143	0.00135	<0.0007	<0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Anthracene	*7.3*	*22*	0.00129	0.00137	0.00267	0.00232	0.0012 J	<0.0007	0.0011 J	0.0014 J	<0.0006	<0.0006	0.0017 J	0.0022 J
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00022	0.0008 J	0.00137 J	0.00126 J	<0.0012	0.0015 J	<0.0033	<0.0033	<0.0033	<0.0033	<0.0033	<0.0033
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	0.00129	0.00211	0.00774	0.00163	0.0058	0.0018 J	<0.0007	<0.0007	0.0016 J	0.0014 J	0.0044 J	0.0067
Di-n-butylphthalate (DBP)	*2.4*	*7.3*												
Fluoranthene	*0.98*	*2.9*	0.00234	0.00233	0.00923	0.00836	0.0024 J	0.0013 J	0.0037 J	0.0039 J	0.0017 J	0.0015 J	0.004 J	0.0049 J
Fluorene	*0.98*	*2.9*	0.0162	0.0167	0.0659	0.0551	0.028	0.018	0.04	0.041	0.022	0.019	0.04	0.047
Naphthalene	*0.49*	*1.5*	<0.00044	<0.00038	0.0168	0.00312	<0.0008	<0.0008	0.0029 J	0.0031 J	0.0043 J	0.0036 J	<0.0006	<0.0006
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*	<0.00022	0.00035 J	0.00177	0.000783	0.001 J	<0.0007	<0.0005	<0.0005	<0.0005	<0.0005	0.0011 J	0.0025 J
Phenol	*7.3*	*22*												
Pyrene	*0.73*	*2.2*	0.00107	0.00108	0.00417	0.00375	0.001 J	<0.0009	0.0019 J	0.0021 J	<0.0005	<0.0005	0.0021 J	0.0026 J
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-01A 01/11/2011	MW-01A 07/13/2011	MW-01A 07/13/2011 Duplicate	MW-01A 01/31/2012	MW-01A 01/31/2012 Duplicate	MW-01A 07/11/2012	MW-01A 07/11/2012 Duplicate	MW-01A 01/09/2013	MW-01A 01/09/2013 Duplicate	MW-01A 07/11/2013	MW-01A 07/11/2013 Duplicate	MW-01A 01/08/2014
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*												
Benzene	*0.005*	*0.005*												
Chlorobenzene	*0.1*	*0.1*												
Ethylbenzene	*0.7*	*0.7*												
Methylene chloride	*0.005*	*0.005*												
Toluene	*1*	*1*												
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*												
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*	<0.0009	0.0068	0.0021 J	<0.0005	<0.0005	0.012	0.011	0.00125	0.00128	0.00193 J	0.0386 J	0.00222 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	0.07	0.1	0.092	0.029	0.028	0.084	0.083	0.117	0.119	0.098 J	0.132 J	<0.00037
Acenaphthylene	*1.5*	*4.4*	0.0011 J	0.0011 J	<0.0005	<0.0005	<0.0005	0.0017 J	0.002 J	0.00222	0.00189	0.00122	0.00137	<0.00093
Anthracene	*7.3*	*22*	0.0021 J	0.0029 J	0.0027 J	<0.0005	<0.0005	0.003 J	0.003 J	0.000285 J	0.00373 J	0.0022 J	0.00331 J	<0.003
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0033	0.003 J	0.0012 J	<0.0005	0.0013 J	<0.0005	<0.0005	0.00163	0.00162	<0.000356	<0.000356	0.000838 J
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	<0.0007	0.0054	0.0027 J	0.0045 J	0.0044 J	0.025	0.025	0.0141	0.0134	0.00264 J	0.0235 J	<0.00951
Di-n-butylphthalate (DBP)	*2.4*	*7.3*												
Fluoranthene	*0.98*	*2.9*	0.0025 J	0.0062	0.0059	0.0012 J	0.0012 J	0.0047 J	0.0045 J	0.00602	0.00537	0.00399	0.00456	<0.00257
Fluorene	*0.98*	*2.9*	0.039	0.056	0.051	0.0013 J	0.0013 J	0.041	0.043	0.0564	0.0556	0.0323 J	0.0545 J	<0.0369
Naphthalene	*0.49*	*1.5*	<0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00219	0.00245	0.0169 J	0.441 J	<0.0000741
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*	<0.0005	0.002 J	0.0011 J	<0.0005	<0.0005	0.0033 J	0.0031 J	0.00388 J	0.0012 J	0.00109 J	0.00928 J	<0.00175
Phenol	*7.3*	*22*												
Pyrene	*0.73*	*2.2*	0.0011 J	0.0028 J	0.0027 J	<0.0005	<0.0005	0.0021 J	0.0019 J	0.00261	0.00202	0.00165	0.00192	<0.0013
Metals														
Arsenic	*0.01*	*0.01*												

Notes:
1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-01A 01/08/2014 Duplicate	MW-01A 07/02/2014	MW-01A 07/02/2014 Duplicate	MW-01A 01/07/2015	MW-01A 01/07/2015 Duplicate	MW-01A 07/08/2015	MW-01A 07/08/2015 Duplicate	MW-01A 01/12/2016	MW-01A 01/12/2016 Duplicate	MW-01A 07/07/2016	MW-01A 07/07/2016 Duplicate	MW-01A 01/11/2017
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*												
Benzene	*0.005*	*0.005*												
Chlorobenzene	*0.1*	*0.1*												
Ethylbenzene	*0.7*	*0.7*												
Methylene chloride	*0.005*	*0.005*												
Toluene	*1*	*1*												
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*												
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*	0.0152 J	0.00865 J	0.0000828 J	0.0000693 J	0.000132 J	0.00063 J	0.0041 J	<0.000019	<0.000019	0.000019 J	0.000095 J	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	<0.000741	0.0848 J	0.0228 J	0.0594	0.0607	0.086	0.095	0.048	0.043	0.053	0.053	0.044 J
Acenaphthylene	*1.5*	*4.4*	<0.00144	0.00138 J	0.000638 J	0.00104	0.00102	0.0009	0.00099	0.0019	0.0018	0.00063	0.00069	0.00092
Anthracene	*7.3*	*22*	<0.00371	0.00326 J	0.00124 J	0.00139	0.00139	0.0018	0.0024	0.00052	0.00059	0.00096	0.001	0.00069
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00067 J	<0.000349	<0.000349	0.00533 J	0.00259 J	<0.0002	<0.000037	0.00042	0.0004	0.000083 J	0.0001 J	0.00031
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	<0.0168	0.0132 J	0.00131 J	0.000541	0.000602	0.0032 J	0.009 J	0.00065	0.00054	0.00072	0.00079	0.0011
Di-n-butylphthalate (DBP)	*2.4*	*7.3*		0.00012 J	0.000133 J									
Fluoranthene	*0.98*	*2.9*	<0.00345	0.0043 J	0.00141 J	0.00246	0.00235	0.0034	0.0038	0.0027	0.0034	0.0027	0.003	0.0021 J
Fluorene	*0.98*	*2.9*	<0.0432	0.0369 J	0.0113 J	0.0209	0.0217	0.038	0.045	0.0057	0.0042	0.014	0.014	0.01 J
Naphthalene	*0.49*	*1.5*	0.00172 J	0.074 J	0.00469 J	0.000121 J	0.000313 J	0.00083 J	0.0049 J	<0.00002	<0.00002	0.00002 J	0.00022 J	<0.00002
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*	<0.00451	0.00537 J	0.000426 J	0.000335 J	0.000326 J	0.0012 J	0.0041 J	0.000067 J	0.000075 J	0.000021 J	0.00027 J	0.000064 J
Phenol	*7.3*	*22*		<0.0000377	<0.0000377									
Pyrene	*0.73*	*2.2*	<0.00165	0.00204 J	0.000662 J	0.00105	0.00102	0.0015	0.0016	0.0011	0.0014	0.0011	0.0013	0.00095
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-01A 01/11/2017 Duplicate	MW-01A 07/13/2017	MW-01A 07/13/2017 Duplicate	MW-01A 01/04/2018	MW-01A 01/04/2018 Duplicate	MW-01A 07/18/2018	MW-01A 07/18/2018 Duplicate	MW-01A 01/07/2019	MW-01A 01/07/2019 Duplicate	MW-01A 07/02/2019	MW-01A 07/02/2019 Duplicate	MW-01A 01/14/2020
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*												
Benzene	*0.005*	*0.005*												
Chlorobenzene	*0.1*	*0.1*												
Ethylbenzene	*0.7*	*0.7*												
Methylene chloride	*0.005*	*0.005*												
Toluene	*1*	*1*												
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*												
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	0.00018	0.000096 J	0.00024	0.00021	0.00014	0.00021	<0.000019	0.00074	0.00069	0.00019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	0.061 J	0.043	0.052	0.041	0.039	0.088	0.12	0.027	0.021	0.063	0.053	0.024
Acenaphthylene	*1.5*	*4.4*	0.00098	0.00055	0.00068	0.00086	0.00083	0.00078	0.00086	0.00069	0.00059	0.00071	0.00071	0.00084
Anthracene	*7.3*	*22*	0.00093	0.00076	0.00079	0.0012	0.0011	0.002	0.0023	0.00068	0.00046	0.00097	0.00096	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00026	0.00012 J	0.00029	<0.000072	<0.000085	<0.000037	<0.000037	<0.000037	<0.000037	<0.000037	<0.000079	<0.000037
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	0.001	0.0017	0.0027	0.0016	0.0015	0.01	0.015	0.0019	0.0014	0.0058	0.0054	0.0036
Di-n-butylphthalate (DBP)	*2.4*	*7.3*												
Fluoranthene	*0.98*	*2.9*	0.003 J	0.0025	0.0025	0.0032	0.0029	0.0038	0.0043	0.0018	0.0016	0.0013	0.0012	0.0011
Fluorene	*0.98*	*2.9*	0.015 J	0.014	0.014	0.018	0.017	0.04	0.05	0.0037	0.0027	0.019	0.016	0.0064
Naphthalene	*0.49*	*1.5*	<0.00002	0.00025	0.00053	<0.00002	<0.00002	0.00027	0.00042	<0.00002	<0.00002	0.00034	0.00034	0.00052
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*	0.000021 J	0.00029	0.00045	0.0004	0.00035	0.0021	0.0024	0.00029	<0.000021	0.00076	0.00067	<0.000021
Phenol	*7.3*	*22*												
Pyrene	*0.73*	*2.2*	0.0012	0.0011	0.001	0.0014	0.0014	0.0019	0.0022	0.00086	0.0007	0.00059	0.00055	0.00052
Metals														
Arsenic	*0.01*	*0.01*												

Notes:
1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-01A 01/14/2020 Duplicate	MW-02 01/28/2008	MW-02 07/16/2008	MW-02 01/22/2009	MW-02 07/22/2009	MW-02 01/22/2010	MW-02 07/14/2010	MW-02 01/11/2011	MW-02 07/13/2011	MW-02 01/30/2012	MW-02 07/10/2012	MW-02 01/09/2013
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*			<0.00052									
Benzene	*0.005*	*0.005*			<0.00025									
Chlorobenzene	*0.1*	*0.1*			<0.00047									
Ethylbenzene	*0.7*	*0.7*			<0.00025									
Methylene chloride	*0.005*	*0.005*			<0.00054									
Toluene	*1*	*1*			<0.00041									
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*			<0.00127									
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.00038	<0.00039	<0.0008	0.0025 J	<0.0009	<0.0009	<0.0009	0.0021 J	<0.0005	<0.0005	0.00318
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	0.018	0.017	0.0218	0.014	<0.0009	0.0073	0.018	0.0078	0.026	<0.0005	0.0088	0.0384
Acenaphthylene	*1.5*	*4.4*	0.00066	<0.00028	0.0003 J	<0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00057
Anthracene	*7.3*	*22*	<0.000014	0.000922	0.00042 J	<0.0007	<0.0006	<0.0006	<0.0006	<0.0006	<0.0005	<0.0005	<0.0005	0.00129
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.000074 J	0.00049 J	<0.00019	<0.0012	<0.0033	<0.0033	<0.0033	<0.0033	0.0021 J	<0.0005	<0.0005	0.000874
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	0.0021	0.0106	0.00673	<0.0007	<0.0007	<0.0007	<0.0007	<0.0007	0.0038 J	<0.0005	0.0043 J	0.0178
Di-n-butylphthalate (DBP)	*2.4*	*7.3*												
Fluoranthene	*0.98*	*2.9*	0.0012	0.0015	0.000961	<0.0006	0.0011 J	<0.0005	<0.0005	<0.0005	0.0012 J	<0.0005	<0.0005	0.00147
Fluorene	*0.98*	*2.9*	0.0038	0.0119	0.0103	0.0039 J	<0.0006	0.0037 J	0.011	0.0049 J	0.015	<0.0005	0.0043 J	0.0201
Naphthalene	*0.49*	*1.5*	<0.00002	0.000827	0.00118	<0.0008	0.012	<0.0006	<0.0006	<0.0006	0.0037 J	<0.0005	0.0033 J	0.0211
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*	<0.000021	0.000532	<0.00019	<0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00241
Phenol	*7.3*	*22*												
Pyrene	*0.73*	*2.2*	0.00059	0.000816	0.00045 J	<0.0009	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.00087
Metals														
Arsenic	*0.01*	*0.01*												

Notes:
1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-02 07/11/2013	MW-02 01/08/2014	MW-02 07/02/2014	MW-02 01/07/2015	MW-02 07/07/2015	MW-02 01/12/2016	MW-02 07/07/2016	MW-02 01/11/2017	MW-02 07/13/2017	MW-02 01/04/2018	MW-02 07/18/2018	MW-02 01/07/2019
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*												
Benzene	*0.005*	*0.005*												
Chlorobenzene	*0.1*	*0.1*												
Ethylbenzene	*0.7*	*0.7*												
Methylene chloride	*0.005*	*0.005*												
Toluene	*1*	*1*												
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*												
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*	0.000897	<0.0000648	0.000509	0.000105 J	0.00013	0.000033 J	<0.000019	<0.000019	0.00093	0.0051	0.00038	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	0.0179	<0.0000741	0.00452	0.0026	0.001	0.0019	0.00058	0.0035	0.0064	0.015	0.0048	0.0016
Acenaphthylene	*1.5*	*4.4*	0.000335 J	<0.000101	0.0000979 J	0.0000892 J	<0.000015	0.000046 J	0.00019	<0.000015	<0.000015	0.00018	<0.000015	<0.000015
Anthracene	*7.3*	*22*	0.0013	<0.00131	0.000596	0.000153 J	0.000078 J	0.00011	0.000026 J	0.0001	0.00016	0.00036	0.0002	0.00012
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000356	<0.000343	<0.000349	0.000426 J	<0.00013	<0.00019	<0.000037	0.00011 J	<0.000037	<0.00016	<0.000038	<0.000063
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	0.00734	<0.000147	0.00301	0.000377 J	0.00075	0.0013	0.00036	0.0019	0.0023	0.0019	0.0016	0.00046
Di-n-butylphthalate (DBP)	*2.4*	*7.3*			<0.000104									
Fluoranthene	*0.98*	*2.9*	0.00069	<0.000307	0.000368 J	<0.0000693	<0.00001	0.00013	0.000052 J	0.00029	0.00025	0.00071	0.00019	0.00011
Fluorene	*0.98*	*2.9*	0.00986	<0.000255	0.00357	0.000681	0.00067	0.001	0.00032	0.0016	0.0041	0.0099	0.0029	0.00081
Naphthalene	*0.49*	*1.5*	0.00754	<0.0000741	0.00653	0.000472 J	0.0013	0.0002	0.00013	<0.00002	0.00047	0.00015	0.00025	<0.00002
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*	0.000776	<0.000122	0.000594	0.000162 J	0.00011	0.000093 J	0.000066 J	<0.000021	0.0005	0.0011	0.00035	0.000041 J
Phenol	*7.3*	*22*			<0.0000377									
Pyrene	*0.73*	*2.2*	0.000336 J	<0.000175	0.000201 J	<0.000109	<0.000019	0.000076 J	0.00003 J	0.00017	0.00011	0.00032	0.000082 J	0.000057 J
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-02 07/02/2019	MW-02 01/14/2020	MW-03 01/30/2008	MW-03 01/24/2018	MW-03 03/27/2018	MW-03 05/25/2018	MW-03 01/09/2019	MW-03 07/12/2019	MW-03 01/21/2020	MW-04 01/29/2008	MW-04 01/24/2018	MW-04 03/23/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*			<0.00052	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052	<0.0002	<0.0002
Benzene	*0.005*	*0.005*			<0.00025	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00025	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*			<0.00047	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*			<0.00025	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00025	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*			<0.00054	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00054	<0.001	<0.001
Toluene	*1*	*1*			<0.00041	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00041	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*			<0.00127	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00127	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*			<0.00008	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00008	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*			<0.0003	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00029	<0.000041	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*			<0.0002	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.00019	<0.000059	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*			<0.0002	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.00019	<0.000043	<0.000042
2-Chloronaphthalene	*2*	*5.8*			<0.0004	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00038	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	0.00011	<0.000019	<0.0004	<0.000019	<0.000019	<0.000019	<0.000019	<0.000035	0.000045 J	<0.00038	0.00008 J	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*			<0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*			<0.00025	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00024	<0.000048	<0.000047
Acenaphthene	*1.5*	*4.4*	0.0019	0.003	0.118	<0.000027	<0.000027	0.00021	<0.000027	<0.000027	0.000061 J	<0.00029	0.00013	<0.000027
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.0003	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.00029	<0.000015	<0.000015
Anthracene	*7.3*	*22*	0.000064 J	0.00011	0.00172	<0.000014	<0.000014	<0.000014	<0.000014	0.000055 J	0.000069 J	0.000739	<0.000014	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*			<0.0002	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00019	<0.000051	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*			<0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.000024 J	<0.00019	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*			<0.0004	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00038	<0.000031	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00015	<0.000037	0.001 J	0.000083 J	<0.000037	<0.000037	<0.000037	<0.000037	0.00011 J	0.00029 J	0.00008 J	<0.000037
Chrysene	*0.91*	*2*			<0.0002	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00019	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	0.00041	0.00039	0.00415	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00029	0.000072 J	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*			<0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.000029 J	<0.00019	0.00003 J	<0.00002
Fluoranthene	*0.98*	*2.9*	0.000071 J	0.00024	0.0125	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.000055 J	0.00045 J	<0.00001	<0.00001
Fluorene	*0.98*	*2.9*	0.00097	0.0017	0.058	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00019	0.000075 J	<0.00003
Naphthalene	*0.49*	*1.5*	0.00011	<0.00002	0.000872	<0.00002	<0.00002	<0.00002	<0.00002	<0.00029	<0.00024	<0.00038	0.0013	0.00055
Nitrobenzene	*0.049*	*0.15*			<0.0004	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00038	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*			<0.00025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00024	<0.000026	<0.000025
Pentachlorophenol	*0.001*	*0.001*			<0.0002	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.00019	<0.000081	<0.000079
Phenanthrene	*0.73*	*2.2*	0.000054 J	0.00011	0.000592	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.00037 J	<0.000021	0.000099 J
Phenol	*7.3*	*22*			<0.0002	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.00019	<0.000036	<0.000035
Pyrene	*0.73*	*2.2*	0.000037 J	0.00011	0.00538	<0.000019	<0.000019	<0.000019	<0.000019	0.00002 J	0.000036 J	<0.00019	0.00003 J	<0.000019
Metals														
Arsenic	*0.01*	*0.01*				0.000895 J	0.00242	0.00363	**0.0191**	0.000582 J	0.00207		0.00454	0.00092 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-04 05/25/2018	MW-04 01/09/2019	MW-04 07/12/2019	MW-04 01/21/2020	MW-05 01/29/2008	MW-05 07/27/2011	MW-05 02/02/2012	MW-05 07/25/2012	MW-05 02/05/2013	MW-05 08/01/2013	MW-05 01/15/2014	MW-05 07/29/2014
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.00025	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	<0.00025	<0.0011	<0.0011	<0.0005	<0.000137	<0.00011	<0.00019	<0.00011
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.00054	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	<0.00041	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015
Vinyl chloride	*0.002*	*0.002*									<0.00011			
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.00127	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	<0.00008	<0.00005	<0.00005	<0.00005	<0.000104	<0.000105	<0.000104	<0.000108
2,4-Dimethylphenol	*0.49*	*1.5*	0.00011 J	<0.00004	<0.00004	<0.00004	<0.00029	<0.00005	<0.00005	<0.00005	<0.000292	<0.000295	<0.000292	<0.000304
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000059	<0.000058	<0.000058	<0.000058	<0.00019	<0.00005	<0.00005	<0.00005	<0.000123	<0.000124	<0.000123	<0.000127
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.000042	<0.00019	<0.00006	<0.00006	<0.00006	<0.0000755	<0.0000762	<0.0000755	<0.0000784
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.00038	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000762	<0.0000755	<0.0000784
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	<0.000059	0.00026	<0.00038	<0.00005	0.000085 J	<0.00005	0.000468 J	<0.0000667	0.000187 J	<0.0000686
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019	<0.00008	<0.00008	<0.00008	<0.000783	<0.00079	<0.000783	<0.000814
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.00024	<0.00005	<0.00005	<0.00005	<0.000528	<0.000533	<0.000528	<0.000549
Acenaphthene	*1.5*	*4.4*	0.00031	<0.000027	0.00052	0.00015	0.000545	0.0053	0.00034	<0.00005	<0.0000755	0.000521	0.000194 J	<0.0000784
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.000015	<0.00029	<0.00005	<0.00005	<0.00005	<0.0000566	<0.0000571	<0.0000566	<0.0000588
Anthracene	*7.3*	*22*	0.000054 J	0.000079 J	<0.000014	0.0001	0.000811	<0.00005	<0.00005	<0.00005	0.000621	0.000427 J	0.000411 J	0.000153 J
Benzo(a)anthracene	*0.0091*	*0.02*	<0.000051	<0.00005	<0.00005	<0.00005	<0.00019	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000762	<0.0000755	<0.0000784
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	0.000033 J	<0.00019	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000762	<0.0000755	<0.0000784
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00038	<0.00005	<0.00005	<0.00005	<0.000123	<0.000124	<0.000123	<0.000127
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	<0.000037	<0.000037	0.0018	0.00034 J	0.00047	<0.0001	0.00019 J	<0.000349	<0.000352	<0.000349	<0.000363
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	0.000034 J	<0.00019	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000762	<0.0000755	<0.0000784
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00002	<0.000058	0.000097 J	<0.00029	0.0022	0.00011 J	<0.00005	<0.0000755	0.0000828 J	0.000162 J	<0.0000784
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019	<0.00005	<0.00005	0.000065 J	<0.000104	<0.000105	<0.000104	<0.000108
Fluoranthene	*0.98*	*2.9*	<0.00001	<0.00001	<0.00001	0.00029	0.00047 J	0.00011 J	<0.00005	<0.00005	<0.000066	0.0000761 J	<0.000066	<0.0000686
Fluorene	*0.98*	*2.9*	0.000059 J	<0.00003	0.000053 J	0.000067 J	0.0002 J	0.0012	0.00012 J	<0.00005	<0.000066	0.000166 J	0.000176 J	<0.0000686
Naphthalene	*0.49*	*1.5*	<0.00002	<0.00002	<0.00053	0.0013	<0.00038	<0.00005	0.00087	<0.00005	0.00133	0.000573 J	0.000969 J	<0.000131
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.00038	<0.00005	<0.00005	<0.00005	<0.000104	<0.000105	<0.000104	<0.000108
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.00024	<0.00005	<0.00005	<0.00005	<0.0000943	<0.0000952	<0.0000943	<0.000098
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.000079	<0.000079	<0.000079	<0.00019	<0.00005	<0.00005	<0.00005	<0.000575	<0.000581	<0.000575	<0.000598
Phenanthrene	*0.73*	*2.2*	<0.000021	<0.000021	<0.000021	0.00017	0.00039 J	0.00013 J	<0.00005	<0.00005	0.000143 J	<0.0000571	0.000507	<0.0000588
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.000035	<0.000035	<0.00019	<0.00005	<0.00005	<0.00005	0.000193 J	<0.0000381	<0.0000377	<0.0000392
Pyrene	*0.73*	*2.2*	0.00011	<0.000019	0.00016	0.0002	0.00045 J	0.00014 J	<0.00005	<0.00005	<0.000104	0.000154 J	<0.000104	<0.000108
Metals														
Arsenic	*0.01*	*0.01*	0.00492	0.000963 J	**0.0127**	0.00223								

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-05 01/24/2018	MW-05 03/20/2018	MW-05 05/24/2018	MW-05 01/09/2019	MW-05 07/11/2019	MW-05 01/13/2020	MW-07 01/29/2008	MW-07 07/16/2008	MW-07 01/22/2009	MW-07 07/22/2009	MW-07 01/22/2010	MW-07 07/14/2010
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		<0.00052				
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		<0.00025				
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003		<0.00047				
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003		<0.00025				
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.00054				
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		<0.00041				
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003		<0.00127				
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021						
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00004	<0.00004	<0.000059	<0.00004						
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000059	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058						
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042						
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021						
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	<0.000019	<0.000019	0.000087 J	<0.000019	<0.00038	<0.00039	<0.0008	<0.0009	<0.0009	<0.0009
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002						
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047						
Acenaphthene	*1.5*	*4.4*	<0.000027	<0.000027	0.00023	<0.000027	0.00043	<0.000027	<0.00028	<0.00029	<0.0008	<0.0009	<0.0009	<0.0009
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.00028	0.00044 J	<0.0007	<0.0005	<0.0005	<0.0005
Anthracene	*7.3*	*22*	0.000037 J	<0.000014	0.000045 J	<0.000014	0.000097 J	<0.000014	0.000516	0.000982	<0.0007	<0.0006	<0.0006	<0.0006
Benzo(a)anthracene	*0.0091*	*0.02*	<0.000051	<0.000051	<0.00005	<0.00005	<0.00005	<0.00005						
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002						
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003						
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00011 J	<0.000037	0.00013 J	<0.000037	<0.000037	<0.000037	<0.00019	<0.00019	<0.0012	<0.0033	<0.0033	0.0049 J
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021						
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00002	0.000024 J	<0.00002	0.000051 J	<0.00002	<0.00028	<0.00029	<0.0007	<0.0007	<0.0007	<0.0007
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	0.000033 J	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002						
Fluoranthene	*0.98*	*2.9*	0.000051 J	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00019	<0.00019	<0.0006	<0.0005	<0.0005	<0.0005
Fluorene	*0.98*	*2.9*	<0.00003	<0.00003	0.000039 J	<0.00003	0.000064 J	<0.00003	<0.00019	<0.00019	<0.0008	<0.0006	<0.0006	<0.0006
Naphthalene	*0.49*	*1.5*	0.0001	<0.00002	<0.00002	<0.00002	<0.00071	<0.00012	<0.00038	0.000675	<0.0008	<0.0006	<0.0006	<0.0006
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024						
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025						
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.00008	<0.000079	<0.000079	<0.000079	<0.000079						
Phenanthrene	*0.73*	*2.2*	0.000054 J	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00019	0.00036 J	<0.0007	<0.0005	<0.0005	<0.0005
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035						
Pyrene	*0.73*	*2.2*	0.000047 J	<0.000019	0.00019	<0.000019	0.00019	<0.000019	<0.00019	<0.00019	<0.0009	<0.0005	<0.0005	<0.0005
Metals														
Arsenic	*0.01*	*0.01*	0.00588	0.00255	0.00488	0.00387	**0.0171**	0.00146 J						

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-07 01/12/2011	MW-07 01/12/2011	MW-07 07/12/2011	MW-07 01/31/2012	MW-07 07/11/2012	MW-07 01/10/2013	MW-07 07/11/2013	MW-07 01/09/2014	MW-07 07/03/2014	MW-07 01/07/2015	MW-07 07/08/2015	MW-07 01/12/2016
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*												
Benzene	*0.005*	*0.005*												
Chlorobenzene	*0.1*	*0.1*												
Ethylbenzene	*0.7*	*0.7*												
Methylene chloride	*0.005*	*0.005*												
Toluene	*1*	*1*												
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*												
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*		<0.0009	<0.0005	<0.0005	<0.0005	<0.000066	<0.0000704	**R**	<0.000066	<0.0000693	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*		<0.0009	<0.0005	<0.0005	<0.0005	0.00181	<0.0000804	**R**	<0.0000755	<0.0000792	<0.000027	<0.000027
Acenaphthylene	*1.5*	*4.4*		<0.0005	<0.0005	<0.0005	<0.0005	0.00011 J	<0.0000603	**R**	<0.0000566	<0.0000594	<0.000015	<0.000015
Anthracene	*7.3*	*22*		<0.0006	<0.0005	<0.0005	<0.0005	0.000833	0.000749	**R**	0.000696	0.000271 J	0.00014	0.000085 J
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*		<0.0033	<0.0005	<0.0005	<0.0005	<0.000349	<0.000372	**R**	<0.000349	0.000944	<0.00024	0.00024
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*		<0.0007	<0.0005	<0.0005	<0.0005	<0.0000755	<0.0000804	**R**	<0.0000755	<0.0000792	<0.00002	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*									<0.000104			
Fluoranthene	*0.98*	*2.9*		<0.0005	<0.0005	<0.0005	<0.0005	<0.000066	<0.0000704	**R**	<0.000066	0.000189 J	<0.00001	<0.00001
Fluorene	*0.98*	*2.9*		<0.0006	<0.0005	<0.0005	<0.0005	0.000137 J	<0.0000704	**R**	<0.000066	0.0000792 J	<0.00003	<0.00003
Naphthalene	*0.49*	*1.5*		<0.0006	<0.0005	<0.0005	<0.0005	<0.0000755	0.000111 J	**R**	<0.0000755	<0.0000792	<0.00002	<0.00002
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*		<0.0005	<0.0005	<0.0005	<0.0005	<0.0000566	<0.0000603	**R**	<0.0000566	<0.0000594	<0.000021	<0.000021
Phenol	*7.3*	*22*									<0.0000377			
Pyrene	*0.73*	*2.2*		<0.0005	<0.0005	<0.0005	<0.0005	<0.000104	<0.000111	**R**	<0.000104	0.000142 J	<0.000019	<0.000019
Metals														
Arsenic	*0.01*	*0.01*												

Notes:
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3. Concentrations > C/I AL and non-detects are highlighted dark gray
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6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	***C/I Assessment Level***	MW-07 07/07/2016	MW-07 01/12/2017	MW-07 07/13/2017	MW-07 01/04/2018	MW-07 07/19/2018	MW-07 01/08/2019	MW-07 07/01/2019	MW-07 07/01/2019 Duplicate	MW-07 01/13/2020	MW-08 01/29/2008	MW-08 07/16/2008	MW-08 01/22/2009
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*											<0.00109	
Benzene	*0.005*	*0.005*											<0.00112	
Chlorobenzene	*0.1*	*0.1*											<0.0015	
Ethylbenzene	*0.7*	*0.7*											<0.00142	
Methylene chloride	*0.005*	*0.005*											<0.00122	
Toluene	*1*	*1*											<0.00138	
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*											<0.00302	
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	0.000023 J	0.000066 J	<0.00044	<0.0004	<0.0008
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.00033	<0.0003	<0.0008
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.00033	0.00044 J	<0.0007
Anthracene	*7.3*	*22*	0.000055 J	0.00025	<0.000014	0.00014	0.00036	<0.000014	0.00014	0.00029	<0.000014	0.00031 J	0.000669	<0.0007
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	0.00011 J	<0.000037	<0.000088	<0.000037	<0.000037	<0.000037	<0.000037	<0.000037	<0.00022	<0.0002	<0.0012
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.000057 J	<0.00033	<0.0003	<0.0007
Di-n-butylphthalate (DBP)	*2.4*	*7.3*												
Fluoranthene	*0.98*	*2.9*	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.0001	<0.00022	<0.0002	<0.0006
Fluorene	*0.98*	*2.9*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00022	<0.0002	<0.0008
Naphthalene	*0.49*	*1.5*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00025	0.00017	<0.00044	0.000654	<0.0008
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.00014	<0.00022	0.00036 J	<0.0007
Phenol	*7.3*	*22*												
Pyrene	*0.73*	*2.2*	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.00022	<0.0002	<0.0009
Metals														
Arsenic	*0.01*	*0.01*												

Notes:
1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	***C/I Assessment Level***	MW-08 07/22/2009	MW-08 01/22/2010	MW-08 07/14/2010	MW-08 01/12/2011	MW-08 01/12/2011 Duplicate	MW-08 07/12/2011	MW-08 01/31/2012	MW-08 07/11/2012	MW-08 01/10/2013	MW-08 07/11/2013	MW-08 01/09/2014	MW-08 07/03/2014
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*												
Benzene	*0.005*	*0.005*												
Chlorobenzene	*0.1*	*0.1*												
Ethylbenzene	*0.7*	*0.7*												
Methylene chloride	*0.005*	*0.005*												
Toluene	*1*	*1*												
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*												
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0005	<0.0005	<0.0005	<0.000066	<0.0000686	<0.0000648	<0.000066
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0005	<0.0005	<0.0005	<0.0000755	<0.0000784	<0.0000741	<0.0000755
Acenaphthylene	*1.5*	*4.4*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0000566	<0.0000588	<0.0000556	<0.0000566
Anthracene	*7.3*	*22*	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0005	<0.0005	<0.0005	0.000439 J	0.000101 J	0.000494	<0.0000472
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0033	<0.0033	<0.0033	<0.0033	<0.0033	<0.0005	<0.0005	<0.0005	<0.000349	<0.000363	<0.000343	<0.000349
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	<0.0007	<0.0007	<0.0007	<0.0007	<0.0007	<0.0005	<0.0005	<0.0005	<0.0000755	<0.0000784	<0.0000741	<0.0000755
Di-n-butylphthalate (DBP)	*2.4*	*7.3*												<0.000104
Fluoranthene	*0.98*	*2.9*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.000066	<0.0000686	<0.0000648	<0.000066
Fluorene	*0.98*	*2.9*	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0005	<0.0005	<0.0005	<0.000066	<0.0000686	<0.0000648	<0.000066
Naphthalene	*0.49*	*1.5*	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0005	<0.0005	<0.0005	<0.0000755	<0.0000784	<0.0000741	<0.0000755
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0000566	<0.0000588	0.0000637 J	<0.0000566
Phenol	*7.3*	*22*												<0.0000377
Pyrene	*0.73*	*2.2*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.000104	<0.000108	<0.000102	<0.000104
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-08 01/07/2015	MW-08 07/08/2015	MW-08 01/12/2016	MW-08 07/07/2016	MW-08 01/12/2017	MW-08 07/13/2017	MW-08 01/04/2018	MW-08 07/19/2018	MW-08 01/07/2019	MW-08 07/01/2019	MW-08 01/13/2020	MW-09 01/29/2008
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*												<0.00052
Benzene	*0.005*	*0.005*												<0.00025
Chlorobenzene	*0.1*	*0.1*												<0.00047
Ethylbenzene	*0.7*	*0.7*												<0.00025
Methylene chloride	*0.005*	*0.005*												<0.00054
Toluene	*1*	*1*												<0.00041
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*												<0.00127
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												<0.00008
2,4-Dimethylphenol	*0.49*	*1.5*												<0.00029
2,4-Dinitrotoluene	*0.0013*	*0.003*												<0.00019
2,6-Dinitrotoluene	*0.0013*	*0.003*												<0.00019
2-Chloronaphthalene	*2*	*5.8*												<0.00038
2-Methylnaphthalene	*0.098*	*0.29*	<0.0000693	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.00038
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												<0.00019
4-Nitrophenol	*0.049*	*0.15*												<0.00024
Acenaphthene	*1.5*	*4.4*	<0.0000792	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	0.00067	<0.000027	<0.000027	<0.000027	<0.00029
Acenaphthylene	*1.5*	*4.4*	<0.0000594	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.00029
Anthracene	*7.3*	*22*	0.000056 J	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	0.000045 J	0.000048 J	<0.000014	<0.000014	<0.00019
Benzo(a)anthracene	*0.0091*	*0.02*												<0.00019
Benzo(a)pyrene	*0.0002*	*0.0002*												<0.00019
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												<0.00038
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000366	<0.00013	<0.000037	<0.000037	0.00018 J	<0.000037	<0.000097	<0.000037	<0.000037	<0.000037	0.00021	0.00034 J
Chrysene	*0.91*	*2*												<0.00019
Dibenzofuran	*0.098*	*0.29*	<0.0000792	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00011	<0.00002	<0.00002	<0.00002	<0.00029
Di-n-butylphthalate (DBP)	*2.4*	*7.3*												<0.00019
Fluoranthene	*0.98*	*2.9*	<0.0000693	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.000031 J	<0.00001	<0.00001	<0.00001	0.00045 J
Fluorene	*0.98*	*2.9*	<0.0000693	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	0.00017	<0.00003	<0.00003	<0.00003	<0.00019
Naphthalene	*0.49*	*1.5*	<0.0000792	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00038
Nitrobenzene	*0.049*	*0.15*												<0.00038
N-Nitrosodiphenylamine	*0.19*	*0.42*												<0.00024
Pentachlorophenol	*0.001*	*0.001*												<0.00019
Phenanthrene	*0.73*	*2.2*	<0.0000594	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.000023 J	<0.000021	<0.000021	0.000046 J	0.000541
Phenol	*7.3*	*22*												<0.00019
Pyrene	*0.73*	*2.2*	<0.000109	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.00019
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-09 07/27/2011	MW-09 02/02/2012	MW-09 07/25/2012	MW-09 04/01/2013	MW-09 01/24/2018	MW-09 03/23/2018	MW-09 05/24/2018	MW-09 01/09/2019	MW-09 07/12/2019	MW-09 01/14/2020	MW-10A 01/28/2008	MW-10A 07/16/2008
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.001	<0.001	<0.0005	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		<0.00052
Benzene	*0.005*	*0.005*	<0.001	<0.001	<0.0005	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		<0.00025
Chlorobenzene	*0.1*	*0.1*	<0.001	<0.001	<0.0005	<0.00012	<0.0003	<0.0003	<0.0003	0.0041	<0.0003	<0.0003		<0.00047
Ethylbenzene	*0.7*	*0.7*	<0.0011	<0.0011	<0.0005	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003		<0.00025
Methylene chloride	*0.005*	*0.005*	<0.0013	<0.0013	<0.001	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.00054
Toluene	*1*	*1*	<0.001	<0.001	<0.0005	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		<0.00041
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.0031	<0.0031	<0.0015	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003		<0.00127
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	<0.00005	<0.00005	<0.000106	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021		
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00005	<0.00005	<0.00005	<0.000298	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004		
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	<0.00005	<0.00005	<0.000125	<0.000059	<0.000058	<0.000058	<0.000059	<0.000058	<0.000058		
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	<0.00006	<0.00006	<0.0000769	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042		
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.00005	<0.00005	<0.0000769	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021		
2-Methylnaphthalene	*0.098*	*0.29*	<0.00005	<0.00005	<0.00005	0.000115 J	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.0004	<0.00038
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.000798	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002		
4-Nitrophenol	*0.049*	*0.15*	<0.00005	<0.00005	<0.00005	<0.000538	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047		
Acenaphthene	*1.5*	*4.4*	<0.00005	<0.00005	<0.00005	0.000188 J	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.0003	<0.00029
Acenaphthylene	*1.5*	*4.4*	<0.00005	<0.00005	<0.00005	<0.0000577	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.0003	<0.00029
Anthracene	*7.3*	*22*	0.00036	<0.00005	<0.00005	0.000471 J	<0.000014	0.00013	0.0001	0.000093 J	0.000061 J	<0.000014	<0.0002	<0.00019
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00005	<0.0000769	<0.000051	<0.00005	<0.00005	<0.000051	<0.00005	<0.00005		
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	<0.00005	<0.00005	<0.0000769	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002		
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	<0.00005	<0.00005	<0.000125	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003		
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00018 J	<0.00032	0.00022	<0.000356	0.000082 J	<0.000037	0.00011 J	<0.000037	<0.000037	<0.000037	<0.0002	0.0002 J
Chrysene	*0.91*	*2*	<0.00005	<0.00005	<0.00005	<0.0000769	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021		
Dibenzofuran	*0.098*	*0.29*	<0.00005	<0.00005	<0.00005	0.000126 J	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0003	<0.00029
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00005	<0.00005	0.000074 J	0.000123 J	<0.00002	<0.00002	0.000031 J	<0.00002	<0.00002	<0.00002		
Fluoranthene	*0.98*	*2.9*	<0.00005	<0.00005	<0.00005	<0.0000673	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.0002	<0.00019
Fluorene	*0.98*	*2.9*	<0.00005	<0.00005	<0.00005	<0.0000673	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.0002	<0.00019
Naphthalene	*0.49*	*1.5*	<0.00005	<0.00005	<0.00005	0.00431 J	<0.00002	0.00039	0.00008 J	<0.00002	<0.00015	0.00011	<0.0004	<0.00038
Nitrobenzene	*0.049*	*0.15*	<0.00005	<0.00005	<0.00005	<0.000106	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024		
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.00005	<0.00005	<0.0000962	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025		
Pentachlorophenol	*0.001*	*0.001*	<0.00005	<0.00005	<0.00005	<0.000587	<0.00008	<0.000079	<0.000079	<0.00008	<0.000079	<0.000079		
Phenanthrene	*0.73*	*2.2*	<0.00005	<0.00005	<0.00005	<0.0000577	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0002	<0.00019
Phenol	*7.3*	*22*	<0.00005	<0.000098	<0.00005	<0.0000385	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035		
Pyrene	*0.73*	*2.2*	<0.00005	<0.00005	<0.00005	<0.000106	<0.000019	<0.000019	0.00004 J	<0.000019	<0.000019	<0.000019	<0.0002	<0.00019
Metals														
Arsenic	*0.01*	*0.01*					0.00104 J	0.0012 J	0.00085 J	0.00202	0.000901 J	0.0043		

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
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TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-10A 01/22/2009	MW-10A 07/22/2009	MW-10A 01/21/2010	MW-10A 07/13/2010	MW-10A 01/11/2011	MW-10A 07/13/2011	MW-10A 01/30/2012	MW-10A 07/10/2012	MW-10A 01/09/2013	MW-10A 07/11/2013	MW-10A 01/08/2014	MW-10A 07/15/2014
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*												
Benzene	*0.005*	*0.005*												
Chlorobenzene	*0.1*	*0.1*												
Ethylbenzene	*0.7*	*0.7*												
Methylene chloride	*0.005*	*0.005*												
Toluene	*1*	*1*												
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*												
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*	<0.0008	<0.0009	<0.0009	<0.0009	<0.0009	<0.0005	<0.0005	<0.0005	<0.0000667	0.00178	<0.0000648	0.00262 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	<0.0008	<0.0009	<0.0009	<0.0009	0.0017 J	<0.0005	<0.0005	0.0016 J	<0.0000762	0.0306	<0.0000741	0.0306
Acenaphthylene	*1.5*	*4.4*	<0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0000571	0.000385 J	<0.0000556	<0.000566
Anthracene	*7.3*	*22*	<0.0007	<0.0006	<0.0006	<0.0006	<0.0006	<0.0005	<0.0005	<0.0005	0.000468 J	0.00036 J	<0.0000463	<0.000472
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0012	<0.0033	<0.0033	<0.0033	<0.0033	<0.0005	<0.0005	<0.0005	0.00171	<0.000356	<0.000343	<0.00349
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	<0.0007	<0.0007	<0.0007	<0.0007	<0.0007	<0.0005	<0.0005	<0.0005	<0.0000762	0.00866	<0.0000741	0.00862
Di-n-butylphthalate (DBP)	*2.4*	*7.3*												
Fluoranthene	*0.98*	*2.9*	<0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0000667	0.000186 J	<0.0000648	<0.00066
Fluorene	*0.98*	*2.9*	<0.0008	<0.0006	<0.0006	<0.0006	<0.0006	<0.0005	<0.0005	<0.0005	<0.0000667	0.00631	<0.0000648	0.0111
Naphthalene	*0.49*	*1.5*	<0.0008	<0.0006	<0.0006	<0.0006	<0.0006	<0.0005	<0.0005	<0.0005	<0.0000762	0.199	<0.0000741	0.199
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*	<0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0000571	0.00221	<0.0000556	0.00442 J
Phenol	*7.3*	*22*												
Pyrene	*0.73*	*2.2*	<0.0009	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.000105	<0.000106	<0.000102	<0.00104
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-10A 01/07/2015	MW-10A 07/07/2015	MW-10A 01/12/2016	MW-10A 07/07/2016	MW-10A 01/11/2017	MW-10A 07/13/2017	MW-10A 01/04/2018	MW-10A 07/18/2018	MW-10A 01/07/2019	MW-10A 07/02/2019	MW-10A 01/14/2020	MW-10B 01/28/2008
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*												
Benzene	*0.005*	*0.005*												
Chlorobenzene	*0.1*	*0.1*												
Ethylbenzene	*0.7*	*0.7*												
Methylene chloride	*0.005*	*0.005*												
Toluene	*1*	*1*												
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*												
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*	<0.0000693	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	0.00272	<0.000027	<0.000027	<0.000027	<0.000028	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	0.00011	0.0743
Acenaphthylene	*1.5*	*4.4*	0.000126 J	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	0.00122
Anthracene	*7.3*	*22*	0.000191 J	0.000069 J	<0.000014	0.000073 J	0.000057 J	<0.000014	<0.000014	<0.000014	0.000065 J	<0.000014	<0.000014	0.00432
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000366	<0.00088	<0.000096	0.000097 J	0.000088 J	<0.000037	<0.000057	<0.0001	<0.000089	<0.000037	<0.000037	<0.00019
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	0.000349 J	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.0255
Di-n-butylphthalate (DBP)	*2.4*	*7.3*												<0.00019
Fluoranthene	*0.98*	*2.9*	<0.0000693	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00371
Fluorene	*0.98*	*2.9*	0.000694	<0.00003	<0.00003	<0.00003	<0.000031	<0.00003	<0.00003	<0.00003	0.000038 J	<0.00003	<0.00003	0.0374
Naphthalene	*0.49*	*1.5*	0.000322 J	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.000043 J	<0.00002	0.0185
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*	0.000126 J	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	
Phenol	*7.3*	*22*												<0.00019
Pyrene	*0.73*	*2.2*	<0.000109	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	0.00146
Metals														
Arsenic	*0.01*	*0.01*												

Notes:
1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-10B 07/16/2008	MW-10B 01/22/2009	MW-10B 07/22/2009	MW-10B 01/21/2010	MW-10B 07/13/2010	MW-10B 01/11/2011	MW-10B 07/13/2011	MW-10B 01/30/2012	MW-10B 07/10/2012	MW-10B 01/09/2013	MW-10B 07/11/2013	MW-10B 10/14/2013
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00052											
Benzene	*0.005*	*0.005*	<0.00025											
Chlorobenzene	*0.1*	*0.1*	<0.00047											
Ethylbenzene	*0.7*	*0.7*	<0.00025											
Methylene chloride	*0.005*	*0.005*	<0.00054											
Toluene	*1*	*1*	<0.00041											
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.00127											
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*												
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	0.0975	0.096	<0.0009	0.052	0.069	0.096	0.054	0.1	0.054	0.12	0.977	
Acenaphthylene	*1.5*	*4.4*	0.00113	<0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0011 J	<0.0005	0.00108	0.00986	
Anthracene	*7.3*	*22*	0.00484	0.0043 J	0.0029 J	0.0025 J	0.0038 J	0.0068	0.0033 J	0.0057	0.0032 J	0.00546	0.0391	
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.0002 J	<0.0012	<0.0033	<0.0033	<0.0033	<0.0033	0.0013 J	<0.0005	<0.0005	<0.000349	<0.0037	
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	0.0392	0.035	0.023	0.018	0.025	0.037	0.019	0.038	0.02	0.0401	**0.302**	0.0334
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.0002	<0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.000104	<0.011	
Fluoranthene	*0.98*	*2.9*	0.00397	0.0039 J	0.0022 J	0.0017 J	0.0026 J	0.0054	0.0023 J	0.0046 J	0.0028 J	0.00427	0.0274	
Fluorene	*0.98*	*2.9*	0.0457	0.051	<0.0006	0.031	0.041	0.059	0.032	0.06	0.031	0.0652	0.468	
Naphthalene	*0.49*	*1.5*	0.014	0.0028 J	0.0082	0.0037 J	0.056	0.075	0.0018 J	0.084	0.004 J	0.00399	0.207	
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*												
Phenol	*7.3*	*22*	<0.0002	<0.0015	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0000377	<0.0004	
Pyrene	*0.73*	*2.2*	0.00174	0.002 J	0.0013 J	<0.0005	0.001 J	0.0023 J	0.0011 J	0.002 J	0.0011 J	0.00146	0.0101	
Metals														
Arsenic	*0.01*	*0.01*												

Notes:
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3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-10B 01/08/2014	MW-10B 07/15/2014	MW-10B 01/07/2015	MW-10B 01/29/2015	MW-10B 07/07/2015	MW-10B 01/12/2016	MW-10B 07/07/2016	MW-10B 01/11/2017	MW-10B 07/13/2017	MW-10B 01/04/2018	MW-10B 07/18/2018	MW-10B 01/07/2019
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*												
Benzene	*0.005*	*0.005*												
Chlorobenzene	*0.1*	*0.1*												
Ethylbenzene	*0.7*	*0.7*												
Methylene chloride	*0.005*	*0.005*												
Toluene	*1*	*1*												
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*												
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*												
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	<0.0000741	0.0777	0.166	0.0507	0.084	0.11	0.053	0.12	0.051	0.093	0.056	0.07
Acenaphthylene	*1.5*	*4.4*	<0.000536	<0.000566	0.00104	0.000597	0.00048	0.00054	0.00032	0.00065	0.00033	0.00068	0.00053	0.00059
Anthracene	*7.3*	*22*	<0.00107	0.00352 J	0.00702	0.00179	0.003	0.0057	0.0027	0.0056	0.0023	0.0052	0.0024	0.0041
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.000408 J	<0.00349	<0.000366	<0.000366	<0.00014	<0.000037	0.00025	0.00022	0.00028	<0.000059	<0.000064	0.00035
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	<0.00493	0.0258	0.0727	0.0129	0.032	0.049	0.019	0.052	0.021	0.048	0.021	0.028
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	0.000275 J	<0.00104	<0.000215	<0.000109	<0.000078	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	<0.000117	0.00211 J	0.00711	0.00117	0.0023	0.0045	0.0023	0.0047	0.0022	0.0053	0.0022	0.0038
Fluorene	*0.98*	*2.9*	<0.00429	0.0424	0.0975	0.0202	0.047	0.064	0.029	0.068	0.034	0.06	0.031	0.04
Naphthalene	*0.49*	*1.5*	0.0646	0.125	**0.556**	0.0247	0.077	0.1	0.0054	0.021	0.0033	0.0013	0.00074	0.00056
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*												
Phenol	*7.3*	*22*	<0.000037	<0.000377	<0.0000396	<0.0000396	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	<0.000102	<0.00104	0.00234	0.000392 J	0.00095	0.0024	0.0009	0.0022	0.00087	0.0019	0.00088	0.0018
Metals														
Arsenic	*0.01*	*0.01*												

Notes:
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3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-10B 07/02/2019	MW-10B 01/14/2020	MW-11A 01/28/2008	MW-11A 07/16/2008	MW-11A 01/22/2009	MW-11A 07/22/2009	MW-11A 01/21/2010	MW-11A 07/13/2010	MW-11A 01/11/2011	MW-11A 07/12/2011	MW-11A 01/30/2012	MW-11A 07/10/2012
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*				<0.00052								
Benzene	*0.005*	*0.005*				<0.00025								
Chlorobenzene	*0.1*	*0.1*				<0.00047								
Ethylbenzene	*0.7*	*0.7*				<0.00025								
Methylene chloride	*0.005*	*0.005*				<0.00054								
Toluene	*1*	*1*				<0.00041								
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*				<0.00127								
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*			<0.00038	<0.0004	<0.0008	<0.0009	<0.0009	<0.0009	<0.0009	<0.0005	<0.0005	<0.0005
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	0.042	0.069	0.0346	0.02	0.0076	<0.0009	<0.0009	0.0028 J	<0.0009	<0.0005	<0.0005	<0.0005
Acenaphthylene	*1.5*	*4.4*	0.00031	0.00066	<0.00029	<0.0003	<0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Anthracene	*7.3*	*22*	0.0012	0.0028	0.000798	0.00054	<0.0007	<0.0006	<0.0006	<0.0006	<0.0006	<0.0005	<0.0005	<0.0005
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	0.0002	0.00028 J	<0.0002	<0.0012	<0.0033	<0.0033	<0.0033	<0.0033	<0.0005	<0.0005	<0.0005
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	0.013	0.022	0.00276	<0.0003	<0.0007	<0.0007	<0.0007	<0.0007	<0.0007	<0.0005	<0.0005	<0.0005
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002										
Fluoranthene	*0.98*	*2.9*	0.0012	0.0029	0.00338	0.00387	0.0012 J	0.0011 J	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Fluorene	*0.98*	*2.9*	0.018	0.036	0.0069	0.00089	<0.0008	<0.0006	<0.0006	<0.0006	<0.0006	<0.0005	<0.0005	<0.0005
Naphthalene	*0.49*	*1.5*	0.00023	0.0021	<0.00038	<0.0004	<0.0008	<0.0006	<0.0006	<0.0006	<0.0006	<0.0005	<0.0005	<0.0005
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*			0.00036 J	<0.0002	<0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Phenol	*7.3*	*22*	<0.000035	<0.000035										
Pyrene	*0.73*	*2.2*	0.00049	0.0013	0.00191	0.00184	<0.0009	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
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7. MW-32A was screened in the B-CZ & replaced with MW-32AR
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TABLE 2
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CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-11A 01/09/2013	MW-11A 07/11/2013	MW-11A 01/08/2014	MW-11A 07/02/2014	MW-11A 01/07/2015	MW-11A 07/07/2015	MW-11A 01/12/2016	MW-11A 07/07/2016	MW-11A 01/11/2017	MW-11A 07/12/2017	MW-11A 01/03/2018	MW-11A 07/18/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*												
Benzene	*0.005*	*0.005*												
Chlorobenzene	*0.1*	*0.1*												
Ethylbenzene	*0.7*	*0.7*												
Methylene chloride	*0.005*	*0.005*												
Toluene	*1*	*1*												
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*												
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*	<0.000066	<0.0000673	<0.0000648	<0.000066	<0.0000673	<0.000019	<0.000019	<0.000019	<0.00002	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	0.00175	0.000878	<0.0000741	0.00427	0.000471 J	0.00025	<0.000027	0.0001	<0.000028	<0.000027	<0.000027	0.0017
Acenaphthylene	*1.5*	*4.4*	<0.0000566	<0.0000577	<0.0001	0.000185 J	<0.0000577	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	*7.3*	*22*	0.000499	0.00044 J	<0.00125	0.00126	0.000399 J	0.00017	0.0001	0.00026	0.00021	<0.000014	<0.000014	0.00019
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000349	<0.000356	0.00046 J	0.00516	<0.000356	<0.00068	<0.000073	0.00038	0.00025	0.00017 J	<0.000073	0.0007
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	<0.0000755	<0.0000769	<0.0000741	0.000618	<0.0000769	0.00012	<0.00002	<0.00002	<0.000021	<0.00002	<0.00002	0.00027
Di-n-butylphthalate (DBP)	*2.4*	*7.3*				0.000109 J								
Fluoranthene	*0.98*	*2.9*	<0.000066	0.000221 J	<0.0000795	0.00215	<0.0000673	0.00028	<0.00001	0.00065	0.000049 J	0.00015	<0.00001	0.00023
Fluorene	*0.98*	*2.9*	<0.000066	<0.0000673	<0.0000648	0.00149	<0.0000673	0.00011	<0.00003	0.00013	<0.000031	<0.00003	<0.00003	0.00083
Naphthalene	*0.49*	*1.5*	<0.0000755	<0.0000769	<0.0000741	0.000343 J	<0.0000769	<0.00002	<0.00002	<0.00002	<0.000021	<0.00002	<0.00002	0.00012
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*	<0.0000566	<0.0000577	<0.0000556	0.000384 J	<0.0000577	<0.000021	<0.000021	<0.000021	0.000067 J	<0.000021	<0.000021	0.000086 J
Phenol	*7.3*	*22*				<0.0000377								
Pyrene	*0.73*	*2.2*	<0.000104	0.000115 J	<0.000102	0.00194	<0.000106	0.00023	<0.000019	0.00073	<0.00002	<0.000019	<0.000019	0.00022
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-11A 01/07/2019	MW-11A 07/02/2019	MW-11A 01/14/2020	MW-11B 01/28/2008	MW-11B 07/16/2008	MW-11B 01/22/2009	MW-11B 07/22/2009	MW-11B 01/21/2010	MW-11B 07/13/2010	MW-11B 01/11/2011	MW-11B 07/12/2011	MW-11B 01/30/2012
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*					<0.00052							
Benzene	*0.005*	*0.005*					<0.00025							
Chlorobenzene	*0.1*	*0.1*					<0.00047							
Ethylbenzene	*0.7*	*0.7*					<0.00025							
Methylene chloride	*0.005*	*0.005*					<0.00054							
Toluene	*1*	*1*					<0.00041							
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*					<0.00127							
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	<0.000019									
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	<0.000027	0.00025	<0.000027	0.0649	0.12	0.072	0.12	0.048	0.11	0.039	0.084	0.025
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.00028	0.00126	<0.0007	0.0015 J	0.0013 J	<0.0005	0.0012 J	0.0012 J	0.0011 J
Anthracene	*7.3*	*22*	0.00013	0.000097 J	<0.000014	0.00236	0.00472	0.0022 J	0.0043 J	0.0011 J	0.0055	<0.0006	0.0054	<0.0005
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000075	<0.00007	<0.000037	0.00021 J	<0.00021	<0.0012	<0.0033	<0.0033	<0.0033	<0.0033	<0.0005	<0.0005
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00002	<0.00002	0.0273	0.0649	0.031	0.054	0.012	0.048	0.006	0.038	<0.0005
Di-n-butylphthalate (DBP)	*2.4*	*7.3*				<0.00019	<0.00021	<0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Fluoranthene	*0.98*	*2.9*	<0.00001	0.000018 J	<0.00001	0.00175	0.00383	0.0018 J	0.0036 J	0.0014 J	0.0046 J	0.0015 J	0.0046 J	0.0013 J
Fluorene	*0.98*	*2.9*	<0.00003	<0.00003	<0.00003	0.0297	0.0578	0.032	0.053	0.013	0.056	0.0038 J	0.046	<0.0005
Naphthalene	*0.49*	*1.5*	<0.00002	0.000041 J	<0.00002	0.0354	0.0772	<0.0008	0.048	<0.0006	0.0068	<0.0006	0.06	<0.0005
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*	<0.000021	<0.000021	<0.000021									
Phenol	*7.3*	*22*				<0.00019	<0.00021	<0.0015	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Pyrene	*0.73*	*2.2*	<0.000019	0.000031 J	<0.000019	0.000848	0.00163	<0.0009	0.002 J	<0.0005	0.0022 J	<0.0005	0.0024 J	<0.0005
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-11B 07/10/2012	MW-11B 01/09/2013	MW-11B 07/11/2013	MW-11B 01/08/2014	MW-11B 07/02/2014	MW-11B 01/07/2015	MW-11B 07/07/2015	MW-11B 01/12/2016	MW-11B 07/07/2016	MW-11B 01/11/2017	MW-11B 07/12/2017	MW-11B 01/03/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*												
Benzene	*0.005*	*0.005*												
Chlorobenzene	*0.1*	*0.1*												
Ethylbenzene	*0.7*	*0.7*												
Methylene chloride	*0.005*	*0.005*												
Toluene	*1*	*1*												
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*												
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*					0.0131							
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	0.1	0.0631	0.108	<0.00037	0.0953	0.0472	0.057	<0.000027	0.039	<0.000027	0.043	<0.000027
Acenaphthylene	*1.5*	*4.4*	0.0013 J	0.00136	0.00119	<0.00102	0.00166	0.00113	0.00065	<0.000015	0.00031	<0.000015	0.00032	<0.000015
Anthracene	*7.3*	*22*	0.0055	0.000168 J	0.00321	<0.00242	0.00375	0.000945	0.0025	0.00011	0.0018	0.00011	0.0022	0.0001
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0005	0.00195	<0.000356	0.000493 J	<0.000349	<0.000356	<0.00019	<0.00019	0.00018 J	0.00017 J	<0.000037	<0.0001
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	0.04	0.00352	0.0231	<0.0111	0.0199	0.00472	0.014	<0.00002	0.0082	0.000055 J	0.0055	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.0005	<0.000104	<0.000106	0.000317 J	0.000109 J	<0.000106	<0.000044	<0.00002	<0.00002	<0.00002	<0.00002	<0.000045
Fluoranthene	*0.98*	*2.9*	0.0053	0.00307	0.00383	<0.00267	0.00417	0.00201	0.0034	0.00011	0.0025	0.00021	0.0029	<0.00001
Fluorene	*0.98*	*2.9*	0.054	0.00205	0.0388	<0.0195	0.0339	0.00867	0.025	<0.00003	0.019	<0.00003	0.025	<0.00003
Naphthalene	*0.49*	*1.5*	0.004 J	<0.0000755	0.00535	0.000382 J	0.0135	<0.0000769	0.0021	<0.00002	0.0082	<0.00002	0.0019	<0.00002
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*					0.012							
Phenol	*7.3*	*22*	<0.0005	<0.0000377	<0.0000385	<0.000037	<0.0000377	<0.0000385	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	0.0024 J	0.00154	0.00196	<0.00126	0.00213	0.000935	0.0017	0.00032	0.0012	0.00013	0.0015	<0.000019
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-11B 07/18/2018	MW-11B 01/07/2019	MW-11B 07/02/2019	MW-11B 07/30/2019	MW-11B 10/17/2019	MW-11B 01/14/2020	MW-12A 01/30/2008	MW-12A 07/15/2008	MW-12A 02/04/2009	MW-12A 01/19/2010	MW-12A 06/22/2010	MW-12A 01/18/2011
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*							<0.00052	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005
Benzene	*0.005*	*0.005*							<0.00025	<0.00025	0.00073 J	<0.0005	<0.0005	<0.0005
Chlorobenzene	*0.1*	*0.1*							<0.00047	<0.00047	<0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	*0.7*	*0.7*							0.00718	<0.00025	0.0059	0.0029 J	0.00056 J	0.0014 J
Methylene chloride	*0.005*	*0.005*							<0.00054	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005
Toluene	*1*	*1*							<0.00041	<0.00041	0.00079 J	<0.0005	<0.0005	<0.0005
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*							0.0105 J	<0.00127	0.012 J	0.0056 J	0.0026 J	0.0025 J
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*							<0.00008	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*							<0.0003	<0.00029	<0.00008	<0.00008	<0.00008	0.0001 J
2,4-Dinitrotoluene	*0.0013*	*0.003*							<0.0002	<0.00019	<0.00009	<0.00009	<0.00009	<0.00009
2,6-Dinitrotoluene	*0.0013*	*0.003*							<0.0002	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007
2-Chloronaphthalene	*2*	*5.8*							<0.0004	<0.00039	<0.00012	<0.0001	<0.0001	<0.0001
2-Methylnaphthalene	*0.098*	*0.29*							**0.174**	**0.332**	**0.22**	**0.15**	**0.15**	0.033
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*							<0.0002	<0.00049	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*							<0.00025	<0.00024	<0.00007	<0.00007	<0.00007	<0.00007
Acenaphthene	*1.5*	*4.4*	0.074	0.015	0.13			0.033	0.173	0.331	0.25	0.19	0.21	0.19
Acenaphthylene	*1.5*	*4.4*	0.00063	0.00054	0.0013			0.0016	<0.0003	0.00276	0.0036	0.0026	0.0019	0.0016
Anthracene	*7.3*	*22*	0.0037	0.00021	0.0045			<0.000014	0.0103	0.0137	0.0099	0.0093	0.011	0.012
Benzo(a)anthracene	*0.0091*	*0.02*							0.00028 J	0.00026 J	<0.00007	<0.00007	<0.00007	0.00082
Benzo(a)pyrene	*0.0002*	*0.0002*							<0.0002	<0.00019	<0.00008	<0.00008	<0.00008	**0.0003**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*							<0.0004	<0.00039	<0.00009	<0.00009	<0.00009	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	<0.000085	<0.00026			0.000095 J	0.0013 J	0.00033 J	0.00031	0.0006	<0.0002	0.00036
Chrysene	*0.91*	*2*							0.00024 J	0.00021 J	<0.00007	<0.00007	<0.00007	0.00074
Dibenzofuran	*0.098*	*0.29*	0.032	<0.00002	0.051			<0.00002	**0.125**	**0.212**	**0.18**	**0.14**	**0.18**	**0.15**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.00002			<0.00002	<0.0002	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007
Fluoranthene	*0.98*	*2.9*	0.0043	0.0025	0.005			0.0024	0.00693	0.0123	0.0061	0.0059	0.0064	0.0086
Fluorene	*0.98*	*2.9*	0.048	0.00015	0.061			0.00035	0.112	0.475	0.15	0.13	0.16	0.14
Naphthalene	*0.49*	*1.5*	0.34	<0.00002	**0.7**	**1.1**	**0.6**	<0.00002	**2.27**	**1.47**	**2.6**	**1.7**	**0.6**	0.22
Nitrobenzene	*0.049*	*0.15*							<0.0004	<0.00039	<0.00009	<0.00009	<0.00009	<0.00009
N-Nitrosodiphenylamine	*0.19*	*0.42*							<0.00025	<0.00024	<0.00009	<0.00009	<0.00009	<0.00009
Pentachlorophenol	*0.001*	*0.001*							<0.0002	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008
Phenanthrene	*0.73*	*2.2*							0.0833	0.372	0.1	0.087	0.091	0.061
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.000035			<0.000035	<0.0002	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007
Pyrene	*0.73*	*2.2*	0.0023	0.0017	0.0027			0.0023	0.00358	0.00518	0.0025	0.0029	0.0025	0.0044
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
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TABLE 2
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CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-12A 07/26/2011	MW-12A 02/01/2012	MW-12A 07/19/2012	MW-12A 02/05/2013	MW-12A 07/31/2013	MW-12A 01/14/2014	MW-12A 07/25/2014	MW-12A 01/23/2018	MW-12A 03/19/2018	MW-12A 05/16/2018	MW-12A 01/09/2019	MW-12A 07/11/2019
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.001	<0.001	<0.0025	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.001	<0.001	<0.0025	0.000237 J	0.0000957 J	0.00048 J	0.000122 J	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.001	<0.001	<0.0025	<0.00012	<0.00012	<0.00012	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	0.0015 J	0.0042 J	<0.0025	0.000521 J	0.000774 J	0.000257 J	0.000403 J	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.0013	<0.0013	**0.0087 J**	<0.00015	<0.00015	<0.00015	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.001	<0.001	<0.0025	<0.00015	<0.000166	<0.00015	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*				<0.00011			<0.00011					
Xylenes (total)	*10*	*10*	<0.0031	0.0048 J	<0.0075	0.00197 J	0.00217 J	0.00145 J	0.00165 J	0.0023	0.00076 J	0.00076 J	<0.0003	0.0006 J
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	<0.00005	<0.00005	<0.000104	<0.000105	**<0.00529**	<0.000107	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00005	<0.00005	0.000056 J	<0.000292	<0.000295	<0.0149	<0.000301	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	<0.00005	<0.00005	<0.000123	<0.000124	**<0.00625**	<0.000126	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	<0.00006	<0.00006	<0.0000755	<0.0000762	**<0.00385**	<0.0000777	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000762	<0.00385	<0.0000777	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	0.014	0.061	**0.17**	0.0477	**0.306**	0.0386	**0.121**	0.067	0.008	0.005	<0.000019	0.013
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.000783	<0.00079	**<0.0399**	<0.000806	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00005	<0.00005	<0.00005	<0.000528	<0.000533	<0.0269	<0.000544	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	0.038	0.13	0.2	0.253	0.428	0.342	0.292	0.26	0.23	0.17	<0.000027	0.19
Acenaphthylene	*1.5*	*4.4*	<0.00005	0.0015	0.0015	<0.0000566	<0.0000571	<0.00288	0.00225	<0.000015	0.0017	0.0015	<0.000015	0.0013
Anthracene	*7.3*	*22*	0.0017	0.028	0.023	0.0179	0.0222	0.0325	0.0179	0.016	0.019	0.014	<0.000014	0.0087
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	0.00011 J	0.000221 J	0.000226 J	<0.00385	0.000268 J	0.00016	0.00026	0.00011	<0.00005	0.00041
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000762	**<0.00385**	<0.0000777	<0.00002	<0.00002	<0.00002	<0.00002	0.00012
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	<0.00005	<0.00005	<0.000123	<0.000124	**<0.00625**	<0.000126	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00017 J	<0.00027	<0.00012	<0.000349	<0.000352	**<0.0178**	0.000679	<0.00011	0.0002 J	0.00013 J	<0.000037	0.00031
Chrysene	*0.91*	*2*	<0.00005	<0.00005	0.00013 J	0.000186 J	0.000231 J	<0.00385	0.000241 J	0.00015	0.00022	0.00011	<0.000021	0.00034
Dibenzofuran	*0.098*	*0.29*	0.025	**0.13**	**0.16**	**0.17**	**0.317**	**0.22**	**0.193**	**0.2**	**0.15**	**0.11**	0.000031 J	**0.14**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00005	<0.00005	<0.00005	<0.000104	<0.00024	<0.00529	0.000797	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	0.0017	0.0031	0.007	0.0111	0.0181	0.018 J	0.0132	0.013	0.0097	0.0084	<0.00001	0.0097
Fluorene	*0.98*	*2.9*	0.025	0.067	0.15	0.17	0.316	0.245	0.202	0.21	0.17	0.13	<0.00003	0.16
Naphthalene	*0.49*	*1.5*	0.05	**1.5**	0.36	0.0828 J	**0.661**	0.0338 J	0.075	0.012	0.0014	<0.0021	<0.00026	<0.0012
Nitrobenzene	*0.049*	*0.15*	<0.00005	<0.00005	<0.00005	<0.000104	<0.000105	<0.00529	<0.000107	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.00005	<0.00005	<0.0000943	<0.0000952	<0.00481	<0.0000971	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00005	<0.00005	<0.00005	<0.000575	<0.000581	**<0.0293**	<0.000592	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	0.015	0.078	0.12	0.13	0.234	0.192	0.162	0.13	0.13	0.093	<0.000021	0.063
Phenol	*7.3*	*22*	<0.00005	<0.00005	<0.00005	0.000101 J	<0.0000381	<0.00192	<0.0000388	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	0.00068	0.0026	0.0036	0.00515	0.00818	0.00759 J	0.00649	0.0064	0.0049	0.0042	<0.000019	0.0047
Metals														
Arsenic	*0.01*	*0.01*								**0.017**	0.00133 J	0.00093 J	0.00192 J	0.00192 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-12A 01/13/2020	MW-12B 01/31/2008 DNAPL	MW-12B 01/23/2020 DNAPL	MW-12C 01/30/2008	MW-12C 07/15/2008	MW-12C 02/04/2009	MW-12C 01/19/2010	MW-12C 06/22/2010	MW-12C 01/18/2011	MW-12C 07/26/2011	MW-12C 02/01/2012	MW-12C 07/19/2012
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.00052	<0.005	<0.00052	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005
Benzene	*0.005*	*0.005*	<0.0002	0.00344 J	**0.03**	<0.00025	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.00047	<0.0075	<0.00047	<0.00047	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005
Ethylbenzene	*0.7*	*0.7*	<0.0003	0.0125	0.014 J	<0.00025	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005
Methylene chloride	*0.005*	*0.005*	<0.001	<0.00054	**<0.025**	<0.00054	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001
Toluene	*1*	*1*	<0.0002	0.00515	<0.005	<0.00041	<0.00041	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005
Vinyl chloride	*0.002*	*0.002*			**<0.005**									
Xylenes (total)	*10*	*10*	<0.0003	0.0264	<0.0075	<0.00127	<0.00127	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.0008	**<0.0021**	<0.00008	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.0029	<0.004	<0.00031	<0.00032	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	**<0.0019**	**<0.0058**	<0.0002	<0.00021	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	**<0.0019**	**<0.0042**	<0.0002	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.0038	<0.0021	<0.00041	<0.00042	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	0.0023	**0.508**	**320 J**	<0.00041	<0.00042	0.00045	0.00024	0.00011 J	0.00012 J	0.000099 J	<0.00005	0.000086 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.0019	<0.002	<0.0002	<0.00053	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.0024	<0.0047	<0.00026	<0.00026	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Acenaphthene	*1.5*	*4.4*	0.28	0.336	**350**	<0.00031	<0.00032	0.00052	0.00019 J	<0.00009	0.00012 J	<0.00005	<0.00005	0.00011 J
Acenaphthylene	*1.5*	*4.4*	0.0012	0.0127	**5.7**	<0.00031	<0.00032	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Anthracene	*7.3*	*22*	0.0097	0.0267	**160**	<0.0002	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Benzo(a)anthracene	*0.0091*	*0.02*	0.00015	0.00746	**79**	<0.0002	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	**<0.0019**	**22**	<0.0002	**<0.00021**	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	**<0.0038**	**<0.003**	<0.00041	<0.00042	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00011 J	<0.0019	<0.0037	0.00114 J	<0.00021	0.0003	0.00077	<0.00099	<0.0002	0.0004	<0.0001	<0.00011
Chrysene	*0.91*	*2*	0.00015	0.00596	**64**	<0.0002	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Dibenzofuran	*0.098*	*0.29*	**0.23**	**0.204**	**320**	<0.00031	<0.00032	0.0004	0.00014 J	<0.00008	0.00011 J	<0.00005	<0.00005	0.000054 J
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.0019	<0.002	<0.0002	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Fluoranthene	*0.98*	*2.9*	0.0067	0.0508	**520**	<0.0002	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Fluorene	*0.98*	*2.9*	0.28	0.196	**420**	<0.0002	<0.00021	0.00037	0.00014 J	<0.00007	0.000099 J	0.000071 J	0.0001 J	0.000082 J
Naphthalene	*0.49*	*1.5*	<0.00051	**5.55**	**760**	0.000734	0.000833	0.003	0.0017	<0.00046	0.00099	0.00048	<0.00054	0.00052
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.0038	<0.0024	<0.00041	<0.00042	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.0024	<0.0025	<0.00026	<0.00026	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
Pentachlorophenol	*0.001*	*0.001*	<0.000079	**<0.0019**	**<0.0079**	<0.0002	<0.00021	<0.00008	<0.00008	<0.00008	0.00015 J	<0.00005	<0.00005	<0.00005
Phenanthrene	*0.73*	*2.2*	0.082	0.322	**1200**	<0.0002	<0.00021	0.00048	0.00015 J	<0.00007	0.00011 J	<0.00005	<0.00005	0.000059 J
Phenol	*7.3*	*22*	<0.000035	<0.0019	<0.0035	<0.0002	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Pyrene	*0.73*	*2.2*	0.0031	0.033	**330**	<0.0002	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Metals														
Arsenic	*0.01*	*0.01*	0.00134 J		**0.0491 J**									

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-12C 02/05/2013	MW-12C 07/31/2013	MW-12C 01/14/2014	MW-12C 07/25/2014	MW-12C 01/23/2018	MW-12C 03/19/2018	MW-12C 05/16/2018	MW-12C 01/09/2019	MW-12C 07/11/2019	MW-12C 01/13/2020	MW-13 01/30/2008	MW-13 07/15/2008
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052	<0.00052
Benzene	*0.005*	*0.005*	<0.00008	<0.00008	<0.00008	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00025	<0.00025
Chlorobenzene	*0.1*	*0.1*	<0.00012	<0.00012	<0.00012	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047	<0.00047
Ethylbenzene	*0.7*	*0.7*	<0.000145	<0.00011	<0.00011	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00025	<0.00025
Methylene chloride	*0.005*	*0.005*	<0.00015	<0.00015	<0.00015	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00054	<0.00054
Toluene	*1*	*1*	<0.00015	<0.00015	<0.00015	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00041	<0.00041
Vinyl chloride	*0.002*	*0.002*	<0.00011			<0.00011								
Xylenes (total)	*10*	*10*	<0.00026	<0.00026	<0.00026	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00127	<0.00127
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000104	<0.000105	<0.000106	<0.000107	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00008	<0.00008
2,4-Dimethylphenol	*0.49*	*1.5*	<0.000292	<0.000295	<0.000298	<0.000301	<0.00004	<0.00004	<0.00004	<0.00004	0.00043	<0.00004	<0.00029	<0.00029
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000123	<0.000124	<0.000125	<0.000126	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.00019	<0.00019
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0000755	<0.0000762	<0.0000769	**0.209**	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.00019	<0.00019
2-Chloronaphthalene	*2*	*5.8*	<0.0000755	<0.0000762	<0.0000769	<0.0000777	0.000079 J	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00038	<0.00039
2-Methylnaphthalene	*0.098*	*0.29*	0.000146 J	0.000129 J	0.000164 J	<0.000146	0.000091 J	0.000092 J	0.000078 J	0.00039	0.00021	0.00018	<0.00038	<0.00039
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.000783	<0.00079	<0.000798	<0.000806	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019	<0.00049
4-Nitrophenol	*0.049*	*0.15*	<0.000528	<0.000533	<0.000538	<0.000544	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00024	<0.00024
Acenaphthene	*1.5*	*4.4*	<0.0000755	<0.0000762	<0.0000769	<0.000114	0.0002	0.0001	<0.000027	0.093	0.000071 J	0.00015	<0.00029	<0.00029
Acenaphthylene	*1.5*	*4.4*	<0.0000566	<0.0000571	<0.0000577	<0.0000583	<0.000015	0.00064	<0.000015	0.00082	<0.000015	<0.000015	<0.00029	<0.00029
Anthracene	*7.3*	*22*	0.0000745 J	<0.0000476	<0.0000481	<0.0000485	<0.000014	<0.000014	<0.000014	0.0084	0.00003 J	<0.000014	0.000955	0.000642
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0000755	<0.0000762	<0.0000769	<0.0000777	<0.00005	<0.00005	<0.00005	0.00014	<0.00005	<0.00005	<0.00019	<0.00019
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0000755	<0.0000762	<0.0000769	<0.0000777	<0.00002	<0.00002	<0.00002	0.000041 J	<0.00002	<0.00002	<0.00019	<0.00019
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.000123	<0.000124	<0.000125	<0.000126	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00038	<0.00039
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000349	<0.000352	<0.000356	<0.000359	<0.00009	0.00013 J	<0.000037	0.00011 J	<0.000037	<0.000037	0.00051 J	<0.00019
Chrysene	*0.91*	*2*	<0.0000755	<0.0000762	<0.0000769	<0.0000777	<0.000021	<0.000021	<0.000021	0.00013	<0.000021	<0.000021	<0.00019	<0.00019
Dibenzofuran	*0.098*	*0.29*	0.0000865 J	0.0000857 J	0.0000979 J	<0.000091	0.0001	<0.00002	0.000052 J	0.067	0.00007 J	0.00012	<0.00029	<0.00029
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.000104	<0.00011	<0.000106	<0.000107	0.000034 J	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019	<0.00019
Fluoranthene	*0.98*	*2.9*	<0.000066	<0.0000667	<0.0000673	<0.000068	<0.00001	<0.00001	<0.00001	0.0071	<0.00001	0.000091 J	0.00046 J	<0.00019
Fluorene	*0.98*	*2.9*	0.000149 J	0.000102 J	<0.0000673	<0.000068	<0.00003	<0.00003	0.000087 J	0.085	0.000052 J	0.00019	<0.00019	<0.00019
Naphthalene	*0.49*	*1.5*	0.000729	0.000585 J	<0.000853	<0.000598	0.00046	0.0003	<0.00061	<0.00017	<0.0031	0.0017	<0.00038	<0.00039
Nitrobenzene	*0.049*	*0.15*	<0.000104	<0.000105	<0.000106	<0.000107	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00038	<0.00039
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.0000943	<0.0000952	<0.0000962	<0.0000971	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00024	<0.00024
Pentachlorophenol	*0.001*	*0.001*	<0.000575	<0.000581	<0.000587	<0.000592	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.00019	<0.00019
Phenanthrene	*0.73*	*2.2*	<0.0000566	<0.0000571	<0.0000872	<0.0000808	0.000069 J	<0.000021	0.000048 J	0.052	0.000039 J	0.00015	<0.00019	<0.00019
Phenol	*7.3*	*22*	<0.0000377	<0.0000381	<0.0000385	<0.0000388	<0.000035	<0.000035	<0.000035	<0.000035	0.0004	0.00012 J	<0.00019	<0.00019
Pyrene	*0.73*	*2.2*	<0.000104	<0.000105	<0.000106	<0.000107	<0.000019	<0.000019	<0.000019	0.0031	<0.000019	0.000068 J	<0.00019	<0.00019
Metals														
Arsenic	*0.01*	*0.01*					0.0025	0.00184 J	0.0017 J	0.000796 J	0.002	0.00195 J		

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-13 02/04/2009	MW-13 01/19/2010	MW-13 06/22/2010	MW-13 01/18/2011	MW-13 07/26/2011	MW-13 02/02/2012	MW-13 07/16/2012	MW-13 02/05/2013	MW-13 07/31/2013	MW-13 01/14/2014	MW-13 07/25/2014	MW-13 01/23/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002
Benzene	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.00008	<0.00008	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	0.000401 J	<0.00012	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00011	<0.00011	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00015	<0.00015	<0.001
Toluene	*1*	*1*	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00015	<0.00015	<0.0002
Vinyl chloride	*0.002*	*0.002*								<0.00011			<0.00011	
Xylenes (total)	*10*	*10*	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00026	<0.00026	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.000104	<0.000107	<0.000212	<0.000107	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**R**	<0.000301	<0.000596	<0.000301	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000123	<0.000126	<0.00025	<0.000126	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00007	0.00066	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000755	<0.0000777	<0.000154	<0.0000777	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000777	<0.000154	<0.0000777	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	<0.00007	0.00076	<0.00007	0.000075 J	0.00026	<0.00005	0.000063 J	<0.000066	<0.000068	0.000141 J	<0.000687	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	**R**	<0.000806	<0.0016	<0.000806	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	**R**	<0.000544	<0.00108	<0.000544	<0.000047
Acenaphthene	*1.5*	*4.4*	<0.00009	0.00011 J	<0.00009	<0.00009	0.00033	<0.00005	<0.00005	<0.0000755	<0.0000777	<0.000154	<0.000329	<0.000027
Acenaphthylene	*1.5*	*4.4*	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000566	0.0000715 J	<0.000115	<0.0000583	0.00003 J
Anthracene	*7.3*	*22*	0.0002	0.00043	<0.00007	<0.00007	0.00037	0.000068 J	0.00011 J	0.0011	0.000878	<0.00118	<0.000587	0.00047
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00014 J	<0.00005	<0.0000755	<0.0000777	<0.000154	<0.0000777	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	0.000073 J	<0.00005	<0.0000755	<0.0000777	<0.000154	<0.0000777	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000123	<0.000126	<0.00025	<0.000126	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00035	0.0016	<0.00044	<0.0002	0.00027	0.00043 J	<0.0001	<0.000349	<0.000359	<0.000712	<0.000359	<0.00011
Chrysene	*0.91*	*2*	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00017 J	<0.00005	<0.0000755	<0.0000777	<0.000154	<0.0000777	<0.000021
Dibenzofuran	*0.098*	*0.29*	<0.00008	0.00019 J	<0.00008	<0.00008	0.00034	0.000063 J	0.00019 J	<0.0000755	<0.0000777	<0.000154	<0.000257	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00007	<0.00007	0.0001 J	<0.00007	<0.00005	<0.00005	<0.00005	<0.000104	<0.000211	<0.000212	0.000122 J	<0.00002
Fluoranthene	*0.98*	*2.9*	<0.00007	<0.00007	<0.00007	<0.00007	0.000067 J	0.00015 J	0.00013 J	<0.000066	<0.000068	<0.000135	<0.000068	<0.00001
Fluorene	*0.98*	*2.9*	<0.00007	<0.00007	<0.00007	0.000072 J	0.00035	<0.00005	0.00012 J	<0.000066	<0.000068	<0.000135	<0.000188	<0.00003
Naphthalene	*0.49*	*1.5*	<0.0001	0.007	<0.0001	0.0005	0.00087	<0.00022	<0.00023	<0.0000755	<0.000226	<0.00126	0.0039	0.00014
Nitrobenzene	*0.049*	*0.15*	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000104	<0.000107	<0.000212	<0.000107	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000943	<0.0000971	<0.000192	<0.0000971	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**R**	<0.000592	**<0.00117**	<0.000592	<0.000079
Phenanthrene	*0.73*	*2.2*	<0.00007	0.00014 J	0.0002	<0.00007	0.00029	0.00015 J	0.00049	<0.0000566	<0.0000583	<0.000115	<0.000163	<0.000021
Phenol	*7.3*	*22*	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	**R**	<0.0000388	<0.0000769	<0.0000388	<0.000035
Pyrene	*0.73*	*2.2*	<0.00007	<0.00007	<0.00007	<0.00007	0.00011 J	0.0002 J	0.000089 J	<0.000104	<0.000107	<0.000212	<0.000107	<0.000019
Metals														
Arsenic	*0.01*	*0.01*												0.00303

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-13 03/18/2018	MW-13 05/15/2018	MW-13 01/08/2019	MW-13 07/11/2019	MW-13 01/14/2020	MW-14 01/30/2008	MW-14 07/15/2008	MW-14 02/04/2009	MW-14 02/04/2009 Duplicate	MW-14 01/19/2010	MW-14 01/19/2010 Duplicate	MW-14 06/22/2010
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00025	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047	<0.00047	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00025	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00054	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00041	<0.00041	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00127	<0.00127	<0.001	<0.001	<0.001	<0.001	<0.001
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00008	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00004	<0.000063	<0.00004	<0.00029	<0.00029	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.00019	<0.00019	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.00019	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00038	<0.00038	<0.00012	<0.00012	<0.0001	<0.0001	<0.0001
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	<0.000019	0.000077 J	0.000054 J	0.00047 J	0.000782	0.00075	0.00078	0.00064	0.0006	0.00049
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019	<0.00048	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00024	<0.00024	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
Acenaphthene	*1.5*	*4.4*	<0.000027	<0.000027	<0.000027	0.000066 J	0.00022	0.00223	0.000515	0.00047	0.0005	0.00043	0.00043	0.00041
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	0.000033 J	<0.000015	<0.00029	<0.00029	<0.00006	<0.00006	<0.00007	<0.00007	<0.00007
Anthracene	*7.3*	*22*	0.000039 J	0.000085 J	0.00039	0.00047	<0.000014	0.000678	<0.00019	<0.00007	<0.00007	<0.00007	0.00013 J	<0.00007
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00019	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00038	<0.00038	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.000078 J	0.00011 J	<0.000037	0.000054 J	<0.000037	0.0004 J	<0.00019	0.00081	0.0027	0.0054 J	0.00037 J	<0.00077
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00019	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00002	<0.00002	0.000039 J	0.00016	0.000491	0.000502	0.00045	0.00045	0.0004	0.00044	0.00037
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	0.000029 J	<0.00002	<0.00002	<0.00002	<0.00019	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
Fluoranthene	*0.98*	*2.9*	<0.00001	0.000015 J	<0.00001	0.000032 J	<0.00001	0.000506	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
Fluorene	*0.98*	*2.9*	<0.00003	<0.00003	<0.00003	0.000042 J	0.00016	<0.00019	<0.00019	<0.00007	0.00014 J	0.00013 J	0.0001 J	<0.00007
Naphthalene	*0.49*	*1.5*	<0.000083	<0.00002	<0.00022	<0.0011	0.00026	0.00222	0.00349	0.0032	0.0033	0.003	0.0026	0.0022
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00038	<0.00038	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00024	<0.00024	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.00019	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
Phenanthrene	*0.73*	*2.2*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.000599	0.00061	0.00035	0.00039	0.00041	0.00043	0.00044
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.00019	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
Pyrene	*0.73*	*2.2*	<0.000019	0.00002 J	<0.000019	0.000084 J	<0.000019	<0.00019	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
Metals														
Arsenic	*0.01*	*0.01*	0.00984	**0.014**	**0.0602**	**0.0715**	**0.0642**							

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	C/I Assessment Level	MW-14 01/17/2011	MW-14 07/26/2011	MW-14 07/26/2011 Duplicate	MW-14 02/02/2012	MW-14 02/02/2012 Duplicate	MW-14 07/16/2012	MW-14 07/16/2012 Duplicate	MW-14 02/05/2013	MW-14 07/31/2013	MW-14 01/14/2014	MW-14 07/18/2014	MW-14 01/23/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002
Benzene	*0.005*	*0.005*	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.00008	<0.00008	<0.00008	<0.00008	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.00012	<0.00012	<0.00012	<0.00012	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0005	<0.0011	<0.0011	<0.0011	<0.0011	<0.0005	<0.0005	<0.00011	0.000123 J	<0.00011	<0.00011	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.0005	<0.0013	<0.0013	<0.0013	<0.0013	<0.001	<0.001	<0.00015	<0.00015	<0.00015	<0.00015	<0.001
Toluene	*1*	*1*	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.00015	<0.00015	<0.00015	<0.00015	<0.0002
Vinyl chloride	*0.002*	*0.002*								<0.00011			<0.00011	
Xylenes (total)	*10*	*10*	<0.001	<0.0031	<0.0031	<0.0031	<0.0031	<0.0015	<0.0015	<0.00026	<0.00026	<0.00026	<0.00026	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000104	<0.000107	<0.000106	<0.000109	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00008	<0.00005	<0.00005	0.00005 J	0.0013 J	<0.00005	<0.00005	<0.000292	<0.000301	<0.000298	<0.000307	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00009	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000123	<0.000126	<0.000125	<0.000129	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00007	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.0000755	<0.0000777	<0.0000769	**0.0788**	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.0001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000777	<0.0000769	<0.0000792	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	0.00039	0.00034	0.00031	0.000064 J	0.00017 J	0.0003	0.00044	0.000402 J	0.000304 J	0.000321 J	0.000336 J	0.00019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.000783	<0.000806	<0.000798	<0.000822	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000528	**R**	<0.000538	<0.000554	<0.000047
Acenaphthene	*1.5*	*4.4*	0.00033	0.00032	0.00028	0.00005 J	0.00015 J	0.0003	0.00035	0.0006	0.000549	0.000943	0.000619	0.00019
Acenaphthylene	*1.5*	*4.4*	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000566	<0.0000583	<0.0000577	<0.0000594	<0.000015
Anthracene	*7.3*	*22*	<0.00007	<0.00005	0.000087 J	<0.00005	<0.00005	0.000069 J	<0.00005	0.000277 J	0.000198 J	<0.000179	0.000139 J	0.000067 J
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000777	<0.0000769	<0.0000792	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000777	<0.0000769	<0.0000792	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00009	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000123	<0.000126	<0.000125	<0.000129	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00029	0.00047	0.00065	<0.0001	<0.00013	0.00011 J	0.00011 J	<0.000349	<0.000359	<0.000356	0.000615	<0.000091
Chrysene	*0.91*	*2*	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000777	<0.0000769	<0.0000792	<0.000021
Dibenzofuran	*0.098*	*0.29*	0.0003	0.00031	0.00027	0.00012 J	0.00015 J	0.00032	0.00034	0.000467 J	0.000372 J	0.000443 J	0.000437 J	0.00024
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000104	<0.000179	<0.000106	<0.000109	<0.00002
Fluoranthene	*0.98*	*2.9*	<0.00007	<0.00005	<0.00005	0.00024	0.00031	0.000055 J	<0.00005	0.0000794 J	0.000274 J	0.0000744 J	<0.0000693	0.000028 J
Fluorene	*0.98*	*2.9*	0.000079 J	<0.00005	0.000065 J	<0.00005	<0.00005	0.000076 J	<0.00005	<0.000066	<0.000068	0.00008 J	0.0000901 J	<0.00003
Naphthalene	*0.49*	*1.5*	0.0024	0.0014	0.0012	0.00034 J	0.0014 J	<0.0015	<0.002	0.00211	0.00216 J	<0.00183	0.00143	0.00067
Nitrobenzene	*0.049*	*0.15*	<0.00009	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00008 J	<0.000104	<0.000107	<0.000106	<0.000109	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00009	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000943	<0.0000971	<0.0000962	<0.000099	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000575	<0.000592	<0.000587	<0.000604	<0.000079
Phenanthrene	*0.73*	*2.2*	0.0003	0.00033	0.00032	0.00011 J	0.00014 J	0.00038	0.00039	0.000484	0.000662	<0.000591	0.000506	0.00035
Phenol	*7.3*	*22*	<0.00007	<0.00005	<0.00005	0.00005 J	0.00075 J	<0.00005	<0.00005	<0.0000377	0.000398 J	<0.0000385	<0.0000396	<0.000035
Pyrene	*0.73*	*2.2*	<0.00007	<0.00005	<0.00005	0.00029	0.00029	<0.00005	<0.00005	<0.000104	0.000164 J	<0.000106	<0.000109	<0.000019
Metals														
Arsenic	*0.01*	*0.01*												<0.0004

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-14 03/18/2018	MW-14 05/15/2018	MW-14 01/08/2019	MW-14 07/11/2019	MW-14 01/14/2020	MW-15A 01/30/2008	MW-15A 07/15/2008	MW-15A 02/04/2009	MW-15A 01/18/2010	MW-15A 06/23/2010	MW-15A 01/17/2011	MW-15A 07/13/2011
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.00161 J	<0.00025	0.0018 J	0.0016 J	0.0017 J	0.00074 J	0.0016 J
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047	<0.00047	<0.0005		<0.0005	<0.0005	<0.001
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.00122 J	<0.00025	0.0019 J	0.0015 J	0.0017 J	<0.0005	0.0019 J
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00054	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00041	<0.00041	<0.0005	<0.0005	0.00055 J	<0.0005	<0.001
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.0056 J	<0.00127	0.0039 J	0.0015 J	0.0047 J	<0.001	0.0038 J
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00008	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00004	<0.00013	<0.00004	<0.0003	0.00042 J	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.0002	<0.0002	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.0002	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0004	<0.00041	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	<0.00014	<0.000019	<0.000019	0.00019	<0.000019	0.0127	**0.0995**	0.044	0.033	0.042	0.038	**0.14**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002	<0.00051	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00025	<0.00026	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005
Acenaphthene	*1.5*	*4.4*	0.00027	<0.000027	<0.000027	0.0001	0.000091 J	0.134	0.442	0.17	0.17	0.16	0.27	0.2
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.0003	<0.00031	0.0017	0.0015	0.00097	0.0011	0.00097
Anthracene	*7.3*	*22*	0.000052 J	<0.000014	0.000052 J	0.000089 J	<0.000014	0.00377	0.00432	0.003	0.0036	0.0049	0.0063	0.0053
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00023 J	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002	<0.0002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.0004	<0.00041	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	0.00014 J	<0.000037	<0.000037	<0.000037	<0.0002	<0.0002	0.0026	<0.00073	<0.00084	0.0016	<0.00012
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0002	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005
Dibenzofuran	*0.098*	*0.29*	<0.00025	<0.00002	<0.00002	0.000087 J	<0.00002	0.0239	**0.156**	0.047	0.043	0.048	0.05	0.078
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	0.000022 J	<0.00002	<0.00002	<0.0002	<0.0002	0.00029	0.00011 J	<0.00007	<0.00007	<0.00005
Fluoranthene	*0.98*	*2.9*	0.000025 J	<0.00001	<0.00001	0.000067 J	0.000064 J	0.00178	0.00183	0.0011	0.0015	0.002	0.0023	0.0021
Fluorene	*0.98*	*2.9*	0.000094 J	<0.00003	<0.00003	0.000069 J	0.000057 J	0.0394	0.18	0.059	0.06	0.062	0.076	0.092
Naphthalene	*0.49*	*1.5*	<0.00057	<0.00002	<0.00002	<0.002	<0.00002	0.00684	0.271	0.048	<0.0018	0.036	0.0023	0.087
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.0004	<0.00041	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00025	<0.00026	<0.00009	<0.00009	<0.00009	<0.00009	0.00055
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.0002	<0.0002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005
Phenanthrene	*0.73*	*2.2*	0.00032	<0.000021	<0.000021	0.000059 J	<0.000021	0.0039	0.0229	0.0095	0.0074	0.012	0.019	0.036
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.000035	0.00019 J	<0.000035	<0.0002	<0.0002	<0.00007	<0.00007	0.0002	<0.00007	<0.00005
Pyrene	*0.73*	*2.2*	<0.000019	<0.000019	<0.000019	0.000032 J	0.00006 J	0.00127	0.000664	0.00042	0.00062	0.00076	0.00095	0.00089
Metals														
Arsenic	*0.01*	*0.01*	<0.0004	<0.0004	0.000752 J	0.00133 J	0.00185 J							

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-15A 02/02/2012	MW-15A 07/19/2012	MW-15A 01/30/2013	MW-15A 07/30/2013	MW-15A 01/14/2014	MW-15A 07/17/2014	MW-15A 01/23/2018	MW-15A 03/18/2018	MW-15A 05/15/2018	MW-15A 01/08/2019	MW-15A 07/10/2019	MW-15A 01/14/2020
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.001	<0.0005	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	0.0012 J	0.0016 J	0.0016	0.0013	0.00106	0.00161	<0.0002	0.00051 J	0.0006 J	<0.0002	0.00074 J	0.00034 J
Chlorobenzene	*0.1*	*0.1*	<0.001	<0.0005	<0.00012	0.000121 J	<0.00012	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	0.0024 J	0.0012 J	0.00066 J	0.000799 J	0.000627 J	0.00101	<0.0003	<0.0003	<0.0003	<0.0003	0.00035 J	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.0013	<0.001	<0.00015	<0.00015	<0.00015	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.001	<0.0005	0.000221 J	0.000199 J	0.00034 J	0.000595 J	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	0.0073 J	0.0097 J	0.00417	0.00527	0.00337	0.00854	0.0018	<0.0003	<0.0003	0.0008 J	0.0026	0.00093 J
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	<0.00005	<0.000104	<0.000107	**<0.00529**	<0.000104	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.00036
2,4-Dimethylphenol	*0.49*	*1.5*	0.00059	0.00056	0.002	<0.000301	<0.0149	<0.000292	<0.00004	<0.00004	<0.00004	<0.00004	<0.00024	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	<0.00005	<0.000123	<0.000126	**<0.00625**	<0.000123	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	<0.00006	<0.0000755	<0.0000777	**<0.00385**	<0.0000755	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.00005	<0.0000755	<0.0000777	<0.00385	<0.0000755	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	0.001	0.046	0.00997	**0.124**	0.0475	0.059	0.0076	0.0016	0.0034	0.0098	0.0077	0.018
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.000783	<0.000806	**<0.0399**	<0.000783	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00005	<0.00005	<0.000528	<0.000544	<0.0269	<0.000528	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	0.13	0.13	0.141	0.332	0.3	0.205	0.13	0.099	0.1	0.1	0.11	0.14
Acenaphthylene	*1.5*	*4.4*	0.00071	0.0012	<0.0000566	<0.0000583	<0.00288	<0.0000566	0.002	0.0007	0.00069	<0.000015	0.00045	0.00066
Anthracene	*7.3*	*22*	0.0028	0.0046	0.00313	0.0085	0.0111 J	0.00642	0.0026	0.0024	0.0032	0.0025	0.0026	0.0048
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.0000755	<0.0000777	<0.00385	<0.0000755	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	<0.00005	<0.0000755	<0.0000777	**<0.00385**	<0.0000755	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	<0.00005	<0.000123	<0.000126	**<0.00625**	<0.000123	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0001	<0.0001	<0.000349	<0.000359	**<0.0178**	<0.000349	<0.000037	<0.000037	**0.0093**	<0.000037	<0.000037	<0.000037
Chrysene	*0.91*	*2*	<0.00005	<0.00005	<0.0000755	<0.0000777	<0.00385	<0.0000755	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	0.028	0.046	0.0416	**0.104**	0.0693	0.0572	0.029	0.024	0.018	0.023	0.035	0.036
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00005	<0.00005	<0.000104	0.000187 J	<0.00529	<0.000104	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	0.00094	0.0015	0.000885	0.00361	<0.00337	0.00257	0.002	0.0012	0.0016	0.0012	0.0018	0.0031
Fluorene	*0.98*	*2.9*	0.043	0.063	0.056	0.139	0.114	0.0822	0.041	0.036	0.029	0.038	0.054	0.065
Naphthalene	*0.49*	*1.5*	0.008	0.27	0.0501 J	**0.526**	0.326	0.248	0.0005	<0.00034	<0.00037	<0.00032	<0.0066	0.00022
Nitrobenzene	*0.049*	*0.15*	<0.00005	<0.00005	<0.000104	<0.000107	<0.00529	<0.000104	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.00005	<0.0000943	<0.0000971	<0.00481	<0.0000943	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00005	<0.00005	<0.000575	<0.000592	**<0.0293**	<0.000575	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	0.0056	0.014	0.00792	0.052	0.0375	0.0203	0.0046	0.0054	0.0074	0.009	0.0095	0.025
Phenol	*7.3*	*22*	<0.00005	<0.00005	<0.0000377	<0.0000388	<0.00192	<0.0000377	<0.000035	<0.000035	<0.000035	<0.000035	0.00039	<0.000035
Pyrene	*0.73*	*2.2*	0.00053	0.00084	0.000496	0.00154	<0.00529	0.00101	0.0009	0.00063	0.00078	0.00051	0.00075	0.0013
Metals														
Arsenic	*0.01*	*0.01*							**0.0264**	**0.0137**	**0.019**	**0.027**	**0.0251**	**0.0441**

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-15B 02/02/2012	MW-15B 07/19/2012	MW-15B 01/30/2013	MW-15B 07/30/2013	MW-15B 01/14/2014	MW-15B 07/17/2014	MW-15B 01/23/2018	MW-15B 03/18/2018	MW-15B 05/15/2018	MW-15B 01/08/2019	MW-15B 07/10/2019	MW-15B 01/14/2020
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.005	<0.0025	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.005	**0.0053 J**	0.0022	0.00484	0.00101	0.00292	<0.0002	<0.0002	0.00071 J	<0.0002	0.0023	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.005	<0.0025	<0.00012	0.000124 J	<0.00012	0.000136 J	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	0.02 J	0.014 J	0.00159	0.00399	0.00019 J	0.00903	<0.0003	<0.0003	0.001	<0.0003	0.0031	<0.0003
Methylene chloride	*0.005*	*0.005*	**<0.0065**	<0.005	<0.00015	<0.00015	<0.00015	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.005	<0.0025	<0.00015	0.000155 J	<0.00015	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.016	<0.0075	0.000356 J	0.00876	0.000876 J	0.00464	<0.0003	<0.0003	<0.0003	<0.0003	0.0025	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	<0.00005	<0.000104	<0.000107	<0.00106	<0.000104	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00043	<0.00005	<0.000292	<0.000301	<0.00298	<0.000292	<0.00004	<0.00004	<0.00004	<0.00004	<0.00016	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	<0.00005	<0.000123	<0.000126	<0.00125	<0.000123	<0.000059	<0.000058	<0.000059	<0.000059	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	<0.00006	<0.0000755	<0.0000777	<0.000769	<0.0000755	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.00005	<0.0000755	<0.0000777	<0.000769	<0.0000755	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	**0.29**	0.023	<0.000744	0.00327	0.00325 J	0.00622	<0.000019	<0.000019	0.00015	<0.000019	0.016	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.000783	<0.000806	**<0.00798**	<0.000783	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00005	<0.00005	<0.000528	<0.000544	<0.00538	<0.000528	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	0.17	0.075	0.0413	0.114	0.134	0.0653	<0.000027	<0.000027	0.012	0.0026	0.029	0.000073 J
Acenaphthylene	*1.5*	*4.4*	0.0011	0.0008	0.000987	<0.0000583	0.00148 J	<0.0000566	0.000059 J	<0.000015	0.00027	0.00015	0.00034	<0.000015
Anthracene	*7.3*	*22*	0.039	0.0071	0.00179	0.00581	0.00665	0.00517	0.00034	0.00016	0.00058	0.00023	0.0016	0.00011
Benzo(a)anthracene	*0.0091*	*0.02*	0.00016 J	0.00017 J	<0.0000755	0.000218 J	0.000868 J	0.00031 J	0.00017	<0.00005	0.00011	<0.000051	0.00016	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	<0.00005	<0.0000755	<0.0000777	**<0.000769**	<0.0000755	0.00007 J	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	<0.00005	<0.000123	<0.000126	**<0.00125**	<0.000123	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0001	<0.00018	<0.000349	<0.000359	<0.00356	0.000548	<0.00007	<0.000037	0.0001 J	<0.000037	<0.000037	0.000055 J
Chrysene	*0.91*	*2*	0.00019 J	0.00013 J	<0.0000755	0.000167 J	<0.000769	0.000228 J	0.00014	<0.000021	0.000098 J	<0.000021	0.00013	<0.000021
Dibenzofuran	*0.098*	*0.29*	**0.15**	0.052	0.0127	0.0589	0.0509	0.0272	0.0005	<0.00002	0.0025	0.00014	0.013	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00005	<0.00005	<0.000104	0.000187 J	<0.00106	<0.000104	<0.00002	<0.00002	0.000042 J	0.000022 J	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	0.012	0.0062	0.00101	0.00615	0.0131	0.00736	0.0027	<0.00001	0.0031	0.00045	0.0042	0.00011
Fluorene	*0.98*	*2.9*	0.084	0.036	0.011	0.0459	0.0443	0.0231	0.00017	<0.00003	0.0028	0.000055 J	0.01	0.000062 J
Naphthalene	*0.49*	*1.5*	**2.5**	**0.82**	0.0569 J	**0.943**	0.248	0.452	<0.00002	<0.00002	0.02	<0.00002	0.33	<0.00002
Nitrobenzene	*0.049*	*0.15*	<0.00005	<0.00005	<0.000104	<0.000107	<0.00106	<0.000104	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.00005	<0.0000943	<0.0000971	<0.000962	<0.0000943	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00005	<0.00005	<0.000575	<0.000592	**<0.00587**	<0.000575	<0.00008	<0.000079	<0.00008	<0.00008	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	0.08	0.052	0.00199	0.0376	0.0257	0.0204	0.00033	<0.000021	0.00016	<0.000021	0.0065	0.00005 J
Phenol	*7.3*	*22*	<0.00012	<0.00005	<0.0000377	<0.0000388	0.00141 J	0.00112	<0.000035	<0.000035	<0.000035	<0.000035	<0.00019	<0.000035
Pyrene	*0.73*	*2.2*	0.005	0.0031	0.000513	0.00291	0.00569	0.00406	0.0016	<0.000019	0.0017	0.00027	0.0018	0.00006 J
Metals														
Arsenic	*0.01*	*0.01*							0.00895	0.00329	**0.0111**	0.00244	**0.0133**	0.00343

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-15C 01/30/2008	MW-15C 07/15/2008	MW-15C 02/04/2009	MW-15C 01/18/2010	MW-15C 06/23/2010	MW-15C 01/17/2011	MW-15C 07/13/2011	MW-15C 02/02/2012	MW-15C 07/19/2012	MW-15C 01/30/2013	MW-15C 07/30/2013	MW-15C 01/14/2014
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00052	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.00014
Benzene	*0.005*	*0.005*	0.00109 J	<0.00025	0.00096 J	0.0012 J	0.001 J	0.00096 J	<0.001	<0.001	<0.0005	0.000951 J	0.000831 J	0.000863 J
Chlorobenzene	*0.1*	*0.1*	<0.00047	<0.00047	<0.0005		<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00012
Ethylbenzene	*0.7*	*0.7*	0.00135 J	<0.00025	0.00068 J	0.00058 J	<0.0005	<0.0005	<0.0011	0.0017 J	<0.0005	0.000408 J	0.000203 J	0.000275 J
Methylene chloride	*0.005*	*0.005*	<0.00054	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00015
Toluene	*1*	*1*	<0.00041	<0.00041	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	0.000323 J	0.000263 J	0.000305 J
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.00127	<0.00127	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	0.000604 J	0.000839 J	0.000581 J
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00008	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	**<0.0104**	<0.000107	<0.00106
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00029	<0.00032	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**113**	<0.000301	<0.00298
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.0002	<0.00021	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	**<0.0123**	<0.000126	<0.00125
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0002	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	**<0.00755**	<0.0000777	<0.000769
2-Chloronaphthalene	*2*	*5.8*	<0.00039	<0.00042	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00755	<0.0000777	<0.000769
2-Methylnaphthalene	*0.098*	*0.29*	<0.00039	<0.00042	0.000084 J	<0.00007	<0.00007	<0.00007	<0.00005	0.000099 J	0.00022	**0.35**	<0.000068	<0.000673
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.0002	<0.00053	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	**<0.0783**	<0.000806	**<0.00798**
4-Nitrophenol	*0.049*	*0.15*	<0.00024	<0.00026	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	**<0.0528**	<0.000544	<0.00538
Acenaphthene	*1.5*	*4.4*	0.0293	0.103	0.034	0.0097	0.013	0.032	0.016	0.041	0.042	0.13	0.0574	0.0912
Acenaphthylene	*1.5*	*4.4*	<0.00029	0.000651	0.00052	0.00041	0.00062	0.0011	0.0012	0.0013	0.002	<0.00566	0.00268	<0.000577
Anthracene	*7.3*	*22*	<0.0002	0.000731	0.00078	0.00031	<0.00007	<0.00007	<0.00005	0.00021	0.00045	0.0191 J	0.0000945 J	<0.000481
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0002	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00755	<0.0000777	<0.000769
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0002	**<0.00021**	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**<0.00755**	<0.0000777	**<0.000769**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00039	<0.00042	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	**<0.0123**	<0.000126	**<0.00125**
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00044 J	<0.00021	<0.0002	<0.00065	<0.00059	0.00044	<0.00057	<0.0001	<0.00012	**<0.0349**	<0.000359	<0.00356
Chrysene	*0.91*	*2*	<0.0002	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00755	<0.0000777	<0.000769
Dibenzofuran	*0.098*	*0.29*	0.0336	0.0904	0.034	0.0075	0.005	0.018	0.0046	0.027	0.021	**0.116**	0.0141	0.0317
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.0002	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.000059 J	<0.0104	<0.000107	<0.00106
Fluoranthene	*0.98*	*2.9*	0.000607	0.00103	0.0006	0.00029	0.0002 J	0.0003	0.00031	0.0016	0.00079	<0.0066	0.000634	0.00158 J
Fluorene	*0.98*	*2.9*	0.00328	0.00278	0.0027	0.0011	0.00071	0.0017	0.00074	0.0025	0.0014	0.0769	0.00159	0.00224 J
Naphthalene	*0.49*	*1.5*	0.00137	0.00195	0.0016	<0.00057	<0.00094	0.00091	<0.00046	0.0011	0.0018	**89.7**	<0.00122	<0.00182
Nitrobenzene	*0.049*	*0.15*	<0.00039	<0.00042	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0104	<0.000107	<0.00106
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00024	<0.00026	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00943	<0.0000971	<0.000962
Pentachlorophenol	*0.001*	*0.001*	<0.0002	<0.00021	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**<0.0575**	<0.000592	**<0.00587**
Phenanthrene	*0.73*	*2.2*	<0.0002	0.00028 J	<0.00007	0.00014 J	<0.00007	<0.00007	0.00019 J	0.0015	0.00038	0.0868	0.000354 J	<0.000577
Phenol	*7.3*	*22*	<0.0002	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	**61.8**	<0.0000388	<0.000385
Pyrene	*0.73*	*2.2*	0.000542	0.00052	0.00027	0.00012 J	0.00011 J	0.00015 J	0.00018 J	0.00093	0.00046	<0.0104	0.00037 J	<0.00106
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-15C 07/17/2014	MW-15C 01/23/2018	MW-15C 03/18/2018	MW-15C 05/15/2018	MW-15C 01/08/2019	MW-15C 07/10/2019	MW-15C 01/14/2020	MW-16 01/31/2008	MW-16 07/15/2008	MW-16 02/05/2009	MW-16 01/18/2010	MW-16 06/23/2010
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052	<0.00052	<0.0025	<0.0025	<0.0025
Benzene	*0.005*	*0.005*	0.000781 J	0.00063 J	0.00053 J	0.00052 J	0.00058 J	0.0005 J	0.00059 J	**0.0383**	**0.11**	**0.048**	**0.031**	**0.058**
Chlorobenzene	*0.1*	*0.1*	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047	<0.00047	<0.0025		<0.0025
Ethylbenzene	*0.7*	*0.7*	0.000219 J	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.037	0.084	0.034	0.021 J	0.032
Methylene chloride	*0.005*	*0.005*	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00054	<0.00054	<0.0025	<0.0025	**<0.0062**
Toluene	*1*	*1*	0.00019 J	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.00619	0.0382	0.0025 J	0.0034 J	0.01 J
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	0.000392 J	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.052	0.121	0.036 J	0.027 J	0.04 J
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000104	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00008	<0.0004	<0.0001	<0.0001	<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*	<0.000292	<0.00004	<0.00004	<0.00004	<0.00004	0.0052	<0.00004	<0.00029	<0.0016	0.0039	0.0025	0.0054
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000123	<0.000058	<0.000058	<0.000059	<0.000058	<0.000058	<0.000058	<0.00019	<0.0011	<0.00009	<0.00009	<0.00009
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0000755	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.00019	<0.0011	<0.00007	<0.00007	<0.00007
2-Chloronaphthalene	*2*	*5.8*	<0.0000755	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00038	<0.0021	<0.00012	<0.0001	<0.0001
2-Methylnaphthalene	*0.098*	*0.29*	<0.000066	<0.000019	<0.000019	<0.000019	<0.000019	<0.00066	<0.000019	0.0747	**0.175**	**0.13**	0.079	0.04
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.000783	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019	**<0.0026**	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000528	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00024	<0.0013	<0.00007	<0.00007	<0.00007
Acenaphthene	*1.5*	*4.4*	0.0455	0.027	0.021	0.02	0.02	0.017	0.016	0.215	0.939	0.24	0.21	0.18
Acenaphthylene	*1.5*	*4.4*	0.00342	0.0027	0.002	0.0022	0.0014	0.0015	0.00089	<0.00029	0.0067	0.0044	0.0041	0.0031
Anthracene	*7.3*	*22*	0.000315 J	0.00047	0.000095 J	0.000067 J	0.00031	0.00064	0.00057	0.0151	0.0321	0.011	0.0084	0.0076
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0000755	<0.00005	<0.00005	<0.000051	<0.00005	<0.00005	<0.00005	<0.00019	<0.0011	0.00014 J	0.00011 J	<0.00007
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0000755	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019	**<0.0011**	<0.00008	<0.00008	<0.00008
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.000123	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00038	**<0.0021**	<0.00009	<0.00009	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.000526	<0.000067	<0.000037	0.000072 J	<0.000037	<0.000037	<0.000037	<0.00019	<0.0011	0.0005	<0.0012	<0.0014
Chrysene	*0.91*	*2*	<0.0000755	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.00036 J	<0.0011	0.00014 J	0.000088 J	<0.00007
Dibenzofuran	*0.098*	*0.29*	0.0102	0.0081	0.0029	0.0046	0.0053	0.0039	0.0045	**0.112**	**0.253**	**0.14**	**0.12**	0.091
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.000104	<0.00002	<0.00002	0.000037 J	<0.00002	<0.00002	<0.00002	<0.00019	<0.0011	0.00025	<0.00007	<0.00007
Fluoranthene	*0.98*	*2.9*	0.000763	0.00094	0.00054	0.00074	0.00075	0.00086	0.00066	0.00769	0.0142	0.0064	0.0037	0.0049
Fluorene	*0.98*	*2.9*	0.00135	0.001	0.00045	0.00064	0.00056	0.00097	0.00051	0.114	0.222	0.088	0.096	0.086
Naphthalene	*0.49*	*1.5*	<0.000748	0.00042	<0.00031	<0.00039	<0.00032	0.019	0.00024	**1.9**	**18.9**	**4.1**	**1.9**	**1.4**
Nitrobenzene	*0.049*	*0.15*	<0.000104	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00038	<0.0021	<0.00009	<0.00009	<0.00009
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.0000943	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00024	<0.0013	<0.00009	<0.00009	<0.00009
Pentachlorophenol	*0.001*	*0.001*	<0.000575	<0.000079	<0.000079	<0.00008	<0.000079	<0.000079	<0.000079	<0.00019	**<0.0011**	<0.00008	<0.00008	<0.00008
Phenanthrene	*0.73*	*2.2*	<0.0000566	<0.000021	0.00019	0.00041	<0.000021	<0.00039	0.00008 J	0.0421	0.0743	0.04	0.038	0.042
Phenol	*7.3*	*22*	<0.0000377	<0.000035	<0.000035	<0.000035	<0.000035	<0.00026	<0.000035	<0.00019	0.0047	0.00022	0.00013 J	<0.00007
Pyrene	*0.73*	*2.2*	0.00043 J	0.00049	0.00035	0.00043	0.00041	0.00043	0.00038	0.00615	0.0114	0.004	0.0027	0.0025
Metals														
Arsenic	*0.01*	*0.01*		0.000738 J	0.000598 J	0.000777 J	0.000629 J	0.000889 J	0.000773 J					

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-16 01/18/2011	MW-16 07/14/2011	MW-16 02/01/2012	MW-16 07/16/2012	MW-16 01/30/2013	MW-17 01/31/2008	MW-17 07/15/2008	MW-17 02/04/2009	MW-17 01/18/2010	MW-17 06/23/2010	MW-17 01/17/2011	MW-17 07/13/2011
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0025	**<0.01**	**<0.01**	<0.0005	<0.00014	<0.00052	**<0.01**	<0.0005	<0.0025	<0.0025	<0.0025	<0.001
Benzene	*0.005*	*0.005*	**0.025 J**	**0.068**	**0.025 J**	**0.056**	**0.0376**	**0.545**	**0.448**	**0.65**	**0.59**	**0.65**	**0.31**	**0.45**
Chlorobenzene	*0.1*	*0.1*	<0.0025	<0.01	<0.01	<0.0005	0.00051 J	<0.00047	<0.0094	<0.0005		<0.0025	<0.0025	<0.001
Ethylbenzene	*0.7*	*0.7*	0.023 J	0.038 J	0.021 J	0.027	0.0211	0.193	0.142	0.26	0.26	0.2	0.21	0.21
Methylene chloride	*0.005*	*0.005*	<0.0025	**<0.013**	**<0.013**	<0.001	<0.00015	<0.00054	**<0.011**	<0.0005	<0.0025	**<0.0056**	<0.0025	<0.0013
Toluene	*1*	*1*	<0.0025	<0.01	<0.01	0.007	0.00095 J	0.909	0.728	**1.1**	1	0.88	0.97	0.85
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	0.025 J	<0.031	<0.031	0.034	0.0348	0.582	0.44	0.55	0.72	0.61	0.64	0.54
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0001	<0.00005	<0.00005	<0.00005	<0.000104	**<0.002**	**<0.008**	<0.0001	0.001 J	<0.001	<0.0001	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	0.0022 J	0.012	0.00077	0.0054	<0.000292	**11.7**	**13.4**	**2.6**	**3.7**	**13**	**3.9 J**	**2.7**
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00009	<0.00005	<0.00005	<0.00005	<0.000123	**<0.0038**	**<0.021**	<0.00009	0.0009 J	<0.0009	<0.00009	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000755	**<0.0038**	**<0.021**	<0.00007	0.0007 J	<0.0007	<0.00007	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0076	<0.042	<0.00012	0.001 J	<0.001	<0.0001	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	0.038	0.082	0.034	0.045	0.0467 J	**0.42**	**0.582**	**0.27**	**0.56 J**	**0.39**	**0.97**	**0.75**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.00008	<0.000783	**<0.0038**	**<0.053**	<0.00008	0.0008 J	<0.0008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.00007	<0.00005	<0.00005	<0.00005	<0.000528	<0.0048	<0.026	<0.00007	0.0007 J	<0.0007	<0.00007	<0.00005
Acenaphthene	*1.5*	*4.4*	0.21	0.23	0.21	0.28	0.281	0.137	0.241	0.094	0.17 J	0.071	0.52	0.22
Acenaphthylene	*1.5*	*4.4*	0.0035	0.0032	0.0021	0.0028	<0.0000566	<0.0057	<0.032	0.0041	0.0067 J	0.003	0.008	0.0069
Anthracene	*7.3*	*22*	0.012	0.017	0.0034	0.017	0.0182 J	0.0115	0.022	0.0099	0.013 J	0.0075	0.12	0.014
Benzo(a)anthracene	*0.0091*	*0.02*	0.00017 J	0.00022	0.000059 J	0.00013 J	0.000339 J	<0.0038	**<0.021**	0.0004	0.0007 J	<0.0007	**0.033**	0.00047
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000755	**<0.0038**	**<0.021**	0.00014 J	**0.0008 J**	**<0.0008**	**0.0097**	**0.00027**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00009	<0.00005	<0.00005	<0.00005	<0.000123	**<0.0076**	**<0.042**	<0.00009	**0.0009 J**	**<0.0009**	<0.00009	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0002	<0.00025	<0.0002	<0.0001	<0.000349	<0.0038	**<0.021**	<0.0002	0.002 J	<0.002	0.0022	<0.00044
Chrysene	*0.91*	*2*	0.00011 J	0.00019 J	0.000053 J	0.0001 J	0.000225 J	<0.0038	<0.021	0.00032	0.0007 J	<0.0007	0.025	0.00047
Dibenzofuran	*0.098*	*0.29*	**0.13**	**0.13**	0.098	**0.17**	**0.158**	**0.115**	**0.195**	0.079	**0.15 J**	0.065	**0.47**	**0.19**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00007	0.000099 J	<0.00005	<0.00005	<0.000104	<0.0038	<0.021	<0.00007	0.0007 J	<0.0007	<0.00007	<0.00005
Fluoranthene	*0.98*	*2.9*	0.0059	0.006	0.0021	0.0059	0.00836	0.0044	<0.021	0.0035	0.0037 J	0.0022	0.17	0.0039
Fluorene	*0.98*	*2.9*	0.12	0.14	0.085	0.15	0.147	0.0701	0.109	0.047	0.076 J	0.039	0.42	0.12
Naphthalene	*0.49*	*1.5*	**1.2**	**1.8**	**1.8**	**2.1**	**1.81**	**23.6**	**25.5**	**9.7**	**16**	**15**	**16**	**19**
Nitrobenzene	*0.049*	*0.15*	<0.00009	<0.00005	<0.00005	<0.00005	<0.000104	<0.0076	<0.042	<0.00009	0.0009 J	<0.0009	<0.00009	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000943	<0.0048	<0.026	<0.00009	0.0009 J	<0.0009	<0.00009	<0.00005
Pentachlorophenol	*0.001*	*0.001*	<0.00008	0.000061 J	<0.00005	<0.00005	<0.000575	**<0.0038**	**<0.021**	<0.00008	0.0008 J	<0.0008	<0.00008	<0.00005
Phenanthrene	*0.73*	*2.2*	0.045	0.058	0.042	0.07	0.0614	0.0502	0.099	0.038	0.06 J	0.033	**0.91**	0.078
Phenol	*7.3*	*22*	0.000074 J	0.000067 J	0.00015 J	0.000088 J	<0.0000377	**20.2**	**16.5**	5.5	**7.7**	**19**	3.6	3.1
Pyrene	*0.73*	*2.2*	0.0034	0.005	0.0017	0.0034	0.0059	0.0076	<0.021	0.002	0.0021 J	0.0012 J	0.12	0.0019
Metals														
Arsenic	*0.01*	*0.01*												

Notes:
1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	***C/I Assessment Level***	MW-17 02/01/2012	MW-17 07/12/2012	MW-17 02/14/2013	MW-17 02/14/2013 Duplicate	MW-17 04/01/2013	MW-17 04/01/2013 Duplicate	MW-17 07/30/2013	MW-17 01/13/2014	MW-17 07/17/2014	MW-17 01/30/2018	MW-17 03/18/2018	MW-17 05/16/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.005	<0.005			**<0.007**	**<0.007**	**<0.014**	**<0.007**	<0.0028	<0.0002	<0.0002	<0.002
Benzene	*0.005*	*0.005*	**0.24**	**0.46**			**0.435**	**0.41**	**0.174**	**0.324**	**0.576**	**0.47**	**0.55**	**0.61**
Chlorobenzene	*0.1*	*0.1*	<0.005	<0.005			<0.006	<0.006	<0.012	<0.006	<0.0024	<0.0003	<0.0003	<0.003
Ethylbenzene	*0.7*	*0.7*	0.23	0.21			0.217	0.22	0.279	0.251	0.209	0.26	0.19	0.23
Methylene chloride	*0.005*	*0.005*	**<0.0065**	**<0.01**			**<0.0075**	**<0.0075**	**0.115**	**<0.0075**	**0.0187 J**	<0.001	<0.001	**<0.01**
Toluene	*1*	*1*	0.74	0.81			0.878	0.861	0.68	0.931	0.93	0.97	0.83	0.82
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	0.63	0.69			0.702	0.672	0.698	0.724	0.641	0.81	0.47	0.77
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0005	<0.00005	**<0.038**	**<0.038**	**<0.0423**	**<0.0423**	**<0.00534**	**<0.0529**	**<0.00519**	<0.00021	<0.00021	<0.00021
2,4-Dimethylphenol	*0.49*	*1.5*	**3**	**4**	**7.93**	**7.03**	**11.3**	**10.4**	**3.19**	**6.75**	**13.9**	**4.3**	**7.7**	**4.2**
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.0005	<0.00005	**<0.032**	**<0.032**	**<0.05**	**<0.05**	**<0.00631**	**<0.0625**	**<0.00613**	<0.00058	<0.00058	<0.00059
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0006	<0.00006	**<0.029**	**<0.029**	**<0.0308**	**<0.0308**	**<0.00388**	**<0.0385**	**<0.00377**	<0.00042	<0.00042	<0.00042
2-Chloronaphthalene	*2*	*5.8*	<0.0005	<0.00005	<0.019	<0.019	<0.0308	<0.0308	<0.00388	<0.0385	<0.00377	<0.00021	<0.00021	<0.00021
2-Methylnaphthalene	*0.098*	*0.29*	**0.29**	**0.51**	**0.443**	**0.421**	**1.04**	**1.24**	**1.04**	**0.857**	**0.636**	**0.3**	**0.38**	**0.34**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.0008	<0.00008	**<0.016**	**<0.016**	**<0.319**	**<0.319**	**<0.0403**	**<0.399**	**<0.0392**	<0.0002	<0.0002	<0.0002
4-Nitrophenol	*0.049*	*0.15*	<0.0005	<0.00005	<0.033	<0.033	**<0.215**	**<0.215**	<0.0272	**<0.269**	<0.0264	<0.00047	<0.00047	0.0076 J
Acenaphthene	*1.5*	*4.4*	0.13	0.14	0.159	0.155	0.36	0.369	0.353	0.315	0.195	0.084	0.13	0.11
Acenaphthylene	*1.5*	*4.4*	0.0056	0.005	<0.016	<0.016	<0.0231	<0.0231	0.0147 J	<0.0288	<0.00283	0.0029	<0.00015	0.0041
Anthracene	*7.3*	*22*	0.0096	0.014	<0.044	<0.044	0.0192 J	0.0822 J	0.0233 J	0.0278 J	0.0202 J	0.0065	0.011	0.0094
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0005	0.00018 J	**<0.025**	**<0.025**	**<0.0308**	**<0.0308**	<0.00388	**<0.0385**	<0.00377	<0.0005	<0.0005	<0.00051
Benzo(a)pyrene	*0.0002*	*0.0002*	**<0.0005**	<0.00005	**<0.013**	**<0.013**	**<0.0308**	**<0.0308**	**<0.00388**	**<0.0385**	**<0.00377**	<0.0002	<0.0002	<0.0002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.0005	<0.00005	**<0.019**	**<0.019**	**<0.05**	**<0.05**	**<0.00631**	**<0.0625**	**<0.00613**	<0.0003	<0.0003	<0.0003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.001	0.00027	**<0.059**	**<0.059**	**<0.142**	**<0.142**	**<0.018**	**<0.178**	**<0.0175**	<0.00037	<0.00037	<0.00037
Chrysene	*0.91*	*2*	<0.0005	0.00011 J	<0.024	<0.024	<0.0308	<0.0308	<0.00388	<0.0385	<0.00377	<0.00021	<0.00021	<0.00021
Dibenzofuran	*0.098*	*0.29*	0.093	**0.13**	**0.133 J**	**0.128 J**	**0.275**	**0.234**	**0.253**	**0.211 J**	**0.148**	0.071	0.092	0.082
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.0005	<0.00005	<0.187	<0.187	<0.0423	<0.0423	<0.00534	<0.0529	<0.00519	<0.0002	<0.0002	<0.0002
Fluoranthene	*0.98*	*2.9*	0.0026	0.0034	<0.031	<0.031	<0.0269	<0.0269	0.00667 J	<0.0337	0.00429 J	0.0022	0.003	0.0022
Fluorene	*0.98*	*2.9*	0.059	0.082	0.0672 J	0.0489 J	0.146 J	0.0718 J	0.165	0.16 J	0.0943	0.04	0.057	0.051
Naphthalene	*0.49*	*1.5*	**10**	**14**	**15.3**	**13.8**	**25.2**	**25.6**	**25.8**	**21.3**	**15.4**	**7.4**	**12**	**8.1**
Nitrobenzene	*0.049*	*0.15*	<0.0005	<0.00005	<0.02	<0.02	<0.0423	<0.0423	<0.00534	**<0.0529**	<0.00519	<0.00024	<0.00024	<0.00024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.0005	<0.00005	<0.033	<0.033	<0.0385	<0.0385	<0.00485	<0.0481	<0.00472	<0.00025	<0.00025	<0.00025
Pentachlorophenol	*0.001*	*0.001*	<0.0005	<0.00005	**<0.096**	**<0.096**	**<0.235**	**<0.235**	**<0.0296**	**<0.293**	**<0.0288**	<0.00079	<0.00079	<0.0008
Phenanthrene	*0.73*	*2.2*	0.042	0.063	0.0564 J	0.0534 J	0.124 J	0.0231 J	0.123	0.0993 J	0.0725	0.034	0.044	0.044
Phenol	*7.3*	*22*	3.7	6.1	**20.7**	**16.2**	**22.2**	**25.1**	1.54	6.46	**18.1**	7.1	**18**	6.5
Pyrene	*0.73*	*2.2*	0.0018 J	0.0018	<0.033	<0.033	<0.0423	<0.0423	<0.00534	<0.0529	<0.00519	0.0011	0.0015	0.0014
Metals														
Arsenic	*0.01*	*0.01*										**0.0444**	**0.0419**	**0.0415**

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-17 01/09/2019	MW-17 07/10/2019	MW-17 01/14/2020	MW-17C 01/30/2008	MW-17C 01/30/2008 Duplicate	MW-17C 07/15/2008	MW-17C 02/04/2009	MW-17C 01/18/2010	MW-17C 06/23/2010	MW-17C 01/17/2011	MW-17C 07/13/2011	MW-17C 02/01/2012
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.002	<0.0002	<0.0002	<0.00052	<0.00052	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.005
Benzene	*0.005*	*0.005*	**0.35**	**0.54**	<0.0002	**0.0565**	**0.0517**	**0.0426**	**0.03**	**0.0083**	**0.024**	**0.023**	**0.01**	**0.016 J**
Chlorobenzene	*0.1*	*0.1*	<0.003	<0.0003	<0.0003	<0.00047	<0.00047	<0.00047	<0.0005		<0.0005	<0.0005	<0.001	<0.005
Ethylbenzene	*0.7*	*0.7*	0.21	0.23	<0.0003	0.292	0.312	0.226	0.17	0.053	0.2	0.21	0.021	0.19
Methylene chloride	*0.005*	*0.005*	**<0.01**	<0.001	<0.001	<0.00054	<0.00054	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	**<0.0065**
Toluene	*1*	*1*	0.68	0.83	<0.0002	0.0137	0.014	0.0102	0.008	0.0042 J	0.0071	0.0081	0.0046 J	0.0067 J
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	0.66	0.78	<0.0003	0.485	0.485	0.353	0.25	0.046	0.33	0.42 J	0.029	0.22
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00021	<0.00021	<0.000021	<0.0008	**<0.04**	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	**1.9**	**5.9**	<0.00004	<0.0029	<0.14	0.00054 J	0.0028	0.044	0.0018	0.0035 J	**1.5**	<0.00005
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00058	<0.00058	<0.000058	**<0.0019**	**<0.096**	<0.00021	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00042	<0.00042	<0.000042	**<0.0019**	**<0.096**	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.00021	<0.00021	<0.000021	<0.0038	<0.19	<0.00042	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	**0.23**	**0.39**	<0.000019	**1.09**	**0.418**	0.0954	0.085	0.063	**0.099**	0.075	0.0073	0.062
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.0002	<0.0002	<0.00002	<0.0019	**<0.096**	<0.00053	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.00047	<0.00047	<0.000047	<0.0024	**<0.12**	<0.00026	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Acenaphthene	*1.5*	*4.4*	0.091	0.16	<0.000027	0.726	0.339	0.227	0.14	0.13	0.14	0.18	0.021	0.097
Acenaphthylene	*1.5*	*4.4*	0.0029	0.0042	<0.000015	<0.0029	<0.14	0.00251	0.0012	0.0013	0.0016	0.0017	0.00028	0.0011
Anthracene	*7.3*	*22*	0.0057	0.0092	<0.000014	0.178	<0.096	0.00985	0.0084	0.0057	0.0071	0.015	0.0016	0.0048
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0005	<0.0005	<0.00005	**0.0466**	**<0.096**	<0.00021	0.00018 J	0.00013 J	0.00016 J	0.0012	0.00017 J	0.000091 J
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0002	<0.0002	<0.00002	**0.0128**	**<0.096**	**<0.00021**	<0.00008	<0.00008	<0.00008	**0.00027**	<0.00005	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.0003	<0.0003	<0.00003	**<0.0038**	**<0.19**	<0.00042	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00037	<0.00037	<0.000037	<0.0019	**<0.096**	0.00021 J	<0.0002	<0.0039	<0.0018	0.0015	**<0.012**	<0.001
Chrysene	*0.91*	*2*	<0.00021	<0.00021	<0.000021	0.0428	<0.096	<0.00021	0.00017 J	0.00012 J	0.00017 J	0.001	<0.00005	0.00013 J
Dibenzofuran	*0.098*	*0.29*	0.072	**0.12**	<0.00002	**0.61**	**0.291**	**0.19**	**0.13**	**0.11**	**0.13**	**0.19**	0.021	0.096
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.0002	<0.0002	<0.00002	<0.0019	<0.096	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Fluoranthene	*0.98*	*2.9*	0.0015	0.0039	0.00011	0.322	<0.096	0.00845	0.007	0.0044	0.005	0.019	0.0018	0.002
Fluorene	*0.98*	*2.9*	0.043	0.06	<0.00003	0.422	0.167	0.0799	0.062	0.055	0.069	0.083	0.009	0.054
Naphthalene	*0.49*	*1.5*	**5.5**	**8.9**	<0.00002	**9.8**	**6.35**	**5.84**	**3.4**	**2.2**	**3.4**	**4.1**	0.37	**3.3**
Nitrobenzene	*0.049*	*0.15*	<0.00024	<0.00024	<0.000024	<0.0038	**<0.19**	<0.00042	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00025	<0.00025	<0.000025	<0.0024	<0.12	<0.00026	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
Pentachlorophenol	*0.001*	*0.001*	<0.00079	<0.00079	<0.000079	**<0.0019**	**<0.096**	<0.00021	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005
Phenanthrene	*0.73*	*2.2*	0.028	0.045	<0.000021	**1.09**	0.316	0.104	0.078	0.058	0.08	0.076	0.014	0.0081
Phenol	*7.3*	*22*	2.2	**9.9**	<0.000035	<0.0019	<0.096	0.0349	0.0013	0.14	<0.00007	0.00078	0.025	0.00014 J
Pyrene	*0.73*	*2.2*	0.00081 J	0.0018	0.000066 J	0.19	<0.096	0.00445	0.0033	0.0028	0.0026	0.009	0.00098	0.0025
Metals														
Arsenic	*0.01*	*0.01*	**0.046**	**0.046**	0.00154 J									

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-17C 07/12/2012	MW-17C 02/14/2013	MW-17C 04/01/2013	MW-17C 07/30/2013	MW-17C 01/13/2014	MW-17C 07/17/2014	MW-17C 01/31/2018	MW-17C 03/18/2018	MW-17C 05/16/2018	MW-17C 01/10/2019	MW-17C 07/10/2019	MW-17C 01/15/2020
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005		<0.0014	<0.0014	<0.0007	<0.00014	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	**0.013**		**0.0114**	**0.0162**	**0.00939**	**0.0132**	**0.014**	**0.0067**	**0.0099**	**0.012**	**0.0097**	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0005		<0.0012	<0.0012	<0.0006	<0.00012	<0.0003	<0.0003	<0.0015	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	0.17		0.161	0.225	0.123	0.0374	0.042	0.16	0.12	0.027	0.027	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.001		0.00368 J	**0.00786 J**	<0.00075	<0.00015	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001
Toluene	*1*	*1*	0.0057		0.0049 J	0.00743 J	0.00471 J	0.0073	0.0097	0.0038	0.0069	0.0087	0.0073	<0.0002
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	0.21		0.217	0.27	0.141	0.0482	0.071	0.1	0.094	0.05	0.039	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	**<0.038**	<0.000106	**<0.0107**	**<0.0106**	**<0.00519**	<0.00021	<0.00021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	0.039	0.0418 J	<0.000298	<0.0301	<0.0298	**7.09**	**0.59**	0.03	0.08	0.47	0.21	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	**<0.032**	<0.000125	**<0.0126**	**<0.0125**	**<0.00613**	<0.00058	<0.00058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	**<0.029**	<0.0000769	**<0.00777**	**<0.00769**	**<0.00377**	<0.00042	<0.00042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.019	<0.0000769	<0.00777	<0.00769	<0.00377	<0.00021	<0.00021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	**0.1**	**0.173**	**0.176**	**0.151**	**0.144**	0.0203 J	0.094	**0.12**	**1.1**	0.025	0.026	0.000073 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	**<0.016**	<0.000798	**<0.0806**	**<0.0798**	**<0.0392**	<0.0002	<0.0002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00005	<0.033	0.00502	**<0.0544**	**<0.0538**	<0.0264	0.0035 J	<0.00047	0.0017	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	0.14	0.194	0.216	0.239	0.218	0.0299	0.043	0.15	1.4	0.031	0.035	0.00023
Acenaphthylene	*1.5*	*4.4*	0.0018	<0.016	<0.0000577	<0.00583	<0.00577	<0.00283	0.00076 J	0.002	0.0017	0.00047	0.00037	<0.000015
Anthracene	*7.3*	*22*	0.008	<0.044	0.011	0.0144 J	0.0156 J	<0.00236	0.0017	0.01	0.0088	0.0012	0.0013	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*	0.00022	**<0.025**	0.00016 J	<0.00777	<0.00769	<0.00377	<0.0005	<0.0005	0.00011	0.000062 J	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	**<0.013**	<0.0000769	**<0.00777**	**<0.00769**	**<0.00377**	<0.0002	<0.0002	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	**<0.019**	<0.000125	**<0.0126**	**<0.0125**	**<0.00613**	<0.0003	<0.0003	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.0048	**<0.059**	0.00148	**<0.0359**	**0.0491 J**	**<0.0175**	0.005	0.0053	0.0018	0.00062	0.00056	<0.000037
Chrysene	*0.91*	*2*	0.00016 J	<0.024	0.000167 J	<0.00777	<0.00769	<0.00377	<0.00021	<0.00021	0.00011	0.000059 J	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	**0.14**	**0.16**	**0.185**	**0.199**	**0.184**	0.0255	0.039	**0.13**	**0.099**	0.027	0.027	0.000065 J
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00005	<0.187	<0.000106	<0.0107	<0.0106	<0.00519	<0.0002	<0.0002	0.000058 J	<0.00002	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	0.0048	<0.031	0.00784	0.00795 J	0.00707 J	<0.0033	0.00073 J	0.0056	0.0044	0.00078	0.0009	0.00034
Fluorene	*0.98*	*2.9*	0.066	0.0785 J	0.0989	0.103	0.0907	0.0118 J	0.019	0.066	0.06	0.012	0.014	0.000061 J
Naphthalene	*0.49*	*1.5*	**4**	**0.988**	**5.9**	**4.4**	**6.24**	**0.772**	**1.8**	**4.8**	**53**	**1.1**	**0.97**	0.00016
Nitrobenzene	*0.049*	*0.15*	<0.00005	<0.02	<0.000106	<0.0107	<0.0106	<0.00519	<0.00024	<0.00024	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.033	<0.0000962	<0.00971	<0.00962	<0.00472	<0.00025	<0.00025	<0.000025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00005	**<0.096**	<0.000587	**<0.0592**	**<0.0587**	**<0.0288**	<0.00079	<0.00079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	0.076	0.106 J	0.12	0.12	0.11	0.0122 J	0.014	0.071	0.07	0.01	0.01	<0.000021
Phenol	*7.3*	*22*	<0.0002	0.107 J	<0.0000385	<0.00388	<0.00385	**8.33**	0.0025	0.0036	0.00022	0.033	0.00073	<0.000035
Pyrene	*0.73*	*2.2*	0.0028	<0.033	0.00356	<0.0107	<0.0106	<0.00519	0.00031 J	0.0031	0.0025	0.00045	0.00046	0.00021
Metals														
Arsenic	*0.01*	*0.01*							0.00112 J	0.00688	0.00479	0.0013 J	0.000854 J	0.00184 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	***C/I Assessment Level***	MW-18A 01/30/2008	MW-18A 07/15/2008	MW-18A 02/05/2009	MW-18A 01/18/2010	MW-18A 06/24/2010	MW-18A 01/17/2011	MW-18A 07/13/2011	MW-18A 02/01/2012	MW-18A 07/11/2012	MW-18A 01/31/2013	MW-18A 07/29/2013	MW-18A 01/13/2014
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00052	<0.00052	<0.0025	<0.005	<0.0025	<0.0025	<0.005	<0.005	<0.005	**<0.007**	0.00405 J	**<0.014**
Benzene	*0.005*	*0.005*	**0.503**	**0.321**	**0.48**	**0.51**	**0.47**	**0.55**	**0.59**	**0.28**	**0.68**	**0.636**	**0.491**	**0.239**
Chlorobenzene	*0.1*	*0.1*	0.0167	0.0074	0.017 J	<0.005	<0.0025	<0.0025	<0.005	<0.005	<0.005	<0.006	<0.0012	<0.012
Ethylbenzene	*0.7*	*0.7*	0.555	0.153	0.52	0.48	0.54	0.55	0.39	0.55	0.3	0.316	0.398	0.637
Methylene chloride	*0.005*	*0.005*	<0.00054	<0.00054	<0.0025	<0.005	<0.0025	<0.0025	**<0.0065**	**<0.0065**	**<0.01**	**<0.0075**	**0.00976 J**	**<0.015**
Toluene	*1*	*1*	0.374	0.0718	0.23	0.32	0.45	0.35	0.23	0.21	0.21	0.154	0.239	0.0731 J
Vinyl chloride	*0.002*	*0.002*				**0.059**		**0.07**	**0.028**	**0.047**	**<0.005**	**0.0181 J**	**0.029**	**<0.011**
Xylenes (total)	*10*	*10*	1.13	0.292	0.98	1.2	1.2	1	0.73	1.1	0.51	0.519	0.991	1.27
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	**<0.008**	<0.0008	<0.0001	<0.0001	<0.0005	<0.0001	<0.00005	<0.0005	0.00005 J	<0.00108	**<0.0214**	**<0.0106**
2,4-Dimethylphenol	*0.49*	*1.5*	**12.5**	**2.17**	**1.9**	**4.5**	**7.9**	**9.6 J**	**11**	**5.8**	**9.4 J**	**11.8**	**6.29**	**2.95**
2,4-Dinitrotoluene	*0.0013*	*0.003*	**<0.02**	**<0.002**	<0.00009	<0.00009	<0.00045	<0.00009	<0.00005	<0.0005	0.00005 J	<0.00127	**<0.0252**	**<0.0125**
2,6-Dinitrotoluene	*0.0013*	*0.003*	**<0.02**	**<0.002**	<0.00007	<0.00007	<0.00035	<0.00007	<0.00006	<0.0006	0.00006 J	<0.000784	**<0.0155**	**<0.00769**
2-Chloronaphthalene	*2*	*5.8*	<0.041	<0.004	<0.00012	<0.0001	<0.0005	<0.0001	<0.00005	<0.0005	0.00005 J	<0.000784	<0.0155	<0.00769
2-Methylnaphthalene	*0.098*	*0.29*	**0.548**	**0.594**	**0.42**	**0.36**	**0.4**	**0.44**	**0.7**	**0.23**	**0.64 J**	**0.745**	**0.819**	**0.996**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	**<0.02**	**<0.005**	<0.00008	<0.00008	<0.0004	<0.00008	<0.00008	<0.0008	0.00008 J	**<0.00814**	**<0.161**	**<0.0798**
4-Nitrophenol	*0.049*	*0.15*	<0.026	<0.0025	<0.00007	<0.00007	<0.00035	<0.00007	<0.00005	<0.0005	0.00005 J	<0.00549	**<0.109**	**<0.0538**
Acenaphthene	*1.5*	*4.4*	0.343	0.466	0.19	0.23	0.25	0.24	0.36	0.15	0.3 J	0.464	0.493	0.553
Acenaphthylene	*1.5*	*4.4*	<0.031	0.0131	0.0092	0.0062	0.0095	0.0072	0.015	0.007	0.0067 J	0.0151	<0.0117	<0.00577
Anthracene	*7.3*	*22*	<0.02	0.0114	0.009	0.0069	0.0075	0.0073	0.013	0.0046	0.009 J	0.0204	0.0204 J	0.0226 J
Benzo(a)anthracene	*0.0091*	*0.02*	**<0.02**	<0.002	<0.00007	<0.00007	<0.00035	<0.00007	<0.00005	<0.0005	0.00005 J	<0.000784	**<0.0155**	<0.00769
Benzo(a)pyrene	*0.0002*	*0.0002*	**<0.02**	**<0.002**	<0.00008	<0.00008	**<0.0004**	<0.00008	<0.00005	**<0.0005**	0.00005 J	**<0.000784**	**<0.0155**	**<0.00769**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	**<0.041**	**<0.004**	<0.00009	<0.00009	<0.00045	<0.00009	<0.00005	<0.0005	0.00005 J	**<0.00127**	**<0.0252**	**<0.0125**
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	**<0.02**	<0.002	0.00033	<0.0002	<0.001	<0.0002	<0.0001	<0.0011	0.0001 J	<0.00363	**<0.0718**	**<0.0356**
Chrysene	*0.91*	*2*	<0.02	<0.002	<0.00007	<0.00007	<0.00035	<0.00007	<0.00005	<0.0005	0.00005 J	<0.000784	<0.0155	<0.00769
Dibenzofuran	*0.098*	*0.29*	**0.233**	**0.29**	**0.12**	**0.15**	**0.16**	**0.15**	**0.23**	0.075	**0.21 J**	**0.188**	**0.279**	**0.326**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.02	<0.002	<0.00007	<0.00007	<0.00035	<0.00007	<0.00005	<0.0005	0.00005 J	<0.00108	<0.0214	<0.0106
Fluoranthene	*0.98*	*2.9*	<0.02	0.0021	0.0026	0.0013	0.0013	0.0014	0.0018	0.0013 J	0.0016 J	<0.000686	<0.0136	<0.00673
Fluorene	*0.98*	*2.9*	0.155	0.182	0.089	0.096	0.11	0.094	0.18	0.057	0.14 J	0.136	0.214	0.268
Naphthalene	*0.49*	*1.5*	**7.93**	**7.43**	**3.3**	**4.3**	**6.1**	**5.9**	**7.3**	**3.6**	**7.8 J**	**9.29**	**11.8**	**11.4**
Nitrobenzene	*0.049*	*0.15*	<0.041	<0.004	<0.00009	<0.00009	<0.00045	<0.00009	<0.00005	<0.0005	0.00005 J	<0.00108	<0.0214	<0.0106
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.026	<0.0025	<0.00009	<0.00009	<0.00045	<0.00009	<0.00005	<0.0005	0.00005 J	<0.00098	<0.0194	<0.00962
Pentachlorophenol	*0.001*	*0.001*	**<0.02**	**<0.002**	<0.00008	<0.00008	<0.0004	<0.00008	<0.00005	<0.0005	0.00005 J	**<0.00598**	**<0.118**	**<0.0587**
Phenanthrene	*0.73*	*2.2*	0.118	0.12	0.078	0.067	0.082	0.063	0.098	0.042	0.083 J	0.101	0.144	0.19
Phenol	*7.3*	*22*	0.364	<0.002	0.005	0.043	0.0054	0.02	0.061	0.011	0.12 J	<0.000392	<0.00777	<0.00385
Pyrene	*0.73*	*2.2*	<0.02	<0.002	0.0013	0.00075	0.00063 J	0.00085	0.0011	0.00077 J	0.00081 J	<0.00108	<0.0214	<0.0106
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-18A 07/16/2014	MW-18A 01/25/2018	MW-18A 03/19/2018	MW-18A 05/16/2018	MW-18A 01/10/2019	MW-18A 07/10/2019	MW-18A 01/08/2020	MW-18C 01/30/2008	MW-18C 07/15/2008	MW-18C 02/05/2009	MW-18C 01/19/2010	MW-18C 06/24/2010
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	0.00482 J	<0.0002	<0.0002	<0.0002	<0.005	<0.0002	<0.005	<0.00052	<0.00052	<0.005	<0.005	<0.0025
Benzene	*0.005*	*0.005*	**0.483**	**0.19**	**0.22**	**0.17**	**1.2**	**0.16**	**0.41**	**1.34**	**0.964**	**1.4**	**1.5**	**1**
Chlorobenzene	*0.1*	*0.1*	<0.0024	0.0062	0.006	0.0066	<0.0075	0.0017	<0.0075	<0.00047	<0.00047	<0.005	<0.005	<0.0025
Ethylbenzene	*0.7*	*0.7*	0.692	0.36	0.36	0.43	0.34	0.28	0.32	0.304	0.178	0.26	0.21	0.13
Methylene chloride	*0.005*	*0.005*	**0.0138 J**	<0.001	<0.001	<0.001	**<0.025**	<0.001	**<0.025**	<0.00054	<0.00054	<0.005	<0.005	<0.0025
Toluene	*1*	*1*	0.416	0.074	0.068	0.042	0.92	0.057	0.11	**1.2**	0.691	1	0.96	0.72 J
Vinyl chloride	*0.002*	*0.002*	**0.02 J**	**0.0023**	0.002	**0.0021**	**<0.005**	0.0013	**<0.005**					
Xylenes (total)	*10*	*10*	1.3	0.97	0.79	0.91	1	0.47	0.5	1.1	0.624	1.1	1	1
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	**<0.00519**	<0.00021	<0.00021	<0.00021	<0.00021	<0.000021	<0.000021	**<0.04**	<0.0008	<0.0001	<0.0001	<0.0005
2,4-Dimethylphenol	*0.49*	*1.5*	**8.01**	0.023	0.12	**0.5**	0.0054	**0.72**	**1.8**	<0.15	<0.0031	0.084	0.0081	0.0078 J
2,4-Dinitrotoluene	*0.0013*	*0.003*	**<0.00613**	<0.00058	<0.00058	<0.00058	<0.00058	<0.000058	<0.000058	**<0.098**	**0.00636**	<0.00009	<0.00009	<0.00045
2,6-Dinitrotoluene	*0.0013*	*0.003*	**<0.00377**	<0.00042	<0.00042	<0.00042	<0.00042	<0.000042	<0.000042	**<0.098**	**<0.002**	<0.00007	<0.00007	<0.00035
2-Chloronaphthalene	*2*	*5.8*	<0.00377	<0.00021	<0.00021	<0.00021	<0.00021	<0.000021	<0.000021	<0.2	<0.0041	<0.00012	<0.0001	<0.0005
2-Methylnaphthalene	*0.098*	*0.29*	**0.589**	**0.33**	**0.34**	**0.22**	**0.1**	**0.47**	**0.36**	**0.894**	**0.674**	**0.95**	**0.46**	**0.2**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	**<0.0392**	<0.0002	<0.0002	<0.0002	<0.0002	<0.00002	<0.00002	**<0.098**	**<0.0051**	<0.00008	<0.00008	<0.0004
4-Nitrophenol	*0.049*	*0.15*	<0.0264	<0.00047	<0.00047	<0.00047	<0.00047	<0.000047	0.0042	**<0.12**	<0.0026	<0.00007	<0.00007	<0.00035
Acenaphthene	*1.5*	*4.4*	0.352	0.25	0.23	0.24	0.048	0.3	0.33	0.293	0.251	0.18	0.17	0.082
Acenaphthylene	*1.5*	*4.4*	0.0155 J	0.0074	0.0092	0.009	0.0016	0.0056	0.0081	<0.15	0.00649	0.0036	0.0023	0.0015
Anthracene	*7.3*	*22*	0.0192 J	0.0061	0.0079	0.0077	0.0064	0.0063	0.0082	<0.098	0.0321	0.017	0.014	0.0076 J
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00377	<0.0005	<0.0005	<0.0005	<0.0005	<0.00005	<0.00005	**<0.098**	0.0025	0.00039	<0.00007	<0.00035
Benzo(a)pyrene	*0.0002*	*0.0002*	**<0.00377**	<0.0002	<0.0002	<0.0002	<0.0002	<0.00002	<0.00002	**<0.098**	**<0.002**	0.00013 J	<0.00008	**<0.0004**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	**<0.00613**	<0.0003	<0.0003	<0.0003	<0.0003	<0.00003	<0.00003	**<0.2**	**<0.0041**	<0.00009	<0.00009	<0.00045
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	**<0.0175**	<0.00037	<0.00037	<0.00037	<0.00037	<0.000037	<0.00043	**<0.098**	<0.002	0.00023	<0.0002	<0.001
Chrysene	*0.91*	*2*	<0.00377	<0.00021	<0.00021	<0.00021	<0.00021	<0.000021	<0.000021	<0.098	0.0021	0.00033	<0.00007	<0.00035
Dibenzofuran	*0.098*	*0.29*	**0.204**	**0.16**	**0.15**	**0.14**	0.047	**0.19**	**0.2**	**0.263**	**0.23**	**0.16**	0.091	0.077
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00519	<0.0002	<0.0002	<0.0002	<0.0002	<0.00002	<0.00002	<0.098	<0.002	<0.00007	<0.00007	<0.00035
Fluoranthene	*0.98*	*2.9*	<0.0033	0.0021	0.0023	0.0017	0.002	0.0022	0.0023	<0.098	0.0169	0.0047	0.0035	0.0023
Fluorene	*0.98*	*2.9*	0.163	0.087	0.12	0.098	0.021	0.091	0.16	0.137	0.153	0.081	0.052	0.034
Naphthalene	*0.49*	*1.5*	**5.27**	**4.4**	**4.9**	**6.1**	**3.2**	**5.6**	**4.6**	**16.6**	**16.7**	**21**	**12**	**6.2**
Nitrobenzene	*0.049*	*0.15*	<0.00519	<0.00024	<0.00024	<0.00024	<0.00024	<0.000024	<0.000024	**<0.2**	<0.0041	<0.00009	<0.00009	<0.00045
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00472	<0.00025	<0.00025	<0.00025	<0.00025	<0.000025	<0.000025	<0.12	<0.0026	<0.00009	<0.00009	<0.00045
Pentachlorophenol	*0.001*	*0.001*	**<0.0288**	<0.00079	<0.00079	<0.00079	**0.014**	<0.000079	<0.000079	**<0.098**	**0.134**	**0.026**	**0.041**	**0.02**
Phenanthrene	*0.73*	*2.2*	0.114	0.066	0.08	0.082	0.024	0.075	0.1	0.213	0.177	0.076	0.052	0.032
Phenol	*7.3*	*22*	<0.00189	0.0019 J	<0.00035	<0.00035	0.0032	0.00048	0.0014	<0.098	0.0944	0.031	0.059	0.026
Pyrene	*0.73*	*2.2*	<0.00519	0.0011	0.0012	0.0008 J	0.0012	0.0011	0.0013	<0.098	0.01	0.0025	0.002	0.0012
Metals														
Arsenic	*0.01*	*0.01*		0.0043	**0.0239**	**0.0291**	0.0031	**0.0248**	**0.0236**					

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-18C 01/17/2011	MW-18C 07/13/2011	MW-18C 02/01/2012	MW-18C 07/11/2012	MW-18C 01/31/2013	MW-18C 07/29/2013	MW-18C 01/13/2014	MW-18C 07/16/2014	MW-18C 01/25/2018	MW-18C 03/19/2018	MW-18C 05/16/2018	MW-18C 01/10/2019
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0025	**<0.01**	<0.005	<0.005	**<0.007**	**<0.014**	**<0.007**	<0.0028	<0.0002	<0.0002	<0.002	<0.002
Benzene	*0.005*	*0.005*	**1.3**	**1.2**	**1.3**	**1.2**	**1.51**	**1.23**	**1.51**	**1.45**	**1.4**	**1.3**	**1.4**	**0.3**
Chlorobenzene	*0.1*	*0.1*	<0.0025	<0.01	<0.005	<0.005	<0.006	<0.012	<0.006	<0.0024	<0.0003	0.00052 J	<0.003	<0.003
Ethylbenzene	*0.7*	*0.7*	0.18	0.16	0.19	0.15	0.203	0.22	0.245	0.309	0.35	0.29	0.32	0.41
Methylene chloride	*0.005*	*0.005*	<0.0025	**<0.013**	**<0.0065**	**<0.01**	**<0.0075**	**0.0688 J**	**<0.0075**	**0.0161 J**	<0.001	<0.001	**<0.01**	**<0.01**
Toluene	*1*	*1*	0.83	0.8	0.83	0.72	0.962	0.899	**1.07**	0.986	**1.1**	0.96	0.9	0.03
Vinyl chloride	*0.002*	*0.002*	**<0.0025**	**<0.01**	**<0.005**	**<0.005**	**<0.0055**	**<0.011**	**<0.0055**	**<0.0022**	0.0018	**0.0026**	<0.002	<0.002
Xylenes (total)	*10*	*10*	1	0.9	0.82	0.84	1.01	0.881	1.02	1.36	1	0.93	1.1	0.69
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0001	<0.00005	<0.0005	<0.00005	**<0.0545**	**<0.00534**	**<0.0106**	**<0.00519**	<0.00021	<0.00021	<0.00021	<0.00021
2,4-Dimethylphenol	*0.49*	*1.5*	0.012 J	0.0031	0.01	<0.0021	<0.153	<0.015	<0.0298	0.0325	<0.0004	<0.0004	0.082	0.29
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00009	<0.00005	<0.0005	<0.00005	**<0.0644**	**<0.00631**	**<0.0125**	**<0.00613**	<0.00058	<0.00058	<0.00058	<0.00059
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00007	<0.00006	<0.0006	<0.00006	**<0.0396**	**<0.00388**	**<0.00769**	**<0.00377**	<0.00042	<0.00042	<0.00042	<0.00042
2-Chloronaphthalene	*2*	*5.8*	<0.0001	<0.00005	<0.0005	<0.00005	<0.0396	<0.00388	<0.00769	<0.00377	<0.00021	<0.00021	<0.00021	<0.00021
2-Methylnaphthalene	*0.098*	*0.29*	**0.31**	**0.34**	**0.16**	**0.46**	**0.977**	**0.871**	**1.06**	**0.778**	**0.41**	**0.44**	**0.3**	**0.33**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.0008	<0.00008	**<0.411**	**<0.0403**	**<0.0798**	**<0.0392**	<0.0002	<0.0002	<0.0002	<0.0002
4-Nitrophenol	*0.049*	*0.15*	<0.00007	<0.00005	<0.0005	<0.00005	**<0.277**	<0.0272	**<0.0538**	<0.0264	<0.00047	<0.00047	<0.00047	<0.00047
Acenaphthene	*1.5*	*4.4*	0.14	0.12	0.062	0.13	0.32	0.265	0.317	0.246	0.15	0.16	0.15	0.21
Acenaphthylene	*1.5*	*4.4*	0.0019	0.0023	0.0018 J	0.0019	<0.0297	<0.00291	<0.00577	<0.00283	0.0025	0.0035	0.003	0.0075
Anthracene	*7.3*	*22*	0.015	0.013	0.012	0.008	0.0401 J	0.0284	0.0414 J	0.028	0.017	0.02	0.019	0.007
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00007	<0.00005	<0.0005	0.00014 J	**<0.0396**	<0.00388	<0.00769	<0.00377	0.0013	<0.0005	<0.0005	<0.00051
Benzo(a)pyrene	*0.0002*	*0.0002*	**0.00035**	0.00015 J	**<0.0005**	<0.00005	**<0.0396**	**<0.00388**	**<0.00769**	**<0.00377**	<0.0002	<0.0002	<0.0002	<0.0002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00009	<0.00005	<0.0005	<0.00005	**<0.0644**	**<0.00631**	**<0.0125**	**<0.00613**	<0.0003	<0.0003	<0.0003	<0.0003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0002	<0.0001	<0.001	<0.0001	**<0.183**	**<0.018**	**<0.0356**	**<0.0175**	<0.00037	<0.00037	<0.00037	<0.00037
Chrysene	*0.91*	*2*	<0.00007	<0.00005	<0.0005	0.0001 J	<0.0396	<0.00388	<0.00769	<0.00377	0.0008 J	<0.00021	0.00038 J	<0.00021
Dibenzofuran	*0.098*	*0.29*	**0.13**	**0.11**	0.06	**0.14**	**0.288**	**0.225**	**0.276**	**0.207**	**0.14**	**0.15**	**0.13**	**0.13**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00007	<0.00005	<0.0005	<0.00005	<0.0545	<0.00534	<0.0106	<0.00519	<0.0002	<0.0002	<0.0002	<0.0002
Fluoranthene	*0.98*	*2.9*	0.0059	0.0042	0.0018 J	0.0023	<0.0347	0.00865 J	0.0191 J	0.00957 J	0.0096	0.0071	0.0058	0.0023
Fluorene	*0.98*	*2.9*	0.051	0.052	0.028	0.055	0.132 J	0.114	<0.00673	0.116	0.056	0.073	0.062	0.095
Naphthalene	*0.49*	*1.5*	**13**	**12**	**9.7**	**13**	**20.2 J**	**20.9**	**20.3**	**14.7**	**14**	**12**	**21**	**4.4**
Nitrobenzene	*0.049*	*0.15*	<0.00009	<0.00005	<0.0005	<0.00005	**<0.0545**	<0.00534	<0.0106	<0.00519	<0.00024	<0.00024	<0.00024	<0.00024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00009	<0.00005	<0.0005	<0.00005	<0.0495	<0.00485	<0.00962	<0.00472	<0.00025	<0.00025	<0.00025	<0.00025
Pentachlorophenol	*0.001*	*0.001*	**0.064**	**0.076 J**	**0.085**	**0.075**	**<0.302**	**<0.0296**	**0.188**	**0.164**	**0.024**	**0.041**	**0.037**	<0.0008
Phenanthrene	*0.73*	*2.2*	0.055	0.052	0.027	0.055	0.155 J	0.127	0.177	0.122	0.072	0.086	0.078	0.084
Phenol	*7.3*	*22*	0.043	0.048	0.027	0.075	0.0601 J	0.0205 J	0.0184 J	0.0285	0.0042	0.0067	<0.00035	<0.00035
Pyrene	*0.73*	*2.2*	0.0028	0.0017	0.001 J	0.0011	<0.0545	<0.00534	<0.0106	0.00571 J	0.0055	0.0049	0.0036	0.0012
Metals														
Arsenic	*0.01*	*0.01*									0.00467	0.00327	0.00342	**0.0257**

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
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8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	***C/I Assessment Level***	MW-18C 07/10/2019	MW-18C 01/08/2020	MW-19C 01/31/2008	MW-19C 07/15/2008	MW-19C 02/04/2009	MW-19C 01/18/2010	MW-19C 06/23/2010	MW-19C 01/18/2011	MW-19C 01/18/2011 Duplicate	MW-19C 07/14/2011	MW-19C 02/08/2012	MW-19C 07/12/2012
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.002	<0.00052	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005
Benzene	*0.005*	*0.005*	**1.2**	**1.1**	0.00398 J	<0.00025	<0.0005	**0.0056**	<0.0005	<0.0005	<0.0005	<0.001	0.005	<0.0005
Chlorobenzene	*0.1*	*0.1*	0.00052 J	<0.003	<0.00047	<0.00047	<0.0005		<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005
Ethylbenzene	*0.7*	*0.7*	0.32	0.31	<0.00025	<0.00025	<0.0005	0.0018 J	<0.0005	<0.0005	<0.0005	<0.0011	0.0031 J	<0.0005
Methylene chloride	*0.005*	*0.005*	<0.001	**<0.01**	<0.00054	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001
Toluene	*1*	*1*	1	0.97	0.00596	<0.00041	<0.0005	0.0076	<0.0005	<0.0005	<0.0005	<0.001	0.0085	<0.0005
Vinyl chloride	*0.002*	*0.002*	<0.0002	<0.002								<0.001	<0.001	<0.0005
Xylenes (total)	*10*	*10*	1	0.92	<0.00127	<0.00127	<0.001	0.0043 J	<0.001	<0.001	<0.001	<0.0031	0.0063 J	<0.0015
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.00008	0.00023 J	<0.0001	<0.0001	0.00024	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	0.0051	0.023	<0.00029	<0.00028	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	0.00016 J
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.00019	<0.00019	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.00019	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.00038	<0.00038	<0.00012	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	**0.28**	**0.31**	0.00132	<0.00038	0.00025	0.0017	0.000079 J	0.00015 J	0.00022	0.0012	<0.00005	<0.000053
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00019	<0.00047	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.00024	<0.00024	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Acenaphthene	*1.5*	*4.4*	0.058	0.093	0.000562	<0.00028	0.00022	0.001	0.00012 J	0.00015 J	0.0003	0.00067	0.0012	0.00017 J
Acenaphthylene	*1.5*	*4.4*	0.005	0.0026	<0.00029	<0.00028	<0.00006	0.00014 J	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Anthracene	*7.3*	*22*	0.0056	0.02	<0.00019	<0.00019	<0.00007	0.0001 J	<0.00007	<0.00007	<0.00007	0.00015 J	<0.00005	<0.00005
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	0.0025	<0.00019	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	**0.00053**	<0.00019	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00038	<0.00038	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	<0.000037	<0.00019	0.00027 J	<0.0002	<0.0028	<0.00036	0.00026	0.00025	<0.00039	<0.00022	0.00014 J
Chrysene	*0.91*	*2*	<0.000021	0.0027	<0.00019	<0.00019	<0.00007	<0.00007	<0.00007	0.000072 J	0.000084 J	<0.00005	<0.00005	<0.00005
Dibenzofuran	*0.098*	*0.29*	0.054	0.085	0.00042 J	<0.00028	0.00017 J	0.00051	<0.00008	0.00013 J	0.0002 J	<0.0006	0.00014 J	<0.00011
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.00019	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00015 J
Fluoranthene	*0.98*	*2.9*	0.0019	0.013	<0.00019	0.00182	0.00015 J	0.00024	0.0021	0.0026 J	0.00062 J	0.0016	<0.00005	0.0018
Fluorene	*0.98*	*2.9*	0.024	0.043	0.00044 J	<0.00019	<0.00007	0.00032	0.00028	0.00032	0.00022	<0.00066	<0.00005	0.00033
Naphthalene	*0.49*	*1.5*	**9.9**	**14**	0.0613	0.000826	0.0077	0.09	<0.0015	0.0061 J	0.0084 J	0.014	0.00077	<0.00048
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.00038	<0.00038	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.00024	<0.00024	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
Pentachlorophenol	*0.001*	*0.001*	**0.034**	**0.023**	<0.00019	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	0.00028 J	<0.00005	<0.00005
Phenanthrene	*0.73*	*2.2*	0.026	0.065	<0.00019	<0.00019	<0.00007	0.00016 J	<0.00007	<0.00007	0.00014 J	<0.00053	<0.00005	<0.00005
Phenol	*7.3*	*22*	0.005	0.0062	<0.00019	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00024
Pyrene	*0.73*	*2.2*	0.0014	0.0066	0.00036 J	0.00117	<0.00007	0.0002	0.0012	0.0016 J	0.0004 J	0.0014	<0.00005	0.0014
Metals														
Arsenic	*0.01*	*0.01*	0.00358	0.00283										

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
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TABLE 2
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CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-19C 02/01/2013	MW-19C 07/30/2013	MW-19C 01/15/2014	MW-19C 07/17/2014	MW-19C 02/09/2018	MW-19C 03/18/2018	MW-19C 05/16/2018	MW-19C 01/24/2019	MW-19C 07/10/2019	MW-19C 01/09/2020	MW-20A 01/30/2008	MW-20A 07/14/2011
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002	<0.0002	<0.002	<0.0002	<0.0002	<0.0002	<0.00052	<0.005
Benzene	*0.005*	*0.005*	0.000558 J	0.00427	0.00028 J	0.0000801 J	0.0013	0.0027	0.0041 J	0.0044	0.0004 J	0.00032 J	**0.0609**	**0.098**
Chlorobenzene	*0.1*	*0.1*	<0.00012	<0.00012	<0.00012	<0.00012	<0.0003	<0.0003	<0.003	<0.0003	<0.0003	<0.0003	<0.00047	<0.005
Ethylbenzene	*0.7*	*0.7*	0.000793 J	0.0114	0.000966 J	0.000783 J	0.00091 J	0.0025	<0.003	0.004	0.00096 J	0.00064 J	0.0965	0.077
Methylene chloride	*0.005*	*0.005*	<0.00015	<0.00015	<0.00015	<0.00015	<0.001	<0.001	**<0.01**	<0.001	<0.001	<0.001	<0.00054	**<0.0065**
Toluene	*1*	*1*	0.00171	0.0155	0.00136	0.000578 J	<0.0002	0.0018	0.0042 J	0.0057	0.00086 J	<0.0002	0.00716	<0.005
Vinyl chloride	*0.002*	*0.002*	<0.00011	<0.00011	<0.00011	<0.00011	<0.0002	<0.0002	<0.002	<0.0002	<0.0002	<0.0002		
Xylenes (total)	*10*	*10*	0.00151 J	0.0197	0.00207 J	0.00179 J	0.00095 J	0.0044	<0.003	0.0037	0.0022	0.0012	0.113	0.057 J
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00011	<0.000107	<0.000212	<0.000104	<0.000021	0.000099 J	0.000061 J	<0.000021	0.000082 J	0.000078 J	**<0.02**	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	0.00125	<0.000301	<0.000596	<0.000292	0.0028	<0.00038	<0.00004	<0.00032	<0.00056	<0.00004	0.134	0.3
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00013	<0.000126	<0.00025	<0.000123	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	**<0.039**	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00008	<0.0000777	<0.000154	<0.0000755	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	**<0.039**	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.00008	<0.0000777	<0.000154	<0.0000755	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.078	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	0.00084	0.000114 J	0.00142	0.000845	0.000093 J	0.00037	<0.000019	<0.000019	<0.000071	<0.000019	**0.204**	**0.42**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00083	<0.000806	<0.0016	<0.000783	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	**<0.039**	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.00056	<0.000544	<0.00108	<0.000528	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	**0.177**	<0.00005
Acenaphthene	*1.5*	*4.4*	<0.000608	0.00279	<0.000154	0.0007	0.0012	0.001	0.00035	0.00078	0.001	0.00099	0.113	0.2
Acenaphthylene	*1.5*	*4.4*	<0.00006	<0.0000583	<0.000115	<0.0000566	0.000069 J	<0.000015	<0.000015	<0.000015	0.00003 J	0.00005 J	<0.059	0.0017
Anthracene	*7.3*	*22*	0.000115 J	0.000269 J	<0.0000962	<0.0000472	0.000057 J	0.000065 J	<0.000014	0.000057 J	<0.000066	<0.00017	<0.039	0.0058
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00008	0.000111 J	<0.000154	<0.0000755	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00026	**<0.039**	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00008	<0.0000777	<0.000154	<0.0000755	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.0001	**<0.039**	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00013	<0.000126	<0.00025	<0.000123	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	**<0.078**	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00037	0.0012 J	<0.000712	0.000646	0.00019 J	0.0001 J	0.00016 J	0.000096 J	<0.000037	<0.000071	**<0.039**	<0.00033
Chrysene	*0.91*	*2*	<0.00008	<0.0000777	<0.000154	<0.0000755	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.00024	<0.039	<0.00005
Dibenzofuran	*0.098*	*0.29*	0.000367 J	0.000631	0.00116	0.000554	0.00045	0.00081	0.000035 J	<0.00002	<0.00057	0.00069	0.071	**0.14**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00011	0.000164 J	<0.000212	<0.000104	<0.00002	<0.00002	0.000031 J	<0.00002	<0.00002	0.000021 J	<0.039	<0.00005
Fluoranthene	*0.98*	*2.9*	0.00257	0.000309 J	0.00223	0.00169	0.000081 J	0.00064	0.00023	<0.00001	0.00056	0.0011	<0.039	0.0007
Fluorene	*0.98*	*2.9*	0.000605	<0.000068	0.000296 J	0.000485	0.000099 J	0.00037	0.00009 J	<0.00003	<0.00031	0.00047	0.045	0.11
Naphthalene	*0.49*	*1.5*	0.0264 J	<0.00196	0.0383	0.0198	0.0022	0.013	<0.00061	<0.00036	<0.0012	<0.00011	**4.75**	**7.7**
Nitrobenzene	*0.049*	*0.15*	<0.00011	<0.000107	<0.000212	<0.000104	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	**<0.078**	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.0001	<0.0000971	<0.000192	<0.0000943	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.049	<0.00005
Pentachlorophenol	*0.001*	*0.001*	<0.00061	<0.000592	**<0.00117**	<0.000575	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	**<0.039**	<0.00005
Phenanthrene	*0.73*	*2.2*	0.000166 J	0.000201 J	<0.000265	<0.0000566	<0.000021	0.000051 J	<0.000021	<0.000021	<0.00014	<0.00045	<0.039	0.039
Phenol	*7.3*	*22*	0.00023 J	0.024	0.000724 J	0.00033 J	0.00071	0.00072	<0.000035	<0.00013	<0.00015	<0.000035	<0.039	<0.00005
Pyrene	*0.73*	*2.2*	0.00207	0.000233 J	0.00191	0.00178	0.000053 J	0.00076	0.00037	<0.000019	0.00064	0.0014	<0.039	0.0004
Metals														
Arsenic	*0.01*	*0.01*					0.00158 J	0.00107 J	0.00294	0.00149 J	0.00166 J	0.0014 J		

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	***C/I Assessment Level***	MW-20A 02/01/2012	MW-20A 07/16/2012	MW-20A 01/30/2013	MW-20A 01/23/2018	MW-20A 03/19/2018	MW-20A 05/15/2018	MW-20A 01/08/2019	MW-20A 07/10/2019	MW-20A 01/14/2020	MW-21C 01/29/2008	MW-21C 01/29/2008 Duplicate	MW-21C 07/15/2008
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.005	<0.0005	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052	<0.00052	<0.00052
Benzene	*0.005*	*0.005*	**0.057**	**0.089**	**0.0746**	**0.053**	**0.05**	**0.062**	**0.024**	**0.013**	**0.02**	<0.00025	<0.00025	<0.00025
Chlorobenzene	*0.1*	*0.1*	<0.005	<0.0005	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047	<0.00047	<0.00047
Ethylbenzene	*0.7*	*0.7*	0.046	0.1	0.0619	0.05	0.027	0.045	0.024	0.0079	0.025	<0.00025	<0.00025	<0.00025
Methylene chloride	*0.005*	*0.005*	**<0.0065**	<0.001	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00054	<0.00054	<0.00054
Toluene	*1*	*1*	<0.005	0.022	0.0028	0.0038	<0.0002	0.0055	0.00077 J	0.0011	<0.0002	<0.00041	<0.00041	<0.00041
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	0.028 J	0.088	0.0549	0.05	0.033	0.048	0.022	0.022	0.024	<0.00127	<0.00127	<0.00127
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0005	<0.00005	**<0.00519**	<0.00021	<0.00021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00008	<0.00008	<0.00008
2,4-Dimethylphenol	*0.49*	*1.5*	0.076	0.1	0.119	0.049	0.072	0.06	0.0076	0.0035	0.0018	<0.00029	<0.00029	<0.0003
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.0005	<0.00005	**<0.00613**	<0.00058	<0.00059	<0.000058	<0.000058	<0.000058	<0.000058	<0.00019	<0.00019	<0.0002
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0006	<0.00006	**<0.00377**	<0.00042	<0.00042	<0.000042	<0.000042	<0.000042	<0.000042	<0.00019	<0.00019	<0.0002
2-Chloronaphthalene	*2*	*5.8*	<0.0005	<0.00005	<0.00377	<0.00021	<0.00021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00038	<0.00038	<0.0004
2-Methylnaphthalene	*0.098*	*0.29*	0.064	**0.36**	**0.191**	**0.15**	**0.15**	**0.17**	0.069	0.072	0.075	<0.00038	<0.00038	<0.0004
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.0008	<0.00008	**<0.0392**	<0.0002	<0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019	<0.00019	<0.0005
4-Nitrophenol	*0.049*	*0.15*	<0.0005	<0.00005	<0.0264	<0.00047	<0.00047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00024	<0.00024	<0.00025
Acenaphthene	*1.5*	*4.4*	0.15	0.19	0.12	0.14	0.18	0.15	0.1	0.14	0.11	<0.00029	<0.00029	<0.0003
Acenaphthylene	*1.5*	*4.4*	0.0015 J	0.0015	<0.00283	0.0014	<0.00015	0.0013	0.00057	0.00078	0.00092	<0.00029	<0.00029	<0.0003
Anthracene	*7.3*	*22*	0.0044	0.0042	0.00589 J	0.021	0.022	0.0081	0.0058	0.0062	0.0075	0.000563	0.000562	<0.0002
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0005	<0.00005	<0.00377	<0.0005	<0.00051	<0.00005	<0.00005	<0.00005	<0.00005	<0.00019	<0.00019	<0.0002
Benzo(a)pyrene	*0.0002*	*0.0002*	**<0.0005**	<0.00005	**<0.00377**	<0.0002	<0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019	<0.00019	<0.0002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.0005	<0.00005	**<0.00613**	<0.0003	<0.0003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00038	<0.00038	<0.0004
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.001	<0.0001	**<0.0175**	<0.00037	<0.00037	<0.000037	<0.000037	<0.000037	<0.000037	**0.00888**	0.00052 J	<0.0002
Chrysene	*0.91*	*2*	<0.0005	<0.00005	<0.00377	<0.00021	<0.00021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00019	<0.00019	<0.0002
Dibenzofuran	*0.098*	*0.29*	0.073	**0.15**	0.0799	0.097	**0.13**	0.081	0.067	0.077	0.079	<0.00029	<0.00029	<0.0003
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.0005	<0.00005	<0.00519	<0.0002	<0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019	<0.00019	<0.0002
Fluoranthene	*0.98*	*2.9*	0.00082 J	0.00061	<0.0033	0.00078 J	0.00095 J	0.00074	0.00041	0.00058	0.00067	0.00047 J	0.00046 J	<0.0002
Fluorene	*0.98*	*2.9*	0.06	0.11	0.0661	0.16	0.16	0.076	0.062	0.068	0.08	<0.00019	<0.00019	<0.0002
Naphthalene	*0.49*	*1.5*	**0.96**	**6.1**	**43.9**	**2.7**	**2.9**	**2.8**	**1.4**	**1.9**	**2**	<0.00038	<0.00038	<0.0004
Nitrobenzene	*0.049*	*0.15*	<0.0005	<0.00005	<0.00519	<0.00024	<0.00024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00038	<0.00038	<0.0004
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.0005	<0.00005	<0.00472	<0.00025	<0.00025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00024	<0.00024	<0.00025
Pentachlorophenol	*0.001*	*0.001*	<0.0005	<0.00005	**<0.0288**	<0.00079	<0.0008	<0.000079	<0.000079	<0.000079	<0.000079	<0.00019	<0.00019	<0.0002
Phenanthrene	*0.73*	*2.2*	0.03	0.043	0.0217 J	0.032	0.037	0.034	0.025	0.026	0.028	0.00039 J	0.00039 J	<0.0002
Phenol	*7.3*	*22*	<0.0005	<0.00005	<0.00189	<0.00035	<0.00035	<0.000035	<0.000035	0.00096	<0.000035	<0.00019	<0.00019	<0.0002
Pyrene	*0.73*	*2.2*	0.00056 J	0.0003	<0.00519	<0.00019	0.0005 J	0.00048	0.00025	0.00026	0.0003	0.00039 J	0.00039 J	<0.0002
Metals														
Arsenic	*0.01*	*0.01*				0.0087	0.00568	0.00895	0.00788	0.00574	0.00808			

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-21C 07/15/2008 Duplicate	MW-21C 02/04/2009	MW-21C 02/04/2009 Duplicate	MW-21C 01/21/2010	MW-21C 01/21/2010 Duplicate	MW-21C 06/22/2010	MW-21C 06/22/2010 Duplicate	MW-21C 01/19/2011	MW-21C 07/27/2011	MW-21C 07/27/2011 Duplicate	MW-21C 02/02/2012	MW-21C 02/02/2012 Duplicate
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001
Benzene	*0.005*	*0.005*	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001
Chlorobenzene	*0.1*	*0.1*	<0.00047	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001
Ethylbenzene	*0.7*	*0.7*	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0011	<0.0011
Methylene chloride	*0.005*	*0.005*	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.0013	<0.0013
Toluene	*1*	*1*	<0.00041	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.00127	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0031	<0.0031
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00029	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00019	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.00039	<0.00012	<0.00012	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	<0.00039	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.000067 J	<0.00005
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00049	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.00024	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005
Acenaphthene	*1.5*	*4.4*	0.00269	<0.00009	<0.00009	0.00041	0.00035	<0.00009	<0.00009	0.00034	<0.00005	<0.00005	<0.00005	<0.00005
Acenaphthylene	*1.5*	*4.4*	<0.00029	<0.00006	<0.00006	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005
Anthracene	*7.3*	*22*	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	0.00013 J	<0.00005	<0.00005	<0.00005	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00039	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00019	<0.0002	0.00038	<0.00072	<0.00054	<0.00023	<0.00041	0.00062	0.00062 J	0.00036 J	<0.0001	<0.00022
Chrysene	*0.91*	*2*	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005
Dibenzofuran	*0.098*	*0.29*	<0.00029	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005
Fluoranthene	*0.98*	*2.9*	0.00019 J	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005
Fluorene	*0.98*	*2.9*	0.00098	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005
Naphthalene	*0.49*	*1.5*	<0.00039	0.00039	0.00033	<0.0001	<0.0001	<0.0001	<0.00021	<0.0001	<0.00005	<0.00005	0.00093 J	0.00015 J
Nitrobenzene	*0.049*	*0.15*	<0.00039	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00024	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00005
Pentachlorophenol	*0.001*	*0.001*	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005
Phenanthrene	*0.73*	*2.2*	<0.00019	<0.00007	<0.00007	<0.00007	0.0001 J	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005
Phenol	*7.3*	*22*	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005
Pyrene	*0.73*	*2.2*	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-21C 07/26/2012	MW-21C 07/26/2012 Duplicate	MW-21C 02/05/2013	MW-21C 02/05/2013 Duplicate	MW-21C 08/01/2013	MW-21C 08/01/2013 Duplicate	MW-21C 01/16/2014	MW-21C 01/16/2014 Duplicate	MW-21C 07/25/2014	MW-21C 07/25/2014 Duplicate	MW-21C 01/24/2018	MW-21C 01/24/2018 Duplicate
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.0005	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002	<0.0002	<0.00014	<0.00014	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.0005	<0.0005	<0.00008	<0.00008	<0.00008	<0.00008	<0.0002	<0.0002	<0.00008	<0.00008	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.0005	<0.00012	<0.00012	<0.00012	<0.00012	<0.00018	<0.00018	<0.00012	<0.00012	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0005	<0.0005	<0.000144	<0.00011	<0.00011	<0.00011	<0.00019	<0.00019	<0.00011	<0.00011	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.00015	<0.00015	<0.00015	<0.00015	<0.00022	<0.00022	<0.00015	<0.00015	<0.001	<0.001
Toluene	*1*	*1*	<0.0005	<0.0005	<0.00015	<0.00015	<0.00015	<0.00015	<0.00017	<0.00017	<0.00015	<0.00015	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*			<0.00011	<0.00011					<0.00011	<0.00011		
Xylenes (total)	*10*	*10*	<0.0015	<0.0015	<0.00026	<0.00026	<0.00026	<0.00026	<0.00058	<0.00058	<0.00026	<0.00026	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	<0.00005	<0.000104	<0.000104	0.000105 J	**0.00732 J**	<0.000104	<0.000104	<0.000107	<0.000107	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00005	<0.00005	<0.000292	**R**	<0.000295	<0.00654	<0.000292	<0.000292	<0.000301	<0.000301	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	<0.00005	<0.000123	<0.000123	0.000124 J	**0.00867 J**	<0.000123	<0.000123	<0.000126	<0.000126	<0.000059	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	<0.00006	<0.0000755	<0.0000755	0.0000762 J	**0.00805 J**	<0.0000755	<0.0000755	<0.0000777	<0.0000777	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.00005	<0.0000755	<0.0000755	0.0000762 J	0.00696 J	<0.0000755	<0.0000755	<0.0000777	<0.0000777	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	<0.00005	<0.00005	0.000271 J	<0.000066	0.0000667 J	0.00686 J	<0.000157	<0.000187	<0.000068	<0.000068	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.000783	**R**	0.00079 J	**0.00371 J**	<0.000783	<0.000783	<0.000806	<0.000806	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00005	<0.00005	<0.000528	**R**	0.000533 J	0.00667 J	<0.000528	<0.000528	<0.000544	<0.000544	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	<0.00005	<0.00005	0.000237 J	<0.0000755	0.0000762 J	0.00726 J	0.000254 J	0.000413 J	<0.0000777	<0.0000777	<0.000027	<0.000027
Acenaphthylene	*1.5*	*4.4*	<0.00005	<0.00005	<0.0000566	<0.0000566	0.0000571 J	0.00735 J	<0.0000566	<0.0000566	<0.0000583	<0.0000583	<0.000015	<0.000015
Anthracene	*7.3*	*22*	<0.00005	<0.00005	0.0000527 J	<0.0000472	0.0000476 J	0.00775 J	0.000243 J	0.000518 J	<0.0000485	<0.0000485	<0.000014	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.0000755	<0.0000755	0.0000762 J	0.00807 J	0.000129 J	0.000137 J	<0.0000777	<0.0000777	<0.000051	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	<0.00005	<0.0000755	<0.0000755	0.0000762 J	**0.00775 J**	<0.0000755	<0.0000755	<0.0000777	<0.0000777	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	<0.00005	<0.000123	<0.000123	0.000124 J	**0.00612 J**	<0.000123	<0.000123	<0.000126	<0.000126	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0001	<0.0001	<0.000349	<0.000349	0.000352 J	**0.00875 J**	<0.000349	<0.000349	<0.000359	<0.000359	0.000058 J	0.000072 J
Chrysene	*0.91*	*2*	<0.00005	<0.00005	<0.0000755	<0.0000755	0.0000762 J	0.00794 J	0.0000812 J	0.000132 J	<0.0000777	<0.0000777	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	<0.00005	<0.00005	0.000109 J	<0.0000755	0.0000762 J	0.00726 J	<0.000258	<0.000456	<0.0000777	<0.0000777	<0.00002	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.000072	<0.000051	<0.000104	<0.000104	0.000105 J	0.00955 J	<0.000104	<0.000104	0.000184 J	0.000107 J	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	<0.00005	<0.00005	<0.000066	<0.000066	0.0000667 J	0.00857 J	0.000528 J	0.000866 J	<0.000068	<0.000068	<0.00001	<0.00001
Fluorene	*0.98*	*2.9*	<0.00005	<0.00005	<0.000066	<0.000066	0.0000667 J	0.00746 J	0.000291 J	0.000705 J	<0.000068	<0.000068	<0.00003	<0.00003
Naphthalene	*0.49*	*1.5*	<0.00005	<0.00005	0.000429 J	<0.0000755	<0.0021	0.00669 J	0.000523 J	<0.000421	<0.0000777	<0.0000777	<0.00002	<0.00002
Nitrobenzene	*0.049*	*0.15*	<0.00005	<0.00005	<0.000104	<0.000104	0.000105 J	0.00628 J	<0.000104	<0.000104	<0.000107	<0.000107	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.00005	<0.0000943	<0.0000943	0.0000952 J	0.00846 J	<0.0000943	<0.0000943	<0.0000971	<0.0000971	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00005	<0.00005	<0.000575	**R**	0.000581 J	**0.0126 J**	<0.000575	<0.000575	<0.000592	<0.000592	<0.00008	<0.000079
Phenanthrene	*0.73*	*2.2*	<0.00005	<0.00005	0.000184 J	<0.0000566	0.0000775 J	0.00777 J	0.00128 J	0.00242 J	<0.000087	<0.0000613	<0.000021	<0.000021
Phenol	*7.3*	*22*	<0.00005	<0.00005	<0.0000377	**R**	0.0000381 J	0.00217 J	<0.0000377	<0.0000377	<0.0000388	<0.0000388	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	<0.00005	<0.00005	<0.000104	<0.000104	0.000105 J	0.00813 J	0.000355 J	0.000508 J	<0.000107	<0.000107	<0.000019	<0.000019
Metals														
Arsenic	*0.01*	*0.01*											0.00128 J	0.00128 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-21C 03/20/2018	MW-21C 03/20/2018 Duplicate	MW-21C 05/17/2018	MW-21C 05/17/2018 Duplicate	MW-21C 01/09/2019	MW-21C 01/09/2019 Duplicate	MW-21C 07/16/2019	MW-21C 07/16/2019 Duplicate	MW-21C 01/14/2020	MW-21C 01/14/2020 Duplicate	MW-22A 01/29/2008	MW-22A 07/14/2008
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052	<0.00109
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00025	<0.00112
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047	<0.0015
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00025	<0.00142
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00054	<0.00122
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00041	<0.00138
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00127	<0.00302
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00008	<0.00008
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	0.0001 J	<0.00004	<0.00004	<0.00004	<0.00029	<0.00028
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000059	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.0002	<0.00019
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	**0.023 J**	0.000042 J	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	**0.003 J**	<0.0002	<0.00019
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00039	<0.00038
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	0.000019 J	0.00012 J	<0.000019	<0.000019	0.0004 J	0.00005 J	<0.000019	<0.000019	<0.00039	<0.00038
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002	<0.00019
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00024	<0.00024
Acenaphthene	*1.5*	*4.4*	<0.000027	<0.000027	0.00013	0.00018	<0.000027	<0.000027	0.0057 J	0.00081 J	<0.000027	0.0002	<0.00029	<0.00028
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	0.000074 J	<0.000015	<0.000015	<0.000015	<0.00029	<0.00028
Anthracene	*7.3*	*22*	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	0.00044 J	0.00005 J	<0.000014	<0.000014	<0.0002	<0.00019
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.000051	<0.000051	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0002	<0.00019
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002	<0.00019
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00039	<0.00038
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	<0.000037	0.000048 J	<0.000037	<0.000037	<0.000037	<0.00004	<0.000037	0.00035	0.000065 J	**0.0104**	<0.00019
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0002	<0.00019
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00002	<0.00002	0.000052 J	<0.00002	<0.00002	0.0032 J	0.0004 J	<0.00002	0.00017	<0.00029	<0.00028
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002	<0.00019
Fluoranthene	*0.98*	*2.9*	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00081 J	0.000087 J	<0.00001	<0.00001	<0.0002	<0.00019
Fluorene	*0.98*	*2.9*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	0.0019 J	0.00025 J	<0.00003	0.00018	<0.0002	<0.00019
Naphthalene	*0.49*	*1.5*	<0.00002	<0.00002	0.00002 J	0.0014 J	<0.00002	<0.00002	0.0044 J	0.0008 J	0.00011	0.00013	<0.00039	<0.00038
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00039	<0.00038
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00024	<0.00024
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.00008	<0.00008	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.0002	<0.00019
Phenanthrene	*0.73*	*2.2*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.00087 J	0.00011 J	<0.000021	0.000061 J	<0.0002	<0.00019
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	0.00018 J	0.00081 J	<0.000035	<0.000035	<0.0002	<0.00019
Pyrene	*0.73*	*2.2*	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	0.00039 J	0.000033 J	<0.000019	<0.000019	<0.0002	<0.00019
Metals														
Arsenic	*0.01*	*0.01*	0.00109 J	0.00113 J	0.00116 J	0.00108 J	0.00187 J	0.00178 J	0.0013 J	0.00326	0.00109 J	0.00109 J		

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-22A 02/03/2009	MW-22A 01/15/2010	MW-22A 06/29/2010	MW-22A 01/25/2011	MW-22A 07/21/2011	MW-22A 02/15/2012	MW-22A 07/18/2012	MW-22A 01/23/2014	MW-22A 07/30/2014	MW-22AR 02/08/2018	MW-22AR 03/25/2018	MW-22AR 05/31/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.0002	0.00296	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	0.000549	0.0403	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00022	<0.00015	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	0.000307 J	0.00925	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	0.000834 J	0.0569	<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.000108	<0.000109	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000304	<0.000307	<0.00004	<0.000041	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000127	<0.000129	<0.000059	<0.000059	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000784	<0.0000792	<0.000042	<0.000043	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000784	<0.0000792	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	<0.00007	<0.00007	<0.00007	0.00072	<0.00005	<0.00005	<0.00059	<0.0000686	0.00603	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.000814	<0.000822	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00007	0.00007 J	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000549	<0.000554	<0.000047	<0.000048	<0.000047
Acenaphthene	*1.5*	*4.4*	<0.00009	<0.00009	<0.00009	0.00015 J	<0.00005	0.00009 J	<0.00031	0.00557	0.0783	<0.000027	<0.000028	<0.000027
Acenaphthylene	*1.5*	*4.4*	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	0.000742	0.000943	<0.000015	<0.000015	<0.000015
Anthracene	*7.3*	*22*	0.0002	<0.00007	<0.00007	0.00011 J	<0.00005	0.000058 J	0.0004	<0.000939	0.00265	<0.000014	<0.000014	0.00017
Benzo(a)anthracene	*0.0091*	*0.02*	0.00015 J	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00011 J	<0.0000784	<0.0000792	<0.000051	<0.000051	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000784	<0.0000792	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000127	<0.000129	<0.00003	<0.000031	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00033	0.0013	<0.0012	<0.0002	0.0015	<0.0011	0.00011 J	<0.000363	0.000703	0.0033	<0.000038	0.0001 J
Chrysene	*0.91*	*2*	0.00014 J	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.0001 J	<0.0000784	<0.0000792	<0.000021	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	<0.00008	<0.00008	<0.00008	0.00015 J	<0.00005	0.000074 J	<0.00048	0.001	0.0224	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	0.00017 J	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000866	<0.000109	<0.00002	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.000086 J	<0.00041	0.000362 J	0.00247	<0.00001	<0.00001	<0.00001
Fluorene	*0.98*	*2.9*	<0.00007	<0.00007	<0.00007	0.0001 J	<0.00005	0.00008 J	<0.00029	0.000468 J	0.0175	<0.00003	<0.000031	<0.00003
Naphthalene	*0.49*	*1.5*	<0.0001	<0.0001	<0.0001	0.0035	0.0001 J	0.00024	<0.0018	<0.0034	**0.792**	<0.00017	0.00012	<0.00002
Nitrobenzene	*0.049*	*0.15*	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000108	<0.000109	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000098	<0.000099	<0.000025	<0.000026	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00008	0.00008 J	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000598	<0.000604	<0.00008	<0.000081	<0.000079
Phenanthrene	*0.73*	*2.2*	<0.00007	<0.00007	<0.00007	0.00028	<0.00005	0.0002 J	<0.0015	<0.000478	0.000604	<0.000021	0.00012	<0.000021
Phenol	*7.3*	*22*	<0.00007	<0.00007	<0.00007	0.00017 J	<0.00005	<0.00005	<0.00005	<0.0000392	<0.0000396	<0.000035	<0.000036	<0.000035
Pyrene	*0.73*	*2.2*	0.00013 J	<0.00007	<0.00007	<0.00007	<0.00005	0.000055 J	<0.00033	<0.000108	0.00106	<0.000019	<0.000019	<0.000019
Metals														
Arsenic	*0.01*	*0.01*										0.000896 J	0.000716 J	0.00293

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-22AR 01/22/2019	MW-22AR 07/31/2019	MW-22AR 02/10/2020	MW-22B 01/29/2008	MW-22B 07/14/2008	MW-22B 02/03/2009	MW-22B 01/15/2010	MW-22B 06/29/2010	MW-22B 01/25/2011	MW-22B 07/21/2011	MW-22B 02/15/2012	MW-22B 07/18/2012
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.00052	<0.00109	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.00025	0.00313 J	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	0.0042 J
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.00047	<0.0015	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.00025	0.00262 J	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	0.0088
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.00054	<0.00122	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.00041	<0.00138	<0.0005	<0.0005	0.00053 J	<0.0005	<0.001	<0.001	0.0033 J
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.00127	0.00339 J	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	0.0057 J
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.00008	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00004	<0.0003	<0.0003	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	0.00014 J	<0.00005
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	<0.0002	<0.0002	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.0002	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.0004	<0.0004	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	<0.00012	<0.0004	<0.0004	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00044	<0.00063
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.0002	<0.0002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.00025	<0.00025	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Acenaphthene	*1.5*	*4.4*	0.00071	<0.000027	<0.00015	0.0121	0.182	0.022	0.00016 J	0.0093	0.00022	0.003	0.068	0.18
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.0003	0.00192	0.00034	<0.00007	0.00012 J	<0.00007	<0.00005	0.00046	0.0018
Anthracene	*7.3*	*22*	0.000028 J	<0.000014	0.0002	0.000948	0.00575	0.00071	<0.00007	0.00031	<0.00007	0.00011 J	0.0017	0.0067
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	0.00029	<0.0002	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	0.0001	<0.0002	<0.0002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.0004	<0.0004	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.000065 J	<0.000037	0.00011 J	0.00172 J	<0.0002	0.00053	0.00022	<0.00061	<0.0002	0.00041	<0.00051	<0.0001
Chrysene	*0.91*	*2*	<0.000021	<0.000021	0.00032	<0.0002	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Dibenzofuran	*0.098*	*0.29*	0.000029 J	<0.00002	<0.00015	0.00363	0.0674	0.0051	0.00026	0.0019	<0.00008	0.00068	0.0079	0.046
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	0.00051	<0.00002	<0.00002	0.00066 J	<0.0002	0.00018 J	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Fluoranthene	*0.98*	*2.9*	0.000079 J	<0.00001	0.0015	0.00029 J	0.00661	0.0011	0.00011 J	0.00061	<0.00007	0.00019 J	0.0022	0.0065
Fluorene	*0.98*	*2.9*	0.00014	<0.00003	0.00019	0.00199	0.0395	0.0018	<0.00007	0.0018	<0.00007	0.00049	0.0035	0.019
Naphthalene	*0.49*	*1.5*	<0.00002	<0.00002	<0.00044	0.000691	0.00435	0.00017 J	0.00012 J	0.00036	<0.0001	<0.00005	0.0032	0.032
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.0004	<0.0004	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.00025	<0.00025	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	0.00029	<0.00005
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	<0.0002	<0.0002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005
Phenanthrene	*0.73*	*2.2*	0.000068 J	<0.000021	0.0015	<0.0002	0.000764	<0.00007	0.00015 J	<0.00007	<0.00007	<0.00005	0.00026	0.0027
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.000041	<0.0002	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.0001 J
Pyrene	*0.73*	*2.2*	0.000084 J	<0.000019	0.001	<0.0002	0.00239	0.00047	<0.00007	0.00027	<0.00007	0.00012 J	0.001	0.0033
Metals														
Arsenic	*0.01*	*0.01*	0.00488	0.000481 J	0.00352									

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-22B 01/23/2014	MW-22B 07/30/2014	MW-22B 08/28/2014	MW-22BR 02/08/2018	MW-22BR 03/25/2018	MW-22BR 05/31/2018	MW-22BR 01/22/2019	MW-22BR 07/31/2019	MW-22BR 02/10/2020	MW-23C 02/04/2009 DNAPL	MW-23C 01/18/2010 DNAPL	MW-23C 06/23/2010 DNAPL
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.00014	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.005
Benzene	*0.005*	*0.005*	0.000304 J	0.00185	0.00238	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	**0.017**	**0.012**	**0.0095 J**
Chlorobenzene	*0.1*	*0.1*	<0.00018	<0.00012	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.001 J		<0.005
Ethylbenzene	*0.7*	*0.7*	0.0022	0.0255	0.0275	0.00034 J	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.13	0.074	0.12
Methylene chloride	*0.005*	*0.005*	<0.00022	<0.00015	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	**<0.0092**
Toluene	*1*	*1*	0.00133	0.00584	0.00752	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0023 J	0.0012 J	<0.005
Vinyl chloride	*0.002*	*0.002*			<0.00011									
Xylenes (total)	*10*	*10*	0.00409	0.0362	0.0383	0.00082 J	<0.0003	0.001	<0.0003	<0.0003	<0.0003	0.073	0.044	0.069 J
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000108	<0.000109	<0.00011	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0001	<0.0001	**<0.005**
2,4-Dimethylphenol	*0.49*	*1.5*	<0.000304	0.00107	<0.00031	<0.00004	<0.000041	<0.00004	<0.00004	<0.00004	<0.00004	<0.00008	<0.00008	<0.004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000127	<0.000129	<0.00013	<0.000059	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058	<0.00009	<0.00009	**<0.0045**
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0000784	<0.0000792	<0.00008	<0.000042	<0.000043	<0.000042	<0.000042	<0.000042	<0.000042	<0.00007	<0.00007	**<0.0035**
2-Chloronaphthalene	*2*	*5.8*	<0.0000784	<0.0000792	<0.00008	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.00011 J	<0.00012	<0.0001	<0.005
2-Methylnaphthalene	*0.098*	*0.29*	0.000414 J	0.00721	0.00663	0.00056	0.000067 J	0.000071 J	<0.000019	<0.000019	<0.000043	**2.6**	**0.75**	**2.7**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.000814	<0.000822	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	**<0.004**
4-Nitrophenol	*0.049*	*0.15*	<0.000549	<0.000554	<0.00056	<0.000047	<0.000048	<0.000047	<0.000047	<0.000047	<0.000047	<0.00007	<0.00007	<0.0035
Acenaphthene	*1.5*	*4.4*	0.0244	0.0762	0.123	0.034	0.044	0.047	0.022	<0.000027	0.018	**3.4**	1.2	**3.4**
Acenaphthylene	*1.5*	*4.4*	0.000886	0.000641	0.00132	<0.000015	0.00096	0.00041	<0.000015	<0.000015	0.00018	0.017	0.01	0.03
Anthracene	*7.3*	*22*	<0.00146	0.00292	0.00404	0.00039	0.00062	0.0013	0.00048	<0.000014	0.00042	1.2	0.36	1.2
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0000784	<0.0000792	<0.00008	<0.000051	<0.000051	<0.00005	<0.00005	<0.00005	<0.00005	**0.31**	**0.12**	**0.3**
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0000784	<0.0000792	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	**0.072**	**0.029**	**0.093**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.000127	<0.000129	<0.00013	<0.00003	<0.000031	<0.00003	<0.00003	<0.00003	<0.00003	<0.00009	<0.00009	**<0.0045**
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000363	0.000672	<0.00037	<0.000037	<0.000038	<0.000037	<0.000037	<0.000037	0.000075 J	0.002	<0.0011	**<0.01**
Chrysene	*0.91*	*2*	<0.0000784	<0.0000792	<0.00008	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.28	0.093	0.27
Dibenzofuran	*0.098*	*0.29*	0.00784	0.0238	0.0409	0.00066	0.00049	0.0011	0.00029	<0.00002	<0.00029	**3.5**	**1.2**	**3.6**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.000873	<0.000109	<0.00011	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00007	<0.00007	<0.0035
Fluoranthene	*0.98*	*2.9*	0.00187	0.00304	0.00282	0.00098	0.0011	0.0028	0.0011	<0.00001	0.0017	**3**	0.77	**3**
Fluorene	*0.98*	*2.9*	0.00521	0.0198	0.0355	0.002	0.0017	0.0046	0.0025	<0.00003	0.0026	**2.5**	0.82	**2.6**
Naphthalene	*0.49*	*1.5*	0.13 J	**0.832**	**0.977**	0.0038	0.0008	0.00044	0.00017	<0.00002	<0.00013	**9.9**	**3.9**	**8.9**
Nitrobenzene	*0.049*	*0.15*	<0.000108	<0.000109	<0.00011	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00009	<0.00009	<0.0045
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000098	<0.000099	<0.0001	<0.000025	<0.000026	<0.000025	<0.000025	<0.000025	<0.000025	<0.00009	<0.00009	<0.0045
Pentachlorophenol	*0.001*	*0.001*	<0.000598	<0.000604	<0.00061	<0.00008	<0.000081	<0.000079	<0.000079	<0.000079	<0.000079	<0.00008	<0.00008	**<0.004**
Phenanthrene	*0.73*	*2.2*	<0.000562	0.00053	<0.00006	0.00081	0.00018	0.00039	<0.000021	<0.000021	<0.00013	**8.8**	**2.7**	**8.2**
Phenol	*7.3*	*22*	<0.0000392	<0.0000396	<0.00004	<0.000035	<0.000036	<0.000035	<0.000035	0.00069	<0.000035	<0.00007	<0.00007	<0.0035
Pyrene	*0.73*	*2.2*	0.000876	0.00123	0.0023	0.00062	0.00077	0.0015	0.00046	<0.000019	0.00082	**1.6**	0.59	**1.9**
Metals														
Arsenic	*0.01*	*0.01*				**0.0219**	**0.0159**	**0.0301**	**0.0535**	0.000559 J	**0.016**			

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-23C 01/19/2011 DNAPL	MW-23C 07/22/2011 DNAPL	MW-23C 02/02/2012 DNAPL	MW-23C 07/12/2012 DNAPL	MW-23C 02/11/2013 DNAPL	MW-23C 07/31/2013 DNAPL	MW-23C 01/15/2014 DNAPL	MW-23C 08/28/2014 DNAPL	MW-23C 01/09/2020 DNAPL	MW-24AR 02/05/2009	MW-24AR 01/14/2010	MW-24AR 06/29/2010
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.005	**<0.01**	**<0.01**	<0.0005	<0.00014	<0.0014	<0.0002	<0.0014	<0.001	<0.0005	<0.0005	<0.0005
Benzene	*0.005*	*0.005*	**0.0072 J**	**<0.01**	**<0.01**	**0.0071**	**0.0111**	**0.0138**	**0.0126**	**0.00596 J**	0.0027 J	<0.0005	<0.0005	<0.0005
Chlorobenzene	*0.1*	*0.1*	<0.005	<0.01	<0.01	<0.0005	0.000279 J	0.00146 J	<0.00018	<0.0012	<0.0015	<0.0005	<0.0005	<0.0005
Ethylbenzene	*0.7*	*0.7*	0.13	0.1	0.1	0.17	0.151	0.185	0.165	0.15	0.028	<0.0005	<0.0005	<0.0005
Methylene chloride	*0.005*	*0.005*	<0.005	**<0.013**	**<0.013**	<0.001	<0.00015	<0.0015	<0.00022	<0.0015	<0.005	<0.0005	<0.0005	<0.0005
Toluene	*1*	*1*	<0.005	<0.01	<0.01	0.0025 J	0.00433	0.00819 J	0.00728	0.00378 J	<0.001	<0.0005	<0.0005	<0.0005
Vinyl chloride	*0.002*	*0.002*	**<0.005**	**<0.01**	**<0.01**	<0.0005	<0.00011	<0.0011	<0.00018	<0.0011				
Xylenes (total)	*10*	*10*	0.059 J	0.048 J	0.039 J	0.11	0.0884	0.0988	0.0959	0.0915	0.025	<0.001	<0.001	<0.001
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0001	<0.00005	<0.0005	<0.001	<0.001	**<0.00534**	**<0.0259**	**<0.022**	<0.00021	<0.0001	<0.0001	<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00008	0.0035	0.0014 J	0.028	<0.00282	<0.015	<0.0731	0.202	<0.047	<0.00008	<0.00008	<0.00008
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00009	<0.00005	<0.0005	<0.001	<0.00118	**<0.00631**	**<0.0307**	**<0.026**	<0.00058	<0.00009	<0.00009	<0.00009
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00007	<0.00006	<0.0006	<0.0012	<0.000727	**<0.00388**	**<0.0189**	**<0.016**	<0.00042	<0.00007	<0.00007	<0.00007
2-Chloronaphthalene	*2*	*5.8*	<0.0001	<0.00005	<0.0005	<0.001	<0.000727	<0.00388	<0.0189	<0.016	<0.00021	<0.00012	<0.0001	<0.0001
2-Methylnaphthalene	*0.098*	*0.29*	**1.2**	**1.3**	**0.65**	**28**	**1.38**	**1.16**	**4.52**	**18.3**	**0.12**	<0.00007	0.00023	<0.00007
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.0008	<0.0016	**<0.00755**	**<0.0403**	**<0.196**	**<0.166**	<0.0002	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.00007	<0.00005	<0.0005	<0.001	<0.00509	<0.0272	**<0.132**	**<0.112**	<0.00047	<0.00007	<0.00007	<0.00007
Acenaphthene	*1.5*	*4.4*	**1.6**	**2**	0.89	**39**	**1.78**	**1.58**	**7.79**	**25.9**	0.21	<0.00009	<0.00009	<0.00009
Acenaphthylene	*1.5*	*4.4*	0.012	0.015	0.0068	0.45	<0.000545	<0.00291	<0.0142	0.336	0.0029	<0.00006	<0.00007	<0.00007
Anthracene	*7.3*	*22*	0.4	1.7	0.25	**16**	0.641	0.31	1.49	**8.74**	0.035	<0.00007	<0.00007	<0.00007
Benzo(a)anthracene	*0.0091*	*0.02*	**0.12**	**0.15**	**0.046**	**4.8**	**0.104**	**0.0905**	**0.5**	**2.63**	0.008	<0.00007	<0.00007	<0.00007
Benzo(a)pyrene	*0.0002*	*0.0002*	**0.04**	**0.044**	**0.016**	**1.2**	**0.0283**	**0.0235 J**	**0.119**	**0.73**	**0.0022**	<0.00008	<0.00008	<0.00008
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00009	<0.00005	<0.0005	**<0.001**	**<0.00118**	**<0.00631**	**<0.0307**	**<0.026**	<0.0003	<0.00009	<0.00009	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.0014	0.0019	<0.001	**0.042**	<0.00336	**<0.018**	**<0.0873**	**<0.074**	<0.00037	0.00031	<0.00029	<0.0024
Chrysene	*0.91*	*2*	0.099	0.21	0.044	**4.3**	0.103	0.0819	0.476	**2.24**	0.0072	<0.00007	<0.00007	<0.00007
Dibenzofuran	*0.098*	*0.29*	**1.6**	**2.7**	**0.85**	**46**	**1.82**	**1.48**	**5.45**	**25.7**	**0.17**	<0.00008	0.000084 J	0.00011 J
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00007	<0.00005	<0.0005	<0.001	<0.001	<0.00534	<0.0259	<0.022	<0.0002	0.0019	0.0001 J	<0.00007
Fluoranthene	*0.98*	*2.9*	**0.99**	**1.8**	0.48	**34**	**1.09**	0.812	**4.42**	**20.4**	0.068	<0.00007	0.00011 J	<0.00007
Fluorene	*0.98*	*2.9*	0.88	**2**	0.57	**32**	**1.19**	0.874	**3.78**	**20.5**	0.12	<0.00007	<0.00007	<0.00007
Naphthalene	*0.49*	*1.5*	**8.5**	**7.5**	**7.8**	**83**	**12.2**	**13.2**	**43.8**	**57.9**	**0.66**	<0.0001	<0.0023	0.00036
Nitrobenzene	*0.049*	*0.15*	<0.00009	<0.00005	<0.0005	<0.001	<0.001	<0.00534	<0.0259	<0.022	<0.00024	<0.00009	<0.00009	<0.00009
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00009	<0.00005	<0.0005	<0.001	<0.000909	<0.00485	<0.0236	<0.02	<0.00025	<0.00009	<0.00009	<0.00009
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.00005	<0.0005	<0.001	**<0.00555**	**<0.0296**	**<0.144**	**<0.122**	<0.00079	<0.00008	<0.00008	<0.00008
Phenanthrene	*0.73*	*2.2*	**3.6**	**3.8**	**1.9**	**130**	**3.48**	**2.8**	**18.2**	**59.4**	0.25	<0.00007	0.00018 J	<0.00007
Phenol	*7.3*	*22*	<0.00007	<0.00005	0.0011 J	<0.001	<0.000364	<0.00194	<0.00943	<0.008	0.0079	<0.00007	<0.00007	<0.00007
Pyrene	*0.73*	*2.2*	0.6	**1.1**	0.35	**21**	**0.754**	0.515	**3.04**	**13.3**	0.043	<0.00007	<0.00007	<0.00007
Metals														
Arsenic	*0.01*	*0.01*									0.00333			

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-24AR 01/25/2011	MW-24AR 07/21/2011	MW-24AR 02/09/2012	MW-24AR 07/25/2012	MW-24AR 02/12/2013	MW-24AR 08/08/2013	MW-24AR 01/23/2014	MW-24B 01/28/2008	MW-24B 07/14/2008	MW-24B 02/03/2009	MW-24B 01/14/2010	MW-24B 06/29/2010
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00245	<0.00109	<0.0005	<0.0005	<0.0005
Benzene	*0.005*	*0.005*	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00257	<0.00112	<0.0005	<0.0005	<0.0005
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.001	<0.001	<0.0005	0.000201 J	<0.00012	<0.00018	<0.00239	<0.0015	<0.0005	<0.0005	<0.0005
Ethylbenzene	*0.7*	*0.7*	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00203	<0.00142	<0.0005	<0.0005	<0.0005
Methylene chloride	*0.005*	*0.005*	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00195	<0.00122	<0.0005	<0.0005	<0.0005
Toluene	*1*	*1*	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00274	<0.00138	<0.0005	<0.0005	<0.0005
Vinyl chloride	*0.002*	*0.002*						<0.00011						
Xylenes (total)	*10*	*10*	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00581	<0.00302	<0.001	<0.001	<0.001
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0001	<0.00005	<0.00005	<0.00005	<0.000105	<0.000104	<0.000105	<0.00008	<0.00008	<0.0001	<0.0001	<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00008	<0.00005	0.00013 J	<0.00005	**R**	<0.000292	<0.000295	<0.00029	<0.0003	<0.00008	<0.00008	<0.00008
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00009	<0.00005	<0.00005	<0.00005	<0.000124	<0.000123	<0.000124	<0.00019	<0.0002	<0.00009	<0.00009	<0.00009
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000762	<0.0000755	<0.0000762	<0.00019	<0.0002	<0.00007	<0.00007	<0.00007
2-Chloronaphthalene	*2*	*5.8*	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000762	<0.00038	<0.0004	<0.00012	<0.0001	<0.0001
2-Methylnaphthalene	*0.098*	*0.29*	0.00018 J	<0.00005	<0.00005	<0.00005	<0.0000667	<0.000066	0.0000924 J	<0.00038	<0.0004	<0.00007	<0.00007	0.000099 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00079	<0.000783	<0.00079	<0.00019	<0.0002	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.00007	<0.00005	<0.00005	<0.00005	**R**	<0.000528	<0.000533	<0.00024	<0.00025	<0.00007	<0.00007	<0.00007
Acenaphthene	*1.5*	*4.4*	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	0.000146 J	<0.00029	<0.0003	<0.00009	<0.00009	<0.00009
Acenaphthylene	*1.5*	*4.4*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000571	<0.0000566	<0.0000571	<0.00029	<0.0003	<0.00006	<0.00007	<0.00007
Anthracene	*7.3*	*22*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000476	<0.0000472	<0.000452	0.00066	<0.0002	<0.00007	<0.00007	<0.00007
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000762	<0.00019	<0.0002	0.00015 J	<0.00007	<0.00007
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000762	<0.00019	<0.0002	<0.00008	<0.00008	<0.00008
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00009	<0.00005	<0.00005	<0.00005	<0.000124	<0.000123	<0.000124	<0.00038	<0.0004	<0.00009	<0.00009	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0002	0.00089	0.00048	<0.0001	<0.000352	<0.000349	0.000767 J	<0.00019	<0.0002	0.00046	<0.0021	<0.00074
Chrysene	*0.91*	*2*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000762	<0.00019	<0.0002	0.00015 J	<0.00007	<0.00007
Dibenzofuran	*0.098*	*0.29*	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	0.000164 J	0.000568	<0.0003	<0.00008	<0.00008	<0.00008
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00007	<0.00005	0.00017 J	<0.000071	<0.000105	0.000168 J	<0.000837	<0.00019	<0.0002	<0.00007	<0.00007	<0.00007
Fluoranthene	*0.98*	*2.9*	<0.00007	<0.00005	0.000069 J	<0.00005	<0.0000667	<0.000066	0.000224 J	<0.00019	<0.0002	0.00011 J	<0.00007	<0.00007
Fluorene	*0.98*	*2.9*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000667	<0.000066	0.000137 J	0.00026 J	<0.0002	<0.00007	<0.00007	<0.00007
Naphthalene	*0.49*	*1.5*	0.00081	<0.00005	<0.00005	<0.00005	<0.000139	<0.0000755	<0.000744	0.00105	<0.0004	<0.0001	<0.0001	0.00083
Nitrobenzene	*0.049*	*0.15*	<0.00009	<0.00005	<0.00005	<0.00005	<0.000105	<0.000104	<0.000105	<0.00038	<0.0004	<0.00009	<0.00009	<0.00009
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000952	<0.0000943	<0.0000952	<0.00024	<0.00025	<0.00009	<0.00009	<0.00009
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.00005	<0.00005	<0.00005	**R**	<0.000575	<0.000581	<0.00019	<0.0002	<0.00008	<0.00008	<0.00008
Phenanthrene	*0.73*	*2.2*	0.0001 J	<0.00005	<0.00005	<0.00005	0.000089 J	<0.0000566	<0.000691	0.000676	<0.0002	<0.00007	<0.00007	<0.00007
Phenol	*7.3*	*22*	<0.00007	<0.00005	0.00005 J	<0.00005	**R**	<0.0000377	<0.0000381	<0.00019	<0.0002	<0.00007	<0.00007	<0.00007
Pyrene	*0.73*	*2.2*	<0.00007	<0.00005	0.000067 J	<0.00005	<0.000105	<0.000104	0.000172 J	<0.00019	<0.0002	<0.00007	<0.00007	<0.00007
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-24B 01/25/2011	MW-24B 07/21/2011	MW-24B 02/09/2012	MW-24B 07/25/2012	MW-24B 02/12/2013	MW-24B 08/08/2013	MW-24C 01/28/2008	MW-24C 07/14/2008	MW-24C 02/03/2009	MW-24C 01/14/2010	MW-24C 06/29/2010	MW-24C 01/25/2011
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.00245	<0.00109	<0.0005	<0.0005	<0.0005	<0.0005
Benzene	*0.005*	*0.005*	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.00257	<0.00112	<0.0005	<0.0005	<0.0005	<0.0005
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00239	<0.0015	<0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	*0.7*	*0.7*	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00203	<0.00142	<0.0005	<0.0005	<0.0005	<0.0005
Methylene chloride	*0.005*	*0.005*	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00195	<0.00122	<0.0005	<0.0005	<0.0005	<0.0005
Toluene	*1*	*1*	<0.0005	<0.001	<0.001	<0.0005	<0.00015	0.0209	<0.00274	<0.00138	<0.0005	<0.0005	<0.0005	<0.0005
Vinyl chloride	*0.002*	*0.002*						<0.00011						
Xylenes (total)	*10*	*10*	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00581	<0.00302	<0.001	<0.001	<0.001	<0.001
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0001	<0.00005	<0.00005	<0.00005	<0.000105	<0.000108	<0.00008	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00008	<0.00005	<0.00005	<0.00005	<0.000295	<0.000304	<0.00029	<0.00029	<0.00008	<0.00008	<0.00008	<0.00008
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00009	<0.00005	<0.00005	<0.00005	<0.000124	<0.000127	<0.00019	<0.00019	<0.00009	<0.00009	<0.00009	<0.00009
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000762	<0.0000784	<0.00019	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007
2-Chloronaphthalene	*2*	*5.8*	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000784	<0.00038	<0.00038	<0.00012	<0.0001	<0.0001	<0.0001
2-Methylnaphthalene	*0.098*	*0.29*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000667	<0.0000686	<0.00038	<0.00038	<0.00007	<0.00007	<0.00007	<0.00007
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00079	<0.000814	<0.00019	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.00007	<0.00005	<0.00005	<0.00005	<0.000533	<0.000549	<0.00024	<0.00024	<0.00007	<0.00007	<0.00007	<0.00007
Acenaphthene	*1.5*	*4.4*	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000784	<0.00029	<0.00029	<0.00009	<0.00009	0.00022	<0.00009
Acenaphthylene	*1.5*	*4.4*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000571	<0.0000588	<0.00029	<0.00029	<0.00006	<0.00007	<0.00007	<0.00007
Anthracene	*7.3*	*22*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000476	<0.000049	<0.00019	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000784	<0.00019	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000784	<0.00019	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00009	<0.00005	<0.00005	<0.00005	<0.000124	<0.000127	<0.00038	<0.00038	<0.00009	<0.00009	<0.00009	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0002	0.00014 J	0.00011 J	<0.00015	<0.000352	<0.000363	<0.00019	<0.00019	0.00055	<0.0002	<0.001	<0.0002
Chrysene	*0.91*	*2*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000784	<0.00019	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007
Dibenzofuran	*0.098*	*0.29*	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000784	0.000571	<0.00029	<0.00008	<0.00008	<0.00008	<0.00008
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00007	<0.00005	<0.00005	<0.00013	<0.000105	<0.000108	0.00063 J	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007
Fluoranthene	*0.98*	*2.9*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000667	<0.0000686	0.000529	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007
Fluorene	*0.98*	*2.9*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000667	<0.0000686	<0.00019	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007
Naphthalene	*0.49*	*1.5*	<0.0001	<0.00005	<0.00005	0.00015 J	<0.0000762	<0.0000784	<0.00038	<0.00038	0.00013 J	<0.00026	<0.0001	<0.0001
Nitrobenzene	*0.049*	*0.15*	<0.00009	<0.00005	<0.00005	<0.00005	<0.000105	<0.000108	<0.00038	<0.00038	<0.00009	<0.00009	<0.00009	<0.00009
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000952	<0.000098	<0.00024	<0.00024	<0.00009	<0.00009	<0.00009	<0.00009
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.00005	<0.00005	<0.00005	<0.000581	<0.000598	<0.00019	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008
Phenanthrene	*0.73*	*2.2*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000571	<0.0000588	0.000677	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007
Phenol	*7.3*	*22*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000381	<0.0000392	<0.00019	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007
Pyrene	*0.73*	*2.2*	<0.00007	<0.00005	<0.00005	<0.00005	<0.000105	<0.000108	0.00041 J	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-24C 07/21/2011	MW-24C 02/09/2012	MW-24C 07/25/2012	MW-24C 02/12/2013	MW-24C 08/08/2013	MW-25A 01/28/2008	MW-25A 07/14/2008	MW-25A 02/03/2009	MW-25A 01/15/2010	MW-25A 06/30/2010	MW-25A 01/26/2011	MW-25A 01/26/2011 Duplicate
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.00245	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Benzene	*0.005*	*0.005*	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.00257	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Chlorobenzene	*0.1*	*0.1*	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00239	<0.00047	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	*0.7*	*0.7*	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00203	<0.00025	0.0029 J	<0.0005	<0.0005	<0.0005	<0.0005
Methylene chloride	*0.005*	*0.005*	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00195	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Toluene	*1*	*1*	<0.001	<0.001	<0.0005	0.000218 J	<0.00015	<0.00274	<0.00041	0.00074 J	<0.0005	<0.0005	<0.0005	<0.0005
Vinyl chloride	*0.002*	*0.002*					<0.00011							
Xylenes (total)	*10*	*10*	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00581	<0.00127	0.0047 J	<0.001	<0.001	<0.001	<0.001
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	<0.00005	<0.00005	<0.000105	<0.000108	<0.00008	<0.00009	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00005	<0.00005	<0.00005	<0.000295	<0.000304	<0.00029	<0.00033	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	<0.00005	<0.00005	<0.000124	<0.000127	<0.00019	<0.00022	<0.00009	<0.00009	0.00066	<0.00009	<0.00009
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	<0.00006	<0.00006	<0.0000762	<0.0000784	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000784	<0.00038	<0.00044	<0.00012	<0.0001	<0.0001	<0.0001	<0.0001
2-Methylnaphthalene	*0.098*	*0.29*	<0.00005	<0.00005	0.000077 J	<0.0000667	<0.0000686	<0.00038	<0.00044	0.024	<0.00007	<0.00007	<0.00007	<0.00007
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.00079	<0.000814	<0.00019	<0.00022	<0.00008	<0.00008	0.00026	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.00005	<0.00005	<0.00005	<0.000533	<0.000549	<0.00024	<0.00028	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
Acenaphthene	*1.5*	*4.4*	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000784	0.00038 J	<0.00033	0.034	0.0014	0.0012	0.00054	0.00052
Acenaphthylene	*1.5*	*4.4*	<0.00005	<0.00005	<0.00005	<0.0000571	<0.0000588	<0.00029	<0.00033	0.0004	<0.00007	0.00034	<0.00007	<0.00007
Anthracene	*7.3*	*22*	<0.00005	<0.00005	<0.00005	<0.0000476	<0.000049	0.00067	<0.00022	0.0005	<0.00007	<0.00007	<0.00007	<0.00007
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000784	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000784	<0.00019	**<0.00022**	<0.00008	<0.00008	0.00012 J	<0.00008	<0.00008
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	<0.00005	<0.00005	<0.000124	<0.000127	<0.00038	<0.00044	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00013 J	0.0013	<0.00013	<0.000352	<0.000363	0.00021 J	<0.00022	0.00033	<0.0002	<0.00056	<0.0002	0.00046
Chrysene	*0.91*	*2*	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000784	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
Dibenzofuran	*0.098*	*0.29*	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000784	0.000601	<0.00033	0.018	<0.00008	0.00034	<0.00008	<0.00008
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00005	<0.00005	<0.00005	<0.000105	<0.000108	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
Fluoranthene	*0.98*	*2.9*	<0.00005	<0.00005	<0.00005	<0.0000667	<0.0000686	0.000556	<0.00022	0.00057	0.000084 J	0.000092 J	<0.00007	<0.00007
Fluorene	*0.98*	*2.9*	<0.00005	<0.00005	<0.00005	<0.0000667	<0.0000686	0.00033 J	<0.00022	0.0049	<0.00007	<0.00007	<0.00007	<0.00007
Naphthalene	*0.49*	*1.5*	0.0002	<0.00005	0.00019 J	<0.0000762	<0.0000784	0.0011	<0.00044	0.45	<0.0001	0.00024	0.00018 J	0.00027
Nitrobenzene	*0.049*	*0.15*	<0.00005	<0.00005	<0.00005	<0.000105	<0.000108	<0.00038	<0.00044	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.00005	<0.00005	<0.0000952	<0.000098	<0.00024	<0.00028	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009
Pentachlorophenol	*0.001*	*0.001*	<0.00005	<0.00005	<0.00005	<0.000581	<0.000598	<0.00019	<0.00022	<0.00008	<0.00008	0.00033	<0.00008	<0.00008
Phenanthrene	*0.73*	*2.2*	<0.00005	<0.00005	<0.00005	<0.0000571	<0.0000588	0.000715	<0.00022	0.0034	<0.00007	<0.00007	<0.00007	<0.00007
Phenol	*7.3*	*22*	<0.00005	<0.00005	<0.00005	<0.0000381	<0.0000392	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
Pyrene	*0.73*	*2.2*	<0.00005	<0.00005	<0.00005	<0.000105	<0.000108	0.000484	<0.00022	0.00036	0.00047	0.00015 J	<0.00007	<0.00007
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-25A 07/20/2011	MW-25A 02/08/2012	MW-25A 07/18/2012	MW-25A 02/06/2013	MW-25A 08/06/2013	MW-25A 01/22/2014	MW-25A 07/29/2014	MW-25A 01/31/2018	MW-25A[8] 03/27/2018	MW-25A 05/31/2018	MW-25A 01/15/2019	MW-25A 07/16/2019
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.001	<0.001	<0.0005	0.000497 J	0.000121 J	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*	<0.001	<0.001	<0.0005	<0.00011	<0.00011	<0.00018	<0.00011	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Xylenes (total)	*10*	*10*	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	<0.00005	<0.00005	<0.000106	<0.00011	<0.000105	<0.000107	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00005	<0.00005	<0.00005	<0.000298	<0.00031	<0.000295	<0.000301	<0.00004	<0.000041	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	<0.00005	<0.00005	<0.000125	<0.00013	<0.000124	<0.000126	<0.000058	<0.000059	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	<0.00006	<0.00006	<0.0000769	<0.00008	<0.0000762	<0.0000777	<0.000042	<0.000043	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.00005	<0.00005	<0.0000769	<0.00008	<0.0000762	<0.0000777	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	<0.00005	<0.00005	<0.000061	<0.0000673	<0.00007	<0.0000667	<0.000068	0.00014	<0.000019	0.000052 J	<0.000051	0.000057 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.000798	<0.00083	<0.00079	<0.000806	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00005	<0.00005	<0.00005	<0.000538	<0.00056	<0.000533	<0.000544	<0.000047	<0.000048	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	0.0042	0.00053	<0.00005	0.000171 J	0.000345 J	0.00356	0.0000912 J	0.062	0.054	<0.000027	0.000036 J	<0.000027
Acenaphthylene	*1.5*	*4.4*	0.000053 J	<0.00005	<0.00005	<0.0000577	<0.00006	0.000542	<0.0000583	0.00044	0.00053	<0.000015	<0.000015	<0.000015
Anthracene	*7.3*	*22*	<0.00005	<0.00005	<0.00005	<0.0000481	<0.00005	<0.0000476	<0.0000485	0.00057	0.00068	<0.000014	0.000015 J	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00005	<0.0000769	<0.00008	<0.0000762	<0.0000777	<0.00005	<0.000051	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	<0.00005	<0.00005	<0.0000769	<0.00008	<0.0000762	<0.0000777	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	<0.00005	<0.00005	<0.000125	<0.00013	<0.000124	<0.000126	<0.00003	<0.000031	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00023	<0.0001	<0.0001	<0.000356	<0.00037	<0.000352	<0.000359	<0.00008	<0.000038	0.0001 J	<0.000078	<0.000037
Chrysene	*0.91*	*2*	<0.00005	<0.00005	<0.00005	<0.0000769	<0.00008	<0.0000762	<0.0000777	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	0.0013	0.0005	<0.00005	<0.0000769	<0.00008	<0.0000762	<0.0000777	0.00017	0.00011	0.000033 J	<0.00002	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00005	<0.00005	<0.00005	<0.000106	<0.00011	<0.000105	<0.000107	<0.00002	<0.00002	<0.00002	0.00002 J	<0.00002
Fluoranthene	*0.98*	*2.9*	0.00014 J	<0.00005	<0.00005	<0.0000673	<0.00007	0.00106	<0.000068	0.0062	0.0066	<0.00001	0.000015 J	<0.00001
Fluorene	*0.98*	*2.9*	0.00016 J	0.00011 J	<0.00005	<0.0000673	<0.00007	<0.0000667	<0.000068	0.026	0.022	<0.00003	<0.00003	<0.00003
Naphthalene	*0.49*	*1.5*	<0.00005	0.00017 J	<0.00038	<0.000692	<0.00008	<0.000217	<0.000817	<0.00029	0.0002	0.0006	<0.00029	0.00023
Nitrobenzene	*0.049*	*0.15*	<0.00005	<0.00005	<0.00005	<0.000106	<0.00011	<0.000105	<0.000107	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.00005	<0.00005	<0.0000962	<0.0001	<0.0000952	<0.0000971	<0.000025	<0.000026	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00005	<0.00005	<0.00005	<0.000587	<0.00061	<0.000581	<0.000592	<0.000079	<0.000081	<0.000079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	<0.00005	<0.00005	<0.00005	<0.0000577	<0.00006	<0.0000571	<0.0000583	0.00015	0.00015	<0.000021	0.000029 J	<0.000021
Phenol	*7.3*	*22*	<0.00005	0.00005 J	<0.00005	<0.0000385	<0.00004	<0.0000381	<0.0000388	<0.000035	<0.000036	<0.000035	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	0.0009	<0.00005	<0.00005	<0.000106	0.000124 J	0.000585	0.00018 J	0.0033	0.0049	<0.000019	0.000027 J	<0.000019
Metals														
Arsenic	*0.01*	*0.01*								**0.0171**	0.00714	0.00171 J	0.00216	0.00285

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	***C/I Assessment Level***	MW-25A 01/15/2020	MW-25C 01/28/2008 DNAPL	MW-25C 01/15/2010 DNAPL	MW-25C 01/26/2011	MW-25C 07/20/2011	MW-25C 02/08/2012	MW-25C 07/18/2012	MW-25C 02/06/2013	MW-25C 08/06/2013	MW-25C 01/22/2014	MW-25C 07/29/2014	MW-25C 01/28/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.001	**<0.025**	<0.0005	<0.005	**<0.01**	<0.005	<0.0028	<0.0007	<0.0002	<0.0007	<0.0002
Benzene	*0.005*	*0.005*	<0.0002	**0.11**	**0.11 J**	**0.092**	**0.076**	**0.039 J**	**0.03 J**	**0.0304**	**0.0283**	**0.022**	**0.0119**	0.00089 J
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.00094	<0.025	<0.0005	<0.005	<0.01	<0.005	0.00653 J	<0.0006	0.00034 J	<0.0006	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0003	0.545	0.47	0.5	0.37	0.34	0.33	0.324	0.173	0.32	0.298	0.042
Methylene chloride	*0.005*	*0.005*	<0.001	<0.0011	**<0.025**	<0.0005	**<0.0065**	**<0.013**	**<0.01**	<0.003	<0.00075	<0.00022	<0.00075	<0.001
Toluene	*1*	*1*	<0.0002	0.556	0.52	0.53	0.4	0.31	0.31	0.291	0.204	0.261	0.207	0.015
Vinyl chloride	*0.002*	*0.002*	<0.0002				**<0.005**	**<0.01**	**<0.005**	**<0.0022**	<0.00055	<0.00018	<0.00055	<0.0002
Xylenes (total)	*10*	*10*	<0.0003	1.43	1.2	1.2	1	0.98	0.96	1.03	0.575	1.01	1.07	0.29
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	**<0.8**	0.0001 J	<0.0001	<0.00005	<0.00005	<0.00005	**<0.106**	**<0.011**	**<0.0105**	<0.000107	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	**<2.9**	0.00008 J	<0.00008	0.0051	<0.00005	<0.00005	<0.298	<0.031	0.372	<0.000301	0.00061
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	**<1.9**	0.00009 J	<0.00009	<0.00005	<0.00005	<0.00005	**<0.125**	**<0.013**	**<0.0124**	<0.000126	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	**<1.9**	0.00007 J	<0.00007	<0.00006	<0.00006	<0.00006	**<0.0769**	**<0.008**	**<0.00762**	<0.0000777	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.000021	**<3.8**	0.0001 J	<0.0001	<0.00005	<0.00005	<0.00005	<0.0769	<0.008	<0.00762	<0.0000777	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	**193**	**0.76**	**1.4**	**1.3**	**0.92**	**0.9**	**0.8**	**1.32**	**1.46**	**0.943**	**0.48**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	**<1.9**	0.00008 J	<0.00008	<0.00008	<0.00008	<0.00008	**<0.798**	**<0.083**	**<0.079**	<0.000806	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.000047	**<2.4**	0.00007 J	<0.00007	<0.00005	<0.00005	<0.00005	**<0.538**	**<0.056**	**<0.0533**	<0.000544	<0.000047
Acenaphthene	*1.5*	*4.4*	<0.000027	**97.5**	0.21	0.55	0.28	0.26	0.21	0.261 J	0.381	0.416	0.284	0.17
Acenaphthylene	*1.5*	*4.4*	<0.000015	**<2.9**	0.0027 J	0.0041	0.0029	0.0021	0.0021	<0.0577	<0.006	<0.00571	0.00316	0.0017
Anthracene	*7.3*	*22*	0.000089 J	**42.8**	0.035	0.19	0.031	0.021	0.019	<0.0481	0.0377 J	0.0372 J	0.0209	0.015
Benzo(a)anthracene	*0.0091*	*0.02*	0.00012	**9.37**	0.0027 J	**0.047**	0.0014	0.00054	0.00086	**<0.0769**	<0.008	<0.00762	0.000813	0.00079
Benzo(a)pyrene	*0.0002*	*0.0002*	0.000038 J	**2.3**	**0.0014 J**	**0.013**	**0.00043**	0.00017 J	0.0002	**<0.0769**	**<0.008**	**<0.00762**	**0.000435 J**	**0.00028**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	**<3.8**	0.00009 J	<0.00009	<0.00005	<0.00005	<0.00005	**<0.125**	**<0.013**	**<0.0124**	**0.0016**	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	**<1.9**	0.0002 J	<0.0002	<0.002	<0.0001	0.00012 J	**<0.356**	**<0.037**	**<0.0352**	<0.000674	0.00006 J
Chrysene	*0.91*	*2*	0.000097 J	**8.38**	0.0025 J	0.048	0.0012	0.00062	0.00086	<0.0769	<0.008	<0.00762	0.000957	0.00077
Dibenzofuran	*0.098*	*0.29*	<0.00002	**102**	**0.22**	**0.52**	**0.29**	**0.26**	**0.22**	**0.174 J**	**0.353**	<0.00762	**0.276**	**0.18**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<1.9	0.00007 J	<0.00007	<0.00005	<0.00005	<0.00005	<0.106	<0.011	<0.0105	<0.000107	<0.00002
Fluoranthene	*0.98*	*2.9*	0.00045	**84.1**	0.041	0.32	0.02	0.011	0.0088	<0.0673	0.0149 J	0.018 J	0.0127	0.0092
Fluorene	*0.98*	*2.9*	<0.00003	**75.5**	0.12	0.34	0.14	0.13	0.096	0.102 J	0.163	<0.00667	0.129	0.086
Naphthalene	*0.49*	*1.5*	0.0001	**750**	**9.8**	**18**	**19**	**15**	**13**	**10.7**	**19.7**	**19**	**10.7**	**3**
Nitrobenzene	*0.049*	*0.15*	<0.000024	**<3.8**	0.00009 J	<0.00009	<0.00005	<0.00005	<0.00005	**<0.106**	<0.011	<0.0105	<0.000107	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	**<2.4**	0.00009 J	<0.00009	<0.00005	<0.00005	<0.00005	<0.0962	<0.01	<0.00952	<0.0000971	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.000079	**<1.9**	0.00008 J	<0.00008	<0.00005	<0.00005	<0.00005	**<0.587**	**<0.061**	**<0.0581**	<0.000592	<0.000079
Phenanthrene	*0.73*	*2.2*	0.00017	**214**	0.19	0.7	0.18	0.14	0.12	0.147 J	0.187	0.222	0.14	0.089
Phenol	*7.3*	*22*	<0.000035	<1.9	0.00007 J	<0.00007	0.026	0.003	0.0045	<0.0385	0.12	<0.00381	0.00177	<0.000035
Pyrene	*0.73*	*2.2*	0.00035	**49.5**	0.022	0.24	0.0092	0.0047	0.0063	<0.106	<0.011	<0.0105	0.00769	0.0062
Metals														
Arsenic	*0.01*	*0.01*	0.00216											0.00283

Notes:

1. All values in milligrams per liter (mg/L).
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3. Concentrations > C/I AL and non-detects are highlighted dark gray
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5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
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7. MW-32A was screened in the B-CZ & replaced with MW-32AR
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ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-25C[8] 03/26/2018	MW-25C 05/31/2018	MW-25C 01/15/2019	MW-25C 07/16/2019	MW-25C 01/15/2020	MW-26A 01/29/2008	MW-26A 07/14/2008	MW-26A 02/03/2009	MW-26A 01/13/2010	MW-26A 06/25/2010	MW-26A 01/24/2011	MW-26A 07/19/2011
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
Benzene	*0.005*	*0.005*	0.00047 J	0.0013	<0.0002	0.0013	0.0017	<0.00025	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	**0.031**
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047	<0.00047	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
Ethylbenzene	*0.7*	*0.7*	0.043	0.036	0.038	0.035	0.033	<0.00025	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00054	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013
Toluene	*1*	*1*	0.015	0.013	0.013	0.011	0.01	<0.00041	<0.00041	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
Vinyl chloride	*0.002*	*0.002*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002							
Xylenes (total)	*10*	*10*	0.32	0.28	0.27	0.25	0.22	<0.00127	<0.00127	<0.001	<0.001	<0.001	<0.001	0.0045 J
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00021	<0.00021	<0.000021	<0.00021	<0.000021	<0.00008	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	0.0033	0.0075	<0.00004	0.0075	0.0062	<0.0003	<0.0003	0.00054	<0.00008	<0.00008	<0.00008	<0.00005
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00058	<0.00058	<0.000058	<0.00058	<0.000058	<0.0002	<0.0002	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00042	<0.00042	<0.000042	<0.00042	<0.000042	<0.0002	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.00021	<0.00021	<0.000021	<0.00021	<0.000021	<0.0004	<0.0004	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	**0.69**	**0.71**	**0.4**	**0.54**	**0.96**	<0.0004	<0.0004	0.0024	<0.00007	<0.00007	0.00031	0.00039
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.0002	<0.0002	<0.00002	<0.0002	<0.00002	<0.0002	<0.0002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.00047	<0.00047	<0.000047	<0.00047	<0.000047	<0.00025	<0.00025	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005
Acenaphthene	*1.5*	*4.4*	0.21	0.23	0.13	0.2	0.36	0.0519	0.0173	0.015	0.0097	0.005	0.0039	0.12
Acenaphthylene	*1.5*	*4.4*	0.0023	0.0028	0.0012	0.002	0.0025	<0.0003	<0.0003	<0.00006	0.00014 J	<0.00007	<0.00007	0.00047
Anthracene	*7.3*	*22*	0.019	0.024	0.011	0.016	0.027	0.0018	0.00047 J	0.00079	<0.00007	0.0002	0.000099 J	0.0026
Benzo(a)anthracene	*0.0091*	*0.02*	0.0011	0.0012	0.00065	0.0013	0.00057	<0.0002	<0.0002	0.00016 J	<0.00007	<0.00007	<0.00007	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0002	**0.00042 J**	**0.00021**	**0.00037 J**	0.00019	<0.0002	<0.0002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.0003	<0.0003	<0.00003	<0.0003	<0.00003	<0.0004	<0.0004	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00037	<0.00037	<0.000037	<0.00037	0.00066	**0.0214**	<0.0002	0.00042	<0.00026	<0.00045	0.00043	<0.00031
Chrysene	*0.91*	*2*	0.0013	0.0014	0.00074	0.0014	0.00056	<0.0002	<0.0002	0.00018 J	<0.00007	0.0003	<0.00007	<0.00005
Dibenzofuran	*0.098*	*0.29*	**0.2**	**0.21**	**0.14**	**0.19**	**0.34**	0.00492	0.00123	0.0026	0.00078	0.00033	0.00038	0.021
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.0002	<0.0002	<0.00002	<0.0002	0.00068	<0.0002	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005
Fluoranthene	*0.98*	*2.9*	0.014	0.015	0.0079	0.014	0.0058	0.00244	0.000523	0.00091	0.0003	0.0004	0.00036	0.0048
Fluorene	*0.98*	*2.9*	0.091	0.11	0.062	0.081	0.15	0.00235	0.000742	0.0016	0.00028	0.00034	0.00017 J	0.0057
Naphthalene	*0.49*	*1.5*	**5.9**	**5.6**	**3.5**	**4.2**	**7.5**	0.00078	<0.0004	0.0074	<0.00051	<0.0001	0.0043	0.0019
Nitrobenzene	*0.049*	*0.15*	<0.00024	<0.00024	<0.000024	<0.00024	<0.000024	<0.0004	<0.0004	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00025	<0.00025	<0.000025	<0.00025	<0.000025	<0.00025	<0.00025	<0.00009	<0.00009	<0.00009	<0.00009	0.00023
Pentachlorophenol	*0.001*	*0.001*	<0.00079	<0.00079	<0.000079	<0.00079	**0.17**	<0.0002	<0.0002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005
Phenanthrene	*0.73*	*2.2*	0.15	0.16	0.077	0.12	0.18	<0.0002	<0.0002	0.003	0.00021	0.00017 J	0.00011 J	0.00029
Phenol	*7.3*	*22*	<0.00035	<0.00035	<0.000035	<0.00035	<0.000035	<0.0002	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005
Pyrene	*0.73*	*2.2*	0.011	0.01	0.0052	0.0085	0.0049	0.00126	0.00021 J	0.00069	0.000092 J	0.0002 J	0.00013 J	0.0031
Metals														
Arsenic	*0.01*	*0.01*	0.003	0.00305	0.00359	0.00487	0.00391							

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-26A 08/25/2011	MW-26A 10/20/2011	MW-26A 02/15/2012	MW-26A 07/17/2012	MW-26A 02/06/2013	MW-26A 08/07/2013	MW-26A 10/14/2013	MW-26A 01/22/2014	MW-26A 07/24/2014	MW-26A 01/28/2018	MW-26A 03/21/2018	MW-26A 06/05/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*			<0.001	<0.0005	<0.00014	<0.00014		<0.0002	<0.00014	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	**0.042**	0.004 J	<0.001	<0.0005	0.00118	**0.0097**	0.00391	0.000434 J	0.000189 J	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*			<0.001	<0.0005	0.000176 J	0.000297 J		<0.00018	0.000205 J	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*			<0.0011	<0.0005	<0.00011	0.000815 J		<0.00019	<0.00011	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*			<0.0013	<0.001	<0.00015	<0.00015		<0.00022	<0.00015	<0.001	<0.001	<0.001
Toluene	*1*	*1*			<0.001	<0.0005	<0.00015	<0.000291		<0.00017	<0.00015	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*									<0.00011			
Xylenes (total)	*10*	*10*			<0.0031	<0.0015	<0.00026	0.00239 J		<0.00058	<0.00026	<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*			<0.00005	<0.00005	**<0.00529**	<0.000104		<0.00011	<0.000107	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*			<0.00005	<0.00005	<0.0149	<0.000292		<0.00031	<0.000301	0.000056 J	<0.000041	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*			<0.00005	0.0001 J	**<0.00625**	<0.000123		<0.00013	<0.000126	<0.000058	<0.000059	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*			<0.00006	<0.00006	**<0.00385**	<0.0000755		<0.00008	<0.0000777	<0.000042	<0.000043	<0.000042
2-Chloronaphthalene	*2*	*5.8*			<0.00005	<0.00005	<0.00385	<0.0000755		<0.00008	<0.0000777	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*			<0.00005	0.000056 J	<0.00337	0.000414 J		<0.00007	<0.000068	0.000053 J	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*			<0.00008	<0.00008	**<0.0399**	<0.000783		<0.00083	<0.000806	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*			<0.00005	<0.00005	<0.0269	<0.000528		<0.00056	<0.000544	<0.000047	<0.000048	<0.000047
Acenaphthene	*1.5*	*4.4*			0.0095	0.0087	0.0481	0.141		0.0699	0.0663	0.0073	<0.000028	0.019
Acenaphthylene	*1.5*	*4.4*			0.00013 J	<0.00005	<0.00288	<0.0000566		<0.00006	0.000486	0.00007 J	<0.000015	0.000082 J
Anthracene	*7.3*	*22*			0.00025	0.00027	<0.0024	0.00228		0.00136	0.00141	0.00012	0.00015	0.00025
Benzo(a)anthracene	*0.0091*	*0.02*			<0.00005	<0.00005	<0.00385	<0.0000755		<0.00008	<0.0000777	<0.00005	<0.000051	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*			<0.00005	<0.00005	**<0.00385**	<0.0000755		<0.00008	<0.0000777	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*			<0.00005	<0.00005	**<0.00625**	<0.000123		<0.00013	<0.000126	<0.00003	<0.000031	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*			<0.0001	0.0002 J	**<0.0178**	<0.000349		<0.00037	<0.000359	0.000076 J	<0.000038	<0.000037
Chrysene	*0.91*	*2*			<0.00005	<0.00005	<0.00385	<0.0000755		<0.00008	<0.0000777	<0.000021	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*			0.0014	0.00084	0.00416 J	0.0151		<0.00008	0.00154	<0.00016	0.000086 J	0.0001
Di-n-butylphthalate (DBP)	*2.4*	*7.3*			<0.00005	<0.00005	<0.00529	<0.000104		<0.00011	<0.000107	<0.00002	0.000052 J	<0.00002
Fluoranthene	*0.98*	*2.9*			0.00049	0.00092	<0.00337	0.0062		0.00306	0.00465	0.00084	0.0011	0.0014
Fluorene	*0.98*	*2.9*			0.0006	0.00041	<0.00337	0.00611		0.0031	0.00245	0.00044	0.00051	0.00084
Naphthalene	*0.49*	*1.5*			0.0001 J	0.00027	<0.00385	0.0066		<0.000924	0.000419 J	<0.00014	<0.00002	<0.00002
Nitrobenzene	*0.049*	*0.15*			<0.00005	<0.00005	<0.00529	<0.000104		<0.00011	0.00394	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*			<0.00005	<0.00005	<0.00481	<0.0000943		<0.0001	<0.0000971	<0.000025	<0.000026	<0.000025
Pentachlorophenol	*0.001*	*0.001*			<0.00005	<0.00005	**<0.0293**	<0.000575		<0.00061	<0.000592	<0.000079	<0.000081	<0.000079
Phenanthrene	*0.73*	*2.2*			<0.00005	<0.00005	<0.00288	<0.0000566		0.000147 J	0.000155 J	<0.000038	<0.000021	<0.000021
Phenol	*7.3*	*22*			<0.00005	<0.00005	<0.00192	<0.0000377		<0.00004	<0.0000388	<0.000035	<0.000036	<0.000035
Pyrene	*0.73*	*2.2*			0.00024	0.00051	<0.00529	0.00322		0.00159	0.0022	0.00043	0.00042	0.00094
Metals														
Arsenic	*0.01*	*0.01*										**0.032**	**0.0427**	**0.0491**

Notes:

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3. Concentrations > C/I AL and non-detects are highlighted dark gray
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5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
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	Residential Assessment Level	*C/I Assessment Level*	MW-26A 01/15/2019	MW-26A 07/17/2019	MW-26A 01/16/2020	MW-27A 01/28/2008	MW-27A 07/14/2008	MW-27A 02/09/2018	MW-27A 03/26/2018	MW-27A 06/01/2018	MW-27A 07/18/2019	MW-27A 01/15/2020	MW-27C 01/28/2008	MW-27C 07/14/2008
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.00245	<0.00109	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00245	<0.00109
Benzene	*0.005*	*0.005*	<0.0002	0.00036 J	<0.0002	<0.00257	<0.00112	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00257	<0.00112
Chlorobenzene	*0.1*	*0.1*	0.00056 J	<0.0003	<0.0003	<0.00239	<0.0015	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00239	<0.0015
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.00203	<0.00142	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00203	<0.00142
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.00195	<0.00122	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00195	<0.00122
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.00274	<0.00138	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00274	<0.00138
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.00581	<0.00302	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00581	<0.00302
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.0001	<0.00008	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00008	<0.00008
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00004	<0.00043	<0.0003	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00029	<0.00032
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	<0.00029	<0.0002	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058	<0.00019	<0.00021
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.00029	<0.0002	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.00019	<0.00021
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.00057	<0.0004	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00038	<0.00042
2-Methylnaphthalene	*0.098*	*0.29*	<0.00009	0.000059 J	<0.000042	<0.00057	<0.0004	<0.000019	<0.000019	<0.000019	0.00034	<0.000019	<0.00038	<0.00042
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00029	<0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019	<0.00021
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.00036	<0.00025	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00024	<0.00026
Acenaphthene	*1.5*	*4.4*	0.042	0.028	<0.00017	<0.00043	<0.0003	<0.000027	<0.000027	<0.000027	0.00011	<0.000027	<0.00029	<0.00032
Acenaphthylene	*1.5*	*4.4*	0.00027	0.00013	<0.000015	<0.00043	<0.0003	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.00029	<0.00032
Anthracene	*7.3*	*22*	0.00087	0.00047	<0.000087	0.00087	<0.0002	<0.000014	<0.000014	<0.000014	0.000036 J	<0.000014	<0.00019	<0.00021
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00005	<0.00029	<0.0002	<0.000051	<0.00005	<0.00005	<0.00005	<0.00005	<0.00019	<0.00021
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	**<0.00029**	<0.0002	<0.00002	<0.00002	<0.00002	<0.00002	0.000052 J	<0.00019	**<0.00021**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00057	<0.0004	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00038	<0.00042
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	<0.00019	<0.000037	0.00044 J	0.00026 J	0.0002	<0.000037	0.0005	0.0002	0.000062 J	0.00039 J	0.00029 J
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	<0.00029	<0.0002	0.00005 J	<0.000021	<0.000021	<0.000021	<0.000021	<0.00019	<0.00021
Dibenzofuran	*0.098*	*0.29*	0.0005	0.00021	<0.000044	0.00044 J	<0.0003	<0.00002	<0.00002	<0.00002	0.00014	<0.00002	<0.00029	<0.00032
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.00002	<0.00029	<0.0002	<0.00002	<0.00002	<0.00002	0.000034 J	<0.00002	<0.00019	<0.00021
Fluoranthene	*0.98*	*2.9*	0.0044	0.0029	0.00073	0.000756	<0.0002	0.000058 J	<0.00001	<0.00001	0.000024 J	<0.00001	<0.00019	<0.00021
Fluorene	*0.98*	*2.9*	0.0039	0.0017	<0.00029	<0.00029	<0.0002	<0.00003	<0.00003	<0.00003	0.000074 J	<0.00003	<0.00019	<0.00021
Naphthalene	*0.49*	*1.5*	<0.00049	<0.00032	<0.00017	0.0018	<0.0004	<0.00002	<0.00002	<0.00002	0.0026	0.000053 J	<0.00038	<0.00042
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.00057	<0.0004	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00038	<0.00042
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.00036	<0.00025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00024	<0.00026
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	<0.00029	<0.0002	<0.00008	<0.000079	<0.000079	<0.000079	<0.000079	<0.00019	<0.00021
Phenanthrene	*0.73*	*2.2*	0.00012	0.000083 J	<0.00003	0.000746	<0.0002	<0.000021	<0.000021	<0.000021	0.00013	<0.000021	<0.00019	<0.00021
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.000035	<0.00029	<0.0002	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.00019	<0.00021
Pyrene	*0.73*	*2.2*	0.0025	0.0015	0.00035	0.00062	<0.0002	0.000078 J	<0.000019	<0.000019	<0.000019	<0.000019	<0.00019	<0.00021
Metals														
Arsenic	*0.01*	*0.01*	**0.166**	**0.0933**	**0.0217**			0.000978 J	<0.0004	0.00207	0.000498 J	0.000859 J		

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-27C 02/03/2009	MW-27C 01/14/2010	MW-27C 06/30/2010	MW-27C 01/27/2011	MW-27C 07/20/2011	MW-27C 02/09/2012	MW-27C 07/25/2012	MW-27C 02/12/2013	MW-27C 08/08/2013	MW-27C 01/24/2014	MW-27C 07/25/2014	MW-27C 01/31/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002
Benzene	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001
Toluene	*1*	*1*	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002
Vinyl chloride	*0.002*	*0.002*									<0.00011		<0.00011	
Xylenes (total)	*10*	*10*	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.000105	<0.000104	<0.000105	<0.000108	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000295	<0.000292	<0.000297	<0.000304	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000124	<0.000123	<0.000124	<0.000127	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000762	<0.0000755	<0.0000766	<0.0000784	0.00052
2-Chloronaphthalene	*2*	*5.8*	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000766	<0.0000784	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000777	<0.000066	<0.000067	<0.0000686	0.00041
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00079	<0.000783	<0.000794	<0.000814	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000533	<0.000528	<0.000536	<0.000549	0.00031 J
Acenaphthene	*1.5*	*4.4*	0.00026	0.00015 J	0.00028	0.00019 J	0.00011 J	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000766	<0.0000784	0.0012
Acenaphthylene	*1.5*	*4.4*	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000571	<0.0000566	<0.0000574	<0.0000588	<0.000015
Anthracene	*7.3*	*22*	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000476	<0.0000472	0.000431 J	<0.000049	0.000065 J
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000766	<0.0000784	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000766	<0.0000784	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000124	<0.000123	<0.000124	<0.000127	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00038	<0.0016	<0.0015	0.00047	<0.00095	0.00014 J	<0.00021	0.000652	<0.000349	<0.000354	<0.000363	<0.000073
Chrysene	*0.91*	*2*	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000766	<0.0000784	<0.000021
Dibenzofuran	*0.098*	*0.29*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000766	<0.0000784	0.00038
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.000055	<0.000105	0.000143 J	<0.000851	<0.000108	<0.00002
Fluoranthene	*0.98*	*2.9*	<0.00007	0.00015 J	<0.00007	<0.00007	0.00011 J	<0.00005	<0.00005	<0.0000667	0.000114 J	0.0000881 J	<0.0000686	0.000085 J
Fluorene	*0.98*	*2.9*	<0.00007	<0.00007	0.00025	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000667	<0.000066	<0.000067	<0.0000686	0.00085
Naphthalene	*0.49*	*1.5*	0.00037	<0.00013	0.00024	0.00015 J	<0.00005	<0.00005	0.00019 J	<0.0000762	0.000353 J	<0.000953	<0.0000784	<0.00043
Nitrobenzene	*0.049*	*0.15*	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000105	<0.000104	<0.000105	<0.000108	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000952	<0.0000943	<0.0000957	<0.000098	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000581	<0.000575	<0.000584	<0.000598	<0.000079
Phenanthrene	*0.73*	*2.2*	<0.00007	0.00014 J	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000571	0.0000908 J	<0.000406	<0.0000588	0.00027
Phenol	*7.3*	*22*	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000381	<0.0000377	<0.0000383	<0.0000392	<0.000035
Pyrene	*0.73*	*2.2*	<0.00007	0.0001 J	<0.00007	<0.00007	0.000064 J	<0.00005	<0.00005	<0.000105	<0.000104	<0.000105	<0.000108	0.000044 J
Metals														
Arsenic	*0.01*	*0.01*												0.00261

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-27C 03/26/2018	MW-27C 06/01/2018	MW-27C 01/22/2019	MW-27C 07/18/2019	MW-27C 01/15/2020	MW-28A 01/29/2008	MW-28A 07/14/2008	MW-28A 02/03/2009	MW-28A 01/13/2010	MW-28A 06/30/2010	MW-28A 01/25/2011	MW-28A 07/19/2011
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00025	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047	<0.00047	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00025	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00054	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00041	<0.00041	<0.0005	<0.0005	<0.0005	<0.0005	<0.001
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00127	<0.00127	<0.001	<0.001	<0.001	<0.001	<0.0031
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00008	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.0003	<0.00032	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058	<0.0002	<0.00021	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	0.00057	<0.000042	<0.000042	<0.000042	<0.0002	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0004	<0.00042	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.0004	<0.00042	<0.00007	<0.00007	<0.00007	0.00064	<0.00005
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002	<0.00021	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00025	<0.00026	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005
Acenaphthene	*1.5*	*4.4*	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.0003	<0.00032	<0.00009	<0.00009	<0.00009	0.0002	<0.00005
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.0003	<0.00032	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005
Anthracene	*7.3*	*22*	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	0.000611	<0.00021	<0.00007	<0.00007	<0.00007	0.00036	<0.00005
Benzo(a)anthracene	*0.0091*	*0.02*	<0.000051	<0.00005	<0.00005	<0.00005	<0.00005	<0.0002	<0.00021	0.00013 J	<0.00007	<0.00007	<0.00007	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002	**<0.00021**	0.00011 J	<0.00008	<0.00008	<0.00008	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.0004	<0.00042	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.000057 J	0.00042	<0.000037	0.000092 J	<0.000037	0.0003 J	<0.00021	0.0037	<0.00022	<0.0019	<0.0002	<0.00032
Chrysene	*0.91*	*2*	<0.000021	0.000054 J	<0.000021	<0.000021	<0.000021	<0.0002	<0.00021	0.00013 J	<0.00007	<0.00007	<0.00007	<0.00005
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00032 J	<0.00032	<0.00008	<0.00008	<0.00008	0.0005	<0.00005
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002	<0.00021	0.00016 J	<0.00007	<0.00007	<0.00007	<0.00005
Fluoranthene	*0.98*	*2.9*	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.0002	<0.00021	0.00012 J	<0.00007	<0.00007	0.00021	<0.00005
Fluorene	*0.98*	*2.9*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.0002	<0.00021	<0.00007	<0.00007	<0.00007	0.0003	<0.00005
Naphthalene	*0.49*	*1.5*	<0.00002	<0.00002	<0.00002	0.000066 J	0.000055 J	0.000699	<0.00042	0.00017 J	<0.0001	<0.0001	0.0023	<0.00005
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.0004	<0.00042	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00025	<0.00026	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.000079	<0.000079	<0.000079	<0.000079	<0.0002	<0.00021	<0.00008	<0.00008	0.00032	<0.00008	<0.00005
Phenanthrene	*0.73*	*2.2*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.00046 J	<0.00021	<0.00007	<0.00007	<0.00007	0.00097	<0.00005
Phenol	*7.3*	*22*	<0.000035	0.000053 J	<0.000035	0.00023	<0.000035	<0.0002	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005
Pyrene	*0.73*	*2.2*	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	0.00041 J	<0.00021	0.00016 J	<0.00007	<0.00007	0.00013 J	<0.00005
Metals														
Arsenic	*0.01*	*0.01*	<0.0004	0.00212	0.000786 J	0.000428 J	0.000623 J							

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-28A 02/16/2012	MW-28A 07/17/2012	MW-28A 02/07/2013	MW-28A 08/07/2013	MW-28A 01/22/2014	MW-28A 07/25/2014	MW-28A 01/25/2018	MW-28A 03/21/2018	MW-28A 05/17/2018	MW-28A 01/14/2019	MW-28A 07/16/2019	MW-28A 01/16/2020
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*						<0.00011						
Xylenes (total)	*10*	*10*	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	<0.00005	<0.00105	<0.000104	<0.000105	<0.000107	<0.000021	<0.000021	<0.00021	<0.000021	<0.000021	0.000034 J
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00005	<0.00005	<0.00295	<0.000292	<0.000295	<0.000301	<0.00004	<0.00004	0.012	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	<0.00005	<0.00124	<0.000123	<0.000124	<0.000126	<0.000059	<0.000059	<0.00058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	<0.00006	<0.000762	<0.0000755	<0.0000762	<0.0000777	<0.000042	<0.000042	<0.00042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.00005	<0.000762	<0.0000755	<0.0000762	<0.0000777	<0.000021	<0.000021	<0.00021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	<0.000066	0.00015 J	<0.000667	<0.000066	<0.0000667	<0.000068	<0.000019	<0.000019	0.001	<0.000055	0.0002	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	**<0.0079**	<0.000783	<0.00079	<0.000806	<0.00002	<0.00002	<0.0002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00005	<0.00005	<0.00533	<0.000528	<0.000533	<0.000544	<0.000047	<0.000047	<0.00047	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	0.00098	<0.00005	<0.000762	0.000368 J	<0.0000762	<0.0000777	<0.000027	<0.000027	0.00031 J	0.000092 J	0.000082 J	<0.00014
Acenaphthylene	*1.5*	*4.4*	<0.00005	<0.00005	<0.000571	<0.0000566	<0.0000571	<0.0000583	<0.000015	<0.000015	<0.00015	<0.000015	<0.000015	<0.000015
Anthracene	*7.3*	*22*	<0.00005	<0.00005	<0.000476	<0.0000472	<0.0000476	<0.0000485	0.000016 J	0.000021 J	<0.00014	<0.000014	0.000036 J	<0.00013
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.000762	<0.0000755	<0.0000762	<0.0000777	<0.000051	<0.000051	<0.0005	<0.00005	0.000055 J	0.000073 J
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	<0.00005	**<0.000762**	<0.0000755	<0.0000762	<0.0000777	0.000045 J	<0.00002	<0.0002	<0.00002	0.000095 J	0.000057 J
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	<0.00005	**<0.00124**	<0.000123	<0.000124	<0.000126	<0.00003	<0.00003	<0.0003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0001	<0.00043	<0.00352	<0.000349	<0.000352	<0.000359	0.00018 J	0.000062 J	0.00084 J	0.000061 J	<0.00023	0.00009 J
Chrysene	*0.91*	*2*	<0.00005	<0.00005	<0.000762	<0.0000755	<0.0000762	<0.0000777	0.000053 J	<0.000021	<0.00021	<0.000021	0.0001	0.000065 J
Dibenzofuran	*0.098*	*0.29*	<0.000051	<0.00005	<0.000762	<0.0000755	<0.0000762	<0.0000777	<0.00002	<0.00002	0.00031 J	<0.00011	0.000084 J	<0.0001
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00005	<0.00005	<0.00105	<0.000104	<0.000105	<0.000107	0.00003 J	<0.00002	<0.0002	<0.00002	<0.00002	0.000032 J
Fluoranthene	*0.98*	*2.9*	<0.00005	<0.00005	<0.000667	<0.000066	<0.0000667	<0.000068	0.000062 J	0.000055 J	<0.0001	<0.00001	0.00012	0.0003
Fluorene	*0.98*	*2.9*	<0.00005	<0.00005	<0.000667	<0.000066	<0.0000667	<0.000068	<0.00003	<0.00003	<0.0003	0.000056 J	0.000053 J	<0.00014
Naphthalene	*0.49*	*1.5*	<0.00093	0.0013	<0.000762	<0.000173	<0.0004	<0.0000777	<0.00002	<0.00002	0.024	<0.0024	0.0013	<0.0006
Nitrobenzene	*0.049*	*0.15*	<0.00005	<0.00005	<0.00105	<0.000104	<0.000105	<0.000107	<0.000024	<0.000024	<0.00024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.00005	<0.000952	<0.0000943	<0.0000952	<0.0000971	<0.000025	<0.000025	<0.00025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00005	<0.00005	**<0.00581**	<0.000575	<0.000581	<0.000592	<0.00008	<0.00008	<0.00079	<0.000079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	<0.00005	<0.00005	<0.000571	<0.0000566	<0.0000571	<0.0000583	0.000032 J	0.00003 J	0.00022 J	<0.000021	0.000049 J	0.00048
Phenol	*7.3*	*22*	<0.00005	<0.00005	<0.000381	<0.0000377	<0.0000381	<0.0000388	<0.000035	<0.000035	0.018	<0.000035	<0.000073	<0.000035
Pyrene	*0.73*	*2.2*	0.00011 J	<0.00005	<0.00105	0.000246 J	0.000105 J	<0.000107	0.000081 J	0.000079 J	<0.00019	0.000065 J	0.00016	0.00021
Metals														
Arsenic	*0.01*	*0.01*							0.0076	0.0053	**0.0177**	**0.0116**	0.0092	0.00664

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-28C 01/29/2008	MW-28C 07/14/2008	MW-28C 02/03/2009	MW-28C 01/13/2010	MW-28C 06/30/2010	MW-28C 01/25/2011	MW-28C 07/19/2011	MW-28C 02/16/2012	MW-28C 07/17/2012	MW-28C 02/07/2013	MW-28C 08/07/2013	MW-28C 01/22/2014
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00052	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002
Benzene	*0.005*	*0.005*	<0.00025	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.00047	<0.00047	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018
Ethylbenzene	*0.7*	*0.7*	<0.00025	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019
Methylene chloride	*0.005*	*0.005*	<0.00054	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022
Toluene	*1*	*1*	<0.00041	<0.00041	0.0026 J	0.0013 J	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.00127	<0.00127	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00008	<0.00009	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.000101	<0.000104	<0.00011
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00029	0.00114 J	<0.00008	0.0002	<0.00008	0.000086 J	<0.00005	<0.00005	<0.00005	<0.000284	<0.000292	<0.00031
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00019	<0.00022	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000119	<0.000123	<0.00013
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000734	<0.0000755	<0.00008
2-Chloronaphthalene	*2*	*5.8*	<0.00038	<0.00044	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000734	<0.0000755	<0.00008
2-Methylnaphthalene	*0.098*	*0.29*	<0.00038	<0.00044	0.000097 J	0.00024	0.000077 J	0.000079 J	<0.00005	<0.00005	0.00011 J	<0.0000642	<0.000066	0.0000741 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00019	<0.00022	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.000761	<0.000783	<0.00083
4-Nitrophenol	*0.049*	*0.15*	<0.00024	<0.00028	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000514	<0.000528	<0.00056
Acenaphthene	*1.5*	*4.4*	<0.00029	<0.00033	<0.00009	0.00018 J	0.00033	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000734	<0.0000755	<0.00008
Acenaphthylene	*1.5*	*4.4*	<0.00029	<0.00033	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000055	<0.0000566	<0.00006
Anthracene	*7.3*	*22*	0.00059	<0.00022	<0.00007	<0.00007	0.00014 J	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000459	<0.0000472	<0.00005
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000734	<0.0000755	<0.00008
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00019	**<0.00022**	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000734	<0.0000755	<0.00008
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00038	<0.00044	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000119	<0.000123	<0.00013
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00049 J	<0.00022	0.0033	<0.00046	<0.0012	0.00063	<0.00053	<0.00013	<0.0001	<0.000339	<0.000349	<0.00037
Chrysene	*0.91*	*2*	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000734	<0.0000755	<0.00008
Dibenzofuran	*0.098*	*0.29*	0.00044 J	<0.00033	<0.00008	0.00018 J	<0.00008	<0.00008	0.00019 J	<0.00005	<0.00005	<0.0000734	<0.0000755	<0.00008
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000101	<0.000104	<0.00011
Fluoranthene	*0.98*	*2.9*	0.000497	<0.00022	<0.00007	<0.00007	0.00012 J	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000642	<0.000066	<0.00007
Fluorene	*0.98*	*2.9*	0.00022 J	<0.00022	<0.00007	0.00016 J	0.00033	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000642	<0.000066	<0.00007
Naphthalene	*0.49*	*1.5*	0.00234	0.00196	0.00057	0.0014	0.00035	0.00029	<0.000091	<0.00031	0.00064	0.000163 J	<0.0000755	<0.000596
Nitrobenzene	*0.049*	*0.15*	<0.00038	<0.00044	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000101	<0.000104	<0.00011
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00024	<0.00028	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000917	<0.0000943	<0.0001
Pentachlorophenol	*0.001*	*0.001*	0.00056 J	<0.00022	<0.00008	<0.00008	0.00034	<0.00008	<0.00005	<0.00005	<0.00005	<0.00056	<0.000575	<0.00061
Phenanthrene	*0.73*	*2.2*	0.000624	<0.00022	0.00013 J	0.00033	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000055	<0.0000566	0.0000739 J
Phenol	*7.3*	*22*	0.00865	0.00648	0.00063	0.0027	0.00075	0.0014	0.00054	<0.00005	<0.00005	<0.0000367	<0.0000377	<0.00004
Pyrene	*0.73*	*2.2*	0.00041 J	<0.00022	<0.00007	<0.00007	0.00007 J	<0.00007	<0.00005	<0.00005	<0.00005	<0.000101	<0.000104	<0.00011
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-28C 07/25/2014	MW-28C 01/25/2018	MW-28C 03/21/2018	MW-28C 05/17/2018	MW-28C 01/14/2019	MW-28C 07/16/2019	MW-28C 01/16/2020	MW-29A 01/28/2008	MW-29B 01/28/2008	MW-29C 01/28/2008	MW-30A 01/30/2008	MW-30A 07/14/2011
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00245	<0.00245	<0.00245	<0.00052	**<0.01**
Benzene	*0.005*	*0.005*	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00257	<0.00257	<0.00257	**0.147**	**0.14**
Chlorobenzene	*0.1*	*0.1*	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00239	<0.00239	<0.00239	<0.00047	<0.01
Ethylbenzene	*0.7*	*0.7*	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00203	<0.00203	<0.00203	0.153	0.12
Methylene chloride	*0.005*	*0.005*	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00195	<0.00195	<0.00195	<0.00054	**<0.013**
Toluene	*1*	*1*	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00274	<0.00274	<0.00274	0.645	0.51
Vinyl chloride	*0.002*	*0.002*	<0.00011			<0.0002								
Xylenes (total)	*10*	*10*	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00581	<0.00581	<0.00581	0.386	0.32
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000107	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0002	0.00008 J	<0.00008	**<0.02**	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	<0.000301	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00057	<0.0003	<0.00029	**4.1**	**2.9**
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000126	<0.000058	<0.000059	<0.000059	<0.000058	<0.000058	<0.000058	<0.00038	<0.0002	<0.00019	**<0.038**	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0000777	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.00038	**0.00374**	<0.00019	**<0.038**	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.0000777	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00076	<0.0004	<0.00038	<0.076	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	<0.000068	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.00076	<0.0004	<0.00038	**0.573**	**0.85**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.000806	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00038	<0.0002	<0.00019	**<0.038**	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000544	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00048	<0.00025	<0.00024	<0.048	<0.00005
Acenaphthene	*1.5*	*4.4*	<0.0000777	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.00057	<0.0003	<0.00029	0.215	0.31
Acenaphthylene	*1.5*	*4.4*	<0.0000583	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.00057	<0.0003	<0.00029	<0.057	0.0075
Anthracene	*7.3*	*22*	<0.0000485	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.00038	<0.0002	<0.00019	<0.038	0.018
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0000777	<0.00005	<0.000051	<0.000051	<0.00005	<0.00005	<0.00005	<0.00038	<0.0002	<0.00019	**<0.038**	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0000777	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	**<0.00038**	<0.0002	<0.00019	**<0.038**	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.000126	<0.00003	<0.00003	0.00003 J	<0.00003	<0.00003	<0.00003	<0.00076	<0.0004	<0.00038	**<0.076**	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000359	0.000064 J	<0.000037	<0.000037	<0.000037	<0.00013	0.000072 J	0.00232 J	0.00037 J	0.00042 J	**<0.038**	<0.0001
Chrysene	*0.91*	*2*	<0.0000777	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00038	<0.0002	<0.00019	<0.038	<0.00005
Dibenzofuran	*0.098*	*0.29*	<0.0000777	<0.00002	<0.00002	0.00002 J	<0.00002	<0.00002	<0.00002	<0.00057	<0.0003	<0.00029	**0.156**	**0.25**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.000107	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00038	<0.0002	<0.00019	<0.038	<0.00005
Fluoranthene	*0.98*	*2.9*	<0.000068	<0.00001	<0.00001	<0.00001	<0.00001	0.000015 J	<0.00001	<0.00038	<0.0002	<0.00019	<0.038	0.0041
Fluorene	*0.98*	*2.9*	<0.000068	<0.00003	<0.00003	0.00003 J	<0.00003	<0.00003	<0.00003	<0.00038	<0.0002	<0.00019	0.109	0.18
Naphthalene	*0.49*	*1.5*	<0.0000777	<0.00021	<0.00002	<0.00002	<0.00002	0.000095 J	<0.00016	<0.00076	<0.0004	0.00047 J	**9.77**	**15**
Nitrobenzene	*0.049*	*0.15*	<0.000107	<0.000024	<0.000024	0.000024 J	<0.000024	<0.000024	<0.000024	<0.00076	<0.0004	<0.00038	**<0.076**	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.0000971	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00048	<0.00025	<0.00024	<0.048	<0.00005
Pentachlorophenol	*0.001*	*0.001*	<0.000592	<0.000079	<0.00008	<0.00008	<0.000079	<0.000079	<0.000079	<0.00038	<0.0002	<0.00019	**<0.038**	0.00033 J
Phenanthrene	*0.73*	*2.2*	<0.0000583	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00038	<0.0002	<0.00019	0.075	0.12
Phenol	*7.3*	*22*	<0.0000388	<0.000035	<0.000035	<0.000035	<0.000035	0.0025	0.000086 J	<0.00038	0.00287	<0.00019	0.174	0.14
Pyrene	*0.73*	*2.2*	<0.000107	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.00038	<0.0002	<0.00019	<0.038	0.0022
Metals														
Arsenic	*0.01*	*0.01*		0.00206	0.00184 J	0.00184 J	0.000447 J	0.000456 J	0.000937 J					

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	C/I Assessment Level	MW-30A 02/03/2012	MW-30A 07/12/2012	MW-30A 02/01/2013	MW-31A 01/31/2008	MW-31A 07/14/2011	MW-31A 02/03/2012	MW-31A 07/12/2012	MW-31A 02/01/2013	MW-32A[7] 01/28/2008 DNAPL	MW-32A[7] 07/14/2008 DNAPL	MW-32A[7] 02/03/2009 DNAPL	MW-32A[7] 01/14/2010 DNAPL
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	**<0.01**	<0.0025	<0.0028	<0.00052	**<0.01**	**<0.025**	<0.005	<0.0014	<0.00052	<0.00109	<0.0005	<0.0005
Benzene	*0.005*	*0.005*	**0.13**	**0.14**	**0.117**	**0.178**	**0.14**	**0.14**	**0.11**	**0.135**	**0.884**	**0.884**	**0.69**	**0.34**
Chlorobenzene	*0.1*	*0.1*	<0.01	<0.0025	<0.0024	<0.00047	<0.01	<0.025	<0.005	<0.0012	<0.00047	<0.0015	<0.0005	<0.0005
Ethylbenzene	*0.7*	*0.7*	0.11	0.13	0.119	0.166	0.19	0.17	0.18	0.171	0.373	0.365	0.34	0.076
Methylene chloride	*0.005*	*0.005*	**<0.013**	<0.005	**0.0211**	<0.00054	**<0.013**	**<0.032**	**<0.01**	**0.00971 J**	<0.00054	<0.00122	<0.0005	<0.0005
Toluene	*1*	*1*	0.49	0.54	0.443	0.337	0.37	0.36	0.31	0.346	0.95	0.983	0.74	0.36
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	0.32	0.32	0.302	0.562	0.63	0.71	0.63	0.583	1.02	1.03	0.88	0.35
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0005	<0.00005	**<0.0524**	**<0.002**	<0.00005	<0.0005	<0.00005	**<0.055**	**<0.02**	**<0.008**	<0.0001	<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*	**3**	**2.7**	**2.94**	**4.74**	**5.3**	**5.1**	**3.4**	**4.45**	**9.57**	**12.6**	**2.2**	**2.1**
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.0005	<0.00005	**<0.0619**	**<0.0038**	<0.00005	<0.0005	<0.00005	**<0.065**	**<0.044**	**<0.019**	<0.00009	<0.00009
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0006	<0.00006	**<0.0381**	**<0.0038**	<0.00006	<0.0006	<0.00006	**<0.04**	**<0.044**	**<0.019**	<0.00007	<0.00007
2-Chloronaphthalene	*2*	*5.8*	<0.0005	<0.00005	<0.0381	<0.0076	<0.00005	<0.0005	<0.00005	<0.04	<0.089	<0.039	<0.00012	<0.0001
2-Methylnaphthalene	*0.098*	*0.29*	**0.42**	**0.67**	**1.01**	**0.887**	**1**	**0.65**	**0.83**	**1.17**	**1.13**	**0.989**	**1.2**	**0.3**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.0008	<0.00008	**<0.395**	**<0.0038**	<0.00008	<0.0008	<0.00008	**<0.415**	**<0.044**	**<0.019**	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.0005	<0.00005	**<0.267**	<0.0048	<0.00005	<0.0005	<0.00005	**<0.28**	**<0.056**	<0.024	<0.00007	<0.00007
Acenaphthene	*1.5*	*4.4*	0.23	0.24	0.436	0.206	0.37	0.3	0.28	0.488	0.341	0.294	0.34	0.13
Acenaphthylene	*1.5*	*4.4*	0.0064	0.0074	<0.0286	<0.0057	0.0076	0.0044	0.0032	<0.03	<0.067	<0.029	0.006	0.0019
Anthracene	*7.3*	*22*	0.013	0.018	0.0391 J	0.0145	0.032	0.026	0.026	0.056 J	<0.044	0.043	0.077	0.051
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0005	<0.00005	**<0.0381**	<0.0038	0.0038	<0.0005	0.00023	**<0.04**	**<0.044**	**<0.019**	**0.0096**	0.0067
Benzo(a)pyrene	*0.0002*	*0.0002*	**<0.0005**	<0.00005	**<0.0381**	**<0.0038**	**0.00089**	**<0.0005**	<0.00005	**<0.04**	**<0.044**	**<0.019**	**0.003**	**0.0023**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.0005	<0.00005	**<0.0619**	**<0.0076**	<0.00005	<0.0005	<0.00005	**<0.065**	**<0.089**	**<0.039**	<0.00009	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.001	<0.0001	**<0.176**	<0.0038	<0.0001	<0.001	<0.0001	**<0.185**	**<0.044**	**<0.019**	0.00042	<0.0018
Chrysene	*0.91*	*2*	<0.0005	<0.00005	<0.0381	<0.0038	0.0031	<0.0005	0.00017 J	<0.04	<0.044	<0.019	0.0087	0.0064
Dibenzofuran	*0.098*	*0.29*	**0.21**	**0.2**	**0.308**	**0.169**	**0.33**	**0.26**	**0.26**	**0.367**	**0.298**	**0.26**	**0.32**	**0.14**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.0005	0.0002	<0.0524	<0.0038	<0.00005	<0.0005	<0.00005	<0.055	<0.044	<0.019	<0.00007	<0.00007
Fluoranthene	*0.98*	*2.9*	0.0031	0.0038	<0.0333	0.006	0.031	0.0029	0.0052	<0.035	<0.044	0.026	0.098	0.07
Fluorene	*0.98*	*2.9*	0.13	0.14	0.247	0.123	0.24	0.17	0.17	0.273	0.163	0.156	0.22	0.087
Naphthalene	*0.49*	*1.5*	**7.8**	**12**	**16.8 J**	**13.7**	**21**	**18**	**17**	**19.3 J**	**25**	**16.2**	**16**	**3.5**
Nitrobenzene	*0.049*	*0.15*	<0.0005	<0.00005	**<0.0524**	<0.0076	<0.00005	<0.0005	<0.00005	**<0.055**	**<0.089**	<0.039	<0.00009	<0.00009
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.0005	<0.00005	<0.0476	<0.0048	<0.00005	<0.0005	<0.00005	<0.05	<0.056	<0.024	<0.00009	<0.00009
Pentachlorophenol	*0.001*	*0.001*	<0.0005	<0.00005	**<0.29**	**0.0895**	**0.076 J**	**0.11**	**0.094**	**<0.305**	**<0.044**	**<0.019**	<0.00008	<0.00008
Phenanthrene	*0.73*	*2.2*	0.064	0.1	0.162 J	0.0774	0.24	0.14	0.13	0.268	0.177	0.185	0.45	0.25
Phenol	*7.3*	*22*	0.015	0.02	0.0781 J	1.56	0.6	0.76	0.29	0.579	**9.01**	**8.83**	1.4	1.3
Pyrene	*0.73*	*2.2*	0.0021	0.0018	<0.0524	0.0084	0.018	0.0025	0.002	<0.055	<0.044	<0.019	0.062	0.043
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	***C/I Assessment Level***	MW-32A[7] 07/01/2010 DNAPL	MW-32A[7] 01/25/2011 DNAPL	MW-32A[7] 07/19/2011 DNAPL	MW-32AR 02/09/2012	MW-32AR 07/16/2012	MW-32AR 02/06/2013	MW-32AR 08/07/2013	MW-32AR 01/21/2014	MW-32AR 07/24/2014	MW-32AR 01/28/2018	MW-32AR 03/27/2018	MW-32AR 05/31/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0025	<0.0025	**0.03**	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	**1.5**	**0.61**	**1.4**	<0.001	<0.0005	**0.023**	0.000475 J	<0.0002	**0.0404**	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0025	<0.0025	<0.005	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	0.45	0.41	0.31	<0.0011	<0.0005	0.0082	0.000296 J	<0.00019	0.0208	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.0032	<0.0025	**<0.0065**	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001
Toluene	*1*	*1*	**1.5**	1	**1.2**	<0.001	<0.0005	0.00338	0.000234 J	<0.00017	0.000849 J	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*							<0.00011		<0.00011			
Xylenes (total)	*10*	*10*	1.3	1.1	0.87	<0.0031	<0.0015	0.0176	0.000873 J	<0.00058	0.0336	<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.001	<0.001	<0.0005	<0.00005	<0.00005	**<0.00529**	<0.000104	<0.000104	<0.000104	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	**15**	**2.3**	**31**	0.0012	0.000061 J	0.0172 J	<0.000292	<0.000292	0.0722	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.0009	<0.0009	<0.0005	<0.00005	<0.00005	**<0.00625**	<0.000123	<0.000123	<0.000123	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0007	<0.0007	<0.0006	<0.00006	<0.00006	**<0.00385**	<0.0000755	<0.0000755	<0.0000755	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.001	<0.001	<0.0005	<0.00005	<0.00005	<0.00385	<0.0000755	<0.0000755	<0.0000755	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	**0.48**	**6.9**	**0.95**	0.000088 J	0.00019 J	0.011 J	<0.000066	0.00021 J	**0.206**	0.000079 J	0.0068	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.0008	<0.0008	<0.0008	<0.00008	<0.00008	**<0.0399**	<0.000783	<0.000783	<0.000783	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.0007	<0.0007	<0.0005	<0.00005	<0.00005	<0.0269	<0.000528	<0.000528	<0.000528	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	0.19	**3.1**	0.25	0.0046	0.0029	0.0232 J	0.00625	0.0105	0.111	0.0013	0.0043	0.002
Acenaphthylene	*1.5*	*4.4*	0.0079	0.027	0.005	0.00032	<0.00005	<0.00288	0.000258 J	<0.000317	0.00226	0.000054 J	0.000054 J	<0.000015
Anthracene	*7.3*	*22*	0.093	0.91	0.09	0.00041	0.00026	<0.0024	0.000223 J	0.000444 J	0.00332	0.000082 J	0.00021	0.000064 J
Benzo(a)anthracene	*0.0091*	*0.02*	**0.01**	**0.3**	**0.038**	0.00012 J	0.00015 J	<0.00385	<0.0000755	<0.0000755	0.000218 J	0.00006 J	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	**0.0067**	**0.078**	**0.019**	<0.00005	<0.00005	**<0.00385**	<0.0000755	<0.0000755	<0.0000755	0.000027 J	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	**<0.0009**	**<0.0009**	<0.0005	<0.00005	<0.00005	**<0.00625**	<0.000123	<0.000123	0.000452 J	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0041	0.0046	<0.0013	0.00054	0.00014 J	**<0.0178**	<0.000349	<0.000349	0.000621	0.00011 J	<0.000037	0.00014 J
Chrysene	*0.91*	*2*	0.0099	0.28	0.033	0.000093 J	0.00023	<0.00385	<0.0000755	0.0000774 J	0.00016 J	0.000058 J	<0.000021	0.000037 J
Dibenzofuran	*0.098*	*0.29*	**0.21**	**3.2**	**0.27**	0.00096	0.0017	0.00936 J	0.000515	0.000664	0.05	<0.000053	0.0024	0.00007 J
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.0007	<0.0007	<0.0005	<0.00005	0.000056 J	<0.00529	<0.000104	<0.000104	<0.000104	<0.00002	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	0.09	**2.5**	0.11	0.002	0.003	0.00508 J	0.00102	0.00124	0.00656	0.00048	0.00023	0.00031
Fluorene	*0.98*	*2.9*	0.13	**2.5**	0.18	0.0017	0.0016	0.00932 J	0.00105	0.00317	0.0516	0.00012	0.00093	0.000058 J
Naphthalene	*0.49*	*1.5*	**11**	**31**	**21**	0.00044	0.0036	0.406	<0.00297	0.0087	**3.83**	<0.00058	0.026	0.000043 J
Nitrobenzene	*0.049*	*0.15*	<0.0009	<0.0009	<0.0005	<0.00005	<0.00005	<0.00529	<0.000104	<0.000104	<0.000104	0.00035	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	0.014	<0.0009	<0.0005	<0.00005	<0.00005	<0.00481	<0.0000943	<0.0000943	<0.0000943	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.0008	<0.0008	<0.0005	<0.00005	<0.00005	**<0.0293**	<0.000575	<0.000575	<0.000575	<0.000079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	0.19	**8.9**	0.35	0.00033	0.000055 J	0.00768 J	0.000112 J	0.000101 J	0.0111	0.00022	0.0013	<0.000021
Phenol	*7.3*	*22*	**14**	1.2	**21**	0.00012 J	0.00029	<0.00192	<0.0000377	<0.0000377	<0.0000377	<0.000035	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	0.047	**1.5**	0.072	0.0041	0.0046	<0.00529	0.000617	0.000625	0.00474	0.00031	0.00018	0.00049
Metals														
Arsenic	*0.01*	*0.01*										0.00294	**0.0228**	**0.0441**

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-32AR 01/23/2019	MW-32AR 07/30/2019	MW-32AR 01/20/2020	MW-33A 01/29/2008	MW-33A 07/14/2008	MW-33A 02/03/2009	MW-33A 02/03/2009 Duplicate	MW-33A 01/13/2010	MW-33A 01/13/2010 Duplicate	MW-33A 06/29/2010	MW-33A 06/29/2010 Duplicate	MW-33A 01/24/2011
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.00052	<0.00109	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.00025	**0.0062**	0.00071 J	0.00074 J	0.0025 J	0.0024 J	0.0018 J	0.0034 J	**0.0056**
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.00047	<0.0015	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.00025	<0.00142	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0015 J
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.00054	<0.00122	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.00041	<0.00138	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Vinyl chloride	*0.002*	*0.002*			<0.0002									
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.00127	<0.00302	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0016 J
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.0001	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*	0.00013 J	<0.00004	<0.00004	<0.0005	<0.00029	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	0.0027
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	<0.00033	<0.00019	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.00033	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.00067	<0.00038	<0.00012	<0.00012	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	<0.000028	<0.00067	<0.00038	0.00066	<0.00007	0.0009 J	0.00051 J	0.00092	<0.00007	0.0067
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00033	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.00042	<0.00024	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
Acenaphthene	*1.5*	*4.4*	0.0001	<0.000027	0.0014	0.0133	0.0124	0.013	<0.00009	0.028	0.026	0.012	0.0072	0.014
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.0005	<0.00029	<0.00006	<0.00006	0.00015 J	0.00014 J	<0.00007	<0.00007	0.00014 J
Anthracene	*7.3*	*22*	0.00002 J	<0.000014	<0.000014	<0.00033	0.00024 J	0.0002 J	<0.00007	0.00028	0.00024	0.00021	<0.00007	0.00072
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	0.000054 J	<0.00005	<0.00033	<0.00019	0.0002 J	<0.00007	0.00017 J	0.00017 J	0.00014 J	0.00014 J	0.00025
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	0.000081 J	**<0.00033**	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00067	<0.00038	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000044	0.000074 J	0.000043 J	0.00137 J	<0.00019	0.00033	0.00035	<0.0003	<0.00038	<0.00035	<0.0016	0.00031
Chrysene	*0.91*	*2*	<0.000021	<0.000021	0.000042 J	<0.00033	<0.00019	0.00012 J	<0.00007	0.00012 J	0.000089 J	0.00009 J	<0.00007	0.00016 J
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00002	<0.00002	0.00074	0.000628	0.00078	<0.00008	0.0019	0.0017	0.0014	0.00035	0.0027
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	0.00002 J	<0.00002	<0.00002	0.00055 J	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
Fluoranthene	*0.98*	*2.9*	0.000051 J	<0.00001	<0.00029	0.00141	0.00154	0.0022	<0.00007	0.0013	0.0012	0.0012	0.00095	0.003
Fluorene	*0.98*	*2.9*	<0.00003	<0.00003	0.000038 J	0.0013	0.000939	0.00067	<0.00007	0.0015	0.0013	0.0012	0.00041	0.0027
Naphthalene	*0.49*	*1.5*	0.000067 J	<0.00002	<0.00014	0.00167	0.0047	0.0028	<0.0001	0.02 J	0.009 J	0.0082	0.0013	0.095
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.00067	<0.00038	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.00042	<0.00024	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	<0.00033	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
Phenanthrene	*0.73*	*2.2*	0.000034 J	<0.000021	<0.000032	<0.00033	0.00028 J	0.00037	<0.00007	0.00032	0.00024	0.00065	<0.00007	0.0048
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.000035	<0.00033	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007	<0.00007
Pyrene	*0.73*	*2.2*	0.000036 J	0.00045	0.00042	0.0019	0.00167	0.0024	<0.00007	0.0019	0.0018	0.0016	0.0015	0.0035
Metals														
Arsenic	*0.01*	*0.01*	**0.0316**	**0.0628**	0.0077									

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	***C/I Assessment Level***	MW-33A 07/19/2011	MW-33A 07/19/2011 Duplicate	MW-33A 02/15/2012	MW-33A 02/15/2012 Duplicate	MW-33A 07/17/2012	MW-33A 07/17/2012 Duplicate	MW-33A 02/12/2013	MW-33A 02/12/2013 Duplicate	MW-33A 08/07/2013	MW-33A 08/07/2013 Duplicate	MW-33A 01/23/2014	MW-33A 01/23/2014 Duplicate
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.005	<0.0005	<0.0005	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	**0.009**	**0.0091**	**0.054**	**0.051**	0.0023 J	0.0022 J	**0.00782**	**0.00782**	**0.165**	**0.174**	**0.223**	**0.223**
Chlorobenzene	*0.1*	*0.1*	<0.001	<0.001	<0.001	<0.005	<0.0005	<0.0005	<0.00012	<0.00012	0.000185 J	0.000189 J	0.000214 J	<0.00018
Ethylbenzene	*0.7*	*0.7*	0.0033 J	0.003 J	0.075	0.061	<0.0005	<0.0005	0.0022	0.00216	0.109	0.117	0.135	0.134
Methylene chloride	*0.005*	*0.005*	<0.0013	<0.0013	<0.0013	**<0.0065**	<0.001	<0.001	<0.00015	<0.00015	<0.00015	<0.00015	<0.00022	<0.00022
Toluene	*1*	*1*	<0.001	<0.001	0.019	0.018 J	<0.0005	<0.0005	<0.00015	<0.00015	0.00639	0.00672	0.23	0.229
Vinyl chloride	*0.002*	*0.002*						<0.0005			<0.00011	<0.00011		
Xylenes (total)	*10*	*10*	<0.0031	<0.0031	0.11	0.092	<0.0015	<0.0015	0.00223 J	0.00229 J	0.172	0.186	0.188	0.19
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000105	<0.000105	**<0.00519**	**<0.00519**	**<0.104**	**<0.106**
2,4-Dimethylphenol	*0.49*	*1.5*	0.0034	0.0046	0.029 J	0.019 J	<0.00005	<0.00005	0.00623	0.0199	**0.888**	**0.801**	**1.44**	**1.54**
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000124	<0.000124	**<0.00613**	**<0.00613**	**<0.123**	**<0.125**
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.0000762	<0.0000762	**<0.00377**	**<0.00377**	**<0.0755**	**<0.0769**
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000762	<0.00377	<0.00377	<0.0755	<0.0769
2-Methylnaphthalene	*0.098*	*0.29*	0.022 J	0.031 J	0.03	0.024	0.0015	0.0011	0.00345	0.0149	**0.195**	**0.16**	**0.263 J**	**0.27 J**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00079	<0.00079	**<0.0392**	**<0.0392**	**<0.783**	**<0.798**
4-Nitrophenol	*0.049*	*0.15*	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000533	<0.000533	<0.0264	<0.0264	**<0.528**	**<0.538**
Acenaphthene	*1.5*	*4.4*	0.037	0.042	0.048	0.064	0.019	0.023	0.0279	0.0374 J	0.157	0.151	0.288 J	0.217 J
Acenaphthylene	*1.5*	*4.4*	0.00018 J	0.00021	0.0003	0.0004	<0.00005	<0.00005	<0.0000571	0.000358 J	<0.00283	<0.00283	<0.0566	<0.0577
Anthracene	*7.3*	*22*	0.0013	0.0016	0.00082	0.00078	0.0026 J	0.0015 J	0.000748	0.000801	0.0049 J	0.00487 J	<0.0472	<0.0481
Benzo(a)anthracene	*0.0091*	*0.02*	0.00019 J	0.00018 J	0.0001 J	0.00011 J	0.00043 J	0.00026 J	0.000174 J	0.000211 J	<0.00377	<0.00377	**<0.0755**	**<0.0769**
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	<0.00005	<0.00005	<0.00005	0.00011 J	0.000054 J	<0.0000762	<0.0000762	**<0.00377**	**<0.00377**	**<0.0755**	**<0.0769**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000124	<0.000124	**<0.00613**	**<0.00613**	**<0.123**	**<0.125**
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00056	<0.00068	0.0013 J	0.00084 J	0.00014 J	0.00022	<0.000352	<0.000352	**<0.0175**	**<0.0175**	**<0.349**	**<0.356**
Chrysene	*0.91*	*2*	0.0001 J	0.00005 J	0.000061 J	<0.00005	0.00033 J	0.00016 J	0.000114 J	0.000106 J	<0.00377	<0.00377	<0.0755	<0.0769
Dibenzofuran	*0.098*	*0.29*	0.0088 J	0.014 J	0.019 J	0.026 J	0.0049	0.0061	0.00262	0.00699	0.0728	0.0717	**0.148 J**	**0.108 J**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000105	<0.000105	<0.00519	<0.00519	<0.104	<0.106
Fluoranthene	*0.98*	*2.9*	0.0021	0.0023	0.0012	0.0011	0.0036 J	0.0026 J	0.00212	0.0025	0.00385 J	0.00435 J	0.0703 J	<0.0673
Fluorene	*0.98*	*2.9*	0.0088 J	0.012 J	0.015	0.019	0.0056	0.0073	0.00641	0.00994	0.0668	0.0623	0.145 J	0.0939 J
Naphthalene	*0.49*	*1.5*	0.31 J	0.44 J	**0.96 J**	**1.6 J**	0.017	0.021	0.112	0.382 J	**4.98**	**4.07**	**5.82**	**5.3**
Nitrobenzene	*0.049*	*0.15*	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000105	<0.000105	<0.00519	<0.00519	**<0.104**	**<0.106**
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000952	<0.0000952	<0.00472	<0.00472	<0.0943	<0.0962
Pentachlorophenol	*0.001*	*0.001*	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000581	<0.000581	**<0.0288**	**<0.0288**	**<0.575**	**<0.587**
Phenanthrene	*0.73*	*2.2*	0.0046 J	0.0068 J	0.0038	0.0032	0.0058 J	0.0026 J	0.000488	0.000987	0.0232 J	0.0236	0.18 J	0.135 J
Phenol	*7.3*	*22*	0.00005 J	0.00091 J	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000381	<0.0000381	<0.00189	<0.00189	0.203 J	0.108 J
Pyrene	*0.73*	*2.2*	0.0025	0.0026	0.0021	0.0022	0.0035	0.0032	0.00283	0.00336	<0.00519	<0.00519	<0.104	<0.106
Metals														
Arsenic	*0.01*	*0.01*												

Notes:
1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-33A 08/28/2014	MW-33A 08/28/2014 Duplicate	MW-33A 01/30/2018	MW-33A 01/30/2018	MW-33A 03/27/2018	MW-33A 03/27/2018 Duplicate	MW-33A 06/05/2018	MW-33A 06/05/2018 Duplicate	MW-33A 01/22/2019	MW-33A 01/22/2019 Duplicate	MW-33A 07/17/2019	MW-33A 07/17/2019 Duplicate
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00014	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	0.00236 J	0.00389 J	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.00012	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	0.0014 J	0.00224 J	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.00015	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.00015	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*			<0.0002	<0.0002	<0.0002							
Xylenes (total)	*10*	*10*	0.000632 J	0.000872 J	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000108	<0.000108	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	0.0212 J	0.0608 J	<0.0002	<0.00021	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000127	<0.000127	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0000784	<0.0000784	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.0000784	<0.0000784	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	0.0216 J	0.0524 J	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.000814	<0.000814	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.000549	<0.000549	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	0.046 J	0.0692 J	0.0005	0.00016	<0.000027	<0.000027	0.00018 J	0.00097 J	<0.000027	<0.000027	0.000098 J	<0.000027
Acenaphthylene	*1.5*	*4.4*	0.00041 J	0.000636 J	0.000022 J	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	*7.3*	*22*	0.00132 J	0.00184 J	<0.000014	<0.000014	<0.000014	<0.000014	0.000021 J	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*	0.000288 J	0.000318 J	0.000077 J	<0.00005	<0.00005	<0.00005	0.000077 J	0.000091 J	<0.00005	0.000062 J	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0000784	<0.0000784	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.000127	0.000476 J	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.000363 J	0.000363 J	<0.000037	<0.000044	<0.000037	<0.000037	0.000078 J	0.00014 J	<0.000037	<0.000037	<0.00022	<0.000084
Chrysene	*0.91*	*2*	0.000168 J	0.000178 J	<0.000021	<0.000021	0.000047 J	<0.000021	0.00005 J	0.000061 J	0.000025 J	0.000034 J	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	0.0164 J	0.0334 J	0.000042 J	<0.00002	<0.00002	0.000036 J	0.00002 J	0.000038 J	<0.00002	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.000108	<0.000108	<0.00002	<0.00002	<0.00002	<0.00002	0.000039 J	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	0.00395	0.00426	0.0006	0.00034	0.00052	0.00052	0.00045 J	0.0006 J	0.00033	0.00044	0.00016	0.00017
Fluorene	*0.98*	*2.9*	0.0146 J	0.0224 J	<0.00003	<0.00003	<0.00003	<0.00003	0.000059 J	0.00017	<0.00003	<0.00003	<0.00003	<0.00003
Naphthalene	*0.49*	*1.5*	0.489 J	**1.02 J**	<0.00033	<0.00035	<0.00002	0.00013	<0.00019	<0.00002	<0.00002	<0.00002	<0.000076	<0.000096
Nitrobenzene	*0.049*	*0.15*	0.000108 J	0.00936 J	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000098	<0.000098	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.000598	<0.000598	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	0.00427 J	0.00736 J	<0.000021	<0.000021	<0.000021	<0.000021	0.000085 J	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Phenol	*7.3*	*22*	<0.0000392	<0.0000392	<0.0002	<0.00025	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	0.00011 J	0.000053 J
Pyrene	*0.73*	*2.2*	0.0043	0.00471	0.00028	0.000041 J	0.00057	0.00062	0.00073	0.001	0.00015	0.00034	0.00028	0.00069
Metals														
Arsenic	*0.01*	*0.01*			**0.0197**	**0.0202**	**0.0186**	**0.0201**	0.00573	0.00584	0.01	0.00995	**0.0155**	**0.0147**

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-33A 01/20/2020	MW-33A 01/20/2020 Duplicate	MW-34C 01/29/2008 DNAPL	MW-34C 02/08/2012	MW-34CR 07/29/2014	MW-34CR 01/29/2018	MW-34CR 03/27/2018	MW-34CR 06/05/2018	MW-34CR 01/15/2019	MW-35A 01/29/2008	MW-35A 07/14/2008	MW-35A 02/03/2009
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.00052	0.001 J	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052	<0.00052	<0.0005
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	**0.0287**	0.0014 J	0.000154 J	<0.0002	<0.0002	<0.0002	<0.0002	<0.00025	<0.00025	<0.0005
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.00047	0.001 J	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047	<0.00047	<0.0005
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	0.0903	0.0039 J	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.00025	<0.00025	<0.0005
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.00054	0.0013 J	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.00054	<0.00054	<0.0005
Toluene	*1*	*1*	<0.0002	<0.0002	0.0832	0.0041 J	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.00041	<0.00041	<0.0005
Vinyl chloride	*0.002*	*0.002*	<0.0002	<0.0002										
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	0.25	0.0077 J	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.00127	<0.00127	<0.001
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	**<0.002**	0.00005 J	<0.000108	<0.000021	<0.000021	<0.000021	<0.000021	<0.00008	0.00012 J	<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.0059	0.00022 J	<0.000304	<0.00004	<0.00004	<0.00004	<0.00004	<0.0003	<0.00028	<0.00008
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	**<0.004**	0.00005 J	<0.000127	<0.000058	<0.000058	<0.000058	<0.000058	<0.0002	<0.00019	<0.00009
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	**<0.004**	0.00006 J	<0.0000784	0.0001 J	<0.000042	<0.000042	<0.000042	<0.0002	<0.00019	<0.00007
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.0079	0.00005 J	<0.0000784	<0.000021	<0.000021	<0.000021	<0.000021	<0.0004	<0.00038	<0.00012
2-Methylnaphthalene	*0.098*	*0.29*	<0.000063	<0.000095	**0.437**	0.00011 J	0.000255 J	<0.000019	<0.000019	<0.000019	<0.000079	<0.0004	<0.00038	<0.00007
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	**<0.004**	0.00008 J	<0.000814	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002	<0.00019	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.005	0.00005 J	<0.000549	<0.000047	<0.000047	<0.000047	<0.000047	<0.00025	<0.00024	<0.00007
Acenaphthene	*1.5*	*4.4*	0.00073 J	0.0011 J	0.365	0.00005 J	<0.0000784	<0.000027	<0.000027	<0.000027	0.000029 J	0.0176	0.00656	0.0035
Acenaphthylene	*1.5*	*4.4*	0.000049 J	0.000038 J	<0.0059	0.00005 J	<0.0000588	<0.000015	<0.000015	<0.000015	<0.000015	<0.0003	<0.00028	<0.00006
Anthracene	*7.3*	*22*	0.000057 J	0.000044 J	0.0712	0.00005 J	<0.000049	<0.000014	<0.000014	<0.000014	<0.000014	0.000542	0.00023 J	<0.00007
Benzo(a)anthracene	*0.0091*	*0.02*	0.00012	0.00012	**0.017**	0.00005 J	<0.0000784	<0.00005	<0.00005	<0.00005	<0.00005	<0.0002	<0.00019	<0.00007
Benzo(a)pyrene	*0.0002*	*0.0002*	0.000066 J	0.000072 J	**0.0065**	0.00005 J	<0.0000784	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002	<0.00019	<0.00008
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	**<0.0079**	0.00005 J	<0.000127	<0.00003	<0.00003	<0.00003	<0.00003	<0.0004	<0.00038	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	<0.000037	**0.0076**	0.00053 J	<0.000799	<0.000037	<0.000037	<0.000037	0.000081 J	<0.000037	0.00453	<0.00019	0.00024
Chrysene	*0.91*	*2*	0.000078 J	0.000093 J	0.0128	0.00005 J	<0.0000784	<0.000021	<0.000021	<0.000021	<0.000021	<0.0002	<0.00019	<0.00007
Dibenzofuran	*0.098*	*0.29*	0.000096 J	0.000067 J	**0.412**	0.000071 J	<0.0000784	<0.00002	<0.00002	<0.00002	0.000027 J	0.00819	0.00319	0.0014
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.004	0.00005 J	<0.000108	<0.00002	<0.00002	<0.00002	0.000021 J	0.00046 J	<0.00019	<0.00007
Fluoranthene	*0.98*	*2.9*	0.00035 J	0.00057 J	0.14	0.00017 J	<0.0000686	<0.00001	<0.00001	<0.00001	0.000014 J	0.0014	0.00105	0.00034
Fluorene	*0.98*	*2.9*	0.000059 J	0.000072 J	0.228	0.00011 J	<0.0000686	<0.00003	<0.00003	<0.00003	<0.00003	0.00328	0.00161	0.00062
Naphthalene	*0.49*	*1.5*	<0.0005	<0.00066	**5.87**	0.00043 J	0.00282	<0.00017	<0.00002	<0.00023	<0.00069	0.0257	0.000704	<0.0001
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.0079	0.00005 J	<0.000108	<0.000024	<0.000024	<0.000024	<0.000024	<0.0004	<0.00038	<0.00009
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.005	0.00005 J	<0.000098	<0.000025	<0.000025	<0.000025	<0.000025	<0.00025	<0.00024	<0.00009
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	**<0.004**	0.00005 J	<0.000598	0.00013 J	<0.000079	<0.000079	<0.000079	<0.0002	<0.00019	<0.00008
Phenanthrene	*0.73*	*2.2*	<0.000056	<0.000046	0.431	0.0001 J	<0.0000588	<0.000021	<0.000021	<0.000021	<0.000021	0.00046 J	<0.00019	<0.00007
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.004	0.000072 J	<0.0000392	<0.000035	<0.000035	<0.000035	<0.000035	<0.0002	<0.00019	<0.00007
Pyrene	*0.73*	*2.2*	<0.00019	0.00052 J	0.0853	0.00021 J	<0.000108	<0.000019	<0.000019	<0.000019	<0.000019	0.000967	0.000547	0.00025
Metals														
Arsenic	*0.01*	*0.01*	0.0081	0.00755				0.00106 J	0.000801 J	0.000689 J	0.00132 J			

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-35A 01/14/2010	MW-35A 06/30/2010	MW-35A 01/27/2011	MW-35A 07/20/2011	MW-35A 02/15/2012	MW-35A 07/18/2012	MW-35A 02/07/2013	MW-35A 08/08/2013	MW-35A 01/24/2014	MW-35A 07/24/2014	MW-35A 01/25/2018	MW-35A 03/22/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	0.000367 J	0.00021 J	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	0.00015 J	<0.0003	0.00042 J
Ethylbenzene	*0.7*	*0.7*	0.0015 J	<0.0005	<0.0005	<0.0011	<0.0011	0.0015 J	<0.00011	<0.00011	<0.00019	0.000473 J	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001
Toluene	*1*	*1*	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*								<0.00011		<0.00011		
Xylenes (total)	*10*	*10*	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	0.000309 J	<0.00058	<0.00026	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0001	0.0003	<0.0001	<0.00005	<0.00005	<0.00005	<0.000105	<0.000108	<0.000104	<0.000106	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000295	<0.000304	<0.000292	<0.000298	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000124	<0.000127	<0.000123	<0.000125	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000762	<0.0000784	<0.0000755	<0.0000769	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000784	<0.0000755	<0.0000769	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	0.00061	<0.00007	<0.00007	<0.00005	<0.00005	0.0063	0.000239 J	<0.0000686	0.00035 J	0.000151 J	0.0019	0.000092 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00079	<0.000814	<0.000783	<0.000798	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000533	<0.000549	<0.000528	<0.000538	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	0.017	0.0077	0.00069	0.00091	0.00041	0.0072	0.0196	0.0181 J	0.0551	0.0294	0.0076	0.0064
Acenaphthylene	*1.5*	*4.4*	0.00011 J	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000571	<0.0000588	0.000754	<0.0000577	<0.000015	0.000088 J
Anthracene	*7.3*	*22*	0.00043	0.00035	<0.00007	<0.00005	<0.00005	0.0013	0.000389 J	<0.000049	0.00111	0.000601	0.00038	0.00028
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.0003	<0.0000762	<0.0000784	<0.0000755	<0.0000769	0.000054 J	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000784	<0.0000755	<0.0000769	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000124	<0.000127	<0.000123	<0.000125	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00045	<0.00048	0.0004	<0.00099	<0.00013	0.00014 J	<0.000352	<0.000363	<0.000349	<0.000356	0.00011 J	<0.000037
Chrysene	*0.91*	*2*	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00027	<0.0000762	<0.0000784	<0.0000755	<0.0000769	0.00005 J	<0.000021
Dibenzofuran	*0.098*	*0.29*	0.005	0.0026	0.00011 J	0.00013 J	0.00008 J	0.0043	0.000429 J	0.000141 J	0.00177	0.00115	0.0047	0.0011
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	0.000092 J	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000105	<0.000108	<0.000838	<0.000106	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	0.0011	0.00048	0.00021	0.00053	0.00007 J	0.0027	0.000109 J	0.000365 J	0.000484	0.000782	0.00065	0.00039
Fluorene	*0.98*	*2.9*	0.0028	0.0014	0.000095 J	0.00012 J	<0.00005	0.0029	<0.0000667	0.002 J	0.0149	0.0071	0.0024	0.00061
Naphthalene	*0.49*	*1.5*	0.19	0.0017	0.00028	<0.00005	0.00027	0.05	0.00286 J	0.000557 J	0.00968	0.00293	0.13	0.013
Nitrobenzene	*0.049*	*0.15*	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000105	<0.000108	<0.000104	<0.000106	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000952	<0.000098	<0.0000943	<0.0000962	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000581	<0.000598	<0.000575	<0.000587	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	0.00039	<0.00007	<0.00007	<0.00005	<0.00005	0.0068	0.000104 J	<0.0000588	<0.000848	0.000449 J	0.0016	0.00028
Phenol	*7.3*	*22*	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000381	<0.0000392	<0.0000377	<0.0000385	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	0.00092	0.00031	<0.00007	0.00029	<0.00005	0.0016	0.000305 J	0.000252 J	0.000376 J	0.000548	0.00055	0.00026
Metals														
Arsenic	*0.01*	*0.01*											**0.0166**	**0.0714**

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-35A 06/05/2018	MW-35A 01/15/2019	MW-35A 07/18/2019	MW-35A 01/10/2020	MW-35B 01/29/2008	MW-35B 07/14/2008	MW-35B 02/03/2009	MW-35B 01/14/2010	MW-35B 07/01/2010	MW-35B 01/27/2011	MW-35B 07/20/2011	MW-35B 02/15/2012
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052	<0.00109	<0.005	<0.005	<0.0005	<0.0005	<0.005	<0.001
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	**0.0648**	**0.0281**	**0.062**	**0.064**	**0.068**	**0.064**	**0.056**	**0.077**
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047	<0.0015	<0.005	<0.005	<0.0005	<0.0005	<0.005	<0.001
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	0.176	0.113	0.2	0.2	0.21	0.22	0.17	0.19
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.00054	<0.00122	<0.005	<0.005	<0.0005	<0.0005	**<0.0065**	<0.0013
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	0.00494 J	0.00249 J	0.0057 J	<0.005	0.005	0.0045 J	<0.005	0.0042 J
Vinyl chloride	*0.002*	*0.002*				<0.0002								
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	0.135	0.0787	0.15	0.15 J	0.17	0.16	0.12	0.13
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	<0.00008	<0.00008	<0.0001	<0.0001	**0.0012**	<0.0001	<0.00005	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	0.0021	<0.00004	<0.00004	<0.00029	<0.0003	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	<0.000058	<0.00019	<0.0002	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.000042	<0.00019	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.00038	<0.0004	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	0.00032	0.016	0.00012	<0.000019	**0.464**	0.0561	**0.4**	**0.47**	**0.36**	**0.41**	**0.48**	**0.18**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019	<0.0002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.00024	<0.00025	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Acenaphthene	*1.5*	*4.4*	0.006	0.0039	0.0028	<0.000027	0.217	0.116	0.17	0.22	0.2	0.19	0.2	0.08
Acenaphthylene	*1.5*	*4.4*	0.000066 J	0.000068 J	0.000071 J	<0.000015	<0.00029	<0.0003	0.00088	0.0013	0.0011	0.0012	0.00097	0.00063 J
Anthracene	*7.3*	*22*	0.00022	0.00044	0.00011	<0.000014	0.0129	0.00842	0.0056	0.008	0.015	0.014	0.016	0.0048 J
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00005	<0.00005	0.00044 J	0.0003 J	0.00017 J	0.00032	0.00022	0.00031	0.00021	0.00011 J
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019	<0.0002	<0.00008	0.00014 J	0.00012 J	0.00014 J	0.000069 J	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00038	<0.0004	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00018 J	<0.000037	0.000057 J	0.000061 J	**0.0198**	<0.0002	0.00052	<0.00029	<0.00097	0.00041	<0.00056	<0.00088
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	<0.000021	0.00033 J	0.00022 J	0.00015 J	0.00028	0.00017 J	0.00037	0.00025	0.0001 J
Dibenzofuran	*0.098*	*0.29*	0.00072	0.0041	0.00039	<0.00002	**0.198**	**0.104**	**0.16**	**0.23**	**0.22**	**0.2**	**0.21**	0.097
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Fluoranthene	*0.98*	*2.9*	0.00024	0.00015	0.00015	<0.00001	0.00698	0.00624	0.0031	0.0053	0.006	0.0065	0.0056	0.0026 J
Fluorene	*0.98*	*2.9*	0.00086	0.0022	0.00036	0.000065 J	0.0912	0.0685	0.063	0.092	0.11	0.09	0.097	0.048
Naphthalene	*0.49*	*1.5*	0.0075	0.22	0.00083	<0.0002	**9.3**	0.365	**12**	**14**	**11**	**4.8**	**12**	**7.4**
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.00038	<0.0004	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.00024	<0.00025	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	<0.000079	<0.00019	<0.0002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005
Phenanthrene	*0.73*	*2.2*	<0.000021	0.0025	0.000042 J	<0.000021	0.1	0.0782	0.061	0.086	0.12	0.078	0.12	0.052
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.000035	<0.000035	<0.00019	0.00059	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Pyrene	*0.73*	*2.2*	0.00027	0.00007 J	0.000096 J	<0.000019	0.00411	0.0026	0.0017	0.0027	0.0025	0.0032	0.0027	0.0016 J
Metals														
Arsenic	*0.01*	*0.01*	**0.0189**	**0.0198**	**0.0548**	**0.0219**								

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-35B 07/18/2012	MW-35B 02/07/2013	MW-35B 08/08/2013	MW-35B 01/24/2014	MW-35B 07/24/2014	MW-35B 01/25/2018	MW-35B 03/22/2018	MW-35B 06/05/2018	MW-35B 01/15/2019	MW-35B 07/18/2019	MW-35B 01/10/2020	MW-35B 01/10/2020 Duplicate
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.005	<0.0007	<0.0028	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	**0.064**	**0.0662**	**0.0855**	**0.0664**	**0.0539**	**0.078**	**0.088**	**0.044**	0.0033	0.0045	**0.025 J**	**0.016 J**
Chlorobenzene	*0.1*	*0.1*	<0.005	<0.0006	<0.0024	0.000241 J	0.000228 J	0.0009 J	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	0.19	0.225	0.258	0.187	0.176	0.15	0.15	0.12	0.0094	0.014	0.096	0.083
Methylene chloride	*0.005*	*0.005*	**0.02 J**	<0.00075	**0.0234**	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.005	0.00437 J	0.00584 J	0.00429	0.00377	0.0057	0.0041	0.0031	<0.0002	0.00054 J	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*			**<0.0022**		<0.00011						<0.0002	<0.0002
Xylenes (total)	*10*	*10*	0.13 J	0.153	0.174	0.132	0.114	0.064	0.066	0.056	0.004	0.0062	0.058 J	0.041 J
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	**<0.105**	**<0.00539**	**<0.106**	<0.00107	<0.00021	<0.00021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00005	<0.295	<0.0152	<0.298	<0.00301	<0.0004	<0.0004	<0.00004	<0.00004	<0.00004	<0.00004	0.00021
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	**<0.124**	**<0.00637**	**<0.125**	<0.00126	<0.00059	<0.00058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	**<0.0762**	**<0.00392**	**<0.0769**	<0.000777	<0.00042	<0.00042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.0762	<0.00392	<0.0769	<0.000777	<0.00021	<0.00021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	**0.26**	**0.295 J**	**0.431**	**0.534**	**0.376**	**0.13**	**0.22**	**0.25**	0.011	0.041	**0.14 J**	0.062 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	**<0.79**	**<0.0407**	**<0.798**	**<0.00806**	<0.0002	0.00078 J	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00005	**<0.533**	<0.0275	**<0.538**	<0.00544	<0.00047	<0.00047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	0.15	0.173 J	0.258	0.305 J	0.139	0.094	0.18	0.17	0.013	0.029	0.059 J	0.033 J
Acenaphthylene	*1.5*	*4.4*	0.00078	<0.0571	<0.00294	<0.0577	0.0015 J	<0.00015	0.0014	0.00076	0.00018	0.00022	0.00038	0.00027
Anthracene	*7.3*	*22*	0.0064	<0.0476	0.0202 J	<0.0481	0.0111	0.011	0.014	0.0072	0.0011	0.0022	0.0029 J	0.0018 J
Benzo(a)anthracene	*0.0091*	*0.02*	0.0002	**<0.0762**	<0.00392	**<0.0769**	<0.000777	<0.00051	<0.0005	0.000075 J	0.000077 J	0.000083 J	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	**<0.0762**	**<0.00392**	**<0.0769**	**<0.000777**	<0.0002	<0.0002	<0.00002	0.000058 J	0.000053 J	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	**<0.124**	**<0.00637**	**<0.125**	**<0.00126**	<0.0003	<0.0003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00018 J	**<0.352**	**<0.0181**	**<0.356**	<0.00359	<0.00037	<0.00037	<0.000037	<0.00014	0.00012 J	<0.000037	<0.000037
Chrysene	*0.91*	*2*	0.00023	<0.0762	<0.00392	<0.0769	<0.000777	0.00051 J	<0.00021	0.000086 J	0.000098 J	0.000091 J	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	**0.14**	**0.161 J**	**0.252**	**0.256 J**	**0.138**	**0.13**	**0.22**	**0.18**	0.015	0.029	0.054 J	0.031 J
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00005	<0.105	<0.00539	<0.106	<0.00107	<0.0002	<0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	0.0039	<0.0667	0.00756 J	0.0698 J	0.00692	0.0081	0.0098	0.0031	0.0013	0.0017	0.0015 J	0.00093 J
Fluorene	*0.98*	*2.9*	0.069	<0.0667	0.138	0.167 J	0.076	0.057	0.092	0.095	0.0066	0.014	0.028 J	0.015 J
Naphthalene	*0.49*	*1.5*	**7.6**	**8.83**	**14.1**	**13.1**	**9.36**	**5**	**13**	**15**	0.079	**1.1**	**2 J**	0.13 J
Nitrobenzene	*0.049*	*0.15*	<0.00005	**<0.105**	<0.00539	**<0.106**	<0.00107	<0.00024	<0.00024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.0952	<0.0049	<0.0962	<0.000971	<0.00025	<0.00025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00005	**<0.581**	**<0.0299**	**<0.587**	**<0.00592**	<0.0008	<0.00079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	0.066	0.0936 J	0.142	0.27 J	0.0891	0.088	0.18	0.11	0.0086	0.019	0.024 J	0.013 J
Phenol	*7.3*	*22*	0.00014 J	<0.0381	<0.00196	0.129 J	<0.000388	<0.00035	<0.00035	<0.000035	<0.000035	0.00017 J	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	0.0019	<0.105	<0.00539	<0.106	0.00327 J	0.0057	0.0053	0.0018	0.00075	0.00079	0.0007 J	0.00045 J
Metals														
Arsenic	*0.01*	*0.01*						0.00465	0.00595	**0.0116**	0.00862	0.0012 J	**0.012**	**0.0159**

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-36A 01/29/2008	MW-36A 07/14/2008	MW-36A 02/03/2009	MW-36A 01/13/2010	MW-36A 06/29/2010	MW-36A 01/20/2011	MW-36A 07/19/2011	MW-36A 02/07/2012	MW-36A 07/17/2012	MW-36A 01/31/2013	MW-36A 08/06/2013	MW-36A 01/16/2014
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00052	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002
Benzene	*0.005*	*0.005*	<0.00025	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.00047	<0.00047	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018
Ethylbenzene	*0.7*	*0.7*	<0.00025	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019
Methylene chloride	*0.005*	*0.005*	<0.00054	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022
Toluene	*1*	*1*	<0.00041	<0.00041	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017
Vinyl chloride	*0.002*	*0.002*							<0.001	<0.001	<0.0005	<0.00011	<0.00011	<0.00018
Xylenes (total)	*10*	*10*	<0.00127	<0.00127	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00008	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.000104	<0.000104	<0.000104
2,4-Dimethylphenol	*0.49*	*1.5*	<0.0003	<0.00029	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000292	<0.000292	<0.000292
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.0002	<0.0002	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000123	<0.000123	<0.000123
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0002	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000755	<0.0000755	<0.0000755
2-Chloronaphthalene	*2*	*5.8*	<0.0004	<0.00039	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000755	<0.0000755
2-Methylnaphthalene	*0.098*	*0.29*	<0.0004	<0.00039	<0.00007	0.0003	0.00023	<0.00007	<0.00005	<0.00005	<0.00005	<0.000066	<0.000066	<0.000066
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.0002	<0.0002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.000783	<0.000783	<0.000783
4-Nitrophenol	*0.049*	*0.15*	<0.00025	<0.00024	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000528	<0.000528	<0.000528
Acenaphthene	*1.5*	*4.4*	<0.0003	<0.00029	<0.00009	0.00036	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000755	<0.0000867
Acenaphthylene	*1.5*	*4.4*	<0.0003	<0.00029	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000566	<0.0000566	<0.0000566
Anthracene	*7.3*	*22*	0.00065	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000472	<0.0000472	<0.0000472
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0002	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000755	<0.0000755
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0002	<0.0002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000755	<0.0000755
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.0004	<0.00039	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000123	<0.000123	<0.000123
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00061 J	<0.0002	0.00045	<0.00033	<0.00061	<0.00048	<0.0004	0.0025	<0.0001	<0.000349	<0.000349	<0.000349
Chrysene	*0.91*	*2*	<0.0002	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000755	<0.0000755
Dibenzofuran	*0.098*	*0.29*	0.00049 J	<0.00029	<0.00008	0.0003	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000755	<0.0000755
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.0002	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000104	<0.000391	<0.000104
Fluoranthene	*0.98*	*2.9*	0.000526	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000066	<0.000066	<0.000066
Fluorene	*0.98*	*2.9*	0.00028 J	<0.0002	<0.00007	0.00024	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000066	<0.000066	<0.000066
Naphthalene	*0.49*	*1.5*	0.00119	<0.00039	0.0006	0.0013	0.0023	<0.0001	<0.00005	<0.00005	0.0003	<0.000211	<0.0000755	<0.0000755
Nitrobenzene	*0.049*	*0.15*	<0.0004	<0.00039	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000104	<0.000104	<0.000104
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00025	<0.00024	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000943	<0.0000943	<0.0000943
Pentachlorophenol	*0.001*	*0.001*	<0.0002	<0.0002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000575	<0.000575	<0.000575
Phenanthrene	*0.73*	*2.2*	0.000727	<0.0002	<0.00007	0.00039	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000566	<0.0000861	<0.000201
Phenol	*7.3*	*22*	<0.0002	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000377	<0.0000377	<0.0000377
Pyrene	*0.73*	*2.2*	0.000531	<0.0002	0.00015 J	0.00021	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000104	<0.000104	0.000155 J
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-36A 07/28/2014	MW-36A 01/25/2018	MW-36A 03/21/2018	MW-36A 05/31/2018	MW-36A 01/14/2019	MW-36A 07/16/2019	MW-36A 01/09/2020	MW-36D 07/15/2010	MW-36D 01/26/2011	MW-36D 07/27/2011	MW-36D 02/14/2012	MW-36D 07/23/2012
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.001	<0.001	<0.0005
Benzene	*0.005*	*0.005*	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	0.00071 J	<0.001	<0.001	<0.0005
Chlorobenzene	*0.1*	*0.1*	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0005	<0.0005	<0.001	<0.001	<0.0005
Ethylbenzene	*0.7*	*0.7*	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005
Methylene chloride	*0.005*	*0.005*	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0013	<0.0013	<0.001
Toluene	*1*	*1*	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.001	<0.001	<0.0005
Vinyl chloride	*0.002*	*0.002*	<0.00011	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002					
Xylenes (total)	*10*	*10*	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.001	<0.001	<0.0031	<0.0031	<0.0015
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000107	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	<0.000301	<0.000041	<0.00004	<0.00004	<0.00004	<0.00004	<0.000052	0.00008 J	<0.00008	<0.00005	<0.00005	<0.00005
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000126	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	0.00009 J	<0.00009	<0.00005	<0.00005	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0000777	<0.000043	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.0000777	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	<0.000177	<0.000019	0.000022 J	<0.000019	<0.000019	<0.000019	<0.000019	<0.00007	0.00013 J	<0.00005	<0.00005	<0.00005
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.000806	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000544	<0.000048	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Acenaphthene	*1.5*	*4.4*	<0.0000777	<0.000028	0.00059	<0.000027	<0.000027	<0.000027	<0.000027	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
Acenaphthylene	*1.5*	*4.4*	<0.0000583	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Anthracene	*7.3*	*22*	<0.0000485	<0.000014	0.000066 J	<0.000014	<0.000014	<0.000014	<0.000014	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0000777	<0.000051	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0000777	<0.00002	0.000064 J	0.00003 J	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.000126	<0.000031	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000359	0.000089 J	0.00015 J	0.0001 J	<0.000037	<0.000037	<0.000037	0.005 J	0.00097	0.0012	<0.0012	<0.00035
Chrysene	*0.91*	*2*	<0.0000777	<0.000021	<0.000021	0.000027 J	<0.000021	<0.000021	<0.000021	<0.00007	<0.00007	<0.00005	0.000078 J	<0.00005
Dibenzofuran	*0.098*	*0.29*	<0.0000777	<0.00002	0.00061	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.000107	<0.00002	<0.00002	0.000028 J	<0.00002	<0.00002	<0.00002	<0.00007	<0.00007	0.00032	0.000052 J	<0.00005
Fluoranthene	*0.98*	*2.9*	<0.000068	<0.00001	0.00012	0.000033 J	<0.00001	<0.00001	<0.00001	<0.00007	<0.00007	0.000068 J	0.00013 J	0.000054 J
Fluorene	*0.98*	*2.9*	<0.000068	<0.000031	0.00034	<0.00003	<0.00003	<0.00003	<0.00003	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Naphthalene	*0.49*	*1.5*	<0.00101	<0.00002	<0.00002	<0.00002	<0.000062	0.00015	<0.00034	<0.0001	0.00083	0.000061 J	<0.000072	<0.00014
Nitrobenzene	*0.049*	*0.15*	<0.000107	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.0000971	<0.000026	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
Pentachlorophenol	*0.001*	*0.001*	<0.000592	<0.000081	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005
Phenanthrene	*0.73*	*2.2*	<0.0000583	<0.000021	0.00011	0.000026 J	<0.000021	<0.000021	<0.000021	<0.00007	<0.00007	0.000072 J	0.000069 J	<0.00005
Phenol	*7.3*	*22*	<0.0000388	<0.000036	<0.000035	<0.000035	<0.000035	<0.00014	<0.000035	0.00065	<0.00007	0.000056 J	0.00023	<0.00005
Pyrene	*0.73*	*2.2*	<0.000107	<0.000019	0.000076 J	0.000032 J	<0.000019	<0.000019	<0.000019	<0.00007	<0.00007	0.000053 J	0.000087 J	<0.00005
Metals														
Arsenic	*0.01*	*0.01*		0.00108 J	0.00753	0.00117 J	0.00107 J	0.00244	0.00354					

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-36D 07/23/2012 Duplicate	MW-36D 02/11/2013	MW-36D 08/05/2013	MW-36D 01/21/2014	MW-36D 08/28/2014	MW-36D 02/07/2018	MW-36D 03/26/2018	MW-36D 05/31/2018	MW-36D 01/24/2019	MW-36D 07/31/2019	MW-36D 01/16/2020	MW-38A 01/29/2008
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052
Benzene	*0.005*	*0.005*	<0.0005	<0.00008	<0.00008	<0.0002	0.0000895 J	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00025
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.00012	0.00013 J	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047
Ethylbenzene	*0.7*	*0.7*	<0.0005	<0.00011	0.000127 J	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00025
Methylene chloride	*0.005*	*0.005*	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00054
Toluene	*1*	*1*	<0.0005	<0.00015	<0.00015	<0.00017	0.00675	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00041
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00127
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	<0.000105	<0.00011	<0.000104	<0.000109	<0.00021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00008
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00005	<0.000295	<0.00031	<0.000292	<0.000307	<0.0004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00029
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	<0.000124	<0.00013	<0.000123	<0.000129	<0.00058	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058	<0.00019
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	<0.0000762	<0.00008	<0.0000755	<0.0000792	<0.00042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.00019
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.0000762	<0.00008	<0.0000755	<0.0000792	<0.00021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00039
2-Methylnaphthalene	*0.098*	*0.29*	<0.00005	<0.0000667	<0.00007	0.000189 J	<0.0000693	<0.00019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.00039
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00079	<0.00083	<0.000783	<0.000822	<0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019
4-Nitrophenol	*0.049*	*0.15*	<0.00005	<0.000533	<0.00056	<0.000528	<0.000554	<0.00047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00024
Acenaphthene	*1.5*	*4.4*	<0.00005	<0.0000762	<0.00008	0.00014 J	<0.0000792	0.00056 J	0.002	<0.000027	<0.000027	<0.000027	<0.000027	<0.00029
Acenaphthylene	*1.5*	*4.4*	<0.00005	<0.0000571	<0.00006	<0.0000566	<0.0000594	<0.00015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.00029
Anthracene	*7.3*	*22*	<0.00005	<0.0000476	<0.00005	0.000105 J	0.000224 J	<0.00014	0.00016	0.000037 J	<0.000014	0.000017 J	<0.000033	<0.00019
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.0000762	<0.00008	<0.0000755	0.000213 J	<0.0005	0.00024	0.00019	<0.00005	0.000053 J	<0.00005	<0.00019
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	<0.0000762	<0.00008	<0.0000755	0.000192 J	<0.0002	**0.0003**	**0.00024**	0.000027 J	0.000087 J	<0.00002	<0.00019
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	<0.000124	<0.00013	<0.000123	<0.000129	<0.0003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00039
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00059	<0.000352	<0.00037	<0.000349	0.00128	<0.00037	0.00054	0.0005	0.000055 J	0.00008 J	<0.000037	0.00078 J
Chrysene	*0.91*	*2*	<0.00005	<0.0000762	<0.00008	<0.0000755	0.000347 J	<0.00021	0.00031	0.00026	0.000031 J	0.000058 J	<0.000021	<0.00019
Dibenzofuran	*0.098*	*0.29*	<0.00005	<0.0000762	<0.00008	0.00017 J	<0.0000792	<0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00029
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00005	<0.000105	<0.00011	<0.000104	<0.000109	<0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019
Fluoranthene	*0.98*	*2.9*	0.000093 J	<0.0000667	<0.00007	0.000216 J	0.00111	<0.0001	0.00094	0.00039	0.000048 J	0.00011	<0.00001	<0.00019
Fluorene	*0.98*	*2.9*	<0.00005	<0.0000667	<0.00007	0.000147 J	0.0001 J	<0.0003	0.00086	0.00003 J	<0.00003	<0.00003	<0.00003	<0.00019
Naphthalene	*0.49*	*1.5*	<0.00015	<0.0000762	<0.00008	0.0011 J	0.0000923 J	<0.0002	0.00015	0.000045 J	<0.00002	<0.00002	<0.000033	<0.00039
Nitrobenzene	*0.049*	*0.15*	<0.00005	<0.000105	<0.00011	<0.000104	<0.000109	<0.00024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00039
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.0000952	<0.0001	<0.0000943	<0.000099	<0.00025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00024
Pentachlorophenol	*0.001*	*0.001*	<0.00005	<0.000581	<0.00061	<0.000575	<0.000604	<0.00079	<0.00008	<0.000079	<0.000079	<0.000079	<0.000079	<0.00019
Phenanthrene	*0.73*	*2.2*	0.00014 J	<0.0000571	<0.00006	0.000665	0.00102	<0.00021	0.00037	0.00028	<0.000021	0.000066 J	<0.000047	<0.00019
Phenol	*7.3*	*22*	<0.00005	<0.0000381	<0.00004	<0.0000377	0.00194	<0.00035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.00019
Pyrene	*0.73*	*2.2*	<0.00005	<0.000105	<0.00011	0.000159 J	0.000881	<0.00019	0.00062	0.00036	0.000042 J	0.000099 J	<0.000019	<0.00019
Metals														
Arsenic	*0.01*	*0.01*						0.000773 J	0.00137 J	<0.0004	0.000417 J	<0.0004	0.000533 J	

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-38A 01/29/2008 Duplicate	MW-38A 07/14/2008	MW-38A 07/14/2008 Duplicate	MW-38A 02/03/2009	MW-38A 01/14/2010	MW-38A 06/29/2010	MW-38A 01/25/2011	MW-38A 07/19/2011	MW-38A 08/25/2011	MW-38A 02/15/2012	MW-38A 07/18/2012	MW-38A 02/07/2013
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00052	<0.00109	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	<0.0005	<0.00014
Benzene	*0.005*	*0.005*	<0.00025	<0.00112	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	<0.0005	<0.00008
Chlorobenzene	*0.1*	*0.1*	<0.00047	<0.0015	<0.00047	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	<0.0005	<0.00012
Ethylbenzene	*0.7*	*0.7*	<0.00025	<0.00142	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011		<0.0011	<0.0005	<0.00011
Methylene chloride	*0.005*	*0.005*	<0.00054	<0.00122	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013		<0.0013	<0.001	<0.00015
Toluene	*1*	*1*	<0.00041	<0.00138	<0.00041	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	<0.0005	<0.00015
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.00127	<0.00302	<0.00127	<0.001	<0.001	<0.001	<0.001	<0.0031		<0.0031	<0.0015	<0.00026
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00008	<0.00008	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005		<0.00005	<0.00005	<0.000105
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00029	<0.00029	<0.00028	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005		<0.00005	<0.00005	<0.000295
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.0002	<0.0002	<0.00019	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005		<0.00005	<0.00005	<0.000124
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0002	<0.0002	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006		<0.00006	<0.00006	<0.0000762
2-Chloronaphthalene	*2*	*5.8*	<0.00039	<0.00039	<0.00038	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005		<0.00005	<0.00005	<0.0000762
2-Methylnaphthalene	*0.098*	*0.29*	<0.00039	<0.00039	<0.00038	0.00044	<0.00007	0.00016 J	0.000085 J	<0.00005		<0.00005	<0.00031	<0.0000667
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.0002	<0.0002	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008		<0.00008	<0.00008	<0.00079
4-Nitrophenol	*0.049*	*0.15*	<0.00024	<0.00024	<0.00024	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005		<0.00005	<0.00005	<0.000533
Acenaphthene	*1.5*	*4.4*	<0.00029	<0.00029	<0.00028	<0.00009	0.00024	<0.00009	<0.00009	0.00043		<0.00005	<0.00025	<0.0000762
Acenaphthylene	*1.5*	*4.4*	<0.00029	<0.00029	<0.00028	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005		<0.00005	<0.00005	<0.0000571
Anthracene	*7.3*	*22*	<0.0002	<0.0002	<0.00019	<0.00007	<0.00007	<0.00007	0.00023	0.0001 J		<0.00005	<0.00013	0.0000712 J
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0002	<0.0002	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	0.00025		<0.00005	<0.00005	<0.0000762
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0002	<0.0002	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008	**0.00052**	<0.00005	<0.00005	<0.00005	<0.0000762
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00039	<0.00039	<0.00038	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005		<0.00005	<0.00005	<0.000124
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	**0.0145**	0.00022 J	0.00105 J	0.00042	<0.00049	<0.00044	0.00064	<0.00094		0.0016	0.00023	<0.000352
Chrysene	*0.91*	*2*	<0.0002	<0.0002	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	0.00022		<0.00005	<0.00005	<0.0000762
Dibenzofuran	*0.098*	*0.29*	<0.00029	<0.00029	<0.00028	<0.00008	<0.00008	0.000083 J	<0.00008	<0.00005	0.000055 J	<0.00005	<0.00014	<0.0000762
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.0002	<0.0002	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	0.00017 J		<0.00005	0.000052 J	<0.000105
Fluoranthene	*0.98*	*2.9*	<0.0002	<0.0002	<0.00019	<0.00007	0.00012 J	<0.00007	0.00034	0.00014 J		<0.00005	<0.00017	<0.0000667
Fluorene	*0.98*	*2.9*	<0.0002	<0.0002	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005		<0.00005	<0.00015	<0.0000667
Naphthalene	*0.49*	*1.5*	<0.00039	<0.00039	<0.00038	0.006	<0.0001	<0.0001	0.00059	<0.00026		<0.00005	<0.001	<0.0000762
Nitrobenzene	*0.049*	*0.15*	<0.00039	<0.00039	<0.00038	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005		<0.00005	<0.00005	<0.000105
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00024	<0.00024	<0.00024	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005		<0.00005	<0.00005	<0.0000952
Pentachlorophenol	*0.001*	*0.001*	<0.0002	<0.0002	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008	0.000067 J		<0.00005	<0.00005	<0.000581
Phenanthrene	*0.73*	*2.2*	<0.0002	<0.0002	<0.00019	<0.00007	<0.00007	<0.00007	0.0001 J	<0.00005		0.00011 J	<0.00032	<0.0000571
Phenol	*7.3*	*22*	<0.0002	<0.0002	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005		<0.00005	<0.00005	<0.0000381
Pyrene	*0.73*	*2.2*	<0.0002	<0.0002	<0.00019	<0.00007	0.0001 J	<0.00007	0.00021	0.00018 J		<0.00005	<0.00016	<0.000105
Metals														
Arsenic	*0.01*	*0.01*												

Notes:
1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
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CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-38A 08/08/2013	MW-38A 01/21/2014	MW-38A 07/25/2014	MW-38A 01/26/2018	MW-38A 03/25/2018	MW-38A 06/05/2018	MW-38A 01/22/2019	MW-38A 07/31/2019	MW-38A 01/21/2020	MW-38B 01/29/2008	MW-38B 07/14/2008	MW-38B 02/03/2009
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	0.00031 J	<0.0002	<0.00052	<0.00109	<0.0005
Benzene	*0.005*	*0.005*	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00025	<0.00112	<0.0005
Chlorobenzene	*0.1*	*0.1*	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047	<0.0015	<0.0005
Ethylbenzene	*0.7*	*0.7*	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00025	<0.00142	<0.0005
Methylene chloride	*0.005*	*0.005*	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00054	<0.00122	<0.0005
Toluene	*1*	*1*	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00041	<0.00138	<0.0005
Vinyl chloride	*0.002*	*0.002*	<0.00011		<0.00011									
Xylenes (total)	*10*	*10*	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00127	<0.00302	<0.001
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000104	<0.000105	<0.000107	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00008	<0.00008	<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*	<0.000292	<0.000295	<0.000301	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.0003	<0.00029	<0.00008
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000123	<0.000124	<0.000126	<0.000058	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058	<0.0002	<0.00019	<0.00009
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0000755	<0.0000762	<0.0000777	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.0002	<0.00019	<0.00007
2-Chloronaphthalene	*2*	*5.8*	<0.0000755	<0.0000762	<0.0000777	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0004	<0.00038	<0.00012
2-Methylnaphthalene	*0.098*	*0.29*	0.000115 J	<0.0000667	<0.000068	<0.000019	0.00014	<0.000019	0.000055 J	<0.000019	0.00017	<0.0004	<0.00038	0.00037
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.000783	<0.00079	<0.000806	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002	<0.00019	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000528	<0.000533	<0.000544	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00025	<0.00024	<0.00007
Acenaphthene	*1.5*	*4.4*	0.000638	<0.0000762	<0.0000777	<0.000027	0.0039	0.00061	0.014	<0.000027	0.00068	<0.0003	<0.00029	0.0001 J
Acenaphthylene	*1.5*	*4.4*	<0.0000566	<0.0000571	<0.0000583	<0.000015	0.000053 J	<0.000015	0.0002	<0.000015	<0.000015	<0.0003	<0.00029	<0.00006
Anthracene	*7.3*	*22*	<0.0000472	0.000103 J	<0.0000816	<0.000014	0.00026	0.00015	0.00017	0.000022 J	0.00015	<0.0002	0.00026 J	0.00013 J
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0000755	<0.0000762	<0.0000777	<0.00005	<0.000051	<0.00005	<0.00005	0.000087 J	<0.00005	<0.0002	<0.00019	<0.00007
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0000755	<0.0000762	<0.0000777	<0.00002	<0.00002	<0.00002	<0.00002	0.00012	0.000032 J	<0.0002	<0.00019	<0.00008
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.000123	<0.000124	<0.000126	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.0004	<0.00038	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000349	<0.000352	<0.000359	<0.000037	<0.000037	0.0001 J	<0.000037	0.000084 J	0.000063 J	0.00103 J	<0.00019	0.00041
Chrysene	*0.91*	*2*	<0.0000755	<0.0000762	<0.0000777	<0.000021	<0.000021	<0.000021	<0.000021	0.000092 J	0.00006 J	<0.0002	<0.00019	<0.00007
Dibenzofuran	*0.098*	*0.29*	<0.0000755	<0.0000762	<0.0000777	<0.00002	<0.00002	0.00006 J	0.00014	<0.00002	0.00036	<0.0003	<0.00029	<0.00008
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	0.000145 J	<0.000105	<0.000107	<0.00002	<0.00002	0.00017 J	0.000068 J	<0.00002	<0.00002	<0.0002	<0.00019	<0.00007
Fluoranthene	*0.98*	*2.9*	0.000164 J	<0.0000667	<0.000068	<0.00001	0.00023	0.000032 J	0.0013	0.00018	0.00018	<0.0002	<0.00019	<0.00007
Fluorene	*0.98*	*2.9*	<0.000066	<0.0000667	<0.000068	<0.00003	0.0003	0.00016	0.0024	<0.00003	0.00029	<0.0002	<0.00019	<0.00007
Naphthalene	*0.49*	*1.5*	0.00192 J	<0.000146	<0.0000777	<0.00002	<0.00002	0.00071	0.00015	0.000068 J	0.0011	<0.0004	<0.00038	0.0045
Nitrobenzene	*0.049*	*0.15*	<0.000104	<0.000105	<0.000107	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.0004	<0.00038	<0.00009
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.0000943	<0.0000952	<0.0000971	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	0.00011 J	<0.00025	<0.00024	<0.00009
Pentachlorophenol	*0.001*	*0.001*	<0.000575	<0.000581	<0.000592	<0.000079	<0.00008	<0.000079	<0.000079	<0.000079	<0.000079	<0.0002	<0.00019	<0.00008
Phenanthrene	*0.73*	*2.2*	<0.0000566	<0.0000571	<0.0000583	<0.000021	0.00033	<0.000021	0.00058	0.0001	0.00039	<0.0002	<0.00019	<0.00007
Phenol	*7.3*	*22*	<0.0000377	<0.0000381	<0.0000388	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.0002	<0.00019	<0.00007
Pyrene	*0.73*	*2.2*	0.000176 J	<0.000105	<0.000107	<0.000019	0.00021	0.000056 J	0.0011	0.00014	0.00014	<0.0002	<0.00019	<0.00007
Metals														
Arsenic	*0.01*	*0.01*				<0.0004	**0.0138**	**0.0124**	**0.0186**	<0.0004	**0.0177**			

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-38B 01/14/2010	MW-38B 06/29/2010	MW-38B 01/25/2011	MW-38B 07/18/2011	MW-38B 02/15/2012	MW-38B 07/18/2012	MW-38B 02/07/2013	MW-38B 08/08/2013	MW-38B 01/21/2014	MW-38B 07/25/2014	MW-38B 01/26/2018	MW-38B 03/25/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001
Toluene	*1*	*1*	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*								<0.00011		<0.00011		
Xylenes (total)	*10*	*10*	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.000105	<0.000104	<0.000105	<0.000109	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000295	<0.000292	<0.000295	<0.000307	<0.000041	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000124	<0.000123	<0.000124	<0.000129	<0.000059	<0.000059
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000762	<0.0000755	<0.0000762	<0.0000792	<0.000043	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000762	<0.0000792	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.0003	<0.0000667	<0.000066	0.000137 J	<0.0000992	0.000096 J	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00079	<0.000783	<0.00079	<0.000822	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000533	<0.000528	<0.000533	<0.000554	<0.000048	<0.000047
Acenaphthene	*1.5*	*4.4*	<0.00009	0.00047	<0.00009	<0.00005	0.0001 J	0.00096	0.000226 J	<0.0000755	0.0000786 J	<0.000342	<0.000028	0.000095 J
Acenaphthylene	*1.5*	*4.4*	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000571	<0.0000566	<0.0000571	<0.0000594	<0.000015	<0.000015
Anthracene	*7.3*	*22*	<0.00007	<0.00007	0.00011 J	0.00013 J	0.00021	<0.00023	0.000313 J	<0.0000472	0.000141 J	<0.000398	0.000047 J	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000762	<0.0000792	<0.000051	<0.000051
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000762	<0.0000792	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	0.000072 J	<0.000124	<0.000123	<0.000124	<0.000129	<0.000031	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00039	<0.00074	<0.0002	<0.001	<0.0001	<0.0001	<0.000352	<0.000349	<0.000352	<0.000366	0.000061 J	0.00012 J
Chrysene	*0.91*	*2*	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000762	<0.0000792	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00028	<0.0000762	<0.0000755	0.0000923 J	<0.00041	0.000053 J	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000105	<0.000104	<0.000105	<0.000109	<0.00002	0.000027 J
Fluoranthene	*0.98*	*2.9*	<0.00007	0.00017 J	<0.00007	<0.00005	<0.00005	<0.00032	<0.0000667	<0.000066	0.000101 J	<0.00058	<0.00001	0.000022 J
Fluorene	*0.98*	*2.9*	<0.00007	0.00015 J	<0.00007	<0.00005	<0.00005	<0.00027	<0.0000667	<0.000066	0.0000778 J	<0.000219	0.000046 J	<0.00003
Naphthalene	*0.49*	*1.5*	<0.00014	<0.0001	0.00031	<0.00005	0.00037	<0.0015	<0.0000762	<0.0000755	0.000466 J	<0.0016	0.00084	0.00016
Nitrobenzene	*0.049*	*0.15*	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000105	<0.000104	<0.000105	<0.000109	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000952	<0.0000943	<0.0000952	<0.000099	<0.000026	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000581	<0.000575	<0.000581	<0.000604	<0.000081	<0.00008
Phenanthrene	*0.73*	*2.2*	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00037	<0.0000571	<0.0000566	0.000304 J	<0.000164	0.000061 J	0.000052 J
Phenol	*7.3*	*22*	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000381	<0.0000377	<0.0000381	<0.0000396	<0.000036	<0.000035
Pyrene	*0.73*	*2.2*	<0.00007	0.00027	<0.00007	<0.00005	<0.00005	<0.00037	<0.000105	<0.000104	<0.000105	0.000472 J	<0.000019	0.000035 J
Metals														
Arsenic	*0.01*	*0.01*											0.000636 J	0.000972 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-38B 06/05/2018	MW-38B 01/22/2019	MW-38B 07/18/2019	MW-38B 01/21/2020	MW-39B 01/30/2008	MW-39B 07/15/2008	MW-39B 02/04/2009	MW-39B 01/19/2010	MW-39B 06/22/2010	MW-39B 01/18/2011	MW-39B 07/26/2011	MW-39B 02/01/2012
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.00025	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047	<0.00047	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	<0.00025	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.00054	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	<0.00041	<0.00041	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.00127	<0.00127	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	0.00025	<0.00008	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	0.000056 J	<0.00004	<0.0003	<0.00029	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	0.00005 J
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	<0.000058	<0.0002	<0.00019	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	0.00005 J
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.000042	<0.0002	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	0.00006 J
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.0004	<0.00039	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	0.00005 J
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	0.0003	0.00017	<0.0004	<0.00039	<0.00007	<0.00007	<0.00007	0.000086 J	<0.00005	0.00005 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002	<0.00049	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.00025	<0.00024	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00005 J
Acenaphthene	*1.5*	*4.4*	0.048	<0.000027	0.00012	0.054	0.000664	<0.00029	0.00022	0.00014 J	0.0034	0.00039	0.00028	0.0011 J
Acenaphthylene	*1.5*	*4.4*	0.00036	<0.000015	<0.000015	0.00045	<0.0003	<0.00029	<0.00006	<0.00007	<0.00007	<0.00007	0.000053 J	0.00005 J
Anthracene	*7.3*	*22*	0.0018	0.0001	0.000037 J	0.0012	0.00106	0.000619	0.00028	<0.00007	<0.00007	<0.00007	0.0004	<0.00005
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00005	0.000055 J	<0.0002	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00005 J
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	<0.0004	<0.00039	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	0.00005 J
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	<0.000037	0.00031	<0.000037	0.00119 J	<0.00019	0.00046	0.0007	<0.0002	0.00024	0.00092	<0.00015
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	0.000057 J	<0.0002	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Dibenzofuran	*0.098*	*0.29*	0.008	<0.00002	0.00014	0.0054	<0.0003	<0.00029	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	0.0004 J
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.00002	0.000036 J	<0.0002	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Fluoranthene	*0.98*	*2.9*	0.0014	<0.00001	<0.00001	0.0025	0.00213	0.000575	0.0014	<0.00007	0.0019	0.00013 J	0.000079 J	0.0011
Fluorene	*0.98*	*2.9*	0.019	<0.00003	0.00006 J	0.015	<0.0002	<0.00019	0.00025	0.00021	0.00048	0.00013 J	0.00011 J	0.00032 J
Naphthalene	*0.49*	*1.5*	0.00099	<0.00002	0.0026	0.00098	<0.0004	<0.00039	0.00052	0.00018 J	<0.00015	0.00076	<0.00005	0.00034 J
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.0004	<0.00039	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	0.00005 J
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.00025	<0.00024	<0.00009	<0.00009	<0.00009	<0.00009	0.000054 J	<0.00005
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	<0.000079	<0.0002	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	0.00005 J
Phenanthrene	*0.73*	*2.2*	<0.000021	<0.000021	0.000079 J	0.00095	0.00045 J	<0.00019	<0.00007	0.00025	<0.00007	0.00018 J	<0.00005	<0.00005
Phenol	*7.3*	*22*	<0.000035	<0.000035	0.000056 J	<0.000035	<0.0002	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Pyrene	*0.73*	*2.2*	0.00086	<0.000019	<0.000019	0.0015	0.00156	0.000956	0.0013	0.00018 J	0.002	<0.00007	0.00017 J	0.0013
Metals														
Arsenic	*0.01*	*0.01*	**0.0386**	<0.0004	0.000553 J	**0.0173**								

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-39B 07/19/2012	MW-39B 02/05/2013	MW-39B 07/31/2013	MW-39B 01/14/2014	MW-39B 07/25/2014	MW-39B 01/23/2018	MW-39B 03/19/2018	MW-39B 05/16/2018	MW-39B 01/08/2019	MW-39B 07/11/2019	MW-39B 01/13/2020	MW-40B 01/30/2008
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052
Benzene	*0.005*	*0.005*	<0.0005	<0.00008	<0.00008	<0.00008	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	**0.0348**
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.00012	<0.00012	<0.00012	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047
Ethylbenzene	*0.7*	*0.7*	<0.0005	<0.00011	<0.00011	<0.00011	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.162
Methylene chloride	*0.005*	*0.005*	<0.001	<0.00015	<0.00015	<0.00015	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00054
Toluene	*1*	*1*	<0.0005	<0.00015	<0.00015	<0.00015	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0791
Vinyl chloride	*0.002*	*0.002*		<0.00011			<0.00011							
Xylenes (total)	*10*	*10*	<0.0015	<0.00026	<0.00026	<0.00026	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.35
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	<0.000104	<0.000105	<0.00106	<0.000107	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	**<0.02**
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00005	<0.000292	<0.000295	<0.00298	<0.000301	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.071
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	<0.000123	<0.000124	<0.00125	<0.000126	<0.000058	<0.000059	<0.000059	<0.000058	<0.000058	<0.000058	**<0.048**
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	<0.0000755	<0.0000762	<0.000769	<0.0000777	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	**<0.048**
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.0000755	<0.0000762	<0.000769	<0.0000777	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.095
2-Methylnaphthalene	*0.098*	*0.29*	0.000069 J	<0.000066	<0.0000667	<0.000673	<0.0000708	0.000081 J	<0.000019	0.00008 J	<0.000019	<0.000027	0.00021	**0.522**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.000783	<0.00079	**<0.00798**	<0.000806	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	**<0.048**
4-Nitrophenol	*0.049*	*0.15*	<0.00005	<0.000528	<0.000533	<0.00538	<0.000544	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	**<0.06**
Acenaphthene	*1.5*	*4.4*	0.0004	0.000756	0.0007	0.00115 J	<0.0012	0.00093	0.001	0.00054	0.00062	0.00065	0.0012	0.365
Acenaphthylene	*1.5*	*4.4*	<0.00005	0.00011 J	0.0000676 J	<0.000577	0.0000623 J	<0.000015	<0.000015	<0.000015	<0.000015	0.000021 J	<0.000015	<0.071
Anthracene	*7.3*	*22*	0.0001 J	0.000901	0.000774	<0.00101	<0.000615	0.000053 J	<0.000014	0.0002	0.00016	0.00021	0.00016	<0.048
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.0000755	<0.0000762	<0.000769	<0.0000777	<0.00005	<0.000051	<0.000051	<0.00005	<0.00005	<0.00005	**<0.048**
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	<0.0000755	<0.0000762	**<0.000769**	<0.0000777	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	**<0.048**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	<0.000123	<0.000124	**<0.00125**	<0.000126	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	**<0.095**
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00015	<0.000349	<0.000352	<0.00356	<0.000359	0.0018	0.00013 J	0.00011 J	<0.000037	0.000042 J	<0.000037	**<0.048**
Chrysene	*0.91*	*2*	<0.00005	<0.0000755	<0.0000762	<0.000769	<0.0000777	0.000057 J	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.048
Dibenzofuran	*0.098*	*0.29*	0.000067 J	<0.0000755	<0.0000762	<0.000769	<0.0000823	0.0001	<0.00002	0.000054 J	<0.00002	0.000037 J	0.00019	**0.239**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00005	<0.000104	<0.000122	<0.00106	<0.000107	0.000082 J	<0.00002	0.000035 J	<0.00002	<0.00002	<0.00002	<0.048
Fluoranthene	*0.98*	*2.9*	0.00036	0.000112 J	0.000418 J	<0.000673	<0.000605	0.00015	0.000075 J	0.000053 J	0.000067 J	0.000048 J	0.00023	<0.048
Fluorene	*0.98*	*2.9*	0.00019 J	<0.000066	0.000216 J	<0.000673	<0.000311	0.00011	<0.00003	0.000061 J	<0.00003	0.000044 J	0.00032	0.175
Naphthalene	*0.49*	*1.5*	0.00018 J	0.000428 J	<0.0000762	<0.000769	<0.0000777	0.00082	<0.00002	<0.0013	<0.000092	<0.00041	0.0023	**9.34**
Nitrobenzene	*0.049*	*0.15*	<0.00005	<0.000104	<0.000105	<0.00106	0.000853	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	**<0.095**
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.0000943	0.000158 J	<0.000962	<0.0000971	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.06
Pentachlorophenol	*0.001*	*0.001*	<0.00005	<0.000575	<0.000581	**<0.00587**	<0.000592	<0.000079	<0.00008	<0.00008	<0.000079	<0.000079	<0.000079	**<0.048**
Phenanthrene	*0.73*	*2.2*	0.00016 J	<0.0000566	0.0000912 J	<0.000577	<0.0001	<0.000021	<0.000021	0.000056 J	0.000039 J	<0.000021	0.00019	0.173
Phenol	*7.3*	*22*	<0.00005	<0.0000377	<0.0000381	<0.000385	<0.0000388	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.048
Pyrene	*0.73*	*2.2*	0.00052	0.000131 J	0.000655	<0.00106	0.000818	0.00015	0.000074 J	0.000064 J	0.000052 J	0.000072 J	0.00022	<0.048
Metals														
Arsenic	*0.01*	*0.01*						**0.0108**	0.00188 J	0.00178 J	0.00365	0.00144 J	0.00248	

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	***C/I Assessment Level***	MW-40B 07/15/2008	MW-40B 02/04/2009	MW-40B 01/19/2010	MW-40B 06/22/2010	MW-40B 01/18/2011	MW-40B 07/14/2011	MW-40B 02/03/2012	MW-40B 07/19/2012	MW-40B 02/05/2013	MW-40B 07/31/2013	MW-40B 01/14/2014	MW-40B 07/18/2014
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	**<0.01**	**<0.01**	<0.005	<0.00014	<0.0014	<0.0007	<0.00014
Benzene	*0.005*	*0.005*	**0.0269**	**0.026**	**0.028**	**0.026**	**0.019**	**0.016 J**	**0.013 J**	**0.013 J**	**0.0108**	**0.0115**	**0.0109**	**0.0103**
Chlorobenzene	*0.1*	*0.1*	<0.00047	0.001 J	<0.0005	<0.0005	<0.0005	<0.01	<0.01	<0.005	<0.00012	<0.0012	<0.0006	<0.00012
Ethylbenzene	*0.7*	*0.7*	0.116	0.1	0.12	0.12	0.13	0.081	0.08	0.082	0.0817	0.0798	0.084	0.0825
Methylene chloride	*0.005*	*0.005*	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	**<0.013**	**<0.013**	**<0.01**	<0.00015	<0.0015	<0.00075	<0.00015
Toluene	*1*	*1*	0.059	0.05	0.054	0.05	0.045	0.019 J	0.028 J	0.022 J	0.0118	0.0173	0.0147	0.0154
Vinyl chloride	*0.002*	*0.002*									<0.00011			<0.00011
Xylenes (total)	*10*	*10*	0.244	0.2	0.22	0.22	0.21	0.12 J	0.13 J	0.14 J	0.116	0.127	0.12	0.126
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0004	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	**<0.0104**	**<0.00524**	**<0.0212**	<0.00109
2,4-Dimethylphenol	*0.49*	*1.5*	0.0445	0.011	0.014	0.0044	0.00033 J	0.0034	0.004	0.0039	<0.0292	<0.0148	<0.0596	<0.00307
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.001	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	**<0.0123**	**<0.00619**	**<0.025**	<0.00129
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.001	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	**<0.00755**	**<0.00381**	**<0.0154**	<0.000792
2-Chloronaphthalene	*2*	*5.8*	<0.002	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00755	<0.00381	<0.0154	<0.000792
2-Methylnaphthalene	*0.098*	*0.29*	**4.41**	**0.58**	**0.49**	**0.41**	**0.27**	**0.24**	**0.2**	**0.28**	**0.302**	**0.309**	**0.35**	**0.263**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	**<0.0025**	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	**<0.0783**	**<0.0395**	**<0.16**	**<0.00822**
4-Nitrophenol	*0.049*	*0.15*	<0.0012	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	**<0.0528**	<0.0267	**<0.108**	<0.00554
Acenaphthene	*1.5*	*4.4*	**3.17**	0.35	0.33	0.27	0.25	0.17	0.2	0.23	0.315	0.35	0.402	0.236
Acenaphthylene	*1.5*	*4.4*	<0.0015	0.0027	0.0025	0.0031	0.0025	0.0019	0.0022	0.0021	<0.00566	<0.00286	<0.0115	0.00335 J
Anthracene	*7.3*	*22*	0.0141	0.016	0.0095	0.017	0.017	0.0097	0.019	0.007	0.0183 J	0.019 J	0.0247 J	0.0142
Benzo(a)anthracene	*0.0091*	*0.02*	<0.001	0.00028	0.0001 J	<0.00007	0.00016 J	<0.00005	0.000095 J	<0.00005	<0.00755	<0.00381	**<0.0154**	<0.000792
Benzo(a)pyrene	*0.0002*	*0.0002*	**<0.001**	0.0002 J	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**<0.00755**	**<0.00381**	**<0.0154**	**<0.000792**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	**<0.002**	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	**<0.0123**	**<0.00619**	**<0.025**	**<0.00129**
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.001	0.00047	0.0035	<0.0002	0.00075	<0.00053	0.00033	<0.00016	**<0.0349**	**<0.0176**	**<0.0712**	<0.00366
Chrysene	*0.91*	*2*	<0.001	0.00023	0.00011 J	<0.00007	0.00013 J	<0.00005	0.00011 J	<0.00005	<0.00755	<0.00381	<0.0154	<0.000792
Dibenzofuran	*0.098*	*0.29*	**2.13**	**0.25**	**0.17**	**0.22**	0.092	**0.13**	**0.15**	**0.17**	**0.206**	**0.242**	**0.252**	**0.178**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.001	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0104	<0.00524	<0.0212	<0.00109
Fluoranthene	*0.98*	*2.9*	0.0067	0.0082	0.0067	0.0064	0.0068	0.0049	0.0042	0.0031	<0.0066	0.0104 J	<0.0135	0.00562
Fluorene	*0.98*	*2.9*	0.247	0.2	0.15	0.17	0.093	0.13	0.13	0.15	0.175	0.212	0.217	0.183
Naphthalene	*0.49*	*1.5*	**94.2**	**9.7**	**8**	**6.8**	**6.1**	**4**	**4.2**	**6**	**6.78**	**7.73**	**6.07**	**4.24**
Nitrobenzene	*0.049*	*0.15*	<0.002	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0104	<0.00524	<0.0212	<0.00109
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.0012	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00943	<0.00476	<0.0192	<0.00099
Pentachlorophenol	*0.001*	*0.001*	<0.001	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**<0.0575**	**<0.029**	**<0.117**	**<0.00604**
Phenanthrene	*0.73*	*2.2*	0.177	0.16	0.12	0.15	0.083	0.11	0.08	0.1	0.137	0.158	0.197	0.111
Phenol	*7.3*	*22*	<0.001	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00377	<0.0019	<0.00769	<0.000396
Pyrene	*0.73*	*2.2*	0.0029	0.0043	0.0033	0.0035	0.0039	0.0021	0.0033	0.0019	<0.0104	<0.00524	<0.0212	0.00242 J
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-40B 01/24/2018	MW-40B 03/19/2018	MW-40B 05/16/2018	MW-40B 01/08/2019	MW-40B 07/11/2019	MW-40B 01/13/2020	MW-41B 01/31/2008 DNAPL	MW-41B 01/23/2020 DNAPL	MW-42B 01/30/2008	MW-42B 01/19/2010	MW-42B 07/14/2011	MW-42B 02/03/2012
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.00052	<0.0002	<0.00052	<0.0005	<0.001	<0.001
Benzene	*0.005*	*0.005*	**0.0091**	**0.0066**	**0.014**	**0.0063**	**0.0088**	**0.011**	**0.0103**	**0.012**	0.00117 J	<0.0005	<0.001	<0.001
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0015	<0.0003	<0.0003	<0.0003	<0.00047	<0.0003	<0.00047	<0.0005	<0.001	<0.001
Ethylbenzene	*0.7*	*0.7*	0.049	0.039	0.08	0.041	0.082	0.089	0.0508	0.066	0.00112 J	<0.0005	<0.0011	<0.0011
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.00054	<0.001	<0.00054	<0.0005	<0.0013	<0.0013
Toluene	*1*	*1*	0.0081	0.0049	0.019	0.0048	0.014	0.022	0.0525	0.087	0.00181 J	<0.0005	<0.001	<0.001
Vinyl chloride	*0.002*	*0.002*								<0.0002				
Xylenes (total)	*10*	*10*	0.066	0.044	0.11	0.052	0.13	0.16	0.127	0.16	0.00377 J	<0.001	<0.0031	<0.0031
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0008	<0.000021	<0.00008	<0.0001	<0.00005	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	0.00034	<0.00004	<0.00004	0.0013	0.0013	0.104	0.043	<0.00029	<0.00008	0.00013 J	<0.00005
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	**<0.0019**	<0.000058	<0.00019	<0.00009	<0.00005	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	**<0.0019**	<0.000042	<0.00019	<0.00007	<0.00006	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0038	<0.000021	<0.00039	<0.0001	<0.00005	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	**0.13**	0.056	0.091	0.077	**0.18**	**0.34**	**0.305**	**0.67 J**	<0.00039	<0.00007	<0.00005	0.000089 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0019	<0.00002	<0.00019	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	0.0015	<0.000047	<0.000047	<0.000047	<0.0024	<0.000047	<0.00024	<0.00007	<0.00005	<0.00005
Acenaphthene	*1.5*	*4.4*	0.26	0.16	0.14	0.12	0.21	0.39	0.161	0.49	<0.00029	0.00021	<0.00024	0.0017
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	0.0014	0.00083	0.0021	0.0021	<0.0029	0.0089	<0.00029	<0.00007	<0.00005	<0.00005
Anthracene	*7.3*	*22*	0.016	0.0082	0.0087	0.007	0.011	0.04	0.0191	0.045	<0.00019	<0.00007	0.00036	<0.00005
Benzo(a)anthracene	*0.0091*	*0.02*	<0.000051	<0.00005	<0.00005	<0.00005	<0.00005	0.000094 J	0.0036	0.004	<0.00019	<0.00007	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	**<0.0019**	**0.0009**	<0.00019	<0.00008	<0.00005	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	**<0.0038**	<0.00003	<0.00039	<0.00009	<0.00005	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00038	<0.000037	0.00012 J	0.000079 J	<0.000037	<0.000037	<0.0019	0.00032	0.00135 J	0.00028	<0.0008	<0.0001
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	0.000045 J	<0.000021	0.000051 J	0.003	0.0033	<0.00019	<0.00007	<0.00005	<0.00005
Dibenzofuran	*0.098*	*0.29*	**0.16**	0.085	0.086	0.069	**0.13**	**0.29**	**0.142**	**0.39**	0.000699	0.00037	<0.00014	0.00016 J
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0019	<0.00002	<0.00019	<0.00007	<0.00005	<0.00005
Fluoranthene	*0.98*	*2.9*	0.0081	0.0037	0.0034	0.0041	0.0059	0.017	0.027	0.052	0.000697	0.00059	0.00024	0.00085
Fluorene	*0.98*	*2.9*	0.18	0.096	0.1	0.087	0.13	0.3	0.148	0.35	<0.00019	0.00016 J	<0.00026	0.0005
Naphthalene	*0.49*	*1.5*	**1.5**	**0.97**	**1.8**	**1.3**	**3.6**	**7.9**	**4.57**	**10**	0.000725	0.00035	<0.00048	<0.00063
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.0038	<0.000024	<0.00039	<0.00009	<0.00005	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.0024	<0.000025	<0.00024	<0.00009	<0.00005	<0.00005
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	**<0.0019**	<0.000079	<0.00019	<0.00008	<0.00005	<0.00005
Phenanthrene	*0.73*	*2.2*	0.14	0.078	0.1	0.068	0.093	0.22	0.161	0.41	<0.00019	<0.00007	<0.00016	0.00012 J
Phenol	*7.3*	*22*	<0.000035	<0.000035	0.00065	<0.000035	0.000053 J	<0.000035	0.00576	<0.000035	<0.00019	<0.00007	<0.00005	<0.00005
Pyrene	*0.73*	*2.2*	0.0036	0.0019	0.0016	0.002	0.0024	0.0037	0.017	0.029	0.000624	0.00035	0.00014 J	0.00044
Metals														
Arsenic	*0.01*	*0.01*	**0.0679**	**0.0606**	**0.0494**	**0.085**	**0.052**	**0.0523**		**0.0842 J**				

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-42B 07/19/2012	MW-42B 02/05/2013	MW-42B 08/01/2013	MW-42B 01/15/2014	MW-42B 07/18/2014	MW-42B 01/24/2018	MW-42B 03/19/2018	MW-42B 05/16/2018	MW-42B 01/08/2019	MW-42B 07/11/2019	MW-42B 01/13/2020	MW-44A 01/30/2008
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0025	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.00052
Benzene	*0.005*	*0.005*	<0.0025	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	**0.00751**
Chlorobenzene	*0.1*	*0.1*	<0.0025	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0015	<0.0003	<0.0003	<0.0003	<0.00047
Ethylbenzene	*0.7*	*0.7*	<0.0025	<0.000132	<0.00011	<0.00019	0.000208 J	<0.0003	<0.0003	<0.0015	<0.0003	<0.0003	<0.0003	0.00363 J
Methylene chloride	*0.005*	*0.005*	**0.0097 J**	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.00054
Toluene	*1*	*1*	<0.0025	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	0.002 J
Vinyl chloride	*0.002*	*0.002*		<0.00011			<0.00011							
Xylenes (total)	*10*	*10*	<0.0075	<0.00026	<0.00026	<0.00058	0.000349 J	<0.0003	<0.0003	<0.0015	<0.0003	<0.0003	<0.0003	0.0186
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	<0.000104	<0.000105	<0.000104	<0.000109	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00008
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00005	<0.000292	<0.000295	0.000916 J	0.000577	<0.00004	<0.00004	<0.00041	<0.00004	<0.00004	<0.00004	<0.0003
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	<0.000123	<0.000124	<0.000123	<0.000129	<0.000059	<0.000058	<0.000059	<0.000058	<0.000058	<0.000058	<0.0002
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	<0.0000755	<0.0000762	<0.0000755	<0.0000792	<0.000042	<0.000042	**0.012**	<0.000042	<0.000042	<0.000042	<0.0002
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.0000755	<0.0000762	<0.0000755	<0.0000792	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0004
2-Methylnaphthalene	*0.098*	*0.29*	0.00015 J	0.000196 J	0.000141 J	0.000317 J	<0.0000693	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	0.000069 J	0.0244
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.000783	<0.00079	<0.000783	<0.000822	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002
4-Nitrophenol	*0.049*	*0.15*	<0.00005	<0.000528	<0.000533	<0.000528	<0.000554	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00025
Acenaphthene	*1.5*	*4.4*	0.00081	0.00036 J	<0.0000762	0.000355 J	<0.0000792	<0.000027	<0.000027	0.000067 J	<0.000027	0.000068 J	0.00012	0.127
Acenaphthylene	*1.5*	*4.4*	<0.00005	<0.0000566	<0.0000571	<0.0000566	<0.0000594	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.0003
Anthracene	*7.3*	*22*	<0.00005	0.000194 J	0.000122 J	0.000465 J	<0.0000495	0.000025 J	<0.000014	0.000019 J	<0.000014	0.000064 J	0.000049 J	0.00195
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.0000755	<0.0000762	<0.0000755	<0.0000792	<0.000051	<0.00005	<0.000051	<0.00005	<0.00005	<0.00005	<0.0002
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	<0.0000755	<0.0000762	<0.0000755	<0.0000792	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	<0.000123	<0.000124	<0.000123	<0.000129	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.0004
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00022	<0.000349	<0.000352	<0.000349	0.000513	0.00025	0.00015 J	0.00021	0.000061 J	0.00015 J	0.00013 J	0.00097 J
Chrysene	*0.91*	*2*	<0.00005	<0.0000755	<0.0000762	<0.0000755	<0.0000792	0.000038 J	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0002
Dibenzofuran	*0.098*	*0.29*	0.000066 J	0.000217 J	0.000131 J	0.000205 J	<0.0000792	<0.00002	<0.00002	0.000039 J	<0.00002	0.000038 J	0.000065 J	0.0642
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	0.000062 J	<0.000104	0.000108 J	<0.000104	<0.000109	0.00006 J	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002
Fluoranthene	*0.98*	*2.9*	0.00041	0.000641	0.000294 J	0.000339 J	<0.0000693	0.00024	0.00014	0.000016 J	0.00011	0.00004 J	0.00018	0.00269
Fluorene	*0.98*	*2.9*	0.00016 J	<0.000066	0.000134 J	0.000198 J	<0.0000693	<0.00003	<0.00003	0.000047 J	<0.00003	0.000057 J	0.000067 J	0.045
Naphthalene	*0.49*	*1.5*	0.0019	0.000476	0.00288 J	0.00242 J	0.000426 J	<0.00002	0.00049	<0.00061	<0.00002	<0.00043	<0.00076	**0.816**
Nitrobenzene	*0.049*	*0.15*	<0.00005	<0.000104	<0.000105	<0.000104	<0.000109	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.0004
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.0000943	<0.0000952	<0.0000943	<0.000099	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00025
Pentachlorophenol	*0.001*	*0.001*	<0.00005	<0.000575	<0.000581	<0.000575	<0.000604	<0.00008	<0.000079	<0.00008	<0.000079	<0.000079	<0.000079	<0.0002
Phenanthrene	*0.73*	*2.2*	<0.00005	0.000356 J	0.000122 J	0.000501	<0.0000594	0.000077 J	<0.000021	0.000039 J	<0.000021	0.000034 J	0.00012	0.0161
Phenol	*7.3*	*22*	<0.00005	<0.0000377	<0.0000381	<0.0000377	0.000801	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.0002
Pyrene	*0.73*	*2.2*	0.00023	0.000369 J	0.000127 J	0.000234 J	<0.000109	0.00023	0.00014	<0.000019	0.0001	0.000033 J	0.00013	0.00159
Metals														
Arsenic	*0.01*	*0.01*						0.00186 J	0.00108 J	0.00112 J	0.00216	0.0022	0.00133 J	

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-44A 07/14/2008	MW-44A 02/03/2009	MW-44A 01/13/2010	MW-44A 06/30/2010	MW-44A 01/26/2011	MW-44A 07/20/2011	MW-44A 02/15/2012	MW-44A 07/25/2012	MW-44A 02/12/2013	MW-44A 08/05/2013	MW-44A 01/17/2014	MW-44A 08/28/2014
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014
Benzene	*0.005*	*0.005*	**0.00635**	0.003 J	<0.0005	0.0026 J	<0.0005	0.002 J	0.0042 J	0.0044 J	0.00206	**0.00849**	**0.00727**	0.0042
Chlorobenzene	*0.1*	*0.1*	<0.00047	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012
Ethylbenzene	*0.7*	*0.7*	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	0.000624 J	0.00172	0.00067	0.000344 J
Methylene chloride	*0.005*	*0.005*	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015
Toluene	*1*	*1*	<0.00041	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	0.000252 J	<0.000705	0.000418 J	0.000329 J
Vinyl chloride	*0.002*	*0.002*						<0.001	<0.001	<0.0005		<0.00011	<0.00018	<0.00011
Xylenes (total)	*10*	*10*	0.006 J	0.0013 J	<0.001	0.0026 J	<0.001	<0.0031	0.0052 J	0.0033 J	0.00469	0.0207	0.00805	0.00561
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00105	<0.0011	<0.000106	<0.000108
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00032	<0.00008	<0.00008	<0.00008	0.00081	<0.00005	<0.00005	<0.00005	<0.00295	<0.0031	<0.000298	<0.000304
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00021	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00124	<0.0013	<0.000125	<0.000127
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.000762	<0.0008	<0.0000769	<0.0000784
2-Chloronaphthalene	*2*	*5.8*	<0.00042	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.000762	<0.0008	<0.0000769	<0.0000784
2-Methylnaphthalene	*0.098*	*0.29*	0.00779	0.00097	0.00012 J	0.004 J	<0.00007	0.0023	0.0048	0.0095 J	<0.000667	**0.109**	0.0106	0.00902
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00021	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	**<0.0079**	**<0.0083**	<0.000798	<0.000814
4-Nitrophenol	*0.049*	*0.15*	<0.00026	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00533	<0.0056	<0.000538	<0.000549
Acenaphthene	*1.5*	*4.4*	0.202	0.12	0.13	0.2	0.023	0.23	0.21	0.22	0.07	0.546	0.394	0.197
Acenaphthylene	*1.5*	*4.4*	<0.00032	0.0012	0.00079	0.00096 J	0.0014	0.0013	0.001	0.0013	0.00276 J	<0.0006	<0.0000577	0.0014
Anthracene	*7.3*	*22*	0.00393	0.0046	0.0077	0.0067 J	0.00055	0.0058	0.0068	0.004	<0.000476	0.017	0.017	0.00868
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000762	<0.0008	<0.0000769	<0.0000784
Benzo(a)pyrene	*0.0002*	*0.0002*	**<0.00021**	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**<0.000762**	**<0.0008**	<0.0000769	<0.0000784
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00042	<0.00009	<0.00009	0.00009 J	<0.00009	<0.00005	<0.00005	<0.00005	**<0.00124**	**<0.0013**	<0.000125	0.00014 J
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00021	0.00043	<0.00031	<0.00028	0.00048	<0.00075	<0.00011	<0.0001	<0.00352	<0.0037	<0.000356	<0.000363
Chrysene	*0.91*	*2*	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000762	<0.0008	<0.0000769	<0.0000784
Dibenzofuran	*0.098*	*0.29*	**0.125**	0.054	0.0087	0.0043 J	0.00072	0.0014	0.001	0.0031	<0.000762	**0.135**	**0.107**	0.0159
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00105	<0.0011	<0.000106	<0.000108
Fluoranthene	*0.98*	*2.9*	0.00367	0.0032	0.0056	0.006 J	0.0014	0.0095	0.0094	0.0065	0.00257 J	0.0137	0.0154	0.00749
Fluorene	*0.98*	*2.9*	0.0865	0.056	0.069	0.097	0.00027	0.094	0.11	0.091 J	0.00495	0.172	0.178	0.0987
Naphthalene	*0.49*	*1.5*	0.287	0.021	<0.0011	0.16	0.00035	0.042	0.32	0.39	<0.000941	**1.72**	0.235 J	0.0163
Nitrobenzene	*0.049*	*0.15*	<0.00042	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00105	<0.0011	<0.000106	0.0012
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00026	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	0.00065	<0.00005	<0.000952	<0.001	<0.0000962	<0.000098
Pentachlorophenol	*0.001*	*0.001*	<0.00021	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**<0.00581**	**<0.0061**	<0.000587	<0.000598
Phenanthrene	*0.73*	*2.2*	0.0184	0.02	0.0055	0.0025 J	<0.00007	0.0047	0.0073	0.0064	<0.000571	0.0416	0.0438	0.0217
Phenol	*7.3*	*22*	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.000062 J	<0.000381	<0.0004	<0.0000385	<0.0000392
Pyrene	*0.73*	*2.2*	0.00156	0.0016	0.0032	0.003 J	0.001	0.0046	0.0054	0.0038	0.00139 J	0.00732	0.0083	0.0041
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
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CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-44A 01/31/2018	MW-44A 03/26/2018	MW-44A 06/01/2018	MW-44A 01/22/2019	MW-44A 07/17/2019	MW-44A 01/09/2020	MW-44C 01/29/2008 DNAPL	MW-44C 07/20/2011 DNAPL	MW-44C 07/18/2012 DNAPL	MW-44C 02/06/2013 DNAPL	MW-44C 01/15/2020	MW-45C 01/29/2008 DNAPL
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052	<0.001	<0.005	<0.0014	<0.0002	<0.00052
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00025	<0.001	<0.005	0.000964 J	<0.0002	**0.0448**
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047	<0.001	<0.005	0.00293 J	<0.0003	<0.00047
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.0204	<0.0011	0.32	0.233	<0.0003	0.111
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00054	<0.0013	**<0.01**	<0.0015	<0.001	<0.00054
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0117	<0.001	0.16	0.0895	<0.0002	0.112
Vinyl chloride	*0.002*	*0.002*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002							
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.0487	<0.0031	0.84	0.688	<0.0003	0.298
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0002	<0.00005	<0.00075	**<0.529**	<0.000021	**<0.002**
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.000041	<0.00004	<0.00004	<0.00004	<0.00042	0.00219 J	<0.00005	<0.00075	**<1.49**	0.00011 J	0.0104
2,4-Dinitrotoluene	*0.0013*	*0.003*	0.00017 J	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058	<0.00039	<0.00005	<0.00075	**<0.625**	<0.000058	**<0.004**
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000043	<0.000042	<0.000042	<0.000042	<0.000042	<0.00039	<0.00006	<0.0009	**<0.385**	<0.000042	**<0.004**
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00078	<0.00005	<0.00075	<0.385	<0.000021	<0.008
2-Methylnaphthalene	*0.098*	*0.29*	<0.000093	<0.000019	<0.000019	<0.000019	<0.000019	<0.00035	0.00551	<0.00005	**62**	**1.15 J**	0.00012	**1.01**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00039	<0.00008	<0.0012	**<3.99**	<0.00002	**<0.004**
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000048	<0.000047	<0.000047	<0.000047	<0.000047	<0.00049	<0.00005	<0.00075	**<2.69**	<0.000047	<0.005
Acenaphthene	*1.5*	*4.4*	0.062	0.064	0.09	0.037	0.056	0.064	0.0531	0.00012 J	**31**	0.632 J	0.00045	0.472
Acenaphthylene	*1.5*	*4.4*	0.00078	0.0006	<0.000015	0.00036	0.00028	0.00097	0.00083	0.000097 J	0.29	<0.288	0.00065	0.0085
Anthracene	*7.3*	*22*	0.00066	0.0024	0.0022	0.00044	0.00089	0.00027	0.0131	0.00014 J	**19**	<0.24	0.0086	0.18
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.000051	<0.00005	<0.00005	0.000085 J	0.000054 J	0.00327	0.00017 J	**3.5**	**<0.385**	0.0018	**0.0416**
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	**<0.00039**	**0.00022**	**0.87**	**<0.385**	**0.00065**	**<0.004**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.000031	<0.00003	<0.00003	<0.00003	<0.00003	<0.00078	<0.00005	<0.00075	**<0.625**	<0.00003	**<0.008**
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0001	<0.000038	0.0001 J	<0.000037	<0.00025	<0.000037	0.00235 J	<0.00087	**0.013**	**<1.78**	0.0012	<0.004
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	0.000026 J	0.000052 J	<0.000021	0.00278	0.00032	**3.3**	<0.385	0.0022	0.0347
Dibenzofuran	*0.098*	*0.29*	0.00019	0.00029	<0.00002	<0.00002	<0.00002	<0.00033	0.046	<0.00005	**38**	**0.453 J**	0.00034	**0.488**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00039	<0.00005	<0.00075	<0.529	0.0016	<0.004
Fluoranthene	*0.98*	*2.9*	0.0067	0.0095	0.012	0.0058	0.0091	0.0059	0.0264	0.00016 J	**28**	<0.337	0.0095	0.384
Fluorene	*0.98*	*2.9*	0.024	0.03	0.039	0.0097	0.014	0.0078	0.0346	<0.00005	**26**	<0.337	0.00067	0.357
Naphthalene	*0.49*	*1.5*	<0.00028	0.00036	0.00038	0.00011	<0.00019	<0.003	<0.00078	<0.00016	**230**	**18 J**	0.000097 J	**6.05**
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00078	<0.00005	<0.00075	**<0.529**	<0.000024	<0.008
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000026	<0.000025	<0.000025	<0.000025	<0.000025	<0.00049	<0.00005	<0.00075	**<0.481**	<0.000025	<0.005
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000081	<0.000079	<0.000079	<0.000079	<0.000079	<0.00039	<0.00005	<0.00075	**<2.93**	<0.000079	**<0.004**
Phenanthrene	*0.73*	*2.2*	0.00012	0.00018	0.0002	<0.000021	0.00012	<0.00022	0.0668	0.000081 J	**88**	0.498 J	0.0077	**0.903**
Phenol	*7.3*	*22*	<0.000035	<0.000036	<0.000035	<0.000035	<0.000035	<0.00013	<0.00039	<0.00005	<0.00075	<0.192	<0.000035	<0.004
Pyrene	*0.73*	*2.2*	0.0037	0.0069	0.0073	0.0033	0.0057	0.0045	0.0159	0.00013 J	**19**	<0.529	0.006	0.234
Metals														
Arsenic	*0.01*	*0.01*	**0.0275**	**0.0169**	**0.0165**	**0.0101**	**0.0303**	0.00966					0.00314	

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

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CLASS 2 GROUNDWATER
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	Residential Assessment Level	*C/I Assessment Level*	MW-45C 01/20/2020	MW-46C 01/30/2008 DNAPL	MW-46C 01/15/2020	MW-47A 03/20/2020	MW-47C 07/14/2008	MW-47C 02/04/2009	MW-47C 01/20/2010	MW-47C 06/24/2010	MW-47C 01/19/2011	MW-47C 07/21/2011	MW-47C 02/07/2012	MW-47C 07/27/2012
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.00052	<0.0002	<0.0002	<0.00109	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005
Benzene	*0.005*	*0.005*	0.0005 J	**0.0222**	**0.028**	<0.0002	<0.00112	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.00047	<0.0003	<0.0003	<0.0015	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005
Ethylbenzene	*0.7*	*0.7*	0.00044 J	0.0249	0.051	<0.0003	<0.00142	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005
Methylene chloride	*0.005*	*0.005*	<0.001	<0.00054	<0.001	<0.001	<0.00122	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001
Toluene	*1*	*1*	<0.0002	0.0167	0.0047	<0.0002	<0.00138	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005
Vinyl chloride	*0.002*	*0.002*	<0.0002											
Xylenes (total)	*10*	*10*	0.0051	0.0377	0.11	<0.0003	<0.00302	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000085	<0.0004	<0.000021	<0.000021	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.0014	0.00016 J	<0.00004	<0.00032	<0.00008	<0.00008	0.00011 J	<0.00008	<0.00005	<0.00005	0.00042
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.00096	<0.000058	<0.000058	<0.00021	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	**0.0022 J**	<0.00096	<0.000042	<0.000042	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.0019	<0.000021	<0.000021	<0.00042	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	<0.00013	0.0825	**0.2**	<0.000019	<0.00042	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.0044	<0.00005
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00096	<0.00002	<0.00002	<0.00021	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	0.000067 J	<0.0012	<0.000047	<0.000047	<0.00026	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Acenaphthene	*1.5*	*4.4*	0.000084 J	0.0635	0.16	<0.000027	<0.00032	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	0.00017 J	0.000058 J
Acenaphthylene	*1.5*	*4.4*	0.000037 J	<0.0014	0.0016	<0.000015	<0.00032	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Anthracene	*7.3*	*22*	0.0009	0.0222	0.073	<0.000014	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.000074 J	<0.00005
Benzo(a)anthracene	*0.0091*	*0.02*	0.00039	0.00597	0.0071	<0.00005	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	**0.00042**	**0.00215**	**0.0021**	<0.00002	**<0.00021**	<0.00008	0.000099 J	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	**<0.0019**	<0.00003	<0.00003	<0.00042	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.000067 J	<0.00096	0.0011	0.00011 J	<0.00021	0.0036	<0.00065	<0.00021	<0.0002	0.0001 J	**0.011**	<0.0001
Chrysene	*0.91*	*2*	0.00062	0.00521	0.0068	<0.000021	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Dibenzofuran	*0.098*	*0.29*	0.000075 J	0.0636	**0.16**	<0.00002	<0.00032	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00096	<0.00002	0.000076 J	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00015 J	<0.00005
Fluoranthene	*0.98*	*2.9*	0.00062	0.0426	0.084	<0.00001	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005
Fluorene	*0.98*	*2.9*	0.00023	0.048	0.12	<0.00003	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00025	<0.00005
Naphthalene	*0.49*	*1.5*	<0.00061	**1.1**	**1.8**	<0.00002	<0.00042	0.00019 J	<0.0001	0.00046	0.00021	<0.00005	0.0041	0.00046
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.0019	<0.000024	<0.000024	<0.00042	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.0012	<0.000025	<0.000025	<0.00026	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.00096	<0.000079	<0.000079	<0.00021	<0.00008	0.0004	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005
Phenanthrene	*0.73*	*2.2*	<0.00027	0.119	0.24	<0.000021	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.0003	<0.00005
Phenol	*7.3*	*22*	<0.000035	0.0133	<0.000035	<0.000035	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00044	0.00056
Pyrene	*0.73*	*2.2*	0.00068	0.0252	0.053	<0.000019	<0.00021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00015 J	<0.00005
Metals														
Arsenic	*0.01*	*0.01*	0.00073 J		0.00272	0.000566 J								

Notes:
1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-47C 02/07/2013	MW-47C 08/06/2013	MW-47C 01/17/2014	MW-47C 07/30/2014	MW-47C 01/23/2019	MW-47C 07/17/2019	MW-47C 01/16/2020	MW-48C 01/29/2008	MW-48C 01/29/2008	MW-48C 07/14/2008	MW-48C 02/04/2009	MW-48C 01/21/2010
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.00052	<0.00052	<0.00109	<0.0005	<0.0005
Benzene	*0.005*	*0.005*	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.00025	<0.00025	<0.00112	<0.0005	<0.0005
Chlorobenzene	*0.1*	*0.1*	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.00047	<0.00047	<0.0015	<0.0005	<0.0005
Ethylbenzene	*0.7*	*0.7*	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.00025	<0.00025	<0.00142	<0.0005	<0.0005
Methylene chloride	*0.005*	*0.005*	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.00054	<0.00054	<0.00122	<0.0005	<0.0005
Toluene	*1*	*1*	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.00041	<0.00041	<0.00138	<0.0005	<0.0005
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.00127	<0.00127	<0.00302	<0.001	<0.001
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000105	<0.00011	**R**	<0.000104	<0.000021	<0.000021	<0.000021	<0.00008	<0.00008	<0.00009	<0.0001	<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*	**R**	<0.00031	**R**	<0.000292	0.000095 J	<0.00004	0.0002	<0.00029	<0.00029	<0.00033	<0.00008	<0.00008
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000124	<0.00013	**R**	<0.000123	<0.000058	<0.000058	<0.000058	<0.00019	<0.00019	<0.00022	<0.00009	<0.00009
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0000762	<0.00008	**R**	<0.0000755	<0.000042	<0.000042	<0.000042	<0.00019	<0.00019	<0.00022	<0.00007	<0.00007
2-Chloronaphthalene	*2*	*5.8*	<0.0000762	<0.00008	**R**	<0.0000755	<0.000021	<0.000021	<0.000021	<0.00038	<0.00038	<0.00044	<0.00012	<0.0001
2-Methylnaphthalene	*0.098*	*0.29*	0.000098 J	<0.00007	**R**	<0.000066	<0.000019	<0.000019	<0.0001	<0.00038	<0.00038	<0.00044	<0.00007	<0.00007
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	**R**	<0.00083	**R**	<0.000783	<0.00002	<0.00002	<0.00002	<0.00019	<0.00019	<0.00022	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000533	<0.00056	**R**	<0.000528	<0.000047	<0.000047	<0.000047	<0.00024	<0.00024	<0.00028	<0.00007	<0.00007
Acenaphthene	*1.5*	*4.4*	<0.0000762	<0.00008	**R**	<0.0000755	<0.000027	<0.000027	<0.000057	<0.00029	<0.00029	<0.00033	<0.00009	<0.00009
Acenaphthylene	*1.5*	*4.4*	<0.0000571	<0.00006	**R**	<0.0000566	<0.000015	<0.000015	<0.000015	<0.00029	<0.00029	<0.00033	<0.00006	<0.00007
Anthracene	*7.3*	*22*	0.000107 J	<0.00005	**R**	<0.0000472	<0.000014	<0.000014	<0.000014	0.000584	0.000589	<0.00022	0.00012 J	<0.00007
Benzo(a)anthracene	*0.0091*	*0.02*	0.000137 J	<0.00008	**R**	<0.0000755	<0.00005	<0.00005	<0.00005	<0.00019	<0.00019	<0.00022	<0.00007	<0.00007
Benzo(a)pyrene	*0.0002*	*0.0002*	**0.000306 J**	<0.00008	**R**	<0.0000755	<0.00002	<0.00002	0.00004 J	<0.00019	<0.00019	**<0.00022**	<0.00008	<0.00008
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.000124	<0.00013	**R**	<0.000123	<0.00003	<0.00003	<0.00003	<0.00038	<0.00038	<0.00044	<0.00009	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.000594	<0.00037	**R**	<0.000349	<0.000056	<0.00027	0.00079	0.00045 J	<0.00019	0.00028 J	0.00034	<0.0018
Chrysene	*0.91*	*2*	0.000127 J	<0.00008	**R**	<0.0000755	<0.000021	<0.000021	0.00006 J	<0.00019	<0.00019	<0.00022	<0.00007	<0.00007
Dibenzofuran	*0.098*	*0.29*	0.000104 J	<0.00008	**R**	<0.0000755	0.000034 J	<0.00002	<0.000049	0.00031 J	<0.00029	<0.00033	0.00025	<0.00008
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.000105	<0.00011	**R**	<0.000104	<0.00002	<0.00002	0.0014	<0.00019	<0.00019	<0.00022	<0.00007	<0.00007
Fluoranthene	*0.98*	*2.9*	0.000289 J	0.000186 J	0.0000718 J	<0.000066	0.000028 J	<0.00001	<0.00011	0.00047 J	0.000687	0.00033 J	<0.00007	0.00013 J
Fluorene	*0.98*	*2.9*	0.000116 J	<0.00007	**R**	<0.000066	<0.00003	<0.00003	<0.000042	<0.00019	<0.00019	<0.00022	<0.00007	<0.00007
Naphthalene	*0.49*	*1.5*	<0.000401	<0.00008	0.000297 J	<0.0000755	0.00083	<0.00002	<0.00056	0.00119	0.00062	<0.00044	0.00052	0.0002 J
Nitrobenzene	*0.049*	*0.15*	<0.000105	<0.00011	**R**	<0.000104	<0.000024	<0.000024	<0.000024	<0.00038	<0.00038	<0.00044	<0.00009	<0.00009
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.0000952	<0.0001	**R**	<0.0000943	<0.000025	<0.000025	<0.000025	<0.00024	<0.00024	<0.00028	<0.00009	<0.00009
Pentachlorophenol	*0.001*	*0.001*	**R**	<0.00061	**R**	<0.000575	<0.000079	<0.000079	<0.000079	<0.00019	<0.00019	<0.00022	<0.00008	<0.00008
Phenanthrene	*0.73*	*2.2*	0.000406 J	<0.00006	0.000185 J	<0.0000566	0.000052 J	<0.000021	<0.000088	0.00046 J	0.00043 J	<0.00022	0.00032	<0.00007
Phenol	*7.3*	*22*	**R**	<0.00004	**R**	<0.0000377	<0.000035	<0.000035	<0.000035	<0.00019	<0.00019	<0.00022	<0.00007	<0.00007
Pyrene	*0.73*	*2.2*	0.000388 J	0.000131 J	**R**	<0.000104	0.000021 J	<0.000019	<0.0001	0.00039 J	0.000528	<0.00022	<0.00007	0.0001 J
Metals														
Arsenic	*0.01*	*0.01*					<0.0004	0.00044 J	0.00234					

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-48C 06/24/2010	MW-48C 07/15/2010	MW-48C 01/19/2011	MW-48C 07/18/2011	MW-48C 02/06/2012	MW-48C 07/24/2012	MW-48C 01/31/2013	MW-48C 08/01/2013	MW-48C 01/16/2014	MW-48C 07/16/2014	MW-48C 01/28/2018	MW-48C 03/20/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001
Toluene	*1*	*1*	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*									<0.00018			
Xylenes (total)	*10*	*10*	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0005	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.000104	<0.000105	<0.000104	<0.000104	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	0.0073	<0.00008	<0.00008	<0.00005	<0.00005	0.00014 J	<0.000292	<0.000295	<0.000292	<0.000292	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00045	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000123	<0.000124	<0.000123	<0.000123	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00035	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000755	<0.0000762	<0.0000755	<0.0000755	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.0005	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000762	<0.0000755	<0.0000755	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	**0.18**	<0.00007	<0.00007	<0.00005	<0.00005	0.0013	<0.000066	<0.0000667	<0.000066	<0.000066	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.0004	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.000783	<0.00079	<0.000783	<0.000783	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00035	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000528	<0.000533	<0.000528	<0.000528	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	0.073	<0.00009	<0.00009	<0.00005	<0.00005	0.0011	<0.0000755	<0.0000762	<0.0000755	<0.0000755	<0.000027	<0.000027
Acenaphthylene	*1.5*	*4.4*	0.0014	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000566	<0.0000571	<0.0000566	<0.0000566	<0.000015	<0.000015
Anthracene	*7.3*	*22*	0.007	<0.00007	<0.00007	<0.00005	<0.00005	0.00077	<0.0000472	<0.0000476	<0.0000472	<0.0000472	0.000025 J	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00035	<0.00007	<0.00007	<0.00005	<0.00005	0.000066 J	<0.0000755	<0.0000762	<0.0000755	<0.0000755	<0.00005	0.000057 J
Benzo(a)pyrene	*0.0002*	*0.0002*	**<0.0004**	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000762	<0.0000755	<0.0000755	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00045	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000123	<0.000124	<0.000123	<0.000123	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.001	0.0013	0.001	<0.00043	<0.0001	<0.00024	<0.000349	<0.000352	<0.000349	<0.000349	0.000079 J	0.00011 J
Chrysene	*0.91*	*2*	<0.00035	<0.00007	<0.00007	<0.00005	<0.00005	0.000073 J	<0.0000755	<0.0000762	<0.0000755	<0.0000755	<0.000021	0.000044 J
Dibenzofuran	*0.098*	*0.29*	0.065	<0.00008	<0.00008	<0.00005	<0.00005	0.00096	<0.0000755	<0.0000762	<0.0000755	<0.0000755	<0.00002	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00035	<0.00007	<0.00007	<0.00005	<0.00005	0.000053 J	<0.000104	<0.000105	<0.000104	<0.000104	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	0.0021	0.00019 J	0.00019 J	<0.00013	<0.00005	0.00095	<0.000066	0.000134 J	0.000153 J	<0.000066	0.000049 J	0.000099 J
Fluorene	*0.98*	*2.9*	0.032	<0.00007	<0.00007	<0.00005	<0.00005	0.0011	<0.000066	<0.0000667	<0.000066	<0.000066	<0.00003	<0.00003
Naphthalene	*0.49*	*1.5*	**5**	<0.0001	<0.0001	<0.00005	<0.00005	0.0071	<0.000495	<0.000158	<0.0000755	<0.0000755	<0.00002	<0.00002
Nitrobenzene	*0.049*	*0.15*	<0.00045	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000104	<0.000105	<0.000104	<0.000104	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00045	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000943	<0.0000952	<0.0000943	<0.0000943	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	**0.019**	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000575	<0.000581	<0.000575	<0.000575	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	0.03	<0.00007	<0.00007	<0.00005	<0.00005	0.0034	<0.0000566	<0.0000571	<0.0000566	<0.0000566	<0.000022	<0.000021
Phenol	*7.3*	*22*	0.024	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000377	<0.0000381	<0.0000377	<0.0000377	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	0.001	0.00015 J	0.00012 J	<0.0001	<0.00005	0.00052	<0.000104	<0.000105	<0.000104	<0.000104	0.000052 J	0.000087 J
Metals														
Arsenic	*0.01*	*0.01*											0.000831 J	0.000581 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-48C 05/24/2018	MW-48C 01/10/2019	MW-48C 07/17/2019	MW-48C 01/16/2020	MW-49A 01/31/2008	MW-49A 07/15/2008	MW-49A 02/04/2009	MW-49A 01/21/2010	MW-49A 06/25/2010	MW-49A 01/20/2011	MW-49A 07/22/2011	MW-49A 02/07/2012
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052	<0.00052	<0.0005	<0.0005	<0.005	<0.005	**<0.01**	**<0.05**
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	**0.0108**	**0.165**	**0.24**	**0.2**	**0.29**	**0.057**	**0.2**	**<0.05**
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	0.00865	0.00702	0.0053	0.0024 J	<0.005	0.0084 J	<0.01	<0.05
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	0.0238	0.0837	0.084	0.085	0.14	0.04 J	0.094	<0.055
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.00054	<0.00054	<0.0005	<0.0005	<0.005	<0.005	**<0.013**	**<0.065**
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	0.00805	0.0415	0.077	0.083	0.13	0.021 J	0.11	<0.05
Vinyl chloride	*0.002*	*0.002*										**<0.005**	**<0.01**	**<0.05**
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	0.0352	0.187	0.2	0.21	0.34	0.079 J	0.2	<0.16
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	**<0.004**	**<0.002**	<0.0001	<0.0001	<0.0005	<0.0001	<0.00005	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	0.001	<0.00004	<0.00004	0.025	**6.08**	**6.8**	**0.86**	**3.7**	0.18	**3**	<0.00005
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	<0.000058	**<0.0095**	**<0.004**	<0.00009	<0.00009	<0.00045	<0.00009	<0.00005	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.000042	**<0.0095**	**<0.004**	<0.00007	<0.00007	<0.00035	<0.00007	<0.00006	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.019	<0.008	<0.00012	<0.0001	<0.0005	<0.0001	<0.00005	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	0.00038	<0.000019	<0.000076	0.0693	**0.492**	**0.6**	**0.35**	**0.44**	**0.13**	**0.27**	<0.00005
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	**<0.0095**	**<0.01**	<0.00008	<0.00008	<0.0004	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.012	<0.005	<0.00007	<0.00007	<0.00035	<0.00007	<0.00005	<0.00005
Acenaphthene	*1.5*	*4.4*	<0.000027	0.000098 J	<0.000027	<0.000073	0.215	0.468	0.32	0.2	0.21	0.13	0.13	<0.00005
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.000015	<0.014	<0.006	0.0039	0.0032	0.0052	0.0018	0.0029	<0.00005
Anthracene	*7.3*	*22*	<0.000014	<0.000014	<0.000014	<0.000014	<0.0095	0.0164	0.01	0.0071	0.0099	0.0096	0.011	<0.00005
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00005	<0.00005	**<0.0095**	<0.004	0.00066	<0.00007	<0.00035	<0.00007	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	0.000021 J	**<0.0095**	**<0.004**	**0.00024**	<0.00008	**<0.0004**	<0.00008	<0.00005	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	**<0.019**	**<0.008**	<0.00009	<0.00009	<0.00045	<0.00009	<0.00005	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.000063 J	<0.000037	<0.0003	0.000039 J	**<0.0095**	<0.004	0.0009	<0.0015	<0.001	<0.00029	<0.0001	<0.0001
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	0.000029 J	<0.0095	<0.004	0.0006	<0.00007	<0.00035	<0.00007	<0.00005	<0.00005
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00002	<0.00002	<0.000054	**0.148**	**0.293**	**0.21**	**0.14**	**0.16**	0.075	0.09	<0.00005
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.00002	<0.00002	<0.0095	<0.004	<0.00007	<0.00007	<0.00035	<0.00007	<0.00005	<0.00005
Fluoranthene	*0.98*	*2.9*	<0.00001	<0.00001	0.000035 J	<0.000061	<0.0095	0.0063	0.0058	0.0025	0.0034	0.0038	0.0033	<0.00005
Fluorene	*0.98*	*2.9*	<0.00003	<0.00003	<0.00003	<0.00005	0.102	0.205	0.15	0.11	0.13	0.073	0.092	<0.00005
Naphthalene	*0.49*	*1.5*	<0.00002	0.0085	<0.00002	<0.00052	**2.13**	**11**	**9**	**5.1**	**10**	**1.8**	**7.4**	<0.00005
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.019	<0.008	<0.00009	<0.00009	<0.00045	<0.00009	<0.00005	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.012	<0.005	<0.00009	<0.00009	<0.00045	<0.00009	<0.00005	<0.00005
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	<0.000079	**<0.0095**	**<0.004**	<0.00008	<0.00008	<0.0004	<0.00008	<0.00005	<0.00005
Phenanthrene	*0.73*	*2.2*	<0.000021	<0.000021	<0.000021	<0.000052	0.0939	0.147	0.096	0.072	0.086	0.062	0.07	<0.00005
Phenol	*7.3*	*22*	<0.000035	0.002	0.000074 J	<0.000035	<0.0095	0.0111	<0.00007	0.00077	0.0011	0.0058	0.0095	<0.00005
Pyrene	*0.73*	*2.2*	<0.000019	<0.000019	0.000036 J	<0.000065	<0.0095	<0.004	0.0046	0.0017	0.0018	0.002	0.0016	<0.00005
Metals														
Arsenic	*0.01*	*0.01*	0.000562 J	0.000924 J	0.00167 J	0.00126 J								

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-49A 07/26/2012	MW-49A 02/07/2013	MW-49A 08/01/2013	MW-49A 01/16/2014	MW-49A 07/16/2014	MW-49A 01/29/2018	MW-49A 04/01/2018	MW-49A 05/31/2018	MW-49A 01/23/2019	MW-49A 07/31/2019	MW-49A 01/07/2020	MW-50A 01/31/2008
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.00014	<0.0014	<0.0002	<0.0028	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.002	<0.00052
Benzene	*0.005*	*0.005*	**0.042**	**0.114**	**0.094**	**0.0565**	**0.108**	**0.013**	**0.016**	**0.01**	0.004	<0.0002	**0.3**	<0.00025
Chlorobenzene	*0.1*	*0.1*	0.0037 J	**0.299**	**0.476**	**0.304**	**0.211**	<0.0003	<0.0015	<0.0003	<0.0003	<0.0003	0.0063 J	<0.00047
Ethylbenzene	*0.7*	*0.7*	0.037	0.0321	0.0499	0.0331	0.0701	0.01	0.01	0.0067	0.0031	<0.0003	0.1	<0.00025
Methylene chloride	*0.005*	*0.005*	<0.001	<0.00015	<0.0015	<0.00022	**0.0212**	<0.001	<0.005	<0.001	<0.001	<0.001	**<0.01**	<0.00054
Toluene	*1*	*1*	0.031	0.0343	0.0347	0.0296	0.0593	0.003	0.0075	0.0065	0.0023	<0.0002	0.19	<0.00041
Vinyl chloride	*0.002*	*0.002*	<0.0005	<0.00011	<0.0011	<0.00018	**<0.0022**	<0.0002		<0.0002	<0.0002	<0.0002	<0.002	
Xylenes (total)	*10*	*10*	0.082	0.0777	0.106	0.0699	0.157	0.023	0.023	0.015	0.0087	<0.0003	0.24	<0.00127
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	**<0.00524**	**<0.0105**	**<0.00519**	**<0.0104**	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00008
2,4-Dimethylphenol	*0.49*	*1.5*	0.037	**1.42**	**0.903**	**2.1 J**	**1.23**	0.097	0.033	0.097	<0.00004	<0.00004	**5.7**	<0.00029
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	**<0.00619**	**<0.0124**	**<0.00613**	**<0.0123**	<0.000058	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058	<0.00019
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	**<0.00381**	**<0.00762**	**<0.00377**	**<0.00755**	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.00019
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.00381	<0.00762	<0.00377	<0.00755	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00038
2-Methylnaphthalene	*0.098*	*0.29*	<0.00005	**0.218**	**0.216**	**0.267**	**0.293**	0.000078 J	0.000067 J	0.0079	<0.000019	<0.000019	**0.13**	<0.00038
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	**<0.0395**	**<0.079**	**<0.0392**	**<0.0783**	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019
4-Nitrophenol	*0.049*	*0.15*	<0.00005	<0.0267	**<0.0533**	<0.0264	**<0.0528**	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00024
Acenaphthene	*1.5*	*4.4*	0.033	0.134	0.126	0.18	0.126	0.0036	0.0049	0.007	<0.000027	<0.000027	0.057	<0.00029
Acenaphthylene	*1.5*	*4.4*	0.00062	<0.00286	<0.00571	0.00528 J	<0.00566	0.00012	0.00012	0.00015	<0.000015	<0.000015	0.00097	<0.00029
Anthracene	*7.3*	*22*	0.00076	0.00824 J	0.0119 J	0.0132 J	<0.00472	0.00028	0.00035	0.00062	<0.000014	<0.000014	0.0028	<0.00019
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00381	<0.00762	<0.00377	<0.00755	<0.00005	<0.000051	<0.00005	<0.00005	<0.00005	<0.00005	<0.00019
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	**<0.00381**	**<0.00762**	**<0.00377**	**<0.00755**	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	**<0.00619**	**<0.0124**	**<0.00613**	**<0.0123**	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00038
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.0001 J	**<0.0176**	**<0.0352**	**<0.0175**	**<0.0349**	0.00013 J	0.00014 J	0.0002 J	<0.000055	<0.000037	<0.00011	<0.00019
Chrysene	*0.91*	*2*	<0.00005	<0.00381	<0.00762	<0.00377	<0.00755	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00019
Dibenzofuran	*0.098*	*0.29*	0.0099	0.0851	0.0812	0.0902	0.0941	0.0021	0.0029	0.0049	<0.00002	<0.00002	0.037	<0.00029
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00005	<0.00524	<0.0105	<0.00519	<0.0104	0.000069 J	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019
Fluoranthene	*0.98*	*2.9*	0.0018	<0.00333	<0.00667	0.00521 J	<0.0066	0.00035	0.00039	0.00049	<0.00001	<0.00001	0.00056	<0.00019
Fluorene	*0.98*	*2.9*	0.015 J	0.0717	0.0662	0.0864	0.0651	0.0025	0.0027	0.0039	<0.00003	<0.00003	0.027	<0.00019
Naphthalene	*0.49*	*1.5*	<0.00005	**2.88**	**3.3**	**5.86**	**5.13**	<0.00016	0.0002	0.046	0.000089 J	<0.00002	**4.5**	<0.00038
Nitrobenzene	*0.049*	*0.15*	<0.00005	<0.00524	<0.0105	<0.00519	<0.0104	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00024	<0.00038
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.00476	<0.00952	<0.00472	<0.00943	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00024
Pentachlorophenol	*0.001*	*0.001*	<0.00005	**<0.029**	**<0.0581**	**<0.0288**	**<0.0575**	<0.000079	<0.00008	<0.000079	<0.000079	<0.000079	<0.000079	<0.00019
Phenanthrene	*0.73*	*2.2*	0.002	0.0455	0.0684	0.0564	0.0519	0.00066	0.00055	0.0034	<0.000021	<0.000021	0.016	0.00026 J
Phenol	*7.3*	*22*	<0.00023	<0.0019	<0.00381	<0.00189	<0.00377	<0.000035	<0.000035	0.0001 J	<0.000035	0.00064	0.17	<0.00019
Pyrene	*0.73*	*2.2*	0.00095	<0.00524	<0.0105	<0.00519	<0.0104	0.00018	0.00029	0.00034	<0.000019	<0.000019	0.00052	<0.00019
Metals														
Arsenic	*0.01*	*0.01*						0.00163 J	0.00233	0.000922 J	0.0012 J	0.000658 J	0.00463	

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-50A 07/16/2008	MW-50A 02/04/2009	MW-50A 01/20/2010	MW-50A 06/25/2010	MW-50A 01/27/2011	MW-50A 07/28/2011	MW-50A 02/09/2012	MW-50A 07/24/2012	MW-50A 04/02/2013	MW-50A 08/09/2013	MW-50A 01/29/2014	MW-50A 08/28/2014
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00109	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.00014	<0.00014
Benzene	*0.005*	*0.005*	<0.00112	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.00008	<0.00008
Chlorobenzene	*0.1*	*0.1*	<0.0015	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00012	<0.00012
Ethylbenzene	*0.7*	*0.7*	<0.00142	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00011	<0.00011
Methylene chloride	*0.005*	*0.005*	<0.00122	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00015	<0.00015
Toluene	*1*	*1*	<0.00138	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00015	<0.00015
Vinyl chloride	*0.002*	*0.002*										<0.00011		
Xylenes (total)	*10*	*10*	<0.00302	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00026	<0.00026
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00009	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.000106	<0.000108	<0.000104	<0.000109
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00033	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	0.000083 J	<0.000298	<0.000304	<0.000292	<0.000307
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00022	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000125	<0.000127	<0.000123	<0.000129
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000769	<0.0000784	<0.0000755	<0.0000792
2-Chloronaphthalene	*2*	*5.8*	<0.00044	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000769	<0.0000784	<0.0000755	<0.0000792
2-Methylnaphthalene	*0.098*	*0.29*	<0.00044	<0.00007	<0.00007	<0.00007	0.00019 J	<0.00005	<0.00005	0.0039	0.000107 J	<0.0000686	0.000264 J	<0.0000693
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00056	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.000798	<0.000814	<0.000783	<0.000822
4-Nitrophenol	*0.049*	*0.15*	<0.00028	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000538	<0.000549	<0.000528	<0.000554
Acenaphthene	*1.5*	*4.4*	<0.00033	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	0.0029	<0.0000769	<0.0000784	<0.0000755	<0.0000792
Acenaphthylene	*1.5*	*4.4*	<0.00033	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000577	<0.0000588	<0.0000566	<0.0000594
Anthracene	*7.3*	*22*	<0.00022	0.00011 J	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.0006	<0.0000481	<0.000049	<0.0000472	<0.0000495
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	0.0000972 J	<0.0000784	<0.0000755	<0.0000792
Benzo(a)pyrene	*0.0002*	*0.0002*	**<0.00022**	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	0.00015 J	<0.0000784	<0.0000755	<0.0000792
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00044	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000125	<0.000127	<0.000123	<0.000129
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00022	0.0035	<0.0002	<0.0003	0.00029	<0.00077	0.00032	<0.00012	0.000512	0.000409 J	<0.000349	<0.000366
Chrysene	*0.91*	*2*	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	0.000157 J	<0.0000784	<0.0000755	<0.0000792
Dibenzofuran	*0.098*	*0.29*	<0.00033	0.00025	<0.00008	<0.00008	0.00011 J	<0.00005	<0.00005	0.0024	<0.0000769	<0.0000784	0.000134 J	<0.0000792
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.000086 J	0.000194 J	0.000147 J	<0.000104	<0.000109
Fluoranthene	*0.98*	*2.9*	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00061	<0.0000673	<0.0000686	<0.000066	<0.0000693
Fluorene	*0.98*	*2.9*	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.0022	<0.0000673	<0.0000686	<0.000066	<0.0000693
Naphthalene	*0.49*	*1.5*	<0.00044	0.0003	<0.0001	<0.0004	0.0026 J	<0.00005	<0.00005	0.02	<0.0000769	0.000265 J	0.00129	0.00071
Nitrobenzene	*0.049*	*0.15*	<0.00044	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000106	<0.000108	<0.000104	<0.000109
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00028	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000962	<0.000098	<0.0000943	<0.000099
Pentachlorophenol	*0.001*	*0.001*	<0.00022	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	0.000921 J	<0.000598	<0.000575	<0.000604
Phenanthrene	*0.73*	*2.2*	<0.00022	0.00031	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.0045	0.000164 J	<0.0000588	0.0000703 J	<0.0000594
Phenol	*7.3*	*22*	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00038	<0.00005	<0.0000385	<0.0000392	<0.0000377	<0.0000396
Pyrene	*0.73*	*2.2*	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00031	0.000138 J	<0.000108	<0.000104	<0.000109
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-50A 01/30/2018	MW-50A 03/28/2018	MW-50A 04/01/2018	MW-50A 05/25/2018	MW-50A 01/10/2019	MW-50A 07/19/2019	MW-50A 01/09/2020	MW-50B 03/12/2020	MW-51A 01/31/2008	MW-51A 01/31/2008 Duplicate	MW-51A 02/04/2009	MW-51A 01/20/2010
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052	<0.00052	<0.0005	<0.0005
Benzene	*0.005*	*0.005*	<0.0002		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00025	<0.00025	<0.0005	<0.0005
Chlorobenzene	*0.1*	*0.1*	<0.0003		<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047	<0.00047	<0.0005	<0.0005
Ethylbenzene	*0.7*	*0.7*	<0.0003		<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.0068	<0.00025	<0.00025	<0.0005	<0.0005
Methylene chloride	*0.005*	*0.005*	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00054	<0.00054	<0.0005	<0.0005
Toluene	*1*	*1*	<0.0002		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0033	<0.00041	<0.00041	<0.0005	<0.0005
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.0003		<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.0056	<0.00127	<0.00127	<0.001	<0.001
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021		<0.000021	<0.000021	<0.000021	<0.000021	<0.000022	<0.00008	<0.0002	<0.0001	<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004		<0.00004	<0.00004	<0.00004	<0.00071	<0.000042	<0.00029	<0.00057	<0.00008	<0.00008
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058		<0.000058	<0.000058	<0.000058	<0.000058	<0.00006	<0.00019	<0.00038	<0.00009	<0.00009
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042		<0.000042	<0.000042	<0.000042	<0.000042	<0.000044	<0.00019	<0.00038	<0.00007	<0.00007
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021		<0.000021	<0.000021	<0.000021	<0.000021	<0.000022	<0.00038	<0.00076	<0.00012	<0.0001
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019		<0.000019	<0.000019	<0.000019	<0.00019	0.016	<0.00038	<0.00076	<0.00007	<0.00007
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.000021	<0.00019	<0.00038	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047		<0.000047	<0.000047	<0.000047	<0.000047	<0.000049	<0.00024	<0.00048	<0.00007	<0.00007
Acenaphthene	*1.5*	*4.4*	<0.000027	<0.000027		<0.000027	<0.000027	<0.000027	<0.00037	0.02	<0.00029	<0.00057	<0.00009	<0.00009
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015		<0.000015	<0.000015	<0.000015	0.000022 J	0.00028	<0.00029	<0.00057	<0.00006	<0.00007
Anthracene	*7.3*	*22*	<0.000014	<0.000014		<0.000014	<0.000014	<0.000014	<0.000014	0.0016	<0.00019	<0.00038	<0.00007	<0.00007
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005		<0.00005	<0.00005	<0.00005	<0.00005	<0.000052	<0.00019	<0.00038	<0.00007	<0.00007
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002		<0.00002	<0.00002	<0.00002	<0.00002	<0.000021	<0.00019	**<0.00038**	<0.00008	<0.00008
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003		<0.00003	<0.00003	<0.00003	<0.00003	<0.000031	<0.00038	<0.00076	<0.00009	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	<0.000037		0.0001 J	<0.000037	<0.000037	<0.000085	<0.000039	<0.00019	<0.00038	0.00034	<0.0019
Chrysene	*0.91*	*2*	<0.000021	<0.000021		<0.000021	<0.000021	<0.000021	<0.000021	<0.000022	<0.00019	<0.00038	<0.00007	<0.00007
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00002		<0.00002	<0.00002	<0.00002	<0.00013	0.015	0.000566	<0.00057	<0.00008	<0.00008
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002		<0.00002	<0.00002	<0.00002	<0.00002	0.000038 J	<0.00019	<0.00038	<0.00007	<0.00007
Fluoranthene	*0.98*	*2.9*	<0.00001	<0.00001		<0.00001	<0.00001	<0.00001	0.000052 J	0.0011	<0.00019	<0.00038	<0.00007	<0.00007
Fluorene	*0.98*	*2.9*	<0.00003	<0.00003		<0.00003	<0.00003	<0.00003	<0.00011	0.011	0.000602	0.00042 J	<0.00007	<0.00007
Naphthalene	*0.49*	*1.5*	<0.000046	<0.00002		0.00018	<0.00002	0.00027	<0.002	0.31	0.00182	0.00131	0.00029	<0.0001
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024		<0.000024	<0.000024	<0.000024	<0.000024	<0.000025	<0.00038	<0.00076	<0.00009	<0.00009
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025		<0.000025	<0.000025	<0.000025	<0.000025	<0.000026	<0.00024	<0.00048	<0.00009	<0.00009
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079		<0.000079	<0.000079	<0.000079	<0.000079	<0.000082	<0.00019	<0.00038	<0.00008	<0.00008
Phenanthrene	*0.73*	*2.2*	<0.000021	<0.000021		<0.000021	<0.000021	<0.000021	<0.00007	0.016	0.00097	0.00075	<0.00007	<0.00007
Phenol	*7.3*	*22*	<0.000035	<0.000035		<0.000035	<0.000035	0.00016 J	<0.000066	<0.000036	0.00044 J	<0.00038	<0.00007	<0.00007
Pyrene	*0.73*	*2.2*	<0.000019	<0.000019		<0.000019	<0.000019	<0.000019	<0.000034	0.00059	<0.00019	<0.00038	<0.00007	<0.00007
Metals														
Arsenic	*0.01*	*0.01*	0.00205		<0.0004	0.00857	0.00134 J	0.000642 J	0.000718 J	0.00372				

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-51A 06/24/2010	MW-51A 01/20/2011	MW-51A 07/28/2011	MW-51A 02/15/2012	MW-51A 07/24/2012	MW-51A 04/02/2013	MW-51A 08/09/2013	MW-51A 01/29/2014	MW-51A 07/24/2014	MW-51A 01/29/2018	MW-51A 03/28/2018	MW-51A 05/24/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.00008	<0.00008	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00012	<0.00012	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00011	<0.00011	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00015	<0.00015	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00015	<0.00015	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*					<0.0005		<0.00011		<0.00011			
Xylenes (total)	*10*	*10*	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00026	<0.00026	<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.000106	<0.000108	<0.000104	<0.000104	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000298	<0.000304	<0.000292	<0.000292	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000125	<0.000127	<0.000123	<0.000123	<0.000058	<0.000059	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000769	<0.0000784	**0.00292**	<0.0000755	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000769	<0.0000784	<0.0000755	<0.0000755	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	0.00013 J	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000673	<0.0000686	<0.000066	<0.000066	0.000069 J	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.000798	<0.000814	<0.000783	<0.000783	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000538	<0.000549	<0.000528	<0.000528	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	0.00013 J	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000769	<0.0000784	<0.0000755	<0.0000755	<0.000027	<0.000027	<0.000027
Acenaphthylene	*1.5*	*4.4*	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000577	<0.0000588	<0.0000566	<0.0000566	<0.000015	<0.000015	<0.000015
Anthracene	*7.3*	*22*	0.00017 J	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000481	<0.000049	<0.0000472	<0.0000472	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*	0.00014 J	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000769	<0.0000784	<0.0000755	<0.0000755	<0.00005	<0.000051	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000769	<0.0000784	<0.0000755	<0.0000755	<0.00002	<0.00002	0.000022 J
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000125	<0.000127	<0.000123	<0.000123	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00035	<0.00029	<0.0018	<0.0001	<0.00033	<0.000356	<0.000363	0.00121	0.000804	<0.000037	0.000069 J	0.000069 J
Chrysene	*0.91*	*2*	0.00013 J	<0.00007	<0.00005	<0.00005	0.00011 J	<0.0000769	<0.0000784	<0.0000755	<0.0000755	<0.000021	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	0.00012 J	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000769	<0.0000784	<0.0000755	<0.0000755	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00007	<0.00007	<0.00005	<0.00005	0.000051 J	<0.000106	0.00011 J	<0.000104	<0.000104	<0.00002	<0.00002	0.000025 J
Fluoranthene	*0.98*	*2.9*	0.00072	<0.00007	<0.00005	<0.00005	0.00012 J	<0.0000673	<0.0000686	<0.000066	<0.000066	<0.00001	<0.00001	<0.00001
Fluorene	*0.98*	*2.9*	0.00011 J	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000673	<0.0000686	<0.000066	<0.000066	<0.00003	<0.00003	<0.00003
Naphthalene	*0.49*	*1.5*	0.00087	<0.00011	<0.00005	<0.00005	<0.00005	<0.0000769	<0.0000784	0.000118 J	0.000162 J	<0.00018	<0.00023	0.000087 J
Nitrobenzene	*0.049*	*0.15*	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000106	<0.000108	<0.000104	<0.000104	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000962	<0.000098	<0.0000943	<0.0000943	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000587	<0.000598	<0.000575	<0.000575	<0.000079	<0.00008	<0.000079
Phenanthrene	*0.73*	*2.2*	0.00068	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000577	0.0000699 J	<0.0000566	<0.0000566	<0.000021	<0.000021	<0.000021
Phenol	*7.3*	*22*	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000385	<0.0000392	<0.0000377	<0.0000377	<0.000035	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	0.00037	<0.00007	<0.00005	<0.00005	0.000088 J	<0.000106	<0.000108	<0.000104	<0.000104	<0.000019	<0.000019	<0.000019
Metals														
Arsenic	*0.01*	*0.01*										<0.0004	<0.0004	<0.0004

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-51A 01/10/2019	MW-51A 07/19/2019	MW-51A 01/09/2020	MW-51C 07/24/2014	MW-51C 01/29/2018	MW-51C 03/28/2018	MW-51C 05/24/2018	MW-51C 01/10/2019	MW-51C 07/19/2019	MW-51C 01/09/2020	MW-52A 01/31/2008	MW-52A 01/18/2010
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00052	<0.0025
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	0.000104 J	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	**0.0576**	0.0047 J
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00047	
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.0892	0.014 J
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00054	<0.0025
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.103	0.012 J
Vinyl chloride	*0.002*	*0.002*				<0.00011								
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.24	0.044 J
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000104	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	**<0.008**	<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00004	<0.000292	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	**1.54**	0.0046
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	<0.000123	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	**<0.019**	<0.00009
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.0000755	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	**<0.019**	<0.00007
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.0000755	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.038	<0.0001
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	0.000067 J	<0.000044	<0.000066	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000055	**0.929**	**0.54**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.000783	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	**<0.019**	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000528	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.024	<0.00007
Acenaphthene	*1.5*	*4.4*	<0.000027	<0.000027	<0.00004	<0.0000755	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000094	0.494	0.36
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.0000566	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.029	0.0045
Anthracene	*7.3*	*22*	<0.000014	<0.000014	<0.000063	<0.0000472	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.0001	0.046	0.022
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00005	<0.0000755	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	**<0.019**	0.00047
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	0.000027 J	<0.0000755	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	**<0.019**	0.00013 J
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.000123	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	**<0.038**	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.000078 J	0.00013 J	<0.00014	0.00111	<0.000037	<0.000037	0.000073 J	0.00013 J	0.000079 J	<0.000085	**<0.019**	<0.00032
Chrysene	*0.91*	*2*	<0.000021	<0.000021	0.00005 J	<0.0000755	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.019	0.00041
Dibenzofuran	*0.098*	*0.29*	<0.00002	0.00003 J	<0.000049	<0.0000755	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00011	**0.373**	**0.28**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	0.000034 J	<0.000104	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.019	<0.00007
Fluoranthene	*0.98*	*2.9*	<0.00001	<0.00001	0.00013	<0.000066	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00018	0.027	0.015
Fluorene	*0.98*	*2.9*	<0.00003	<0.00003	<0.000043	<0.000066	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00011	0.263	0.23
Naphthalene	*0.49*	*1.5*	0.00012	0.00055	<0.00032	0.000553	<0.0002	<0.00021	0.00029	0.00017	0.00023	<0.0003	**10.3**	**3.9**
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000104	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.038	<0.00009
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.0000943	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.024	<0.00009
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	<0.000575	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	**<0.019**	<0.00008
Phenanthrene	*0.73*	*2.2*	<0.000021	0.000026 J	<0.00021	<0.0000566	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00056	0.24	0.24
Phenol	*7.3*	*22*	<0.000035	0.00019 J	<0.000035	0.000628	<0.000035	<0.000035	<0.000035	<0.000035	0.00027	<0.000035	0.038	<0.00007
Pyrene	*0.73*	*2.2*	<0.000019	<0.000019	<0.000083	<0.000104	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.00011	0.039	0.0066
Metals														
Arsenic	*0.01*	*0.01*	<0.0004	<0.0004	0.00188 J		0.000614 J	0.0004 J	<0.0004	<0.0004	<0.0004	0.000452 J		

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-52A 07/14/2011	MW-52A 02/03/2012	MW-52A 07/12/2012	MW-52A 02/01/2013	MW-53C 01/29/2008	MW-53C 07/14/2008	MW-53C 02/03/2009	MW-53C 01/13/2010	MW-53C 06/30/2010	MW-53C 01/26/2011	MW-53C 07/20/2011	MW-53C 02/09/2012
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.001	<0.001	<0.0005	<0.00014	<0.00052	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001
Benzene	*0.005*	*0.005*	0.0025 J	0.0017 J	**0.0053**	0.00461	<0.00025	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001
Chlorobenzene	*0.1*	*0.1*	<0.001	<0.001	<0.0005	<0.00012	<0.00047	<0.00047	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001
Ethylbenzene	*0.7*	*0.7*	0.011	0.0053	0.0099	0.00677	<0.00025	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011
Methylene chloride	*0.005*	*0.005*	<0.0013	<0.0013	<0.001	<0.00015	<0.00054	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013
Toluene	*1*	*1*	0.0089	0.0034 J	0.0084	0.00679	<0.00041	<0.00041	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001
Vinyl chloride	*0.002*	*0.002*	<0.001		<0.0005	0.000661 J								
Xylenes (total)	*10*	*10*	0.025	0.011 J	0.021	0.0147	<0.00127	<0.00127	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	<0.00005	<0.00005	**<0.00524**	<0.00008	<0.00009	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	0.0045	0.0034	0.029	0.0479	<0.00029	<0.00033	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	<0.00005	<0.00005	**<0.00619**	<0.00019	<0.00022	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	<0.00006	<0.00006	**<0.00381**	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.00005	<0.00005	<0.00381	<0.00038	<0.00044	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	**0.33**	0.096	**0.16**	**0.165**	<0.00038	<0.00044	<0.00007	0.000071 J	<0.00007	<0.00007	<0.00005	0.00008 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	**<0.0395**	<0.00019	<0.00022	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.00005	<0.00005	<0.00005	<0.0267	<0.00024	<0.00028	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Acenaphthene	*1.5*	*4.4*	0.26	0.19	0.15	0.271	<0.00029	<0.00033	<0.00009	0.0002	0.00032	<0.00009	0.00032	0.0002 J
Acenaphthylene	*1.5*	*4.4*	0.004	0.0024	0.0025	<0.00286	<0.00029	<0.00033	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Anthracene	*7.3*	*22*	0.041	0.036	0.021	0.0231 J	0.000569	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Benzo(a)anthracene	*0.0091*	*0.02*	0.00063	0.00031	0.00022	<0.00381	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	0.00017 J	0.000066 J	<0.00005	**<0.00381**	<0.00019	**<0.00022**	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	<0.00005	<0.00005	**<0.00619**	<0.00038	<0.00044	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00042	0.00043	<0.0001	**<0.0176**	<0.00019	0.00026 J	0.00072	<0.00024	<0.00032	0.00037	<0.00014	<0.0001
Chrysene	*0.91*	*2*	0.0006	0.00033	0.00028	<0.00381	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Dibenzofuran	*0.098*	*0.29*	**0.2**	**0.14**	**0.13**	**0.178**	<0.00029	<0.00033	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00005	<0.00005	<0.00005	<0.00524	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Fluoranthene	*0.98*	*2.9*	0.024	0.013	0.017	0.0245	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Fluorene	*0.98*	*2.9*	0.18	0.12	0.11	0.167	<0.00019	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Naphthalene	*0.49*	*1.5*	**1.9**	**0.77**	**0.83**	**0.878**	0.00075	0.00161	0.0012	<0.00027	<0.0001	0.00015 J	<0.00005	0.00066
Nitrobenzene	*0.049*	*0.15*	<0.00005	<0.00005	<0.00005	<0.00524	<0.00038	<0.00044	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.00005	<0.00005	<0.00476	<0.00024	<0.00028	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
Pentachlorophenol	*0.001*	*0.001*	<0.00005	<0.00005	<0.00005	**<0.029**	<0.00019	<0.00022	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005
Phenanthrene	*0.73*	*2.2*	0.22	0.081	0.12	0.226	0.00043 J	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Phenol	*7.3*	*22*	0.000066 J	0.000052 J	<0.00015	<0.0019	<0.00019	0.00027 J	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Pyrene	*0.73*	*2.2*	0.011	0.0054	0.0071	0.0124 J	0.00039 J	<0.00022	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-53C 07/18/2012	MW-53C 02/06/2013	MW-53C 08/06/2013	MW-53C 01/22/2014	MW-53C 07/25/2014	MW-53C 01/28/2018	MW-53C 03/21/2018	MW-53C 05/31/2018	MW-53C 01/14/2019	MW-53C 07/16/2019	MW-53C 01/09/2020	MW-54C 01/28/2008
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	0.000644 J	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00245
Benzene	*0.005*	*0.005*	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00257
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00239
Ethylbenzene	*0.7*	*0.7*	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.00584
Methylene chloride	*0.005*	*0.005*	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00195
Toluene	*1*	*1*	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00274
Vinyl chloride	*0.002*	*0.002*					<0.00011							
Xylenes (total)	*10*	*10*	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.00581
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	<0.000106	<0.00011	<0.000524	<0.000107	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00008
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00005	<0.000298	<0.00031	<0.00148	<0.000301	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.0011	<0.00029
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	<0.000125	<0.00013	<0.000619	<0.000126	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.00019
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	<0.0000769	<0.00008	<0.000381	<0.0000777	<0.000042	<0.000042	**0.0016**	<0.000042	**0.0028**	<0.000042	<0.00019
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.0000769	<0.00008	<0.000381	<0.0000777	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00038
2-Methylnaphthalene	*0.098*	*0.29*	<0.000091	<0.0000673	<0.00007	0.000358 J	<0.0000826	<0.000019	<0.000019	<0.000019	<0.000019	0.000071 J	<0.00025	**0.109**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.000798	<0.00083	**<0.00395**	<0.000806	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019
4-Nitrophenol	*0.049*	*0.15*	<0.00005	<0.000538	<0.00056	<0.00267	<0.000544	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00024
Acenaphthene	*1.5*	*4.4*	<0.00005	<0.0000769	<0.00008	0.000856 J	<0.0000777	<0.000027	<0.000027	0.000044 J	<0.000027	<0.000027	<0.00032	0.074
Acenaphthylene	*1.5*	*4.4*	<0.00005	<0.0000577	<0.00006	<0.000286	<0.0000583	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.00029
Anthracene	*7.3*	*22*	<0.00005	<0.0000481	<0.00005	<0.000238	<0.0000485	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000028	0.00268
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.0000769	<0.00008	<0.000381	<0.0000777	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00024 J
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	<0.0000769	<0.00008	**<0.000381**	<0.0000777	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	<0.000125	<0.00013	<0.000619	<0.000126	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00038
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0001	<0.000356	<0.00037	<0.00176	<0.000359	0.00012 J	<0.000037	0.0001 J	<0.000037	<0.000037	<0.000037	0.00105 J
Chrysene	*0.91*	*2*	<0.00005	<0.0000769	<0.00008	<0.000381	<0.0000777	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.00021 J
Dibenzofuran	*0.098*	*0.29*	<0.00005	<0.0000769	<0.00008	<0.000381	<0.0000777	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00027	0.0611
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00005	<0.000106	<0.00011	<0.000524	<0.000107	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00069 J
Fluoranthene	*0.98*	*2.9*	<0.00005	<0.0000673	<0.00007	<0.000333	<0.000068	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.000071 J	0.00426
Fluorene	*0.98*	*2.9*	<0.00005	<0.0000673	<0.00007	0.000355 J	<0.000068	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.0002	0.0323
Naphthalene	*0.49*	*1.5*	<0.00048	<0.000183	<0.00008	<0.00212	<0.00194	<0.00002	<0.000034	0.00023	<0.00025	0.00013	<0.0012	**0.892**
Nitrobenzene	*0.049*	*0.15*	<0.00005	<0.000106	<0.00011	<0.000524	<0.000107	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00038
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.0000962	<0.0001	<0.000476	<0.0000971	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	0.000056 J	<0.00024
Pentachlorophenol	*0.001*	*0.001*	<0.00005	<0.000587	<0.00061	**<0.0029**	<0.000592	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	0.00025 J
Phenanthrene	*0.73*	*2.2*	<0.00005	<0.0000577	<0.00006	0.000939 J	<0.0000665	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00025	0.0389
Phenol	*7.3*	*22*	<0.00005	<0.0000385	<0.00004	<0.00019	<0.0000388	<0.000035	<0.000035	<0.000035	<0.000035	<0.00016	0.0005	<0.00019
Pyrene	*0.73*	*2.2*	<0.00005	<0.000106	<0.00011	<0.000524	<0.000107	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000061	0.00227
Metals														
Arsenic	*0.01*	*0.01*						0.000502 J	0.000443 J	0.000694 J	<0.0004	0.000569 J	0.000728 J	

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-54C 07/14/2008	MW-54C 02/03/2009	MW-54C 01/21/2010	MW-54C 06/30/2010	MW-54C 01/26/2011	MW-54C 07/20/2011	MW-54C 02/08/2012	MW-54C 07/25/2012	MW-54C 02/12/2013	MW-54C 08/06/2013	MW-54C 01/23/2014	MW-54C 07/25/2014
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014
Benzene	*0.005*	*0.005*	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008
Chlorobenzene	*0.1*	*0.1*	<0.00047	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	0.000128 J	<0.00018	<0.00012
Ethylbenzene	*0.7*	*0.7*	0.00391 J	0.0029 J	<0.0005	0.0024 J	<0.0005	0.0018 J	0.0011 J	0.0011 J	0.000187 J	0.00062 J	0.000527	0.000282 J
Methylene chloride	*0.005*	*0.005*	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015
Toluene	*1*	*1*	<0.00041	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015
Vinyl chloride	*0.002*	*0.002*												<0.00011
Xylenes (total)	*10*	*10*	<0.00127	0.0027 J	<0.001	0.0011 J	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	0.00076 J	0.00062 J	<0.00026
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.000105	<0.00011	<0.000104	<0.000109
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00029	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	0.000098 J	<0.00005	<0.000295	<0.00031	<0.000292	<0.000307
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.0002	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000124	<0.00013	<0.000123	<0.000129
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000762	<0.00008	<0.0000755	<0.0000792
2-Chloronaphthalene	*2*	*5.8*	<0.00039	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000762	<0.00008	<0.0000755	<0.0000792
2-Methylnaphthalene	*0.098*	*0.29*	**0.14**	**0.13**	<0.00007	0.0096	0.00025	0.022	0.0065	0.0054 J	0.00392	0.0173	0.0176	0.00834
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.0002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00079	<0.00083	<0.000783	<0.000822
4-Nitrophenol	*0.049*	*0.15*	<0.00024	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000533	<0.00056	<0.000528	<0.000554
Acenaphthene	*1.5*	*4.4*	0.0738	0.067	0.00016 J	0.024	0.0023	0.039	0.035	0.022	0.0219	0.0749	0.062	0.0367
Acenaphthylene	*1.5*	*4.4*	<0.00029	0.00072	<0.00007	0.00042	<0.00007	0.00045	0.00051	0.00039	<0.0000571	<0.00006	0.00105	0.000526
Anthracene	*7.3*	*22*	0.00293	0.003	<0.00007	0.005	0.00027	0.0029	0.0024	0.0019	0.00183	0.00389	0.00445	0.00261
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000762	<0.00008	0.0000993 J	<0.0000792
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000762	<0.00008	<0.0000755	<0.0000792
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00039	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000124	<0.00013	<0.000123	<0.000129
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00029 J	0.00072	<0.00077	<0.00037	0.0016	<0.00015	<0.0001	0.00017 J	<0.000352	<0.00037	<0.000349	<0.000366
Chrysene	*0.91*	*2*	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000762	<0.00008	0.0000758 J	<0.0000792
Dibenzofuran	*0.098*	*0.29*	0.0739	0.064	<0.00008	0.028	0.0018	0.046	0.047	0.029	0.0223	0.0878	0.0695	0.0471
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.000064 J	<0.000105	<0.00011	<0.000824	<0.000109
Fluoranthene	*0.98*	*2.9*	0.00349	0.0032	<0.00007	0.0032	0.00016 J	0.0034	0.0026	0.002	0.00246	0.00474	0.00575	0.00302
Fluorene	*0.98*	*2.9*	0.0351	0.03	<0.00007	0.015	0.001	0.022	0.021	0.011	0.0092	0.0409	0.0321	<0.0208
Naphthalene	*0.49*	*1.5*	**0.912**	**1.1**	<0.0001	0.21	0.0055	0.47	0.35	0.15	0.0681	0.383 J	0.315 J	0.18
Nitrobenzene	*0.049*	*0.15*	<0.00039	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000105	<0.00011	<0.000104	<0.000109
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00024	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	0.00014 J	<0.0000952	<0.0001	<0.0000943	<0.000099
Pentachlorophenol	*0.001*	*0.001*	<0.0002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000581	<0.00061	<0.000575	<0.000604
Phenanthrene	*0.73*	*2.2*	0.0495	0.042	<0.00007	0.024	0.0011	0.04	0.034	0.019	0.0128	0.04	0.042	0.0148
Phenol	*7.3*	*22*	<0.0002	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00011 J	<0.00005	<0.0000381	<0.00004	<0.0000377	<0.0000396
Pyrene	*0.73*	*2.2*	0.00163	0.0018	<0.00007	0.0016	<0.00007	0.0017	0.0015	0.0013	0.00138	0.00248	0.00373	0.00169
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-54C 01/28/2018	MW-54C 03/20/2018	MW-54C 05/31/2018	MW-54C 01/14/2019	MW-54C 07/16/2019	MW-54C 01/09/2020	MW-55A 02/04/2009	MW-55A 01/18/2010	MW-55A 07/14/2011	MW-55A 02/03/2012	MW-55A 07/12/2012	MW-55A 01/30/2013
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0025	<0.005	**<0.01**	<0.005	<0.0028
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	**0.19**	**0.072**	**0.07**	**0.15**	**0.17**	**0.133**
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0005		<0.005	<0.01	<0.005	<0.0024
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.15	0.2	0.17	0.2	0.24	0.228
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0025	**<0.0065**	**<0.013**	**<0.01**	<0.003
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.44	0.29	0.24	0.41	0.39	0.385
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.35	0.47	0.42	0.48	0.62	0.575
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0001	<0.0001	<0.00005	<0.0005	<0.00005	<0.000104
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	**1.2**	0.28	0.48	**1.8**	**0.96**	<0.000292
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.00009	<0.00009	<0.00005	<0.0005	<0.00005	<0.000123
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.00007	<0.00007	<0.00006	<0.0006	<0.00006	<0.0000755
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00012	<0.0001	<0.00005	<0.0005	<0.00005	<0.0000755
2-Methylnaphthalene	*0.098*	*0.29*	0.00048	0.00075	0.0059	0.0014	0.0021	0.002	**0.63**	**0.39**	**0.33**	**0.25**	**0.31**	<0.000066
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	<0.0008	<0.00008	<0.000783
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00007	<0.00007	<0.00005	<0.0005	<0.00005	<0.000528
Acenaphthene	*1.5*	*4.4*	0.023	0.03	0.04	0.014	0.041	0.021	0.28	0.19	0.16	0.14	0.11	0.0573
Acenaphthylene	*1.5*	*4.4*	0.00034	0.00036	0.00054	<0.0002	0.00037	0.00023	0.0037	0.0028	0.003	0.0019 J	0.0017	0.0021
Anthracene	*7.3*	*22*	0.0015	0.0027	0.0041	0.0013	0.0023	0.0015	0.047	0.021	0.016	0.016	0.0075	0.00062
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	0.000065 J	<0.00005	<0.00005	<0.00005	**0.01**	0.0018	0.0014	<0.0005	0.00034	<0.0000755
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	0.000039 J	<0.00002	<0.00002	**0.0069**	**0.00081**	**0.00062**	**<0.0005**	0.000081 J	<0.0000755
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	0.000056 J	<0.00003	<0.00003	<0.00009	0.00009 J	<0.00005	<0.0005	<0.00005	<0.000123
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.000055 J	<0.000037	0.00011 J	0.000096 J	<0.000037	<0.00018	0.00073	<0.0031	<0.0001	<0.001	<0.0001	<0.000349
Chrysene	*0.91*	*2*	<0.000021	0.000059 J	0.000053 J	0.000038 J	<0.000021	0.000054 J	0.0099	0.0017	0.0014	<0.0005	0.00025	<0.0000755
Dibenzofuran	*0.098*	*0.29*	0.025	0.029	0.045	0.015	0.032	0.02	**0.2**	**0.13**	**0.12**	0.084	0.078	0.0265
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	0.000029 J	<0.00002	<0.00002	<0.00002	<0.00007	<0.00007	<0.00005	<0.0005	<0.00005	<0.000104
Fluoranthene	*0.98*	*2.9*	0.0023	0.004	0.0049	0.002	0.0033	0.0026	0.052	0.0081	0.009	0.0044	0.0042	0.000459 J
Fluorene	*0.98*	*2.9*	0.011	0.014	0.022	0.0085	0.018	0.0095	0.16	0.083	0.08	0.057	0.048	0.00213
Naphthalene	*0.49*	*1.5*	0.022	0.029	0.068	0.019	0.032	<0.035	**17**	**11**	**8.6**	**9.9**	**9.7**	<0.00227
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00009	0.00009 J	<0.00005	<0.0005	<0.00005	<0.000104
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00009	<0.00009	<0.00005	<0.0005	<0.00005	<0.0000943
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	0.00053	<0.00008	<0.00005	<0.0005	<0.00005	<0.000575
Phenanthrene	*0.73*	*2.2*	0.0023	0.0041	0.023	0.0052	0.0065	0.0056	0.2	0.084	0.083	0.047	0.045	<0.0000566
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.000035	<0.000035	0.00044	<0.000064	0.15	0.025 J	0.0038	0.079	0.046	<0.0000377
Pyrene	*0.73*	*2.2*	0.0012	0.0018	0.0028	0.001	0.0016	0.0014	0.032	0.0052	0.0061	0.0041	0.0021	0.000223 J
Metals														
Arsenic	*0.01*	*0.01*	0.00128 J	0.00133 J	0.0012 J	0.00123 J	0.00103 J	0.00122 J						

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	C/I Assessment Level	MW-55A 07/30/2013	MW-55A 01/14/2014	MW-55A 07/17/2014	MW-55B 02/02/2012	MW-55B 07/12/2012	MW-55B 01/30/2013	MW-55B 07/30/2013	MW-55B 01/14/2014	MW-55B 07/17/2014	MW-57A 02/05/2009	MW-57A 01/20/2010	MW-57A 06/23/2010 DNAPL
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	**<0.014**	**<0.007**	<0.0028	**<0.01**	<0.005	**<0.007**	**<0.014**	**<0.007**	<0.0028	<0.0005	<0.0025	<0.005
Benzene	*0.005*	*0.005*	**0.145**	**0.0715**	**0.0881**	**0.78**	**0.89**	**0.881**	**0.809**	**0.648**	**0.846**	**0.26**	**0.17**	**0.47**
Chlorobenzene	*0.1*	*0.1*	<0.012	<0.006	<0.0024	<0.01	<0.005	<0.006	<0.012	<0.006	<0.0024	<0.0005	<0.0025	<0.005
Ethylbenzene	*0.7*	*0.7*	0.26	0.2	0.368	0.13	0.21	0.162	0.173	0.134	0.126	0.34	0.32	0.45
Methylene chloride	*0.005*	*0.005*	**0.0894 J**	**<0.0075**	**0.0179 J**	**<0.013**	**<0.01**	**0.0213 J**	**0.0517 J**	**<0.0075**	**0.0155 J**	<0.0005	<0.0025	**0.014 J**
Toluene	*1*	*1*	0.431	0.311	0.409	0.65	0.9	0.76	0.782	0.597	0.591	0.63	0.13	0.86
Vinyl chloride	*0.002*	*0.002*	**<0.011**						**<0.011**				**<0.0025**	
Xylenes (total)	*10*	*10*	0.584	0.486	0.869	0.39	0.68	0.623	0.624	0.481	0.443	0.92	0.6	1.2
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	**<0.00534**	**<0.0529**	**<0.00519**	<0.0005	<0.0005	**<0.0208**	**<0.0534**	**<0.529**	**<0.013**	<0.0001	<0.0001	0.0005 J
2,4-Dimethylphenol	*0.49*	*1.5*	**0.956**	**0.519**	0.463	**35**	**30**	**2.06**	**25.2**	**44.2**	**35.6**	**1.8**	**3**	**2.7 J**
2,4-Dinitrotoluene	*0.0013*	*0.003*	**<0.00631**	**<0.0625**	**<0.00613**	<0.0005	<0.0005	**<0.0245**	**<0.0631**	**<0.625**	**<0.0153**	<0.00009	<0.00009	0.00045 J
2,6-Dinitrotoluene	*0.0013*	*0.003*	**<0.00388**	**<0.0385**	**<0.00377**	<0.0006	<0.0006	**<0.0151**	**<0.0388**	**<0.385**	**<0.00943**	<0.00007	<0.00007	0.00035 J
2-Chloronaphthalene	*2*	*5.8*	<0.00388	<0.0385	<0.00377	<0.0005	<0.0005	<0.0151	<0.0388	<0.385	<0.00943	<0.00012	<0.0001	0.0005 J
2-Methylnaphthalene	*0.098*	*0.29*	**0.468**	**0.463**	**0.486**	**0.28**	**0.64**	**0.757**	**0.868**	**0.901 J**	**0.512**	**0.73**	**0.89**	**3.5 J**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	**<0.0403**	**<0.399**	**<0.0392**	<0.0008	<0.0008	**<0.157**	**<0.403**	**<3.99**	**<0.0979**	<0.00008	<0.00008	0.0004 J
4-Nitrophenol	*0.049*	*0.15*	<0.0272	**<0.269**	<0.0264	<0.0005	<0.0005	**<0.106**	**<0.272**	**<2.69**	**<0.066**	<0.00007	<0.00007	0.00035 J
Acenaphthene	*1.5*	*4.4*	0.207	0.251	0.219	0.19	0.26	0.347	<0.0388	<0.385	0.19	0.24	0.31	**2 J**
Acenaphthylene	*1.5*	*4.4*	<0.00291	<0.0288	<0.00283	0.0057	0.01	<0.0113	<0.0291	<0.288	<0.00708	0.0056	0.0061	0.02 J
Anthracene	*7.3*	*22*	0.0336	0.083 J	0.032	0.016	0.03	0.0492 J	0.0437 J	<0.24	0.027 J	0.044	0.022	0.9 J
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00388	**<0.0385**	<0.00377	0.0011 J	0.0012 J	**<0.0151**	**<0.0388**	**<0.385**	**<0.00943**	**0.011**	0.00051	**0.15 J**
Benzo(a)pyrene	*0.0002*	*0.0002*	**<0.00388**	**<0.0385**	**<0.00377**	**<0.0005**	**<0.0005**	**<0.0151**	**<0.0388**	**<0.385**	**<0.00943**	**0.0045**	0.00012 J	**0.037 J**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	**<0.00631**	**<0.0625**	**<0.00613**	<0.0005	<0.0005	**<0.0245**	**<0.0631**	**<0.625**	**<0.0153**	<0.00009	<0.00009	0.00045 J
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	**<0.018**	**<0.178**	**<0.0175**	<0.001	<0.001	**<0.0698**	**<0.18**	**<1.78**	**<0.0436**	0.002	<0.0004	0.001 J
Chrysene	*0.91*	*2*	<0.00388	<0.0385	<0.00377	<0.0005	0.0009 J	<0.0151	<0.0388	<0.385	<0.00943	0.0094	0.00034	0.14 J
Dibenzofuran	*0.098*	*0.29*	<0.00388	**0.15 J**	**0.14**	**0.15**	**0.23**	<0.0151	**0.309**	**<0.385**	**0.138**	**0.21**	**0.17**	**1.9 J**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00534	<0.0529	<0.00519	<0.0005	<0.0005	<0.0208	<0.0534	<0.529	<0.013	<0.00007	<0.00007	0.00035 J
Fluoranthene	*0.98*	*2.9*	0.0148 J	0.0595 J	0.0175 J	0.0047	0.014	0.0153 J	<0.034	<0.337	0.0119 J	0.054	0.0063	**1.4 J**
Fluorene	*0.98*	*2.9*	0.0996	0.172 J	0.1	0.09	0.15	0.166	0.195 J	<0.337	0.0816	0.083	0.11	**1.6 J**
Naphthalene	*0.49*	*1.5*	**13.8**	**11.7**	**11.6**	**21**	**24**	**2.3**	**21.9**	**24.3**	**13.5**	**16**	**7.4**	**20 J**
Nitrobenzene	*0.049*	*0.15*	<0.00534	**<0.0529**	<0.00519	<0.0005	<0.0005	<0.0208	**<0.0534**	**<0.529**	<0.013	<0.00009	<0.00009	0.00045 J
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00485	<0.0481	<0.00472	<0.0005	<0.0005	<0.0189	<0.0485	**<0.481**	<0.0118	<0.00009	<0.00009	0.00045 J
Pentachlorophenol	*0.001*	*0.001*	**<0.0296**	**<0.293**	**<0.0288**	<0.0005	0.00069 J	**<0.115**	**<0.296**	**<2.93**	**<0.0719**	<0.00008	<0.00008	0.0004 J
Phenanthrene	*0.73*	*2.2*	0.078	0.174 J	0.0893	0.057	0.13	0.13	0.228 J	<0.288	0.1	0.22	0.088	**4 J**
Phenol	*7.3*	*22*	<0.00194	<0.0192	<0.00189	**150**	**130**	0.0999	**103**	**454**	**127**	0.052	0.0099	0.042 J
Pyrene	*0.73*	*2.2*	0.00729 J	<0.0529	0.0101 J	0.0042	0.0076	<0.0208	<0.0534	<0.529	<0.013	0.038	0.0037	**0.84 J**
Metals														
Arsenic	*0.01*	*0.01*												

Notes:
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3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-57A 01/18/2011 DNAPL	MW-57A 07/22/2011 DNAPL	MW-57A 02/02/2012 DNAPL	MW-57A 07/24/2012 DNAPL	MW-57A 02/11/2013 DNAPL	MW-57A 07/31/2013 DNAPL	MW-57A 01/15/2014 DNAPL	MW-57A 07/29/2014 DNAPL	MW-57A 07/10/2019	MW-57A 01/08/2020	MW-58A 02/05/2009	MW-58A 01/20/2010
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.005	**<0.01**	**<0.01**	<0.0005	<0.0014	**<0.007**	<0.0002	<0.00014	<0.0002	<0.0002	<0.0025	<0.0025
Benzene	*0.005*	*0.005*	**0.23**	**0.084**	**0.14**	**0.064**	**0.138**	**0.137**	**0.109**	**0.0412**	0.00057 J	**0.038**	**0.052**	**0.038**
Chlorobenzene	*0.1*	*0.1*	<0.005	<0.01	<0.01	<0.0005	<0.0012	<0.006	0.000465 J	0.000625 J	<0.0003	0.00046 J	<0.0025	0.0093 J
Ethylbenzene	*0.7*	*0.7*	0.29	0.13	0.22	0.17	0.24	0.283	0.198	0.274	0.00085 J	0.015	0.079	0.063
Methylene chloride	*0.005*	*0.005*	<0.005	**<0.013**	**<0.013**	<0.001	0.00367 J	**<0.0075**	<0.00022	<0.00015	<0.001	<0.001	<0.0025	<0.0025
Toluene	*1*	*1*	0.38	0.055	0.23	0.1	0.244	0.308	0.198	0.0355	<0.0002	0.01	0.022 J	0.02 J
Vinyl chloride	*0.002*	*0.002*	**<0.005**	**<0.01**	**<0.01**	0.0016 J	<0.0011	**<0.0055**	0.00154		<0.0002	<0.0002		**<0.0025**
Xylenes (total)	*10*	*10*	0.68	0.19	0.4	0.33	0.591	0.572	0.454	0.455	<0.0003	0.026	0.1	0.04 J
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0001	<0.0005	<0.0005	<0.0005	**<0.075**	**<0.0267**	**<0.0259**	<0.000109	<0.000021	<0.000021	<0.0001	<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*	**2**	**1**	**1.7**	0.2	**1.62**	**0.994**	**7.91 J**	0.0443 J	<0.00059	0.41	0.047	0.097
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00009	<0.0005	<0.0005	<0.0005	**<0.0886**	**<0.0316**	**<0.0307**	<0.000129	<0.000058	<0.000058	<0.00009	<0.00009
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00007	<0.0006	<0.0006	<0.0006	**<0.0545**	**<0.0194**	**<0.0189**	<0.0000792	<0.000042	<0.000042	<0.00007	<0.00007
2-Chloronaphthalene	*2*	*5.8*	<0.0001	<0.0005	<0.0005	<0.0005	<0.0545	<0.0194	<0.0189	<0.0000792	<0.000021	<0.000021	<0.00012	<0.0001
2-Methylnaphthalene	*0.098*	*0.29*	**3.5**	**13**	**1.9**	**3.1**	**13.9**	**1.5**	**8.24**	**0.616**	**0.19**	**0.18**	**0.22**	**0.1**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.0008	<0.0008	<0.0008	**<0.566**	**<0.201**	**<0.196**	<0.000822	<0.00002	<0.00002	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.00007	<0.0005	<0.0005	<0.0005	**<0.382**	**<0.136**	**<0.132**	<0.000554	<0.000047	<0.000047	<0.00007	<0.00007
Acenaphthene	*1.5*	*4.4*	**1.9**	**8.6**	1.2	**1.8**	**8.56**	0.997	**5.69**	0.335	0.099	0.19	0.31	0.18
Acenaphthylene	*1.5*	*4.4*	0.022	0.091	0.014	0.024	<0.0409	<0.0146	<0.0142	0.00779	0.0019	0.0025	0.0012	0.0013
Anthracene	*7.3*	*22*	0.62	**8.4**	0.34	0.55	3.09	0.337	2.02	0.0557	0.0084	0.048	0.0045	0.0098
Benzo(a)anthracene	*0.0091*	*0.02*	**0.12**	**0.45**	**0.047**	**0.074**	**0.605**	**0.0521 J**	**0.361**	0.0072	0.001	0.0036	<0.00007	<0.00007
Benzo(a)pyrene	*0.0002*	*0.0002*	**0.028**	**0.16**	**0.014**	**0.024**	**0.165 J**	**<0.0194**	**0.0962 J**	**0.00385**	**0.00054**	**0.0011**	<0.00008	<0.00008
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00009	<0.0005	<0.0005	<0.0005	**<0.0886**	**<0.0316**	**<0.0307**	**0.0021**	<0.00003	<0.00003	<0.00009	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0002	<0.001	0.0016 J	<0.001	**<0.252**	**<0.0898**	**<0.0873**	<0.000808	0.00021	<0.00037	0.0003	<0.0002
Chrysene	*0.91*	*2*	0.11	0.53	0.046	0.089	0.602	0.0482 J	0.36	0.00625	0.001	0.003	<0.00007	<0.00007
Dibenzofuran	*0.098*	*0.29*	**1.7**	**8.6**	**0.86**	**1.7**	**7.28**	**0.799**	**4.69**	**0.257**	0.076	**0.15**	**0.23**	**0.14**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00007	<0.0005	<0.0005	<0.0005	<0.075	<0.0267	<0.0259	<0.000109	<0.00002	<0.00002	0.0012	<0.00007
Fluoranthene	*0.98*	*2.9*	**0.99**	**6**	0.48	0.74	**4.98**	0.412	**3.19**	0.0561	0.0091	0.038	0.0025	0.0058
Fluorene	*0.98*	*2.9*	**1.4**	**7.9**	0.72	**1.4**	**6.54**	0.713	**4.16**	0.21	0.059	0.13	0.15	0.12
Naphthalene	*0.49*	*1.5*	**18**	**71**	**9.2**	**22**	**60.7**	**13.5**	**56.9**	**7.27**	**0.61**	**1**	**2.4**	**0.67**
Nitrobenzene	*0.049*	*0.15*	<0.00009	<0.0005	<0.0005	<0.0005	**<0.075**	<0.0267	<0.0259	<0.000109	<0.000024	<0.000024	<0.00009	<0.00009
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00009	<0.0005	<0.0005	<0.0005	<0.0682	<0.0243	<0.0236	<0.000099	<0.000025	<0.000025	<0.00009	<0.00009
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.0005	<0.0005	<0.0005	**<0.416**	**<0.148**	**<0.144**	<0.000604	0.00059	<0.000079	<0.00008	<0.00008
Phenanthrene	*0.73*	*2.2*	**3.5**	**13**	**2**	**3**	**17**	**1.61**	**13.1**	0.271	0.059	0.17	0.041	0.049
Phenol	*7.3*	*22*	0.02	<0.0005	0.0089	<0.0005	<0.0273	<0.00971	<0.00943	<0.0000396	<0.00016	0.0049	0.00029	0.0074
Pyrene	*0.73*	*2.2*	0.67	**3.3**	0.34	0.42	**3.12**	0.264	**2.29**	0.0308 J	0.0055	0.025	0.0012	0.0034
Metals														
Arsenic	*0.01*	*0.01*									0.00447	**0.0545**		

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	***C/I Assessment Level***	MW-58A 06/23/2010	MW-58A 01/19/2011	MW-58A 07/27/2011	MW-58A 02/03/2012	MW-58A 07/24/2012	MW-58A 02/11/2013	MW-58A 08/06/2013	MW-58A 01/29/2014	MW-58A 08/28/2014	MW-58A 01/31/2018	MW-58A 03/19/2018	MW-58A 05/16/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0025	<0.0025	<0.005	**<0.01**	<0.0005	<0.00014	<0.00014	<0.00014	<0.0014	<0.0002	<0.0002	<0.001
Benzene	*0.005*	*0.005*	**0.075**	**0.034**	<0.005	**0.12**	**0.16**	**0.0943**	0.0000807 J	<0.00008	**0.259**	0.0048	**0.012**	**0.012**
Chlorobenzene	*0.1*	*0.1*	0.01 J	0.0029 J	<0.005	<0.01	0.0018 J	0.00295	<0.00012	<0.00012	<0.0012	<0.0003	0.00054 J	<0.0015
Ethylbenzene	*0.7*	*0.7*	0.11	0.03	<0.0055	0.085	0.099	0.0648	<0.00011	<0.00011	0.167	0.0066	0.038	0.035
Methylene chloride	*0.005*	*0.005*	<0.0048	<0.0025	**<0.0065**	**<0.013**	<0.001	<0.00015	<0.00015	<0.00015	<0.0015	<0.001	<0.001	<0.005
Toluene	*1*	*1*	0.045	0.0059 J	<0.005	0.043 J	0.041	0.0176	<0.00015	<0.00015	0.135	0.00091 J	0.00063 J	0.0027 J
Vinyl chloride	*0.002*	*0.002*		**<0.0025**	**<0.005**		**0.011**	**0.00281**	<0.00011	<0.00011	**0.0101 J**	<0.0002	<0.0002	<0.001
Xylenes (total)	*10*	*10*	0.15	0.029 J	<0.016	0.23	0.31	0.122	<0.00026	<0.00026	0.352	0.012	0.068	0.015
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	0.0001 J	<0.0001	<0.00005	<0.00005	<0.00005	**<0.01**	<0.00011	<0.000104	**<0.00539**	<0.00021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	**0.61**	**0.68**	<0.00005	**1.1**	**2.4**	**0.95**	<0.00031	<0.000292	**9.19**	0.0015 J	0.00053	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	**<0.0118**	<0.00013	<0.000123	**<0.00637**	<0.00058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	**<0.00727**	<0.00008	<0.0000755	**<0.00392**	<0.00042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00727	<0.00008	<0.0000755	<0.00392	<0.00021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	**0.21**	0.057	<0.00005	0.082	0.0076	**0.243**	<0.00007	<0.000066	**0.373**	0.038	0.045	**0.14**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	0.00008 J	<0.00008	<0.00008	<0.00008	<0.00008	**<0.0755**	<0.00083	<0.000783	**<0.0407**	<0.0002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	0.00007 J	<0.00007	<0.00005	<0.00005	<0.00005	**<0.0509**	<0.00056	<0.000528	<0.0275	<0.00047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	0.28	0.12	<0.00005	0.16	0.057	0.205	<0.00008	<0.0000755	0.221	0.1	0.17	0.19
Acenaphthylene	*1.5*	*4.4*	0.0015	0.00072	<0.00005	0.0011	0.0011	<0.00545	<0.00006	<0.0000566	0.00996 J	0.0012	0.001	0.0017
Anthracene	*7.3*	*22*	0.017 J	0.0051	0.00039	0.0055	0.0069	0.0245 J	<0.00005	<0.0000472	0.0126 J	0.0055	0.008	0.011
Benzo(a)anthracene	*0.0091*	*0.02*	0.00007 J	<0.00007	<0.00005	<0.00005	0.00072	<0.00727	<0.00008	<0.0000755	<0.00392	<0.0005	0.000083 J	0.000083 J
Benzo(a)pyrene	*0.0002*	*0.0002*	0.00008 J	<0.00008	<0.00005	<0.00005	**0.00027**	**<0.00727**	<0.00008	<0.0000755	**<0.00392**	<0.0002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	**0.0321 J**	<0.00013	<0.000123	**<0.00637**	<0.0003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00046 J	0.00035	0.00071	<0.0001	<0.00094	**<0.0336**	<0.00037	<0.000349	**<0.0181**	<0.00037	<0.000037	0.000098 J
Chrysene	*0.91*	*2*	0.00007 J	<0.00007	<0.00005	<0.00005	0.0011	<0.00727	<0.00008	<0.0000755	<0.00392	<0.00021	0.000083 J	0.000082 J
Dibenzofuran	*0.098*	*0.29*	**0.23**	0.079	0.0017	**0.13**	0.0088	**0.128**	<0.00008	<0.0000755	**0.136**	0.036	0.08	0.091
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	0.00007 J	<0.00007	<0.00005	<0.00005	<0.00005	<0.01	<0.00011	<0.000104	<0.00539	<0.0002	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	0.009 J	0.0049	0.001	0.0036	0.0099	0.0102 J	<0.00007	<0.000066	<0.00343	0.0065	0.0074	0.0067
Fluorene	*0.98*	*2.9*	0.16	0.065	<0.00005	0.08	0.027	0.12	<0.00007	<0.000066	0.109	0.084	0.096	0.12
Naphthalene	*0.49*	*1.5*	**1.5**	0.45	<0.00005	**2.2**	0.068	**2.96 J**	0.00036 J	<0.0000755	**4.05**	0.0037	**0.95**	0.32
Nitrobenzene	*0.049*	*0.15*	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.01	<0.00011	<0.000104	<0.00539	<0.00024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	0.00009 J	<0.00009	<0.00005	<0.00005	<0.00005	<0.00909	<0.0001	<0.0000943	<0.0049	<0.00025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	0.00008 J	<0.00008	<0.00005	<0.00005	0.00017 J	**<0.0555**	<0.00061	<0.000575	**<0.0299**	<0.00079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	0.061 J	0.037	<0.00005	0.039	0.036	0.0563	<0.00006	<0.0000566	0.0702	0.024	0.042	0.038
Phenol	*7.3*	*22*	0.0065 J	0.00037	0.000077 J	0.0038	0.00074	<0.00364	<0.00004	<0.0000377	<0.00196	0.00054 J	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	0.0042 J	0.0022	0.00073	0.0022	0.0069	<0.01	<0.00011	<0.000104	<0.00539	0.0031	0.0039	0.0036
Metals														
Arsenic	*0.01*	*0.01*										0.000713 J	0.00106 J	0.00143 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-58A 01/23/2019	MW-58A 07/10/2019	MW-58A 01/08/2020	MW-59A 02/05/2009	MW-59A 01/20/2010	MW-59A 06/24/2010	MW-59A 01/20/2011	MW-59A 07/18/2011	MW-59A 02/06/2012	MW-59A 07/27/2012	MW-59A 01/31/2013	MW-59A 08/01/2013
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014
Benzene	*0.005*	*0.005*	0.0011	0.0049	**0.0053**	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008
Chlorobenzene	*0.1*	*0.1*	0.00046 J	0.0008 J	0.00072 J	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012
Ethylbenzene	*0.7*	*0.7*	0.0032	0.017	0.0098	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015
Toluene	*1*	*1*	0.0014	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015
Vinyl chloride	*0.002*	*0.002*	<0.0002	<0.0002	<0.0002					<0.001	<0.001	<0.0005	<0.00011	<0.00011
Xylenes (total)	*10*	*10*	0.005	0.028	0.028	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.000104	<0.000108
2,4-Dimethylphenol	*0.49*	*1.5*	0.0001 J	<0.00004	<0.00004	<0.00008	<0.00008	<0.00008	<0.00008	0.000066 J	<0.00005	<0.00005	<0.000292	<0.000304
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000123	<0.000127
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000755	<0.0000784
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000784
2-Methylnaphthalene	*0.098*	*0.29*	0.000072 J	0.015	0.08	<0.00007	<0.00007	0.0002	0.0018	<0.00005	<0.00005	<0.00005	<0.000066	<0.0000686
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.000783	<0.000814
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000528	<0.000549
Acenaphthene	*1.5*	*4.4*	0.023	0.11	0.27	<0.00009	<0.00009	0.0003	0.00079	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000784
Acenaphthylene	*1.5*	*4.4*	0.00038	0.00087	0.0015	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000566	<0.0000588
Anthracene	*7.3*	*22*	0.002	0.062	0.018	<0.00007	<0.00007	0.00026	0.0004	<0.00005	<0.00005	<0.00005	<0.0000472	0.0000519 J
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	0.00082	0.000091 J	<0.00007	<0.00007	<0.00007	0.00015 J	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000784
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000784
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000123	<0.000127
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00007	<0.000037	<0.00011	0.0006	<0.00065	<0.00023	<0.00031	<0.00054	0.00015 J	<0.0001	<0.000349	<0.000363
Chrysene	*0.91*	*2*	0.00003 J	0.00084	0.000071 J	<0.00007	<0.00007	<0.00007	0.00014 J	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000784
Dibenzofuran	*0.098*	*0.29*	0.013	0.059	**0.13**	<0.00008	<0.00008	0.0007	0.00099	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000784
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	0.000032 J	<0.00002	<0.00002	0.00077	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.000075	<0.000104	0.000169 J
Fluoranthene	*0.98*	*2.9*	0.002	0.02	0.0099	<0.00007	<0.00007	0.0005	0.0012	<0.00012	<0.00005	<0.00005	<0.000066	<0.0000686
Fluorene	*0.98*	*2.9*	0.015	0.15	0.19	<0.00007	<0.00007	0.00045	0.00084	<0.00005	<0.00005	<0.00005	<0.000066	<0.0000686
Naphthalene	*0.49*	*1.5*	0.00042	0.46	**1.2**	<0.0001	<0.0001	0.00047	0.0066	<0.00005	<0.00005	0.000051 J	<0.0000755	<0.0000784
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000104	<0.000108
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000943	<0.000098
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000575	<0.000598
Phenanthrene	*0.73*	*2.2*	0.0038	0.036	0.062	<0.00007	<0.00007	0.0017	0.0024	<0.00018	<0.00005	<0.00005	<0.0000566	0.000075 J
Phenol	*7.3*	*22*	0.000074 J	<0.000035	<0.000035	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.000065 J	<0.0000377	<0.0000392
Pyrene	*0.73*	*2.2*	0.00088	0.0099	0.005	<0.00007	<0.00007	0.00029	0.00059	<0.00005	<0.00005	<0.00005	<0.000104	<0.000108
Metals														
Arsenic	*0.01*	*0.01*	0.00232	0.00748	0.000906 J									

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-59A 01/16/2014	MW-59A 07/30/2014	MW-59A 01/29/2018	MW-59A 03/20/2018	MW-59A 05/24/2018	MW-59A 01/23/2019	MW-59A 07/17/2019	MW-59A 01/16/2020	MW-59D 02/05/2009	MW-59D 02/05/2009 Duplicate	MW-59D 01/20/2010	MW-59D 01/20/2010 Duplicate
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005
Benzene	*0.005*	*0.005*	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005
Chlorobenzene	*0.1*	*0.1*	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	*0.7*	*0.7*	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005
Methylene chloride	*0.005*	*0.005*	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0011 J	0.0014 J	<0.0005	<0.0005
Toluene	*1*	*1*	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.00064 J	0.0007 J	<0.0005	<0.0005
Vinyl chloride	*0.002*	*0.002*	<0.00018	<0.00011	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002				
Xylenes (total)	*10*	*10*	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.001	<0.001	<0.001	<0.001
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000104	<0.000109	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0001	<0.0001	<0.0001	<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*	<0.000292	<0.000307	<0.00004	<0.000041	<0.00004	<0.00004	<0.00004	<0.00004	<0.00008	<0.00008	<0.00008	<0.00008
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000123	<0.000129	<0.000058	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058	<0.00009	<0.00009	<0.00009	<0.00009
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0000755	<0.0000792	<0.000042	<0.000043	<0.000042	<0.000042	<0.000042	<0.000042	<0.00007	<0.00007	<0.00007	<0.00007
2-Chloronaphthalene	*2*	*5.8*	<0.0000755	<0.0000792	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00012	<0.00012	<0.0001	<0.0001
2-Methylnaphthalene	*0.098*	*0.29*	<0.0000902	<0.0000693	0.00011	<0.000019	<0.000019	<0.000019	0.000036 J	<0.00016	0.00015 J	0.0003	<0.00007	<0.00007
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.000783	<0.000822	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000528	<0.000554	<0.000047	<0.000048	<0.000047	<0.000047	<0.000047	<0.000047	<0.00007	<0.00007	<0.00007	<0.00007
Acenaphthene	*1.5*	*4.4*	<0.0000831	<0.0000792	0.0001	<0.000028	<0.000027	<0.000027	<0.000027	<0.00029	0.00015 J	0.00014 J	<0.00009	<0.00009
Acenaphthylene	*1.5*	*4.4*	<0.0000566	<0.0000594	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.00006	<0.00006	<0.00007	<0.00007
Anthracene	*7.3*	*22*	0.000119 J	<0.0000495	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000027	<0.00007	<0.00007	<0.00007	<0.00007
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0000755	<0.0000792	<0.00005	<0.000051	<0.00005	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	<0.00007	<0.00007
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0000755	<0.0000792	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.000123	<0.000129	<0.00003	<0.000031	<0.00003	<0.00003	<0.00003	<0.00003	<0.00009	<0.00009	<0.00009	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000349	<0.000366	0.000094 J	<0.000038	<0.000037	<0.000037	<0.00005	<0.000037	0.006	0.0055	<0.00023	<0.00087
Chrysene	*0.91*	*2*	<0.0000755	<0.0000792	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00007	<0.00007	<0.00007	<0.00007
Dibenzofuran	*0.098*	*0.29*	<0.000136	<0.0000792	0.00017	<0.00002	<0.00002	<0.00002	<0.00002	<0.00016	0.00014 J	<0.00008	<0.00008	<0.00008
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	0.000178 J	<0.000109	<0.00002	<0.00002	<0.00002	<0.00002	0.000064 J	<0.00002	0.0029	0.0023	<0.00007	<0.00007
Fluoranthene	*0.98*	*2.9*	0.000199 J	<0.0000693	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.000032	<0.00007	<0.00007	<0.00007	<0.00007
Fluorene	*0.98*	*2.9*	0.000176 J	<0.0000693	0.00011	<0.000031	<0.00003	<0.00003	<0.00003	<0.00011	0.00013 J	0.00012 J	<0.00007	<0.00007
Naphthalene	*0.49*	*1.5*	<0.000381	0.000219 J	0.00068	<0.00002	<0.00002	<0.00002	<0.00012	<0.0012	0.0019	0.0029	<0.0001	<0.0001
Nitrobenzene	*0.049*	*0.15*	<0.000104	<0.000109	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00009	<0.00009	<0.00009	<0.00009
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.0000943	<0.000099	<0.000025	<0.000026	<0.000025	<0.000025	<0.000025	<0.000025	<0.00009	<0.00009	<0.00009	<0.00009
Pentachlorophenol	*0.001*	*0.001*	<0.000575	<0.000604	<0.000079	<0.000081	<0.000079	<0.000079	<0.000079	<0.000079	<0.00008	<0.00008	<0.00008	<0.00008
Phenanthrene	*0.73*	*2.2*	<0.000587	<0.0000594	0.00018	<0.000021	<0.000021	<0.000021	<0.000021	<0.00012	0.0002	0.00025	<0.00007	<0.00007
Phenol	*7.3*	*22*	<0.0000377	<0.0000396	<0.000035	<0.000036	0.000089 J	<0.000035	0.000058 J	<0.000035	<0.00007	<0.00007	<0.00007	<0.00007
Pyrene	*0.73*	*2.2*	0.00012 J	<0.000109	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000023	<0.00007	<0.00007	<0.00007	<0.00007
Metals														
Arsenic	*0.01*	*0.01*			0.00181 J	0.00131 J	**0.0101**	0.00243	0.00455	0.00368				

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-59D 07/01/2010	MW-59D 07/01/2010 Duplicate	MW-59D 01/20/2011	MW-59D 07/27/2011	MW-59D 07/27/2011 Duplicate	MW-59D 02/14/2012	MW-59D 02/14/2012 Duplicate	MW-59D 07/23/2012	MW-59D 02/11/2013	MW-59D 02/11/2013 Duplicate	MW-59D 08/05/2013	MW-59D 08/05/2013 Duplicate
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.00014	<0.00014
Benzene	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.00008	<0.00008
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00012	<0.00012
Ethylbenzene	*0.7*	*0.7*	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00011	<0.00011
Methylene chloride	*0.005*	*0.005*	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00015	<0.00015
Toluene	*1*	*1*	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00015	<0.00015
Vinyl chloride	*0.002*	*0.002*							<0.001					
Xylenes (total)	*10*	*10*	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00026	<0.00026
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000105	<0.000105	<0.00011	<0.00011
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000295	<0.000295	<0.00031	<0.00031
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000124	<0.000124	<0.00013	<0.00013
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.0000762	<0.0000762	<0.00008	<0.00008
2-Chloronaphthalene	*2*	*5.8*	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000762	<0.00008	<0.00008
2-Methylnaphthalene	*0.098*	*0.29*	<0.00007	<0.00007	0.00046	<0.00005	<0.00005	<0.00005	<0.00005	0.000071 J	<0.0000667	<0.0000667	0.00016 J	0.00007 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00079	<0.00079	<0.00083	<0.00083
4-Nitrophenol	*0.049*	*0.15*	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000533	<0.000533	<0.00056	<0.00056
Acenaphthene	*1.5*	*4.4*	<0.00009	<0.00009	0.00095	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000762	<0.00008	<0.00008
Acenaphthylene	*1.5*	*4.4*	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000571	<0.0000571	<0.00006	<0.00006
Anthracene	*7.3*	*22*	<0.00007	<0.00007	0.00069	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000476	<0.0000476	<0.00005	<0.00005
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00007	<0.00007	0.00027	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000762	<0.00008	<0.00008
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000762	<0.00008	<0.00008
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000124	<0.000124	<0.00013	<0.00013
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00031	<0.00049	<0.0015	0.0011	0.0018	<0.00094	<0.00068	<0.00014	<0.000352	0.000538	0.000805 J	0.000812 J
Chrysene	*0.91*	*2*	<0.00007	<0.00007	0.00024	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000762	<0.00008	<0.00008
Dibenzofuran	*0.098*	*0.29*	<0.00008	<0.00008	0.0011	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000762	<0.00008	<0.00008
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000105	<0.000105	<0.00011	<0.00011
Fluoranthene	*0.98*	*2.9*	<0.00007	<0.00007	0.0018	<0.00005	<0.00005	<0.00005	0.000075 J	<0.00005	<0.0000667	<0.0000667	<0.00007	<0.00007
Fluorene	*0.98*	*2.9*	<0.00007	<0.00007	0.00079	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000667	<0.0000667	<0.00007	<0.00007
Naphthalene	*0.49*	*1.5*	<0.00022	<0.0001	0.0034	<0.00005	<0.00005	<0.00005	<0.000064	<0.00036	<0.0000762	<0.0000762	0.00226 J	0.00008 J
Nitrobenzene	*0.049*	*0.15*	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000105	<0.000105	<0.00011	<0.00011
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000952	<0.0000952	<0.0001	<0.0001
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000581	<0.000581	<0.00061	<0.00061
Phenanthrene	*0.73*	*2.2*	<0.00007	<0.00007	0.0037	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000571	<0.0000571	<0.00006	<0.00006
Phenol	*7.3*	*22*	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00014 J	0.000087 J	<0.00005	<0.0000381	<0.0000381	<0.00004	<0.00004
Pyrene	*0.73*	*2.2*	<0.00007	<0.00007	0.0011	<0.00005	<0.00005	<0.00005	0.000054 J	<0.00005	<0.000105	<0.000105	<0.00011	<0.00011
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-59D 01/23/2014	MW-59D 01/23/2014 Duplicate	MW-59D 08/28/2014	MW-59D 08/28/2014 Duplicate	MW-59D 02/07/2018	MW-59D 02/07/2018 Duplicate	MW-59D 03/26/2018	MW-59D 03/26/2018 Duplicate	MW-59D 06/01/2018	MW-59D 06/01/2018 Duplicate	MW-59D 01/24/2019	MW-59D 01/24/2019 Duplicate
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.00014	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	0.000135 J	0.000114 J	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.00018	<0.00018	<0.00012	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.00019	<0.00019	<0.00011	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.00022	<0.00022	<0.00015	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.00017	<0.00017	0.000258 J	0.000249 J	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.00058	<0.00058	<0.00026	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000104	<0.000104	<0.00011	<0.00011	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.000292	<0.000292	<0.00031	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000123	<0.000123	<0.00013	<0.00013	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0000755	<0.0000755	<0.00008	<0.00008	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.0000755	<0.0000755	<0.00008	<0.00008	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	<0.000066	<0.000066	0.000334 J	0.00007 J	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	0.000083 J	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.000783	<0.000783	<0.00083	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.000528	<0.000528	<0.00056	<0.00056	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	<0.0000755	<0.0000755	<0.00008	<0.00008	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	0.00012	<0.000027	<0.000027
Acenaphthylene	*1.5*	*4.4*	<0.0000566	<0.0000566	<0.00006	<0.00006	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	*7.3*	*22*	<0.000425	<0.0000472	<0.00005	<0.00005	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	0.000024 J	<0.000014	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0000755	<0.0000755	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0000755	<0.0000755	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.000123	<0.000123	<0.00013	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.000425 J	0.000364 J	0.00306 J	0.00598 J	0.000063 J	0.000054 J	<0.000037	0.000095 J	0.00024	0.00026	<0.000037	<0.000037
Chrysene	*0.91*	*2*	<0.0000755	<0.0000755	<0.00008	<0.00008	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	<0.0000755	<0.0000755	<0.00008	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002	0.000092 J	0.00024 J	<0.00002	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.000825	<0.000827	<0.00011	<0.00011	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	0.0000789 J	0.0000746 J	0.00018 J	0.00007 J	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Fluorene	*0.98*	*2.9*	<0.000066	0.0000688 J	<0.00007	<0.00007	<0.00003	<0.00003	<0.00003	<0.00003	0.000064 J	0.00017 J	<0.00003	<0.00003
Naphthalene	*0.49*	*1.5*	<0.000727	<0.000796	0.00576 J	0.00008 J	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.0002	<0.00002	<0.00002
Nitrobenzene	*0.049*	*0.15*	<0.000104	<0.000104	<0.00011	<0.00011	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.0000943	<0.0000943	<0.0001	<0.0001	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.000575	<0.000575	<0.00061	<0.00061	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	<0.000455	<0.000464	0.00018 J	0.0000608 J	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.00018	<0.000021	<0.000021
Phenol	*7.3*	*22*	<0.0000377	<0.0000377	<0.00004	<0.00004	<0.000035	<0.000035	<0.000035	<0.000035	0.00063 J	0.00097 J	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	<0.000104	<0.000104	0.000131 J	<0.00011	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019
Metals														
Arsenic	*0.01*	*0.01*					<0.0004	<0.0004	<0.0004	<0.0004	0.00111 J	0.00101 J	0.000765 J	0.000637 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-59D 07/31/2019	MW-59D 07/31/2019 Duplicate	MW-59D 01/16/2020	MW-59D 01/16/2020 Duplicate	MW-60A 02/04/2009	MW-60A 01/20/2010	MW-60A 06/24/2010	MW-60A 01/19/2011	MW-60A 07/18/2011	MW-60A 02/07/2012	MW-60A 07/23/2012	MW-60A 02/14/2013
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	
Vinyl chloride	*0.002*	*0.002*								<0.0005	<0.001	<0.001	<0.0005	
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00038
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00004	<0.00004	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	0.001	<0.00018
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	<0.000058	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00032
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.000042	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00029
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00019
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	<0.000019	<0.000019	0.00028	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.0021	0.000146 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00016
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00033
Acenaphthene	*1.5*	*4.4*	<0.000027	<0.000027	<0.000036	<0.000027	0.00045	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	0.0012	<0.00016
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.000015	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00016
Anthracene	*7.3*	*22*	<0.000014	<0.000014	<0.000014	<0.000014	0.00034	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00027	<0.00044
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00025
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00013
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00019
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	<0.000037	<0.000037	<0.000037	0.002	<0.0025	<0.0002	0.0031	<0.00017	0.00023	<0.0001	<0.00059
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	<0.000021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00024
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00002	<0.000028	<0.00002	0.00035	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	0.00099	<0.00016
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.00002	<0.00002	0.0023	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.000076	<0.00187
Fluoranthene	*0.98*	*2.9*	<0.00001	<0.00001	<0.00001	<0.00001	0.00039	<0.00007	0.0003	0.00029	<0.00005	0.00028	0.0003	<0.00031
Fluorene	*0.98*	*2.9*	<0.00003	<0.00003	<0.000031	<0.00003	0.00044	<0.00007	<0.00007	<0.00007	<0.00005	0.00016 J	0.00089	<0.00012
Naphthalene	*0.49*	*1.5*	<0.00002	<0.00002	<0.00013	<0.00002	0.0095	<0.0001	0.0015	<0.0001	<0.00005	<0.00005	0.025	0.00043 J
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0002
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00033
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	<0.000079	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00096
Phenanthrene	*0.73*	*2.2*	<0.000021	<0.000021	<0.000043	<0.000021	0.0011	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.0015	<0.00029
Phenol	*7.3*	*22*	0.00011 J	<0.000035	<0.000035	<0.000035	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	0.000275 J
Pyrene	*0.73*	*2.2*	<0.000019	<0.000019	<0.000019	<0.000019	0.00029	<0.00007	0.0002 J	0.00079	<0.00005	0.0013	0.00033	<0.00033
Metals														
Arsenic	*0.01*	*0.01*	<0.0004	0.000502 J	0.000508 J	0.000478 J								

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-60A 04/02/2013	MW-60A 08/02/2013	MW-60A 01/15/2014	MW-60A 07/16/2014	MW-60A 02/08/2018	MW-60A 03/20/2018	MW-60A 05/25/2018	MW-60A 01/11/2019	MW-60A 07/17/2019	MW-60AR 03/20/2020	MW-61A 02/03/2009	MW-61A 01/20/2010
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005
Benzene	*0.005*	*0.005*	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005
Chlorobenzene	*0.1*	*0.1*	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0005	<0.0005
Ethylbenzene	*0.7*	*0.7*	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0005	<0.0005
Methylene chloride	*0.005*	*0.005*	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
Toluene	*1*	*1*	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005
Vinyl chloride	*0.002*	*0.002*	<0.00011	<0.00011	<0.00018	<0.00011	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
Xylenes (total)	*10*	*10*	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.001	<0.001
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000106	<0.000105	<0.000104	<0.000104	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0001	<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*	<0.000298	<0.000295	<0.000292	<0.000292	<0.00004	<0.000041	<0.00004	<0.00004	<0.00004	<0.00004	<0.00008	<0.00008
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000125	<0.000124	<0.000123	<0.000123	<0.000058	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058	<0.00009	<0.00009
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0000769	<0.0000762	<0.0000755	<0.0000755	<0.000042	<0.000043	<0.000042	<0.000042	<0.000042	<0.000042	<0.00007	<0.00007
2-Chloronaphthalene	*2*	*5.8*	<0.0000769	<0.0000762	<0.0000755	<0.0000755	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00012	<0.0001
2-Methylnaphthalene	*0.098*	*0.29*	<0.0000673	<0.0000667	0.000143 J	0.000516	<0.000019	<0.000019	<0.000019	<0.000019	0.000072 J	<0.000019	0.00041	<0.00007
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.000798	<0.00079	<0.000783	<0.000783	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000538	<0.000533	<0.000528	<0.000528	<0.000047	<0.000048	<0.000047	<0.000047	<0.000047	<0.000047	<0.00007	<0.00007
Acenaphthene	*1.5*	*4.4*	<0.0000769	<0.0000762	0.000157 J	0.000167 J	<0.000027	<0.000028	<0.000027	<0.000027	<0.000027	<0.000027	0.00017 J	<0.00009
Acenaphthylene	*1.5*	*4.4*	<0.0000577	<0.0000571	<0.0000566	<0.0000566	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.00006	<0.00007
Anthracene	*7.3*	*22*	<0.0000481	0.0000883 J	0.000158 J	<0.0000472	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.00007	<0.00007
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0000769	<0.0000762	<0.0000755	<0.0000755	<0.00005	<0.000051	<0.00005	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0000769	<0.0000762	<0.0000755	<0.0000755	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.000125	<0.000124	<0.000123	<0.000123	<0.00003	<0.000031	<0.00003	<0.00003	<0.00003	<0.00003	<0.00009	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000356	<0.000352	<0.000349	<0.000349	<0.000037	<0.000038	0.000076 J	<0.000092	<0.00055	0.000063 J	0.0017	<0.002
Chrysene	*0.91*	*2*	<0.0000769	<0.0000762	<0.0000755	<0.0000755	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00007	<0.00007
Dibenzofuran	*0.098*	*0.29*	<0.0000769	<0.0000762	0.000145 J	0.000116 J	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.000106	<0.000105	<0.000104	<0.000104	<0.00002	<0.00002	<0.00002	0.000064 J	0.000075 J	<0.00002	0.011	<0.00007
Fluoranthene	*0.98*	*2.9*	<0.0000673	<0.0000667	0.0000894 J	<0.000066	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00007	<0.00007
Fluorene	*0.98*	*2.9*	<0.0000673	<0.0000667	0.000162 J	<0.000066	<0.00003	0.000054 J	<0.00003	<0.00003	<0.00003	<0.00003	0.00011 J	<0.00007
Naphthalene	*0.49*	*1.5*	<0.0000769	<0.0000762	0.000668 J	0.00653	<0.00002	<0.00002	<0.00002	<0.00002	<0.00013	<0.00002	0.0066	<0.0001
Nitrobenzene	*0.049*	*0.15*	<0.000106	<0.000105	<0.000104	<0.000104	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00009	<0.00009
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.0000962	<0.0000952	<0.0000943	<0.0000943	<0.000025	<0.000026	<0.000025	<0.000025	<0.000025	<0.000025	<0.00009	<0.00009
Pentachlorophenol	*0.001*	*0.001*	<0.000587	<0.000581	<0.000575	<0.000575	<0.000079	<0.000081	<0.000079	<0.000079	<0.000079	<0.000079	<0.00008	<0.00008
Phenanthrene	*0.73*	*2.2*	<0.0000577	<0.0000571	0.000345 J	<0.0000566	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.00021	<0.00007
Phenol	*7.3*	*22*	<0.0000385	<0.0000381	<0.0000377	<0.0000377	<0.000035	<0.000036	<0.000035	<0.000035	<0.000035	<0.000035	<0.00007	<0.00007
Pyrene	*0.73*	*2.2*	<0.000106	<0.000105	<0.000104	<0.000104	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.00007	<0.00007
Metals														
Arsenic	*0.01*	*0.01*					0.000649 J	0.000706 J	0.000636 J	0.00453	0.00044 J	0.00189 J		

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-61A 07/01/2010	MW-61A 01/27/2011	MW-61A 07/21/2011	MW-61A 02/07/2012	MW-61A 07/27/2012	MW-61A 04/02/2013	MW-61A 08/01/2013	MW-61A 01/23/2014	MW-61A 08/28/2014	MW-61A 02/08/2018	MW-61A 03/20/2018	MW-61A 05/25/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*			<0.001	<0.001	<0.0005	<0.00011	<0.00011	<0.00018	<0.00011	<0.0002	<0.0002	<0.0002
Xylenes (total)	*10*	*10*	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.000106	<0.000105	<0.000104	<0.00011	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000298	<0.000295	<0.000292	<0.00031	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000125	<0.000124	<0.000123	<0.00013	<0.000058	<0.000059	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000769	<0.0000762	<0.0000755	<0.00008	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000769	<0.0000762	<0.0000755	<0.00008	<0.000021	<0.000021	0.000021 J
2-Methylnaphthalene	*0.098*	*0.29*	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000673	<0.0000667	<0.000066	<0.00007	<0.000019	<0.000019	0.000019 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.000798	<0.00079	<0.000783	<0.00083	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000538	<0.000533	<0.000528	<0.00056	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000769	<0.0000762	<0.0000755	<0.00008	<0.000027	<0.000027	0.000027 J
Acenaphthylene	*1.5*	*4.4*	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000577	<0.0000571	<0.0000566	<0.00006	<0.000015	<0.000015	0.000015 J
Anthracene	*7.3*	*22*	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000481	<0.0000476	<0.000434	<0.00005	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000769	<0.0000762	<0.0000755	<0.00008	<0.00005	<0.000051	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000769	<0.0000762	<0.0000755	<0.00008	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000125	<0.000124	<0.000123	<0.00013	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0021	<0.0002	0.00023	0.00038	0.00027	<0.000356	<0.000352	0.00163 J	0.000536 J	<0.000037	<0.000037	0.000054 J
Chrysene	*0.91*	*2*	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000769	<0.0000762	<0.0000755	<0.00008	<0.000021	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000769	<0.0000762	<0.0000755	<0.00008	<0.00002	<0.00002	0.00002 J
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000106	<0.000105	<0.000827	<0.00011	<0.00002	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000673	<0.0000667	0.0000806 J	<0.00007	<0.00001	<0.00001	<0.00001
Fluorene	*0.98*	*2.9*	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000673	<0.0000667	<0.000066	<0.00007	<0.00003	<0.00003	0.00003 J
Naphthalene	*0.49*	*1.5*	<0.00018	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000769	<0.00012	<0.000668	<0.00008	<0.00002	<0.00002	<0.00002
Nitrobenzene	*0.049*	*0.15*	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000106	<0.000105	<0.000104	<0.00011	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000962	<0.0000952	<0.0000943	<0.0001	<0.000025	<0.000025	0.00015 J
Pentachlorophenol	*0.001*	*0.001*	<0.00032	<0.00008	<0.00005	<0.00005	<0.00005	<0.000587	<0.000581	<0.000575	<0.00061	<0.000079	<0.00008	<0.000079
Phenanthrene	*0.73*	*2.2*	<0.00007	<0.00007	<0.00005	<0.00005	0.00016 J	<0.0000577	0.0000586 J	<0.00046	<0.00006	<0.000021	<0.000021	<0.000021
Phenol	*7.3*	*22*	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000385	<0.0000381	<0.0000377	<0.00004	<0.000035	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000106	<0.000105	<0.000104	<0.00011	<0.000019	<0.000019	<0.000019
Metals														
Arsenic	*0.01*	*0.01*										0.000743 J	0.00116 J	0.00172 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-61A 01/23/2019	MW-61A 07/17/2019	MW-61A 01/16/2020	MW-62B 02/04/2009	MW-62B 01/21/2010	MW-62B 07/14/2010	MW-62B 01/27/2011	MW-62B 07/27/2011	MW-62B 08/25/2011	MW-62B 02/08/2012	MW-62B 07/26/2012	MW-62B 02/11/2013
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	<0.0005	<0.00014
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0043 J		<0.001	0.002 J	<0.00008
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.001		<0.001	<0.0005	<0.00012
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	0.00071 J	<0.0005	<0.0005	<0.0005	0.041		<0.0011	0.0021 J	<0.00011
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013		<0.0013	<0.001	<0.00015
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	0.0095		<0.001	0.0012 J	<0.00015
Vinyl chloride	*0.002*	*0.002*	<0.0002	<0.0002	<0.0002									
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.001	<0.001	<0.001	<0.001	0.025		<0.0031	0.0053 J	<0.00026
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005		<0.00005	<0.00005	<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00004	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005		<0.00005	<0.00005	<0.000282
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005		<0.00005	<0.00005	<0.000118
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006		<0.00006	<0.00006	<0.0000727
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005		<0.00005	<0.00005	<0.0000727
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	<0.000019	0.00012 J	0.0016	0.00064	<0.00007	<0.00005		<0.00005	<0.00006	<0.000174
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008		<0.00008	<0.00008	<0.000755
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005		<0.00005	<0.00005	<0.000509
Acenaphthene	*1.5*	*4.4*	<0.000027	<0.000027	<0.000052	0.0078	0.039	0.00041	<0.00009	0.21		0.026	0.085	0.000242 J
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.00006	0.00066	<0.00007	<0.00007	0.0026		0.0013	0.00084	0.000112 J
Anthracene	*7.3*	*22*	<0.000014	<0.000014	<0.000014	0.00024	0.0011	<0.00007	<0.00007	0.013		<0.00005	0.0032	0.000723
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005		<0.00005	<0.00005	<0.0000727
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005	<0.0000727
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005		<0.00005	<0.00005	<0.000118
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	<0.00037	0.000081 J	0.00041	<0.00098	0.0016	0.00022	0.00042		<0.00029	0.00013 J	<0.000336
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005		<0.00005	<0.00005	<0.0000727
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00002	<0.00002	0.0024	0.013	0.00034	<0.00008	**0.15**	**0.23**	0.00012 J	0.038	0.000174 J
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	0.000056 J	<0.00002	0.00065	<0.00007	<0.00007	<0.00007	<0.00005		<0.00005	<0.000078	<0.0001
Fluoranthene	*0.98*	*2.9*	<0.00001	<0.00001	<0.00006	0.00012 J	0.0011	<0.00007	0.00014 J	0.0079		0.00053	0.004	0.00033 J
Fluorene	*0.98*	*2.9*	<0.00003	<0.00003	<0.00003	0.0012	0.015	0.00016 J	<0.00007	0.058		0.0002	0.0087 J	<0.0000636
Naphthalene	*0.49*	*1.5*	<0.00002	<0.00002	<0.00021	0.0027	0.00028	0.0096	<0.0001	0.035		<0.00021	0.0056	<0.00129
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005		<0.00005	<0.00005	<0.0001
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005		<0.00005	<0.00005	<0.0000909
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005		<0.00005	<0.00005	<0.000555
Phenanthrene	*0.73*	*2.2*	<0.000021	<0.000021	<0.0001	0.00087	0.0025	0.00025	<0.00007	0.035		0.00014 J	0.0026	<0.000472
Phenol	*7.3*	*22*	<0.000035	0.00011 J	<0.000035	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005		0.000053 J	<0.00005	<0.0000364
Pyrene	*0.73*	*2.2*	<0.000019	<0.000019	<0.000059	<0.00007	0.00047	<0.00007	0.000077 J	0.0033		0.00037	0.0021	0.000387 J
Metals														
Arsenic	*0.01*	*0.01*	0.00069 J	0.00117 J	0.00107 J									

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-62B 08/02/2013	MW-62B 01/29/2014	MW-62B 07/29/2014	MW-62B 01/24/2018	MW-62B 03/20/2018	MW-62B 05/24/2018	MW-62B 01/23/2019	MW-62B 07/16/2019	MW-62B 01/27/2020	MW-64A 02/04/2009	MW-64A 01/21/2010	MW-64A 07/14/2010
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00014	<0.00014	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005
Benzene	*0.005*	*0.005*	<0.00008	<0.00008	<0.00008	<0.0002	<0.0002	0.0021	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005
Chlorobenzene	*0.1*	*0.1*	<0.00012	<0.00012	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0005	<0.0005	<0.0005
Ethylbenzene	*0.7*	*0.7*	<0.00011	<0.00011	<0.00011	<0.0003	<0.0003	0.013	<0.0003	<0.0003	<0.0003	<0.0005	<0.0005	<0.0005
Methylene chloride	*0.005*	*0.005*	<0.00015	<0.00015	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005
Toluene	*1*	*1*	<0.00015	<0.00015	<0.00015	<0.0002	<0.0002	0.003	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.00026	<0.00026	<0.00026	<0.0003	<0.0003	0.014	<0.0003	<0.0003	<0.0003	<0.001	<0.001	<0.001
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000105	<0.000104	<0.000109	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0001	<0.0001	<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*	<0.000295	<0.000292	<0.000307	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00008	<0.00008	<0.00008
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000124	<0.000123	<0.000129	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.00009	<0.00009	<0.00009
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0000762	<0.0000755	<0.0000792	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.00007	<0.00007	<0.00007
2-Chloronaphthalene	*2*	*5.8*	<0.0000762	<0.0000755	<0.0000792	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.00016 J	<0.00012	<0.0001	<0.0001
2-Methylnaphthalene	*0.098*	*0.29*	<0.0000667	<0.000066	<0.0000693	<0.000019	<0.000019	0.00011	<0.000019	0.000096 J	0.00011	0.00014 J	<0.00007	<0.00007
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00079	<0.000783	<0.000822	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.000533	<0.000528	<0.000554	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00007	<0.00007	<0.00007
Acenaphthene	*1.5*	*4.4*	<0.0000762	<0.0000755	0.000235 J	0.00006 J	0.023	0.11	<0.000027	0.000099 J	0.04	0.00029	<0.00009	<0.00009
Acenaphthylene	*1.5*	*4.4*	<0.0000571	<0.0000566	<0.0000594	0.000061 J	0.00063	0.0013	<0.000015	<0.000015	0.00029	<0.00006	<0.00007	<0.00007
Anthracene	*7.3*	*22*	<0.0000476	<0.0000472	0.0000699 J	0.00036	0.00051	0.0044	<0.000014	<0.000014	0.00096	0.00016 J	<0.00007	<0.00007
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0000762	<0.0000755	<0.0000792	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	<0.00007
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0000762	<0.0000755	<0.0000792	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.000124	<0.000123	<0.000129	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00009	<0.00009	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000352	<0.000349	<0.000366	0.00026	0.00018 J	0.00013 J	<0.000037	<0.000037	0.000095 J	0.0004	<0.0016	0.002
Chrysene	*0.91*	*2*	<0.0000762	<0.0000755	<0.0000792	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.000027 J	<0.00007	<0.00007	<0.00007
Dibenzofuran	*0.098*	*0.29*	<0.0000762	<0.0000755	0.0000916 J	<0.00002	0.0031	0.048	<0.00002	0.000048 J	0.0042	0.00012 J	<0.00008	<0.00008
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	0.000107 J	<0.000104	<0.000109	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00014 J	0.02	<0.00007	<0.00007
Fluoranthene	*0.98*	*2.9*	<0.0000667	<0.000066	<0.0000693	0.00052	0.0015	0.0041	<0.00001	0.000017 J	0.002	0.00076	<0.00007	<0.00007
Fluorene	*0.98*	*2.9*	<0.0000667	<0.000066	0.000126 J	0.00015	0.0047	0.034	<0.00003	0.000036 J	0.011	0.00018 J	<0.00007	<0.00007
Naphthalene	*0.49*	*1.5*	<0.0000762	<0.0000755	<0.0000792	<0.00002	<0.00002	0.038	<0.00002	0.00028	0.001	0.00092	<0.0001	<0.0001
Nitrobenzene	*0.049*	*0.15*	<0.000105	<0.000104	<0.000109	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00009	<0.00009	<0.00009
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.0000952	<0.0000943	<0.000099	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00009	<0.00009	<0.00009
Pentachlorophenol	*0.001*	*0.001*	<0.000581	<0.000575	<0.000604	<0.000079	0.00033	<0.000079	<0.000079	<0.000079	<0.000079	<0.00008	<0.00008	<0.00008
Phenanthrene	*0.73*	*2.2*	<0.0000571	<0.0000566	<0.000144	<0.000021	0.00023	0.0083	<0.000021	0.000021 J	0.00087	0.00055	<0.00007	<0.00007
Phenol	*7.3*	*22*	<0.0000381	<0.0000377	<0.0000396	<0.000035	<0.000035	<0.000035	<0.000035	0.00056	<0.000035	<0.00007	<0.00007	<0.00007
Pyrene	*0.73*	*2.2*	<0.000105	<0.000104	<0.000109	0.00039	0.00077	0.002	<0.000019	<0.000019	0.0013	0.00063	<0.00007	<0.00007
Metals														
Arsenic	*0.01*	*0.01*				0.00842	**0.0173**	**0.028**	<0.0004	0.00194 J	**0.0161**			

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-64A 01/27/2011	MW-64A 07/27/2011	MW-64A 02/08/2012	MW-64A 07/25/2012	MW-64A 04/01/2013	MW-64A 08/06/2013	MW-64A 01/29/2014	MW-64A 07/29/2014	MW-64A 01/31/2018	MW-64A 03/25/2018	MW-64A 05/31/2018	MW-64A 01/23/2019
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.00014	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	0.000154 J	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00012	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00011	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00015	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00015	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00026	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0001	<0.00005	<0.00005	<0.00005	<0.000106	<0.00011	<0.000104	<0.000108	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00008	<0.00005	<0.00005	<0.00005	<0.000298	<0.00031	<0.000292	<0.000304	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00009	<0.00005	<0.00005	<0.00005	<0.000125	<0.00013	<0.000123	<0.000127	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000769	<0.00008	<0.0000755	<0.0000784	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000769	<0.00008	<0.0000755	<0.0000784	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	<0.00007	<0.00005	0.000053 J	<0.00005	<0.0000673	<0.00007	<0.000066	<0.0000686	<0.000019	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.00008	<0.000798	<0.00083	<0.000783	<0.000814	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00007	<0.00005	<0.00005	<0.00005	<0.000538	<0.00056	<0.000528	<0.000549	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	<0.00009	<0.00005	0.0096	<0.00005	<0.0000769	<0.00008	<0.0000755	<0.0000784	<0.000027	0.035	<0.000027	<0.000027
Acenaphthylene	*1.5*	*4.4*	<0.00007	<0.00005	0.0005	<0.00005	<0.0000577	<0.00006	<0.0000566	<0.0000588	<0.000015	0.00086	<0.000015	<0.000015
Anthracene	*7.3*	*22*	<0.00007	0.00036	<0.00005	<0.00005	0.000158 J	<0.00005	<0.0000472	0.000127 J	<0.000014	0.00056	<0.000014	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000769	<0.00008	<0.0000755	<0.0000784	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000769	<0.00008	<0.0000755	<0.0000784	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00009	<0.00005	<0.00005	<0.00005	<0.000125	<0.00013	<0.000123	<0.000127	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00049	0.00076	<0.00013	0.00021	<0.000356	<0.00037	<0.000349	<0.000363	<0.0001	<0.000037	0.00023	<0.000037
Chrysene	*0.91*	*2*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000769	<0.00008	<0.0000755	<0.0000784	<0.000021	<0.000021	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	<0.00008	0.0013	<0.00005	<0.00005	<0.0000769	<0.00008	<0.0000755	<0.0000784	0.00003 J	0.00038	<0.00002	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00007	0.000079 J	<0.00005	0.000084 J	<0.000106	<0.00011	0.000117 J	<0.000108	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	<0.00007	0.00057	0.00021	<0.00005	<0.0000673	<0.00007	<0.000066	<0.0000686	<0.00001	0.00095	<0.00001	<0.00001
Fluorene	*0.98*	*2.9*	<0.00007	<0.00005	0.00012 J	<0.00005	<0.0000673	<0.00007	<0.000066	<0.0000686	<0.00003	0.0013	<0.00003	<0.00003
Naphthalene	*0.49*	*1.5*	<0.0001	<0.00005	<0.00063	<0.00005	<0.0000769	<0.00008	<0.0000755	<0.000317	<0.000094	0.00058	<0.00002	<0.00002
Nitrobenzene	*0.049*	*0.15*	<0.00009	<0.00005	<0.00005	<0.00005	<0.000106	<0.00011	<0.000104	<0.000108	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000962	<0.0001	<0.0000943	<0.000098	<0.000025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.00005	<0.00005	<0.00005	<0.000587	<0.00061	<0.000575	<0.000598	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000577	<0.00006	<0.0000566	<0.0000588	0.000032 J	<0.000021	<0.000021	<0.000021
Phenol	*7.3*	*22*	<0.00007	0.000077 J	<0.00005	<0.00005	<0.0000385	<0.00004	<0.0000377	<0.0000392	<0.000035	<0.000035	0.00051	<0.000035
Pyrene	*0.73*	*2.2*	<0.00007	0.00042	0.00013 J	<0.00005	<0.000106	<0.00011	<0.000104	<0.000108	<0.000019	0.00059	<0.000019	<0.000019
Metals														
Arsenic	*0.01*	*0.01*									0.000419 J	**0.0117**	0.00111 J	<0.0004

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-64A 07/11/2019	MW-64A 01/27/2020	MW-65D 02/05/2009	MW-65D 01/21/2010	MW-65D 07/01/2010	MW-65D 01/26/2011	MW-65D 07/27/2011	MW-65D 02/14/2012	MW-65D 07/23/2012	MW-65D 02/11/2013	MW-65D 08/05/2013	MW-65D 01/21/2014
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	0.0013 J	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	0.00095 J	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.000105	<0.000108	<0.000104
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000295	<0.000304	<0.000292
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000124	<0.000127	<0.000123
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000762	<0.0000784	<0.0000755
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000784	<0.0000755
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	0.00037	0.00012 J	<0.00007	0.00014 J	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000667	<0.0000686	0.0000808 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00079	<0.000814	<0.000783
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000533	<0.000549	<0.000528
Acenaphthene	*1.5*	*4.4*	0.0003	0.00016	0.00019 J	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000784	<0.0000755
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000571	<0.0000588	<0.0000566
Anthracene	*7.3*	*22*	<0.000014	0.000096 J	0.000078 J	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000476	<0.000049	0.0000574 J
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000784	<0.0000755
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000784	<0.0000755
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000124	<0.000127	<0.000123
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	0.00031	0.0019	<0.0027	<0.001	0.001	0.001	<0.00013	<0.00025	0.000593	<0.000363	<0.000349
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000784	<0.0000755
Dibenzofuran	*0.098*	*0.29*	<0.00002	0.0001 J	0.00016 J	0.00012 J	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000784	<0.0000755
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	0.000079 J	0.00029	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	0.000135 J	0.000148 J	<0.000104
Fluoranthene	*0.98*	*2.9*	<0.00001	0.00028	0.000097 J	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000667	<0.0000686	0.000117 J
Fluorene	*0.98*	*2.9*	0.000031 J	0.000082 J	0.00016 J	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000667	<0.0000686	<0.000066
Naphthalene	*0.49*	*1.5*	<0.00033	0.002	0.00051	0.00026	<0.00059	0.00019 J	<0.00005	<0.00005	<0.000094	<0.0000762	<0.0000784	0.000529 J
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000105	<0.000108	<0.000104
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000952	<0.000098	<0.0000943
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000581	<0.000598	<0.000575
Phenanthrene	*0.73*	*2.2*	<0.000021	<0.000021	0.00014 J	<0.00007	<0.00007	<0.00007	0.000065 J	<0.00005	<0.00005	<0.0000571	0.000093 J	0.000294 J
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.00007	0.0015	<0.00007	<0.00007	0.000051 J	<0.00005	<0.00005	<0.0000381	<0.0000392	<0.0000377
Pyrene	*0.73*	*2.2*	0.00015	0.00015	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000105	<0.000108	<0.000104
Metals														
Arsenic	*0.01*	*0.01*	0.00939	0.00126 J										

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-65D 08/28/2014	MW-65D 02/07/2018	MW-65D 03/26/2018	MW-65D 06/01/2018	MW-65D 01/24/2019	MW-65D 07/31/2019	MW-65D 01/16/2020	MW-66D 02/05/2009	MW-66D 01/20/2010	MW-66D 07/01/2010	MW-66D 07/27/2011	MW-66D 02/14/2012
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.001	<0.001
Benzene	*0.005*	*0.005*	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.001	<0.001
Chlorobenzene	*0.1*	*0.1*	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0005	<0.0005	<0.0005	<0.001	<0.001
Ethylbenzene	*0.7*	*0.7*	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011
Methylene chloride	*0.005*	*0.005*	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013
Toluene	*1*	*1*	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.001	<0.001
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.001	<0.001	<0.001	<0.0031	<0.0031
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00011	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00031	<0.00004	<0.00004	<0.00004	<0.00009	<0.00004	<0.00004	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00013	<0.000058	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00008	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006
2-Chloronaphthalene	*2*	*5.8*	<0.00008	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00012	<0.0001	<0.0001	<0.00005	<0.00005
2-Methylnaphthalene	*0.098*	*0.29*	<0.00007	<0.000019	<0.000019	0.000089 J	0.00016	<0.000019	<0.000019	0.00062	<0.00007	<0.00007	<0.00005	<0.00005
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.00056	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Acenaphthene	*1.5*	*4.4*	<0.00008	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	0.0004	<0.00009	<0.00009	<0.00005	<0.00005
Acenaphthylene	*1.5*	*4.4*	<0.00006	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.00006	<0.00007	<0.00007	<0.00005	<0.00005
Anthracene	*7.3*	*22*	<0.00005	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	0.00015 J	<0.00007	<0.00007	0.00022	0.00027
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00008	<0.00005	<0.000051	<0.00005	<0.00005	<0.00005	<0.00005	<0.00007	<0.00007	<0.00007	0.00011 J	0.00012 J
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	0.00016 J	0.00013 J
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00244	<0.000037	<0.000037	0.0002 J	0.00006 J	0.00016 J	0.00026	**0.0064**	<0.0028	<0.00096	0.0019	<0.0002
Chrysene	*0.91*	*2*	<0.00008	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00007	<0.00007	<0.00007	0.00046	0.00052
Dibenzofuran	*0.098*	*0.29*	<0.00008	<0.00002	<0.00002	0.000061 J	0.000039 J	<0.00002	<0.00002	0.00036	<0.00008	0.000083 J	<0.00005	<0.00005
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00011	<0.00002	<0.00002	0.000022 J	<0.00002	<0.00002	<0.00002	0.00044	0.000086 J	<0.00007	0.000056 J	<0.00005
Fluoranthene	*0.98*	*2.9*	<0.00007	<0.00001	<0.00001	0.000013 J	0.000027 J	<0.00001	<0.00001	0.00026	<0.00007	<0.00007	0.00035	0.00057
Fluorene	*0.98*	*2.9*	<0.00007	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	0.00033	<0.00007	<0.00007	<0.00005	<0.00005
Naphthalene	*0.49*	*1.5*	0.00071	<0.00002	<0.00002	0.00029	<0.0026	<0.00002	<0.00002	0.0058	<0.0001	<0.0002	<0.00005	<0.00005
Nitrobenzene	*0.049*	*0.15*	<0.00011	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.0001	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005
Pentachlorophenol	*0.001*	*0.001*	<0.00061	<0.000079	<0.00008	<0.000079	<0.000079	<0.000079	<0.000079	<0.00008	<0.00008	<0.00008	0.000084 J	<0.00005
Phenanthrene	*0.73*	*2.2*	<0.00006	<0.000021	<0.000021	0.000035 J	<0.000021	<0.000021	<0.000021	0.00073	0.00012 J	<0.00007	0.00011 J	0.00011 J
Phenol	*7.3*	*22*	<0.00004	<0.000035	<0.000035	<0.000035	<0.00019	<0.000035	<0.000035	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005
Pyrene	*0.73*	*2.2*	<0.00011	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	0.00017 J	<0.00007	<0.00007	0.00036	0.00051
Metals														
Arsenic	*0.01*	*0.01*		<0.0004	0.00761	0.00292	0.00202	0.00135 J	0.000507 J					

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-66D 07/23/2012	MW-66D 04/02/2013	MW-66D 08/05/2013	MW-66D 01/29/2014	MW-66D 08/28/2014	MW-66D 10/03/2014	MW-66D 02/07/2018	MW-66D 03/26/2018	MW-66D 06/01/2018	MW-66D 01/24/2019	MW-66D 07/31/2019	MW-66D 01/16/2020
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.00014	<0.00014	<0.00014	<0.00014		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.0005	<0.00008	<0.00008	<0.00008	<0.00008		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.00012	<0.00012	<0.00012	<0.00012		<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0005	<0.00011	<0.00011	<0.00011	<0.00011		<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.001	<0.00015	<0.00015	<0.00015	<0.00015		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.0005	<0.00015	<0.00015	<0.00015	<0.00015		<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.0015	<0.00026	<0.00026	<0.00026	<0.00026		<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	<0.000106	<0.00011	<0.000104	<0.000109	<0.000107	<0.00021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00005	<0.000298	<0.00031	<0.000292	<0.000307	<0.000301	<0.0004	<0.000041	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	<0.000125	<0.00013	<0.000123	<0.000129	<0.000126	<0.00058	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	<0.0000769	<0.00008	<0.0000755	<0.0000792	<0.0000777	<0.00042	<0.000043	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.00005	<0.0000769	<0.00008	<0.0000755	<0.0000792	<0.0000777	<0.00021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	0.000085 J	<0.0000673	<0.00007	<0.000066	0.000211 J	<0.000068	<0.00019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000095
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.000798	<0.00083	<0.000783	<0.000822	<0.000806	<0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00005	<0.000538	<0.00056	<0.000528	<0.000554	<0.000544	<0.00047	<0.000048	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	0.000054 J	<0.0000769	<0.00008	0.000145 J	0.000141 J	<0.0000777	<0.00027	<0.000028	<0.000027	<0.000027	<0.000027	<0.000027
Acenaphthylene	*1.5*	*4.4*	0.000081 J	<0.0000577	<0.00006	<0.0000566	0.000411 J	0.000206 J	<0.00015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	*7.3*	*22*	0.00059	<0.0000481	<0.00005	<0.0000472	0.00304	0.00256	<0.00014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*	0.00036	<0.0000769	<0.00008	<0.0000755	0.00041 J	0.000245 J	<0.0005	<0.000051	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	**0.00067**	<0.0000769	<0.00008	<0.0000755	**0.000436 J**	**0.000439 J**	<0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	<0.000125	<0.00013	<0.000123	<0.000129	<0.000126	<0.0003	<0.000031	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.0032	<0.000356	<0.00037	<0.000349	0.000585	0.000415 J	<0.00037	<0.000038	0.00019 J	0.00017 J	0.00022	0.000046 J
Chrysene	*0.91*	*2*	0.0018	<0.0000769	<0.00008	<0.0000755	0.00104	0.000582	<0.00021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	0.000066 J	<0.0000769	<0.00008	<0.0000755	0.000133 J	<0.0000777	<0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.000078	<0.000106	<0.00011	<0.000104	0.000121 J	<0.000107	<0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	0.0019	<0.0000673	<0.00007	<0.000066	0.00116	0.000346 J	<0.0001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Fluorene	*0.98*	*2.9*	<0.00005	<0.0000673	<0.00007	<0.000066	0.000143 J	<0.000068	<0.0003	<0.000031	<0.00003	<0.00003	<0.00003	<0.00003
Naphthalene	*0.49*	*1.5*	<0.0004	<0.0000769	0.0000999 J	0.000367 J	0.00118	<0.0000777	<0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00013
Nitrobenzene	*0.049*	*0.15*	<0.00005	<0.000106	<0.00011	<0.000104	<0.000109	<0.000107	<0.00024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.0000962	<0.0001	<0.0000943	<0.000099	<0.0000971	<0.00025	<0.000026	<0.000025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00005	<0.000587	<0.00061	<0.000575	<0.000604	<0.000592	<0.00079	<0.000081	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	0.00058	<0.0000577	<0.00006	0.000132 J	0.000295 J	0.0000729 J	<0.00021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Phenol	*7.3*	*22*	<0.00005	<0.0000385	<0.00004	<0.0000377	<0.0000396	<0.0000388	<0.00035	<0.000036	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	0.0019	<0.000106	<0.00011	<0.000104	0.00118	0.000388 J	<0.00019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019
Metals														
Arsenic	*0.01*	*0.01*							0.000711 J	0.00663	0.00223	0.00204	0.00124 J	0.00138 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-68A 05/29/2019	MW-68A 05/29/2019 Duplicate	MW-68A 07/18/2019	MW-68A 01/17/2020	MW-68B 02/16/2012	MW-68B 07/16/2012	MW-68B 02/06/2013	MW-68B 08/08/2013	MW-68B 01/22/2014	MW-68B 01/22/2014 Duplicate	MW-68B 07/24/2014	MW-68B 07/24/2014 Duplicate
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.005	<0.005	**<0.014**	**<0.014**	<0.0002	<0.0002	<0.0028	<0.0028
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	**2.7**	**2.4**	**2.35**	**2.88**	**1.5**	**1.51**	**2.18**	**2.1**
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.005	<0.005	0.0273 J	<0.012	0.000454 J	0.000468 J	<0.0024	<0.0024
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	0.45	0.49	0.449	0.55	0.364	0.363	0.403	0.453
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	**<0.0065**	**<0.01**	**<0.015**	**0.101**	<0.00022	<0.00022	<0.003	<0.003
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	0.91	0.93	0.701	0.625	0.329	0.329	0.538	0.57
Vinyl chloride	*0.002*	*0.002*								**<0.011**			**0.007 J**	**0.0022 J**
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	1.2	1.3	1.04	1.28	0.857	0.862	1.08	1.22
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	<0.00005	<0.00025	**<0.00524**	**<0.00519**	**<0.0105**	**<0.0105**	**<0.0055**	**<0.00529**
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00004	<0.00004	0.19	0.27	0.273	<0.0146	**0.536**	0.457 J	0.445	0.451
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000059	<0.000058	<0.000058	<0.00005	<0.00025	**<0.00619**	**<0.00613**	**<0.0124**	**<0.0124**	**<0.0065**	**<0.00625**
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.000042	<0.00006	<0.0003	**<0.00381**	**<0.00377**	**<0.00762**	**<0.00762**	**<0.004**	**<0.00385**
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.00005	<0.00025	<0.00381	<0.00377	<0.00762	<0.00762	<0.004	<0.00385
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	0.000026 J	0.00012	0.000048 J	**0.66**	**1.3**	**0.952**	**1.41**	**1.1**	**1.19**	**0.852**	**0.906**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.0004	**<0.0395**	**<0.0392**	**<0.079**	**<0.079**	**<0.0415**	**<0.0399**
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.00005	<0.00025	<0.0267	<0.0264	**<0.0533**	**<0.0533**	<0.028	<0.0269
Acenaphthene	*1.5*	*4.4*	0.0012	0.0011	0.0019	0.0003	0.15	0.23	0.261	0.304	0.263	0.26	0.178	0.181
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	0.000054 J	0.0023	0.003	<0.00286	<0.00283	<0.00571	<0.00571	<0.003	<0.00288
Anthracene	*7.3*	*22*	<0.000014	<0.000014	0.000028 J	0.000059 J	0.046	0.034	0.0194 J	0.023 J	0.0428 J	0.0292 J	0.0169 J	0.0162 J
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.000051	<0.00005	<0.00005	0.006	0.0054	<0.00381	<0.00377	**0.0123 J**	0.00762 J	<0.004	<0.00385
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00002	**0.0017**	**0.0016**	**<0.00381**	**<0.00377**	**<0.00762**	**<0.00762**	**<0.004**	**<0.00385**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00005	<0.00025	**<0.00619**	**<0.00613**	**<0.0124**	**<0.0124**	**<0.0065**	**<0.00625**
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00015 J	0.000074 J	0.00024	<0.000061	<0.0001	<0.0005	**<0.0176**	**<0.0175**	**<0.0352**	**<0.0352**	**<0.0185**	**<0.0178**
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	<0.000021	0.0052	0.005	<0.00381	<0.00377	0.00806 J	0.00976 J	<0.004	<0.00385
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00002	0.000082 J	<0.00002	**0.19**	**0.3**	**0.26**	**0.325**	**0.284**	**0.276**	**0.198**	**0.196**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	0.00087	0.00064	0.00015 J	0.000034 J	<0.00005	<0.00025	<0.00524	<0.00519	<0.0105	<0.0105	<0.0055	<0.00529
Fluoranthene	*0.98*	*2.9*	<0.00001	<0.00001	<0.00001	0.00013	0.05	0.044	<0.00333	0.00764 J	0.052	0.0357 J	0.00825 J	0.00751 J
Fluorene	*0.98*	*2.9*	0.000044 J	0.000042 J	0.00012	0.000069 J	0.096	0.13	0.118	0.154	0.149	0.143	0.0966	0.0953
Naphthalene	*0.49*	*1.5*	0.00019	0.00025	0.00035	<0.00022	**14**	**26**	**11.8**	**31.2**	**17**	**17.6**	**10.5**	**12.6**
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.00005	<0.00025	<0.00524	<0.00519	<0.0105	<0.0105	<0.0055	<0.00529
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	0.0011	<0.00025	<0.00476	<0.00472	<0.00952	<0.00952	<0.005	<0.00481
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.00008	<0.000079	<0.000079	<0.00005	<0.00025	**<0.029**	**<0.0288**	**<0.0581**	**<0.0581**	**<0.0305**	**<0.0293**
Phenanthrene	*0.73*	*2.2*	<0.000021	<0.000021	0.000062 J	0.00016	0.19	0.24	0.12	0.136	0.263	0.196	0.106	0.103
Phenol	*7.3*	*22*	0.000041 J	<0.000035	<0.000035	<0.000035	0.035	0.058	0.0421	0.0795	0.0862	0.0929	0.00988 J	0.00192 J
Pyrene	*0.73*	*2.2*	<0.000019	<0.000019	<0.000019	0.000068 J	0.031	0.024	<0.00524	<0.00519	0.0341 J	0.0227 J	<0.0055	<0.00529
Metals														
Arsenic	*0.01*	*0.01*	0.00966	0.00894	**0.0353**	**0.0423**								

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-68B 01/29/2018	MW-68B 01/29/2018 Duplicate	MW-68B 03/21/2018	MW-68B 03/21/2018 Duplicate	MW-68B 06/06/2018	MW-68B 06/06/2018 Duplicate	MW-68B 01/15/2019	MW-68B 01/15/2019 Duplicate	MW-68B 07/18/2019	MW-68B 07/18/2019 Duplicate	MW-68B 01/23/2020 DNAPL	MW-68C 07/15/2010
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.001	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.002	<0.002	<0.005	<0.0005
Benzene	*0.005*	*0.005*	**2.1**	**2.2**	**1.4**	**1.4**	**1.9**	**2**	**2**	**1.9**	**1.4**	**1.4**	**1.4**	0.00081 J
Chlorobenzene	*0.1*	*0.1*	<0.0015	<0.0015	<0.0003	<0.0003	<0.0003	<0.0003	0.00056 J	0.00056 J	<0.003	<0.003	<0.0075	<0.0005
Ethylbenzene	*0.7*	*0.7*	0.61	0.56	0.29	0.28	0.5	0.5	0.5	0.49	0.52	0.51	0.39	<0.0005
Methylene chloride	*0.005*	*0.005*	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	**<0.01**	**<0.01**	**<0.025**	<0.0005
Toluene	*1*	*1*	0.45	0.42	0.2	0.19	0.45	0.44	0.086	0.084	0.37	0.37	0.23	<0.0005
Vinyl chloride	*0.002*	*0.002*											**<0.005**	
Xylenes (total)	*10*	*10*	1.6	1.5	0.83	0.84	1.4	1.4	1.2	1.2	1.5	1.4	1.1	<0.001
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00021	<0.00021	<0.00021	<0.00021	<0.00021	<0.00021	<0.00021	<0.00021	<0.00021	<0.00021	<0.000021	<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*	0.051 J	0.071 J	0.07	0.065	0.075 J	0.23 J	0.05	0.058	0.076	0.076	0.075	<0.00008
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00058	<0.00058	<0.00059	<0.00059	<0.00058	<0.00058	<0.00058	0.0013 J	<0.00058	<0.00058	<0.000058	<0.00009
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00042	<0.00042	<0.00042	<0.00042	<0.00042	<0.00042	<0.00042	<0.00042	<0.00042	<0.00042	<0.000042	<0.00007
2-Chloronaphthalene	*2*	*5.8*	<0.00021	<0.00021	<0.00021	<0.00021	<0.00021	<0.00021	<0.00021	<0.00021	<0.00021	<0.00021	<0.000021	<0.0001
2-Methylnaphthalene	*0.098*	*0.29*	**0.6**	**0.6**	**0.67**	**0.67**	**1.4**	**1.3**	**0.33**	**0.31**	**0.72**	**0.66**	**1.1 J**	<0.00007
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0011 J	<0.0002	<0.0002	<0.00002	<0.00008
4-Nitrophenol	*0.049*	*0.15*	<0.00047	<0.00047	<0.00047	<0.00047	<0.00047	<0.00047	<0.00047	0.0074 J	<0.00047	<0.00047	<0.000047	<0.00007
Acenaphthene	*1.5*	*4.4*	0.13	0.15	0.21	0.22	0.34	0.36	0.1	0.13	0.2	0.17	0.44	<0.00009
Acenaphthylene	*1.5*	*4.4*	0.002	0.0024	0.0021	0.0016	0.0022	0.0029	0.0012	0.0014	0.0027	0.0022	0.0037	<0.00007
Anthracene	*7.3*	*22*	0.014	0.014	0.014	0.012	0.015	0.021	0.008	0.0098	0.03 J	0.022 J	0.15	<0.00007
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0005	<0.0005	<0.00051	<0.00051	<0.0005	<0.0005	<0.0005	<0.0005	0.0051 J	0.003 J	**0.047**	<0.00007
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	**0.0018**	**0.0012**	**0.0089**	<0.00008
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	**0.0036**	<0.0003	<0.0003	<0.00003	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.00037	<0.00037	<0.00037	<0.00037	<0.00037	<0.00037	<0.00037	<0.00037	<0.00037	<0.00037	0.0011	0.00098
Chrysene	*0.91*	*2*	<0.00021	<0.00021	<0.00021	<0.00021	<0.00021	<0.00021	<0.00021	<0.00021	0.005 J	0.0029 J	0.04	<0.00007
Dibenzofuran	*0.098*	*0.29*	**0.16**	**0.16**	**0.24**	**0.25**	**0.38**	**0.38**	**0.1**	**0.12**	**0.21**	**0.18**	**0.5**	<0.00008
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.00018 J	<0.00007
Fluoranthene	*0.98*	*2.9*	0.0052	0.0049	0.006	0.005	0.0063	0.0088	0.0031	0.0039	0.043 J	0.027 J	0.31	<0.00007
Fluorene	*0.98*	*2.9*	0.082	0.086	0.092	0.078	0.082 J	0.18 J	0.057	0.065	0.11	0.083	0.32	<0.00007
Naphthalene	*0.49*	*1.5*	**9.2**	**10**	**12**	**13**	**23**	**23**	**5**	**3.8**	**9.6**	**9.9**	**12**	0.00083
Nitrobenzene	*0.049*	*0.15*	<0.00024	<0.00024	<0.00024	<0.00024	<0.00024	<0.00024	<0.00024	<0.00024	<0.00024	<0.00024	<0.000024	<0.00009
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	0.0051	<0.00025	<0.00025	<0.000025	<0.00009
Pentachlorophenol	*0.001*	*0.001*	<0.00079	<0.00079	<0.0008	<0.0008	<0.00079	<0.00079	<0.00079	<0.00079	<0.00079	<0.00079	<0.000079	<0.00008
Phenanthrene	*0.73*	*2.2*	0.099	0.098	0.15	0.088	0.096 J	0.22 J	0.065	0.073	0.21	0.16	**0.95**	<0.00007
Phenol	*7.3*	*22*	<0.00035	<0.00035	<0.00035	<0.00035	<0.00035	<0.00035	0.0019 J	0.0015 J	<0.00035	<0.00035	<0.000035	0.0005
Pyrene	*0.73*	*2.2*	0.0025	0.0024	0.0032	0.0029	0.0045 J	0.0058 J	0.0015	0.0018	0.025 J	0.015 J	0.19	<0.00007
Metals														
Arsenic	*0.01*	*0.01*	**0.0114**	**0.0117**	**0.014**	**0.0151**	**0.0112**	**0.0107**	**0.0123**	**0.0125**	**0.0134**	**0.0129**	0.00944 J	

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-68C 01/25/2011	MW-68C 07/21/2011	MW-68C 02/16/2012	MW-68C 07/17/2012	MW-68C 02/06/2013	MW-68C 08/07/2013	MW-68C 01/22/2014	MW-68C 07/24/2014	MW-68C 08/28/2014	MW-68C 01/29/2018	MW-68C 03/21/2018	MW-68C 06/06/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.00014	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	0.0021 J	0.0032 J	**0.0069**	**0.0079**	0.00134	0.00364	0.00225	**0.0073**	0.00118	0.0028	0.0049	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0005	<0.001	<0.001	<0.0005	<0.000352	<0.00012	<0.00018	<0.00012	<0.00012	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0005	<0.0011	<0.0011	<0.0005	0.000363 J	0.000517 J	0.00024 J	0.000419 J	0.00014 J	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.00015	<0.001	<0.001	<0.001
Toluene	*1*	*1*	0.00067 J	0.0011 J	0.0019 J	0.0023 J	0.000632 J	<0.0016	0.00059	0.00138	0.000442 J	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*								<0.00011	<0.00011			
Xylenes (total)	*10*	*10*	<0.001	<0.0031	<0.0031	<0.0015	0.000873 J	0.000879 J	<0.00058	0.000649 J	<0.00026	<0.0003	0.00046 J	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0001	<0.00005	<0.00005	<0.00005	<0.000105	<0.000104	<0.000105	<0.000104		<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	0.00012 J	0.00031	0.00095	0.0014	**R**	<0.000292	0.000454 J	<0.000292		<0.00004	0.0015	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00009	<0.00005	<0.00005	<0.00005	<0.000124	<0.000123	<0.000124	<0.000123		<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000762	<0.0000755	<0.0000762	<0.0000755		<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000762	<0.0000755		<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	0.00016 J	0.00024	<0.00011	0.0025	0.00132	0.000301 J	0.00331	0.000188 J		<0.000019	0.00014	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.00008	<0.00079	<0.000783	<0.00079	<0.000783		<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00007	<0.00005	<0.00005	<0.00005	**R**	<0.000528	<0.000533	<0.000528		<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	<0.00009	0.00013 J	<0.00005	0.0013	0.000647	<0.0000755	0.00183	0.000235 J		<0.000027	0.00017	<0.000027
Acenaphthylene	*1.5*	*4.4*	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000571	<0.0000566	<0.0000571	<0.0000566		<0.000015	<0.000015	<0.000015
Anthracene	*7.3*	*22*	<0.00007	<0.00005	<0.00005	0.00089	<0.0000476	<0.0000472	0.00106	<0.0000472		<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00007	<0.00005	<0.00005	0.00018 J	<0.0000762	<0.0000755	0.000276 J	<0.0000755		<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	0.000171 J	<0.0000755		<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00009	<0.00005	<0.00005	<0.00005	<0.000124	<0.000123	<0.000124	<0.000123		<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.006	0.001	<0.0015	0.0018	0.000637	0.00157 J	<0.000352	<0.000349		0.00015 J	<0.000037	<0.00056
Chrysene	*0.91*	*2*	<0.00007	<0.00005	<0.00005	0.00016 J	<0.0000762	<0.0000755	0.000301 J	<0.0000755		<0.000021	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	<0.00008	0.0002 J	<0.000078	0.0018	0.000168 J	<0.0000755	0.00192	0.0000942 J		<0.00002	<0.00002	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00007	<0.00005	<0.00005	0.00011 J	<0.000105	<0.000104	<0.000105	<0.000104		<0.00002	<0.00002	0.0001 J
Fluoranthene	*0.98*	*2.9*	<0.00007	<0.00005	<0.00005	0.0016	<0.0000667	<0.000066	0.00233	<0.000066		<0.00001	<0.00001	0.00021
Fluorene	*0.98*	*2.9*	<0.00007	0.0001 J	<0.00005	0.0012	0.00034 J	0.000135 J	0.00167	0.000155 J		<0.00003	0.00012	<0.00003
Naphthalene	*0.49*	*1.5*	0.0014	0.0027	<0.0015	0.015	0.0129	0.00643 J	0.0112	0.00274		0.00088	0.0032	0.00035
Nitrobenzene	*0.049*	*0.15*	<0.00009	<0.00005	<0.00005	<0.00005	<0.000105	<0.000104	<0.000105	<0.000104		<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000952	<0.0000943	<0.0000952	<0.0000943		<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.00005	<0.00005	<0.00005	**R**	<0.000575	<0.000581	<0.000575		<0.000079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	<0.00007	0.00016 J	<0.00005	0.005	0.000499	<0.0000566	0.00585	<0.0000566		<0.000021	0.0001	<0.000021
Phenol	*7.3*	*22*	0.0039	0.0049	0.0074	0.000062 J	**R**	<0.0000377	<0.0000381	<0.0000377		<0.000035	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	<0.00007	<0.00005	<0.00005	0.00086	<0.000105	<0.000104	0.0014	<0.000104		<0.000019	<0.000019	0.00015
Metals														
Arsenic	*0.01*	*0.01*										<0.0004	0.000618 J	<0.0004

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-68C 01/15/2019	MW-68C 07/18/2019	MW-68C 01/17/2020	MW-69A 07/15/2010	MW-69A 01/19/2011	MW-69A 07/21/2011	MW-69A 02/08/2012	MW-69A 07/24/2012	MW-69A 02/07/2013	MW-69A 08/06/2013	MW-69A 01/24/2014	MW-69A 07/16/2014
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	0.00056 J	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	0.00047 J	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015
Vinyl chloride	*0.002*	*0.002*						<0.001	<0.001	<0.0005	<0.00011	<0.00011	<0.00018	<0.00011
Xylenes (total)	*10*	*10*	0.0011	<0.0003	0.00062 J	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.000105	<0.00011	<0.000106	<0.000104
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00004	0.0036	<0.00008	<0.00005	<0.00005	0.000078 J	<0.000295	<0.00031	<0.000298	<0.000292
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000059	<0.000058	<0.000058	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000124	<0.00013	<0.000125	<0.000123
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000762	<0.00008	<0.0000769	<0.0000755
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000762	<0.00008	<0.0000769	<0.0000755
2-Methylnaphthalene	*0.098*	*0.29*	<0.000077	0.000072 J	0.00033	0.0038	0.000074 J	<0.00005	<0.00005	0.0009	<0.0000667	<0.00007	<0.0000673	<0.000066
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00079	<0.00083	<0.000798	<0.000783
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000533	<0.00056	<0.000538	<0.000528
Acenaphthene	*1.5*	*4.4*	<0.000027	0.00012	0.000036 J	0.0037	0.00025	<0.00005	<0.00005	0.00082	<0.0000762	<0.00008	<0.0000769	<0.0000755
Acenaphthylene	*1.5*	*4.4*	<0.000015	0.000053 J	0.000023 J	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000571	<0.00006	<0.0000577	<0.0000566
Anthracene	*7.3*	*22*	<0.000014	<0.000014	0.000036 J	0.00039	0.00024	<0.00005	<0.00005	0.00047	<0.0000476	<0.00005	0.000497	<0.0000472
Benzo(a)anthracene	*0.0091*	*0.02*	<0.000051	<0.00005	0.000055 J	0.00049	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000762	<0.00008	<0.0000769	<0.0000755
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	0.000063 J	0.00013 J	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000762	<0.00008	<0.0000769	<0.0000755
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000124	<0.00013	<0.000125	<0.000123
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000044	0.00032	0.00029	0.0059	0.00081	0.00086	<0.00018	<0.0003	<0.000352	<0.00037	<0.000356	<0.000349
Chrysene	*0.91*	*2*	<0.000021	<0.000021	0.000054 J	0.00032	0.00011 J	<0.00005	<0.00005	<0.00005	<0.0000762	<0.00008	<0.0000769	<0.0000755
Dibenzofuran	*0.098*	*0.29*	0.000066 J	0.000064 J	0.00003 J	0.003	0.00022	<0.00005	<0.00005	0.00071	<0.0000762	<0.00008	<0.0000769	<0.0000755
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	0.000067 J	<0.00002	<0.00007	<0.00007	0.000069 J	<0.00005	<0.00005	<0.000105	<0.00011	<0.000855	<0.000104
Fluoranthene	*0.98*	*2.9*	<0.00001	<0.00001	0.000074 J	0.0025	0.00057	0.000059 J	<0.00005	0.00045	<0.0000667	<0.00007	<0.0000673	<0.000066
Fluorene	*0.98*	*2.9*	0.000057 J	0.000051 J	0.000036 J	0.0033	0.00036	<0.00005	<0.00005	0.00085	<0.0000667	<0.00007	<0.0000673	<0.000066
Naphthalene	*0.49*	*1.5*	<0.00079	0.0011	<0.00052	0.026	0.00011 J	<0.00005	<0.00029	<0.004	<0.000142	<0.00008	<0.000713	<0.000155
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000105	<0.00011	<0.000106	<0.000104
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000952	<0.0001	<0.0000962	<0.0000943
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.000079	<0.000079	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000581	<0.00061	<0.000587	<0.000575
Phenanthrene	*0.73*	*2.2*	0.000062 J	<0.000021	0.000042 J	0.0083	0.0012	<0.00005	<0.00005	0.0022	<0.0000571	<0.00006	<0.00039	<0.0000566
Phenol	*7.3*	*22*	<0.000035	0.00026	<0.000035	0.0069	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000381	<0.00004	<0.0000385	<0.0000377
Pyrene	*0.73*	*2.2*	<0.000019	<0.000019	0.000092 J	0.0022	0.00037	<0.00005	<0.00005	0.00033	<0.000105	<0.00011	<0.000106	<0.000104
Metals														
Arsenic	*0.01*	*0.01*	<0.0004	<0.0004	<0.0004									

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-69A 01/28/2018	MW-69A 03/20/2018	MW-69A 05/24/2018	MW-69A 01/10/2019	MW-69A 07/17/2019	MW-70C 03/12/2020	MW-70C 03/12/2020 Duplicate	MW-73B 02/02/2012	MW-73B 07/16/2012	MW-73B 01/30/2013	MW-73B 07/30/2013	MW-73B 01/15/2014
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.0005	<0.00014	0.000678 J	<0.0002
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	**0.01**	**0.0089**	**0.0097**	<0.0005	0.000218 J	0.000156 J	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.001	<0.0005	<0.00012	<0.00012	<0.00018
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.057	0.052	0.0059	<0.0005	<0.00011	<0.00011	0.000437 J
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0013	<0.001	<0.00015	<0.00015	<0.00022
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.034	0.032	0.015	<0.0005	0.000336 J	<0.00015	0.000575
Vinyl chloride	*0.002*	*0.002*	<0.0002	<0.0002		<0.0002	<0.0002							
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.064	0.061	0.0059 J	<0.0015	<0.00026	<0.00026	0.00133 J
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000022	<0.000022	<0.0005	<0.00005	<0.000104	<0.000107	<0.000104
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	0.00041	<0.000041	0.007	0.0028	<0.000292	<0.000301	0.000946 J
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.00006	<0.00006	<0.0005	<0.00005	<0.000123	<0.000126	<0.000123
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000044	<0.000043	<0.0006	<0.00006	<0.0000755	<0.0000777	<0.0000755
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000022	<0.000022	<0.0005	<0.00005	<0.0000755	<0.0000777	<0.0000755
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	0.067 J	0.098 J	0.00055 J	0.00011 J	<0.000066	0.0000878 J	0.0161
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.000021	<0.000021	<0.0008	<0.00008	<0.000783	<0.000806	<0.000783
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000049	<0.000048	<0.0005	<0.00005	<0.000528	<0.000544	<0.000528
Acenaphthene	*1.5*	*4.4*	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	0.059 J	0.087 J	0.012	0.00016 J	<0.000185	0.000118 J	0.0112
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000016	0.00074	0.0013 J	<0.00005	0.0000696 J	<0.0000583	<0.0000566
Anthracene	*7.3*	*22*	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	0.0049 J	0.0082 J	<0.0005	0.00012 J	0.000186 J	0.000245 J	0.00462
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000052	0.000079 J	<0.0005	0.000057 J	<0.0000755	<0.0000777	0.00131
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.000021	<0.000021	**<0.0005**	<0.00005	<0.0000755	<0.0000777	**0.00039 J**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.000031	<0.000031	<0.0005	<0.00005	<0.000123	<0.000126	<0.000123
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00028	0.00038	0.00025	<0.000037	<0.00034	<0.000039	0.000052 J	<0.001	0.00012 J	<0.000349	<0.000359	0.0015 J
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000022	0.000061 J	<0.0005	0.000096 J	<0.0000755	<0.0000777	0.00119
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.055 J	0.078 J	0.00078 J	0.000067 J	<0.0000755	<0.0000777	0.0102
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.000061 J	0.0001 J	<0.0005	<0.00005	<0.000104	0.000133 J	0.000169 J
Fluoranthene	*0.98*	*2.9*	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.003 J	0.0053 J	0.01	0.000059 J	0.000138 J	<0.000068	0.00937
Fluorene	*0.98*	*2.9*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	0.028 J	0.038 J	0.0041	0.00021	<0.000066	0.0000805 J	0.00951
Naphthalene	*0.49*	*1.5*	<0.00019	<0.00002	0.00008 J	<0.00002	<0.000078	**1.6 J**	**2.5 J**	0.0014 J	<0.00064	<0.000436	<0.000674	0.0906
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000025	<0.000025	<0.0005	<0.00005	<0.000104	<0.000107	<0.000104
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000026	<0.000026	<0.0005	<0.00005	<0.0000943	<0.0000971	<0.0000943
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000082	<0.000081	<0.0005	<0.00005	<0.000575	<0.000592	<0.000575
Phenanthrene	*0.73*	*2.2*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.04	0.054	0.00087 J	0.000089 J	<0.0000566	0.000228 J	0.0348
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000036	<0.000036	0.0053	0.00015 J	<0.0000377	<0.0000388	0.000522
Pyrene	*0.73*	*2.2*	<0.000019	0.000055 J	<0.000019	<0.000019	<0.000019	0.0017 J	0.0029 J	0.0077	<0.00005	<0.000104	<0.000107	0.00725
Metals														
Arsenic	*0.01*	*0.01*	0.00916	0.0017 J	**0.0142**	0.000717 J	0.000642 J	0.00598	0.0047					

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-73B 07/18/2014	MW-74B 02/09/2012	MW-74B 07/26/2012	MW-74B 04/02/2013	MW-74B 01/29/2014	MW-74B 08/28/2014	MW-74B 01/30/2018	MW-74B 03/28/2018	MW-74B 06/07/2018	MW-74B 01/23/2019	MW-74B 07/30/2019	MW-74B 01/17/2020
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.00014	**<0.01**	<0.005	<0.0028	<0.0007	<0.0028	<0.0002	<0.0002	<0.0002	<0.002	<0.001	<0.0002
Benzene	*0.005*	*0.005*	0.00309	**0.35**	**0.71**	**0.552**	**0.795**	**0.652**	**0.47**	**0.58**	**0.71**	**0.83**	**0.59**	**0.12**
Chlorobenzene	*0.1*	*0.1*	<0.00012	<0.01	<0.005	<0.0024	<0.0006	<0.0024	<0.0003	<0.0003	<0.0003	<0.003	<0.0015	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.00011	0.086	0.14	0.147	0.203	0.2	0.25	0.12	0.17 J	0.22	0.15	0.076
Methylene chloride	*0.005*	*0.005*	<0.00015	**<0.013**	**<0.01**	<0.003	<0.00075	<0.003	<0.001	<0.001	<0.001	**<0.01**	<0.005	<0.001
Toluene	*1*	*1*	<0.00015	0.32	0.56	0.533	0.774	0.741	0.75	0.56	0.74	0.69	0.52	0.29
Vinyl chloride	*0.002*	*0.002*	<0.00011											
Xylenes (total)	*10*	*10*	<0.00026	0.25	0.38	0.427	0.553	0.558	0.53	0.33	0.51 J	0.63	0.42	0.2
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000109	<0.0005	<0.0005	**<0.106**	**<0.208**	**<0.216**	**<0.0021**	<0.00021	**<0.0021**	<0.00021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.000307	**55**	**41**	**56.9**	**525**	**70.6**	**59**	**30**	**57**	**9**	**37**	0.21
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000129	<0.0005	<0.0005	**<0.125**	**<0.245**	**<0.255**	**<0.0058**	<0.00058	**<0.0058**	<0.00058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0000792	<0.0006	<0.0006	**<0.0769**	**<0.151**	**<0.157**	**<0.0042**	<0.00042	**<0.0042**	<0.00042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.0000792	<0.0005	<0.0005	<0.0769	<0.151	<0.157	<0.0021	<0.00021	<0.0021	<0.00021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	<0.0000693	**0.39**	**0.43 J**	**0.673**	**5.52**	**0.95 J**	**0.3**	**2.4**	**0.99**	**0.22**	**0.48**	**1.3**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.000822	<0.0008	<0.0008	**<0.798**	**<1.57**	**<1.63**	<0.002	<0.0002	<0.002	<0.0002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.000554	<0.0005	<0.0005	**<0.538**	**<1.06**	**<1.1**	0.033 J	<0.00047	<0.0047	<0.00047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	<0.0000792	0.29	0.21	0.31 J	**2.4**	0.413 J	0.31	1.4	0.33	0.098	0.24	0.98
Acenaphthylene	*1.5*	*4.4*	<0.0000594	0.0058	0.0062	<0.0577	<0.113	<0.118	0.012	0.019	0.0098 J	0.0032	0.0037	0.018
Anthracene	*7.3*	*22*	0.00015 J	0.037	0.024	<0.0481	0.282 J	<0.098	0.027	0.58	0.034	0.0074	0.0071	0.42
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0000792	<0.0005	0.0022	**<0.0769**	**<0.151**	**<0.157**	<0.005	**0.22**	<0.005	<0.0005	0.00022	**0.13**
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0000792	**<0.0005**	**0.00085 J**	**<0.0769**	**<0.151**	**<0.157**	**<0.002**	**0.064**	**<0.002**	<0.0002	<0.00002	**0.034**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.000129	<0.0005	<0.0005	**<0.125**	**<0.245**	**<0.255**	**<0.003**	<0.0003	**<0.003**	<0.0003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.000603	<0.001	<0.001	**<0.356**	**<0.698**	**<0.725**	<0.0037	<0.00037	<0.0037	<0.00037	<0.000037	0.0014
Chrysene	*0.91*	*2*	<0.0000792	<0.0005	0.0018 J	<0.0769	<0.151	<0.157	<0.0021	0.23	<0.0021	<0.00021	0.00016	0.082
Dibenzofuran	*0.098*	*0.29*	<0.0000792	**0.25**	**0.19**	**0.252 J**	**1.84**	**<0.157**	**0.24**	**1.4**	**0.24**	0.079	**0.19**	**0.72**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.000109	<0.0005	<0.0005	<0.106	<0.208	<0.216	<0.002	<0.0002	<0.002	<0.0002	<0.00002	0.0022
Fluoranthene	*0.98*	*2.9*	<0.0000693	0.0044	0.018	<0.0673	<0.132	<0.137	0.015	**1.4**	0.017	0.0038	0.0035	0.67
Fluorene	*0.98*	*2.9*	<0.0000693	0.17	0.14 J	0.196 J	**1.34**	0.263 J	0.19	**1.4**	0.19	0.056	0.14	0.88
Naphthalene	*0.49*	*1.5*	<0.0000792	**16**	**10**	**13.9**	**139**	**17.9**	**18**	**21**	**19**	**4**	**13 J**	**8.5**
Nitrobenzene	*0.049*	*0.15*	<0.000109	<0.0005	<0.0005	**<0.106**	**<0.208**	**<0.216**	<0.0024	<0.00024	<0.0024	<0.0024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000099	<0.0005	<0.0005	<0.0962	<0.189	**<0.196**	<0.0025	<0.00025	<0.0025	<0.00025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.000604	<0.0005	<0.0005	**<0.587**	**<1.15**	**<1.2**	**<0.0079**	<0.00079	**<0.0079**	<0.00079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	<0.0000594	0.15	0.15	0.169 J	**1.28**	0.307 J	0.16	**3.7**	0.17	0.046	0.087	**2.3**
Phenol	*7.3*	*22*	<0.0000396	**43**	**38**	**63.2**	**420**	**53.3**	**56**	**25**	**39**	5	**33**	0.048
Pyrene	*0.73*	*2.2*	<0.000109	0.005	0.01	<0.106	<0.208	<0.216	0.0079 J	**0.83**	0.0077 J	0.002	0.0023	0.44
Metals														
Arsenic	*0.01*	*0.01*							0.00162 J	0.00142 J	0.00131 J	0.0014 J	0.00128 J	0.000443 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
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CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	***C/I Assessment Level***	MW-75B 02/08/2012 DNAPL	MW-75B 07/26/2012 DNAPL	MW-75B 04/02/2013 DNAPL	MW-75B 01/29/2014 DNAPL	MW-75B 07/24/2014 DNAPL	MW-75B 01/17/2020	MW-76B 03/12/2020	MW-76C 07/24/2014	MW-76C 10/03/2014	MW-76C 01/30/2018	MW-76C 03/28/2018	MW-76C 05/25/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	**<0.01**	<0.0025	<0.0028	<0.0007	<0.00014	<0.0002	<0.0002	<0.00014		<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	**0.61**	**0.85**	**0.369**	**0.502**	**0.298**	**0.12**	<0.0002	0.000149 J		<0.0002	<0.0002	0.00021 J
Chlorobenzene	*0.1*	*0.1*	<0.01	<0.0025	<0.0024	<0.0006	<0.00012	<0.0003	<0.0003	<0.00012		<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	0.13	0.1	0.069	0.0773	0.0737	0.037	<0.0003	<0.00011		<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	**<0.013**	<0.005	<0.003	<0.00075	<0.00015	<0.001	<0.001	<0.00015		<0.001	<0.001	<0.001
Toluene	*1*	*1*	0.51	0.5	0.282	0.328	0.273	0.13	<0.0002	0.000156 J		<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*					<0.00011			<0.00011				
Xylenes (total)	*10*	*10*	0.41	0.33	0.247	0.276	0.255	0.11	<0.0003	<0.00026		<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.0005	<0.0005	**<0.00212**	**<0.0519**	**<0.00214**	<0.000021	<0.000022	<0.000104	<0.000107	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	0.18	**0.64**	0.0695	**6.35**	<0.00602	**0.86**	<0.000042	<0.000292	<0.000301	0.0018	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.0005	<0.0005	**<0.0025**	**<0.0613**	**<0.00252**	<0.000058	<0.00006	<0.000123	<0.000126	<0.000058	<0.000058	<0.000059
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0006	<0.0006	**<0.00154**	**<0.0377**	**<0.00155**	<0.000042	<0.000044	<0.0000755	<0.0000777	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.0005	<0.0005	<0.00154	<0.0377	<0.00155	<0.000021	<0.000022	<0.0000755	<0.0000777	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	**0.62**	**0.6 J**	**0.101**	**3.18**	**0.546**	**0.81**	<0.00002	0.000392 J	0.0000976 J	0.0001	0.00012	0.000032 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.0008	<0.0008	**<0.016**	**<0.392**	**<0.0161**	<0.00002	<0.000021	<0.000783	<0.000806	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.0005	<0.0005	<0.0108	**<0.264**	<0.0109	<0.000047	<0.000049	<0.000528	<0.000544	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	0.34	0.26	0.0697	**2.57**	0.429	0.67	<0.000028	0.000696	0.00024 J	0.00015	0.00023	0.000071 J
Acenaphthylene	*1.5*	*4.4*	0.013	0.0058	<0.00115	0.0672 J	0.0121	0.0086	<0.000016	<0.0000566	<0.0000583	0.0002	<0.000015	<0.000015
Anthracene	*7.3*	*22*	0.035	0.045	0.00948 J	0.605	0.0626	0.39	<0.000015	0.000234 J	0.00011 J	0.00006 J	0.000055 J	0.000048 J
Benzo(a)anthracene	*0.0091*	*0.02*	0.00064 J	0.0047	<0.00154	**0.0667 J**	0.00748 J	**0.12**	<0.000052	<0.0000755	<0.0000777	<0.00005	<0.00005	<0.000051
Benzo(a)pyrene	*0.0002*	*0.0002*	**<0.0005**	**0.0013 J**	**<0.00154**	**<0.0377**	**<0.00155**	**0.035**	<0.000021	<0.0000755	**0.000276 J**	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.0005	<0.0005	**<0.0025**	**<0.0613**	**<0.00252**	<0.00003	<0.000031	<0.000123	<0.000126	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.001	<0.001	**<0.00712**	**<0.175**	**<0.00718**	0.0021	<0.000039	0.000803	0.000714	<0.00024	0.00015 J	0.000096 J
Chrysene	*0.91*	*2*	0.00062 J	0.0042	<0.00154	0.0704 J	0.00677 J	0.095	<0.000022	<0.0000755	<0.0000777	<0.000021	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	**0.29**	**0.23**	0.0533	**1.56**	**0.214**	**0.54**	<0.000021	0.000507	0.000159 J	0.00012	0.00012	0.000056 J
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.0005	<0.0005	<0.00212	<0.0519	<0.00214	0.0016	0.000025 J	<0.000104	0.000124 J	<0.00002	<0.00002	0.00004 J
Fluoranthene	*0.98*	*2.9*	0.016	0.04	0.0103	0.708	0.0914	0.75	<0.00001	0.000322 J	0.000188 J	0.00019	0.00018	0.00007 J
Fluorene	*0.98*	*2.9*	0.19	0.17 J	0.0425	**1.59**	0.218	0.61	<0.000031	0.000778	0.000264 J	0.00016	0.00014	0.000076 J
Naphthalene	*0.49*	*1.5*	**8.9**	**9.3**	0.211	**27.1**	**5.7**	**7.5**	0.000096 J	0.00176	0.000506	<0.0028	0.0019	0.00036
Nitrobenzene	*0.049*	*0.15*	<0.0005	<0.0005	<0.00212	**<0.0519**	<0.00214	<0.000024	<0.000025	<0.000104	0.000124 J	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.0005	<0.0005	<0.00192	<0.0472	<0.00194	<0.000025	<0.000026	<0.0000943	<0.0000971	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.0005	<0.0005	**<0.0117**	**<0.288**	**<0.0118**	<0.000079	<0.000082	**0.00272**	<0.000592	<0.000079	<0.000079	<0.00008
Phenanthrene	*0.73*	*2.2*	0.24	0.27	0.0606	**2.13**	0.238	**1.9**	<0.000022	0.00183	0.000611	0.00051	0.00044	0.00023
Phenol	*7.3*	*22*	0.0066	0.0027	0.0069 J	0.108 J	<0.000777	0.0029	<0.000036	0.00284	0.00163	0.0032	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	0.0098	0.026	0.00617 J	0.416	0.0537	0.51	<0.00002	0.000194 J	0.000161 J	0.00016	0.00012	0.000048 J
Metals														
Arsenic	*0.01*	*0.01*						0.00167 J	0.00115 J			0.00157 J	0.000631 J	0.000527 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-76C 01/23/2019	MW-76C 07/30/2019	MW-76C 01/09/2020	MW-77A 07/24/2014	MW-77A 01/30/2018	MW-77A 03/28/2018	MW-77A 05/24/2018	MW-77A 02/01/2019	MW-77A 07/30/2019	MW-77A 01/09/2020	MW-78A 07/24/2014 DNAPL	MW-78A 01/17/2020 DNAPL
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0007	<0.0002
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.00008	**0.054**	**0.063**	**0.053**	<0.0002	**0.063**	**0.058**	**0.0571**	**0.018**
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0006	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.00011	0.059	0.063	0.044	<0.0003	0.072	0.063	0.0637	0.011
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.00075	<0.001
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.00015	0.011	0.011	0.006	<0.0002	0.012	0.0069	0.1	0.033
Vinyl chloride	*0.002*	*0.002*				<0.00011							<0.00055	
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.00026	0.1	0.11	0.058	<0.0003	0.097	0.065	0.158	0.028
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	**<0.00519**	<0.00021	<0.00021	<0.00021	<0.000022	<0.000021	<0.000021	**<0.0259**	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	0.0041	<0.00004	<0.00038	<0.0146	0.014	0.015	0.007	<0.000042	0.062	0.055	**6.66**	**2.5**
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	**<0.00613**	<0.00058	<0.00058	<0.00058	<0.00006	<0.000058	<0.000058	**<0.0307**	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	**<0.00377**	<0.00042	<0.00042	<0.00042	<0.000044	<0.000042	<0.000042	**<0.0189**	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.00377	<0.00021	<0.00021	<0.00021	<0.000022	<0.000021	<0.000021	<0.0189	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	0.00031	<0.000019	<0.00045	0.0571	**0.2**	**0.28**	0.085	<0.00002	**0.2**	**0.22**	**0.879**	**0.13**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	**<0.0392**	<0.0002	<0.0002	<0.0002	<0.000021	<0.00002	<0.00002	**<0.196**	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.0264	0.0044 J	<0.00047	<0.00047	<0.000049	<0.000047	<0.000047	**<0.132**	<0.000047
Acenaphthene	*1.5*	*4.4*	0.00011	<0.000027	<0.00041	0.0456	0.2	0.23	0.079	<0.000028	0.16	0.13	0.497	0.071
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	0.000035 J	<0.00283	0.0032	0.0035	0.0012	<0.000016	0.0013	0.0013	<0.0142	0.0015
Anthracene	*7.3*	*22*	0.000041 J	<0.000014	<0.00017	<0.00236	0.0034	0.0052	0.0025	<0.000015	0.0028	0.0036	0.105 J	0.004
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	0.00014	<0.00377	<0.0005	<0.0005	<0.0005	<0.000052	<0.00005	<0.00005	**0.0336 J**	0.00043
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	0.000037 J	**<0.00377**	<0.0002	<0.0002	<0.0002	<0.000021	<0.00002	<0.00002	**<0.0189**	0.00014
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	**<0.00613**	<0.0003	<0.0003	<0.0003	<0.000031	<0.00003	<0.00003	**<0.0307**	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000091	<0.000037	<0.00016	**<0.0175**	<0.00037	<0.00037	<0.00037	0.0001 J	<0.000037	<0.000077	**<0.0873**	0.00092
Chrysene	*0.91*	*2*	<0.000021	<0.000021	0.00013	<0.00377	<0.00021	<0.00021	<0.00021	<0.000022	<0.000021	0.000041 J	0.0248 J	0.00039
Dibenzofuran	*0.098*	*0.29*	0.00011	<0.00002	<0.00029	0.0229 J	0.086	0.09	0.04	<0.000021	0.096	0.079	**0.411**	0.055
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	0.000027 J	0.000054 J	<0.00002	<0.00519	<0.0002	<0.0002	<0.0002	0.000081 J	<0.00002	<0.00002	<0.0259	0.0016
Fluoranthene	*0.98*	*2.9*	<0.00001	<0.00001	0.001	<0.0033	0.0014	0.0013	0.00067 J	<0.00001	0.00052	0.00071	0.165	0.0029
Fluorene	*0.98*	*2.9*	0.000076 J	<0.00003	<0.00032	0.024	0.076	0.083	0.037	<0.000031	0.078	0.067	0.382	0.04
Naphthalene	*0.49*	*1.5*	0.007	0.00018 J	<0.0038	**0.884**	**7.8**	**6**	**1.5**	<0.000021	**4.9 J**	**4.7**	**7.18**	**3.1**
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.00519	<0.00024	<0.00024	<0.00024	<0.000025	<0.000024	<0.000024	<0.0259	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.00472	<0.00025	<0.00025	<0.00025	<0.000026	<0.000025	<0.000025	<0.0236	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	**<0.0288**	<0.00079	<0.00079	<0.00079	<0.000082	<0.000079	<0.000079	**<0.144**	<0.000079
Phenanthrene	*0.73*	*2.2*	0.000086 J	<0.000021	<0.00069	0.0262	0.026	0.035	0.019	<0.000022	0.032	0.031	0.604	0.031
Phenol	*7.3*	*22*	0.0012	<0.000035	<0.000035	<0.00189	<0.00035	<0.00035	<0.00035	<0.000036	<0.000035	<0.000035	0.192	0.13
Pyrene	*0.73*	*2.2*	<0.000019	<0.000019	0.0007	<0.00519	0.00068 J	0.001	0.00037 J	<0.00002	0.00041	0.00046	0.0967 J	0.0018
Metals														
Arsenic	*0.01*	*0.01*	0.000579 J	0.00216	0.00299		**0.0263**	**0.0187**	**0.019**	0.00207	**0.0231**	**0.0237**		0.00991

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-79A 08/28/2014	MW-79A 01/30/2018	MW-79A 03/28/2018	MW-79A 05/25/2018	MW-79A 01/23/2019	MW-79A 07/30/2019	MW-79A 01/17/2020	MW-80B 08/28/2014	MW-80B 01/30/2018	MW-80B 03/28/2018	MW-80B 05/24/2018	MW-80B 01/10/2019
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0007	<0.0002	<0.0002	<0.0002	<0.002	<0.0002	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	**0.0485**	**1**	**0.3**	**0.36**	**0.45**	**0.013**	**0.12**	0.0000898 J	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0006	<0.0003	<0.0003	<0.0003	<0.003	<0.0003	<0.0003	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	0.0215	0.18	0.12	0.14	0.19	0.0067	0.075	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.00075	<0.001	<0.001	<0.001	**<0.01**	<0.001	<0.001	<0.00015	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	0.076	0.99	0.44	0.48	0.55	0.018	0.26	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	0.0763	0.48	0.31	0.41	0.54	0.023	0.2	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	**<0.00539**	<0.00021	<0.00021	<0.00021	<0.00021	<0.000021	<0.000021	<0.00011	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	**6.11**	**11**	**11**	**20**	**2.5**	0.33	**6.7**	<0.00031	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	**<0.00637**	<0.00058	<0.00058	<0.00058	<0.00058	<0.000058	<0.000058	<0.00013	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	**<0.00392**	<0.00042	<0.00042	<0.00042	<0.00042	<0.000042	<0.000042	<0.00008	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.00392	<0.00021	<0.00021	<0.00021	<0.00021	<0.000021	<0.000021	<0.00008	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	**0.654**	**0.17**	**0.42**	**0.44**	**0.1**	0.051	**0.43**	0.000158 J	<0.000019	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	**<0.0407**	<0.0002	<0.0002	<0.0002	<0.0002	<0.00002	<0.00002	<0.00083	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.0275	<0.00047	<0.00047	0.016 J	<0.00047	<0.000047	<0.000047	<0.00056	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	0.427	0.13	0.17	0.16	0.039	0.034	0.19	0.0000835 J	<0.000027	<0.000027	<0.000027	<0.000027
Acenaphthylene	*1.5*	*4.4*	0.0112 J	0.0045	<0.00015	0.0056	0.0015	0.00076	0.0036	<0.00006	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	*7.3*	*22*	0.0673	0.0057	0.0092	0.0084	0.0021	0.002	0.0094	<0.00005	<0.000014	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*	**0.00985 J**	<0.0005	<0.0005	<0.0005	<0.0005	0.00023	0.00081	<0.00008	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	**<0.00392**	<0.0002	<0.0002	<0.0002	<0.0002	<0.00002	**0.00029**	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	**<0.00637**	<0.0003	<0.0003	<0.0003	<0.0003	<0.00003	<0.00003	<0.00013	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	**<0.0181**	<0.00037	<0.00037	<0.00037	<0.00037	0.00055	<0.000037	0.00106	<0.000069	<0.000037	0.00012 J	<0.000037
Chrysene	*0.91*	*2*	0.00948 J	<0.00021	<0.00021	<0.00021	<0.00021	0.00027	0.00072	<0.00008	<0.000021	<0.000021	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	**0.342**	0.097	**0.14**	0.092	0.037	0.026	**0.14**	<0.00008	<0.00002	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00539	<0.0002	<0.0002	<0.0002	<0.0002	<0.00002	0.00098	<0.00011	<0.00002	<0.00002	0.000047 J	<0.00002
Fluoranthene	*0.98*	*2.9*	0.0713	0.0036	0.0051	0.0023	0.001	0.0012	0.0076	<0.00007	<0.00001	<0.00001	<0.00001	<0.00001
Fluorene	*0.98*	*2.9*	0.291	0.063	0.081	0.056	0.022	0.017	0.094	<0.00007	<0.00003	<0.00003	<0.00003	<0.00003
Naphthalene	*0.49*	*1.5*	**6.89**	**7.9**	**8.5**	**15**	**1.9**	**0.74 J**	**9**	0.00157	<0.00002	<0.00002	<0.00002	0.000068 J
Nitrobenzene	*0.049*	*0.15*	<0.00539	<0.00024	<0.00024	<0.00024	<0.00024	<0.000024	<0.000024	<0.00011	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.0049	<0.00025	<0.00025	<0.00025	<0.00025	<0.000025	<0.000025	<0.0001	<0.000025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	**<0.0299**	<0.00079	<0.00079	<0.00079	<0.00079	<0.000079	<0.000079	<0.00061	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	0.355	0.038	0.049	0.039	0.012	0.0082	0.081	0.0000792 J	<0.000021	<0.000021	<0.000021	<0.000021
Phenol	*7.3*	*22*	1.13	2.6	4	4.2	0.51	0.063	0.35	0.00018 J	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	0.0434	0.0022	0.0038	0.0022	0.00063 J	0.0011	0.0035	<0.00011	<0.000019	<0.000019	<0.000019	<0.000019
Metals														
Arsenic	*0.01*	*0.01*		**0.0184**	**0.0149**	**0.0134**	**0.0133**	0.00991	0.00893		0.00286	0.00187 J	0.00202	0.0018 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-80B 07/30/2019	MW-80B 01/07/2020	MW-81B 07/24/2014	MW-81B 01/29/2018	MW-81B 03/28/2018	MW-81B 05/25/2018	MW-81B 01/10/2019	MW-81B 07/19/2019	MW-81B 01/09/2020	MW-82B 02/01/2018	MW-82B 03/22/2018	MW-82B 06/06/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.00008	<0.0002	<0.0002	0.00021 J	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.00012	<0.0003	<0.0003	0.00036 J	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.0002	<0.0002	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*			<0.00011									
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.00065 J	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000107	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	0.00028	<0.000301	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000126	<0.000058	<0.000059	0.00079	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.0000777	<0.000042	<0.000042	0.001	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.0000777	<0.000021	<0.000021	0.0018	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.000021 J
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000036	<0.000068	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	0.000019 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.000806	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000544	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	<0.000027	0.000046 J	<0.0000777	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000077	<0.000027	<0.000027	0.000027 J
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.0000583	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	0.000015 J
Anthracene	*7.3*	*22*	<0.000014	0.000026 J	<0.0000485	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	0.000068 J	0.000091 J
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.0000777	<0.00005	<0.000051	<0.000051	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.0000777	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.000126	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00007 J	<0.000069	<0.000359	<0.000037	<0.000037	0.00006 J	0.000058 J	<0.000037	<0.000066	0.00011 J	<0.000037	<0.00056
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.0000777	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	<0.00002	0.000048 J	<0.0000777	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00002 J
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.000107	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	<0.00001	<0.00001	<0.000068	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Fluorene	*0.98*	*2.9*	<0.00003	0.000032 J	<0.000068	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	0.00003 J
Naphthalene	*0.49*	*1.5*	<0.00002	<0.00034	<0.0000777	<0.00002	<0.00002	<0.00002	0.00016	0.000099 J	<0.00023	0.00019	<0.00015	0.00002 J
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000107	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.0000971	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000592	<0.000079	<0.00008	<0.00008	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	<0.000021	0.000027 J	0.0000944 J	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.0000388	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	<0.000019	<0.000019	<0.000107	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019
Metals														
Arsenic	*0.01*	*0.01*	0.00162 J	0.00212		0.00207	0.00134 J	0.00203	0.00116 J	0.000563 J	0.0013 J	0.00271	0.00175 J	**0.0103**

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-82B 01/22/2019	MW-82B 07/30/2019	MW-82B 01/21/2020	MW-83B 02/08/2018	MW-83B 03/22/2018	MW-83B 06/07/2018	MW-83B 07/19/2018	MW-83B 01/15/2019	MW-83B 07/18/2019	MW-83B 01/10/2020	MW-83C 02/08/2018	MW-83C 03/22/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	**0.018**	**0.019**	**0.02**	**0.03**	**0.032**	**0.021**	**0.021**	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	0.08	0.1	0.085	0.068	0.091	0.055	0.078	0.00066 J	0.0005 J
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	0.0055	0.0046	0.0049	0.007	0.0082	0.0042	0.0052	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*										<0.0002		
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	0.1	0.11	0.091	0.066	0.1	0.061	0.098	0.0014	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.00021	<0.00021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00004	<0.0004	<0.0004	<0.00004	<0.00004	<0.00004	<0.00004	0.000072 J	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	<0.00058	<0.00059	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.00042	<0.00042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.00021	<0.00021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	0.0001	**0.15**	**0.75**	**0.23**	0.076	0.086	0.05	0.078	0.0015	0.0015
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.0002	<0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.00047	<0.00047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	0.0003 J	<0.000047
Acenaphthene	*1.5*	*4.4*	<0.000027	<0.000027	0.000043 J	0.098	0.33	0.11	0.027	0.026	0.021	0.066	0.00083	0.001
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	0.00086 J	0.0016	0.00064	<0.000015	0.00034	0.00025	0.00047	<0.000015	<0.000015
Anthracene	*7.3*	*22*	0.000042 J	<0.000014	0.000031 J	0.01	0.011	0.007	0.0014	0.0012	0.00099	0.0039	0.000034 J	0.000068 J
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00005	<0.0005	<0.00051	0.000058 J	<0.00005	<0.00005	<0.00005	0.00007 J	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.0002	<0.0002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.0003	<0.0003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	<0.000037	<0.000037	<0.00037	<0.00037	0.00012 J	<0.000037	<0.000064	0.00036	<0.000037	0.00019 J	<0.000037
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	<0.00021	<0.00021	0.00009 J	<0.000021	<0.000021	<0.000021	0.000065 J	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00002	0.00004 J	0.043	**0.17**	0.061	0.023	0.02	0.014	0.023	0.00061	0.00044
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.00002	<0.0002	<0.0002	0.000094 J	0.00021	0.00015 J	0.00012 J	<0.00002	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	<0.00001	<0.00001	<0.00001	0.0035	0.0043	0.0046	0.00057	0.00051	0.00038	0.0033	0.000044 J	<0.00001
Fluorene	*0.98*	*2.9*	<0.00003	<0.00003	0.000037 J	0.046	0.072	0.039	0.0083	0.0099	0.0076	0.024	0.00035	0.00034
Naphthalene	*0.49*	*1.5*	<0.00002	<0.00002	<0.00041	**2.6**	**14**	**2**	**1.5**	**1.6**	**0.77**	**1.2**	0.012	0.016
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.00024	<0.00024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.00025	<0.00025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	<0.00079	<0.0008	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	<0.000021	<0.000021	0.00012	0.04	0.071	0.045	0.0086	0.0074	0.0059	0.021	0.00044	0.00053
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.000035	<0.00035	<0.00035	<0.000035	<0.000035	<0.000035	0.00051	<0.000035	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	<0.000019	<0.000019	<0.000019	0.0029	0.0023	0.0026	0.00037	0.0003	0.0002	0.0022	0.000027 J	<0.000019
Metals														
Arsenic	*0.01*	*0.01*	0.00838	0.00873	0.00484	**0.0353**	**0.0185**	**0.0673**	**0.0731**	**0.0916**	**0.0648**	**0.0709**	0.000609 J	<0.0004

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-83C 06/07/2018	MW-83C 01/15/2019	MW-83C 07/18/2019	MW-83C 01/10/2020	MW-84A 03/12/2020	MW-84B 02/08/2018	MW-84B 03/27/2018	MW-84B 06/07/2018	MW-84B 07/19/2018	MW-84B 07/19/2018 Duplicate	MW-84B 01/24/2019	MW-84B 07/30/2019
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	**0.0097**	**0.0086**	0.0017	0.002	0.0019	0.0024	**0.01**
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.039	0.037	0.0036	0.0029	0.0026	0.0051	0.013
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0025	0.00099 J	<0.0002	<0.0002	<0.0002	0.00056 J	0.0015
Vinyl chloride	*0.002*	*0.002*				<0.0002								
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.035	0.031	0.003	0.0019	0.0017	0.0033	0.0041
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	0.000087 J	<0.000021	<0.000021	<0.000021	**0.0014 J**	<0.00021	<0.00021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00004	<0.00004	<0.000041	<0.0004	<0.0004	0.0017 J	0.00048	<0.00004	<0.00016	0.00081
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	<0.000058	<0.000059	<0.00058	<0.00058	<0.00058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.000042	<0.000043	<0.00042	<0.00042	<0.00042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00021	<0.00021	<0.00021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	0.000089 J	<0.000019	0.00012	0.00021	<0.000019	**0.55**	**0.58**	0.025	0.074 J	**0.2 J**	<0.000019	0.0027
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002	<0.0002	**0.0038**	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.000048	<0.00047	<0.00047	<0.00047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	0.00017	<0.000027	0.000094 J	0.00018	<0.000028	0.22	0.27	0.031	0.048 J	0.14 J	0.000032 J	0.008
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	0.003	0.0032	0.00061 J	0.00062	<0.000015	0.000043 J	0.0003
Anthracene	*7.3*	*22*	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	0.02	0.0092	0.0022	0.0027 J	0.0042 J	<0.000014	0.00042
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00005	<0.00005	<0.000051	<0.0005	<0.0005	<0.0005	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0002	<0.0002	<0.0002	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	<0.000031	<0.0003	<0.0003	<0.0003	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00012 J	<0.000037	0.00023	<0.000037	<0.000038	0.00056 J	<0.00037	<0.00037	<0.000037	<0.000037	<0.000037	0.00026
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00021	<0.00021	<0.00021	<0.000021	<0.000021	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	0.000046 J	<0.00002	0.00007 J	0.00015	<0.00002	**0.13**	**0.22**	0.019	0.037 J	0.077 J	<0.00002	0.0054
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	0.000092 J	0.00006 J	0.00004 J	<0.00002	<0.00002	<0.0002	<0.0002	<0.0002	<0.00002	<0.00002	<0.00002	0.000055 J
Fluoranthene	*0.98*	*2.9*	0.000018 J	<0.00001	<0.00001	<0.00001	<0.00001	0.0039	0.0029	0.00069 J	0.0011 J	0.0016 J	<0.00001	0.00015
Fluorene	*0.98*	*2.9*	0.000067 J	<0.00003	<0.00003	0.00012	<0.000031	0.074	0.076	0.011	0.018 J	0.039 J	<0.00003	0.0026
Naphthalene	*0.49*	*1.5*	0.00039	<0.00036	0.0014	0.0018	0.000023 J	**2.4**	**2.2**	0.066	0.49 J	**0.95 J**	<0.00002	0.06 J
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00024	<0.00024	<0.00024	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.000026	<0.00025	<0.00025	<0.00025	<0.000025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	<0.000079	<0.000081	<0.00079	<0.00079	<0.00079	**0.005**	0.000094 J	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	0.000038 J	<0.000021	<0.000021	0.00017	<0.000021	0.088	0.072	0.013	0.024 J	0.043 J	<0.000021	0.0021
Phenol	*7.3*	*22*	<0.000035	0.000038 J	0.000068 J	<0.000035	<0.000036	<0.00035	<0.00035	0.00062 J	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	0.0025	0.0018	0.00036 J	0.00062 J	0.00097 J	<0.000019	0.00011
Metals														
Arsenic	*0.01*	*0.01*	0.00139 J	0.00616	0.00617	0.00564	0.00464	0.00269	0.00277	<0.0004	<0.0004	<0.0004	0.00219	0.00838

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-84B 01/16/2020	MW-85C 02/01/2018	MW-85C 03/28/2018	MW-85C 05/24/2018	MW-85C 02/01/2019	MW-85C 07/30/2019	MW-85C 01/09/2020	MW-86C 02/01/2018	MW-86C 02/01/2018	MW-86C 03/28/2018	MW-86C 03/28/2018 Duplicate	MW-86C 05/25/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	**0.0064**	<0.0002	**0.013**	0.0026	<0.0002	0.00093 J	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	0.0094	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*								<0.0002	<0.0002	<0.0002		
Xylenes (total)	*10*	*10*	0.0032	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.000069 J	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	0.00048	<0.00004	<0.00004	<0.00004	<0.000041	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	<0.000058	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.000042	<0.000043	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	0.0065	0.0001 J	0.000049 J	0.000067 J	<0.000019	<0.000019	<0.000041	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	0.00035	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.000048	<0.000047	0.00077 J	<0.000047	0.0003 J	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	0.025	0.00013	<0.000027	<0.000027	<0.000028	<0.000027	<0.000077	0.00091	<0.000027	<0.000027	<0.000027	<0.000027
Acenaphthylene	*1.5*	*4.4*	0.00031	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	*7.3*	*22*	0.00095	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00005	<0.00005	<0.000051	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.000031 J	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	<0.000031	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	0.000091 J	0.0002	0.00013 J	<0.000038	<0.000037	<0.00016	0.000053 J	<0.000037	<0.000037	<0.000037	0.000052 J
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.000053 J	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	0.015	0.000087 J	<0.00002	0.000036 J	<0.00002	<0.00002	<0.000059	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	0.00023	<0.00002	0.00003 J	<0.00002	<0.00002	<0.00002	0.000093 J	0.000051 J	<0.00002	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	0.00037	0.000015 J	<0.00001	<0.00001	<0.00001	<0.00001	0.00025	0.00011	<0.00001	<0.00001	<0.00001	<0.00001
Fluorene	*0.98*	*2.9*	0.0063	0.00011	<0.00003	0.000034 J	<0.000031	<0.00003	<0.000055	0.00038	<0.00003	<0.00003	<0.00003	<0.00003
Naphthalene	*0.49*	*1.5*	0.13	0.00069	0.0017	0.0026	<0.00002	0.0012 J	<0.00046	0.000054 J	<0.00002	<0.00002	<0.00002	0.000079 J
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.000026	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	0.00015 J	<0.000081	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	0.0065	0.0001	<0.000021	0.0001	<0.000021	<0.000021	<0.000067	<0.000021	<0.000021	<0.000021	<0.000021	0.000032 J
Phenol	*7.3*	*22*	<0.000035	0.00011 J	<0.000035	<0.000035	<0.000036	<0.000035	<0.000042	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	0.00025	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	0.00021	0.00006 J	<0.000019	<0.000019	<0.000019	<0.000019
Metals														
Arsenic	*0.01*	*0.01*	0.00363	0.00152 J	0.00287	0.00588	0.00136 J	0.000633 J	0.00272	0.00146 J	0.00156 J	0.00612	0.00608	0.00768

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-86C 05/25/2018 Duplicate	MW-86C 01/11/2019	MW-86C 01/11/2019 Duplicate	MW-86C 07/30/2019	MW-86C 07/30/2019 Duplicate	MW-86C 01/17/2020	MW-86C 01/17/2020 Duplicate	MW-87C 02/08/2018	MW-87C 03/27/2018	MW-87C 06/07/2018	MW-87C 01/22/2019	MW-87C 07/17/2019
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0039	0.0045	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*					<0.0002							
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	**0.0028**	0.00041 J	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	0.00018 J	<0.00004	<0.00004	<0.00004	0.00004 J	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	0.000058 J	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	0.000042 J	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.000021 J	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	0.000061 J	0.000066 J	0.00043	0.00014	0.000019 J	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00002 J	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	0.00033 J	<0.000047	0.000047 J	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	0.00042	0.00011	0.000027 J	<0.000027	<0.000027
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	0.000015 J	<0.000015	<0.000015
Anthracene	*7.3*	*22*	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	0.00012	0.000081 J	<0.000014	0.000014 J	<0.000014	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00005 J	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00002 J	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	0.00003 J	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.000061 J	<0.000057	<0.0001	0.00006 J	0.00005 J	<0.000037	<0.000053	0.0003	<0.000037	0.00012 J	<0.000037	<0.00018
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.000021 J	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00032	0.000063 J	0.00002 J	<0.00002	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	0.000072 J	0.00011 J	0.00011 J	0.000073 J	<0.00002	<0.00002	<0.00002	<0.00002	0.00002 J	<0.00002	0.00017 J
Fluoranthene	*0.98*	*2.9*	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.00001 J	<0.00001	<0.00001
Fluorene	*0.98*	*2.9*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	0.00027	<0.00003	0.00003 J	<0.00003	<0.00003
Naphthalene	*0.49*	*1.5*	<0.00002	0.000079 J	<0.00002	0.00012 J	0.00031 J	<0.00075	<0.00022	0.0014	0.00038	0.00002 J	<0.00002	<0.00017
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	0.000024 J	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	0.000025 J	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	0.000079 J	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.00036	0.00048	0.00015	0.000021 J	<0.000021	<0.000021
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.00011	<0.000035	0.000035 J	<0.000035	0.00013 J
Pyrene	*0.73*	*2.2*	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	0.000019 J	<0.000019	<0.000019
Metals														
Arsenic	*0.01*	*0.01*	0.00824	0.00402	0.00405	0.00236	0.0019 J	0.000645 J	0.000699 J	<0.0004	<0.0004	<0.0004	0.000587 J	<0.0004

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-87C 01/20/2020	MW-88A 03/17/2020	MW-88B 03/17/2020	MW-88C 02/01/2018	MW-88C 03/19/2018	MW-88C 05/24/2018	MW-88C 01/08/2019	MW-88C 07/31/2019	MW-88C 01/14/2020	MW-89B 07/19/2018	MW-89B 01/22/2019	MW-89B 07/18/2019
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*	<0.0002											
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058	<0.000059	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	0.00023	<0.000019	<0.000019	<0.000019	0.000052 J	<0.000019	<0.000019	<0.000019	<0.000019	0.000054 J	<0.000019	0.00005 J
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	0.00011	0.0015	<0.000027	0.000053 J	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	*7.3*	*22*	0.000088 J	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000051	<0.00005	<0.00005	<0.00005	<0.00005	<0.000051	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	0.000066 J	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	0.0001 J	<0.000037	0.000052 J	<0.000037	0.00017 J	<0.000037	<0.000037	0.000064 J	0.000065 J	<0.000037	0.00015 J
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	0.00011	<0.00002	<0.00002	0.000023 J	0.000056 J	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.00002	<0.00002	0.000025 J	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.000038 J
Fluoranthene	*0.98*	*2.9*	<0.000086	0.00025	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Fluorene	*0.98*	*2.9*	0.000093 J	0.00026	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
Naphthalene	*0.49*	*1.5*	0.0011	<0.00002	<0.00002	0.00011	0.00055	0.00011	<0.000059	<0.00002	<0.00002	0.0009	<0.00002	0.00025
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.00008	<0.000079	<0.000079	<0.000079	<0.000079	<0.00008	<0.000079
Phenanthrene	*0.73*	*2.2*	<0.00028	<0.000021	<0.000021	0.00003 J	<0.000021	0.000035 J	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Phenol	*7.3*	*22*	0.00048	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	0.00055	<0.000035	<0.000035	<0.000035	0.00042
Pyrene	*0.73*	*2.2*	<0.000057	0.00053	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019
Metals														
Arsenic	*0.01*	*0.01*	0.00135 J	0.00355	0.00166 J	0.000557 J	0.000653 J	0.00346	0.000864 J	<0.0004	0.000862 J	0.00138 J	0.000683 J	<0.0004

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	MW-89B 01/16/2020	MW-90B 07/19/2018	MW-90B 01/22/2019	MW-90B 07/18/2019	MW-90B 01/20/2020	MW-91A 03/12/2020	MW-92B 03/12/2020	MW-93B 03/12/2020	MW-94A 03/12/2020	MW-95A 03/17/2020	MW-96B 03/17/2020	MW-96B 03/17/2020 Duplicate
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1*	*1*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.00049 J	0.00092 J	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.002*	*0.002*					<0.0002							
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000022	<0.000021	<0.000021	<0.000022	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	<0.00004	<0.00004	<0.00004	0.000075 J	<0.000042	<0.00004	<0.000041	<0.000041	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.000061	<0.000059	<0.000059	<0.00006	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000044	<0.000042	<0.000043	<0.000043	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000022	<0.000021	<0.000021	<0.000022	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	<0.000032	<0.000019	<0.000019	<0.000019	0.00034	<0.00002	<0.000019	<0.000019	<0.00002	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.000021	<0.00002	<0.00002	<0.000021	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000049	<0.000047	<0.000048	<0.000048	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	<0.000083	<0.000027	<0.000027	<0.000027	0.00015	<0.000028	<0.000027	0.000039 J	<0.000028	<0.000027	<0.000027	<0.000027
Acenaphthylene	*1.5*	*4.4*	0.000045 J	<0.000015	<0.000015	<0.000015	<0.000015	<0.000016	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	*7.3*	*22*	0.0002	<0.000014	<0.000014	<0.000014	0.00014	<0.000015	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*	0.00017	<0.00005	<0.00005	<0.00005	<0.00005	<0.000053	<0.000051	<0.000051	<0.000052	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	0.000079 J	<0.00002	<0.00002	<0.00002	0.000052 J	<0.000021	<0.00002	<0.00002	<0.000021	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.000032	<0.00003	<0.000031	<0.000031	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.000099 J	0.000097 J	<0.000037	0.00011 J	<0.000037	<0.000039	<0.000037	<0.000038	0.000056 J	<0.000037	0.00035	0.00013 J
Chrysene	*0.91*	*2*	0.00024	<0.000021	<0.000021	<0.000021	<0.000021	<0.000022	<0.000021	<0.000021	<0.000022	<0.000021	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	<0.00011	<0.00002	<0.00002	<0.00002	0.00011	<0.000021	<0.00002	0.000071 J	<0.000021	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	0.000034 J	<0.00002	<0.00002	<0.00002	<0.00002	0.000031 J	<0.00002	<0.00002	<0.000021	<0.00002	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	0.0012	<0.00001	<0.00001	<0.00001	<0.00012	<0.000011	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Fluorene	*0.98*	*2.9*	<0.00018	<0.00003	<0.00003	<0.00003	0.00013	<0.000032	<0.00003	0.000058 J	<0.000031	<0.00003	<0.00003	<0.00003
Naphthalene	*0.49*	*1.5*	<0.00029	<0.00002	0.000045 J	0.000091 J	0.003	0.000083 J	<0.00002	<0.00002	<0.000021	<0.00002	<0.00002	<0.00002
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000025	<0.000024	<0.000024	<0.000025	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000026	<0.000025	<0.000026	<0.000026	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.000083	<0.00008	<0.000081	<0.000081	<0.000079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	0.00083	<0.000021	<0.000021	<0.000021	0.0004	<0.000022	<0.000021	0.00016	<0.000022	<0.000021	<0.000021	<0.000021
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.000035	<0.000035	0.00019 J	<0.000037	<0.000035	<0.000036	<0.000036	<0.000035	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	0.00081	<0.000019	<0.000019	<0.000019	<0.000077	<0.00002	<0.000019	<0.000019	<0.00002	<0.000019	<0.000019	<0.000019
Metals														
Arsenic	*0.01*	*0.01*	0.000463 J	0.00169 J	0.00346	**0.0135**	0.0029	0.00989	0.00201	0.00455	0.0054	0.000977 J	0.00312	0.00311

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	***C/I Assessment Level***	MW-97A 03/12/2020	MW-98A 03/12/2020	MW-98B 03/12/2020	MW-99C 03/11/2020	P-10 01/29/2008	P-10 01/29/2008 Duplicate	P-10 07/16/2008	P-10 01/22/2009	P-10 07/22/2009	P-10 07/22/2009 Duplicate	P-10 01/22/2010	P-10 01/22/2010 Duplicate
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002			<0.00052					
Benzene	*0.005*	*0.005*	<0.0002	<0.0002	<0.0002	<0.0002			<0.00025					
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0003	<0.0003	<0.0003			<0.00047					
Ethylbenzene	*0.7*	*0.7*	<0.0003	<0.0003	<0.0003	<0.0003			<0.00025					
Methylene chloride	*0.005*	*0.005*	<0.001	<0.001	<0.001	<0.001			<0.00054					
Toluene	*1*	*1*	<0.0002	0.00065 J	0.002	0.00078 J			<0.00041					
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003			<0.00127					
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.000021	<0.000021	<0.000021								
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00004	0.000078 J	<0.000041	<0.000041								
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000059	<0.000059	<0.000059	<0.000059								
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.000043	<0.000043	<0.000043								
2-Chloronaphthalene	*2*	*5.8*	<0.000021	<0.000021	<0.000021	<0.000021								
2-Methylnaphthalene	*0.098*	*0.29*	<0.000019	<0.000019	<0.000019	0.000086 J								
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00002	<0.00002	<0.00002								
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.000048	<0.000048	<0.000048								
Acenaphthene	*1.5*	*4.4*	<0.000027	0.00004 J	<0.000028	<0.000028	0.00373	0.00854	0.0106	<0.0008	<0.0009	<0.0009	<0.0009	<0.0009
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.000015	<0.00028	<0.00028	0.00053	<0.0007	<0.0005	<0.0005	<0.0005	<0.0005
Anthracene	*7.3*	*22*	<0.000014	<0.000014	<0.000014	<0.000014	0.000703	0.00036 J	0.000747	<0.0007	<0.0006	<0.0006	<0.0006	<0.0006
Benzo(a)anthracene	*0.0091*	*0.02*	<0.000051	<0.000051	<0.000051	<0.000051								
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	<0.00002	<0.00002	<0.00002								
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.000031	<0.000031	<0.000031								
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	<0.000038	<0.000038	0.00007 J	0.00023 J	<0.00019	0.00022 J	<0.0012	<0.0033	<0.0033	<0.0033	<0.0033
Chrysene	*0.91*	*2*	<0.000021	<0.000021	<0.000021	<0.000021								
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00002	<0.00002	<0.00002	0.000713	0.00175	0.00176	<0.0007	<0.0007	<0.0007	<0.0007	<0.0007
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00019	<0.00019	0.00092 J	<0.0007	<0.0005	<0.0005	<0.0005	<0.0005
Fluoranthene	*0.98*	*2.9*	<0.00001	0.000018 J	<0.00001	<0.00001	0.000506	0.00025 J	0.00022 J	<0.0006	<0.0005	<0.0005	<0.0005	<0.0005
Fluorene	*0.98*	*2.9*	<0.00003	<0.000031	<0.000031	<0.000031	0.000668	0.00251	0.00245	<0.0008	<0.0006	<0.0006	<0.0006	<0.0006
Naphthalene	*0.49*	*1.5*	<0.00002	0.000042 J	0.000036 J	0.00018	<0.00038	<0.00037	0.00079	<0.0008	<0.0006	<0.0006	<0.0006	<0.0006
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.000024	<0.000024	<0.000024								
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.000026	<0.000026	<0.000026								
Pentachlorophenol	*0.001*	*0.001*	<0.00008	<0.000081	<0.000081	<0.000081								
Phenanthrene	*0.73*	*2.2*	<0.000021	<0.000021	<0.000021	0.000053 J								
Phenol	*7.3*	*22*	<0.000035	<0.000036	<0.000036	<0.000036	<0.00019	<0.00019	<0.00021	<0.0015	<0.0005	<0.0005	<0.0005	<0.0005
Pyrene	*0.73*	*2.2*	<0.000019	<0.000019	<0.000019	<0.000019	0.00039 J	<0.00019	<0.00021	<0.0009	<0.0005	<0.0005	<0.0005	<0.0005
Metals														
Arsenic	*0.01*	*0.01*	0.00121 J	0.00963	0.00165 J	0.000866 J								

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	P-10 07/14/2010	P-10 07/14/2010 Duplicate	P-10 01/12/2011	P-10 07/12/2011	P-10 07/12/2011 Duplicate	P-10 01/31/2012	P-10 01/31/2012 Duplicate	P-10 07/11/2012	P-10 07/11/2012 Duplicate	P-10 01/10/2013	P-10 01/10/2013 Duplicate	P-10 07/11/2013
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*												
Benzene	*0.005*	*0.005*												
Chlorobenzene	*0.1*	*0.1*												
Ethylbenzene	*0.7*	*0.7*												
Methylene chloride	*0.005*	*0.005*												
Toluene	*1*	*1*												
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*												
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*												
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	<0.0009	<0.0009	<0.0009	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0000755	<0.0000755	<0.0000808
Acenaphthylene	*1.5*	*4.4*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0000566	<0.0000566	<0.0000606
Anthracene	*7.3*	*22*	<0.0006	<0.0006	<0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0000472 J	0.000148 J	0.000133 J
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0033	<0.0033	<0.0033	<0.0005	0.0015 J	<0.0005	<0.0005	<0.0005	<0.0005	0.000906	0.00112	0.000492 J
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	<0.0007	<0.0007	<0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0000755	<0.0000755	<0.0000808
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.000104	<0.000104	<0.000111
Fluoranthene	*0.98*	*2.9*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.000066	<0.000066	<0.0000707
Fluorene	*0.98*	*2.9*	<0.0006	<0.0006	<0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.000066	<0.000066	<0.0000707
Naphthalene	*0.49*	*1.5*	<0.0006	<0.0006	<0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0000755	<0.0000755	<0.0000808
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*												
Phenol	*7.3*	*22*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0000377	<0.0000377	<0.0000404
Pyrene	*0.73*	*2.2*	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.000104	<0.000104	<0.000111
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	P-10 07/11/2013 Duplicate	P-10 01/09/2014	P-10 01/09/2014 Duplicate	P-10 07/02/2014	P-10 07/02/2014 Duplicate	P-10 01/07/2015	P-10 01/07/2015 Duplicate	P-10 07/08/2015	P-10 07/08/2015 Duplicate	P-10 01/13/2016	P-10 01/13/2016 Duplicate	P-10 07/07/2016
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*												
Benzene	*0.005*	*0.005*												
Chlorobenzene	*0.1*	*0.1*												
Ethylbenzene	*0.7*	*0.7*												
Methylene chloride	*0.005*	*0.005*												
Toluene	*1*	*1*												
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*												
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*				0.0000718 J	0.000891 J							
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	<0.0000812	0.000102 J	0.000966	0.01 J	0.0169 J	<0.0000792	<0.0000792	0.023	0.022	<0.000027	<0.000027	<0.000027
Acenaphthylene	*1.5*	*4.4*	<0.0000609	<0.0000556	0.0000571 J	0.0000588 J	0.000265 J	<0.0000594	<0.0000594	0.00012	0.00012	<0.000015	<0.000015	<0.000015
Anthracene	*7.3*	*22*	0.000181 J	0.000323 J	0.000369 J	0.000375 J	0.000473 J	0.000122 J	0.000115 J	0.00039	0.00033	0.000014 J	0.00007 J	<0.000014
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.000575	<0.000343	<0.000343	0.00127	0.00133	0.000853 J	0.00155 J	0.0006 J	0.00032 J	0.0002 J	0.00035 J	0.00029
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	<0.0000812	<0.0000741	0.000135 J	0.00205 J	0.00304 J	<0.0000792	<0.0000792	0.0024	0.0021	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.000112	<0.000262	<0.000309	0.000108 J	0.000321 J	<0.000109	<0.000119	<0.000044	<0.000059	<0.000058	<0.00011	<0.000046
Fluoranthene	*0.98*	*2.9*	<0.0000711	<0.0000648	<0.0000648	0.00042 J	0.00039 J	0.000114 J	0.000113 J	0.0006	0.00047	<0.00001	<0.00001	<0.00001
Fluorene	*0.98*	*2.9*	<0.0000711	<0.0000648	0.000262 J	0.00393	0.00514	<0.0000693	<0.0000693	0.0046	0.0038	<0.00003	<0.00003	<0.00003
Naphthalene	*0.49*	*1.5*	<0.0000812	<0.0000741	<0.0000741	0.0000784 J	0.000924 J	<0.0000792	<0.0000792	0.019	0.018	<0.00002	<0.00002	<0.00002
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*				0.000575 J	0.000808 J							
Phenol	*7.3*	*22*	<0.0000406	<0.000037	<0.000037	<0.0000392	<0.0000396	<0.0000396	<0.0000396	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	<0.000112	<0.000102	<0.000102	0.000318 J	0.000306 J	<0.000109	<0.000109	0.00038	0.00029	<0.000019	<0.000019	<0.000019
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	P-10 07/07/2016 Duplicate	P-10 01/12/2017	P-10 01/12/2017 Duplicate	P-10 07/13/2017	P-10 07/13/2017 Duplicate	P-10 01/04/2018	P-10 01/04/2018 Duplicate	P-10 07/19/2018	P-10 07/19/2018 Duplicate	P-10 01/08/2019	P-10 01/08/2019 Duplicate	P-10 07/01/2019
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*												
Benzene	*0.005*	*0.005*												
Chlorobenzene	*0.1*	*0.1*												
Ethylbenzene	*0.7*	*0.7*												
Methylene chloride	*0.005*	*0.005*												
Toluene	*1*	*1*												
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*												
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*												
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	<0.000027	0.000027 J	0.000078 J	<0.000027	<0.000027	<0.000027	0.0033	0.041	0.043	<0.000027	<0.000027	0.0028
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	0.00038	0.00032	<0.000015	<0.000015	<0.000015
Anthracene	*7.3*	*22*	<0.000014	0.000014 J	0.000081 J	<0.000014	<0.000014	<0.000014	0.00017	0.00058	0.0006	0.00025	0.00021	0.000065 J
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.0003	0.00025 J	0.00018 J	0.000097 J	0.00016 J	<0.00024	<0.00017	<0.00019	<0.00022	<0.000061	<0.000057	0.00029
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	<0.00002	0.00002 J	0.000055 J	<0.00002	<0.00002	0.00029	0.00093	0.0047	0.0042	<0.00002	<0.00002	<0.00002
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.000031	<0.00002	<0.00002	<0.00002	<0.00002	<0.000042	<0.000034	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	<0.00001	0.00001 J	0.000088 J	<0.00001	<0.00001	0.00017	0.00016	0.00099	0.001	<0.00001	<0.00001	<0.00001
Fluorene	*0.98*	*2.9*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	0.00042	0.0012	0.0073	0.007	<0.00003	0.00003 J	<0.00003
Naphthalene	*0.49*	*1.5*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.0034	0.00014	0.000056 J	<0.00002	<0.00002	0.000063 J
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*												
Phenol	*7.3*	*22*	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	0.0014	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	<0.000019	<0.000019	0.000022 J	<0.000019	<0.000019	<0.000019	<0.000019	0.00049	0.00048	<0.000019	<0.000019	<0.000019
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	P-10 01/13/2020	P-11 01/30/2008	P-11 07/15/2008	P-11 02/04/2009	P-11 01/21/2010	P-11 06/22/2010	P-11 01/18/2011	P-11 07/27/2011	P-11 02/02/2012	P-11 07/26/2012	P-11 02/05/2013	P-11 08/01/2013
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*		<0.00052	<0.00052	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014
Benzene	*0.005*	*0.005*		<0.00025	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00008	<0.00008
Chlorobenzene	*0.1*	*0.1*		<0.00047	<0.00047	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012
Ethylbenzene	*0.7*	*0.7*		<0.00025	<0.00025	<0.0005	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011
Methylene chloride	*0.005*	*0.005*		<0.00054	<0.00054	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015
Toluene	*1*	*1*		<0.00041	<0.00041	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015
Vinyl chloride	*0.002*	*0.002*											<0.00011	
Xylenes (total)	*10*	*10*		<0.00127	<0.00127	<0.001	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*		<0.00008	<0.00008	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.000104	<0.000105
2,4-Dimethylphenol	*0.49*	*1.5*		<0.00031	<0.00028	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**R**	<0.000295
2,4-Dinitrotoluene	*0.0013*	*0.003*		<0.00021	<0.00019	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000123	<0.000124
2,6-Dinitrotoluene	*0.0013*	*0.003*		<0.00021	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000755	<0.0000762
2-Chloronaphthalene	*2*	*5.8*		<0.00042	<0.00038	<0.00012	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000762
2-Methylnaphthalene	*0.098*	*0.29*		0.000783	<0.00038	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	0.00023	<0.000052	0.000127 J	<0.0000667
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*		<0.00021	<0.00047	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	**R**	<0.00079
4-Nitrophenol	*0.049*	*0.15*		<0.00026	<0.00024	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	**R**	<0.000533
Acenaphthene	*1.5*	*4.4*	<0.000027	0.0776	<0.00028	0.0057	<0.00009	0.0037	<0.00009	0.00075	0.03	0.018	<0.0000755	<0.0000762
Acenaphthylene	*1.5*	*4.4*	<0.000015	<0.00031	<0.00028	<0.00006	<0.00007	<0.00007	<0.00007	<0.00005	0.0002	0.0001 J	<0.0000566	<0.0000571
Anthracene	*7.3*	*22*	<0.000014	0.00356	<0.00019	0.00015 J	<0.00007	0.00012 J	<0.00007	0.00012 J	0.0016	0.00039	0.00025 J	0.0000997 J
Benzo(a)anthracene	*0.0091*	*0.02*		<0.00021	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000762
Benzo(a)pyrene	*0.0002*	*0.0002*		**<0.00021**	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000762
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*		<0.00042	<0.00038	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000123	<0.000124
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	0.00116 J	<0.00019	0.00022	<0.00051	<0.00021	0.0016	0.00018 J	<0.00013	0.00021	0.00036 J	0.000593 J
Chrysene	*0.91*	*2*		<0.00021	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000762
Dibenzofuran	*0.098*	*0.29*	<0.00002	<0.00031	<0.00028	0.00024	<0.00008	0.000093 J	<0.00008	0.00013 J	0.0035	0.00059	0.000135 J	<0.0000762
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	<0.00021	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000104	<0.000105
Fluoranthene	*0.98*	*2.9*	<0.00001	0.0061	<0.00019	<0.00007	<0.00007	0.00042	<0.00007	0.000081 J	0.0022	0.00048	<0.000066	<0.0000667
Fluorene	*0.98*	*2.9*	<0.00003	0.0219	<0.00019	0.0018	<0.00007	0.0016	<0.00007	0.000082 J	0.011	0.0044 J	0.0000769 J	<0.0000667
Naphthalene	*0.49*	*1.5*	0.00017	0.0324	<0.00038	0.0027	<0.0001	0.0027	<0.0001	0.00013 J	0.0017	<0.00026	0.000662	<0.0000762
Nitrobenzene	*0.049*	*0.15*		<0.00042	<0.00038	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000104	<0.000105
N-Nitrosodiphenylamine	*0.19*	*0.42*		<0.00026	<0.00024	<0.00009	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000943	<0.0000952
Pentachlorophenol	*0.001*	*0.001*		<0.00021	<0.00019	<0.00008	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	**R**	<0.000581
Phenanthrene	*0.73*	*2.2*		0.0196	<0.00019	0.00048	<0.00007	0.00053	<0.00007	0.000086 J	0.0045	0.00055	0.0000854 J	<0.0000571
Phenol	*7.3*	*22*	<0.000035	<0.00021	<0.00019	<0.00007	<0.00007	<0.00007	<0.00007	<0.00005	<0.00015	<0.00005	**R**	<0.0000381
Pyrene	*0.73*	*2.2*	<0.000019	0.00369	<0.00019	<0.00007	<0.00007	0.00015 J	<0.00007	<0.00005	0.0013	0.00023	<0.000104	<0.000105
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	P-11 01/15/2014	P-11 07/29/2014	P-11 01/24/2018	P-11 03/23/2018	P-11 05/24/2018	P-11 01/09/2019	P-11 07/11/2019	P-11 01/14/2020	P-12 01/29/2008	P-12 07/16/2008	P-12 07/16/2008 Duplicate	P-12 01/22/2009
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		<0.00109	<0.00052	
Benzene	*0.005*	*0.005*	0.000207 J	<0.00008	<0.0002	<0.0002	0.00021 J	<0.0002	<0.0002	<0.0002		<0.00112	<0.00025	
Chlorobenzene	*0.1*	*0.1*	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003		<0.0015	<0.00047	
Ethylbenzene	*0.7*	*0.7*	0.000253 J	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003		<0.00142	<0.00025	
Methylene chloride	*0.005*	*0.005*	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.00122	<0.00054	
Toluene	*1*	*1*	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002		<0.00138	<0.00041	
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*	<0.00058	<0.00026	<0.0003	<0.0003	0.00032 J	<0.0003	<0.0003	<0.0003		<0.00302	<0.00127	
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000104	<0.000108	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021				
2,4-Dimethylphenol	*0.49*	*1.5*	<0.000292	<0.000304	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004				
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000123	<0.000127	<0.000058	<0.000058	<0.000059	<0.000058	<0.000058	<0.000058				
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.0000755	<0.0000784	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042				
2-Chloronaphthalene	*2*	*5.8*	<0.0000755	<0.0000784	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021				
2-Methylnaphthalene	*0.098*	*0.29*	0.000257 J	<0.0000686	<0.000019	<0.000019	0.00015	<0.000019	0.00005 J	0.000076 J				
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.000783	<0.000814	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002				
4-Nitrophenol	*0.049*	*0.15*	<0.000528	<0.000549	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047				
Acenaphthene	*1.5*	*4.4*	0.00951	0.000653	<0.000027	0.00021	0.081	<0.000027	0.0019	0.0046	<0.00029	<0.0003	<0.0003	<0.0008
Acenaphthylene	*1.5*	*4.4*	<0.0000566	<0.0000588	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.00029	<0.0003	<0.0003	<0.0007
Anthracene	*7.3*	*22*	0.000503	0.000119 J	<0.000014	<0.000014	0.0037	<0.000014	0.000063 J	0.000081 J	0.000645	0.000552	0.000566	<0.0007
Benzo(a)anthracene	*0.0091*	*0.02*	<0.0000755	<0.0000784	<0.00005	<0.00005	<0.000051	<0.00005	<0.00005	<0.00005				
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.0000755	<0.0000784	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002				
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.000123	<0.000127	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003				
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00403	<0.000711	0.00018 J	<0.000037	0.000063 J	<0.000037	0.000087 J	<0.000037	<0.00019	0.00034 J	0.00064 J	<0.0012
Chrysene	*0.91*	*2*	<0.0000755	<0.0000784	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021				
Dibenzofuran	*0.098*	*0.29*	0.00103	0.000176 J	<0.00002	<0.00002	0.0016	<0.00002	0.000079 J	0.00016	<0.00029	<0.0003	<0.0003	<0.0007
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.000104	<0.000108	<0.00002	<0.00002	0.000025 J	<0.00002	<0.00002	<0.00002	<0.00019	0.00085 J	0.00087 J	<0.0007
Fluoranthene	*0.98*	*2.9*	0.000287 J	0.0000771 J	0.000038 J	<0.00001	0.0056	<0.00001	0.00006 J	<0.00001	<0.00019	<0.0002	<0.0002	<0.0006
Fluorene	*0.98*	*2.9*	0.00264	0.000344 J	0.000045 J	<0.00003	0.037	<0.00003	0.00074	0.0013	<0.00019	<0.0002	<0.0002	<0.0008
Naphthalene	*0.49*	*1.5*	0.0554	<0.0000784	<0.00002	<0.00002	0.0024	<0.00002	<0.0018	0.00048	<0.00038	0.000626	0.000639	<0.0008
Nitrobenzene	*0.049*	*0.15*	<0.000104	<0.000108	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024				
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.0000943	<0.000098	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025				
Pentachlorophenol	*0.001*	*0.001*	<0.000575	<0.000598	<0.000079	<0.000079	<0.00008	<0.000079	<0.000079	<0.000079				
Phenanthrene	*0.73*	*2.2*	0.00189	<0.000317	<0.000021	<0.000021	0.04	<0.000021	0.0002	0.00035				
Phenol	*7.3*	*22*	<0.0000377	<0.0000392	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.00019	<0.0002	<0.0002	<0.0015
Pyrene	*0.73*	*2.2*	0.000274 J	<0.000108	0.000039 J	<0.000019	0.0032	<0.000019	0.000036 J	<0.000019	0.00932	0.00211	0.00166	0.0026 J
Metals														
Arsenic	*0.01*	*0.01*			**0.0374**	**0.016**	**0.0622**	**0.0183**	**0.0704**	**0.036**				

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	***C/I Assessment Level***	P-12 01/22/2009 Duplicate	P-12 07/22/2009	P-12 01/22/2010	P-12 07/14/2010	P-12 01/12/2011	P-12 07/12/2011	P-12 01/31/2012	P-12 07/11/2012	P-12 01/09/2013	P-12 07/11/2013	P-12 01/09/2014	P-12 07/02/2014
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*												
Benzene	*0.005*	*0.005*												
Chlorobenzene	*0.1*	*0.1*												
Ethylbenzene	*0.7*	*0.7*												
Methylene chloride	*0.005*	*0.005*												
Toluene	*1*	*1*												
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*												
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												
2,4-Dimethylphenol	*0.49*	*1.5*												
2,4-Dinitrotoluene	*0.0013*	*0.003*												
2,6-Dinitrotoluene	*0.0013*	*0.003*												
2-Chloronaphthalene	*2*	*5.8*												
2-Methylnaphthalene	*0.098*	*0.29*		<0.0009										<0.000066
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												
4-Nitrophenol	*0.049*	*0.15*												
Acenaphthene	*1.5*	*4.4*	<0.0008	<0.0009	<0.0009	<0.0009	<0.0009	<0.0005	<0.0005	<0.0005	<0.0000755	<0.00008	<0.0000741	<0.0000755
Acenaphthylene	*1.5*	*4.4*	<0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0000566	<0.00006	<0.0000556	<0.0000566
Anthracene	*7.3*	*22*	<0.0007	<0.0006	<0.0006	<0.0006	<0.0006	<0.0005	<0.0005	<0.0005	<0.0000472	<0.00005	0.0002 J	0.000189 J
Benzo(a)anthracene	*0.0091*	*0.02*												
Benzo(a)pyrene	*0.0002*	*0.0002*												
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.0012	<0.0033	<0.0033	<0.0033	<0.0033	<0.0005	<0.0005	<0.0005	0.00142 J	0.00039 J	0.000515 J	0.000439 J
Chrysene	*0.91*	*2*												
Dibenzofuran	*0.098*	*0.29*	<0.0007	<0.0007	<0.0007	<0.0007	<0.0007	<0.0005	<0.0005	<0.0005	<0.0000755	<0.00008	<0.0000741	<0.0000755
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.000104	<0.00011	<0.000416	0.000144 J
Fluoranthene	*0.98*	*2.9*	<0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.000066	<0.00007	<0.0000648	<0.000066
Fluorene	*0.98*	*2.9*	<0.0008	<0.0006	<0.0006	<0.0006	<0.0006	<0.0005	<0.0005	<0.0005	<0.000066	<0.00007	<0.0000648	<0.000066
Naphthalene	*0.49*	*1.5*	<0.0008	<0.0006	<0.0006	<0.0006	0.0006 J	<0.0005	<0.0005	<0.0005	<0.0000755	<0.00008	<0.0000741	<0.0000755
Nitrobenzene	*0.049*	*0.15*												
N-Nitrosodiphenylamine	*0.19*	*0.42*												
Pentachlorophenol	*0.001*	*0.001*												
Phenanthrene	*0.73*	*2.2*		<0.0005										<0.0000566
Phenol	*7.3*	*22*	<0.0015	<0.0005	<0.0005	<0.0005	0.0005 J	<0.0005	<0.0005	<0.0005	<0.0000377	<0.00004	<0.000037	<0.0000377
Pyrene	*0.73*	*2.2*	0.0012 J	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.000104	<0.00011	<0.000102	0.00189
Metals														
Arsenic	*0.01*	*0.01*												

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	P-12 01/07/2015	P-12 07/08/2015	P-12 01/13/2016	P-12 07/07/2016	P-12 01/12/2017	P-12 07/13/2017	P-12 01/04/2018	P-12 07/19/2018	P-12 01/07/2019	P-12 07/01/2019	P-12 01/13/2020	TW-41B 01/19/2010
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*												<0.0005
Benzene	*0.005*	*0.005*												<0.0005
Chlorobenzene	*0.1*	*0.1*												<0.0005
Ethylbenzene	*0.7*	*0.7*												<0.0005
Methylene chloride	*0.005*	*0.005*												<0.0005
Toluene	*1*	*1*												<0.0005
Vinyl chloride	*0.002*	*0.002*												
Xylenes (total)	*10*	*10*												<0.001
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*												<0.0001
2,4-Dimethylphenol	*0.49*	*1.5*												<0.00008
2,4-Dinitrotoluene	*0.0013*	*0.003*												<0.00009
2,6-Dinitrotoluene	*0.0013*	*0.003*												<0.00007
2-Chloronaphthalene	*2*	*5.8*												<0.0001
2-Methylnaphthalene	*0.098*	*0.29*												<0.00007
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*												<0.00008
4-Nitrophenol	*0.049*	*0.15*												<0.00007
Acenaphthene	*1.5*	*4.4*	<0.0000792	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.00009
Acenaphthylene	*1.5*	*4.4*	<0.0000594	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.00007
Anthracene	*7.3*	*22*	<0.0000495	<0.000014	<0.000014	0.000026 J	<0.000014	<0.000014	0.000036 J	<0.000014	0.000063 J	0.000052 J	0.0001	<0.00007
Benzo(a)anthracene	*0.0091*	*0.02*												<0.00007
Benzo(a)pyrene	*0.0002*	*0.0002*												<0.00008
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*												<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000366	0.00055	0.00036	0.000086 J	0.00029	0.00026	<0.00012	<0.00009	<0.000037	<0.000037	<0.000037	0.0011
Chrysene	*0.91*	*2*												<0.00007
Dibenzofuran	*0.098*	*0.29*	<0.0000792	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.000109	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.000022	<0.00002	<0.00002	<0.00002	<0.00002	<0.00007
Fluoranthene	*0.98*	*2.9*	<0.0000693	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00007
Fluorene	*0.98*	*2.9*	<0.0000693	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	0.00015 J
Naphthalene	*0.49*	*1.5*	<0.0000792	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.00016	0.00014 J
Nitrobenzene	*0.049*	*0.15*												<0.00009
N-Nitrosodiphenylamine	*0.19*	*0.42*												<0.00009
Pentachlorophenol	*0.001*	*0.001*												<0.00008
Phenanthrene	*0.73*	*2.2*												<0.00007
Phenol	*7.3*	*22*	<0.0000396	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.00007
Pyrene	*0.73*	*2.2*	0.00152 J	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	0.000097 J	<0.000019	<0.000019	<0.000019	0.00063	<0.00007
Metals														
Arsenic	*0.01*	*0.01*												

Notes:
1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	*C/I Assessment Level*	TW-41B 07/27/2011	TW-41B 02/01/2012	TW-41B 07/26/2012	TW-41B 02/05/2013	TW-41B 07/31/2013	TW-41B 01/16/2014	TW-41B 07/25/2014	TW-41B 01/24/2018	TW-41B 03/20/2018	TW-41B 05/16/2018	TW-41B 01/09/2019	TW-41B 07/12/2019
Volatile Organic Compounds														
1,2-Dichloroethane	*0.005*	*0.005*	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.002	<0.0002
Benzene	*0.005*	*0.005*	<0.001	<0.001	<0.0005	<0.00008	0.000347 J	<0.0002	0.000594 J	0.00065 J	0.001 J	0.0013	<0.002	<0.0013
Chlorobenzene	*0.1*	*0.1*	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.003	<0.0003
Ethylbenzene	*0.7*	*0.7*	0.0075	<0.0011	<0.0005	<0.00011	0.00115	<0.00019	0.00501	<0.0003	0.0036	0.0029	<0.003	<0.0011
Methylene chloride	*0.005*	*0.005*	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	**<0.01**	<0.001
Toluene	*1*	*1*	0.0033 J	<0.001	<0.0005	<0.00015	<0.000279	<0.00017	0.00116	<0.0002	0.00068 J	0.0012	<0.002	<0.0011
Vinyl chloride	*0.002*	*0.002*				<0.00011			<0.00011					
Xylenes (total)	*10*	*10*	0.0052 J	<0.0031	<0.0015	<0.00026	0.000386 J	<0.00058	0.0101	0.0079	0.013	0.015	<0.003	0.019
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.00005	<0.00005	<0.00005	<0.000104	<0.000105	<0.000104	<0.000107	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*0.49*	*1.5*	<0.00005	0.00005 J	0.0014	<0.000292	<0.000295	<0.000292	<0.000301	<0.000041	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.00005	0.00005 J	<0.00005	<0.000123	<0.000124	<0.000123	<0.000126	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.00006	0.00006 J	<0.00006	<0.0000755	<0.0000762	<0.0000755	<0.0000777	<0.000043	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*2*	*5.8*	<0.00005	0.00005 J	<0.00005	<0.0000755	<0.0000762	<0.0000755	<0.0000777	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*0.098*	*0.29*	0.015	0.00005 J	<0.0001	<0.000066	0.000256 J	<0.0000846	0.0125	0.0003	0.011	0.026	0.0098	0.067
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00008	<0.00008	<0.00008	<0.000783	<0.00079	<0.000783	<0.000806	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*0.049*	*0.15*	<0.00005	0.00005 J	<0.00005	<0.000528	<0.000533	<0.000528	<0.000544	<0.000048	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	*1.5*	*4.4*	0.041	0.00005 J	0.039	<0.0000755	0.0252	<0.0000755	0.142	0.087	0.072	0.08	0.058	0.15
Acenaphthylene	*1.5*	*4.4*	0.00053	0.00005 J	0.00041	0.0000751 J	0.000409 J	0.0000926 J	0.00185	0.0019	0.0017	0.0016	0.00091	0.0014
Anthracene	*7.3*	*22*	0.0022	0.00016 J	0.0011	0.000979	0.00161	0.00093	0.00697	0.0016	0.0034	0.0039	0.0023	0.0055
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	<0.00005	<0.00005	<0.0000755	0.0000879 J	<0.0000755	<0.0000777	<0.000051	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000762	<0.0000755	<0.0000777	<0.00002	<0.00002	<0.00002	0.000097 J	<0.00002
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00005	0.00005 J	<0.00005	<0.000123	<0.000124	<0.000123	<0.000126	<0.000031	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	0.00022	<0.00023	<0.0001	<0.000349	<0.000352	<0.000349	<0.000359	0.000058 J	<0.000037	<0.000037	<0.000037	<0.000037
Chrysene	*0.91*	*2*	<0.00005	<0.00005	<0.00005	<0.0000755	<0.0000762	<0.0000755	<0.0000777	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Dibenzofuran	*0.098*	*0.29*	0.029	0.00005 J	0.016	<0.0000755	0.0104	<0.0000755	0.0845	0.022	0.026	0.034	0.026	0.074
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00005	<0.00005	<0.0001	<0.000104	<0.000138	0.000116 J	<0.000107	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	*0.98*	*2.9*	0.0022	<0.00005	0.0015	<0.000066	0.00153	0.000206 J	0.00475	0.0019	0.0026	0.0022	0.0014	0.0034
Fluorene	*0.98*	*2.9*	0.028	0.00005 J	0.0054 J	0.0000917 J	0.00386	<0.000066	<0.0811	0.035	0.037	0.045	0.035	0.085
Naphthalene	*0.49*	*1.5*	0.049	0.00051 J	<0.0013	0.000156 J	0.00309 J	<0.000259	0.149	0.027	0.12	0.28	0.061	**0.69**
Nitrobenzene	*0.049*	*0.15*	<0.00005	0.00005 J	<0.00005	<0.000104	<0.000105	<0.000104	<0.000107	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.00005	<0.00005	<0.00005	<0.0000943	<0.0000952	<0.0000943	<0.0000971	<0.000026	<0.000025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.001*	*0.001*	<0.00005	0.00005 J	<0.00005	<0.000575	<0.000581	<0.000575	<0.000592	<0.000081	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	*0.73*	*2.2*	0.019	<0.00005	<0.00005	<0.0000566	0.000659	<0.000176	0.0573	0.00048	0.0089	0.013	0.0035	0.027
Phenol	*7.3*	*22*	<0.00005	0.000057 J	0.0016	<0.0000377	<0.0000381	<0.0000377	<0.0000388	<0.000036	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	*0.73*	*2.2*	0.00095	<0.00005	0.00066	<0.000104	0.000702	0.000223 J	0.00209	0.00083	0.0011	0.001	0.00056	0.0014
Metals														
Arsenic	*0.01*	*0.01*								**0.0376**	**0.0953**	**0.0976**	**0.125**	**0.113**

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 2
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 2 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Residential Assessment Level	***C/I Assessment Level***	TW-41B 01/13/2020	TW-56A 01/20/2010	TW-56A 07/14/2011	TW-56A 02/02/2012	TW-56A 07/11/2012	TW-56A 01/31/2013
Volatile Organic Compounds								
1,2-Dichloroethane	*0.005*	*0.005*	<0.0002	**0.023 J**	<0.005	**<0.01**	<0.0025	<0.0014
Benzene	*0.005*	*0.005*	0.00039 J	**0.26**	**0.27**	**0.15**	**0.26**	**0.238**
Chlorobenzene	*0.1*	*0.1*	<0.0003	<0.0025	<0.005	<0.01	<0.0025	0.00412 J
Ethylbenzene	*0.7*	*0.7*	<0.0003	0.36	0.16	0.068	0.14	0.202
Methylene chloride	*0.005*	*0.005*	<0.001	<0.0025	**<0.0065**	**<0.013**	<0.005	<0.0015
Toluene	*1*	*1*	<0.0002	0.32	0.14	0.028 J	0.069	0.0314
Vinyl chloride	*0.002*	*0.002*		**<0.0025**	**0.0069 J**	**0.01 J**	**0.016**	**0.0126 J**
Xylenes (total)	*10*	*10*	0.0021	0.98	0.61	0.53	0.43	0.5
Semivolatile Organic Compounds								
1,2-Diphenylhydrazine	*0.0011*	*0.0026*	<0.000021	<0.0001	<0.00005	<0.0005	<0.00005	**<0.055**
2,4-Dimethylphenol	*0.49*	*1.5*	0.00017 J	**2.9**	**6.8**	**4.2**	**3.8**	**4.81**
2,4-Dinitrotoluene	*0.0013*	*0.003*	<0.000058	<0.00009	<0.00005	<0.0005	<0.00005	**<0.065**
2,6-Dinitrotoluene	*0.0013*	*0.003*	<0.000042	<0.00007	<0.00006	<0.0006	<0.00006	**<0.04**
2-Chloronaphthalene	*2*	*5.8*	0.00012 J	<0.0001	<0.00005	<0.0005	<0.00005	<0.04
2-Methylnaphthalene	*0.098*	*0.29*	0.0071	**0.15**	**0.16**	**0.11**	0.052	**0.123 J**
4,6-Dinitro-2-methylphenol	*0.0024*	*0.0073*	<0.00002	<0.00008	<0.00008	<0.0008	<0.00008	**<0.415**
4-Nitrophenol	*0.049*	*0.15*	<0.000047	<0.00007	<0.00005	<0.0005	<0.00005	**<0.28**
Acenaphthene	*1.5*	*4.4*	0.12	0.077	0.18	0.19	0.095	0.25
Acenaphthylene	*1.5*	*4.4*	0.0011	0.0024	0.004	0.0038	0.0028	<0.03
Anthracene	*7.3*	*22*	0.0031	0.0035	0.021	0.02	0.0083	0.0338 J
Benzo(a)anthracene	*0.0091*	*0.02*	<0.00005	0.00099	0.0014	0.0016 J	0.0024	**<0.04**
Benzo(a)pyrene	*0.0002*	*0.0002*	<0.00002	**0.00031**	**0.00047**	**0.00051 J**	**0.0008**	**<0.04**
bis(2-Chloroethoxy)methane	*0.00083*	*0.0019*	<0.00003	<0.00009	<0.00005	<0.0005	<0.00005	**<0.065**
bis(2-Ethylhexyl)phthalate (DEHP)	*0.006*	*0.006*	<0.000037	<0.00025	<0.0018	<0.001	<0.0001	**<0.185**
Chrysene	*0.91*	*2*	<0.000021	0.00084	0.0014	0.0018 J	0.0022	<0.04
Dibenzofuran	*0.098*	*0.29*	0.055	0.043	0.09	0.049	0.038	**0.108 J**
Di-n-butylphthalate (DBP)	*2.4*	*7.3*	<0.00002	0.00045	<0.00005	<0.0005	<0.00005	<0.055
Fluoranthene	*0.98*	*2.9*	0.0021	0.01	0.021	0.02	0.027	<0.035
Fluorene	*0.98*	*2.9*	0.078	0.033	0.09	0.058	0.047	0.12 J
Naphthalene	*0.49*	*1.5*	0.058	**2.5**	**2.3**	**2.2**	**0.81**	**1.75 J**
Nitrobenzene	*0.049*	*0.15*	<0.000024	<0.00009	<0.00005	<0.0005	<0.00005	**<0.055**
N-Nitrosodiphenylamine	*0.19*	*0.42*	<0.000025	<0.00009	<0.00005	<0.0005	<0.00005	<0.05
Pentachlorophenol	*0.001*	*0.001*	<0.000079	0.00013 J	0.00076 J	<0.0005	0.00091	**<0.305**
Phenanthrene	*0.73*	*2.2*	0.0084	0.06	0.17	0.2	0.073	0.217 J
Phenol	*7.3*	*22*	<0.000035	0.014	<0.00005	0.0063	<0.00005	<0.02
Pyrene	*0.73*	*2.2*	0.00082	0.0067	0.012	0.015	0.018	<0.055
Metals								
Arsenic	*0.01*	*0.01*	**0.0557**					

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.
7. MW-32A was screened in the B-CZ & replaced with MW-32AR
8. Based on historical data, MW-25A and MW-25C were likely mislabeled in March 2018 and results are provided correctly in this table.

TABLE 3
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 3 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Class 3 Residential Assessment	*Class 3 C/I Assessment Level*	MW-32B 02/09/2012 DNAPL	MW-32B 07/16/2012 DNAPL	MW-32B 02/06/2013 DNAPL	MW-32B 01/21/2014 DNAPL	MW-32B 01/20/2020 DNAPL	MW-33B 01/29/2008 DNAPL	MW-33B 07/14/2008 DNAPL	MW-33B 07/14/2008 Duplicate	MW-33B 02/03/2009 DNAPL	MW-33B 01/13/2010 DNAPL	MW-33B 06/29/2010	MW-33B 01/24/2011 DNAPL
Volatile Organic Compounds														
1,2-Dichloroethane	*0.5*	*0.5*	0.025 J	<0.0005	<0.00014	<0.0002	<0.005	<0.00052	<0.00109	<0.00109	<0.005	<0.005	<0.005	<0.005
Benzene	*0.5*	*0.5*	**2.6 J**	<0.0005	0.00428	0.239	**1.8**	**1.92**	**2.73**	**2.69**	**2.4**	**1.2**	**2**	**1**
Chlorobenzene	*10*	*10*	0.025 J	<0.0005	<0.000343	<0.00018	<0.0075	<0.00047	<0.0015	<0.0015	<0.005	<0.005	<0.005	<0.005
Ethylbenzene	*70*	*70*	0.53 J	<0.0005	0.00561	0.254	0.73	0.491	0.626	0.598	0.47	0.41	0.62	0.36
Methylene chloride	*0.5*	*0.5*	0.032 J	<0.001	<0.00015	<0.00022	<0.025	<0.00054	<0.00122	<0.00122	0.0096 J	<0.005	<0.005	<0.005
Toluene	*100*	*100*	2.2 J	<0.0005	0.00261	0.541	2.3	0.1	0.136	0.13	0.084	0.019 J	0.016 J	0.0067 J
Vinyl chloride	*0.2*	*0.2*					<0.005							
Xylenes (total)	*1000*	*1000*	1.5 J	<0.0015	0.0203	0.749	2.1	1.24	1.63	1.58	1.4	1.2	1.5	0.85
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.11*	*0.26*	0.0005 J	<0.00005	<0.0262	<0.00104	<0.00042	<0.01	<0.008	<0.008	<0.0001	<0.0001	<0.0001	<0.0001
2,4-Dimethylphenol	*49*	*150*	46	0.0014	<0.0738	0.178	26	<0.043	<0.028	<0.028	<0.00008	0.0035	<0.00008	0.0029
2,4-Dinitrotoluene	*0.13*	*0.3*	0.0005 J	<0.00005	<0.031	<0.00123	<0.0012	<0.029	<0.019	<0.019	<0.00009	<0.00009	<0.00009	<0.00009
2,6-Dinitrotoluene	*0.13*	*0.3*	0.0006 J	<0.00006	<0.019	<0.000755	<0.00084	<0.029	<0.019	<0.019	<0.00007	<0.00007	<0.00007	<0.00007
2-Chloronaphthalene	*200*	*580*	0.0005 J	<0.00005	<0.019	<0.000755	<0.00042	<0.057	<0.038	<0.038	<0.00012	<0.0001	<0.0001	<0.0001
2-Methylnaphthalene	*9.8*	*29*	0.53	0.00019 J	<0.0167	0.137	**50**	0.443	0.808	0.787	1.9	0.71	0.51	0.52
4,6-Dinitro-2-methylphenol	*0.24*	*0.73*	0.0008 J	<0.00008	<0.198	<0.00783	<0.0004	<0.029	<0.019	<0.019	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*4.9*	*15*	0.0005 J	<0.00005	<0.133	<0.00528	<0.00094	<0.036	<0.024	<0.024	<0.00007	<0.00007	<0.00007	<0.00007
Acenaphthene	*150*	*440*	0.28 J	0.014	0.0416 J	0.0427	26	0.137	0.152	0.182	0.41	0.17	0.096	0.15
Acenaphthylene	*150*	*440*	0.0059 J	0.00085	<0.0143	<0.000566	<0.0003	<0.043	<0.028	<0.028	0.0037	0.0016	0.0011	0.0015
Anthracene	*730*	*2200*	0.059 J	0.0048	<0.0119	0.144	23	<0.029	<0.019	0.035	0.14	0.015	0.011	0.027
Benzo(a)anthracene	*0.91*	*2*	0.0033 J	0.0033	<0.019	0.0195	**2.2**	<0.029	<0.019	<0.019	0.022	0.00019 J	0.000073 J	0.0019
Benzo(a)pyrene	*0.02*	*0.02*	0.0005 J	0.00089	<0.019	0.00649	**0.74**	**<0.029**	<0.019	<0.019	0.0045	<0.00008	<0.00008	0.00073
bis(2-Chloroethoxy)methane	*0.083*	*0.19*	<0.0005	<0.00005	<0.031	<0.00123	<0.0006	<0.057	<0.038	<0.038	<0.00009	<0.00009	<0.00009	<0.00009
bis(2-Ethylhexyl)phthalate (DEHP)	*0.6*	*0.6*	0.001 J	0.00079	<0.0881	<0.00349	<0.00074	<0.029	<0.019	<0.019	0.00031	0.008	<0.00054	0.00091
Chrysene	*91*	*200*	0.0042 J	0.0023	<0.019	0.018	2.4	<0.029	<0.019	<0.019	0.02	0.00018 J	0.000092 J	0.0018
Dibenzofuran	*9.8*	*29*	0.28 J	0.0012	<0.019	0.0428	**28**	0.118	0.17	0.205	0.46	0.18	0.13	0.17
Di-n-butylphthalate (DBP)	*240*	*730*	0.0005 J	<0.00005	<0.0262	<0.00104	<0.0004	<0.029	<0.019	<0.019	<0.00007	<0.00007	<0.00007	<0.00007
Fluoranthene	*98*	*290*	0.03 J	0.031	<0.0167	0.121	21	<0.029	<0.019	0.042	0.2	0.0033	0.0018	0.033
Fluorene	*98*	*290*	0.15 J	0.0021	<0.0167	0.0282	23	0.046	0.0683	0.098	0.26	0.068	0.048	0.069
Naphthalene	*49*	*150*	26	<0.00057	<0.019	2.17 J	**300**	12.5	16	13.1	20	10	2.2	7
Nitrobenzene	*4.9*	*15*	<0.0005	<0.00005	<0.0262	<0.00104	<0.00048	<0.057	<0.038	<0.038	<0.00009	<0.00009	<0.00009	<0.00009
N-Nitrosodiphenylamine	*19*	*42*	0.0005 J	<0.00005	<0.0238	<0.000943	<0.0005	<0.036	<0.024	<0.024	<0.00009	<0.00009	<0.00009	<0.00009
Pentachlorophenol	*0.1*	*0.1*	0.0005 J	<0.00005	**<0.145**	<0.00575	<0.0016	<0.029	<0.019	<0.019	<0.00008	<0.00008	<0.00008	<0.00008
Phenanthrene	*73*	*220*	0.25 J	0.0012	<0.0143	0.0548	69	0.0903	0.0688	0.186	0.72	0.066	0.041	0.09
Phenol	*730*	*2200*	38 J	0.000066 J	<0.00952	0.0357	17	<0.029	<0.019	<0.019	0.003	<0.00007	0.0032	<0.00007
Pyrene	*73*	*220*	0.02 J	0.04	<0.0262	0.0841	14	0.045	<0.019	0.022	0.13	0.0016	0.00092	0.007
Metals														
Arsenic	*1*	*1*					0.00193 J							

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.

TABLE 3
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 3 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Class 3 Residential Assessment	*Class 3 C/I Assessment Level*	MW-33B 07/19/2011 DNAPL	MW-33B 02/15/2012	MW-33B 07/17/2012	MW-33BR 02/06/2013	MW-33BR 08/07/2013	MW-33BR 01/21/2014	MW-33BR 07/28/2014	MW-33BR 01/28/2018	MW-33BR 03/29/2018	MW-33BR 05/31/2018	MW-33BR 01/22/2019	MW-33BR 07/30/2019
Volatile Organic Compounds														
1,2-Dichloroethane	*0.5*	*0.5*	<0.01	<0.005	<0.0005	<0.007	<0.0007	<0.0002	<0.0007	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.5*	*0.5*	**1.6**	**2**	0.3	**1.61**	**1.62**	**0.837**	**1.41**	<0.0002	<0.0002	0.12	0.0025	0.25
Chlorobenzene	*10*	*10*	<0.01	<0.005	<0.0005	<0.006	<0.0006	0.000349 J	<0.0006	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*70*	*70*	0.4	0.46	0.07	0.471	0.389	0.128	0.348	<0.0003	<0.0003	0.0058	0.013	0.065
Methylene chloride	*0.5*	*0.5*	<0.013	<0.0065	<0.001	0.011 J	<0.00075	<0.00022	<0.00075	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*100*	*100*	<0.01	0.12	0.023	0.157	0.0645	0.00942	0.00638	<0.0002	<0.0002	<0.0002	<0.0002	0.0031
Vinyl chloride	*0.2*	*0.2*	<0.01	<0.005	<0.0005	<0.0055	<0.00055	<0.00018	<0.00055	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Xylenes (total)	*1000*	*1000*	1.2	0.82	0.15	0.924	0.182	0.128	0.0649	<0.0003	<0.0003	0.0058	<0.0003	0.016
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.11*	*0.26*	<0.00005	<0.00005	<0.0005	**<0.529**	<0.00519	<0.000529	<0.000107	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*49*	*150*	0.0034	<0.00005	0.0074	<1.49	<0.0146	<0.00149	<0.000301	<0.00004	<0.00004	<0.00004	<0.00004	0.00028
2,4-Dinitrotoluene	*0.13*	*0.3*	<0.00005	<0.00005	<0.0005	**<0.625**	<0.00613	<0.000625	<0.000126	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.13*	*0.3*	<0.00006	<0.00006	<0.0006	**<0.385**	<0.00377	<0.000385	<0.0000777	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*200*	*580*	<0.00005	<0.00005	<0.0005	<0.385	<0.00377	<0.000385	<0.0000777	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*9.8*	*29*	1.6	0.81	0.55	0.993 J	0.198	0.0558	0.277	<0.000019	<0.000019	0.0029	<0.000019	0.014
4,6-Dinitro-2-methylphenol	*0.24*	*0.73*	<0.00008	<0.00008	<0.0008	**<3.99**	<0.0392	<0.00399	<0.000806	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*4.9*	*15*	<0.00005	<0.00005	<0.0005	<2.69	<0.0264	<0.00269	<0.000544	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	*150*	*440*	0.41	0.23	0.099	<0.385	0.0455	0.0625	0.0711	<0.000027	<0.000027	0.0019	0.0013	0.0078
Acenaphthylene	*150*	*440*	0.0033	<0.00005	0.0014 J	<0.288	<0.00283	<0.000679	0.00087	<0.000015	<0.000015	0.000068 J	<0.000015	<0.000015
Anthracene	*730*	*2200*	0.16	0.054	0.011	<0.24	<0.00236	0.0045	0.00564	<0.000014	<0.000014	0.00018	<0.000014	0.00055
Benzo(a)anthracene	*0.91*	*2*	0.032	0.000074 J	<0.0005	<0.385	<0.00377	<0.000385	0.000119 J	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.02*	*0.02*	0.0077	<0.00005	<0.0005	**<0.385**	<0.00377	<0.000385	<0.0000777	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.083*	*0.19*	<0.00005	<0.00005	<0.0005	**<0.625**	<0.00613	<0.000625	<0.000126	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.6*	*0.6*	<0.00046	<0.00018	<0.001	**<1.78**	<0.0175	<0.00178	0.000722	0.000062 J	<0.000037	0.0001 J	<0.000037	0.00007 J
Chrysene	*91*	*200*	0.026	0.000073 J	<0.0005	<0.385	<0.00377	<0.000385	0.000132 J	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Dibenzofuran	*9.8*	*29*	0.53	0.38	0.15	<0.385	0.0498	0.0769	0.0868	<0.000021	<0.00002	0.0019	0.000079 J	0.012
Di-n-butylphthalate (DBP)	*240*	*730*	<0.00005	<0.00005	<0.0005	<0.529	<0.00519	<0.000529	<0.000384	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	*98*	*290*	0.28	0.0049	0.01	<0.337	<0.0033	0.00107 J	0.00265	0.000049 J	<0.00001	0.0003	0.000053 J	0.00039
Fluorene	*98*	*290*	0.31	0.12	0.051	<0.337	0.0181 J	0.0287	0.035 J	<0.00003	<0.00003	0.00058	<0.00003	0.0042
Naphthalene	*49*	*150*	13	21	7.3	14.9 J	6.54	1.68 J	6.59	<0.00018	<0.00002	0.069	0.00004 J	0.53 J
Nitrobenzene	*4.9*	*15*	<0.00005	<0.00005	<0.0005	<0.529	<0.00519	<0.000529	<0.000107	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*19*	*42*	<0.00005	0.00081	<0.0005	<0.481	<0.00472	<0.000481	<0.0000971	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.1*	*0.1*	<0.00005	<0.00005	<0.0005	**<2.93**	<0.0288	<0.00293	<0.000592	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	*73*	*220*	0.79	0.17	0.091	<0.288	0.0141 J	0.0238	0.0313 J	<0.000047	<0.000021	0.0008	<0.000021	0.0048
Phenol	*730*	*2200*	0.001	0.0043	0.0014 J	<0.192	<0.00189	<0.000192	<0.0000388	<0.000035	<0.000035	<0.000035	<0.000035	0.00021
Pyrene	*73*	*220*	0.17	0.0025	0.0054	<0.529	<0.00519	0.000734 J	0.00126	<0.000019	<0.000019	0.00019	0.00003 J	0.00026
Metals														
Arsenic	*1*	*1*								0.00144 J	0.00187 J	0.00294	0.00143 J	0.00117 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.

TABLE 3
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 3 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Class 3 Residential Assessment	*Class 3 C/I Assessment Level*	MW-33BR 01/15/2020	MW-36B 07/15/2010	MW-36B 07/15/2010 Duplicate	MW-36B 01/20/2011	MW-36B 07/19/2011	MW-36B 02/08/2012	MW-36B 07/17/2012	MW-36B 01/31/2013	MW-36B 08/06/2013	MW-36B 01/16/2014	MW-36B 07/28/2014	MW-36B 01/25/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.5*	*0.5*	<0.0002	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002
Benzene	*0.5*	*0.5*	0.12	<0.0005	<0.0005	0.0018 J	0.0014 J	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002
Chlorobenzene	*10*	*10*	<0.0003	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003
Ethylbenzene	*70*	*70*	0.043	<0.0005	<0.0005	<0.0005	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003
Methylene chloride	*0.5*	*0.5*	<0.001	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001
Toluene	*100*	*100*	<0.0002	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002
Vinyl chloride	*0.2*	*0.2*	<0.0002				<0.001		<0.0005	<0.00011	<0.00011	<0.00018	<0.00011	<0.0002
Xylenes (total)	*1000*	*1000*	0.011	<0.001	<0.001	<0.001	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.11*	*0.26*	<0.000021	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.000104	<0.00011	<0.000104	<0.000107	<0.000021
2,4-Dimethylphenol	*49*	*150*	0.00018 J	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000292	<0.00031	<0.000292	<0.000301	<0.00004
2,4-Dinitrotoluene	*0.13*	*0.3*	<0.000058	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000123	<0.00013	<0.000123	<0.000126	<0.000059
2,6-Dinitrotoluene	*0.13*	*0.3*	<0.000042	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.0000755	<0.00008	<0.0000755	<0.0000777	<0.000042
2-Chloronaphthalene	*200*	*580*	<0.000021	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.0000755	<0.00008	<0.0000755	<0.0000777	<0.000021
2-Methylnaphthalene	*9.8*	*29*	0.00025	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000762	<0.00007	<0.000271	<0.000068	<0.000019
4,6-Dinitro-2-methylphenol	*0.24*	*0.73*	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.000783	<0.00083	<0.000783	<0.000806	<0.00002
4-Nitrophenol	*4.9*	*15*	<0.000047	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000528	<0.00056	<0.000528	<0.000544	<0.000047
Acenaphthene	*150*	*440*	0.0051	<0.00009	<0.00009	0.00023	0.00014 J	0.00023	0.00016 J	<0.0000755	<0.00008	0.000463 J	<0.0000777	0.00014
Acenaphthylene	*150*	*440*	0.00015	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000566	<0.00006	<0.0000566	<0.0000583	<0.000015
Anthracene	*730*	*2200*	0.00046	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000472	<0.00005	0.00035 J	<0.0000485	<0.000014
Benzo(a)anthracene	*0.91*	*2*	0.0001	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000755	<0.00008	0.00012 J	<0.0000777	<0.000051
Benzo(a)pyrene	*0.02*	*0.02*	0.000039 J	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.0000755	<0.00008	<0.0000755	<0.0000777	<0.00002
bis(2-Chloroethoxy)methane	*0.083*	*0.19*	<0.00003	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000123	<0.00013	<0.000123	<0.000126	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.6*	*0.6*	0.00067	0.01	0.0024	<0.00048	<0.00068	<0.00033	0.00021	<0.000349	<0.00037	0.00044 J	<0.000359	0.00015 J
Chrysene	*91*	*200*	0.00011	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.0000755	<0.00008	0.000146 J	<0.0000777	<0.000021
Dibenzofuran	*9.8*	*29*	0.0039	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	0.00011 J	<0.000118	<0.00008	<0.000409	<0.0000777	<0.00002
Di-n-butylphthalate (DBP)	*240*	*730*	0.00099	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000104	<0.00011	<0.000104	<0.000107	<0.00002
Fluoranthene	*98*	*290*	0.00082	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000066	<0.00007	0.000756	<0.000068	<0.00001
Fluorene	*98*	*290*	0.0018	<0.00007	<0.00007	<0.00007	<0.00005	0.00011 J	<0.00005	<0.000066	<0.00007	0.000434 J	<0.000068	<0.00003
Naphthalene	*49*	*150*	0.0051	<0.0001	<0.0001	<0.0001	<0.00005	<0.00024	<0.00005	<0.000943	0.0000895 J	0.000825 J	<0.0000777	<0.00002
Nitrobenzene	*4.9*	*15*	<0.000024	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.000104	<0.00011	<0.000104	<0.000107	<0.000024
N-Nitrosodiphenylamine	*19*	*42*	<0.000025	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.0000943	<0.0001	<0.0000943	<0.0000971	<0.000025
Pentachlorophenol	*0.1*	*0.1*	<0.000079	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	<0.00005	<0.000575	<0.00061	<0.000575	<0.000592	<0.00008
Phenanthrene	*73*	*220*	0.0013	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00027	<0.0000566	<0.00006	0.00183	<0.0000583	<0.000021
Phenol	*730*	*2200*	0.00018 J	<0.00007	<0.00007	0.000089 J	<0.00005	0.00026	<0.00005	<0.0000377	<0.00004	<0.0000377	<0.0000388	<0.000035
Pyrene	*73*	*220*	0.00057	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.000104	<0.00011	0.00046 J	<0.000107	<0.000019
Metals														
Arsenic	*1*	*1*	0.000877 J											0.00116 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.

TABLE 3
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 3 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Class 3 Residential Assessment	*Class 3 C/I Assessment Level*	MW-36B 03/21/2018	MW-36B 05/31/2018	MW-36B 01/14/2019	MW-36B 07/16/2019	MW-36B 01/09/2020	MW-49B 02/04/2009	MW-49B 01/20/2010	MW-49B 06/24/2010	MW-49B 01/20/2011	MW-49B 01/20/2011 Duplicate	MW-49B 07/22/2011	MW-49B 02/07/2012
Volatile Organic Compounds														
1,2-Dichloroethane	*0.5*	*0.5*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001
Benzene	*0.5*	*0.5*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0095	0.013	0.1	0.0057	0.0056	0.056	0.0056
Chlorobenzene	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001
Ethylbenzene	*70*	*70*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.0081	0.024	0.019	0.004 J	0.0046 J	0.0091	0.0042 J
Methylene chloride	*0.5*	*0.5*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013
Toluene	*100*	*100*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.016	0.045	0.071	0.0072	0.0072	0.038	0.0057
Vinyl chloride	*0.2*	*0.2*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002						<0.001	<0.001
Xylenes (total)	*1000*	*1000*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.024	0.07	0.047	0.0066 J	0.0073 J	0.02	0.008 J
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.11*	*0.26*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0001	<0.0001	<0.0005	<0.0001	<0.0001	<0.00005	<0.00005
2,4-Dimethylphenol	*49*	*150*	<0.00004	<0.00004	<0.00004	0.000078 J	<0.000054	0.031	0.013	1.2	0.18	0.16	0.59	0.19
2,4-Dinitrotoluene	*0.13*	*0.3*	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058	<0.00009	<0.00009	<0.00045	<0.00009	<0.00009	<0.00005	<0.00005
2,6-Dinitrotoluene	*0.13*	*0.3*	<0.000042	0.0073	<0.000042	<0.000042	<0.000042	<0.00007	<0.00007	<0.00035	<0.00007	<0.00007	<0.00006	<0.00006
2-Chloronaphthalene	*200*	*580*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.00012	<0.0001	<0.0005	<0.0001	<0.0001	<0.00005	<0.00005
2-Methylnaphthalene	*9.8*	*29*	<0.000019	<0.000019	<0.000019	0.00058	<0.00013	0.14	<0.00007	0.0016	<0.00007	<0.00007	0.0029	0.0095
4,6-Dinitro-2-methylphenol	*0.24*	*0.73*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.0004	<0.00008	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*4.9*	*15*	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.00007	<0.00007	<0.00035	<0.00007	<0.00007	<0.00005	<0.00005
Acenaphthene	*150*	*440*	<0.000027	0.00014	<0.000027	0.00014	<0.00017	0.094	0.017	0.014	0.00067	0.00049	0.0051	0.034
Acenaphthylene	*150*	*440*	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	0.0016	0.0007	0.00063 J	<0.00007	0.000072 J	0.00019 J	0.0007
Anthracene	*730*	*2200*	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	0.019	0.00015 J	<0.00035	0.00031	0.000083 J	0.00093	0.0029
Benzo(a)anthracene	*0.91*	*2*	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00035	<0.00007	<0.00035	<0.00007	<0.00007	0.00018 J	<0.00005
Benzo(a)pyrene	*0.02*	*0.02*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00008	<0.00008	<0.0004	<0.00008	<0.00008	0.000057 J	<0.00005
bis(2-Chloroethoxy)methane	*0.083*	*0.19*	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00009	<0.00009	<0.00045	<0.00009	<0.00009	<0.00005	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.6*	*0.6*	<0.000037	0.00017 J	0.00022	<0.000088	<0.000037	0.00029	<0.00053	<0.001	<0.00055	<0.0015	<0.00024	0.00069
Chrysene	*91*	*200*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	0.00038	<0.00007	<0.00035	<0.00007	<0.00007	0.00016 J	<0.00005
Dibenzofuran	*9.8*	*29*	<0.00002	<0.00002	<0.00002	0.000087 J	<0.00012	0.071	0.0024	0.0026	0.00018 J	0.00012 J	0.0018	0.019
Di-n-butylphthalate (DBP)	*240*	*730*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	0.0013	0.000083 J	<0.00035	<0.00007	<0.00007	<0.00005	<0.00005
Fluoranthene	*98*	*290*	<0.00001	<0.00001	<0.00001	0.000017 J	0.000051 J	0.014	0.00023	<0.00035	0.00019 J	<0.00007	0.0011	0.0015
Fluorene	*98*	*290*	<0.00003	<0.00003	<0.00003	0.000047 J	<0.00012	0.071	0.0036	0.0016	0.00018 J	<0.00007	0.0014	0.019
Naphthalene	*49*	*150*	<0.00002	<0.00002	<0.00002	0.006	<0.00093	1.4	0.00044	0.23	<0.00052	<0.0002	0.13	0.047
Nitrobenzene	*4.9*	*15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.00009	<0.00009	<0.00045	<0.00009	<0.00009	<0.00005	<0.00005
N-Nitrosodiphenylamine	*19*	*42*	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.00009	<0.00009	<0.00045	<0.00009	<0.00009	<0.00005	<0.00005
Pentachlorophenol	*0.1*	*0.1*	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079	<0.00008	<0.00008	<0.0004	<0.00008	<0.00008	<0.00005	<0.00005
Phenanthrene	*73*	*220*	<0.000021	<0.000021	<0.000021	<0.000021	<0.0001	0.11	0.00017 J	<0.00035	<0.00021	<0.0003	0.0025	0.0098
Phenol	*730*	*2200*	<0.000035	<0.000035	<0.000035	<0.00017	<0.000075	<0.00007	<0.00007	0.0053	0.00044	0.0004	0.00021	<0.00005
Pyrene	*73*	*220*	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	0.0074	0.0002	<0.00035	0.00024	0.00017 J	0.00066	0.00083
Metals														
Arsenic	*1*	*1*	0.000942 J	0.000817 J	0.00118 J	0.00127 J	0.001 J							

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.

TABLE 3
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 3 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Class 3 Residential Assessment	***Class 3 C/I Assessment Level***	MW-49B 07/23/2012	MW-49B 02/07/2013 DNAPL	MW-49B 08/01/2013 DNAPL	MW-49B 01/16/2014	MW-49B 07/16/2014	MW-49B 01/29/2018	MW-49B 03/21/2018	MW-49B 05/25/2018	MW-49B 01/27/2020 DNAPL	MW-54B 03/11/2020	MW-57B 02/15/2012 DNAPL	MW-57B 07/24/2012 DNAPL
Volatile Organic Compounds														
1,2-Dichloroethane	*0.5*	*0.5*	<0.0005	<0.00014	<0.0028	<0.0002	<0.0028	<0.0002	<0.0002	<0.0002	<0.01	<0.0002	<0.01	<0.005
Benzene	*0.5*	*0.5*	0.11	0.0631	0.469	0.0691	0.346	0.0073	0.026	0.26	**0.6**	0.00043 J	**1.4**	**1.5**
Chlorobenzene	*10*	*10*	<0.0005	<0.00012	0.0103 J	<0.00018	<0.0024	<0.0003	<0.0003	<0.0003	<0.015	<0.0003	<0.01	<0.005
Ethylbenzene	*70*	*70*	0.023	0.0182	0.0825	0.0425	0.0847	<0.0003	<0.0003	0.048	0.26	0.0011	0.39	0.42
Methylene chloride	*0.5*	*0.5*	<0.001	<0.00015	<0.003	<0.00022	0.0212	<0.001	<0.001	<0.001	<0.05	<0.001	<0.013	0.017 J
Toluene	*100*	*100*	0.089	0.0633	0.345	0.091	0.31	0.0058	0.014	0.23	0.72	<0.0002	1.3	1.4
Vinyl chloride	*0.2*	*0.2*	<0.0005	<0.00011	<0.0022	<0.00018	<0.0022	<0.0002	<0.0002	<0.0002	<0.01			
Xylenes (total)	*1000*	*1000*	0.06	0.0527	0.222	0.112	0.249	0.0095	0.012	0.14	0.71	0.0018	1.2	1.1
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.11*	*0.26*	<0.00005	<0.00524	<0.0105	<0.0259	<0.00208	<0.000021	<0.00021	<0.00021	<0.0013	<0.000021	<0.0005	<0.0005
2,4-Dimethylphenol	*49*	*150*	6.3	1.09	21.4	4.96 J	13.6	0.2	0.34	3.4	25	<0.00004	6.3	16
2,4-Dinitrotoluene	*0.13*	*0.3*	<0.00005	<0.00619	<0.0124	<0.0307	<0.00245	<0.000058	<0.00058	<0.00058	<0.0035	<0.000059	<0.0005	<0.0005
2,6-Dinitrotoluene	*0.13*	*0.3*	<0.00006	<0.00381	<0.00762	<0.0189	<0.00151	0.002	<0.00042	<0.00042	<0.0025	<0.000042	<0.0006	<0.0006
2-Chloronaphthalene	*200*	*580*	<0.00005	<0.00381	<0.00762	<0.0189	<0.00151	<0.000021	<0.00021	<0.00021	<0.0013	<0.000021	<0.0005	<0.0005
2-Methylnaphthalene	*9.8*	*29*	0.18	0.297	0.223	0.691	0.276	0.00011	0.00084 J	0.072	**250**	0.00011	0.92	1.6
4,6-Dinitro-2-methylphenol	*0.24*	*0.73*	<0.00008	<0.0395	<0.079	<0.196	<0.0157	<0.00002	<0.0002	<0.0002	<0.0012	<0.00002	<0.0008	<0.0008
4-Nitrophenol	*4.9*	*15*	<0.00005	<0.0267	<0.0533	<0.132	<0.0106	<0.000047	<0.00047	<0.00047	<0.0028	<0.000047	<0.0005	<0.0005
Acenaphthene	*150*	*440*	0.14	0.248	0.0964	0.622	0.117	0.071	0.066	0.071	**190**	0.0093	0.35	0.44
Acenaphthylene	*150*	*440*	0.0013	<0.00286	<0.00571	<0.0142	0.00432 J	0.0017	0.003	0.0026	2.1	0.000087 J	0.006	0.0087
Anthracene	*730*	*2200*	0.056	0.0876	<0.00476	0.221	0.013	0.003	0.0038	0.0073	87	0.00017	0.023	0.05
Benzo(a)anthracene	*0.91*	*2*	0.013	0.0228 J	<0.00762	0.0671 J	<0.00151	0.000088 J	<0.0005	<0.0005	**23**	<0.000051	0.0011 J	0.0012 J
Benzo(a)pyrene	*0.02*	*0.02*	0.0038	<0.00381	<0.00762	<0.0189	<0.00151	<0.00002	<0.0002	<0.0002	**7.5**	<0.00002	<0.0005	<0.0005
bis(2-Chloroethoxy)methane	*0.083*	*0.19*	<0.00005	<0.00619	<0.0124	<0.0307	<0.00245	<0.00003	<0.0003	<0.0003	<0.0018	<0.00003	<0.0005	<0.0005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.6*	*0.6*	<0.00055	<0.0176	<0.0352	<0.0873	<0.00698	0.00011 J	<0.00037	<0.00037	<0.0022	0.000089 J	0.0019 J	<0.001
Chrysene	*91*	*200*	0.015	0.0207 J	<0.00762	0.0737 J	<0.00151	0.00012	<0.00021	<0.00021	23	<0.000021	0.00099 J	0.0016 J
Dibenzofuran	*9.8*	*29*	0.12	0.2	<0.00762	0.484	0.08	0.0028	0.009	0.03	**160**	0.000076 J	0.28	0.38
Di-n-butylphthalate (DBP)	*240*	*730*	<0.00005	<0.00524	<0.0105	<0.0259	<0.00208	<0.00002	<0.0002	<0.0002	<0.0012	0.000033 J	<0.0005	<0.0005
Fluoranthene	*98*	*290*	0.093	0.167	<0.00667	0.415	0.00456 J	0.0027	0.0038	0.0036	**170**	0.000022 J	0.0081	0.016
Fluorene	*98*	*290*	0.13	0.217	0.049	0.464	0.0633	0.0087	0.018	0.031	**170**	0.00015	0.095	0.23
Naphthalene	*49*	*150*	2.3	1.58 J	9.38	6.75	5.57	0.00042	0.0075	2.5	**1200**	0.0021	24	27
Nitrobenzene	*4.9*	*15*	<0.00005	<0.00524	<0.0105	<0.0259	<0.00208	<0.000024	<0.00024	<0.00024	<0.0014	<0.000024	<0.0005	<0.0005
N-Nitrosodiphenylamine	*19*	*42*	<0.00005	<0.00476	<0.00952	<0.0236	<0.00189	<0.000025	<0.00025	<0.00025	<0.0015	<0.000025	<0.0005	<0.0005
Pentachlorophenol	*0.1*	*0.1*	<0.00005	<0.029	<0.0581	**<0.144**	<0.0115	<0.000079	<0.00079	<0.00079	<0.0047	<0.00008	<0.0005	<0.0005
Phenanthrene	*73*	*220*	0.35	0.466	0.039 J	1.29	0.0458	0.0073	0.011	0.028	**500**	0.0028	0.16	0.24
Phenol	*730*	*2200*	0.0063	<0.0019	<0.00381	0.0445 J	0.0145	<0.000035	<0.00035	<0.00035	<0.0021	<0.000035	0.45	1
Pyrene	*73*	*220*	0.062	0.101	<0.0105	0.262	<0.00208	0.0014	0.002	0.0021	**96**	<0.000019	0.0075	0.011
Metals														
Arsenic	*1*	*1*						0.000564 J	0.000746 J	0.00146 J	0.0107	0.00117 J		

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.

TABLE 3
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 3 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Class 3 Residential Assessment	*Class 3 C/I Assessment Level*	MW-57B 01/31/2013 DNAPL	MW-57B 07/31/2013 DNAPL	MW-57B 01/15/2014 DNAPL	MW-57B 07/29/2014 DNAPL	MW-57B 01/31/2018	MW-57B 04/01/2018	MW-57B 05/25/2018	MW-57B 07/10/2019	MW-57B 01/08/2020	MW-59B 07/15/2010	MW-59B 01/20/2011	MW-59B 07/18/2011
Volatile Organic Compounds														
1,2-Dichloroethane	*0.5*	*0.5*	<0.0035	<0.014	<0.0002	<0.0007	<0.0002	<0.001	<0.0002	<0.0002	<0.002	<0.0005	<0.0005	<0.001
Benzene	*0.5*	*0.5*	**0.733**	**1.49**	**0.716**	**1.25**	0.012	0.01	**0.82**	**0.84**	**0.52**	<0.0005	<0.0005	<0.001
Chlorobenzene	*10*	*10*	<0.003	<0.012	<0.00018	<0.0006	<0.0003	<0.0015	<0.0003	<0.0003	<0.003	<0.0005	<0.0005	<0.001
Ethylbenzene	*70*	*70*	0.193	0.501	0.174	0.371	0.026	0.032	0.3	0.39	0.25	<0.0005	<0.0005	<0.0011
Methylene chloride	*0.5*	*0.5*	<0.00375	0.0405 J	<0.00022	<0.00075	<0.001	<0.005	<0.001	<0.001	<0.01	<0.0005	<0.0005	<0.0013
Toluene	*100*	*100*	0.692	1.62	0.63	1.33	0.0043	0.0019 J	0.84	0.93	0.64	<0.0005	<0.0005	<0.001
Vinyl chloride	*0.2*	*0.2*				0.00299 J				0.00048 J				<0.001
Xylenes (total)	*1000*	*1000*	0.589	1.4	0.574	1.16	0.057	0.055	0.84	1.2	0.7	<0.001	<0.001	<0.0031
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.11*	*0.26*	<0.055	<0.0267	<0.0519	<0.0109	<0.00021	<0.000021	<0.00021	<0.00021	<0.00021	<0.0001	<0.0001	<0.00005
2,4-Dimethylphenol	*49*	*150*	13.8	9.67	19.8 J	15	0.01	<0.00004	3.7	6.5	2.8	<0.00008	<0.00008	<0.00005
2,4-Dinitrotoluene	*0.13*	*0.3*	<0.065	<0.0316	<0.0613	<0.0129	<0.00058	<0.000058	<0.00058	<0.00058	<0.00058	<0.00009	<0.00009	<0.00005
2,6-Dinitrotoluene	*0.13*	*0.3*	<0.04	<0.0194	<0.0377	<0.00792	<0.00042	<0.000042	<0.00042	<0.00042	<0.00042	<0.00007	<0.00007	<0.00006
2-Chloronaphthalene	*200*	*580*	<0.04	<0.0194	<0.0377	<0.00792	<0.00021	<0.000021	<0.00021	<0.00021	<0.00021	<0.0001	<0.0001	<0.00005
2-Methylnaphthalene	*9.8*	*29*	1.75	1.07	0.892	0.945	0.17	0.029	0.61	0.93	1.1	<0.00007	<0.00007	<0.00005
4,6-Dinitro-2-methylphenol	*0.24*	*0.73*	**<0.415**	<0.201	**<0.392**	<0.0822	<0.0002	<0.00002	<0.0002	<0.0002	<0.0002	<0.00008	<0.00008	<0.00008
4-Nitrophenol	*4.9*	*15*	<0.28	<0.136	<0.264	<0.0554	<0.00047	<0.000047	<0.00047	<0.00047	<0.00047	<0.00007	<0.00007	<0.00005
Acenaphthene	*150*	*440*	0.93	0.423	0.524	0.267	0.13	0.13	0.3	0.38	0.55	<0.00009	<0.00009	<0.00005
Acenaphthylene	*150*	*440*	<0.03	<0.0146	<0.0283	<0.00594	0.0029	0.0011	0.0063	0.0051	0.0086	<0.00007	<0.00007	<0.00005
Anthracene	*730*	*2200*	0.292	0.0493 J	0.0844 J	0.0355 J	0.014	0.005	0.44	0.039	0.19	<0.00007	<0.00007	<0.00005
Benzo(a)anthracene	*0.91*	*2*	0.0543 J	<0.0194	<0.0377	<0.00792	0.001	<0.00005	0.03	0.0071	0.04	<0.00007	<0.00007	<0.00005
Benzo(a)pyrene	*0.02*	*0.02*	**<0.04**	<0.0194	**<0.0377**	<0.00792	0.00058 J	<0.00002	0.0094	0.0021	0.012	<0.00008	<0.00008	<0.00005
bis(2-Chloroethoxy)methane	*0.083*	*0.19*	<0.065	<0.0316	<0.0613	<0.0129	<0.0003	<0.00003	<0.0003	<0.0003	<0.0003	<0.00009	<0.00009	<0.00005
bis(2-Ethylhexyl)phthalate (DEHP)	*0.6*	*0.6*	<0.185	<0.0898	<0.175	<0.0366	0.00043 J	0.000095 J	<0.00037	<0.00037	<0.00037	0.002	<0.00021	<0.00031
Chrysene	*91*	*200*	0.0561 J	<0.0194	<0.0377	<0.00792	0.00091 J	<0.000021	0.024	0.0065	0.042	<0.00007	<0.00007	<0.00005
Dibenzofuran	*9.8*	*29*	0.814	0.322	0.392	0.226	0.11	0.081	0.29	0.32	0.49	<0.00008	<0.00008	<0.00005
Di-n-butylphthalate (DBP)	*240*	*730*	<0.055	<0.0267	<0.0519	<0.0109	<0.0002	<0.00002	<0.0002	<0.0002	<0.0002	<0.00007	<0.00007	<0.00005
Fluoranthene	*98*	*290*	0.387	0.0301 J	0.0752 J	0.0109 J	0.012	0.0044	0.19	0.047	0.34	<0.00007	<0.00007	<0.00005
Fluorene	*98*	*290*	0.65	0.208	0.298	0.138	0.081	0.096	0.27	0.21	0.46	<0.00007	<0.00007	<0.00005
Naphthalene	*49*	*150*	18.9 J	18.1	10.6	17	1.8	0.39	12	17	13	0.00014 J	<0.0001	<0.00005
Nitrobenzene	*4.9*	*15*	<0.055	<0.0267	<0.0519	<0.0109	<0.00024	<0.000024	<0.00024	<0.00024	<0.00024	<0.00009	<0.00009	<0.00005
N-Nitrosodiphenylamine	*19*	*42*	<0.05	<0.0243	<0.0472	<0.0099	<0.00025	<0.000025	<0.00025	<0.00025	<0.00025	<0.00009	<0.00009	<0.00005
Pentachlorophenol	*0.1*	*0.1*	**<0.305**	**<0.148**	**<0.288**	<0.0604	<0.00079	<0.000079	<0.00079	<0.00079	<0.00079	<0.00008	<0.00008	<0.00005
Phenanthrene	*73*	*220*	1.39	0.242	0.456	0.127	0.094	0.033	0.63	0.29	1.1	<0.00007	<0.00007	<0.00005
Phenol	*730*	*2200*	1	0.645	1	0.495	<0.00035	<0.000035	0.22	1	0.32	0.0002	<0.00007	<0.00005
Pyrene	*73*	*220*	0.245 J	<0.0267	<0.0519	<0.0109	0.0068	0.003	0.13	0.03	0.21	<0.00007	<0.00007	<0.00005
Metals														
Arsenic	*1*	*1*					0.0419	0.00179 J	0.00285	0.00404	0.00404			

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.

TABLE 3
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 3 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Class 3 Residential Assessment	*Class 3 C/I Assessment Level*	MW-59B 02/06/2012	MW-59B 07/27/2012	MW-59B 01/31/2013	MW-59B 08/01/2013	MW-59B 01/16/2014	MW-59B 07/30/2014	MW-59B 01/29/2018	MW-59B 03/20/2018	MW-59B 05/25/2018	MW-59B 01/23/2019	MW-59B 07/17/2019	MW-59B 01/16/2020
Volatile Organic Compounds														
1,2-Dichloroethane	*0.5*	*0.5*	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.5*	*0.5*	<0.001	<0.0005	<0.00008	0.0000981 J	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	*10*	*10*	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*70*	*70*	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.5*	*0.5*	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*100*	*100*	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.18
Vinyl chloride	*0.2*	*0.2*	<0.001	<0.0005	<0.00011	<0.00011	<0.00018	<0.00011	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Xylenes (total)	*1000*	*1000*	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.11*	*0.26*	<0.00005	<0.00005	<0.000104	<0.000105	<0.000104	**R**	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*49*	*150*	0.25	<0.00005	<0.000292	<0.000295	<0.000292	**R**	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.13*	*0.3*	<0.00005	<0.00005	<0.000123	<0.000124	<0.000123	**R**	<0.000058	<0.000059	<0.000059	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.13*	*0.3*	<0.00006	<0.00006	<0.0000755	<0.0000762	<0.0000755	**R**	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*200*	*580*	<0.00005	<0.00005	<0.0000755	<0.0000762	<0.0000755	**R**	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	*9.8*	*29*	<0.00005	<0.00005	<0.000066	<0.0000667	<0.000066	**R**	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019	<0.000038
4,6-Dinitro-2-methylphenol	*0.24*	*0.73*	<0.00008	<0.00008	<0.000783	<0.00079	<0.000783	**R**	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*4.9*	*15*	<0.00005	<0.00005	<0.000528	<0.000533	<0.000528	**R**	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	*150*	*440*	0.0017	<0.00005	<0.0000755	<0.0000762	<0.0000755	**0.000621U**	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027	<0.000051
Acenaphthylene	*150*	*440*	0.00014 J	<0.00005	<0.0000566	<0.0000571	<0.0000566	**R**	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	*730*	*2200*	0.000054 J	<0.00005	<0.0000472	<0.0000476	<0.0000472	**R**	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014	<0.000031
Benzo(a)anthracene	*0.91*	*2*	<0.00005	<0.00005	<0.0000755	<0.0000762	<0.0000755	**R**	<0.00005	<0.000051	<0.000051	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.02*	*0.02*	<0.00005	<0.00005	<0.0000755	<0.0000762	<0.0000755	**R**	<0.00002	<0.00002	<0.00002	0.000033 J	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.083*	*0.19*	<0.00005	<0.00005	<0.000123	<0.000124	<0.000123	**R**	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.6*	*0.6*	0.00068	0.00018 J	<0.000349	<0.000352	<0.000349	**R**	0.000058 J	<0.000037	<0.000037	<0.000056	<0.00039	<0.000037
Chrysene	*91*	*200*	<0.00005	<0.00005	<0.0000755	<0.0000762	<0.0000755	**R**	<0.000021	<0.000021	<0.000021	0.000036 J	<0.000021	<0.000021
Dibenzofuran	*9.8*	*29*	<0.00005	<0.00005	<0.0000755	<0.0000762	<0.0000755	**0.000201U**	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00005
Di-n-butylphthalate (DBP)	*240*	*730*	<0.00005	<0.00005	<0.000104	0.000115 J	0.000105 J	**R**	<0.00002	<0.00002	<0.00002	<0.00002	0.000055 J	<0.00002
Fluoranthene	*98*	*290*	<0.00005	<0.00005	<0.000066	<0.0000667	<0.000066	**R**	<0.00001	<0.00001	<0.00001	0.000051 J	<0.00001	<0.000025
Fluorene	*98*	*290*	<0.00005	<0.00005	<0.000066	<0.0000667	<0.000066	**0.000189U**	<0.00003	<0.00003	<0.00003	<0.00003	<0.00003	<0.000042
Naphthalene	*49*	*150*	0.00012 J	0.00006 J	<0.000269	<0.000166	<0.000172	**0.00627U**	<0.00002	<0.00002	<0.00002	0.000072 J	<0.00015	<0.00024
Nitrobenzene	*4.9*	*15*	<0.00005	<0.00005	<0.000104	<0.000105	<0.000104	**R**	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
N-Nitrosodiphenylamine	*19*	*42*	<0.00005	<0.00005	<0.0000943	<0.0000952	<0.0000943	**R**	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.1*	*0.1*	0.00011 J	<0.00005	<0.000575	<0.000581	<0.000575	**R**	<0.000079	<0.00008	<0.00008	<0.000079	<0.000079	<0.000079
Phenanthrene	*73*	*220*	0.00025	<0.00005	<0.0000566	<0.0000571	<0.000112	**R**	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000099
Phenol	*730*	*2200*	0.00033	<0.00005	<0.0000377	<0.0000381	<0.0000377	**R**	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	*73*	*220*	0.000062 J	<0.00005	<0.000104	<0.000105	<0.000104	**R**	<0.000019	<0.000019	<0.000019	0.000053 J	<0.000019	<0.000021
Metals														
Arsenic	*1*	*1*							<0.0004	<0.0004	<0.0004	0.000983 J	0.000542 J	0.000486 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.

TABLE 3
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 3 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Class 3 Residential Assessment	*Class 3 C/I Assessment Level*	MW60B 03/17/2020	MW61B 03/17/2020	MW-63B 01/13/2010	MW-63B 06/30/2010	MW-63B 01/27/2011	MW-63B 07/19/2011	MW-63B 07/19/2011 Duplicate	MW-63B 02/09/2012	MW-63B 02/09/2012 Duplicate	MW-63B 07/18/2012	MW-63B 07/18/2012 Duplicate	MW-63B 02/07/2013
Volatile Organic Compounds														
1,2-Dichloroethane	*0.5*	*0.5*	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.00014
Benzene	*0.5*	*0.5*	<0.0002	<0.0002	0.21	0.015	0.019	0.019	0.024	<0.001	<0.001	0.0015 J	0.0016 J	0.00952
Chlorobenzene	*10*	*10*	<0.0003	<0.0003	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.00012
Ethylbenzene	*70*	*70*	<0.0003	<0.0003	0.2	0.072	0.071	0.04	0.045	0.0012 J	0.0012 J	0.0014 J	0.0014 J	0.0165
Methylene chloride	*0.5*	*0.5*	<0.001	<0.001	<0.0005	<0.0005	<0.0005	<0.0013	<0.0013	<0.0013	<0.0013	<0.001	<0.001	<0.00015
Toluene	*100*	*100*	<0.0002	<0.0002	0.015	0.0016 J	0.0018 J	0.0017 J	0.0019 J	<0.001	<0.001	0.0038 J	0.0038 J	0.00241
Vinyl chloride	*0.2*	*0.2*												
Xylenes (total)	*1000*	*1000*	<0.0003	<0.0003	0.082	0.02	0.016	0.013 J	0.014 J	<0.0031	<0.0031	<0.0015	<0.0015	0.00629
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.11*	*0.26*	<0.000021	<0.000021	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00524
2,4-Dimethylphenol	*49*	*150*	<0.00004	<0.00004	<0.00008	<0.00008	<0.00008	0.000056 J	<0.00005	0.00005 J	0.00044 J	<0.00005	<0.00005	<0.0148
2,4-Dinitrotoluene	*0.13*	*0.3*	<0.000058	<0.000058	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00619
2,6-Dinitrotoluene	*0.13*	*0.3*	<0.000042	<0.000042	<0.00007	<0.00007	<0.00007	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.00006	<0.00381
2-Chloronaphthalene	*200*	*580*	<0.000021	<0.000021	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00381
2-Methylnaphthalene	*9.8*	*29*	<0.000019	<0.000019	0.11	0.031	0.025	0.014	0.013	0.0029	0.0029	0.0034	0.0032	0.0104 J
4,6-Dinitro-2-methylphenol	*0.24*	*0.73*	<0.00002	<0.00002	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.00008	<0.0395
4-Nitrophenol	*4.9*	*15*	<0.000047	<0.000047	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0267
Acenaphthene	*150*	*440*	<0.000027	<0.000027	0.028	0.013	0.017	0.0053	0.0066	0.002	0.0019	0.0023	0.0022	0.00952 J
Acenaphthylene	*150*	*440*	<0.000015	<0.000015	0.00051	0.00018 J	<0.00007	0.000066 J	0.00011 J	0.00012 J	0.00016 J	<0.00005	<0.00005	<0.00286
Anthracene	*730*	*2200*	<0.000014	<0.000014	0.00068	0.00039	0.0011	0.00011 J	0.0002 J	0.00015 J	0.00015 J	<0.00013	<0.00011	0.00238 J
Benzo(a)anthracene	*0.91*	*2*	<0.00005	<0.00005	<0.00007	<0.00007	0.00087	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00381
Benzo(a)pyrene	*0.02*	*0.02*	<0.00002	<0.00002	<0.00008	<0.00008	0.00027	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00381
bis(2-Chloroethoxy)methane	*0.083*	*0.19*	<0.00003	<0.00003	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00619
bis(2-Ethylhexyl)phthalate (DEHP)	*0.6*	*0.6*	0.00092	0.00015 J	<0.00036	<0.00036	0.0006	<0.00051	<0.00029	0.00096	0.00073	0.00096 J	0.00051 J	<0.0176
Chrysene	*91*	*200*	<0.000021	<0.000021	<0.00007	<0.00007	0.00079	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00381
Dibenzofuran	*9.8*	*29*	<0.00002	<0.00002	0.022	0.008	0.013	0.0041	0.0049	0.0024	0.0019	0.0026	0.0023	0.00576 J
Di-n-butylphthalate (DBP)	*240*	*730*	0.000047 J	<0.00002	0.00019 J	<0.00007	<0.00007	<0.00005	<0.00005	0.00014 J	0.00005 J	<0.00005	<0.00005	0.00524 J
Fluoranthene	*98*	*290*	0.000015 J	<0.00001	<0.00007	<0.00007	0.0042	<0.00005	<0.00005	0.000091 J	0.00005 J	<0.00013	<0.00013	<0.00333
Fluorene	*98*	*290*	<0.00003	<0.00003	0.0078	0.0041	0.0054	0.0019	0.0024	0.00093	0.00078	0.0011	0.001	<0.00333
Naphthalene	*49*	*150*	<0.00002	<0.00002	3.1	0.67	0.76	0.36 J	0.49 J	0.027	0.026	0.044	0.04	0.251
Nitrobenzene	*4.9*	*15*	<0.000024	<0.000024	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00524
N-Nitrosodiphenylamine	*19*	*42*	<0.000025	<0.000025	<0.00009	<0.00009	<0.00009	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00476
Pentachlorophenol	*0.1*	*0.1*	<0.000079	<0.000079	<0.00008	<0.00008	<0.00008	<0.00005	<0.00005	0.00018 J	0.00005 J	<0.00005	<0.00005	<0.029
Phenanthrene	*73*	*220*	<0.000021	<0.000021	0.0034	0.00076	0.0044	0.00075	0.00098	0.00072 J	0.0005 J	<0.001	<0.001	0.00286 J
Phenol	*730*	*2200*	<0.000035	<0.000035	<0.00007	<0.00007	<0.00007	<0.00005	<0.00005	0.00057 J	0.00095 J	<0.00005	<0.00005	<0.0019
Pyrene	*73*	*220*	<0.000019	<0.000019	<0.00007	<0.00007	0.0029	<0.00005	<0.00005	0.000063 J	<0.00005	<0.00005	<0.00005	<0.00524
Metals														
Arsenic	*1*	*1*	0.00234	0.00461										

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.

TABLE 3
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 3 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Class 3 Residential Assessment	*Class 3 C/I Assessment Level*	MW-63B 02/07/2013 Duplicate	MW-63B 08/07/2013	MW-63B 01/22/2014	MW-63B 07/24/2014	MW-63B 01/28/2018	MW-63B 03/26/2018	MW-63B 06/06/2018	MW-63B 01/14/2019	MW-63B 07/16/2019	MW-63B 01/16/2020	MW-67B 07/15/2010	MW-67B 01/27/2011
Volatile Organic Compounds														
1,2-Dichloroethane	*0.5*	*0.5*	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0005	<0.0005
Benzene	*0.5*	*0.5*	0.00919	0.0869	0.0762	0.108	0.0033	0.0026	0.048	0.35	0.11	0.018	<0.0005	<0.0005
Chlorobenzene	*10*	*10*	<0.00012	<0.00012	<0.00018	0.000216 J	<0.0003	<0.0003	<0.0003	0.00073 J	<0.0003	<0.0003	<0.0005	<0.0005
Ethylbenzene	*70*	*70*	0.0163	0.0341	0.0418	0.151	0.012	0.0059	0.048	0.48	0.14	0.051	0.0015 J	<0.0005
Methylene chloride	*0.5*	*0.5*	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005
Toluene	*100*	*100*	0.00231	<0.000434	0.000399 J	0.00257	<0.0002	<0.0002	0.00093 J	0.0071	0.00071 J	<0.0002	<0.0005	<0.0005
Vinyl chloride	*0.2*	*0.2*				<0.00011								
Xylenes (total)	*1000*	*1000*	0.00635	0.0113	0.0156	0.0535	0.0048	0.0016	0.011	0.11	0.041	0.013	0.0012 J	<0.001
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.11*	*0.26*	<0.000105	<0.000104	<0.00109	<0.0011	<0.000021	<0.000021	<0.00021	<0.00021	<0.000021	<0.000021	<0.0001	<0.0001
2,4-Dimethylphenol	*49*	*150*	<0.000295	<0.000292	<0.00307	<0.0031	<0.00004	<0.00004	<0.0004	<0.0004	<0.00004	<0.00004	<0.00008	<0.00008
2,4-Dinitrotoluene	*0.13*	*0.3*	<0.000124	<0.000123	<0.00129	<0.0013	<0.000058	<0.000058	<0.00058	<0.00059	<0.000058	<0.000058	<0.00009	<0.00009
2,6-Dinitrotoluene	*0.13*	*0.3*	<0.0000762	<0.0000755	<0.000792	<0.0008	<0.000042	<0.000042	<0.00042	<0.00042	<0.000042	<0.000042	<0.00007	<0.00007
2-Chloronaphthalene	*200*	*580*	<0.0000762	<0.0000755	<0.000792	<0.0008	<0.000021	<0.000021	<0.00021	<0.00021	<0.000021	<0.000021	<0.0001	<0.0001
2-Methylnaphthalene	*9.8*	*29*	0.00865	0.00242	0.00756	0.0302	0.000059 J	<0.000019	0.0016	0.042	0.037	<0.000056	<0.00007	0.00007 J
4,6-Dinitro-2-methylphenol	*0.24*	*0.73*	<0.00079	<0.000783	<0.00822	<0.0083	<0.00002	<0.00002	<0.0002	<0.0002	<0.00002	<0.00002	<0.00008	<0.00008
4-Nitrophenol	*4.9*	*15*	<0.000533	<0.000528	<0.00554	<0.0056	<0.000047	<0.000047	<0.00047	<0.00047	<0.000047	<0.000047	<0.00007	<0.00007
Acenaphthene	*150*	*440*	0.0065	0.000833	0.00274 J	0.00754	0.00066	<0.000027	0.0027	<0.00027	0.012	<0.000059	0.00011 J	<0.00009
Acenaphthylene	*150*	*440*	<0.0000571	<0.0000566	<0.000594	<0.0006	<0.000015	<0.000015	<0.00015	0.0029	0.00016	0.000032 J	<0.00007	0.00007 J
Anthracene	*730*	*2200*	0.000124 J	<0.0000472	<0.000495	<0.0005	0.00011	0.00022	<0.00014	0.00017 J	0.00034	<0.000081	<0.00007	<0.00007
Benzo(a)anthracene	*0.91*	*2*	<0.0000762	<0.0000755	<0.000792	<0.0008	<0.00005	<0.00005	<0.0005	<0.00051	<0.00005	<0.00005	<0.00007	<0.00007
Benzo(a)pyrene	*0.02*	*0.02*	<0.0000762	<0.0000755	<0.000792	<0.0008	<0.00002	<0.00002	<0.0002	<0.0002	<0.00002	<0.00002	<0.00008	<0.00008
bis(2-Chloroethoxy)methane	*0.083*	*0.19*	<0.000124	<0.000123	<0.00129	<0.0013	<0.00003	<0.00003	<0.0003	<0.0003	<0.00003	<0.00003	<0.00009	0.00009 J
bis(2-Ethylhexyl)phthalate (DEHP)	*0.6*	*0.6*	<0.000376	0.000381 J	<0.00366	<0.0037	<0.000037	<0.000037	<0.00037	<0.00037	<0.000037	0.000065 J	0.0016	0.0022 J
Chrysene	*91*	*200*	<0.0000762	<0.0000755	<0.000792	<0.0008	<0.000021	<0.000021	<0.00021	<0.00021	<0.000021	<0.000021	<0.00007	<0.00007
Dibenzofuran	*9.8*	*29*	0.00514	0.00104	0.002 J	0.00663	0.00065	<0.00002	0.002	0.0087	0.011	<0.000063	<0.00008	0.00008 J
Di-n-butylphthalate (DBP)	*240*	*730*	0.000127 J	<0.000104	<0.00109	<0.0011	<0.00002	<0.00002	<0.0002	<0.0002	<0.00002	0.000034 J	<0.00007	0.000083 J
Fluoranthene	*98*	*290*	<0.0000667	<0.000066	<0.000693	<0.0007	0.0001	<0.00001	<0.0001	<0.0001	<0.00001	<0.000023	<0.00007	<0.00007
Fluorene	*98*	*290*	0.00208	0.000349 J	0.00102 J	0.00248 J	0.00033	<0.00003	0.00099 J	0.0029	0.0037	<0.00012	<0.00007	<0.00007
Naphthalene	*49*	*150*	0.162 J	0.146	0.374	1.69	<0.00066	<0.00002	0.29	2.1	1.5	<0.00035	<0.0001	0.00062
Nitrobenzene	*4.9*	*15*	<0.000105	<0.000104	<0.00109	<0.0011	<0.000024	<0.000024	<0.00024	<0.00024	<0.000024	<0.000024	<0.00009	0.00009 J
N-Nitrosodiphenylamine	*19*	*42*	<0.0000952	<0.0000943	<0.00099	<0.001	<0.000025	<0.000025	<0.00025	<0.00025	<0.000025	<0.000025	<0.00009	<0.00009
Pentachlorophenol	*0.1*	*0.1*	<0.000581	<0.000575	<0.00604	<0.0061	<0.000079	<0.000079	<0.00079	<0.0008	<0.000079	<0.000079	<0.00008	<0.00008
Phenanthrene	*73*	*220*	0.000776 J	<0.0000566	0.00133 J	<0.0006	<0.000075	<0.000021	<0.00021	0.00094 J	0.0013	<0.000072	<0.00007	<0.00007
Phenol	*730*	*2200*	<0.0000381	<0.0000377	0.000889 J	<0.0004	<0.000035	<0.000035	<0.00035	<0.00035	<0.000035	<0.000035	<0.00007	<0.00007
Pyrene	*73*	*220*	<0.000105	<0.000104	<0.00109	<0.0011	<0.000019	<0.000019	<0.00019	<0.00019	<0.000019	<0.000021	<0.00007	<0.00007
Metals														
Arsenic	*1*	*1*					0.00114 J	0.00211	0.000818 J	0.00338	0.00156 J	0.00204		

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.

TABLE 3
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 3 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Class 3 Residential Assessment	*Class 3 C/I Assessment Level*	MW-67B 07/20/2011	MW-67B 02/09/2012	MW-67B 07/17/2012	MW-67B 02/12/2013	MW-67B 08/08/2013	MW-67B 01/23/2014	MW-67B 07/24/2014	MW-67B 01/31/2018	MW-67B 03/27/2018	MW-67B 06/06/2018	MW-67B 01/24/2019	MW-67B 07/31/2019
Volatile Organic Compounds														
1,2-Dichloroethane	*0.5*	*0.5*	<0.001	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.5*	*0.5*	<0.001	<0.001	<0.0005	<0.00008	<0.00008	<0.0002	<0.00008	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	*10*	*10*	<0.001	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*70*	*70*	<0.0011	<0.0011	<0.0005	<0.00011	<0.00011	<0.00019	<0.00011	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.5*	*0.5*	<0.0013	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*100*	*100*	<0.001	<0.001	<0.0005	<0.00015	<0.00015	<0.00017	<0.00015	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.2*	*0.2*					<0.00011		<0.00011					
Xylenes (total)	*1000*	*1000*	<0.0031	<0.0031	<0.0015	<0.00026	<0.00026	<0.00058	<0.00026	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.11*	*0.26*	<0.00005	<0.00005	<0.00005	<0.000105	<0.000104	<0.000106	<0.000106	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	*49*	*150*	<0.00005	0.0005 J	<0.00005	<0.000295	<0.000292	<0.000298	<0.000298	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004
2,4-Dinitrotoluene	*0.13*	*0.3*	<0.00005	<0.00005	<0.00005	<0.000124	<0.000123	<0.000125	<0.000125	<0.000058	<0.000058	0.000058 J	<0.000058	<0.000058
2,6-Dinitrotoluene	*0.13*	*0.3*	<0.00006	<0.00006	0.0022 J	<0.0000762	<0.0000755	<0.0000769	<0.0000769	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	*200*	*580*	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000769	<0.0000769	<0.000021	<0.000021	0.000021 J	<0.000021	<0.000021
2-Methylnaphthalene	*9.8*	*29*	<0.00005	0.00023 J	0.000062 J	<0.0000667	<0.000066	<0.0000673	<0.0000673	<0.000031	<0.000019	0.000061 J	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	*0.24*	*0.73*	<0.00008	<0.00008	<0.00008	**R**	<0.000783	<0.000798	<0.000798	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
4-Nitrophenol	*4.9*	*15*	<0.00005	<0.00005	<0.00005	<0.000533	<0.000528	<0.000538	<0.000538	<0.000047	<0.000047	0.000047 J	<0.000047	<0.000047
Acenaphthene	*150*	*440*	<0.00005	0.00012 J	<0.00005	<0.0000762	<0.0000755	<0.0000769	<0.0000769	<0.000027	<0.000027	0.000027 J	<0.000027	<0.000027
Acenaphthylene	*150*	*440*	<0.00005	<0.00005	<0.00005	<0.0000571	<0.0000566	<0.0000577	<0.0000577	<0.000015	<0.000015	0.000015 J	<0.000015	<0.000015
Anthracene	*730*	*2200*	<0.00005	<0.00005	<0.00005	<0.0000476	<0.0000472	<0.000424	<0.0000481	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	*0.91*	*2*	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000769	<0.0000769	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Benzo(a)pyrene	*0.02*	*0.02*	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000769	<0.0000769	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
bis(2-Chloroethoxy)methane	*0.083*	*0.19*	<0.00005	<0.00005	<0.00005	<0.000124	<0.000123	<0.000125	<0.000125	<0.00003	<0.00003	0.00003 J	<0.00003	<0.00003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.6*	*0.6*	<0.00094	0.00042	0.00012 J	<0.000352	<0.000349	<0.000356	0.00184	<0.000056	<0.000037	<0.00056	0.000051 J	<0.000037
Chrysene	*91*	*200*	<0.00005	<0.00005	<0.00005	<0.0000762	<0.0000755	<0.0000769	<0.0000769	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Dibenzofuran	*9.8*	*29*	<0.00005	0.00013 J	<0.00005	<0.0000762	<0.0000755	<0.0000769	<0.0000769	<0.00002	<0.00002	0.000069 J	<0.00002	<0.00002
Di-n-butylphthalate (DBP)	*240*	*730*	<0.00005	<0.00005	<0.00005	<0.000105	0.000119 J	<0.000834	<0.000106	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Fluoranthene	*98*	*290*	<0.00005	<0.00005	<0.00005	<0.0000667	<0.000066	<0.0000673	<0.0000673	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Fluorene	*98*	*290*	<0.00005	0.0001 J	<0.00005	<0.0000667	<0.000066	<0.0000673	<0.0000673	<0.00003	<0.00003	0.00003 J	<0.00003	<0.00003
Naphthalene	*49*	*150*	<0.00005	0.0019	0.00049	<0.0000762	0.000433 J	<0.000711	0.000275 J	<0.00045	0.00013	0.00047 J	<0.00002	0.000079 J
Nitrobenzene	*4.9*	*15*	<0.00005	<0.00005	<0.00005	<0.000105	<0.000104	<0.000106	<0.000106	<0.000024	<0.000024	0.000024 J	<0.000024	<0.000024
N-Nitrosodiphenylamine	*19*	*42*	<0.00005	<0.00005	<0.00005	<0.0000952	<0.0000943	<0.0000962	<0.0000962	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Pentachlorophenol	*0.1*	*0.1*	<0.00005	<0.00005	<0.00005	0.000581 J	<0.000575	<0.000587	<0.000587	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	*73*	*220*	<0.00005	0.00011 J	<0.00005	<0.0000571	<0.0000566	<0.000377	<0.0000577	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Phenol	*730*	*2200*	<0.00005	0.000089 J	<0.00005	<0.0000381	<0.0000377	<0.0000385	<0.0000385	0.00018 J	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	*73*	*220*	<0.00005	<0.00005	<0.00005	<0.000105	<0.000104	<0.000106	<0.000106	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019
Metals														
Arsenic	*1*	*1*								0.000751 J	0.000565 J	0.000416 J	<0.0004	0.000494 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.

TABLE 3
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 3 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Class 3 Residential Assessment	*Class 3 C/I Assessment Level*	MW-67B 01/15/2020	MW-70B 07/17/2012 DNAPL	MW-70B 02/07/2013 DNAPL	MW-70B 01/22/2014 DNAPL	MW-70B 07/28/2014 DNAPL	MW-70B 01/20/2020 DNAPL	MW-71B 02/08/2012	MW-71B 07/18/2012	MW-71B 02/07/2013	MW-71B 08/07/2013	MW-71B 01/24/2014	MW-71B 07/28/2014
Volatile Organic Compounds														
1,2-Dichloroethane	*0.5*	*0.5*	<0.0002	<0.0025	<0.007	<0.0002	<0.0014	<0.01	<0.001	<0.0005	<0.00014	<0.00014	<0.0002	<0.00014
Benzene	*0.5*	*0.5*	<0.0002	0.21	**2.01**	**2.39**	**2.55**	**1.9**	0.012	0.0014 J	0.0124	0.103	0.039	0.00155
Chlorobenzene	*10*	*10*	<0.0003	<0.0025	0.0317 J	0.000715	<0.0012	<0.015	<0.001	<0.0005	<0.00012	<0.00012	<0.00018	<0.00012
Ethylbenzene	*70*	*70*	<0.0003	0.058	0.524	0.621	0.742	0.57	0.0045 J	0.0075	0.00541	0.0354	0.00793	<0.00011
Methylene chloride	*0.5*	*0.5*	<0.001	<0.005	<0.0075	<0.00022	<0.0015	<0.05	<0.0013	<0.001	<0.00015	<0.00015	<0.00022	<0.00015
Toluene	*100*	*100*	<0.0002	0.22	1.65	2.31	2.76	2.1	0.0077	0.0078	0.0104	0.0355	0.00918	0.00423
Vinyl chloride	*0.2*	*0.2*						<0.01				<0.00011		
Xylenes (total)	*1000*	*1000*	<0.0003	0.19	1.51	1.68	2.11	1.5	0.016	0.033	0.0143	0.0615	0.0202	0.0126
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.11*	*0.26*	<0.000021	<0.0005	<0.075	<0.0157	<0.0107	<0.00042	<0.00005	<0.00005	<0.000105	<0.00519	<0.000106	<0.000107
2,4-Dimethylphenol	*49*	*150*	<0.00004	2.6	<2.11	**72**	**50.8**	49	0.0034	<0.00005	<0.000295	<0.0146	0.0225	<0.000301
2,4-Dinitrotoluene	*0.13*	*0.3*	<0.000058	<0.0005	<0.0886	<0.0186	<0.0126	<0.0012	<0.00005	<0.00005	<0.000124	<0.00613	<0.000125	<0.000126
2,6-Dinitrotoluene	*0.13*	*0.3*	<0.000042	<0.0006	<0.0545	<0.0114	<0.00777	<0.00084	<0.00006	<0.00006	<0.0000762	<0.00377	<0.0000769	<0.0000777
2-Chloronaphthalene	*200*	*580*	<0.000021	<0.0005	<0.0545	<0.0114	<0.00777	<0.00042	<0.00005	<0.00005	<0.0000762	<0.00377	<0.0000769	<0.0000777
2-Methylnaphthalene	*9.8*	*29*	<0.000019	0.94	1.21	1.4	1.31	**10**	0.0076	<0.0004	0.000377 J	0.114	0.0476	<0.000068
4,6-Dinitro-2-methylphenol	*0.24*	*0.73*	<0.00002	<0.0008	**<0.566**	<0.119	<0.0806	<0.0004	<0.00008	<0.00008	<0.00079	<0.0392	<0.000798	<0.000806
4-Nitrophenol	*4.9*	*15*	<0.000047	<0.0005	<0.382	<0.08	<0.0544	<0.00094	<0.00005	<0.00005	<0.000533	<0.0264	<0.000538	<0.000544
Acenaphthene	*150*	*440*	<0.000027	0.91	0.515	0.454	0.374	7.1	0.0039	<0.00017	0.0044	0.0346	0.0212	0.000785
Acenaphthylene	*150*	*440*	<0.000015	0.011	0.0424 J	<0.00857	0.0114 J	0.079	0.00019 J	<0.00005	0.000135 J	<0.00283	0.00122	<0.0000583
Anthracene	*730*	*2200*	<0.000014	0.096	0.051 J	0.0423 J	0.0387 J	5.8	0.00056	<0.00013	0.000452 J	0.00383 J	0.00198	<0.0000485
Benzo(a)anthracene	*0.91*	*2*	<0.00005	0.016	<0.0545	<0.0114	<0.00777	0.52	0.000081 J	0.00011 J	<0.0000762	<0.00377	<0.0000769	<0.0000777
Benzo(a)pyrene	*0.02*	*0.02*	<0.00002	0.0041	**<0.0545**	<0.0114	<0.00777	**0.13**	0.00012 J	0.00014 J	<0.0000762	<0.00377	<0.0000769	<0.0000777
bis(2-Chloroethoxy)methane	*0.083*	*0.19*	<0.00003	<0.0005	**<0.0886**	<0.0186	<0.0126	<0.0006	<0.00005	<0.00005	<0.000124	<0.00613	<0.000125	<0.000126
bis(2-Ethylhexyl)phthalate (DEHP)	*0.6*	*0.6*	0.00009 J	0.0068	<0.252	<0.0529	<0.0359	0.0039 J	<0.0013	0.00012 J	<0.000352	<0.0175	<0.000356	<0.000359
Chrysene	*91*	*200*	<0.000021	0.013	<0.0545	<0.0114	<0.00777	0.63	0.000089 J	0.00015 J	<0.0000762	<0.00377	<0.0000769	<0.0000777
Dibenzofuran	*9.8*	*29*	<0.00002	0.69	0.345	0.355	0.278	6.2	0.0031	<0.00016	0.00244	0.0292	0.0175	<0.0000777
Di-n-butylphthalate (DBP)	*240*	*730*	<0.00002	<0.0005	<0.075	<0.0157	<0.0107	<0.0004	<0.00005	<0.00005	<0.000105	<0.00519	<0.00085	<0.000107
Fluoranthene	*98*	*290*	<0.00001	0.28	<0.0477	0.0105 J	0.013 J	4.7	0.00053	<0.00026	0.000387 J	<0.0033	0.000712	0.000149 J
Fluorene	*98*	*290*	<0.00003	0.66	0.211 J	0.217	0.186	6.7	0.002	<0.00023	0.00168	0.0127 J	0.0104	<0.000068
Naphthalene	*49*	*150*	<0.00002	5.3	17.3 J	30.1	18.1	**71**	0.051	<0.0019	0.0000937 J	2.07	0.504	<0.000471
Nitrobenzene	*4.9*	*15*	<0.000024	<0.0005	<0.075	<0.0157	<0.0107	<0.00048	<0.00005	<0.00005	<0.000105	<0.00519	<0.000106	<0.000107
N-Nitrosodiphenylamine	*19*	*42*	<0.000025	<0.0005	<0.0682	<0.0143	<0.00971	<0.0005	<0.00005	<0.00005	<0.0000952	<0.00472	<0.0000962	<0.0000971
Pentachlorophenol	*0.1*	*0.1*	<0.000079	<0.0005	**<0.416**	<0.0871	<0.0592	<0.0016	0.00022	<0.00005	<0.000581	<0.0288	<0.000587	<0.000592
Phenanthrene	*73*	*220*	<0.000021	0.93	0.227 J	0.175	0.162	14	0.0025	<0.00034	0.00127	0.0124 J	0.00677	<0.0000583
Phenol	*730*	*2200*	<0.000035	0.077	2.87	3.86	1.69	3.4	0.00037	<0.00005	<0.0000381	<0.00189	<0.0000385	<0.0000388
Pyrene	*73*	*220*	<0.000019	0.094	<0.075	<0.0157	<0.0107	3.2	0.00057	<0.00026	0.000253 J	<0.00519	0.000353 J	<0.000107
Metals														
Arsenic	*1*	*1*	0.000467 J					0.0012 J						

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.

TABLE 3
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 3 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Class 3 Residential Assessment	*Class 3 C/I Assessment Level*	MW-71B 01/25/2018	MW-71B 03/26/2018	MW-71B 06/06/2018	MW-71B 01/15/2019	MW-71B 07/17/2019	MW-71B 01/15/2020	MW-72B 07/12/2012	MW-72B 02/01/2013	MW-72B 07/29/2013	MW-72B 01/15/2014	MW-72B 02/08/2018	MW-72B 03/19/2018
Volatile Organic Compounds														
1,2-Dichloroethane	*0.5*	*0.5*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.005	<0.007	<0.014	<0.0002	0.018	<0.0002
Benzene	*0.5*	*0.5*	<0.0002	0.0042	0.027	0.0024	0.13	0.0021	**1.4**	**1.45**	**1.23**	**0.932**	**0.8**	**1.1**
Chlorobenzene	*10*	*10*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.005	<0.006	<0.012	0.00029 J	0.00033 J	<0.0003
Ethylbenzene	*70*	*70*	<0.0003	0.00065 J	0.0055	0.00093 J	0.031	0.0013	0.31	0.321	0.332	0.224	0.26	0.31
Methylene chloride	*0.5*	*0.5*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.0075	0.291	<0.00022	<0.001	<0.001
Toluene	*100*	*100*	<0.0002	0.00094 J	0.0033	<0.0002	0.023	<0.0002	1.1	1.18	1.12	0.724	0.72	0.99
Vinyl chloride	*0.2*	*0.2*												
Xylenes (total)	*1000*	*1000*	<0.0003	0.0044	0.013	0.00084 J	0.054	0.003	0.88	0.96	0.928	0.661	0.87	0.94
Semivolatile Organic Compounds														
1,2-Diphenylhydrazine	*0.11*	*0.26*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0005	<0.0524	<0.0267	**<0.156**	<0.00021	<0.00021
2,4-Dimethylphenol	*49*	*150*	<0.000041	<0.000041	0.00044	<0.00004	<0.00004	<0.00004	20	**98.1**	29.9	**182 J**	10	16
2,4-Dinitrotoluene	*0.13*	*0.3*	<0.000059	<0.000059	<0.000058	<0.000058	<0.000058	<0.000058	<0.0005	<0.0619	<0.0316	**<0.184**	<0.00058	<0.00058
2,6-Dinitrotoluene	*0.13*	*0.3*	<0.000043	<0.000043	<0.000042	<0.000042	<0.000042	<0.000042	<0.0006	<0.0381	<0.0194	<0.113	<0.00042	<0.00042
2-Chloronaphthalene	*200*	*580*	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021	<0.0005	<0.0381	<0.0194	<0.113	<0.00021	<0.00021
2-Methylnaphthalene	*9.8*	*29*	<0.000019	0.0017	0.00031	<0.000019	0.024	0.006	0.74	1.39	1.19	3.37	0.33	0.42
4,6-Dinitro-2-methylphenol	*0.24*	*0.73*	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.0008	**<0.395**	<0.201	**<1.17**	<0.0002	<0.0002
4-Nitrophenol	*4.9*	*15*	<0.000048	<0.000048	<0.000047	<0.000047	<0.000047	<0.000047	<0.0005	<0.267	<0.136	<0.792	<0.00047	<0.00047
Acenaphthene	*150*	*440*	<0.000028	0.0043	0.0023	<0.000027	0.016	0.0053	0.23	0.584	0.476	1.6	0.07	0.15
Acenaphthylene	*150*	*440*	<0.000015	0.000066 J	0.00011	<0.000015	0.00033	0.00015	0.0073	<0.0286	<0.0146	<0.0849	0.0021	<0.00015
Anthracene	*730*	*2200*	0.000064 J	0.0022	0.00041	<0.000014	0.0066	0.0039	0.017	0.0646 J	0.033 J	0.179 J	0.0085	0.02
Benzo(a)anthracene	*0.91*	*2*	0.00015	0.00067	0.00013	<0.00005	0.0026	0.0011	<0.0005	<0.0381	<0.0194	<0.113	<0.0005	<0.0005
Benzo(a)pyrene	*0.02*	*0.02*	0.0002	0.00029	0.00018	0.000021 J	0.00083	0.00052	<0.0005	**<0.0381**	<0.0194	**<0.113**	<0.0002	<0.0002
bis(2-Chloroethoxy)methane	*0.083*	*0.19*	<0.000031	<0.000031	<0.00003	<0.00003	<0.00003	<0.00003	<0.0005	<0.0619	<0.0316	**<0.184**	<0.0003	<0.0003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.6*	*0.6*	0.00018 J	0.000081 J	<0.00056	<0.000037	<0.00014	0.00063	<0.001	<0.176	<0.0898	<0.524	<0.00037	<0.00037
Chrysene	*91*	*200*	0.00023	0.00077	0.00025	<0.000021	0.0024	0.0011	<0.0005	<0.0381	<0.0194	<0.113	<0.00021	<0.00021
Dibenzofuran	*9.8*	*29*	<0.00002	0.004	0.0019	<0.00002	0.016	0.0049	0.18	0.355	0.348	1.21	0.06	0.13
Di-n-butylphthalate (DBP)	*240*	*730*	<0.00002	<0.00002	<0.00002	0.000022 J	<0.00002	0.00098	<0.0005	<0.0524	<0.0267	<0.156	<0.0002	<0.0002
Fluoranthene	*98*	*290*	0.00033	0.0045	0.0005	0.000039 J	0.017	0.0057	0.0034	<0.0333	<0.017	<0.0991	<0.0001	0.0015
Fluorene	*98*	*290*	<0.000031	0.0032	0.0013	<0.00003	0.0093	0.0038	0.11	0.253	0.224	0.7 J	0.032	0.069
Naphthalene	*49*	*150*	<0.00002	0.00048	0.00011	<0.00002	0.44	0.0064	16	**88.5 J**	25	**82.8**	7.5	13
Nitrobenzene	*4.9*	*15*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.0005	<0.0524	<0.0267	<0.156	<0.00024	<0.00024
N-Nitrosodiphenylamine	*19*	*42*	<0.000026	<0.000026	<0.000025	<0.000025	<0.000025	<0.000025	<0.0005	<0.0476	<0.0243	<0.142	<0.00025	<0.00025
Pentachlorophenol	*0.1*	*0.1*	<0.000081	<0.000081	<0.000079	<0.000079	<0.000079	<0.000079	<0.0005	**<0.29**	**<0.148**	**<0.863**	<0.00079	<0.00079
Phenanthrene	*73*	*220*	0.00012	0.012	0.0016	<0.000021	0.03	0.017	0.079	0.264	0.182	0.76	0.02	0.084
Phenol	*730*	*2200*	<0.000036	<0.000036	<0.000035	<0.000035	0.000051 J	<0.000035	3.4	7.51	6.31	31.4	4.2	4.2
Pyrene	*73*	*220*	0.00031	0.0028	0.00064	0.000037 J	0.0088	0.0042	0.0019 J	<0.0524	<0.0267	<0.156	<0.00019	0.0012
Metals														
Arsenic	*1*	*1*	0.00174 J	0.00214	0.000851 J	0.00158 J	0.000626 J	0.00279					0.00127 J	0.000624 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.

TABLE 3
ANALYTICAL RESULTS SUMMARY (2008 - 2020)
CLASS 3 GROUNDWATER
HOUSTON, TX - WOOD PRESERVING WORKS

	Class 3 Residential Assessment	***Class 3 C/I Assessment Level***	MW-72B 05/16/2018	MW-72B 01/24/2019	MW-72B 07/10/2019	MW-72B 01/09/2020
Volatile Organic Compounds						
1,2-Dichloroethane	*0.5*	*0.5*	<0.001	0.011	<0.0002	<0.002
Benzene	*0.5*	*0.5*	**1.2**	**0.63**	**1.1**	**0.7**
Chlorobenzene	*10*	*10*	<0.0015	<0.003	<0.0003	<0.003
Ethylbenzene	*70*	*70*	0.34	0.2	0.3	0.13
Methylene chloride	*0.5*	*0.5*	<0.005	<0.01	<0.001	<0.01
Toluene	*100*	*100*	0.95	0.58	0.96	0.58
Vinyl chloride	*0.2*	*0.2*				
Xylenes (total)	*1000*	*1000*	1.1	0.63	0.97	0.36
Semivolatile Organic Compounds						
1,2-Diphenylhydrazine	*0.11*	*0.26*	<0.00021	<0.00021	<0.00021	<0.00021
2,4-Dimethylphenol	*49*	*150*	14	2	19	13
2,4-Dinitrotoluene	*0.13*	*0.3*	<0.00058	<0.00058	<0.00058	<0.00058
2,6-Dinitrotoluene	*0.13*	*0.3*	<0.00042	<0.00042	<0.00042	<0.00042
2-Chloronaphthalene	*200*	*580*	<0.00021	<0.00021	<0.00021	<0.00021
2-Methylnaphthalene	*9.8*	*29*	0.23	0.071	0.57	0.22
4,6-Dinitro-2-methylphenol	*0.24*	*0.73*	<0.0002	<0.0002	<0.0002	<0.0002
4-Nitrophenol	*4.9*	*15*	<0.00047	0.0073 J	<0.00047	<0.00047
Acenaphthene	*150*	*440*	0.12	0.019	0.2	0.079
Acenaphthylene	*150*	*440*	0.003	0.00069 J	0.0044	0.0023
Anthracene	*730*	*2200*	<0.00014	0.0015	0.034	0.02
Benzo(a)anthracene	*0.91*	*2*	<0.0005	<0.0005	0.0069	0.0031
Benzo(a)pyrene	*0.02*	*0.02*	<0.0002	<0.0002	0.0019	0.0011
bis(2-Chloroethoxy)methane	*0.083*	*0.19*	<0.0003	<0.0003	<0.0003	<0.0003
bis(2-Ethylhexyl)phthalate (DEHP)	*0.6*	*0.6*	<0.00037	<0.00037	<0.00037	<0.00037
Chrysene	*91*	*200*	<0.00021	<0.00021	0.0069	0.0033
Dibenzofuran	*9.8*	*29*	0.082	0.017	0.16	0.061
Di-n-butylphthalate (DBP)	*240*	*730*	<0.0002	<0.0002	<0.0002	<0.0002
Fluoranthene	*98*	*290*	0.00095 J	<0.0001	0.046	0.024
Fluorene	*98*	*290*	0.051	0.0091	0.12	0.049
Naphthalene	*49*	*150*	12	1.2	12	2
Nitrobenzene	*4.9*	*15*	<0.00024	<0.00024	<0.00024	<0.00024
N-Nitrosodiphenylamine	*19*	*42*	<0.00025	<0.00025	<0.00025	<0.00025
Pentachlorophenol	*0.1*	*0.1*	<0.00079	<0.00079	<0.00079	<0.00079
Phenanthrene	*73*	*220*	0.045	0.0042	0.16	0.075
Phenol	*730*	*2200*	2.3	0.58	9.3	5.2
Pyrene	*73*	*220*	0.00074 J	<0.00019	0.029	0.013
Metals						
Arsenic	*1*	*1*	0.000951 J	0.00106 J	0.000861 J	0.00105 J

Notes:

1. All values in milligrams per liter (mg/L).
2. Concentrations > RAL and non-detects are highlighted light gray.
3. Concentrations > C/I AL and non-detects are highlighted dark gray
4. TRRP PCLs (30 TAC §350, Table 3), updated November 2019.
5. RAL = Residential Assessment Level, C/I = Commercial/Industrial
6. J = Estimated value, < = not detected at the specified detection limit.

TABLE 4

Analytical Results Summary - A-TZ Wells - VISL Comparison
Houston, tx - Wood Preserving Works

Location ID: / *Sample Date:*	*Target Groundwater Concentration (TCR=1E-05 or THQ=0.1) Cgw,Target (mg/L)*	MW-25A 07/16/2019	MW-25A 01/15/2020	MW-26A 07/17/2019	MW-26A 01/16/2020	MW-27A 07/18/2019	MW-27A 01/15/2020	MW-28A 07/16/2019	MW-28A 01/16/2020
Semivolatile Organic Compounds (mg/L)									
Benzo(a)anthracene	*0.344*	<0.00005	0.00012	<0.00005	<0.00005	<0.00005	<0.00005	0.000055 J	0.000073 J
Naphthalene	*0.0174*	0.00023	0.0001	<0.00032	<0.00017	0.0026	0.000053 J	0.0013	<0.0006
Nitrobenzene	*0.715*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
Volatile Organic Compounds (mg/L)									
1,2-Dichloroethane	*0.0151*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.0138*	<0.0002	<0.0002	0.00036 J	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.041*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.0349*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.471*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1.92*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.00147*	<0.0002	<0.0002	NA	NA	NA	NA	NA	NA
Xylenes (total)	*0.0385*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003

Notes: VISL Calculator output for target groundwater screening level with inputs: residential scenario, hazard quotient of 0.1, carcinogenic risk of 10-5, and groundwater temperature of 25 degree Celsius (EPA, 2019).

J = Estimated value

< = Compound not detected at the specified detection limit.

TABLE 4

Analytical Results Summary - A-TZ Wells - VISL Comparison
Houston, tx - Wood Preserving Works

Location ID: / *Sample Date:*	*Target Groundwater Concentration (TCR=1E-05 or THQ=0.1) Cgw,Target (mg/L)*	MW-32AR 07/30/2019	MW-32AR 01/20/2020	MW-33A 07/17/2019	MW-33A (DUP 07/17/2019	MW-33A 01/20/2020	MW-33A (DUP 01/20/2020	MW-35A 07/18/2019	MW-35A 01/10/2020	MW-36A 07/16/2019	MW-36A 01/09/2020
Semivolatile Organic Compounds (mg/L)											
Benzo(a)anthracene	*0.344*	0.000054 J	<0.00005	<0.00005	<0.00005	0.00012	0.00012	<0.00005	<0.00005	<0.00005	<0.00005
Naphthalene	*0.0174*	<0.00002	<0.00014	<0.000076	<0.000096	<0.0005	<0.00066	0.00083	<0.0002	0.00015	<0.00034
Nitrobenzene	*0.715*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
Volatile Organic Compounds (mg/L)											
1,2-Dichloroethane	*0.0151*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.0138*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.041*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.0349*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.471*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1.92*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.00147*	NA	<0.0002	NA	NA	<0.0002	<0.0002	NA	<0.0002	<0.0002	<0.0002
Xylenes (total)	*0.0385*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003

Notes: VISL Calculator output for target groundwater screening level with inputs: residential scenario, hazard quotient of 0.1, carcinogenic risk of 10-5, and groundwater temperature of 25 degree Celsius (EPA, 2019).

J = Estimated value

< = Compound not detected at the specified detection limit.

TABLE 4

Analytical Results Summary - A-TZ Wells - VISL Comparison
Houston, tx - Wood Preserving Works

Location ID: / *Sample Date:*	*Target Groundwater Concentration (TCR=1E-05 or THQ=0.1) Cgw,Target (mg/L)*	MW-38A 07/31/2019	MW-38A 01/21/2020	MW-44A 07/17/2019	MW-44A 01/09/2020	MW-47A 03/20/2020	MW-59A 07/17/2019	MW-59A 01/16/2020	MW-60A 07/17/2019	MW-60AR 03/20/2020
Semivolatile Organic Compounds (mg/L)										
Benzo(a)anthracene	*0.344*	0.000087 J	<0.00005	0.000085 J	0.000054 J	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Naphthalene	*0.0174*	0.000068 J	0.0011	<0.00019	<0.003	<0.00002	<0.00012	<0.0012	<0.00013	<0.00002
Nitrobenzene	*0.715*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
Volatile Organic Compounds (mg/L)										
1,2-Dichloroethane	*0.0151*	0.00031 J	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.0138*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.041*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.0349*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.471*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1.92*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.00147*	NA	NA	<0.0002	NA	NA	<0.0002	<0.0002	<0.0002	NA
Xylenes (total)	*0.0385*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003

Notes: VISL Calculator output for target groundwater screening level with inputs: residential scenario, hazard quotient of 0.1, carcinogenic risk of 10-5, and groundwater temperature of 25 degree Celsius (EPA, 2019).

J = Estimated value

< = Compound not detected at the specified detection limit.

TABLE 4

Analytical Results Summary - A-TZ Wells - VISL Comparison
Houston, tx - Wood Preserving Works

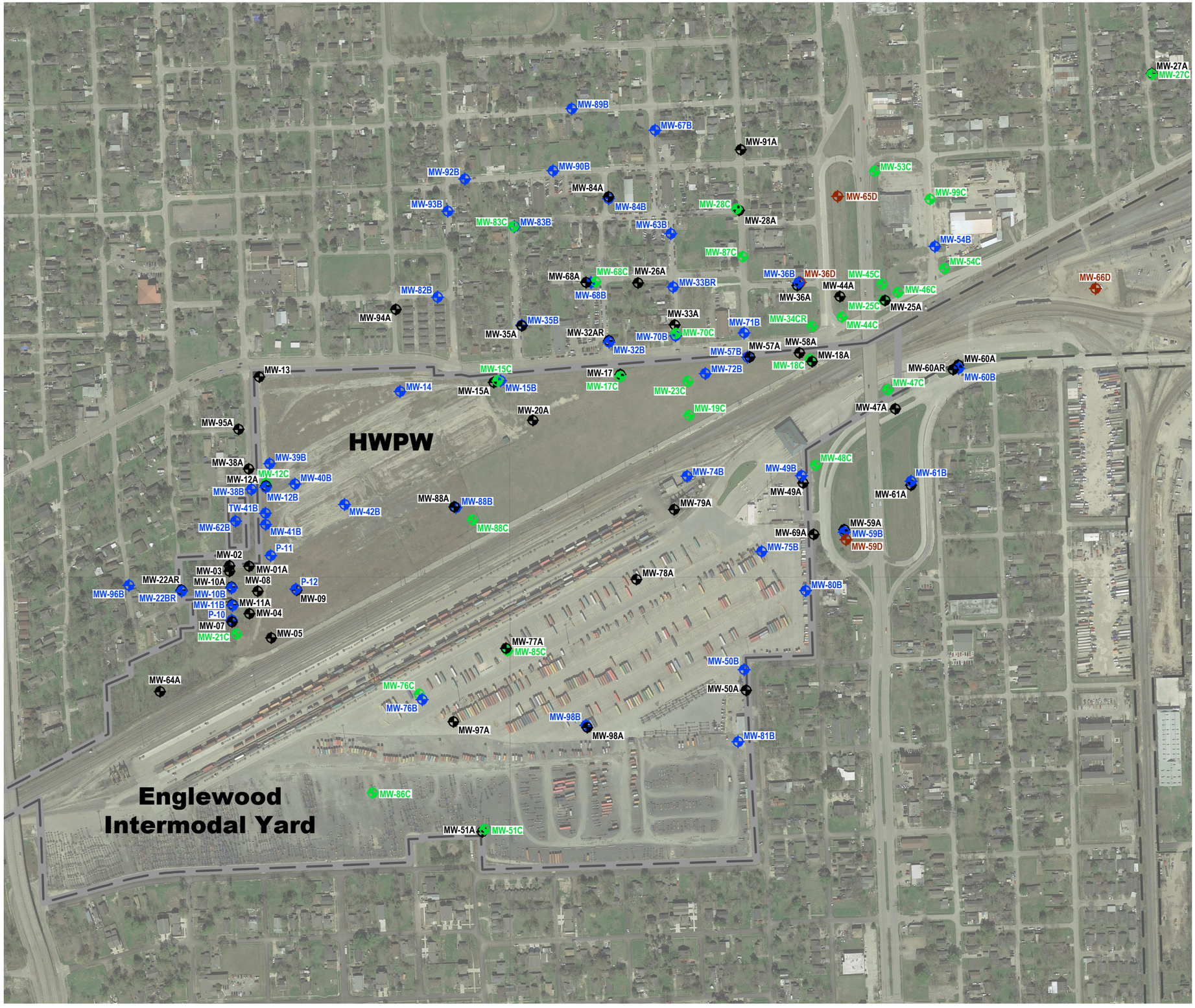
Location ID: / *Sample Date:*	*Target Groundwater Concentration (TCR=1E-05 or THQ=0.1) Cgw,Target (mg/L)*	MW-61A 07/17/2019	MW-61A 01/16/2020	MW-68A 07/18/2019	MW-68A 01/17/2020	MW-69A 07/17/2019	MW-84A 03/12/2020	MW-91A 03/12/2020	MW-94A 03/12/2020	MW-95A 03/17/2020
Semivolatile Organic Compounds (mg/L)										
Benzo(a)anthracene	*0.344*	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000051	<0.000053	<0.000052	<0.00005
Naphthalene	*0.0174*	<0.00002	<0.00021	0.00035	<0.00022	<0.000078	0.000023 J	0.000083 J	<0.000021	<0.00002
Nitrobenzene	*0.715*	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024	<0.000025	<0.000025	<0.000024
Volatile Organic Compounds (mg/L)										
1,2-Dichloroethane	*0.0151*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Benzene	*0.0138*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chlorobenzene	*0.041*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Ethylbenzene	*0.0349*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Methylene chloride	*0.471*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Toluene	*1.92*	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vinyl chloride	*0.00147*	<0.0002	<0.0002	NA	NA	<0.0002	NA	NA	NA	NA
Xylenes (total)	*0.0385*	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003

Notes: VISL Calculator output for target groundwater screening level with inputs: residential scenario, hazard quotient of 0.1, carcinogenic risk of 10-5, and groundwater temperature of 25 degree Celsius (EPA, 2019).

J = Estimated value

< = Compound not detected at the specified detection limit.

FIGURES



LEGEND

- UPRR PROPERTY BOUNDARY
- A-TZ MONITORING WELL LOCATION
- B-CZ/B-TZ MONITORING WELL LOCATION
- C-TZ MONITORING WELL LOCATION
- D-TZ MONITORING WELL LOCATION

REFERENCE(S)

PARCEL BOUNDARIES: CITY OF HOUSTON GEOGRAPHIC INFORMATION & MANAGEMENT SYSTEMS (GIMS).
AERIAL: GOOGLE EARTH, IMAGERY DATED 2/23/19.

0 200 400
1" = 400' FEET

UNION PACIFIC RAILROAD CO.

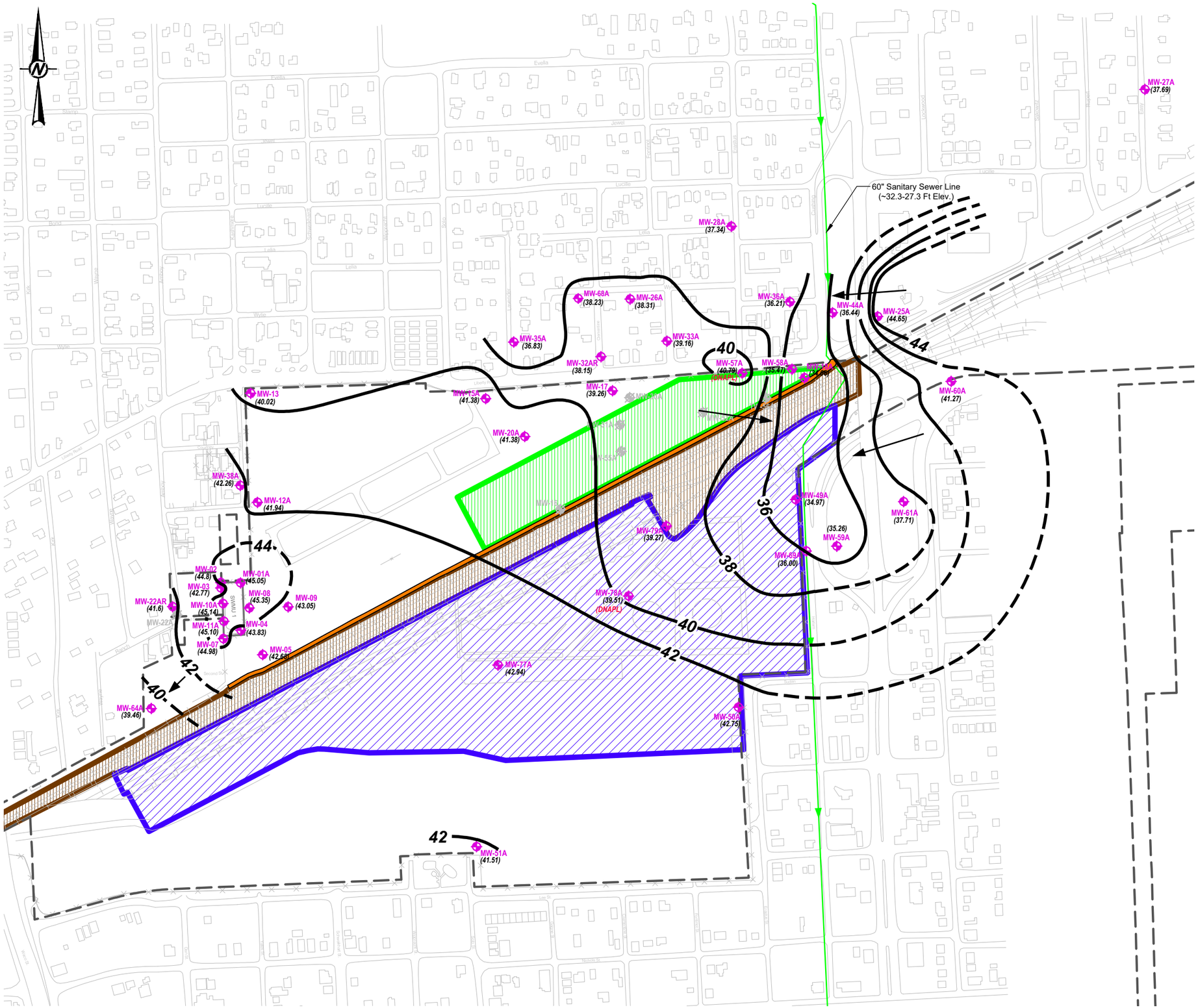
HOUSTON WOOD PRESERVING WORKS

MONITORING WELL LOCATION MAP

	2020-03-18
	AJD
	AJD
	MH
	ECM

GOLDER

19119232 0 FIGURE 1



LEGEND

- UPRR PROPERTY BOUNDARY
- HISTORIC STRUCTURE AND FEATURE
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- (37.71) GROUNDWATER ELEVATION (FT, HVD) (NM = NOT MEASURED)
- 39 GROUNDWATER ELEVATION CONTOUR (FT, HVD) C.I. = 2 FT
- INFERRED GROUNDWATER FLOW DIRECTION
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA

NOTE(S)

1. VERTICAL DATUM BASED ON CITY OF HOUSTON VERTICAL DATUM (HVD).
2. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JULY 2019).
3. ** - NOT USED TO DEVELOP POTENTIOMETRIC SURFACE.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
4/30/20

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

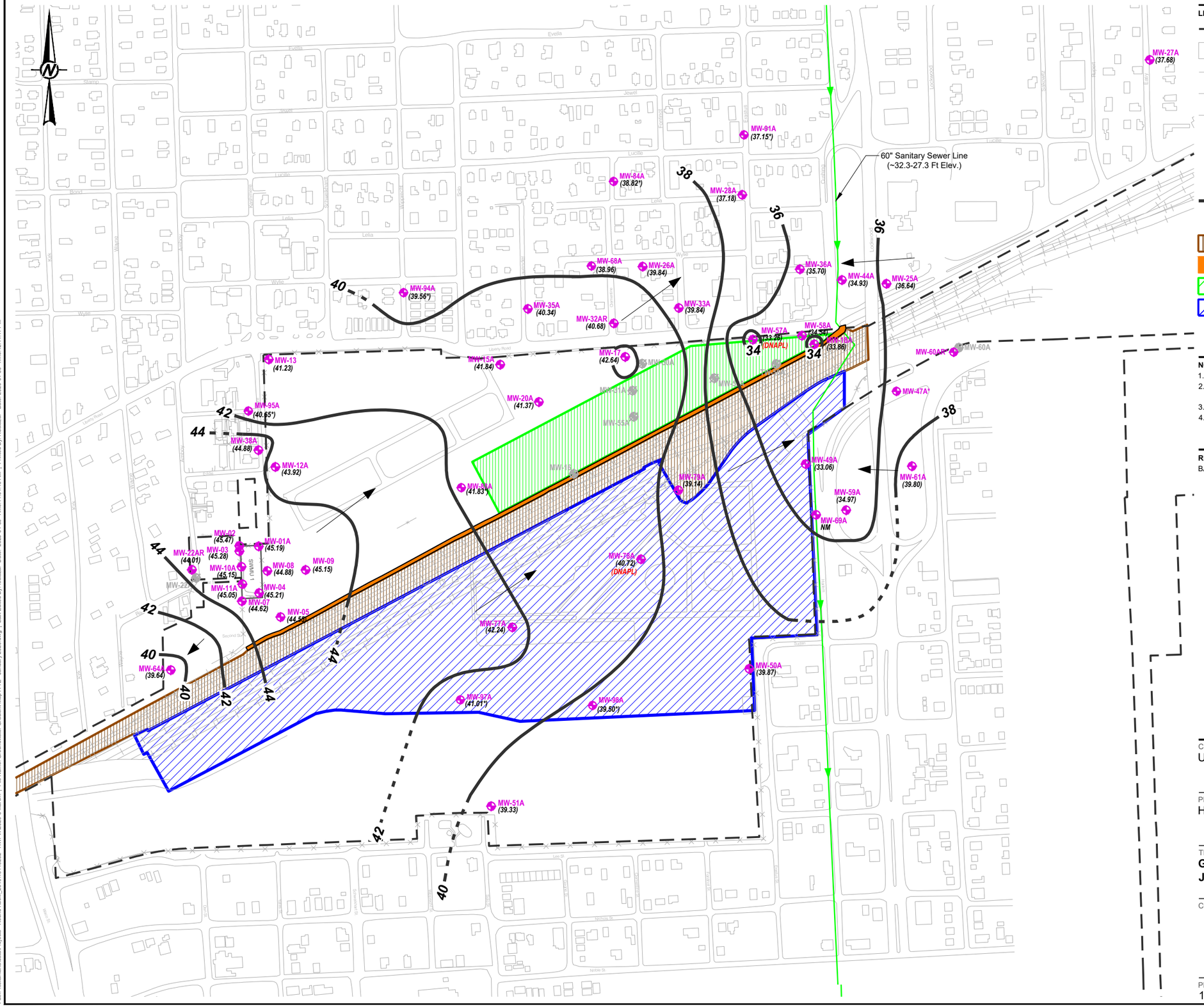
TITLE
GROUNDWATER GRADIENT MAP A-TZ
JULY 2019

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5A-1a

Path: \\texarkana\data\projects - round rock\ 19119119232 - hwpw\2019-10 Ord\ | File Name: FIG 5A-1 - Groundwater Gradient Map A-TZ - July 2019.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time:12:46:31 PM | Printed By: RSalazar Date: 2020-04-30 Time:1:22:01 PM
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B



LEGEND

- UPRR PROPERTY BOUNDARY
- HISTORIC STRUCTURE AND FEATURE
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- (37.71) GROUNDWATER ELEVATION (FT, HVD) (NM = NOT MEASURED)
- 39 GROUNDWATER ELEVATION CONTOUR (FT, HVD) C.I. = 2 FT
- INFERRED GROUNDWATER FLOW DIRECTION
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA

NOTE(S)

1. VERTICAL DATUM BASED ON CITY OF HOUSTON VERTICAL DATUM (HVD).
2. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2020).
3. ** - NOT USED TO DEVELOP POTENTIOMETRIC SURFACE.
4. * - WATER ELEVATION MEASURED IN MARCH 2020.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
4/30/20

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER GRADIENT MAP - A-TZ
JANUARY-MARCH 2020

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 REV. 0 FIGURE 5A-1b

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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

CLASS 2 GW

CLASS 3 GW

MW-89B (36.83)
MW-67B (34.84)
MW-90B (40.26)
(37.41) MW-84B
MW-83B (39.22)
MW-63B (40.52)
MW-82B (40.61)
MW-68B (38.85)
MW-33BR (38.43)
MW-36B (42.21)
MW-35B (39.21)
(DNAPL) (38.29) MW-70B
(43.97) MW-71B
MW-32B (38.80) (DNAPL)
MW-57B (37.19)
MW-14 (41.09)
MW-15B (40.97)
MW-72B (36.69)
MW-58B
MW-73B
MW-74B (38.99)
MW-49B (34.20)
MW-59B (35.30)
MW-75B (37.89) (DNAPL)
MW-80B (36.09)
MW-81B (38.86)
(42.11) MW-39B
(42.36) MW-40B
MW-38B (42.25)
MW-12B (43.35) (DNAPL)
MW-42B (43.10)
TW-41B (41.45)
MW-41B (41.80) (DNAPL)
MW-62B (46.82)
P-11 (43.67)
MW-22BR (41.30)
MW-22B
MW-10B (45.14)
MW-11B (45.03)
P-12 (45.70)
P-10 (44.58)

36 38 40 42 38 36 42 44 42 40

LEGEND

- UPRR PROPERTY BOUNDARY
- HISTORIC STRUCTURE AND FEATURE
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- B-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- B-CZ (CLASS 3 GW) / B-TZ (CLASS 2 GW) — B-TZ/B-CZ BOUNDARY
- (39.98) — GROUNDWATER ELEVATION (FT, HVD) (NM = NOT MEASURED)
- 36 — GROUNDWATER ELEVATION CONTOUR (FT, HVD) C.I. = 2 FT
- INFERRED GROUNDWATER FLOW DIRECTION
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA

NOTE(S)

1. VERTICAL DATUM BASED ON CITY OF HOUSTON VERTICAL DATUM (HVD).
2. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JULY 2019).
3. ** - NOT USED TO GENERATE CONTOURS.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
4/30/20

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER GRADIENT MAP B-TZ AND B-CZ
JULY 2019

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5A-2a

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texas\kanal\data\projects - round rock\ 2019\19119232 - hwpw\2019-10 Oct\ | File Name: FIG 5A-2 - Groundwater Gradient Map B-TZ-B-CZ - July 2019.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time:12:45:50 PM | Printed By: RSalazar Date: 2020-04-30 Time:1:22:59 PM

CLASS 2 GW

CLASS 3 GW

MW-67B (34.91)
MW-89B (38.33)
MW-90B (43.53)
MW-92B (39.06*)
MW-93B (39.33*)
MW-84B (40.12)
MW-83B (40.00)
MW-63B (40.14)
MW-54B (30.17*)
MW-68B (39.81) (DNAPL)
MW-33BR (39.29)
MW-36B (43.68)
MW-71B (43.47)
MW-82B (41.97)
MW-35B (40.16)
MW-70B (38.31) (DNAPL)
MW-32B (41.70) (DNAPL)
MW-57B (37.17)
MW-72B (37.16)
MW-60B* (20.47**)
MW-15B (41.81)
MW-14 (42.27)
MW-39B (43.56)
MW-38B (41.72)
MW-40B (43.52)
MW-13B (44.36) (DNAPL)
TW-41B (48.15)
MW-42B (43.55)
MW-88B (42.09*)
MW-41B (45.17) (DNAPL)
MW-62B (45.07)
P-11 (44.72)
MW-74B (39.29)
MW-49B (34.71) (DNAPL)
MW-61B (35.12*)
MW-59B (35.19)
MW-75B (38.26) (DNAPL)
MW-96B (41.08*)
MW-22BR (44.27)
MW-10B (45.04)
MW-11B (44.94)
P-12 (44.80)
P-10 (44.53)
MW-88B (36.24)
MW-50B (37.52*)
MW-76B (40.92*)
MW-98B (38.63*)
MW-81B (39.65)

34 32 36 38 40 42 44

Eyella Stamps Alcorn Wade Lucile Lelia Wylie Kress Kelvin Cleveland Wesley Lockwood Quitman Second St Lee St Noble St Live Oak Road

LEGEND

- UPRR PROPERTY BOUNDARY
- HISTORIC STRUCTURE AND FEATURE
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- B-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- B-CZ (CLASS 3 GW) / B-TZ (CLASS 2 GW) — B-TZ/B-CZ BOUNDARY
- (39.98) — GROUNDWATER ELEVATION (FT, HVD) (NM = NOT MEASURED)
- 36 — GROUNDWATER ELEVATION CONTOUR (FT, HVD) C.I. = 2 FT
- INFERRED GROUNDWATER FLOW DIRECTION
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA

NOTE(S)

1. VERTICAL DATUM BASED ON CITY OF HOUSTON VERTICAL DATUM (HVD).
2. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2020).
3. ** - NOT USED TO GENERATE CONTOURS.
4. * - WATER ELEVATION MEASURED IN MARCH 2020.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
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LICENSED
PROFESSIONAL GEOSCIENTIST
4/30/20

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER GRADIENT MAP - B-TZ/B-CZ
JANUARY-MARCH 2020

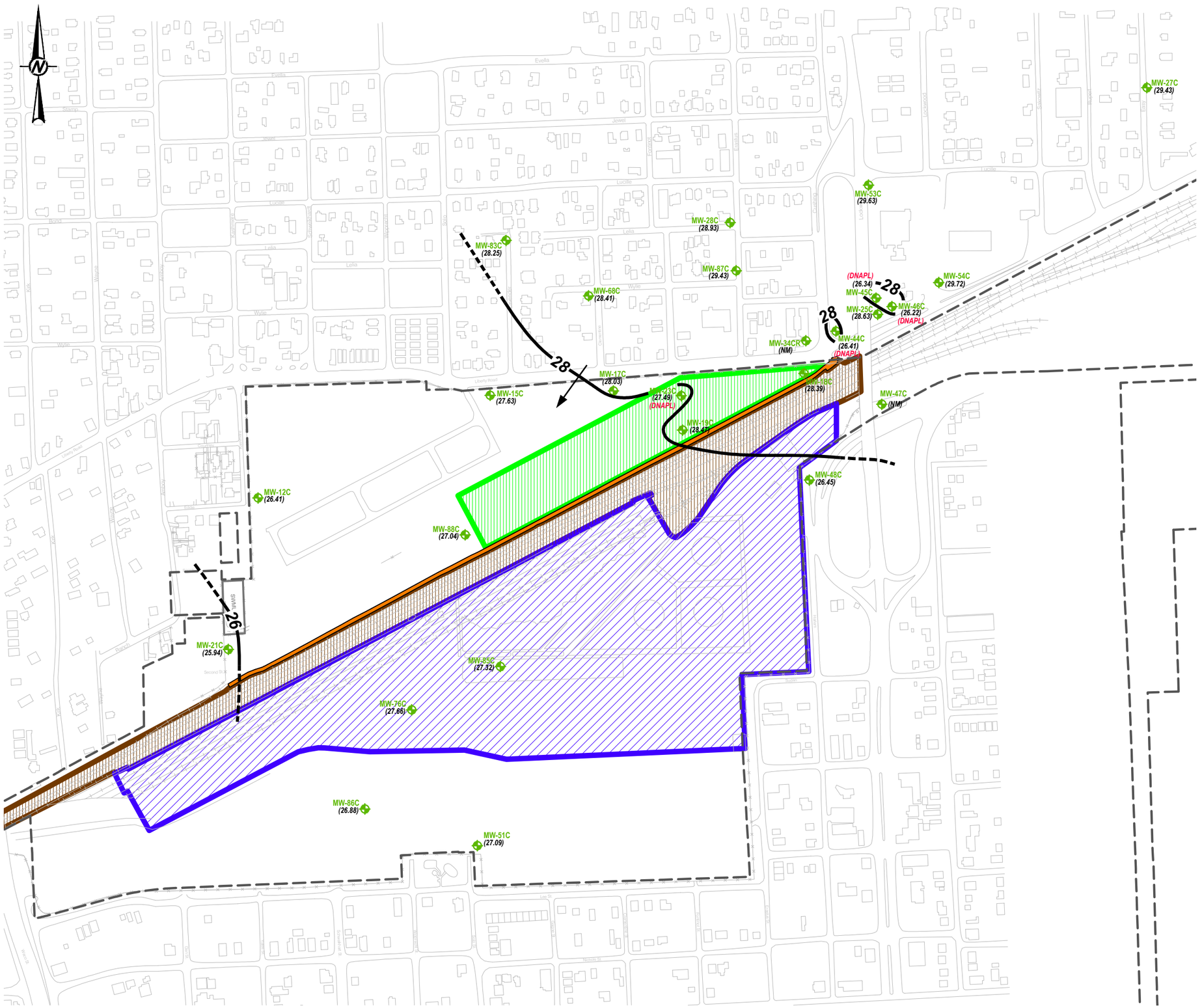
CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 REV. 0 FIGURE 5A-2b

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\Projects - Round Rock_20191919119232 - HWPW2020-3 March\ | File Name: Groundwater Gradient Map B-TZ-B-CZ - January 2020.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time:11:04-15 AM | Printed By: RSalazar Date: 2020-04-30 Time:12:11:46 PM



LEGEND

- UPRR PROPERTY BOUNDARY
- HISTORIC STRUCTURE AND FEATURE
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- C-TZ MONITORING WELL LOCATION
- (26.04) GROUNDWATER ELEVATION (FT, HVD) (NM = NOT MEASURED)
- 26 GROUNDWATER ELEVATION CONTOUR (FT, HVD) C.I. = 2 FT
- INFERRED GROUNDWATER FLOW DIRECTION
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA

NOTE(S)

1. VERTICAL DATUM BASED ON CITY OF HOUSTON VERTICAL DATUM (HVD).
2. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JULY 2019).
3. ** NOT USED TO CREATE POTENTIOMETRIC SURFACE.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

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LICENSED
PROFESSIONAL GEOSCIENTIST
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1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER GRADIENT MAP C-TZ
JULY 2019

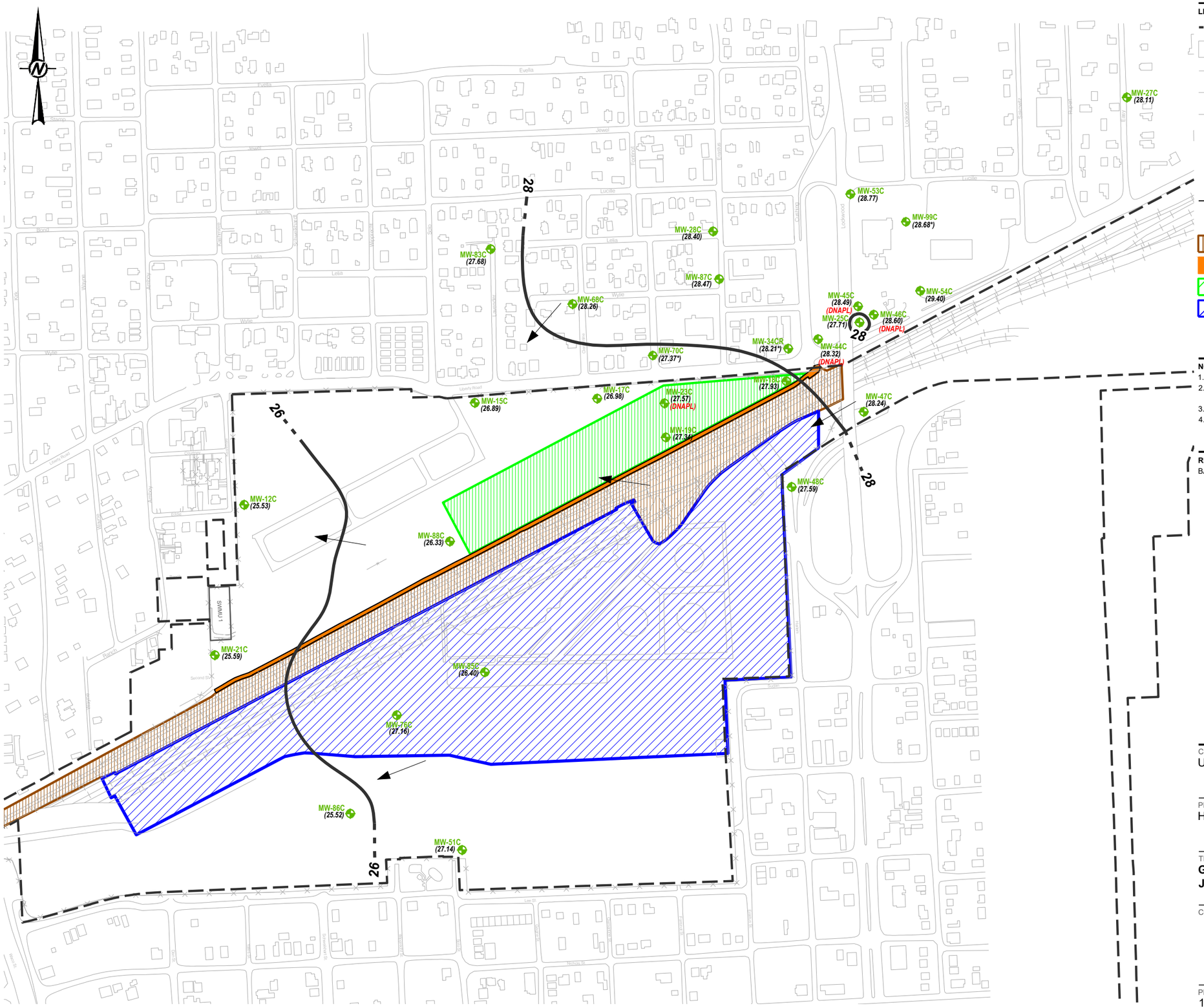
CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 REV. 0 FIGURE 5A-3a

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\projects - round rock\ 2019\19119232 - hwpw\2019-10 Oct\ | File Name: FIG 5A-3 - Groundwater Gradient Map C-TZ - July 2019.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time:1:09:00 PM | Printed By: RSalazar Date: 2020-04-30 Time:1:23:55 PM



LEGEND

- UPRR PROPERTY BOUNDARY
- HISTORIC STRUCTURE AND FEATURE
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- C-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- (29.40) GROUNDWATER ELEVATION (FT, HVD) (NM = NOT MEASURED)
- 28 GROUNDWATER ELEVATION CONTOUR (FT, HVD) C.I. = 2 FT
- INFERRED GROUNDWATER FLOW DIRECTION
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA

NOTE(S)

1. VERTICAL DATUM BASED ON CITY OF HOUSTON VERTICAL DATUM (HVD).
2. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2020).
3. ** - NOT USED TO DEVELOP POTENTIOMETRIC SURFACE.
4. * - WATER ELEVATION MEASURED IN MARCH 2020.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
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4/30/20

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER GRADIENT MAP - C-TZ
JANUARY-MARCH 2020

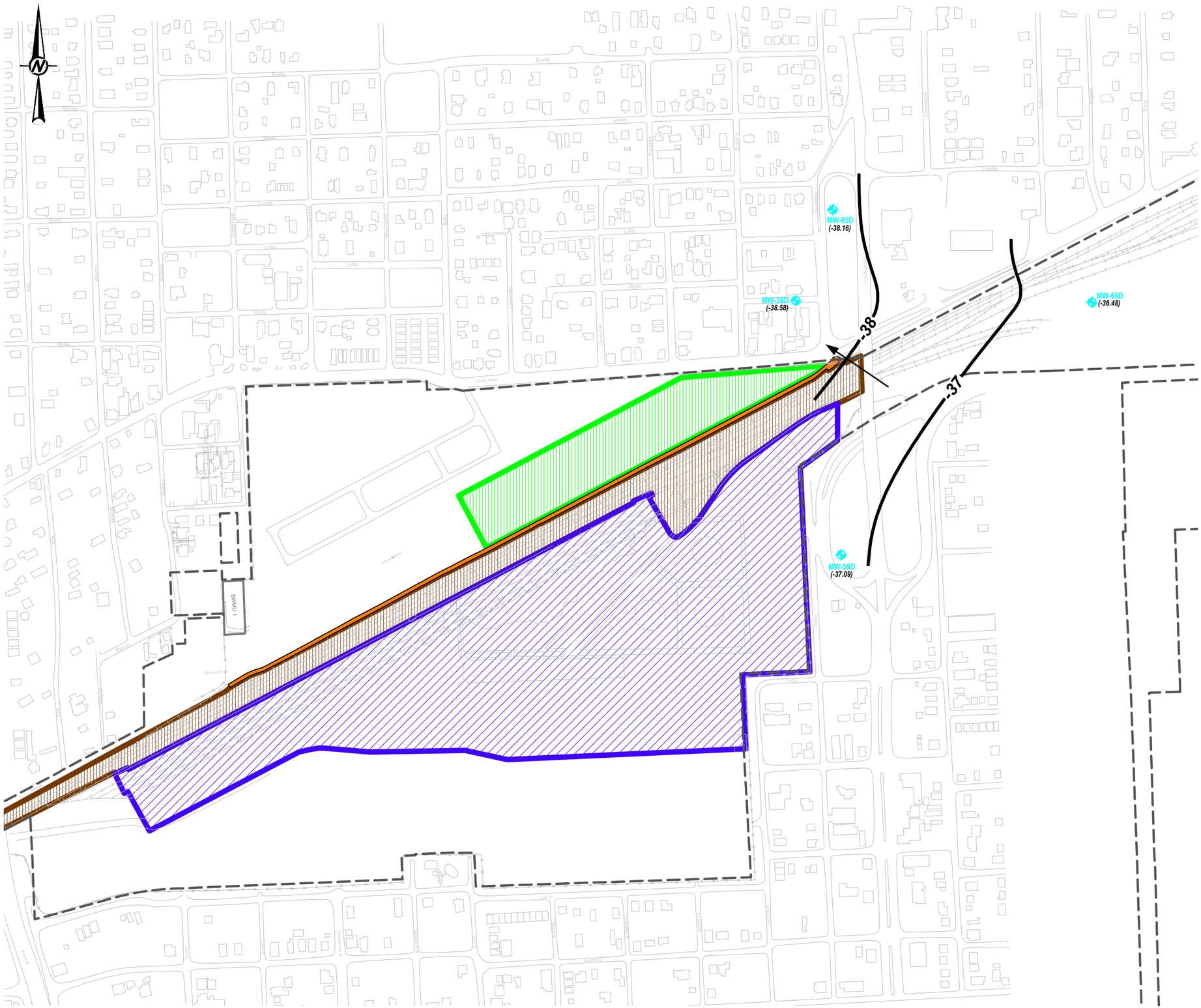
CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 REV. 0 FIGURE 5A-3b

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\Projects - Round Rock_2019\19119232 - HWPW\2020-3 March\ | File Name: Groundwater Gradient Map C-TZ - January 2020.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time:11:03:38 AM | Printed By: RSalazar Date: 2020-04-30 Time:12:12:14 PM



LEGEND

- UPRR PROPERTY BOUNDARY
- HISTORIC STRUCTURE AND FEATURE
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- D-TZ MONITORING WELL LOCATION
- (-38.37) GROUNDWATER ELEVATION (FT, HVD) (NM = NOT MEASURED)
- -39 GROUNDWATER ELEVATION CONTOUR (FT, HVD) C.I. = 1 FT
- INFERRED GROUNDWATER FLOW DIRECTION
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA

NOTE(S)

1. VERTICAL DATUM BASED ON CITY OF HOUSTON VERTICAL DATUM (HVD).
2. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JULY 2019).

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

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1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER GRADIENT MAP D-TZ
JULY 2019

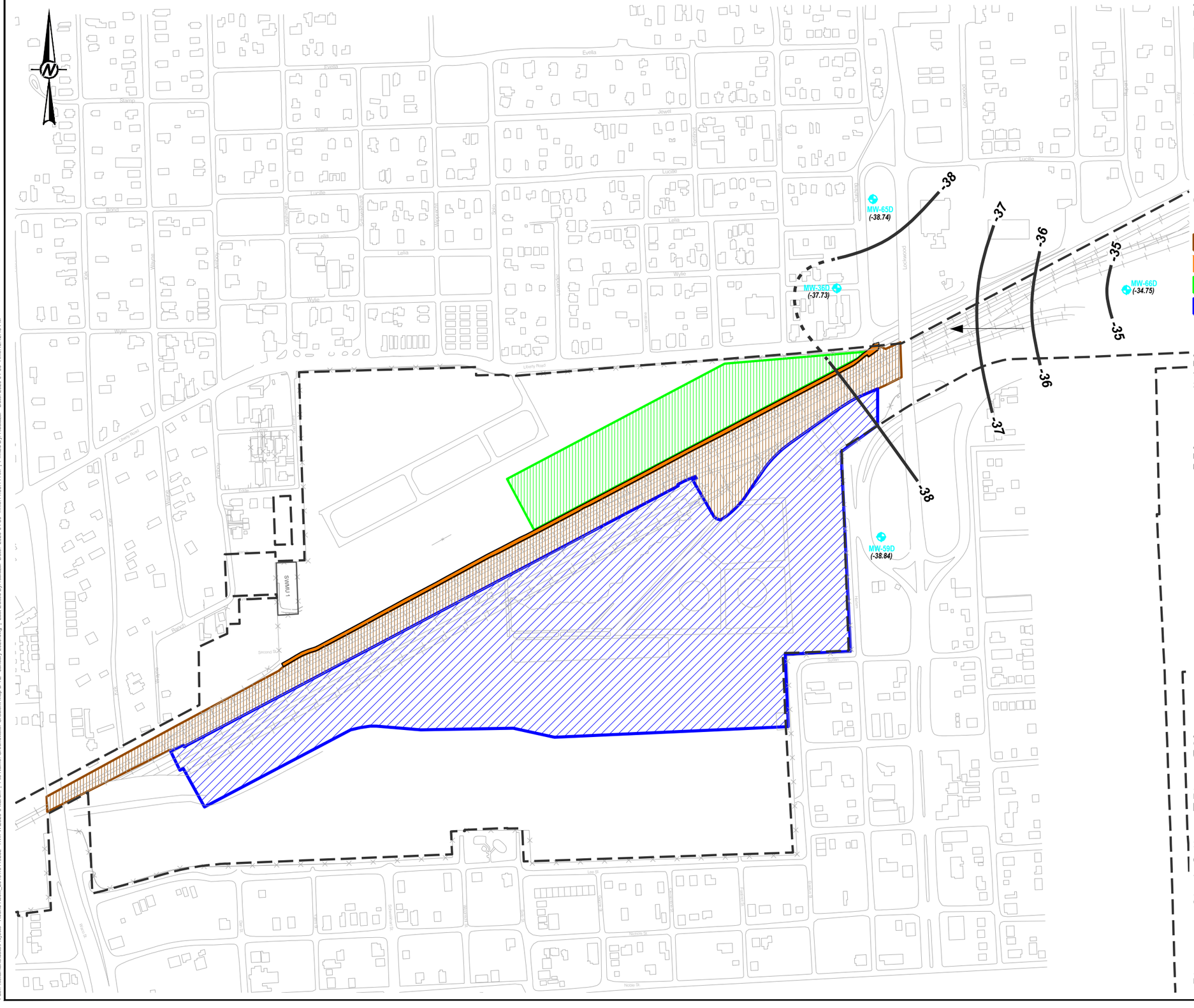
CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 REV. 0 FIGURE 5A-4a

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\projects - round rock_2019\19119232 - hwpw\2019-10 Oct\ | File Name: FIG 5A-4 - Groundwater Gradient Map D-TZ - July 2019.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time: 1:18:00 PM | Printed By: RSalazar Date: 2020-04-30 Time: 1:25:00 PM



LEGEND

- UPRR PROPERTY BOUNDARY
- HISTORIC STRUCTURE AND FEATURE
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- D-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- (37.71) GROUNDWATER ELEVATION (FT, HVD) (NM = NOT MEASURED)
- 39 GROUNDWATER ELEVATION CONTOUR (FT, HVD) C.I. = 2 FT
- INFERRED GROUNDWATER FLOW DIRECTION
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA

NOTE(S)

1. VERTICAL DATUM BASED ON CITY OF HOUSTON VERTICAL DATUM (HVD).
2. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2020).

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
4/30/20

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER GRADIENT MAP - D-TZ
JANUARY-MARCH 2020

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 REV. 0 FIGURE 5A-4b

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\Projects - Round Rock\ 19191919232 - HWPW\2020-3 March\ | File Name: Groundwater Gradient Map D-TZ - January 2020.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time:11:03:14 AM | Printed By: RSalazar Date: 2020-04-30 Time:12:12:45 PM

ATTACHMENT A

Monitoring Well Construction Logs

TABLE A-1
SUMMARY OF GROUNDWATER MONITORING WELLS
HOUSTON, TX - WOOD PRESERVING WORKS

WELL NO.	DATE INSTALLED	NORTHING	EASTING	TOP OF CASING ELEVATION (FT HVD)	TOTAL DEPTH (FT BGS)	Top Screen Interval (FT BGS)	Bottom Screen Interval (FT BGS)	Zone	Plugged
SWMU No. 1 Monitoring Wells									
MW-01A[1]	1/0/1900	728,006	3,165,936	47.90	19	8.5	18.5	A-TZ	
MW-02[1]	4/17/1984	728,007	3,165,857	47.89	18.5	8.5	18.5	A-TZ	
MW-07[1]	3/27/1991	727,779	3,165,867	48.91	23	14.1	19.1	A-TZ	
MW-08[1]	3/27/1991	727,903	3,165,972	49.33	24	14.2	19.2	A-TZ	
MW-10A[1]	9/13/1994	727,921	3,165,866	49.83	23	11	20.5	A-TZ	
MW-10B[1]	9/14/1994	727,916	3,165,866	49.96	46	27.1	41.6	B-TZ	
MW-11A[1]	9/15/1994	727,849	3,165,869	50.16	22	10	19.3	A-TZ	
MW-11B[1]	9/19/1994	727,845	3,165,869	50.24	44	27.5	41.2	B-TZ	
P-10[1]	3/26/1991	727,786	3,165,866	47.71	50	36.2	38.2	B-TZ	
P-12[1]	3/27/1991	727,912	3,166,127	48.76	50	36.3	38.3	B-TZ	
Site-Wide Monitoring Wells									
MW-03	4/17/1984	727,985	3,165,857	48.34	18.5	8.5	18.5	A-TZ	
MW-04	4/18/1984	727,813	3,165,938	49.85	21	11	21	A-TZ	
MW-05	----	727,715	3,166,026	49.24	26	10	25	A-TZ	
MW-09	3/26/1991	727,908	3,166,130	49.26	24	14.8	19.8	A-TZ	
MW-12A	2/27/1997	728,333	3,166,004	49.96	30	17.5	27.5	A-TZ	
MW-12B	2/27/1997	728,328	3,166,004	50.02	45	32.5	42.5	B-TZ	
MW-12C	4/21/1997	728,345	3,166,005	50.14	75.3	69	73.5	C-TZ	
MW-13	2/25/1997	728,777	3,165,977	50.65	25	9	22.5	A-TZ	
MW-14	2/27/1997	728,718	3,166,550	50.66	45	28	42.5	B-TZ	
MW-15A	2/25/1997	728,755	3,166,931	50.41	30	12	26.1	A-TZ	
MW-15B	12/19/2011	728,761	3,166,960	47.05	40	28	38	B-TZ	
MW-15C	4/25/1997	728,761	3,166,947	50.01	75	64	73.5	C-TZ	
MW-16	2/26/1997	728,305	3,167,235	51.51	30	12.5	27	A-TZ	P
MW-17	3/25/1997	728,787	3,167,447	50.92	35	18	32.5	A-TZ	
MW-17C	12/10/2003	728,779	3,167,446	50.17	70	59.5	69.5	C-TZ	
MW-18A	2/26/1997	728,839	3,168,227	51.57	35	18	32.5	A-TZ	P
MW-18C	4/25/1997	728,849	3,168,219	51.47	80.2	62	76.5	C-TZ	P
MW-19C	10/15/1998	728,620	3,167,727	53.05	73	63	73	C-TZ	
MW-20A	9/28/1998	728,600	3,167,091	50.43	30	15	25	A-TZ	
MW-21C	10/26/1998	727,730	3,165,884	49.05	72.5	62.5	72.5	C-TZ	
MW-22A	10/1/1998	727,876	3,165,677	46.07	25	10	20	A-TZ	P
MW-22AR	1/24/2018	727,909	3,165,660	45.56	25	9.6	19.6	A-TZ	
MW-22B	10/27/1998	727,871	3,165,678	45.86	38	27.5	37.5	B-TZ	P
MW-22BR	1/24/2018	727,904	3,165,660	45.71	39	27.6	37.6	B-TZ	
MW-23C	10/14/1998	728,759	3,167,722	54.16*	72.5	62.5	72.5	C-TZ	
MW-24AR	1/27/2009	727,531	3,165,207	45.65	21	11	21	A-TZ	
MW-24B	3/7/2000	727,534	3,165,208	46.06	50	38.5	48.5	B-TZ	
MW-24C	3/8/2000	727,542	3,165,206	46.05	74	63	73	C-TZ	
MW-25A	3/7/2000	729,089	3,168,524	44.65	29	18.5	28.5	A-TZ	
MW-25C	3/7/2000	729,089	3,168,518	44.49	74	58	68	C-TZ	
MW-26A	3/7/2000	729,159	3,167,519	44.62	26	14.5	24.5	A-TZ	
MW-27A	3/26/2001	730,002	3,169,610	44.90	30	17	27	A-TZ	
MW-27C	4/16/2001	730,009	3,169,610	45.04	73.5	60.5	70.5	C-TZ	
MW-28A	3/26/2001	729,462	3,167,926	43.86	28	16	26	A-TZ	
MW-28C	4/12/2001	729,461	3,167,920	43.96	88	75	85	C-TZ	
MW-29A	4/19/2001	727,310	3,164,239	46.59	23	9	19	A-TZ	P
MW-29B	4/12/2001	727,303	3,164,239	46.26	57	44	54	B-TZ	P
MW-29C	4/27/2001	727,293	3,164,240	46.46	75	62.5	72.5	C-TZ	P
MW-30A	12/8/2003	728,759	3,167,517	50.45	31	19.5	29.5	A-TZ	P
MW-31A	12/8/2003	728,648	3,167,477	52.08	33	21.5	31.5	A-TZ	P
MW-32A	12/29/203	728,914	3,167,401	43.77	33	20.5	30.5	A-TZ	P
MW-32AR	12/15/2011	728,925	3,167,400	44.74	22	10	20	A-TZ	
MW-32B	12/15/2011	728,918	3,167,400	44.73	40	26	36	B-TZ	
MW-33A	12/30/2003	728,989	3,167,668	44.25	25	13	23	A-TZ	
MW-33B	2/23/2007	729,150	3,167,661	44.35	75	32	42	B-CZ	P
MW-33BR	12/19/2011	729,142	3,167,662	44.86	40	28	38	B-CZ	
MW-33C	8/14/2006	729,092	3,167,663	NA	40	NA	NA	C-TZ	P
MW-34C	1/13/2004	728,934	3,168,160	45.31	72.5	60	70	C-TZ	P
MW-34CR	5/9/2014	728,982	3,168,227	46.47	70	60	70	C-TZ	
MW-35A	2/21/2007	728,985	3,167,045	44.75	28	13	28	A-TZ	
MW-35B	2/26/2007	728,988	3,167,045	44.83	42	32	42	B-CZ	
MW-35C	8/14/2006	729,021	3,167,040	NA	40	NA	NA	C-TZ	P
MW-36A	2/22/2007	729,148	3,168,167	44.53	28	18	28	A-TZ	
MW-36B	6/24/2010	729,161	3,168,172	44.07	43	38	43	B-CZ	
MW-36D	6/23/2010	729,162	3,168,180	44.33	110	100	110	D-TZ	
MW-37A	8/16/2006	728,896	3,166,210	NA	25	NA	NA	A-TZ	P
MW-38A	2/21/2007	728,402	3,165,934	46.39	22	12	22	A-TZ	
MW-38B	12/31/2003	728,319	3,165,945	45.51	37	25.5	35.5	B-TZ	
MW-39B	12/16/2003	728,424	3,166,019	49.58	40	29.5	39.5	B-TZ	

TABLE A-1
SUMMARY OF GROUNDWATER MONITORING WELLS
HOUSTON, TX - WOOD PRESERVING WORKS

WELL NO.	DATE INSTALLED	NORTHING	EASTING	TOP OF CASING ELEVATION (FT HVD)	TOTAL DEPTH (FT BGS)	Top Screen Interval (FT BGS)	Bottom Screen Interval (FT BGS)	Zone	Plugged
MW-40B	12/15/2004	728,341	3,166,122	49.59	40	29.5	39.5	B-TZ	
MW-41B	1/7/2003	728,176	3,166,003	49.37	40	29.5	39.5	B-TZ	
MW-42B	8/24/2006	728,257	3,166,324	50.52	42	30	40	B-TZ	
MW-44A	2/22/2007	729,021	3,168,349	45.11	28	18	28	A-TZ	
MW-44C	1/16/2004	729,021	3,168,349	45.13	70	57.5	67.5	C-TZ	
MW-45C	1/20/2004	729,155	3,168,512	44.73	70	58	68	C-TZ	
MW-46C	1/9/2004	729,121	3,168,576	44.94	72	60	70	C-TZ	
MW-47A	3/17/2020	728,644	3,168,558	43.92	26	16	26	A-TZ	
MW-47C	3/16/2007	728,725	3,168,535	45.52	71	61	71	C-TZ	
MW-48C	2/2/2004	728,417	3,168,241	44.68	72	60	70	C-TZ	
MW-49A	2/28/2007	728,345	3,168,191	46.18	30	20	30	A-TZ	
MW-49B	1/24/2009	728,375	3,168,184	46.43	35	30	35	B-CZ	
MW-50A	3/1/2007	727,501	3,167,958	46.96	25	15	25	A-TZ	
MW 50B	2/7/2020	727,585	3,167,950	45.89	40	34.5	39.5	B-TZ	
MW-51A	2/28/2007	726,925	3,166,885	47.80	25	15	25	A-TZ	
MW-51C	5/10/2014	726,935	3,166,894	47.48	80	62	72	C-TZ	
MW-52A	2/27/2007	728,699	3,167,814	51.91	30	20	30	A-TZ	P
MW-53C	8/15/2006	729,613	3,168,481	45.49	72	60	70	C-TZ	
MW 54B	2/22/2020	729,308	3,168,727	43.59	40	34.6	39.6	B-CZ	
MW-54C	8/15/2006	729,218	3,168,766	44.99	72	60	70	C-TZ	
MW-55A	1/12/2009	728,540	3,167,482	52.01	25	10	25	A-TZ	P
MW-55B	12/14/2011	728,538	3,167,474	49.15	40	32	37	B-TZ	P
MW-55C	8/22/2006	728,540	3,167,440	NA	30	NA	NA	C-TZ	P
MW-57A	1/22/2009	728,859	3,167,973	50.89*	27	12	27	A-TZ	
MW-57B	12/21/2011	728,857	3,167,965	47.93	40	34	39	B-TZ	
MW-58A	1/23/2009	728,875	3,168,176	47.76	29	14	29	A-TZ	
MW-59A	1/28/2009	728,155	3,168,358	44.18	21	11	21	A-TZ	
MW-59B	6/26/2010	728,145	3,168,358	44.36	33	28	33	B-CZ	
MW-59D	1/27/2009	728,114	3,168,365	44.22	118	108	118	D-TZ	
MW-60A	1/26/2009	728,825	3,168,823	46.79	28.5	18.5	28.5	A-TZ	
MW-60AR	3/17/2020	728,810	3,168,818	45.43	30	20	30	A-TZ	
MW-60B	2/27/2020	728,812	3,168,824	45.38	40	35	40	B-CZ	
MW-61A	1/26/2009	728,336	3,168,630	44.67	22	12	22	A-TZ	
MW-61B	2/23/2020	728,352	3,168,630	43.43	40	28	33	B-CZ	
MW-62B	1/21/2009	728,190	3,165,880	48.16	35	25	35	B-TZ	
MW-63B	1/28/2009	729,361	3,167,652	44.48	36	31	36	B-CZ	
MW-64A	1/26/2009	727,496	3,165,573	44.55	19.5	14.5	19.5	A-TZ	
MW-65D	1/17/2009	729,512	3,168,331	44.55	110	100	110	D-TZ	
MW-66D	1/20/2009	729,137	3,169,381	46.51	103	93	103	D-TZ	
MW-67B	6/26/2010	729,782	3,167,588	43.93	40	35	40	B-CZ	
MW-68A	5/21/2019	729,160	3,167,324	43.24	23.4	13	23	A-TZ	
MW-68B	12/15/2011	729,162	3,167,328	44.93	40	28	38	B-TZ	
MW-68C	6/25/2010	729,164	3,167,346	44.80	70	60	70	C-TZ	
MW-69A	6/23/2010	728,136	3,168,234	45.71	18.5	8.5	18.5	A-TZ	
MW-70B	12/14/2011	728,944	3,167,671	45.02	40	25	35	B-CZ	
MW 70C	2/21/2020	728,954	3,167,674	43.41	70	58	68	C-TZ	
MW-71B	12/13/2011	728,956	3,167,951	45.06	40	32	37	B-TZ	
MW-72B	12/21/2011	728,790	3,167,792	48.69	41	32	37	B-TZ	
MW-73B	12/13/2011	728,419	3,167,123	48.66	55	47	52	B-TZ	P
MW-74B	12/20/2011	728,373	3,167,718	47.83	40	26.5	36.5	B-TZ	
MW-75B	12/20/2011	728,066	3,168,022	47.18	40	32.2	37.2	B-TZ	P
MW 76B	2/12/2020	727,463	3,166,640	46.32	40	31	36	B-TZ	
MW-76C	5/7/2014	727,485	3,166,628	47.84	70	60	70	C-TZ	
MW-77A	5/7/2014	727,672	3,166,981	49.05	25	13	23	A-TZ	
MW-78A	5/6/2014	727,953	3,167,512	48.68	30	15	25	A-TZ	
MW-79A	5/7/2014	728,237	3,167,666	48.95	30	17	27	A-TZ	
MW-80B	5/8/2014	727,907	3,168,201	47.11	35	29	34	B-TZ	
MW-81B	5/11/2014	727,292	3,167,926	46.77	40	29	34	B-TZ	
MW-82B	1/22/2018	729,102	3,166,703	44.64	38	29.6	34.6	B-TZ	
MW-83B	1/30/2018	729,389	3,167,015	45.33	37	29.6	34.6	B-TZ	
MW-83C	2/2/2018	729,389	3,167,011	45.42	70	58.6	68.6	C-TZ	
MW 84A	2/19/2020	729,510	3,167,399	43.01	24	13.5	23.5	A-TZ	
MW-84B	1/23/2018	729,503	3,167,399	44.50	43	34.6	39.6	B-TZ	
MW-85C	1/20/2018	727,661	3,166,988	49.10	75	59.9	69.9	C-TZ	
MW-86C	1/18/2018	727,083	3,166,438	46.61	70	59.6	69.6	C-TZ	
MW-87C	1/31/2018	729,266	3,167,944	44.26	70	57.6	67.6	C-TZ	
MW-88A	2/22/2020	728,247	3,166,771	49.83	24	13	23	A-TZ	
MW-88B	2/19/2020	728,245	3,166,778	49.91	24	35	40	B-TZ	
MW-88C	1/21/2018	728,195	3,166,845	51.17	75	64.6	74.6	C-TZ	
MW-89B	7/12/2018	729,869	3,167,249	44.57	40.4	30	40	B-TZ	
MW-90B	7/13/2018	729,616	3,167,173	44.39	35.4	30	35	B-TZ	
MW-91A	2/19/2020	729,702	3,167,937	42.36	25	14.5	24.5	A-TZ	
MW-92B	2/20/2020	729,583	3,166,814	43.25	35.5	30	35	B-TZ	

TABLE A-1
SUMMARY OF GROUNDWATER MONITORING WELLS
HOUSTON, TX - WOOD PRESERVING WORKS

WELL NO.	DATE INSTALLED	NORTHING	EASTING	TOP OF CASING ELEVATION (FT HVD)	TOTAL DEPTH (FT BGS)	Top Screen Interval (FT BGS)	Bottom Screen Interval (FT BGS)	Zone	Plugged
MW-93B	2/26/2020	729,451	3,166,744	43.39	35.5	30	35	B-TZ	
MW-94A	2/18/2020	729,052	3,166,533	43.55	22	11.5	21.5	A-TZ	
MW-95A	2/19/2020	728,564	3,165,893	44.53	21	15	25	A-TZ	
MW-96B	2/24/2020	727,929	3,165,446	45.36	22	27	37	B-TZ	
MW-97A	2/13/2020	727,373	3,166,767	46.11	21	10.5	20.5	A-TZ	
MW-98A	2/10/2020	727,350	3,167,312	46.69	21	10.5	20.5	A-TZ	
MW-98B	2/11/2020	727,359	3,167,306	46.93	40.5	35	40	B-TZ	
MW-99C	2/23/2020	729,500	3,168,707	43.67	70	59.5	69.5	C-TZ	
TW-03	3/12/2007	727,734	3,167,007	NA	25	14	24	NA	
TW-41B	1/22/2009	728,222	3,166,002	49.67	40	30	40	B-TZ	
TW-56A	1/23/2009	728,758	3,168,070	51.89	31	21	31	A-TZ	P
GB-1	1/14/2009	729,146	3,169,447	NA	135	NA	NA	NA	
P-11	3/25/1991	728,049	3,166,025	48.98	50	36.2	38.2	B-TZ	

Notes:

1 - Point of Compliance Wells for SWMU No. 1 (resurveyed every 5 years)

BGS=Below Ground Surface

HVD = Elevations relative to Houston Vertical Datum, Houston Monument System

Northing/Easting = Coordinates based on NAD 1927 Texas State Plane, South Central Zone, US Survey Feet

* Wells were resurveyed after casings were modified from above ground to flush grade during soil cap construction (2016).

LOG OF BORING:
MW-47A

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	8
Completion Date:	3/17/2020	Total Depth (ft):	26
Driller:	Davis Ocana	Water Level (ft bgl):	--
Driller's License:	TX 59380	Northing:	728644.1
Logged By:	K. Worley	Easting:	3168558.3
Drilling Method:	HSA	TOC Elev. (ft AMSL):	43.92
Sampling Method:	2" x 5' Core	Ground Elev. (ft AMSL):	43.80

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
4/13/22
Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0		0.0/15.0		NR	(0 - 15) No Recovery - Hydrovac to 15.0'
16		5.0/5.0	0.9	SP	(15 - 24.8) SAND, SP, tan to gray, fine, poorly sorted, soft, unconsolidated, interbedded tan silty clay lenses, no odor, color change to gray at 17.3', fine to medium grained at 17.9', interbedded gray fine sand and brown medium sand at 24.2'
18			0.7		
20			0.0		
22		5.0/5.0	0.1		
24			0.0		
26		1.0/1.0	0.0	CL	(24.8 - 26) Sandy, Silty, CLAY, CL, brown to reddish brown, medium density, wet, no odor, clay content increases with depth.

GOLDER
2201 Double Creek Dr., Suite 4004
Round Rock, Texas 78664
O·512.671.3434 F·512.671.3446

Notes: 1.) Top 15.0' drilled out with a hydrovac to clear for utilities.

Casing Materials
(0.0 - 16.0) 2" SCH-40 PVC Casing
(16.0 - 26.0) 2" SCH-40 PVC 0.010" Slotted Screen
(26.0 - 26.5) End Cap

Annular Materials
(0.0 - 1.0) Concrete
(1.0 - 14.0) 3/8" Bentonite Chips
(14.0 - 26.0) 16/30 Silica Sand

LOG OF BORING:
MW-50B

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
Completion Date:	2/7/2020	Total Depth (ft):	40
Driller:	Joey Lester	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	727585.1
Logged By:	K. Worley	Easting:	3167950.5
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	45.89
Sampling Method:	4" x 10' Core	Ground Elev. (ft AMSL):	46.16

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST

Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0					
2					
4		0.0/10.0		NR	(0 - 10) No Recovery - Hydrovac to 10.0'.
6					
8					
10			0.0		
12			0.0	CL	(10 - 14.8) Sandy CLAY, CL, tan with gray mottling, 20% fine sand, high plasticity clay, medium stiff to firm, slight odor.
14			0.0		
16		10.0/10.0	0.0	SC	(14.8 - 16.5) Clayey SAND, SC, light brown to gray, soft, fine to very fine sand, sand content increases with depth, no odor, wet.
18			0.0		
20			0.0	SP	(16.5 - 22) Sand, SP, gray, poorly sorted, fine grained, unconsolidated, no odor, wet.
22			0.0	SC	(22 - 23.2) Sandy CLAY, SC, gray to brown, medium plasticity.
24		5.0/5.0	0.0	CL	(23.2 - 25) CLAY, CL, gray to brown with orange mottling, stiff, low plasticity, moist.
26			0.0		
28			0.0		
30		10.0/10.0	0.0		(25 - 40) Silty CLAY, CH, gray, becomes red brown at 27.2', stiff, medium plasticity at 31.2', no plasticity at 33', carbonate gravel abundant at 33' to 37.2', silty sand seam, moist, strong odor at 37.8' to 38.7'
32			0.0	CH	
34			0.0		
36			0.0		
38		5.0/5.0	0.0		
40					

GOLDER
2201 Double Creek Dr., Suite 4004
Round Rock, Texas 78664
O·512.671.3434 F·512.671.3446

Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) 8.0" Sonic isolation casing to 27.0'. Removed during grouting.

Casing Materials
(0.0 - 34.5) 2" SCH-40 PVC Casing
(34.5 - 39.5) 2" SCH-40 PVC 0.010" Slotted Screen
(39.5 - 40.0) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 26.0) Grout
(26.0 - 32.0) 3/8" Bentonite Chips
(32.0 - 40.0) 16/30 Silica Sand

LOG OF BORING:
MW-54B

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
Completion Date:	2/22/2020	Total Depth (ft):	40
Driller:	Joey Lester	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	729308
Logged By:	M. Hermiston	Easting:	3168726.9
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	43.59
Sampling Method:	6" x 10' Core	Ground Elev. (ft AMSL):	--

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
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PROFESSIONAL GEOSCIENTIST

Texas Geoscience Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0					(0 - 10) No Recovery - Hydrovac to 10.0'.
2					
4		0.0/10.0		NR	
6					
8					
10		2.5/2.5	0.0	CL	(10 - 17.8) Silty CLAY, CL, light gray GLEY1 7/ with yellow 2.5Y 7/8 mottling, black staining, moist, no odor, white beds/mottling throughout 11.5' to 13.5', yellowish reddish 5YR 5/8 with reddish brown 5YR 5/4 mottling to 15.2', calcareous nodules abundant from 16' to 17.8', moderately firm, medium plasticity
12			0.0		
14		2.5/2.5	0.0		
16		2.5/2.5	0.0		
18		2.5/2.5	0.0	ML/CL	(17.8 - 20.2) Clayey SILT/ silty CLAY, ML/CL, light gray GLEY1 7/ with reddish brown 5YR 5/4 mottling, trace yellow 2.5Y 7/8 mottling, moist, no odor, cobble (2.4"x1"x1') at 19.8', sand content increases with depth.
20		2.5/2.5	0.0	ML/SC	(20.2 - 23.8) Sandy, clayey SILT / Clayey, silty SAND, ML/SC, reddish brown with some gray pockets, sand is very fine, wet, interbedded silty clay beds.
22		2.5/2.5	0.0		
24		2.5/2.5	0.0	CL	(23.8 - 25) Silty CLAY, CL, reddish brown 5YR 5/4, very firm, some calcareous nodules present.
26		2.5/2.5	0.0	SM	(25 - 27.8) Silty SAND, SM, reddish brown 5YR 5/4, very fine grained, wet.
28		2.5/2.5	0.0	CL	(27.8 - 30.2) Silty CLAY, CL, reddish brown 5YR 5/4 and red 2.5 YR 4/8, thin sand lenses present.
30		5.0/5.0			(30.2 - 40) Silty CLAY, CL, light gray GLEY1 7/ with yellow 2.5Y 7/8 mottling, silt content decreases with depth, firm to hard, trace calcareous nodules throuought 32.4' to 40', calcareous gravel near 36', red mottling from 38' to 40'.
32					
34					
36		5.0/5.0			
38					
40					

GOLDER
2201 Double Creek Dr., Suite 4004
Round Rock, Texas 78664
O·512.671.3434 F·512.671.3446

Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) 7" Sonic isolation casing to 25'. Removed during grouting.

Casing Materials
(0.0 - 34.5) 2" SCH-40 PVC Casing
(34.5 - 39.5) 2" SCH-40 PVC 0.010" Slotted Screen
(39.5 - 40.0) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 30.0) Grout
(30.0 - 33.0) 3/8" Bentonite Chips
(33.0 - 40.0) 16/30 Silica Sand

LOG OF BORING:
MW-60AR

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	8
Completion Date:	3/17/2020	Total Depth (ft):	30
Driller:	Davis Ocana	Water Level (ft bgl):	--
Driller's License:	TX 59380	Northing:	728810.3
Logged By:	K. Worley	Easting:	3168817.9
Drilling Method:	HSA	TOC Elev. (ft AMSL):	45.43
Sampling Method:	2" x 5' Core	Ground Elev. (ft AMSL):	45.42

STATE OF TEXAS
ERIC C. MATZNER
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Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0		0.0/15.0		NR	(0 - 15) No Recovery - Hydrovac to 15.0'.
16		5.0/5.0	0.5	SC	(15 - 16.3) Clayey SAND, SC, gray, very fine to fine grained, saturated, no odor, soft.
18			0.9	SP	(16.3 - 29.4) SAND, SP, greenish gray, poorly sorted, fine grained, wet, no odor, fine to medium grained, gray at 19.2' to 19.5', begins grading to reddish brown at 20.0', saturated at 22', brown at 27.3'.
20			1.0		
22		5.0/5.0	0.8		
24			0.8		
26		5.0/5.0	0.6		
28			0.3		
30				CL	(29.4 - 30) Silty CLAY, CL, reddish brown, firm, moist, no odor.

GOLDER
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Round Rock, Texas 78664
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Notes: 1.) Top 15.0' drilled out with a hydrovac to clear for utilities.

Casing Materials
(0.0 - 20.0) 2" SCH-40 PVC Casing
(20.0 - 30.0) 2" SCH-40 PVC 0.010" Slotted Screen
(30.0 - 30.5) End Cap

Annular Materials
(0.0 - 1.0) Concrete
(1.0 - 16.0) 3/8" Bentonite Chips
(16.0 - 30.0) 16/30 Silica Sand

LOG OF BORING: **MW-60B**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
Completion Date:	2/27/2020	Total Depth (ft):	40
Driller:	Jesse Van Kirk	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	728811.6
Logged By:	S. Ruiz	Easting:	3168823.6
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	45.38
Sampling Method:	6" x 10' Core	Ground Elev. (ft AMSL):	45.64

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST

Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0		0.0/10.0		NR	(0 - 11.2) No Recovery - Hydrovac to 10.0'.
10		0.0/5.0		CL	(11.2 - 20.9) Sandy CLAY, CL, bluish gray with yellow-orange mottle, low plasticity, firm, wet. Abundant black streaks, very stiff from 18.1' - 18.8'.
16		8.8/10.0	0.1		
18			0.2		
20			0.3	SP	(20.9 - 24.2) SAND, SP, fine, poorly sorted, light gray with brown streaks, wet, very soft.
22			0.3		
24			0.2	SM	(24.2 - 27.6) Silty SAND, SM, brown with light gray, wet, soft, slow dilatancy. Interbedded silt and clay lenses throughout, localized clay lenses with medium plasticity.
26		10.0/10.0	0.1		
28			0.1	CL	(27.6 - 40) Silty CLAY, CL, reddish brown with bluish gray mottle, some yellow-orange and black streaks, moist, firm to very firm, medium plasticity, laminated. Less cohesive from 30.0' - 32.5'. Color change to light brown with light gray mottle with brown-red streaks below 34.5. Localized black gravel pockets, small to medium size, at 34.5', 35.1', 37.8', and 39.4'. Trace calcareous nodules below 38.0'.
30			0.2		
32			0.2		
34			0.2		
36		5.0/5.0	0.3		
38			0.2		
40					

GOLDER
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Notes: 1.) Top 15.0' drilled out with a hydrovac to clear for utilities.
2.) 8.0" Sonic isolation casing to 30.0'. Removed during grouting.

Casing Materials
(0.0 - 35.0) 2" SCH-40 PVC Casing
(35.0 - 40.0) 2" SCH-40 PVC 0.010" Slotted Screen
(40.0 - 40.5) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 30.0) Grout
(30.0 - 33.0) 3/8" Bentonite Chips
(33.0 - 40.0) 16/30 Silica Sand

LOG OF BORING:
MW-61B

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
Completion Date:	2/23/2020	Total Depth (ft):	40
Driller:	Joey Lester	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	728352.3
Logged By:	M. Hermiston	Easting:	3168629.6
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	43.43
Sampling Method:	6" x 10' Core	Ground Elev. (ft AMSL):	43.58

STATE OF TEXAS
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GEOLOGY
LIC. # 795
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PROFESSIONAL GEOSCIENTIST

Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0		0.0/10.0		NR	(0 - 10) No Recovery - Hydrovac to 10.0'.
10		5.0/5.0	1.7	CL	(10 - 14) Sandy Silty CLAY, CL, light gray 7.5YR 7/1 with yellow 10YR 7/8 mottling and pinkish gray 7.5YR 7/2, no odor, sand content increases with depth.
12			0.4		
14		5.0/5.0	3.5	SM	(14 - 21.4) Silty SAND, SM, interbedded / mottled light gray 7.5YR 7/1 and strong brown 7.5YR 5/8, light gray sand has higher % fines, becomes light gray from 19.7' to 21.4', no odor, wet.
16			3.4		
18			3.5		
20		5.0/5.0	0.0		
22			0.0	CL	(21.4 - 35) Silty CLAY, CL, reddish brown 2.5YR 5/4 /red 2.5YR 5/8 /yellowish red 5YR 5/8 with gray mottling, moist, firm, black staining from 24' to 25', becomes more firm with depth, becomes red with depth near 28.5', calcareous gravel beds from 28.3' to 28.4', gravel beds with ironstone at 30.7' and 32.2', wet from 28' to 32.5', moist from 32.5' to 35', interbedded clayey silt / silty clay from 33' to 35', moist , soft to firm, no odor.
24			0.0		
26		2.5/2.5	0.0		
28		5.0/5.0	0.0		
30			0.0		
32		2.5/2.5	0.0		
34			0.0		
36		5.0/5.0	0.0		(35 - 40) CLAY, CL, red 2.5YR 5/4 with trace gray, low silt content, trace nodules, dry, very firm, no odor.
38			0.0		
40					

GOLDER
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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) 7.0" sonic isolation casing to 25.0'. Removed during grouting.
3.) Photoionization detector (PID) readings were inconsistent.

Casing Materials
(0.0 - 28.0) 2" SCH-40 PVC Casing
(28.0 - 33.0) 2" SCH-40 PVC 0.010" Slotted Screen
(33.0 - 33.5) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 22.5) Grout
(22.5 - 26.0) 3/8" Bentonite Chips
(26.0 - 33.0) 16/30 Silica Sand

LOG OF BORING: **MW-70C**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	8
Completion Date:	2/21/2020	Total Depth (ft):	70
Driller:	Jesse Van Kirk	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	728954.390
Logged By:	S. Ruiz	Easting:	3167673.513
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	43.41
Sampling Method:	6" & 4" x 10' Core	Ground Elev. (ft AMSL):	--

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST

Texas Geosciences Firm No. 50869

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0		0.0/10.0		NR	(0 - 10) No Recovery - Hydrovac to 10.0'.
10		10.0/10.0	1.7	SP	(10 - 15.7) Fine SAND, SP, bluish gray with light gray with localized brown discoloration, wet, very soft, rapid dilatancy.
			2.2		
15			2.3	CL	(15.7 - 16.5) Sandy CLAY, CL, bluish gray with red-brown mottle, moist, firm, medium plasticity.
			2.5	SM	(16.5 - 22.9) Silty SAND, SM, light brown with bluish gray, wet, very soft, slow dilatancy, trace iron (Fe) staining at 17.5', odor.
20		7.0/7.0	3.3		
			7.4		
			16.3	CH	(22.9 - 24.3) Silty CLAY, CH, red-brown with light gray mottle, dry, very firm, high plasticity.
25			13.2	CL	(24.3 - 37) CLAY, CL, light gray with light brown mottle, dry, very firm, medium plasticity, strong odor. Color transitions to tan with light gray mottle, streaks of black, red-brown, and yellow-orange, then to red-brown with light gray mottle below 32.0'. Strong odor throughout. Large calcareous gravel layers at 32.8' - 34.5', with thinner gravel lenses starting at 29.5' to 33.0'. Gravel lenses are moist and stained, with visible sheen on clay between 27.0' - 29.0'. Clay is very moist below 30.0', with thin, interbedded, stained silt lenses.
			201.3		
30		10.0/10.0	234.2		
			42.3		
			21.3		
35			362.5		
		7.0/7.0	59.5	CH	(37 - 45) CLAY, CH, red-brown with bluish gray mottle, moist, very firm and stiff, medium to high plasticity, trace black organic staining, slight odor.
			6.2		
40			5.1		
			6.9		
45		5.0/5.0	12.0	ML	(45 - 46.5) SILT, ML, red-brown silt with interbedded clay nodules, moist, very soft, low plasticity.
			10.1	CH	(46.5 - 58.6) Silty CLAY, CH, red-brown with trace black streaks, dry, very firm to hard, high plasticity, strong cementation, concretions from 47.6' - 47.8'. Calcareous lenses below 55.8'.
50			4.2		

GOLDER
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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) 12.0" Sonic isolation casing to 50.0'. Removed during grouting of 7.0" permanent casing. 7.0" permanent isolation casing to 52.0'.

Casing Materials
(2.0 - 52.0) 7" Permanent Steel Isolation Casing
(0.0 - 58.0) 2" SCH-40 PVC Casing
(58.0 - 68.0) 2" SCH-40 PVC 0.010" Slotted Screen
(68.0 - 68.5) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 50.0) Grout
(50.0 - 58.0) 3/8" Bentonite Chips
(58.0 - 68.0) 16/30 Silica Sand

LOG OF BORING: **MW-70C**

Union Pacific Railroad

SITE INFORMATION	PROJECT AND DRILLING INFORMATION			
Houston Wood Preserving Works Houston, TX	Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	8
	Completion Date:	2/21/2020	Total Depth (ft):	70
	Driller:	Jesse Van Kirk	Water Level (ft bgl):	--
	Driller's License:	TX 59618M	Northing:	728954.390
	Logged By:	S. Ruiz	Easting:	3167673.513
Project No. 19119232	Drilling Method:	Sonic	TOC Elev. (ft AMSL):	43.41
	Sampling Method:	6" & 4" x 10' Core	Ground Elev. (ft AMSL):	--

Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
55		10.0/10.0	3.2	CH	
			1.8		
			2.1		
			3.4		
			1.4	ML	(58.6 - 59.3) SILT, ML, red-brown silt, wet, very soft, low plasticity, increasing clay content with depth, odor.
60		10.0/10.0	10.0	CH	(59.3 - 62.3) Silty CLAY, CH, red-brown, wet, firm, high plasticity, silt seams throughout.
			23.5	SM	(62.3 - 67.5) Silty SAND, SM, red-brown, very fine, wet, very soft, slow dilatancy, trace black staining and odor throughout. Clay lenses from 64.8' - 65.5', small concretions with small to medium gravel from 65.5' - 66.1'.
65			4.8		
			2.0		
			1.6	CH	(67.5 - 70) Silty CLAY, CH, red-brown with black streaks, moist, very firm to hard, high plasticity, laminated, trace silt seams.
70					

GOLDER
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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) 12.0" Sonic isolation casing to 50.0'. Removed during grouting of 7.0" permanent casing. 7.0" permanent isolation casing to 52.0'.

Casing Materials	Annular Materials
(2.0 - 52.0) 7" Permanent Steel Isolation Casing	(0.0 - 2.0) Concrete
(0.0 - 58.0) 2" SCH-40 PVC Casing	(2.0 - 50.0) Grout
(58.0 - 68.0) 2" SCH-40 PVC 0.010" Slotted Screen	(50.0 - 58.0) 3/8" Bentonite Chips
(68.0 - 68.5) End Cap	(58.0 - 68.0) 16/30 Silica Sand

LOG OF BORING:
MW-76B

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
Completion Date:	2/12/2020	Total Depth (ft):	40
Driller:	Jesse Van Kirk	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	727463.2
Logged By:	S. Ruiz	Easting:	3166640.1
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	46.32
Sampling Method:	6" x 10' Core	Ground Elev. (ft AMSL):	46.69

STATE OF TEXAS
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GEOLOGY
LIC. # 795
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Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0					
2					
4		0.0/0.0		NR	(0 - 10) No recovery - Hydrovac to 10.0'.
6					
8					
10					
12					(10 - 19.9) Silty CLAY, CL, gray with yellow-orange mottle, moist, firm to very firm, medium plasticity. Calcareous lens from 12.9' - 13.3', black organic staining above 13.7', trace red mottle. Thin fine sand seams from 15.7' - 16.9'. Increasing orange mottle with depth.
14			0.2		
16			0.4	CL	
18		12.5/15.0	0.4		
20			0.5		
22			0.5	SC/SM	(19.9 - 21.5) Silty SAND, SM/SC, tan with red-brown, fine to very fine with clay nodules throughout, some light gray, wet, soft, slow dilatancy, low plasticity.
24			0.4		(21.5 - 40) Silty CLAY, CL, light gray with orange mottle, trace fine sand, moist, firm to very firm, medium to high plasticity. Increasing red-brown mottle with depth. Wet calcareous gravel, small to medium, mixed with silt layers from 29.2' - 29.8', 32.3' - 32.5', 32.9' - 33.2', 34.8' - 35.1'. Clay is dryer below 35', with dry calcareous nodule layers at 36.9' - 37.4' and 38.9' - 39.3'. Color change to red-brown with light gray mottle below 35.5, with increasing firmness, becoming very hard below 36.0'.
26			0.5		
28			1.0		
30		10.0/10.0	0.6		
32			0.9	CL	
34			1.0		
36			0.9		
38		5.0/5.0	1.1		
40			0.8		

GOLDER
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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) 8.0" Sonic isolation casing to 27.0'. Removed during grouting.

Casing Materials
(0.0 - 31.0) 2" SCH-40 PVC Casing
(31.0 - 36.0) 2" SCH-40 PVC 0.010" Slotted Screen
(36.0 - 36.5) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 26.0) Grout
(26.0 - 29.0) 3/8" Bentonite Chips
(29.0 - 36.0) 16/30 Silica Sand

LOG OF BORING: **MW-84A**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
Completion Date:	2/19/2020	Total Depth (ft):	25
Driller:	Jesse Van Kirk	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	729510.3
Logged By:	S. Ruiz	Easting:	3167398.8
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	43.01
Sampling Method:	6" x 10' Core	Ground Elev. (ft AMSL):	--

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
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4/30/20

Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0					
2					
4		0.0/10.0		NR	(0 - 10) No recovery - Hydrovac to 10.0'
6					
8					
10					(10 - 11.7) No recovery - lost
12			0.8		(11.7 - 18.3) Silty SAND, SM, light gray, very fine with clay nodules throughout, trace iron (Fe) staining at 13', wet, soft, slow dilatancy, low plasticity.
14		8.3/10.0	0.8	SM	
16			0.6		
18			0.8	CL	(18.3 - 18.8) Sandy CLAY, CL, bluish gray with reddish brown mottle, wet, firm, medium plasticity.
20					(18.8 - 23.9) Silty SAND, SM, light gray, very fine, wet.
22		5.0/5.0	0.6	SM	
24			0.4	CL	(23.9 - 25) CLAY, CL, reddish brown with light gray mottle, moist, firm to very firm, medium to high plasticity.
26					

GOLDER
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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.

Casing Materials
(0.0 - 13.5) 2" SCH-40 PVC Casing
(13.5 - 23.5) 2" SCH-40 PVC 0.010" Slotted Screen
(23.5 - 24) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 11.5) 3/8" Bentonite Chips
(11.5 - 24) 16/30 Silica Sand

LOG OF BORING:
MW-88A

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
Completion Date:	2/22/2020	Total Depth (ft):	25
Driller:	Joey Lester	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	728247.4
Logged By:	M. Hermiston	Easting:	3166771
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	49.83
Sampling Method:	6" x 10' Core	Ground Elev. (ft AMSL):	46.95

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
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PROFESSIONAL GEOSCIENTIST
4/13/2020

Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0		0.0/10.0		NR	(0 - 10) No recovery - Hydrovac to 10.0'
10		5.0/5.0	0.0	CL	(10 - 15) Silty CLAY, CL, gray 7.5 YR 7/1 / greenish gray GLEY1 6/1 with yellow 2.5Y 7/8 mottling from 10' to 12.5', no mottling from 12.5' to 15', firm, moist to wet, no odor, med plasticity.
			0.2		
15		5.0/5.0	0.0	ML	(15 - 17.8) Clayey SILT, ML, light bluish gray GLEY2 7/1, interbedded clay, mostly silt, wet, no odor, grades into sand unit below.
			0.0		
18			0.0	SM	(17.8 - 21.8) Silty SAND, SM, light gray 7.5YR 7/1, wet
20		2.0/2.0	0.2		
22		3.0/3.0	0.2	CL	(21.8 - 25) Silty CLAY, CL, light gray with yellow mottling, moderate plasticity.
24			0.2		
26					

GOLDER
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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.

Casing Materials
(+2.9 - 13.0) 2" SCH-40 PVC Casing
(13.0 - 23.0) 2" SCH-40 PVC 0.010" Slotted Screen
(23.0 - 23.5) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 11.0) 3/8" Bentonite Chips
(11.0 - 23.0) 16/30 Silica Sand

LOG OF BORING: **MW-88B**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
Completion Date:	2/19/2020	Total Depth (ft):	45
Driller:	Jesse Van Kirk	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	728245
Logged By:	S. Ruiz	Easting:	3166777.6
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	49.91
Sampling Method:	6" x 10' Core	Ground Elev. (ft AMSL):	46.86

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
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Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0					
4		0.0/10.0		NR	(0 - 10) No recovery - Hydrovac to 10.0'
8					
12			1.7	CL	(10 - 16.1) Silty CLAY, CL, bluish gray with reddish brown, orange yellow streaks with green and black streaks, moist, weak cementation, firm, medium plasticity, soft below 14' silt content increases with depth.
			1.4		
16			1.4	ML	(16.1 - 16.8) SILT, ML, light blueish gray with orange and some black organic staining, some clay, moist, soft, low plasticity.
		15.0/15.0	1.4	SM	(16.8 - 20.3) Silty SAND, SM, light gray with yellow and orange streaks, with blueish gray, at 18.5 transitions to light gray, wet, moderate cementation, very firm, high plasticity.
20			1.2	CH	
				ML/CL	(20.3 - 20.7) Silty CLAY, CH, bluish gray clay with reddish brown streaks, clear boundary, moist, very firm, high plasticity.
			1.4		(20.7 - 21.5) SILT with clay nodules, ML/CL, light gray, moist, very soft, medium to high plasticity.
24			1.5		
			0.6		(21.5 - 40) Silty CLAY, CL, light grey with yellow streaks and reddish brown streaks below 24', moist, very soft, medium to high plasticity. Color transitions from light gray to red brown, with interbedded moist, soft, silt seams below 30'.
28		5.0/5.0	0.8		
			0.5		
32				CL	
		10/0/10.0	0.6		
36					
			0.6		
40					
		5.0/5.0	--	CH	(40 - 45) Silty CLAY, CH, reddish brown, with silt lenses, light gray mottle, calcareous nodules and gravel mixed throughout, wet, very firm to hard, moderate plasticity.
44					
48					

GOLDER
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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) 8.0" Sonic isolation casing to 30.0'. Removed during sanding.

Casing Materials
(0.0 - 35.0) 2" SCH-40 PVC Casing
(35.0 - 40.0) 2" SCH-40 PVC 0.010" Slotted Screen
(40.0 - 40.5) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 30.0) Grout
(30.0 - 33.0) 3/8" Bentonite Chips
(33.0 - 40.0) 16/30 Silica Sand

LOG OF BORING:
MW-91A

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
Completion Date:	2/19/2020	Total Depth (ft):	30
Driller:	Jesse Van Kirk	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	729702.2
Logged By:	S. Ruiz	Easting:	3167936.8
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	42.36
Sampling Method:	6" x 10' Core	Ground Elev. (ft AMSL):	--

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
4/30/20

Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0		0.0/10.0		NR	(0 - 10) No recovery - Hydrovac to 10.0'
10					(10 - 10.7) No recovery - lost
12		6.3/7.0	1.3	CL	(10.7 - 17) Sandy CLAY, CL, light gray with reddish brown and yellow orange mottle with blueish streaks, moist, firm, medium to high plasticity, color change to light gray with just reddish brown mottle below 14', trace black streaks.
14			1.2		
16			1.1		
18		7.0/8.0	0.8	SM	(17 - 24.5) Silty SAND, SM, light orange brown with streaks of gray, trace clay nodules, color change to light brown below 21', with gray streaks, very fine, wet, very soft, rapid dilatancy.
20			0.8		
22			1.0		
24			0.9		
26		5.0/5.0	1.5	CL	(24.5 - 30) Silty CLAY, CL, light brown with small light gray mottle, trace lenses of black staining at 26.5', moist, firm to very firm, medium to high plasticity.
28			--		
30			--		

GOLDER
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Round Rock, Texas 78664
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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.

Casing Materials
(0.0 - 14.5) 2" SCH-40 PVC Casing
(14.5 - 24.5) 2" SCH-40 PVC 0.010" Slotted Screen
(24.5 - 25) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 12.5) 3/8" Bentonite Chips
(12.5 - 25) 16/30 Silica Sand

LOG OF BORING: **MW-92B**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
Completion Date:	2/20/2020	Total Depth (ft):	40
Driller:	Jesse Van Kirk	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	729582.6
Logged By:	S. Ruiz	Easting:	3166813.6
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	43.25
Sampling Method:	6" x 10' Core	Ground Elev. (ft AMSL):	--

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST

Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0					
2					
4					
6		0.0/10.0		NR	(0 - 10) No recovery - Hydrovac to 10.0'
8					
10					(10 - 11.8) No recovery
12			0.7		
14			0.7	SP	(11.8 - 17.5) Fine SAND, SP, light gray with some Iron (Fe) staining, wet below 13', soft, low plasticity.
16			0.7		
18		13.2/15.0	0.7	CL	(17.5 - 19) Silty CLAY, CL, light gray with reddish brown mottle, trace calcareous nodules, clear boundary, moist, moderate cementation, very firm, medium plasticity.
20			6.7	SM	(19 - 21.9) Silty SAND, SM, light gray, wet, no cementation, very soft, rounded, no plasticity.
22			6.5		
24			6.6	CL	(21.9 - 26.8) Silty CLAY, CL, light gray with red mottle to 23', thin light gray with yellow mottling, clear boundary, sands increasing with depth, moist, moderate cementation, very firm, medium plasticity.
26			0.9		
28			0.8		
30			0.7	SM/SC	(26.8 - 33.2) Silty SAND Clayey SAND, SM/SC, tan with some light gray, moist to wet, weak cementation, soft, slow dilatancy, low plasticity.
32		15.0/15.0	1.0		
34			1.1		
36			1.0	CL	(33.2 - 40) CLAY, CL, brownish red with light brown, some blue streaks, moist, moderate cementation, very firm to hard, low to medium plasticity, calc gravel from 33.34' to 41.8' with trace calc noddules below.
38			0.6		
40			0.7		

GOLDER
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Round Rock, Texas 78664
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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) 8.0" Sonic isolation casing to 25.0'. Removed during grouting.

Casing Materials
(0.0 - 30.0) 2" SCH-40 PVC Casing
(30.0 - 35.0) 2" SCH-40 PVC 0.010" Slotted Screen
(35.0 - 35.5) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 24.0) Grout
(24.0 - 27.0) 3/8" Bentonite Chips
(27.0 - 35.0) 16/30 Silica Sand

LOG OF BORING: **MW-93B**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
Completion Date:	2/26/2020	Total Depth (ft):	40
Driller:	Jesse Van Kirk	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	729451.5
Logged By:	S. Ruiz	Easting:	3166744.3
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	43.39
Sampling Method:	6" x 10' Core	Ground Elev. (ft AMSL):	--

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4/13/20

Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0					
2					
4		0.0/10.0		NR	(0 - 10) No recovery - Hydrovac to 10.0'
6					
8					
10					
12		4.0/5.0		SP	(10 - 16.8) Fine SAND, SP, tan fine to medium grained, small unit of light gray sand at 14.3' to 14.6', wet, soft, subang, slow dilatancy.
14					
16			0.3		
18			0.0	SM	(16.8 - 21.6) Silty SAND, SM, light gray that transitions to bluish gray below 20.8', increasing clay content with depth, wet, weak cementation, very soft, slow dilatancy, low plasticity.
20		8.0/8.0	0.1		
22			0.1	SC	(21.6 - 22.8) Clayey SAND, SC, light gray with tan, wet, weak cementation, soft, low plasticity.
24		2.0/2.0	0.1	CL	(22.8 - 26.8) Sandy CLAY, CL, bluish gray with tan mottle, sand grains above 25.5 are fine grained, light gray with tan and orange yellow mottle, moist, weak cementation, firm, low to medium plasticity.
26			0.2		
28			0.2	ML/SM	(26.8 - 31.5) SILT and Silty SAND, ML/SM, light gray with reddish brown, silty sand, clay nodules throughout, wet, weak cementation, soft, slow dilatancy, low plasticity.
30		10/0/10.0	0.0		
32			0.3		
34			0.2	CL	(31.5 - 34.8) Silty CLAY, CL, reddish brown with light gray, calc nodules from 32.5' to 34', some yellowish streaks, wet, moderate cementation, firm, subangular, high dry strength, medium plasticity.
36			0.1		(34.8 - 40) Silty Clay, CL, reddish brown with light bluish gray streaks, trace black streaks throughout, dry, strong cementation, very firm to hard, low plasticity.
38		5.0/5.0	0.1		
40			0.0		

GOLDER
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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) 8.0" Sonic isolation casing to 25.0'. Removed during grouting.

Casing Materials
(0.0 - 30.0) 2" SCH-40 PVC Casing
(30.0 - 35.0) 2" SCH-40 PVC 0.010" Slotted Screen
(35.0 - 35.5) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 24.0) Grout
(24.0 - 27.0) 3/8" Bentonite Chips
(27.0 - 35.0) 16/30 Silica Sand

LOG OF BORING: **MW-94A**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
Completion Date:	2/18/2020	Total Depth (ft):	22
Driller:	Jesse Van Kirk	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	729051.6
Logged By:	S. Ruiz	Easting:	3166533.1
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	43.55
Sampling Method:	6" x 10' Core	Ground Elev. (ft AMSL):	--

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4/13/22
Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0		0.0/10.0		NR	(0 - 10) No recovery - Hydrovac to 10.0'
10		3.0/5.0	--		(10 - 12) No recovery - lost
12				SC	(12 - 17) Clayey SAND, light gray with tan, fine grained, wet.
16		6.0/8.0	--		
18			0.9	CL	(17 - 18.2) CLAY, CL, tan with light gray, mottled, moist firm, medium plasticity.
				SM	(18.2 - 20.1) Silty SAND, SM, tan with light gray, mottled clay, moist, firm, medium plasticity.
20			0.8	CL	(20.1 - 20.8) CLAY, CL, tan with light gray, mottled, moist firm, medium plasticity.
				SM	(20.8 - 21.4) Silty SAND, SM, light gray, wet, soft, very fine grain.
22			0.8	CL	(21.4 - 22) CLAY, CL, light gray, gravel, firm orange mottling with brownish red streaks below 22.5', dry, firm, medium plasticity.

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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.

Casing Materials
(0.0 - 11.5) 2" SCH-40 PVC Casing
(11.5 - 21.5) 2" SCH-40 PVC 0.010" Slotted Screen
(21.5 - 22) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 9.5) 3/8" Bentonite Chips
(9.5 - 22) 16/30 Silica Sand

LOG OF BORING:
MW-95A

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
Completion Date:	2/19/2020	Total Depth (ft):	25
Driller:	Joey Lester	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	728563.9
Logged By:	K. Worley	Easting:	3165892.7
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	44.53
Sampling Method:	6" x 10' Core	Ground Elev. (ft AMSL):	45.57

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5/13/22

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Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0		0.0/10.0		NR	(0 - 10) No recovery - Hydrovac to 10.0'
10		5.0/5.0	0.0	SC	(10 - 15.8) Clayey SAND, SC, gray to beige, orange mottling, iron staining, no odor, sand content increases with depth, moist.
12			0.0		
14			0.1		
16		5.0/5.0	0.0	SP	(15.8 - 21.5) SAND, SP, gray, poorly sorted, fine grained, unconsolidated, no odor, wet
18			0.0		
20		5.0/5.0	0.0		
22			0.0	CL	(21.5 - 24.2) Sandy CLAY, CL, gray, orange mottling, medium plasticity, moist.
24					(24.2 - 25) CLAY, CL, gray to brown, medium stiff, < 10% silt, no odor.
26					

GOLDER
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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) 8.0" Sonic isolation casing to 15.0'. Removed during sanding.

Casing Materials
(0.0 - 15.0) 2" SCH-40 PVC Casing
(15.0 - 25.0) 2" SCH-40 PVC 0.010" Slotted Screen
(25.0 - 25.5) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 12.0) 3/8" Bentonite Chips
(12.0 - 25.0) 16/30 Silica Sand

LOG OF BORING:
MW-96B

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
Completion Date:	2/24/2020	Total Depth (ft):	40
Driller:	Joey Lester	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	727928.5
Logged By:	M. Hermiston	Easting:	3165445.9
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	45.36
Sampling Method:	6" x 10' Core	Ground Elev. (ft AMSL):	45.57

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Texas Geoscience Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0		0.0/10.0		NR	(0 - 10) No recovery - Hydrovac to 10.0'
10		5.0/5.0	2.0	CL	(10 - 13.4) Silty CLAY, CL, light gray with reddish yellow mottling and black staining, trace white pockets, silt content increases with depth, no odor.
12			6.3		
14			5.7	SM	(13.4 - 19.4) Silty SAND, SM, light gray with strong brown mottling from 16' to 19.4', no odor, wet.
16		5.0/5.0	4.8		
18			4.3		
20		5.0/5.0	3.7	CL	(19.4 - 23) CLAY, CL, light gray with yellow mottling, becomes red mottling near 23' with black mottling near 23.5', more abundant red mottling with depth, no odor, firm , moderate plasticity.
22			3.4		
24			4.4		(23 - 37) Silty CLAY, CL,light gray with red mottling, calcareous nodules at 25.2', 28' to 29', 30.2' to 31.4', interbedded and friable clay from 33' to 34', moist from 35' to 37', some silt at 37', no odor.
26		5.0/5.0	4.3		
28			3.6		
30		5.0/5.0	3.7		
32			5.7		
34			5.1		
36		2.0/2.0	4.7		
38		3.0/3.0	3.2		(37 - 40) CLAY, CL, red with some gray mottling, moist, very firm, no odor, moderate plasticity.
40					

GOLDER
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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) 7.0" Sonic isolation casing to 25.0'. Removed during grouting.

Casing Materials
(0.0 - 27.0) 2" SCH-40 PVC Casing
(27.0 - 37.0) 2" SCH-40 PVC 0.010" Slotted Screen
(37.0 - 37.5) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 22.0) Grout
(22.0 - 25.0) 3/8" Bentonite Chips
(25.0 - 37.0) 16/30 Silica Sand

LOG OF BORING: **MW-97A**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
Completion Date:	2/13/2020	Total Depth (ft):	23
Driller:	Jesse Van Kirk	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	727373
Logged By:	S. Ruiz	Easting:	3166767.2
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	46.21
Sampling Method:	6" x 10' Core	Ground Elev. (ft AMSL):	46.52

STATE OF TEXAS
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4/13/20
Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0		0.0/10.0		NR	(0 - 10) No recovery - Hydrovac to 10.0'
10		8.9/10.0		NR	(10 - 11.1) No recovery
12			0.4	CL	(11.1 - 15.2) Sandy CLAY, CL, light gray with orange and yellow mottle and streaks of black, moist, firm, medium plasticity.
14			0.2		
16				SC	(15.2 - 15.8) Clayey SAND, SC, light gray with yellow and orange mottling, trace black organic staining, wet, firm to soft, slow dilatancy, low plasticity.
			0.3	CL	(15.8 - 17.8) CLAY, CL, light gray with reddish brown mottle and trace black organic staining, wet, very stiff.
18			0.4	SM/SC	(17.8 - 20.2) Silty SAND and Clayey SAND, SM/SC, light gray with tan, interbedded clay nodules, very fine, wet, no cementation, soft to very soft, slow dilatancy.
20		3.0/3.0	0.4	CL	(20.2 - 23) Sandy CLAY, CL, light gray, yellow and reddish brown mottle below 22', moist, very firm to stiff, medium to high plasticity.
22			0.4		
24					

GOLDER
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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.

Casing Materials
(0.0 - 10.5) 2" SCH-40 PVC Casing
(10.5 - 20.5) 2" SCH-40 PVC 0.010" Slotted Screen
(20.5 - 21) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 8.5) 3/8" Bentonite Chips
(8.5 - 21) 16/30 Silica Sand

LOG OF BORING:
MW-98A

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
Completion Date:	2/10/2020	Total Depth (ft):	25
Driller:	Jesse Van Kirk	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	727349.7
Logged By:	S. Ruiz	Easting:	3167312
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	46.69
Sampling Method:	6" x 10' Core	Ground Elev. (ft AMSL):	47.13

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Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0					
2					
4		0.0/10.0		NR	(0 - 10) No recovery - Hydrovac to 10.0'
6					
8					
10			0.1		
12			0.0		
14		10.0/10.0	0.0	CL	(10 - 19) CLAY, CL, light gray with tan and yellow orange mottle, abundant calcareous, color change to bluish gray below 15', gravel layer from 17.5' to 18.6', small to medium, moist, firm to very firm, medium to high plasticity.
16			0.2		
18			0.1		
20				SM	(19 - 20.6) Silty SAND, SM, light gray, gradual boundary, fine to very fine grain, wet, very soft, slow dilatancy.
22			0.1		
24		5.0/5.0	0.0	CL	(20.6 - 25) Silty CLAY, CL, light gray, light brown mottling, increasing light brown color with depth, moist, very firm , medium to high plasticity.
26			0.0		

GOLDER
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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.

Casing Materials
(0.0 - 10.5) 2" SCH-40 PVC Casing
(10.5 - 20.5) 2" SCH-40 PVC 0.010" Slotted Screen
(20.5 - 21) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 8.5) 3/8" Bentonite Chips
(8.5 - 21) 16/30 Silica Sand

LOG OF BORING:
MW-98B

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
Completion Date:	2/11/2020	Total Depth (ft):	40
Driller:	Jesse Van Kirk	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	727358.6
Logged By:	S. Ruiz	Easting:	3167306.4
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	46.93
Sampling Method:	6" x 10' Core	Ground Elev. (ft AMSL):	47.17

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4/13/20
Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0					
2					
4					
6					
8					
10		0.0/10.0		NR	(0 - 10) No recovery - Hydrovac to 10.0'
12				CH	(10 - 14.4) CLAY, CH, gray with bluish gray and orange mottle, black organic staining from 15.0' to 15.5', small sand seams, moist, firm, medium to high plasticity.
14			0.3		
16		8.0/10.0	0.3	SC	(14.4 - 16.8) Clayey SAND, SC, light gray with bluish gray and orange mottle, fine grain sand, moist, firm to soft, gradual boundary, low to medium plasticity.
18			0.3	SM	(16.8 - 21.1) Silty SAND, SM, light gray with light brown mottle above 17', clay nodules above 17.6', fine grain sand, wet at 17.6', very moist to wet, soft to very soft, slow dilatancy, diffused boundary, low plasticity.
20			0.2		
22		5.0/5.0	0.6	CH	(21.1 - 33.8) CLAY, CH, gray with bluish gray and orange mottle, black organic staining from 15.0' to 15.5', small sand seams, calcareous nodules, moist, firm, medium to high plasticity.
24			0.2		
26			0.0		
28		3.0/5.0	0.1		
30					
32			0.7		
34		10.0/10.0	0.8	SC	(33.8 - 34.7) Clayey SAND, SC, gray with red below 31', calcareous nodules at 33', moist, soft, low to medium plasticity.
36			1.1	CL	(34.7 - 40) CLAY, CL, red to gray, color change to reddish brown below 34', 32.1' to 32.9' clayey sand, calcareous nodules at 33.3' with sandy clay below, silty sand seem at 39.3' to 39.61', dry, very hard, medium to high plasticity.
38			1.3		
40			1.2		

GOLDER
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Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) 8.0" Sonic isolation casing to 28.0'. Removed during grouting.

Casing Materials
(0.0 - 35.0) 2" SCH-40 PVC Casing
(35.0 - 40.0) 2" SCH-40 PVC 0.010" Slotted Screen
(40.0 - 40.5) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 28.0) Grout
(28.0 - 31.0) 3/8" Bentonite Chips
(21.0 - 40.0) 16/30 Silica Sand

LOG OF BORING: **MW-99C**

Union Pacific Railroad

SITE INFORMATION

Houston Wood Preserving Works
Houston, TX

Project No. 19119232

PROJECT AND DRILLING INFORMATION

Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
Completion Date:	2/23/2020	Total Depth (ft):	70
Driller:	Jesse Van Kirk	Water Level (ft bgl):	--
Driller's License:	TX 59618M	Northing:	729500.354
Logged By:	S. Ruiz	Easting:	3168707.132
Drilling Method:	Sonic	TOC Elev. (ft AMSL):	43.67
Sampling Method:	6" & 4" x 10' Core	Ground Elev. (ft AMSL):	--

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GEOLOGY
LIC. # 795
LICENSED
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4/13/22

Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
0		0.0/10.0		NR	(0 - 11.5) No recovery - Hydrovac to 10.0'
5					
10			0.7		
		8.5/10.0	0.1	CL	(11.5 - 15.9) CLAY, CL, dark gray with greenish gray, calcareous nodules throughout, color change to light gray with reddish brown mottle below 18', some black streaks, increasing sand with depth, moist, weak cementation, soft, subangular grains, high plasticity.
15			0.1		
			0.0	SM	(15.9 - 22.5) Silty SAND, SM, clayey sand from 15.9 to 16.2, brown sand with lite gray interbedded clay lenses, wet, soft, slow dilatancy, low plasticity.
			0.0		
20			0.0		
			0.0	CL	(22.5 - 23.6) CLAY, CL, silty sand, brown with light gray, calc nodules, thin silt seams, moist to wet, firm, low plasticity.
25		10.0/10.0	0.3	SM	(23.6 - 26.1) Silty SAND, SM, brown with light gray above 24.5', very fine grain, wet, weak cementation, slow dilatancy.
			0.3	CH	(26.1 - 56.1) Silty CLAY, CH, reddish brown and gray with orange and yellow mottling below 30.51, abundant calcareous nodules below 35.51, some black streaks at 38.5' with gravel, orange and yellow mottle becomes reddish brown below 38', trace calcareous with localized black staining around black organic concentrations, dry silt seam with calcareous nodules from 52.6' to 54.8', dry, moderate cementation, firm, subangular grains, med dry strength.
			0.2		
30					
			0.5		
		10.0/10.0	0.7		
35			0.3		
			0.4		
			0.6		
40					
			0.0		
			0.0		
45			0.2		
		15.0/15.0	0.1		
50			0.0		

GOLDER
2201 Double Creek Dr., Suite 4004
Round Rock, Texas 78664
O·512.671.3434 F·512.671.3446

Notes: 1.) Top 10.0' drilled out with a hydrovac to clear for utilities.
2.) 8.0" Sonic isolation casing to 30.0', 7" Sonic isolation casing to 45.0'. Both removed during grouting.

Casing Materials
(0.0 - 59.5) 2" SCH-40 PVC Casing
(59.5 - 69.5) 2" SCH-40 PVC 0.010" Slotted Screen
(69.5 - 70.0) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 51.0) Grout
(51.0 - 56.0) 3/8" Bentonite Chips
(56.0 - 70.0) 16/30 Silica Sand

LOG OF BORING:
MW-99C

Union Pacific Railroad

SITE INFORMATION	PROJECT AND DRILLING INFORMATION			
Houston Wood Preserving Works Houston, TX	Drilling Company:	Cascade Drilling	Borehole Diameter (in.):	6
	Completion Date:	2/23/2020	Total Depth (ft):	70
	Driller:	Jesse Van Kirk	Water Level (ft bgl):	--
	Driller's License:	TX 59618M	Northing:	729500.354
	Logged By:	S. Ruiz	Easting:	3168707.132
Project No. 19119232	Drilling Method:	Sonic	TOC Elev. (ft AMSL):	43.67
	Sampling Method:	6" & 4" x 10' Core	Ground Elev. (ft AMSL):	--

Texas Geosciences Firm No. 50369

Depth (ft)	Well Materials	Recovery (ft/ft)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION
55			0.0		
			0.3		
			0.1		
60		15.0/15.0	0.3	SM	(56.1 - 68.8) Silty SAND, SM, red, very fine grain, poorly sorted, clay nodules with calcareous nodules from 57' to 58', clay lenses from 60' to 61' with silt seams, clay nodules, calcareous nodules, wet, very soft
			0.2		
			0.5		
65			0.5		
			0.3		
			0.0		
70			0.4	CH	(68.8 - 70) Silty CLAY, CH, red with trace black streaks, moist, moderate cementation, very firm to hard, med toughness, high plasticity.

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2.) 8.0" Sonic isolation casing to 30.0', 7" Sonic isolation casing to 45.0'. Both removed during grouting.

Casing Materials
(0.0 - 59.5) 2" SCH-40 PVC Casing
(59.5 - 69.5) 2" SCH-40 PVC 0.010" Slotted Screen
(69.5 - 70.0) End Cap

Annular Materials
(0.0 - 2.0) Concrete
(2.0 - 51.0) Grout
(51.0 - 56.0) 3/8" Bentonite Chips
(56.0 - 70.0) 16/30 Silica Sand

ATTACHMENT B

Data Usability Summary and Analytical Reports from July 2019 through March 2020 Site-Wide Sampling Events

JULY 2019

Memorandum

August 22, 2019

To:	Eric Matzner	Ref. No.:	11183954-1620
From:	Chris G. Knight/eew/353-NF	Tel:	512-506-8803
cc:	Jesse Orth, Jon Lang; Julie Lidstone		

Subject: **Data Usability Summary**
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
July 2019

1. Scope of Data Usability Study

This document details a Data Usability Summary (DUS) of analytical results for groundwater samples collected in support of the HWPW - Site-Wide Monitoring at the Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works site during July 2019. Samples were submitted to ALS Environmental (ALS), located in Houston, Texas and are reported in data packages HS19070575, HS19070609, HS19070735, HS19070864, HS19070994, HS19080069, and HS19080113. The intended use of the data is to support the HWPW - Site-Wide Monitoring at the site by providing current concentration of chemicals of concern.

Data were reviewed and validated by Chris G. Knight of GHD, in accordance with Title 30 of the Texas Administrative Code Section 350.54 (30 TAC 350.54) as described in the Texas Commission on Environmental Quality (TCEQ) Regulatory Guidance document entitled "Review and Reporting of COC Concentration Data under TRRP", (RG-366/TRRP-13), revised May 2010, herein referred to as "TRRP-13 Guidance". Evaluation of the data was based on information obtained from the chain of custody forms, the finished report forms, method blank data, recovery data from surrogate spikes/laboratory control samples (LCS)/matrix spikes (MS), duplicate data, field quality assurance/quality control (QA/QC) samples, the laboratory review checklists (LRC), and the laboratory exception reports (ER).

A sample collection and analysis summary is presented in Table 1. This summary provides a cross-reference of field sample identification numbers and location identification. Each sample is assigned a unique field identification number.

The validated sample results are presented in Table 2. A summary of the analytical methodology is presented in Table 3.

2. Laboratory Qualifications

The Laboratory's quality assurance program is consistent with the quality standards outlined in the National Environmental Laboratory Accreditation Program (NELAP). This laboratory was accredited under Texas Certification number # TX104704231 at the time the analysis was performed and the certificate is included in Attachment A.

3. Project Objectives

3.1 Sampling/Analytical QA/QC Objectives

The QA/QC program was designed to identify contamination resulting from the sampling, sample transport and analytical process through the analysis of trip blank samples, field blank samples, field duplicate sample sets, and method blanks. The QA/QC program was designed to evaluate the quality of the resulting data with respect to bias and precision through analysis of LCS, MS, and duplicate analyses.

4. Data Review/Validation Results

4.1 Sample Holding Time and Preservation

Samples were shipped with a chain of custody and the paper work was filled out properly with the following exceptions:

i) HS19070864 – One of the sample vials for WG-1620-MW36A-20190716 mislabeled. It was logged in using the chain of custody. No further action was required.

ii) HS19070994 – An additional trip blank sample was submitted but not listed on the chain of custody. The samples was logged in as WG-1620-TB06-20190719 for volatile organic compounds (VOCs) analysis. No further action was required.

All samples were properly preserved, delivered on ice, and stored by the laboratory at the required temperature (0-6°C).

The sample chain of custody documents and the analytical report were used to determine sample holding times. All samples were prepared and analyzed within the required holding times.

4.2 Sample Containers

Sample containers used were certified pre-cleaned glass and plastic containers provided by the laboratory. These containers meet or exceed analyte specifications established in the United States Environmental Protection Agency (USEPA) *Specifications and Guidance for Contaminant-free Sample Containers*.

4.3 Calibrations

According to the LRC, initial calibration and continuing calibration data met the criteria for the selected method.

4.4 Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures. As these were not discrete samples handled in the field, these blanks are not listed on the sample identification cross-reference list found in the data packages.

For this study, laboratory method blanks were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch and results are reported in the laboratory data packages.

The method blank result was non-detect or below the method quantitation limit (MQL), indicating that laboratory contamination was not a factor for this investigation.

4.5 Internal Standard and Surrogate Spike Recoveries

Recoveries of internal standards are addressed in the LRC of the data packages. All internal standard recoveries associated with the compounds of interest were acceptable per the LRC.

In accordance with the methods employed, all samples, blanks, and QC samples analyzed for VOCs and semi-volatile organic compounds (SVOCs) are spiked with surrogate compounds prior to sample analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project. Each individual surrogate compound is expected to meet the laboratory control limits. According to the TRRP-13 Guidelines, one outlying surrogate is acceptable for methods with multiple surrogate spike compounds as long as the recovery is at least ten percent. Sample analyzed at elevated sample dilutions (five times or greater) were not assessed.

Surrogate recoveries were assessed against laboratory control limits and/or the guidance in TRRP-13. All surrogate recoveries met the above criteria.

4.6 Laboratory Control Sample Analysis

LCS or LCS/laboratory control sample duplicate (LCSD) are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects. The relative percent difference (RPD) of the LCS/LCSD recoveries is used to evaluate analytical precision. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project.

For this study, LCS or LCS/LCSD were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch.

The LCS or LCS/LCSD contained all analytes specified in the methods. All LCS recoveries and/or RPDs were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision (where applicable).

4.7 Matrix Spike Analysis

To evaluate the effects of sample matrices on the preparation process, measurement procedures, and accuracy of a particular analysis, samples are spiked with known concentrations of the analytes of interest and analyzed as MS/matrix spike duplicate (MSD) samples. The RPD between the MS and MSD is used to assess analytical precision.

MS/MSD analyses were performed as specified in Table 1. The recovery ranges established by the laboratory is adopted as the acceptance criteria for the project.

The MS/MSD samples were spiked with all analytes specified in the methods. All percent recoveries and the RPD value were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision with the following exceptions (see Table 4):

i) Several MS/MSDs were reported with outlying recoveries and/or elevated RPDs for VOCs and/or SVOCs analyses due to possible matrix interferences and were not assessed. No further action was required.

ii) One MS/MSD was reported with an elevated RPD for naphthalene. All associated detected sample results were qualified as estimated.

The laboratory also performed additional MS/MSD on non-site samples. These cannot be used to assess accuracy and precision for the site samples.

4.8 Duplicate Sample Analyses

Analytical precision is evaluated based on the analysis of laboratory duplicate samples. For this study, duplicate samples were prepared and analyzed by the laboratory as specified in Table 1 for arsenic. The RPDs established by the laboratory are adopted as the acceptance criteria for the project.

All duplicate analyses performed were acceptable, demonstrating acceptable analytical precision.

The laboratory also performed additional duplicate analyses on non-site samples. These cannot be used to assess precision for the site samples.

4.9 Field QA/QC Samples

The field QA/QC consisted of nine trip blank samples, five field blank samples, and five field duplicate sample sets.

Trip Blank Sample Analysis

To evaluate contamination from sample collection, transportation, storage, and analytical activities, nine trip blank samples were submitted to the laboratory for VOCs analysis. All results were non-detect for the compounds of interest.

Field Blank Sample Analysis

To assess ambient conditions at the site, five field blank samples were submitted for analysis, as identified in Table 1. All results were non-detect for the analytes of interest with the following exceptions (see Table 5):

i) All field blanks submitted yielded low level detections for various VOCs and/or SVOCs. Associated sample results that were significantly greater than the concentrations found in the field blanks or were non-detect were not impacted. No further action was required. Associated sample results with comparable concentrations to the field blank detections were qualified as non-detect.

Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, two field duplicate sample sets were collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples must be less than thirty percent for water samples. The RPDs are only used when sample concentrations are above the estimated regions of detection.

Field duplicate summary data are presented in Table 2. All field duplicate results were within acceptable agreement, demonstrating acceptable sampling and analytical precision with the following exceptions (see Table 6):

i) WG-1620-MW21C-20190716 and WG-1620-FD01-20190716 did show some variability in SVOCs results and were qualified as estimated.

ii) WG-1620-MW68B-20190718 and WG-1620-FD03-20190718 did show some variability in SVOCs results and were qualified as estimated.

4.10 Field Procedures

Golder Associates, Inc. collected groundwater samples in accordance with their Standard Operating Procedures (SOP) for sample collection.

4.11 Analyte Reporting

The laboratory reported detected results for each analyte down to the sample detection limit (SDL), which is defined as the method detection limit (MDL) with sample-specific adjustments for dilutions, aliquot size, volumes, etc. Positive analyte detections less than the MQL but greater than the SDL were qualified as estimated (J) in Table 2 unless qualified otherwise in this memorandum.

The detectability check standard (DCS) results supported the laboratory MDLs.

5. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are usable for the purpose of supporting the HWPW - Site-Wide Monitoring at the site by providing current concentration of chemicals of concern with the specific qualifications noted herein.

Table 1

Sample Collection and Analysis Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

					Analysis/Parameters			
Sample Identification	**Location**	**Matrix**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**VOCs**	**SVOCs**	**Arsenic**	**Comments**
WG-1620-MW18A-20190710	MW-18A	Water	07/10/2019	07:20	X	X	X	
WG-1620-MW18C-20190710	MW-18C	Water	07/10/2019	08:05	X	X	X	
WG-1620-MW58A-20190710	MW-58A	Water	07/10/2019	08:55	X	X	X	
WG-1620-MW57A-20190710	MW-57A	Water	07/10/2019	09:55	X	X	X	
WG-1620-MW57B-20190710	MW-57B	Water	07/10/2019	10:40	X	X	X	
WG-1620-MW72B-20190710	MW-72B	Water	07/10/2019	11:35	X	X	X	
WG-1620-MW19C-20190710	MW-19C	Water	07/10/2019	12:25	X	X	X	MS/MSD-P
WG-1620-MW17C-20190710	MW-17C	Water	07/10/2019	13:25	X	X	X	
WG-1620-MW17-20190710	MW-17	Water	07/10/2019	14:15	X	X	X	
WG-1620-MW20A-20190710	MW-20A	Water	07/10/2019	15:10	X	X	X	
WG-1620-MW15A-20190710	MW-15A	Water	07/10/2019	16:10	X	X	X	MS/MSD-P; DUP
WG-1620-MW15C-20190710	MW-15C	Water	07/10/2019	17:05	X	X	X	
WG-1620-MW15B-20190710	MW-15B	Water	07/10/2019	18:00	X	X	X	
WG-1620-FB01-20190710	-	Water	07/10/2019	18:15	X	X	X	Field Blank
WQ-1620-TB01-20190710	-	Water	07/10/2019	-	X			Trip Blank
WQ-1620-TB02-20190710	-	Water	07/10/2019	-	X			Trip Blank
WG-1620-MW14-20190711	MW-14	Water	07/11/2019	07:20	X	X	X	
WG-1620-MW13-20190711	MW-13	Water	07/11/2019	08:15	X	X	X	
WG-1620-MW39B-20190711	MW-39B	Water	07/11/2019	09:15	X	X	X	
WG-1620-MW12C-20190711	MW-12C	Water	07/11/2019	10:00	X	X	X	
WG-1620-MW12A-20190711	MW-12A	Water	07/11/2019	10:55	X	X	X	MS/MSD-P; DUP
WG-1620-MW40B-20190711	MW-40B	Water	07/11/2019	12:00	X	X	X	
WG-1620-MW42B-20190711	MW-42B	Water	07/11/2019	13:00	X	X	X	
WG-1620-P11-20190711	P-11	Water	07/11/2019	13:55	X	X	X	

Table 1

Sample Collection and Analysis Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

					Analysis/Parameters			
Sample Identification	**Location**	**Matrix**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**VOCs**	**SVOCs**	**Arsenic**	**Comments**
WG-1620-MW05-20190711	MW-05	Water	07/11/2019	14:50	X	X	X	
WG-1620-MW64A-20190711	MW-64A	Water	07/11/2019	15:50	X	X	X	MS/MSD-P; DUP
WG-1620-FB02-20190711	-	Water	07/11/2019	16:05	X	X	X	Field Blank
WG-1620-TB02-20190711	-	Water	07/11/2019	-	X			Trip Blank
WG-1620-MW09-20190712	MW-09	Water	07/12/2019	07:35	X	X	X	MS/MSD-P; DUP
WG-1620-MW03-20190712	MW-03	Water	07/12/2019	08:35	X	X	X	
WG-1620-MW04-20190712	MW-04	Water	07/12/2019	09:25	X	X	X	
WG-1620-TW41B-20190712	TW-41B	Water	07/12/2019	10:40	X	X	X	
WG-1620-FB03-20190712	-	Water	07/12/2019	11:00	X	X	X	Field Blank
WG-1620-TB03-20190712	-	Water	07/12/2019	-	X			Trip Blank
WG-1620-MW21C-20190716	MW-21C	Water	07/16/2019	07:35	X	X	X	
WG-1620-FD01-20190716	MW-21C	Water	07/16/2019	07:35	X	X	X	Field duplicate of MW-21C
WG-1620-MW62B-20190716	MW-62B	Water	07/16/2019	08:25	X	X	X	
WG-1620-MW53C-20190716	MW-53C	Water	07/16/2019	10:15	X	X	X	
WG-1620-MW54C-20190716	MW-54C	Water	07/16/2019	11:15	X	X	X	
WG-1620-MW25C-20190716	MW-25C	Water	07/16/2019	12:15	X	X	X	
WG-1620-MW25A-20190716	MW-25A	Water	07/16/2019	13:10	X	X	X	
WG-1620-MW36B-20190716	MW-36B	Water	07/16/2019	14:20	X	X	X	MS/MSD-P
WG-1620-MW36A-20190716	MW-36A	Water	07/16/2019	15:20	X	X	X	
WG-1620-MW28C-20190716	MW-28C	Water	07/16/2019	16:15	X	X	X	MS/MSD; DUP
WG-1620-MW28A-20190716	MW-28A	Water	07/16/2019	17:00	X	X	X	
WG-1620-MW63B-20190716	MW-63B	Water	07/16/2019	17:55	X	X	X	
WG-1620-FB04-20190716	-	Water	07/16/2019	18:20	X	X	X	Field Blank
WG-1620-TB04-20190716	-	Water	07/16/2019	-	X			Trip Blank

Table 1

Sample Collection and Analysis Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

					Analysis/Parameters			
Sample Identification	**Location**	**Matrix**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**VOCs**	**SVOCs**	**Arsenic**	**Comments**
WG-1620-MW61A-20190717	MW-61A	Water	07/17/2019	07:50	X	X	X	MS/MSD; DUP
WG-1620-MW60A-20190717	MW-60A	Water	07/17/2019	08:35	X	X	X	
WG-1620-MW69A-20190717	MW-69A	Water	07/17/2019	09:35	X	X	X	
WG-1620-MW47C-20190717	MW-47C	Water	07/17/2019	10:25	X	X	X	
WG-1620-MW48C-20190717	MW-48C	Water	07/17/2019	11:20	X	X	X	
WG-1620-MW59A-20190717	MW-59A	Water	07/17/2019	12:20	X	X	X	
WG-1620-MW59B-20190717	MW-59B	Water	07/17/2019	13:10	X	X	X	
WG-1620-MW44A-20190717	MW-44A	Water	07/17/2019	14:00	X	X	X	
WG-1620-MW87C-20190717	MW-87C	Water	07/17/2019	15:40	X	X	X	
WG-1620-MW71B-20190717	MW-71B	Water	07/17/2019	16:40	X	X	X	
WG-1620-MW33A-20190717	MW-33A	Water	07/17/2019	17:50	X	X	X	
WG-1620-FD02-20190717	MW-33A	Water	07/17/2019	17:50	X	X	X	Field duplicate of MW-33A
WG-1620-MW26A-20190717	MW-26A	Water	07/17/2019	18:45	X	X	X	
WG-1620-FB05-20190717	-	Water	07/17/2019	19:05	X	X	X	Field Blank
WG-1620-MW68A-20190718	MW-68A	Water	07/18/2019	07:55	X	X	X	
WG-1620-MW68B-20190718	MW-68B	Water	07/18/2019	08:55	X	X	X	
WG-1620-FD03-20190718	MW-68B	Water	07/18/2019	08:55	X	X	X	Field duplicate of MW-68B
WG-1620-MW68C-20190718	MW-68C	Water	07/18/2019	09:45	X	X	X	
WG-1620-MW83B-20190718	MW-83B	Water	07/18/2019	10:40	X	X	X	
WG-1620-MW83C-20190718	MW-83C	Water	07/18/2019	11:30	X	X	X	MS/MSD-P; DUP
WG-1620-MW35A-20190718	MW-35A	Water	07/18/2019	12:40	X	X	X	
WG-1620-MW35B-20190718	MW-35B	Water	07/18/2019	13:30	X	X	X	
WG-1620-MW90B-20190718	MW-90B	Water	07/18/2019	14:25	X	X	X	
WG-1620-MW89B-20190718	MW-89B	Water	07/18/2019	15:15	X	X	X	

Table 1

Sample Collection and Analysis Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

					Analysis/Parameters			
Sample Identification	**Location**	**Matrix**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**VOCs**	**SVOCs**	**Arsenic**	**Comments**
WG-1620-MW38B-20190718	MW-38B	Water	07/18/2019	16:10	X	X	X	
WG-1620-MW27A-20190718	MW-27A	Water	07/18/2019	17:15	X	X	X	
WG-1620-MW27C-20190718	MW-27C	Water	07/18/2019	18:05	X	X	X	
WG-1620-MW51A-20190719	MW-51A	Water	07/19/2019	07:25	X	X	X	
WG-1620-MW51C-20190719	MW-51C	Water	07/19/2019	08:55	X	X	X	
WG-1620-MW81B-20190719	MW-81B	Water	07/19/2019	09:45	X	X	X	
WG-1620-MW50A-20190719	MW-50A	Water	07/19/2019	10:40	X	X	X	
WG-1620-TB05-20190719	-	Water	07/19/2019	-	X			Trip Blank
WG-1620-TB06-20190719	-	Water	07/19/2019	-	X			Trip Blank
WG-1620-MW32AR-20190730	MW-32AR	Water	07/30/2019	07:25	X	X	X	
WG-1620-MW33BR-20190730	MW-33BR	Water	07/30/2019	08:20	X	X	X	
WG-1620-MW84B-20190730	MW-84B	Water	07/30/2019	09:15	X	X	X	
WG-1620-MW82B-20190730	MW-82B	Water	07/30/2019	10:10	X	X	X	MS/MSD; DUP
WG-1620-MW80B-20190730	MW-80B	Water	07/30/2019	11:10	X	X	X	
WG-1620-MW77A-20190730	MW-77A	Water	07/30/2019	11:55	X	X	X	
WG-1620-MW85C-20190730	MW-85C	Water	07/30/2019	15:35	X	X	X	
WG-1620-MW86C-20190730	MW-86C	Water	07/30/2019	16:40	X	X	X	
WG-1620-FD04-20190730	MW-86C	Water	07/30/2019	16:40	X	X	X	Field duplicate of MW-86C
WG-1620-MW76C-20190730	MW-76C	Water	07/30/2019	17:30	X	X	X	
WG-1620-MW74B-20190730	MW-74B	Water	07/30/2019	18:20	X	X	X	
WG-1620-MW79A-20190730	MW-79A	Water	07/30/2019	19:10	X	X	X	
WG-1620-TB05-20190730	-	Water	07/30/2019	-	X			Trip Blank
WG-1620-MW36D-20190731	MW-36D	Water	07/31/2019	07:40	X	X	X	
WG-1620-MW38A-20190731	MW-38A	Water	07/31/2019	08:35	X	X	X	

Table 1

Sample Collection and Analysis Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

					Analysis/Parameters			
Sample Identification	**Location**	**Matrix**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**VOCs**	**SVOCs**	**Arsenic**	**Comments**
WG-1620-MW65D-20190731	MW-65D	Water	07/31/2019	09:45	X	X	X	MS/MSD-P; DUP
WG-1620-MW66D-20190731	MW-66D	Water	07/31/2019	10:45	X	X	X	
WG-1620-MW59D-20190731	MW-59D	Water	07/31/2019	11:50	X	X	X	
WG-1620-FD05-20190731	MW-59D	Water	07/31/2019	11:50	X	X	X	Field duplicate of MW-59D
WG-1620-MW22AR-20190731	MW-22AR	Water	07/31/2019	13:05	X	X	X	MS/MSD-P
WG-1620-MW22BR-20190731	MW-22BR	Water	07/31/2019	13:50	X	X	X	
WG-1620-MW88C-20190731	MW-88C	Water	07/31/2019	15:45	X	X	X	
WG-1620-MW67B-20190731	MW-67B	Water	07/31/2019	16:45	X	X	X	MS/MSD; DUP
WG-1620-MW49A-20190731	MW-49A	Water	07/31/2019	17:45	X	X	X	
WG-1620-TB06-20190731	-	Water	07/31/2019	-	X			Trip Blank

Notes:

VOCs - Volatile Organic Compounds
SVOCs - Semi-volatile Organic Compounds
MS/MSD - Matrix Spike/ Matrix Spike Duplicate
MS/MSD-P - Matrix Spike/ Matrix Spike Duplicate (partial parameters)
DUP - Laboratory Duplicate
"-" - Not Applicable

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-03	MW-04	MW-05	MW-09	MW-12A
Sample Name:		WG-1620-MW03-20190712	WG-1620-MW04-20190712	WG-1620-MW05-20190711	WG-1620-MW09-20190712	WG-1620-MW12A-20190711
Sample Date:		07/12/2019	07/12/2019	07/11/2019	07/12/2019	07/11/2019
Parameters	**Unit**					
Volatile Organic Compounds						
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Vinyl chloride	mg/L	--	--	--	--	--
Xylenes (total)	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	0.00060 J
Semi-volatile Organic Compounds						
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	<0.000059	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.000035	<0.000059	0.000087 J	<0.000019	0.013
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	<0.000027	0.00052	0.00043	<0.000027	0.19
Acenaphthylene	mg/L	<0.000015	<0.000015	<0.000015	<0.000015	0.0013
Anthracene	mg/L	0.000055 J	<0.000014	0.000097 J	0.000061 J	0.0087
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	0.00041
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	0.00012
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000037	<0.000037	<0.000037	<0.000037	0.00031
Chrysene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	0.00034
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Dibenzofuran	mg/L	<0.000020	<0.000058	0.000051 J	<0.000020	0.14
Fluoranthene	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	0.0097
Fluorene	mg/L	<0.000030	0.000053 J	0.000064 J	<0.000030	0.16
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	<0.00029	<0.00053	<0.00071	<0.00015	<0.0012

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-03	MW-04	MW-05	MW-09	MW-12A
Sample Name:		WG-1620-MW03-20190712	WG-1620-MW04-20190712	WG-1620-MW05-20190711	WG-1620-MW09-20190712	WG-1620-MW12A-20190711
Sample Date:		07/12/2019	07/12/2019	07/11/2019	07/12/2019	07/11/2019
Parameters	**Unit**					
Semi-volatile Organic Compounds (Continued)						
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	0.063
Phenol	mg/L	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	mg/L	0.000020 J	0.00016	0.00019	<0.000019	0.0047
Metals						
Arsenic	mg/L	0.000582 J	0.0127	0.0171	0.000901 J	0.00192 J

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-12C	MW-13	MW-14	MW-15A	MW-15B
Sample Name:		WG-1620-MW12C-20190711	WG-1620-MW13-20190711	WG-1620-MW14-20190711	WG-1620-MW15A-20190710	WG-1620-MW15B-20190710
Sample Date:		07/11/2019	07/11/2019	07/11/2019	07/10/2019	07/10/2019
Parameters	**Unit**					
Volatile Organic Compounds						
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	<0.00020	0.00074 J	0.0023
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	<0.00030	0.00035 J	0.0031
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Vinyl chloride	mg/L	--	--	--	--	--
Xylenes (total)	mg/L	<0.00030	<0.00030	<0.00030	0.0026	0.0025
Semi-volatile Organic Compounds						
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	0.00043	<0.000063	<0.00013	<0.00024	<0.00016
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	0.00021	0.000077 J	0.00019	0.0077	0.016
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	0.000071 J	0.000066 J	0.00010	0.11	0.029
Acenaphthylene	mg/L	<0.000015	0.000033 J	<0.000015	0.00045	0.00034
Anthracene	mg/L	0.000030 J	0.00047	0.000089 J	0.0026	0.0016
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	0.00016
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000037	0.000054 J	<0.000037	<0.000037	<0.000037
Chrysene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	0.00013
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Dibenzofuran	mg/L	0.000070 J	0.000039 J	0.000087 J	0.035	0.013
Fluoranthene	mg/L	<0.000010	0.000032 J	0.000067 J	0.0018	0.0042
Fluorene	mg/L	0.000052 J	0.000042 J	0.000069 J	0.054	0.010
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	<0.0031	<0.0011	<0.0020	<0.0066	0.33

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-12C	MW-13	MW-14	MW-15A	MW-15B
Sample Name:		WG-1620-MW12C-20190711	WG-1620-MW13-20190711	WG-1620-MW14-20190711	WG-1620-MW15A-20190710	WG-1620-MW15B-20190710
Sample Date:		07/11/2019	07/11/2019	07/11/2019	07/10/2019	07/10/2019
Parameters	**Unit**					
Semi-volatile Organic Compounds (Continued)						
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	0.000039 J	<0.000021	0.000059 J	0.0095	0.0065
Phenol	mg/L	0.00040	<0.000035	0.00019 J	0.00039	<0.00019
Pyrene	mg/L	<0.000019	0.000084 J	0.000032 J	0.00075	0.0018
Metals						
Arsenic	mg/L	0.00200	0.0715	0.00133 J	0.0251	0.0133

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-15C	MW-17	MW-17C	MW-18A	MW-18C
Sample Name:		WG-1620-MW15C-20190710	WG-1620-MW17-20190710	WG-1620-MW17C-20190710	WG-1620-MW18A-20190710	WG-1620-MW18C-20190710
Sample Date:		07/10/2019	07/10/2019	07/10/2019	07/10/2019	07/10/2019
Parameters	**Unit**					
Volatile Organic Compounds						
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	0.00050 J	0.54	0.0097	0.16	1.2
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	0.0017	0.00052 J
Ethylbenzene	mg/L	<0.00030	0.23	0.027	0.28	0.32
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	0.83	0.0073	0.057	1.0
Vinyl chloride	mg/L	--	--	--	0.0013	<0.00020
Xylenes (total)	mg/L	<0.00030	0.78	0.039	0.47	1.0
Semi-volatile Organic Compounds						
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.00021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	0.0052	5.9	0.21	0.72	0.0051
2,4-Dinitrotoluene	mg/L	<0.000058	<0.00058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.00042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.00021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.00066	0.39	0.026	0.47	0.28
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.00020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.00047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	0.017	0.16	0.035	0.30	0.058
Acenaphthylene	mg/L	0.0015	0.0042	0.00037	0.0056	0.0050
Anthracene	mg/L	0.00064	0.0092	0.0013	0.0063	0.0056
Benzo(a)anthracene	mg/L	<0.000050	<0.00050	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.00020	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.00030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000037	<0.00037	0.00056	<0.000037	<0.000037
Chrysene	mg/L	<0.000021	<0.00021	<0.000021	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.00020	<0.000020	<0.000020	<0.000020
Dibenzofuran	mg/L	0.0039	0.12	0.027	0.19	0.054
Fluoranthene	mg/L	0.00086	0.0039	0.00090	0.0022	0.0019
Fluorene	mg/L	0.00097	0.060	0.014	0.091	0.024
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.00025	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	0.019	8.9	0.97	5.6	9.9

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-15C	MW-17	MW-17C	MW-18A	MW-18C
Sample Name:		WG-1620-MW15C-20190710	WG-1620-MW17-20190710	WG-1620-MW17C-20190710	WG-1620-MW18A-20190710	WG-1620-MW18C-20190710
Sample Date:		07/10/2019	07/10/2019	07/10/2019	07/10/2019	07/10/2019
Parameters	**Unit**					
Semi-volatile Organic Compounds (Continued)						
Nitrobenzene	mg/L	<0.000024	<0.00024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.00079	<0.000079	<0.000079	0.034
Phenanthrene	mg/L	<0.00039	0.045	0.0100	0.075	0.026
Phenol	mg/L	<0.00026	9.9	0.00073	0.00048	0.0050
Pyrene	mg/L	0.00043	0.0018	0.00046	0.0011	0.0014
Metals						
Arsenic	mg/L	0.000889 J	0.0460	0.000854 J	0.0248	0.00358

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-19C	MW-20A	MW-21C	MW-21C	MW-22AR
Sample Name:		WG-1620-MW19C-20190710	WG-1620-MW20A-20190710	WG-1620-MW21C-20190716	WG-1620-FD01-20190716	WG-1620-MW22AR-20190731
Sample Date:		07/10/2019	07/10/2019	07/16/2019	07/16/2019 Duplicate	07/31/2019
Parameters	**Unit**					
Volatile Organic Compounds						
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	0.00040 J	0.013	<0.00020	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	0.00096 J	0.0079	<0.00030	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	0.00086 J	0.0011	<0.00020	<0.00020	<0.00020
Vinyl chloride	mg/L	<0.00020	--	--	--	--
Xylenes (total)	mg/L	0.0022	0.022	<0.00030	<0.00030	<0.00030
Semi-volatile Organic Compounds						
1,2-Diphenylhydrazine	mg/L	0.000082 J	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.00056	0.0035	0.00010 J	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.000071	0.072	0.00040 J	0.000050 J	<0.000019
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	0.0010	0.14	0.0057 J	0.00081 J	<0.000027
Acenaphthylene	mg/L	0.000030 J	0.00078	0.000074 J	<0.000015	<0.000015
Anthracene	mg/L	<0.000066	0.0062	0.00044 J	0.000050 J	<0.000014
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000037	<0.000037	<0.000040	<0.000037	<0.000037
Chrysene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Dibenzofuran	mg/L	<0.00057	0.077	0.0032 J	0.00040 J	<0.000020
Fluoranthene	mg/L	0.00056	0.00058	0.00081 J	0.000087 J	<0.000010
Fluorene	mg/L	<0.00031	0.068	0.0019 J	0.00025 J	<0.000030
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	<0.0012	1.9	0.0044 J	0.00080 J	<0.000020

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-19C	MW-20A	MW-21C	MW-21C	MW-22AR
Sample Name:		WG-1620-MW19C-20190710	WG-1620-MW20A-20190710	WG-1620-MW21C-20190716	WG-1620-FD01-20190716	WG-1620-MW22AR-20190731
Sample Date:		07/10/2019	07/10/2019	07/16/2019	07/16/2019 Duplicate	07/31/2019
Parameters	**Unit**					
Semi-volatile Organic Compounds (Continued)						
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	<0.00014	0.026	0.00087 J	0.00011 J	<0.000021
Phenol	mg/L	<0.00015	0.00096	<0.00018 J	0.00081 J	<0.000035
Pyrene	mg/L	0.00064	0.00026	0.00039 J	0.000033 J	<0.000019
Metals						
Arsenic	mg/L	0.00166 J	0.00574	0.00130 J	0.00326	0.000481 J

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-22BR	MW-25A	MW-25C	MW-26A	MW-27A
Sample Name:		WG-1620-MW22BR-20190731	WG-1620-MW25A-20190716	WG-1620-MW25C-20190716	WG-1620-MW26A-20190717	WG-1620-MW27A-20190718
Sample Date:		07/31/2019	07/16/2019	07/16/2019	07/17/2019	07/18/2019
Parameters	**Unit**					
Volatile Organic Compounds						
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	0.0013	0.00036 J	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	0.035	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	0.011	<0.00020	<0.00020
Vinyl chloride	mg/L	--	<0.00020	<0.00020	--	--
Xylenes (total)	mg/L	<0.00030	<0.00030	0.25	<0.00030	<0.00030
Semi-volatile Organic Compounds						
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.00021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	0.0075	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.00058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.00042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.00021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.000019	0.000057 J	0.54	0.000059 J	0.00034
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.00020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.00047	<0.000047	<0.000047
Acenaphthene	mg/L	<0.000027	<0.000027	0.20	0.028	0.00011
Acenaphthylene	mg/L	<0.000015	<0.000015	0.0020	0.00013	<0.000015
Anthracene	mg/L	<0.000014	<0.000014	0.016	0.00047	0.000036 J
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	0.0013	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	0.00037 J	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.00030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000037	<0.000037	<0.00037	<0.00019	0.00020
Chrysene	mg/L	<0.000021	<0.000021	0.0014	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	<0.00020	<0.000020	0.000034 J
Dibenzofuran	mg/L	<0.000020	<0.000020	0.19	0.00021	0.00014
Fluoranthene	mg/L	<0.000010	<0.000010	0.014	0.0029	0.000024 J
Fluorene	mg/L	<0.000030	<0.000030	0.081	0.0017	0.000074 J
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.00025	<0.000025	<0.000025
Naphthalene	mg/L	<0.000020	0.00023	4.2	<0.00032	0.0026

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-22BR	MW-25A	MW-25C	MW-26A	MW-27A
Sample Name:		WG-1620-MW22BR-20190731	WG-1620-MW25A-20190716	WG-1620-MW25C-20190716	WG-1620-MW26A-20190717	WG-1620-MW27A-20190718
Sample Date:		07/31/2019	07/16/2019	07/16/2019	07/17/2019	07/18/2019
Parameters	**Unit**					
Semi-volatile Organic Compounds (Continued)						
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.00024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.00079	<0.000079	<0.000079
Phenanthrene	mg/L	<0.000021	<0.000021	0.12	0.000083 J	0.00013
Phenol	mg/L	0.00069	<0.000035	<0.00035	<0.000035	<0.000035
Pyrene	mg/L	<0.000019	<0.000019	0.0085	0.0015	<0.000019
Metals						
Arsenic	mg/L	0.000559 J	0.00285	0.00487	0.0933	0.000498 J

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-27C	MW-28A	MW-28C	MW-32AR	MW-33A
Sample Name:		WG-1620-MW27C-20190718	WG-1620-MW28A-20190716	WG-1620-MW28C-20190716	WG-1620-MW32AR-20190730	WG-1620-MW33A-20190717
Sample Date:		07/18/2019	07/16/2019	07/16/2019	07/30/2019	07/17/2019
Parameters	**Unit**					
Volatile Organic Compounds						
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Vinyl chloride	mg/L	--	--	--	--	--
Xylenes (total)	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Semi-volatile Organic Compounds						
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.000019	0.00020	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	<0.000027	0.000082 J	<0.000027	<0.000027	0.000098 J
Acenaphthylene	mg/L	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	mg/L	<0.000014	0.000036 J	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	mg/L	<0.000050	0.000055 J	<0.000050	0.000054 J	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	0.000095 J	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	0.000092 J	<0.00023	<0.00013	0.000074 J	<0.00022
Chrysene	mg/L	<0.000021	0.00010	<0.000021	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Dibenzofuran	mg/L	<0.000020	0.000084 J	<0.000020	<0.000020	<0.000020
Fluoranthene	mg/L	<0.000010	0.00012	0.000015 J	<0.000010	0.00016
Fluorene	mg/L	<0.000030	0.000053 J	<0.000030	<0.000030	<0.000030
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	0.000066 J	0.0013	0.000095 J	<0.000020	<0.000076

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-27C	MW-28A	MW-28C	MW-32AR	MW-33A
Sample Name:		WG-1620-MW27C-20190718	WG-1620-MW28A-20190716	WG-1620-MW28C-20190716	WG-1620-MW32AR-20190730	WG-1620-MW33A-20190717
Sample Date:		07/18/2019	07/16/2019	07/16/2019	07/30/2019	07/17/2019
Parameters	**Unit**					
Semi-volatile Organic Compounds (Continued)						
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	<0.000021	0.000049 J	<0.000021	<0.000021	<0.000021
Phenol	mg/L	0.00023	<0.000073	0.0025	<0.000035	0.00011 J
Pyrene	mg/L	<0.000019	0.00016	<0.000019	0.00045	0.00028
Metals						
Arsenic	mg/L	0.000428 J	0.00920	0.000456 J	0.0628	0.0155

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-33A	MW-33BR	MW-35A	MW-35B	MW-36A
Sample Name:		WG-1620-FD02-20190717	WG-1620-MW33BR-20190730	WG-1620-MW35A-20190718	WG-1620-MW35B-20190718	WG-1620-MW36A-20190716
Sample Date:		07/17/2019	07/30/2019	07/18/2019	07/18/2019	07/16/2019
		Duplicate				
Parameters	**Unit**					
Volatile Organic Compounds						
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	0.25	<0.00020	0.0045	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	0.065	<0.00030	0.014	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	0.0031	<0.00020	0.00054 J	<0.00020
Vinyl chloride	mg/L	--	<0.00020	--	--	<0.00020
Xylenes (total)	mg/L	<0.00030	0.016	<0.00030	0.0062	<0.00030
Semi-volatile Organic Compounds						
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	0.00028	<0.000040	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.000019	0.014	0.00012	0.041	<0.000019
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	<0.000027	0.0078	0.0028	0.029	<0.000027
Acenaphthylene	mg/L	<0.000015	<0.000015	0.000071 J	0.00022	<0.000015
Anthracene	mg/L	<0.000014	0.00055	0.00011	0.0022	<0.000014
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050	0.000083 J	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.000020	0.000053 J	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000084	0.000070 J	0.000057 J	0.00012 J	<0.000037
Chrysene	mg/L	<0.000021	<0.000021	<0.000021	0.000091 J	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Dibenzofuran	mg/L	<0.000020	0.012	0.00039	0.029	<0.000020
Fluoranthene	mg/L	0.00017	0.00039	0.00015	0.0017	<0.000010
Fluorene	mg/L	<0.000030	0.0042	0.00036	0.014	<0.000030
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	<0.000096	0.53 J	0.00083	1.1	0.00015

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-33A	MW-33BR	MW-35A	MW-35B	MW-36A
Sample Name:		WG-1620-FD02-20190717	WG-1620-MW33BR-20190730	WG-1620-MW35A-20190718	WG-1620-MW35B-20190718	WG-1620-MW36A-20190716
Sample Date:		07/17/2019	07/30/2019	07/18/2019	07/18/2019	07/16/2019
		Duplicate				
Parameters	**Unit**					
Semi-volatile Organic Compounds (Continued)						
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	<0.000021	0.0048	0.000042 J	0.019	<0.000021
Phenol	mg/L	0.000053 J	0.00021	<0.000035	0.00017 J	<0.00014
Pyrene	mg/L	0.00069	0.00026	0.000096 J	0.00079	<0.000019
Metals						
Arsenic	mg/L	0.0147	0.00117 J	0.0548	0.00120 J	0.00244

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-36B	MW-36D	MW-38A	MW-38B	MW-39B
Sample Name:		WG-1620-MW36B-20190716	WG-1620-MW36D-20190731	WG-1620-MW38A-20190731	WG-1620-MW38B-20190718	WG-1620-MW39B-20190711
Sample Date:		07/16/2019	07/31/2019	07/31/2019	07/18/2019	07/11/2019
Parameters	**Unit**					
Volatile Organic Compounds						
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	0.00031 J	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Vinyl chloride	mg/L	<0.00020	--	--	--	--
Xylenes (total)	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Semi-volatile Organic Compounds						
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	0.000078 J	<0.000040	<0.000040	0.000056 J	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	0.00058	<0.000019	<0.000019	0.00030	<0.000027
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	0.00014	<0.000027	<0.000027	0.00012	0.00065
Acenaphthylene	mg/L	<0.000015	<0.000015	<0.000015	<0.000015	0.000021 J
Anthracene	mg/L	<0.000014	0.000017 J	0.000022 J	0.000037 J	0.00021
Benzo(a)anthracene	mg/L	<0.000050	0.000053 J	0.000087 J	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	0.000087 J	0.00012	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000088	0.000080 J	0.000084 J	0.00031	0.000042 J
Chrysene	mg/L	<0.000021	0.000058 J	0.000092 J	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Dibenzofuran	mg/L	0.000087 J	<0.000020	<0.000020	0.00014	0.000037 J
Fluoranthene	mg/L	0.000017 J	0.00011	0.00018	<0.000010	0.000048 J
Fluorene	mg/L	0.000047 J	<0.000030	<0.000030	0.000060 J	0.000044 J
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	0.0060	<0.000020	0.000068 J	0.0026	<0.00041

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-36B	MW-36D	MW-38A	MW-38B	MW-39B
Sample Name:		WG-1620-MW36B-20190716	WG-1620-MW36D-20190731	WG-1620-MW38A-20190731	WG-1620-MW38B-20190718	WG-1620-MW39B-20190711
Sample Date:		07/16/2019	07/31/2019	07/31/2019	07/18/2019	07/11/2019
Parameters	**Unit**					
Semi-volatile Organic Compounds (Continued)						
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	<0.000021	0.000066 J	0.00010	0.000079 J	<0.000021
Phenol	mg/L	<0.00017	<0.000035	<0.000035	0.000056 J	<0.000035
Pyrene	mg/L	<0.000019	0.000099 J	0.00014	<0.000019	0.000072 J
Metals						
Arsenic	mg/L	0.00127 J	<0.000400	<0.000400	0.000553 J	0.00144 J

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-40B	MW-42B	MW-44A	MW-47C	MW-48C
Sample Name:		WG-1620-MW40B-20190711	WG-1620-MW42B-20190711	WG-1620-MW44A-20190717	WG-1620-MW47C-20190717	WG-1620-MW48C-20190717
Sample Date:		07/11/2019	07/11/2019	07/17/2019	07/17/2019	07/17/2019
Parameters	**Unit**					
Volatile Organic Compounds						
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	0.0088	<0.00020	<0.00020	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	0.082	<0.00030	<0.00030	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	0.014	<0.00020	<0.00020	<0.00020	<0.00020
Vinyl chloride	mg/L	--	--	<0.00020	--	--
Xylenes (total)	mg/L	0.13	<0.00030	<0.00030	<0.00030	<0.00030
Semi-volatile Organic Compounds						
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	0.0013	<0.000040	<0.000040	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	0.18	<0.000019	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	0.21	0.000068 J	0.056	<0.000027	<0.000027
Acenaphthylene	mg/L	0.0021	<0.000015	0.00028	<0.000015	<0.000015
Anthracene	mg/L	0.011	0.000064 J	0.00089	<0.000014	<0.000014
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	0.000085 J	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000037	0.00015 J	<0.00025	<0.00027	<0.00030
Chrysene	mg/L	<0.000021	<0.000021	0.000052 J	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Dibenzofuran	mg/L	0.13	0.000038 J	<0.000020	<0.000020	<0.000020
Fluoranthene	mg/L	0.0059	0.000040 J	0.0091	<0.000010	0.000035 J
Fluorene	mg/L	0.13	0.000057 J	0.014	<0.000030	<0.000030
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	3.6	<0.00043	<0.00019	<0.000020	<0.000020

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-40B	MW-42B	MW-44A	MW-47C	MW-48C
Sample Name:		WG-1620-MW40B-20190711	WG-1620-MW42B-20190711	WG-1620-MW44A-20190717	WG-1620-MW47C-20190717	WG-1620-MW48C-20190717
Sample Date:		07/11/2019	07/11/2019	07/17/2019	07/17/2019	07/17/2019
Parameters	**Unit**					
Semi-volatile Organic Compounds (Continued)						
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	0.093	0.000034 J	0.00012	<0.000021	<0.000021
Phenol	mg/L	0.000053 J	<0.000035	<0.000035	<0.000035	0.000074 J
Pyrene	mg/L	0.0024	0.000033 J	0.0057	<0.000019	0.000036 J
Metals						
Arsenic	mg/L	0.0520	0.00220	0.0303	0.000440 J	0.00167 J

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-49A	MW-50A	MW-51A	MW-51C	MW-53C
Sample Name:		WG-1620-MW49A-20190731	WG-1620-MW50A-20190719	WG-1620-MW51A-20190719	WG-1620-MW51C-20190719	WG-1620-MW53C-20190716
Sample Date:		07/31/2019	07/19/2019	07/19/2019	07/19/2019	07/16/2019
Parameters	**Unit**					
Volatile Organic Compounds						
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Vinyl chloride	mg/L	<0.00020	--	--	--	--
Xylenes (total)	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Semi-volatile Organic Compounds						
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042	0.0028
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.000019	<0.000019	0.000067 J	<0.000019	0.000071 J
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027
Acenaphthylene	mg/L	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	mg/L	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000037	<0.000037	0.00013 J	0.000079 J	<0.000037
Chrysene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Dibenzofuran	mg/L	<0.000020	<0.000020	0.000030 J	<0.000020	<0.000020
Fluoranthene	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Fluorene	mg/L	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	<0.000020	0.00027	0.00055	0.00023	0.00013

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-49A	MW-50A	MW-51A	MW-51C	MW-53C
Sample Name:		WG-1620-MW49A-20190731	WG-1620-MW50A-20190719	WG-1620-MW51A-20190719	WG-1620-MW51C-20190719	WG-1620-MW53C-20190716
Sample Date:		07/31/2019	07/19/2019	07/19/2019	07/19/2019	07/16/2019
Parameters	**Unit**					
Semi-volatile Organic Compounds (Continued)						
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	<0.000021	<0.000021	0.000026 J	<0.000021	<0.000021
Phenol	mg/L	0.00064	0.00016 J	0.00019 J	0.00027	<0.00016
Pyrene	mg/L	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019
Metals						
Arsenic	mg/L	0.000658 J	0.000642 J	<0.000400	<0.000400	0.000569 J

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-54C	MW-57A	MW-57B	MW-58A	MW-59A
Sample Name:		WG-1620-MW54C-20190716	WG-1620-MW57A-20190710	WG-1620-MW57B-20190710	WG-1620-MW58A-20190710	WG-1620-MW59A-20190717
Sample Date:		07/16/2019	07/10/2019	07/10/2019	07/10/2019	07/17/2019
Parameters	**Unit**					
Volatile Organic Compounds						
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	0.00057 J	0.84	0.0049	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	0.00080 J	<0.00030
Ethylbenzene	mg/L	<0.00030	0.00085 J	0.39	0.017	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	0.93	<0.00020	<0.00020
Vinyl chloride	mg/L	--	<0.00020	0.00048 J	<0.00020	<0.00020
Xylenes (total)	mg/L	<0.00030	<0.00030	1.2	0.028	<0.00030
Semi-volatile Organic Compounds						
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.00021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.00059	6.5	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.00058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.00042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.00021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	0.0021	0.19	0.93	0.015	0.000036 J
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.00020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.00047	<0.000047	<0.000047
Acenaphthene	mg/L	0.041	0.099	0.38	0.11	<0.000027
Acenaphthylene	mg/L	0.00037	0.0019	0.0051	0.00087	<0.000015
Anthracene	mg/L	0.0023	0.0084	0.039	0.062	<0.000014
Benzo(a)anthracene	mg/L	<0.000050	0.00100	0.0071	0.00082	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	0.00054	0.0021	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.00030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000037	0.00021	<0.00037	<0.000037	<0.000050
Chrysene	mg/L	<0.000021	0.00100	0.0065	0.00084	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	<0.00020	<0.000020	0.000064 J
Dibenzofuran	mg/L	0.032	0.076	0.32	0.059	<0.000020
Fluoranthene	mg/L	0.0033	0.0091	0.047	0.020	<0.000010
Fluorene	mg/L	0.018	0.059	0.21	0.15	<0.000030
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.00025	<0.000025	<0.000025
Naphthalene	mg/L	0.032	0.61	17	0.46	<0.00012

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-54C	MW-57A	MW-57B	MW-58A	MW-59A
Sample Name:		WG-1620-MW54C-20190716	WG-1620-MW57A-20190710	WG-1620-MW57B-20190710	WG-1620-MW58A-20190710	WG-1620-MW59A-20190717
Sample Date:		07/16/2019	07/10/2019	07/10/2019	07/10/2019	07/17/2019
Parameters	**Unit**					
Semi-volatile Organic Compounds (Continued)						
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.00024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	0.00059	<0.00079	<0.000079	<0.000079
Phenanthrene	mg/L	0.0065	0.059	0.29	0.036	<0.000021
Phenol	mg/L	0.00044	<0.00016	1.0	<0.000035	0.000058 J
Pyrene	mg/L	0.0016	0.0055	0.030	0.0099	<0.000019
Metals						
Arsenic	mg/L	0.00103 J	0.00447	0.00404	0.00748	0.00455

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-59B	MW-59D	MW-59D	MW-60A	MW-61A
Sample Name:		WG-1620-MW59B-20190717	WG-1620-MW59D-20190731	WG-1620-FD05-20190731	WG-1620-MW60A-20190717	WG-1620-MW61A-20190717
Sample Date:		07/17/2019	07/31/2019	07/31/2019 Duplicate	07/17/2019	07/17/2019
Parameters	**Unit**					
Volatile Organic Compounds						
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Vinyl chloride	mg/L	<0.00020	--	--	<0.00020	<0.00020
Xylenes (total)	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Semi-volatile Organic Compounds						
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.000019	<0.000019	<0.000019	0.000072 J	<0.000019
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	<0.000027	<0.000027	<0.000027	<0.000027	<0.000027
Acenaphthylene	mg/L	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	mg/L	<0.000014	<0.000014	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.00039	<0.000037	<0.000037	<0.00055	<0.00037
Chrysene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	0.000055 J	<0.000020	<0.000020	0.000075 J	0.000056 J
Dibenzofuran	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Fluoranthene	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Fluorene	mg/L	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	<0.00015	<0.000020	<0.000020	<0.00013	<0.000020

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-59B	MW-59D	MW-59D	MW-60A	MW-61A
Sample Name:		WG-1620-MW59B-20190717	WG-1620-MW59D-20190731	WG-1620-FD05-20190731	WG-1620-MW60A-20190717	WG-1620-MW61A-20190717
Sample Date:		07/17/2019	07/31/2019	07/31/2019 Duplicate	07/17/2019	07/17/2019
Parameters	**Unit**					
Semi-volatile Organic Compounds (Continued)						
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Phenol	mg/L	<0.000035	0.00011 J	<0.000035	<0.000035	0.00011 J
Pyrene	mg/L	<0.000019	<0.000019	<0.000019	<0.000019	<0.000019
Metals						
Arsenic	mg/L	0.000542 J	<0.000400	0.000502 J	0.000440 J	0.00117 J

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-62B	MW-63B	MW-64A	MW-65D	MW-66D
Sample Name:		WG-1620-MW62B-20190716	WG-1620-MW63B-20190716	WG-1620-MW64A-20190711	WG-1620-MW65D-20190731	WG-1620-MW66D-20190731
Sample Date:		07/16/2019	07/16/2019	07/11/2019	07/31/2019	07/31/2019
Parameters	**Unit**					
Volatile Organic Compounds						
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	0.11	<0.00020	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	0.14	<0.00030	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	0.00071 J	<0.00020	<0.00020	<0.00020
Vinyl chloride	mg/L	--	--	--	--	--
Xylenes (total)	mg/L	<0.00030	0.041	<0.00030	<0.00030	<0.00030
Semi-volatile Organic Compounds						
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	0.000096 J	0.037	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	0.000099 J	0.012	0.00030	<0.000027	<0.000027
Acenaphthylene	mg/L	<0.000015	0.00016	<0.000015	<0.000015	<0.000015
Anthracene	mg/L	<0.000014	0.00034	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000037	<0.000037	<0.000037	0.00016 J	0.00022
Chrysene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Dibenzofuran	mg/L	0.000048 J	0.011	<0.000020	<0.000020	<0.000020
Fluoranthene	mg/L	0.000017 J	<0.000010	<0.000010	<0.000010	<0.000010
Fluorene	mg/L	0.000036 J	0.0037	0.000031 J	<0.000030	<0.000030
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	0.00028	1.5	<0.00033	<0.000020	<0.000020

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-62B	MW-63B	MW-64A	MW-65D	MW-66D
Sample Name:		WG-1620-MW62B-20190716	WG-1620-MW63B-20190716	WG-1620-MW64A-20190711	WG-1620-MW65D-20190731	WG-1620-MW66D-20190731
Sample Date:		07/16/2019	07/16/2019	07/11/2019	07/31/2019	07/31/2019
Parameters	**Unit**					
Semi-volatile Organic Compounds (Continued)						
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	0.000021 J	0.0013	<0.000021	<0.000021	<0.000021
Phenol	mg/L	0.00056	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	mg/L	<0.000019	<0.000019	0.00015	<0.000019	<0.000019
Metals						
Arsenic	mg/L	0.00194 J	0.00156 J	0.00939	0.00135 J	0.00124 J

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-67B	MW-68A	MW-68B	MW-68B	MW-68C
Sample Name:		WG-1620-MW67B-20190731	WG-1620-MW68A-20190718	WG-1620-MW68B-20190718	WG-1620-FD03-20190718	WG-1620-MW68C-20190718
Sample Date:		07/31/2019	07/18/2019	07/18/2019	07/18/2019 Duplicate	07/18/2019
Parameters	**Unit**					
Volatile Organic Compounds						
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.0020	<0.0020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	1.4	1.4	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.0030	<0.0030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	0.52	0.51	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.010	<0.010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	0.37	0.37	<0.00020
Vinyl chloride	mg/L	--	--	--	--	--
Xylenes (total)	mg/L	<0.00030	<0.00030	1.5	1.4	<0.00030
Semi-volatile Organic Compounds						
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.00021	<0.00021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	0.076	0.076	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.00058	<0.00058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.00042	<0.00042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.00021	<0.00021	<0.000021
2-Methylnaphthalene	mg/L	<0.000019	0.00012	0.72	0.66	0.000072 J
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.00020	<0.00020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.00047	<0.00047	<0.000047
Acenaphthene	mg/L	<0.000027	0.0019	0.20	0.17	0.00012
Acenaphthylene	mg/L	<0.000015	<0.000015	0.0027	0.0022	0.000053 J
Anthracene	mg/L	<0.000014	0.000028 J	0.030 J	0.022 J	<0.000014
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	0.0051 J	0.0030 J	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	0.0018	0.0012	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.00030	<0.00030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000037	0.00024	<0.00037	<0.00037	0.00032
Chrysene	mg/L	<0.000021	<0.000021	0.0050 J	0.0029 J	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	0.00015 J	<0.00020	<0.00020	0.000067 J
Dibenzofuran	mg/L	<0.000020	0.000082 J	0.21	0.18	0.000064 J
Fluoranthene	mg/L	<0.000010	<0.000010	0.043 J	0.027 J	<0.000010
Fluorene	mg/L	<0.000030	0.00012	0.11	0.083	0.000051 J
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.00025	<0.00025	<0.000025
Naphthalene	mg/L	0.000079 J	0.00035	9.6	9.9	0.0011

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-67B	MW-68A	MW-68B	MW-68B	MW-68C
Sample Name:		WG-1620-MW67B-20190731	WG-1620-MW68A-20190718	WG-1620-MW68B-20190718	WG-1620-FD03-20190718	WG-1620-MW68C-20190718
Sample Date:		07/31/2019	07/18/2019	07/18/2019	07/18/2019 Duplicate	07/18/2019
Parameters	**Unit**					
Semi-volatile Organic Compounds (Continued)						
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.00024	<0.00024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.00079	<0.00079	<0.000079
Phenanthrene	mg/L	<0.000021	0.000062 J	0.21	0.16	<0.000021
Phenol	mg/L	<0.000035	<0.000035	<0.00035	<0.00035	0.00026
Pyrene	mg/L	<0.000019	<0.000019	0.025 J	0.015 J	<0.000019
Metals						
Arsenic	mg/L	0.000494 J	0.0353	0.0134	0.0129	<0.000400

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-69A	MW-71B	MW-72B	MW-74B	MW-76C
Sample Name:		WG-1620-MW69A-20190717	WG-1620-MW71B-20190717	WG-1620-MW72B-20190710	WG-1620-MW74B-20190730	WG-1620-MW76C-20190730
Sample Date:		07/17/2019	07/17/2019	07/10/2019	07/30/2019	07/30/2019
Parameters	**Unit**					
Volatile Organic Compounds						
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020
Benzene	mg/L	<0.00020	0.13	1.1	0.59	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.0015	<0.00030
Ethylbenzene	mg/L	<0.00030	0.031	0.30	0.15	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010
Toluene	mg/L	<0.00020	0.023	0.96	0.52	<0.00020
Vinyl chloride	mg/L	<0.00020	--	--	--	--
Xylenes (total)	mg/L	<0.00030	0.054	0.97	0.42	<0.00030
Semi-volatile Organic Compounds						
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.00021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	19	37	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.00058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.00042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.00021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.000019	0.024	0.57	0.48	<0.000019
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.00020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.00047	<0.000047	<0.000047
Acenaphthene	mg/L	<0.000027	0.016	0.20	0.24	<0.000027
Acenaphthylene	mg/L	<0.000015	0.00033	0.0044	0.0037	<0.000015
Anthracene	mg/L	<0.000014	0.0066	0.034	0.0071	<0.000014
Benzo(a)anthracene	mg/L	<0.000050	0.0026	0.0069	0.00022	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	0.00083	0.0019	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.00030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.00034	<0.00014	<0.00037	<0.000037	<0.000037
Chrysene	mg/L	<0.000021	0.0024	0.0069	0.00016	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	<0.00020	<0.000020	0.000054 J
Dibenzofuran	mg/L	<0.000020	0.016	0.16	0.19	<0.000020
Fluoranthene	mg/L	<0.000010	0.017	0.046	0.0035	<0.000010
Fluorene	mg/L	<0.000030	0.0093	0.12	0.14	<0.000030
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.00025	<0.000025	<0.000025
Naphthalene	mg/L	<0.000078	0.44	12	13 J	0.00018 J

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-69A	MW-71B	MW-72B	MW-74B	MW-76C
Sample Name:		WG-1620-MW69A-20190717	WG-1620-MW71B-20190717	WG-1620-MW72B-20190710	WG-1620-MW74B-20190730	WG-1620-MW76C-20190730
Sample Date:		07/17/2019	07/17/2019	07/10/2019	07/30/2019	07/30/2019
Parameters	**Unit**					
Semi-volatile Organic Compounds (Continued)						
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.00024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.00079	<0.000079	<0.000079
Phenanthrene	mg/L	<0.000021	0.030	0.16	0.087	<0.000021
Phenol	mg/L	<0.000035	0.000051 J	9.3	33	<0.000035
Pyrene	mg/L	<0.000019	0.0088	0.029	0.0023	<0.000019
Metals						
Arsenic	mg/L	0.000642 J	0.000626 J	0.000861 J	0.00128 J	0.00216

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-77A	MW-79A	MW-80B	MW-81B	MW-82B
Sample Name:		WG-1620-MW77A-20190730	WG-1620-MW79A-20190730	WG-1620-MW80B-20190730	WG-1620-MW81B-20190719	WG-1620-MW82B-20190730
Sample Date:		07/30/2019	07/30/2019	07/30/2019	07/19/2019	07/30/2019
Parameters	**Unit**					
Volatile Organic Compounds						
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	0.063	0.013	<0.00020	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	0.072	0.0067	<0.00030	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	0.012	0.018	<0.00020	<0.00020	<0.00020
Vinyl chloride	mg/L	--	--	--	--	--
Xylenes (total)	mg/L	0.097	0.023	<0.00030	<0.00030	<0.00030
Semi-volatile Organic Compounds						
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	0.062	0.33	<0.000040	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	0.20	0.051	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	0.16	0.034	<0.000027	<0.000027	<0.000027
Acenaphthylene	mg/L	0.0013	0.00076	<0.000015	<0.000015	<0.000015
Anthracene	mg/L	0.0028	0.0020	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	mg/L	<0.000050	0.00023	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000037	0.00055	0.000070 J	<0.000037	<0.000037
Chrysene	mg/L	<0.000021	0.00027	<0.000021	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Dibenzofuran	mg/L	0.096	0.026	<0.000020	<0.000020	<0.000020
Fluoranthene	mg/L	0.00052	0.0012	<0.000010	<0.000010	<0.000010
Fluorene	mg/L	0.078	0.017	<0.000030	<0.000030	<0.000030
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	4.9 J	0.74 J	<0.000020	0.000099 J	<0.000020

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-77A	MW-79A	MW-80B	MW-81B	MW-82B
Sample Name:		WG-1620-MW77A-20190730	WG-1620-MW79A-20190730	WG-1620-MW80B-20190730	WG-1620-MW81B-20190719	WG-1620-MW82B-20190730
Sample Date:		07/30/2019	07/30/2019	07/30/2019	07/19/2019	07/30/2019
Parameters	**Unit**					
Semi-volatile Organic Compounds (Continued)						
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	0.032	0.0082	<0.000021	<0.000021	<0.000021
Phenol	mg/L	<0.000035	0.063	<0.000035	<0.000035	<0.000035
Pyrene	mg/L	0.00041	0.0011	<0.000019	<0.000019	<0.000019
Metals						
Arsenic	mg/L	0.0231	0.00991	0.00162 J	0.000563 J	0.00873

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-83B	MW-83C	MW-84B	MW-85C
Sample Name:		WG-1620-MW83B-20190718	WG-1620-MW83C-20190718	WG-1620-MW84B-20190730	WG-1620-MW85C-20190730
Sample Date:		07/18/2019	07/18/2019	07/30/2019	07/30/2019
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	0.021	<0.00020	0.010	0.00093 J
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	0.055	<0.00030	0.013	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	0.0042	<0.00020	0.0015	<0.00020
Vinyl chloride	mg/L	--	--	--	--
Xylenes (total)	mg/L	0.061	<0.00030	0.0041	<0.00030
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	0.00081	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	0.050	0.00012	0.0027	<0.000019
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	0.021	0.000094 J	0.0080	<0.000027
Acenaphthylene	mg/L	0.00025	<0.000015	0.00030	<0.000015
Anthracene	mg/L	0.00099	<0.000014	0.00042	<0.000014
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	0.00036	0.00023	0.00026	<0.000037
Chrysene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	0.00012 J	0.000040 J	0.000055 J	<0.000020
Dibenzofuran	mg/L	0.014	0.000070 J	0.0054	<0.000020
Fluoranthene	mg/L	0.00038	<0.000010	0.00015	<0.000010
Fluorene	mg/L	0.0076	<0.000030	0.0026	<0.000030
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	0.77	0.0014	0.060 J	0.0012 J

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-83B	MW-83C	MW-84B	MW-85C
Sample Name:		WG-1620-MW83B-20190718	WG-1620-MW83C-20190718	WG-1620-MW84B-20190730	WG-1620-MW85C-20190730
Sample Date:		07/18/2019	07/18/2019	07/30/2019	07/30/2019
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	0.0059	<0.000021	0.0021	<0.000021
Phenol	mg/L	0.00051	0.000068 J	<0.000035	<0.000035
Pyrene	mg/L	0.00020	<0.000019	0.00011	<0.000019
Metals					
Arsenic	mg/L	0.0648	0.00617	0.00838	0.000633 J

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-86C	MW-86C	MW-87C	MW-88C
Sample Name:		WG-1620-MW86C-20190730	WG-1620-FD04-20190730	WG-1620-MW87C-20190717	WG-1620-MW88C-20190731
Sample Date:		07/30/2019	07/30/2019 Duplicate	07/17/2019	07/31/2019
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Vinyl chloride	mg/L	--	<0.00020	--	--
Xylenes (total)	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.000019	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	<0.000027	<0.000027	<0.000027	<0.000027
Acenaphthylene	mg/L	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	mg/L	<0.000014	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	0.000060 J	0.000050 J	<0.00018	<0.000037
Chrysene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	0.00011 J	0.000073 J	0.00017 J	<0.000020
Dibenzofuran	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
Fluoranthene	mg/L	<0.000010	<0.000010	<0.000010	<0.000010
Fluorene	mg/L	<0.000030	<0.000030	<0.000030	<0.000030
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	0.00012 J	0.00031 J	<0.00017	<0.000020

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-86C	MW-86C	MW-87C	MW-88C
Sample Name:		WG-1620-MW86C-20190730	WG-1620-FD04-20190730	WG-1620-MW87C-20190717	WG-1620-MW88C-20190731
Sample Date:		07/30/2019	07/30/2019	07/17/2019	07/31/2019
			Duplicate		
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
Phenol	mg/L	<0.000035	<0.000035	0.00013 J	0.00055
Pyrene	mg/L	<0.000019	<0.000019	<0.000019	<0.000019
Metals					
Arsenic	mg/L	0.00236	0.00190 J	<0.000400	<0.000400

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-89B	MW-90B	P-11	TW-41B
Sample Name:		WG-1620-MW89B-20190718	WG-1620-MW90B-20190718	WG-1620-P11-20190711	WG-1620-TW41B-20190712
Sample Date:		07/18/2019	07/18/2019	07/11/2019	07/12/2019
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	<0.00020	<0.0013
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.0011
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	<0.00020	<0.0011
Vinyl chloride	mg/L	--	--	--	--
Xylenes (total)	mg/L	<0.00030	<0.00030	<0.00030	0.019
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	0.000050 J	<0.000019	0.000050 J	0.067
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	<0.000027	<0.000027	0.0019	0.15
Acenaphthylene	mg/L	<0.000015	<0.000015	<0.000015	0.0014
Anthracene	mg/L	<0.000014	<0.000014	0.000063 J	0.0055
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	0.00015 J	0.00011 J	0.000087 J	<0.000037
Chrysene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	0.000038 J	<0.000020	<0.000020	<0.000020
Dibenzofuran	mg/L	<0.000020	<0.000020	0.000079 J	0.074
Fluoranthene	mg/L	<0.000010	<0.000010	0.000060 J	0.0034
Fluorene	mg/L	<0.000030	<0.000030	0.00074	0.085
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	0.00025	0.000091 J	<0.0018	0.69

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Location ID:		MW-89B	MW-90B	P-11	TW-41B
Sample Name:		WG-1620-MW89B-20190718	WG-1620-MW90B-20190718	WG-1620-P11-20190711	WG-1620-TW41B-20190712
Sample Date:		07/18/2019	07/18/2019	07/11/2019	07/12/2019
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	<0.000021	<0.000021	0.00020	0.027
Phenol	mg/L	0.00042	<0.000035	<0.000035	<0.000035
Pyrene	mg/L	<0.000019	<0.000019	0.000036 J	0.0014
Metals					
Arsenic	mg/L	<0.000400	0.0135	0.0704	0.113

Notes:

< - Not detected at the associated reporting limit
J - Estimated concentration
"--" - Not applicable

Table 3

Analytical Methods
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Parameter	Method	Matrix	Holding Time	
			Collection to Extraction (Days)	Extraction to Analysis (Days)
VOCs	SW-846 8260C	Water	-	14
SVOCs	SW-846 8270D	Water	7	40
Arsenic	SW-846 6020A	Water	-	180

Notes:

VOCs - Volatile Organic Compounds
SVOCs - Semi-volatile Organic Compounds
"-" - Not Applicable

Method References:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions

Table 4

Qualified Sample Results Due to Outlying MS/MSD Results
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Parameter	Sample ID	Analyte	MS % Recovery	MSD % Recovery	RPD (percent)	Control Limits % Recovery	Control Limits RPD	Qualified Result	Units
SVOCs	WG-1620-FD04-20190730	Naphthalene	65.1	104	46.1	70-127	20	0.00031 J	mg/L
	WG-1620-MW33BR-20190730							0.53 J	mg/L
	WG-1620-MW74B-20190730							13 J	mg/L
	WG-1620-MW76C-20190730							0.00018 J	mg/L
	WG-1620-MW77A-20190730							4.9 J	mg/L
	WG-1620-MW79A-20190730							0.74 J	mg/L
	WG-1620-MW84B-20190730							0.060 J	mg/L
	WG-1620-MW85C-20190730							0.0012 J	mg/L
	WG-1620-MW86C-20190730							0.00012 J	mg/L

Notes:

MS - Matrix Spike
MSD - Matrix Spike Duplicate
RPD - Relative Percent Difference
SVOCs - Semi-volatile Organic Compounds
J - Estimated concentration

Table 5

Qualified Sample Data Due to Analyte Concentrations in the Field Blanks
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Parameter	Field Blank ID	Blank Date (mm/dd/yyyy)	Analyte	Blank Result	Associated Sample ID	Original Result	Qualified Result	Units
SVOCs	WG-1620-FB01-20190710	07/10/2019	2,4-Dimethylphenol	0.00037	WG-1620-MW15A-20190710	0.00024	<0.00024	mg/L
					WG-1620-MW15B-20190710	0.00016 J	<0.00016	mg/L
					WG-1620-MW19C-20190710	0.00056	<0.00056	mg/L
					WG-1620-MW57A-20190710	0.00059	<0.00059	mg/L
			2-Methylnaphthalene	0.00038	WG-1620-MW15C-20190710	0.00066	<0.00066	mg/L
					WG-1620-MW19C-20190710	0.000071 J	<0.000071	mg/L
			Anthracene	0.000032 J	WG-1620-MW19C-20190710	0.000066 J	<0.000066	mg/L
			Dibenzofuran	0.00018	WG-1620-MW19C-20190710	0.00057	<0.00057	mg/L
			Fluorene	0.00011	WG-1620-MW19C-20190710	0.00031	<0.00031	mg/L
			Naphthalene	0.0035	WG-1620-MW15A-20190710	0.0066	<0.0066	mg/L
					WG-1620-MW19C-20190710	0.0012	<0.0012	mg/L
			Phenanthrene	0.00013	WG-1620-MW15C-20190710	0.00039	<0.00039	mg/L
					WG-1620-MW19C-20190710	0.00014	<0.00014	mg/L
			Phenol	0.000071 J	WG-1620-MW15B-20190710	0.00019 J	<0.00019	mg/L
					WG-1620-MW15C-20190710	0.00026	<0.00026	mg/L
					WG-1620-MW19C-20190710	0.00015 J	<0.00015	mg/L
					WG-1620-MW57A-20190710	0.00016 J	<0.00016	mg/L
SVOCs	WG-1620-FB02-20190711	07/11/2019	2,4-Dimethylphenol	0.000064 J	WG-1620-MW05-20190711	0.000059 J	<0.000059	mg/L
					WG-1620-MW13-20190711	0.000063 J	<0.000063	mg/L
					WG-1620-MW14-20190711	0.00013 J	<0.00013	mg/L
			2-Methylnaphthalene	0.000077 J	WG-1620-MW39B-20190711	0.000027 J	<0.000027	mg/L

Table 5

Qualified Sample Data Due to Analyte Concentrations in the Field Blanks
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Parameter	Field Blank ID	Blank Date (mm/dd/yyyy)	Analyte	Blank Result	Associated Sample ID	Original Result	Qualified Result	Units
SVOCs	WG-1620-FB02-20190711		Naphthalene	0.0062	WG-1620-MW05-20190711	0.00071	<0.00071	mg/L
					WG-1620-MW12A-20190711	0.0012	<0.0012	mg/L
					WG-1620-MW12C-20190711	0.0031	<0.0031	mg/L
					WG-1620-MW13-20190711	0.0011	<0.0011	mg/L
					WG-1620-MW14-20190711	0.0020	<0.0020	mg/L
					WG-1620-MW39B-20190711	0.00041	<0.00041	mg/L
					WG-1620-MW42B-20190711	0.00043	<0.00043	mg/L
					WG-1620-MW64A-20190711	0.00033	<0.00033	mg/L
					WG-1620-P11-20190711	0.0018	<0.0018	mg/L
VOCs	WG-1620-FB03-20190712	07/12/2019	Benzene	0.00052 J	WG-1620-TW41B-20190712	0.0013	<0.0013	mg/L
			Ethylbenzene	0.00032 J	WG-1620-TW41B-20190712	0.0011	<0.0011	mg/L
VOCs	WG-1620-FB03-20190712	07/12/2019	Toluene	0.00037 J	WG-1620-TW41B-20190712	0.0011	<0.0011	mg/L
SVOCs			2-Methylnaphthalene	0.000052 J	WG-1620-MW03-20190712	0.000035 J	<0.000035	mg/L
					WG-1620-MW04-20190712	0.000059 J	<0.000059	mg/L
			Dibenzofuran	0.000026 J	WG-1620-MW04-20190712	0.000058 J	<0.000058	mg/L
			Naphthalene	0.00028	WG-1620-MW03-20190712	0.00029	<0.00029	mg/L
					WG-1620-MW04-20190712	0.00053	<0.00053	mg/L
					WG-1620-MW09-20190712	0.00015	<0.00015	mg/L

Table 5

Qualified Sample Data Due to Analyte Concentrations in the Field Blanks
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Parameter	Field Blank ID	Blank Date (mm/dd/yyyy)	Analyte	Blank Result	Associated Sample ID	Original Result	Qualified Result	Units
SVOCs	WG-1620-FB04-20190716	07/16/2019	bis(2-Ethylhexyl)phthalate (DEHP)	0.00045	WG-1620-MW21C-20190716	0.000040 J	<0.000040	mg/L
					WG-1620-MW28A-20190716	0.00023	<0.00023	mg/L
					WG-1620-MW28C-20190716	0.00013 J	<0.00013	mg/L
					WG-1620-MW36B-20190716	0.000088 J	<0.000088	mg/L
			Di-n-butylphthalate (DBP)	0.000043 J	WG-1620-FD01-20190716	0.000020 J	<0.000020	mg/L
			Phenol	0.000084 J	WG-1620-MW21C-20190716	0.00018 J	<0.00018 J	mg/L
					WG-1620-MW28A-20190716	0.000073 J	<0.000073	mg/L
					WG-1620-MW36A-20190716	0.00014 J	<0.00014	mg/L
					WG-1620-MW36B-20190716	0.00017 J	<0.00017	mg/L
					WG-1620-MW53C-20190716	0.00016 J	<0.00016	mg/L
SVOCs	WG-1620-FB05-20190717	07/17/2019	bis(2-Ethylhexyl)phthalate (DEHP)	0.00023	WG-1620-FD02-20190717	0.000084 J	<0.000084	mg/L
					WG-1620-MW26A-20190717	0.00019 J	<0.00019	mg/L
					WG-1620-MW33A-20190717	0.00022	<0.00022	mg/L
					WG-1620-MW44A-20190717	0.00025	<0.00025	mg/L
					WG-1620-MW47C-20190717	0.00027	<0.00027	mg/L
					WG-1620-MW48C-20190717	0.00030	<0.00030	mg/L
					WG-1620-MW59A-20190717	.000050	.000050	mg/L
					WG-1620-MW59B-20190717	0.00039	<0.00039	mg/L
					WG-1620-MW60A-20190717	0.00055	<0.00055	mg/L

Table 5

Qualified Sample Data Due to Analyte Concentrations in the Field Blanks
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Parameter	Field Blank ID	Blank Date (mm/dd/yyyy)	Analyte	Blank Result	Associated Sample ID	Original Result	Qualified Result	Units
SVOCs	WG-1620-FB05-20190717	07/17/2019	bis(2-Ethylhexyl)phthalate (DEHP)	0.00023	WG-1620-MW61A-20190717	0.00037	<0.00037	mg/L
					WG-1620-MW69A-20190717	0.00034	<0.00034	mg/L
					WG-1620-MW71B-20190717	0.00014 J	<0.00014	mg/L
					WG-1620-MW87C-20190717	0.00018 J	<0.00018	mg/L
			Naphthalene	0.00023	WG-1620-FD02-20190717	0.000096 J	<0.000096	mg/L
					WG-1620-MW26A-20190717	0.00032	<0.00032	mg/L
					WG-1620-MW33A-20190717	0.000076 J	<0.000076	mg/L
					WG-1620-MW44A-20190717	0.00019	<0.00019	mg/L
					WG-1620-MW59A-20190717	0.00012	<0.00012	mg/L
					WG-1620-MW59B-20190717	0.00015	<0.00015	mg/L
					WG-1620-MW60A-20190717	0.00013	<0.00013	mg/L
					WG-1620-MW69A-20190717	0.000078 J	<0.000078	mg/L
					WG-1620-MW87C-20190717	0.00017	<0.00017	mg/L

Notes:

SVOCs - Semi-volatile Organic Compounds
VOCs - Volatile Organic Compounds
J - Estimated concentration
< - Not detected at the associated reporting limit

Table 6

Qualified Sample Data Due to Variability in Field Duplicate Results
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
July 2019

Parameter	Analyte	RPD	Sample ID	Qualified Result	Field Duplicate Sample ID	Qualified Result	Units
SVOCs	2-Methylnaphthalene	155	WG-1620-MW21C-20190716	0.00040 J	WG-1620-FD01-20190716	0.000050 J	mg/L
	Acenaphthene	150		0.0057 J		0.00081 J	mg/L
	Anthracene	159		0.00044 J		0.000050 J	mg/L
	Dibenzofuran	155		0.0032 J		0.00040 J	mg/L
	Fluoranthene	161		0.00081 J		0.000087 J	mg/L
	Fluorene	153		0.0019 J		0.00025 J	mg/L
	Naphthalene	138		0.0044 J		0.00080 J	mg/L
	Phenanthrene	155		0.00087 J		0.00011 J	mg/L
	Phenol	120		<0.00020 J		0.00081 J	mg/L
	Pyrene	168		0.00039 J		0.000033 J	mg/L
SVOCs	Anthracene	30.8	WG-1620-MW68B-20190718	0.030 J	WG-1620-FD03-20190718	0.022 J	mg/L
	Benzo(a)anthracene	51.9		0.0051 J		0.0030 J	mg/L
	Chrysene	53.2		0.0050 J		0.0029 J	mg/L
	Fluoranthene	45.7		0.043 J		0.027 J	mg/L
	Pyrene	50.0		0.025 J		0.015 J	mg/L

Notes:

RPD - Relative Percent Difference
SVOCs - Semi-volatile Organic Compounds
J - Estimated concentration
< - Not detected at the associated reporting limit

Attachment A
Laboratory NELAP Certificate

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-19-23

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

Expiration Date: 4/30/2020

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2019

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: ***Drinking Water***

Method EPA 1613

Analyte	AB	Analyte ID	Method ID
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10120408

Method EPA 200.8

Analyte	AB	Analyte ID	Method ID
Copper	TX	1055	10014605
Lead	TX	1075	10014605

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-19-23

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

Expiration Date: 4/30/2020

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2019

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: ***Non-Potable Water***

Method EPA 1010

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10116606

Method EPA 120.1

Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	10006403

Method EPA 1311

Analyte	AB	Analyte ID	Method ID
TCLP	TX	849	10118806

Method EPA 1312

Analyte	AB	Analyte ID	Method ID
SPLP	TX	850	10119003

Method EPA 160.4

Analyte	AB	Analyte ID	Method ID
Residue-volatile	TX	1970	10010409

Method EPA 1613

Analyte	AB	Analyte ID	Method ID
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10120408
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10120408
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10120408
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10120408
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10120408
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10120408
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10120408
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10120408
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10120408
1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10120408
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10120408
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10120408
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10120408
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10120408

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Matrix: ***Non-Potable Water***

2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10120408
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10120408
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10120408
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10120408
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10120408
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10120408
Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10120408
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10120408
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10120408
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10120408
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10120408

Method EPA 1664

Analyte	**AB**	**Analyte ID**	**Method ID**
n-Hexane Extractable Material (HEM) (O&G)	TX	1803	10127807

Method EPA 180.1

Analyte	**AB**	**Analyte ID**	**Method ID**
Turbidity	TX	2055	10011606

Method EPA 200.8

Analyte	**AB**	**Analyte ID**	**Method ID**
Aluminum	TX	1000	10014605
Antimony	TX	1005	10014605
Arsenic	TX	1010	10014605
Barium	TX	1015	10014605
Beryllium	TX	1020	10014605
Boron	TX	1025	10014605
Cadmium	TX	1030	10014605
Calcium	TX	1035	10014605
Chromium	TX	1040	10014605
Cobalt	TX	1050	10014605
Copper	TX	1055	10014605
Iron	TX	1070	10014605

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Matrix: ***Non-Potable Water***

Lead	TX	1075	10014605
Magnesium	TX	1085	10014605
Manganese	TX	1090	10014605
Molybdenum	TX	1100	10014605
Nickel	TX	1105	10014605
Potassium	TX	1125	10014605
Selenium	TX	1140	10014605
Silver	TX	1150	10014605
Sodium	TX	1155	10014605
Strontium	TX	1160	10014605
Thallium	TX	1165	10014605
Tin	TX	1175	10014605
Titanium	TX	1180	10014605
Uranium	TX	3035	10014605
Vanadium	TX	1185	10014605
Zinc	TX	1190	10014605

Method EPA 245.1

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10036609

Method EPA 300.0

Analyte	**AB**	**Analyte ID**	**Method ID**
Bromide	TX	1540	10053200
Chloride	TX	1575	10053200
Fluoride	TX	1730	10053200
Nitrate as N	TX	1810	10053200
Nitrate-nitrite	TX	1820	10053200
Nitrite as N	TX	1840	10053200
Orthophosphate as P	TX	1870	10053200
Sulfate	TX	2000	10053200

Method EPA 325.1

Analyte	**AB**	**Analyte ID**	**Method ID**

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Matrix: ***Non-Potable Water***

Chloride	TX	1575	10056801

Method EPA 335.1

Analyte	AB	Analyte ID	Method ID
Amenable cyanide	TX	1510	10060001

Method EPA 335.2

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	10278203

Method EPA 335.4

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	10061402

Method EPA 350.3

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	10064401

Method EPA 365.3

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	10070801
Phosphorus	TX	1910	10070801

Method EPA 375.4

Analyte	AB	Analyte ID	Method ID
Sulfate	TX	2000	10073800

Method EPA 376.1

Analyte	AB	Analyte ID	Method ID
Sulfide	TX	2005	10074201

Method EPA 410.4

Analyte	AB	Analyte ID	Method ID
Chemical oxygen demand (COD)	TX	1565	10077404

Method EPA 415.1

Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	10078407

Method EPA 420.1

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10079400

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Matrix: ***Non-Potable Water***

Method EPA 420.4

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10080203

Method EPA 6020

Analyte	AB	Analyte ID	Method ID
Aluminum	TX	1000	10156419
Antimony	TX	1005	10156419
Arsenic	TX	1010	10156419
Barium	TX	1015	10156419
Beryllium	TX	1020	10156419
Boron	TX	1025	10156419
Cadmium	TX	1030	10156419
Calcium	TX	1035	10156419
Chromium	TX	1040	10156419
Cobalt	TX	1050	10156419
Copper	TX	1055	10156419
Iron	TX	1070	10156419
Lead	TX	1075	10156419
Lithium	TX	1080	10156419
Magnesium	TX	1085	10156419
Manganese	TX	1090	10156419
Molybdenum	TX	1100	10156419
Nickel	TX	1105	10156419
Potassium	TX	1125	10156419
Selenium	TX	1140	10156419
Silver	TX	1150	10156419
Sodium	TX	1155	10156419
Strontium	TX	1160	10156419
Thallium	TX	1165	10156419
Tin	TX	1175	10156419
Titanium	TX	1180	10156419

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Matrix: ***Non-Potable Water***

Vanadium	TX	1185	10156419
Zinc	TX	1190	10156419

Method EPA 608

Analyte	AB	Analyte ID	Method ID
4,4'-DDD	TX	7355	10103603
4,4'-DDE	TX	7360	10103603
4,4'-DDT	TX	7365	10103603
Aldrin	TX	7025	10103603
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10103603
alpha-Chlordane	TX	7240	10103603
Aroclor-1016 (PCB-1016)	TX	8880	10103603
Aroclor-1221 (PCB-1221)	TX	8885	10103603
Aroclor-1232 (PCB-1232)	TX	8890	10103603
Aroclor-1242 (PCB-1242)	TX	8895	10103603
Aroclor-1248 (PCB-1248)	TX	8900	10103603
Aroclor-1254 (PCB-1254)	TX	8905	10103603
Aroclor-1260 (PCB-1260)	TX	8910	10103603
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10103603
Chlordane (tech.)	TX	7250	10103603
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10103603
Dieldrin	TX	7470	10103603
Endosulfan I	TX	7510	10103603
Endosulfan II	TX	7515	10103603
Endosulfan sulfate	TX	7520	10103603
Endrin	TX	7540	10103603
Endrin aldehyde	TX	7530	10103603
Endrin ketone	TX	7535	10103603
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10103603
gamma-Chlordane	TX	7245	10103603
Heptachlor	TX	7685	10103603

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Matrix: ***Non-Potable Water***

Heptachlor epoxide	TX	7690	10103603
Methoxychlor	TX	7810	10103603
Toxaphene (Chlorinated camphene)	TX	8250	10103603

Method EPA 624

Analyte	AB	Analyte ID	Method ID
1,1,1-Trichloroethane	TX	5160	10107207
1,1,2,2-Tetrachloroethane	TX	5110	10107207
1,1,2-Trichloroethane	TX	5165	10107207
1,1-Dichloroethane	TX	4630	10107207
1,1-Dichloroethylene	TX	4640	10107207
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10107207
1,2-Dichlorobenzene	TX	4610	10107207
1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10107207
1,2-Dichloropropane	TX	4655	10107207
1,3-Dichlorobenzene	TX	4615	10107207
1,4-Dichlorobenzene	TX	4620	10107207
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10107207
2-Chloroethyl vinyl ether	TX	4500	10107207
Acetone (2-Propanone)	TX	4315	10107207
Acrolein (Propenal)	TX	4325	10107207
Acrylonitrile	TX	4340	10107207
Benzene	TX	4375	10107207
Bromodichloromethane	TX	4395	10107207
Bromoform	TX	4400	10107207
Carbon tetrachloride	TX	4455	10107207
Chlorobenzene	TX	4475	10107207
Chlorodibromomethane	TX	4575	10107207
Chloroethane (Ethyl chloride)	TX	4485	10107207
Chloroform	TX	4505	10107207
cis-1,2-Dichloroethylene	TX	4645	10107207

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Matrix: ***Non-Potable Water***

cis-1,3-Dichloropropene	TX	4680	10107207
Ethylbenzene	TX	4765	10107207
m+p-xylene	TX	5240	10107207
Methyl bromide (Bromomethane)	TX	4950	10107207
Methyl chloride (Chloromethane)	TX	4960	10107207
Methyl tert-butyl ether (MTBE)	TX	5000	10107207
Methylene chloride (Dichloromethane)	TX	4975	10107207
Naphthalene	TX	5005	10107207
o-Xylene	TX	5250	10107207
Tetrachloroethylene (Perchloroethylene)	TX	5115	10107207
Toluene	TX	5140	10107207
trans-1,2-Dichloroethylene	TX	4700	10107207
trans-1,3-Dichloropropylene	TX	4685	10107207
Trichloroethene (Trichloroethylene)	TX	5170	10107207
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10107207
Vinyl chloride	TX	5235	10107207
Xylene (total)	TX	5260	10107207

Method EPA 625

Analyte	**AB**	**Analyte ID**	**Method ID**
1,2,4,5-Tetrachlorobenzene	TX	6715	10107401
1,2,4-Trichlorobenzene	TX	5155	10107401
1,2-Dichlorobenzene	TX	4610	10107401
1,2-Diphenylhydrazine	TX	6220	10107401
1,3-Dichlorobenzene	TX	4615	10107401
1,4-Dichlorobenzene	TX	4620	10107401
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10107401
2,4,5-Trichlorophenol	TX	6835	10107401
2,4,6-Trichlorophenol	TX	6840	10107401
2,4-Dichlorophenol	TX	6000	10107401
2,4-Dimethylphenol	TX	6130	10107401

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Matrix: ***Non-Potable Water***

2,4-Dinitrophenol	TX	6175	10107401
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10107401
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10107401
2-Chloronaphthalene	TX	5795	10107401
2-Chlorophenol	TX	5800	10107401
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10107401
2-Methylphenol (o-Cresol)	TX	6400	10107401
2-Nitrophenol	TX	6490	10107401
3,3'-Dichlorobenzidine	TX	5945	10107401
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10107401
4-Chloro-3-methylphenol	TX	5700	10107401
4-Chlorophenyl phenylether	TX	5825	10107401
4-Methylphenol (p-Cresol)	TX	6410	10107401
4-Nitrophenol	TX	6500	10107401
Acenaphthene	TX	5500	10107401
Acenaphthylene	TX	5505	10107401
Anthracene	TX	5555	10107401
Benzidine	TX	5595	10107401
Benzo(a)anthracene	TX	5575	10107401
Benzo(a)pyrene	TX	5580	10107401
Benzo(b)fluoranthene	TX	5585	10107401
Benzo(g,h,i)perylene	TX	5590	10107401
Benzo(k)fluoranthene	TX	5600	10107401
bis(2-Chloroethoxy)methane	TX	5760	10107401
bis(2-Chloroethyl) ether	TX	5765	10107401
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10107401
Butyl benzyl phthalate	TX	5670	10107401
Chrysene	TX	5855	10107401
Dibenz(a,h) anthracene	TX	5895	10107401
Diethyl phthalate	TX	6070	10107401

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Matrix: ***Non-Potable Water***

Dimethyl phthalate	TX	6135	10107401
Di-n-butyl phthalate	TX	5925	10107401
Di-n-octyl phthalate	TX	6200	10107401
Fluoranthene	TX	6265	10107401
Fluorene	TX	6270	10107401
Hexachlorobenzene	TX	6275	10107401
Hexachlorobutadiene	TX	4835	10107401
Hexachlorocyclopentadiene	TX	6285	10107401
Hexachloroethane	TX	4840	10107401
Indeno(1,2,3-cd) pyrene	TX	6315	10107401
Isophorone	TX	6320	10107401
Naphthalene	TX	5005	10107401
Nitrobenzene	TX	5015	10107401
n-Nitrosodiethylamine	TX	6525	10107401
n-Nitrosodimethylamine	TX	6530	10107401
n-Nitrosodi-n-butylamine	TX	5025	10107401
n-Nitrosodi-n-propylamine	TX	6545	10107401
n-Nitrosodiphenylamine	TX	6535	10107401
Pentachlorobenzene	TX	6590	10107401
Pentachlorophenol	TX	6605	10107401
Phenanthrene	TX	6615	10107401
Phenol	TX	6625	10107401
Pyrene	TX	6665	10107401
Pyridine	TX	5095	10107401

Method EPA 7196

Analyte	**AB**	**Analyte ID**	**Method ID**
Chromium (VI)	TX	1045	10162206

Method EPA 7470

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10165603

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Matrix: ***Non-Potable Water***

Method EPA 8011

Analyte	AB	Analyte ID	Method ID
1,2,3-Trichloropropane	TX	5180	10173009
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10173009
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10173009

Method EPA 8015

Analyte	AB	Analyte ID	Method ID
Diesel range organics (DRO)	TX	9369	10173203
Ethanol	TX	4750	10173203
Ethylene glycol	TX	4785	10173203
Gasoline range organics (GRO)	TX	9408	10173203
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10173203
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10173203
Methanol	TX	4930	10173203
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10173203
n-Propanol (1-Propanol)	TX	5055	10173203
Propylene Glycol	TX	6657	10173203
tert-Butyl alcohol	TX	4420	10173203

Method EPA 8021

Analyte	AB	Analyte ID	Method ID
Benzene	TX	4375	10174400
Ethylbenzene	TX	4765	10174400
m+p-xylene	TX	5240	10174400
Methyl tert-butyl ether (MTBE)	TX	5000	10174400
o-Xylene	TX	5250	10174400
Toluene	TX	5140	10174400
Xylene (total)	TX	5260	10174400

Method EPA 8081

Analyte	AB	Analyte ID	Method ID
4,4'-DDD	TX	7355	10178402
4,4'-DDE	TX	7360	10178402

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Matrix: ***Non-Potable Water***

4,4'-DDT	TX	7365	10178402
Aldrin	TX	7025	10178402
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10178402
alpha-Chlordane	TX	7240	10178402
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10178402
Chlordane (tech.)	TX	7250	10178402
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10178402
Dieldrin	TX	7470	10178402
Endosulfan I	TX	7510	10178402
Endosulfan II	TX	7515	10178402
Endosulfan sulfate	TX	7520	10178402
Endrin	TX	7540	10178402
Endrin aldehyde	TX	7530	10178402
Endrin ketone	TX	7535	10178402
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10178402
gamma-Chlordane	TX	7245	10178402
Heptachlor	TX	7685	10178402
Heptachlor epoxide	TX	7690	10178402
Hexachlorobenzene	TX	6275	10178402
Methoxychlor	TX	7810	10178402
Mirex	TX	7870	10178402
Toxaphene (Chlorinated camphene)	TX	8250	10178402

Method EPA 8082

Analyte	**AB**	**Analyte ID**	**Method ID**
Aroclor-1016 (PCB-1016)	TX	8880	10179201
Aroclor-1221 (PCB-1221)	TX	8885	10179201
Aroclor-1232 (PCB-1232)	TX	8890	10179201
Aroclor-1242 (PCB-1242)	TX	8895	10179201
Aroclor-1248 (PCB-1248)	TX	8900	10179201
Aroclor-1254 (PCB-1254)	TX	8905	10179201

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Matrix: ***Non-Potable Water***

Aroclor-1260 (PCB-1260)	TX	8910	10179201
PCBs (total)	TX	8870	10179201

Method EPA 8151

Analyte	AB	Analyte ID	Method ID
2,4,5-T	TX	8655	10183003
2,4-D	TX	8545	10183003
2,4-DB	TX	8560	10183003
Dalapon	TX	8555	10183003
Dicamba	TX	8595	10183003
Dichloroprop (Dichlorprop, Weedone)	TX	8605	10183003
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10183003
MCPA	TX	7775	10183003
MCPP	TX	7780	10183003
Silvex (2,4,5-TP)	TX	8650	10183003

Method EPA 8260

Analyte	AB	Analyte ID	Method ID
1,1,1,2-Tetrachloroethane	TX	5105	10184404
1,1,1-Trichloroethane	TX	5160	10184404
1,1,2,2-Tetrachloroethane	TX	5110	10184404
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	TX	5195	10184404
1,1,2-Trichloroethane	TX	5165	10184404
1,1-Dichloroethane	TX	4630	10184404
1,1-Dichloroethylene	TX	4640	10184404
1,1-Dichloropropene	TX	4670	10184404
1,2,3-Trichlorobenzene	TX	5150	10184404
1,2,3-Trichloropropane	TX	5180	10184404
1,2,4-Trichlorobenzene	TX	5155	10184404
1,2,4-Trimethylbenzene	TX	5210	10184404
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10184404
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10184404
1,2-Dichlorobenzene	TX	4610	10184404

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Issue Date: 5/1/2019

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Matrix: ***Non-Potable Water***

1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10184404
1,2-Dichloropropane	TX	4655	10184404
1,3,5-Trimethylbenzene	TX	5215	10184404
1,3-Dichlorobenzene	TX	4615	10184404
1,3-Dichloropropane	TX	4660	10184404
1,4-Dichlorobenzene	TX	4620	10184404
1,4-Dioxane (1,4-Diethyleneoxide)	TX	4735	10184404
1-Chlorohexane	TX	4510	10184404
1-Propanol	TX	5060	10184404
2,2-Dichloropropane	TX	4665	10184404
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10184404
2-Chloroethyl vinyl ether	TX	4500	10184404
2-Chlorotoluene	TX	4535	10184404
2-Hexanone (MBK)	TX	4860	10184404
2-Pentanone	TX	5045	10184404
4-Chlorotoluene	TX	4540	10184404
4-Isopropyltoluene (p-Cymene)	TX	4915	10184404
4-Methyl-2-pentanone (MIBK)	TX	4995	10184404
Acetone (2-Propanone)	TX	4315	10184404
Acetonitrile	TX	4320	10184404
Acrolein (Propenal)	TX	4325	10184404
Acrylonitrile	TX	4340	10184404
Allyl alcohol	TX	4350	10184404
Allyl chloride (3-Chloropropene)	TX	4355	10184404
Benzene	TX	4375	10184404
Benzyl chloride	TX	5635	10184404
Bromobenzene	TX	4385	10184404
Bromochloromethane	TX	4390	10184404
Bromodichloromethane	TX	4395	10184404
Bromoform	TX	4400	10184404

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Carbon disulfide	TX	4450	10184404
Carbon tetrachloride	TX	4455	10184404
Chlorobenzene	TX	4475	10184404
Chlorodibromomethane	TX	4575	10184404
Chloroethane (Ethyl chloride)	TX	4485	10184404
Chloroform	TX	4505	10184404
Chloroprene (2-Chloro-1,3-butadiene)	TX	4525	10184404
cis-1,2-Dichloroethylene	TX	4645	10184404
cis-1,3-Dichloropropene	TX	4680	10184404
Dibromofluoromethane	TX	4590	10184404
Dibromomethane (Methylene bromide)	TX	4595	10184404
Dichlorodifluoromethane (Freon-12)	TX	4625	10184404
Diethyl ether	TX	4725	10184404
Di-isopropylether (DIPE)	TX	9375	10184404
Epichlorohydrin (1-Chloro-2,3-epoxypropane)	TX	4745	10184404
Ethanol	TX	4750	10184404
Ethyl acetate	TX	4755	10184404
Ethyl methacrylate	TX	4810	10184404
Ethylbenzene	TX	4765	10184404
Ethylene oxide	TX	4795	10184404
Ethyl-t-butylether (ETBE) (2-Ethoxy-2-methylpropane)	TX	4770	10184404
Hexachlorobutadiene	TX	4835	10184404
Iodomethane (Methyl iodide)	TX	4870	10184404
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10184404
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10184404
Isopropylbenzene (Cumene)	TX	4900	10184404
m+p-xylene	TX	5240	10184404
Methacrylonitrile	TX	4925	10184404
Methyl acetate	TX	4940	10184404
Methyl acrylate	TX	4945	10184404

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Matrix: ***Non-Potable Water***

Methyl bromide (Bromomethane)	TX	4950	10184404
Methyl chloride (Chloromethane)	TX	4960	10184404
Methyl methacrylate	TX	4990	10184404
Methyl tert-butyl ether (MTBE)	TX	5000	10184404
Methylcyclohexane	TX	4965	10184404
Methylene chloride (Dichloromethane)	TX	4975	10184404
Naphthalene	TX	5005	10184404
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10184404
n-Butylbenzene	TX	4435	10184404
n-Propylbenzene	TX	5090	10184404
o-Xylene	TX	5250	10184404
Pentachloroethane	TX	5035	10184404
Propionitrile (Ethyl cyanide)	TX	5080	10184404
Pyridine	TX	5095	10184404
sec-Butylbenzene	TX	4440	10184404
Styrene	TX	5100	10184404
T-amylmethylether (TAME)	TX	4370	10184404
tert-Butyl alcohol	TX	4420	10184404
tert-Butylbenzene	TX	4445	10184404
Tetrachloroethylene (Perchloroethylene)	TX	5115	10184404
Toluene	TX	5140	10184404
trans-1,2-Dichloroethylene	TX	4700	10184404
trans-1,3-Dichloropropylene	TX	4685	10184404
trans-1,4-Dichloro-2-butene	TX	4605	10184404
Trichloroethene (Trichloroethylene)	TX	5170	10184404
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10184404
Vinyl acetate	TX	5225	10184404
Vinyl chloride	TX	5235	10184404
Xylene (total)	TX	5260	10184404

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Matrix: ***Non-Potable Water***

Method EPA 8270

Analyte	AB	Analyte ID	Method ID
1,2,4,5-Tetrachlorobenzene	TX	6715	10185203
1,2,4-Trichlorobenzene	TX	5155	10185203
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10185203
1,2-Dichlorobenzene	TX	4610	10185203
1,2-Dinitrobenzene	TX	6155	10185203
1,2-Diphenylhydrazine	TX	6220	10185203
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10185203
1,3-Dichlorobenzene	TX	4615	10185203
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10185203
1,4-Dichlorobenzene	TX	4620	10185203
1,4-Dinitrobenzene	TX	6165	10185203
1,4-Naphthoquinone	TX	6420	10185203
1,4-Phenylenediamine	TX	6630	10185203
1-Chloronaphthalene	TX	5790	10185203
1-Naphthylamine	TX	6425	10185203
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10185203
2,3,4,6-Tetrachlorophenol	TX	6735	10185203
2,4,5-Trichlorophenol	TX	6835	10185203
2,4,5-Trimethylaniline	TX	6880	10185203
2,4,6-Trichlorophenol	TX	6840	10185203
2,4-Diaminotoluene	TX	5880	10185203
2,4-Dichlorophenol	TX	6000	10185203
2,4-Dimethylphenol	TX	6130	10185203
2,4-Dinitrophenol	TX	6175	10185203
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10185203
2,6-Dichlorophenol	TX	6005	10185203
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10185203
2-Acetylaminofluorene	TX	5515	10185203

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Matrix: ***Non-Potable Water***

2-Chloronaphthalene	TX	5795	10185203
2-Chlorophenol	TX	5800	10185203
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10185203
2-Methylaniline (o-Toluidine)	TX	5145	10185203
2-Methylnaphthalene	TX	6385	10185203
2-Methylphenol (o-Cresol)	TX	6400	10185203
2-Naphthylamine	TX	6430	10185203
2-Nitroaniline	TX	6460	10185203
2-Nitrophenol	TX	6490	10185203
2-Picoline (2-Methylpyridine)	TX	5050	10185203
3,3'-Dichlorobenzidine	TX	5945	10185203
3,3'-Dimethylbenzidine	TX	6120	10185203
3-Methylcholanthrene	TX	6355	10185203
3-Methylphenol (m-Cresol)	TX	6405	10185203
3-Nitroaniline	TX	6465	10185203
4-Aminobiphenyl	TX	5540	10185203
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10185203
4-Chloro-3-methylphenol	TX	5700	10185203
4-Chloroaniline	TX	5745	10185203
4-Chlorophenyl phenylether	TX	5825	10185203
4-Dimethyl aminoazobenzene	TX	6105	10185203
4-Methylphenol (p-Cresol)	TX	6410	10185203
4-Nitroaniline	TX	6470	10185203
4-Nitrobiphenyl	TX	6480	10185203
4-Nitrophenol	TX	6500	10185203
4-Nitroquinoline-1-oxide	TX	6510	10185203
5-Chloro-2-methylaniline	TX	5695	10185203
5-Nitro-o-toluidine	TX	6570	10185203
7,12-Dimethylbenz(a) anthracene	TX	6115	10185203
a-a-Dimethylphenethylamine	TX	6125	10185203

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Matrix: ***Non-Potable Water***

Acenaphthene	TX	5500	10185203
Acenaphthylene	TX	5505	10185203
Acetophenone	TX	5510	10185203
Aniline	TX	5545	10185203
Anthracene	TX	5555	10185203
Aramite	TX	5560	10185203
Atrazine	TX	7065	10185203
Azinphos-methyl (Guthion)	TX	7075	10185203
Azobenzene	TX	5562	10185203
Benzenethiol (Thiophenol)	TX	6750	10185203
Benzidine	TX	5595	10185203
Benzo(a)anthracene	TX	5575	10185203
Benzo(a)pyrene	TX	5580	10185203
Benzo(b)fluoranthene	TX	5585	10185203
Benzo(e)pyrene	TX	5605	10185203
Benzo(g,h,i)perylene	TX	5590	10185203
Benzo(k)fluoranthene	TX	5600	10185203
Benzoic acid	TX	5610	10185203
Benzyl alcohol	TX	5630	10185203
Biphenyl	TX	5640	10185203
bis(2-Chloroethoxy)methane	TX	5760	10185203
bis(2-Chloroethyl) ether	TX	5765	10185203
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10185203
Butyl benzyl phthalate	TX	5670	10185203
Caprolactam	TX	7180	10185203
Captan	TX	7190	10185203
Carbaryl (Sevin)	TX	7195	10185203
Carbazole	TX	5680	10185203
Carbophenothion	TX	7220	10185203
Chlorobenzilate	TX	7260	10185203

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Matrix: ***Non-Potable Water***

Chrysene	TX	5855	10185203
Coumaphos	TX	7315	10185203
Demeton	TX	7390	10185203
Demeton	TX	7390	10185203
Demeton-o	TX	7395	10185203
Demeton-s	TX	7385	10185203
Diallate	TX	7405	10185203
Dibenz(a,h) anthracene	TX	5895	10185203
Dibenz(a,j) acridine	TX	5900	10185203
Dibenzofuran	TX	5905	10185203
Dichlorovos (DDVP, Dichlorvos)	TX	8610	10185203
Diethyl phthalate	TX	6070	10185203
Dimethoate	TX	7475	10185203
Dimethoate	TX	7475	10185203
Dimethyl phthalate	TX	6135	10185203
Di-n-butyl phthalate	TX	5925	10185203
Di-n-octyl phthalate	TX	6200	10185203
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10185203
Dioxathion	TX	7495	10185203
Diphenylamine	TX	6205	10185203
Disulfoton	TX	8625	10185203
Ethion	TX	7565	10185203
Ethyl methanesulfonate	TX	6260	10185203
Famphur	TX	7580	10185203
Fluoranthene	TX	6265	10185203
Fluorene	TX	6270	10185203
Hexachlorobenzene	TX	6275	10185203
Hexachlorobutadiene	TX	4835	10185203
Hexachlorocyclopentadiene	TX	6285	10185203
Hexachloroethane	TX	4840	10185203

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Matrix: ***Non-Potable Water***

Hexachlorophene	TX	6290	10185203
Hexachloropropene	TX	6295	10185203
Indeno(1,2,3-cd) pyrene	TX	6315	10185203
Isodrin	TX	7725	10185203
Isophorone	TX	6320	10185203
Isosafrole	TX	6325	10185203
Kepone	TX	7740	10185203
Maleic anhydride	TX	6335	10185203
Methapyrilene	TX	6345	10185203
Methyl methanesulfonate	TX	6375	10185203
Methyl parathion (Parathion, methyl)	TX	7825	10185203
Mevinphos	TX	7850	10185203
Naled	TX	7905	10185203
Naphthalene	TX	5005	10185203
Nitrobenzene	TX	5015	10185203
n-Nitrosodiethylamine	TX	6525	10185203
n-Nitrosodimethylamine	TX	6530	10185203
n-Nitrosodi-n-butylamine	TX	5025	10185203
n-Nitrosodi-n-propylamine	TX	6545	10185203
n-Nitrosodiphenylamine	TX	6535	10185203
n-Nitrosomethylethylamine	TX	6550	10185203
n-Nitrosomorpholine	TX	6555	10185203
n-Nitrosopiperidine	TX	6560	10185203
n-Nitrosopyrrolidine	TX	6565	10185203
o,o,o-Triethyl phosphorothioate	TX	8290	10185203
o-Anisidine	TX	5550	10185203
Parathion, ethyl	TX	7955	10185203
p-Cresidine	TX	5860	10185203
Pentachlorobenzene	TX	6590	10185203
Pentachloronitrobenzene (PCNB)	TX	6600	10185203

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Matrix: ***Non-Potable Water***

Pentachlorophenol	TX	6605	10185203
Phenacetin	TX	6610	10185203
Phenanthrene	TX	6615	10185203
Phenol	TX	6625	10185203
Phorate	TX	7985	10185203
Phosmet (Imidan)	TX	8000	10185203
Phthalic anhydride	TX	6640	10185203
Pronamide (Kerb)	TX	6650	10185203
Pyrene	TX	6665	10185203
Pyridine	TX	5095	10185203
Quinoline	TX	6670	10185203
Resorcinol	TX	6680	10185203
Safrole	TX	6685	10185203
Sulfotepp	TX	8155	10185203
Terbufos	TX	8185	10185203
Tetrachlorvinphos (Stirophos, Gardona)	TX	8197	10185203
Thionazin (Zinophos)	TX	8235	10185203
Toluene diisocyanate	TX	6775	10185203
Trifluralin (Treflan)	TX	8295	10185203

Method EPA 8290

Analyte	AB	Analyte ID	Method ID
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10187209
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10187209
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10187209
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10187209
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10187209
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10187209
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10187209
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10187209
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10187209

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Matrix: ***Non-Potable Water***

1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10187209
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10187209
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10187209
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10187209
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10187209
2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10187209
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10187209
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10187209
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10187209
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10187209
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10187209
Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10187209
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10187209
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10187209
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10187209
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10187209

Method EPA 8316

Analyte	**AB**	**Analyte ID**	**Method ID**
Acrylamide	TX	4330	10188202

Method EPA 8330

Analyte	**AB**	**Analyte ID**	**Method ID**
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10189807
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10189807
2,4,6-Trinitrotoluene (2,4,6-TNT)	TX	9651	10189807
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10189807
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10189807
2-Amino-4,6-dinitrotoluene (2-am-dnt)	TX	9303	10189807
2-Nitrotoluene	TX	9507	10189807
3-Nitrotoluene	TX	9510	10189807
4-Amino-2,6-dinitrotoluene (4-am-dnt)	TX	9306	10189807
4-Nitrotoluene	TX	9513	10189807

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Issue Date: 5/1/2019

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Matrix: ***Non-Potable Water***

Methyl-2,4,6-trinitrophenylnitramine (tetryl)	TX	6415	10189807
Nitrobenzene	TX	5015	10189807
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	TX	9522	10189807
RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine)	TX	9432	10189807

Method EPA 9014

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	10193803
Total cyanide	TX	1645	10193803

Method EPA 9038

Analyte	**AB**	**Analyte ID**	**Method ID**
Sulfate	TX	2000	10196608

Method EPA 9040

Analyte	**AB**	**Analyte ID**	**Method ID**
pH	TX	1900	10196802

Method EPA 9050

Analyte	**AB**	**Analyte ID**	**Method ID**
Conductivity	TX	1610	10198604

Method EPA 9056

Analyte	**AB**	**Analyte ID**	**Method ID**
Bromide	TX	1540	10199209
Chloride	TX	1575	10199209
Fluoride	TX	1730	10199209
Nitrate as N	TX	1810	10199209
Nitrate-nitrite	TX	1820	10199209
Nitrite as N	TX	1840	10199209
Orthophosphate as P	TX	1870	10199209
Sulfate	TX	2000	10199209

Method EPA 9060

Analyte	**AB**	**Analyte ID**	**Method ID**
Total Organic Carbon (TOC)	TX	2040	10200201

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Matrix: ***Non-Potable Water***

Method EPA 9065

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200405

Method EPA 9066

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200609

Method EPA 9250

Analyte	AB	Analyte ID	Method ID
Chloride	TX	1575	10207202

Method EPA RSK 175

Analyte	AB	Analyte ID	Method ID
2-methylpropane (Isobutane)	TX	4942	10212905
Ethane	TX	4747	10212905
Ethene	TX	4752	10212905
Methane	TX	4926	10212905
n-Butane	TX	5007	10212905
n-Propane	TX	5029	10212905

Method HACH 8000

Analyte	AB	Analyte ID	Method ID
Chemical oxygen demand (COD)	TX	1565	60003001

Method SM 2120 B

Analyte	AB	Analyte ID	Method ID
Color	TX	1605	20223807

Method SM 2310 B (4a)

Analyte	AB	Analyte ID	Method ID
Acidity, as CaCO3	TX	1500	20002806

Method SM 2320 B

Analyte	AB	Analyte ID	Method ID
Alkalinity as CaCO3	TX	1505	20045005

Method SM 2340 B

Analyte	AB	Analyte ID	Method ID

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Matrix: ***Non-Potable Water***

Total hardness as CaCO3	TX	1755	20046008

Method SM 2510 B

Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	20048004

Method SM 2540 B

Analyte	AB	Analyte ID	Method ID
Residue-total (total solids)	TX	1950	20004608

Method SM 2540 C

Analyte	AB	Analyte ID	Method ID
Residue-filterable (TDS)	TX	1955	20049803

Method SM 2540 D

Analyte	AB	Analyte ID	Method ID
Residue-nonfilterable (TSS)	TX	1960	20004802

Method SM 3500-Cr B

Analyte	AB	Analyte ID	Method ID
Chromium (VI)	TX	1045	20065809

Method SM 4500-Cl F

Analyte	AB	Analyte ID	Method ID
Total residual chlorine	TX	1940	20080482

Method SM 4500-Cl^- E

Analyte	AB	Analyte ID	Method ID
Chloride	TX	1575	20019209

Method SM 4500-CN^- C

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	20020808

Method SM 4500-CN^- E

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	20021209

Method SM 4500-CN^- G

Analyte	AB	Analyte ID	Method ID
Amenable cyanide	TX	1510	20021607

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Matrix: ***Non-Potable Water***

Method SM 4500-H+ B

Analyte	AB	Analyte ID	Method ID
pH	TX	1900	20104603

Method SM 4500-NH3 D

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	20108809
Kjeldahl Nitrogen (Total Kjeldahl Nitrogen-TKN)	TX	1790	20108809

Method SM 4500-NH3 F

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	20023001

Method SM 4500-O G

Analyte	AB	Analyte ID	Method ID
Oxygen, dissolved	TX	1880	20025405

Method SM 4500-P E

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	20025803
Phosphorus	TX	1910	20025803

Method SM 4500-$S2^{-}$ F

Analyte	AB	Analyte ID	Method ID
Sulfide	TX	2005	20126209

Method SM 4500-SiO2 D

Analyte	AB	Analyte ID	Method ID
Silica as SiO2	TX	1990	20127202

Method SM 4500-$SO3^{-}$ B

Analyte	AB	Analyte ID	Method ID
Sulfite	TX	2015	20026806

Method SM 5210 B

Analyte	AB	Analyte ID	Method ID
Biochemical oxygen demand (BOD)	TX	1530	20027401
Carbonaceous BOD, CBOD	TX	1555	20027401

Method SM 5310 B

Analyte	AB	Analyte ID	Method ID

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Matrix: ***Non-Potable Water***

Total Organic Carbon (TOC)	TX	2040	20137206

Method SM 5310 C

Analyte	**AB**	**Analyte ID**	**Method ID**
Total Organic Carbon (TOC)	TX	2040	20138209

Method SM 5540 C

Analyte	**AB**	**Analyte ID**	**Method ID**
Surfactants - MBAS	TX	2025	20144405

Method TCEQ 1005

Analyte	**AB**	**Analyte ID**	**Method ID**
Total Petroleum Hydrocarbons (TPH)	TX	2050	90019208

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Matrix: ***Solid & Chemical Materials***

Method ASTM D2216

Analyte	AB	Analyte ID	Method ID
Moisture	TX	10337	ASTM D2216-05

Method EPA 1010

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10116606

Method EPA 1030

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10117201

Method EPA 1311

Analyte	AB	Analyte ID	Method ID
TCLP	TX	849	10118806

Method EPA 1312

Analyte	AB	Analyte ID	Method ID
SPLP	TX	850	10119003

Method EPA 1668

Analyte	AB	Analyte ID	Method ID
Decachlorobiphenyls	TX	10332	10262007
Dichlorobiphenyls	TX	464	10262007
Heptachlorobiphenyls	TX	486	10262007
Hexachlorobiphenyls	TX	487	10262007
Monochlorobiphenyls	TX	501	10262007
Nonachlorobiphenyls	TX	507	10262007
Octachlorobiphenyls	TX	508	10262007
Pentachlorobiphenyls	TX	515	10262007
Tetrachlorobiphenyls	TX	528	10262007
Trichlorobiphenyls	TX	541	10262007

Method EPA 200.8

Analyte	AB	Analyte ID	Method ID
Uranium	TX	3035	10014605

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Matrix: ***Solid & Chemical Materials***

Method EPA 300.0

Analyte	AB	Analyte ID	Method ID
Bromide	TX	1540	10053200
Chloride	TX	1575	10053200
Fluoride	TX	1730	10053200
Nitrate as N	TX	1810	10053200
Nitrate-nitrite	TX	1820	10053200
Nitrite as N	TX	1840	10053200
Orthophosphate as P	TX	1870	10053200
Sulfate	TX	2000	10053200

Method EPA 310.1

Analyte	AB	Analyte ID	Method ID
Alkalinity as CaCO3	TX	1505	10054805

Method EPA 350.3

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	10064401

Method EPA 365.3

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	10070801
Phosphorus	TX	1910	10070801

Method EPA 6020

Analyte	AB	Analyte ID	Method ID
Aluminum	TX	1000	10156204
Antimony	TX	1005	10156204
Arsenic	TX	1010	10156204
Barium	TX	1015	10156204
Beryllium	TX	1020	10156204
Boron	TX	1025	10156204
Cadmium	TX	1030	10156204
Calcium	TX	1035	10156204
Chromium	TX	1040	10156204

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Matrix: ***Solid & Chemical Materials***

Cobalt	TX	1050	10156204
Copper	TX	1055	10156204
Iron	TX	1070	10156204
Lead	TX	1075	10156204
Lithium	TX	1080	10156204
Magnesium	TX	1085	10156204
Manganese	TX	1090	10156204
Molybdenum	TX	1100	10156204
Nickel	TX	1105	10156204
Potassium	TX	1125	10156204
Selenium	TX	1140	10156204
Silver	TX	1150	10156204
Sodium	TX	1155	10156204
Strontium	TX	1160	10156204
Thallium	TX	1165	10156204
Tin	TX	1175	10156204
Titanium	TX	1180	10156204
Vanadium	TX	1185	10156204
Zinc	TX	1190	10156204

Method EPA 7196

Analyte	**AB**	**Analyte ID**	**Method ID**
Chromium (VI)	TX	1045	10162206

Method EPA 7470

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10165603

Method EPA 7471

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10166004

Method EPA 8015

Analyte	**AB**	**Analyte ID**	**Method ID**
Diesel range organics (DRO)	TX	9369	10173203

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Matrix: ***Solid & Chemical Materials***

Ethanol	TX	4750	10173203
Ethylene glycol	TX	4785	10173203
Gasoline range organics (GRO)	TX	9408	10173203
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10173203
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10173203
Methanol	TX	4930	10173203
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10173203
n-Propanol (1-Propanol)	TX	5055	10173203
Propylene Glycol	TX	6657	10173203
tert-Butyl alcohol	TX	4420	10173203

Method EPA 8021

Analyte	**AB**	**Analyte ID**	**Method ID**
Benzene	TX	4375	10174400
Ethylbenzene	TX	4765	10174400
m+p-xylene	TX	5240	10174400
Methyl tert-butyl ether (MTBE)	TX	5000	10174400
o-Xylene	TX	5250	10174400
Toluene	TX	5140	10174400
Xylene (total)	TX	5260	10174400

Method EPA 8081

Analyte	**AB**	**Analyte ID**	**Method ID**
4,4'-DDD	TX	7355	10178402
4,4'-DDE	TX	7360	10178402
4,4'-DDT	TX	7365	10178402
Aldrin	TX	7025	10178402
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10178402
alpha-Chlordane	TX	7240	10178402
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10178402
Chlordane (tech.)	TX	7250	10178402
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10178402
Dieldrin	TX	7470	10178402

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Matrix: ***Solid & Chemical Materials***

Endosulfan I	TX	7510	10178402
Endosulfan II	TX	7515	10178402
Endosulfan sulfate	TX	7520	10178402
Endrin	TX	7540	10178402
Endrin aldehyde	TX	7530	10178402
Endrin ketone	TX	7535	10178402
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10178402
gamma-Chlordane	TX	7245	10178402
Heptachlor	TX	7685	10178402
Heptachlor epoxide	TX	7690	10178402
Methoxychlor	TX	7810	10178402
Mirex	TX	7870	10178402
Toxaphene (Chlorinated camphene)	TX	8250	10178402

Method EPA 8082

Analyte	**AB**	**Analyte ID**	**Method ID**
Aroclor-1016 (PCB-1016)	TX	8880	10179201
Aroclor-1221 (PCB-1221)	TX	8885	10179201
Aroclor-1232 (PCB-1232)	TX	8890	10179201
Aroclor-1242 (PCB-1242)	TX	8895	10179201
Aroclor-1248 (PCB-1248)	TX	8900	10179201
Aroclor-1254 (PCB-1254)	TX	8905	10179201
Aroclor-1260 (PCB-1260)	TX	8910	10179201
PCBs (total)	TX	8870	10179201

Method EPA 8260

Analyte	**AB**	**Analyte ID**	**Method ID**
1,1,1,2-Tetrachloroethane	TX	5105	10184404
1,1,1-Trichloroethane	TX	5160	10184404
1,1,2,2-Tetrachloroethane	TX	5110	10184404
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	TX	5195	10184404
1,1,2-Trichloroethane	TX	5165	10184404
1,1-Dichloroethane	TX	4630	10184404

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Matrix: ***Solid & Chemical Materials***

1,1-Dichloroethylene	TX	4640	10184404
1,1-Dichloropropene	TX	4670	10184404
1,2,3-Trichlorobenzene	TX	5150	10184404
1,2,3-Trichloropropane	TX	5180	10184404
1,2,4-Trichlorobenzene	TX	5155	10184404
1,2,4-Trimethylbenzene	TX	5210	10184404
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10184404
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10184404
1,2-Dichlorobenzene	TX	4610	10184404
1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10184404
1,2-Dichloropropane	TX	4655	10184404
1,3,5-Trimethylbenzene	TX	5215	10184404
1,3-Dichlorobenzene	TX	4615	10184404
1,3-Dichloropropane	TX	4660	10184404
1,4-Dichlorobenzene	TX	4620	10184404
1,4-Dioxane (1,4-Diethyleneoxide)	TX	4735	10184404
1-Chlorohexane	TX	4510	10184404
1-Propanol	TX	5060	10184404
2,2-Dichloropropane	TX	4665	10184404
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10184404
2-Chloroethyl vinyl ether	TX	4500	10184404
2-Chlorotoluene	TX	4535	10184404
2-Hexanone (MBK)	TX	4860	10184404
4-Chlorotoluene	TX	4540	10184404
4-Isopropyltoluene (p-Cymene)	TX	4915	10184404
4-Methyl-2-pentanone (MIBK)	TX	4995	10184404
Acetone (2-Propanone)	TX	4315	10184404
Acetonitrile	TX	4320	10184404
Acrolein (Propenal)	TX	4325	10184404
Acrylonitrile	TX	4340	10184404

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Matrix: ***Solid & Chemical Materials***

Allyl chloride (3-Chloropropene)	TX	4355	10184404
Benzene	TX	4375	10184404
Benzyl chloride	TX	5635	10184404
Bromobenzene	TX	4385	10184404
Bromochloromethane	TX	4390	10184404
Bromodichloromethane	TX	4395	10184404
Bromoform	TX	4400	10184404
Carbon disulfide	TX	4450	10184404
Carbon tetrachloride	TX	4455	10184404
Chlorobenzene	TX	4475	10184404
Chlorodibromomethane	TX	4575	10184404
Chloroethane (Ethyl chloride)	TX	4485	10184404
Chloroform	TX	4505	10184404
Chloroprene (2-Chloro-1,3-butadiene)	TX	4525	10184404
cis-1,2-Dichloroethylene	TX	4645	10184404
cis-1,3-Dichloropropene	TX	4680	10184404
Dibromofluoromethane	TX	4590	10184404
Dibromomethane (Methylene bromide)	TX	4595	10184404
Dichlorodifluoromethane (Freon-12)	TX	4625	10184404
Diethyl ether	TX	4725	10184404
Epichlorohydrin (1-Chloro-2,3-epoxypropane)	TX	4745	10184404
Ethanol	TX	4750	10184404
Ethyl acetate	TX	4755	10184404
Ethyl methacrylate	TX	4810	10184404
Ethylbenzene	TX	4765	10184404
Ethylene oxide	TX	4795	10184404
Hexachlorobutadiene	TX	4835	10184404
Iodomethane (Methyl iodide)	TX	4870	10184404
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10184404
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10184404

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Matrix: ***Solid & Chemical Materials***

Isopropylbenzene (Cumene)	TX	4900	10184404
m+p-xylene	TX	5240	10184404
Methacrylonitrile	TX	4925	10184404
Methyl acetate	TX	4940	10184404
Methyl acrylate	TX	4945	10184404
Methyl bromide (Bromomethane)	TX	4950	10184404
Methyl chloride (Chloromethane)	TX	4960	10184404
Methyl methacrylate	TX	4990	10184404
Methyl tert-butyl ether (MTBE)	TX	5000	10184404
Methylcyclohexane	TX	4965	10184404
Methylene chloride (Dichloromethane)	TX	4975	10184404
Naphthalene	TX	5005	10184404
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10184404
n-Butylbenzene	TX	4435	10184404
n-Propylbenzene	TX	5090	10184404
o-Xylene	TX	5250	10184404
Pentachloroethane	TX	5035	10184404
Propionitrile (Ethyl cyanide)	TX	5080	10184404
Pyridine	TX	5095	10184404
sec-Butylbenzene	TX	4440	10184404
Styrene	TX	5100	10184404
tert-Butyl alcohol	TX	4420	10184404
tert-Butylbenzene	TX	4445	10184404
Tetrachloroethylene (Perchloroethylene)	TX	5115	10184404
Toluene	TX	5140	10184404
trans-1,2-Dichloroethylene	TX	4700	10184404
trans-1,3-Dichloropropylene	TX	4685	10184404
trans-1,4-Dichloro-2-butene	TX	4605	10184404
Trichloroethene (Trichloroethylene)	TX	5170	10184404
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10184404

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Matrix: ***Solid & Chemical Materials***

Vinyl acetate	TX	5225	10184404
Vinyl chloride	TX	5235	10184404
Xylene (total)	TX	5260	10184404

Method EPA 8270

Analyte	AB	Analyte ID	Method ID
1,2,4,5-Tetrachlorobenzene	TX	6715	10185203
1,2,4-Trichlorobenzene	TX	5155	10185203
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10185203
1,2-Dichlorobenzene	TX	4610	10185203
1,2-Dinitrobenzene	TX	6155	10185203
1,2-Diphenylhydrazine	TX	6220	10185203
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10185203
1,3-Dichlorobenzene	TX	4615	10185203
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10185203
1,4-Dichlorobenzene	TX	4620	10185203
1,4-Dinitrobenzene	TX	6165	10185203
1,4-Naphthoquinone	TX	6420	10185203
1,4-Phenylenediamine	TX	6630	10185203
1-Chloronaphthalene	TX	5790	10185203
1-Naphthylamine	TX	6425	10185203
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10185203
2,3,4,6-Tetrachlorophenol	TX	6735	10185203
2,4,5-Trichlorophenol	TX	6835	10185203
2,4,5-Trimethylaniline	TX	6880	10185203
2,4,6-Trichlorophenol	TX	6840	10185203
2,4-Diaminotoluene	TX	5880	10185203
2,4-Dichlorophenol	TX	6000	10185203
2,4-Dimethylphenol	TX	6130	10185203
2,4-Dinitrophenol	TX	6175	10185203
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10185203

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-19-23

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

Expiration Date: 4/30/2020

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2019

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Matrix: ***Solid & Chemical Materials***

2,6-Dichlorophenol	TX	6005	10185203
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10185203
2-Acetylaminofluorene	TX	5515	10185203
2-Chloronaphthalene	TX	5795	10185203
2-Chlorophenol	TX	5800	10185203
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10185203
2-Methylaniline (o-Toluidine)	TX	5145	10185203
2-Methylnaphthalene	TX	6385	10185203
2-Methylphenol (o-Cresol)	TX	6400	10185203
2-Naphthylamine	TX	6430	10185203
2-Nitroaniline	TX	6460	10185203
2-Nitrophenol	TX	6490	10185203
2-Picoline (2-Methylpyridine)	TX	5050	10185203
3,3'-Dichlorobenzidine	TX	5945	10185203
3,3'-Dimethylbenzidine	TX	6120	10185203
3-Methylcholanthrene	TX	6355	10185203
3-Methylphenol (m-Cresol)	TX	6405	10185203
3-Nitroaniline	TX	6465	10185203
4-Aminobiphenyl	TX	5540	10185203
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10185203
4-Chloro-3-methylphenol	TX	5700	10185203
4-Chloroaniline	TX	5745	10185203
4-Chlorophenyl phenylether	TX	5825	10185203
4-Methylphenol (p-Cresol)	TX	6410	10185203
4-Nitroaniline	TX	6470	10185203
4-Nitrophenol	TX	6500	10185203
4-Nitroquinoline-1-oxide	TX	6510	10185203
5-Nitro-o-toluidine	TX	6570	10185203
7,12-Dimethylbenz(a) anthracene	TX	6115	10185203
a-a-Dimethylphenethylamine	TX	6125	10185203

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Matrix: ***Solid & Chemical Materials***

Acenaphthene	TX	5500	10185203
Acenaphthylene	TX	5505	10185203
Acetophenone	TX	5510	10185203
Aniline	TX	5545	10185203
Anthracene	TX	5555	10185203
Aramite	TX	5560	10185203
Atrazine	TX	7065	10185203
Azinphos-methyl (Guthion)	TX	7075	10185203
Azobenzene	TX	5562	10185203
Benzenethiol (Thiophenol)	TX	6750	10185203
Benzidine	TX	5595	10185203
Benzo(a)anthracene	TX	5575	10185203
Benzo(a)pyrene	TX	5580	10185203
Benzo(b)fluoranthene	TX	5585	10185203
Benzo(e)pyrene	TX	5605	10185203
Benzo(g,h,i)perylene	TX	5590	10185203
Benzo(k)fluoranthene	TX	5600	10185203
Benzoic acid	TX	5610	10185203
Benzyl alcohol	TX	5630	10185203
Biphenyl	TX	5640	10185203
bis(2-Chloroethoxy)methane	TX	5760	10185203
bis(2-Chloroethyl) ether	TX	5765	10185203
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10185203
Butyl benzyl phthalate	TX	5670	10185203
Caprolactam	TX	7180	10185203
Carbaryl (Sevin)	TX	7195	10185203
Carbazole	TX	5680	10185203
Carbophenothion	TX	7220	10185203
Chlorobenzilate	TX	7260	10185203
Chrysene	TX	5855	10185203

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Matrix: ***Solid & Chemical Materials***

Demeton	TX	7390	10185203
Demeton-o	TX	7395	10185203
Demeton-s	TX	7385	10185203
Diallate	TX	7405	10185203
Dibenz(a,h) anthracene	TX	5895	10185203
Dibenz(a,j) acridine	TX	5900	10185203
Dibenzo(a,e) pyrene	TX	5890	10185203
Dibenzofuran	TX	5905	10185203
Dichlorovos (DDVP, Dichlorvos)	TX	8610	10185203
Diethyl phthalate	TX	6070	10185203
Dimethoate	TX	7475	10185203
Dimethyl phthalate	TX	6135	10185203
Di-n-butyl phthalate	TX	5925	10185203
Di-n-octyl phthalate	TX	6200	10185203
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10185203
Diphenylamine	TX	6205	10185203
Disulfoton	TX	8625	10185203
Ethyl methanesulfonate	TX	6260	10185203
Fluoranthene	TX	6265	10185203
Fluorene	TX	6270	10185203
Hexachlorobenzene	TX	6275	10185203
Hexachlorobutadiene	TX	4835	10185203
Hexachlorocyclopentadiene	TX	6285	10185203
Hexachloroethane	TX	4840	10185203
Hexachlorophene	TX	6290	10185203
Hexachloropropene	TX	6295	10185203
Indeno(1,2,3-cd) pyrene	TX	6315	10185203
Isodrin	TX	7725	10185203
Isophorone	TX	6320	10185203
Isosafrole	TX	6325	10185203

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Matrix: ***Solid & Chemical Materials***

Kepone	TX	7740	10185203
Malathion	TX	7770	10185203
Methapyrilene	TX	6345	10185203
Methyl methanesulfonate	TX	6375	10185203
Methyl parathion (Parathion, methyl)	TX	7825	10185203
Mevinphos	TX	7850	10185203
Naphthalene	TX	5005	10185203
Nitrobenzene	TX	5015	10185203
n-Nitrosodiethylamine	TX	6525	10185203
n-Nitrosodimethylamine	TX	6530	10185203
n-Nitrosodi-n-butylamine	TX	5025	10185203
n-Nitrosodi-n-propylamine	TX	6545	10185203
n-Nitrosodiphenylamine	TX	6535	10185203
n-Nitrosomethylethylamine	TX	6550	10185203
n-Nitrosomorpholine	TX	6555	10185203
n-Nitrosopiperidine	TX	6560	10185203
n-Nitrosopyrrolidine	TX	6565	10185203
o,o,o-Triethyl phosphorothioate	TX	8290	10185203
o-Anisidine	TX	5550	10185203
Parathion, ethyl	TX	7955	10185203
p-Cresidine	TX	5860	10185203
Pentachlorobenzene	TX	6590	10185203
Pentachloronitrobenzene (PCNB)	TX	6600	10185203
Pentachlorophenol	TX	6605	10185203
Phenacetin	TX	6610	10185203
Phenanthrene	TX	6615	10185203
Phenol	TX	6625	10185203
Phorate	TX	7985	10185203
Pronamide (Kerb)	TX	6650	10185203
Pyrene	TX	6665	10185203

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Matrix: ***Solid & Chemical Materials***

Pyridine	TX	5095	10185203
Quinoline	TX	6670	10185203
Safrole	TX	6685	10185203
Sulfotepp	TX	8155	10185203
Terbufos	TX	8185	10185203
Tetrachlorvinphos (Stirophos, Gardona)	TX	8197	10185203
Thionazin (Zinophos)	TX	8235	10185203
Toluene diisocyanate	TX	6775	10185203

Method EPA 8290

Analyte	**AB**	**Analyte ID**	**Method ID**
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10187209
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10187209
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10187209
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10187209
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10187209
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10187209
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10187209
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10187209
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10187209
1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10187209
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10187209
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10187209
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10187209
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10187209
2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10187209
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10187209
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10187209
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10187209
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10187209
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10187209

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Matrix: ***Solid & Chemical Materials***

Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10187209
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10187209
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10187209
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10187209
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10187209

Method EPA 8316

Analyte	**AB**	**Analyte ID**	**Method ID**
Acrylamide	TX	4330	10188202

Method EPA 8330

Analyte	**AB**	**Analyte ID**	**Method ID**
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10189807
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10189807
2,4,6-Trinitrotoluene (2,4,6-TNT)	TX	9651	10189807
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10189807
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10189807
2-Amino-4,6-dinitrotoluene (2-am-dnt)	TX	9303	10189807
2-Nitrotoluene	TX	9507	10189807
3-Nitrotoluene	TX	9510	10189807
4-Amino-2,6-dinitrotoluene (4-am-dnt)	TX	9306	10189807
4-Nitrotoluene	TX	9513	10189807
Methyl-2,4,6-trinitrophenylnitramine (tetryl)	TX	6415	10189807
Nitrobenzene	TX	5015	10189807
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	TX	9522	10189807
RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine)	TX	9432	10189807

Method EPA 9014

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	10193803
Total cyanide	TX	1645	10193803

Method EPA 9038

Analyte	**AB**	**Analyte ID**	**Method ID**
Sulfate	TX	2000	10196608

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Matrix: ***Solid & Chemical Materials***

Method EPA 9040

Analyte	AB	Analyte ID	Method ID
Corrosivity	TX	1615	10197203
pH	TX	1900	10196802

Method EPA 9045

Analyte	AB	Analyte ID	Method ID
Corrosivity	TX	1615	10197805
pH	TX	1900	10197805

Method EPA 9050

Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	10198604

Method EPA 9056

Analyte	AB	Analyte ID	Method ID
Bromide	TX	1540	10199209
Chloride	TX	1575	10199209
Fluoride	TX	1730	10199209
Nitrate as N	TX	1810	10199209
Nitrate-nitrite	TX	1820	10199209
Nitrite as N	TX	1840	10199209
Orthophosphate as P	TX	1870	10199209
Sulfate	TX	2000	10199209

Method EPA 9060

Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	10200201

Method EPA 9065

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200405

Method EPA 9071

Analyte	AB	Analyte ID	Method ID
n-Hexane Extractable Material (HEM) (O&G)	TX	1803	10201204

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Matrix: ***Solid & Chemical Materials***

Method	Analyte	AB	Analyte ID	Method ID
EPA 9095	Paint Filter Liquids Test	TX	10312	10204009
EPA 9250	Chloride	TX	1575	10207202
SM 2320 B	Alkalinity as CaCO3	TX	1505	20045005
SM 2510 B	Conductivity	TX	1610	20048004
SM 2540 G	Residue-total (total solids)	TX	1950	20005203
SSA/ASA Part 3:34	Carbon, organic (Walkley-Black)	TX	10340	SSA/ASA Pt 3:34
TCEQ 1005	Total Petroleum Hydrocarbons (TPH)	TX	2050	90019208

10450 Stancliff Rd. Suite 210
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T: +1 281 530 5656
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July 19, 2019

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS19070575**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 21 sample(s) on Jul 11, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS19070575**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS19070575**	

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data								
Laboratory Name: ALS Laboratory Group			LRC Date: 07/19/2019					
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS19070575					
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 143014,143067,143129,R342400,R342410,R342474					
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]	
R1	OI	**Chain-of-custody (C-O-C)**						
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X					
		Were all departures from standard conditions described in an exception report?	X					
R2	OI	**Sample and quality control (QC) identification**						
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X					
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X					
R3	OI	**Test reports**						
		Were all samples prepared and analyzed within holding times?	X					
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X					
		Were calculations checked by a peer or supervisor?	X					
		Were all analyte identifications checked by a peer or supervisor?	X					
		Were sample detection limits reported for all analytes not detected?	X					
		Were all results for soil and sediment samples reported on a dry weight basis?			X			
		Were % moisture (or solids) reported for all soil and sediment samples?			X			
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X			
		If required for the project, TICs reported?			X			
R4	O	**Surrogate recovery data**						
		Were surrogates added prior to extraction?	X					
		Were surrogate percent recoveries in all samples within the laboratory QC limits?		X			1	
R5	OI	**Test reports/summary forms for blank samples**						
		Were appropriate type(s) of blanks analyzed?	X					
		Were blanks analyzed at the appropriate frequency?	X					
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X					
		Were blank concentrations < MQL?	X					
R6	OI	**Laboratory control samples (LCS):**						
		Were all COCs included in the LCS?	X					
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X					
		Were LCSs analyzed at the required frequency?	X					
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X					
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X					
		Was the LCSD RPD within QC limits?	X					
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**						
		Were the project/method specified analytes included in the MS and MSD?	X					
		Were MS/MSD analyzed at the appropriate frequency?		X			2	
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X					
		Were MS/MSD RPDs within laboratory QC limits?	X					
R8	OI	**Analytical duplicate data**						
		Were appropriate analytical duplicates analyzed for each matrix?	X					
		Were analytical duplicates analyzed at the appropriate frequency?	X					
		Were RPDs or relative standard deviations within the laboratory QC limits?	X					
R9	OI	**Method quantitation limits (MQLs):**						
		Are the MQLs for each method analyte included in the laboratory data package?			X			
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			X			
		Are unadjusted MQLs and DCSs included in the laboratory data package?			X			
R10	OI	**Other problems/anomalies**						
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X					
		Were all necessary corrective actions performed for the reported data?	X					
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				3	
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X					

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 07/19/2019				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS19070575				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 143014,143067,143129,R342400,R342410,R342474				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?	X				
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports		
Laboratory Name: ALS Laboratory Group		LRC Date: 07/19/2019
Project Name: Houston TX-Wood Preserving Works		Laboratory Job Number: HS19070575
Reviewer Name: Dane Wacasey		Prep Batch Number(s): 143014,143067,143129,R342400,R342410,R342474
ER#[5]	**Description**	
1	Semivolatile Organics Method SW8270, samples WG-1620-MW18A-20190710, WG-1620-MW18C-20190710, WG-1620-MW58A-20190710, WG-1620-MW57A-20190710, WG-1620-MW57B-20190710, WG-1620-MW72B-20190710, WG-1620-MW17C-20190710, WG-1620-MW17-20190710, WG-1620-MW20A-20190710, WG-1620-MW15B-20190710, WG-1620-MW12A-20190711, the surrogate recoveries could not be determined due to dilution below the calibration range.	
2	Batch 143014, Semivolatile Organics Method SW8270, LCS/LCSD were analyzed and reported in lieu of an MS/MSD for this batch.	
3	Batch 143014, Semivolatile Organics Method SW8270, samples WG-1620-MW57B-20190710, WG-1620-MW72B-20190710, WG-1620-MW17-20190710, the GCMS semi-volatile extract of the samples were run at a dilution due to a high level of matrix interference.	

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS19070575

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19070575-01	WG-1620-MW18A-20190710	Water		10-Jul-2019 07:20	11-Jul-2019 16:45	☐
HS19070575-02	WG-1620-MW18C-20190710	Water		10-Jul-2019 08:05	11-Jul-2019 16:45	☐
HS19070575-03	WG-1620-MW58A-20190710	Water		10-Jul-2019 08:55	11-Jul-2019 16:45	☐
HS19070575-04	WG-1620-MW57A-20190710	Water		10-Jul-2019 09:55	11-Jul-2019 16:45	☐
HS19070575-05	WG-1620-MW57B-20190710	Water		10-Jul-2019 10:40	11-Jul-2019 16:45	☐
HS19070575-06	WG-1620-MW72B-20190710	Water		10-Jul-2019 11:35	11-Jul-2019 16:45	☐
HS19070575-07	WG-1620-MW19C-20190710	Water		10-Jul-2019 12:25	11-Jul-2019 16:45	☐
HS19070575-08	WG-1620-MW17C-20190710	Water		10-Jul-2019 13:25	11-Jul-2019 16:45	☐
HS19070575-09	WG-1620-MW17-20190710	Water		10-Jul-2019 14:15	11-Jul-2019 16:45	☐
HS19070575-10	WG-1620-MW20A-20190710	Water		10-Jul-2019 15:10	11-Jul-2019 16:45	☐
HS19070575-11	WG-1620-MW15A-20190710	Water		10-Jul-2019 16:10	11-Jul-2019 16:45	☐
HS19070575-12	WG-1620-MW15C-20190710	Water		10-Jul-2019 17:05	11-Jul-2019 16:45	☐
HS19070575-13	WG-1620-MW15B-20190710	Water		10-Jul-2019 18:00	11-Jul-2019 16:45	☐
HS19070575-14	WG-1620-FB01-20190710	Water		10-Jul-2019 18:15	11-Jul-2019 16:45	☐
HS19070575-15	WG-1620-MW14-20190711	Water		11-Jul-2019 07:20	11-Jul-2019 16:45	☐
HS19070575-16	WG-1620-MW13-20190711	Water		11-Jul-2019 08:15	11-Jul-2019 16:45	☐
HS19070575-17	WG-1620-MW39B-20190711	Water		11-Jul-2019 09:15	11-Jul-2019 16:45	☐
HS19070575-18	WG-1620-MW12C-20190711	Water		11-Jul-2019 10:00	11-Jul-2019 16:45	☐
HS19070575-19	WG-1620-MW12A-20190711	Water		11-Jul-2019 10:55	11-Jul-2019 16:45	☐
HS19070575-20	WQ-1620-TB01-20190710	Water	C&G-062119-76	10-Jul-2019 00:00	11-Jul-2019 16:45	☐
HS19070575-21	WQ-1620-TB02-20190710	Water	C&G-062119-84	10-Jul-2019 00:00	11-Jul-2019 16:45	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW18A-20190710
Collection Date: 10-Jul-2019 07:20

ANALYTICAL REPORT
WorkOrder:HS19070575
Lab ID:HS19070575-01
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	14-Jul-2019 04:56
Benzene	**0.16**		**0.00020**	**0.0010**	**mg/L**	1	14-Jul-2019 04:56
Chlorobenzene	**0.0017**		**0.00030**	**0.0010**	**mg/L**	1	14-Jul-2019 04:56
Ethylbenzene	**0.28**		**0.0015**	**0.0050**	**mg/L**	5	15-Jul-2019 19:23
Methylene chloride	U		0.0010	0.0020	mg/L	1	14-Jul-2019 04:56
Toluene	**0.057**		**0.00020**	**0.0010**	**mg/L**	1	14-Jul-2019 04:56
Vinyl chloride	**0.0013**		**0.00020**	**0.0010**	**mg/L**	1	14-Jul-2019 04:56
Xylenes, Total	**0.47**		**0.00030**	**0.0010**	**mg/L**	1	14-Jul-2019 04:56
Surr: 1,2-Dichloroethane-d4	*83.0*			*70-126*	*%REC*	*1*	*14-Jul-2019 04:56*
Surr: 1,2-Dichloroethane-d4	*87.9*			*70-126*	*%REC*	*5*	*15-Jul-2019 19:23*
Surr: 4-Bromofluorobenzene	*98.6*			*81-113*	*%REC*	*1*	*14-Jul-2019 04:56*
Surr: 4-Bromofluorobenzene	*94.8*			*81-113*	*%REC*	*5*	*15-Jul-2019 19:23*
Surr: Dibromofluoromethane	*98.1*			*77-123*	*%REC*	*1*	*14-Jul-2019 04:56*
Surr: Dibromofluoromethane	*97.2*			*77-123*	*%REC*	*5*	*15-Jul-2019 19:23*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*14-Jul-2019 04:56*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*5*	*15-Jul-2019 19:23*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW18A-20190710
Collection Date: 10-Jul-2019 07:20

ANALYTICAL REPORT
WorkOrder:HS19070575
Lab ID:HS19070575-01
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 15-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	15-Jul-2019 13:05
2,4-Dimethylphenol	**0.72**		**0.0040**	**0.020**	**mg/L**	100	15-Jul-2019 19:37
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	15-Jul-2019 13:05
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	15-Jul-2019 13:05
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	15-Jul-2019 13:05
2-Methylnaphthalene	**0.47**		**0.0019**	**0.010**	**mg/L**	100	15-Jul-2019 19:37
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	15-Jul-2019 13:05
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	15-Jul-2019 13:05
Acenaphthene	**0.30**		**0.0027**	**0.010**	**mg/L**	100	15-Jul-2019 19:37
Acenaphthylene	**0.0056**		**0.000015**	**0.00010**	**mg/L**	1	15-Jul-2019 13:05
Anthracene	**0.0063**		**0.000014**	**0.00010**	**mg/L**	1	15-Jul-2019 13:05
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	15-Jul-2019 13:05
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	15-Jul-2019 13:05
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	15-Jul-2019 13:05
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	15-Jul-2019 13:05
Chrysene	U		0.000021	0.00010	mg/L	1	15-Jul-2019 13:05
Dibenzofuran	**0.19**		**0.0020**	**0.010**	**mg/L**	100	15-Jul-2019 19:37
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	15-Jul-2019 13:05
Fluoranthene	**0.0022**		**0.000010**	**0.00010**	**mg/L**	1	15-Jul-2019 13:05
Fluorene	**0.091**		**0.00030**	**0.0010**	**mg/L**	10	15-Jul-2019 19:17
Naphthalene	**5.6**		**0.020**	**0.10**	**mg/L**	1000	15-Jul-2019 19:56
Nitrobenzene	U		0.000024	0.00020	mg/L	1	15-Jul-2019 13:05
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	15-Jul-2019 13:05
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	15-Jul-2019 13:05
Phenanthrene	**0.075**		**0.00021**	**0.0010**	**mg/L**	10	15-Jul-2019 19:17
Phenol	**0.00048**		**0.000035**	**0.00020**	**mg/L**	1	15-Jul-2019 13:05
Pyrene	**0.0011**		**0.000019**	**0.00010**	**mg/L**	1	15-Jul-2019 13:05
Surr: 2,4,6-Tribromophenol	*77.5*			*34-129*	*%REC*	*1*	*15-Jul-2019 13:05*
Surr: 2,4,6-Tribromophenol	*89.8*			*34-129*	*%REC*	*10*	*15-Jul-2019 19:17*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*15-Jul-2019 19:37*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*1000*	*15-Jul-2019 19:56*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*1000*	*15-Jul-2019 19:56*
Surr: 2-Fluorobiphenyl	*49.1*			*40-125*	*%REC*	*1*	*15-Jul-2019 13:05*
Surr: 2-Fluorobiphenyl	*62.1*			*40-125*	*%REC*	*10*	*15-Jul-2019 19:17*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*15-Jul-2019 19:37*
Surr: 2-Fluorophenol	*80.2*			*20-120*	*%REC*	*1*	*15-Jul-2019 13:05*
Surr: 2-Fluorophenol	*74.7*			*20-120*	*%REC*	*10*	*15-Jul-2019 19:17*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*15-Jul-2019 19:37*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*1000*	*15-Jul-2019 19:56*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW18A-20190710
Collection Date: 10-Jul-2019 07:20

ANALYTICAL REPORT
WorkOrder:HS19070575
Lab ID:HS19070575-01
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 15-Jul-2019		Analyst: GEY
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*1000*	*15-Jul-2019 19:56*
Surr: 4-Terphenyl-d14	*69.4*			*40-135*	*%REC*	*1*	*15-Jul-2019 13:05*
Surr: 4-Terphenyl-d14	*92.2*			*40-135*	*%REC*	*10*	*15-Jul-2019 19:17*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*100*	*15-Jul-2019 19:37*
Surr: Nitrobenzene-d5	*56.3*			*41-120*	*%REC*	*1*	*15-Jul-2019 13:05*
Surr: Nitrobenzene-d5	*71.1*			*41-120*	*%REC*	*10*	*15-Jul-2019 19:17*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*15-Jul-2019 19:37*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*1000*	*15-Jul-2019 19:56*
Surr: Phenol-d6	*71.2*			*20-120*	*%REC*	*1*	*15-Jul-2019 13:05*
Surr: Phenol-d6	*65.2*			*20-120*	*%REC*	*10*	*15-Jul-2019 19:17*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*15-Jul-2019 19:37*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*1000*	*15-Jul-2019 19:56*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 16-Jul-2019		Analyst: JHD
Arsenic	**0.0248**		**0.000400**	**0.00200**	**mg/L**	1	16-Jul-2019 22:38

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19070575
Sample ID: WG-1620-MW18C-20190710
Lab ID:HS19070575-02
Collection Date: 10-Jul-2019 08:05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	14-Jul-2019 06:09
Benzene	**1.2**		**0.0020**	**0.010**	**mg/L**	10	15-Jul-2019 19:50
Chlorobenzene	**0.00052**	J	**0.00030**	**0.0010**	**mg/L**	1	14-Jul-2019 06:09
Ethylbenzene	**0.32**		**0.0030**	**0.010**	**mg/L**	10	15-Jul-2019 19:50
Methylene chloride	U		0.0010	0.0020	mg/L	1	14-Jul-2019 06:09
Toluene	**1.0**		**0.0020**	**0.010**	**mg/L**	10	15-Jul-2019 19:50
Vinyl chloride	U		0.00020	0.0010	mg/L	1	14-Jul-2019 06:09
Xylenes, Total	**1.0**		**0.0030**	**0.010**	**mg/L**	10	15-Jul-2019 19:50
Surr: 1,2-Dichloroethane-d4	*81.7*			*70-126*	*%REC*	*1*	*14-Jul-2019 06:09*
Surr: 1,2-Dichloroethane-d4	*87.1*			*70-126*	*%REC*	*10*	*15-Jul-2019 19:50*
Surr: 4-Bromofluorobenzene	*99.2*			*81-113*	*%REC*	*1*	*14-Jul-2019 06:09*
Surr: 4-Bromofluorobenzene	*96.3*			*81-113*	*%REC*	*10*	*15-Jul-2019 19:50*
Surr: Dibromofluoromethane	*97.5*			*77-123*	*%REC*	*1*	*14-Jul-2019 06:09*
Surr: Dibromofluoromethane	*97.9*			*77-123*	*%REC*	*10*	*15-Jul-2019 19:50*
Surr: Toluene-d8	*100.0*			*82-127*	*%REC*	*1*	*14-Jul-2019 06:09*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*10*	*15-Jul-2019 19:50*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW18C-20190710
Collection Date: 10-Jul-2019 08:05

ANALYTICAL REPORT
WorkOrder:HS19070575
Lab ID:HS19070575-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 15-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	15-Jul-2019 13:25
2,4-Dimethylphenol	**0.0051**		**0.000040**	**0.00020**	**mg/L**	1	15-Jul-2019 13:25
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	15-Jul-2019 13:25
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	15-Jul-2019 13:25
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	15-Jul-2019 13:25
2-Methylnaphthalene	**0.28**		**0.0019**	**0.010**	**mg/L**	100	15-Jul-2019 20:36
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	15-Jul-2019 13:25
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	15-Jul-2019 13:25
Acenaphthene	**0.058**		**0.00027**	**0.0010**	**mg/L**	10	15-Jul-2019 20:16
Acenaphthylene	**0.0050**		**0.000015**	**0.00010**	**mg/L**	1	15-Jul-2019 13:25
Anthracene	**0.0056**		**0.000014**	**0.00010**	**mg/L**	1	15-Jul-2019 13:25
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	15-Jul-2019 13:25
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	15-Jul-2019 13:25
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	15-Jul-2019 13:25
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	15-Jul-2019 13:25
Chrysene	U		0.000021	0.00010	mg/L	1	15-Jul-2019 13:25
Dibenzofuran	**0.054**		**0.00020**	**0.0010**	**mg/L**	10	15-Jul-2019 20:16
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	15-Jul-2019 13:25
Fluoranthene	**0.0019**		**0.000010**	**0.00010**	**mg/L**	1	15-Jul-2019 13:25
Fluorene	**0.024**		**0.00030**	**0.0010**	**mg/L**	10	15-Jul-2019 20:16
Naphthalene	**9.9**		**0.10**	**0.50**	**mg/L**	5000	16-Jul-2019 13:47
Nitrobenzene	U		0.000024	0.00020	mg/L	1	15-Jul-2019 13:25
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	15-Jul-2019 13:25
Pentachlorophenol	**0.034**		**0.00079**	**0.0020**	**mg/L**	10	15-Jul-2019 20:16
Phenanthrene	**0.026**		**0.00021**	**0.0010**	**mg/L**	10	15-Jul-2019 20:16
Phenol	**0.0050**		**0.000035**	**0.00020**	**mg/L**	1	15-Jul-2019 13:25
Pyrene	**0.0014**		**0.000019**	**0.00010**	**mg/L**	1	15-Jul-2019 13:25
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*5000*	*16-Jul-2019 13:47*
Surr: 2,4,6-Tribromophenol	*38.0*			*34-129*	*%REC*	*1*	*15-Jul-2019 13:25*
Surr: 2,4,6-Tribromophenol	*91.7*			*34-129*	*%REC*	*10*	*15-Jul-2019 20:16*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*15-Jul-2019 20:36*
Surr: 2-Fluorobiphenyl	*68.1*			*40-125*	*%REC*	*10*	*15-Jul-2019 20:16*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*15-Jul-2019 20:36*
Surr: 2-Fluorobiphenyl	*42.6*			*40-125*	*%REC*	*1*	*15-Jul-2019 13:25*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*5000*	*16-Jul-2019 13:47*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*5000*	*16-Jul-2019 13:47*
Surr: 2-Fluorophenol	*43.8*			*20-120*	*%REC*	*1*	*15-Jul-2019 13:25*
Surr: 2-Fluorophenol	*114*			*20-120*	*%REC*	*10*	*15-Jul-2019 20:16*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*15-Jul-2019 20:36*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW18C-20190710
Collection Date: 10-Jul-2019 08:05

ANALYTICAL REPORT
WorkOrder:HS19070575
Lab ID:HS19070575-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 15-Jul-2019		Analyst: GEY
Surr: 4-Terphenyl-d14	*74.9*			*40-135*	*%REC*	*10*	*15-Jul-2019 20:16*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*100*	*15-Jul-2019 20:36*
Surr: 4-Terphenyl-d14	*68.0*			*40-135*	*%REC*	*1*	*15-Jul-2019 13:25*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*5000*	*16-Jul-2019 13:47*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*5000*	*16-Jul-2019 13:47*
Surr: Nitrobenzene-d5	*57.2*			*41-120*	*%REC*	*1*	*15-Jul-2019 13:25*
Surr: Nitrobenzene-d5	*44.0*			*41-120*	*%REC*	*10*	*15-Jul-2019 20:16*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*15-Jul-2019 20:36*
Surr: Phenol-d6	*45.4*			*20-120*	*%REC*	*1*	*15-Jul-2019 13:25*
Surr: Phenol-d6	*71.7*			*20-120*	*%REC*	*10*	*15-Jul-2019 20:16*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*15-Jul-2019 20:36*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*5000*	*16-Jul-2019 13:47*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 16-Jul-2019		Analyst: JHD
Arsenic	**0.00358**		**0.000400**	**0.00200**	**mg/L**	1	16-Jul-2019 22:40

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19070575
Sample ID: WG-1620-MW58A-20190710
Lab ID:HS19070575-03
Collection Date: 10-Jul-2019 08:55
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	14-Jul-2019 05:20
Benzene	**0.0049**		**0.00020**	**0.0010**	**mg/L**	1	14-Jul-2019 05:20
Chlorobenzene	**0.00080**	J	**0.00030**	**0.0010**	**mg/L**	1	14-Jul-2019 05:20
Ethylbenzene	**0.017**		**0.00030**	**0.0010**	**mg/L**	1	14-Jul-2019 05:20
Methylene chloride	U		0.0010	0.0020	mg/L	1	14-Jul-2019 05:20
Toluene	U		0.00020	0.0010	mg/L	1	14-Jul-2019 05:20
Vinyl chloride	U		0.00020	0.0010	mg/L	1	14-Jul-2019 05:20
Xylenes, Total	**0.028**		**0.00030**	**0.0010**	**mg/L**	1	14-Jul-2019 05:20
Surr: 1,2-Dichloroethane-d4	*86.6*			*70-126*	*%REC*	*1*	*14-Jul-2019 05:20*
Surr: 4-Bromofluorobenzene	*96.1*			*81-113*	*%REC*	*1*	*14-Jul-2019 05:20*
Surr: Dibromofluoromethane	*99.0*			*77-123*	*%REC*	*1*	*14-Jul-2019 05:20*
Surr: Toluene-d8	*99.4*			*82-127*	*%REC*	*1*	*14-Jul-2019 05:20*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19070575
Sample ID: WG-1620-MW58A-20190710
Lab ID:HS19070575-03
Collection Date: 10-Jul-2019 08:55
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 15-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	15-Jul-2019 13:45
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	15-Jul-2019 13:45
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	15-Jul-2019 13:45
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	15-Jul-2019 13:45
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	15-Jul-2019 13:45
2-Methylnaphthalene	**0.015**		**0.00019**	**0.0010**	**mg/L**	10	15-Jul-2019 21:15
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	15-Jul-2019 13:45
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	15-Jul-2019 13:45
Acenaphthene	**0.11**		**0.0027**	**0.010**	**mg/L**	100	15-Jul-2019 21:34
Acenaphthylene	**0.00087**		**0.000015**	**0.00010**	**mg/L**	1	15-Jul-2019 13:45
Anthracene	**0.062**		**0.00014**	**0.0010**	**mg/L**	10	15-Jul-2019 21:15
Benz(a)anthracene	**0.00082**		**0.000050**	**0.00010**	**mg/L**	1	15-Jul-2019 13:45
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	15-Jul-2019 13:45
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	15-Jul-2019 13:45
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	15-Jul-2019 13:45
Chrysene	**0.00084**		**0.000021**	**0.00010**	**mg/L**	1	15-Jul-2019 13:45
Dibenzofuran	**0.059**		**0.00020**	**0.0010**	**mg/L**	10	15-Jul-2019 21:15
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	15-Jul-2019 13:45
Fluoranthene	**0.020**		**0.00010**	**0.0010**	**mg/L**	10	15-Jul-2019 21:15
Fluorene	**0.15**		**0.0030**	**0.010**	**mg/L**	100	15-Jul-2019 21:34
Naphthalene	**0.46**		**0.0020**	**0.010**	**mg/L**	100	15-Jul-2019 21:34
Nitrobenzene	U		0.000024	0.00020	mg/L	1	15-Jul-2019 13:45
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	15-Jul-2019 13:45
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	15-Jul-2019 13:45
Phenanthrene	**0.036**		**0.00021**	**0.0010**	**mg/L**	10	15-Jul-2019 21:15
Phenol	U		0.000035	0.00020	mg/L	1	15-Jul-2019 13:45
Pyrene	**0.0099**		**0.000019**	**0.00010**	**mg/L**	1	15-Jul-2019 13:45
Surr: 2,4,6-Tribromophenol	*93.8*			*34-129*	*%REC*	*10*	*15-Jul-2019 21:15*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*15-Jul-2019 21:34*
Surr: 2,4,6-Tribromophenol	*74.0*			*34-129*	*%REC*	*1*	*15-Jul-2019 13:45*
Surr: 2-Fluorobiphenyl	*47.7*			*40-125*	*%REC*	*1*	*15-Jul-2019 13:45*
Surr: 2-Fluorobiphenyl	*68.2*			*40-125*	*%REC*	*10*	*15-Jul-2019 21:15*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*15-Jul-2019 21:34*
Surr: 2-Fluorophenol	*76.7*			*20-120*	*%REC*	*10*	*15-Jul-2019 21:15*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*15-Jul-2019 21:34*
Surr: 2-Fluorophenol	*59.4*			*20-120*	*%REC*	*1*	*15-Jul-2019 13:45*
Surr: 4-Terphenyl-d14	*67.0*			*40-135*	*%REC*	*1*	*15-Jul-2019 13:45*
Surr: 4-Terphenyl-d14	*86.4*			*40-135*	*%REC*	*10*	*15-Jul-2019 21:15*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*100*	*15-Jul-2019 21:34*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19070575
Sample ID: WG-1620-MW58A-20190710
Lab ID:HS19070575-03
Collection Date: 10-Jul-2019 08:55
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 15-Jul-2019		Analyst: GEY
Surr: Nitrobenzene-d5	*57.0*			*41-120*	*%REC*	*1*	*15-Jul-2019 13:45*
Surr: Nitrobenzene-d5	*78.8*			*41-120*	*%REC*	*10*	*15-Jul-2019 21:15*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*15-Jul-2019 21:34*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*15-Jul-2019 21:34*
Surr: Phenol-d6	*62.6*			*20-120*	*%REC*	*1*	*15-Jul-2019 13:45*
Surr: Phenol-d6	*69.9*			*20-120*	*%REC*	*10*	*15-Jul-2019 21:15*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 16-Jul-2019		Analyst: JHD
Arsenic	**0.00748**		**0.000400**	**0.00200**	**mg/L**	1	16-Jul-2019 22:43

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW57A-20190710
Collection Date: 10-Jul-2019 09:55

ANALYTICAL REPORT
WorkOrder:HS19070575
Lab ID:HS19070575-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	14-Jul-2019 05:45
Benzene	**0.00057**	J	**0.00020**	**0.0010**	**mg/L**	1	14-Jul-2019 05:45
Chlorobenzene	U		0.00030	0.0010	mg/L	1	14-Jul-2019 05:45
Ethylbenzene	**0.00085**	J	**0.00030**	**0.0010**	**mg/L**	1	14-Jul-2019 05:45
Methylene chloride	U		0.0010	0.0020	mg/L	1	14-Jul-2019 05:45
Toluene	U		0.00020	0.0010	mg/L	1	14-Jul-2019 05:45
Vinyl chloride	U		0.00020	0.0010	mg/L	1	14-Jul-2019 05:45
Xylenes, Total	U		0.00030	0.0010	mg/L	1	14-Jul-2019 05:45
Surr: 1,2-Dichloroethane-d4	*87.8*			*70-126*	*%REC*	*1*	*14-Jul-2019 05:45*
Surr: 4-Bromofluorobenzene	*96.0*			*81-113*	*%REC*	*1*	*14-Jul-2019 05:45*
Surr: Dibromofluoromethane	*97.9*			*77-123*	*%REC*	*1*	*14-Jul-2019 05:45*
Surr: Toluene-d8	*99.9*			*82-127*	*%REC*	*1*	*14-Jul-2019 05:45*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19070575
Sample ID: WG-1620-MW57A-20190710
Lab ID:HS19070575-04
Collection Date: 10-Jul-2019 09:55
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 15-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	15-Jul-2019 14:04
2,4-Dimethylphenol	**0.00059**		**0.000040**	**0.00020**	**mg/L**	1	15-Jul-2019 14:04
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	15-Jul-2019 14:04
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	15-Jul-2019 14:04
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	15-Jul-2019 14:04
2-Methylnaphthalene	**0.19**		**0.0019**	**0.010**	**mg/L**	100	15-Jul-2019 22:13
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	15-Jul-2019 14:04
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	15-Jul-2019 14:04
Acenaphthene	**0.099**		**0.00027**	**0.0010**	**mg/L**	10	15-Jul-2019 21:54
Acenaphthylene	**0.0019**		**0.000015**	**0.00010**	**mg/L**	1	15-Jul-2019 14:04
Anthracene	**0.0084**		**0.000014**	**0.00010**	**mg/L**	1	15-Jul-2019 14:04
Benz(a)anthracene	**0.00100**		**0.000050**	**0.00010**	**mg/L**	1	15-Jul-2019 14:04
Benzo(a)pyrene	**0.00054**		**0.000020**	**0.00010**	**mg/L**	1	15-Jul-2019 14:04
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	15-Jul-2019 14:04
Bis(2-ethylhexyl)phthalate	**0.00021**		**0.000037**	**0.00020**	**mg/L**	1	15-Jul-2019 14:04
Chrysene	**0.00100**		**0.000021**	**0.00010**	**mg/L**	1	15-Jul-2019 14:04
Dibenzofuran	**0.076**		**0.00020**	**0.0010**	**mg/L**	10	15-Jul-2019 21:54
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	15-Jul-2019 14:04
Fluoranthene	**0.0091**		**0.000010**	**0.00010**	**mg/L**	1	15-Jul-2019 14:04
Fluorene	**0.059**		**0.00030**	**0.0010**	**mg/L**	10	15-Jul-2019 21:54
Naphthalene	**0.61**		**0.0020**	**0.010**	**mg/L**	100	15-Jul-2019 22:13
Nitrobenzene	U		0.000024	0.00020	mg/L	1	15-Jul-2019 14:04
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	15-Jul-2019 14:04
Pentachlorophenol	**0.00059**		**0.000079**	**0.00020**	**mg/L**	1	15-Jul-2019 14:04
Phenanthrene	**0.059**		**0.00021**	**0.0010**	**mg/L**	10	15-Jul-2019 21:54
Phenol	**0.00016**	J	**0.000035**	**0.00020**	**mg/L**	1	15-Jul-2019 14:04
Pyrene	**0.0055**		**0.000019**	**0.00010**	**mg/L**	1	15-Jul-2019 14:04
Surr: 2,4,6-Tribromophenol	*117*			*34-129*	*%REC*	*10*	*15-Jul-2019 21:54*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*15-Jul-2019 22:13*
Surr: 2,4,6-Tribromophenol	*74.0*			*34-129*	*%REC*	*1*	*15-Jul-2019 14:04*
Surr: 2-Fluorobiphenyl	*54.5*			*40-125*	*%REC*	*1*	*15-Jul-2019 14:04*
Surr: 2-Fluorobiphenyl	*80.3*			*40-125*	*%REC*	*10*	*15-Jul-2019 21:54*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*15-Jul-2019 22:13*
Surr: 2-Fluorophenol	*61.2*			*20-120*	*%REC*	*1*	*15-Jul-2019 14:04*
Surr: 2-Fluorophenol	*80.0*			*20-120*	*%REC*	*10*	*15-Jul-2019 21:54*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*15-Jul-2019 22:13*
Surr: 4-Terphenyl-d14	*65.2*			*40-135*	*%REC*	*1*	*15-Jul-2019 14:04*
Surr: 4-Terphenyl-d14	*97.9*			*40-135*	*%REC*	*10*	*15-Jul-2019 21:54*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*100*	*15-Jul-2019 22:13*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19070575
Sample ID: WG-1620-MW57A-20190710
Lab ID:HS19070575-04
Collection Date: 10-Jul-2019 09:55
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 15-Jul-2019		Analyst: GEY
Surr: Nitrobenzene-d5	*58.0*			*41-120*	*%REC*	*1*	*15-Jul-2019 14:04*
Surr: Nitrobenzene-d5	*89.3*			*41-120*	*%REC*	*10*	*15-Jul-2019 21:54*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*15-Jul-2019 22:13*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*15-Jul-2019 22:13*
Surr: Phenol-d6	*70.1*			*20-120*	*%REC*	*1*	*15-Jul-2019 14:04*
Surr: Phenol-d6	*87.2*			*20-120*	*%REC*	*10*	*15-Jul-2019 21:54*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 16-Jul-2019		Analyst: JHD
Arsenic	**0.00447**		**0.000400**	**0.00200**	**mg/L**	1	16-Jul-2019 22:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW57B-20190710
Collection Date: 10-Jul-2019 10:40

ANALYTICAL REPORT
WorkOrder:HS19070575
Lab ID:HS19070575-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	14-Jul-2019 06:19
Benzene	**0.84**		**0.0020**	**0.010**	**mg/L**	10	14-Jul-2019 06:47
Chlorobenzene	U		0.00030	0.0010	mg/L	1	14-Jul-2019 06:19
Ethylbenzene	**0.39**		**0.0030**	**0.010**	**mg/L**	10	14-Jul-2019 06:47
Methylene chloride	U		0.0010	0.0020	mg/L	1	14-Jul-2019 06:19
Toluene	**0.93**		**0.0020**	**0.010**	**mg/L**	10	14-Jul-2019 06:47
Vinyl chloride	**0.00048**	J	**0.00020**	**0.0010**	**mg/L**	1	14-Jul-2019 06:19
Xylenes, Total	**1.2**		**0.0030**	**0.010**	**mg/L**	10	14-Jul-2019 06:47
Surr: 1,2-Dichloroethane-d4	*97.4*			*70-126*	*%REC*	*10*	*14-Jul-2019 06:47*
Surr: 1,2-Dichloroethane-d4	*96.3*			*70-126*	*%REC*	*1*	*14-Jul-2019 06:19*
Surr: 4-Bromofluorobenzene	*102*			*81-113*	*%REC*	*1*	*14-Jul-2019 06:19*
Surr: 4-Bromofluorobenzene	*103*			*81-113*	*%REC*	*10*	*14-Jul-2019 06:47*
Surr: Dibromofluoromethane	*97.4*			*77-123*	*%REC*	*1*	*14-Jul-2019 06:19*
Surr: Dibromofluoromethane	*98.2*			*77-123*	*%REC*	*10*	*14-Jul-2019 06:47*
Surr: Toluene-d8	*99.8*			*82-127*	*%REC*	*1*	*14-Jul-2019 06:19*
Surr: Toluene-d8	*99.1*			*82-127*	*%REC*	*10*	*14-Jul-2019 06:47*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc. **ANALYTICAL REPORT**
Project: Houston TX-Wood Preserving Works WorkOrder:HS19070575
Sample ID: WG-1620-MW57B-20190710 Lab ID:HS19070575-05
Collection Date: 10-Jul-2019 10:40 Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 15-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.00021	0.0020	mg/L	10	15-Jul-2019 14:24
2,4-Dimethylphenol	**6.5**		**0.040**	**0.20**	**mg/L**	1000	16-Jul-2019 14:06
2,4-Dinitrotoluene	U		0.00058	0.0020	mg/L	10	15-Jul-2019 14:24
2,6-Dinitrotoluene	U		0.00042	0.0020	mg/L	10	15-Jul-2019 14:24
2-Chloronaphthalene	U		0.00021	0.0020	mg/L	10	15-Jul-2019 14:24
2-Methylnaphthalene	**0.93**		**0.0019**	**0.010**	**mg/L**	100	15-Jul-2019 22:33
4,6-Dinitro-2-methylphenol	U		0.00020	0.0020	mg/L	10	15-Jul-2019 14:24
4-Nitrophenol	U		0.00047	0.010	mg/L	10	15-Jul-2019 14:24
Acenaphthene	**0.38**		**0.0027**	**0.010**	**mg/L**	100	15-Jul-2019 22:33
Acenaphthylene	**0.0051**		**0.00015**	**0.0010**	**mg/L**	10	15-Jul-2019 14:24
Anthracene	**0.039**		**0.00014**	**0.0010**	**mg/L**	10	15-Jul-2019 14:24
Benz(a)anthracene	**0.0071**		**0.00050**	**0.0010**	**mg/L**	10	15-Jul-2019 14:24
Benzo(a)pyrene	**0.0021**		**0.00020**	**0.0010**	**mg/L**	10	15-Jul-2019 14:24
Bis(2-chloroethoxy)methane	U		0.00030	0.0020	mg/L	10	15-Jul-2019 14:24
Bis(2-ethylhexyl)phthalate	U		0.00037	0.0020	mg/L	10	15-Jul-2019 14:24
Chrysene	**0.0065**		**0.00021**	**0.0010**	**mg/L**	10	15-Jul-2019 14:24
Dibenzofuran	**0.32**		**0.0020**	**0.010**	**mg/L**	100	15-Jul-2019 22:33
Di-n-butyl phthalate	U		0.00020	0.0020	mg/L	10	15-Jul-2019 14:24
Fluoranthene	**0.047**		**0.00010**	**0.0010**	**mg/L**	10	15-Jul-2019 14:24
Fluorene	**0.21**		**0.0030**	**0.010**	**mg/L**	100	15-Jul-2019 22:33
Naphthalene	**17**		**0.10**	**0.50**	**mg/L**	5000	16-Jul-2019 14:26
Nitrobenzene	U		0.00024	0.0020	mg/L	10	15-Jul-2019 14:24
N-Nitrosodiphenylamine	U		0.00025	0.0020	mg/L	10	15-Jul-2019 14:24
Pentachlorophenol	U		0.00079	0.0020	mg/L	10	15-Jul-2019 14:24
Phenanthrene	**0.29**		**0.0021**	**0.010**	**mg/L**	100	15-Jul-2019 22:33
Phenol	**1.0**		**0.035**	**0.20**	**mg/L**	1000	16-Jul-2019 14:06
Pyrene	**0.030**		**0.00019**	**0.0010**	**mg/L**	10	15-Jul-2019 14:24
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*1000*	*16-Jul-2019 14:06*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*5000*	*16-Jul-2019 14:26*
Surr: 2,4,6-Tribromophenol	*72.0*			*34-129*	*%REC*	*10*	*15-Jul-2019 14:24*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*15-Jul-2019 22:33*
Surr: 2-Fluorobiphenyl	*63.8*			*40-125*	*%REC*	*10*	*15-Jul-2019 14:24*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*15-Jul-2019 22:33*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*1000*	*16-Jul-2019 14:06*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*5000*	*16-Jul-2019 14:26*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*1000*	*16-Jul-2019 14:06*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*5000*	*16-Jul-2019 14:26*
Surr: 2-Fluorophenol	*70.5*			*20-120*	*%REC*	*10*	*15-Jul-2019 14:24*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*15-Jul-2019 22:33*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW57B-20190710
Collection Date: 10-Jul-2019 10:40

ANALYTICAL REPORT
WorkOrder:HS19070575
Lab ID:HS19070575-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 15-Jul-2019		Analyst: GEY
Surr: 4-Terphenyl-d14	*77.3*			*40-135*	*%REC*	*10*	*15-Jul-2019 14:24*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*100*	*15-Jul-2019 22:33*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*1000*	*16-Jul-2019 14:06*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*5000*	*16-Jul-2019 14:26*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*1000*	*16-Jul-2019 14:06*
Surr: Nitrobenzene-d5	*78.7*			*41-120*	*%REC*	*10*	*15-Jul-2019 14:24*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*15-Jul-2019 22:33*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*5000*	*16-Jul-2019 14:26*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*1000*	*16-Jul-2019 14:06*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*5000*	*16-Jul-2019 14:26*
Surr: Phenol-d6	*75.3*			*20-120*	*%REC*	*10*	*15-Jul-2019 14:24*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*15-Jul-2019 22:33*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 16-Jul-2019		Analyst: JHD
Arsenic	**0.00404**		**0.000400**	**0.00200**	**mg/L**	1	16-Jul-2019 22:47

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW72B-20190710
Collection Date: 10-Jul-2019 11:35

ANALYTICAL REPORT
WorkOrder:HS19070575
Lab ID:HS19070575-06
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	14-Jul-2019 07:11
Benzene	**1.1**		**0.0020**	**0.010**	**mg/L**	10	14-Jul-2019 07:38
Chlorobenzene	U		0.00030	0.0010	mg/L	1	14-Jul-2019 07:11
Ethylbenzene	**0.30**		**0.0030**	**0.010**	**mg/L**	10	14-Jul-2019 07:38
Methylene chloride	U		0.0010	0.0020	mg/L	1	14-Jul-2019 07:11
Toluene	**0.96**		**0.0020**	**0.010**	**mg/L**	10	14-Jul-2019 07:38
Xylenes, Total	**0.97**		**0.0030**	**0.010**	**mg/L**	10	14-Jul-2019 07:38
Surr: 1,2-Dichloroethane-d4	*95.3*			*70-126*	*%REC*	*1*	*14-Jul-2019 07:11*
Surr: 1,2-Dichloroethane-d4	*96.8*			*70-126*	*%REC*	*10*	*14-Jul-2019 07:38*
Surr: 4-Bromofluorobenzene	*103*			*81-113*	*%REC*	*1*	*14-Jul-2019 07:11*
Surr: 4-Bromofluorobenzene	*101*			*81-113*	*%REC*	*10*	*14-Jul-2019 07:38*
Surr: Dibromofluoromethane	*97.2*			*77-123*	*%REC*	*1*	*14-Jul-2019 07:11*
Surr: Dibromofluoromethane	*98.2*			*77-123*	*%REC*	*10*	*14-Jul-2019 07:38*
Surr: Toluene-d8	*99.5*			*82-127*	*%REC*	*1*	*14-Jul-2019 07:11*
Surr: Toluene-d8	*98.4*			*82-127*	*%REC*	*10*	*14-Jul-2019 07:38*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW72B-20190710
Collection Date: 10-Jul-2019 11:35

ANALYTICAL REPORT
WorkOrder:HS19070575
Lab ID:HS19070575-06
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 15-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.00021	0.0020	mg/L	10	15-Jul-2019 14:43
2,4-Dimethylphenol	**19**		**0.20**	**1.0**	**mg/L**	5000	17-Jul-2019 14:18
2,4-Dinitrotoluene	U		0.00058	0.0020	mg/L	10	15-Jul-2019 14:43
2,6-Dinitrotoluene	U		0.00042	0.0020	mg/L	10	15-Jul-2019 14:43
2-Chloronaphthalene	U		0.00021	0.0020	mg/L	10	15-Jul-2019 14:43
2-Methylnaphthalene	**0.57**		**0.0019**	**0.010**	**mg/L**	100	16-Jul-2019 19:00
4,6-Dinitro-2-methylphenol	U		0.00020	0.0020	mg/L	10	15-Jul-2019 14:43
4-Nitrophenol	U		0.00047	0.010	mg/L	10	15-Jul-2019 14:43
Acenaphthene	**0.20**		**0.0027**	**0.010**	**mg/L**	100	16-Jul-2019 19:00
Acenaphthylene	**0.0044**		**0.00015**	**0.0010**	**mg/L**	10	15-Jul-2019 14:43
Anthracene	**0.034**		**0.00014**	**0.0010**	**mg/L**	10	15-Jul-2019 14:43
Benz(a)anthracene	**0.0069**		**0.00050**	**0.0010**	**mg/L**	10	15-Jul-2019 14:43
Benzo(a)pyrene	**0.0019**		**0.00020**	**0.0010**	**mg/L**	10	15-Jul-2019 14:43
Bis(2-chloroethoxy)methane	U		0.00030	0.0020	mg/L	10	15-Jul-2019 14:43
Bis(2-ethylhexyl)phthalate	U		0.00037	0.0020	mg/L	10	15-Jul-2019 14:43
Chrysene	**0.0069**		**0.00021**	**0.0010**	**mg/L**	10	15-Jul-2019 14:43
Dibenzofuran	**0.16**		**0.0020**	**0.010**	**mg/L**	100	16-Jul-2019 19:00
Di-n-butyl phthalate	U		0.00020	0.0020	mg/L	10	15-Jul-2019 14:43
Fluoranthene	**0.046**		**0.00010**	**0.0010**	**mg/L**	10	15-Jul-2019 14:43
Fluorene	**0.12**		**0.0030**	**0.010**	**mg/L**	100	16-Jul-2019 19:00
Naphthalene	**12**		**0.10**	**0.50**	**mg/L**	5000	17-Jul-2019 14:18
Nitrobenzene	U		0.00024	0.0020	mg/L	10	15-Jul-2019 14:43
N-Nitrosodiphenylamine	U		0.00025	0.0020	mg/L	10	15-Jul-2019 14:43
Pentachlorophenol	U		0.00079	0.0020	mg/L	10	15-Jul-2019 14:43
Phenanthrene	**0.16**		**0.0021**	**0.010**	**mg/L**	100	16-Jul-2019 19:00
Phenol	**9.3**		**0.035**	**0.20**	**mg/L**	1000	16-Jul-2019 19:19
Pyrene	**0.029**		**0.00019**	**0.0010**	**mg/L**	10	15-Jul-2019 14:43
Surr: 2,4,6-Tribromophenol	*72.3*			*34-129*	*%REC*	*10*	*15-Jul-2019 14:43*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*5000*	*17-Jul-2019 14:18*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*16-Jul-2019 19:00*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*1000*	*16-Jul-2019 19:19*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*16-Jul-2019 19:00*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*5000*	*17-Jul-2019 14:18*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*1000*	*16-Jul-2019 19:19*
Surr: 2-Fluorobiphenyl	*83.3*			*40-125*	*%REC*	*10*	*15-Jul-2019 14:43*
Surr: 2-Fluorophenol	*118*			*20-120*	*%REC*	*10*	*15-Jul-2019 14:43*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*1000*	*16-Jul-2019 19:19*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*5000*	*17-Jul-2019 14:18*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*16-Jul-2019 19:00*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW72B-20190710
Collection Date: 10-Jul-2019 11:35

ANALYTICAL REPORT
WorkOrder:HS19070575
Lab ID:HS19070575-06
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 15-Jul-2019		Analyst: GEY
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*100*	*16-Jul-2019 19:00*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*1000*	*16-Jul-2019 19:19*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*5000*	*17-Jul-2019 14:18*
Surr: 4-Terphenyl-d14	*86.9*			*40-135*	*%REC*	*10*	*15-Jul-2019 14:43*
Surr: Nitrobenzene-d5	*42.9*			*41-120*	*%REC*	*10*	*15-Jul-2019 14:43*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*5000*	*17-Jul-2019 14:18*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*16-Jul-2019 19:00*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*1000*	*16-Jul-2019 19:19*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*16-Jul-2019 19:00*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*1000*	*16-Jul-2019 19:19*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*5000*	*17-Jul-2019 14:18*
Surr: Phenol-d6	*52.2*			*20-120*	*%REC*	*10*	*15-Jul-2019 14:43*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 16-Jul-2019		Analyst: JHD
Arsenic	**0.000861**	J	**0.000400**	**0.00200**	**mg/L**	1	17-Jul-2019 12:21

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19070575
Sample ID: WG-1620-MW19C-20190710
Lab ID:HS19070575-07
Collection Date: 10-Jul-2019 12:25
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	14-Jul-2019 00:59
Benzene	**0.00040**	J	**0.00020**	**0.0010**	**mg/L**	1	14-Jul-2019 00:59
Chlorobenzene	U		0.00030	0.0010	mg/L	1	14-Jul-2019 00:59
Ethylbenzene	**0.00096**	J	**0.00030**	**0.0010**	**mg/L**	1	14-Jul-2019 00:59
Methylene chloride	U		0.0010	0.0020	mg/L	1	14-Jul-2019 00:59
Toluene	**0.00086**	J	**0.00020**	**0.0010**	**mg/L**	1	14-Jul-2019 00:59
Vinyl chloride	U		0.00020	0.0010	mg/L	1	14-Jul-2019 00:59
Xylenes, Total	**0.0022**		**0.00030**	**0.0010**	**mg/L**	1	14-Jul-2019 00:59
Surr: 1,2-Dichloroethane-d4	*99.8*			*70-126*	*%REC*	*1*	*14-Jul-2019 00:59*
Surr: 4-Bromofluorobenzene	*98.4*			*81-113*	*%REC*	*1*	*14-Jul-2019 00:59*
Surr: Dibromofluoromethane	*103*			*77-123*	*%REC*	*1*	*14-Jul-2019 00:59*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*1*	*14-Jul-2019 00:59*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19070575
Sample ID: WG-1620-MW19C-20190710
Lab ID:HS19070575-07
Collection Date: 10-Jul-2019 12:25
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 15-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	**0.000082**	J	**0.000021**	**0.00020**	**mg/L**	1	15-Jul-2019 15:03
2,4-Dimethylphenol	**0.00056**		**0.000040**	**0.00020**	**mg/L**	1	15-Jul-2019 15:03
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	15-Jul-2019 15:03
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	15-Jul-2019 15:03
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	15-Jul-2019 15:03
2-Methylnaphthalene	**0.000071**	J	**0.000019**	**0.00010**	**mg/L**	1	15-Jul-2019 15:03
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	15-Jul-2019 15:03
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	15-Jul-2019 15:03
Acenaphthene	**0.0010**		**0.000027**	**0.00010**	**mg/L**	1	15-Jul-2019 15:03
Acenaphthylene	**0.000030**	J	**0.000015**	**0.00010**	**mg/L**	1	15-Jul-2019 15:03
Anthracene	**0.000066**	J	**0.000014**	**0.00010**	**mg/L**	1	15-Jul-2019 15:03
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	15-Jul-2019 15:03
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	15-Jul-2019 15:03
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	15-Jul-2019 15:03
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	15-Jul-2019 15:03
Chrysene	U		0.000021	0.00010	mg/L	1	15-Jul-2019 15:03
Dibenzofuran	**0.00057**		**0.000020**	**0.00010**	**mg/L**	1	15-Jul-2019 15:03
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	15-Jul-2019 15:03
Fluoranthene	**0.00056**		**0.000010**	**0.00010**	**mg/L**	1	15-Jul-2019 15:03
Fluorene	**0.00031**		**0.000030**	**0.00010**	**mg/L**	1	15-Jul-2019 15:03
Naphthalene	**0.0012**		**0.000020**	**0.00010**	**mg/L**	1	15-Jul-2019 15:03
Nitrobenzene	U		0.000024	0.00020	mg/L	1	15-Jul-2019 15:03
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	15-Jul-2019 15:03
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	15-Jul-2019 15:03
Phenanthrene	**0.00014**		**0.000021**	**0.00010**	**mg/L**	1	15-Jul-2019 15:03
Phenol	**0.00015**	J	**0.000035**	**0.00020**	**mg/L**	1	15-Jul-2019 15:03
Pyrene	**0.00064**		**0.000019**	**0.00010**	**mg/L**	1	15-Jul-2019 15:03
Surr: 2,4,6-Tribromophenol	*90.9*			*34-129*	*%REC*	*1*	*15-Jul-2019 15:03*
Surr: 2-Fluorobiphenyl	*59.4*			*40-125*	*%REC*	*1*	*15-Jul-2019 15:03*
Surr: 2-Fluorophenol	*53.6*			*20-120*	*%REC*	*1*	*15-Jul-2019 15:03*
Surr: 4-Terphenyl-d14	*70.2*			*40-135*	*%REC*	*1*	*15-Jul-2019 15:03*
Surr: Nitrobenzene-d5	*60.0*			*41-120*	*%REC*	*1*	*15-Jul-2019 15:03*
Surr: Phenol-d6	*61.1*			*20-120*	*%REC*	*1*	*15-Jul-2019 15:03*
ICP-MS METALS BY SW6020A	**Method:SW6020**				Prep:SW3010A / 16-Jul-2019		Analyst: JHD
Arsenic	**0.00166**	J	**0.000400**	**0.00200**	**mg/L**	1	16-Jul-2019 22:52

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW17C-20190710
Collection Date: 10-Jul-2019 13:25

ANALYTICAL REPORT
WorkOrder:HS19070575
Lab ID:HS19070575-08
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	14-Jul-2019 02:13
Benzene	**0.0097**		**0.00020**	**0.0010**	**mg/L**	1	14-Jul-2019 02:13
Chlorobenzene	U		0.00030	0.0010	mg/L	1	14-Jul-2019 02:13
Ethylbenzene	**0.027**		**0.00030**	**0.0010**	**mg/L**	1	14-Jul-2019 02:13
Methylene chloride	U		0.0010	0.0020	mg/L	1	14-Jul-2019 02:13
Toluene	**0.0073**		**0.00020**	**0.0010**	**mg/L**	1	14-Jul-2019 02:13
Xylenes, Total	**0.039**		**0.00030**	**0.0010**	**mg/L**	1	14-Jul-2019 02:13
Surr: 1,2-Dichloroethane-d4	*99.8*			*70-126*	*%REC*	*1*	*14-Jul-2019 02:13*
Surr: 4-Bromofluorobenzene	*101*			*81-113*	*%REC*	*1*	*14-Jul-2019 02:13*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*14-Jul-2019 02:13*
Surr: Toluene-d8	*98.4*			*82-127*	*%REC*	*1*	*14-Jul-2019 02:13*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19070575
Sample ID: WG-1620-MW17C-20190710
Lab ID:HS19070575-08
Collection Date: 10-Jul-2019 13:25
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 15-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	15-Jul-2019 15:22
2,4-Dimethylphenol	**0.21**		**0.0040**	**0.020**	**mg/L**	100	16-Jul-2019 19:58
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	15-Jul-2019 15:22
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	15-Jul-2019 15:22
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	15-Jul-2019 15:22
2-Methylnaphthalene	**0.026**		**0.00019**	**0.0010**	**mg/L**	10	16-Jul-2019 19:39
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	15-Jul-2019 15:22
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	15-Jul-2019 15:22
Acenaphthene	**0.035**		**0.00027**	**0.0010**	**mg/L**	10	16-Jul-2019 19:39
Acenaphthylene	**0.00037**		**0.000015**	**0.00010**	**mg/L**	1	15-Jul-2019 15:22
Anthracene	**0.0013**		**0.000014**	**0.00010**	**mg/L**	1	15-Jul-2019 15:22
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	15-Jul-2019 15:22
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	15-Jul-2019 15:22
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	15-Jul-2019 15:22
Bis(2-ethylhexyl)phthalate	**0.00056**		**0.000037**	**0.00020**	**mg/L**	1	15-Jul-2019 15:22
Chrysene	U		0.000021	0.00010	mg/L	1	15-Jul-2019 15:22
Dibenzofuran	**0.027**		**0.00020**	**0.0010**	**mg/L**	10	16-Jul-2019 19:39
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	15-Jul-2019 15:22
Fluoranthene	**0.00090**		**0.000010**	**0.00010**	**mg/L**	1	15-Jul-2019 15:22
Fluorene	**0.014**		**0.00030**	**0.0010**	**mg/L**	10	16-Jul-2019 19:39
Naphthalene	**0.97**		**0.0020**	**0.010**	**mg/L**	100	16-Jul-2019 19:58
Nitrobenzene	U		0.000024	0.00020	mg/L	1	15-Jul-2019 15:22
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	15-Jul-2019 15:22
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	15-Jul-2019 15:22
Phenanthrene	**0.0100**		**0.000021**	**0.00010**	**mg/L**	1	15-Jul-2019 15:22
Phenol	**0.00073**		**0.000035**	**0.00020**	**mg/L**	1	15-Jul-2019 15:22
Pyrene	**0.00046**		**0.000019**	**0.00010**	**mg/L**	1	15-Jul-2019 15:22
Surr: 2,4,6-Tribromophenol	*61.3*			*34-129*	*%REC*	*10*	*16-Jul-2019 19:39*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*16-Jul-2019 19:58*
Surr: 2,4,6-Tribromophenol	*69.6*			*34-129*	*%REC*	*1*	*15-Jul-2019 15:22*
Surr: 2-Fluorobiphenyl	*62.4*			*40-125*	*%REC*	*10*	*16-Jul-2019 19:39*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*16-Jul-2019 19:58*
Surr: 2-Fluorobiphenyl	*45.2*			*40-125*	*%REC*	*1*	*15-Jul-2019 15:22*
Surr: 2-Fluorophenol	*52.5*			*20-120*	*%REC*	*1*	*15-Jul-2019 15:22*
Surr: 2-Fluorophenol	*76.5*			*20-120*	*%REC*	*10*	*16-Jul-2019 19:39*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*16-Jul-2019 19:58*
Surr: 4-Terphenyl-d14	*93.5*			*40-135*	*%REC*	*10*	*16-Jul-2019 19:39*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*100*	*16-Jul-2019 19:58*
Surr: 4-Terphenyl-d14	*68.8*			*40-135*	*%REC*	*1*	*15-Jul-2019 15:22*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW17C-20190710
Collection Date: 10-Jul-2019 13:25

ANALYTICAL REPORT
WorkOrder:HS19070575
Lab ID:HS19070575-08
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 15-Jul-2019		Analyst: GEY
Surr: Nitrobenzene-d5	*45.3*			*41-120*	*%REC*	*1*	*15-Jul-2019 15:22*
Surr: Nitrobenzene-d5	*62.8*			*41-120*	*%REC*	*10*	*16-Jul-2019 19:39*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*16-Jul-2019 19:58*
Surr: Phenol-d6	*66.3*			*20-120*	*%REC*	*10*	*16-Jul-2019 19:39*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*16-Jul-2019 19:58*
Surr: Phenol-d6	*51.8*			*20-120*	*%REC*	*1*	*15-Jul-2019 15:22*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 16-Jul-2019		Analyst: JHD
Arsenic	**0.000854**	J	**0.000400**	**0.00200**	**mg/L**	1	16-Jul-2019 22:54

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW17-20190710
Collection Date: 10-Jul-2019 14:15

ANALYTICAL REPORT
WorkOrder:HS19070575
Lab ID:HS19070575-09
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	14-Jul-2019 08:03
Benzene	**0.54**		**0.0020**	**0.010**	**mg/L**	10	14-Jul-2019 08:30
Chlorobenzene	U		0.00030	0.0010	mg/L	1	14-Jul-2019 08:03
Ethylbenzene	**0.23**		**0.0030**	**0.010**	**mg/L**	10	14-Jul-2019 08:30
Methylene chloride	U		0.0010	0.0020	mg/L	1	14-Jul-2019 08:03
Toluene	**0.83**		**0.0020**	**0.010**	**mg/L**	10	14-Jul-2019 08:30
Xylenes, Total	**0.78**		**0.0030**	**0.010**	**mg/L**	10	14-Jul-2019 08:30
Surr: 1,2-Dichloroethane-d4	*93.9*			*70-126*	*%REC*	*1*	*14-Jul-2019 08:03*
Surr: 1,2-Dichloroethane-d4	*96.0*			*70-126*	*%REC*	*10*	*14-Jul-2019 08:30*
Surr: 4-Bromofluorobenzene	*108*			*81-113*	*%REC*	*1*	*14-Jul-2019 08:03*
Surr: 4-Bromofluorobenzene	*107*			*81-113*	*%REC*	*10*	*14-Jul-2019 08:30*
Surr: Dibromofluoromethane	*95.4*			*77-123*	*%REC*	*1*	*14-Jul-2019 08:03*
Surr: Dibromofluoromethane	*96.9*			*77-123*	*%REC*	*10*	*14-Jul-2019 08:30*
Surr: Toluene-d8	*98.2*			*82-127*	*%REC*	*1*	*14-Jul-2019 08:03*
Surr: Toluene-d8	*97.1*			*82-127*	*%REC*	*10*	*14-Jul-2019 08:30*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW17-20190710
Collection Date: 10-Jul-2019 14:15

ANALYTICAL REPORT
WorkOrder:HS19070575
Lab ID:HS19070575-09
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 15-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.00021	0.0020	mg/L	10	15-Jul-2019 15:42
2,4-Dimethylphenol	**5.9**		**0.040**	**0.20**	**mg/L**	1000	16-Jul-2019 20:37
2,4-Dinitrotoluene	U		0.00058	0.0020	mg/L	10	15-Jul-2019 15:42
2,6-Dinitrotoluene	U		0.00042	0.0020	mg/L	10	15-Jul-2019 15:42
2-Chloronaphthalene	U		0.00021	0.0020	mg/L	10	15-Jul-2019 15:42
2-Methylnaphthalene	**0.39**		**0.0019**	**0.010**	**mg/L**	100	16-Jul-2019 20:18
4,6-Dinitro-2-methylphenol	U		0.00020	0.0020	mg/L	10	15-Jul-2019 15:42
4-Nitrophenol	U		0.00047	0.010	mg/L	10	15-Jul-2019 15:42
Acenaphthene	**0.16**		**0.0027**	**0.010**	**mg/L**	100	16-Jul-2019 20:18
Acenaphthylene	**0.0042**		**0.00015**	**0.0010**	**mg/L**	10	15-Jul-2019 15:42
Anthracene	**0.0092**		**0.00014**	**0.0010**	**mg/L**	10	15-Jul-2019 15:42
Benz(a)anthracene	U		0.00050	0.0010	mg/L	10	15-Jul-2019 15:42
Benzo(a)pyrene	U		0.00020	0.0010	mg/L	10	15-Jul-2019 15:42
Bis(2-chloroethoxy)methane	U		0.00030	0.0020	mg/L	10	15-Jul-2019 15:42
Bis(2-ethylhexyl)phthalate	U		0.00037	0.0020	mg/L	10	15-Jul-2019 15:42
Chrysene	U		0.00021	0.0010	mg/L	10	15-Jul-2019 15:42
Dibenzofuran	**0.12**		**0.0020**	**0.010**	**mg/L**	100	16-Jul-2019 20:18
Di-n-butyl phthalate	U		0.00020	0.0020	mg/L	10	15-Jul-2019 15:42
Fluoranthene	**0.0039**		**0.00010**	**0.0010**	**mg/L**	10	15-Jul-2019 15:42
Fluorene	**0.060**		**0.00030**	**0.0010**	**mg/L**	10	15-Jul-2019 15:42
Naphthalene	**8.9**		**0.10**	**0.50**	**mg/L**	5000	16-Jul-2019 20:57
Nitrobenzene	U		0.00024	0.0020	mg/L	10	15-Jul-2019 15:42
N-Nitrosodiphenylamine	U		0.00025	0.0020	mg/L	10	15-Jul-2019 15:42
Pentachlorophenol	U		0.00079	0.0020	mg/L	10	15-Jul-2019 15:42
Phenanthrene	**0.045**		**0.00021**	**0.0010**	**mg/L**	10	15-Jul-2019 15:42
Phenol	**9.9**		**0.18**	**1.0**	**mg/L**	5000	16-Jul-2019 20:57
Pyrene	**0.0018**		**0.00019**	**0.0010**	**mg/L**	10	15-Jul-2019 15:42
Surr: 2,4,6-Tribromophenol	*118*			*34-129*	*%REC*	*10*	*15-Jul-2019 15:42*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*5000*	*16-Jul-2019 20:57*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*16-Jul-2019 20:18*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*1000*	*16-Jul-2019 20:37*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*16-Jul-2019 20:18*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*1000*	*16-Jul-2019 20:37*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*5000*	*16-Jul-2019 20:57*
Surr: 2-Fluorobiphenyl	*89.4*			*40-125*	*%REC*	*10*	*15-Jul-2019 15:42*
Surr: 2-Fluorophenol	*72.9*			*20-120*	*%REC*	*10*	*15-Jul-2019 15:42*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*5000*	*16-Jul-2019 20:57*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*16-Jul-2019 20:18*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*1000*	*16-Jul-2019 20:37*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW17-20190710
Collection Date: 10-Jul-2019 14:15

ANALYTICAL REPORT
WorkOrder:HS19070575
Lab ID:HS19070575-09
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 15-Jul-2019		Analyst: GEY
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*100*	*16-Jul-2019 20:18*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*1000*	*16-Jul-2019 20:37*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*5000*	*16-Jul-2019 20:57*
Surr: 4-Terphenyl-d14	*86.5*			*40-135*	*%REC*	*10*	*15-Jul-2019 15:42*
Surr: Nitrobenzene-d5	*65.4*			*41-120*	*%REC*	*10*	*15-Jul-2019 15:42*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*16-Jul-2019 20:18*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*1000*	*16-Jul-2019 20:37*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*5000*	*16-Jul-2019 20:57*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*16-Jul-2019 20:18*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*1000*	*16-Jul-2019 20:37*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*5000*	*16-Jul-2019 20:57*
Surr: Phenol-d6	*117*			*20-120*	*%REC*	*10*	*15-Jul-2019 15:42*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 16-Jul-2019		Analyst: JHD
Arsenic	**0.0460**		**0.000400**	**0.00200**	**mg/L**	1	17-Jul-2019 12:23

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW20A-20190710
Collection Date: 10-Jul-2019 15:10

ANALYTICAL REPORT
WorkOrder:HS19070575
Lab ID:HS19070575-10
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	14-Jul-2019 02:38
Benzene	**0.013**		**0.00020**	**0.0010**	**mg/L**	1	14-Jul-2019 02:38
Chlorobenzene	U		0.00030	0.0010	mg/L	1	14-Jul-2019 02:38
Ethylbenzene	**0.0079**		**0.00030**	**0.0010**	**mg/L**	1	14-Jul-2019 02:38
Methylene chloride	U		0.0010	0.0020	mg/L	1	14-Jul-2019 02:38
Toluene	**0.0011**		**0.00020**	**0.0010**	**mg/L**	1	14-Jul-2019 02:38
Xylenes, Total	**0.022**		**0.00030**	**0.0010**	**mg/L**	1	14-Jul-2019 02:38
Surr: 1,2-Dichloroethane-d4	*97.2*			*70-126*	*%REC*	*1*	*14-Jul-2019 02:38*
Surr: 4-Bromofluorobenzene	*106*			*81-113*	*%REC*	*1*	*14-Jul-2019 02:38*
Surr: Dibromofluoromethane	*98.2*			*77-123*	*%REC*	*1*	*14-Jul-2019 02:38*
Surr: Toluene-d8	*96.6*			*82-127*	*%REC*	*1*	*14-Jul-2019 02:38*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19070575
Sample ID: WG-1620-MW20A-20190710
Lab ID:HS19070575-10
Collection Date: 10-Jul-2019 15:10
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 15-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	15-Jul-2019 16:01
2,4-Dimethylphenol	**0.0035**		**0.000040**	**0.00020**	**mg/L**	1	15-Jul-2019 16:01
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	15-Jul-2019 16:01
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	15-Jul-2019 16:01
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	15-Jul-2019 16:01
2-Methylnaphthalene	**0.072**		**0.00019**	**0.0010**	**mg/L**	10	16-Jul-2019 21:16
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	15-Jul-2019 16:01
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	15-Jul-2019 16:01
Acenaphthene	**0.14**		**0.0027**	**0.010**	**mg/L**	100	16-Jul-2019 21:36
Acenaphthylene	**0.00078**		**0.000015**	**0.00010**	**mg/L**	1	15-Jul-2019 16:01
Anthracene	**0.0062**		**0.000014**	**0.00010**	**mg/L**	1	15-Jul-2019 16:01
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	15-Jul-2019 16:01
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	15-Jul-2019 16:01
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	15-Jul-2019 16:01
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	15-Jul-2019 16:01
Chrysene	U		0.000021	0.00010	mg/L	1	15-Jul-2019 16:01
Dibenzofuran	**0.077**		**0.00020**	**0.0010**	**mg/L**	10	16-Jul-2019 21:16
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	15-Jul-2019 16:01
Fluoranthene	**0.00058**		**0.000010**	**0.00010**	**mg/L**	1	15-Jul-2019 16:01
Fluorene	**0.068**		**0.00030**	**0.0010**	**mg/L**	10	16-Jul-2019 21:16
Naphthalene	**1.9**		**0.010**	**0.050**	**mg/L**	500	17-Jul-2019 15:16
Nitrobenzene	U		0.000024	0.00020	mg/L	1	15-Jul-2019 16:01
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	15-Jul-2019 16:01
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	15-Jul-2019 16:01
Phenanthrene	**0.026**		**0.00021**	**0.0010**	**mg/L**	10	16-Jul-2019 21:16
Phenol	**0.00096**		**0.000035**	**0.00020**	**mg/L**	1	15-Jul-2019 16:01
Pyrene	**0.00026**		**0.000019**	**0.00010**	**mg/L**	1	15-Jul-2019 16:01
Surr: 2,4,6-Tribromophenol	*76.1*			*34-129*	*%REC*	*10*	*16-Jul-2019 21:16*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*16-Jul-2019 21:36*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*500*	*17-Jul-2019 15:16*
Surr: 2,4,6-Tribromophenol	*76.7*			*34-129*	*%REC*	*1*	*15-Jul-2019 16:01*
Surr: 2-Fluorobiphenyl	*60.0*			*40-125*	*%REC*	*1*	*15-Jul-2019 16:01*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*500*	*17-Jul-2019 15:16*
Surr: 2-Fluorobiphenyl	*68.6*			*40-125*	*%REC*	*10*	*16-Jul-2019 21:16*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*16-Jul-2019 21:36*
Surr: 2-Fluorophenol	*96.5*			*20-120*	*%REC*	*10*	*16-Jul-2019 21:16*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*16-Jul-2019 21:36*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*500*	*17-Jul-2019 15:16*
Surr: 2-Fluorophenol	*60.7*			*20-120*	*%REC*	*1*	*15-Jul-2019 16:01*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW20A-20190710
Collection Date: 10-Jul-2019 15:10

ANALYTICAL REPORT
WorkOrder:HS19070575
Lab ID:HS19070575-10
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 15-Jul-2019		Analyst: GEY
Surr: 4-Terphenyl-d14	*63.0*			*40-135*	*%REC*	*1*	*15-Jul-2019 16:01*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*500*	*17-Jul-2019 15:16*
Surr: 4-Terphenyl-d14	*98.3*			*40-135*	*%REC*	*10*	*16-Jul-2019 21:16*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*100*	*16-Jul-2019 21:36*
Surr: Nitrobenzene-d5	*67.4*			*41-120*	*%REC*	*10*	*16-Jul-2019 21:16*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*16-Jul-2019 21:36*
Surr: Nitrobenzene-d5	*66.5*			*41-120*	*%REC*	*1*	*15-Jul-2019 16:01*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*500*	*17-Jul-2019 15:16*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*500*	*17-Jul-2019 15:16*
Surr: Phenol-d6	*68.2*			*20-120*	*%REC*	*1*	*15-Jul-2019 16:01*
Surr: Phenol-d6	*90.7*			*20-120*	*%REC*	*10*	*16-Jul-2019 21:16*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*16-Jul-2019 21:36*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 16-Jul-2019		Analyst: JHD
Arsenic	**0.00574**		**0.000400**	**0.00200**	**mg/L**	1	16-Jul-2019 23:03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW15A-20190710
Collection Date: 10-Jul-2019 16:10

ANALYTICAL REPORT
WorkOrder:HS19070575
Lab ID:HS19070575-11
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	14-Jul-2019 03:02
Benzene	**0.00074**	J	**0.00020**	**0.0010**	**mg/L**	1	14-Jul-2019 03:02
Chlorobenzene	U		0.00030	0.0010	mg/L	1	14-Jul-2019 03:02
Ethylbenzene	**0.00035**	J	**0.00030**	**0.0010**	**mg/L**	1	14-Jul-2019 03:02
Methylene chloride	U		0.0010	0.0020	mg/L	1	14-Jul-2019 03:02
Toluene	U		0.00020	0.0010	mg/L	1	14-Jul-2019 03:02
Xylenes, Total	**0.0026**		**0.00030**	**0.0010**	**mg/L**	1	14-Jul-2019 03:02
Surr: 1,2-Dichloroethane-d4	*96.9*			*70-126*	*%REC*	*1*	*14-Jul-2019 03:02*
Surr: 4-Bromofluorobenzene	*101*			*81-113*	*%REC*	*1*	*14-Jul-2019 03:02*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*14-Jul-2019 03:02*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*14-Jul-2019 03:02*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW15A-20190710
Collection Date: 10-Jul-2019 16:10

ANALYTICAL REPORT
WorkOrder:HS19070575
Lab ID:HS19070575-11
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 15-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	15-Jul-2019 16:21
2,4-Dimethylphenol	**0.00024**		**0.000040**	**0.00020**	**mg/L**	1	15-Jul-2019 16:21
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	15-Jul-2019 16:21
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	15-Jul-2019 16:21
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	15-Jul-2019 16:21
2-Methylnaphthalene	**0.0077**		**0.000019**	**0.00010**	**mg/L**	1	15-Jul-2019 16:21
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	15-Jul-2019 16:21
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	15-Jul-2019 16:21
Acenaphthene	**0.11**		**0.0014**	**0.0050**	**mg/L**	50	17-Jul-2019 15:35
Acenaphthylene	**0.00045**		**0.000015**	**0.00010**	**mg/L**	1	15-Jul-2019 16:21
Anthracene	**0.0026**		**0.000014**	**0.00010**	**mg/L**	1	15-Jul-2019 16:21
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	15-Jul-2019 16:21
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	15-Jul-2019 16:21
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	15-Jul-2019 16:21
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	15-Jul-2019 16:21
Chrysene	U		0.000021	0.00010	mg/L	1	15-Jul-2019 16:21
Dibenzofuran	**0.035**		**0.00020**	**0.0010**	**mg/L**	10	16-Jul-2019 21:55
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	15-Jul-2019 16:21
Fluoranthene	**0.0018**		**0.000010**	**0.00010**	**mg/L**	1	15-Jul-2019 16:21
Fluorene	**0.054**		**0.00030**	**0.0010**	**mg/L**	10	16-Jul-2019 21:55
Naphthalene	**0.0066**		**0.000020**	**0.00010**	**mg/L**	1	15-Jul-2019 16:21
Nitrobenzene	U		0.000024	0.00020	mg/L	1	15-Jul-2019 16:21
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	15-Jul-2019 16:21
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	15-Jul-2019 16:21
Phenanthrene	**0.0095**		**0.000021**	**0.00010**	**mg/L**	1	15-Jul-2019 16:21
Phenol	**0.00039**		**0.000035**	**0.00020**	**mg/L**	1	15-Jul-2019 16:21
Pyrene	**0.00075**		**0.000019**	**0.00010**	**mg/L**	1	15-Jul-2019 16:21
Surr: 2,4,6-Tribromophenol	*71.3*			*34-129*	*%REC*	*10*	*16-Jul-2019 21:55*
Surr: 2,4,6-Tribromophenol	*59.6*	*J*		*34-129*	*%REC*	*50*	*17-Jul-2019 15:35*
Surr: 2,4,6-Tribromophenol	*65.0*			*34-129*	*%REC*	*1*	*15-Jul-2019 16:21*
Surr: 2-Fluorobiphenyl	*44.5*			*40-125*	*%REC*	*1*	*15-Jul-2019 16:21*
Surr: 2-Fluorobiphenyl	*60.0*	*J*		*40-125*	*%REC*	*50*	*17-Jul-2019 15:35*
Surr: 2-Fluorobiphenyl	*70.9*			*40-125*	*%REC*	*10*	*16-Jul-2019 21:55*
Surr: 2-Fluorophenol	*52.8*	*J*		*20-120*	*%REC*	*50*	*17-Jul-2019 15:35*
Surr: 2-Fluorophenol	*97.0*			*20-120*	*%REC*	*10*	*16-Jul-2019 21:55*
Surr: 2-Fluorophenol	*39.2*			*20-120*	*%REC*	*1*	*15-Jul-2019 16:21*
Surr: 4-Terphenyl-d14	*52.3*			*40-135*	*%REC*	*1*	*15-Jul-2019 16:21*
Surr: 4-Terphenyl-d14	*73.2*			*40-135*	*%REC*	*10*	*16-Jul-2019 21:55*
Surr: 4-Terphenyl-d14	*65.2*	*J*		*40-135*	*%REC*	*50*	*17-Jul-2019 15:35*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19070575
Sample ID: WG-1620-MW15A-20190710
Lab ID:HS19070575-11
Collection Date: 10-Jul-2019 16:10
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 15-Jul-2019		Analyst: GEY
Surr: Nitrobenzene-d5	*65.2*	*J*		*41-120*	*%REC*	*50*	*17-Jul-2019 15:35*
Surr: Nitrobenzene-d5	*59.8*			*41-120*	*%REC*	*10*	*16-Jul-2019 21:55*
Surr: Nitrobenzene-d5	*44.0*			*41-120*	*%REC*	*1*	*15-Jul-2019 16:21*
Surr: Phenol-d6	*43.2*			*20-120*	*%REC*	*1*	*15-Jul-2019 16:21*
Surr: Phenol-d6	*83.2*			*20-120*	*%REC*	*10*	*16-Jul-2019 21:55*
Surr: Phenol-d6	*62.3*	*J*		*20-120*	*%REC*	*50*	*17-Jul-2019 15:35*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 16-Jul-2019		Analyst: JHD
Arsenic	**0.0251**		**0.000400**	**0.00200**	**mg/L**	1	16-Jul-2019 22:18

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW15C-20190710
Collection Date: 10-Jul-2019 17:05

ANALYTICAL REPORT
WorkOrder:HS19070575
Lab ID:HS19070575-12
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	14-Jul-2019 03:27
Benzene	**0.00050**	J	**0.00020**	**0.0010**	**mg/L**	1	14-Jul-2019 03:27
Chlorobenzene	U		0.00030	0.0010	mg/L	1	14-Jul-2019 03:27
Ethylbenzene	U		0.00030	0.0010	mg/L	1	14-Jul-2019 03:27
Methylene chloride	U		0.0010	0.0020	mg/L	1	14-Jul-2019 03:27
Toluene	U		0.00020	0.0010	mg/L	1	14-Jul-2019 03:27
Xylenes, Total	U		0.00030	0.0010	mg/L	1	14-Jul-2019 03:27
Surr: 1,2-Dichloroethane-d4	*97.4*			*70-126*	*%REC*	*1*	*14-Jul-2019 03:27*
Surr: 4-Bromofluorobenzene	*98.7*			*81-113*	*%REC*	*1*	*14-Jul-2019 03:27*
Surr: Dibromofluoromethane	*100*			*77-123*	*%REC*	*1*	*14-Jul-2019 03:27*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*14-Jul-2019 03:27*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW15C-20190710
Collection Date: 10-Jul-2019 17:05

ANALYTICAL REPORT
WorkOrder:HS19070575
Lab ID:HS19070575-12
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 15-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	15-Jul-2019 16:41
2,4-Dimethylphenol	**0.0052**		**0.000040**	**0.00020**	**mg/L**	1	15-Jul-2019 16:41
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	15-Jul-2019 16:41
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	15-Jul-2019 16:41
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	15-Jul-2019 16:41
2-Methylnaphthalene	**0.00066**		**0.000019**	**0.00010**	**mg/L**	1	15-Jul-2019 16:41
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	15-Jul-2019 16:41
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	15-Jul-2019 16:41
Acenaphthene	**0.017**		**0.00027**	**0.0010**	**mg/L**	10	16-Jul-2019 22:15
Acenaphthylene	**0.0015**		**0.000015**	**0.00010**	**mg/L**	1	15-Jul-2019 16:41
Anthracene	**0.00064**		**0.000014**	**0.00010**	**mg/L**	1	15-Jul-2019 16:41
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	15-Jul-2019 16:41
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	15-Jul-2019 16:41
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	15-Jul-2019 16:41
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	15-Jul-2019 16:41
Chrysene	U		0.000021	0.00010	mg/L	1	15-Jul-2019 16:41
Dibenzofuran	**0.0039**		**0.000020**	**0.00010**	**mg/L**	1	15-Jul-2019 16:41
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	15-Jul-2019 16:41
Fluoranthene	**0.00086**		**0.000010**	**0.00010**	**mg/L**	1	15-Jul-2019 16:41
Fluorene	**0.00097**		**0.000030**	**0.00010**	**mg/L**	1	15-Jul-2019 16:41
Naphthalene	**0.019**		**0.00020**	**0.0010**	**mg/L**	10	16-Jul-2019 22:15
Nitrobenzene	U		0.000024	0.00020	mg/L	1	15-Jul-2019 16:41
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	15-Jul-2019 16:41
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	15-Jul-2019 16:41
Phenanthrene	**0.00039**		**0.000021**	**0.00010**	**mg/L**	1	15-Jul-2019 16:41
Phenol	**0.00026**		**0.000035**	**0.00020**	**mg/L**	1	15-Jul-2019 16:41
Pyrene	**0.00043**		**0.000019**	**0.00010**	**mg/L**	1	15-Jul-2019 16:41
Surr: 2,4,6-Tribromophenol	*103*			*34-129*	*%REC*	*1*	*15-Jul-2019 16:41*
Surr: 2,4,6-Tribromophenol	*73.5*			*34-129*	*%REC*	*10*	*16-Jul-2019 22:15*
Surr: 2-Fluorobiphenyl	*65.7*			*40-125*	*%REC*	*10*	*16-Jul-2019 22:15*
Surr: 2-Fluorobiphenyl	*70.0*			*40-125*	*%REC*	*1*	*15-Jul-2019 16:41*
Surr: 2-Fluorophenol	*64.8*			*20-120*	*%REC*	*1*	*15-Jul-2019 16:41*
Surr: 2-Fluorophenol	*107*			*20-120*	*%REC*	*10*	*16-Jul-2019 22:15*
Surr: 4-Terphenyl-d14	*86.6*			*40-135*	*%REC*	*10*	*16-Jul-2019 22:15*
Surr: 4-Terphenyl-d14	*92.9*			*40-135*	*%REC*	*1*	*15-Jul-2019 16:41*
Surr: Nitrobenzene-d5	*79.0*			*41-120*	*%REC*	*1*	*15-Jul-2019 16:41*
Surr: Nitrobenzene-d5	*76.1*			*41-120*	*%REC*	*10*	*16-Jul-2019 22:15*
Surr: Phenol-d6	*93.8*			*20-120*	*%REC*	*10*	*16-Jul-2019 22:15*
Surr: Phenol-d6	*65.9*			*20-120*	*%REC*	*1*	*15-Jul-2019 16:41*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW15C-20190710
Collection Date: 10-Jul-2019 17:05

ANALYTICAL REPORT
WorkOrder:HS19070575
Lab ID:HS19070575-12
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A	**Method:SW6020**				Prep:SW3010A / 16-Jul-2019		Analyst: JHD
Arsenic	**0.000889**	J	**0.000400**	**0.00200**	**mg/L**	1	16-Jul-2019 23:05

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19070575
Sample ID: WG-1620-MW15B-20190710
Lab ID:HS19070575-13
Collection Date: 10-Jul-2019 18:00
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	14-Jul-2019 03:52
Benzene	**0.0023**		**0.00020**	**0.0010**	**mg/L**	1	14-Jul-2019 03:52
Chlorobenzene	U		0.00030	0.0010	mg/L	1	14-Jul-2019 03:52
Ethylbenzene	**0.0031**		**0.00030**	**0.0010**	**mg/L**	1	14-Jul-2019 03:52
Methylene chloride	U		0.0010	0.0020	mg/L	1	14-Jul-2019 03:52
Toluene	U		0.00020	0.0010	mg/L	1	14-Jul-2019 03:52
Xylenes, Total	**0.0025**		**0.00030**	**0.0010**	**mg/L**	1	14-Jul-2019 03:52
Surr: 1,2-Dichloroethane-d4	*95.7*			*70-126*	*%REC*	*1*	*14-Jul-2019 03:52*
Surr: 4-Bromofluorobenzene	*104*			*81-113*	*%REC*	*1*	*14-Jul-2019 03:52*
Surr: Dibromofluoromethane	*97.8*			*77-123*	*%REC*	*1*	*14-Jul-2019 03:52*
Surr: Toluene-d8	*97.6*			*82-127*	*%REC*	*1*	*14-Jul-2019 03:52*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW15B-20190710
Collection Date: 10-Jul-2019 18:00

ANALYTICAL REPORT
WorkOrder:HS19070575
Lab ID:HS19070575-13
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 15-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	15-Jul-2019 17:00
2,4-Dimethylphenol	**0.00016**	J	**0.000040**	**0.00020**	**mg/L**	1	15-Jul-2019 17:00
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	15-Jul-2019 17:00
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	15-Jul-2019 17:00
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	15-Jul-2019 17:00
2-Methylnaphthalene	**0.016**		**0.00019**	**0.0010**	**mg/L**	10	17-Jul-2019 12:42
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	15-Jul-2019 17:00
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	15-Jul-2019 17:00
Acenaphthene	**0.029**		**0.00027**	**0.0010**	**mg/L**	10	17-Jul-2019 12:42
Acenaphthylene	**0.00034**		**0.000015**	**0.00010**	**mg/L**	1	15-Jul-2019 17:00
Anthracene	**0.0016**		**0.000014**	**0.00010**	**mg/L**	1	15-Jul-2019 17:00
Benz(a)anthracene	**0.00016**		**0.000050**	**0.00010**	**mg/L**	1	15-Jul-2019 17:00
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	15-Jul-2019 17:00
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	15-Jul-2019 17:00
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	15-Jul-2019 17:00
Chrysene	**0.00013**		**0.000021**	**0.00010**	**mg/L**	1	15-Jul-2019 17:00
Dibenzofuran	**0.013**		**0.00020**	**0.0010**	**mg/L**	10	17-Jul-2019 12:42
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	15-Jul-2019 17:00
Fluoranthene	**0.0042**		**0.000010**	**0.00010**	**mg/L**	1	15-Jul-2019 17:00
Fluorene	**0.010**		**0.00030**	**0.0010**	**mg/L**	10	17-Jul-2019 12:42
Naphthalene	**0.33**		**0.0020**	**0.010**	**mg/L**	100	17-Jul-2019 13:01
Nitrobenzene	U		0.000024	0.00020	mg/L	1	15-Jul-2019 17:00
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	15-Jul-2019 17:00
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	15-Jul-2019 17:00
Phenanthrene	**0.0065**		**0.000021**	**0.00010**	**mg/L**	1	15-Jul-2019 17:00
Phenol	**0.00019**	J	**0.000035**	**0.00020**	**mg/L**	1	15-Jul-2019 17:00
Pyrene	**0.0018**		**0.000019**	**0.00010**	**mg/L**	1	15-Jul-2019 17:00
Surr: 2,4,6-Tribromophenol	*107*			*34-129*	*%REC*	*1*	*15-Jul-2019 17:00*
Surr: 2,4,6-Tribromophenol	*95.6*			*34-129*	*%REC*	*10*	*17-Jul-2019 12:42*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*17-Jul-2019 13:01*
Surr: 2-Fluorobiphenyl	*77.5*			*40-125*	*%REC*	*10*	*17-Jul-2019 12:42*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*17-Jul-2019 13:01*
Surr: 2-Fluorobiphenyl	*69.3*			*40-125*	*%REC*	*1*	*15-Jul-2019 17:00*
Surr: 2-Fluorophenol	*58.3*			*20-120*	*%REC*	*1*	*15-Jul-2019 17:00*
Surr: 2-Fluorophenol	*73.4*			*20-120*	*%REC*	*10*	*17-Jul-2019 12:42*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*17-Jul-2019 13:01*
Surr: 4-Terphenyl-d14	*88.1*			*40-135*	*%REC*	*10*	*17-Jul-2019 12:42*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*100*	*17-Jul-2019 13:01*
Surr: 4-Terphenyl-d14	*89.5*			*40-135*	*%REC*	*1*	*15-Jul-2019 17:00*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19070575
Sample ID: WG-1620-MW15B-20190710
Lab ID:HS19070575-13
Collection Date: 10-Jul-2019 18:00
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 15-Jul-2019		Analyst: GEY
Surr: Nitrobenzene-d5	*70.9*			*41-120*	*%REC*	*1*	*15-Jul-2019 17:00*
Surr: Nitrobenzene-d5	*81.5*			*41-120*	*%REC*	*10*	*17-Jul-2019 12:42*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*17-Jul-2019 13:01*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*17-Jul-2019 13:01*
Surr: Phenol-d6	*78.0*			*20-120*	*%REC*	*10*	*17-Jul-2019 12:42*
Surr: Phenol-d6	*66.4*			*20-120*	*%REC*	*1*	*15-Jul-2019 17:00*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 16-Jul-2019		Analyst: JHD
Arsenic	**0.0133**		**0.000400**	**0.00200**	**mg/L**	1	16-Jul-2019 23:08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB01-20190710
Collection Date: 10-Jul-2019 18:15

ANALYTICAL REPORT
WorkOrder:HS19070575
Lab ID:HS19070575-14
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	13-Jul-2019 23:46
Benzene		U	0.00020	0.0010	mg/L	1	13-Jul-2019 23:46
Chlorobenzene		U	0.00030	0.0010	mg/L	1	13-Jul-2019 23:46
Ethylbenzene		U	0.00030	0.0010	mg/L	1	13-Jul-2019 23:46
Methylene chloride		U	0.0010	0.0020	mg/L	1	13-Jul-2019 23:46
Toluene		U	0.00020	0.0010	mg/L	1	13-Jul-2019 23:46
Vinyl chloride		U	0.00020	0.0010	mg/L	1	13-Jul-2019 23:46
Xylenes, Total		U	0.00030	0.0010	mg/L	1	13-Jul-2019 23:46
Surr: 1,2-Dichloroethane-d4	*99.6*			*70-126*	*%REC*	*1*	*13-Jul-2019 23:46*
Surr: 4-Bromofluorobenzene	*96.9*			*81-113*	*%REC*	*1*	*13-Jul-2019 23:46*
Surr: Dibromofluoromethane	*100*			*77-123*	*%REC*	*1*	*13-Jul-2019 23:46*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*1*	*13-Jul-2019 23:46*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB01-20190710
Collection Date: 10-Jul-2019 18:15

ANALYTICAL REPORT
WorkOrder:HS19070575
Lab ID:HS19070575-14
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 15-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	15-Jul-2019 17:20
2,4-Dimethylphenol	**0.00037**		**0.000040**	**0.00020**	**mg/L**	1	15-Jul-2019 17:20
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	15-Jul-2019 17:20
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	15-Jul-2019 17:20
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	15-Jul-2019 17:20
2-Methylnaphthalene	**0.00038**		**0.000019**	**0.00010**	**mg/L**	1	15-Jul-2019 17:20
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	15-Jul-2019 17:20
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	15-Jul-2019 17:20
Acenaphthene	**0.00011**		**0.000027**	**0.00010**	**mg/L**	1	15-Jul-2019 17:20
Acenaphthylene	U		0.000015	0.00010	mg/L	1	15-Jul-2019 17:20
Anthracene	**0.000032**	J	**0.000014**	**0.00010**	**mg/L**	1	15-Jul-2019 17:20
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	15-Jul-2019 17:20
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	15-Jul-2019 17:20
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	15-Jul-2019 17:20
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	15-Jul-2019 17:20
Chrysene	U		0.000021	0.00010	mg/L	1	15-Jul-2019 17:20
Dibenzofuran	**0.00018**		**0.000020**	**0.00010**	**mg/L**	1	15-Jul-2019 17:20
Di-n-butyl phthalate	**0.000024**	J	**0.000020**	**0.00020**	**mg/L**	1	15-Jul-2019 17:20
Fluoranthene	**0.000025**	J	**0.000010**	**0.00010**	**mg/L**	1	15-Jul-2019 17:20
Fluorene	**0.00011**		**0.000030**	**0.00010**	**mg/L**	1	15-Jul-2019 17:20
Naphthalene	**0.0035**		**0.000020**	**0.00010**	**mg/L**	1	15-Jul-2019 17:20
Nitrobenzene	U		0.000024	0.00020	mg/L	1	15-Jul-2019 17:20
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	15-Jul-2019 17:20
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	15-Jul-2019 17:20
Phenanthrene	**0.00013**		**0.000021**	**0.00010**	**mg/L**	1	15-Jul-2019 17:20
Phenol	**0.000071**	J	**0.000035**	**0.00020**	**mg/L**	1	15-Jul-2019 17:20
Pyrene	U		0.000019	0.00010	mg/L	1	15-Jul-2019 17:20
Surr: 2,4,6-Tribromophenol	*121*			*34-129*	*%REC*	*1*	*15-Jul-2019 17:20*
Surr: 2-Fluorobiphenyl	*110*			*40-125*	*%REC*	*1*	*15-Jul-2019 17:20*
Surr: 2-Fluorophenol	*103*			*20-120*	*%REC*	*1*	*15-Jul-2019 17:20*
Surr: 4-Terphenyl-d14	*99.6*			*40-135*	*%REC*	*1*	*15-Jul-2019 17:20*
Surr: Nitrobenzene-d5	*106*			*41-120*	*%REC*	*1*	*15-Jul-2019 17:20*
Surr: Phenol-d6	*112*			*20-120*	*%REC*	*1*	*15-Jul-2019 17:20*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 16-Jul-2019		Analyst: JHD
Arsenic	U		0.000400	0.00200	mg/L	1	16-Jul-2019 23:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW14-20190711
Collection Date: 11-Jul-2019 07:20

ANALYTICAL REPORT
WorkOrder:HS19070575
Lab ID:HS19070575-15
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	14-Jul-2019 04:16
Benzene		U	0.00020	0.0010	mg/L	1	14-Jul-2019 04:16
Chlorobenzene		U	0.00030	0.0010	mg/L	1	14-Jul-2019 04:16
Ethylbenzene		U	0.00030	0.0010	mg/L	1	14-Jul-2019 04:16
Methylene chloride		U	0.0010	0.0020	mg/L	1	14-Jul-2019 04:16
Toluene		U	0.00020	0.0010	mg/L	1	14-Jul-2019 04:16
Xylenes, Total		U	0.00030	0.0010	mg/L	1	14-Jul-2019 04:16
Surr: 1,2-Dichloroethane-d4	*98.5*			*70-126*	*%REC*	*1*	*14-Jul-2019 04:16*
Surr: 4-Bromofluorobenzene	*99.7*			*81-113*	*%REC*	*1*	*14-Jul-2019 04:16*
Surr: Dibromofluoromethane	*99.6*			*77-123*	*%REC*	*1*	*14-Jul-2019 04:16*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*14-Jul-2019 04:16*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW14-20190711
Collection Date: 11-Jul-2019 07:20

ANALYTICAL REPORT
WorkOrder:HS19070575
Lab ID:HS19070575-15
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 15-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	15-Jul-2019 17:39
2,4-Dimethylphenol	**0.00013**	J	**0.000040**	**0.00020**	**mg/L**	1	15-Jul-2019 17:39
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	15-Jul-2019 17:39
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	15-Jul-2019 17:39
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	15-Jul-2019 17:39
2-Methylnaphthalene	**0.00019**		**0.000019**	**0.00010**	**mg/L**	1	15-Jul-2019 17:39
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	15-Jul-2019 17:39
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	15-Jul-2019 17:39
Acenaphthene	**0.00010**		**0.000027**	**0.00010**	**mg/L**	1	15-Jul-2019 17:39
Acenaphthylene	U		0.000015	0.00010	mg/L	1	15-Jul-2019 17:39
Anthracene	**0.000089**	J	**0.000014**	**0.00010**	**mg/L**	1	15-Jul-2019 17:39
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	15-Jul-2019 17:39
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	15-Jul-2019 17:39
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	15-Jul-2019 17:39
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	15-Jul-2019 17:39
Chrysene	U		0.000021	0.00010	mg/L	1	15-Jul-2019 17:39
Dibenzofuran	**0.000087**	J	**0.000020**	**0.00010**	**mg/L**	1	15-Jul-2019 17:39
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	15-Jul-2019 17:39
Fluoranthene	**0.000067**	J	**0.000010**	**0.00010**	**mg/L**	1	15-Jul-2019 17:39
Fluorene	**0.000069**	J	**0.000030**	**0.00010**	**mg/L**	1	15-Jul-2019 17:39
Naphthalene	**0.0020**		**0.000020**	**0.00010**	**mg/L**	1	15-Jul-2019 17:39
Nitrobenzene	U		0.000024	0.00020	mg/L	1	15-Jul-2019 17:39
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	15-Jul-2019 17:39
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	15-Jul-2019 17:39
Phenanthrene	**0.000059**	J	**0.000021**	**0.00010**	**mg/L**	1	15-Jul-2019 17:39
Phenol	**0.00019**	J	**0.000035**	**0.00020**	**mg/L**	1	15-Jul-2019 17:39
Pyrene	**0.000032**	J	**0.000019**	**0.00010**	**mg/L**	1	15-Jul-2019 17:39
Surr: 2,4,6-Tribromophenol	*87.6*			*34-129*	*%REC*	*1*	*15-Jul-2019 17:39*
Surr: 2-Fluorobiphenyl	*77.2*			*40-125*	*%REC*	*1*	*15-Jul-2019 17:39*
Surr: 2-Fluorophenol	*79.3*			*20-120*	*%REC*	*1*	*15-Jul-2019 17:39*
Surr: 4-Terphenyl-d14	*76.6*			*40-135*	*%REC*	*1*	*15-Jul-2019 17:39*
Surr: Nitrobenzene-d5	*89.4*			*41-120*	*%REC*	*1*	*15-Jul-2019 17:39*
Surr: Phenol-d6	*86.2*			*20-120*	*%REC*	*1*	*15-Jul-2019 17:39*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 16-Jul-2019		Analyst: JHD
Arsenic	**0.00133**	J	**0.000400**	**0.00200**	**mg/L**	1	16-Jul-2019 23:12

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW13-20190711
Collection Date: 11-Jul-2019 08:15

ANALYTICAL REPORT
WorkOrder:HS19070575
Lab ID:HS19070575-16
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	14-Jul-2019 04:41
Benzene		U	0.00020	0.0010	mg/L	1	14-Jul-2019 04:41
Chlorobenzene		U	0.00030	0.0010	mg/L	1	14-Jul-2019 04:41
Ethylbenzene		U	0.00030	0.0010	mg/L	1	14-Jul-2019 04:41
Methylene chloride		U	0.0010	0.0020	mg/L	1	14-Jul-2019 04:41
Toluene		U	0.00020	0.0010	mg/L	1	14-Jul-2019 04:41
Xylenes, Total		U	0.00030	0.0010	mg/L	1	14-Jul-2019 04:41
Surr: 1,2-Dichloroethane-d4	*99.7*			*70-126*	*%REC*	*1*	*14-Jul-2019 04:41*
Surr: 4-Bromofluorobenzene	*97.3*			*81-113*	*%REC*	*1*	*14-Jul-2019 04:41*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*14-Jul-2019 04:41*
Surr: Toluene-d8	*99.5*			*82-127*	*%REC*	*1*	*14-Jul-2019 04:41*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW13-20190711
Collection Date: 11-Jul-2019 08:15

ANALYTICAL REPORT
WorkOrder:HS19070575
Lab ID:HS19070575-16
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 15-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	15-Jul-2019 17:59
2,4-Dimethylphenol	**0.000063**	J	**0.000040**	**0.00020**	**mg/L**	1	15-Jul-2019 17:59
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	15-Jul-2019 17:59
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	15-Jul-2019 17:59
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	15-Jul-2019 17:59
2-Methylnaphthalene	**0.000077**	J	**0.000019**	**0.00010**	**mg/L**	1	15-Jul-2019 17:59
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	15-Jul-2019 17:59
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	15-Jul-2019 17:59
Acenaphthene	**0.000066**	J	**0.000027**	**0.00010**	**mg/L**	1	15-Jul-2019 17:59
Acenaphthylene	**0.000033**	J	**0.000015**	**0.00010**	**mg/L**	1	15-Jul-2019 17:59
Anthracene	**0.00047**		**0.000014**	**0.00010**	**mg/L**	1	15-Jul-2019 17:59
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	15-Jul-2019 17:59
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	15-Jul-2019 17:59
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	15-Jul-2019 17:59
Bis(2-ethylhexyl)phthalate	**0.000054**	J	**0.000037**	**0.00020**	**mg/L**	1	15-Jul-2019 17:59
Chrysene	U		0.000021	0.00010	mg/L	1	15-Jul-2019 17:59
Dibenzofuran	**0.000039**	J	**0.000020**	**0.00010**	**mg/L**	1	15-Jul-2019 17:59
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	15-Jul-2019 17:59
Fluoranthene	**0.000032**	J	**0.000010**	**0.00010**	**mg/L**	1	15-Jul-2019 17:59
Fluorene	**0.000042**	J	**0.000030**	**0.00010**	**mg/L**	1	15-Jul-2019 17:59
Naphthalene	**0.0011**		**0.000020**	**0.00010**	**mg/L**	1	15-Jul-2019 17:59
Nitrobenzene	U		0.000024	0.00020	mg/L	1	15-Jul-2019 17:59
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	15-Jul-2019 17:59
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	15-Jul-2019 17:59
Phenanthrene	U		0.000021	0.00010	mg/L	1	15-Jul-2019 17:59
Phenol	U		0.000035	0.00020	mg/L	1	15-Jul-2019 17:59
Pyrene	**0.000084**	J	**0.000019**	**0.00010**	**mg/L**	1	15-Jul-2019 17:59
Surr: 2,4,6-Tribromophenol	*93.4*			*34-129*	*%REC*	*1*	*15-Jul-2019 17:59*
Surr: 2-Fluorobiphenyl	*65.6*			*40-125*	*%REC*	*1*	*15-Jul-2019 17:59*
Surr: 2-Fluorophenol	*54.0*			*20-120*	*%REC*	*1*	*15-Jul-2019 17:59*
Surr: 4-Terphenyl-d14	*87.4*			*40-135*	*%REC*	*1*	*15-Jul-2019 17:59*
Surr: Nitrobenzene-d5	*62.7*			*41-120*	*%REC*	*1*	*15-Jul-2019 17:59*
Surr: Phenol-d6	*68.6*			*20-120*	*%REC*	*1*	*15-Jul-2019 17:59*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 16-Jul-2019		Analyst: JHD
Arsenic	**0.0715**		**0.000400**	**0.00200**	**mg/L**	1	16-Jul-2019 23:14

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW39B-20190711
Collection Date: 11-Jul-2019 09:15

ANALYTICAL REPORT
WorkOrder:HS19070575
Lab ID:HS19070575-17
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	14-Jul-2019 05:06
Benzene		U	0.00020	0.0010	mg/L	1	14-Jul-2019 05:06
Chlorobenzene		U	0.00030	0.0010	mg/L	1	14-Jul-2019 05:06
Ethylbenzene		U	0.00030	0.0010	mg/L	1	14-Jul-2019 05:06
Methylene chloride		U	0.0010	0.0020	mg/L	1	14-Jul-2019 05:06
Toluene		U	0.00020	0.0010	mg/L	1	14-Jul-2019 05:06
Xylenes, Total		U	0.00030	0.0010	mg/L	1	14-Jul-2019 05:06
Surr: 1,2-Dichloroethane-d4	*99.7*			*70-126*	*%REC*	*1*	*14-Jul-2019 05:06*
Surr: 4-Bromofluorobenzene	*96.0*			*81-113*	*%REC*	*1*	*14-Jul-2019 05:06*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*14-Jul-2019 05:06*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*14-Jul-2019 05:06*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19070575
Sample ID: WG-1620-MW39B-20190711
Lab ID:HS19070575-17
Collection Date: 11-Jul-2019 09:15
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 15-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	15-Jul-2019 18:19
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	15-Jul-2019 18:19
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	15-Jul-2019 18:19
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	15-Jul-2019 18:19
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	15-Jul-2019 18:19
2-Methylnaphthalene	**0.000027**	J	**0.000019**	**0.00010**	**mg/L**	1	15-Jul-2019 18:19
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	15-Jul-2019 18:19
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	15-Jul-2019 18:19
Acenaphthene	**0.00065**		**0.000027**	**0.00010**	**mg/L**	1	15-Jul-2019 18:19
Acenaphthylene	**0.000021**	J	**0.000015**	**0.00010**	**mg/L**	1	15-Jul-2019 18:19
Anthracene	**0.00021**		**0.000014**	**0.00010**	**mg/L**	1	15-Jul-2019 18:19
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	15-Jul-2019 18:19
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	15-Jul-2019 18:19
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	15-Jul-2019 18:19
Bis(2-ethylhexyl)phthalate	**0.000042**	J	**0.000037**	**0.00020**	**mg/L**	1	15-Jul-2019 18:19
Chrysene	U		0.000021	0.00010	mg/L	1	15-Jul-2019 18:19
Dibenzofuran	**0.000037**	J	**0.000020**	**0.00010**	**mg/L**	1	15-Jul-2019 18:19
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	15-Jul-2019 18:19
Fluoranthene	**0.000048**	J	**0.000010**	**0.00010**	**mg/L**	1	15-Jul-2019 18:19
Fluorene	**0.000044**	J	**0.000030**	**0.00010**	**mg/L**	1	15-Jul-2019 18:19
Naphthalene	**0.00041**		**0.000020**	**0.00010**	**mg/L**	1	15-Jul-2019 18:19
Nitrobenzene	U		0.000024	0.00020	mg/L	1	15-Jul-2019 18:19
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	15-Jul-2019 18:19
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	15-Jul-2019 18:19
Phenanthrene	U		0.000021	0.00010	mg/L	1	15-Jul-2019 18:19
Phenol	U		0.000035	0.00020	mg/L	1	15-Jul-2019 18:19
Pyrene	**0.000072**	J	**0.000019**	**0.00010**	**mg/L**	1	15-Jul-2019 18:19
Surr: 2,4,6-Tribromophenol	*73.3*			*34-129*	*%REC*	*1*	*15-Jul-2019 18:19*
Surr: 2-Fluorobiphenyl	*51.9*			*40-125*	*%REC*	*1*	*15-Jul-2019 18:19*
Surr: 2-Fluorophenol	*48.6*			*20-120*	*%REC*	*1*	*15-Jul-2019 18:19*
Surr: 4-Terphenyl-d14	*71.9*			*40-135*	*%REC*	*1*	*15-Jul-2019 18:19*
Surr: Nitrobenzene-d5	*59.8*			*41-120*	*%REC*	*1*	*15-Jul-2019 18:19*
Surr: Phenol-d6	*55.7*			*20-120*	*%REC*	*1*	*15-Jul-2019 18:19*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 16-Jul-2019		Analyst: JHD
Arsenic	**0.00144**	J	**0.000400**	**0.00200**	**mg/L**	1	16-Jul-2019 23:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19070575
Sample ID: WG-1620-MW12C-20190711
Lab ID:HS19070575-18
Collection Date: 11-Jul-2019 10:00
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	14-Jul-2019 05:30
Benzene		U	0.00020	0.0010	mg/L	1	14-Jul-2019 05:30
Chlorobenzene		U	0.00030	0.0010	mg/L	1	14-Jul-2019 05:30
Ethylbenzene		U	0.00030	0.0010	mg/L	1	14-Jul-2019 05:30
Methylene chloride		U	0.0010	0.0020	mg/L	1	14-Jul-2019 05:30
Toluene		U	0.00020	0.0010	mg/L	1	14-Jul-2019 05:30
Xylenes, Total		U	0.00030	0.0010	mg/L	1	14-Jul-2019 05:30
Surr: 1,2-Dichloroethane-d4	*98.6*			*70-126*	*%REC*	*1*	*14-Jul-2019 05:30*
Surr: 4-Bromofluorobenzene	*97.0*			*81-113*	*%REC*	*1*	*14-Jul-2019 05:30*
Surr: Dibromofluoromethane	*100*			*77-123*	*%REC*	*1*	*14-Jul-2019 05:30*
Surr: Toluene-d8	*99.4*			*82-127*	*%REC*	*1*	*14-Jul-2019 05:30*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW12C-20190711
Collection Date: 11-Jul-2019 10:00

ANALYTICAL REPORT
WorkOrder:HS19070575
Lab ID:HS19070575-18
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 15-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	15-Jul-2019 18:38
2,4-Dimethylphenol	**0.00043**		**0.000040**	**0.00020**	**mg/L**	1	15-Jul-2019 18:38
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	15-Jul-2019 18:38
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	15-Jul-2019 18:38
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	15-Jul-2019 18:38
2-Methylnaphthalene	**0.00021**		**0.000019**	**0.00010**	**mg/L**	1	15-Jul-2019 18:38
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	15-Jul-2019 18:38
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	15-Jul-2019 18:38
Acenaphthene	**0.000071**	J	**0.000027**	**0.00010**	**mg/L**	1	15-Jul-2019 18:38
Acenaphthylene	U		0.000015	0.00010	mg/L	1	15-Jul-2019 18:38
Anthracene	**0.000030**	J	**0.000014**	**0.00010**	**mg/L**	1	15-Jul-2019 18:38
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	15-Jul-2019 18:38
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	15-Jul-2019 18:38
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	15-Jul-2019 18:38
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	15-Jul-2019 18:38
Chrysene	U		0.000021	0.00010	mg/L	1	15-Jul-2019 18:38
Dibenzofuran	**0.000070**	J	**0.000020**	**0.00010**	**mg/L**	1	15-Jul-2019 18:38
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	15-Jul-2019 18:38
Fluoranthene	U		0.000010	0.00010	mg/L	1	15-Jul-2019 18:38
Fluorene	**0.000052**	J	**0.000030**	**0.00010**	**mg/L**	1	15-Jul-2019 18:38
Naphthalene	**0.0031**		**0.000020**	**0.00010**	**mg/L**	1	15-Jul-2019 18:38
Nitrobenzene	U		0.000024	0.00020	mg/L	1	15-Jul-2019 18:38
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	15-Jul-2019 18:38
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	15-Jul-2019 18:38
Phenanthrene	**0.000039**	J	**0.000021**	**0.00010**	**mg/L**	1	15-Jul-2019 18:38
Phenol	**0.00040**		**0.000035**	**0.00020**	**mg/L**	1	15-Jul-2019 18:38
Pyrene	U		0.000019	0.00010	mg/L	1	15-Jul-2019 18:38
Surr: 2,4,6-Tribromophenol	*67.0*			*34-129*	*%REC*	*1*	*15-Jul-2019 18:38*
Surr: 2-Fluorobiphenyl	*50.5*			*40-125*	*%REC*	*1*	*15-Jul-2019 18:38*
Surr: 2-Fluorophenol	*54.1*			*20-120*	*%REC*	*1*	*15-Jul-2019 18:38*
Surr: 4-Terphenyl-d14	*71.3*			*40-135*	*%REC*	*1*	*15-Jul-2019 18:38*
Surr: Nitrobenzene-d5	*62.0*			*41-120*	*%REC*	*1*	*15-Jul-2019 18:38*
Surr: Phenol-d6	*62.5*			*20-120*	*%REC*	*1*	*15-Jul-2019 18:38*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 16-Jul-2019		Analyst: JHD
Arsenic	**0.00200**		**0.000400**	**0.00200**	**mg/L**	1	16-Jul-2019 23:19

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19070575
Sample ID: WG-1620-MW12A-20190711
Lab ID:HS19070575-19
Collection Date: 11-Jul-2019 10:55
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	14-Jul-2019 05:55
Benzene	U		0.00020	0.0010	mg/L	1	14-Jul-2019 05:55
Chlorobenzene	U		0.00030	0.0010	mg/L	1	14-Jul-2019 05:55
Ethylbenzene	U		0.00030	0.0010	mg/L	1	14-Jul-2019 05:55
Methylene chloride	U		0.0010	0.0020	mg/L	1	14-Jul-2019 05:55
Toluene	U		0.00020	0.0010	mg/L	1	14-Jul-2019 05:55
Xylenes, Total	**0.00060**	J	**0.00030**	**0.0010**	**mg/L**	1	14-Jul-2019 05:55
Surr: 1,2-Dichloroethane-d4	*98.5*			*70-126*	*%REC*	*1*	*14-Jul-2019 05:55*
Surr: 4-Bromofluorobenzene	*99.4*			*81-113*	*%REC*	*1*	*14-Jul-2019 05:55*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*14-Jul-2019 05:55*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*14-Jul-2019 05:55*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW12A-20190711
Collection Date: 11-Jul-2019 10:55

ANALYTICAL REPORT
WorkOrder:HS19070575
Lab ID:HS19070575-19
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 15-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	15-Jul-2019 18:58
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	15-Jul-2019 18:58
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	15-Jul-2019 18:58
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	15-Jul-2019 18:58
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	15-Jul-2019 18:58
2-Methylnaphthalene	**0.013**		**0.00019**	**0.0010**	**mg/L**	10	17-Jul-2019 13:40
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	15-Jul-2019 18:58
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	15-Jul-2019 18:58
Acenaphthene	**0.19**		**0.0027**	**0.010**	**mg/L**	100	17-Jul-2019 13:59
Acenaphthylene	**0.0013**		**0.000015**	**0.00010**	**mg/L**	1	15-Jul-2019 18:58
Anthracene	**0.0087**		**0.000014**	**0.00010**	**mg/L**	1	15-Jul-2019 18:58
Benz(a)anthracene	**0.00041**		**0.000050**	**0.00010**	**mg/L**	1	15-Jul-2019 18:58
Benzo(a)pyrene	**0.00012**		**0.000020**	**0.00010**	**mg/L**	1	15-Jul-2019 18:58
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	15-Jul-2019 18:58
Bis(2-ethylhexyl)phthalate	**0.00031**		**0.000037**	**0.00020**	**mg/L**	1	15-Jul-2019 18:58
Chrysene	**0.00034**		**0.000021**	**0.00010**	**mg/L**	1	15-Jul-2019 18:58
Dibenzofuran	**0.14**		**0.0020**	**0.010**	**mg/L**	100	17-Jul-2019 13:59
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	15-Jul-2019 18:58
Fluoranthene	**0.0097**		**0.000010**	**0.00010**	**mg/L**	1	15-Jul-2019 18:58
Fluorene	**0.16**		**0.0030**	**0.010**	**mg/L**	100	17-Jul-2019 13:59
Naphthalene	**0.0012**		**0.000020**	**0.00010**	**mg/L**	1	15-Jul-2019 18:58
Nitrobenzene	U		0.000024	0.00020	mg/L	1	15-Jul-2019 18:58
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	15-Jul-2019 18:58
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	15-Jul-2019 18:58
Phenanthrene	**0.063**		**0.00021**	**0.0010**	**mg/L**	10	17-Jul-2019 13:40
Phenol	U		0.000035	0.00020	mg/L	1	15-Jul-2019 18:58
Pyrene	**0.0047**		**0.000019**	**0.00010**	**mg/L**	1	15-Jul-2019 18:58
Surr: 2,4,6-Tribromophenol	*103*			*34-129*	*%REC*	*10*	*17-Jul-2019 13:40*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*17-Jul-2019 13:59*
Surr: 2,4,6-Tribromophenol	*76.7*			*34-129*	*%REC*	*1*	*15-Jul-2019 18:58*
Surr: 2-Fluorobiphenyl	*49.9*			*40-125*	*%REC*	*1*	*15-Jul-2019 18:58*
Surr: 2-Fluorobiphenyl	*69.8*			*40-125*	*%REC*	*10*	*17-Jul-2019 13:40*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*17-Jul-2019 13:59*
Surr: 2-Fluorophenol	*51.5*			*20-120*	*%REC*	*10*	*17-Jul-2019 13:40*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*17-Jul-2019 13:59*
Surr: 2-Fluorophenol	*48.6*			*20-120*	*%REC*	*1*	*15-Jul-2019 18:58*
Surr: 4-Terphenyl-d14	*84.1*			*40-135*	*%REC*	*10*	*17-Jul-2019 13:40*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*100*	*17-Jul-2019 13:59*
Surr: 4-Terphenyl-d14	*76.2*			*40-135*	*%REC*	*1*	*15-Jul-2019 18:58*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW12A-20190711
Collection Date: 11-Jul-2019 10:55

ANALYTICAL REPORT
WorkOrder:HS19070575
Lab ID:HS19070575-19
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 15-Jul-2019		Analyst: GEY
Surr: Nitrobenzene-d5	*54.7*			*41-120*	*%REC*	*1*	*15-Jul-2019 18:58*
Surr: Nitrobenzene-d5	*70.5*			*41-120*	*%REC*	*10*	*17-Jul-2019 13:40*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*17-Jul-2019 13:59*
Surr: Phenol-d6	*68.7*			*20-120*	*%REC*	*10*	*17-Jul-2019 13:40*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*17-Jul-2019 13:59*
Surr: Phenol-d6	*54.0*			*20-120*	*%REC*	*1*	*15-Jul-2019 18:58*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jul-2019		Analyst: JHD
Arsenic	**0.00192**	J	**0.000400**	**0.00200**	**mg/L**	1	17-Jul-2019 22:23

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19070575
Sample ID: WQ-1620-TB01-20190710
Lab ID:HS19070575-20
Collection Date: 10-Jul-2019 00:00
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	14-Jul-2019 00:10
Benzene		U	0.00020	0.0010	mg/L	1	14-Jul-2019 00:10
Chlorobenzene		U	0.00030	0.0010	mg/L	1	14-Jul-2019 00:10
Ethylbenzene		U	0.00030	0.0010	mg/L	1	14-Jul-2019 00:10
Methylene chloride		U	0.0010	0.0020	mg/L	1	14-Jul-2019 00:10
Toluene		U	0.00020	0.0010	mg/L	1	14-Jul-2019 00:10
Vinyl chloride		U	0.00020	0.0010	mg/L	1	14-Jul-2019 00:10
Xylenes, Total		U	0.00030	0.0010	mg/L	1	14-Jul-2019 00:10
Surr: 1,2-Dichloroethane-d4	*99.0*			*70-126*	*%REC*	*1*	*14-Jul-2019 00:10*
Surr: 4-Bromofluorobenzene	*99.8*			*81-113*	*%REC*	*1*	*14-Jul-2019 00:10*
Surr: Dibromofluoromethane	*99.4*			*77-123*	*%REC*	*1*	*14-Jul-2019 00:10*
Surr: Toluene-d8	*98.1*			*82-127*	*%REC*	*1*	*14-Jul-2019 00:10*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WQ-1620-TB02-20190710
Collection Date: 10-Jul-2019 00:00

ANALYTICAL REPORT
WorkOrder:HS19070575
Lab ID:HS19070575-21
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	14-Jul-2019 00:35
Benzene		U	0.00020	0.0010	mg/L	1	14-Jul-2019 00:35
Chlorobenzene		U	0.00030	0.0010	mg/L	1	14-Jul-2019 00:35
Ethylbenzene		U	0.00030	0.0010	mg/L	1	14-Jul-2019 00:35
Methylene chloride		U	0.0010	0.0020	mg/L	1	14-Jul-2019 00:35
Toluene		U	0.00020	0.0010	mg/L	1	14-Jul-2019 00:35
Vinyl chloride		U	0.00020	0.0010	mg/L	1	14-Jul-2019 00:35
Xylenes, Total		U	0.00030	0.0010	mg/L	1	14-Jul-2019 00:35
Surr: 1,2-Dichloroethane-d4	*101*			*70-126*	*%REC*	*1*	*14-Jul-2019 00:35*
Surr: 4-Bromofluorobenzene	*96.6*			*81-113*	*%REC*	*1*	*14-Jul-2019 00:35*
Surr: Dibromofluoromethane	*103*			*77-123*	*%REC*	*1*	*14-Jul-2019 00:35*
Surr: Toluene-d8	*98.4*			*82-127*	*%REC*	*1*	*14-Jul-2019 00:35*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

WEIGHT LOG

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070575

Batch ID: 143014 **Method:** LOW-LEVEL SEMIVOLATILES BY 8270D **Prep:** 3510_B_LOW

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19070575-01	1	1000	1 (mL)	0.001
HS19070575-02	1	1000	1 (mL)	0.001
HS19070575-03	1	1000	1 (mL)	0.001
HS19070575-04	1	1000	1 (mL)	0.001
HS19070575-05	1	1000	1 (mL)	0.001
HS19070575-06	1	1000	1 (mL)	0.001
HS19070575-07	1	1000	1 (mL)	0.001
HS19070575-08	1	1000	1 (mL)	0.001
HS19070575-09	1	1000	1 (mL)	0.001
HS19070575-10	1	1000	1 (mL)	0.001
HS19070575-11	1	1000	1 (mL)	0.001
HS19070575-12	1	1000	1 (mL)	0.001
HS19070575-13	1	1000	1 (mL)	0.001
HS19070575-14	1	1000	1 (mL)	0.001
HS19070575-15	1	1000	1 (mL)	0.001
HS19070575-16	1	1000	1 (mL)	0.001
HS19070575-17	1	1000	1 (mL)	0.001
HS19070575-18	1	1000	1 (mL)	0.001
HS19070575-19	1	1000	1 (mL)	0.001

Batch ID: 143067 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19070575-01	1	10	10 (mL)	1
HS19070575-02	1	10	10 (mL)	1
HS19070575-03	1	10	10 (mL)	1
HS19070575-04	1	10	10 (mL)	1
HS19070575-05	1	10	10 (mL)	1
HS19070575-06	1	10	10 (mL)	1
HS19070575-07	1	10	10 (mL)	1
HS19070575-08	1	10	10 (mL)	1
HS19070575-09	1	10	10 (mL)	1
HS19070575-10	1	10	10 (mL)	1
HS19070575-11	1	10	10 (mL)	1
HS19070575-12	1	10	10 (mL)	1
HS19070575-13	1	10	10 (mL)	1
HS19070575-14	1	10	10 (mL)	1
HS19070575-15	1	10	10 (mL)	1
HS19070575-16	1	10	10 (mL)	1
HS19070575-17	1	10	10 (mL)	1
HS19070575-18	1	10	10 (mL)	1

Batch ID: 143129 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19070575-19	1	10	10 (mL)	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070575

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID: 143014 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Water	
HS19070575-01	WG-1620-MW18A-20190710	10 Jul 2019 07:20		15 Jul 2019 10:03	15 Jul 2019 19:37	100
HS19070575-01	WG-1620-MW18A-20190710	10 Jul 2019 07:20		15 Jul 2019 10:03	15 Jul 2019 19:56	1000
HS19070575-01	WG-1620-MW18A-20190710	10 Jul 2019 07:20		15 Jul 2019 10:03	15 Jul 2019 19:17	10
HS19070575-01	WG-1620-MW18A-20190710	10 Jul 2019 07:20		15 Jul 2019 10:03	15 Jul 2019 13:05	1
HS19070575-02	WG-1620-MW18C-20190710	10 Jul 2019 08:05		15 Jul 2019 10:03	15 Jul 2019 20:36	100
HS19070575-02	WG-1620-MW18C-20190710	10 Jul 2019 08:05		15 Jul 2019 10:03	16 Jul 2019 13:47	5000
HS19070575-02	WG-1620-MW18C-20190710	10 Jul 2019 08:05		15 Jul 2019 10:03	15 Jul 2019 20:16	10
HS19070575-02	WG-1620-MW18C-20190710	10 Jul 2019 08:05		15 Jul 2019 10:03	15 Jul 2019 13:25	1
HS19070575-03	WG-1620-MW58A-20190710	10 Jul 2019 08:55		15 Jul 2019 10:03	15 Jul 2019 21:34	100
HS19070575-03	WG-1620-MW58A-20190710	10 Jul 2019 08:55		15 Jul 2019 10:03	15 Jul 2019 21:15	10
HS19070575-03	WG-1620-MW58A-20190710	10 Jul 2019 08:55		15 Jul 2019 10:03	15 Jul 2019 13:45	1
HS19070575-04	WG-1620-MW57A-20190710	10 Jul 2019 09:55		15 Jul 2019 10:03	15 Jul 2019 22:13	100
HS19070575-04	WG-1620-MW57A-20190710	10 Jul 2019 09:55		15 Jul 2019 10:03	15 Jul 2019 21:54	10
HS19070575-04	WG-1620-MW57A-20190710	10 Jul 2019 09:55		15 Jul 2019 10:03	15 Jul 2019 14:04	1
HS19070575-05	WG-1620-MW57B-20190710	10 Jul 2019 10:40		15 Jul 2019 10:03	16 Jul 2019 14:26	5000
HS19070575-05	WG-1620-MW57B-20190710	10 Jul 2019 10:40		15 Jul 2019 10:03	16 Jul 2019 14:06	1000
HS19070575-05	WG-1620-MW57B-20190710	10 Jul 2019 10:40		15 Jul 2019 10:03	15 Jul 2019 22:33	100
HS19070575-05	WG-1620-MW57B-20190710	10 Jul 2019 10:40		15 Jul 2019 10:03	15 Jul 2019 14:24	10
HS19070575-06	WG-1620-MW72B-20190710	10 Jul 2019 11:35		15 Jul 2019 10:03	17 Jul 2019 14:18	5000
HS19070575-06	WG-1620-MW72B-20190710	10 Jul 2019 11:35		15 Jul 2019 10:03	16 Jul 2019 19:19	1000
HS19070575-06	WG-1620-MW72B-20190710	10 Jul 2019 11:35		15 Jul 2019 10:03	16 Jul 2019 19:00	100
HS19070575-06	WG-1620-MW72B-20190710	10 Jul 2019 11:35		15 Jul 2019 10:03	15 Jul 2019 14:43	10
HS19070575-07	WG-1620-MW19C-20190710	10 Jul 2019 12:25		15 Jul 2019 10:03	15 Jul 2019 15:03	1
HS19070575-08	WG-1620-MW17C-20190710	10 Jul 2019 13:25		15 Jul 2019 10:03	16 Jul 2019 19:58	100
HS19070575-08	WG-1620-MW17C-20190710	10 Jul 2019 13:25		15 Jul 2019 10:03	16 Jul 2019 19:39	10
HS19070575-08	WG-1620-MW17C-20190710	10 Jul 2019 13:25		15 Jul 2019 10:03	15 Jul 2019 15:22	1
HS19070575-09	WG-1620-MW17-20190710	10 Jul 2019 14:15		15 Jul 2019 10:03	16 Jul 2019 20:37	1000
HS19070575-09	WG-1620-MW17-20190710	10 Jul 2019 14:15		15 Jul 2019 10:03	16 Jul 2019 20:57	5000
HS19070575-09	WG-1620-MW17-20190710	10 Jul 2019 14:15		15 Jul 2019 10:03	16 Jul 2019 20:18	100
HS19070575-09	WG-1620-MW17-20190710	10 Jul 2019 14:15		15 Jul 2019 10:03	15 Jul 2019 15:42	10
HS19070575-10	WG-1620-MW20A-20190710	10 Jul 2019 15:10		15 Jul 2019 10:03	17 Jul 2019 15:16	500
HS19070575-10	WG-1620-MW20A-20190710	10 Jul 2019 15:10		15 Jul 2019 10:03	16 Jul 2019 21:36	100
HS19070575-10	WG-1620-MW20A-20190710	10 Jul 2019 15:10		15 Jul 2019 10:03	16 Jul 2019 21:16	10
HS19070575-10	WG-1620-MW20A-20190710	10 Jul 2019 15:10		15 Jul 2019 10:03	15 Jul 2019 16:01	1
HS19070575-11	WG-1620-MW15A-20190710	10 Jul 2019 16:10		15 Jul 2019 10:03	17 Jul 2019 15:35	50
HS19070575-11	WG-1620-MW15A-20190710	10 Jul 2019 16:10		15 Jul 2019 10:03	16 Jul 2019 21:55	10
HS19070575-11	WG-1620-MW15A-20190710	10 Jul 2019 16:10		15 Jul 2019 10:03	15 Jul 2019 16:21	1
HS19070575-12	WG-1620-MW15C-20190710	10 Jul 2019 17:05		15 Jul 2019 10:03	16 Jul 2019 22:15	10
HS19070575-12	WG-1620-MW15C-20190710	10 Jul 2019 17:05		15 Jul 2019 10:03	15 Jul 2019 16:41	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070575

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
HS19070575-13	WG-1620-MW15B-20190710	10 Jul 2019 18:00		15 Jul 2019 10:03	17 Jul 2019 13:01	100
HS19070575-13	WG-1620-MW15B-20190710	10 Jul 2019 18:00		15 Jul 2019 10:03	17 Jul 2019 12:42	10
HS19070575-13	WG-1620-MW15B-20190710	10 Jul 2019 18:00		15 Jul 2019 10:03	15 Jul 2019 17:00	1
HS19070575-14	WG-1620-FB01-20190710	10 Jul 2019 18:15		15 Jul 2019 10:03	15 Jul 2019 17:20	1
HS19070575-15	WG-1620-MW14-20190711	11 Jul 2019 07:20		15 Jul 2019 10:03	15 Jul 2019 17:39	1
HS19070575-16	WG-1620-MW13-20190711	11 Jul 2019 08:15		15 Jul 2019 10:03	15 Jul 2019 17:59	1
HS19070575-17	WG-1620-MW39B-20190711	11 Jul 2019 09:15		15 Jul 2019 10:03	15 Jul 2019 18:19	1
HS19070575-18	WG-1620-MW12C-20190711	11 Jul 2019 10:00		15 Jul 2019 10:03	15 Jul 2019 18:38	1
HS19070575-19	WG-1620-MW12A-20190711	11 Jul 2019 10:55		15 Jul 2019 10:03	17 Jul 2019 13:59	100
HS19070575-19	WG-1620-MW12A-20190711	11 Jul 2019 10:55		15 Jul 2019 10:03	17 Jul 2019 13:40	10
HS19070575-19	WG-1620-MW12A-20190711	11 Jul 2019 10:55		15 Jul 2019 10:03	15 Jul 2019 18:58	1
Batch ID: 143067 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS19070575-01	WG-1620-MW18A-20190710	10 Jul 2019 07:20		16 Jul 2019 11:30	16 Jul 2019 22:38	1
HS19070575-02	WG-1620-MW18C-20190710	10 Jul 2019 08:05		16 Jul 2019 11:30	16 Jul 2019 22:40	1
HS19070575-03	WG-1620-MW58A-20190710	10 Jul 2019 08:55		16 Jul 2019 11:30	16 Jul 2019 22:43	1
HS19070575-04	WG-1620-MW57A-20190710	10 Jul 2019 09:55		16 Jul 2019 11:30	16 Jul 2019 22:45	1
HS19070575-05	WG-1620-MW57B-20190710	10 Jul 2019 10:40		16 Jul 2019 11:30	16 Jul 2019 22:47	1
HS19070575-06	WG-1620-MW72B-20190710	10 Jul 2019 11:35		16 Jul 2019 11:30	17 Jul 2019 12:21	1
HS19070575-07	WG-1620-MW19C-20190710	10 Jul 2019 12:25		16 Jul 2019 11:30	16 Jul 2019 22:52	1
HS19070575-08	WG-1620-MW17C-20190710	10 Jul 2019 13:25		16 Jul 2019 11:30	16 Jul 2019 22:54	1
HS19070575-09	WG-1620-MW17-20190710	10 Jul 2019 14:15		16 Jul 2019 11:30	17 Jul 2019 12:23	1
HS19070575-10	WG-1620-MW20A-20190710	10 Jul 2019 15:10		16 Jul 2019 11:30	16 Jul 2019 23:03	1
HS19070575-11	WG-1620-MW15A-20190710	10 Jul 2019 16:10		16 Jul 2019 11:30	16 Jul 2019 22:18	1
HS19070575-12	WG-1620-MW15C-20190710	10 Jul 2019 17:05		16 Jul 2019 11:30	16 Jul 2019 23:05	1
HS19070575-13	WG-1620-MW15B-20190710	10 Jul 2019 18:00		16 Jul 2019 11:30	16 Jul 2019 23:08	1
HS19070575-14	WG-1620-FB01-20190710	10 Jul 2019 18:15		16 Jul 2019 11:30	16 Jul 2019 23:10	1
HS19070575-15	WG-1620-MW14-20190711	11 Jul 2019 07:20		16 Jul 2019 11:30	16 Jul 2019 23:12	1
HS19070575-16	WG-1620-MW13-20190711	11 Jul 2019 08:15		16 Jul 2019 11:30	16 Jul 2019 23:14	1
HS19070575-17	WG-1620-MW39B-20190711	11 Jul 2019 09:15		16 Jul 2019 11:30	16 Jul 2019 23:16	1
HS19070575-18	WG-1620-MW12C-20190711	11 Jul 2019 10:00		16 Jul 2019 11:30	16 Jul 2019 23:19	1
Batch ID: 143129 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS19070575-19	WG-1620-MW12A-20190711	11 Jul 2019 10:55		17 Jul 2019 13:00	17 Jul 2019 22:23	1
Batch ID: R342400 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS19070575-01	WG-1620-MW18A-20190710	10 Jul 2019 07:20			14 Jul 2019 04:56	1
HS19070575-02	WG-1620-MW18C-20190710	10 Jul 2019 08:05			14 Jul 2019 06:09	1
HS19070575-03	WG-1620-MW58A-20190710	10 Jul 2019 08:55			14 Jul 2019 05:20	1
HS19070575-04	WG-1620-MW57A-20190710	10 Jul 2019 09:55			14 Jul 2019 05:45	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070575

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID: R342410 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS19070575-05	WG-1620-MW57B-20190710	10 Jul 2019 10:40			14 Jul 2019 06:47	10
HS19070575-05	WG-1620-MW57B-20190710	10 Jul 2019 10:40			14 Jul 2019 06:19	1
HS19070575-06	WG-1620-MW72B-20190710	10 Jul 2019 11:35			14 Jul 2019 07:38	10
HS19070575-06	WG-1620-MW72B-20190710	10 Jul 2019 11:35			14 Jul 2019 07:11	1
HS19070575-07	WG-1620-MW19C-20190710	10 Jul 2019 12:25			14 Jul 2019 00:59	1
HS19070575-08	WG-1620-MW17C-20190710	10 Jul 2019 13:25			14 Jul 2019 02:13	1
HS19070575-09	WG-1620-MW17-20190710	10 Jul 2019 14:15			14 Jul 2019 08:30	10
HS19070575-09	WG-1620-MW17-20190710	10 Jul 2019 14:15			14 Jul 2019 08:03	1
HS19070575-10	WG-1620-MW20A-20190710	10 Jul 2019 15:10			14 Jul 2019 02:38	1
HS19070575-11	WG-1620-MW15A-20190710	10 Jul 2019 16:10			14 Jul 2019 03:02	1
HS19070575-12	WG-1620-MW15C-20190710	10 Jul 2019 17:05			14 Jul 2019 03:27	1
HS19070575-13	WG-1620-MW15B-20190710	10 Jul 2019 18:00			14 Jul 2019 03:52	1
HS19070575-14	WG-1620-FB01-20190710	10 Jul 2019 18:15			13 Jul 2019 23:46	1
HS19070575-15	WG-1620-MW14-20190711	11 Jul 2019 07:20			14 Jul 2019 04:16	1
HS19070575-16	WG-1620-MW13-20190711	11 Jul 2019 08:15			14 Jul 2019 04:41	1
HS19070575-17	WG-1620-MW39B-20190711	11 Jul 2019 09:15			14 Jul 2019 05:06	1
HS19070575-18	WG-1620-MW12C-20190711	11 Jul 2019 10:00			14 Jul 2019 05:30	1
HS19070575-19	WG-1620-MW12A-20190711	11 Jul 2019 10:55			14 Jul 2019 05:55	1
HS19070575-20	WQ-1620-TB01-20190710	10 Jul 2019 00:00			14 Jul 2019 00:10	1
HS19070575-21	WQ-1620-TB02-20190710	10 Jul 2019 00:00			14 Jul 2019 00:35	1
Batch ID: R342474 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS19070575-01	WG-1620-MW18A-20190710	10 Jul 2019 07:20			15 Jul 2019 19:23	5
HS19070575-02	WG-1620-MW18C-20190710	10 Jul 2019 08:05			15 Jul 2019 19:50	10

WorkOrder: HS19070575
InstrumentID: ICPMS05
Test Code: ICP_TW
Test Number: SW6020
Test Name: ICP-MS Metals by SW6020A

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Arsenic	7440-38-2	0.000500	0.000547	0.000400	0.00200

WorkOrder: HS19070575
InstrumentID: SV-7
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Diphenylhydrazine	122-66-7	0.00010	0.00011	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.00010	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.000096	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.00012	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.00011	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.00010	0.00012	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000013	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00010	0.00013	0.000047	0.0010
A	Acenaphthene	83-32-9	0.00010	0.00011	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.00010	0.00010	0.000015	0.00010
A	Anthracene	120-12-7	0.00010	0.00011	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.00010	0.000099	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.00010	0.000076	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.00012	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.000086	0.000037	0.00020
A	Chrysene	218-01-9	0.00010	0.00011	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.00010	0.000094	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.000099	0.000020	0.00020
A	Fluoranthene	206-44-0	0.00010	0.00012	0.000010	0.00010
A	Fluorene	86-73-7	0.00010	0.00012	0.000030	0.00010
A	Naphthalene	91-20-3	0.00010	0.00010	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.00013	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.00012	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.000085	0.000079	0.00020
A	Phenanthrene	85-01-8	0.00010	0.00011	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.000094	0.000035	0.00020
A	Pyrene	129-00-0	0.00010	0.00011	0.000019	0.00010
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0.00020
S	2-Fluorobiphenyl	321-60-8	0	0	0	0.00020
S	2-Fluorophenol	367-12-4	0	0	0	0.00020
S	4-Terphenyl-d14	1718-51-0	0	0	0	0.00020
S	Nitrobenzene-d5	4165-60-0	0	0	0	0.00020
S	Phenol-d6	13127-88-3	0	0	0	0.00020

WorkOrder: HS19070575
InstrumentID: VOA2
Test Code: 8260_LL_W
Test Number: SW8260
Test Name: Low Level Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.00050	0.00065	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00059	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00060	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00062	0.00030	0.0010
A	Methylene chloride	75-09-2	0.00050	0.00067	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00066	0.00020	0.0010
A	Vinyl chloride	75-01-4	0.00050	0.00051	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00076	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

WorkOrder: HS19070575
InstrumentID: VOA4
Test Code: 8260_LL_W
Test Number: SW8260
Test Name: Low Level Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.00050	0.00064	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00060	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00061	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00063	0.00030	0.0010
A	Methylene chloride	75-09-2	0.0010	0.00077	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00058	0.00020	0.0010
A	Vinyl chloride	75-01-4	0.00050	0.00070	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00062	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070575

QC BATCH REPORT

Batch ID: 143067 (0) **Instrument: ICPMS05** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-143067** Units: **mg/L** Analysis Date: **16-Jul-2019 22:14**
Client ID: Run ID: **ICPMS05_342486** SeqNo: **5169331** PrepDate: **16-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								

LCS Sample ID: **LCS-143067** Units: **mg/L** Analysis Date: **16-Jul-2019 22:16**
Client ID: Run ID: **ICPMS05_342486** SeqNo: **5169332** PrepDate: **16-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05122	0.00200	0.05	0	102	80 - 120				

MS Sample ID: **HS19070575-11MS** Units: **mg/L** Analysis Date: **16-Jul-2019 22:23**
Client ID: **WG-1620-MW15A-20190710** Run ID: **ICPMS05_342486** SeqNo: **5169335** PrepDate: **16-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.07665	0.00200	0.05	0.02509	103	80 - 120				

MSD Sample ID: **HS19070575-11MSD** Units: **mg/L** Analysis Date: **16-Jul-2019 22:25**
Client ID: **WG-1620-MW15A-20190710** Run ID: **ICPMS05_342486** SeqNo: **5169336** PrepDate: **16-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.07628	0.00200	0.05	0.02509	102	80 - 120	0.07665	0.475	20	

PDS Sample ID: **HS19070575-11PDS** Units: **mg/L** Analysis Date: **16-Jul-2019 22:27**
Client ID: **WG-1620-MW15A-20190710** Run ID: **ICPMS05_342486** SeqNo: **5169337** PrepDate: **16-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1292	0.00200	0.1	0.02509	104	75 - 125				

SD Sample ID: **HS19070575-11SD** Units: **mg/L** Analysis Date: **16-Jul-2019 22:20**
Client ID: **WG-1620-MW15A-20190710** Run ID: **ICPMS05_342486** SeqNo: **5169334** PrepDate: **16-Jul-2019** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.02454	0.0100					0.02509	2.21	10	

The following samples were analyzed in this batch:

HS19070575-01	HS19070575-02	HS19070575-03	HS19070575-04
HS19070575-05	HS19070575-06	HS19070575-07	HS19070575-08
HS19070575-09	HS19070575-10	HS19070575-11	HS19070575-12
HS19070575-13	HS19070575-14	HS19070575-15	HS19070575-16
HS19070575-17	HS19070575-18		

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070575

QC BATCH REPORT

Batch ID: 143129 (0) **Instrument: ICPMS05** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-143129** Units: **mg/L** Analysis Date: **17-Jul-2019 22:19**
Client ID: Run ID: **ICPMS05_342573** SeqNo: **5171278** PrepDate: **17-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								

LCS Sample ID: **LCS-143129** Units: **mg/L** Analysis Date: **17-Jul-2019 22:21**
Client ID: Run ID: **ICPMS05_342573** SeqNo: **5171279** PrepDate: **17-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04949	0.00200	0.05	0	99.0	80 - 120				

MS Sample ID: **HS19070575-19MS** Units: **mg/L** Analysis Date: **17-Jul-2019 22:28**
Client ID: **WG-1620-MW12A-20190711** Run ID: **ICPMS05_342573** SeqNo: **5171282** PrepDate: **17-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05141	0.00200	0.05	0.001917	99.0	80 - 120				

MSD Sample ID: **HS19070575-19MSD** Units: **mg/L** Analysis Date: **17-Jul-2019 22:30**
Client ID: **WG-1620-MW12A-20190711** Run ID: **ICPMS05_342573** SeqNo: **5171283** PrepDate: **17-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05143	0.00200	0.05	0.001917	99.0	80 - 120	0.05141	0.0486	20	

PDS Sample ID: **HS19070575-19PDS** Units: **mg/L** Analysis Date: **17-Jul-2019 22:32**
Client ID: **WG-1620-MW12A-20190711** Run ID: **ICPMS05_342573** SeqNo: **5171284** PrepDate: **17-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1245	0.00200	0.1	0.001917	123	75 - 125				

SD Sample ID: **HS19070575-19SD** Units: **mg/L** Analysis Date: **17-Jul-2019 22:26**
Client ID: **WG-1620-MW12A-20190711** Run ID: **ICPMS05_342573** SeqNo: **5171281** PrepDate: **17-Jul-2019** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.002209	0.0100					0.001917	0	10	J

The following samples were analyzed in this batch: HS19070575-19

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070575

QC BATCH REPORT

Batch ID: 143014 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-143014** Units: **ug/L** Analysis Date: **15-Jul-2019 12:07**
Client ID: Run ID: **SV-7_342456** SeqNo: **5167140** PrepDate: **15-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	U	0.20								
2,4-Dimethylphenol	U	0.20								
2,4-Dinitrotoluene	U	0.20								
2,6-Dinitrotoluene	U	0.20								
2-Chloronaphthalene	U	0.20								
2-Methylnaphthalene	U	0.10								
4,6-Dinitro-2-methylphenol	U	0.20								
4-Nitrophenol	U	1.0								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Benz(a)anthracene	U	0.10								
Benzo(a)pyrene	U	0.10								
Bis(2-chloroethoxy)methane	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Chrysene	U	0.10								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Nitrobenzene	U	0.20								
N-Nitrosodiphenylamine	U	0.20								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*3.701*	*0.20*	*5*	*0*	*74.0*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.828*	*0.20*	*5*	*0*	*76.6*	*40 - 125*				
Surr: 2-Fluorophenol	*3.803*	*0.20*	*5*	*0*	*76.1*	*20 - 120*				
Surr: 4-Terphenyl-d14	*3.47*	*0.20*	*5*	*0*	*69.4*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.43*	*0.20*	*5*	*0*	*88.6*	*41 - 120*				
Surr: Phenol-d6	*4.183*	*0.20*	*5*	*0*	*83.7*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070575

QC BATCH REPORT

Batch ID: 143014 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCS Sample ID: **LCS-143014** Units: **ug/L** Analysis Date: **15-Jul-2019 12:26**
Client ID: Run ID: **SV-7_342456** SeqNo: **5167141** PrepDate: **15-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	3.902	0.20	5	0	78.0	39 - 127				
2,4-Dimethylphenol	3.394	0.20	5	0	67.9	35 - 120				
2,4-Dinitrotoluene	4.229	0.20	5	0	84.6	50 - 122				
2,6-Dinitrotoluene	3.892	0.20	5	0	77.8	50 - 120				
2-Chloronaphthalene	3.393	0.20	5	0	67.9	50 - 120				
2-Methylnaphthalene	3.647	0.10	5	0	72.9	50 - 120				
4,6-Dinitro-2-methylphenol	3.043	0.20	5	0	60.9	25 - 121				
4-Nitrophenol	3.955	1.0	5	0	79.1	30 - 130				
Acenaphthene	3.452	0.10	5	0	69.0	45 - 120				
Acenaphthylene	3.423	0.10	5	0	68.5	47 - 120				
Anthracene	3.186	0.10	5	0	63.7	45 - 120				
Benz(a)anthracene	3.587	0.10	5	0	71.7	40 - 120				
Benzo(a)pyrene	2.95	0.10	5	0	59.0	45 - 120				
Bis(2-chloroethoxy)methane	3.517	0.20	5	0	70.3	45 - 120				
Bis(2-ethylhexyl)phthalate	3.572	0.20	5	0	71.4	40 - 139				
Chrysene	3.538	0.10	5	0	70.8	43 - 120				
Dibenzofuran	3.567	0.10	5	0	71.3	50 - 120				
Di-n-butyl phthalate	3.477	0.20	5	0	69.5	45 - 123				
Fluoranthene	3.475	0.10	5	0	69.5	45 - 125				
Fluorene	3.341	0.10	5	0	66.8	49 - 120				
Naphthalene	3.401	0.10	5	0	68.0	45 - 120				
Nitrobenzene	4.121	0.20	5	0	82.4	44 - 120				
N-Nitrosodiphenylamine	3.473	0.20	5	0	69.5	40 - 125				
Pentachlorophenol	2.714	0.20	5	0	54.3	19 - 121				
Phenanthrene	3.125	0.10	5	0	62.5	45 - 121				
Phenol	3.76	0.20	5	0	75.2	20 - 124				
Pyrene	3.463	0.10	5	0	69.3	40 - 130				
Surr: 2,4,6-Tribromophenol	*3.938*	*0.20*	*5*	*0*	*78.8*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.839*	*0.20*	*5*	*0*	*76.8*	*40 - 125*				
Surr: 2-Fluorophenol	*3.753*	*0.20*	*5*	*0*	*75.1*	*20 - 120*				
Surr: 4-Terphenyl-d14	*3.464*	*0.20*	*5*	*0*	*69.3*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.278*	*0.20*	*5*	*0*	*85.6*	*41 - 120*				
Surr: Phenol-d6	*4.197*	*0.20*	*5*	*0*	*83.9*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070575

QC BATCH REPORT

Batch ID: 143014 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCSD Sample ID: **LCSD-143014** Units: **ug/L** Analysis Date: **15-Jul-2019 12:46**
Client ID: Run ID: **SV-7_342456** SeqNo: **5167142** PrepDate: **15-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	3.957	0.20	5	0	79.1	39 - 127	3.902	1.41	20	
2,4-Dimethylphenol	3.566	0.20	5	0	71.3	35 - 120	3.394	4.94	20	
2,4-Dinitrotoluene	4.08	0.20	5	0	81.6	50 - 122	4.229	3.59	20	
2,6-Dinitrotoluene	3.82	0.20	5	0	76.4	50 - 120	3.892	1.87	20	
2-Chloronaphthalene	3.286	0.20	5	0	65.7	50 - 120	3.393	3.21	20	
2-Methylnaphthalene	3.596	0.10	5	0	71.9	50 - 120	3.647	1.41	20	
4,6-Dinitro-2-methylphenol	3.247	0.20	5	0	64.9	25 - 121	3.043	6.47	30	
4-Nitrophenol	3.728	1.0	5	0	74.6	30 - 130	3.955	5.92	20	
Acenaphthene	3.494	0.10	5	0	69.9	45 - 120	3.452	1.22	20	
Acenaphthylene	3.398	0.10	5	0	68.0	47 - 120	3.423	0.726	20	
Anthracene	3.226	0.10	5	0	64.5	45 - 120	3.186	1.26	20	
Benz(a)anthracene	3.638	0.10	5	0	72.8	40 - 120	3.587	1.4	20	
Benzo(a)pyrene	2.952	0.10	5	0	59.0	45 - 120	2.95	0.0403	20	
Bis(2-chloroethoxy)methane	3.497	0.20	5	0	69.9	45 - 120	3.517	0.59	20	
Bis(2-ethylhexyl)phthalate	3.575	0.20	5	0	71.5	40 - 139	3.572	0.0967	20	
Chrysene	3.526	0.10	5	0	70.5	43 - 120	3.538	0.344	20	
Dibenzofuran	3.479	0.10	5	0	69.6	50 - 120	3.567	2.5	20	
Di-n-butyl phthalate	3.423	0.20	5	0	68.5	45 - 123	3.477	1.58	20	
Fluoranthene	3.476	0.10	5	0	69.5	45 - 125	3.475	0.0122	20	
Fluorene	3.303	0.10	5	0	66.1	49 - 120	3.341	1.14	20	
Naphthalene	3.377	0.10	5	0	67.5	45 - 120	3.401	0.71	20	
Nitrobenzene	4.097	0.20	5	0	81.9	44 - 120	4.121	0.591	20	
N-Nitrosodiphenylamine	3.473	0.20	5	0	69.5	40 - 125	3.473	0.0165	20	
Pentachlorophenol	2.83	0.20	5	0	56.6	19 - 121	2.714	4.18	20	
Phenanthrene	3.152	0.10	5	0	63.0	45 - 121	3.125	0.835	20	
Phenol	3.643	0.20	5	0	72.9	20 - 124	3.76	3.19	20	
Pyrene	3.488	0.10	5	0	69.8	40 - 130	3.463	0.698	20	
Surr: 2,4,6-Tribromophenol	*3.744*	*0.20*	*5*	*0*	*74.9*	*34 - 129*	*3.938*	*5.07*	*20*	
Surr: 2-Fluorobiphenyl	*3.773*	*0.20*	*5*	*0*	*75.5*	*40 - 125*	*3.839*	*1.75*	*20*	
Surr: 2-Fluorophenol	*3.729*	*0.20*	*5*	*0*	*74.6*	*20 - 120*	*3.753*	*0.655*	*20*	
Surr: 4-Terphenyl-d14	*3.457*	*0.20*	*5*	*0*	*69.1*	*40 - 135*	*3.464*	*0.215*	*20*	
Surr: Nitrobenzene-d5	*4.223*	*0.20*	*5*	*0*	*84.5*	*41 - 120*	*4.278*	*1.28*	*20*	
Surr: Phenol-d6	*4.186*	*0.20*	*5*	*0*	*83.7*	*20 - 120*	*4.197*	*0.273*	*20*	

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	HS19070575

QC BATCH REPORT

Batch ID: 143014 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

The following samples were analyzed in this batch:

HS19070575-01	HS19070575-02	HS19070575-03	HS19070575-04
HS19070575-05	HS19070575-06	HS19070575-07	HS19070575-08
HS19070575-09	HS19070575-10	HS19070575-11	HS19070575-12
HS19070575-13	HS19070575-14	HS19070575-15	HS19070575-16
HS19070575-17	HS19070575-18	HS19070575-19	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070575

QC BATCH REPORT

Batch ID: R342400 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-190713** Units: **ug/L** Analysis Date: **13-Jul-2019 23:38**
Client ID: Run ID: **VOA2_342400** SeqNo: **5166127** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*42.28*	*1.0*	*50*	*0*	*84.6*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*47.37*	*1.0*	*50*	*0*	*94.7*	*82 - 115*				
Surr: Dibromofluoromethane	*48.29*	*1.0*	*50*	*0*	*96.6*	*73 - 126*				
Surr: Toluene-d8	*49.5*	*1.0*	*50*	*0*	*99.0*	*81 - 120*				

LCS Sample ID: **VLCSW-190713** Units: **ug/L** Analysis Date: **13-Jul-2019 23:13**
Client ID: Run ID: **VOA2_342400** SeqNo: **5166126** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	19.36	1.0	20	0	96.8	70 - 124				
Benzene	20.6	1.0	20	0	103	74 - 120				
Chlorobenzene	19.47	1.0	20	0	97.3	76 - 113				
Ethylbenzene	19.57	1.0	20	0	97.8	77 - 117				
Methylene chloride	20.05	2.0	20	0	100	70 - 127				
Toluene	22.21	1.0	20	0	111	77 - 118				
Vinyl chloride	23.29	1.0	20	0	116	70 - 130				
Xylenes, Total	64.58	1.0	60	0	108	75 - 122				
Surr: 1,2-Dichloroethane-d4	*45.98*	*1.0*	*50*	*0*	*92.0*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*46.75*	*1.0*	*50*	*0*	*93.5*	*82 - 115*				
Surr: Dibromofluoromethane	*47.95*	*1.0*	*50*	*0*	*95.9*	*73 - 126*				
Surr: Toluene-d8	*49.31*	*1.0*	*50*	*0*	*98.6*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070575

QC BATCH REPORT

Batch ID: R342400 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS19070509-10MS** Units: **ug/L** Analysis Date: **14-Jul-2019 00:51**
Client ID: Run ID: **VOA2_342400** SeqNo: **5166130** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Dichloroethane	16.54	1.0	20	0	82.7	70 - 127				
Benzene	17.76	1.0	20	0	88.8	70 - 127				
Chlorobenzene	17.58	1.0	20	0	87.9	70 - 114				
Ethylbenzene	17.7	1.0	20	0	88.5	70 - 124				
Methylene chloride	17.93	2.0	20	0	89.7	70 - 128				
Toluene	20.17	1.0	20	0	101	70 - 123				
Vinyl chloride	20.19	1.0	20	0	101	70 - 130				
Xylenes, Total	57.61	1.0	60	0	96.0	70 - 130				
Surr: 1,2-Dichloroethane-d4	*45.2*	*1.0*	*50*	*0*	*90.4*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*48.16*	*1.0*	*50*	*0*	*96.3*	*81 - 113*				
Surr: Dibromofluoromethane	*48.56*	*1.0*	*50*	*0*	*97.1*	*77 - 123*				
Surr: Toluene-d8	*50.25*	*1.0*	*50*	*0*	*101*	*82 - 127*				

MSD Sample ID: **HS19070509-10MSD** Units: **ug/L** Analysis Date: **14-Jul-2019 01:16**
Client ID: Run ID: **VOA2_342400** SeqNo: **5166131** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Dichloroethane	16.17	1.0	20	0	80.8	70 - 127	16.54	2.3	20	
Benzene	17.18	1.0	20	0	85.9	70 - 127	17.76	3.31	20	
Chlorobenzene	16.7	1.0	20	0	83.5	70 - 114	17.58	5.17	20	
Ethylbenzene	16.96	1.0	20	0	84.8	70 - 124	17.7	4.27	20	
Methylene chloride	16.55	2.0	20	0	82.8	70 - 128	17.93	8.02	20	
Toluene	18.64	1.0	20	0	93.2	70 - 123	20.17	7.89	20	
Vinyl chloride	19.45	1.0	20	0	97.2	70 - 130	20.19	3.77	20	
Xylenes, Total	55.71	1.0	60	0	92.9	70 - 130	57.61	3.35	20	
Surr: 1,2-Dichloroethane-d4	*44.37*	*1.0*	*50*	*0*	*88.7*	*70 - 126*	*45.2*	*1.85*	*20*	
Surr: 4-Bromofluorobenzene	*47.48*	*1.0*	*50*	*0*	*95.0*	*81 - 113*	*48.16*	*1.41*	*20*	
Surr: Dibromofluoromethane	*47.39*	*1.0*	*50*	*0*	*94.8*	*77 - 123*	*48.56*	*2.44*	*20*	
Surr: Toluene-d8	*49.77*	*1.0*	*50*	*0*	*99.5*	*82 - 127*	*50.25*	*0.966*	*20*	

The following samples were analyzed in this batch: HS19070575-01 HS19070575-02 HS19070575-03 HS19070575-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070575

QC BATCH REPORT

Batch ID: R342410 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-190713** Units: **ug/L** Analysis Date: **13-Jul-2019 23:21**
Client ID: Run ID: **VOA4_342410** SeqNo: **5166422** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*49.93*	*1.0*	*50*	*0*	*99.9*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*52.25*	*1.0*	*50*	*0*	*104*	*82 - 115*				
Surr: Dibromofluoromethane	*50.49*	*1.0*	*50*	*0*	*101*	*73 - 126*				
Surr: Toluene-d8	*50.01*	*1.0*	*50*	*0*	*100*	*81 - 120*				

LCS Sample ID: **VLCSW-190713** Units: **ug/L** Analysis Date: **13-Jul-2019 22:31**
Client ID: Run ID: **VOA4_342410** SeqNo: **5166421** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	18.33	1.0	20	0	91.6	70 - 124				
Benzene	18.78	1.0	20	0	93.9	74 - 120				
Chlorobenzene	19.89	1.0	20	0	99.4	76 - 113				
Ethylbenzene	19.73	1.0	20	0	98.7	77 - 117				
Methylene chloride	19.5	2.0	20	0	97.5	70 - 127				
Toluene	19.33	1.0	20	0	96.7	77 - 118				
Vinyl chloride	19.32	1.0	20	0	96.6	70 - 130				
Xylenes, Total	63.31	1.0	60	0	106	75 - 122				
Surr: 1,2-Dichloroethane-d4	*47.2*	*1.0*	*50*	*0*	*94.4*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*50.98*	*1.0*	*50*	*0*	*102*	*82 - 115*				
Surr: Dibromofluoromethane	*48.19*	*1.0*	*50*	*0*	*96.4*	*73 - 126*				
Surr: Toluene-d8	*49.83*	*1.0*	*50*	*0*	*99.7*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070575

QC BATCH REPORT

Batch ID: R342410 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS19070575-07MS** Units: **ug/L** Analysis Date: **14-Jul-2019 01:24**
Client ID: **WG-1620-MW19C-20190710** Run ID: **VOA4_342410** SeqNo: **5166427** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Dichloroethane	16.77	1.0	20	0	83.9	70 - 127				
Benzene	18.56	1.0	20	0.3991	90.8	70 - 127				
Chlorobenzene	18.71	1.0	20	0	93.5	70 - 114				
Ethylbenzene	19.94	1.0	20	0.9597	94.9	70 - 124				
Methylene chloride	18.1	2.0	20	0	90.5	70 - 128				
Toluene	19.42	1.0	20	0.8601	92.8	70 - 123				
Vinyl chloride	19.21	1.0	20	0	96.1	70 - 130				
Xylenes, Total	63.56	1.0	60	2.208	102	70 - 130				
Surr: 1,2-Dichloroethane-d4	*48.1*	*1.0*	*50*	*0*	*96.2*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*51.66*	*1.0*	*50*	*0*	*103*	*81 - 113*				
Surr: Dibromofluoromethane	*48.64*	*1.0*	*50*	*0*	*97.3*	*77 - 123*				
Surr: Toluene-d8	*49.6*	*1.0*	*50*	*0*	*99.2*	*82 - 127*				

MSD Sample ID: **HS19070575-07MSD** Units: **ug/L** Analysis Date: **14-Jul-2019 01:49**
Client ID: **WG-1620-MW19C-20190710** Run ID: **VOA4_342410** SeqNo: **5166428** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Dichloroethane	17.01	1.0	20	0	85.0	70 - 127	16.77	1.39	20	
Benzene	18.15	1.0	20	0.3991	88.8	70 - 127	18.56	2.23	20	
Chlorobenzene	18.19	1.0	20	0	90.9	70 - 114	18.71	2.83	20	
Ethylbenzene	19.39	1.0	20	0.9597	92.2	70 - 124	19.94	2.78	20	
Methylene chloride	17.68	2.0	20	0	88.4	70 - 128	18.1	2.38	20	
Toluene	19.25	1.0	20	0.8601	92.0	70 - 123	19.42	0.87	20	
Vinyl chloride	18.26	1.0	20	0	91.3	70 - 130	19.21	5.06	20	
Xylenes, Total	60.19	1.0	60	2.208	96.6	70 - 130	63.56	5.45	20	
Surr: 1,2-Dichloroethane-d4	*47.27*	*1.0*	*50*	*0*	*94.5*	*70 - 126*	*48.1*	*1.73*	*20*	
Surr: 4-Bromofluorobenzene	*50.29*	*1.0*	*50*	*0*	*101*	*81 - 113*	*51.66*	*2.67*	*20*	
Surr: Dibromofluoromethane	*48.5*	*1.0*	*50*	*0*	*97.0*	*77 - 123*	*48.64*	*0.291*	*20*	
Surr: Toluene-d8	*50.32*	*1.0*	*50*	*0*	*101*	*82 - 127*	*49.6*	*1.44*	*20*	

The following samples were analyzed in this batch:

HS19070575-05	HS19070575-06	HS19070575-07	HS19070575-08
HS19070575-09	HS19070575-10	HS19070575-11	HS19070575-12
HS19070575-13	HS19070575-14	HS19070575-15	HS19070575-16
HS19070575-17	HS19070575-18	HS19070575-19	HS19070575-20
HS19070575-21			

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070575

QC BATCH REPORT

Batch ID: R342474 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-190715** Units: **ug/L** Analysis Date: **15-Jul-2019 12:40**
Client ID: Run ID: **VOA2_342474** SeqNo: **5167694** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	1.0								
Ethylbenzene	U	1.0								
Toluene	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*44.39*	*1.0*	*50*	*0*	*88.8*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*46.81*	*1.0*	*50*	*0*	*93.6*	*82 - 115*				
Surr: Dibromofluoromethane	*48.92*	*1.0*	*50*	*0*	*97.8*	*73 - 126*				
Surr: Toluene-d8	*50.4*	*1.0*	*50*	*0*	*101*	*81 - 120*				

LCS Sample ID: **VLCSW-190715** Units: **ug/L** Analysis Date: **15-Jul-2019 11:51**
Client ID: Run ID: **VOA2_342474** SeqNo: **5167693** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.79	1.0	20	0	98.9	74 - 120				
Ethylbenzene	20.53	1.0	20	0	103	77 - 117				
Toluene	22.56	1.0	20	0	113	77 - 118				
Xylenes, Total	66.83	1.0	60	0	111	75 - 122				
Surr: 1,2-Dichloroethane-d4	*46.06*	*1.0*	*50*	*0*	*92.1*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*47.86*	*1.0*	*50*	*0*	*95.7*	*82 - 115*				
Surr: Dibromofluoromethane	*47.97*	*1.0*	*50*	*0*	*95.9*	*73 - 126*				
Surr: Toluene-d8	*50.17*	*1.0*	*50*	*0*	*100*	*81 - 120*				

MS Sample ID: **HS19070637-01MS** Units: **ug/L** Analysis Date: **15-Jul-2019 14:47**
Client ID: Run ID: **VOA2_342474** SeqNo: **5167699** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	16.39	1.0	20	0	82.0	70 - 127				
Ethylbenzene	16.9	1.0	20	0	84.5	70 - 124				
Toluene	18.59	1.0	20	0	93.0	70 - 123				
Xylenes, Total	55.82	1.0	60	0	93.0	70 - 130				
Surr: 1,2-Dichloroethane-d4	*45.39*	*1.0*	*50*	*0*	*90.8*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*48.72*	*1.0*	*50*	*0*	*97.4*	*81 - 113*				
Surr: Dibromofluoromethane	*47.25*	*1.0*	*50*	*0*	*94.5*	*77 - 123*				
Surr: Toluene-d8	*50.44*	*1.0*	*50*	*0*	*101*	*82 - 127*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070575

QC BATCH REPORT

Batch ID: R342474 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MSD Sample ID: **HS19070637-01MSD** Units: **ug/L** Analysis Date: **15-Jul-2019 15:11**
Client ID: Run ID: **VOA2_342474** SeqNo: **5167700** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	15.74	1.0	20	0	78.7	70 - 127	16.39	4.06	20	
Ethylbenzene	16.05	1.0	20	0	80.2	70 - 124	16.9	5.16	20	
Toluene	16.99	1.0	20	0	84.9	70 - 123	18.59	9.02	20	
Xylenes, Total	50.24	1.0	60	0	83.7	70 - 130	55.82	10.5	20	
Surr: 1,2-Dichloroethane-d4	*46.08*	*1.0*	*50*	*0*	*92.2*	*70 - 126*	*45.39*	*1.5*	*20*	
Surr: 4-Bromofluorobenzene	*47.43*	*1.0*	*50*	*0*	*94.9*	*81 - 113*	*48.72*	*2.69*	*20*	
Surr: Dibromofluoromethane	*47.53*	*1.0*	*50*	*0*	*95.1*	*77 - 123*	*47.25*	*0.583*	*20*	
Surr: Toluene-d8	*48.79*	*1.0*	*50*	*0*	*97.6*	*82 - 127*	*50.44*	*3.32*	*20*	

The following samples were analyzed in this batch: HS19070575-01 HS19070575-02

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS19070575**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Kansas	E-10352 2018-2019	31-Jul-2019
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
Oklahoma	2018-156	31-Aug-2019
Texas	TX104704231-19-23	30-Apr-2020

Sample Receipt Checklist

Client Name: PBW
Work Order: HS19070575

Date/Time Received: **11-Jul-2019 16:45**
Received by: **JRM**

Checklist completed by: *Nilesh D. Ranchod* eSignature — 12-Jul-2019 Date

Reviewed by: *Dane J. Wacasey* eSignature — 18-Jul-2019 Date

Matrices: **Water**

Carrier name: **Client**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	3 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:196131/196140/196123
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	0.7C/0.7C , 1.2C/1.2C , 1.0C/1.0C , 0.9C/0.9C UC/C	IR # 11
Cooler(s)/Kit(s):	44145/43623/44608/44381	
Date/Time sample(s) sent to storage:	07/11/2019 18:00	

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

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Chain of Custody Form

Page 1 of

COC ID: 196131

HS19070575

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information			
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A	8260_LL_W (5632528 Volatile Organics Site Specific)
Work Order		Project Number	1620-07-Rev0 SR 92688	B	8260_LL_W (5632528 VOC Site Specific + V.C.)
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P	C	8270_LOW_W (5632532 SemiVolatiles Site specific)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	ICP_TW (5636002 5652646 Metals - As, Pb)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	WG-1620-TB01-20190710	7-10-19	—	Water	1	2		X									
2	WG-1620-MW18A-20190710		0720	W		6		X	X	X							
3	WG-1620-MW18C-20190710		0805	W		6		X	X	X							
4	WG-1620-MW58A-20190710		0855	W		6		X	X	X							
5	WG-1620-MW57A-20190710		0955	W		6		X	X	X							
6	WG-1620-MW57B-20190710		1040	W		6		X	X	X							
7	WG-1620-MW72B-20190710		1135	W		6	X		X	X							
8	WG-1620-MW19C-20190710		1225	W		6		X	X	X							
9	WG-1620-MW17C-20190710		1325	W		6	X		X	X							
10	WG-1620-MW-17-20190710		1415	W		6	X		X	X							

Sampler(s) Please Print & Sign: JOHN BRAYTON John Brayton

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: John Brayton Date: 7-11-19 Time: 16:45

Received by:

Relinquished by: Date: 7/11/19 Time: 16:45

Received by (Laboratory): J. Hampton

Logged by (Laboratory): Date: Time:

Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.
44145	0.7
43623	1.2
44608	1.0
44381	0.9

QC Package: (Check One Box Below)

- [ ] Level II Std QC
- [ ] Level III Std QC/Raw Data
- [ ] Level IV SW846/CLP
- [ ] Other
- [X] TRRP Checklist
- [ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Chain of Custody Form

Page 2 of 2

COC ID: 196140

HS19070575

, WV

Golder Associates Inc.

Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information			
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A	8260_LL_W (5632528 Volatile Organics Site Specific)
Work Order		Project Number	1620-07-Rev0 SR 92688	B	8260_LL_W (5632528 VOC Site Specific + V.C.)
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P	C	8270_LOW_W (5632532 SemiVolatiles Site specific)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	ICP_TW (5636002 5652846 Metals - As, Pb)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~WG-1620-TB0 28 1807~~			Water	1	2		X									
2	WG-1620-MW20A-20190710	7-10-19	1510	W		6	X		X	X							
3	WG-1620-MW15A-20190710		1610	W		6	X		X	X							
4	WG-1620-MW15C-20190710		1705	W		6	X		X	X							
5	WG-1620-MW15B-20190710		1800	W		6	X		X	X							
6	WG-1620-FB01-20190710		1815	W		6		X	X	X							
7	WG-1620-MW14-20190711	7-11-19	0720	W		6	X		X	X							
8	WG-1620-MW13-20190711		0815	W		6	X		X	X							
9	WG-1620-MW39B-20190711		0915	W		6	X		X	X							
10	WG-1620-MW12C-20190711		1000	W		6	X		X	X							

Sampler(s) Please Print & Sign: JOHN BEAVERS

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: [signature] Date: 7-11-19 Time: 1645 Received by:

Relinquished By: Date: 7/11/19 Time: 16:45 Received by (Laboratory):

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)

[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[X] TRRP Checklist
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note:
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Chain of Custody Form

Page 1 of 1

COC ID: 196123

HS19070575

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information			
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A	8260_LL_W (5632528 Volatile Organics Site Specific)
Work Order		Project Number	1620-07-Rev0 SR 92688	B	8260_LL_W (5632528 VOC Site Specific + V.C.)
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P	C	8270_LOW_W (5632532 SemiVolatiles Site specific)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	ICP_TW (5636002 5632646 Metals - As, Pb)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~WG-1620-TBD-201891~~																
2	WG-1620-MW12A-20190711	7-11-19	1055	W		6	X		X	X							
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: JOHN BEAUDOIN John Beaudoin

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: John Beaudoin Date: 7-12-19 Time: 16:45 Received by:

Relinquished by: John Beaudoin Date: 7/11/19 Time: 16:45 Received by (Laboratory): J. Mumm

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)

[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[X] TRRP Checklist
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

ote:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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July 22, 2019

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS19070609**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 8 sample(s) on Jul 12, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS19070609**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS19070609**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 07/22/2019				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS19070609				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 143051,143162,R342484				
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?		X			1
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?		X			2
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 07/22/2019				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS19070609				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 143051,143162,R342484				
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?	X				
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 07/22/2019
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS19070609
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 143051,143162,R342484

ER#[5]	Description
1	Semivolatile Organics Method SW8270, sample WG-1620-MW40B-20190711, the surrogate recoveries could not be determined due to dilution below the calibration range.
2	Batch 143051, Semivolatile Organics Method SW8270, LCS/LCSD were analyzed and reported in lieu of an MS/MSD for this batch.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS19070609

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19070609-01	WG-1620-MW40B-20190711	Water		11-Jul-2019 12:00	12-Jul-2019 12:15	☐
HS19070609-02	WG-1620-MW42B-20190711	Water		11-Jul-2019 13:00	12-Jul-2019 12:15	☐
HS19070609-03	WG-1620-P11-20190711	Water		11-Jul-2019 13:55	12-Jul-2019 12:15	☐
HS19070609-04	WG-1620-MW05-20190711	Water		11-Jul-2019 14:50	12-Jul-2019 12:15	☐
HS19070609-05	WG-1620-MW64A-20190711	Water		11-Jul-2019 15:50	12-Jul-2019 12:15	☐
HS19070609-06	WG-1620-FB02-20190711	Water		11-Jul-2019 16:05	12-Jul-2019 12:15	☐
HS19070609-07	WG-1620-TB02-20190711	Water	C&G-062119-78	11-Jul-2019 00:00	12-Jul-2019 12:15	☐
HS19070609-08	WQ-1620-TB01-20190711	Water	C&G-062119-78	11-Jul-2019 00:00	12-Jul-2019 12:15	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW40B-20190711
Collection Date: 11-Jul-2019 12:00

ANALYTICAL REPORT
WorkOrder:HS19070609
Lab ID:HS19070609-01
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	15-Jul-2019 14:00
Benzene	**0.0088**		**0.00020**	**0.0010**	**mg/L**	1	15-Jul-2019 14:00
Chlorobenzene	U		0.00030	0.0010	mg/L	1	15-Jul-2019 14:00
Ethylbenzene	**0.082**		**0.00030**	**0.0010**	**mg/L**	1	15-Jul-2019 14:00
Methylene chloride	U		0.0010	0.0020	mg/L	1	15-Jul-2019 14:00
Toluene	**0.014**		**0.00020**	**0.0010**	**mg/L**	1	15-Jul-2019 14:00
Xylenes, Total	**0.13**		**0.00030**	**0.0010**	**mg/L**	1	15-Jul-2019 14:00
Surr: 1,2-Dichloroethane-d4	*97.9*			*70-126*	*%REC*	*1*	*15-Jul-2019 14:00*
Surr: 4-Bromofluorobenzene	*107*			*81-113*	*%REC*	*1*	*15-Jul-2019 14:00*
Surr: Dibromofluoromethane	*97.7*			*77-123*	*%REC*	*1*	*15-Jul-2019 14:00*
Surr: Toluene-d8	*98.4*			*82-127*	*%REC*	*1*	*15-Jul-2019 14:00*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW40B-20190711
Collection Date: 11-Jul-2019 12:00

ANALYTICAL REPORT
WorkOrder:HS19070609
Lab ID:HS19070609-01
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 16-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	17-Jul-2019 21:21
2,4-Dimethylphenol	**0.0013**		**0.000040**	**0.00020**	**mg/L**	1	17-Jul-2019 21:21
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	17-Jul-2019 21:21
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	17-Jul-2019 21:21
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	17-Jul-2019 21:21
2-Methylnaphthalene	**0.18**		**0.0019**	**0.010**	**mg/L**	100	18-Jul-2019 15:40
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	17-Jul-2019 21:21
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	17-Jul-2019 21:21
Acenaphthene	**0.21**		**0.0027**	**0.010**	**mg/L**	100	18-Jul-2019 15:40
Acenaphthylene	**0.0021**		**0.000015**	**0.00010**	**mg/L**	1	17-Jul-2019 21:21
Anthracene	**0.011**		**0.00014**	**0.0010**	**mg/L**	10	18-Jul-2019 15:21
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	17-Jul-2019 21:21
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	17-Jul-2019 21:21
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	17-Jul-2019 21:21
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	17-Jul-2019 21:21
Chrysene	U		0.000021	0.00010	mg/L	1	17-Jul-2019 21:21
Dibenzofuran	**0.13**		**0.0020**	**0.010**	**mg/L**	100	18-Jul-2019 15:40
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	17-Jul-2019 21:21
Fluoranthene	**0.0059**		**0.000010**	**0.00010**	**mg/L**	1	17-Jul-2019 21:21
Fluorene	**0.13**		**0.0030**	**0.010**	**mg/L**	100	18-Jul-2019 15:40
Naphthalene	**3.6**		**0.020**	**0.10**	**mg/L**	1000	18-Jul-2019 15:59
Nitrobenzene	U		0.000024	0.00020	mg/L	1	17-Jul-2019 21:21
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	17-Jul-2019 21:21
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	17-Jul-2019 21:21
Phenanthrene	**0.093**		**0.00021**	**0.0010**	**mg/L**	10	18-Jul-2019 15:21
Phenol	**0.000053**	J	**0.000035**	**0.00020**	**mg/L**	1	17-Jul-2019 21:21
Pyrene	**0.0024**		**0.000019**	**0.00010**	**mg/L**	1	17-Jul-2019 21:21
Surr: 2,4,6-Tribromophenol	*53.1*			*34-129*	*%REC*	*10*	*18-Jul-2019 15:21*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*18-Jul-2019 15:40*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*1000*	*18-Jul-2019 15:59*
Surr: 2,4,6-Tribromophenol	*88.2*			*34-129*	*%REC*	*1*	*17-Jul-2019 21:21*
Surr: 2-Fluorobiphenyl	*65.6*			*40-125*	*%REC*	*1*	*17-Jul-2019 21:21*
Surr: 2-Fluorobiphenyl	*59.9*			*40-125*	*%REC*	*10*	*18-Jul-2019 15:21*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*18-Jul-2019 15:40*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*1000*	*18-Jul-2019 15:59*
Surr: 2-Fluorophenol	*61.1*			*20-120*	*%REC*	*10*	*18-Jul-2019 15:21*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*18-Jul-2019 15:40*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*1000*	*18-Jul-2019 15:59*
Surr: 2-Fluorophenol	*65.2*			*20-120*	*%REC*	*1*	*17-Jul-2019 21:21*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW40B-20190711
Collection Date: 11-Jul-2019 12:00

ANALYTICAL REPORT
WorkOrder:HS19070609
Lab ID:HS19070609-01
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Jul-2019		Analyst: GEY
Surr: 4-Terphenyl-d14	*76.8*			*40-135*	*%REC*	*10*	*18-Jul-2019 15:21*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*100*	*18-Jul-2019 15:40*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*1000*	*18-Jul-2019 15:59*
Surr: 4-Terphenyl-d14	*71.7*			*40-135*	*%REC*	*1*	*17-Jul-2019 21:21*
Surr: Nitrobenzene-d5	*66.2*			*41-120*	*%REC*	*10*	*18-Jul-2019 15:21*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*18-Jul-2019 15:40*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*1000*	*18-Jul-2019 15:59*
Surr: Nitrobenzene-d5	*50.5*			*41-120*	*%REC*	*1*	*17-Jul-2019 21:21*
Surr: Phenol-d6	*54.1*			*20-120*	*%REC*	*1*	*17-Jul-2019 21:21*
Surr: Phenol-d6	*68.9*			*20-120*	*%REC*	*10*	*18-Jul-2019 15:21*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*18-Jul-2019 15:40*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*1000*	*18-Jul-2019 15:59*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 18-Jul-2019		Analyst: JHD
Arsenic	**0.0520**		**0.000400**	**0.00200**	**mg/L**	1	18-Jul-2019 18:11

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW42B-20190711
Collection Date: 11-Jul-2019 13:00

ANALYTICAL REPORT
WorkOrder:HS19070609
Lab ID:HS19070609-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	15-Jul-2019 14:26
Benzene		U	0.00020	0.0010	mg/L	1	15-Jul-2019 14:26
Chlorobenzene		U	0.00030	0.0010	mg/L	1	15-Jul-2019 14:26
Ethylbenzene		U	0.00030	0.0010	mg/L	1	15-Jul-2019 14:26
Methylene chloride		U	0.0010	0.0020	mg/L	1	15-Jul-2019 14:26
Toluene		U	0.00020	0.0010	mg/L	1	15-Jul-2019 14:26
Xylenes, Total		U	0.00030	0.0010	mg/L	1	15-Jul-2019 14:26
Surr: 1,2-Dichloroethane-d4	*98.2*			*70-126*	*%REC*	*1*	*15-Jul-2019 14:26*
Surr: 4-Bromofluorobenzene	*102*			*81-113*	*%REC*	*1*	*15-Jul-2019 14:26*
Surr: Dibromofluoromethane	*99.9*			*77-123*	*%REC*	*1*	*15-Jul-2019 14:26*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*15-Jul-2019 14:26*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19070609
Sample ID: WG-1620-MW42B-20190711
Lab ID:HS19070609-02
Collection Date: 11-Jul-2019 13:00
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	17-Jul-2019 21:40
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	17-Jul-2019 21:40
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	17-Jul-2019 21:40
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	17-Jul-2019 21:40
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	17-Jul-2019 21:40
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	17-Jul-2019 21:40
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	17-Jul-2019 21:40
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	17-Jul-2019 21:40
Acenaphthene	**0.000068**	J	**0.000027**	**0.00010**	**mg/L**	1	17-Jul-2019 21:40
Acenaphthylene	U		0.000015	0.00010	mg/L	1	17-Jul-2019 21:40
Anthracene	**0.000064**	J	**0.000014**	**0.00010**	**mg/L**	1	17-Jul-2019 21:40
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	17-Jul-2019 21:40
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	17-Jul-2019 21:40
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	17-Jul-2019 21:40
Bis(2-ethylhexyl)phthalate	**0.00015**	J	**0.000037**	**0.00020**	**mg/L**	1	17-Jul-2019 21:40
Chrysene	U		0.000021	0.00010	mg/L	1	17-Jul-2019 21:40
Dibenzofuran	**0.000038**	J	**0.000020**	**0.00010**	**mg/L**	1	17-Jul-2019 21:40
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	17-Jul-2019 21:40
Fluoranthene	**0.000040**	J	**0.000010**	**0.00010**	**mg/L**	1	17-Jul-2019 21:40
Fluorene	**0.000057**	J	**0.000030**	**0.00010**	**mg/L**	1	17-Jul-2019 21:40
Naphthalene	**0.00043**		**0.000020**	**0.00010**	**mg/L**	1	17-Jul-2019 21:40
Nitrobenzene	U		0.000024	0.00020	mg/L	1	17-Jul-2019 21:40
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	17-Jul-2019 21:40
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	17-Jul-2019 21:40
Phenanthrene	**0.000034**	J	**0.000021**	**0.00010**	**mg/L**	1	17-Jul-2019 21:40
Phenol	U		0.000035	0.00020	mg/L	1	17-Jul-2019 21:40
Pyrene	**0.000033**	J	**0.000019**	**0.00010**	**mg/L**	1	17-Jul-2019 21:40
Surr: 2,4,6-Tribromophenol	*78.4*			*34-129*	*%REC*	*1*	*17-Jul-2019 21:40*
Surr: 2-Fluorobiphenyl	*63.5*			*40-125*	*%REC*	*1*	*17-Jul-2019 21:40*
Surr: 2-Fluorophenol	*66.7*			*20-120*	*%REC*	*1*	*17-Jul-2019 21:40*
Surr: 4-Terphenyl-d14	*77.9*			*40-135*	*%REC*	*1*	*17-Jul-2019 21:40*
Surr: Nitrobenzene-d5	*63.9*			*41-120*	*%REC*	*1*	*17-Jul-2019 21:40*
Surr: Phenol-d6	*70.7*			*20-120*	*%REC*	*1*	*17-Jul-2019 21:40*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 18-Jul-2019		Analyst: JHD
Arsenic	**0.00220**		**0.000400**	**0.00200**	**mg/L**	1	18-Jul-2019 18:14

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-P11-20190711
Collection Date: 11-Jul-2019 13:55

ANALYTICAL REPORT
WorkOrder:HS19070609
Lab ID:HS19070609-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	15-Jul-2019 14:51
Benzene		U	0.00020	0.0010	mg/L	1	15-Jul-2019 14:51
Chlorobenzene		U	0.00030	0.0010	mg/L	1	15-Jul-2019 14:51
Ethylbenzene		U	0.00030	0.0010	mg/L	1	15-Jul-2019 14:51
Methylene chloride		U	0.0010	0.0020	mg/L	1	15-Jul-2019 14:51
Toluene		U	0.00020	0.0010	mg/L	1	15-Jul-2019 14:51
Xylenes, Total		U	0.00030	0.0010	mg/L	1	15-Jul-2019 14:51
Surr: 1,2-Dichloroethane-d4	*97.9*			*70-126*	*%REC*	*1*	*15-Jul-2019 14:51*
Surr: 4-Bromofluorobenzene	*101*			*81-113*	*%REC*	*1*	*15-Jul-2019 14:51*
Surr: Dibromofluoromethane	*99.6*			*77-123*	*%REC*	*1*	*15-Jul-2019 14:51*
Surr: Toluene-d8	*98.2*			*82-127*	*%REC*	*1*	*15-Jul-2019 14:51*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-P11-20190711
Collection Date: 11-Jul-2019 13:55

ANALYTICAL REPORT
WorkOrder:HS19070609
Lab ID:HS19070609-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	18-Jul-2019 14:04
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	18-Jul-2019 14:04
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	18-Jul-2019 14:04
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	18-Jul-2019 14:04
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	18-Jul-2019 14:04
2-Methylnaphthalene	**0.000050**	J	**0.000019**	**0.00010**	**mg/L**	1	18-Jul-2019 14:04
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	18-Jul-2019 14:04
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	18-Jul-2019 14:04
Acenaphthene	**0.0019**		**0.000027**	**0.00010**	**mg/L**	1	18-Jul-2019 14:04
Acenaphthylene	U		0.000015	0.00010	mg/L	1	18-Jul-2019 14:04
Anthracene	**0.000063**	J	**0.000014**	**0.00010**	**mg/L**	1	18-Jul-2019 14:04
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	18-Jul-2019 14:04
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	18-Jul-2019 14:04
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	18-Jul-2019 14:04
Bis(2-ethylhexyl)phthalate	**0.000087**	J	**0.000037**	**0.00020**	**mg/L**	1	18-Jul-2019 14:04
Chrysene	U		0.000021	0.00010	mg/L	1	18-Jul-2019 14:04
Dibenzofuran	**0.000079**	J	**0.000020**	**0.00010**	**mg/L**	1	18-Jul-2019 14:04
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	18-Jul-2019 14:04
Fluoranthene	**0.000060**	J	**0.000010**	**0.00010**	**mg/L**	1	18-Jul-2019 14:04
Fluorene	**0.00074**		**0.000030**	**0.00010**	**mg/L**	1	18-Jul-2019 14:04
Naphthalene	**0.0018**		**0.000020**	**0.00010**	**mg/L**	1	18-Jul-2019 14:04
Nitrobenzene	U		0.000024	0.00020	mg/L	1	18-Jul-2019 14:04
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	18-Jul-2019 14:04
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	18-Jul-2019 14:04
Phenanthrene	**0.00020**		**0.000021**	**0.00010**	**mg/L**	1	18-Jul-2019 14:04
Phenol	U		0.000035	0.00020	mg/L	1	18-Jul-2019 14:04
Pyrene	**0.000036**	J	**0.000019**	**0.00010**	**mg/L**	1	18-Jul-2019 14:04
Surr: 2,4,6-Tribromophenol	*83.5*			*34-129*	*%REC*	*1*	*18-Jul-2019 14:04*
Surr: 2-Fluorobiphenyl	*60.1*			*40-125*	*%REC*	*1*	*18-Jul-2019 14:04*
Surr: 2-Fluorophenol	*61.8*			*20-120*	*%REC*	*1*	*18-Jul-2019 14:04*
Surr: 4-Terphenyl-d14	*85.9*			*40-135*	*%REC*	*1*	*18-Jul-2019 14:04*
Surr: Nitrobenzene-d5	*61.2*			*41-120*	*%REC*	*1*	*18-Jul-2019 14:04*
Surr: Phenol-d6	*64.0*			*20-120*	*%REC*	*1*	*18-Jul-2019 14:04*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 18-Jul-2019		Analyst: JHD
Arsenic	**0.0704**		**0.000400**	**0.00200**	**mg/L**	1	18-Jul-2019 18:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW05-20190711
Collection Date: 11-Jul-2019 14:50

ANALYTICAL REPORT
WorkOrder:HS19070609
Lab ID:HS19070609-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	15-Jul-2019 15:17
Benzene		U	0.00020	0.0010	mg/L	1	15-Jul-2019 15:17
Chlorobenzene		U	0.00030	0.0010	mg/L	1	15-Jul-2019 15:17
Ethylbenzene		U	0.00030	0.0010	mg/L	1	15-Jul-2019 15:17
Methylene chloride		U	0.0010	0.0020	mg/L	1	15-Jul-2019 15:17
Toluene		U	0.00020	0.0010	mg/L	1	15-Jul-2019 15:17
Xylenes, Total		U	0.00030	0.0010	mg/L	1	15-Jul-2019 15:17
Surr: 1,2-Dichloroethane-d4	*99.1*			*70-126*	*%REC*	*1*	*15-Jul-2019 15:17*
Surr: 4-Bromofluorobenzene	*104*			*81-113*	*%REC*	*1*	*15-Jul-2019 15:17*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*15-Jul-2019 15:17*
Surr: Toluene-d8	*98.5*			*82-127*	*%REC*	*1*	*15-Jul-2019 15:17*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19070609
Sample ID: WG-1620-MW05-20190711
Lab ID:HS19070609-04
Collection Date: 11-Jul-2019 14:50
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	18-Jul-2019 14:23
2,4-Dimethylphenol	**0.000059**	J	**0.000040**	**0.00020**	**mg/L**	1	18-Jul-2019 14:23
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	18-Jul-2019 14:23
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	18-Jul-2019 14:23
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	18-Jul-2019 14:23
2-Methylnaphthalene	**0.000087**	J	**0.000019**	**0.00010**	**mg/L**	1	18-Jul-2019 14:23
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	18-Jul-2019 14:23
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	18-Jul-2019 14:23
Acenaphthene	**0.00043**		**0.000027**	**0.00010**	**mg/L**	1	18-Jul-2019 14:23
Acenaphthylene	U		0.000015	0.00010	mg/L	1	18-Jul-2019 14:23
Anthracene	**0.000097**	J	**0.000014**	**0.00010**	**mg/L**	1	18-Jul-2019 14:23
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	18-Jul-2019 14:23
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	18-Jul-2019 14:23
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	18-Jul-2019 14:23
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	18-Jul-2019 14:23
Chrysene	U		0.000021	0.00010	mg/L	1	18-Jul-2019 14:23
Dibenzofuran	**0.000051**	J	**0.000020**	**0.00010**	**mg/L**	1	18-Jul-2019 14:23
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	18-Jul-2019 14:23
Fluoranthene	U		0.000010	0.00010	mg/L	1	18-Jul-2019 14:23
Fluorene	**0.000064**	J	**0.000030**	**0.00010**	**mg/L**	1	18-Jul-2019 14:23
Naphthalene	**0.00071**		**0.000020**	**0.00010**	**mg/L**	1	18-Jul-2019 14:23
Nitrobenzene	U		0.000024	0.00020	mg/L	1	18-Jul-2019 14:23
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	18-Jul-2019 14:23
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	18-Jul-2019 14:23
Phenanthrene	U		0.000021	0.00010	mg/L	1	18-Jul-2019 14:23
Phenol	U		0.000035	0.00020	mg/L	1	18-Jul-2019 14:23
Pyrene	**0.00019**		**0.000019**	**0.00010**	**mg/L**	1	18-Jul-2019 14:23
Surr: 2,4,6-Tribromophenol	*94.6*			*34-129*	*%REC*	*1*	*18-Jul-2019 14:23*
Surr: 2-Fluorobiphenyl	*88.0*			*40-125*	*%REC*	*1*	*18-Jul-2019 14:23*
Surr: 2-Fluorophenol	*82.2*			*20-120*	*%REC*	*1*	*18-Jul-2019 14:23*
Surr: 4-Terphenyl-d14	*96.1*			*40-135*	*%REC*	*1*	*18-Jul-2019 14:23*
Surr: Nitrobenzene-d5	*90.5*			*41-120*	*%REC*	*1*	*18-Jul-2019 14:23*
Surr: Phenol-d6	*87.9*			*20-120*	*%REC*	*1*	*18-Jul-2019 14:23*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 18-Jul-2019		Analyst: JHD
Arsenic	**0.0171**		**0.000400**	**0.00200**	**mg/L**	1	18-Jul-2019 18:18

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW64A-20190711
Collection Date: 11-Jul-2019 15:50

ANALYTICAL REPORT
WorkOrder:HS19070609
Lab ID:HS19070609-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	15-Jul-2019 15:42
Benzene		U	0.00020	0.0010	mg/L	1	15-Jul-2019 15:42
Chlorobenzene		U	0.00030	0.0010	mg/L	1	15-Jul-2019 15:42
Ethylbenzene		U	0.00030	0.0010	mg/L	1	15-Jul-2019 15:42
Methylene chloride		U	0.0010	0.0020	mg/L	1	15-Jul-2019 15:42
Toluene		U	0.00020	0.0010	mg/L	1	15-Jul-2019 15:42
Xylenes, Total		U	0.00030	0.0010	mg/L	1	15-Jul-2019 15:42
Surr: 1,2-Dichloroethane-d4	*101*			*70-126*	*%REC*	*1*	*15-Jul-2019 15:42*
Surr: 4-Bromofluorobenzene	*98.2*			*81-113*	*%REC*	*1*	*15-Jul-2019 15:42*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*15-Jul-2019 15:42*
Surr: Toluene-d8	*98.9*			*82-127*	*%REC*	*1*	*15-Jul-2019 15:42*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19070609
Sample ID: WG-1620-MW64A-20190711
Lab ID:HS19070609-05
Collection Date: 11-Jul-2019 15:50
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	18-Jul-2019 14:42
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	18-Jul-2019 14:42
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	18-Jul-2019 14:42
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	18-Jul-2019 14:42
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	18-Jul-2019 14:42
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	18-Jul-2019 14:42
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	18-Jul-2019 14:42
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	18-Jul-2019 14:42
Acenaphthene	**0.00030**		**0.000027**	**0.00010**	**mg/L**	1	18-Jul-2019 14:42
Acenaphthylene	U		0.000015	0.00010	mg/L	1	18-Jul-2019 14:42
Anthracene	U		0.000014	0.00010	mg/L	1	18-Jul-2019 14:42
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	18-Jul-2019 14:42
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	18-Jul-2019 14:42
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	18-Jul-2019 14:42
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	18-Jul-2019 14:42
Chrysene	U		0.000021	0.00010	mg/L	1	18-Jul-2019 14:42
Dibenzofuran	U		0.000020	0.00010	mg/L	1	18-Jul-2019 14:42
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	18-Jul-2019 14:42
Fluoranthene	U		0.000010	0.00010	mg/L	1	18-Jul-2019 14:42
Fluorene	**0.000031**	J	**0.000030**	**0.00010**	**mg/L**	1	18-Jul-2019 14:42
Naphthalene	**0.00033**		**0.000020**	**0.00010**	**mg/L**	1	18-Jul-2019 14:42
Nitrobenzene	U		0.000024	0.00020	mg/L	1	18-Jul-2019 14:42
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	18-Jul-2019 14:42
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	18-Jul-2019 14:42
Phenanthrene	U		0.000021	0.00010	mg/L	1	18-Jul-2019 14:42
Phenol	U		0.000035	0.00020	mg/L	1	18-Jul-2019 14:42
Pyrene	**0.00015**		**0.000019**	**0.00010**	**mg/L**	1	18-Jul-2019 14:42
Surr: 2,4,6-Tribromophenol	*97.5*			*34-129*	*%REC*	*1*	*18-Jul-2019 14:42*
Surr: 2-Fluorobiphenyl	*90.7*			*40-125*	*%REC*	*1*	*18-Jul-2019 14:42*
Surr: 2-Fluorophenol	*84.9*			*20-120*	*%REC*	*1*	*18-Jul-2019 14:42*
Surr: 4-Terphenyl-d14	*80.5*			*40-135*	*%REC*	*1*	*18-Jul-2019 14:42*
Surr: Nitrobenzene-d5	*93.0*			*41-120*	*%REC*	*1*	*18-Jul-2019 14:42*
Surr: Phenol-d6	*93.3*			*20-120*	*%REC*	*1*	*18-Jul-2019 14:42*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 18-Jul-2019		Analyst: JHD
Arsenic	**0.00939**		**0.000400**	**0.00200**	**mg/L**	1	18-Jul-2019 18:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19070609
Sample ID: WG-1620-FB02-20190711
Lab ID:HS19070609-06
Collection Date: 11-Jul-2019 16:05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	15-Jul-2019 13:09
Benzene		U	0.00020	0.0010	mg/L	1	15-Jul-2019 13:09
Chlorobenzene		U	0.00030	0.0010	mg/L	1	15-Jul-2019 13:09
Ethylbenzene		U	0.00030	0.0010	mg/L	1	15-Jul-2019 13:09
Methylene chloride		U	0.0010	0.0020	mg/L	1	15-Jul-2019 13:09
Toluene		U	0.00020	0.0010	mg/L	1	15-Jul-2019 13:09
Xylenes, Total		U	0.00030	0.0010	mg/L	1	15-Jul-2019 13:09
Surr: 1,2-Dichloroethane-d4	*99.3*			*70-126*	*%REC*	*1*	*15-Jul-2019 13:09*
Surr: 4-Bromofluorobenzene	*98.7*			*81-113*	*%REC*	*1*	*15-Jul-2019 13:09*
Surr: Dibromofluoromethane	*98.5*			*77-123*	*%REC*	*1*	*15-Jul-2019 13:09*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*1*	*15-Jul-2019 13:09*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB02-20190711
Collection Date: 11-Jul-2019 16:05

ANALYTICAL REPORT
WorkOrder:HS19070609
Lab ID:HS19070609-06
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	**0.00026**		**0.000021**	**0.00020**	**mg/L**	1	18-Jul-2019 15:02
2,4-Dimethylphenol	**0.000064**	J	**0.000040**	**0.00020**	**mg/L**	1	18-Jul-2019 15:02
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	18-Jul-2019 15:02
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	18-Jul-2019 15:02
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	18-Jul-2019 15:02
2-Methylnaphthalene	**0.000077**	J	**0.000019**	**0.00010**	**mg/L**	1	18-Jul-2019 15:02
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	18-Jul-2019 15:02
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	18-Jul-2019 15:02
Acenaphthene	U		0.000027	0.00010	mg/L	1	18-Jul-2019 15:02
Acenaphthylene	U		0.000015	0.00010	mg/L	1	18-Jul-2019 15:02
Anthracene	U		0.000014	0.00010	mg/L	1	18-Jul-2019 15:02
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	18-Jul-2019 15:02
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	18-Jul-2019 15:02
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	18-Jul-2019 15:02
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	18-Jul-2019 15:02
Chrysene	U		0.000021	0.00010	mg/L	1	18-Jul-2019 15:02
Dibenzofuran	U		0.000020	0.00010	mg/L	1	18-Jul-2019 15:02
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	18-Jul-2019 15:02
Fluoranthene	U		0.000010	0.00010	mg/L	1	18-Jul-2019 15:02
Fluorene	U		0.000030	0.00010	mg/L	1	18-Jul-2019 15:02
Naphthalene	**0.00062**		**0.000020**	**0.00010**	**mg/L**	1	18-Jul-2019 15:02
Nitrobenzene	U		0.000024	0.00020	mg/L	1	18-Jul-2019 15:02
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	18-Jul-2019 15:02
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	18-Jul-2019 15:02
Phenanthrene	U		0.000021	0.00010	mg/L	1	18-Jul-2019 15:02
Phenol	U		0.000035	0.00020	mg/L	1	18-Jul-2019 15:02
Pyrene	U		0.000019	0.00010	mg/L	1	18-Jul-2019 15:02
Surr: 2,4,6-Tribromophenol	*79.7*			*34-129*	*%REC*	*1*	*18-Jul-2019 15:02*
Surr: 2-Fluorobiphenyl	*103*			*40-125*	*%REC*	*1*	*18-Jul-2019 15:02*
Surr: 2-Fluorophenol	*98.2*			*20-120*	*%REC*	*1*	*18-Jul-2019 15:02*
Surr: 4-Terphenyl-d14	*88.2*			*40-135*	*%REC*	*1*	*18-Jul-2019 15:02*
Surr: Nitrobenzene-d5	*99.2*			*41-120*	*%REC*	*1*	*18-Jul-2019 15:02*
Surr: Phenol-d6	*104*			*20-120*	*%REC*	*1*	*18-Jul-2019 15:02*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 18-Jul-2019		Analyst: JC
Arsenic	U		0.000400	0.00200	mg/L	1	19-Jul-2019 15:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19070609
Sample ID: WG-1620-TB02-20190711
Lab ID:HS19070609-07
Collection Date: 11-Jul-2019 00:00
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	15-Jul-2019 13:35
Benzene		U	0.00020	0.0010	mg/L	1	15-Jul-2019 13:35
Chlorobenzene		U	0.00030	0.0010	mg/L	1	15-Jul-2019 13:35
Ethylbenzene		U	0.00030	0.0010	mg/L	1	15-Jul-2019 13:35
Methylene chloride		U	0.0010	0.0020	mg/L	1	15-Jul-2019 13:35
Toluene		U	0.00020	0.0010	mg/L	1	15-Jul-2019 13:35
Xylenes, Total		U	0.00030	0.0010	mg/L	1	15-Jul-2019 13:35
Surr: 1,2-Dichloroethane-d4	*99.6*			*70-126*	*%REC*	*1*	*15-Jul-2019 13:35*
Surr: 4-Bromofluorobenzene	*98.6*			*81-113*	*%REC*	*1*	*15-Jul-2019 13:35*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*15-Jul-2019 13:35*
Surr: Toluene-d8	*99.0*			*82-127*	*%REC*	*1*	*15-Jul-2019 13:35*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

WEIGHT LOG

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070609

Batch ID: 143051 **Method:** LOW-LEVEL SEMIVOLATILES BY 8270D **Prep:** 3510_B_LOW

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19070609-01	1	1000	1 (mL)	0.001
HS19070609-02	1	1000	1 (mL)	0.001
HS19070609-03	1	1000	1 (mL)	0.001
HS19070609-04	1	1000	1 (mL)	0.001
HS19070609-05	1	1000	1 (mL)	0.001
HS19070609-06	1	1000	1 (mL)	0.001

Batch ID: 143162 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19070609-01	1	10	10 (mL)	1
HS19070609-02	1	10	10 (mL)	1
HS19070609-03	1	10	10 (mL)	1
HS19070609-04	1	10	10 (mL)	1
HS19070609-05	1	10	10 (mL)	1
HS19070609-06	1	10	10 (mL)	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070609

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID: 143051 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Water	
HS19070609-01	WG-1620-MW40B-20190711	11 Jul 2019 12:00		16 Jul 2019 09:08	18 Jul 2019 15:40	100
HS19070609-01	WG-1620-MW40B-20190711	11 Jul 2019 12:00		16 Jul 2019 09:08	18 Jul 2019 15:59	1000
HS19070609-01	WG-1620-MW40B-20190711	11 Jul 2019 12:00		16 Jul 2019 09:08	18 Jul 2019 15:21	10
HS19070609-01	WG-1620-MW40B-20190711	11 Jul 2019 12:00		16 Jul 2019 09:08	17 Jul 2019 21:21	1
HS19070609-02	WG-1620-MW42B-20190711	11 Jul 2019 13:00		16 Jul 2019 09:08	17 Jul 2019 21:40	1
HS19070609-03	WG-1620-P11-20190711	11 Jul 2019 13:55		16 Jul 2019 09:08	18 Jul 2019 14:04	1
HS19070609-04	WG-1620-MW05-20190711	11 Jul 2019 14:50		16 Jul 2019 09:08	18 Jul 2019 14:23	1
HS19070609-05	WG-1620-MW64A-20190711	11 Jul 2019 15:50		16 Jul 2019 09:08	18 Jul 2019 14:42	1
HS19070609-06	WG-1620-FB02-20190711	11 Jul 2019 16:05		16 Jul 2019 09:08	18 Jul 2019 15:02	1
Batch ID: 143162 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS19070609-01	WG-1620-MW40B-20190711	11 Jul 2019 12:00		18 Jul 2019 12:00	18 Jul 2019 18:11	1
HS19070609-02	WG-1620-MW42B-20190711	11 Jul 2019 13:00		18 Jul 2019 12:00	18 Jul 2019 18:14	1
HS19070609-03	WG-1620-P11-20190711	11 Jul 2019 13:55		18 Jul 2019 12:00	18 Jul 2019 18:16	1
HS19070609-04	WG-1620-MW05-20190711	11 Jul 2019 14:50		18 Jul 2019 12:00	18 Jul 2019 18:18	1
HS19070609-05	WG-1620-MW64A-20190711	11 Jul 2019 15:50		18 Jul 2019 12:00	18 Jul 2019 18:20	1
HS19070609-06	WG-1620-FB02-20190711	11 Jul 2019 16:05		18 Jul 2019 12:00	19 Jul 2019 15:24	1
Batch ID: R342484 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS19070609-01	WG-1620-MW40B-20190711	11 Jul 2019 12:00			15 Jul 2019 14:00	1
HS19070609-02	WG-1620-MW42B-20190711	11 Jul 2019 13:00			15 Jul 2019 14:26	1
HS19070609-03	WG-1620-P11-20190711	11 Jul 2019 13:55			15 Jul 2019 14:51	1
HS19070609-04	WG-1620-MW05-20190711	11 Jul 2019 14:50			15 Jul 2019 15:17	1
HS19070609-05	WG-1620-MW64A-20190711	11 Jul 2019 15:50			15 Jul 2019 15:42	1
HS19070609-06	WG-1620-FB02-20190711	11 Jul 2019 16:05			15 Jul 2019 13:09	1
HS19070609-07	WG-1620-TB02-20190711	11 Jul 2019 00:00			15 Jul 2019 13:35	1

WorkOrder: HS19070609
InstrumentID: ICPMS05
Test Code: ICP_TW
Test Number: SW6020
Test Name: ICP-MS Metals by SW6020A

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Arsenic	7440-38-2	0.000500	0.000547	0.000400	0.00200

WorkOrder: HS19070609
InstrumentID: ICPMS04
Test Code: ICP_TW
Test Number: SW6020
Test Name: ICP-MS Metals by SW6020A

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Arsenic	7440-38-2	0.00100	0.000579	0.000400	0.00200

WorkOrder: HS19070609
InstrumentID: SV-7
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Diphenylhydrazine	122-66-7	0.00010	0.00011	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.00010	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.000096	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.00012	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.00011	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.00010	0.00012	0.000019	0.00010
A	2-Methylnaphthalene	91-57-6	0.000050	0.000049	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000013	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00010	0.00013	0.000047	0.0010
A	Acenaphthene	83-32-9	0.000050	0.000051	0.000027	0.00010
A	Acenaphthene	83-32-9	0.00010	0.00011	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.00010	0.00010	0.000015	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000050	0.000015	0.00010
A	Anthracene	120-12-7	0.00010	0.00011	0.000014	0.00010
A	Anthracene	120-12-7	0.000050	0.000055	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.000050	0.000068	0.000050	0.00010
A	Benz(a)anthracene	56-55-3	0.00010	0.000099	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.00010	0.000076	0.000020	0.00010
A	Benzo(a)pyrene	50-32-8	0.000050	0.000053	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.00012	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.000086	0.000037	0.00020
A	Chrysene	218-01-9	0.000050	0.000066	0.000021	0.00010
A	Chrysene	218-01-9	0.00010	0.00011	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.00010	0.000094	0.000020	0.00010
A	Dibenzofuran	132-64-9	0.000050	0.000052	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.000099	0.000020	0.00020
A	Fluoranthene	206-44-0	0.00010	0.00012	0.000010	0.00010
A	Fluoranthene	206-44-0	0.000050	0.000053	0.000010	0.00010
A	Fluorene	86-73-7	0.00010	0.00012	0.000030	0.00010
A	Fluorene	86-73-7	0.000050	0.000052	0.000030	0.00010
A	Naphthalene	91-20-3	0.00010	0.00010	0.000020	0.00010
A	Naphthalene	91-20-3	0.000050	0.000061	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.00013	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.00012	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.000085	0.000079	0.00020
A	Phenanthrene	85-01-8	0.00010	0.00011	0.000021	0.00010
A	Phenanthrene	85-01-8	0.000050	0.000055	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.000094	0.000035	0.00020
A	Pyrene	129-00-0	0.00010	0.00011	0.000019	0.00010
A	Pyrene	129-00-0	0.000050	0.000061	0.000019	0.00010

WorkOrder: HS19070609
InstrumentID: SV-7
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0.00020
S	2-Fluorobiphenyl	321-60-8	0	0	0	0.00020
S	2-Fluorophenol	367-12-4	0	0	0	0.00020
S	4-Terphenyl-d14	1718-51-0	0	0	0	0.00020
S	Nitrobenzene-d5	4165-60-0	0	0	0	0.00020
S	Phenol-d6	13127-88-3	0	0	0	0.00020

WorkOrder: HS19070609
InstrumentID: VOA4
Test Code: 8260_LL_W
Test Number: SW8260
Test Name: Low Level Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.00050	0.00064	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00060	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00061	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00063	0.00030	0.0010
A	Methylene chloride	75-09-2	0.0010	0.00077	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00058	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00062	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070609

QC BATCH REPORT

Batch ID: 143162 (0) **Instrument: ICPMS05** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-143162** Units: **mg/L** Analysis Date: **18-Jul-2019 17:57**
Client ID: Run ID: **ICPMS05_342669** SeqNo: **5172670** PrepDate: **18-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								

LCS Sample ID: **LCS-143162** Units: **mg/L** Analysis Date: **18-Jul-2019 17:59**
Client ID: Run ID: **ICPMS05_342669** SeqNo: **5172671** PrepDate: **18-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05156	0.00200	0.05	0	103	80 - 120				

MS Sample ID: **HS19070609-05MS** Units: **mg/L** Analysis Date: **18-Jul-2019 19:07**
Client ID: **WG-1620-MW64A-20190711** Run ID: **ICPMS05_342669** SeqNo: **5172775** PrepDate: **18-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.06093	0.00200	0.05	0.009394	103	80 - 120				

MSD Sample ID: **HS19070609-05MSD** Units: **mg/L** Analysis Date: **18-Jul-2019 19:10**
Client ID: **WG-1620-MW64A-20190711** Run ID: **ICPMS05_342669** SeqNo: **5172776** PrepDate: **18-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.06097	0.00200	0.05	0.009394	103	80 - 120	0.06093	0.0689	20	

PDS Sample ID: **HS19070609-05PDS** Units: **mg/L** Analysis Date: **18-Jul-2019 19:12**
Client ID: **WG-1620-MW64A-20190711** Run ID: **ICPMS05_342669** SeqNo: **5172783** PrepDate: **18-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1102	0.00200	0.1	0.009394	101	75 - 125				

SD Sample ID: **HS19070609-05SD** Units: **mg/L** Analysis Date: **18-Jul-2019 19:05**
Client ID: **WG-1620-MW64A-20190711** Run ID: **ICPMS05_342669** SeqNo: **5172774** PrepDate: **18-Jul-2019** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.009487	0.0100					0.009394	0	10	J

The following samples were analyzed in this batch: HS19070609-01 HS19070609-02 HS19070609-03 HS19070609-04 HS19070609-05 HS19070609-06

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070609

QC BATCH REPORT

Batch ID: 143051 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-143051** Units: **ug/L** Analysis Date: **17-Jul-2019 11:25**
Client ID: Run ID: **SV-7_342594** SeqNo: **5170297** PrepDate: **16-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	U	0.20								
2,4-Dimethylphenol	U	0.20								
2,4-Dinitrotoluene	U	0.20								
2,6-Dinitrotoluene	U	0.20								
2-Chloronaphthalene	U	0.20								
2-Methylnaphthalene	U	0.10								
4,6-Dinitro-2-methylphenol	U	0.20								
4-Nitrophenol	U	1.0								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Benz(a)anthracene	U	0.10								
Benzo(a)pyrene	U	0.10								
Bis(2-chloroethoxy)methane	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Chrysene	U	0.10								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Nitrobenzene	U	0.20								
N-Nitrosodiphenylamine	U	0.20								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*5.164*	*0.20*	*5*	*0*	*103*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.71*	*0.20*	*5*	*0*	*94.2*	*40 - 125*				
Surr: 2-Fluorophenol	*5.02*	*0.20*	*5*	*0*	*100*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.296*	*0.20*	*5*	*0*	*85.9*	*40 - 135*				
Surr: Nitrobenzene-d5	*5.224*	*0.20*	*5*	*0*	*104*	*41 - 120*				
Surr: Phenol-d6	*5.169*	*0.20*	*5*	*0*	*103*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070609

QC BATCH REPORT

Batch ID: 143051 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCS Sample ID: **LCS-143051** Units: **ug/L** Analysis Date: **17-Jul-2019 11:44**
Client ID: Run ID: **SV-7_342594** SeqNo: **5170298** PrepDate: **16-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.891	0.20	5	0	97.8	39 - 127				
2,4-Dimethylphenol	4.456	0.20	5	0	89.1	35 - 120				
2,4-Dinitrotoluene	5.665	0.20	5	0	113	50 - 122				
2,6-Dinitrotoluene	5.12	0.20	5	0	102	50 - 120				
2-Chloronaphthalene	4.568	0.20	5	0	91.4	50 - 120				
2-Methylnaphthalene	4.785	0.10	5	0	95.7	50 - 120				
4,6-Dinitro-2-methylphenol	4.433	0.20	5	0	88.7	25 - 121				
4-Nitrophenol	5.291	1.0	5	0	106	30 - 130				
Acenaphthene	4.568	0.10	5	0	91.4	45 - 120				
Acenaphthylene	4.495	0.10	5	0	89.9	47 - 120				
Anthracene	4.502	0.10	5	0	90.0	45 - 120				
Benz(a)anthracene	5.224	0.10	5	0	104	40 - 120				
Benzo(a)pyrene	4.184	0.10	5	0	83.7	45 - 120				
Bis(2-chloroethoxy)methane	4.62	0.20	5	0	92.4	45 - 120				
Bis(2-ethylhexyl)phthalate	5.383	0.20	5	0	108	40 - 139				
Chrysene	5.78	0.10	5	0	116	43 - 120				
Dibenzofuran	4.573	0.10	5	0	91.5	50 - 120				
Di-n-butyl phthalate	4.964	0.20	5	0	99.3	45 - 123				
Fluoranthene	5.235	0.10	5	0	105	45 - 125				
Fluorene	4.312	0.10	5	0	86.2	49 - 120				
Naphthalene	4.422	0.10	5	0	88.4	45 - 120				
Nitrobenzene	5.307	0.20	5	0	106	44 - 120				
N-Nitrosodiphenylamine	4.846	0.20	5	0	96.9	40 - 125				
Pentachlorophenol	3.998	0.20	5	0	80.0	19 - 121				
Phenanthrene	4.511	0.10	5	0	90.2	45 - 121				
Phenol	4.734	0.20	5	0	94.7	20 - 124				
Pyrene	4.84	0.10	5	0	96.8	40 - 130				
Surr: 2,4,6-Tribromophenol	*5.277*	*0.20*	*5*	*0*	*106*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.715*	*0.20*	*5*	*0*	*94.3*	*40 - 125*				
Surr: 2-Fluorophenol	*4.401*	*0.20*	*5*	*0*	*88.0*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.682*	*0.20*	*5*	*0*	*93.6*	*40 - 135*				
Surr: Nitrobenzene-d5	*5.128*	*0.20*	*5*	*0*	*103*	*41 - 120*				
Surr: Phenol-d6	*4.86*	*0.20*	*5*	*0*	*97.2*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070609

QC BATCH REPORT

Batch ID: 143051 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCSD Sample ID: **LCSD-143051** Units: **ug/L** Analysis Date: **17-Jul-2019 12:04**
Client ID: Run ID: **SV-7_342594** SeqNo: **5170299** PrepDate: **16-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	5.027	0.20	5	0	101	39 - 127	4.891	2.75	20	
2,4-Dimethylphenol	4.508	0.20	5	0	90.2	35 - 120	4.456	1.17	20	
2,4-Dinitrotoluene	6.009	0.20	5	0	120	50 - 122	5.665	5.91	20	
2,6-Dinitrotoluene	5.413	0.20	5	0	108	50 - 120	5.12	5.56	20	
2-Chloronaphthalene	4.685	0.20	5	0	93.7	50 - 120	4.568	2.52	20	
2-Methylnaphthalene	4.646	0.10	5	0	92.9	50 - 120	4.785	2.96	20	
4,6-Dinitro-2-methylphenol	4.386	0.20	5	0	87.7	25 - 121	4.433	1.06	30	
4-Nitrophenol	5.432	1.0	5	0	109	30 - 130	5.291	2.62	20	
Acenaphthene	4.65	0.10	5	0	93.0	45 - 120	4.568	1.77	20	
Acenaphthylene	4.597	0.10	5	0	91.9	47 - 120	4.495	2.24	20	
Anthracene	4.626	0.10	5	0	92.5	45 - 120	4.502	2.72	20	
Benz(a)anthracene	5.314	0.10	5	0	106	40 - 120	5.224	1.7	20	
Benzo(a)pyrene	4.37	0.10	5	0	87.4	45 - 120	4.184	4.35	20	
Bis(2-chloroethoxy)methane	4.471	0.20	5	0	89.4	45 - 120	4.62	3.27	20	
Bis(2-ethylhexyl)phthalate	5.015	0.20	5	0	100	40 - 139	5.383	7.09	20	
Chrysene	5.4	0.10	5	0	108	43 - 120	5.78	6.79	20	
Dibenzofuran	4.789	0.10	5	0	95.8	50 - 120	4.573	4.61	20	
Di-n-butyl phthalate	4.9	0.20	5	0	98.0	45 - 123	4.964	1.29	20	
Fluoranthene	5.005	0.10	5	0	100	45 - 125	5.235	4.5	20	
Fluorene	4.585	0.10	5	0	91.7	49 - 120	4.312	6.13	20	
Naphthalene	4.38	0.10	5	0	87.6	45 - 120	4.422	0.956	20	
Nitrobenzene	5.058	0.20	5	0	101	44 - 120	5.307	4.82	20	
N-Nitrosodiphenylamine	4.98	0.20	5	0	99.6	40 - 125	4.846	2.72	20	
Pentachlorophenol	3.749	0.20	5	0	75.0	19 - 121	3.998	6.45	20	
Phenanthrene	4.452	0.10	5	0	89.0	45 - 121	4.511	1.31	20	
Phenol	4.892	0.20	5	0	97.8	20 - 124	4.734	3.28	20	
Pyrene	4.992	0.10	5	0	99.8	40 - 130	4.84	3.09	20	
Surr: 2,4,6-Tribromophenol	*5.252*	*0.20*	*5*	*0*	*105*	*34 - 129*	*5.277*	*0.469*	*20*	
Surr: 2-Fluorobiphenyl	*4.793*	*0.20*	*5*	*0*	*95.9*	*40 - 125*	*4.715*	*1.64*	*20*	
Surr: 2-Fluorophenol	*4.505*	*0.20*	*5*	*0*	*90.1*	*20 - 120*	*4.401*	*2.33*	*20*	
Surr: 4-Terphenyl-d14	*4.494*	*0.20*	*5*	*0*	*89.9*	*40 - 135*	*4.682*	*4.08*	*20*	
Surr: Nitrobenzene-d5	*5.029*	*0.20*	*5*	*0*	*101*	*41 - 120*	*5.128*	*1.95*	*20*	
Surr: Phenol-d6	*4.973*	*0.20*	*5*	*0*	*99.5*	*20 - 120*	*4.86*	*2.3*	*20*	

The following samples were analyzed in this batch: HS19070609-01 HS19070609-02 HS19070609-03 HS19070609-04 HS19070609-05 HS19070609-06

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070609

QC BATCH REPORT

Batch ID: R342484 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-190715** Units: **ug/L** Analysis Date: **15-Jul-2019 12:44**
Client ID: Run ID: **VOA4_342484** SeqNo: **5167898** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*48.36*	*1.0*	*50*	*0*	*96.7*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*50.95*	*1.0*	*50*	*0*	*102*	*82 - 115*				
Surr: Dibromofluoromethane	*48.97*	*1.0*	*50*	*0*	*97.9*	*73 - 126*				
Surr: Toluene-d8	*48.51*	*1.0*	*50*	*0*	*97.0*	*81 - 120*				

LCS Sample ID: **VLCSW-190715** Units: **ug/L** Analysis Date: **15-Jul-2019 11:53**
Client ID: Run ID: **VOA4_342484** SeqNo: **5167897** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.98	1.0	20	0	84.9	70 - 124				
Benzene	18.25	1.0	20	0	91.2	74 - 120				
Chlorobenzene	19.01	1.0	20	0	95.0	76 - 113				
Ethylbenzene	19.38	1.0	20	0	96.9	77 - 117				
Methylene chloride	18.63	2.0	20	0	93.1	70 - 127				
Toluene	18.74	1.0	20	0	93.7	77 - 118				
Xylenes, Total	63.1	1.0	60	0	105	75 - 122				
Surr: 1,2-Dichloroethane-d4	*46.29*	*1.0*	*50*	*0*	*92.6*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*52.69*	*1.0*	*50*	*0*	*105*	*82 - 115*				
Surr: Dibromofluoromethane	*47.88*	*1.0*	*50*	*0*	*95.8*	*73 - 126*				
Surr: Toluene-d8	*48.6*	*1.0*	*50*	*0*	*97.2*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070609

QC BATCH REPORT

Batch ID: R342484 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS19070645-01MS** Units: **ug/L** Analysis Date: **15-Jul-2019 16:33**
Client ID: Run ID: **VOA4_342484** SeqNo: **5167907** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	14.64	1.0	20	0	73.2	70 - 127				
Benzene	54.83	1.0	20	39.27	77.8	70 - 127				
Chlorobenzene	15.71	1.0	20	0	78.5	70 - 114				
Ethylbenzene	16.09	1.0	20	0	80.5	70 - 124				
Methylene chloride	15.72	2.0	20	0	78.6	70 - 128				
Toluene	16.11	1.0	20	0	80.5	70 - 123				
Xylenes, Total	50.86	1.0	60	0	84.8	70 - 130				
Surr: 1,2-Dichloroethane-d4	*48.75*	*1.0*	*50*	*0*	*97.5*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*50.19*	*1.0*	*50*	*0*	*100*	*81 - 113*				
Surr: Dibromofluoromethane	*49.67*	*1.0*	*50*	*0*	*99.3*	*77 - 123*				
Surr: Toluene-d8	*49.7*	*1.0*	*50*	*0*	*99.4*	*82 - 127*				

MSD Sample ID: **HS19070645-01MSD** Units: **ug/L** Analysis Date: **15-Jul-2019 16:58**
Client ID: Run ID: **VOA4_342484** SeqNo: **5167908** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	14.23	1.0	20	0	71.2	70 - 127	14.64	2.81	20	
Benzene	54.47	1.0	20	39.27	76.0	70 - 127	54.83	0.657	20	
Chlorobenzene	15.64	1.0	20	0	78.2	70 - 114	15.71	0.441	20	
Ethylbenzene	16.03	1.0	20	0	80.2	70 - 124	16.09	0.374	20	
Methylene chloride	15.2	2.0	20	0	76.0	70 - 128	15.72	3.37	20	
Toluene	16.04	1.0	20	0	80.2	70 - 123	16.11	0.413	20	
Xylenes, Total	50.75	1.0	60	0	84.6	70 - 130	50.86	0.216	20	
Surr: 1,2-Dichloroethane-d4	*49.03*	*1.0*	*50*	*0*	*98.1*	*70 - 126*	*48.75*	*0.579*	*20*	
Surr: 4-Bromofluorobenzene	*50.34*	*1.0*	*50*	*0*	*101*	*81 - 113*	*50.19*	*0.298*	*20*	
Surr: Dibromofluoromethane	*49.86*	*1.0*	*50*	*0*	*99.7*	*77 - 123*	*49.67*	*0.381*	*20*	
Surr: Toluene-d8	*50.98*	*1.0*	*50*	*0*	*102*	*82 - 127*	*49.7*	*2.54*	*20*	

The following samples were analyzed in this batch:

HS19070609-01	HS19070609-02	HS19070609-03	HS19070609-04
HS19070609-05	HS19070609-06	HS19070609-07	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS19070609**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Kansas	E-10352 2018-2019	31-Jul-2019
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
Oklahoma	2018-156	31-Aug-2019
Texas	TX104704231-19-23	30-Apr-2020

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS19070609

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS19070609-01	WG-1620-MW40B-20190711	Login	12/07/2019 15:13:02	NDR	MET044
HS19070609-01	WG-1620-MW40B-20190711	Login	12/07/2019 15:13:02	NDR	EXT133
HS19070609-01	WG-1620-MW40B-20190711	Login	12/07/2019 15:13:02	NDR	VOA244

Sample Receipt Checklist

Client Name: PBW
Work Order: HS19070609

Date/Time Received: **12-Jul-2019 12:15**
Received by: **JRM**

Checklist completed by: *Nilesh D. Ranchod* eSignature — 12-Jul-2019 Date

Reviewed by: *Dane J. Wacasey* eSignature — 15-Jul-2019 Date

Matrices: **Water**

Carrier name: **Client**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:196133
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	4.5C UC/C	IR # 25
Cooler(s)/Kit(s):	44990	
Date/Time sample(s) sent to storage:	07/12/2019 16:00	

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600
Holland, MI +1 616 399 6070

Chain of Custody Form

Page 1 of 1

COC ID: 196133

HS19070609

Golder Associates Inc.
Houston TX-Wood Preserving Works

WV

ALS Project Manager:

Customer Information		Project Information			
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A	8260_LL_W (5632528 Volatile Organics Site Specific)
Work Order		Project Number	1620-07-Rev0 SR 92688	B	8260_LL_W (5632528 VOC Site Specific + VOA)
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P	C	8270_LOW_W (5632532 SemiVolatiles Site specific)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	ICP_TW (5636002 5632646 Metals - As, Pb)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	WQ-1620-TB0__-201801___			Water	1	2		X									
2	WG-1620-MW40B-20190711	7-11-19	1200	W		6	X		X	X							
3	WG-1620-MW42B-20190711		1300	W		6	X		X	X							
4	WG-1620-P11-20190711		1355	W		6	X		X	X							
5	WG-1620-MW05-20190711		1450	W		6	X		X	X							
6	WG-1620-MW64A-20190711		1550	W		6	X		X	X							
7	WG-1620-FB02-20190711		1605	W		6	X		X	X							
8	WG-1620-TB02-20190711			W		2	X	[redacted]B									
9																	
10																	

Sampler(s) Please Print & Sign: JOHN BRAYTON

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: Date: 7-12-19 Time: 12:15

Received by:

Relinquished by: Date: 7/12/19 Time: 12:15

Received by (Laboratory): J. Imamura

Logged by (Laboratory): Date: Time:

Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.
	UC
44990	4.5
	1.425
	CF0.0

QC Package: (Check One Box Below)

- [ ] Level II Std QC
- [ ] Level III Std QC/Raw Data
- [ ] Level IV SW846/CLP
- [ ] Other
- [X] TRRP Checklist
- [ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

July 23, 2019

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS19070735**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 6 sample(s) on Jul 15, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS19070735**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS19070735**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 07/23/2019				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS19070735				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 143051,143254,R342562				
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?		X			1
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?		X			2
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			3
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 07/23/2019				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS19070735				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 143051,143254,R342562				
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?	X				
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 07/23/2019
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS19070735
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 143051,143254,R342562

ER#[5]	Description
1	Semivolatile Organics Method Sw8270, sample WG-1620-TW41B-20190712, the surrogate recoveries could not be determined due to dilution below the calibration range.
2	Batch 143051, Semivolatile Organics Method SW8270, LCS/LCSD were analyzed and reported in lieu of an MS/MSD for this batch
3	Batch R342562, Volatile Organics Method SW8260, sample HS19070681-04, MSD was performed on unrelated sample.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS19070735

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19070735-01	WG-1620-MW09-20190712	Water		12-Jul-2019 07:35	15-Jul-2019 16:30	☐
HS19070735-02	WG-1620-MW03-20190712	Water		12-Jul-2019 08:35	15-Jul-2019 16:30	☐
HS19070735-03	WG-1620-MW04-20190712	Water		12-Jul-2019 09:25	15-Jul-2019 16:30	☐
HS19070735-04	WG-1620-TW41B-20190712	Water		12-Jul-2019 10:40	15-Jul-2019 16:30	☐
HS19070735-05	WG-1620-FB03-20190712	Water		12-Jul-2019 11:00	15-Jul-2019 16:30	☐
HS19070735-06	WG-1620-TB03-20190712	Water	CG 062119 -79	12-Jul-2019 00:00	15-Jul-2019 16:30	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW09-20190712
Collection Date: 12-Jul-2019 07:35

ANALYTICAL REPORT
WorkOrder:HS19070735
Lab ID:HS19070735-01
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	16-Jul-2019 19:17
Benzene		U	0.00020	0.0010	mg/L	1	16-Jul-2019 19:17
Chlorobenzene		U	0.00030	0.0010	mg/L	1	16-Jul-2019 19:17
Ethylbenzene		U	0.00030	0.0010	mg/L	1	16-Jul-2019 19:17
Methylene chloride		U	0.0010	0.0020	mg/L	1	16-Jul-2019 19:17
Toluene		U	0.00020	0.0010	mg/L	1	16-Jul-2019 19:17
Xylenes, Total		U	0.00030	0.0010	mg/L	1	16-Jul-2019 19:17
Surr: 1,2-Dichloroethane-d4	*99.9*			*70-126*	*%REC*	*1*	*16-Jul-2019 19:17*
Surr: 4-Bromofluorobenzene	*98.0*			*81-113*	*%REC*	*1*	*16-Jul-2019 19:17*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*16-Jul-2019 19:17*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*16-Jul-2019 19:17*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW09-20190712
Collection Date: 12-Jul-2019 07:35

ANALYTICAL REPORT
WorkOrder:HS19070735
Lab ID:HS19070735-01
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	18-Jul-2019 16:18
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	18-Jul-2019 16:18
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	18-Jul-2019 16:18
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	18-Jul-2019 16:18
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	18-Jul-2019 16:18
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	18-Jul-2019 16:18
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	18-Jul-2019 16:18
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	18-Jul-2019 16:18
Acenaphthene	U		0.000027	0.00010	mg/L	1	18-Jul-2019 16:18
Acenaphthylene	U		0.000015	0.00010	mg/L	1	18-Jul-2019 16:18
Anthracene	**0.000061**	J	**0.000014**	**0.00010**	**mg/L**	1	18-Jul-2019 16:18
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	18-Jul-2019 16:18
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	18-Jul-2019 16:18
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	18-Jul-2019 16:18
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	18-Jul-2019 16:18
Chrysene	U		0.000021	0.00010	mg/L	1	18-Jul-2019 16:18
Dibenzofuran	U		0.000020	0.00010	mg/L	1	18-Jul-2019 16:18
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	18-Jul-2019 16:18
Fluoranthene	U		0.000010	0.00010	mg/L	1	18-Jul-2019 16:18
Fluorene	U		0.000030	0.00010	mg/L	1	18-Jul-2019 16:18
Naphthalene	**0.00015**		**0.000020**	**0.00010**	**mg/L**	1	18-Jul-2019 16:18
Nitrobenzene	U		0.000024	0.00020	mg/L	1	18-Jul-2019 16:18
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	18-Jul-2019 16:18
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	18-Jul-2019 16:18
Phenanthrene	U		0.000021	0.00010	mg/L	1	18-Jul-2019 16:18
Phenol	U		0.000035	0.00020	mg/L	1	18-Jul-2019 16:18
Pyrene	U		0.000019	0.00010	mg/L	1	18-Jul-2019 16:18
Surr: 2,4,6-Tribromophenol	*91.0*			*34-129*	*%REC*	*1*	*18-Jul-2019 16:18*
Surr: 2-Fluorobiphenyl	*68.7*			*40-125*	*%REC*	*1*	*18-Jul-2019 16:18*
Surr: 2-Fluorophenol	*69.5*			*20-120*	*%REC*	*1*	*18-Jul-2019 16:18*
Surr: 4-Terphenyl-d14	*83.8*			*40-135*	*%REC*	*1*	*18-Jul-2019 16:18*
Surr: Nitrobenzene-d5	*74.2*			*41-120*	*%REC*	*1*	*18-Jul-2019 16:18*
Surr: Phenol-d6	*79.7*			*20-120*	*%REC*	*1*	*18-Jul-2019 16:18*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 22-Jul-2019		Analyst: JHD
Arsenic	**0.000901**	J	**0.000400**	**0.00200**	**mg/L**	1	22-Jul-2019 22:25

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW03-20190712
Collection Date: 12-Jul-2019 08:35

ANALYTICAL REPORT
WorkOrder:HS19070735
Lab ID:HS19070735-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	16-Jul-2019 19:42
Benzene		U	0.00020	0.0010	mg/L	1	16-Jul-2019 19:42
Chlorobenzene		U	0.00030	0.0010	mg/L	1	16-Jul-2019 19:42
Ethylbenzene		U	0.00030	0.0010	mg/L	1	16-Jul-2019 19:42
Methylene chloride		U	0.0010	0.0020	mg/L	1	16-Jul-2019 19:42
Toluene		U	0.00020	0.0010	mg/L	1	16-Jul-2019 19:42
Xylenes, Total		U	0.00030	0.0010	mg/L	1	16-Jul-2019 19:42
Surr: 1,2-Dichloroethane-d4	*97.7*			*70-126*	*%REC*	*1*	*16-Jul-2019 19:42*
Surr: 4-Bromofluorobenzene	*98.3*			*81-113*	*%REC*	*1*	*16-Jul-2019 19:42*
Surr: Dibromofluoromethane	*100*			*77-123*	*%REC*	*1*	*16-Jul-2019 19:42*
Surr: Toluene-d8	*98.8*			*82-127*	*%REC*	*1*	*16-Jul-2019 19:42*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW03-20190712
Collection Date: 12-Jul-2019 08:35

ANALYTICAL REPORT
WorkOrder:HS19070735
Lab ID:HS19070735-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	18-Jul-2019 16:37
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	18-Jul-2019 16:37
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	18-Jul-2019 16:37
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	18-Jul-2019 16:37
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	18-Jul-2019 16:37
2-Methylnaphthalene	**0.000035**	J	**0.000019**	**0.00010**	**mg/L**	1	18-Jul-2019 16:37
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	18-Jul-2019 16:37
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	18-Jul-2019 16:37
Acenaphthene	U		0.000027	0.00010	mg/L	1	18-Jul-2019 16:37
Acenaphthylene	U		0.000015	0.00010	mg/L	1	18-Jul-2019 16:37
Anthracene	**0.000055**	J	**0.000014**	**0.00010**	**mg/L**	1	18-Jul-2019 16:37
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	18-Jul-2019 16:37
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	18-Jul-2019 16:37
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	18-Jul-2019 16:37
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	18-Jul-2019 16:37
Chrysene	U		0.000021	0.00010	mg/L	1	18-Jul-2019 16:37
Dibenzofuran	U		0.000020	0.00010	mg/L	1	18-Jul-2019 16:37
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	18-Jul-2019 16:37
Fluoranthene	U		0.000010	0.00010	mg/L	1	18-Jul-2019 16:37
Fluorene	U		0.000030	0.00010	mg/L	1	18-Jul-2019 16:37
Naphthalene	**0.00029**		**0.000020**	**0.00010**	**mg/L**	1	18-Jul-2019 16:37
Nitrobenzene	U		0.000024	0.00020	mg/L	1	18-Jul-2019 16:37
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	18-Jul-2019 16:37
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	18-Jul-2019 16:37
Phenanthrene	U		0.000021	0.00010	mg/L	1	18-Jul-2019 16:37
Phenol	U		0.000035	0.00020	mg/L	1	18-Jul-2019 16:37
Pyrene	**0.000020**	J	**0.000019**	**0.00010**	**mg/L**	1	18-Jul-2019 16:37
Surr: 2,4,6-Tribromophenol	*98.3*			*34-129*	*%REC*	*1*	*18-Jul-2019 16:37*
Surr: 2-Fluorobiphenyl	*69.6*			*40-125*	*%REC*	*1*	*18-Jul-2019 16:37*
Surr: 2-Fluorophenol	*62.4*			*20-120*	*%REC*	*1*	*18-Jul-2019 16:37*
Surr: 4-Terphenyl-d14	*89.7*			*40-135*	*%REC*	*1*	*18-Jul-2019 16:37*
Surr: Nitrobenzene-d5	*67.0*			*41-120*	*%REC*	*1*	*18-Jul-2019 16:37*
Surr: Phenol-d6	*74.4*			*20-120*	*%REC*	*1*	*18-Jul-2019 16:37*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 22-Jul-2019		Analyst: JHD
Arsenic	**0.000582**	J	**0.000400**	**0.00200**	**mg/L**	1	22-Jul-2019 23:04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW04-20190712
Collection Date: 12-Jul-2019 09:25

ANALYTICAL REPORT
WorkOrder:HS19070735
Lab ID:HS19070735-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	16-Jul-2019 20:07
Benzene		U	0.00020	0.0010	mg/L	1	16-Jul-2019 20:07
Chlorobenzene		U	0.00030	0.0010	mg/L	1	16-Jul-2019 20:07
Ethylbenzene		U	0.00030	0.0010	mg/L	1	16-Jul-2019 20:07
Methylene chloride		U	0.0010	0.0020	mg/L	1	16-Jul-2019 20:07
Toluene		U	0.00020	0.0010	mg/L	1	16-Jul-2019 20:07
Xylenes, Total		U	0.00030	0.0010	mg/L	1	16-Jul-2019 20:07
Surr: 1,2-Dichloroethane-d4	*99.7*			*70-126*	*%REC*	*1*	*16-Jul-2019 20:07*
Surr: 4-Bromofluorobenzene	*95.1*			*81-113*	*%REC*	*1*	*16-Jul-2019 20:07*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*16-Jul-2019 20:07*
Surr: Toluene-d8	*99.0*			*82-127*	*%REC*	*1*	*16-Jul-2019 20:07*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW04-20190712
Collection Date: 12-Jul-2019 09:25

ANALYTICAL REPORT
WorkOrder:HS19070735
Lab ID:HS19070735-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	18-Jul-2019 16:57
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	18-Jul-2019 16:57
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	18-Jul-2019 16:57
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	18-Jul-2019 16:57
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	18-Jul-2019 16:57
2-Methylnaphthalene	**0.000059**	J	**0.000019**	**0.00010**	**mg/L**	1	18-Jul-2019 16:57
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	18-Jul-2019 16:57
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	18-Jul-2019 16:57
Acenaphthene	**0.00052**		**0.000027**	**0.00010**	**mg/L**	1	18-Jul-2019 16:57
Acenaphthylene	U		0.000015	0.00010	mg/L	1	18-Jul-2019 16:57
Anthracene	U		0.000014	0.00010	mg/L	1	18-Jul-2019 16:57
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	18-Jul-2019 16:57
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	18-Jul-2019 16:57
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	18-Jul-2019 16:57
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	18-Jul-2019 16:57
Chrysene	U		0.000021	0.00010	mg/L	1	18-Jul-2019 16:57
Dibenzofuran	**0.000058**	J	**0.000020**	**0.00010**	**mg/L**	1	18-Jul-2019 16:57
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	18-Jul-2019 16:57
Fluoranthene	U		0.000010	0.00010	mg/L	1	18-Jul-2019 16:57
Fluorene	**0.000053**	J	**0.000030**	**0.00010**	**mg/L**	1	18-Jul-2019 16:57
Naphthalene	**0.00053**		**0.000020**	**0.00010**	**mg/L**	1	18-Jul-2019 16:57
Nitrobenzene	U		0.000024	0.00020	mg/L	1	18-Jul-2019 16:57
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	18-Jul-2019 16:57
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	18-Jul-2019 16:57
Phenanthrene	U		0.000021	0.00010	mg/L	1	18-Jul-2019 16:57
Phenol	U		0.000035	0.00020	mg/L	1	18-Jul-2019 16:57
Pyrene	**0.00016**		**0.000019**	**0.00010**	**mg/L**	1	18-Jul-2019 16:57
Surr: 2,4,6-Tribromophenol	*82.2*			*34-129*	*%REC*	*1*	*18-Jul-2019 16:57*
Surr: 2-Fluorobiphenyl	*75.2*			*40-125*	*%REC*	*1*	*18-Jul-2019 16:57*
Surr: 2-Fluorophenol	*67.0*			*20-120*	*%REC*	*1*	*18-Jul-2019 16:57*
Surr: 4-Terphenyl-d14	*83.3*			*40-135*	*%REC*	*1*	*18-Jul-2019 16:57*
Surr: Nitrobenzene-d5	*80.2*			*41-120*	*%REC*	*1*	*18-Jul-2019 16:57*
Surr: Phenol-d6	*76.6*			*20-120*	*%REC*	*1*	*18-Jul-2019 16:57*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 22-Jul-2019		Analyst: JHD
Arsenic	**0.0127**		**0.000400**	**0.00200**	**mg/L**	1	22-Jul-2019 23:06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-TW41B-20190712
Collection Date: 12-Jul-2019 10:40

ANALYTICAL REPORT
WorkOrder:HS19070735
Lab ID:HS19070735-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	16-Jul-2019 20:32
Benzene	**0.0013**		**0.00020**	**0.0010**	**mg/L**	1	16-Jul-2019 20:32
Chlorobenzene	U		0.00030	0.0010	mg/L	1	16-Jul-2019 20:32
Ethylbenzene	**0.0011**		**0.00030**	**0.0010**	**mg/L**	1	16-Jul-2019 20:32
Methylene chloride	U		0.0010	0.0020	mg/L	1	16-Jul-2019 20:32
Toluene	**0.0011**		**0.00020**	**0.0010**	**mg/L**	1	16-Jul-2019 20:32
Xylenes, Total	**0.019**		**0.00030**	**0.0010**	**mg/L**	1	16-Jul-2019 20:32
Surr: 1,2-Dichloroethane-d4	*99.1*			*70-126*	*%REC*	*1*	*16-Jul-2019 20:32*
Surr: 4-Bromofluorobenzene	*107*			*81-113*	*%REC*	*1*	*16-Jul-2019 20:32*
Surr: Dibromofluoromethane	*98.3*			*77-123*	*%REC*	*1*	*16-Jul-2019 20:32*
Surr: Toluene-d8	*96.6*			*82-127*	*%REC*	*1*	*16-Jul-2019 20:32*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19070735
Sample ID: WG-1620-TW41B-20190712
Lab ID:HS19070735-04
Collection Date: 12-Jul-2019 10:40
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 16-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	18-Jul-2019 17:16
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	18-Jul-2019 17:16
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	18-Jul-2019 17:16
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	18-Jul-2019 17:16
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	18-Jul-2019 17:16
2-Methylnaphthalene	**0.067**		**0.00019**	**0.0010**	**mg/L**	10	19-Jul-2019 17:34
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	18-Jul-2019 17:16
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	18-Jul-2019 17:16
Acenaphthene	**0.15**		**0.0027**	**0.010**	**mg/L**	100	19-Jul-2019 17:54
Acenaphthylene	**0.0014**		**0.000015**	**0.00010**	**mg/L**	1	18-Jul-2019 17:16
Anthracene	**0.0055**		**0.000014**	**0.00010**	**mg/L**	1	18-Jul-2019 17:16
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	18-Jul-2019 17:16
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	18-Jul-2019 17:16
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	18-Jul-2019 17:16
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	18-Jul-2019 17:16
Chrysene	U		0.000021	0.00010	mg/L	1	18-Jul-2019 17:16
Dibenzofuran	**0.074**		**0.00020**	**0.0010**	**mg/L**	10	19-Jul-2019 17:34
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	18-Jul-2019 17:16
Fluoranthene	**0.0034**		**0.000010**	**0.00010**	**mg/L**	1	18-Jul-2019 17:16
Fluorene	**0.085**		**0.00030**	**0.0010**	**mg/L**	10	19-Jul-2019 17:34
Naphthalene	**0.69**		**0.0020**	**0.010**	**mg/L**	100	19-Jul-2019 17:54
Nitrobenzene	U		0.000024	0.00020	mg/L	1	18-Jul-2019 17:16
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	18-Jul-2019 17:16
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	18-Jul-2019 17:16
Phenanthrene	**0.027**		**0.00021**	**0.0010**	**mg/L**	10	19-Jul-2019 17:34
Phenol	U		0.000035	0.00020	mg/L	1	18-Jul-2019 17:16
Pyrene	**0.0014**		**0.000019**	**0.00010**	**mg/L**	1	18-Jul-2019 17:16
Surr: 2,4,6-Tribromophenol	*118*			*34-129*	*%REC*	*10*	*19-Jul-2019 17:34*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*19-Jul-2019 17:54*
Surr: 2,4,6-Tribromophenol	*69.5*			*34-129*	*%REC*	*1*	*18-Jul-2019 17:16*
Surr: 2-Fluorobiphenyl	*54.2*			*40-125*	*%REC*	*1*	*18-Jul-2019 17:16*
Surr: 2-Fluorobiphenyl	*81.3*			*40-125*	*%REC*	*10*	*19-Jul-2019 17:34*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*19-Jul-2019 17:54*
Surr: 2-Fluorophenol	*60.1*			*20-120*	*%REC*	*10*	*19-Jul-2019 17:34*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*19-Jul-2019 17:54*
Surr: 2-Fluorophenol	*57.7*			*20-120*	*%REC*	*1*	*18-Jul-2019 17:16*
Surr: 4-Terphenyl-d14	*84.7*			*40-135*	*%REC*	*1*	*18-Jul-2019 17:16*
Surr: 4-Terphenyl-d14	*83.2*			*40-135*	*%REC*	*10*	*19-Jul-2019 17:34*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*100*	*19-Jul-2019 17:54*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-TW41B-20190712
Collection Date: 12-Jul-2019 10:40

ANALYTICAL REPORT
WorkOrder:HS19070735
Lab ID:HS19070735-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Jul-2019		Analyst: GEY
Surr: Nitrobenzene-d5	*67.6*			*41-120*	*%REC*	*10*	*19-Jul-2019 17:34*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*19-Jul-2019 17:54*
Surr: Nitrobenzene-d5	*65.5*			*41-120*	*%REC*	*1*	*18-Jul-2019 17:16*
Surr: Phenol-d6	*63.7*			*20-120*	*%REC*	*1*	*18-Jul-2019 17:16*
Surr: Phenol-d6	*70.5*			*20-120*	*%REC*	*10*	*19-Jul-2019 17:34*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*19-Jul-2019 17:54*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 22-Jul-2019		Analyst: JHD
Arsenic	**0.113**		**0.000400**	**0.00200**	**mg/L**	1	22-Jul-2019 23:09

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB03-20190712
Collection Date: 12-Jul-2019 11:00

ANALYTICAL REPORT
WorkOrder:HS19070735
Lab ID:HS19070735-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	16-Jul-2019 18:26
Benzene	**0.00052**	J	**0.00020**	**0.0010**	**mg/L**	1	16-Jul-2019 18:26
Chlorobenzene	U		0.00030	0.0010	mg/L	1	16-Jul-2019 18:26
Ethylbenzene	**0.00032**	J	**0.00030**	**0.0010**	**mg/L**	1	16-Jul-2019 18:26
Methylene chloride	U		0.0010	0.0020	mg/L	1	16-Jul-2019 18:26
Toluene	**0.00037**	J	**0.00020**	**0.0010**	**mg/L**	1	16-Jul-2019 18:26
Xylenes, Total	U		0.00030	0.0010	mg/L	1	16-Jul-2019 18:26
Surr: 1,2-Dichloroethane-d4	*97.5*			*70-126*	*%REC*	*1*	*16-Jul-2019 18:26*
Surr: 4-Bromofluorobenzene	*97.1*			*81-113*	*%REC*	*1*	*16-Jul-2019 18:26*
Surr: Dibromofluoromethane	*100*			*77-123*	*%REC*	*1*	*16-Jul-2019 18:26*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*16-Jul-2019 18:26*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB03-20190712
Collection Date: 12-Jul-2019 11:00

ANALYTICAL REPORT
WorkOrder:HS19070735
Lab ID:HS19070735-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	18-Jul-2019 17:35
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	18-Jul-2019 17:35
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	18-Jul-2019 17:35
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	18-Jul-2019 17:35
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	18-Jul-2019 17:35
2-Methylnaphthalene	**0.000052**	J	**0.000019**	**0.00010**	**mg/L**	1	18-Jul-2019 17:35
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	18-Jul-2019 17:35
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	18-Jul-2019 17:35
Acenaphthene	U		0.000027	0.00010	mg/L	1	18-Jul-2019 17:35
Acenaphthylene	U		0.000015	0.00010	mg/L	1	18-Jul-2019 17:35
Anthracene	U		0.000014	0.00010	mg/L	1	18-Jul-2019 17:35
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	18-Jul-2019 17:35
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	18-Jul-2019 17:35
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	18-Jul-2019 17:35
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	18-Jul-2019 17:35
Chrysene	U		0.000021	0.00010	mg/L	1	18-Jul-2019 17:35
Dibenzofuran	**0.000026**	J	**0.000020**	**0.00010**	**mg/L**	1	18-Jul-2019 17:35
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	18-Jul-2019 17:35
Fluoranthene	U		0.000010	0.00010	mg/L	1	18-Jul-2019 17:35
Fluorene	U		0.000030	0.00010	mg/L	1	18-Jul-2019 17:35
Naphthalene	**0.00028**		**0.000020**	**0.00010**	**mg/L**	1	18-Jul-2019 17:35
Nitrobenzene	U		0.000024	0.00020	mg/L	1	18-Jul-2019 17:35
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	18-Jul-2019 17:35
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	18-Jul-2019 17:35
Phenanthrene	U		0.000021	0.00010	mg/L	1	18-Jul-2019 17:35
Phenol	**0.000052**	J	**0.000035**	**0.00020**	**mg/L**	1	18-Jul-2019 17:35
Pyrene	U		0.000019	0.00010	mg/L	1	18-Jul-2019 17:35
Surr: 2,4,6-Tribromophenol	*83.5*			*34-129*	*%REC*	*1*	*18-Jul-2019 17:35*
Surr: 2-Fluorobiphenyl	*98.5*			*40-125*	*%REC*	*1*	*18-Jul-2019 17:35*
Surr: 2-Fluorophenol	*77.3*			*20-120*	*%REC*	*1*	*18-Jul-2019 17:35*
Surr: 4-Terphenyl-d14	*95.6*			*40-135*	*%REC*	*1*	*18-Jul-2019 17:35*
Surr: Nitrobenzene-d5	*100*			*41-120*	*%REC*	*1*	*18-Jul-2019 17:35*
Surr: Phenol-d6	*91.5*			*20-120*	*%REC*	*1*	*18-Jul-2019 17:35*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 22-Jul-2019		Analyst: JHD
Arsenic	U		0.000400	0.00200	mg/L	1	22-Jul-2019 23:11

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19070735
Sample ID: WG-1620-TB03-20190712
Lab ID:HS19070735-06
Collection Date: 12-Jul-2019 00:00
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	16-Jul-2019 18:52
Benzene		U	0.00020	0.0010	mg/L	1	16-Jul-2019 18:52
Chlorobenzene		U	0.00030	0.0010	mg/L	1	16-Jul-2019 18:52
Ethylbenzene		U	0.00030	0.0010	mg/L	1	16-Jul-2019 18:52
Methylene chloride		U	0.0010	0.0020	mg/L	1	16-Jul-2019 18:52
Toluene		U	0.00020	0.0010	mg/L	1	16-Jul-2019 18:52
Xylenes, Total		U	0.00030	0.0010	mg/L	1	16-Jul-2019 18:52
Surr: 1,2-Dichloroethane-d4	*97.5*			*70-126*	*%REC*	*1*	*16-Jul-2019 18:52*
Surr: 4-Bromofluorobenzene	*98.6*			*81-113*	*%REC*	*1*	*16-Jul-2019 18:52*
Surr: Dibromofluoromethane	*96.7*			*77-123*	*%REC*	*1*	*16-Jul-2019 18:52*
Surr: Toluene-d8	*96.6*			*82-127*	*%REC*	*1*	*16-Jul-2019 18:52*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

WEIGHT LOG

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070735

Batch ID: 143051 **Method:** LOW-LEVEL SEMIVOLATILES BY 8270D **Prep:** 3510_B_LOW

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19070735-01	1	1000	1 (mL)	0.001
HS19070735-02	1	1000	1 (mL)	0.001
HS19070735-03	1	1000	1 (mL)	0.001
HS19070735-04	1	1000	1 (mL)	0.001
HS19070735-05	1	1000	1 (mL)	0.001

Batch ID: 143254 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19070735-01	1	10	10 (mL)	1
HS19070735-02	1	10	10 (mL)	1
HS19070735-03	1	10	10 (mL)	1
HS19070735-04	1	10	10 (mL)	1
HS19070735-05	1	10	10 (mL)	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070735

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID: 143051 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Water	
HS19070735-01	WG-1620-MW09-20190712	12 Jul 2019 07:35		16 Jul 2019 09:08	18 Jul 2019 16:18	1
HS19070735-02	WG-1620-MW03-20190712	12 Jul 2019 08:35		16 Jul 2019 09:08	18 Jul 2019 16:37	1
HS19070735-03	WG-1620-MW04-20190712	12 Jul 2019 09:25		16 Jul 2019 09:08	18 Jul 2019 16:57	1
HS19070735-04	WG-1620-TW41B-20190712	12 Jul 2019 10:40		16 Jul 2019 09:08	19 Jul 2019 17:54	100
HS19070735-04	WG-1620-TW41B-20190712	12 Jul 2019 10:40		16 Jul 2019 09:08	19 Jul 2019 17:34	10
HS19070735-04	WG-1620-TW41B-20190712	12 Jul 2019 10:40		16 Jul 2019 09:08	18 Jul 2019 17:16	1
HS19070735-05	WG-1620-FB03-20190712	12 Jul 2019 11:00		16 Jul 2019 09:08	18 Jul 2019 17:35	1
Batch ID: 143254 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS19070735-01	WG-1620-MW09-20190712	12 Jul 2019 07:35		22 Jul 2019 12:00	22 Jul 2019 22:25	1
HS19070735-02	WG-1620-MW03-20190712	12 Jul 2019 08:35		22 Jul 2019 12:00	22 Jul 2019 23:04	1
HS19070735-03	WG-1620-MW04-20190712	12 Jul 2019 09:25		22 Jul 2019 12:00	22 Jul 2019 23:06	1
HS19070735-04	WG-1620-TW41B-20190712	12 Jul 2019 10:40		22 Jul 2019 12:00	22 Jul 2019 23:09	1
HS19070735-05	WG-1620-FB03-20190712	12 Jul 2019 11:00		22 Jul 2019 12:00	22 Jul 2019 23:11	1
Batch ID: R342562 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS19070735-01	WG-1620-MW09-20190712	12 Jul 2019 07:35			16 Jul 2019 19:17	1
HS19070735-02	WG-1620-MW03-20190712	12 Jul 2019 08:35			16 Jul 2019 19:42	1
HS19070735-03	WG-1620-MW04-20190712	12 Jul 2019 09:25			16 Jul 2019 20:07	1
HS19070735-04	WG-1620-TW41B-20190712	12 Jul 2019 10:40			16 Jul 2019 20:32	1
HS19070735-05	WG-1620-FB03-20190712	12 Jul 2019 11:00			16 Jul 2019 18:26	1
HS19070735-06	WG-1620-TB03-20190712	12 Jul 2019 00:00			16 Jul 2019 18:52	1

WorkOrder: HS19070735
InstrumentID: ICPMS05
Test Code: ICP_TW
Test Number: SW6020
Test Name: ICP-MS Metals by SW6020A

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Arsenic	7440-38-2	0.000500	0.000547	0.000400	0.00200

WorkOrder: HS19070735
InstrumentID: SV-7
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Diphenylhydrazine	122-66-7	0.00010	0.00011	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.00010	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.000096	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.00012	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.00011	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.00010	0.00012	0.000019	0.00010
A	2-Methylnaphthalene	91-57-6	0.000050	0.000049	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000013	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00010	0.00013	0.000047	0.0010
A	Acenaphthene	83-32-9	0.00010	0.00011	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000050	0.000015	0.00010
A	Acenaphthylene	208-96-8	0.00010	0.00010	0.000015	0.00010
A	Anthracene	120-12-7	0.00010	0.00011	0.000014	0.00010
A	Anthracene	120-12-7	0.000050	0.000055	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.000050	0.000068	0.000050	0.00010
A	Benz(a)anthracene	56-55-3	0.00010	0.000099	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.00010	0.000076	0.000020	0.00010
A	Benzo(a)pyrene	50-32-8	0.000050	0.000053	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.00012	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.000086	0.000037	0.00020
A	Chrysene	218-01-9	0.00010	0.00011	0.000021	0.00010
A	Chrysene	218-01-9	0.000050	0.000066	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.000050	0.000052	0.000020	0.00010
A	Dibenzofuran	132-64-9	0.00010	0.000094	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.000099	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000053	0.000010	0.00010
A	Fluoranthene	206-44-0	0.00010	0.00012	0.000010	0.00010
A	Fluorene	86-73-7	0.00010	0.00012	0.000030	0.00010
A	Fluorene	86-73-7	0.000050	0.000052	0.000030	0.00010
A	Naphthalene	91-20-3	0.00010	0.00010	0.000020	0.00010
A	Naphthalene	91-20-3	0.000050	0.000061	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.00013	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.00012	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.000085	0.000079	0.00020
A	Phenanthrene	85-01-8	0.00010	0.00011	0.000021	0.00010
A	Phenanthrene	85-01-8	0.000050	0.000055	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.000094	0.000035	0.00020
A	Pyrene	129-00-0	0.00010	0.00011	0.000019	0.00010
A	Pyrene	129-00-0	0.000050	0.000061	0.000019	0.00010
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0.00020

WorkOrder: HS19070735
InstrumentID: SV-7
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
S	2-Fluorobiphenyl	321-60-8	0	0	0	0.00020
S	2-Fluorophenol	367-12-4	0	0	0	0.00020
S	4-Terphenyl-d14	1718-51-0	0	0	0	0.00020
S	Nitrobenzene-d5	4165-60-0	0	0	0	0.00020
S	Phenol-d6	13127-88-3	0	0	0	0.00020

WorkOrder: HS19070735
InstrumentID: VOA4
Test Code: 8260_LL_W
Test Number: SW8260
Test Name: Low Level Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.00050	0.00064	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00060	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00061	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00063	0.00030	0.0010
A	Methylene chloride	75-09-2	0.0010	0.00077	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00058	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00062	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070735

QC BATCH REPORT

Batch ID: 143254 (0) **Instrument: ICPMS05** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-143254** Units: **mg/L** Analysis Date: **22-Jul-2019 22:21**
Client ID: Run ID: **ICPMS05_342799** SeqNo: **5176129** PrepDate: **22-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								

LCS Sample ID: **LCS-143254** Units: **mg/L** Analysis Date: **22-Jul-2019 22:23**
Client ID: Run ID: **ICPMS05_342799** SeqNo: **5176130** PrepDate: **22-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05183	0.00200	0.05	0	104	80 - 120				

MS Sample ID: **HS19070735-01MS** Units: **mg/L** Analysis Date: **22-Jul-2019 22:30**
Client ID: **WG-1620-MW09-20190712** Run ID: **ICPMS05_342799** SeqNo: **5176133** PrepDate: **22-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05366	0.00200	0.05	0.000901	106	80 - 120				

MSD Sample ID: **HS19070735-01MSD** Units: **mg/L** Analysis Date: **22-Jul-2019 22:32**
Client ID: **WG-1620-MW09-20190712** Run ID: **ICPMS05_342799** SeqNo: **5176134** PrepDate: **22-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0522	0.00200	0.05	0.000901	103	80 - 120	0.05366	2.76	20	

PDS Sample ID: **HS19070735-01PDS** Units: **mg/L** Analysis Date: **22-Jul-2019 22:35**
Client ID: **WG-1620-MW09-20190712** Run ID: **ICPMS05_342799** SeqNo: **5176135** PrepDate: **22-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0984	0.00200	0.1	0.000901	97.5	75 - 125				

SD Sample ID: **HS19070735-01SD** Units: **mg/L** Analysis Date: **22-Jul-2019 22:28**
Client ID: **WG-1620-MW09-20190712** Run ID: **ICPMS05_342799** SeqNo: **5176132** PrepDate: **22-Jul-2019** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	U	0.0100					0.000901	0	10	

The following samples were analyzed in this batch: HS19070735-01 HS19070735-02 HS19070735-03 HS19070735-04 HS19070735-05

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070735

QC BATCH REPORT

Batch ID: 143051 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-143051** Units: **ug/L** Analysis Date: **17-Jul-2019 11:25**
Client ID: Run ID: **SV-7_342594** SeqNo: **5170297** PrepDate: **16-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	U	0.20								
2,4-Dimethylphenol	U	0.20								
2,4-Dinitrotoluene	U	0.20								
2,6-Dinitrotoluene	U	0.20								
2-Chloronaphthalene	U	0.20								
2-Methylnaphthalene	U	0.10								
4,6-Dinitro-2-methylphenol	U	0.20								
4-Nitrophenol	U	1.0								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Benz(a)anthracene	U	0.10								
Benzo(a)pyrene	U	0.10								
Bis(2-chloroethoxy)methane	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Chrysene	U	0.10								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Nitrobenzene	U	0.20								
N-Nitrosodiphenylamine	U	0.20								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*5.164*	*0.20*	*5*	*0*	*103*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.71*	*0.20*	*5*	*0*	*94.2*	*40 - 125*				
Surr: 2-Fluorophenol	*5.02*	*0.20*	*5*	*0*	*100*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.296*	*0.20*	*5*	*0*	*85.9*	*40 - 135*				
Surr: Nitrobenzene-d5	*5.224*	*0.20*	*5*	*0*	*104*	*41 - 120*				
Surr: Phenol-d6	*5.169*	*0.20*	*5*	*0*	*103*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070735

QC BATCH REPORT

Batch ID: 143051 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCS Sample ID: **LCS-143051** Units: **ug/L** Analysis Date: **17-Jul-2019 11:44**
Client ID: Run ID: **SV-7_342594** SeqNo: **5170298** PrepDate: **16-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.891	0.20	5	0	97.8	39 - 127				
2,4-Dimethylphenol	4.456	0.20	5	0	89.1	35 - 120				
2,4-Dinitrotoluene	5.665	0.20	5	0	113	50 - 122				
2,6-Dinitrotoluene	5.12	0.20	5	0	102	50 - 120				
2-Chloronaphthalene	4.568	0.20	5	0	91.4	50 - 120				
2-Methylnaphthalene	4.785	0.10	5	0	95.7	50 - 120				
4,6-Dinitro-2-methylphenol	4.433	0.20	5	0	88.7	25 - 121				
4-Nitrophenol	5.291	1.0	5	0	106	30 - 130				
Acenaphthene	4.568	0.10	5	0	91.4	45 - 120				
Acenaphthylene	4.495	0.10	5	0	89.9	47 - 120				
Anthracene	4.502	0.10	5	0	90.0	45 - 120				
Benz(a)anthracene	5.224	0.10	5	0	104	40 - 120				
Benzo(a)pyrene	4.184	0.10	5	0	83.7	45 - 120				
Bis(2-chloroethoxy)methane	4.62	0.20	5	0	92.4	45 - 120				
Bis(2-ethylhexyl)phthalate	5.383	0.20	5	0	108	40 - 139				
Chrysene	5.78	0.10	5	0	116	43 - 120				
Dibenzofuran	4.573	0.10	5	0	91.5	50 - 120				
Di-n-butyl phthalate	4.964	0.20	5	0	99.3	45 - 123				
Fluoranthene	5.235	0.10	5	0	105	45 - 125				
Fluorene	4.312	0.10	5	0	86.2	49 - 120				
Naphthalene	4.422	0.10	5	0	88.4	45 - 120				
Nitrobenzene	5.307	0.20	5	0	106	44 - 120				
N-Nitrosodiphenylamine	4.846	0.20	5	0	96.9	40 - 125				
Pentachlorophenol	3.998	0.20	5	0	80.0	19 - 121				
Phenanthrene	4.511	0.10	5	0	90.2	45 - 121				
Phenol	4.734	0.20	5	0	94.7	20 - 124				
Pyrene	4.84	0.10	5	0	96.8	40 - 130				
Surr: 2,4,6-Tribromophenol	*5.277*	*0.20*	*5*	*0*	*106*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.715*	*0.20*	*5*	*0*	*94.3*	*40 - 125*				
Surr: 2-Fluorophenol	*4.401*	*0.20*	*5*	*0*	*88.0*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.682*	*0.20*	*5*	*0*	*93.6*	*40 - 135*				
Surr: Nitrobenzene-d5	*5.128*	*0.20*	*5*	*0*	*103*	*41 - 120*				
Surr: Phenol-d6	*4.86*	*0.20*	*5*	*0*	*97.2*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070735

QC BATCH REPORT

Batch ID: 143051 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCSD Sample ID: **LCSD-143051** Units: **ug/L** Analysis Date: **17-Jul-2019 12:04**
Client ID: Run ID: **SV-7_342594** SeqNo: **5170299** PrepDate: **16-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	5.027	0.20	5	0	101	39 - 127	4.891	2.75	20	
2,4-Dimethylphenol	4.508	0.20	5	0	90.2	35 - 120	4.456	1.17	20	
2,4-Dinitrotoluene	6.009	0.20	5	0	120	50 - 122	5.665	5.91	20	
2,6-Dinitrotoluene	5.413	0.20	5	0	108	50 - 120	5.12	5.56	20	
2-Chloronaphthalene	4.685	0.20	5	0	93.7	50 - 120	4.568	2.52	20	
2-Methylnaphthalene	4.646	0.10	5	0	92.9	50 - 120	4.785	2.96	20	
4,6-Dinitro-2-methylphenol	4.386	0.20	5	0	87.7	25 - 121	4.433	1.06	30	
4-Nitrophenol	5.432	1.0	5	0	109	30 - 130	5.291	2.62	20	
Acenaphthene	4.65	0.10	5	0	93.0	45 - 120	4.568	1.77	20	
Acenaphthylene	4.597	0.10	5	0	91.9	47 - 120	4.495	2.24	20	
Anthracene	4.626	0.10	5	0	92.5	45 - 120	4.502	2.72	20	
Benz(a)anthracene	5.314	0.10	5	0	106	40 - 120	5.224	1.7	20	
Benzo(a)pyrene	4.37	0.10	5	0	87.4	45 - 120	4.184	4.35	20	
Bis(2-chloroethoxy)methane	4.471	0.20	5	0	89.4	45 - 120	4.62	3.27	20	
Bis(2-ethylhexyl)phthalate	5.015	0.20	5	0	100	40 - 139	5.383	7.09	20	
Chrysene	5.4	0.10	5	0	108	43 - 120	5.78	6.79	20	
Dibenzofuran	4.789	0.10	5	0	95.8	50 - 120	4.573	4.61	20	
Di-n-butyl phthalate	4.9	0.20	5	0	98.0	45 - 123	4.964	1.29	20	
Fluoranthene	5.005	0.10	5	0	100	45 - 125	5.235	4.5	20	
Fluorene	4.585	0.10	5	0	91.7	49 - 120	4.312	6.13	20	
Naphthalene	4.38	0.10	5	0	87.6	45 - 120	4.422	0.956	20	
Nitrobenzene	5.058	0.20	5	0	101	44 - 120	5.307	4.82	20	
N-Nitrosodiphenylamine	4.98	0.20	5	0	99.6	40 - 125	4.846	2.72	20	
Pentachlorophenol	3.749	0.20	5	0	75.0	19 - 121	3.998	6.45	20	
Phenanthrene	4.452	0.10	5	0	89.0	45 - 121	4.511	1.31	20	
Phenol	4.892	0.20	5	0	97.8	20 - 124	4.734	3.28	20	
Pyrene	4.992	0.10	5	0	99.8	40 - 130	4.84	3.09	20	
Surr: 2,4,6-Tribromophenol	*5.252*	*0.20*	*5*	*0*	*105*	*34 - 129*	*5.277*	*0.469*	*20*	
Surr: 2-Fluorobiphenyl	*4.793*	*0.20*	*5*	*0*	*95.9*	*40 - 125*	*4.715*	*1.64*	*20*	
Surr: 2-Fluorophenol	*4.505*	*0.20*	*5*	*0*	*90.1*	*20 - 120*	*4.401*	*2.33*	*20*	
Surr: 4-Terphenyl-d14	*4.494*	*0.20*	*5*	*0*	*89.9*	*40 - 135*	*4.682*	*4.08*	*20*	
Surr: Nitrobenzene-d5	*5.029*	*0.20*	*5*	*0*	*101*	*41 - 120*	*5.128*	*1.95*	*20*	
Surr: Phenol-d6	*4.973*	*0.20*	*5*	*0*	*99.5*	*20 - 120*	*4.86*	*2.3*	*20*	

The following samples were analyzed in this batch: HS19070735-01 HS19070735-02 HS19070735-03 HS19070735-04 HS19070735-05

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070735

QC BATCH REPORT

Batch ID: R342562 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-190716** Units: **ug/L** Analysis Date: **16-Jul-2019 14:10**
Client ID: Run ID: **VOA4_342562** SeqNo: **5169824** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*48.3*	*1.0*	*50*	*0*	*96.6*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*51.24*	*1.0*	*50*	*0*	*102*	*82 - 115*				
Surr: Dibromofluoromethane	*49.23*	*1.0*	*50*	*0*	*98.5*	*73 - 126*				
Surr: Toluene-d8	*49.44*	*1.0*	*50*	*0*	*98.9*	*81 - 120*				

LCS Sample ID: **VLCSW-190716** Units: **ug/L** Analysis Date: **16-Jul-2019 13:18**
Client ID: Run ID: **VOA4_342562** SeqNo: **5169823** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	17.58	1.0	20	0	87.9	70 - 124				
Benzene	18.78	1.0	20	0	93.9	74 - 120				
Chlorobenzene	19.65	1.0	20	0	98.3	76 - 113				
Ethylbenzene	19.35	1.0	20	0	96.7	77 - 117				
Methylene chloride	19.06	2.0	20	0	95.3	70 - 127				
Toluene	19.08	1.0	20	0	95.4	77 - 118				
Xylenes, Total	64.06	1.0	60	0	107	75 - 122				
Surr: 1,2-Dichloroethane-d4	*45.57*	*1.0*	*50*	*0*	*91.1*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*51.32*	*1.0*	*50*	*0*	*103*	*82 - 115*				
Surr: Dibromofluoromethane	*47.81*	*1.0*	*50*	*0*	*95.6*	*73 - 126*				
Surr: Toluene-d8	*48.58*	*1.0*	*50*	*0*	*97.2*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070735

QC BATCH REPORT

Batch ID: R342562 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS19070681-04MS** Units: **ug/L** Analysis Date: **16-Jul-2019 16:45**
Client ID: Run ID: **VOA4_342562** SeqNo: **5169830** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	14.82	1.0	20	0	74.1	70 - 127				
Benzene	124.2	1.0	20	109.8	71.6	70 - 127				O
Chlorobenzene	16.67	1.0	20	0	83.4	70 - 114				
Ethylbenzene	37.48	1.0	20	17.94	97.7	70 - 124				
Methylene chloride	17	2.0	20	0	85.0	70 - 128				
Toluene	21.24	1.0	20	2.685	92.8	70 - 123				
Xylenes, Total	62.26	1.0	60	4.367	96.5	70 - 130				
Surr: 1,2-Dichloroethane-d4	*47.06*	*1.0*	*50*	*0*	*94.1*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*52.4*	*1.0*	*50*	*0*	*105*	*81 - 113*				
Surr: Dibromofluoromethane	*48.33*	*1.0*	*50*	*0*	*96.7*	*77 - 123*				
Surr: Toluene-d8	*50.02*	*1.0*	*50*	*0*	*100*	*82 - 127*				

MSD Sample ID: **HS19070681-04MSD** Units: **ug/L** Analysis Date: **16-Jul-2019 17:11**
Client ID: Run ID: **VOA4_342562** SeqNo: **5169831** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	14.45	1.0	20	0	72.2	70 - 127	14.82	2.55	20	
Benzene	115.9	1.0	20	109.8	30.4	70 - 127	124.2	6.87	20	SO
Chlorobenzene	15.87	1.0	20	0	79.4	70 - 114	16.67	4.94	20	
Ethylbenzene	33.81	1.0	20	17.94	79.3	70 - 124	37.48	10.3	20	
Methylene chloride	14.72	2.0	20	0	73.6	70 - 128	17	14.3	20	
Toluene	19.3	1.0	20	2.685	83.1	70 - 123	21.24	9.56	20	
Xylenes, Total	55.27	1.0	60	4.367	84.8	70 - 130	62.26	11.9	20	
Surr: 1,2-Dichloroethane-d4	*47.42*	*1.0*	*50*	*0*	*94.8*	*70 - 126*	*47.06*	*0.76*	*20*	
Surr: 4-Bromofluorobenzene	*49.53*	*1.0*	*50*	*0*	*99.1*	*81 - 113*	*52.4*	*5.63*	*20*	
Surr: Dibromofluoromethane	*48.81*	*1.0*	*50*	*0*	*97.6*	*77 - 123*	*48.33*	*0.983*	*20*	
Surr: Toluene-d8	*50.24*	*1.0*	*50*	*0*	*100*	*82 - 127*	*50.02*	*0.425*	*20*	

The following samples were analyzed in this batch: HS19070735-01 HS19070735-02 HS19070735-03 HS19070735-04 HS19070735-05 HS19070735-06

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS19070735**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Kansas	E-10352 2018-2019	31-Jul-2019
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
Oklahoma	2018-156	31-Aug-2019
Texas	TX104704231-19-23	30-Apr-2020

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS19070735

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS19070735-01	WG-1620-MW09-20190712	Login	15/07/2019 18:21:52	JRM	MET044
HS19070735-01	WG-1620-MW09-20190712	Login	15/07/2019 18:21:52	JRM	EXT108
HS19070735-01	WG-1620-MW09-20190712	Login	15/07/2019 18:21:52	JRM	VOA074
HS19070735-02	WG-1620-MW03-20190712	Login	15/07/2019 18:21:52	JRM	MET044
HS19070735-02	WG-1620-MW03-20190712	Login	15/07/2019 18:21:52	JRM	EXT108
HS19070735-02	WG-1620-MW03-20190712	Login	15/07/2019 18:21:52	JRM	VOA074
HS19070735-03	WG-1620-MW04-20190712	Login	15/07/2019 18:21:52	JRM	MET044
HS19070735-03	WG-1620-MW04-20190712	Login	15/07/2019 18:21:52	JRM	EXT108
HS19070735-03	WG-1620-MW04-20190712	Login	15/07/2019 18:21:52	JRM	VOA074
HS19070735-04	WG-1620-TW41B-20190712	Login	15/07/2019 18:21:52	JRM	MET044
HS19070735-04	WG-1620-TW41B-20190712	Login	15/07/2019 18:21:52	JRM	EXT135
HS19070735-04	WG-1620-TW41B-20190712	Login	15/07/2019 18:21:52	JRM	VOA074
HS19070735-05	WG-1620-FB03-20190712	Login	15/07/2019 18:21:52	JRM	MET044
HS19070735-05	WG-1620-FB03-20190712	Login	15/07/2019 18:21:52	JRM	EXT135
HS19070735-05	WG-1620-FB03-20190712	Login	15/07/2019 18:21:52	JRM	VOA074
HS19070735-06	WG-1620-TB03-20190712	Login	15/07/2019 18:21:52	JRM	VOA074

Sample Receipt Checklist

Client Name: PBW
Work Order: HS19070735

Date/Time Received: **15-Jul-2019 16:30**
Received by: **JRM**

Checklist completed by: *Jared R. Makan* eSignature 15-Jul-2019 Date

Reviewed by: *Dane J. Wacasey* eSignature 18-Jul-2019 Date

Matrices: **Water**

Carrier name: **Client**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:196142
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	1.0c/1.0c UC/C	IR25
Cooler(s)/Kit(s):	45005	
Date/Time sample(s) sent to storage:	07/15/2019 18:40	

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600
Holland, MI +1 616 399 6070

Chain of Custody Form

Page ___ of ___

COC ID: 196142

HS19070735

Golder Associates Inc.
Houston TX-Wood Preserving Works

Customer Information		Project Information		ALS Project Manager:	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A	8260_LL_W (5632528 Volatile Organics Site Specific)
Work Order		Project Number	1620-07-Rev0 SR 92688	B	8260_LL_W (5632528 VOC Site Specific + V.C.)
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P	C	8270_LOW_W (5632532 SemiVolatiles Site specific)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	ICP_TW (5636002 5632646 Metals - As, Pb)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~WG-1620-TB0[illegible]~~			~~Water~~	~~←~~	~~2~~		*									
2	WG-1620-MW09-20190712	7-12-19	0735	W		6	X		X	X							
3	WG-1620-MW03-20190712		0835	W		6	X		X	X							
4	WG-1620-MW04-20190712		0925	W		6	X		X	X							
5	WG-1620-TW41B-20190712		1040	W		6	X		X	X							
6	WG-1620-FB03-20190712		1100	W		6	X		X	X							
7	WG-1620-TB03-20190712			W		2	X										
8																	
9																	
10																	

Sampler(s) Please Print & Sign: JOHN BRAYTON

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) ☐ Other ___ ☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 -hour

Results Due Date:

Relinquished by: [signature] Date: 7-15-19 Time: 1630 Received by:

Relinquished by: [signature] Date: 7/15/19 Time: 1630 Received by (Laboratory): [signature]

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.
	UC
45005	1.0
	1.225
	UF 0.0

QC Package: (Check One Box Below)

☐ Level II Std QC
☐ Level III Std QC/Raw Data
☐ Level IV SW846/CLP
☐ Other
☒ TRRP Checklist
☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

July 25, 2019

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS19070864**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 13 sample(s) on Jul 17, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS19070864**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS19070864**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data								
Laboratory Name: ALS Laboratory Group			LRC Date: 07/25/2019					
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS19070864					
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 143194,143304,143325,R342655,R342706					
#[1]	A[2]	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?		X			1
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			2
		Were MS/MSD RPDs within laboratory QC limits?		X			3
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				4
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 07/25/2019				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS19070864				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 143194,143304,143325,R342655,R342706				
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?	X				
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 07/25/2019
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS19070864
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 143194,143304,143325,R342655,R342706

ER#[5]	Description
1	Semivolatile Organics Method SW8270, samples WG-1620-MW25C-20190716, WG-1620-MW63B-20190716: the surrogate recoveries could not be determined due to dilution below the calibration range
2	Batch 143194, Semivolatile Organics Method SW8270, sample WG-1620-MW28C-20190716, MSD recovered outside the control limit for Phenol due to possible matrix effect.
3	Batch 143194, Semivolatile Organics Method SW8270, sample WG-1620-MW28C-20190716, MS/MSD RPD recovered above the RPD limit for 2-Chloronaphthalene due to possible matrix effect.
4	Batch 143194, Semivolatile Organics Method SW8270, samples WG-1620-MW25C-20190716, the GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS19070864

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19070864-01	WG-1620-MW21C-20190716	Water		16-Jul-2019 07:35	17-Jul-2019 14:24	☐
HS19070864-02	WG-1620-FD01-20190716	Water		16-Jul-2019 07:35	17-Jul-2019 14:24	☐
HS19070864-03	WG-1620-MW62B-20190716	Water		16-Jul-2019 08:25	17-Jul-2019 14:24	☐
HS19070864-04	WG-1620-MW53C-20190716	Water		16-Jul-2019 10:15	17-Jul-2019 14:24	☐
HS19070864-05	WG-1620-MW54C-20190716	Water		16-Jul-2019 11:15	17-Jul-2019 14:24	☐
HS19070864-06	WG-1620-MW25C-20190716	Water		16-Jul-2019 12:15	17-Jul-2019 14:24	☐
HS19070864-07	WG-1620-MW25A-20190716	Water		16-Jul-2019 13:10	17-Jul-2019 14:24	☐
HS19070864-08	WG-1620-MW36B-20190716	Water		16-Jul-2019 14:20	17-Jul-2019 14:24	☐
HS19070864-09	WG-1620-MW36A-20190716	Water		16-Jul-2019 15:20	17-Jul-2019 14:24	☐
HS19070864-10	WG-1620-MW28C-20190716	Water		16-Jul-2019 16:15	17-Jul-2019 14:24	☐
HS19070864-11	WG-1620-MW28A-20190716	Water		16-Jul-2019 17:00	17-Jul-2019 14:24	☐
HS19070864-12	WG-1620-MW63B-20190716	Water		16-Jul-2019 17:55	17-Jul-2019 14:24	☐
HS19070864-13	WG-1620-TB04-20190716	Water		16-Jul-2019 00:00	17-Jul-2019 14:24	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW21C-20190716
Collection Date: 16-Jul-2019 07:35

ANALYTICAL REPORT
WorkOrder:HS19070864
Lab ID:HS19070864-01
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	18-Jul-2019 14:48
Benzene		U	0.00020	0.0010	mg/L	1	18-Jul-2019 14:48
Chlorobenzene		U	0.00030	0.0010	mg/L	1	18-Jul-2019 14:48
Ethylbenzene		U	0.00030	0.0010	mg/L	1	18-Jul-2019 14:48
Methylene chloride		U	0.0010	0.0020	mg/L	1	18-Jul-2019 14:48
Toluene		U	0.00020	0.0010	mg/L	1	18-Jul-2019 14:48
Xylenes, Total		U	0.00030	0.0010	mg/L	1	18-Jul-2019 14:48
Surr: 1,2-Dichloroethane-d4	*90.1*			*70-126*	*%REC*	*1*	*18-Jul-2019 14:48*
Surr: 4-Bromofluorobenzene	*94.8*			*81-113*	*%REC*	*1*	*18-Jul-2019 14:48*
Surr: Dibromofluoromethane	*98.1*			*77-123*	*%REC*	*1*	*18-Jul-2019 14:48*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*18-Jul-2019 14:48*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW21C-20190716
Collection Date: 16-Jul-2019 07:35

ANALYTICAL REPORT
WorkOrder:HS19070864
Lab ID:HS19070864-01
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 19-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	20-Jul-2019 01:12
2,4-Dimethylphenol	**0.00010**	J	**0.000040**	**0.00020**	**mg/L**	1	20-Jul-2019 01:12
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	20-Jul-2019 01:12
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	20-Jul-2019 01:12
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	20-Jul-2019 01:12
2-Methylnaphthalene	**0.00040**		**0.000019**	**0.00010**	**mg/L**	1	20-Jul-2019 01:12
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	20-Jul-2019 01:12
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	20-Jul-2019 01:12
Acenaphthene	**0.0057**		**0.000027**	**0.00010**	**mg/L**	1	20-Jul-2019 01:12
Acenaphthylene	**0.000074**	J	**0.000015**	**0.00010**	**mg/L**	1	20-Jul-2019 01:12
Anthracene	**0.00044**		**0.000014**	**0.00010**	**mg/L**	1	20-Jul-2019 01:12
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	20-Jul-2019 01:12
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	20-Jul-2019 01:12
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	20-Jul-2019 01:12
Bis(2-ethylhexyl)phthalate	**0.000040**	J	**0.000037**	**0.00020**	**mg/L**	1	20-Jul-2019 01:12
Chrysene	U		0.000021	0.00010	mg/L	1	20-Jul-2019 01:12
Dibenzofuran	**0.0032**		**0.000020**	**0.00010**	**mg/L**	1	20-Jul-2019 01:12
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	20-Jul-2019 01:12
Fluoranthene	**0.00081**		**0.000010**	**0.00010**	**mg/L**	1	20-Jul-2019 01:12
Fluorene	**0.0019**		**0.000030**	**0.00010**	**mg/L**	1	20-Jul-2019 01:12
Naphthalene	**0.0044**		**0.000020**	**0.00010**	**mg/L**	1	20-Jul-2019 01:12
Nitrobenzene	U		0.000024	0.00020	mg/L	1	20-Jul-2019 01:12
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	20-Jul-2019 01:12
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	20-Jul-2019 01:12
Phenanthrene	**0.00087**		**0.000021**	**0.00010**	**mg/L**	1	20-Jul-2019 01:12
Phenol	**0.00018**	J	**0.000035**	**0.00020**	**mg/L**	1	20-Jul-2019 01:12
Pyrene	**0.00039**		**0.000019**	**0.00010**	**mg/L**	1	20-Jul-2019 01:12
Surr: 2,4,6-Tribromophenol	*77.5*			*34-129*	*%REC*	*1*	*20-Jul-2019 01:12*
Surr: 2-Fluorobiphenyl	*61.6*			*40-125*	*%REC*	*1*	*20-Jul-2019 01:12*
Surr: 2-Fluorophenol	*53.9*			*20-120*	*%REC*	*1*	*20-Jul-2019 01:12*
Surr: 4-Terphenyl-d14	*72.9*			*40-135*	*%REC*	*1*	*20-Jul-2019 01:12*
Surr: Nitrobenzene-d5	*67.9*			*41-120*	*%REC*	*1*	*20-Jul-2019 01:12*
Surr: Phenol-d6	*67.1*			*20-120*	*%REC*	*1*	*20-Jul-2019 01:12*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jul-2019		Analyst: JHD
Arsenic	**0.00130**	J	**0.000400**	**0.00200**	**mg/L**	1	23-Jul-2019 22:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FD01-20190716
Collection Date: 16-Jul-2019 07:35

ANALYTICAL REPORT
WorkOrder:HS19070864
Lab ID:HS19070864-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	19-Jul-2019 07:08
Benzene		U	0.00020	0.0010	mg/L	1	19-Jul-2019 07:08
Chlorobenzene		U	0.00030	0.0010	mg/L	1	19-Jul-2019 07:08
Ethylbenzene		U	0.00030	0.0010	mg/L	1	19-Jul-2019 07:08
Methylene chloride		U	0.0010	0.0020	mg/L	1	19-Jul-2019 07:08
Toluene		U	0.00020	0.0010	mg/L	1	19-Jul-2019 07:08
Xylenes, Total		U	0.00030	0.0010	mg/L	1	19-Jul-2019 07:08
Surr: 1,2-Dichloroethane-d4	*88.4*			*70-126*	*%REC*	*1*	*19-Jul-2019 07:08*
Surr: 4-Bromofluorobenzene	*96.2*			*81-113*	*%REC*	*1*	*19-Jul-2019 07:08*
Surr: Dibromofluoromethane	*97.3*			*77-123*	*%REC*	*1*	*19-Jul-2019 07:08*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*19-Jul-2019 07:08*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FD01-20190716
Collection Date: 16-Jul-2019 07:35

ANALYTICAL REPORT
WorkOrder:HS19070864
Lab ID:HS19070864-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 19-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	20-Jul-2019 01:32
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	20-Jul-2019 01:32
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	20-Jul-2019 01:32
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	20-Jul-2019 01:32
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	20-Jul-2019 01:32
2-Methylnaphthalene	**0.000050**	J	**0.000019**	**0.00010**	**mg/L**	1	20-Jul-2019 01:32
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	20-Jul-2019 01:32
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	20-Jul-2019 01:32
Acenaphthene	**0.00081**		**0.000027**	**0.00010**	**mg/L**	1	20-Jul-2019 01:32
Acenaphthylene	U		0.000015	0.00010	mg/L	1	20-Jul-2019 01:32
Anthracene	**0.000050**	J	**0.000014**	**0.00010**	**mg/L**	1	20-Jul-2019 01:32
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	20-Jul-2019 01:32
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	20-Jul-2019 01:32
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	20-Jul-2019 01:32
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	20-Jul-2019 01:32
Chrysene	U		0.000021	0.00010	mg/L	1	20-Jul-2019 01:32
Dibenzofuran	**0.00040**		**0.000020**	**0.00010**	**mg/L**	1	20-Jul-2019 01:32
Di-n-butyl phthalate	**0.000020**	J	**0.000020**	**0.00020**	**mg/L**	1	20-Jul-2019 01:32
Fluoranthene	**0.000087**	J	**0.000010**	**0.00010**	**mg/L**	1	20-Jul-2019 01:32
Fluorene	**0.00025**		**0.000030**	**0.00010**	**mg/L**	1	20-Jul-2019 01:32
Naphthalene	**0.00080**		**0.000020**	**0.00010**	**mg/L**	1	20-Jul-2019 01:32
Nitrobenzene	U		0.000024	0.00020	mg/L	1	20-Jul-2019 01:32
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	20-Jul-2019 01:32
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	20-Jul-2019 01:32
Phenanthrene	**0.00011**		**0.000021**	**0.00010**	**mg/L**	1	20-Jul-2019 01:32
Phenol	**0.00081**		**0.000035**	**0.00020**	**mg/L**	1	20-Jul-2019 01:32
Pyrene	**0.000033**	J	**0.000019**	**0.00010**	**mg/L**	1	20-Jul-2019 01:32
Surr: 2,4,6-Tribromophenol	*76.9*			*34-129*	*%REC*	*1*	*20-Jul-2019 01:32*
Surr: 2-Fluorobiphenyl	*65.2*			*40-125*	*%REC*	*1*	*20-Jul-2019 01:32*
Surr: 2-Fluorophenol	*58.3*			*20-120*	*%REC*	*1*	*20-Jul-2019 01:32*
Surr: 4-Terphenyl-d14	*68.4*			*40-135*	*%REC*	*1*	*20-Jul-2019 01:32*
Surr: Nitrobenzene-d5	*68.2*			*41-120*	*%REC*	*1*	*20-Jul-2019 01:32*
Surr: Phenol-d6	*64.6*			*20-120*	*%REC*	*1*	*20-Jul-2019 01:32*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jul-2019		Analyst: JHD
Arsenic	**0.00326**		**0.000400**	**0.00200**	**mg/L**	1	23-Jul-2019 22:31

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW62B-20190716
Collection Date: 16-Jul-2019 08:25

ANALYTICAL REPORT
WorkOrder:HS19070864
Lab ID:HS19070864-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	19-Jul-2019 04:42
Benzene		U	0.00020	0.0010	mg/L	1	19-Jul-2019 04:42
Chlorobenzene		U	0.00030	0.0010	mg/L	1	19-Jul-2019 04:42
Ethylbenzene		U	0.00030	0.0010	mg/L	1	19-Jul-2019 04:42
Methylene chloride		U	0.0010	0.0020	mg/L	1	19-Jul-2019 04:42
Toluene		U	0.00020	0.0010	mg/L	1	19-Jul-2019 04:42
Xylenes, Total		U	0.00030	0.0010	mg/L	1	19-Jul-2019 04:42
Surr: 1,2-Dichloroethane-d4	*87.7*			*70-126*	*%REC*	*1*	*19-Jul-2019 04:42*
Surr: 4-Bromofluorobenzene	*95.9*			*81-113*	*%REC*	*1*	*19-Jul-2019 04:42*
Surr: Dibromofluoromethane	*97.4*			*77-123*	*%REC*	*1*	*19-Jul-2019 04:42*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*19-Jul-2019 04:42*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19070864
Sample ID: WG-1620-MW62B-20190716
Lab ID:HS19070864-03
Collection Date: 16-Jul-2019 08:25
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 19-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	20-Jul-2019 01:51
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	20-Jul-2019 01:51
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	20-Jul-2019 01:51
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	20-Jul-2019 01:51
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	20-Jul-2019 01:51
2-Methylnaphthalene	**0.000096**	J	**0.000019**	**0.00010**	**mg/L**	1	20-Jul-2019 01:51
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	20-Jul-2019 01:51
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	20-Jul-2019 01:51
Acenaphthene	**0.000099**	J	**0.000027**	**0.00010**	**mg/L**	1	20-Jul-2019 01:51
Acenaphthylene	U		0.000015	0.00010	mg/L	1	20-Jul-2019 01:51
Anthracene	U		0.000014	0.00010	mg/L	1	20-Jul-2019 01:51
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	20-Jul-2019 01:51
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	20-Jul-2019 01:51
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	20-Jul-2019 01:51
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	20-Jul-2019 01:51
Chrysene	U		0.000021	0.00010	mg/L	1	20-Jul-2019 01:51
Dibenzofuran	**0.000048**	J	**0.000020**	**0.00010**	**mg/L**	1	20-Jul-2019 01:51
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	20-Jul-2019 01:51
Fluoranthene	**0.000017**	J	**0.000010**	**0.00010**	**mg/L**	1	20-Jul-2019 01:51
Fluorene	**0.000036**	J	**0.000030**	**0.00010**	**mg/L**	1	20-Jul-2019 01:51
Naphthalene	**0.00028**		**0.000020**	**0.00010**	**mg/L**	1	20-Jul-2019 01:51
Nitrobenzene	U		0.000024	0.00020	mg/L	1	20-Jul-2019 01:51
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	20-Jul-2019 01:51
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	20-Jul-2019 01:51
Phenanthrene	**0.000021**	J	**0.000021**	**0.00010**	**mg/L**	1	20-Jul-2019 01:51
Phenol	**0.00056**		**0.000035**	**0.00020**	**mg/L**	1	20-Jul-2019 01:51
Pyrene	U		0.000019	0.00010	mg/L	1	20-Jul-2019 01:51
Surr: 2,4,6-Tribromophenol	*85.2*			*34-129*	*%REC*	*1*	*20-Jul-2019 01:51*
Surr: 2-Fluorobiphenyl	*73.5*			*40-125*	*%REC*	*1*	*20-Jul-2019 01:51*
Surr: 2-Fluorophenol	*60.4*			*20-120*	*%REC*	*1*	*20-Jul-2019 01:51*
Surr: 4-Terphenyl-d14	*73.3*			*40-135*	*%REC*	*1*	*20-Jul-2019 01:51*
Surr: Nitrobenzene-d5	*70.2*			*41-120*	*%REC*	*1*	*20-Jul-2019 01:51*
Surr: Phenol-d6	*70.9*			*20-120*	*%REC*	*1*	*20-Jul-2019 01:51*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jul-2019		Analyst: JHD
Arsenic	**0.00194**	J	**0.000400**	**0.00200**	**mg/L**	1	23-Jul-2019 22:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19070864
Sample ID: WG-1620-MW53C-20190716
Lab ID:HS19070864-04
Collection Date: 16-Jul-2019 10:15
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	18-Jul-2019 20:06
Benzene		U	0.00020	0.0010	mg/L	1	18-Jul-2019 20:06
Chlorobenzene		U	0.00030	0.0010	mg/L	1	18-Jul-2019 20:06
Ethylbenzene		U	0.00030	0.0010	mg/L	1	18-Jul-2019 20:06
Methylene chloride		U	0.0010	0.0020	mg/L	1	18-Jul-2019 20:06
Toluene		U	0.00020	0.0010	mg/L	1	18-Jul-2019 20:06
Xylenes, Total		U	0.00030	0.0010	mg/L	1	18-Jul-2019 20:06
Surr: 1,2-Dichloroethane-d4	*89.1*			*70-126*	*%REC*	*1*	*18-Jul-2019 20:06*
Surr: 4-Bromofluorobenzene	*96.9*			*81-113*	*%REC*	*1*	*18-Jul-2019 20:06*
Surr: Dibromofluoromethane	*97.7*			*77-123*	*%REC*	*1*	*18-Jul-2019 20:06*
Surr: Toluene-d8	*99.6*			*82-127*	*%REC*	*1*	*18-Jul-2019 20:06*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW53C-20190716
Collection Date: 16-Jul-2019 10:15

ANALYTICAL REPORT
WorkOrder:HS19070864
Lab ID:HS19070864-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 19-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	20-Jul-2019 02:11
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	20-Jul-2019 02:11
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	20-Jul-2019 02:11
2,6-Dinitrotoluene	**0.0028**		**0.000042**	**0.00020**	**mg/L**	1	20-Jul-2019 02:11
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	20-Jul-2019 02:11
2-Methylnaphthalene	**0.000071**	J	**0.000019**	**0.00010**	**mg/L**	1	20-Jul-2019 02:11
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	20-Jul-2019 02:11
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	20-Jul-2019 02:11
Acenaphthene	U		0.000027	0.00010	mg/L	1	20-Jul-2019 02:11
Acenaphthylene	U		0.000015	0.00010	mg/L	1	20-Jul-2019 02:11
Anthracene	U		0.000014	0.00010	mg/L	1	20-Jul-2019 02:11
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	20-Jul-2019 02:11
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	20-Jul-2019 02:11
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	20-Jul-2019 02:11
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	20-Jul-2019 02:11
Chrysene	U		0.000021	0.00010	mg/L	1	20-Jul-2019 02:11
Dibenzofuran	U		0.000020	0.00010	mg/L	1	20-Jul-2019 02:11
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	20-Jul-2019 02:11
Fluoranthene	U		0.000010	0.00010	mg/L	1	20-Jul-2019 02:11
Fluorene	U		0.000030	0.00010	mg/L	1	20-Jul-2019 02:11
Naphthalene	**0.00013**		**0.000020**	**0.00010**	**mg/L**	1	20-Jul-2019 02:11
Nitrobenzene	U		0.000024	0.00020	mg/L	1	20-Jul-2019 02:11
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	20-Jul-2019 02:11
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	20-Jul-2019 02:11
Phenanthrene	U		0.000021	0.00010	mg/L	1	20-Jul-2019 02:11
Phenol	**0.00016**	J	**0.000035**	**0.00020**	**mg/L**	1	20-Jul-2019 02:11
Pyrene	U		0.000019	0.00010	mg/L	1	20-Jul-2019 02:11
Surr: 2,4,6-Tribromophenol	*77.4*			*34-129*	*%REC*	*1*	*20-Jul-2019 02:11*
Surr: 2-Fluorobiphenyl	*70.2*			*40-125*	*%REC*	*1*	*20-Jul-2019 02:11*
Surr: 2-Fluorophenol	*63.6*			*20-120*	*%REC*	*1*	*20-Jul-2019 02:11*
Surr: 4-Terphenyl-d14	*73.2*			*40-135*	*%REC*	*1*	*20-Jul-2019 02:11*
Surr: Nitrobenzene-d5	*69.0*			*41-120*	*%REC*	*1*	*20-Jul-2019 02:11*
Surr: Phenol-d6	*70.9*			*20-120*	*%REC*	*1*	*20-Jul-2019 02:11*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jul-2019		Analyst: JHD
Arsenic	**0.000569**	J	**0.000400**	**0.00200**	**mg/L**	1	23-Jul-2019 22:40

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW54C-20190716
Collection Date: 16-Jul-2019 11:15

ANALYTICAL REPORT
WorkOrder:HS19070864
Lab ID:HS19070864-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	18-Jul-2019 23:48
Benzene		U	0.00020	0.0010	mg/L	1	18-Jul-2019 23:48
Chlorobenzene		U	0.00030	0.0010	mg/L	1	18-Jul-2019 23:48
Ethylbenzene		U	0.00030	0.0010	mg/L	1	18-Jul-2019 23:48
Methylene chloride		U	0.0010	0.0020	mg/L	1	18-Jul-2019 23:48
Toluene		U	0.00020	0.0010	mg/L	1	18-Jul-2019 23:48
Xylenes, Total		U	0.00030	0.0010	mg/L	1	18-Jul-2019 23:48
Surr: 1,2-Dichloroethane-d4	*90.0*			*70-126*	*%REC*	*1*	*18-Jul-2019 23:48*
Surr: 4-Bromofluorobenzene	*96.0*			*81-113*	*%REC*	*1*	*18-Jul-2019 23:48*
Surr: Dibromofluoromethane	*96.3*			*77-123*	*%REC*	*1*	*18-Jul-2019 23:48*
Surr: Toluene-d8	*103*			*82-127*	*%REC*	*1*	*18-Jul-2019 23:48*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19070864
Sample ID: WG-1620-MW54C-20190716
Lab ID:HS19070864-05
Collection Date: 16-Jul-2019 11:15
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	20-Jul-2019 02:31
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	20-Jul-2019 02:31
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	20-Jul-2019 02:31
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	20-Jul-2019 02:31
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	20-Jul-2019 02:31
2-Methylnaphthalene	**0.0021**		**0.000019**	**0.00010**	**mg/L**	1	20-Jul-2019 02:31
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	20-Jul-2019 02:31
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	20-Jul-2019 02:31
Acenaphthene	**0.041**		**0.00027**	**0.0010**	**mg/L**	10	22-Jul-2019 16:38
Acenaphthylene	**0.00037**		**0.000015**	**0.00010**	**mg/L**	1	20-Jul-2019 02:31
Anthracene	**0.0023**		**0.000014**	**0.00010**	**mg/L**	1	20-Jul-2019 02:31
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	20-Jul-2019 02:31
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	20-Jul-2019 02:31
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	20-Jul-2019 02:31
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	20-Jul-2019 02:31
Chrysene	U		0.000021	0.00010	mg/L	1	20-Jul-2019 02:31
Dibenzofuran	**0.032**		**0.00020**	**0.0010**	**mg/L**	10	22-Jul-2019 16:38
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	20-Jul-2019 02:31
Fluoranthene	**0.0033**		**0.000010**	**0.00010**	**mg/L**	1	20-Jul-2019 02:31
Fluorene	**0.018**		**0.00030**	**0.0010**	**mg/L**	10	22-Jul-2019 16:38
Naphthalene	**0.032**		**0.00020**	**0.0010**	**mg/L**	10	22-Jul-2019 16:38
Nitrobenzene	U		0.000024	0.00020	mg/L	1	20-Jul-2019 02:31
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	20-Jul-2019 02:31
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	20-Jul-2019 02:31
Phenanthrene	**0.0065**		**0.000021**	**0.00010**	**mg/L**	1	20-Jul-2019 02:31
Phenol	**0.00044**		**0.000035**	**0.00020**	**mg/L**	1	20-Jul-2019 02:31
Pyrene	**0.0016**		**0.000019**	**0.00010**	**mg/L**	1	20-Jul-2019 02:31
Surr: 2,4,6-Tribromophenol	*81.1*			*34-129*	*%REC*	*1*	*20-Jul-2019 02:31*
Surr: 2,4,6-Tribromophenol	*95.1*			*34-129*	*%REC*	*10*	*22-Jul-2019 16:38*
Surr: 2-Fluorobiphenyl	*79.3*			*40-125*	*%REC*	*10*	*22-Jul-2019 16:38*
Surr: 2-Fluorobiphenyl	*58.3*			*40-125*	*%REC*	*1*	*20-Jul-2019 02:31*
Surr: 2-Fluorophenol	*58.0*			*20-120*	*%REC*	*1*	*20-Jul-2019 02:31*
Surr: 2-Fluorophenol	*69.2*			*20-120*	*%REC*	*10*	*22-Jul-2019 16:38*
Surr: 4-Terphenyl-d14	*93.8*			*40-135*	*%REC*	*10*	*22-Jul-2019 16:38*
Surr: 4-Terphenyl-d14	*67.9*			*40-135*	*%REC*	*1*	*20-Jul-2019 02:31*
Surr: Nitrobenzene-d5	*57.8*			*41-120*	*%REC*	*1*	*20-Jul-2019 02:31*
Surr: Nitrobenzene-d5	*86.8*			*41-120*	*%REC*	*10*	*22-Jul-2019 16:38*
Surr: Phenol-d6	*64.3*			*20-120*	*%REC*	*10*	*22-Jul-2019 16:38*
Surr: Phenol-d6	*62.3*			*20-120*	*%REC*	*1*	*20-Jul-2019 02:31*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW54C-20190716
Collection Date: 16-Jul-2019 11:15

ANALYTICAL REPORT
WorkOrder:HS19070864
Lab ID:HS19070864-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A	**Method:SW6020**				Prep:SW3010A / 23-Jul-2019		Analyst: JHD
Arsenic	**0.00103**	J	**0.000400**	**0.00200**	**mg/L**	1	23-Jul-2019 22:42

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW25C-20190716
Collection Date: 16-Jul-2019 12:15

ANALYTICAL REPORT
WorkOrder:HS19070864
Lab ID:HS19070864-06
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	18-Jul-2019 20:30
Benzene	**0.0013**		**0.00020**	**0.0010**	**mg/L**	1	18-Jul-2019 20:30
Chlorobenzene	U		0.00030	0.0010	mg/L	1	18-Jul-2019 20:30
Ethylbenzene	**0.035**		**0.00030**	**0.0010**	**mg/L**	1	18-Jul-2019 20:30
Methylene chloride	U		0.0010	0.0020	mg/L	1	18-Jul-2019 20:30
Toluene	**0.011**		**0.00020**	**0.0010**	**mg/L**	1	18-Jul-2019 20:30
Vinyl chloride	U		0.00020	0.0010	mg/L	1	18-Jul-2019 20:30
Xylenes, Total	**0.25**		**0.00030**	**0.0010**	**mg/L**	1	18-Jul-2019 20:30
Surr: 1,2-Dichloroethane-d4	*87.8*			*70-126*	*%REC*	*1*	*18-Jul-2019 20:30*
Surr: 4-Bromofluorobenzene	*97.5*			*81-113*	*%REC*	*1*	*18-Jul-2019 20:30*
Surr: Dibromofluoromethane	*96.7*			*77-123*	*%REC*	*1*	*18-Jul-2019 20:30*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*1*	*18-Jul-2019 20:30*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW25C-20190716
Collection Date: 16-Jul-2019 12:15

ANALYTICAL REPORT
WorkOrder:HS19070864
Lab ID:HS19070864-06
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.00021	0.0020	mg/L	10	22-Jul-2019 14:58
2,4-Dimethylphenol	**0.0075**		**0.00040**	**0.0020**	**mg/L**	10	22-Jul-2019 14:58
2,4-Dinitrotoluene	U		0.00058	0.0020	mg/L	10	22-Jul-2019 14:58
2,6-Dinitrotoluene	U		0.00042	0.0020	mg/L	10	22-Jul-2019 14:58
2-Chloronaphthalene	U		0.00021	0.0020	mg/L	10	22-Jul-2019 14:58
2-Methylnaphthalene	**0.54**		**0.0019**	**0.010**	**mg/L**	100	22-Jul-2019 15:18
4,6-Dinitro-2-methylphenol	U		0.00020	0.0020	mg/L	10	22-Jul-2019 14:58
4-Nitrophenol	U		0.00047	0.010	mg/L	10	22-Jul-2019 14:58
Acenaphthene	**0.20**		**0.0027**	**0.010**	**mg/L**	100	22-Jul-2019 15:18
Acenaphthylene	**0.0020**		**0.00015**	**0.0010**	**mg/L**	10	22-Jul-2019 14:58
Anthracene	**0.016**		**0.00014**	**0.0010**	**mg/L**	10	22-Jul-2019 14:58
Benz(a)anthracene	**0.0013**		**0.00050**	**0.0010**	**mg/L**	10	22-Jul-2019 14:58
Benzo(a)pyrene	**0.00037**	J	**0.00020**	**0.0010**	**mg/L**	10	22-Jul-2019 14:58
Bis(2-chloroethoxy)methane	U		0.00030	0.0020	mg/L	10	22-Jul-2019 14:58
Bis(2-ethylhexyl)phthalate	U		0.00037	0.0020	mg/L	10	22-Jul-2019 14:58
Chrysene	**0.0014**		**0.00021**	**0.0010**	**mg/L**	10	22-Jul-2019 14:58
Dibenzofuran	**0.19**		**0.0020**	**0.010**	**mg/L**	100	22-Jul-2019 15:18
Di-n-butyl phthalate	U		0.00020	0.0020	mg/L	10	22-Jul-2019 14:58
Fluoranthene	**0.014**		**0.00010**	**0.0010**	**mg/L**	10	22-Jul-2019 14:58
Fluorene	**0.081**		**0.00030**	**0.0010**	**mg/L**	10	22-Jul-2019 14:58
Naphthalene	**4.2**		**0.020**	**0.10**	**mg/L**	1000	22-Jul-2019 15:38
Nitrobenzene	U		0.00024	0.0020	mg/L	10	22-Jul-2019 14:58
N-Nitrosodiphenylamine	U		0.00025	0.0020	mg/L	10	22-Jul-2019 14:58
Pentachlorophenol	U		0.00079	0.0020	mg/L	10	22-Jul-2019 14:58
Phenanthrene	**0.12**		**0.0021**	**0.010**	**mg/L**	100	22-Jul-2019 15:18
Phenol	U		0.00035	0.0020	mg/L	10	22-Jul-2019 14:58
Pyrene	**0.0085**		**0.00019**	**0.0010**	**mg/L**	10	22-Jul-2019 14:58
Surr: 2,4,6-Tribromophenol	*119*			*34-129*	*%REC*	*10*	*22-Jul-2019 14:58*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*22-Jul-2019 15:18*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*1000*	*22-Jul-2019 15:38*
Surr: 2-Fluorobiphenyl	*78.7*			*40-125*	*%REC*	*10*	*22-Jul-2019 14:58*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*22-Jul-2019 15:18*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*1000*	*22-Jul-2019 15:38*
Surr: 2-Fluorophenol	*74.1*			*20-120*	*%REC*	*10*	*22-Jul-2019 14:58*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*22-Jul-2019 15:18*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*1000*	*22-Jul-2019 15:38*
Surr: 4-Terphenyl-d14	*96.6*			*40-135*	*%REC*	*10*	*22-Jul-2019 14:58*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*100*	*22-Jul-2019 15:18*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*1000*	*22-Jul-2019 15:38*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW25C-20190716
Collection Date: 16-Jul-2019 12:15

ANALYTICAL REPORT
WorkOrder:HS19070864
Lab ID:HS19070864-06
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 19-Jul-2019		Analyst: GEY
Surr: Nitrobenzene-d5	*73.3*			*41-120*	*%REC*	*10*	*22-Jul-2019 14:58*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*22-Jul-2019 15:18*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*1000*	*22-Jul-2019 15:38*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*1000*	*22-Jul-2019 15:38*
Surr: Phenol-d6	*84.5*			*20-120*	*%REC*	*10*	*22-Jul-2019 14:58*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*22-Jul-2019 15:18*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jul-2019		Analyst: JHD
Arsenic	**0.00487**		**0.000400**	**0.00200**	**mg/L**	1	23-Jul-2019 22:44

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW25A-20190716
Collection Date: 16-Jul-2019 13:10

ANALYTICAL REPORT
WorkOrder:HS19070864
Lab ID:HS19070864-07
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	19-Jul-2019 03:28
Benzene		U	0.00020	0.0010	mg/L	1	19-Jul-2019 03:28
Chlorobenzene		U	0.00030	0.0010	mg/L	1	19-Jul-2019 03:28
Ethylbenzene		U	0.00030	0.0010	mg/L	1	19-Jul-2019 03:28
Methylene chloride		U	0.0010	0.0020	mg/L	1	19-Jul-2019 03:28
Toluene		U	0.00020	0.0010	mg/L	1	19-Jul-2019 03:28
Vinyl chloride		U	0.00020	0.0010	mg/L	1	19-Jul-2019 03:28
Xylenes, Total		U	0.00030	0.0010	mg/L	1	19-Jul-2019 03:28
Surr: 1,2-Dichloroethane-d4	*89.1*			*70-126*	*%REC*	*1*	*19-Jul-2019 03:28*
Surr: 4-Bromofluorobenzene	*94.1*			*81-113*	*%REC*	*1*	*19-Jul-2019 03:28*
Surr: Dibromofluoromethane	*98.5*			*77-123*	*%REC*	*1*	*19-Jul-2019 03:28*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*19-Jul-2019 03:28*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19070864
Sample ID: WG-1620-MW25A-20190716
Lab ID:HS19070864-07
Collection Date: 16-Jul-2019 13:10
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 19-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	22-Jul-2019 12:00
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	22-Jul-2019 12:00
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	22-Jul-2019 12:00
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	22-Jul-2019 12:00
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	22-Jul-2019 12:00
2-Methylnaphthalene	**0.000057**	J	**0.000019**	**0.00010**	**mg/L**	1	22-Jul-2019 12:00
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	22-Jul-2019 12:00
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	22-Jul-2019 12:00
Acenaphthene	U		0.000027	0.00010	mg/L	1	22-Jul-2019 12:00
Acenaphthylene	U		0.000015	0.00010	mg/L	1	22-Jul-2019 12:00
Anthracene	U		0.000014	0.00010	mg/L	1	22-Jul-2019 12:00
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	22-Jul-2019 12:00
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	22-Jul-2019 12:00
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	22-Jul-2019 12:00
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	22-Jul-2019 12:00
Chrysene	U		0.000021	0.00010	mg/L	1	22-Jul-2019 12:00
Dibenzofuran	U		0.000020	0.00010	mg/L	1	22-Jul-2019 12:00
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	22-Jul-2019 12:00
Fluoranthene	U		0.000010	0.00010	mg/L	1	22-Jul-2019 12:00
Fluorene	U		0.000030	0.00010	mg/L	1	22-Jul-2019 12:00
Naphthalene	**0.00023**		**0.000020**	**0.00010**	**mg/L**	1	22-Jul-2019 12:00
Nitrobenzene	U		0.000024	0.00020	mg/L	1	22-Jul-2019 12:00
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	22-Jul-2019 12:00
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	22-Jul-2019 12:00
Phenanthrene	U		0.000021	0.00010	mg/L	1	22-Jul-2019 12:00
Phenol	U		0.000035	0.00020	mg/L	1	22-Jul-2019 12:00
Pyrene	U		0.000019	0.00010	mg/L	1	22-Jul-2019 12:00
Surr: 2,4,6-Tribromophenol	*92.6*			*34-129*	*%REC*	*1*	*22-Jul-2019 12:00*
Surr: 2-Fluorobiphenyl	*69.5*			*40-125*	*%REC*	*1*	*22-Jul-2019 12:00*
Surr: 2-Fluorophenol	*68.3*			*20-120*	*%REC*	*1*	*22-Jul-2019 12:00*
Surr: 4-Terphenyl-d14	*82.4*			*40-135*	*%REC*	*1*	*22-Jul-2019 12:00*
Surr: Nitrobenzene-d5	*74.6*			*41-120*	*%REC*	*1*	*22-Jul-2019 12:00*
Surr: Phenol-d6	*68.8*			*20-120*	*%REC*	*1*	*22-Jul-2019 12:00*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 24-Jul-2019		Analyst: JHD
Arsenic	**0.00285**		**0.000400**	**0.00200**	**mg/L**	1	24-Jul-2019 15:44

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW36B-20190716
Collection Date: 16-Jul-2019 14:20

ANALYTICAL REPORT
WorkOrder:HS19070864
Lab ID:HS19070864-08
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	19-Jul-2019 00:37
Benzene		U	0.00020	0.0010	mg/L	1	19-Jul-2019 00:37
Chlorobenzene		U	0.00030	0.0010	mg/L	1	19-Jul-2019 00:37
Ethylbenzene		U	0.00030	0.0010	mg/L	1	19-Jul-2019 00:37
Methylene chloride		U	0.0010	0.0020	mg/L	1	19-Jul-2019 00:37
Toluene		U	0.00020	0.0010	mg/L	1	19-Jul-2019 00:37
Vinyl chloride		U	0.00020	0.0010	mg/L	1	19-Jul-2019 00:37
Xylenes, Total		U	0.00030	0.0010	mg/L	1	19-Jul-2019 00:37
Surr: 1,2-Dichloroethane-d4	*87.9*			*70-126*	*%REC*	*1*	*19-Jul-2019 00:37*
Surr: 4-Bromofluorobenzene	*96.2*			*81-113*	*%REC*	*1*	*19-Jul-2019 00:37*
Surr: Dibromofluoromethane	*96.5*			*77-123*	*%REC*	*1*	*19-Jul-2019 00:37*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*19-Jul-2019 00:37*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW36B-20190716
Collection Date: 16-Jul-2019 14:20

ANALYTICAL REPORT
WorkOrder:HS19070864
Lab ID:HS19070864-08
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 19-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	22-Jul-2019 12:20
2,4-Dimethylphenol	**0.000078**	J	**0.000040**	**0.00020**	**mg/L**	1	22-Jul-2019 12:20
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	22-Jul-2019 12:20
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	22-Jul-2019 12:20
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	22-Jul-2019 12:20
2-Methylnaphthalene	**0.00058**		**0.000019**	**0.00010**	**mg/L**	1	22-Jul-2019 12:20
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	22-Jul-2019 12:20
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	22-Jul-2019 12:20
Acenaphthene	**0.00014**		**0.000027**	**0.00010**	**mg/L**	1	22-Jul-2019 12:20
Acenaphthylene	U		0.000015	0.00010	mg/L	1	22-Jul-2019 12:20
Anthracene	U		0.000014	0.00010	mg/L	1	22-Jul-2019 12:20
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	22-Jul-2019 12:20
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	22-Jul-2019 12:20
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	22-Jul-2019 12:20
Bis(2-ethylhexyl)phthalate	**0.000088**	J	**0.000037**	**0.00020**	**mg/L**	1	22-Jul-2019 12:20
Chrysene	U		0.000021	0.00010	mg/L	1	22-Jul-2019 12:20
Dibenzofuran	**0.000087**	J	**0.000020**	**0.00010**	**mg/L**	1	22-Jul-2019 12:20
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	22-Jul-2019 12:20
Fluoranthene	**0.000017**	J	**0.000010**	**0.00010**	**mg/L**	1	22-Jul-2019 12:20
Fluorene	**0.000047**	J	**0.000030**	**0.00010**	**mg/L**	1	22-Jul-2019 12:20
Naphthalene	**0.0060**		**0.000020**	**0.00010**	**mg/L**	1	22-Jul-2019 12:20
Nitrobenzene	U		0.000024	0.00020	mg/L	1	22-Jul-2019 12:20
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	22-Jul-2019 12:20
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	22-Jul-2019 12:20
Phenanthrene	U		0.000021	0.00010	mg/L	1	22-Jul-2019 12:20
Phenol	**0.00017**	J	**0.000035**	**0.00020**	**mg/L**	1	22-Jul-2019 12:20
Pyrene	U		0.000019	0.00010	mg/L	1	22-Jul-2019 12:20
Surr: 2,4,6-Tribromophenol	*98.3*			*34-129*	*%REC*	*1*	*22-Jul-2019 12:20*
Surr: 2-Fluorobiphenyl	*72.1*			*40-125*	*%REC*	*1*	*22-Jul-2019 12:20*
Surr: 2-Fluorophenol	*74.0*			*20-120*	*%REC*	*1*	*22-Jul-2019 12:20*
Surr: 4-Terphenyl-d14	*82.4*			*40-135*	*%REC*	*1*	*22-Jul-2019 12:20*
Surr: Nitrobenzene-d5	*78.5*			*41-120*	*%REC*	*1*	*22-Jul-2019 12:20*
Surr: Phenol-d6	*75.7*			*20-120*	*%REC*	*1*	*22-Jul-2019 12:20*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 24-Jul-2019		Analyst: JHD
Arsenic	**0.00127**	J	**0.000400**	**0.00200**	**mg/L**	1	24-Jul-2019 15:47

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19070864
Sample ID: WG-1620-MW36A-20190716
Lab ID:HS19070864-09
Collection Date: 16-Jul-2019 15:20
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	19-Jul-2019 03:53
Benzene		U	0.00020	0.0010	mg/L	1	19-Jul-2019 03:53
Chlorobenzene		U	0.00030	0.0010	mg/L	1	19-Jul-2019 03:53
Ethylbenzene		U	0.00030	0.0010	mg/L	1	19-Jul-2019 03:53
Methylene chloride		U	0.0010	0.0020	mg/L	1	19-Jul-2019 03:53
Toluene		U	0.00020	0.0010	mg/L	1	19-Jul-2019 03:53
Vinyl chloride		U	0.00020	0.0010	mg/L	1	19-Jul-2019 03:53
Xylenes, Total		U	0.00030	0.0010	mg/L	1	19-Jul-2019 03:53
Surr: 1,2-Dichloroethane-d4	*87.0*			*70-126*	*%REC*	*1*	*19-Jul-2019 03:53*
Surr: 4-Bromofluorobenzene	*96.0*			*81-113*	*%REC*	*1*	*19-Jul-2019 03:53*
Surr: Dibromofluoromethane	*97.3*			*77-123*	*%REC*	*1*	*19-Jul-2019 03:53*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*19-Jul-2019 03:53*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW36A-20190716
Collection Date: 16-Jul-2019 15:20

ANALYTICAL REPORT
WorkOrder:HS19070864
Lab ID:HS19070864-09
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 19-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	22-Jul-2019 15:58
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	22-Jul-2019 15:58
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	22-Jul-2019 15:58
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	22-Jul-2019 15:58
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	22-Jul-2019 15:58
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	22-Jul-2019 15:58
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	22-Jul-2019 15:58
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	22-Jul-2019 15:58
Acenaphthene	U		0.000027	0.00010	mg/L	1	22-Jul-2019 15:58
Acenaphthylene	U		0.000015	0.00010	mg/L	1	22-Jul-2019 15:58
Anthracene	U		0.000014	0.00010	mg/L	1	22-Jul-2019 15:58
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	22-Jul-2019 15:58
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	22-Jul-2019 15:58
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	22-Jul-2019 15:58
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	22-Jul-2019 15:58
Chrysene	U		0.000021	0.00010	mg/L	1	22-Jul-2019 15:58
Dibenzofuran	U		0.000020	0.00010	mg/L	1	22-Jul-2019 15:58
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	22-Jul-2019 15:58
Fluoranthene	U		0.000010	0.00010	mg/L	1	22-Jul-2019 15:58
Fluorene	U		0.000030	0.00010	mg/L	1	22-Jul-2019 15:58
Naphthalene	**0.00015**		**0.000020**	**0.00010**	**mg/L**	1	22-Jul-2019 15:58
Nitrobenzene	U		0.000024	0.00020	mg/L	1	22-Jul-2019 15:58
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	22-Jul-2019 15:58
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	22-Jul-2019 15:58
Phenanthrene	U		0.000021	0.00010	mg/L	1	22-Jul-2019 15:58
Phenol	**0.00014**	J	**0.000035**	**0.00020**	**mg/L**	1	22-Jul-2019 15:58
Pyrene	U		0.000019	0.00010	mg/L	1	22-Jul-2019 15:58
Surr: 2,4,6-Tribromophenol	*84.9*			*34-129*	*%REC*	*1*	*22-Jul-2019 15:58*
Surr: 2-Fluorobiphenyl	*69.4*			*40-125*	*%REC*	*1*	*22-Jul-2019 15:58*
Surr: 2-Fluorophenol	*63.5*			*20-120*	*%REC*	*1*	*22-Jul-2019 15:58*
Surr: 4-Terphenyl-d14	*82.6*			*40-135*	*%REC*	*1*	*22-Jul-2019 15:58*
Surr: Nitrobenzene-d5	*75.0*			*41-120*	*%REC*	*1*	*22-Jul-2019 15:58*
Surr: Phenol-d6	*63.9*			*20-120*	*%REC*	*1*	*22-Jul-2019 15:58*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 24-Jul-2019		Analyst: JHD
Arsenic	**0.00244**		**0.000400**	**0.00200**	**mg/L**	1	24-Jul-2019 15:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW28C-20190716
Collection Date: 16-Jul-2019 16:15

ANALYTICAL REPORT
WorkOrder:HS19070864
Lab ID:HS19070864-10
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	18-Jul-2019 13:34
Benzene		U	0.00020	0.0010	mg/L	1	18-Jul-2019 13:34
Chlorobenzene		U	0.00030	0.0010	mg/L	1	18-Jul-2019 13:34
Ethylbenzene		U	0.00030	0.0010	mg/L	1	18-Jul-2019 13:34
Methylene chloride		U	0.0010	0.0020	mg/L	1	18-Jul-2019 13:34
Toluene		U	0.00020	0.0010	mg/L	1	18-Jul-2019 13:34
Xylenes, Total		U	0.00030	0.0010	mg/L	1	18-Jul-2019 13:34
Surr: 1,2-Dichloroethane-d4	*88.5*			*70-126*	*%REC*	*1*	*18-Jul-2019 13:34*
Surr: 4-Bromofluorobenzene	*96.9*			*81-113*	*%REC*	*1*	*18-Jul-2019 13:34*
Surr: Dibromofluoromethane	*99.2*			*77-123*	*%REC*	*1*	*18-Jul-2019 13:34*
Surr: Toluene-d8	*99.0*			*82-127*	*%REC*	*1*	*18-Jul-2019 13:34*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW28C-20190716
Collection Date: 16-Jul-2019 16:15

ANALYTICAL REPORT
WorkOrder:HS19070864
Lab ID:HS19070864-10
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 19-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	22-Jul-2019 16:18
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	22-Jul-2019 16:18
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	22-Jul-2019 16:18
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	22-Jul-2019 16:18
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	22-Jul-2019 16:18
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	22-Jul-2019 16:18
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	22-Jul-2019 16:18
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	22-Jul-2019 16:18
Acenaphthene	U		0.000027	0.00010	mg/L	1	22-Jul-2019 16:18
Acenaphthylene	U		0.000015	0.00010	mg/L	1	22-Jul-2019 16:18
Anthracene	U		0.000014	0.00010	mg/L	1	22-Jul-2019 16:18
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	22-Jul-2019 16:18
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	22-Jul-2019 16:18
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	22-Jul-2019 16:18
Bis(2-ethylhexyl)phthalate	**0.00013**	J	**0.000037**	**0.00020**	**mg/L**	1	22-Jul-2019 16:18
Chrysene	U		0.000021	0.00010	mg/L	1	22-Jul-2019 16:18
Dibenzofuran	U		0.000020	0.00010	mg/L	1	22-Jul-2019 16:18
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	22-Jul-2019 16:18
Fluoranthene	**0.000015**	J	**0.000010**	**0.00010**	**mg/L**	1	22-Jul-2019 16:18
Fluorene	U		0.000030	0.00010	mg/L	1	22-Jul-2019 16:18
Naphthalene	**0.000095**	J	**0.000020**	**0.00010**	**mg/L**	1	22-Jul-2019 16:18
Nitrobenzene	U		0.000024	0.00020	mg/L	1	22-Jul-2019 16:18
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	22-Jul-2019 16:18
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	22-Jul-2019 16:18
Phenanthrene	U		0.000021	0.00010	mg/L	1	22-Jul-2019 16:18
Phenol	**0.0025**		**0.000035**	**0.00020**	**mg/L**	1	22-Jul-2019 16:18
Pyrene	U		0.000019	0.00010	mg/L	1	22-Jul-2019 16:18
Surr: 2,4,6-Tribromophenol	*109*			*34-129*	*%REC*	*1*	*22-Jul-2019 16:18*
Surr: 2-Fluorobiphenyl	*75.7*			*40-125*	*%REC*	*1*	*22-Jul-2019 16:18*
Surr: 2-Fluorophenol	*70.7*			*20-120*	*%REC*	*1*	*22-Jul-2019 16:18*
Surr: 4-Terphenyl-d14	*89.0*			*40-135*	*%REC*	*1*	*22-Jul-2019 16:18*
Surr: Nitrobenzene-d5	*79.5*			*41-120*	*%REC*	*1*	*22-Jul-2019 16:18*
Surr: Phenol-d6	*69.8*			*20-120*	*%REC*	*1*	*22-Jul-2019 16:18*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 24-Jul-2019		Analyst: JHD
Arsenic	**0.000456**	J	**0.000400**	**0.00200**	**mg/L**	1	24-Jul-2019 15:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW28A-20190716
Collection Date: 16-Jul-2019 17:00

ANALYTICAL REPORT
WorkOrder:HS19070864
Lab ID:HS19070864-11
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	19-Jul-2019 04:17
Benzene		U	0.00020	0.0010	mg/L	1	19-Jul-2019 04:17
Chlorobenzene		U	0.00030	0.0010	mg/L	1	19-Jul-2019 04:17
Ethylbenzene		U	0.00030	0.0010	mg/L	1	19-Jul-2019 04:17
Methylene chloride		U	0.0010	0.0020	mg/L	1	19-Jul-2019 04:17
Toluene		U	0.00020	0.0010	mg/L	1	19-Jul-2019 04:17
Xylenes, Total		U	0.00030	0.0010	mg/L	1	19-Jul-2019 04:17
Surr: 1,2-Dichloroethane-d4	*88.6*			*70-126*	*%REC*	*1*	*19-Jul-2019 04:17*
Surr: 4-Bromofluorobenzene	*95.3*			*81-113*	*%REC*	*1*	*19-Jul-2019 04:17*
Surr: Dibromofluoromethane	*98.5*			*77-123*	*%REC*	*1*	*19-Jul-2019 04:17*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*19-Jul-2019 04:17*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW28A-20190716
Collection Date: 16-Jul-2019 17:00

ANALYTICAL REPORT
WorkOrder:HS19070864
Lab ID:HS19070864-11
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 19-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	22-Jul-2019 18:37
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	22-Jul-2019 18:37
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	22-Jul-2019 18:37
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	22-Jul-2019 18:37
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	22-Jul-2019 18:37
2-Methylnaphthalene	**0.00020**		**0.000019**	**0.00010**	**mg/L**	1	22-Jul-2019 18:37
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	22-Jul-2019 18:37
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	22-Jul-2019 18:37
Acenaphthene	**0.000082**	J	**0.000027**	**0.00010**	**mg/L**	1	22-Jul-2019 18:37
Acenaphthylene	U		0.000015	0.00010	mg/L	1	22-Jul-2019 18:37
Anthracene	**0.000036**	J	**0.000014**	**0.00010**	**mg/L**	1	22-Jul-2019 18:37
Benz(a)anthracene	**0.000055**	J	**0.000050**	**0.00010**	**mg/L**	1	22-Jul-2019 18:37
Benzo(a)pyrene	**0.000095**	J	**0.000020**	**0.00010**	**mg/L**	1	22-Jul-2019 18:37
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	22-Jul-2019 18:37
Bis(2-ethylhexyl)phthalate	**0.00023**		**0.000037**	**0.00020**	**mg/L**	1	22-Jul-2019 18:37
Chrysene	**0.00010**		**0.000021**	**0.00010**	**mg/L**	1	22-Jul-2019 18:37
Dibenzofuran	**0.000084**	J	**0.000020**	**0.00010**	**mg/L**	1	22-Jul-2019 18:37
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	22-Jul-2019 18:37
Fluoranthene	**0.00012**		**0.000010**	**0.00010**	**mg/L**	1	22-Jul-2019 18:37
Fluorene	**0.000053**	J	**0.000030**	**0.00010**	**mg/L**	1	22-Jul-2019 18:37
Naphthalene	**0.0013**		**0.000020**	**0.00010**	**mg/L**	1	22-Jul-2019 18:37
Nitrobenzene	U		0.000024	0.00020	mg/L	1	22-Jul-2019 18:37
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	22-Jul-2019 18:37
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	22-Jul-2019 18:37
Phenanthrene	**0.000049**	J	**0.000021**	**0.00010**	**mg/L**	1	22-Jul-2019 18:37
Phenol	**0.000073**	J	**0.000035**	**0.00020**	**mg/L**	1	22-Jul-2019 18:37
Pyrene	**0.00016**		**0.000019**	**0.00010**	**mg/L**	1	22-Jul-2019 18:37
Surr: 2,4,6-Tribromophenol	*111*			*34-129*	*%REC*	*1*	*22-Jul-2019 18:37*
Surr: 2-Fluorobiphenyl	*76.9*			*40-125*	*%REC*	*1*	*22-Jul-2019 18:37*
Surr: 2-Fluorophenol	*65.8*			*20-120*	*%REC*	*1*	*22-Jul-2019 18:37*
Surr: 4-Terphenyl-d14	*82.4*			*40-135*	*%REC*	*1*	*22-Jul-2019 18:37*
Surr: Nitrobenzene-d5	*72.0*			*41-120*	*%REC*	*1*	*22-Jul-2019 18:37*
Surr: Phenol-d6	*74.5*			*20-120*	*%REC*	*1*	*22-Jul-2019 18:37*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 24-Jul-2019		Analyst: JHD
Arsenic	**0.00920**		**0.000400**	**0.00200**	**mg/L**	1	24-Jul-2019 16:19

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW63B-20190716
Collection Date: 16-Jul-2019 17:55

ANALYTICAL REPORT
WorkOrder:HS19070864
Lab ID:HS19070864-12
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	19-Jul-2019 08:00
Benzene	**0.11**		**0.00020**	**0.0010**	**mg/L**	1	19-Jul-2019 08:00
Chlorobenzene	U		0.00030	0.0010	mg/L	1	19-Jul-2019 08:00
Ethylbenzene	**0.14**		**0.00030**	**0.0010**	**mg/L**	1	19-Jul-2019 08:00
Methylene chloride	U		0.0010	0.0020	mg/L	1	19-Jul-2019 08:00
Toluene	**0.00071**	J	**0.00020**	**0.0010**	**mg/L**	1	19-Jul-2019 08:00
Xylenes, Total	**0.041**		**0.00030**	**0.0010**	**mg/L**	1	19-Jul-2019 08:00
Surr: 1,2-Dichloroethane-d4	*85.8*			*70-126*	*%REC*	*1*	*19-Jul-2019 08:00*
Surr: 4-Bromofluorobenzene	*96.9*			*81-113*	*%REC*	*1*	*19-Jul-2019 08:00*
Surr: Dibromofluoromethane	*97.0*			*77-123*	*%REC*	*1*	*19-Jul-2019 08:00*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*1*	*19-Jul-2019 08:00*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW63B-20190716
Collection Date: 16-Jul-2019 17:55

ANALYTICAL REPORT
WorkOrder:HS19070864
Lab ID:HS19070864-12
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	22-Jul-2019 13:59
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	22-Jul-2019 13:59
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	22-Jul-2019 13:59
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	22-Jul-2019 13:59
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	22-Jul-2019 13:59
2-Methylnaphthalene	**0.037**		**0.00019**	**0.0010**	**mg/L**	10	22-Jul-2019 16:58
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	22-Jul-2019 13:59
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	22-Jul-2019 13:59
Acenaphthene	**0.012**		**0.00027**	**0.0010**	**mg/L**	10	22-Jul-2019 16:58
Acenaphthylene	**0.00016**		**0.000015**	**0.00010**	**mg/L**	1	22-Jul-2019 13:59
Anthracene	**0.00034**		**0.000014**	**0.00010**	**mg/L**	1	22-Jul-2019 13:59
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	22-Jul-2019 13:59
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	22-Jul-2019 13:59
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	22-Jul-2019 13:59
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	22-Jul-2019 13:59
Chrysene	U		0.000021	0.00010	mg/L	1	22-Jul-2019 13:59
Dibenzofuran	**0.011**		**0.00020**	**0.0010**	**mg/L**	10	22-Jul-2019 16:58
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	22-Jul-2019 13:59
Fluoranthene	U		0.000010	0.00010	mg/L	1	22-Jul-2019 13:59
Fluorene	**0.0037**		**0.000030**	**0.00010**	**mg/L**	1	22-Jul-2019 13:59
Naphthalene	**1.5**		**0.020**	**0.10**	**mg/L**	1000	22-Jul-2019 17:57
Nitrobenzene	U		0.000024	0.00020	mg/L	1	22-Jul-2019 13:59
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	22-Jul-2019 13:59
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	22-Jul-2019 13:59
Phenanthrene	**0.0013**		**0.000021**	**0.00010**	**mg/L**	1	22-Jul-2019 13:59
Phenol	U		0.000035	0.00020	mg/L	1	22-Jul-2019 13:59
Pyrene	U		0.000019	0.00010	mg/L	1	22-Jul-2019 13:59
Surr: 2,4,6-Tribromophenol	*107*			*34-129*	*%REC*	*1*	*22-Jul-2019 13:59*
Surr: 2,4,6-Tribromophenol	*106*			*34-129*	*%REC*	*10*	*22-Jul-2019 16:58*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*1000*	*22-Jul-2019 17:57*
Surr: 2-Fluorobiphenyl	*71.6*			*40-125*	*%REC*	*10*	*22-Jul-2019 16:58*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*1000*	*22-Jul-2019 17:57*
Surr: 2-Fluorobiphenyl	*69.3*			*40-125*	*%REC*	*1*	*22-Jul-2019 13:59*
Surr: 2-Fluorophenol	*80.9*			*20-120*	*%REC*	*1*	*22-Jul-2019 13:59*
Surr: 2-Fluorophenol	*83.3*			*20-120*	*%REC*	*10*	*22-Jul-2019 16:58*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*1000*	*22-Jul-2019 17:57*
Surr: 4-Terphenyl-d14	*84.7*			*40-135*	*%REC*	*1*	*22-Jul-2019 13:59*
Surr: 4-Terphenyl-d14	*86.7*			*40-135*	*%REC*	*10*	*22-Jul-2019 16:58*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*1000*	*22-Jul-2019 17:57*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW63B-20190716
Collection Date: 16-Jul-2019 17:55

ANALYTICAL REPORT
WorkOrder:HS19070864
Lab ID:HS19070864-12
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 19-Jul-2019		Analyst: GEY
Surr: Nitrobenzene-d5	*85.7*			*41-120*	*%REC*	*1*	*22-Jul-2019 13:59*
Surr: Nitrobenzene-d5	*75.0*			*41-120*	*%REC*	*10*	*22-Jul-2019 16:58*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*1000*	*22-Jul-2019 17:57*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*1000*	*22-Jul-2019 17:57*
Surr: Phenol-d6	*68.4*			*20-120*	*%REC*	*1*	*22-Jul-2019 13:59*
Surr: Phenol-d6	*66.8*			*20-120*	*%REC*	*10*	*22-Jul-2019 16:58*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 24-Jul-2019		Analyst: JHD
Arsenic	**0.00156**	J	**0.000400**	**0.00200**	**mg/L**	1	24-Jul-2019 16:21

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-TB04-20190716
Collection Date: 16-Jul-2019 00:00

ANALYTICAL REPORT
WorkOrder:HS19070864
Lab ID:HS19070864-13
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	19-Jul-2019 00:12
Benzene		U	0.00020	0.0010	mg/L	1	19-Jul-2019 00:12
Chlorobenzene		U	0.00030	0.0010	mg/L	1	19-Jul-2019 00:12
Ethylbenzene		U	0.00030	0.0010	mg/L	1	19-Jul-2019 00:12
Methylene chloride		U	0.0010	0.0020	mg/L	1	19-Jul-2019 00:12
Toluene		U	0.00020	0.0010	mg/L	1	19-Jul-2019 00:12
Vinyl chloride		U	0.00020	0.0010	mg/L	1	19-Jul-2019 00:12
Xylenes, Total		U	0.00030	0.0010	mg/L	1	19-Jul-2019 00:12
Surr: 1,2-Dichloroethane-d4	*87.8*			*70-126*	*%REC*	*1*	*19-Jul-2019 00:12*
Surr: 4-Bromofluorobenzene	*94.2*			*81-113*	*%REC*	*1*	*19-Jul-2019 00:12*
Surr: Dibromofluoromethane	*98.9*			*77-123*	*%REC*	*1*	*19-Jul-2019 00:12*
Surr: Toluene-d8	*99.0*			*82-127*	*%REC*	*1*	*19-Jul-2019 00:12*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

WEIGHT LOG

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070864

Batch ID: 143194 **Method:** LOW-LEVEL SEMIVOLATILES BY 8270D **Prep:** 3510_B_LOW

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19070864-01	1	1000	1 (mL)	0.001
HS19070864-02	1	1000	1 (mL)	0.001
HS19070864-03	1	1000	1 (mL)	0.001
HS19070864-04	1	1000	1 (mL)	0.001
HS19070864-05	1	1000	1 (mL)	0.001
HS19070864-06	1	1000	1 (mL)	0.001
HS19070864-07	1	1000	1 (mL)	0.001
HS19070864-08	1	1000	1 (mL)	0.001
HS19070864-09	1	1000	1 (mL)	0.001
HS19070864-10	1	1000	1 (mL)	0.001
HS19070864-11	1	1000	1 (mL)	0.001
HS19070864-12	1	1000	1 (mL)	0.001

Batch ID: 143304 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19070864-01	1	10	10 (mL)	1
HS19070864-02	1	10	10 (mL)	1
HS19070864-03	1	10	10 (mL)	1
HS19070864-04	1	10	10 (mL)	1
HS19070864-05	1	10	10 (mL)	1
HS19070864-06	1	10	10 (mL)	1

Batch ID: 143325 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19070864-07	1	10	10 (mL)	1
HS19070864-08	1	10	10 (mL)	1
HS19070864-09	1	10	10 (mL)	1
HS19070864-10	1	10	10 (mL)	1
HS19070864-11	1	10	10 (mL)	1
HS19070864-12	1	10	10 (mL)	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070864

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID: 143194 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Water	
HS19070864-01	WG-1620-MW21C-20190716	16 Jul 2019 07:35		19 Jul 2019 11:41	20 Jul 2019 01:12	1
HS19070864-02	WG-1620-FD01-20190716	16 Jul 2019 07:35		19 Jul 2019 11:41	20 Jul 2019 01:32	1
HS19070864-03	WG-1620-MW62B-20190716	16 Jul 2019 08:25		19 Jul 2019 11:41	20 Jul 2019 01:51	1
HS19070864-04	WG-1620-MW53C-20190716	16 Jul 2019 10:15		19 Jul 2019 11:41	20 Jul 2019 02:11	1
HS19070864-05	WG-1620-MW54C-20190716	16 Jul 2019 11:15		19 Jul 2019 11:41	22 Jul 2019 16:38	10
HS19070864-05	WG-1620-MW54C-20190716	16 Jul 2019 11:15		19 Jul 2019 11:41	20 Jul 2019 02:31	1
HS19070864-06	WG-1620-MW25C-20190716	16 Jul 2019 12:15		19 Jul 2019 11:41	22 Jul 2019 15:38	1000
HS19070864-06	WG-1620-MW25C-20190716	16 Jul 2019 12:15		19 Jul 2019 11:41	22 Jul 2019 15:18	100
HS19070864-06	WG-1620-MW25C-20190716	16 Jul 2019 12:15		19 Jul 2019 11:41	22 Jul 2019 14:58	10
HS19070864-07	WG-1620-MW25A-20190716	16 Jul 2019 13:10		19 Jul 2019 11:41	22 Jul 2019 12:00	1
HS19070864-08	WG-1620-MW36B-20190716	16 Jul 2019 14:20		19 Jul 2019 11:41	22 Jul 2019 12:20	1
HS19070864-09	WG-1620-MW36A-20190716	16 Jul 2019 15:20		19 Jul 2019 11:41	22 Jul 2019 15:58	1
HS19070864-10	WG-1620-MW28C-20190716	16 Jul 2019 16:15		19 Jul 2019 11:41	22 Jul 2019 16:18	1
HS19070864-11	WG-1620-MW28A-20190716	16 Jul 2019 17:00		19 Jul 2019 11:41	22 Jul 2019 18:37	1
HS19070864-12	WG-1620-MW63B-20190716	16 Jul 2019 17:55		19 Jul 2019 11:41	22 Jul 2019 17:57	1000
HS19070864-12	WG-1620-MW63B-20190716	16 Jul 2019 17:55		19 Jul 2019 11:41	22 Jul 2019 16:58	10
HS19070864-12	WG-1620-MW63B-20190716	16 Jul 2019 17:55		19 Jul 2019 11:41	22 Jul 2019 13:59	1
Batch ID: 143304 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS19070864-01	WG-1620-MW21C-20190716	16 Jul 2019 07:35		23 Jul 2019 12:00	23 Jul 2019 22:28	1
HS19070864-02	WG-1620-FD01-20190716	16 Jul 2019 07:35		23 Jul 2019 12:00	23 Jul 2019 22:31	1
HS19070864-03	WG-1620-MW62B-20190716	16 Jul 2019 08:25		23 Jul 2019 12:00	23 Jul 2019 22:37	1
HS19070864-04	WG-1620-MW53C-20190716	16 Jul 2019 10:15		23 Jul 2019 12:00	23 Jul 2019 22:40	1
HS19070864-05	WG-1620-MW54C-20190716	16 Jul 2019 11:15		23 Jul 2019 12:00	23 Jul 2019 22:42	1
HS19070864-06	WG-1620-MW25C-20190716	16 Jul 2019 12:15		23 Jul 2019 12:00	23 Jul 2019 22:44	1
Batch ID: 143325 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS19070864-07	WG-1620-MW25A-20190716	16 Jul 2019 13:10		24 Jul 2019 09:30	24 Jul 2019 15:44	1
HS19070864-08	WG-1620-MW36B-20190716	16 Jul 2019 14:20		24 Jul 2019 09:30	24 Jul 2019 15:47	1
HS19070864-09	WG-1620-MW36A-20190716	16 Jul 2019 15:20		24 Jul 2019 09:30	24 Jul 2019 15:49	1
HS19070864-10	WG-1620-MW28C-20190716	16 Jul 2019 16:15		24 Jul 2019 09:30	24 Jul 2019 15:51	1
HS19070864-11	WG-1620-MW28A-20190716	16 Jul 2019 17:00		24 Jul 2019 09:30	24 Jul 2019 16:19	1
HS19070864-12	WG-1620-MW63B-20190716	16 Jul 2019 17:55		24 Jul 2019 09:30	24 Jul 2019 16:21	1
Batch ID: R342655 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS19070864-01	WG-1620-MW21C-20190716	16 Jul 2019 07:35			18 Jul 2019 14:48	1
HS19070864-04	WG-1620-MW53C-20190716	16 Jul 2019 10:15			18 Jul 2019 20:06	1
HS19070864-06	WG-1620-MW25C-20190716	16 Jul 2019 12:15			18 Jul 2019 20:30	1
HS19070864-10	WG-1620-MW28C-20190716	16 Jul 2019 16:15			18 Jul 2019 13:34	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070864

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID: R342706 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS19070864-02	WG-1620-FD01-20190716	16 Jul 2019 07:35			19 Jul 2019 07:08	1
HS19070864-03	WG-1620-MW62B-20190716	16 Jul 2019 08:25			19 Jul 2019 04:42	1
HS19070864-05	WG-1620-MW54C-20190716	16 Jul 2019 11:15			18 Jul 2019 23:48	1
HS19070864-07	WG-1620-MW25A-20190716	16 Jul 2019 13:10			19 Jul 2019 03:28	1
HS19070864-08	WG-1620-MW36B-20190716	16 Jul 2019 14:20			19 Jul 2019 00:37	1
HS19070864-09	WG-1620-MW36A-20190716	16 Jul 2019 15:20			19 Jul 2019 03:53	1
HS19070864-11	WG-1620-MW28A-20190716	16 Jul 2019 17:00			19 Jul 2019 04:17	1
HS19070864-12	WG-1620-MW63B-20190716	16 Jul 2019 17:55			19 Jul 2019 08:00	1
HS19070864-13	WG-1620-TB04-20190716	16 Jul 2019 00:00			19 Jul 2019 00:12	1

WorkOrder: HS19070864
InstrumentID: ICPMS05
Test Code: ICP_TW
Test Number: SW6020
Test Name: ICP-MS Metals by SW6020A

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Arsenic	7440-38-2	0.000500	0.000547	0.000400	0.00200

WorkOrder: HS19070864
InstrumentID: SV-7
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Diphenylhydrazine	122-66-7	0.00010	0.00011	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.00010	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.000096	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.00012	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.00011	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.000050	0.000049	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000013	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00010	0.00013	0.000047	0.0010
A	Acenaphthene	83-32-9	0.000050	0.000051	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000050	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.000055	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.000050	0.000068	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.000050	0.000053	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.00012	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.000086	0.000037	0.00020
A	Chrysene	218-01-9	0.000050	0.000066	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.000050	0.000052	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.000099	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000053	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.000052	0.000030	0.00010
A	Naphthalene	91-20-3	0.000050	0.000061	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.00013	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.00012	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.000085	0.000079	0.00020
A	Phenanthrene	85-01-8	0.000050	0.000055	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.000094	0.000035	0.00020
A	Pyrene	129-00-0	0.000050	0.000061	0.000019	0.00010
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0.00020
S	2-Fluorobiphenyl	321-60-8	0	0	0	0.00020
S	2-Fluorophenol	367-12-4	0	0	0	0.00020
S	4-Terphenyl-d14	1718-51-0	0	0	0	0.00020
S	Nitrobenzene-d5	4165-60-0	0	0	0	0.00020
S	Phenol-d6	13127-88-3	0	0	0	0.00020

WorkOrder: HS19070864
InstrumentID: VOA2
Test Code: 8260_LL_W
Test Number: SW8260
Test Name: Low Level Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.00050	0.00067	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00056	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00059	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00051	0.00030	0.0010
A	Methylene chloride	75-09-2	0.00050	0.00054	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00056	0.00020	0.0010
A	Vinyl chloride	75-01-4	0.00050	0.00046	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00052	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070864

QC BATCH REPORT

Batch ID: 143304 (0) **Instrument: ICPMS05** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-143304** Units: **mg/L** Analysis Date: **23-Jul-2019 21:27**
Client ID: Run ID: **ICPMS05_342915** SeqNo: **5177608** PrepDate: **23-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								

LCS Sample ID: **LCS-143304** Units: **mg/L** Analysis Date: **23-Jul-2019 21:29**
Client ID: Run ID: **ICPMS05_342915** SeqNo: **5177609** PrepDate: **23-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04867	0.00200	0.05	0	97.3	80 - 120				

MS Sample ID: **HS19070566-06MS** Units: **mg/L** Analysis Date: **23-Jul-2019 21:36**
Client ID: Run ID: **ICPMS05_342915** SeqNo: **5177612** PrepDate: **23-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04953	0.00200	0.05	0.001142	96.8	80 - 120				

MSD Sample ID: **HS19070566-06MSD** Units: **mg/L** Analysis Date: **23-Jul-2019 21:38**
Client ID: Run ID: **ICPMS05_342915** SeqNo: **5177613** PrepDate: **23-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04774	0.00200	0.05	0.001142	93.2	80 - 120	0.04953	3.68	20	

SD Sample ID: **HS19070566-06SD** Units: **mg/L** Analysis Date: **23-Jul-2019 21:33**
Client ID: Run ID: **ICPMS05_342915** SeqNo: **5177611** PrepDate: **23-Jul-2019** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	U	0.0100					0.001142	0	10	

The following samples were analyzed in this batch: HS19070864-01 HS19070864-02 HS19070864-03 HS19070864-04 HS19070864-05 HS19070864-06

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070864

QC BATCH REPORT

Batch ID: 143325 (0) **Instrument: ICPMS05** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-143325** Units: **mg/L** Analysis Date: **25-Jul-2019 12:47**
Client ID: Run ID: **ICPMS05_343031** SeqNo: **5180640** PrepDate: **24-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								

LCS Sample ID: **LCS-143325** Units: **mg/L** Analysis Date: **25-Jul-2019 12:49**
Client ID: Run ID: **ICPMS05_343031** SeqNo: **5180641** PrepDate: **24-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04998	0.00200	0.05	0	100.0	80 - 120				

MS Sample ID: **HS19070864-10MS** Units: **mg/L** Analysis Date: **25-Jul-2019 13:01**
Client ID: **WG-1620-MW28C-20190716** Run ID: **ICPMS05_343031** SeqNo: **5180628** PrepDate: **24-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05185	0.00200	0.05	0.000456	103	80 - 120				

MSD Sample ID: **HS19070864-10MSD** Units: **mg/L** Analysis Date: **24-Jul-2019 15:58**
Client ID: **WG-1620-MW28C-20190716** Run ID: **ICPMS05_342951** SeqNo: **5179479** PrepDate: **24-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05134	0.00200	0.05	0.000456	102	80 - 120	0.05087	0.902	20	

PDS Sample ID: **HS19070864-10PDS** Units: **mg/L** Analysis Date: **24-Jul-2019 16:00**
Client ID: **WG-1620-MW28C-20190716** Run ID: **ICPMS05_342951** SeqNo: **5179480** PrepDate: **24-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1061	0.00200	0.1	0.000456	106	75 - 125				

SD Sample ID: **HS19070864-10SD** Units: **mg/L** Analysis Date: **24-Jul-2019 15:53**
Client ID: **WG-1620-MW28C-20190716** Run ID: **ICPMS05_342951** SeqNo: **5179477** PrepDate: **24-Jul-2019** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	U	0.0100					0.000456	0	10	

The following samples were analyzed in this batch: HS19070864-07 HS19070864-08 HS19070864-09 HS19070864-10 HS19070864-11 HS19070864-12

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070864

QC BATCH REPORT

Batch ID: 143194 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-143194** Units: **ug/L** Analysis Date: **22-Jul-2019 11:00**
Client ID: Run ID: **SV-7_342875** SeqNo: **5176674** PrepDate: **19-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	U	0.20								
2,4-Dimethylphenol	U	0.20								
2,4-Dinitrotoluene	U	0.20								
2,6-Dinitrotoluene	U	0.20								
2-Chloronaphthalene	U	0.20								
2-Methylnaphthalene	U	0.10								
4,6-Dinitro-2-methylphenol	U	0.20								
4-Nitrophenol	U	1.0								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Benz(a)anthracene	U	0.10								
Benzo(a)pyrene	U	0.10								
Bis(2-chloroethoxy)methane	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Chrysene	U	0.10								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Nitrobenzene	U	0.20								
N-Nitrosodiphenylamine	U	0.20								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*4.914*	*0.20*	*5*	*0*	*98.3*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.077*	*0.20*	*5*	*0*	*81.5*	*40 - 125*				
Surr: 2-Fluorophenol	*4.22*	*0.20*	*5*	*0*	*84.4*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.338*	*0.20*	*5*	*0*	*86.8*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.575*	*0.20*	*5*	*0*	*91.5*	*41 - 120*				
Surr: Phenol-d6	*4.538*	*0.20*	*5*	*0*	*90.8*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070864

QC BATCH REPORT

Batch ID: 143194 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCS Sample ID: **LCS-143194** Units: **ug/L** Analysis Date: **22-Jul-2019 11:20**
Client ID: Run ID: **SV-7_342875** SeqNo: **5176675** PrepDate: **19-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.448	0.20	5	0	89.0	39 - 127				
2,4-Dimethylphenol	4.065	0.20	5	0	81.3	35 - 120				
2,4-Dinitrotoluene	5.282	0.20	5	0	106	50 - 122				
2,6-Dinitrotoluene	4.965	0.20	5	0	99.3	50 - 120				
2-Chloronaphthalene	4.463	0.20	5	0	89.3	50 - 120				
2-Methylnaphthalene	4.445	0.10	5	0	88.9	50 - 120				
4,6-Dinitro-2-methylphenol	4.939	0.20	5	0	98.8	25 - 121				
4-Nitrophenol	5.208	1.0	5	0	104	30 - 130				
Acenaphthene	4.419	0.10	5	0	88.4	45 - 120				
Acenaphthylene	4.131	0.10	5	0	82.6	47 - 120				
Anthracene	4.283	0.10	5	0	85.7	45 - 120				
Benz(a)anthracene	4.742	0.10	5	0	94.8	40 - 120				
Benzo(a)pyrene	5.119	0.10	5	0	102	45 - 120				
Bis(2-chloroethoxy)methane	4.08	0.20	5	0	81.6	45 - 120				
Bis(2-ethylhexyl)phthalate	4.229	0.20	5	0	84.6	40 - 139				
Chrysene	4.691	0.10	5	0	93.8	43 - 120				
Dibenzofuran	4.419	0.10	5	0	88.4	50 - 120				
Di-n-butyl phthalate	4.404	0.20	5	0	88.1	45 - 123				
Fluoranthene	4.651	0.10	5	0	93.0	45 - 125				
Fluorene	4.206	0.10	5	0	84.1	49 - 120				
Naphthalene	4.123	0.10	5	0	82.5	45 - 120				
Nitrobenzene	4.585	0.20	5	0	91.7	44 - 120				
N-Nitrosodiphenylamine	4.889	0.20	5	0	97.8	40 - 125				
Pentachlorophenol	4.714	0.20	5	0	94.3	19 - 121				
Phenanthrene	4.063	0.10	5	0	81.3	45 - 121				
Phenol	3.959	0.20	5	0	79.2	20 - 124				
Pyrene	4.472	0.10	5	0	89.4	40 - 130				
Surr: 2,4,6-Tribromophenol	*5.604*	*0.20*	*5*	*0*	*112*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.713*	*0.20*	*5*	*0*	*94.3*	*40 - 125*				
Surr: 2-Fluorophenol	*4.535*	*0.20*	*5*	*0*	*90.7*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.418*	*0.20*	*5*	*0*	*88.4*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.682*	*0.20*	*5*	*0*	*93.6*	*41 - 120*				
Surr: Phenol-d6	*4.612*	*0.20*	*5*	*0*	*92.2*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070864

QC BATCH REPORT

Batch ID: 143194 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MS Sample ID: **HS19070864-10MS** Units: **ug/L** Analysis Date: **22-Jul-2019 14:19**
Client ID: **WG-1620-MW28C-20190716** Run ID: **SV-7_342875** SeqNo: **5176679** PrepDate: **19-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	3.693	0.20	5	0	73.9	39 - 127				
2,4-Dimethylphenol	3.397	0.20	5	0	67.9	35 - 120				
2,4-Dinitrotoluene	4.804	0.20	5	0	96.1	50 - 122				
2,6-Dinitrotoluene	4.2	0.20	5	0	84.0	50 - 120				
2-Chloronaphthalene	3.834	0.20	5	0	76.7	50 - 120				
2-Methylnaphthalene	3.758	0.10	5	0	75.2	50 - 120				
4,6-Dinitro-2-methylphenol	4.56	0.20	5	0	91.2	25 - 121				
4-Nitrophenol	4.615	1.0	5	0	92.3	30 - 130				
Acenaphthene	3.72	0.10	5	0	74.4	45 - 120				
Acenaphthylene	3.54	0.10	5	0	70.8	47 - 120				
Anthracene	3.902	0.10	5	0	78.0	45 - 120				
Benz(a)anthracene	4.637	0.10	5	0	92.7	40 - 120				
Benzo(a)pyrene	5.199	0.10	5	0	104	45 - 120				
Bis(2-chloroethoxy)methane	3.411	0.20	5	0	68.2	45 - 120				
Bis(2-ethylhexyl)phthalate	4.294	0.20	5	0.1317	83.2	40 - 139				
Chrysene	4.71	0.10	5	0	94.2	43 - 120				
Dibenzofuran	3.788	0.10	5	0	75.8	50 - 120				
Di-n-butyl phthalate	4.444	0.20	5	0	88.9	45 - 123				
Fluoranthene	4.84	0.10	5	0.01464	96.5	45 - 125				
Fluorene	3.733	0.10	5	0	74.7	49 - 120				
Naphthalene	3.498	0.10	5	0.09505	68.1	45 - 120				
Nitrobenzene	4.018	0.20	5	0	80.4	44 - 120				
N-Nitrosodiphenylamine	4.429	0.20	5	0	88.6	40 - 125				
Pentachlorophenol	4.657	0.20	5	0	93.1	19 - 121				
Phenanthrene	3.943	0.10	5	0	78.9	45 - 121				
Phenol	4.038	0.20	5	2.478	31.2	20 - 124				
Pyrene	4.3	0.10	5	0.01185	85.8	40 - 130				
Surr: 2,4,6-Tribromophenol	*5.507*	*0.20*	*5*	*0*	*110*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.746*	*0.20*	*5*	*0*	*74.9*	*40 - 125*				
Surr: 2-Fluorophenol	*3.67*	*0.20*	*5*	*0*	*73.4*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.25*	*0.20*	*5*	*0*	*85.0*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.838*	*0.20*	*5*	*0*	*76.8*	*41 - 120*				
Surr: Phenol-d6	*3.934*	*0.20*	*5*	*0*	*78.7*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070864

QC BATCH REPORT

Batch ID: 143194 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MSD Sample ID: **HS19070864-10MSD** Units: **ug/L** Analysis Date: **22-Jul-2019 14:39**
Client ID: **WG-1620-MW28C-20190716** Run ID: **SV-7_342875** SeqNo: **5176680** PrepDate: **19-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	3.672	0.20	5	0	73.4	39 - 127	3.693	0.547	20	
2,4-Dimethylphenol	3.328	0.20	5	0	66.6	35 - 120	3.397	2.04	20	
2,4-Dinitrotoluene	5.13	0.20	5	0	103	50 - 122	4.804	6.56	20	
2,6-Dinitrotoluene	4.241	0.20	5	0	84.8	50 - 120	4.2	0.976	20	
2-Chloronaphthalene	3.063	0.20	5	0	61.3	50 - 120	3.834	22.4	20	R
2-Methylnaphthalene	3.431	0.10	5	0	68.6	50 - 120	3.758	9.09	20	
4,6-Dinitro-2-methylphenol	4.711	0.20	5	0	94.2	25 - 121	4.56	3.25	30	
4-Nitrophenol	4.266	1.0	5	0	85.3	30 - 130	4.615	7.87	20	
Acenaphthene	3.557	0.10	5	0	71.1	45 - 120	3.72	4.47	20	
Acenaphthylene	3.316	0.10	5	0	66.3	47 - 120	3.54	6.53	20	
Anthracene	3.912	0.10	5	0	78.2	45 - 120	3.902	0.239	20	
Benz(a)anthracene	4.648	0.10	5	0	93.0	40 - 120	4.637	0.248	20	
Benzo(a)pyrene	5.69	0.10	5	0	114	45 - 120	5.199	9.02	20	
Bis(2-chloroethoxy)methane	3.137	0.20	5	0	62.7	45 - 120	3.411	8.37	20	
Bis(2-ethylhexyl)phthalate	4.518	0.20	5	0.1317	87.7	40 - 139	4.294	5.09	20	
Chrysene	5.022	0.10	5	0	100	43 - 120	4.71	6.41	20	
Dibenzofuran	3.658	0.10	5	0	73.2	50 - 120	3.788	3.49	20	
Di-n-butyl phthalate	4.461	0.20	5	0	89.2	45 - 123	4.444	0.39	20	
Fluoranthene	4.861	0.10	5	0.01464	96.9	45 - 125	4.84	0.439	20	
Fluorene	3.634	0.10	5	0	72.7	49 - 120	3.733	2.7	20	
Naphthalene	3.326	0.10	5	0.09505	64.6	45 - 120	3.498	5.04	20	
Nitrobenzene	3.644	0.20	5	0	72.9	44 - 120	4.018	9.78	20	
N-Nitrosodiphenylamine	4.775	0.20	5	0	95.5	40 - 125	4.429	7.52	20	
Pentachlorophenol	4.782	0.20	5	0	95.6	19 - 121	4.657	2.66	20	
Phenanthrene	4.08	0.10	5	0	81.6	45 - 121	3.943	3.41	20	
Phenol	3.46	0.20	5	2.478	19.6	20 - 124	4.038	15.4	20	S
Pyrene	4.476	0.10	5	0.01185	89.3	40 - 130	4.3	4	20	
Surr: 2,4,6-Tribromophenol	*5.092*	*0.20*	*5*	*0*	*102*	*34 - 129*	*5.507*	*7.83*	*20*	
Surr: 2-Fluorobiphenyl	*3.506*	*0.20*	*5*	*0*	*70.1*	*40 - 125*	*3.746*	*6.6*	*20*	
Surr: 2-Fluorophenol	*3.369*	*0.20*	*5*	*0*	*67.4*	*20 - 120*	*3.67*	*8.54*	*20*	
Surr: 4-Terphenyl-d14	*4.3*	*0.20*	*5*	*0*	*86.0*	*40 - 135*	*4.25*	*1.16*	*20*	
Surr: Nitrobenzene-d5	*3.541*	*0.20*	*5*	*0*	*70.8*	*41 - 120*	*3.838*	*8.05*	*20*	
Surr: Phenol-d6	*3.444*	*0.20*	*5*	*0*	*68.9*	*20 - 120*	*3.934*	*13.3*	*20*	

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	HS19070864

QC BATCH REPORT

Batch ID: 143194 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

The following samples were analyzed in this batch:

HS19070864-01	HS19070864-02	HS19070864-03	HS19070864-04
HS19070864-05	HS19070864-06	HS19070864-07	HS19070864-08
HS19070864-09	HS19070864-10	HS19070864-11	HS19070864-12

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070864

QC BATCH REPORT

Batch ID: R342655 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-190718** Units: **ug/L** Analysis Date: **18-Jul-2019 12:21**
Client ID: Run ID: **VOA2_342655** SeqNo: **5171721** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*43.57*	*1.0*	*50*	*0*	*87.1*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*48.02*	*1.0*	*50*	*0*	*96.0*	*82 - 115*				
Surr: Dibromofluoromethane	*48.98*	*1.0*	*50*	*0*	*98.0*	*73 - 126*				
Surr: Toluene-d8	*51.34*	*1.0*	*50*	*0*	*103*	*81 - 120*				

LCS Sample ID: **VLCSW-190718** Units: **ug/L** Analysis Date: **18-Jul-2019 11:57**
Client ID: Run ID: **VOA2_342655** SeqNo: **5171720** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	19.53	1.0	20	0	97.7	70 - 124				
Benzene	19.25	1.0	20	0	96.2	74 - 120				
Chlorobenzene	19.1	1.0	20	0	95.5	76 - 113				
Ethylbenzene	19.59	1.0	20	0	97.9	77 - 117				
Methylene chloride	21.04	2.0	20	0	105	70 - 127				
Toluene	21.75	1.0	20	0	109	77 - 118				
Vinyl chloride	21.23	1.0	20	0	106	70 - 130				
Xylenes, Total	63.51	1.0	60	0	106	75 - 122				
Surr: 1,2-Dichloroethane-d4	*46.28*	*1.0*	*50*	*0*	*92.6*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*47.96*	*1.0*	*50*	*0*	*95.9*	*82 - 115*				
Surr: Dibromofluoromethane	*46.75*	*1.0*	*50*	*0*	*93.5*	*73 - 126*				
Surr: Toluene-d8	*49.39*	*1.0*	*50*	*0*	*98.8*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070864

QC BATCH REPORT

Batch ID: R342655 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS19070864-10MS** Units: **ug/L** Analysis Date: **18-Jul-2019 13:59**
Client ID: **WG-1620-MW28C-20190716** Run ID: **VOA2_342655** SeqNo: **5171839** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Dichloroethane	16.04	1.0	20	0	80.2	70 - 127				
Benzene	17.2	1.0	20	0	86.0	70 - 127				
Chlorobenzene	17.15	1.0	20	0	85.7	70 - 114				
Ethylbenzene	17.86	1.0	20	0	89.3	70 - 124				
Methylene chloride	17.39	2.0	20	0	86.9	70 - 128				
Toluene	19.38	1.0	20	0	96.9	70 - 123				
Vinyl chloride	17.32	1.0	20	0	86.6	70 - 130				
Xylenes, Total	56.86	1.0	60	0	94.8	70 - 130				
Surr: 1,2-Dichloroethane-d4	*45.22*	*1.0*	*50*	*0*	*90.4*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*47.86*	*1.0*	*50*	*0*	*95.7*	*81 - 113*				
Surr: Dibromofluoromethane	*46.88*	*1.0*	*50*	*0*	*93.8*	*77 - 123*				
Surr: Toluene-d8	*50.33*	*1.0*	*50*	*0*	*101*	*82 - 127*				

MSD Sample ID: **HS19070864-10MSD** Units: **ug/L** Analysis Date: **18-Jul-2019 14:23**
Client ID: **WG-1620-MW28C-20190716** Run ID: **VOA2_342655** SeqNo: **5171840** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Dichloroethane	16.85	1.0	20	0	84.3	70 - 127	16.04	4.93	20	
Benzene	16.52	1.0	20	0	82.6	70 - 127	17.2	3.98	20	
Chlorobenzene	16.89	1.0	20	0	84.5	70 - 114	17.15	1.5	20	
Ethylbenzene	17.1	1.0	20	0	85.5	70 - 124	17.86	4.3	20	
Methylene chloride	17	2.0	20	0	85.0	70 - 128	17.39	2.26	20	
Toluene	18.9	1.0	20	0	94.5	70 - 123	19.38	2.49	20	
Vinyl chloride	17.85	1.0	20	0	89.3	70 - 130	17.32	3.02	20	
Xylenes, Total	56.52	1.0	60	0	94.2	70 - 130	56.86	0.595	20	
Surr: 1,2-Dichloroethane-d4	*45.82*	*1.0*	*50*	*0*	*91.6*	*70 - 126*	*45.22*	*1.33*	*20*	
Surr: 4-Bromofluorobenzene	*48.64*	*1.0*	*50*	*0*	*97.3*	*81 - 113*	*47.86*	*1.62*	*20*	
Surr: Dibromofluoromethane	*47.8*	*1.0*	*50*	*0*	*95.6*	*77 - 123*	*46.88*	*1.95*	*20*	
Surr: Toluene-d8	*50.55*	*1.0*	*50*	*0*	*101*	*82 - 127*	*50.33*	*0.435*	*20*	

The following samples were analyzed in this batch: HS19070864-01 HS19070864-04 HS19070864-06 HS19070864-10

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070864

QC BATCH REPORT

Batch ID: R342706 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-190718** Units: **ug/L** Analysis Date: **18-Jul-2019 23:24**
Client ID: Run ID: **VOA2_342706** SeqNo: **5172917** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*44.78*	*1.0*	*50*	*0*	*89.6*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*47.6*	*1.0*	*50*	*0*	*95.2*	*82 - 115*				
Surr: Dibromofluoromethane	*49.51*	*1.0*	*50*	*0*	*99.0*	*73 - 126*				
Surr: Toluene-d8	*50.99*	*1.0*	*50*	*0*	*102*	*81 - 120*				

LCS Sample ID: **VLCSW-190718** Units: **ug/L** Analysis Date: **18-Jul-2019 22:59**
Client ID: Run ID: **VOA2_342706** SeqNo: **5172916** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	19.09	1.0	20	0	95.5	70 - 124				
Benzene	18.84	1.0	20	0	94.2	74 - 120				
Chlorobenzene	18.95	1.0	20	0	94.8	76 - 113				
Ethylbenzene	18.88	1.0	20	0	94.4	77 - 117				
Methylene chloride	20.56	2.0	20	0	103	70 - 127				
Toluene	21.32	1.0	20	0	107	77 - 118				
Vinyl chloride	20.66	1.0	20	0	103	70 - 130				
Xylenes, Total	61.87	1.0	60	0	103	75 - 122				
Surr: 1,2-Dichloroethane-d4	*46.21*	*1.0*	*50*	*0*	*92.4*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*47.64*	*1.0*	*50*	*0*	*95.3*	*82 - 115*				
Surr: Dibromofluoromethane	*47.97*	*1.0*	*50*	*0*	*95.9*	*73 - 126*				
Surr: Toluene-d8	*50.4*	*1.0*	*50*	*0*	*101*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070864

QC BATCH REPORT

Batch ID: R342706 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS19070864-08MS** Units: **ug/L** Analysis Date: **19-Jul-2019 02:39**
Client ID: **WG-1620-MW36B-20190716** Run ID: **VOA2_342706** SeqNo: **5172921** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	15.7	1.0	20	0	78.5	70 - 127				
Benzene	16.86	1.0	20	0	84.3	70 - 127				
Chlorobenzene	16.83	1.0	20	0	84.2	70 - 114				
Ethylbenzene	17.18	1.0	20	0	85.9	70 - 124				
Methylene chloride	15.53	2.0	20	0	77.6	70 - 128				
Toluene	19.17	1.0	20	0	95.9	70 - 123				
Vinyl chloride	18.84	1.0	20	0	94.2	70 - 130				
Xylenes, Total	55.11	1.0	60	0	91.8	70 - 130				
Surr: 1,2-Dichloroethane-d4	*45.83*	*1.0*	*50*	*0*	*91.7*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*48*	*1.0*	*50*	*0*	*96.0*	*81 - 113*				
Surr: Dibromofluoromethane	*48.11*	*1.0*	*50*	*0*	*96.2*	*77 - 123*				
Surr: Toluene-d8	*49.8*	*1.0*	*50*	*0*	*99.6*	*82 - 127*				

MSD Sample ID: **HS19070864-08MSD** Units: **ug/L** Analysis Date: **19-Jul-2019 03:04**
Client ID: **WG-1620-MW36B-20190716** Run ID: **VOA2_342706** SeqNo: **5172922** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.2	1.0	20	0	81.0	70 - 127	15.7	3.11	20	
Benzene	16.39	1.0	20	0	82.0	70 - 127	16.86	2.81	20	
Chlorobenzene	16.02	1.0	20	0	80.1	70 - 114	16.83	4.92	20	
Ethylbenzene	16.88	1.0	20	0	84.4	70 - 124	17.18	1.79	20	
Methylene chloride	16.85	2.0	20	0	84.3	70 - 128	15.53	8.19	20	
Toluene	18.14	1.0	20	0	90.7	70 - 123	19.17	5.55	20	
Vinyl chloride	18.13	1.0	20	0	90.6	70 - 130	18.84	3.87	20	
Xylenes, Total	53.8	1.0	60	0	89.7	70 - 130	55.11	2.4	20	
Surr: 1,2-Dichloroethane-d4	*46.31*	*1.0*	*50*	*0*	*92.6*	*70 - 126*	*45.83*	*1.04*	*20*	
Surr: 4-Bromofluorobenzene	*48.57*	*1.0*	*50*	*0*	*97.1*	*81 - 113*	*48*	*1.18*	*20*	
Surr: Dibromofluoromethane	*48.65*	*1.0*	*50*	*0*	*97.3*	*77 - 123*	*48.11*	*1.13*	*20*	
Surr: Toluene-d8	*49.78*	*1.0*	*50*	*0*	*99.6*	*82 - 127*	*49.8*	*0.0359*	*20*	

The following samples were analyzed in this batch: HS19070864-02 HS19070864-03 HS19070864-05 HS19070864-07 HS19070864-08 HS19070864-09 HS19070864-11 HS19070864-12 HS19070864-13

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS19070864**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Kansas	E-10352 2018-2019	31-Jul-2019
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
Oklahoma	2018-156	31-Aug-2019
Texas	TX104704231-19-23	30-Apr-2020

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS19070864

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS19070864-01	WG-1620-MW21C-20190716	Login	17/07/2019 18:07:39	RPG	MET074
HS19070864-01	WG-1620-MW21C-20190716	Login	17/07/2019 18:07:39	RPG	EXT011
HS19070864-01	WG-1620-MW21C-20190716	Login	17/07/2019 18:07:39	RPG	VOA153
HS19070864-02	WG-1620-FD01-20190716	Login	17/07/2019 18:07:39	RPG	MET074
HS19070864-02	WG-1620-FD01-20190716	Login	17/07/2019 18:07:39	RPG	EXT011
HS19070864-02	WG-1620-FD01-20190716	Login	17/07/2019 18:07:39	RPG	VOA153
HS19070864-03	WG-1620-MW62B-20190716	Login	17/07/2019 18:07:39	RPG	MET074
HS19070864-03	WG-1620-MW62B-20190716	Login	17/07/2019 18:07:39	RPG	EXT011
HS19070864-03	WG-1620-MW62B-20190716	Login	17/07/2019 18:07:39	RPG	VOA153
HS19070864-04	WG-1620-MW53C-20190716	Login	17/07/2019 18:07:39	RPG	MET074
HS19070864-04	WG-1620-MW53C-20190716	Login	17/07/2019 18:07:39	RPG	EXT012
HS19070864-04	WG-1620-MW53C-20190716	Login	17/07/2019 18:07:39	RPG	VOA153
HS19070864-05	WG-1620-MW54C-20190716	Login	17/07/2019 18:07:39	RPG	MET074
HS19070864-05	WG-1620-MW54C-20190716	Login	17/07/2019 18:07:39	RPG	EXT012
HS19070864-05	WG-1620-MW54C-20190716	Login	17/07/2019 18:07:39	RPG	VOA153
HS19070864-13	WG-1620-TB04-20190716	Login	17/07/2019 18:07:39	RPG	VOA153

Sample Receipt Checklist

Client Name: PBW
Work Order: HS19070864

Date/Time Received: **17-Jul-2019 14:24**
Received by: **AC**

Checklist completed by: *Raegen Giga* 17-Jul-2019
eSignature | Date

Reviewed by: *Dane J. Wacasey* 18-Jul-2019
eSignature | Date

Matrices: **Water**

Carrier name: **Client**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:196141/196139
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	0.2c , 0.7c , 2.2c UC/C	IR25
Cooler(s)/Kit(s):	44161/44877/45083	
Date/Time sample(s) sent to storage:	07/17/2019 18:40	

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes: Vial # 3 ID Differs: COC = WG-1620-MW36A-20190716; Label = WG-1620-MW36B-20190716; Logged per COC using vial #1 and vial #2

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336 | Fort Collins, CO +1 970 490 1511 | Everett, WA +1 425 356 2600 | Holland, MI +1 616 399 6070
Houston, TX +1 281 530 5656 | Spring City, PA +1 610 948 4903 | South Charleston, WV +1 304 356 3168 | Middletown, PA +1 717 944 5541 | Salt Lake City, UT +1 801 266 7700 | York, PA +1 717 505 5280

Chain of Custody Form

Page 1 of 2

COC ID: 196141

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A	8260_LL_W (5632528 Volatile Organics Site Specific)
Work Order		Project Number	1620-07-Rev0 SR 92688	B	8260_LL_W (5632528 VOC Site Specific + V.C.)
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P	C	8270_LOW_W (5632532 SemiVolatiles Site specific)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	ICP_TW (5636002 5652646 Metals - As, Pb)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E F	**HS19070864** Golder Associates Inc. Houston TX-Wood Preserving Works
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~WG-1620-TB6-20190716~~			~~Water~~	←	~~2~~		*									
2	WG-1620-MW21C-20190716	7-16-19	0735	W		6	X		X	X							
3	WG-1620-FD01-20190716		0735	W		6	X		X	X							
4	WG-1620-MW62B-20190716		0825	W		6	X		X	X							
5	WG-1620-MW53C-20190716		1015	W		6	X		X	X							
6	WG-1620-MW54C-20190716		1115	W		6	X		X	X							
7	WG-1620-MW25C-20190716		1215	W		6		X	X	X							
8	WG-1620-MW25A-20190716		1310	W		6		X	X	X							
9	WG-1620-MW36B-20190716		1420	W		6		X	X	X							
10	WG-1620-MW36A-20190716		1520	W		6		X	X	X							

Sampler(s) Please Print & Sign: JOHN BRAYTON John Br

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: John Br Date: 7-17-19 Time: 1424

Received by:

Relinquished by: Date: 7-17-19 Time: 14:24

Received by (Laboratory): AC

Logged by (Laboratory): Date: Time:

Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.
	U/C
94161	0.2
44877	0.7
45083	2.2

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[X] TRRP Checklist
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

2R + 2S

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

COC ID: 196139

HS19070864

Golder Associates Inc.
Houston TX-Wood Preserving Works

NV

ALS Project Manager:

Customer Information		Project Information			
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A	8260_LL_W (5632528 Volatile Organics Site Specific)
Work Order		Project Number	1620-07-Rev0 SR 92688	B	8260_LL_W (5632528 VOC Site Specific + V.C.)
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P	C	8270_LOW_W (5632532 SemiVolatiles Site specific)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	ICP_TW (5636002 5652646 Metals - As, Pb)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	MS/MSD
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~WG-1620-TB0__20190[illegible]~~			~~Water~~	←	~~2~~		X									
2	WG-1620-MW28C-20190716	7-16-19	1615	W		12	X		X	X	X						
3	WG-1620-MW28A-20190716	↓	1700	W		6	X		X	X							
4	WG-1620-MW63B-20190716		1755	W		6	X		X	X							
5	WG-1620-TB04-20190716		-	W		2											
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: JOHN GRAY TOM

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) ☐ Other ____ ☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
	7-17-19	1424	
Relinquished by:	Date:	Time:	Received by (Laboratory):
	7-17-19	14:24	AC
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)

- ☐ Level II Std QC
- ☐ Level III Std QC/Raw Data
- ☐ Level IV SW846/CLP
- ☐ Other
- ☒ TRRP Checklist
- ☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

July 31, 2019

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS19070994**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 34 sample(s) on Jul 19, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS19070994**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS19070994**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data								
Laboratory Name: ALS Laboratory Group			LRC Date: 07/31/2019					
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS19071233					
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 143239,143295,143526,143558,R342868,R342877,R342879					
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]	
R1	OI	**Chain-of-custody (C-O-C)**						
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X					
		Were all departures from standard conditions described in an exception report?	X					
R2	OI	**Sample and quality control (QC) identification**						
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X					
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X					
R3	OI	**Test reports**						
		Were all samples prepared and analyzed within holding times?	X					
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X					
		Were calculations checked by a peer or supervisor?	X					
		Were all analyte identifications checked by a peer or supervisor?	X					
		Were sample detection limits reported for all analytes not detected?	X					
		Were all results for soil and sediment samples reported on a dry weight basis?			X			
		Were % moisture (or solids) reported for all soil and sediment samples?			X			
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X			
		If required for the project, TICs reported?			X			
R4	O	**Surrogate recovery data**						
		Were surrogates added prior to extraction?	X					
		Were surrogate percent recoveries in all samples within the laboratory QC limits?		X			1	
R5	OI	**Test reports/summary forms for blank samples**						
		Were appropriate type(s) of blanks analyzed?	X					
		Were blanks analyzed at the appropriate frequency?	X					
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X					
		Were blank concentrations < MQL?	X					
R6	OI	**Laboratory control samples (LCS):**						
		Were all COCs included in the LCS?	X					
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X					
		Were LCSs analyzed at the required frequency?	X					
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?		X			2	
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X					
		Was the LCSD RPD within QC limits?	X					
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**						
		Were the project/method specified analytes included in the MS and MSD?	X					
		Were MS/MSD analyzed at the appropriate frequency?	X					
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			3	
		Were MS/MSD RPDs within laboratory QC limits?		X			4	
R8	OI	**Analytical duplicate data**						
		Were appropriate analytical duplicates analyzed for each matrix?	X					
		Were analytical duplicates analyzed at the appropriate frequency?	X					
		Were RPDs or relative standard deviations within the laboratory QC limits?	X					
R9	OI	**Method quantitation limits (MQLs):**						
		Are the MQLs for each method analyte included in the laboratory data package?	X					
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X					
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X					
R10	OI	**Other problems/anomalies**						
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X					
		Were all necessary corrective actions performed for the reported data?	X					
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				5	
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X					

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 07/31/2019				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS19071233				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 143239,143295,143526,143558,R342868,R342877,R342879				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?	X				
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 07/31/2019
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS19071233
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 143239,143295,143526,143558,R342868,R342877,R342879

ER#[5]	Description
1	Volatile Organics Method SW8260, sample WG-1620-MW71B-20190717, WG-1620-MW68B-20190718, WG-1620-FD03-20190718, WG-1620-MW83B-20190718, WG-1620-MW35B-20190718, the surrogate recoveries could not be determined due to dilution below the calibration range.
2	Batch 143295, Semivolatile Organics Method SW8270, LCS/LCSD were analyzed and reported in lieu of an MS/MSD for this batch.
3	Batch 143239, Semivolatile Organics Method SW8270, sample WG-1620-MW61A-20190717, MSD recovered outside the control limit for Benzo(a)pyrene due to possible matrix effect. Batch R342877, Volatile Organics Method SW8260, sample WG-1620-MW83C-20190718, MS and MSD recovered outside the control limit for surrogate 4-Bromofluorobenzene due to possible matrix effect. Batch R342879, Volatile Organics Method SW8260, sample WG-1620-MW61A-20190717, MSD recovered below the control limit for 1,2-Dichloroethane due to possible matrix effect.
4	Batch 143239, Semivolatile Organics Method SW8270, sample WG-1620-MW61A-20190717, MS/MSD RPD recovered above the RPD limits for 2,6-Dinitrotoluene, Benzo(a)pyrene and surrogates 2,4,6-Tribromophenol, 2-Fluorobiphenyl due to possible matrix effect.
5	Batch 143239, Semivolatile Organics Method SW8270, samples WG-1620-MW68B-20190718, WG-1620-FD03-20190718, the GCMS semi-volatile extract of the samples were run at a dilution due to a high level of matrix interference.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS19070994

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19070994-01	WG-1620-FB04-20190716	Water		16-Jul-2019 18:20	19-Jul-2019 13:15	☐
HS19070994-02	WG-1620-MW61A-20190717	Water		17-Jul-2019 07:50	19-Jul-2019 13:15	☐
HS19070994-03	WG-1620-MW60A-20190717	Water		17-Jul-2019 08:35	19-Jul-2019 13:15	☐
HS19070994-04	WG-1620-MW69A-20190717	Water		17-Jul-2019 09:35	19-Jul-2019 13:15	☐
HS19070994-05	WG-1620-MW47C-20190717	Water		17-Jul-2019 10:25	19-Jul-2019 13:15	☐
HS19070994-06	WG-1620-MW48C-20190717	Water		17-Jul-2019 11:20	19-Jul-2019 13:15	☐
HS19070994-07	WG-1620-MW59A-20190717	Water		17-Jul-2019 12:20	19-Jul-2019 13:15	☐
HS19070994-08	WG-1620-MW59B-20190717	Water		17-Jul-2019 13:10	19-Jul-2019 13:15	☐
HS19070994-09	WG-1620-MW44A-20190717	Water		17-Jul-2019 14:00	19-Jul-2019 13:15	☐
HS19070994-10	WG-1620-MW87C-20190717	Water		17-Jul-2019 15:40	19-Jul-2019 13:15	☐
HS19070994-11	WG-1620-MW71B-20190717	Water		17-Jul-2019 16:40	19-Jul-2019 13:15	☐
HS19070994-12	WG-1620-MW33A-20190717	Water		17-Jul-2019 17:50	19-Jul-2019 13:15	☐
HS19070994-13	WG-1620-FD02-20190717	Water		17-Jul-2019 17:50	19-Jul-2019 13:15	☐
HS19070994-14	WG-1620-MW26A-20190717	Water		17-Jul-2019 18:45	19-Jul-2019 13:15	☐
HS19070994-15	WG-1620-FB05-20190717	Water		17-Jul-2019 19:05	19-Jul-2019 13:15	☐
HS19070994-16	WG-1620-MW68A-20190718	Water		18-Jul-2019 07:55	19-Jul-2019 13:15	☐
HS19070994-17	WG-1620-MW68B-20190718	Water		18-Jul-2019 08:55	19-Jul-2019 13:15	☐
HS19070994-18	WG-1620-FD03-20190718	Water		18-Jul-2019 08:55	19-Jul-2019 13:15	☐
HS19070994-19	WG-1620-MW68C-20190718	Water		18-Jul-2019 09:45	19-Jul-2019 13:15	☐
HS19070994-20	WG-1620-MW83B-20190718	Water		18-Jul-2019 10:40	19-Jul-2019 13:15	☐
HS19070994-21	WG-1620-MW83C-20190718	Water		18-Jul-2019 11:30	19-Jul-2019 13:15	☐
HS19070994-22	WG-1620-MW35A-20190718	Water		18-Jul-2019 12:40	19-Jul-2019 13:15	☐
HS19070994-23	WG-1620-MW35B-20190718	Water		18-Jul-2019 13:30	19-Jul-2019 13:15	☐
HS19070994-24	WG-1620-MW90B-20190718	Water		18-Jul-2019 14:25	19-Jul-2019 13:15	☐
HS19070994-25	WG-1620-MW89B-20190718	Water		18-Jul-2019 15:15	19-Jul-2019 13:15	☐
HS19070994-26	WG-1620-MW38B-20190718	Water		18-Jul-2019 16:10	19-Jul-2019 13:15	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS19070994

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19070994-27	WG-1620-MW27A-20190718	Water		18-Jul-2019 17:15	19-Jul-2019 13:15	☐
HS19070994-28	WG-1620-MW27C-20190718	Water		18-Jul-2019 18:05	19-Jul-2019 13:15	☐
HS19070994-29	WG-1620-MW51A-20190719	Water		19-Jul-2019 07:25	19-Jul-2019 13:15	☐
HS19070994-30	WG-1620-MW51C-20190719	Water		19-Jul-2019 08:55	19-Jul-2019 13:15	☐
HS19070994-31	WG-1620-MW81B-20190719	Water		19-Jul-2019 09:45	19-Jul-2019 13:15	☐
HS19070994-32	WG-1620-MW50A-20190719	Water		19-Jul-2019 10:40	19-Jul-2019 13:15	☐
HS19070994-33	WG-1620-TB05-20190719	Water	C&G-062119-82	19-Jul-2019 00:00	19-Jul-2019 13:15	☐
HS19070994-34	WG-1620-TB06-20190719	Water	C&G-062119-82	19-Jul-2019 00:00	19-Jul-2019 13:15	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB04-20190716
Collection Date: 16-Jul-2019 18:20

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-01
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	23-Jul-2019 00:42
Benzene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 00:42
Chlorobenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 00:42
Ethylbenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 00:42
Methylene chloride		U	0.0010	0.0020	mg/L	1	23-Jul-2019 00:42
Toluene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 00:42
Vinyl chloride		U	0.00020	0.0010	mg/L	1	23-Jul-2019 00:42
Xylenes, Total		U	0.00030	0.0010	mg/L	1	23-Jul-2019 00:42
Surr: 1,2-Dichloroethane-d4	*102*			*70-126*	*%REC*	*1*	*23-Jul-2019 00:42*
Surr: 4-Bromofluorobenzene	*99.6*			*81-113*	*%REC*	*1*	*23-Jul-2019 00:42*
Surr: Dibromofluoromethane	*104*			*77-123*	*%REC*	*1*	*23-Jul-2019 00:42*
Surr: Toluene-d8	*98.6*			*82-127*	*%REC*	*1*	*23-Jul-2019 00:42*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB04-20190716
Collection Date: 16-Jul-2019 18:20

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-01
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	23-Jul-2019 11:41
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	23-Jul-2019 11:41
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	23-Jul-2019 11:41
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	23-Jul-2019 11:41
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	23-Jul-2019 11:41
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	23-Jul-2019 11:41
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	23-Jul-2019 11:41
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	23-Jul-2019 11:41
Acenaphthene	U		0.000027	0.00010	mg/L	1	23-Jul-2019 11:41
Acenaphthylene	U		0.000015	0.00010	mg/L	1	23-Jul-2019 11:41
Anthracene	U		0.000014	0.00010	mg/L	1	23-Jul-2019 11:41
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	23-Jul-2019 11:41
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	23-Jul-2019 11:41
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	23-Jul-2019 11:41
Bis(2-ethylhexyl)phthalate	**0.00045**		**0.000037**	**0.00020**	**mg/L**	1	23-Jul-2019 11:41
Chrysene	U		0.000021	0.00010	mg/L	1	23-Jul-2019 11:41
Dibenzofuran	U		0.000020	0.00010	mg/L	1	23-Jul-2019 11:41
Di-n-butyl phthalate	**0.000043**	J	**0.000020**	**0.00020**	**mg/L**	1	23-Jul-2019 11:41
Fluoranthene	U		0.000010	0.00010	mg/L	1	23-Jul-2019 11:41
Fluorene	U		0.000030	0.00010	mg/L	1	23-Jul-2019 11:41
Naphthalene	U		0.000020	0.00010	mg/L	1	23-Jul-2019 11:41
Nitrobenzene	U		0.000024	0.00020	mg/L	1	23-Jul-2019 11:41
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	23-Jul-2019 11:41
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	23-Jul-2019 11:41
Phenanthrene	U		0.000021	0.00010	mg/L	1	23-Jul-2019 11:41
Phenol	**0.000084**	J	**0.000035**	**0.00020**	**mg/L**	1	23-Jul-2019 11:41
Pyrene	U		0.000019	0.00010	mg/L	1	23-Jul-2019 11:41
Surr: 2,4,6-Tribromophenol	*82.0*			*34-129*	*%REC*	*1*	*23-Jul-2019 11:41*
Surr: 2-Fluorobiphenyl	*72.1*			*40-125*	*%REC*	*1*	*23-Jul-2019 11:41*
Surr: 2-Fluorophenol	*67.6*			*20-120*	*%REC*	*1*	*23-Jul-2019 11:41*
Surr: 4-Terphenyl-d14	*85.2*			*40-135*	*%REC*	*1*	*23-Jul-2019 11:41*
Surr: Nitrobenzene-d5	*70.1*			*41-120*	*%REC*	*1*	*23-Jul-2019 11:41*
Surr: Phenol-d6	*70.9*			*20-120*	*%REC*	*1*	*23-Jul-2019 11:41*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jul-2019		Analyst: JHD
Arsenic	U		0.000400	0.00200	mg/L	1	30-Jul-2019 21:42

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW61A-20190717
Collection Date: 17-Jul-2019 07:50

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	23-Jul-2019 01:32
Benzene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 01:32
Chlorobenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 01:32
Ethylbenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 01:32
Methylene chloride		U	0.0010	0.0020	mg/L	1	23-Jul-2019 01:32
Toluene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 01:32
Vinyl chloride		U	0.00020	0.0010	mg/L	1	23-Jul-2019 01:32
Xylenes, Total		U	0.00030	0.0010	mg/L	1	23-Jul-2019 01:32
Surr: 1,2-Dichloroethane-d4	*102*			*70-126*	*%REC*	*1*	*23-Jul-2019 01:32*
Surr: 4-Bromofluorobenzene	*95.9*			*81-113*	*%REC*	*1*	*23-Jul-2019 01:32*
Surr: Dibromofluoromethane	*107*			*77-123*	*%REC*	*1*	*23-Jul-2019 01:32*
Surr: Toluene-d8	*99.0*			*82-127*	*%REC*	*1*	*23-Jul-2019 01:32*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW61A-20190717
Collection Date: 17-Jul-2019 07:50

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	23-Jul-2019 12:21
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	23-Jul-2019 12:21
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	23-Jul-2019 12:21
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	23-Jul-2019 12:21
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	23-Jul-2019 12:21
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	23-Jul-2019 12:21
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	23-Jul-2019 12:21
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	23-Jul-2019 12:21
Acenaphthene	U		0.000027	0.00010	mg/L	1	23-Jul-2019 12:21
Acenaphthylene	U		0.000015	0.00010	mg/L	1	23-Jul-2019 12:21
Anthracene	U		0.000014	0.00010	mg/L	1	23-Jul-2019 12:21
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	23-Jul-2019 12:21
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	23-Jul-2019 12:21
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	23-Jul-2019 12:21
Bis(2-ethylhexyl)phthalate	**0.00037**		**0.000037**	**0.00020**	**mg/L**	1	23-Jul-2019 12:21
Chrysene	U		0.000021	0.00010	mg/L	1	23-Jul-2019 12:21
Dibenzofuran	U		0.000020	0.00010	mg/L	1	23-Jul-2019 12:21
Di-n-butyl phthalate	**0.000056**	J	**0.000020**	**0.00020**	**mg/L**	1	23-Jul-2019 12:21
Fluoranthene	U		0.000010	0.00010	mg/L	1	23-Jul-2019 12:21
Fluorene	U		0.000030	0.00010	mg/L	1	23-Jul-2019 12:21
Naphthalene	U		0.000020	0.00010	mg/L	1	23-Jul-2019 12:21
Nitrobenzene	U		0.000024	0.00020	mg/L	1	23-Jul-2019 12:21
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	23-Jul-2019 12:21
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	23-Jul-2019 12:21
Phenanthrene	U		0.000021	0.00010	mg/L	1	23-Jul-2019 12:21
Phenol	**0.00011**	J	**0.000035**	**0.00020**	**mg/L**	1	23-Jul-2019 12:21
Pyrene	U		0.000019	0.00010	mg/L	1	23-Jul-2019 12:21
Surr: 2,4,6-Tribromophenol	*109*			*34-129*	*%REC*	*1*	*23-Jul-2019 12:21*
Surr: 2-Fluorobiphenyl	*83.5*			*40-125*	*%REC*	*1*	*23-Jul-2019 12:21*
Surr: 2-Fluorophenol	*74.1*			*20-120*	*%REC*	*1*	*23-Jul-2019 12:21*
Surr: 4-Terphenyl-d14	*99.5*			*40-135*	*%REC*	*1*	*23-Jul-2019 12:21*
Surr: Nitrobenzene-d5	*84.0*			*41-120*	*%REC*	*1*	*23-Jul-2019 12:21*
Surr: Phenol-d6	*83.1*			*20-120*	*%REC*	*1*	*23-Jul-2019 12:21*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jul-2019		Analyst: JHD
Arsenic	**0.00117**	J	**0.000400**	**0.00200**	**mg/L**	1	30-Jul-2019 21:26

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW60A-20190717
Collection Date: 17-Jul-2019 08:35

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	23-Jul-2019 03:10
Benzene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 03:10
Chlorobenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 03:10
Ethylbenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 03:10
Methylene chloride		U	0.0010	0.0020	mg/L	1	23-Jul-2019 03:10
Toluene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 03:10
Vinyl chloride		U	0.00020	0.0010	mg/L	1	23-Jul-2019 03:10
Xylenes, Total		U	0.00030	0.0010	mg/L	1	23-Jul-2019 03:10
Surr: 1,2-Dichloroethane-d4	*102*			*70-126*	*%REC*	*1*	*23-Jul-2019 03:10*
Surr: 4-Bromofluorobenzene	*96.1*			*81-113*	*%REC*	*1*	*23-Jul-2019 03:10*
Surr: Dibromofluoromethane	*104*			*77-123*	*%REC*	*1*	*23-Jul-2019 03:10*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*23-Jul-2019 03:10*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW60A-20190717
Collection Date: 17-Jul-2019 08:35

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	22-Jul-2019 18:57
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	22-Jul-2019 18:57
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	22-Jul-2019 18:57
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	22-Jul-2019 18:57
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	22-Jul-2019 18:57
2-Methylnaphthalene	**0.000072**	J	**0.000019**	**0.00010**	**mg/L**	1	22-Jul-2019 18:57
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	22-Jul-2019 18:57
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	22-Jul-2019 18:57
Acenaphthene	U		0.000027	0.00010	mg/L	1	22-Jul-2019 18:57
Acenaphthylene	U		0.000015	0.00010	mg/L	1	22-Jul-2019 18:57
Anthracene	U		0.000014	0.00010	mg/L	1	22-Jul-2019 18:57
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	22-Jul-2019 18:57
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	22-Jul-2019 18:57
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	22-Jul-2019 18:57
Bis(2-ethylhexyl)phthalate	**0.00055**		**0.000037**	**0.00020**	**mg/L**	1	22-Jul-2019 18:57
Chrysene	U		0.000021	0.00010	mg/L	1	22-Jul-2019 18:57
Dibenzofuran	U		0.000020	0.00010	mg/L	1	22-Jul-2019 18:57
Di-n-butyl phthalate	**0.000075**	J	**0.000020**	**0.00020**	**mg/L**	1	22-Jul-2019 18:57
Fluoranthene	U		0.000010	0.00010	mg/L	1	22-Jul-2019 18:57
Fluorene	U		0.000030	0.00010	mg/L	1	22-Jul-2019 18:57
Naphthalene	**0.00013**		**0.000020**	**0.00010**	**mg/L**	1	22-Jul-2019 18:57
Nitrobenzene	U		0.000024	0.00020	mg/L	1	22-Jul-2019 18:57
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	22-Jul-2019 18:57
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	22-Jul-2019 18:57
Phenanthrene	U		0.000021	0.00010	mg/L	1	22-Jul-2019 18:57
Phenol	U		0.000035	0.00020	mg/L	1	22-Jul-2019 18:57
Pyrene	U		0.000019	0.00010	mg/L	1	22-Jul-2019 18:57
Surr: 2,4,6-Tribromophenol	*96.9*			*34-129*	*%REC*	*1*	*22-Jul-2019 18:57*
Surr: 2-Fluorobiphenyl	*71.2*			*40-125*	*%REC*	*1*	*22-Jul-2019 18:57*
Surr: 2-Fluorophenol	*71.7*			*20-120*	*%REC*	*1*	*22-Jul-2019 18:57*
Surr: 4-Terphenyl-d14	*75.8*			*40-135*	*%REC*	*1*	*22-Jul-2019 18:57*
Surr: Nitrobenzene-d5	*79.7*			*41-120*	*%REC*	*1*	*22-Jul-2019 18:57*
Surr: Phenol-d6	*70.1*			*20-120*	*%REC*	*1*	*22-Jul-2019 18:57*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jul-2019		Analyst: JHD
Arsenic	**0.000440**	J	**0.000400**	**0.00200**	**mg/L**	1	30-Jul-2019 21:44

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW69A-20190717
Collection Date: 17-Jul-2019 09:35

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	23-Jul-2019 03:35
Benzene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 03:35
Chlorobenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 03:35
Ethylbenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 03:35
Methylene chloride		U	0.0010	0.0020	mg/L	1	23-Jul-2019 03:35
Toluene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 03:35
Vinyl chloride		U	0.00020	0.0010	mg/L	1	23-Jul-2019 03:35
Xylenes, Total		U	0.00030	0.0010	mg/L	1	23-Jul-2019 03:35
Surr: 1,2-Dichloroethane-d4	*102*			*70-126*	*%REC*	*1*	*23-Jul-2019 03:35*
Surr: 4-Bromofluorobenzene	*102*			*81-113*	*%REC*	*1*	*23-Jul-2019 03:35*
Surr: Dibromofluoromethane	*106*			*77-123*	*%REC*	*1*	*23-Jul-2019 03:35*
Surr: Toluene-d8	*97.9*			*82-127*	*%REC*	*1*	*23-Jul-2019 03:35*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW69A-20190717
Collection Date: 17-Jul-2019 09:35

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	22-Jul-2019 19:17
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	22-Jul-2019 19:17
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	22-Jul-2019 19:17
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	22-Jul-2019 19:17
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	22-Jul-2019 19:17
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	22-Jul-2019 19:17
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	22-Jul-2019 19:17
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	22-Jul-2019 19:17
Acenaphthene	U		0.000027	0.00010	mg/L	1	22-Jul-2019 19:17
Acenaphthylene	U		0.000015	0.00010	mg/L	1	22-Jul-2019 19:17
Anthracene	U		0.000014	0.00010	mg/L	1	22-Jul-2019 19:17
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	22-Jul-2019 19:17
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	22-Jul-2019 19:17
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	22-Jul-2019 19:17
Bis(2-ethylhexyl)phthalate	**0.00034**		**0.000037**	**0.00020**	**mg/L**	1	22-Jul-2019 19:17
Chrysene	U		0.000021	0.00010	mg/L	1	22-Jul-2019 19:17
Dibenzofuran	U		0.000020	0.00010	mg/L	1	22-Jul-2019 19:17
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	22-Jul-2019 19:17
Fluoranthene	U		0.000010	0.00010	mg/L	1	22-Jul-2019 19:17
Fluorene	U		0.000030	0.00010	mg/L	1	22-Jul-2019 19:17
Naphthalene	**0.000078**	J	**0.000020**	**0.00010**	**mg/L**	1	22-Jul-2019 19:17
Nitrobenzene	U		0.000024	0.00020	mg/L	1	22-Jul-2019 19:17
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	22-Jul-2019 19:17
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	22-Jul-2019 19:17
Phenanthrene	U		0.000021	0.00010	mg/L	1	22-Jul-2019 19:17
Phenol	U		0.000035	0.00020	mg/L	1	22-Jul-2019 19:17
Pyrene	U		0.000019	0.00010	mg/L	1	22-Jul-2019 19:17
Surr: 2,4,6-Tribromophenol	*102*			*34-129*	*%REC*	*1*	*22-Jul-2019 19:17*
Surr: 2-Fluorobiphenyl	*71.9*			*40-125*	*%REC*	*1*	*22-Jul-2019 19:17*
Surr: 2-Fluorophenol	*68.4*			*20-120*	*%REC*	*1*	*22-Jul-2019 19:17*
Surr: 4-Terphenyl-d14	*77.2*			*40-135*	*%REC*	*1*	*22-Jul-2019 19:17*
Surr: Nitrobenzene-d5	*73.1*			*41-120*	*%REC*	*1*	*22-Jul-2019 19:17*
Surr: Phenol-d6	*70.5*			*20-120*	*%REC*	*1*	*22-Jul-2019 19:17*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jul-2019		Analyst: JHD
Arsenic	**0.000642**	J	**0.000400**	**0.00200**	**mg/L**	1	30-Jul-2019 21:47

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW47C-20190717
Collection Date: 17-Jul-2019 10:25

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	23-Jul-2019 03:59
Benzene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 03:59
Chlorobenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 03:59
Ethylbenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 03:59
Methylene chloride		U	0.0010	0.0020	mg/L	1	23-Jul-2019 03:59
Toluene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 03:59
Xylenes, Total		U	0.00030	0.0010	mg/L	1	23-Jul-2019 03:59
Surr: 1,2-Dichloroethane-d4	*101*			*70-126*	*%REC*	*1*	*23-Jul-2019 03:59*
Surr: 4-Bromofluorobenzene	*95.8*			*81-113*	*%REC*	*1*	*23-Jul-2019 03:59*
Surr: Dibromofluoromethane	*106*			*77-123*	*%REC*	*1*	*23-Jul-2019 03:59*
Surr: Toluene-d8	*97.6*			*82-127*	*%REC*	*1*	*23-Jul-2019 03:59*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW47C-20190717
Collection Date: 17-Jul-2019 10:25

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	22-Jul-2019 19:36
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	22-Jul-2019 19:36
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	22-Jul-2019 19:36
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	22-Jul-2019 19:36
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	22-Jul-2019 19:36
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	22-Jul-2019 19:36
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	22-Jul-2019 19:36
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	22-Jul-2019 19:36
Acenaphthene	U		0.000027	0.00010	mg/L	1	22-Jul-2019 19:36
Acenaphthylene	U		0.000015	0.00010	mg/L	1	22-Jul-2019 19:36
Anthracene	U		0.000014	0.00010	mg/L	1	22-Jul-2019 19:36
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	22-Jul-2019 19:36
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	22-Jul-2019 19:36
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	22-Jul-2019 19:36
Bis(2-ethylhexyl)phthalate	**0.00027**		**0.000037**	**0.00020**	**mg/L**	1	22-Jul-2019 19:36
Chrysene	U		0.000021	0.00010	mg/L	1	22-Jul-2019 19:36
Dibenzofuran	U		0.000020	0.00010	mg/L	1	22-Jul-2019 19:36
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	22-Jul-2019 19:36
Fluoranthene	U		0.000010	0.00010	mg/L	1	22-Jul-2019 19:36
Fluorene	U		0.000030	0.00010	mg/L	1	22-Jul-2019 19:36
Naphthalene	U		0.000020	0.00010	mg/L	1	22-Jul-2019 19:36
Nitrobenzene	U		0.000024	0.00020	mg/L	1	22-Jul-2019 19:36
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	22-Jul-2019 19:36
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	22-Jul-2019 19:36
Phenanthrene	U		0.000021	0.00010	mg/L	1	22-Jul-2019 19:36
Phenol	U		0.000035	0.00020	mg/L	1	22-Jul-2019 19:36
Pyrene	U		0.000019	0.00010	mg/L	1	22-Jul-2019 19:36
Surr: 2,4,6-Tribromophenol	*101*			*34-129*	*%REC*	*1*	*22-Jul-2019 19:36*
Surr: 2-Fluorobiphenyl	*82.9*			*40-125*	*%REC*	*1*	*22-Jul-2019 19:36*
Surr: 2-Fluorophenol	*75.2*			*20-120*	*%REC*	*1*	*22-Jul-2019 19:36*
Surr: 4-Terphenyl-d14	*80.7*			*40-135*	*%REC*	*1*	*22-Jul-2019 19:36*
Surr: Nitrobenzene-d5	*91.6*			*41-120*	*%REC*	*1*	*22-Jul-2019 19:36*
Surr: Phenol-d6	*75.9*			*20-120*	*%REC*	*1*	*22-Jul-2019 19:36*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jul-2019		Analyst: JHD
Arsenic	**0.000440**	J	**0.000400**	**0.00200**	**mg/L**	1	30-Jul-2019 21:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW48C-20190717
Collection Date: 17-Jul-2019 11:20

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-06
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	23-Jul-2019 04:24
Benzene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 04:24
Chlorobenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 04:24
Ethylbenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 04:24
Methylene chloride		U	0.0010	0.0020	mg/L	1	23-Jul-2019 04:24
Toluene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 04:24
Xylenes, Total		U	0.00030	0.0010	mg/L	1	23-Jul-2019 04:24
Surr: 1,2-Dichloroethane-d4	*102*			*70-126*	*%REC*	*1*	*23-Jul-2019 04:24*
Surr: 4-Bromofluorobenzene	*95.3*			*81-113*	*%REC*	*1*	*23-Jul-2019 04:24*
Surr: Dibromofluoromethane	*106*			*77-123*	*%REC*	*1*	*23-Jul-2019 04:24*
Surr: Toluene-d8	*99.5*			*82-127*	*%REC*	*1*	*23-Jul-2019 04:24*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW48C-20190717
Collection Date: 17-Jul-2019 11:20

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-06
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	22-Jul-2019 19:56
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	22-Jul-2019 19:56
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	22-Jul-2019 19:56
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	22-Jul-2019 19:56
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	22-Jul-2019 19:56
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	22-Jul-2019 19:56
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	22-Jul-2019 19:56
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	22-Jul-2019 19:56
Acenaphthene	U		0.000027	0.00010	mg/L	1	22-Jul-2019 19:56
Acenaphthylene	U		0.000015	0.00010	mg/L	1	22-Jul-2019 19:56
Anthracene	U		0.000014	0.00010	mg/L	1	22-Jul-2019 19:56
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	22-Jul-2019 19:56
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	22-Jul-2019 19:56
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	22-Jul-2019 19:56
Bis(2-ethylhexyl)phthalate	**0.00030**		**0.000037**	**0.00020**	**mg/L**	1	22-Jul-2019 19:56
Chrysene	U		0.000021	0.00010	mg/L	1	22-Jul-2019 19:56
Dibenzofuran	U		0.000020	0.00010	mg/L	1	22-Jul-2019 19:56
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	22-Jul-2019 19:56
Fluoranthene	**0.000035**	J	**0.000010**	**0.00010**	**mg/L**	1	22-Jul-2019 19:56
Fluorene	U		0.000030	0.00010	mg/L	1	22-Jul-2019 19:56
Naphthalene	U		0.000020	0.00010	mg/L	1	22-Jul-2019 19:56
Nitrobenzene	U		0.000024	0.00020	mg/L	1	22-Jul-2019 19:56
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	22-Jul-2019 19:56
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	22-Jul-2019 19:56
Phenanthrene	U		0.000021	0.00010	mg/L	1	22-Jul-2019 19:56
Phenol	**0.000074**	J	**0.000035**	**0.00020**	**mg/L**	1	22-Jul-2019 19:56
Pyrene	**0.000036**	J	**0.000019**	**0.00010**	**mg/L**	1	22-Jul-2019 19:56
Surr: 2,4,6-Tribromophenol	*93.3*			*34-129*	*%REC*	*1*	*22-Jul-2019 19:56*
Surr: 2-Fluorobiphenyl	*71.4*			*40-125*	*%REC*	*1*	*22-Jul-2019 19:56*
Surr: 2-Fluorophenol	*68.3*			*20-120*	*%REC*	*1*	*22-Jul-2019 19:56*
Surr: 4-Terphenyl-d14	*77.0*			*40-135*	*%REC*	*1*	*22-Jul-2019 19:56*
Surr: Nitrobenzene-d5	*74.2*			*41-120*	*%REC*	*1*	*22-Jul-2019 19:56*
Surr: Phenol-d6	*65.4*			*20-120*	*%REC*	*1*	*22-Jul-2019 19:56*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jul-2019		Analyst: JHD
Arsenic	**0.00167**	J	**0.000400**	**0.00200**	**mg/L**	1	30-Jul-2019 21:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19070994
Sample ID: WG-1620-MW59A-20190717
Lab ID:HS19070994-07
Collection Date: 17-Jul-2019 12:20
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	23-Jul-2019 04:48
Benzene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 04:48
Chlorobenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 04:48
Ethylbenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 04:48
Methylene chloride		U	0.0010	0.0020	mg/L	1	23-Jul-2019 04:48
Toluene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 04:48
Vinyl chloride		U	0.00020	0.0010	mg/L	1	23-Jul-2019 04:48
Xylenes, Total		U	0.00030	0.0010	mg/L	1	23-Jul-2019 04:48
Surr: 1,2-Dichloroethane-d4	*101*			*70-126*	*%REC*	*1*	*23-Jul-2019 04:48*
Surr: 4-Bromofluorobenzene	*101*			*81-113*	*%REC*	*1*	*23-Jul-2019 04:48*
Surr: Dibromofluoromethane	*105*			*77-123*	*%REC*	*1*	*23-Jul-2019 04:48*
Surr: Toluene-d8	*97.3*			*82-127*	*%REC*	*1*	*23-Jul-2019 04:48*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW59A-20190717
Collection Date: 17-Jul-2019 12:20

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-07
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	22-Jul-2019 20:16
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	22-Jul-2019 20:16
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	22-Jul-2019 20:16
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	22-Jul-2019 20:16
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	22-Jul-2019 20:16
2-Methylnaphthalene	**0.000036**	J	**0.000019**	**0.00010**	**mg/L**	1	22-Jul-2019 20:16
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	22-Jul-2019 20:16
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	22-Jul-2019 20:16
Acenaphthene	U		0.000027	0.00010	mg/L	1	22-Jul-2019 20:16
Acenaphthylene	U		0.000015	0.00010	mg/L	1	22-Jul-2019 20:16
Anthracene	U		0.000014	0.00010	mg/L	1	22-Jul-2019 20:16
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	22-Jul-2019 20:16
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	22-Jul-2019 20:16
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	22-Jul-2019 20:16
Bis(2-ethylhexyl)phthalate	**0.00050**		**0.000037**	**0.00020**	**mg/L**	1	22-Jul-2019 20:16
Chrysene	U		0.000021	0.00010	mg/L	1	22-Jul-2019 20:16
Dibenzofuran	U		0.000020	0.00010	mg/L	1	22-Jul-2019 20:16
Di-n-butyl phthalate	**0.000064**	J	**0.000020**	**0.00020**	**mg/L**	1	22-Jul-2019 20:16
Fluoranthene	U		0.000010	0.00010	mg/L	1	22-Jul-2019 20:16
Fluorene	U		0.000030	0.00010	mg/L	1	22-Jul-2019 20:16
Naphthalene	**0.00012**		**0.000020**	**0.00010**	**mg/L**	1	22-Jul-2019 20:16
Nitrobenzene	U		0.000024	0.00020	mg/L	1	22-Jul-2019 20:16
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	22-Jul-2019 20:16
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	22-Jul-2019 20:16
Phenanthrene	U		0.000021	0.00010	mg/L	1	22-Jul-2019 20:16
Phenol	**0.000058**	J	**0.000035**	**0.00020**	**mg/L**	1	22-Jul-2019 20:16
Pyrene	U		0.000019	0.00010	mg/L	1	22-Jul-2019 20:16
Surr: 2,4,6-Tribromophenol	*102*			*34-129*	*%REC*	*1*	*22-Jul-2019 20:16*
Surr: 2-Fluorobiphenyl	*75.4*			*40-125*	*%REC*	*1*	*22-Jul-2019 20:16*
Surr: 2-Fluorophenol	*73.3*			*20-120*	*%REC*	*1*	*22-Jul-2019 20:16*
Surr: 4-Terphenyl-d14	*83.3*			*40-135*	*%REC*	*1*	*22-Jul-2019 20:16*
Surr: Nitrobenzene-d5	*83.4*			*41-120*	*%REC*	*1*	*22-Jul-2019 20:16*
Surr: Phenol-d6	*75.5*			*20-120*	*%REC*	*1*	*22-Jul-2019 20:16*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jul-2019		Analyst: JHD
Arsenic	**0.00455**		**0.000400**	**0.00200**	**mg/L**	1	30-Jul-2019 21:53

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW59B-20190717
Collection Date: 17-Jul-2019 13:10

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-08
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	23-Jul-2019 05:13
Benzene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 05:13
Chlorobenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 05:13
Ethylbenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 05:13
Methylene chloride		U	0.0010	0.0020	mg/L	1	23-Jul-2019 05:13
Toluene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 05:13
Vinyl chloride		U	0.00020	0.0010	mg/L	1	23-Jul-2019 05:13
Xylenes, Total		U	0.00030	0.0010	mg/L	1	23-Jul-2019 05:13
Surr: 1,2-Dichloroethane-d4	*102*			*70-126*	*%REC*	*1*	*23-Jul-2019 05:13*
Surr: 4-Bromofluorobenzene	*95.1*			*81-113*	*%REC*	*1*	*23-Jul-2019 05:13*
Surr: Dibromofluoromethane	*104*			*77-123*	*%REC*	*1*	*23-Jul-2019 05:13*
Surr: Toluene-d8	*99.1*			*82-127*	*%REC*	*1*	*23-Jul-2019 05:13*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW59B-20190717
Collection Date: 17-Jul-2019 13:10

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-08
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	22-Jul-2019 20:36
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	22-Jul-2019 20:36
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	22-Jul-2019 20:36
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	22-Jul-2019 20:36
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	22-Jul-2019 20:36
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	22-Jul-2019 20:36
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	22-Jul-2019 20:36
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	22-Jul-2019 20:36
Acenaphthene	U		0.000027	0.00010	mg/L	1	22-Jul-2019 20:36
Acenaphthylene	U		0.000015	0.00010	mg/L	1	22-Jul-2019 20:36
Anthracene	U		0.000014	0.00010	mg/L	1	22-Jul-2019 20:36
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	22-Jul-2019 20:36
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	22-Jul-2019 20:36
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	22-Jul-2019 20:36
Bis(2-ethylhexyl)phthalate	**0.00039**		**0.000037**	**0.00020**	**mg/L**	1	22-Jul-2019 20:36
Chrysene	U		0.000021	0.00010	mg/L	1	22-Jul-2019 20:36
Dibenzofuran	U		0.000020	0.00010	mg/L	1	22-Jul-2019 20:36
Di-n-butyl phthalate	**0.000055**	J	**0.000020**	**0.00020**	**mg/L**	1	22-Jul-2019 20:36
Fluoranthene	U		0.000010	0.00010	mg/L	1	22-Jul-2019 20:36
Fluorene	U		0.000030	0.00010	mg/L	1	22-Jul-2019 20:36
Naphthalene	**0.00015**		**0.000020**	**0.00010**	**mg/L**	1	22-Jul-2019 20:36
Nitrobenzene	U		0.000024	0.00020	mg/L	1	22-Jul-2019 20:36
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	22-Jul-2019 20:36
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	22-Jul-2019 20:36
Phenanthrene	U		0.000021	0.00010	mg/L	1	22-Jul-2019 20:36
Phenol	U		0.000035	0.00020	mg/L	1	22-Jul-2019 20:36
Pyrene	U		0.000019	0.00010	mg/L	1	22-Jul-2019 20:36
Surr: 2,4,6-Tribromophenol	*109*			*34-129*	*%REC*	*1*	*22-Jul-2019 20:36*
Surr: 2-Fluorobiphenyl	*70.3*			*40-125*	*%REC*	*1*	*22-Jul-2019 20:36*
Surr: 2-Fluorophenol	*60.4*			*20-120*	*%REC*	*1*	*22-Jul-2019 20:36*
Surr: 4-Terphenyl-d14	*77.1*			*40-135*	*%REC*	*1*	*22-Jul-2019 20:36*
Surr: Nitrobenzene-d5	*68.4*			*41-120*	*%REC*	*1*	*22-Jul-2019 20:36*
Surr: Phenol-d6	*60.9*			*20-120*	*%REC*	*1*	*22-Jul-2019 20:36*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jul-2019		Analyst: JHD
Arsenic	**0.000542**	J	**0.000400**	**0.00200**	**mg/L**	1	30-Jul-2019 21:56

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW44A-20190717
Collection Date: 17-Jul-2019 14:00

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-09
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	23-Jul-2019 05:37
Benzene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 05:37
Chlorobenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 05:37
Ethylbenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 05:37
Methylene chloride		U	0.0010	0.0020	mg/L	1	23-Jul-2019 05:37
Toluene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 05:37
Vinyl chloride		U	0.00020	0.0010	mg/L	1	23-Jul-2019 05:37
Xylenes, Total		U	0.00030	0.0010	mg/L	1	23-Jul-2019 05:37
Surr: 1,2-Dichloroethane-d4	*100*			*70-126*	*%REC*	*1*	*23-Jul-2019 05:37*
Surr: 4-Bromofluorobenzene	*98.9*			*81-113*	*%REC*	*1*	*23-Jul-2019 05:37*
Surr: Dibromofluoromethane	*104*			*77-123*	*%REC*	*1*	*23-Jul-2019 05:37*
Surr: Toluene-d8	*96.0*			*82-127*	*%REC*	*1*	*23-Jul-2019 05:37*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc. **ANALYTICAL REPORT**
Project: Houston TX-Wood Preserving Works WorkOrder:HS19070994
Sample ID: WG-1620-MW44A-20190717 Lab ID:HS19070994-09
Collection Date: 17-Jul-2019 14:00 Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 22-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	22-Jul-2019 20:56
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	22-Jul-2019 20:56
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	22-Jul-2019 20:56
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	22-Jul-2019 20:56
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	22-Jul-2019 20:56
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	22-Jul-2019 20:56
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	22-Jul-2019 20:56
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	22-Jul-2019 20:56
Acenaphthene	**0.056**		**0.00027**	**0.0010**	**mg/L**	10	23-Jul-2019 15:59
Acenaphthylene	**0.00028**		**0.000015**	**0.00010**	**mg/L**	1	22-Jul-2019 20:56
Anthracene	**0.00089**		**0.000014**	**0.00010**	**mg/L**	1	22-Jul-2019 20:56
Benz(a)anthracene	**0.000085**	J	**0.000050**	**0.00010**	**mg/L**	1	22-Jul-2019 20:56
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	22-Jul-2019 20:56
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	22-Jul-2019 20:56
Bis(2-ethylhexyl)phthalate	**0.00025**		**0.000037**	**0.00020**	**mg/L**	1	22-Jul-2019 20:56
Chrysene	**0.000052**	J	**0.000021**	**0.00010**	**mg/L**	1	22-Jul-2019 20:56
Dibenzofuran	U		0.000020	0.00010	mg/L	1	22-Jul-2019 20:56
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	22-Jul-2019 20:56
Fluoranthene	**0.0091**		**0.000010**	**0.00010**	**mg/L**	1	22-Jul-2019 20:56
Fluorene	**0.014**		**0.00030**	**0.0010**	**mg/L**	10	23-Jul-2019 15:59
Naphthalene	**0.00019**		**0.000020**	**0.00010**	**mg/L**	1	22-Jul-2019 20:56
Nitrobenzene	U		0.000024	0.00020	mg/L	1	22-Jul-2019 20:56
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	22-Jul-2019 20:56
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	22-Jul-2019 20:56
Phenanthrene	**0.00012**		**0.000021**	**0.00010**	**mg/L**	1	22-Jul-2019 20:56
Phenol	U		0.000035	0.00020	mg/L	1	22-Jul-2019 20:56
Pyrene	**0.0057**		**0.000019**	**0.00010**	**mg/L**	1	22-Jul-2019 20:56
Surr: 2,4,6-Tribromophenol	*103*			*34-129*	*%REC*	*10*	*23-Jul-2019 15:59*
Surr: 2,4,6-Tribromophenol	*80.5*			*34-129*	*%REC*	*1*	*22-Jul-2019 20:56*
Surr: 2-Fluorobiphenyl	*48.6*			*40-125*	*%REC*	*1*	*22-Jul-2019 20:56*
Surr: 2-Fluorobiphenyl	*61.1*			*40-125*	*%REC*	*10*	*23-Jul-2019 15:59*
Surr: 2-Fluorophenol	*73.0*			*20-120*	*%REC*	*10*	*23-Jul-2019 15:59*
Surr: 2-Fluorophenol	*55.1*			*20-120*	*%REC*	*1*	*22-Jul-2019 20:56*
Surr: 4-Terphenyl-d14	*72.2*			*40-135*	*%REC*	*1*	*22-Jul-2019 20:56*
Surr: 4-Terphenyl-d14	*87.2*			*40-135*	*%REC*	*10*	*23-Jul-2019 15:59*
Surr: Nitrobenzene-d5	*64.4*			*41-120*	*%REC*	*10*	*23-Jul-2019 15:59*
Surr: Nitrobenzene-d5	*59.3*			*41-120*	*%REC*	*1*	*22-Jul-2019 20:56*
Surr: Phenol-d6	*53.3*			*20-120*	*%REC*	*1*	*22-Jul-2019 20:56*
Surr: Phenol-d6	*62.1*			*20-120*	*%REC*	*10*	*23-Jul-2019 15:59*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW44A-20190717
Collection Date: 17-Jul-2019 14:00

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-09
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jul-2019		Analyst: JHD
Arsenic	**0.0303**		**0.000400**	**0.00200**	**mg/L**	1	30-Jul-2019 21:58

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW87C-20190717
Collection Date: 17-Jul-2019 15:40

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-10
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	23-Jul-2019 06:02
Benzene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 06:02
Chlorobenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 06:02
Ethylbenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 06:02
Methylene chloride		U	0.0010	0.0020	mg/L	1	23-Jul-2019 06:02
Toluene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 06:02
Xylenes, Total		U	0.00030	0.0010	mg/L	1	23-Jul-2019 06:02
Surr: 1,2-Dichloroethane-d4	*99.7*			*70-126*	*%REC*	*1*	*23-Jul-2019 06:02*
Surr: 4-Bromofluorobenzene	*94.8*			*81-113*	*%REC*	*1*	*23-Jul-2019 06:02*
Surr: Dibromofluoromethane	*104*			*77-123*	*%REC*	*1*	*23-Jul-2019 06:02*
Surr: Toluene-d8	*98.5*			*82-127*	*%REC*	*1*	*23-Jul-2019 06:02*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW87C-20190717
Collection Date: 17-Jul-2019 15:40

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-10
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	22-Jul-2019 21:16
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	22-Jul-2019 21:16
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	22-Jul-2019 21:16
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	22-Jul-2019 21:16
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	22-Jul-2019 21:16
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	22-Jul-2019 21:16
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	22-Jul-2019 21:16
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	22-Jul-2019 21:16
Acenaphthene	U		0.000027	0.00010	mg/L	1	22-Jul-2019 21:16
Acenaphthylene	U		0.000015	0.00010	mg/L	1	22-Jul-2019 21:16
Anthracene	U		0.000014	0.00010	mg/L	1	22-Jul-2019 21:16
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	22-Jul-2019 21:16
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	22-Jul-2019 21:16
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	22-Jul-2019 21:16
Bis(2-ethylhexyl)phthalate	**0.00018**	J	**0.000037**	**0.00020**	**mg/L**	1	22-Jul-2019 21:16
Chrysene	U		0.000021	0.00010	mg/L	1	22-Jul-2019 21:16
Dibenzofuran	U		0.000020	0.00010	mg/L	1	22-Jul-2019 21:16
Di-n-butyl phthalate	**0.00017**	J	**0.000020**	**0.00020**	**mg/L**	1	22-Jul-2019 21:16
Fluoranthene	U		0.000010	0.00010	mg/L	1	22-Jul-2019 21:16
Fluorene	U		0.000030	0.00010	mg/L	1	22-Jul-2019 21:16
Naphthalene	**0.00017**		**0.000020**	**0.00010**	**mg/L**	1	22-Jul-2019 21:16
Nitrobenzene	U		0.000024	0.00020	mg/L	1	22-Jul-2019 21:16
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	22-Jul-2019 21:16
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	22-Jul-2019 21:16
Phenanthrene	U		0.000021	0.00010	mg/L	1	22-Jul-2019 21:16
Phenol	**0.00013**	J	**0.000035**	**0.00020**	**mg/L**	1	22-Jul-2019 21:16
Pyrene	U		0.000019	0.00010	mg/L	1	22-Jul-2019 21:16
Surr: 2,4,6-Tribromophenol	*106*			*34-129*	*%REC*	*1*	*22-Jul-2019 21:16*
Surr: 2-Fluorobiphenyl	*73.4*			*40-125*	*%REC*	*1*	*22-Jul-2019 21:16*
Surr: 2-Fluorophenol	*61.6*			*20-120*	*%REC*	*1*	*22-Jul-2019 21:16*
Surr: 4-Terphenyl-d14	*78.4*			*40-135*	*%REC*	*1*	*22-Jul-2019 21:16*
Surr: Nitrobenzene-d5	*73.5*			*41-120*	*%REC*	*1*	*22-Jul-2019 21:16*
Surr: Phenol-d6	*67.0*			*20-120*	*%REC*	*1*	*22-Jul-2019 21:16*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jul-2019		Analyst: JHD
Arsenic	U		0.000400	0.00200	mg/L	1	30-Jul-2019 22:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW71B-20190717
Collection Date: 17-Jul-2019 16:40

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-11
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	23-Jul-2019 06:26
Benzene	**0.13**		**0.00020**	**0.0010**	**mg/L**	1	23-Jul-2019 06:26
Chlorobenzene	U		0.00030	0.0010	mg/L	1	23-Jul-2019 06:26
Ethylbenzene	**0.031**		**0.00030**	**0.0010**	**mg/L**	1	23-Jul-2019 06:26
Methylene chloride	U		0.0010	0.0020	mg/L	1	23-Jul-2019 06:26
Toluene	**0.023**		**0.00020**	**0.0010**	**mg/L**	1	23-Jul-2019 06:26
Xylenes, Total	**0.054**		**0.00030**	**0.0010**	**mg/L**	1	23-Jul-2019 06:26
Surr: 1,2-Dichloroethane-d4	*101*			*70-126*	*%REC*	*1*	*23-Jul-2019 06:26*
Surr: 4-Bromofluorobenzene	*102*			*81-113*	*%REC*	*1*	*23-Jul-2019 06:26*
Surr: Dibromofluoromethane	*104*			*77-123*	*%REC*	*1*	*23-Jul-2019 06:26*
Surr: Toluene-d8	*98.2*			*82-127*	*%REC*	*1*	*23-Jul-2019 06:26*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19070994
Sample ID: WG-1620-MW71B-20190717
Lab ID:HS19070994-11
Collection Date: 17-Jul-2019 16:40
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 22-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	22-Jul-2019 21:36
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	22-Jul-2019 21:36
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	22-Jul-2019 21:36
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	22-Jul-2019 21:36
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	22-Jul-2019 21:36
2-Methylnaphthalene	**0.024**		**0.00019**	**0.0010**	**mg/L**	10	23-Jul-2019 16:19
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	22-Jul-2019 21:36
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	22-Jul-2019 21:36
Acenaphthene	**0.016**		**0.00027**	**0.0010**	**mg/L**	10	23-Jul-2019 16:19
Acenaphthylene	**0.00033**		**0.000015**	**0.00010**	**mg/L**	1	22-Jul-2019 21:36
Anthracene	**0.0066**		**0.000014**	**0.00010**	**mg/L**	1	22-Jul-2019 21:36
Benz(a)anthracene	**0.0026**		**0.000050**	**0.00010**	**mg/L**	1	22-Jul-2019 21:36
Benzo(a)pyrene	**0.00083**		**0.000020**	**0.00010**	**mg/L**	1	22-Jul-2019 21:36
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	22-Jul-2019 21:36
Bis(2-ethylhexyl)phthalate	**0.00014**	J	**0.000037**	**0.00020**	**mg/L**	1	22-Jul-2019 21:36
Chrysene	**0.0024**		**0.000021**	**0.00010**	**mg/L**	1	22-Jul-2019 21:36
Dibenzofuran	**0.016**		**0.00020**	**0.0010**	**mg/L**	10	23-Jul-2019 16:19
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	22-Jul-2019 21:36
Fluoranthene	**0.017**		**0.00010**	**0.0010**	**mg/L**	10	23-Jul-2019 16:19
Fluorene	**0.0093**		**0.000030**	**0.00010**	**mg/L**	1	22-Jul-2019 21:36
Naphthalene	**0.44**		**0.0020**	**0.010**	**mg/L**	100	23-Jul-2019 16:39
Nitrobenzene	U		0.000024	0.00020	mg/L	1	22-Jul-2019 21:36
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	22-Jul-2019 21:36
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	22-Jul-2019 21:36
Phenanthrene	**0.030**		**0.00021**	**0.0010**	**mg/L**	10	23-Jul-2019 16:19
Phenol	**0.000051**	J	**0.000035**	**0.00020**	**mg/L**	1	22-Jul-2019 21:36
Pyrene	**0.0088**		**0.000019**	**0.00010**	**mg/L**	1	22-Jul-2019 21:36
Surr: 2,4,6-Tribromophenol	*96.3*			*34-129*	*%REC*	*1*	*22-Jul-2019 21:36*
Surr: 2,4,6-Tribromophenol	*113*			*34-129*	*%REC*	*10*	*23-Jul-2019 16:19*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*23-Jul-2019 16:39*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*23-Jul-2019 16:39*
Surr: 2-Fluorobiphenyl	*77.7*			*40-125*	*%REC*	*10*	*23-Jul-2019 16:19*
Surr: 2-Fluorobiphenyl	*58.7*			*40-125*	*%REC*	*1*	*22-Jul-2019 21:36*
Surr: 2-Fluorophenol	*64.3*			*20-120*	*%REC*	*1*	*22-Jul-2019 21:36*
Surr: 2-Fluorophenol	*90.1*			*20-120*	*%REC*	*10*	*23-Jul-2019 16:19*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*23-Jul-2019 16:39*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*100*	*23-Jul-2019 16:39*
Surr: 4-Terphenyl-d14	*88.9*			*40-135*	*%REC*	*10*	*23-Jul-2019 16:19*
Surr: 4-Terphenyl-d14	*74.0*			*40-135*	*%REC*	*1*	*22-Jul-2019 21:36*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW71B-20190717
Collection Date: 17-Jul-2019 16:40

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-11
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jul-2019		Analyst: GEY
Surr: Nitrobenzene-d5	*67.5*			*41-120*	*%REC*	*1*	*22-Jul-2019 21:36*
Surr: Nitrobenzene-d5	*72.8*			*41-120*	*%REC*	*10*	*23-Jul-2019 16:19*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*23-Jul-2019 16:39*
Surr: Phenol-d6	*71.5*			*20-120*	*%REC*	*10*	*23-Jul-2019 16:19*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*23-Jul-2019 16:39*
Surr: Phenol-d6	*63.8*			*20-120*	*%REC*	*1*	*22-Jul-2019 21:36*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jul-2019		Analyst: JHD
Arsenic	**0.000626**	J	**0.000400**	**0.00200**	**mg/L**	1	30-Jul-2019 22:02

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW33A-20190717
Collection Date: 17-Jul-2019 17:50

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-12
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	23-Jul-2019 06:51
Benzene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 06:51
Chlorobenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 06:51
Ethylbenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 06:51
Methylene chloride		U	0.0010	0.0020	mg/L	1	23-Jul-2019 06:51
Toluene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 06:51
Xylenes, Total		U	0.00030	0.0010	mg/L	1	23-Jul-2019 06:51
Surr: 1,2-Dichloroethane-d4	*97.8*			*70-126*	*%REC*	*1*	*23-Jul-2019 06:51*
Surr: 4-Bromofluorobenzene	*97.3*			*81-113*	*%REC*	*1*	*23-Jul-2019 06:51*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*23-Jul-2019 06:51*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*23-Jul-2019 06:51*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW33A-20190717
Collection Date: 17-Jul-2019 17:50

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-12
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	22-Jul-2019 21:55
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	22-Jul-2019 21:55
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	22-Jul-2019 21:55
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	22-Jul-2019 21:55
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	22-Jul-2019 21:55
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	22-Jul-2019 21:55
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	22-Jul-2019 21:55
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	22-Jul-2019 21:55
Acenaphthene	**0.000098**	J	**0.000027**	**0.00010**	**mg/L**	1	22-Jul-2019 21:55
Acenaphthylene	U		0.000015	0.00010	mg/L	1	22-Jul-2019 21:55
Anthracene	U		0.000014	0.00010	mg/L	1	22-Jul-2019 21:55
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	22-Jul-2019 21:55
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	22-Jul-2019 21:55
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	22-Jul-2019 21:55
Bis(2-ethylhexyl)phthalate	**0.00022**		**0.000037**	**0.00020**	**mg/L**	1	22-Jul-2019 21:55
Chrysene	U		0.000021	0.00010	mg/L	1	22-Jul-2019 21:55
Dibenzofuran	U		0.000020	0.00010	mg/L	1	22-Jul-2019 21:55
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	22-Jul-2019 21:55
Fluoranthene	**0.00016**		**0.000010**	**0.00010**	**mg/L**	1	22-Jul-2019 21:55
Fluorene	U		0.000030	0.00010	mg/L	1	22-Jul-2019 21:55
Naphthalene	**0.000076**	J	**0.000020**	**0.00010**	**mg/L**	1	22-Jul-2019 21:55
Nitrobenzene	U		0.000024	0.00020	mg/L	1	22-Jul-2019 21:55
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	22-Jul-2019 21:55
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	22-Jul-2019 21:55
Phenanthrene	U		0.000021	0.00010	mg/L	1	22-Jul-2019 21:55
Phenol	**0.00011**	J	**0.000035**	**0.00020**	**mg/L**	1	22-Jul-2019 21:55
Pyrene	**0.00028**		**0.000019**	**0.00010**	**mg/L**	1	22-Jul-2019 21:55
Surr: 2,4,6-Tribromophenol	*103*			*34-129*	*%REC*	*1*	*22-Jul-2019 21:55*
Surr: 2-Fluorobiphenyl	*81.4*			*40-125*	*%REC*	*1*	*22-Jul-2019 21:55*
Surr: 2-Fluorophenol	*73.5*			*20-120*	*%REC*	*1*	*22-Jul-2019 21:55*
Surr: 4-Terphenyl-d14	*78.2*			*40-135*	*%REC*	*1*	*22-Jul-2019 21:55*
Surr: Nitrobenzene-d5	*75.0*			*41-120*	*%REC*	*1*	*22-Jul-2019 21:55*
Surr: Phenol-d6	*76.6*			*20-120*	*%REC*	*1*	*22-Jul-2019 21:55*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jul-2019		Analyst: JHD
Arsenic	**0.0155**		**0.000400**	**0.00200**	**mg/L**	1	30-Jul-2019 22:09

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FD02-20190717
Collection Date: 17-Jul-2019 17:50

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-13
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	23-Jul-2019 07:16
Benzene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 07:16
Chlorobenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 07:16
Ethylbenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 07:16
Methylene chloride		U	0.0010	0.0020	mg/L	1	23-Jul-2019 07:16
Toluene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 07:16
Xylenes, Total		U	0.00030	0.0010	mg/L	1	23-Jul-2019 07:16
Surr: 1,2-Dichloroethane-d4	*98.2*			*70-126*	*%REC*	*1*	*23-Jul-2019 07:16*
Surr: 4-Bromofluorobenzene	*97.8*			*81-113*	*%REC*	*1*	*23-Jul-2019 07:16*
Surr: Dibromofluoromethane	*104*			*77-123*	*%REC*	*1*	*23-Jul-2019 07:16*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*23-Jul-2019 07:16*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FD02-20190717
Collection Date: 17-Jul-2019 17:50

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-13
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	23-Jul-2019 13:20
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	23-Jul-2019 13:20
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	23-Jul-2019 13:20
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	23-Jul-2019 13:20
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	23-Jul-2019 13:20
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	23-Jul-2019 13:20
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	23-Jul-2019 13:20
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	23-Jul-2019 13:20
Acenaphthene	U		0.000027	0.00010	mg/L	1	23-Jul-2019 13:20
Acenaphthylene	U		0.000015	0.00010	mg/L	1	23-Jul-2019 13:20
Anthracene	U		0.000014	0.00010	mg/L	1	23-Jul-2019 13:20
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	23-Jul-2019 13:20
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	23-Jul-2019 13:20
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	23-Jul-2019 13:20
Bis(2-ethylhexyl)phthalate	**0.000084**	J	**0.000037**	**0.00020**	**mg/L**	1	23-Jul-2019 13:20
Chrysene	U		0.000021	0.00010	mg/L	1	23-Jul-2019 13:20
Dibenzofuran	U		0.000020	0.00010	mg/L	1	23-Jul-2019 13:20
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	23-Jul-2019 13:20
Fluoranthene	**0.00017**		**0.000010**	**0.00010**	**mg/L**	1	23-Jul-2019 13:20
Fluorene	U		0.000030	0.00010	mg/L	1	23-Jul-2019 13:20
Naphthalene	**0.000096**	J	**0.000020**	**0.00010**	**mg/L**	1	23-Jul-2019 13:20
Nitrobenzene	U		0.000024	0.00020	mg/L	1	23-Jul-2019 13:20
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	23-Jul-2019 13:20
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	23-Jul-2019 13:20
Phenanthrene	U		0.000021	0.00010	mg/L	1	23-Jul-2019 13:20
Phenol	**0.000053**	J	**0.000035**	**0.00020**	**mg/L**	1	23-Jul-2019 13:20
Pyrene	**0.00069**		**0.000019**	**0.00010**	**mg/L**	1	23-Jul-2019 13:20
Surr: 2,4,6-Tribromophenol	*105*			*34-129*	*%REC*	*1*	*23-Jul-2019 13:20*
Surr: 2-Fluorobiphenyl	*75.5*			*40-125*	*%REC*	*1*	*23-Jul-2019 13:20*
Surr: 2-Fluorophenol	*64.3*			*20-120*	*%REC*	*1*	*23-Jul-2019 13:20*
Surr: 4-Terphenyl-d14	*73.8*			*40-135*	*%REC*	*1*	*23-Jul-2019 13:20*
Surr: Nitrobenzene-d5	*69.6*			*41-120*	*%REC*	*1*	*23-Jul-2019 13:20*
Surr: Phenol-d6	*67.8*			*20-120*	*%REC*	*1*	*23-Jul-2019 13:20*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jul-2019		Analyst: JHD
Arsenic	**0.0147**		**0.000400**	**0.00200**	**mg/L**	1	30-Jul-2019 22:11

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW26A-20190717
Collection Date: 17-Jul-2019 18:45

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-14
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	23-Jul-2019 07:40
Benzene	**0.00036**	J	**0.00020**	**0.0010**	**mg/L**	1	23-Jul-2019 07:40
Chlorobenzene	U		0.00030	0.0010	mg/L	1	23-Jul-2019 07:40
Ethylbenzene	U		0.00030	0.0010	mg/L	1	23-Jul-2019 07:40
Methylene chloride	U		0.0010	0.0020	mg/L	1	23-Jul-2019 07:40
Toluene	U		0.00020	0.0010	mg/L	1	23-Jul-2019 07:40
Xylenes, Total	U		0.00030	0.0010	mg/L	1	23-Jul-2019 07:40
Surr: 1,2-Dichloroethane-d4	*98.8*			*70-126*	*%REC*	*1*	*23-Jul-2019 07:40*
Surr: 4-Bromofluorobenzene	*102*			*81-113*	*%REC*	*1*	*23-Jul-2019 07:40*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*23-Jul-2019 07:40*
Surr: Toluene-d8	*98.3*			*82-127*	*%REC*	*1*	*23-Jul-2019 07:40*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW26A-20190717
Collection Date: 17-Jul-2019 18:45

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-14
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 22-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	23-Jul-2019 13:40
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	23-Jul-2019 13:40
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	23-Jul-2019 13:40
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	23-Jul-2019 13:40
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	23-Jul-2019 13:40
2-Methylnaphthalene	**0.000059**	J	**0.000019**	**0.00010**	**mg/L**	1	23-Jul-2019 13:40
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	23-Jul-2019 13:40
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	23-Jul-2019 13:40
Acenaphthene	**0.028**		**0.00027**	**0.0010**	**mg/L**	10	23-Jul-2019 16:59
Acenaphthylene	**0.00013**		**0.000015**	**0.00010**	**mg/L**	1	23-Jul-2019 13:40
Anthracene	**0.00047**		**0.000014**	**0.00010**	**mg/L**	1	23-Jul-2019 13:40
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	23-Jul-2019 13:40
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	23-Jul-2019 13:40
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	23-Jul-2019 13:40
Bis(2-ethylhexyl)phthalate	**0.00019**	J	**0.000037**	**0.00020**	**mg/L**	1	23-Jul-2019 13:40
Chrysene	U		0.000021	0.00010	mg/L	1	23-Jul-2019 13:40
Dibenzofuran	**0.00021**		**0.000020**	**0.00010**	**mg/L**	1	23-Jul-2019 13:40
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	23-Jul-2019 13:40
Fluoranthene	**0.0029**		**0.000010**	**0.00010**	**mg/L**	1	23-Jul-2019 13:40
Fluorene	**0.0017**		**0.000030**	**0.00010**	**mg/L**	1	23-Jul-2019 13:40
Naphthalene	**0.00032**		**0.000020**	**0.00010**	**mg/L**	1	23-Jul-2019 13:40
Nitrobenzene	U		0.000024	0.00020	mg/L	1	23-Jul-2019 13:40
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	23-Jul-2019 13:40
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	23-Jul-2019 13:40
Phenanthrene	**0.000083**	J	**0.000021**	**0.00010**	**mg/L**	1	23-Jul-2019 13:40
Phenol	U		0.000035	0.00020	mg/L	1	23-Jul-2019 13:40
Pyrene	**0.0015**		**0.000019**	**0.00010**	**mg/L**	1	23-Jul-2019 13:40
Surr: 2,4,6-Tribromophenol	*95.5*			*34-129*	*%REC*	*1*	*23-Jul-2019 13:40*
Surr: 2,4,6-Tribromophenol	*83.1*			*34-129*	*%REC*	*10*	*23-Jul-2019 16:59*
Surr: 2-Fluorobiphenyl	*104*			*40-125*	*%REC*	*10*	*23-Jul-2019 16:59*
Surr: 2-Fluorobiphenyl	*81.3*			*40-125*	*%REC*	*1*	*23-Jul-2019 13:40*
Surr: 2-Fluorophenol	*72.7*			*20-120*	*%REC*	*1*	*23-Jul-2019 13:40*
Surr: 2-Fluorophenol	*84.3*			*20-120*	*%REC*	*10*	*23-Jul-2019 16:59*
Surr: 4-Terphenyl-d14	*79.4*			*40-135*	*%REC*	*1*	*23-Jul-2019 13:40*
Surr: 4-Terphenyl-d14	*84.8*			*40-135*	*%REC*	*10*	*23-Jul-2019 16:59*
Surr: Nitrobenzene-d5	*82.2*			*41-120*	*%REC*	*1*	*23-Jul-2019 13:40*
Surr: Nitrobenzene-d5	*109*			*41-120*	*%REC*	*10*	*23-Jul-2019 16:59*
Surr: Phenol-d6	*82.9*			*20-120*	*%REC*	*10*	*23-Jul-2019 16:59*
Surr: Phenol-d6	*75.5*			*20-120*	*%REC*	*1*	*23-Jul-2019 13:40*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW26A-20190717
Collection Date: 17-Jul-2019 18:45

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-14
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jul-2019		Analyst: JHD
Arsenic	**0.0933**		**0.000400**	**0.00200**	**mg/L**	1	30-Jul-2019 22:14

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB05-20190717
Collection Date: 17-Jul-2019 19:05

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-15
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	23-Jul-2019 01:07
Benzene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 01:07
Chlorobenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 01:07
Ethylbenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 01:07
Methylene chloride		U	0.0010	0.0020	mg/L	1	23-Jul-2019 01:07
Toluene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 01:07
Xylenes, Total		U	0.00030	0.0010	mg/L	1	23-Jul-2019 01:07
Surr: 1,2-Dichloroethane-d4	*101*			*70-126*	*%REC*	*1*	*23-Jul-2019 01:07*
Surr: 4-Bromofluorobenzene	*98.1*			*81-113*	*%REC*	*1*	*23-Jul-2019 01:07*
Surr: Dibromofluoromethane	*105*			*77-123*	*%REC*	*1*	*23-Jul-2019 01:07*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*23-Jul-2019 01:07*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB05-20190717
Collection Date: 17-Jul-2019 19:05

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-15
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine		U	0.000021	0.00020	mg/L	1	23-Jul-2019 14:00
2,4-Dimethylphenol		U	0.000040	0.00020	mg/L	1	23-Jul-2019 14:00
2,4-Dinitrotoluene		U	0.000058	0.00020	mg/L	1	23-Jul-2019 14:00
2,6-Dinitrotoluene		U	0.000042	0.00020	mg/L	1	23-Jul-2019 14:00
2-Chloronaphthalene		U	0.000021	0.00020	mg/L	1	23-Jul-2019 14:00
2-Methylnaphthalene		U	0.000019	0.00010	mg/L	1	23-Jul-2019 14:00
4,6-Dinitro-2-methylphenol		U	0.000020	0.00020	mg/L	1	23-Jul-2019 14:00
4-Nitrophenol		U	0.000047	0.0010	mg/L	1	23-Jul-2019 14:00
Acenaphthene		U	0.000027	0.00010	mg/L	1	23-Jul-2019 14:00
Acenaphthylene		U	0.000015	0.00010	mg/L	1	23-Jul-2019 14:00
Anthracene		U	0.000014	0.00010	mg/L	1	23-Jul-2019 14:00
Benz(a)anthracene		U	0.000050	0.00010	mg/L	1	23-Jul-2019 14:00
Benzo(a)pyrene		U	0.000020	0.00010	mg/L	1	23-Jul-2019 14:00
Bis(2-chloroethoxy)methane		U	0.000030	0.00020	mg/L	1	23-Jul-2019 14:00
Bis(2-ethylhexyl)phthalate	**0.00023**		**0.000037**	**0.00020**	**mg/L**	1	23-Jul-2019 14:00
Chrysene		U	0.000021	0.00010	mg/L	1	23-Jul-2019 14:00
Dibenzofuran		U	0.000020	0.00010	mg/L	1	23-Jul-2019 14:00
Di-n-butyl phthalate		U	0.000020	0.00020	mg/L	1	23-Jul-2019 14:00
Fluoranthene		U	0.000010	0.00010	mg/L	1	23-Jul-2019 14:00
Fluorene		U	0.000030	0.00010	mg/L	1	23-Jul-2019 14:00
Naphthalene	**0.00023**		**0.000020**	**0.00010**	**mg/L**	1	23-Jul-2019 14:00
Nitrobenzene		U	0.000024	0.00020	mg/L	1	23-Jul-2019 14:00
N-Nitrosodiphenylamine		U	0.000025	0.00020	mg/L	1	23-Jul-2019 14:00
Pentachlorophenol		U	0.000079	0.00020	mg/L	1	23-Jul-2019 14:00
Phenanthrene		U	0.000021	0.00010	mg/L	1	23-Jul-2019 14:00
Phenol		U	0.000035	0.00020	mg/L	1	23-Jul-2019 14:00
Pyrene		U	0.000019	0.00010	mg/L	1	23-Jul-2019 14:00
Surr: 2,4,6-Tribromophenol	*98.8*			*34-129*	*%REC*	*1*	*23-Jul-2019 14:00*
Surr: 2-Fluorobiphenyl	*104*			*40-125*	*%REC*	*1*	*23-Jul-2019 14:00*
Surr: 2-Fluorophenol	*97.5*			*20-120*	*%REC*	*1*	*23-Jul-2019 14:00*
Surr: 4-Terphenyl-d14	*92.4*			*40-135*	*%REC*	*1*	*23-Jul-2019 14:00*
Surr: Nitrobenzene-d5	*107*			*41-120*	*%REC*	*1*	*23-Jul-2019 14:00*
Surr: Phenol-d6	*98.7*			*20-120*	*%REC*	*1*	*23-Jul-2019 14:00*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jul-2019		Analyst: JHD
Arsenic		U	0.000400	0.00200	mg/L	1	30-Jul-2019 22:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW68A-20190718
Collection Date: 18-Jul-2019 07:55

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-16
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	23-Jul-2019 08:05
Benzene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 08:05
Chlorobenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 08:05
Ethylbenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 08:05
Methylene chloride		U	0.0010	0.0020	mg/L	1	23-Jul-2019 08:05
Toluene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 08:05
Xylenes, Total		U	0.00030	0.0010	mg/L	1	23-Jul-2019 08:05
Surr: 1,2-Dichloroethane-d4	*98.9*			*70-126*	*%REC*	*1*	*23-Jul-2019 08:05*
Surr: 4-Bromofluorobenzene	*98.8*			*81-113*	*%REC*	*1*	*23-Jul-2019 08:05*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*23-Jul-2019 08:05*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*23-Jul-2019 08:05*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW68A-20190718
Collection Date: 18-Jul-2019 07:55

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-16
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	23-Jul-2019 14:20
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	23-Jul-2019 14:20
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	23-Jul-2019 14:20
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	23-Jul-2019 14:20
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	23-Jul-2019 14:20
2-Methylnaphthalene	**0.00012**		**0.000019**	**0.00010**	**mg/L**	1	23-Jul-2019 14:20
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	23-Jul-2019 14:20
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	23-Jul-2019 14:20
Acenaphthene	**0.0019**		**0.000027**	**0.00010**	**mg/L**	1	23-Jul-2019 14:20
Acenaphthylene	U		0.000015	0.00010	mg/L	1	23-Jul-2019 14:20
Anthracene	**0.000028**	J	**0.000014**	**0.00010**	**mg/L**	1	23-Jul-2019 14:20
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	23-Jul-2019 14:20
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	23-Jul-2019 14:20
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	23-Jul-2019 14:20
Bis(2-ethylhexyl)phthalate	**0.00024**		**0.000037**	**0.00020**	**mg/L**	1	23-Jul-2019 14:20
Chrysene	U		0.000021	0.00010	mg/L	1	23-Jul-2019 14:20
Dibenzofuran	**0.000082**	J	**0.000020**	**0.00010**	**mg/L**	1	23-Jul-2019 14:20
Di-n-butyl phthalate	**0.00015**	J	**0.000020**	**0.00020**	**mg/L**	1	23-Jul-2019 14:20
Fluoranthene	U		0.000010	0.00010	mg/L	1	23-Jul-2019 14:20
Fluorene	**0.00012**		**0.000030**	**0.00010**	**mg/L**	1	23-Jul-2019 14:20
Naphthalene	**0.00035**		**0.000020**	**0.00010**	**mg/L**	1	23-Jul-2019 14:20
Nitrobenzene	U		0.000024	0.00020	mg/L	1	23-Jul-2019 14:20
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	23-Jul-2019 14:20
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	23-Jul-2019 14:20
Phenanthrene	**0.000062**	J	**0.000021**	**0.00010**	**mg/L**	1	23-Jul-2019 14:20
Phenol	U		0.000035	0.00020	mg/L	1	23-Jul-2019 14:20
Pyrene	U		0.000019	0.00010	mg/L	1	23-Jul-2019 14:20
Surr: 2,4,6-Tribromophenol	*110*			*34-129*	*%REC*	*1*	*23-Jul-2019 14:20*
Surr: 2-Fluorobiphenyl	*82.8*			*40-125*	*%REC*	*1*	*23-Jul-2019 14:20*
Surr: 2-Fluorophenol	*92.3*			*20-120*	*%REC*	*1*	*23-Jul-2019 14:20*
Surr: 4-Terphenyl-d14	*95.3*			*40-135*	*%REC*	*1*	*23-Jul-2019 14:20*
Surr: Nitrobenzene-d5	*80.4*			*41-120*	*%REC*	*1*	*23-Jul-2019 14:20*
Surr: Phenol-d6	*85.2*			*20-120*	*%REC*	*1*	*23-Jul-2019 14:20*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jul-2019		Analyst: JHD
Arsenic	**0.0353**		**0.000400**	**0.00200**	**mg/L**	1	30-Jul-2019 22:18

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW68B-20190718
Collection Date: 18-Jul-2019 08:55

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-17
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.0020	0.010	mg/L	10	23-Jul-2019 08:32
Benzene	**1.4**		**0.020**	**0.10**	**mg/L**	100	23-Jul-2019 08:59
Chlorobenzene	U		0.0030	0.010	mg/L	10	23-Jul-2019 08:32
Ethylbenzene	**0.52**		**0.0030**	**0.010**	**mg/L**	10	23-Jul-2019 08:32
Methylene chloride	U		0.010	0.020	mg/L	10	23-Jul-2019 08:32
Toluene	**0.37**		**0.0020**	**0.010**	**mg/L**	10	23-Jul-2019 08:32
Xylenes, Total	**1.5**		**0.0030**	**0.010**	**mg/L**	10	23-Jul-2019 08:32
Surr: 1,2-Dichloroethane-d4	*97.0*			*70-126*	*%REC*	*100*	*23-Jul-2019 08:59*
Surr: 1,2-Dichloroethane-d4	*99.2*			*70-126*	*%REC*	*10*	*23-Jul-2019 08:32*
Surr: 4-Bromofluorobenzene	*104*			*81-113*	*%REC*	*10*	*23-Jul-2019 08:32*
Surr: 4-Bromofluorobenzene	*99.3*			*81-113*	*%REC*	*100*	*23-Jul-2019 08:59*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*10*	*23-Jul-2019 08:32*
Surr: Dibromofluoromethane	*100*			*77-123*	*%REC*	*100*	*23-Jul-2019 08:59*
Surr: Toluene-d8	*99.6*			*82-127*	*%REC*	*10*	*23-Jul-2019 08:32*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*100*	*23-Jul-2019 08:59*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW68B-20190718
Collection Date: 18-Jul-2019 08:55

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-17
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 22-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.00021	0.0020	mg/L	10	23-Jul-2019 21:16
2,4-Dimethylphenol	**0.076**		**0.00040**	**0.0020**	**mg/L**	10	23-Jul-2019 21:16
2,4-Dinitrotoluene	U		0.00058	0.0020	mg/L	10	23-Jul-2019 21:16
2,6-Dinitrotoluene	U		0.00042	0.0020	mg/L	10	23-Jul-2019 21:16
2-Chloronaphthalene	U		0.00021	0.0020	mg/L	10	23-Jul-2019 21:16
2-Methylnaphthalene	**0.72**		**0.0019**	**0.010**	**mg/L**	100	25-Jul-2019 18:57
4,6-Dinitro-2-methylphenol	U		0.00020	0.0020	mg/L	10	23-Jul-2019 21:16
4-Nitrophenol	U		0.00047	0.010	mg/L	10	23-Jul-2019 21:16
Acenaphthene	**0.20**		**0.0027**	**0.010**	**mg/L**	100	25-Jul-2019 18:57
Acenaphthylene	**0.0027**		**0.00015**	**0.0010**	**mg/L**	10	23-Jul-2019 21:16
Anthracene	**0.030**		**0.00014**	**0.0010**	**mg/L**	10	23-Jul-2019 21:16
Benz(a)anthracene	**0.0051**		**0.00050**	**0.0010**	**mg/L**	10	23-Jul-2019 21:16
Benzo(a)pyrene	**0.0018**		**0.00020**	**0.0010**	**mg/L**	10	23-Jul-2019 21:16
Bis(2-chloroethoxy)methane	U		0.00030	0.0020	mg/L	10	23-Jul-2019 21:16
Bis(2-ethylhexyl)phthalate	U		0.00037	0.0020	mg/L	10	23-Jul-2019 21:16
Chrysene	**0.0050**		**0.00021**	**0.0010**	**mg/L**	10	23-Jul-2019 21:16
Dibenzofuran	**0.21**		**0.0020**	**0.010**	**mg/L**	100	25-Jul-2019 18:57
Di-n-butyl phthalate	U		0.00020	0.0020	mg/L	10	23-Jul-2019 21:16
Fluoranthene	**0.043**		**0.00010**	**0.0010**	**mg/L**	10	23-Jul-2019 21:16
Fluorene	**0.11**		**0.0030**	**0.010**	**mg/L**	100	25-Jul-2019 18:57
Naphthalene	**9.6**		**0.020**	**0.10**	**mg/L**	1000	24-Jul-2019 15:22
Nitrobenzene	U		0.00024	0.0020	mg/L	10	23-Jul-2019 21:16
N-Nitrosodiphenylamine	U		0.00025	0.0020	mg/L	10	23-Jul-2019 21:16
Pentachlorophenol	U		0.00079	0.0020	mg/L	10	23-Jul-2019 21:16
Phenanthrene	**0.21**		**0.0021**	**0.010**	**mg/L**	100	25-Jul-2019 18:57
Phenol	U		0.00035	0.0020	mg/L	10	23-Jul-2019 21:16
Pyrene	**0.025**		**0.00019**	**0.0010**	**mg/L**	10	23-Jul-2019 21:16
Surr: 2,4,6-Tribromophenol	*102*			*34-129*	*%REC*	*10*	*23-Jul-2019 21:16*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*1000*	*24-Jul-2019 15:22*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*25-Jul-2019 18:57*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*25-Jul-2019 18:57*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*1000*	*24-Jul-2019 15:22*
Surr: 2-Fluorobiphenyl	*80.5*			*40-125*	*%REC*	*10*	*23-Jul-2019 21:16*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*1000*	*24-Jul-2019 15:22*
Surr: 2-Fluorophenol	*116*			*20-120*	*%REC*	*10*	*23-Jul-2019 21:16*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*25-Jul-2019 18:57*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*100*	*25-Jul-2019 18:57*
Surr: 4-Terphenyl-d14	*94.2*			*40-135*	*%REC*	*10*	*23-Jul-2019 21:16*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*1000*	*24-Jul-2019 15:22*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW68B-20190718
Collection Date: 18-Jul-2019 08:55

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-17
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jul-2019		Analyst: GEY
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*1000*	*24-Jul-2019 15:22*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*25-Jul-2019 18:57*
Surr: Nitrobenzene-d5	*99.5*			*41-120*	*%REC*	*10*	*23-Jul-2019 21:16*
Surr: Phenol-d6	*99.7*			*20-120*	*%REC*	*10*	*23-Jul-2019 21:16*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*25-Jul-2019 18:57*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*1000*	*24-Jul-2019 15:22*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jul-2019		Analyst: JHD
Arsenic	**0.0134**		**0.000400**	**0.00200**	**mg/L**	1	30-Jul-2019 22:21

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FD03-20190718
Collection Date: 18-Jul-2019 08:55

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-18
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.0020	0.010	mg/L	10	23-Jul-2019 09:26
Benzene	**1.4**		**0.020**	**0.10**	**mg/L**	100	23-Jul-2019 09:53
Chlorobenzene	U		0.0030	0.010	mg/L	10	23-Jul-2019 09:26
Ethylbenzene	**0.51**		**0.0030**	**0.010**	**mg/L**	10	23-Jul-2019 09:26
Methylene chloride	U		0.010	0.020	mg/L	10	23-Jul-2019 09:26
Toluene	**0.37**		**0.0020**	**0.010**	**mg/L**	10	23-Jul-2019 09:26
Xylenes, Total	**1.4**		**0.0030**	**0.010**	**mg/L**	10	23-Jul-2019 09:26
Surr: 1,2-Dichloroethane-d4	*98.5*			*70-126*	*%REC*	*10*	*23-Jul-2019 09:26*
Surr: 1,2-Dichloroethane-d4	*97.1*			*70-126*	*%REC*	*100*	*23-Jul-2019 09:53*
Surr: 4-Bromofluorobenzene	*102*			*81-113*	*%REC*	*10*	*23-Jul-2019 09:26*
Surr: 4-Bromofluorobenzene	*102*			*81-113*	*%REC*	*100*	*23-Jul-2019 09:53*
Surr: Dibromofluoromethane	*103*			*77-123*	*%REC*	*10*	*23-Jul-2019 09:26*
Surr: Dibromofluoromethane	*99.5*			*77-123*	*%REC*	*100*	*23-Jul-2019 09:53*
Surr: Toluene-d8	*98.3*			*82-127*	*%REC*	*10*	*23-Jul-2019 09:26*
Surr: Toluene-d8	*97.2*			*82-127*	*%REC*	*100*	*23-Jul-2019 09:53*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FD03-20190718
Collection Date: 18-Jul-2019 08:55

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-18
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 22-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.00021	0.0020	mg/L	10	23-Jul-2019 21:36
2,4-Dimethylphenol	**0.076**		**0.00040**	**0.0020**	**mg/L**	10	23-Jul-2019 21:36
2,4-Dinitrotoluene	U		0.00058	0.0020	mg/L	10	23-Jul-2019 21:36
2,6-Dinitrotoluene	U		0.00042	0.0020	mg/L	10	23-Jul-2019 21:36
2-Chloronaphthalene	U		0.00021	0.0020	mg/L	10	23-Jul-2019 21:36
2-Methylnaphthalene	**0.66**		**0.0019**	**0.010**	**mg/L**	100	24-Jul-2019 14:23
4,6-Dinitro-2-methylphenol	U		0.00020	0.0020	mg/L	10	23-Jul-2019 21:36
4-Nitrophenol	U		0.00047	0.010	mg/L	10	23-Jul-2019 21:36
Acenaphthene	**0.17**		**0.0027**	**0.010**	**mg/L**	100	24-Jul-2019 14:23
Acenaphthylene	**0.0022**		**0.00015**	**0.0010**	**mg/L**	10	23-Jul-2019 21:36
Anthracene	**0.022**		**0.00014**	**0.0010**	**mg/L**	10	23-Jul-2019 21:36
Benz(a)anthracene	**0.0030**		**0.00050**	**0.0010**	**mg/L**	10	23-Jul-2019 21:36
Benzo(a)pyrene	**0.0012**		**0.00020**	**0.0010**	**mg/L**	10	23-Jul-2019 21:36
Bis(2-chloroethoxy)methane	U		0.00030	0.0020	mg/L	10	23-Jul-2019 21:36
Bis(2-ethylhexyl)phthalate	U		0.00037	0.0020	mg/L	10	23-Jul-2019 21:36
Chrysene	**0.0029**		**0.00021**	**0.0010**	**mg/L**	10	23-Jul-2019 21:36
Dibenzofuran	**0.18**		**0.0020**	**0.010**	**mg/L**	100	24-Jul-2019 14:23
Di-n-butyl phthalate	U		0.00020	0.0020	mg/L	10	23-Jul-2019 21:36
Fluoranthene	**0.027**		**0.00010**	**0.0010**	**mg/L**	10	23-Jul-2019 21:36
Fluorene	**0.083**		**0.00030**	**0.0010**	**mg/L**	10	23-Jul-2019 21:36
Naphthalene	**9.9**		**0.020**	**0.10**	**mg/L**	1000	24-Jul-2019 14:43
Nitrobenzene	U		0.00024	0.0020	mg/L	10	23-Jul-2019 21:36
N-Nitrosodiphenylamine	U		0.00025	0.0020	mg/L	10	23-Jul-2019 21:36
Pentachlorophenol	U		0.00079	0.0020	mg/L	10	23-Jul-2019 21:36
Phenanthrene	**0.16**		**0.0021**	**0.010**	**mg/L**	100	24-Jul-2019 14:23
Phenol	U		0.00035	0.0020	mg/L	10	23-Jul-2019 21:36
Pyrene	**0.015**		**0.00019**	**0.0010**	**mg/L**	10	23-Jul-2019 21:36
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*1000*	*24-Jul-2019 14:43*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*24-Jul-2019 14:23*
Surr: 2,4,6-Tribromophenol	*91.9*			*34-129*	*%REC*	*10*	*23-Jul-2019 21:36*
Surr: 2-Fluorobiphenyl	*77.8*			*40-125*	*%REC*	*10*	*23-Jul-2019 21:36*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*24-Jul-2019 14:23*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*1000*	*24-Jul-2019 14:43*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*24-Jul-2019 14:23*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*1000*	*24-Jul-2019 14:43*
Surr: 2-Fluorophenol	*105*			*20-120*	*%REC*	*10*	*23-Jul-2019 21:36*
Surr: 4-Terphenyl-d14	*76.3*			*40-135*	*%REC*	*10*	*23-Jul-2019 21:36*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*100*	*24-Jul-2019 14:23*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*1000*	*24-Jul-2019 14:43*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FD03-20190718
Collection Date: 18-Jul-2019 08:55

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-18
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jul-2019		Analyst: GEY
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*24-Jul-2019 14:23*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*1000*	*24-Jul-2019 14:43*
Surr: Nitrobenzene-d5	*106*			*41-120*	*%REC*	*10*	*23-Jul-2019 21:36*
Surr: Phenol-d6	*76.0*			*20-120*	*%REC*	*10*	*23-Jul-2019 21:36*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*24-Jul-2019 14:23*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*1000*	*24-Jul-2019 14:43*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jul-2019		Analyst: JHD
Arsenic	**0.0129**		**0.000400**	**0.00200**	**mg/L**	1	30-Jul-2019 22:23

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW68C-20190718
Collection Date: 18-Jul-2019 09:45

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-19
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	23-Jul-2019 02:01
Benzene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 02:01
Chlorobenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 02:01
Ethylbenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 02:01
Methylene chloride		U	0.0010	0.0020	mg/L	1	23-Jul-2019 02:01
Toluene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 02:01
Xylenes, Total		U	0.00030	0.0010	mg/L	1	23-Jul-2019 02:01
Surr: 1,2-Dichloroethane-d4	*88.4*			*70-126*	*%REC*	*1*	*23-Jul-2019 02:01*
Surr: 4-Bromofluorobenzene	*95.7*			*81-113*	*%REC*	*1*	*23-Jul-2019 02:01*
Surr: Dibromofluoromethane	*99.0*			*77-123*	*%REC*	*1*	*23-Jul-2019 02:01*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*23-Jul-2019 02:01*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW68C-20190718
Collection Date: 18-Jul-2019 09:45

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-19
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	23-Jul-2019 15:19
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	23-Jul-2019 15:19
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	23-Jul-2019 15:19
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	23-Jul-2019 15:19
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	23-Jul-2019 15:19
2-Methylnaphthalene	**0.000072**	J	**0.000019**	**0.00010**	**mg/L**	1	23-Jul-2019 15:19
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	23-Jul-2019 15:19
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	23-Jul-2019 15:19
Acenaphthene	**0.00012**		**0.000027**	**0.00010**	**mg/L**	1	23-Jul-2019 15:19
Acenaphthylene	**0.000053**	J	**0.000015**	**0.00010**	**mg/L**	1	23-Jul-2019 15:19
Anthracene	U		0.000014	0.00010	mg/L	1	23-Jul-2019 15:19
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	23-Jul-2019 15:19
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	23-Jul-2019 15:19
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	23-Jul-2019 15:19
Bis(2-ethylhexyl)phthalate	**0.00032**		**0.000037**	**0.00020**	**mg/L**	1	23-Jul-2019 15:19
Chrysene	U		0.000021	0.00010	mg/L	1	23-Jul-2019 15:19
Dibenzofuran	**0.000064**	J	**0.000020**	**0.00010**	**mg/L**	1	23-Jul-2019 15:19
Di-n-butyl phthalate	**0.000067**	J	**0.000020**	**0.00020**	**mg/L**	1	23-Jul-2019 15:19
Fluoranthene	U		0.000010	0.00010	mg/L	1	23-Jul-2019 15:19
Fluorene	**0.000051**	J	**0.000030**	**0.00010**	**mg/L**	1	23-Jul-2019 15:19
Naphthalene	**0.0011**		**0.000020**	**0.00010**	**mg/L**	1	23-Jul-2019 15:19
Nitrobenzene	U		0.000024	0.00020	mg/L	1	23-Jul-2019 15:19
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	23-Jul-2019 15:19
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	23-Jul-2019 15:19
Phenanthrene	U		0.000021	0.00010	mg/L	1	23-Jul-2019 15:19
Phenol	**0.00026**		**0.000035**	**0.00020**	**mg/L**	1	23-Jul-2019 15:19
Pyrene	U		0.000019	0.00010	mg/L	1	23-Jul-2019 15:19
Surr: 2,4,6-Tribromophenol	*106*			*34-129*	*%REC*	*1*	*23-Jul-2019 15:19*
Surr: 2-Fluorobiphenyl	*84.4*			*40-125*	*%REC*	*1*	*23-Jul-2019 15:19*
Surr: 2-Fluorophenol	*79.1*			*20-120*	*%REC*	*1*	*23-Jul-2019 15:19*
Surr: 4-Terphenyl-d14	*84.9*			*40-135*	*%REC*	*1*	*23-Jul-2019 15:19*
Surr: Nitrobenzene-d5	*80.3*			*41-120*	*%REC*	*1*	*23-Jul-2019 15:19*
Surr: Phenol-d6	*80.4*			*20-120*	*%REC*	*1*	*23-Jul-2019 15:19*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jul-2019		Analyst: JHD
Arsenic	U		0.000400	0.00200	mg/L	1	30-Jul-2019 22:25

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW83B-20190718
Collection Date: 18-Jul-2019 10:40

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-20
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	23-Jul-2019 06:30
Benzene	**0.021**		**0.00020**	**0.0010**	**mg/L**	1	23-Jul-2019 06:30
Chlorobenzene	U		0.00030	0.0010	mg/L	1	23-Jul-2019 06:30
Ethylbenzene	**0.055**		**0.00030**	**0.0010**	**mg/L**	1	23-Jul-2019 06:30
Methylene chloride	U		0.0010	0.0020	mg/L	1	23-Jul-2019 06:30
Toluene	**0.0042**		**0.00020**	**0.0010**	**mg/L**	1	23-Jul-2019 06:30
Xylenes, Total	**0.061**		**0.00030**	**0.0010**	**mg/L**	1	23-Jul-2019 06:30
Surr: 1,2-Dichloroethane-d4	*87.6*			*70-126*	*%REC*	*1*	*23-Jul-2019 06:30*
Surr: 4-Bromofluorobenzene	*97.3*			*81-113*	*%REC*	*1*	*23-Jul-2019 06:30*
Surr: Dibromofluoromethane	*97.4*			*77-123*	*%REC*	*1*	*23-Jul-2019 06:30*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*23-Jul-2019 06:30*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW83B-20190718
Collection Date: 18-Jul-2019 10:40

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-20
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 22-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	23-Jul-2019 15:39
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	23-Jul-2019 15:39
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	23-Jul-2019 15:39
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	23-Jul-2019 15:39
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	23-Jul-2019 15:39
2-Methylnaphthalene	**0.050**		**0.00019**	**0.0010**	**mg/L**	10	23-Jul-2019 21:56
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	23-Jul-2019 15:39
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	23-Jul-2019 15:39
Acenaphthene	**0.021**		**0.00027**	**0.0010**	**mg/L**	10	23-Jul-2019 21:56
Acenaphthylene	**0.00025**		**0.000015**	**0.00010**	**mg/L**	1	23-Jul-2019 15:39
Anthracene	**0.00099**		**0.000014**	**0.00010**	**mg/L**	1	23-Jul-2019 15:39
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	23-Jul-2019 15:39
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	23-Jul-2019 15:39
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	23-Jul-2019 15:39
Bis(2-ethylhexyl)phthalate	**0.00036**		**0.000037**	**0.00020**	**mg/L**	1	23-Jul-2019 15:39
Chrysene	U		0.000021	0.00010	mg/L	1	23-Jul-2019 15:39
Dibenzofuran	**0.014**		**0.00020**	**0.0010**	**mg/L**	10	23-Jul-2019 21:56
Di-n-butyl phthalate	**0.00012**	J	**0.000020**	**0.00020**	**mg/L**	1	23-Jul-2019 15:39
Fluoranthene	**0.00038**		**0.000010**	**0.00010**	**mg/L**	1	23-Jul-2019 15:39
Fluorene	**0.0076**		**0.000030**	**0.00010**	**mg/L**	1	23-Jul-2019 15:39
Naphthalene	**0.77**		**0.0020**	**0.010**	**mg/L**	100	24-Jul-2019 15:02
Nitrobenzene	U		0.000024	0.00020	mg/L	1	23-Jul-2019 15:39
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	23-Jul-2019 15:39
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	23-Jul-2019 15:39
Phenanthrene	**0.0059**		**0.000021**	**0.00010**	**mg/L**	1	23-Jul-2019 15:39
Phenol	**0.00051**		**0.000035**	**0.00020**	**mg/L**	1	23-Jul-2019 15:39
Pyrene	**0.00020**		**0.000019**	**0.00010**	**mg/L**	1	23-Jul-2019 15:39
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*24-Jul-2019 15:02*
Surr: 2,4,6-Tribromophenol	*94.6*			*34-129*	*%REC*	*10*	*23-Jul-2019 21:56*
Surr: 2,4,6-Tribromophenol	*101*			*34-129*	*%REC*	*1*	*23-Jul-2019 15:39*
Surr: 2-Fluorobiphenyl	*58.6*			*40-125*	*%REC*	*1*	*23-Jul-2019 15:39*
Surr: 2-Fluorobiphenyl	*55.7*			*40-125*	*%REC*	*10*	*23-Jul-2019 21:56*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*24-Jul-2019 15:02*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*24-Jul-2019 15:02*
Surr: 2-Fluorophenol	*64.1*			*20-120*	*%REC*	*10*	*23-Jul-2019 21:56*
Surr: 2-Fluorophenol	*61.1*			*20-120*	*%REC*	*1*	*23-Jul-2019 15:39*
Surr: 4-Terphenyl-d14	*91.3*			*40-135*	*%REC*	*1*	*23-Jul-2019 15:39*
Surr: 4-Terphenyl-d14	*86.5*			*40-135*	*%REC*	*10*	*23-Jul-2019 21:56*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*100*	*24-Jul-2019 15:02*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW83B-20190718
Collection Date: 18-Jul-2019 10:40

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-20
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jul-2019		Analyst: GEY
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*24-Jul-2019 15:02*
Surr: Nitrobenzene-d5	*51.9*			*41-120*	*%REC*	*1*	*23-Jul-2019 15:39*
Surr: Nitrobenzene-d5	*56.9*			*41-120*	*%REC*	*10*	*23-Jul-2019 21:56*
Surr: Phenol-d6	*59.6*			*20-120*	*%REC*	*1*	*23-Jul-2019 15:39*
Surr: Phenol-d6	*47.6*			*20-120*	*%REC*	*10*	*23-Jul-2019 21:56*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*24-Jul-2019 15:02*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 29-Jul-2019		Analyst: JHD
Arsenic	**0.0648**		**0.000400**	**0.00200**	**mg/L**	1	30-Jul-2019 22:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW83C-20190718
Collection Date: 18-Jul-2019 11:30

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-21
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	23-Jul-2019 03:13
Benzene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 03:13
Chlorobenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 03:13
Ethylbenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 03:13
Methylene chloride		U	0.0010	0.0020	mg/L	1	23-Jul-2019 03:13
Toluene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 03:13
Xylenes, Total		U	0.00030	0.0010	mg/L	1	23-Jul-2019 03:13
Surr: 1,2-Dichloroethane-d4	*99.1*			*70-126*	*%REC*	*1*	*23-Jul-2019 03:13*
Surr: 4-Bromofluorobenzene	*98.5*			*81-113*	*%REC*	*1*	*23-Jul-2019 03:13*
Surr: Dibromofluoromethane	*98.6*			*77-123*	*%REC*	*1*	*23-Jul-2019 03:13*
Surr: Toluene-d8	*105*			*82-127*	*%REC*	*1*	*23-Jul-2019 03:13*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW83C-20190718
Collection Date: 18-Jul-2019 11:30

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-21
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 23-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	23-Jul-2019 17:19
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	23-Jul-2019 17:19
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	23-Jul-2019 17:19
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	23-Jul-2019 17:19
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	23-Jul-2019 17:19
2-Methylnaphthalene	**0.00012**		**0.000019**	**0.00010**	**mg/L**	1	23-Jul-2019 17:19
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	23-Jul-2019 17:19
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	23-Jul-2019 17:19
Acenaphthene	**0.000094**	J	**0.000027**	**0.00010**	**mg/L**	1	23-Jul-2019 17:19
Acenaphthylene	U		0.000015	0.00010	mg/L	1	23-Jul-2019 17:19
Anthracene	U		0.000014	0.00010	mg/L	1	23-Jul-2019 17:19
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	23-Jul-2019 17:19
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	23-Jul-2019 17:19
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	23-Jul-2019 17:19
Bis(2-ethylhexyl)phthalate	**0.00023**		**0.000037**	**0.00020**	**mg/L**	1	23-Jul-2019 17:19
Chrysene	U		0.000021	0.00010	mg/L	1	23-Jul-2019 17:19
Dibenzofuran	**0.000070**	J	**0.000020**	**0.00010**	**mg/L**	1	23-Jul-2019 17:19
Di-n-butyl phthalate	**0.000040**	J	**0.000020**	**0.00020**	**mg/L**	1	23-Jul-2019 17:19
Fluoranthene	U		0.000010	0.00010	mg/L	1	23-Jul-2019 17:19
Fluorene	U		0.000030	0.00010	mg/L	1	23-Jul-2019 17:19
Naphthalene	**0.0014**		**0.000020**	**0.00010**	**mg/L**	1	23-Jul-2019 17:19
Nitrobenzene	U		0.000024	0.00020	mg/L	1	23-Jul-2019 17:19
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	23-Jul-2019 17:19
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	23-Jul-2019 17:19
Phenanthrene	U		0.000021	0.00010	mg/L	1	23-Jul-2019 17:19
Phenol	**0.000068**	J	**0.000035**	**0.00020**	**mg/L**	1	23-Jul-2019 17:19
Pyrene	U		0.000019	0.00010	mg/L	1	23-Jul-2019 17:19
Surr: 2,4,6-Tribromophenol	*78.7*			*34-129*	*%REC*	*1*	*23-Jul-2019 17:19*
Surr: 2-Fluorobiphenyl	*59.2*			*40-125*	*%REC*	*1*	*23-Jul-2019 17:19*
Surr: 2-Fluorophenol	*54.1*			*20-120*	*%REC*	*1*	*23-Jul-2019 17:19*
Surr: 4-Terphenyl-d14	*85.6*			*40-135*	*%REC*	*1*	*23-Jul-2019 17:19*
Surr: Nitrobenzene-d5	*71.6*			*41-120*	*%REC*	*1*	*23-Jul-2019 17:19*
Surr: Phenol-d6	*56.2*			*20-120*	*%REC*	*1*	*23-Jul-2019 17:19*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 30-Jul-2019		Analyst: JHD
Arsenic	**0.00617**		**0.000400**	**0.00200**	**mg/L**	1	30-Jul-2019 22:41

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW35A-20190718
Collection Date: 18-Jul-2019 12:40

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-22
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: PC
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	23-Jul-2019 04:25
Benzene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 04:25
Chlorobenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 04:25
Ethylbenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 04:25
Methylene chloride		U	0.0010	0.0020	mg/L	1	23-Jul-2019 04:25
Toluene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 04:25
Xylenes, Total		U	0.00030	0.0010	mg/L	1	23-Jul-2019 04:25
Surr: 1,2-Dichloroethane-d4	*104*			*70-126*	*%REC*	*1*	*23-Jul-2019 04:25*
Surr: 4-Bromofluorobenzene	*103*			*81-113*	*%REC*	*1*	*23-Jul-2019 04:25*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*23-Jul-2019 04:25*
Surr: Toluene-d8	*107*			*82-127*	*%REC*	*1*	*23-Jul-2019 04:25*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW35A-20190718
Collection Date: 18-Jul-2019 12:40

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-22
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 23-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	23-Jul-2019 17:38
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	23-Jul-2019 17:38
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	23-Jul-2019 17:38
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	23-Jul-2019 17:38
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	23-Jul-2019 17:38
2-Methylnaphthalene	**0.00012**		**0.000019**	**0.00010**	**mg/L**	1	23-Jul-2019 17:38
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	23-Jul-2019 17:38
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	23-Jul-2019 17:38
Acenaphthene	**0.0028**		**0.000027**	**0.00010**	**mg/L**	1	23-Jul-2019 17:38
Acenaphthylene	**0.000071**	J	**0.000015**	**0.00010**	**mg/L**	1	23-Jul-2019 17:38
Anthracene	**0.00011**		**0.000014**	**0.00010**	**mg/L**	1	23-Jul-2019 17:38
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	23-Jul-2019 17:38
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	23-Jul-2019 17:38
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	23-Jul-2019 17:38
Bis(2-ethylhexyl)phthalate	**0.000057**	J	**0.000037**	**0.00020**	**mg/L**	1	23-Jul-2019 17:38
Chrysene	U		0.000021	0.00010	mg/L	1	23-Jul-2019 17:38
Dibenzofuran	**0.00039**		**0.000020**	**0.00010**	**mg/L**	1	23-Jul-2019 17:38
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	23-Jul-2019 17:38
Fluoranthene	**0.00015**		**0.000010**	**0.00010**	**mg/L**	1	23-Jul-2019 17:38
Fluorene	**0.00036**		**0.000030**	**0.00010**	**mg/L**	1	23-Jul-2019 17:38
Naphthalene	**0.00083**		**0.000020**	**0.00010**	**mg/L**	1	23-Jul-2019 17:38
Nitrobenzene	U		0.000024	0.00020	mg/L	1	23-Jul-2019 17:38
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	23-Jul-2019 17:38
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	23-Jul-2019 17:38
Phenanthrene	**0.000042**	J	**0.000021**	**0.00010**	**mg/L**	1	23-Jul-2019 17:38
Phenol	U		0.000035	0.00020	mg/L	1	23-Jul-2019 17:38
Pyrene	**0.000096**	J	**0.000019**	**0.00010**	**mg/L**	1	23-Jul-2019 17:38
Surr: 2,4,6-Tribromophenol	*103*			*34-129*	*%REC*	*1*	*23-Jul-2019 17:38*
Surr: 2-Fluorobiphenyl	*70.8*			*40-125*	*%REC*	*1*	*23-Jul-2019 17:38*
Surr: 2-Fluorophenol	*69.2*			*20-120*	*%REC*	*1*	*23-Jul-2019 17:38*
Surr: 4-Terphenyl-d14	*86.8*			*40-135*	*%REC*	*1*	*23-Jul-2019 17:38*
Surr: Nitrobenzene-d5	*83.4*			*41-120*	*%REC*	*1*	*23-Jul-2019 17:38*
Surr: Phenol-d6	*73.4*			*20-120*	*%REC*	*1*	*23-Jul-2019 17:38*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 30-Jul-2019		Analyst: JHD
Arsenic	**0.0548**		**0.000400**	**0.00200**	**mg/L**	1	30-Jul-2019 22:57

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW35B-20190718
Collection Date: 18-Jul-2019 13:30

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-23
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: PC
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	23-Jul-2019 04:49
Benzene	**0.0045**		**0.00020**	**0.0010**	**mg/L**	1	23-Jul-2019 04:49
Chlorobenzene	U		0.00030	0.0010	mg/L	1	23-Jul-2019 04:49
Ethylbenzene	**0.014**		**0.00030**	**0.0010**	**mg/L**	1	23-Jul-2019 04:49
Methylene chloride	U		0.0010	0.0020	mg/L	1	23-Jul-2019 04:49
Toluene	**0.00054**	J	**0.00020**	**0.0010**	**mg/L**	1	23-Jul-2019 04:49
Xylenes, Total	**0.0062**		**0.00030**	**0.0010**	**mg/L**	1	23-Jul-2019 04:49
Surr: 1,2-Dichloroethane-d4	*101*			*70-126*	*%REC*	*1*	*23-Jul-2019 04:49*
Surr: 4-Bromofluorobenzene	*97.9*			*81-113*	*%REC*	*1*	*23-Jul-2019 04:49*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*23-Jul-2019 04:49*
Surr: Toluene-d8	*104*			*82-127*	*%REC*	*1*	*23-Jul-2019 04:49*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW35B-20190718
Collection Date: 18-Jul-2019 13:30

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-23
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 23-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	23-Jul-2019 17:58
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	23-Jul-2019 17:58
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	23-Jul-2019 17:58
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	23-Jul-2019 17:58
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	23-Jul-2019 17:58
2-Methylnaphthalene	**0.041**		**0.00019**	**0.0010**	**mg/L**	10	25-Jul-2019 19:17
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	23-Jul-2019 17:58
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	23-Jul-2019 17:58
Acenaphthene	**0.029**		**0.00027**	**0.0010**	**mg/L**	10	25-Jul-2019 19:17
Acenaphthylene	**0.00022**		**0.000015**	**0.00010**	**mg/L**	1	23-Jul-2019 17:58
Anthracene	**0.0022**		**0.000014**	**0.00010**	**mg/L**	1	23-Jul-2019 17:58
Benz(a)anthracene	**0.000083**	J	**0.000050**	**0.00010**	**mg/L**	1	23-Jul-2019 17:58
Benzo(a)pyrene	**0.000053**	J	**0.000020**	**0.00010**	**mg/L**	1	23-Jul-2019 17:58
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	23-Jul-2019 17:58
Bis(2-ethylhexyl)phthalate	**0.00012**	J	**0.000037**	**0.00020**	**mg/L**	1	23-Jul-2019 17:58
Chrysene	**0.000091**	J	**0.000021**	**0.00010**	**mg/L**	1	23-Jul-2019 17:58
Dibenzofuran	**0.029**		**0.00020**	**0.0010**	**mg/L**	10	25-Jul-2019 19:17
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	23-Jul-2019 17:58
Fluoranthene	**0.0017**		**0.000010**	**0.00010**	**mg/L**	1	23-Jul-2019 17:58
Fluorene	**0.014**		**0.00030**	**0.0010**	**mg/L**	10	25-Jul-2019 19:17
Naphthalene	**1.1**		**0.010**	**0.050**	**mg/L**	500	26-Jul-2019 19:55
Nitrobenzene	U		0.000024	0.00020	mg/L	1	23-Jul-2019 17:58
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	23-Jul-2019 17:58
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	23-Jul-2019 17:58
Phenanthrene	**0.019**		**0.00021**	**0.0010**	**mg/L**	10	25-Jul-2019 19:17
Phenol	**0.00017**	J	**0.000035**	**0.00020**	**mg/L**	1	23-Jul-2019 17:58
Pyrene	**0.00079**		**0.000019**	**0.00010**	**mg/L**	1	23-Jul-2019 17:58
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*500*	*26-Jul-2019 19:55*
Surr: 2,4,6-Tribromophenol	*112*			*34-129*	*%REC*	*1*	*23-Jul-2019 17:58*
Surr: 2,4,6-Tribromophenol	*98.6*			*34-129*	*%REC*	*10*	*25-Jul-2019 19:17*
Surr: 2-Fluorobiphenyl	*97.8*			*40-125*	*%REC*	*10*	*25-Jul-2019 19:17*
Surr: 2-Fluorobiphenyl	*88.4*			*40-125*	*%REC*	*1*	*23-Jul-2019 17:58*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*500*	*26-Jul-2019 19:55*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*500*	*26-Jul-2019 19:55*
Surr: 2-Fluorophenol	*86.8*			*20-120*	*%REC*	*1*	*23-Jul-2019 17:58*
Surr: 2-Fluorophenol	*90.8*			*20-120*	*%REC*	*10*	*25-Jul-2019 19:17*
Surr: 4-Terphenyl-d14	*105*			*40-135*	*%REC*	*10*	*25-Jul-2019 19:17*
Surr: 4-Terphenyl-d14	*92.1*			*40-135*	*%REC*	*1*	*23-Jul-2019 17:58*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*500*	*26-Jul-2019 19:55*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW35B-20190718
Collection Date: 18-Jul-2019 13:30

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-23
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 23-Jul-2019		Analyst: GEY
Surr: Nitrobenzene-d5	*89.4*			*41-120*	*%REC*	*1*	*23-Jul-2019 17:58*
Surr: Nitrobenzene-d5	*97.7*			*41-120*	*%REC*	*10*	*25-Jul-2019 19:17*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*500*	*26-Jul-2019 19:55*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*500*	*26-Jul-2019 19:55*
Surr: Phenol-d6	*89.7*			*20-120*	*%REC*	*10*	*25-Jul-2019 19:17*
Surr: Phenol-d6	*93.6*			*20-120*	*%REC*	*1*	*23-Jul-2019 17:58*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 30-Jul-2019		Analyst: JHD
Arsenic	**0.00120**	J	**0.000400**	**0.00200**	**mg/L**	1	30-Jul-2019 22:59

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW90B-20190718
Collection Date: 18-Jul-2019 14:25

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-24
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	23-Jul-2019 05:13
Benzene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 05:13
Chlorobenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 05:13
Ethylbenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 05:13
Methylene chloride		U	0.0010	0.0020	mg/L	1	23-Jul-2019 05:13
Toluene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 05:13
Xylenes, Total		U	0.00030	0.0010	mg/L	1	23-Jul-2019 05:13
Surr: 1,2-Dichloroethane-d4	*109*			*70-126*	*%REC*	*1*	*23-Jul-2019 05:13*
Surr: 4-Bromofluorobenzene	*107*			*81-113*	*%REC*	*1*	*23-Jul-2019 05:13*
Surr: Dibromofluoromethane	*109*			*77-123*	*%REC*	*1*	*23-Jul-2019 05:13*
Surr: Toluene-d8	*111*			*82-127*	*%REC*	*1*	*23-Jul-2019 05:13*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW90B-20190718
Collection Date: 18-Jul-2019 14:25

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-24
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 23-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	23-Jul-2019 18:18
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	23-Jul-2019 18:18
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	23-Jul-2019 18:18
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	23-Jul-2019 18:18
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	23-Jul-2019 18:18
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	23-Jul-2019 18:18
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	23-Jul-2019 18:18
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	23-Jul-2019 18:18
Acenaphthene	U		0.000027	0.00010	mg/L	1	23-Jul-2019 18:18
Acenaphthylene	U		0.000015	0.00010	mg/L	1	23-Jul-2019 18:18
Anthracene	U		0.000014	0.00010	mg/L	1	23-Jul-2019 18:18
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	23-Jul-2019 18:18
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	23-Jul-2019 18:18
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	23-Jul-2019 18:18
Bis(2-ethylhexyl)phthalate	**0.00011**	J	**0.000037**	**0.00020**	**mg/L**	1	23-Jul-2019 18:18
Chrysene	U		0.000021	0.00010	mg/L	1	23-Jul-2019 18:18
Dibenzofuran	U		0.000020	0.00010	mg/L	1	23-Jul-2019 18:18
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	23-Jul-2019 18:18
Fluoranthene	U		0.000010	0.00010	mg/L	1	23-Jul-2019 18:18
Fluorene	U		0.000030	0.00010	mg/L	1	23-Jul-2019 18:18
Naphthalene	**0.000091**	J	**0.000020**	**0.00010**	**mg/L**	1	23-Jul-2019 18:18
Nitrobenzene	U		0.000024	0.00020	mg/L	1	23-Jul-2019 18:18
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	23-Jul-2019 18:18
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	23-Jul-2019 18:18
Phenanthrene	U		0.000021	0.00010	mg/L	1	23-Jul-2019 18:18
Phenol	U		0.000035	0.00020	mg/L	1	23-Jul-2019 18:18
Pyrene	U		0.000019	0.00010	mg/L	1	23-Jul-2019 18:18
Surr: 2,4,6-Tribromophenol	*101*			*34-129*	*%REC*	*1*	*23-Jul-2019 18:18*
Surr: 2-Fluorobiphenyl	*84.5*			*40-125*	*%REC*	*1*	*23-Jul-2019 18:18*
Surr: 2-Fluorophenol	*78.2*			*20-120*	*%REC*	*1*	*23-Jul-2019 18:18*
Surr: 4-Terphenyl-d14	*89.3*			*40-135*	*%REC*	*1*	*23-Jul-2019 18:18*
Surr: Nitrobenzene-d5	*87.0*			*41-120*	*%REC*	*1*	*23-Jul-2019 18:18*
Surr: Phenol-d6	*85.5*			*20-120*	*%REC*	*1*	*23-Jul-2019 18:18*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 30-Jul-2019		Analyst: JHD
Arsenic	**0.0135**		**0.000400**	**0.00200**	**mg/L**	1	30-Jul-2019 23:01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW89B-20190718
Collection Date: 18-Jul-2019 15:15

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-25
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	23-Jul-2019 05:37
Benzene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 05:37
Chlorobenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 05:37
Ethylbenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 05:37
Methylene chloride		U	0.0010	0.0020	mg/L	1	23-Jul-2019 05:37
Toluene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 05:37
Xylenes, Total		U	0.00030	0.0010	mg/L	1	23-Jul-2019 05:37
Surr: 1,2-Dichloroethane-d4	*105*			*70-126*	*%REC*	*1*	*23-Jul-2019 05:37*
Surr: 4-Bromofluorobenzene	*105*			*81-113*	*%REC*	*1*	*23-Jul-2019 05:37*
Surr: Dibromofluoromethane	*104*			*77-123*	*%REC*	*1*	*23-Jul-2019 05:37*
Surr: Toluene-d8	*112*			*82-127*	*%REC*	*1*	*23-Jul-2019 05:37*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW89B-20190718
Collection Date: 18-Jul-2019 15:15

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-25
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 23-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	23-Jul-2019 18:38
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	23-Jul-2019 18:38
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	23-Jul-2019 18:38
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	23-Jul-2019 18:38
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	23-Jul-2019 18:38
2-Methylnaphthalene	**0.000050**	J	**0.000019**	**0.00010**	**mg/L**	1	23-Jul-2019 18:38
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	23-Jul-2019 18:38
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	23-Jul-2019 18:38
Acenaphthene	U		0.000027	0.00010	mg/L	1	23-Jul-2019 18:38
Acenaphthylene	U		0.000015	0.00010	mg/L	1	23-Jul-2019 18:38
Anthracene	U		0.000014	0.00010	mg/L	1	23-Jul-2019 18:38
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	23-Jul-2019 18:38
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	23-Jul-2019 18:38
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	23-Jul-2019 18:38
Bis(2-ethylhexyl)phthalate	**0.00015**	J	**0.000037**	**0.00020**	**mg/L**	1	23-Jul-2019 18:38
Chrysene	U		0.000021	0.00010	mg/L	1	23-Jul-2019 18:38
Dibenzofuran	U		0.000020	0.00010	mg/L	1	23-Jul-2019 18:38
Di-n-butyl phthalate	**0.000038**	J	**0.000020**	**0.00020**	**mg/L**	1	23-Jul-2019 18:38
Fluoranthene	U		0.000010	0.00010	mg/L	1	23-Jul-2019 18:38
Fluorene	U		0.000030	0.00010	mg/L	1	23-Jul-2019 18:38
Naphthalene	**0.00025**		**0.000020**	**0.00010**	**mg/L**	1	23-Jul-2019 18:38
Nitrobenzene	U		0.000024	0.00020	mg/L	1	23-Jul-2019 18:38
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	23-Jul-2019 18:38
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	23-Jul-2019 18:38
Phenanthrene	U		0.000021	0.00010	mg/L	1	23-Jul-2019 18:38
Phenol	**0.00042**		**0.000035**	**0.00020**	**mg/L**	1	23-Jul-2019 18:38
Pyrene	U		0.000019	0.00010	mg/L	1	23-Jul-2019 18:38
Surr: 2,4,6-Tribromophenol	*105*			*34-129*	*%REC*	*1*	*23-Jul-2019 18:38*
Surr: 2-Fluorobiphenyl	*76.4*			*40-125*	*%REC*	*1*	*23-Jul-2019 18:38*
Surr: 2-Fluorophenol	*71.0*			*20-120*	*%REC*	*1*	*23-Jul-2019 18:38*
Surr: 4-Terphenyl-d14	*92.2*			*40-135*	*%REC*	*1*	*23-Jul-2019 18:38*
Surr: Nitrobenzene-d5	*80.3*			*41-120*	*%REC*	*1*	*23-Jul-2019 18:38*
Surr: Phenol-d6	*76.1*			*20-120*	*%REC*	*1*	*23-Jul-2019 18:38*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 30-Jul-2019		Analyst: JHD
Arsenic	U		0.000400	0.00200	mg/L	1	30-Jul-2019 23:04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW38B-20190718
Collection Date: 18-Jul-2019 16:10

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-26
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	23-Jul-2019 06:01
Benzene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 06:01
Chlorobenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 06:01
Ethylbenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 06:01
Methylene chloride		U	0.0010	0.0020	mg/L	1	23-Jul-2019 06:01
Toluene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 06:01
Xylenes, Total		U	0.00030	0.0010	mg/L	1	23-Jul-2019 06:01
Surr: 1,2-Dichloroethane-d4	*114*			*70-126*	*%REC*	*1*	*23-Jul-2019 06:01*
Surr: 4-Bromofluorobenzene	*111*			*81-113*	*%REC*	*1*	*23-Jul-2019 06:01*
Surr: Dibromofluoromethane	*113*			*77-123*	*%REC*	*1*	*23-Jul-2019 06:01*
Surr: Toluene-d8	*115*			*82-127*	*%REC*	*1*	*23-Jul-2019 06:01*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW38B-20190718
Collection Date: 18-Jul-2019 16:10

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-26
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 23-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	23-Jul-2019 18:58
2,4-Dimethylphenol	**0.000056**	J	**0.000040**	**0.00020**	**mg/L**	1	23-Jul-2019 18:58
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	23-Jul-2019 18:58
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	23-Jul-2019 18:58
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	23-Jul-2019 18:58
2-Methylnaphthalene	**0.00030**		**0.000019**	**0.00010**	**mg/L**	1	23-Jul-2019 18:58
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	23-Jul-2019 18:58
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	23-Jul-2019 18:58
Acenaphthene	**0.00012**		**0.000027**	**0.00010**	**mg/L**	1	23-Jul-2019 18:58
Acenaphthylene	U		0.000015	0.00010	mg/L	1	23-Jul-2019 18:58
Anthracene	**0.000037**	J	**0.000014**	**0.00010**	**mg/L**	1	23-Jul-2019 18:58
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	23-Jul-2019 18:58
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	23-Jul-2019 18:58
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	23-Jul-2019 18:58
Bis(2-ethylhexyl)phthalate	**0.00031**		**0.000037**	**0.00020**	**mg/L**	1	23-Jul-2019 18:58
Chrysene	U		0.000021	0.00010	mg/L	1	23-Jul-2019 18:58
Dibenzofuran	**0.00014**		**0.000020**	**0.00010**	**mg/L**	1	23-Jul-2019 18:58
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	23-Jul-2019 18:58
Fluoranthene	U		0.000010	0.00010	mg/L	1	23-Jul-2019 18:58
Fluorene	**0.000060**	J	**0.000030**	**0.00010**	**mg/L**	1	23-Jul-2019 18:58
Naphthalene	**0.0026**		**0.000020**	**0.00010**	**mg/L**	1	23-Jul-2019 18:58
Nitrobenzene	U		0.000024	0.00020	mg/L	1	23-Jul-2019 18:58
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	23-Jul-2019 18:58
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	23-Jul-2019 18:58
Phenanthrene	**0.000079**	J	**0.000021**	**0.00010**	**mg/L**	1	23-Jul-2019 18:58
Phenol	**0.000056**	J	**0.000035**	**0.00020**	**mg/L**	1	23-Jul-2019 18:58
Pyrene	U		0.000019	0.00010	mg/L	1	23-Jul-2019 18:58
Surr: 2,4,6-Tribromophenol	*101*			*34-129*	*%REC*	*1*	*23-Jul-2019 18:58*
Surr: 2-Fluorobiphenyl	*96.4*			*40-125*	*%REC*	*1*	*23-Jul-2019 18:58*
Surr: 2-Fluorophenol	*83.6*			*20-120*	*%REC*	*1*	*23-Jul-2019 18:58*
Surr: 4-Terphenyl-d14	*85.6*			*40-135*	*%REC*	*1*	*23-Jul-2019 18:58*
Surr: Nitrobenzene-d5	*90.4*			*41-120*	*%REC*	*1*	*23-Jul-2019 18:58*
Surr: Phenol-d6	*90.0*			*20-120*	*%REC*	*1*	*23-Jul-2019 18:58*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 30-Jul-2019		Analyst: JHD
Arsenic	**0.000553**	J	**0.000400**	**0.00200**	**mg/L**	1	30-Jul-2019 23:06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW27A-20190718
Collection Date: 18-Jul-2019 17:15

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-27
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: PC
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	23-Jul-2019 06:25
Benzene	U		0.00020	0.0010	mg/L	1	23-Jul-2019 06:25
Chlorobenzene	U		0.00030	0.0010	mg/L	1	23-Jul-2019 06:25
Ethylbenzene	U		0.00030	0.0010	mg/L	1	23-Jul-2019 06:25
Methylene chloride	U		0.0010	0.0020	mg/L	1	23-Jul-2019 06:25
Toluene	U		0.00020	0.0010	mg/L	1	23-Jul-2019 06:25
Xylenes, Total	U		0.00030	0.0010	mg/L	1	23-Jul-2019 06:25
Surr: 1,2-Dichloroethane-d4	*102*			*70-126*	*%REC*	*1*	*23-Jul-2019 06:25*
Surr: 4-Bromofluorobenzene	*103*			*81-113*	*%REC*	*1*	*23-Jul-2019 06:25*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*23-Jul-2019 06:25*
Surr: Toluene-d8	*108*			*82-127*	*%REC*	*1*	*23-Jul-2019 06:25*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW27A-20190718
Collection Date: 18-Jul-2019 17:15

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-27
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 23-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	23-Jul-2019 19:18
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	23-Jul-2019 19:18
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	23-Jul-2019 19:18
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	23-Jul-2019 19:18
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	23-Jul-2019 19:18
2-Methylnaphthalene	**0.00034**		**0.000019**	**0.00010**	**mg/L**	1	23-Jul-2019 19:18
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	23-Jul-2019 19:18
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	23-Jul-2019 19:18
Acenaphthene	**0.00011**		**0.000027**	**0.00010**	**mg/L**	1	23-Jul-2019 19:18
Acenaphthylene	U		0.000015	0.00010	mg/L	1	23-Jul-2019 19:18
Anthracene	**0.000036**	J	**0.000014**	**0.00010**	**mg/L**	1	23-Jul-2019 19:18
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	23-Jul-2019 19:18
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	23-Jul-2019 19:18
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	23-Jul-2019 19:18
Bis(2-ethylhexyl)phthalate	**0.00020**		**0.000037**	**0.00020**	**mg/L**	1	23-Jul-2019 19:18
Chrysene	U		0.000021	0.00010	mg/L	1	23-Jul-2019 19:18
Dibenzofuran	**0.00014**		**0.000020**	**0.00010**	**mg/L**	1	23-Jul-2019 19:18
Di-n-butyl phthalate	**0.000034**	J	**0.000020**	**0.00020**	**mg/L**	1	23-Jul-2019 19:18
Fluoranthene	**0.000024**	J	**0.000010**	**0.00010**	**mg/L**	1	23-Jul-2019 19:18
Fluorene	**0.000074**	J	**0.000030**	**0.00010**	**mg/L**	1	23-Jul-2019 19:18
Naphthalene	**0.0026**		**0.000020**	**0.00010**	**mg/L**	1	23-Jul-2019 19:18
Nitrobenzene	U		0.000024	0.00020	mg/L	1	23-Jul-2019 19:18
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	23-Jul-2019 19:18
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	23-Jul-2019 19:18
Phenanthrene	**0.00013**		**0.000021**	**0.00010**	**mg/L**	1	23-Jul-2019 19:18
Phenol	U		0.000035	0.00020	mg/L	1	23-Jul-2019 19:18
Pyrene	U		0.000019	0.00010	mg/L	1	23-Jul-2019 19:18
Surr: 2,4,6-Tribromophenol	*106*			*34-129*	*%REC*	*1*	*23-Jul-2019 19:18*
Surr: 2-Fluorobiphenyl	*86.5*			*40-125*	*%REC*	*1*	*23-Jul-2019 19:18*
Surr: 2-Fluorophenol	*78.0*			*20-120*	*%REC*	*1*	*23-Jul-2019 19:18*
Surr: 4-Terphenyl-d14	*93.2*			*40-135*	*%REC*	*1*	*23-Jul-2019 19:18*
Surr: Nitrobenzene-d5	*90.9*			*41-120*	*%REC*	*1*	*23-Jul-2019 19:18*
Surr: Phenol-d6	*83.4*			*20-120*	*%REC*	*1*	*23-Jul-2019 19:18*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 30-Jul-2019		Analyst: JHD
Arsenic	**0.000498**	J	**0.000400**	**0.00200**	**mg/L**	1	30-Jul-2019 23:08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW27C-20190718
Collection Date: 18-Jul-2019 18:05

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-28
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	23-Jul-2019 06:48
Benzene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 06:48
Chlorobenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 06:48
Ethylbenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 06:48
Methylene chloride		U	0.0010	0.0020	mg/L	1	23-Jul-2019 06:48
Toluene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 06:48
Xylenes, Total		U	0.00030	0.0010	mg/L	1	23-Jul-2019 06:48
Surr: 1,2-Dichloroethane-d4	*110*			*70-126*	*%REC*	*1*	*23-Jul-2019 06:48*
Surr: 4-Bromofluorobenzene	*107*			*81-113*	*%REC*	*1*	*23-Jul-2019 06:48*
Surr: Dibromofluoromethane	*108*			*77-123*	*%REC*	*1*	*23-Jul-2019 06:48*
Surr: Toluene-d8	*113*			*82-127*	*%REC*	*1*	*23-Jul-2019 06:48*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW27C-20190718
Collection Date: 18-Jul-2019 18:05

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-28
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 23-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	23-Jul-2019 19:37
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	23-Jul-2019 19:37
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	23-Jul-2019 19:37
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	23-Jul-2019 19:37
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	23-Jul-2019 19:37
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	23-Jul-2019 19:37
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	23-Jul-2019 19:37
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	23-Jul-2019 19:37
Acenaphthene	U		0.000027	0.00010	mg/L	1	23-Jul-2019 19:37
Acenaphthylene	U		0.000015	0.00010	mg/L	1	23-Jul-2019 19:37
Anthracene	U		0.000014	0.00010	mg/L	1	23-Jul-2019 19:37
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	23-Jul-2019 19:37
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	23-Jul-2019 19:37
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	23-Jul-2019 19:37
Bis(2-ethylhexyl)phthalate	**0.000092**	J	**0.000037**	**0.00020**	**mg/L**	1	23-Jul-2019 19:37
Chrysene	U		0.000021	0.00010	mg/L	1	23-Jul-2019 19:37
Dibenzofuran	U		0.000020	0.00010	mg/L	1	23-Jul-2019 19:37
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	23-Jul-2019 19:37
Fluoranthene	U		0.000010	0.00010	mg/L	1	23-Jul-2019 19:37
Fluorene	U		0.000030	0.00010	mg/L	1	23-Jul-2019 19:37
Naphthalene	**0.000066**	J	**0.000020**	**0.00010**	**mg/L**	1	23-Jul-2019 19:37
Nitrobenzene	U		0.000024	0.00020	mg/L	1	23-Jul-2019 19:37
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	23-Jul-2019 19:37
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	23-Jul-2019 19:37
Phenanthrene	U		0.000021	0.00010	mg/L	1	23-Jul-2019 19:37
Phenol	**0.00023**		**0.000035**	**0.00020**	**mg/L**	1	23-Jul-2019 19:37
Pyrene	U		0.000019	0.00010	mg/L	1	23-Jul-2019 19:37
Surr: 2,4,6-Tribromophenol	*106*			*34-129*	*%REC*	*1*	*23-Jul-2019 19:37*
Surr: 2-Fluorobiphenyl	*85.8*			*40-125*	*%REC*	*1*	*23-Jul-2019 19:37*
Surr: 2-Fluorophenol	*81.7*			*20-120*	*%REC*	*1*	*23-Jul-2019 19:37*
Surr: 4-Terphenyl-d14	*91.7*			*40-135*	*%REC*	*1*	*23-Jul-2019 19:37*
Surr: Nitrobenzene-d5	*91.2*			*41-120*	*%REC*	*1*	*23-Jul-2019 19:37*
Surr: Phenol-d6	*87.0*			*20-120*	*%REC*	*1*	*23-Jul-2019 19:37*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 30-Jul-2019		Analyst: JHD
Arsenic	**0.000428**	J	**0.000400**	**0.00200**	**mg/L**	1	30-Jul-2019 23:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW51A-20190719
Collection Date: 19-Jul-2019 07:25

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-29
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	23-Jul-2019 07:12
Benzene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 07:12
Chlorobenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 07:12
Ethylbenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 07:12
Methylene chloride		U	0.0010	0.0020	mg/L	1	23-Jul-2019 07:12
Toluene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 07:12
Xylenes, Total		U	0.00030	0.0010	mg/L	1	23-Jul-2019 07:12
Surr: 1,2-Dichloroethane-d4	*115*			*70-126*	*%REC*	*1*	*23-Jul-2019 07:12*
Surr: 4-Bromofluorobenzene	*109*			*81-113*	*%REC*	*1*	*23-Jul-2019 07:12*
Surr: Dibromofluoromethane	*114*			*77-123*	*%REC*	*1*	*23-Jul-2019 07:12*
Surr: Toluene-d8	*116*			*82-127*	*%REC*	*1*	*23-Jul-2019 07:12*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW51A-20190719
Collection Date: 19-Jul-2019 07:25

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-29
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 23-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	23-Jul-2019 19:57
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	23-Jul-2019 19:57
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	23-Jul-2019 19:57
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	23-Jul-2019 19:57
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	23-Jul-2019 19:57
2-Methylnaphthalene	**0.000067**	J	**0.000019**	**0.00010**	**mg/L**	1	23-Jul-2019 19:57
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	23-Jul-2019 19:57
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	23-Jul-2019 19:57
Acenaphthene	U		0.000027	0.00010	mg/L	1	23-Jul-2019 19:57
Acenaphthylene	U		0.000015	0.00010	mg/L	1	23-Jul-2019 19:57
Anthracene	U		0.000014	0.00010	mg/L	1	23-Jul-2019 19:57
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	23-Jul-2019 19:57
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	23-Jul-2019 19:57
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	23-Jul-2019 19:57
Bis(2-ethylhexyl)phthalate	**0.00013**	J	**0.000037**	**0.00020**	**mg/L**	1	23-Jul-2019 19:57
Chrysene	U		0.000021	0.00010	mg/L	1	23-Jul-2019 19:57
Dibenzofuran	**0.000030**	J	**0.000020**	**0.00010**	**mg/L**	1	23-Jul-2019 19:57
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	23-Jul-2019 19:57
Fluoranthene	U		0.000010	0.00010	mg/L	1	23-Jul-2019 19:57
Fluorene	U		0.000030	0.00010	mg/L	1	23-Jul-2019 19:57
Naphthalene	**0.00055**		**0.000020**	**0.00010**	**mg/L**	1	23-Jul-2019 19:57
Nitrobenzene	U		0.000024	0.00020	mg/L	1	23-Jul-2019 19:57
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	23-Jul-2019 19:57
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	23-Jul-2019 19:57
Phenanthrene	**0.000026**	J	**0.000021**	**0.00010**	**mg/L**	1	23-Jul-2019 19:57
Phenol	**0.00019**	J	**0.000035**	**0.00020**	**mg/L**	1	23-Jul-2019 19:57
Pyrene	U		0.000019	0.00010	mg/L	1	23-Jul-2019 19:57
Surr: 2,4,6-Tribromophenol	*112*			*34-129*	*%REC*	*1*	*23-Jul-2019 19:57*
Surr: 2-Fluorobiphenyl	*95.7*			*40-125*	*%REC*	*1*	*23-Jul-2019 19:57*
Surr: 2-Fluorophenol	*92.0*			*20-120*	*%REC*	*1*	*23-Jul-2019 19:57*
Surr: 4-Terphenyl-d14	*86.7*			*40-135*	*%REC*	*1*	*23-Jul-2019 19:57*
Surr: Nitrobenzene-d5	*99.5*			*41-120*	*%REC*	*1*	*23-Jul-2019 19:57*
Surr: Phenol-d6	*99.6*			*20-120*	*%REC*	*1*	*23-Jul-2019 19:57*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 30-Jul-2019		Analyst: JHD
Arsenic	U		0.000400	0.00200	mg/L	1	30-Jul-2019 23:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19070994
Sample ID: WG-1620-MW51C-20190719
Lab ID:HS19070994-30
Collection Date: 19-Jul-2019 08:55
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: PC
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	23-Jul-2019 07:36
Benzene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 07:36
Chlorobenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 07:36
Ethylbenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 07:36
Methylene chloride		U	0.0010	0.0020	mg/L	1	23-Jul-2019 07:36
Toluene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 07:36
Xylenes, Total		U	0.00030	0.0010	mg/L	1	23-Jul-2019 07:36
Surr: 1,2-Dichloroethane-d4	*111*			*70-126*	*%REC*	*1*	*23-Jul-2019 07:36*
Surr: 4-Bromofluorobenzene	*109*			*81-113*	*%REC*	*1*	*23-Jul-2019 07:36*
Surr: Dibromofluoromethane	*110*			*77-123*	*%REC*	*1*	*23-Jul-2019 07:36*
Surr: Toluene-d8	*116*			*82-127*	*%REC*	*1*	*23-Jul-2019 07:36*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW51C-20190719
Collection Date: 19-Jul-2019 08:55

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-30
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 23-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	23-Jul-2019 20:17
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	23-Jul-2019 20:17
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	23-Jul-2019 20:17
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	23-Jul-2019 20:17
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	23-Jul-2019 20:17
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	23-Jul-2019 20:17
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	23-Jul-2019 20:17
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	23-Jul-2019 20:17
Acenaphthene	U		0.000027	0.00010	mg/L	1	23-Jul-2019 20:17
Acenaphthylene	U		0.000015	0.00010	mg/L	1	23-Jul-2019 20:17
Anthracene	U		0.000014	0.00010	mg/L	1	23-Jul-2019 20:17
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	23-Jul-2019 20:17
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	23-Jul-2019 20:17
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	23-Jul-2019 20:17
Bis(2-ethylhexyl)phthalate	**0.000079**	J	**0.000037**	**0.00020**	**mg/L**	1	23-Jul-2019 20:17
Chrysene	U		0.000021	0.00010	mg/L	1	23-Jul-2019 20:17
Dibenzofuran	U		0.000020	0.00010	mg/L	1	23-Jul-2019 20:17
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	23-Jul-2019 20:17
Fluoranthene	U		0.000010	0.00010	mg/L	1	23-Jul-2019 20:17
Fluorene	U		0.000030	0.00010	mg/L	1	23-Jul-2019 20:17
Naphthalene	**0.00023**		**0.000020**	**0.00010**	**mg/L**	1	23-Jul-2019 20:17
Nitrobenzene	U		0.000024	0.00020	mg/L	1	23-Jul-2019 20:17
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	23-Jul-2019 20:17
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	23-Jul-2019 20:17
Phenanthrene	U		0.000021	0.00010	mg/L	1	23-Jul-2019 20:17
Phenol	**0.00027**		**0.000035**	**0.00020**	**mg/L**	1	23-Jul-2019 20:17
Pyrene	U		0.000019	0.00010	mg/L	1	23-Jul-2019 20:17
Surr: 2,4,6-Tribromophenol	*106*			*34-129*	*%REC*	*1*	*23-Jul-2019 20:17*
Surr: 2-Fluorobiphenyl	*87.4*			*40-125*	*%REC*	*1*	*23-Jul-2019 20:17*
Surr: 2-Fluorophenol	*83.4*			*20-120*	*%REC*	*1*	*23-Jul-2019 20:17*
Surr: 4-Terphenyl-d14	*85.7*			*40-135*	*%REC*	*1*	*23-Jul-2019 20:17*
Surr: Nitrobenzene-d5	*92.6*			*41-120*	*%REC*	*1*	*23-Jul-2019 20:17*
Surr: Phenol-d6	*89.8*			*20-120*	*%REC*	*1*	*23-Jul-2019 20:17*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 30-Jul-2019		Analyst: JHD
Arsenic	U		0.000400	0.00200	mg/L	1	30-Jul-2019 23:15

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW81B-20190719
Collection Date: 19-Jul-2019 09:45

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-31
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	23-Jul-2019 08:00
Benzene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 08:00
Chlorobenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 08:00
Ethylbenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 08:00
Methylene chloride		U	0.0010	0.0020	mg/L	1	23-Jul-2019 08:00
Toluene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 08:00
Xylenes, Total		U	0.00030	0.0010	mg/L	1	23-Jul-2019 08:00
Surr: 1,2-Dichloroethane-d4	*110*			*70-126*	*%REC*	*1*	*23-Jul-2019 08:00*
Surr: 4-Bromofluorobenzene	*109*			*81-113*	*%REC*	*1*	*23-Jul-2019 08:00*
Surr: Dibromofluoromethane	*109*			*77-123*	*%REC*	*1*	*23-Jul-2019 08:00*
Surr: Toluene-d8	*114*			*82-127*	*%REC*	*1*	*23-Jul-2019 08:00*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW81B-20190719
Collection Date: 19-Jul-2019 09:45

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-31
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 23-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	23-Jul-2019 20:37
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	23-Jul-2019 20:37
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	23-Jul-2019 20:37
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	23-Jul-2019 20:37
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	23-Jul-2019 20:37
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	23-Jul-2019 20:37
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	23-Jul-2019 20:37
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	23-Jul-2019 20:37
Acenaphthene	U		0.000027	0.00010	mg/L	1	23-Jul-2019 20:37
Acenaphthylene	U		0.000015	0.00010	mg/L	1	23-Jul-2019 20:37
Anthracene	U		0.000014	0.00010	mg/L	1	23-Jul-2019 20:37
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	23-Jul-2019 20:37
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	23-Jul-2019 20:37
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	23-Jul-2019 20:37
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	23-Jul-2019 20:37
Chrysene	U		0.000021	0.00010	mg/L	1	23-Jul-2019 20:37
Dibenzofuran	U		0.000020	0.00010	mg/L	1	23-Jul-2019 20:37
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	23-Jul-2019 20:37
Fluoranthene	U		0.000010	0.00010	mg/L	1	23-Jul-2019 20:37
Fluorene	U		0.000030	0.00010	mg/L	1	23-Jul-2019 20:37
Naphthalene	**0.000099**	J	**0.000020**	**0.00010**	**mg/L**	1	23-Jul-2019 20:37
Nitrobenzene	U		0.000024	0.00020	mg/L	1	23-Jul-2019 20:37
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	23-Jul-2019 20:37
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	23-Jul-2019 20:37
Phenanthrene	U		0.000021	0.00010	mg/L	1	23-Jul-2019 20:37
Phenol	U		0.000035	0.00020	mg/L	1	23-Jul-2019 20:37
Pyrene	U		0.000019	0.00010	mg/L	1	23-Jul-2019 20:37
Surr: 2,4,6-Tribromophenol	*85.0*			*34-129*	*%REC*	*1*	*23-Jul-2019 20:37*
Surr: 2-Fluorobiphenyl	*79.3*			*40-125*	*%REC*	*1*	*23-Jul-2019 20:37*
Surr: 2-Fluorophenol	*73.1*			*20-120*	*%REC*	*1*	*23-Jul-2019 20:37*
Surr: 4-Terphenyl-d14	*80.9*			*40-135*	*%REC*	*1*	*23-Jul-2019 20:37*
Surr: Nitrobenzene-d5	*80.9*			*41-120*	*%REC*	*1*	*23-Jul-2019 20:37*
Surr: Phenol-d6	*79.3*			*20-120*	*%REC*	*1*	*23-Jul-2019 20:37*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 30-Jul-2019		Analyst: JHD
Arsenic	**0.000563**	J	**0.000400**	**0.00200**	**mg/L**	1	30-Jul-2019 23:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW50A-20190719
Collection Date: 19-Jul-2019 10:40

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-32
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	23-Jul-2019 08:24
Benzene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 08:24
Chlorobenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 08:24
Ethylbenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 08:24
Methylene chloride		U	0.0010	0.0020	mg/L	1	23-Jul-2019 08:24
Toluene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 08:24
Xylenes, Total		U	0.00030	0.0010	mg/L	1	23-Jul-2019 08:24
Surr: 1,2-Dichloroethane-d4	*105*			*70-126*	*%REC*	*1*	*23-Jul-2019 08:24*
Surr: 4-Bromofluorobenzene	*103*			*81-113*	*%REC*	*1*	*23-Jul-2019 08:24*
Surr: Dibromofluoromethane	*106*			*77-123*	*%REC*	*1*	*23-Jul-2019 08:24*
Surr: Toluene-d8	*110*			*82-127*	*%REC*	*1*	*23-Jul-2019 08:24*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW50A-20190719
Collection Date: 19-Jul-2019 10:40

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-32
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 23-Jul-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	24-Jul-2019 15:41
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	24-Jul-2019 15:41
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	24-Jul-2019 15:41
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	24-Jul-2019 15:41
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	24-Jul-2019 15:41
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	24-Jul-2019 15:41
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	24-Jul-2019 15:41
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	24-Jul-2019 15:41
Acenaphthene	U		0.000027	0.00010	mg/L	1	24-Jul-2019 15:41
Acenaphthylene	U		0.000015	0.00010	mg/L	1	24-Jul-2019 15:41
Anthracene	U		0.000014	0.00010	mg/L	1	24-Jul-2019 15:41
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	24-Jul-2019 15:41
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	24-Jul-2019 15:41
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	24-Jul-2019 15:41
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	24-Jul-2019 15:41
Chrysene	U		0.000021	0.00010	mg/L	1	24-Jul-2019 15:41
Dibenzofuran	U		0.000020	0.00010	mg/L	1	24-Jul-2019 15:41
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	24-Jul-2019 15:41
Fluoranthene	U		0.000010	0.00010	mg/L	1	24-Jul-2019 15:41
Fluorene	U		0.000030	0.00010	mg/L	1	24-Jul-2019 15:41
Naphthalene	**0.00027**		**0.000020**	**0.00010**	**mg/L**	1	24-Jul-2019 15:41
Nitrobenzene	U		0.000024	0.00020	mg/L	1	24-Jul-2019 15:41
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	24-Jul-2019 15:41
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	24-Jul-2019 15:41
Phenanthrene	U		0.000021	0.00010	mg/L	1	24-Jul-2019 15:41
Phenol	**0.00016**	J	**0.000035**	**0.00020**	**mg/L**	1	24-Jul-2019 15:41
Pyrene	U		0.000019	0.00010	mg/L	1	24-Jul-2019 15:41
Surr: 2,4,6-Tribromophenol	*87.3*			*34-129*	*%REC*	*1*	*24-Jul-2019 15:41*
Surr: 2-Fluorobiphenyl	*79.2*			*40-125*	*%REC*	*1*	*24-Jul-2019 15:41*
Surr: 2-Fluorophenol	*78.4*			*20-120*	*%REC*	*1*	*24-Jul-2019 15:41*
Surr: 4-Terphenyl-d14	*92.2*			*40-135*	*%REC*	*1*	*24-Jul-2019 15:41*
Surr: Nitrobenzene-d5	*73.6*			*41-120*	*%REC*	*1*	*24-Jul-2019 15:41*
Surr: Phenol-d6	*83.0*			*20-120*	*%REC*	*1*	*24-Jul-2019 15:41*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 30-Jul-2019		Analyst: JHD
Arsenic	**0.000642**	J	**0.000400**	**0.00200**	**mg/L**	1	30-Jul-2019 23:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19070994
Sample ID: WG-1620-TB05-20190719
Lab ID:HS19070994-33
Collection Date: 19-Jul-2019 00:00
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	23-Jul-2019 02:25
Benzene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 02:25
Chlorobenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 02:25
Ethylbenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 02:25
Methylene chloride		U	0.0010	0.0020	mg/L	1	23-Jul-2019 02:25
Toluene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 02:25
Vinyl chloride		U	0.00020	0.0010	mg/L	1	23-Jul-2019 02:25
Xylenes, Total		U	0.00030	0.0010	mg/L	1	23-Jul-2019 02:25
Surr: 1,2-Dichloroethane-d4	*93.4*			*70-126*	*%REC*	*1*	*23-Jul-2019 02:25*
Surr: 4-Bromofluorobenzene	*96.4*			*81-113*	*%REC*	*1*	*23-Jul-2019 02:25*
Surr: Dibromofluoromethane	*92.9*			*77-123*	*%REC*	*1*	*23-Jul-2019 02:25*
Surr: Toluene-d8	*103*			*82-127*	*%REC*	*1*	*23-Jul-2019 02:25*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-TB06-20190719
Collection Date: 19-Jul-2019 00:00

ANALYTICAL REPORT
WorkOrder:HS19070994
Lab ID:HS19070994-34
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	23-Jul-2019 02:49
Benzene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 02:49
Chlorobenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 02:49
Ethylbenzene		U	0.00030	0.0010	mg/L	1	23-Jul-2019 02:49
Methylene chloride		U	0.0010	0.0020	mg/L	1	23-Jul-2019 02:49
Toluene		U	0.00020	0.0010	mg/L	1	23-Jul-2019 02:49
Vinyl chloride		U	0.00020	0.0010	mg/L	1	23-Jul-2019 02:49
Xylenes, Total		U	0.00030	0.0010	mg/L	1	23-Jul-2019 02:49
Surr: 1,2-Dichloroethane-d4	*97.8*			*70-126*	*%REC*	*1*	*23-Jul-2019 02:49*
Surr: 4-Bromofluorobenzene	*99.5*			*81-113*	*%REC*	*1*	*23-Jul-2019 02:49*
Surr: Dibromofluoromethane	*97.2*			*77-123*	*%REC*	*1*	*23-Jul-2019 02:49*
Surr: Toluene-d8	*105*			*82-127*	*%REC*	*1*	*23-Jul-2019 02:49*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

WEIGHT LOG

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070994

Batch ID: 143239 **Method:** LOW-LEVEL SEMIVOLATILES BY 8270D **Prep:** 3510_B_LOW

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19070994-01	1	1000	1 (mL)	0.001
HS19070994-02	1	1000	1 (mL)	0.001
HS19070994-03	1	1000	1 (mL)	0.001
HS19070994-04	1	1000	1 (mL)	0.001
HS19070994-05	1	1000	1 (mL)	0.001
HS19070994-06	1	1000	1 (mL)	0.001
HS19070994-07	1	1000	1 (mL)	0.001
HS19070994-08	1	1000	1 (mL)	0.001
HS19070994-09	1	1000	1 (mL)	0.001
HS19070994-10	1	1000	1 (mL)	0.001
HS19070994-11	1	1000	1 (mL)	0.001
HS19070994-12	1	1000	1 (mL)	0.001
HS19070994-13	1	1000	1 (mL)	0.001
HS19070994-14	1	1000	1 (mL)	0.001
HS19070994-15	1	1000	1 (mL)	0.001
HS19070994-16	1	1000	1 (mL)	0.001
HS19070994-17	1	1000	1 (mL)	0.001
HS19070994-18	1	1000	1 (mL)	0.001
HS19070994-19	1	1000	1 (mL)	0.001
HS19070994-20	1	1000	1 (mL)	0.001

Batch ID: 143295 **Method:** LOW-LEVEL SEMIVOLATILES BY 8270D **Prep:** 3510_B_LOW

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19070994-21	1	1000	1 (mL)	0.001
HS19070994-22	1	1000	1 (mL)	0.001
HS19070994-23	1	1000	1 (mL)	0.001
HS19070994-24	1	1000	1 (mL)	0.001
HS19070994-25	1	1000	1 (mL)	0.001
HS19070994-26	1	1000	1 (mL)	0.001
HS19070994-27	1	1000	1 (mL)	0.001
HS19070994-28	1	1000	1 (mL)	0.001
HS19070994-29	1	1000	1 (mL)	0.001
HS19070994-30	1	1000	1 (mL)	0.001
HS19070994-31	1	1000	1 (mL)	0.001
HS19070994-32	1	1000	1 (mL)	0.001

WEIGHT LOG

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070994

Batch ID: 143526 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19070994-01	1	10	10 (mL)	1
HS19070994-02	1	10	10 (mL)	1
HS19070994-03	1	10	10 (mL)	1
HS19070994-04	1	10	10 (mL)	1
HS19070994-05	1	10	10 (mL)	1
HS19070994-06	1	10	10 (mL)	1
HS19070994-07	1	10	10 (mL)	1
HS19070994-08	1	10	10 (mL)	1
HS19070994-09	1	10	10 (mL)	1
HS19070994-10	1	10	10 (mL)	1
HS19070994-11	1	10	10 (mL)	1
HS19070994-12	1	10	10 (mL)	1
HS19070994-13	1	10	10 (mL)	1
HS19070994-14	1	10	10 (mL)	1
HS19070994-15	1	10	10 (mL)	1
HS19070994-16	1	10	10 (mL)	1
HS19070994-17	1	10	10 (mL)	1
HS19070994-18	1	10	10 (mL)	1
HS19070994-19	1	10	10 (mL)	1
HS19070994-20	1	10	10 (mL)	1

Batch ID: 143558 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19070994-21	1	10	10 (mL)	1
HS19070994-22	1	10	10 (mL)	1
HS19070994-23	1	10	10 (mL)	1
HS19070994-24	1	10	10 (mL)	1
HS19070994-25	1	10	10 (mL)	1
HS19070994-26	1	10	10 (mL)	1
HS19070994-27	1	10	10 (mL)	1
HS19070994-28	1	10	10 (mL)	1
HS19070994-29	1	10	10 (mL)	1
HS19070994-30	1	10	10 (mL)	1
HS19070994-31	1	10	10 (mL)	1
HS19070994-32	1	10	10 (mL)	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070994

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID: 143239 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Water	
HS19070994-01	WG-1620-FB04-20190716	16 Jul 2019 18:20		22 Jul 2019 11:13	23 Jul 2019 11:41	1
HS19070994-02	WG-1620-MW61A-20190717	17 Jul 2019 07:50		22 Jul 2019 11:13	23 Jul 2019 12:21	1
HS19070994-03	WG-1620-MW60A-20190717	17 Jul 2019 08:35		22 Jul 2019 11:13	22 Jul 2019 18:57	1
HS19070994-04	WG-1620-MW69A-20190717	17 Jul 2019 09:35		22 Jul 2019 11:13	22 Jul 2019 19:17	1
HS19070994-05	WG-1620-MW47C-20190717	17 Jul 2019 10:25		22 Jul 2019 11:13	22 Jul 2019 19:36	1
HS19070994-06	WG-1620-MW48C-20190717	17 Jul 2019 11:20		22 Jul 2019 11:13	22 Jul 2019 19:56	1
HS19070994-07	WG-1620-MW59A-20190717	17 Jul 2019 12:20		22 Jul 2019 11:13	22 Jul 2019 20:16	1
HS19070994-08	WG-1620-MW59B-20190717	17 Jul 2019 13:10		22 Jul 2019 11:13	22 Jul 2019 20:36	1
HS19070994-09	WG-1620-MW44A-20190717	17 Jul 2019 14:00		22 Jul 2019 11:13	23 Jul 2019 15:59	10
HS19070994-09	WG-1620-MW44A-20190717	17 Jul 2019 14:00		22 Jul 2019 11:13	22 Jul 2019 20:56	1
HS19070994-10	WG-1620-MW87C-20190717	17 Jul 2019 15:40		22 Jul 2019 11:13	22 Jul 2019 21:16	1
HS19070994-11	WG-1620-MW71B-20190717	17 Jul 2019 16:40		22 Jul 2019 11:13	23 Jul 2019 16:39	100
HS19070994-11	WG-1620-MW71B-20190717	17 Jul 2019 16:40		22 Jul 2019 11:13	23 Jul 2019 16:19	10
HS19070994-11	WG-1620-MW71B-20190717	17 Jul 2019 16:40		22 Jul 2019 11:13	22 Jul 2019 21:36	1
HS19070994-12	WG-1620-MW33A-20190717	17 Jul 2019 17:50		22 Jul 2019 11:13	22 Jul 2019 21:55	1
HS19070994-13	WG-1620-FD02-20190717	17 Jul 2019 17:50		22 Jul 2019 11:13	23 Jul 2019 13:20	1
HS19070994-14	WG-1620-MW26A-20190717	17 Jul 2019 18:45		22 Jul 2019 11:13	23 Jul 2019 16:59	10
HS19070994-14	WG-1620-MW26A-20190717	17 Jul 2019 18:45		22 Jul 2019 11:13	23 Jul 2019 13:40	1
HS19070994-15	WG-1620-FB05-20190717	17 Jul 2019 19:05		22 Jul 2019 11:13	23 Jul 2019 14:00	1
HS19070994-16	WG-1620-MW68A-20190718	18 Jul 2019 07:55		22 Jul 2019 11:13	23 Jul 2019 14:20	1
HS19070994-17	WG-1620-MW68B-20190718	18 Jul 2019 08:55		22 Jul 2019 11:13	25 Jul 2019 18:57	100
HS19070994-17	WG-1620-MW68B-20190718	18 Jul 2019 08:55		22 Jul 2019 11:13	24 Jul 2019 15:22	1000
HS19070994-17	WG-1620-MW68B-20190718	18 Jul 2019 08:55		22 Jul 2019 11:13	23 Jul 2019 21:16	10
HS19070994-18	WG-1620-FD03-20190718	18 Jul 2019 08:55		22 Jul 2019 11:13	24 Jul 2019 14:43	1000
HS19070994-18	WG-1620-FD03-20190718	18 Jul 2019 08:55		22 Jul 2019 11:13	24 Jul 2019 14:23	100
HS19070994-18	WG-1620-FD03-20190718	18 Jul 2019 08:55		22 Jul 2019 11:13	23 Jul 2019 21:36	10
HS19070994-19	WG-1620-MW68C-20190718	18 Jul 2019 09:45		22 Jul 2019 11:13	23 Jul 2019 15:19	1
HS19070994-20	WG-1620-MW83B-20190718	18 Jul 2019 10:40		22 Jul 2019 11:13	24 Jul 2019 15:02	100
HS19070994-20	WG-1620-MW83B-20190718	18 Jul 2019 10:40		22 Jul 2019 11:13	23 Jul 2019 21:56	10
HS19070994-20	WG-1620-MW83B-20190718	18 Jul 2019 10:40		22 Jul 2019 11:13	23 Jul 2019 15:39	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070994

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID: 143295 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Water	
HS19070994-21	WG-1620-MW83C-20190718	18 Jul 2019 11:30		23 Jul 2019 13:00	23 Jul 2019 17:19	1
HS19070994-22	WG-1620-MW35A-20190718	18 Jul 2019 12:40		23 Jul 2019 13:00	23 Jul 2019 17:38	1
HS19070994-23	WG-1620-MW35B-20190718	18 Jul 2019 13:30		23 Jul 2019 13:00	26 Jul 2019 19:55	500
HS19070994-23	WG-1620-MW35B-20190718	18 Jul 2019 13:30		23 Jul 2019 13:00	25 Jul 2019 19:17	10
HS19070994-23	WG-1620-MW35B-20190718	18 Jul 2019 13:30		23 Jul 2019 13:00	23 Jul 2019 17:58	1
HS19070994-24	WG-1620-MW90B-20190718	18 Jul 2019 14:25		23 Jul 2019 13:00	23 Jul 2019 18:18	1
HS19070994-25	WG-1620-MW89B-20190718	18 Jul 2019 15:15		23 Jul 2019 13:00	23 Jul 2019 18:38	1
HS19070994-26	WG-1620-MW38B-20190718	18 Jul 2019 16:10		23 Jul 2019 13:00	23 Jul 2019 18:58	1
HS19070994-27	WG-1620-MW27A-20190718	18 Jul 2019 17:15		23 Jul 2019 13:00	23 Jul 2019 19:18	1
HS19070994-28	WG-1620-MW27C-20190718	18 Jul 2019 18:05		23 Jul 2019 13:00	23 Jul 2019 19:37	1
HS19070994-29	WG-1620-MW51A-20190719	19 Jul 2019 07:25		23 Jul 2019 13:00	23 Jul 2019 19:57	1
HS19070994-30	WG-1620-MW51C-20190719	19 Jul 2019 08:55		23 Jul 2019 13:00	23 Jul 2019 20:17	1
HS19070994-31	WG-1620-MW81B-20190719	19 Jul 2019 09:45		23 Jul 2019 13:00	23 Jul 2019 20:37	1
HS19070994-32	WG-1620-MW50A-20190719	19 Jul 2019 10:40		23 Jul 2019 13:00	24 Jul 2019 15:41	1
Batch ID: 143526 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS19070994-01	WG-1620-FB04-20190716	16 Jul 2019 18:20		29 Jul 2019 14:00	30 Jul 2019 21:42	1
HS19070994-02	WG-1620-MW61A-20190717	17 Jul 2019 07:50		29 Jul 2019 14:00	30 Jul 2019 21:26	1
HS19070994-03	WG-1620-MW60A-20190717	17 Jul 2019 08:35		29 Jul 2019 14:00	30 Jul 2019 21:44	1
HS19070994-04	WG-1620-MW69A-20190717	17 Jul 2019 09:35		29 Jul 2019 14:00	30 Jul 2019 21:47	1
HS19070994-05	WG-1620-MW47C-20190717	17 Jul 2019 10:25		29 Jul 2019 14:00	30 Jul 2019 21:49	1
HS19070994-06	WG-1620-MW48C-20190717	17 Jul 2019 11:20		29 Jul 2019 14:00	30 Jul 2019 21:51	1
HS19070994-07	WG-1620-MW59A-20190717	17 Jul 2019 12:20		29 Jul 2019 14:00	30 Jul 2019 21:53	1
HS19070994-08	WG-1620-MW59B-20190717	17 Jul 2019 13:10		29 Jul 2019 14:00	30 Jul 2019 21:56	1
HS19070994-09	WG-1620-MW44A-20190717	17 Jul 2019 14:00		29 Jul 2019 14:00	30 Jul 2019 21:58	1
HS19070994-10	WG-1620-MW87C-20190717	17 Jul 2019 15:40		29 Jul 2019 14:00	30 Jul 2019 22:00	1
HS19070994-11	WG-1620-MW71B-20190717	17 Jul 2019 16:40		29 Jul 2019 14:00	30 Jul 2019 22:02	1
HS19070994-12	WG-1620-MW33A-20190717	17 Jul 2019 17:50		29 Jul 2019 14:00	30 Jul 2019 22:09	1
HS19070994-13	WG-1620-FD02-20190717	17 Jul 2019 17:50		29 Jul 2019 14:00	30 Jul 2019 22:11	1
HS19070994-14	WG-1620-MW26A-20190717	17 Jul 2019 18:45		29 Jul 2019 14:00	30 Jul 2019 22:14	1
HS19070994-15	WG-1620-FB05-20190717	17 Jul 2019 19:05		29 Jul 2019 14:00	30 Jul 2019 22:16	1
HS19070994-16	WG-1620-MW68A-20190718	18 Jul 2019 07:55		29 Jul 2019 14:00	30 Jul 2019 22:18	1
HS19070994-17	WG-1620-MW68B-20190718	18 Jul 2019 08:55		29 Jul 2019 14:00	30 Jul 2019 22:21	1
HS19070994-18	WG-1620-FD03-20190718	18 Jul 2019 08:55		29 Jul 2019 14:00	30 Jul 2019 22:23	1
HS19070994-19	WG-1620-MW68C-20190718	18 Jul 2019 09:45		29 Jul 2019 14:00	30 Jul 2019 22:25	1
HS19070994-20	WG-1620-MW83B-20190718	18 Jul 2019 10:40		29 Jul 2019 14:00	30 Jul 2019 22:27	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070994

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID: 143558 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS19070994-21	WG-1620-MW83C-20190718	18 Jul 2019 11:30		30 Jul 2019 12:00	30 Jul 2019 22:41	1
HS19070994-22	WG-1620-MW35A-20190718	18 Jul 2019 12:40		30 Jul 2019 12:00	30 Jul 2019 22:57	1
HS19070994-23	WG-1620-MW35B-20190718	18 Jul 2019 13:30		30 Jul 2019 12:00	30 Jul 2019 22:59	1
HS19070994-24	WG-1620-MW90B-20190718	18 Jul 2019 14:25		30 Jul 2019 12:00	30 Jul 2019 23:01	1
HS19070994-25	WG-1620-MW89B-20190718	18 Jul 2019 15:15		30 Jul 2019 12:00	30 Jul 2019 23:04	1
HS19070994-26	WG-1620-MW38B-20190718	18 Jul 2019 16:10		30 Jul 2019 12:00	30 Jul 2019 23:06	1
HS19070994-27	WG-1620-MW27A-20190718	18 Jul 2019 17:15		30 Jul 2019 12:00	30 Jul 2019 23:08	1
HS19070994-28	WG-1620-MW27C-20190718	18 Jul 2019 18:05		30 Jul 2019 12:00	30 Jul 2019 23:10	1
HS19070994-29	WG-1620-MW51A-20190719	19 Jul 2019 07:25		30 Jul 2019 12:00	30 Jul 2019 23:13	1
HS19070994-30	WG-1620-MW51C-20190719	19 Jul 2019 08:55		30 Jul 2019 12:00	30 Jul 2019 23:15	1
HS19070994-31	WG-1620-MW81B-20190719	19 Jul 2019 09:45		30 Jul 2019 12:00	30 Jul 2019 23:17	1
HS19070994-32	WG-1620-MW50A-20190719	19 Jul 2019 10:40		30 Jul 2019 12:00	30 Jul 2019 23:24	1
Batch ID: R342868 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS19070994-19	WG-1620-MW68C-20190718	18 Jul 2019 09:45			23 Jul 2019 02:01	1
HS19070994-20	WG-1620-MW83B-20190718	18 Jul 2019 10:40			23 Jul 2019 06:30	1
Batch ID: R342877 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS19070994-21	WG-1620-MW83C-20190718	18 Jul 2019 11:30			23 Jul 2019 03:13	1
HS19070994-22	WG-1620-MW35A-20190718	18 Jul 2019 12:40			23 Jul 2019 04:25	1
HS19070994-23	WG-1620-MW35B-20190718	18 Jul 2019 13:30			23 Jul 2019 04:49	1
HS19070994-24	WG-1620-MW90B-20190718	18 Jul 2019 14:25			23 Jul 2019 05:13	1
HS19070994-25	WG-1620-MW89B-20190718	18 Jul 2019 15:15			23 Jul 2019 05:37	1
HS19070994-26	WG-1620-MW38B-20190718	18 Jul 2019 16:10			23 Jul 2019 06:01	1
HS19070994-27	WG-1620-MW27A-20190718	18 Jul 2019 17:15			23 Jul 2019 06:25	1
HS19070994-28	WG-1620-MW27C-20190718	18 Jul 2019 18:05			23 Jul 2019 06:48	1
HS19070994-29	WG-1620-MW51A-20190719	19 Jul 2019 07:25			23 Jul 2019 07:12	1
HS19070994-30	WG-1620-MW51C-20190719	19 Jul 2019 08:55			23 Jul 2019 07:36	1
HS19070994-31	WG-1620-MW81B-20190719	19 Jul 2019 09:45			23 Jul 2019 08:00	1
HS19070994-32	WG-1620-MW50A-20190719	19 Jul 2019 10:40			23 Jul 2019 08:24	1
HS19070994-33	WG-1620-TB05-20190719	19 Jul 2019 00:00			23 Jul 2019 02:25	1
HS19070994-34	WG-1620-TB06-20190719	19 Jul 2019 00:00			23 Jul 2019 02:49	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070994

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID: R342879 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS19070994-01	WG-1620-FB04-20190716	16 Jul 2019 18:20			23 Jul 2019 00:42	1
HS19070994-02	WG-1620-MW61A-20190717	17 Jul 2019 07:50			23 Jul 2019 01:32	1
HS19070994-03	WG-1620-MW60A-20190717	17 Jul 2019 08:35			23 Jul 2019 03:10	1
HS19070994-04	WG-1620-MW69A-20190717	17 Jul 2019 09:35			23 Jul 2019 03:35	1
HS19070994-05	WG-1620-MW47C-20190717	17 Jul 2019 10:25			23 Jul 2019 03:59	1
HS19070994-06	WG-1620-MW48C-20190717	17 Jul 2019 11:20			23 Jul 2019 04:24	1
HS19070994-07	WG-1620-MW59A-20190717	17 Jul 2019 12:20			23 Jul 2019 04:48	1
HS19070994-08	WG-1620-MW59B-20190717	17 Jul 2019 13:10			23 Jul 2019 05:13	1
HS19070994-09	WG-1620-MW44A-20190717	17 Jul 2019 14:00			23 Jul 2019 05:37	1
HS19070994-10	WG-1620-MW87C-20190717	17 Jul 2019 15:40			23 Jul 2019 06:02	1
HS19070994-11	WG-1620-MW71B-20190717	17 Jul 2019 16:40			23 Jul 2019 06:26	1
HS19070994-12	WG-1620-MW33A-20190717	17 Jul 2019 17:50			23 Jul 2019 06:51	1
HS19070994-13	WG-1620-FD02-20190717	17 Jul 2019 17:50			23 Jul 2019 07:16	1
HS19070994-14	WG-1620-MW26A-20190717	17 Jul 2019 18:45			23 Jul 2019 07:40	1
HS19070994-15	WG-1620-FB05-20190717	17 Jul 2019 19:05			23 Jul 2019 01:07	1
HS19070994-16	WG-1620-MW68A-20190718	18 Jul 2019 07:55			23 Jul 2019 08:05	1
HS19070994-17	WG-1620-MW68B-20190718	18 Jul 2019 08:55			23 Jul 2019 08:59	100
HS19070994-17	WG-1620-MW68B-20190718	18 Jul 2019 08:55			23 Jul 2019 08:32	10
HS19070994-18	WG-1620-FD03-20190718	18 Jul 2019 08:55			23 Jul 2019 09:53	100
HS19070994-18	WG-1620-FD03-20190718	18 Jul 2019 08:55			23 Jul 2019 09:26	10

WorkOrder: HS19070994
InstrumentID: ICPMS05
Test Code: ICP_TW
Test Number: SW6020
Test Name: ICP-MS Metals by SW6020A

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Arsenic	7440-38-2	0.000500	0.000547	0.000400	0.00200

WorkOrder: HS19070994
InstrumentID: SV-7
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Diphenylhydrazine	122-66-7	0.00010	0.00011	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.00010	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.000096	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.00012	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.00011	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.00010	0.00012	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000013	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00010	0.00013	0.000047	0.0010
A	Acenaphthene	83-32-9	0.00010	0.00011	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.00010	0.00010	0.000015	0.00010
A	Anthracene	120-12-7	0.00010	0.00011	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.00010	0.000099	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.00010	0.000076	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.00012	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.000086	0.000037	0.00020
A	Chrysene	218-01-9	0.00010	0.00011	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.00010	0.000094	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.000099	0.000020	0.00020
A	Fluoranthene	206-44-0	0.00010	0.00012	0.000010	0.00010
A	Fluorene	86-73-7	0.00010	0.00012	0.000030	0.00010
A	Naphthalene	91-20-3	0.00010	0.00010	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.00013	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.00012	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.000085	0.000079	0.00020
A	Phenanthrene	85-01-8	0.00010	0.00011	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.000094	0.000035	0.00020
A	Pyrene	129-00-0	0.00010	0.00011	0.000019	0.00010
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0.00020
S	2-Fluorobiphenyl	321-60-8	0	0	0	0.00020
S	2-Fluorophenol	367-12-4	0	0	0	0.00020
S	4-Terphenyl-d14	1718-51-0	0	0	0	0.00020
S	Nitrobenzene-d5	4165-60-0	0	0	0	0.00020
S	Phenol-d6	13127-88-3	0	0	0	0.00020

WorkOrder: HS19070994
InstrumentID: VOA4
Test Code: 8260_LL_W
Test Number: SW8260
Test Name: Low Level Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.00050	0.00064	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00060	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00061	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00063	0.00030	0.0010
A	Methylene chloride	75-09-2	0.0010	0.00077	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00058	0.00020	0.0010
A	Vinyl chloride	75-01-4	0.00050	0.00070	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00062	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

WorkOrder: HS19070994
InstrumentID: VOA2
Test Code: 8260_LL_W
Test Number: SW8260
Test Name: Low Level Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.00050	0.00067	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00056	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00059	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00051	0.00030	0.0010
A	Methylene chloride	75-09-2	0.00050	0.00054	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00056	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00052	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

WorkOrder: HS19070994
InstrumentID: VOA6
Test Code: 8260_LL_W
Test Number: SW8260
Test Name: Low Level Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.00050	0.00065	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00062	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00061	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00062	0.00030	0.0010
A	Methylene chloride	75-09-2	0.00050	0.00067	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00060	0.00020	0.0010
A	Vinyl chloride	75-01-4	0.00050	0.00049	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.0019	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070994

QC BATCH REPORT

Batch ID: 143526 (0) **Instrument: ICPMS05** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-143526** Units: **mg/L** Analysis Date: **30-Jul-2019 21:22**
Client ID: Run ID: **ICPMS05_343276** SeqNo: **5187971** PrepDate: **29-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								

LCS Sample ID: **LCS-143526** Units: **mg/L** Analysis Date: **30-Jul-2019 21:24**
Client ID: Run ID: **ICPMS05_343276** SeqNo: **5187972** PrepDate: **29-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04941	0.00200	0.05	0	98.8	80 - 120				

MS Sample ID: **HS19070994-02MS** Units: **mg/L** Analysis Date: **30-Jul-2019 21:31**
Client ID: **WG-1620-MW61A-20190717** Run ID: **ICPMS05_343276** SeqNo: **5187975** PrepDate: **29-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0527	0.00200	0.05	0.00117	103	80 - 120				

MSD Sample ID: **HS19070994-02MSD** Units: **mg/L** Analysis Date: **30-Jul-2019 21:33**
Client ID: **WG-1620-MW61A-20190717** Run ID: **ICPMS05_343276** SeqNo: **5187976** PrepDate: **29-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05075	0.00200	0.05	0.00117	99.2	80 - 120	0.0527	3.77	20	

PDS Sample ID: **HS19070994-02PDS** Units: **mg/L** Analysis Date: **30-Jul-2019 21:35**
Client ID: **WG-1620-MW61A-20190717** Run ID: **ICPMS05_343276** SeqNo: **5187977** PrepDate: **29-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1026	0.00200	0.1	0.00117	101	75 - 125				

SD Sample ID: **HS19070994-02SD** Units: **mg/L** Analysis Date: **30-Jul-2019 21:29**
Client ID: **WG-1620-MW61A-20190717** Run ID: **ICPMS05_343276** SeqNo: **5187974** PrepDate: **29-Jul-2019** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	U	0.0100					0.00117	0	10	

The following samples were analyzed in this batch:

HS19070994-01	HS19070994-02	HS19070994-03	HS19070994-04
HS19070994-05	HS19070994-06	HS19070994-07	HS19070994-08
HS19070994-09	HS19070994-10	HS19070994-11	HS19070994-12
HS19070994-13	HS19070994-14	HS19070994-15	HS19070994-16
HS19070994-17	HS19070994-18	HS19070994-19	HS19070994-20

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070994

QC BATCH REPORT

Batch ID: 143558 (0) **Instrument: ICPMS05** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-143558** Units: **mg/L** Analysis Date: **30-Jul-2019 22:36**
Client ID: Run ID: **ICPMS05_343276** SeqNo: **5187939** PrepDate: **30-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								

LCS Sample ID: **LCS-143558** Units: **mg/L** Analysis Date: **30-Jul-2019 22:39**
Client ID: Run ID: **ICPMS05_343276** SeqNo: **5187940** PrepDate: **30-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05011	0.00200	0.05	0	100	80 - 120				

MS Sample ID: **HS19070994-21MS** Units: **mg/L** Analysis Date: **30-Jul-2019 22:45**
Client ID: **WG-1620-MW83C-20190718** Run ID: **ICPMS05_343276** SeqNo: **5187943** PrepDate: **30-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05667	0.00200	0.05	0.006174	101	80 - 120				

MSD Sample ID: **HS19070994-21MSD** Units: **mg/L** Analysis Date: **30-Jul-2019 22:48**
Client ID: **WG-1620-MW83C-20190718** Run ID: **ICPMS05_343276** SeqNo: **5187944** PrepDate: **30-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05623	0.00200	0.05	0.006174	100	80 - 120	0.05667	0.771	20	

PDS Sample ID: **HS19070994-21PDS** Units: **mg/L** Analysis Date: **30-Jul-2019 22:50**
Client ID: **WG-1620-MW83C-20190718** Run ID: **ICPMS05_343276** SeqNo: **5187945** PrepDate: **30-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1089	0.00200	0.1	0.006174	103	75 - 125				

SD Sample ID: **HS19070994-21SD** Units: **mg/L** Analysis Date: **30-Jul-2019 22:43**
Client ID: **WG-1620-MW83C-20190718** Run ID: **ICPMS05_343276** SeqNo: **5187942** PrepDate: **30-Jul-2019** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.006418	0.0100					0.006174	0	10	J

The following samples were analyzed in this batch:

HS19070994-21	HS19070994-22	HS19070994-23	HS19070994-24
HS19070994-25	HS19070994-26	HS19070994-27	HS19070994-28
HS19070994-29	HS19070994-30	HS19070994-31	HS19070994-32

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070994

QC BATCH REPORT

Batch ID: 143239 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-143239** Units: **ug/L** Analysis Date: **23-Jul-2019 11:01**
Client ID: Run ID: **SV-7_342905** SeqNo: **5177235** PrepDate: **22-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	U	0.20								
2,4-Dimethylphenol	U	0.20								
2,4-Dinitrotoluene	U	0.20								
2,6-Dinitrotoluene	U	0.20								
2-Chloronaphthalene	U	0.20								
2-Methylnaphthalene	U	0.10								
4,6-Dinitro-2-methylphenol	U	0.20								
4-Nitrophenol	U	1.0								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Benz(a)anthracene	U	0.10								
Benzo(a)pyrene	U	0.10								
Bis(2-chloroethoxy)methane	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Chrysene	U	0.10								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Nitrobenzene	U	0.20								
N-Nitrosodiphenylamine	U	0.20								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*4.901*	*0.20*	*5*	*0*	*98.0*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*5.092*	*0.20*	*5*	*0*	*102*	*40 - 125*				
Surr: 2-Fluorophenol	*5.088*	*0.20*	*5*	*0*	*102*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.374*	*0.20*	*5*	*0*	*87.5*	*40 - 135*				
Surr: Nitrobenzene-d5	*5.314*	*0.20*	*5*	*0*	*106*	*41 - 120*				
Surr: Phenol-d6	*5.31*	*0.20*	*5*	*0*	*106*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070994

QC BATCH REPORT

Batch ID: 143239 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCS Sample ID: **LCS-143239** Units: **ug/L** Analysis Date: **23-Jul-2019 12:01**
Client ID: Run ID: **SV-7_342905** SeqNo: **5177237** PrepDate: **22-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.199	0.20	5	0	84.0	39 - 127				
2,4-Dimethylphenol	4.42	0.20	5	0	88.4	35 - 120				
2,4-Dinitrotoluene	5.269	0.20	5	0	105	50 - 122				
2,6-Dinitrotoluene	4.941	0.20	5	0	98.8	50 - 120				
2-Chloronaphthalene	4.227	0.20	5	0	84.5	50 - 120				
2-Methylnaphthalene	4.244	0.10	5	0	84.9	50 - 120				
4,6-Dinitro-2-methylphenol	4.356	0.20	5	0	87.1	25 - 121				
4-Nitrophenol	5.086	1.0	5	0	102	30 - 130				
Acenaphthene	4.208	0.10	5	0	84.2	45 - 120				
Acenaphthylene	4.309	0.10	5	0	86.2	47 - 120				
Anthracene	4.111	0.10	5	0	82.2	45 - 120				
Benz(a)anthracene	4.208	0.10	5	0	84.2	40 - 120				
Benzo(a)pyrene	4.855	0.10	5	0	97.1	45 - 120				
Bis(2-chloroethoxy)methane	4.151	0.20	5	0	83.0	45 - 120				
Bis(2-ethylhexyl)phthalate	3.673	0.20	5	0	73.5	40 - 139				
Chrysene	4.083	0.10	5	0	81.7	43 - 120				
Dibenzofuran	4.51	0.10	5	0	90.2	50 - 120				
Di-n-butyl phthalate	3.819	0.20	5	0	76.4	45 - 123				
Fluoranthene	4.501	0.10	5	0	90.0	45 - 125				
Fluorene	4.41	0.10	5	0	88.2	49 - 120				
Naphthalene	4.048	0.10	5	0	81.0	45 - 120				
Nitrobenzene	4.645	0.20	5	0	92.9	44 - 120				
N-Nitrosodiphenylamine	4.632	0.20	5	0	92.6	40 - 125				
Pentachlorophenol	3.799	0.20	5	0	76.0	19 - 121				
Phenanthrene	3.815	0.10	5	0	76.3	45 - 121				
Phenol	4.879	0.20	5	0	97.6	20 - 124				
Pyrene	4.227	0.10	5	0	84.5	40 - 130				
Surr: 2,4,6-Tribromophenol	*5.4*	*0.20*	*5*	*0*	*108*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.924*	*0.20*	*5*	*0*	*98.5*	*40 - 125*				
Surr: 2-Fluorophenol	*4.63*	*0.20*	*5*	*0*	*92.6*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.258*	*0.20*	*5*	*0*	*85.2*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.988*	*0.20*	*5*	*0*	*99.8*	*41 - 120*				
Surr: Phenol-d6	*5.053*	*0.20*	*5*	*0*	*101*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070994

QC BATCH REPORT

Batch ID: 143239 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MS Sample ID: **HS19070994-02MS** Units: **ug/L** Analysis Date: **23-Jul-2019 12:41**
Client ID: **WG-1620-MW61A-20190717** Run ID: **SV-7_342905** SeqNo: **5177239** PrepDate: **22-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.415	0.20	5	0	88.3	39 - 127				
2,4-Dimethylphenol	4.037	0.20	5	0	80.7	35 - 120				
2,4-Dinitrotoluene	5.451	0.20	5	0	109	50 - 122				
2,6-Dinitrotoluene	4.473	0.20	5	0	89.5	50 - 120				
2-Chloronaphthalene	3.33	0.20	5	0	66.6	50 - 120				
2-Methylnaphthalene	3.896	0.10	5	0	77.9	50 - 120				
4,6-Dinitro-2-methylphenol	5.429	0.20	5	0	109	25 - 121				
4-Nitrophenol	5.9	1.0	5	0	118	30 - 130				
Acenaphthene	3.872	0.10	5	0	77.4	45 - 120				
Acenaphthylene	3.749	0.10	5	0	75.0	47 - 120				
Anthracene	4.161	0.10	5	0	83.2	45 - 120				
Benz(a)anthracene	5.184	0.10	5	0	104	40 - 120				
Benzo(a)pyrene	5.7	0.10	5	0	114	45 - 120				
Bis(2-chloroethoxy)methane	3.56	0.20	5	0	71.2	45 - 120				
Bis(2-ethylhexyl)phthalate	4.733	0.20	5	0.3733	87.2	40 - 139				
Chrysene	5.104	0.10	5	0	102	43 - 120				
Dibenzofuran	4.1	0.10	5	0	82.0	50 - 120				
Di-n-butyl phthalate	4.681	0.20	5	0.0555	92.5	45 - 123				
Fluoranthene	5.584	0.10	5	0	112	45 - 125				
Fluorene	3.523	0.10	5	0	70.5	49 - 120				
Naphthalene	3.717	0.10	5	0	74.3	45 - 120				
Nitrobenzene	4.017	0.20	5	0	80.3	44 - 120				
N-Nitrosodiphenylamine	5.187	0.20	5	0	104	40 - 125				
Pentachlorophenol	5.322	0.20	5	0	106	19 - 121				
Phenanthrene	4.06	0.10	5	0	81.2	45 - 121				
Phenol	3.917	0.20	5	0.1053	76.2	20 - 124				
Pyrene	4.987	0.10	5	0	99.7	40 - 130				
Surr: 2,4,6-Tribromophenol	*5.013*	*0.20*	*5*	*0*	*100*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.557*	*0.20*	*5*	*0*	*71.1*	*40 - 125*				
Surr: 2-Fluorophenol	*3.895*	*0.20*	*5*	*0*	*77.9*	*20 - 120*				
Surr: 4-Terphenyl-d14	*5.264*	*0.20*	*5*	*0*	*105*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.008*	*0.20*	*5*	*0*	*80.2*	*41 - 120*				
Surr: Phenol-d6	*4.273*	*0.20*	*5*	*0*	*85.5*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070994

QC BATCH REPORT

Batch ID: 143239 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MSD Sample ID: **HS19070994-02MSD** Units: **ug/L** Analysis Date: **23-Jul-2019 13:00**
Client ID: **WG-1620-MW61A-20190717** Run ID: **SV-7_342905** SeqNo: **5177240** PrepDate: **22-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	3.835	0.20	5	0	76.7	39 - 127	4.415	14.1	20	
2,4-Dimethylphenol	4.214	0.20	5	0	84.3	35 - 120	4.037	4.29	20	
2,4-Dinitrotoluene	5.713	0.20	5	0	114	50 - 122	5.451	4.68	20	
2,6-Dinitrotoluene	5.485	0.20	5	0	110	50 - 120	4.473	20.3	20	R
2-Chloronaphthalene	3.935	0.20	5	0	78.7	50 - 120	3.33	16.7	20	
2-Methylnaphthalene	4.33	0.10	5	0	86.6	50 - 120	3.896	10.6	20	
4,6-Dinitro-2-methylphenol	4.985	0.20	5	0	99.7	25 - 121	5.429	8.53	30	
4-Nitrophenol	5.681	1.0	5	0	114	30 - 130	5.9	3.79	20	
Acenaphthene	3.837	0.10	5	0	76.7	45 - 120	3.872	0.909	20	
Acenaphthylene	4.093	0.10	5	0	81.9	47 - 120	3.749	8.78	20	
Anthracene	4.614	0.10	5	0	92.3	45 - 120	4.161	10.3	20	
Benz(a)anthracene	5.589	0.10	5	0	112	40 - 120	5.184	7.52	20	
Benzo(a)pyrene	7.055	0.10	5	0	141	45 - 120	5.7	21.2	20	SR
Bis(2-chloroethoxy)methane	3.926	0.20	5	0	78.5	45 - 120	3.56	9.79	20	
Bis(2-ethylhexyl)phthalate	5.527	0.20	5	0.3733	103	40 - 139	4.733	15.5	20	
Chrysene	5.555	0.10	5	0	111	43 - 120	5.104	8.47	20	
Dibenzofuran	4.216	0.10	5	0	84.3	50 - 120	4.1	2.79	20	
Di-n-butyl phthalate	5.227	0.20	5	0.0555	103	45 - 123	4.681	11	20	
Fluoranthene	5.526	0.10	5	0	111	45 - 125	5.584	1.05	20	
Fluorene	4.025	0.10	5	0	80.5	49 - 120	3.523	13.3	20	
Naphthalene	4.11	0.10	5	0	82.2	45 - 120	3.717	10	20	
Nitrobenzene	4.765	0.20	5	0	95.3	44 - 120	4.017	17	20	
N-Nitrosodiphenylamine	4.526	0.20	5	0	90.5	40 - 125	5.187	13.6	20	
Pentachlorophenol	5.029	0.20	5	0	101	19 - 121	5.322	5.66	20	
Phenanthrene	4.459	0.10	5	0	89.2	45 - 121	4.06	9.37	20	
Phenol	4.499	0.20	5	0.1053	87.9	20 - 124	3.917	13.8	20	
Pyrene	4.913	0.10	5	0	98.3	40 - 130	4.987	1.49	20	
Surr: 2,4,6-Tribromophenol	*6.449*	*0.20*	*5*	*0*	*129*	*34 - 129*	*5.013*	*25.1*	*20*	R
Surr: 2-Fluorobiphenyl	*4.764*	*0.20*	*5*	*0*	*95.3*	*40 - 125*	*3.557*	*29*	*20*	R
Surr: 2-Fluorophenol	*4.185*	*0.20*	*5*	*0*	*83.7*	*20 - 120*	*3.895*	*7.17*	*20*	
Surr: 4-Terphenyl-d14	*4.986*	*0.20*	*5*	*0*	*99.7*	*40 - 135*	*5.264*	*5.43*	*20*	
Surr: Nitrobenzene-d5	*4.82*	*0.20*	*5*	*0*	*96.4*	*41 - 120*	*4.008*	*18.4*	*20*	
Surr: Phenol-d6	*4.591*	*0.20*	*5*	*0*	*91.8*	*20 - 120*	*4.273*	*7.17*	*20*	

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	HS19070994

QC BATCH REPORT

Batch ID: 143239 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

The following samples were analyzed in this batch:

HS19070994-01	HS19070994-02	HS19070994-03	HS19070994-04
HS19070994-05	HS19070994-06	HS19070994-07	HS19070994-08
HS19070994-09	HS19070994-10	HS19070994-11	HS19070994-12
HS19070994-13	HS19070994-14	HS19070994-15	HS19070994-16
HS19070994-17	HS19070994-18	HS19070994-19	HS19070994-20

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070994

QC BATCH REPORT

Batch ID: 143295 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-143295** Units: **ug/L** Analysis Date: **24-Jul-2019 11:06**
Client ID: Run ID: **SV-7_342956** SeqNo: **5178273** PrepDate: **23-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	U	0.20								
2,4-Dimethylphenol	U	0.20								
2,4-Dinitrotoluene	U	0.20								
2,6-Dinitrotoluene	U	0.20								
2-Chloronaphthalene	U	0.20								
2-Methylnaphthalene	U	0.10								
4,6-Dinitro-2-methylphenol	U	0.20								
4-Nitrophenol	U	1.0								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Benz(a)anthracene	U	0.10								
Benzo(a)pyrene	U	0.10								
Bis(2-chloroethoxy)methane	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Chrysene	U	0.10								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Nitrobenzene	U	0.20								
N-Nitrosodiphenylamine	U	0.20								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*4.93*	*0.20*	*5*	*0*	*98.6*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.783*	*0.20*	*5*	*0*	*95.7*	*40 - 125*				
Surr: 2-Fluorophenol	*4.587*	*0.20*	*5*	*0*	*91.7*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.364*	*0.20*	*5*	*0*	*87.3*	*40 - 135*				
Surr: Nitrobenzene-d5	*5.101*	*0.20*	*5*	*0*	*102*	*41 - 120*				
Surr: Phenol-d6	*4.662*	*0.20*	*5*	*0*	*93.2*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070994

QC BATCH REPORT

Batch ID: 143295 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCS Sample ID: **LCS-143295** Units: **ug/L** Analysis Date: **24-Jul-2019 11:26**
Client ID: Run ID: **SV-7_342956** SeqNo: **5178274** PrepDate: **23-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.27	0.20	5	0	85.4	39 - 127				
2,4-Dimethylphenol	4.441	0.20	5	0	88.8	35 - 120				
2,4-Dinitrotoluene	5.322	0.20	5	0	106	50 - 122				
2,6-Dinitrotoluene	5.12	0.20	5	0	102	50 - 120				
2-Chloronaphthalene	4.199	0.20	5	0	84.0	50 - 120				
2-Methylnaphthalene	4.573	0.10	5	0	91.5	50 - 120				
4,6-Dinitro-2-methylphenol	4.011	0.20	5	0	80.2	25 - 121				
4-Nitrophenol	4.862	1.0	5	0	97.2	30 - 130				
Acenaphthene	4.17	0.10	5	0	83.4	45 - 120				
Acenaphthylene	4.231	0.10	5	0	84.6	47 - 120				
Anthracene	4.089	0.10	5	0	81.8	45 - 120				
Benz(a)anthracene	4.331	0.10	5	0	86.6	40 - 120				
Benzo(a)pyrene	4.809	0.10	5	0	96.2	45 - 120				
Bis(2-chloroethoxy)methane	4.11	0.20	5	0	82.2	45 - 120				
Bis(2-ethylhexyl)phthalate	3.802	0.20	5	0	76.0	40 - 139				
Chrysene	4.35	0.10	5	0	87.0	43 - 120				
Dibenzofuran	4.37	0.10	5	0	87.4	50 - 120				
Di-n-butyl phthalate	4.066	0.20	5	0	81.3	45 - 123				
Fluoranthene	4.558	0.10	5	0	91.2	45 - 125				
Fluorene	4.23	0.10	5	0	84.6	49 - 120				
Naphthalene	4.296	0.10	5	0	85.9	45 - 120				
Nitrobenzene	4.503	0.20	5	0	90.1	44 - 120				
N-Nitrosodiphenylamine	4.726	0.20	5	0	94.5	40 - 125				
Pentachlorophenol	3.475	0.20	5	0	69.5	19 - 121				
Phenanthrene	4.047	0.10	5	0	80.9	45 - 121				
Phenol	4.067	0.20	5	0	81.3	20 - 124				
Pyrene	4.074	0.10	5	0	81.5	40 - 130				
Surr: 2,4,6-Tribromophenol	*5.763*	*0.20*	*5*	*0*	*115*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*5.062*	*0.20*	*5*	*0*	*101*	*40 - 125*				
Surr: 2-Fluorophenol	*5.062*	*0.20*	*5*	*0*	*101*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.484*	*0.20*	*5*	*0*	*89.7*	*40 - 135*				
Surr: Nitrobenzene-d5	*5.287*	*0.20*	*5*	*0*	*106*	*41 - 120*				
Surr: Phenol-d6	*5.182*	*0.20*	*5*	*0*	*104*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070994

QC BATCH REPORT

Batch ID: 143295 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCSD Sample ID: **LCSD-143295** Units: **ug/L** Analysis Date: **24-Jul-2019 11:45**
Client ID: Run ID: **SV-7_342956** SeqNo: **5178275** PrepDate: **23-Jul-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.086	0.20	5	0	81.7	39 - 127	4.27	4.39	20	
2,4-Dimethylphenol	3.98	0.20	5	0	79.6	35 - 120	4.441	10.9	20	
2,4-Dinitrotoluene	4.984	0.20	5	0	99.7	50 - 122	5.322	6.57	20	
2,6-Dinitrotoluene	4.803	0.20	5	0	96.1	50 - 120	5.12	6.38	20	
2-Chloronaphthalene	4.174	0.20	5	0	83.5	50 - 120	4.199	0.592	20	
2-Methylnaphthalene	4.27	0.10	5	0	85.4	50 - 120	4.573	6.86	20	
4,6-Dinitro-2-methylphenol	4.202	0.20	5	0	84.0	25 - 121	4.011	4.64	30	
4-Nitrophenol	4.668	1.0	5	0	93.4	30 - 130	4.862	4.08	20	
Acenaphthene	4.187	0.10	5	0	83.7	45 - 120	4.17	0.401	20	
Acenaphthylene	4.194	0.10	5	0	83.9	47 - 120	4.231	0.87	20	
Anthracene	3.968	0.10	5	0	79.4	45 - 120	4.089	2.99	20	
Benz(a)anthracene	4.302	0.10	5	0	86.0	40 - 120	4.331	0.675	20	
Benzo(a)pyrene	4.814	0.10	5	0	96.3	45 - 120	4.809	0.104	20	
Bis(2-chloroethoxy)methane	3.975	0.20	5	0	79.5	45 - 120	4.11	3.33	20	
Bis(2-ethylhexyl)phthalate	4.142	0.20	5	0	82.8	40 - 139	3.802	8.55	20	
Chrysene	4.582	0.10	5	0	91.6	43 - 120	4.35	5.2	20	
Dibenzofuran	4.408	0.10	5	0	88.2	50 - 120	4.37	0.854	20	
Di-n-butyl phthalate	3.886	0.20	5	0	77.7	45 - 123	4.066	4.51	20	
Fluoranthene	4.17	0.10	5	0	83.4	45 - 125	4.558	8.9	20	
Fluorene	4.027	0.10	5	0	80.5	49 - 120	4.23	4.91	20	
Naphthalene	4.055	0.10	5	0	81.1	45 - 120	4.296	5.76	20	
Nitrobenzene	4.324	0.20	5	0	86.5	44 - 120	4.503	4.06	20	
N-Nitrosodiphenylamine	4.328	0.20	5	0	86.6	40 - 125	4.726	8.8	20	
Pentachlorophenol	3.469	0.20	5	0	69.4	19 - 121	3.475	0.178	20	
Phenanthrene	3.88	0.10	5	0	77.6	45 - 121	4.047	4.21	20	
Phenol	3.851	0.20	5	0	77.0	20 - 124	4.067	5.47	20	
Pyrene	4.178	0.10	5	0	83.6	40 - 130	4.074	2.54	20	
Surr: 2,4,6-Tribromophenol	*5.553*	*0.20*	*5*	*0*	*111*	*34 - 129*	*5.763*	*3.72*	*20*	
Surr: 2-Fluorobiphenyl	*5.19*	*0.20*	*5*	*0*	*104*	*40 - 125*	*5.062*	*2.49*	*20*	
Surr: 2-Fluorophenol	*4.776*	*0.20*	*5*	*0*	*95.5*	*20 - 120*	*5.062*	*5.8*	*20*	
Surr: 4-Terphenyl-d14	*4.505*	*0.20*	*5*	*0*	*90.1*	*40 - 135*	*4.484*	*0.476*	*20*	
Surr: Nitrobenzene-d5	*4.96*	*0.20*	*5*	*0*	*99.2*	*41 - 120*	*5.287*	*6.39*	*20*	
Surr: Phenol-d6	*4.968*	*0.20*	*5*	*0*	*99.4*	*20 - 120*	*5.182*	*4.22*	*20*	

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	HS19070994

QC BATCH REPORT

Batch ID: 143295 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

The following samples were analyzed in this batch:

HS19070994-21	HS19070994-22	HS19070994-23	HS19070994-24
HS19070994-25	HS19070994-26	HS19070994-27	HS19070994-28
HS19070994-29	HS19070994-30	HS19070994-31	HS19070994-32

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070994

QC BATCH REPORT

Batch ID: R342868 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-190722** Units: **ug/L** Analysis Date: **22-Jul-2019 23:59**
Client ID: Run ID: **VOA2_342868** SeqNo: **5176537** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*44.65*	*1.0*	*50*	*0*	*89.3*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*47.26*	*1.0*	*50*	*0*	*94.5*	*82 - 115*				
Surr: Dibromofluoromethane	*49.12*	*1.0*	*50*	*0*	*98.2*	*73 - 126*				
Surr: Toluene-d8	*50.45*	*1.0*	*50*	*0*	*101*	*81 - 120*				

LCS Sample ID: **VLCSW-190722** Units: **ug/L** Analysis Date: **22-Jul-2019 23:34**
Client ID: Run ID: **VOA2_342868** SeqNo: **5176536** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	19.73	1.0	20	0	98.6	70 - 124				
Benzene	19.51	1.0	20	0	97.6	74 - 120				
Chlorobenzene	18.74	1.0	20	0	93.7	76 - 113				
Ethylbenzene	19.69	1.0	20	0	98.5	77 - 117				
Methylene chloride	22.08	2.0	20	0	110	70 - 127				
Toluene	21.86	1.0	20	0	109	77 - 118				
Xylenes, Total	62.78	1.0	60	0	105	75 - 122				
Surr: 1,2-Dichloroethane-d4	*46.76*	*1.0*	*50*	*0*	*93.5*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*47.46*	*1.0*	*50*	*0*	*94.9*	*82 - 115*				
Surr: Dibromofluoromethane	*47.79*	*1.0*	*50*	*0*	*95.6*	*73 - 126*				
Surr: Toluene-d8	*49.22*	*1.0*	*50*	*0*	*98.4*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070994

QC BATCH REPORT

Batch ID: R342868 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS19070949-09MS** Units: **ug/L** Analysis Date: **23-Jul-2019 01:12**
Client ID: Run ID: **VOA2_342868** SeqNo: **5176540** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.08	1.0	20	0	80.4	70 - 127				
Benzene	16.82	1.0	20	0	84.1	70 - 127				
Chlorobenzene	16.71	1.0	20	0	83.5	70 - 114				
Ethylbenzene	17.05	1.0	20	0	85.2	70 - 124				
Methylene chloride	16.4	2.0	20	0	82.0	70 - 128				
Toluene	18.99	1.0	20	0	94.9	70 - 123				
Xylenes, Total	55.12	1.0	60	0	91.9	70 - 130				
Surr: 1,2-Dichloroethane-d4	*46.06*	*1.0*	*50*	*0*	*92.1*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*47.94*	*1.0*	*50*	*0*	*95.9*	*81 - 113*				
Surr: Dibromofluoromethane	*47.34*	*1.0*	*50*	*0*	*94.7*	*77 - 123*				
Surr: Toluene-d8	*49.78*	*1.0*	*50*	*0*	*99.6*	*82 - 127*				

MSD Sample ID: **HS19070949-09MSD** Units: **ug/L** Analysis Date: **23-Jul-2019 01:36**
Client ID: Run ID: **VOA2_342868** SeqNo: **5176541** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	15.97	1.0	20	0	79.9	70 - 127	16.08	0.65	20	
Benzene	16.22	1.0	20	0	81.1	70 - 127	16.82	3.64	20	
Chlorobenzene	16.12	1.0	20	0	80.6	70 - 114	16.71	3.54	20	
Ethylbenzene	16.48	1.0	20	0	82.4	70 - 124	17.05	3.37	20	
Methylene chloride	17.05	2.0	20	0	85.2	70 - 128	16.4	3.88	20	
Toluene	18.03	1.0	20	0	90.2	70 - 123	18.99	5.16	20	
Xylenes, Total	53.8	1.0	60	0	89.7	70 - 130	55.12	2.42	20	
Surr: 1,2-Dichloroethane-d4	*46.15*	*1.0*	*50*	*0*	*92.3*	*70 - 126*	*46.06*	*0.195*	*20*	
Surr: 4-Bromofluorobenzene	*47.96*	*1.0*	*50*	*0*	*95.9*	*81 - 113*	*47.94*	*0.0444*	*20*	
Surr: Dibromofluoromethane	*47.74*	*1.0*	*50*	*0*	*95.5*	*77 - 123*	*47.34*	*0.827*	*20*	
Surr: Toluene-d8	*49.92*	*1.0*	*50*	*0*	*99.8*	*82 - 127*	*49.78*	*0.281*	*20*	

The following samples were analyzed in this batch: HS19070994-19 HS19070994-20

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070994

QC BATCH REPORT

Batch ID: R342877 (0) **Instrument: VOA6** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-190722** Units: **ug/L** Analysis Date: **23-Jul-2019 02:01**
Client ID: Run ID: **VOA6_342877** SeqNo: **5176718** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*48.06*	*1.0*	*50*	*0*	*96.1*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*50.41*	*1.0*	*50*	*0*	*101*	*82 - 115*				
Surr: Dibromofluoromethane	*46.89*	*1.0*	*50*	*0*	*93.8*	*73 - 126*				
Surr: Toluene-d8	*52.48*	*1.0*	*50*	*0*	*105*	*81 - 120*				

LCS Sample ID: **VLCSW-190722** Units: **ug/L** Analysis Date: **23-Jul-2019 01:13**
Client ID: Run ID: **VOA6_342877** SeqNo: **5176717** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	20.99	1.0	20	0	105	70 - 124				
Benzene	20.69	1.0	20	0	103	74 - 120				
Chlorobenzene	21.43	1.0	20	0	107	76 - 113				
Ethylbenzene	22.09	1.0	20	0	110	77 - 117				
Methylene chloride	20.58	2.0	20	0	103	70 - 127				
Toluene	21.9	1.0	20	0	110	77 - 118				
Vinyl chloride	19	1.0	20	0	95.0	70 - 130				
Xylenes, Total	65.67	1.0	60	0	109	75 - 122				
Surr: 1,2-Dichloroethane-d4	*47.16*	*1.0*	*50*	*0*	*94.3*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*47.92*	*1.0*	*50*	*0*	*95.8*	*82 - 115*				
Surr: Dibromofluoromethane	*45.72*	*1.0*	*50*	*0*	*91.4*	*73 - 126*				
Surr: Toluene-d8	*46.8*	*1.0*	*50*	*0*	*93.6*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070994

QC BATCH REPORT

Batch ID: R342877 (0) **Instrument: VOA6** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS19070994-21MS** Units: **ug/L** Analysis Date: **23-Jul-2019 03:37**
Client ID: **WG-1620-MW83C-20190718** Run ID: **VOA6_342877** SeqNo: **5176722** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	20.44	1.0	20	0	102	70 - 127				
Benzene	20.94	1.0	20	0	105	70 - 127				
Chlorobenzene	21.37	1.0	20	0	107	70 - 114				
Ethylbenzene	22.48	1.0	20	0	112	70 - 124				
Methylene chloride	20.11	2.0	20	0	101	70 - 128				
Toluene	22.22	1.0	20	0	111	70 - 123				
Vinyl chloride	17.71	1.0	20	0	88.6	70 - 130				
Xylenes, Total	65.87	1.0	60	0	110	70 - 130				
Surr: 1,2-Dichloroethane-d4	*55.84*	*1.0*	*50*	*0*	*112*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*57.14*	*1.0*	*50*	*0*	*114*	*81 - 113*				S
Surr: Dibromofluoromethane	*56.54*	*1.0*	*50*	*0*	*113*	*77 - 123*				
Surr: Toluene-d8	*58.54*	*1.0*	*50*	*0*	*117*	*82 - 127*				

MSD Sample ID: **HS19070994-21MSD** Units: **ug/L** Analysis Date: **23-Jul-2019 04:01**
Client ID: **WG-1620-MW83C-20190718** Run ID: **VOA6_342877** SeqNo: **5176723** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	20.9	1.0	20	0	104	70 - 127	20.44	2.23	20	
Benzene	20.94	1.0	20	0	105	70 - 127	20.94	0.0341	20	
Chlorobenzene	21.3	1.0	20	0	107	70 - 114	21.37	0.321	20	
Ethylbenzene	22.27	1.0	20	0	111	70 - 124	22.48	0.963	20	
Methylene chloride	19.56	2.0	20	0	97.8	70 - 128	20.11	2.8	20	
Toluene	22.05	1.0	20	0	110	70 - 123	22.22	0.788	20	
Vinyl chloride	17.32	1.0	20	0	86.6	70 - 130	17.71	2.25	20	
Xylenes, Total	66.41	1.0	60	0	111	70 - 130	65.87	0.815	20	
Surr: 1,2-Dichloroethane-d4	*57.37*	*1.0*	*50*	*0*	*115*	*70 - 126*	*55.84*	*2.72*	*20*	
Surr: 4-Bromofluorobenzene	*57.48*	*1.0*	*50*	*0*	*115*	*81 - 113*	*57.14*	*0.606*	*20*	S
Surr: Dibromofluoromethane	*56.89*	*1.0*	*50*	*0*	*114*	*77 - 123*	*56.54*	*0.628*	*20*	
Surr: Toluene-d8	*58.25*	*1.0*	*50*	*0*	*116*	*82 - 127*	*58.54*	*0.502*	*20*	

The following samples were analyzed in this batch:

HS19070994-21	HS19070994-22	HS19070994-23	HS19070994-24
HS19070994-25	HS19070994-26	HS19070994-27	HS19070994-28
HS19070994-29	HS19070994-30	HS19070994-31	HS19070994-32
HS19070994-33	HS19070994-34		

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070994

QC BATCH REPORT

Batch ID: R342879 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-190722** Units: **ug/L** Analysis Date: **23-Jul-2019 00:18**
Client ID: Run ID: **VOA4_342879** SeqNo: **5176775** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*51.51*	*1.0*	*50*	*0*	*103*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*48.74*	*1.0*	*50*	*0*	*97.5*	*82 - 115*				
Surr: Dibromofluoromethane	*53.07*	*1.0*	*50*	*0*	*106*	*73 - 126*				
Surr: Toluene-d8	*50.85*	*1.0*	*50*	*0*	*102*	*81 - 120*				

LCS Sample ID: **VLCSW-190722** Units: **ug/L** Analysis Date: **22-Jul-2019 23:29**
Client ID: Run ID: **VOA4_342879** SeqNo: **5176774** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	17.24	1.0	20	0	86.2	70 - 124				
Benzene	18.53	1.0	20	0	92.7	74 - 120				
Chlorobenzene	18.8	1.0	20	0	94.0	76 - 113				
Ethylbenzene	18.76	1.0	20	0	93.8	77 - 117				
Methylene chloride	21.91	2.0	20	0	110	70 - 127				
Toluene	18.63	1.0	20	0	93.2	77 - 118				
Vinyl chloride	17.76	1.0	20	0	88.8	70 - 130				
Xylenes, Total	58.77	1.0	60	0	97.9	75 - 122				
Surr: 1,2-Dichloroethane-d4	*49.31*	*1.0*	*50*	*0*	*98.6*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*49.64*	*1.0*	*50*	*0*	*99.3*	*82 - 115*				
Surr: Dibromofluoromethane	*52.39*	*1.0*	*50*	*0*	*105*	*73 - 126*				
Surr: Toluene-d8	*50.05*	*1.0*	*50*	*0*	*100*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19070994

QC BATCH REPORT

Batch ID: R342879 (0) **Instrument:** VOA4 **Method:** LOW LEVEL VOLATILES BY SW8260C

MS Sample ID: **HS19070994-02MS** Units: **ug/L** Analysis Date: **23-Jul-2019 01:56**
Client ID: **WG-1620-MW61A-20190717** Run ID: **VOA4_342879** SeqNo: **5176779** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	14.52	1.0	20	0	72.6	70 - 127				
Benzene	16.38	1.0	20	0	81.9	70 - 127				
Chlorobenzene	16.17	1.0	20	0	80.8	70 - 114				
Ethylbenzene	16.41	1.0	20	0	82.0	70 - 124				
Methylene chloride	16.8	2.0	20	0	84.0	70 - 128				
Toluene	16.66	1.0	20	0	83.3	70 - 123				
Vinyl chloride	16.09	1.0	20	0	80.4	70 - 130				
Xylenes, Total	52.27	1.0	60	0	87.1	70 - 130				
Surr: 1,2-Dichloroethane-d4	*48.95*	*1.0*	*50*	*0*	*97.9*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*50.73*	*1.0*	*50*	*0*	*101*	*81 - 113*				
Surr: Dibromofluoromethane	*52.02*	*1.0*	*50*	*0*	*104*	*77 - 123*				
Surr: Toluene-d8	*50.27*	*1.0*	*50*	*0*	*101*	*82 - 127*				

MSD Sample ID: **HS19070994-02MSD** Units: **ug/L** Analysis Date: **23-Jul-2019 02:21**
Client ID: **WG-1620-MW61A-20190717** Run ID: **VOA4_342879** SeqNo: **5176780** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	13.98	1.0	20	0	69.9	70 - 127	14.52	3.83	20	S
Benzene	15.56	1.0	20	0	77.8	70 - 127	16.38	5.12	20	
Chlorobenzene	15.68	1.0	20	0	78.4	70 - 114	16.17	3.03	20	
Ethylbenzene	15.79	1.0	20	0	79.0	70 - 124	16.41	3.81	20	
Methylene chloride	15.84	2.0	20	0	79.2	70 - 128	16.8	5.86	20	
Toluene	15.71	1.0	20	0	78.5	70 - 123	16.66	5.9	20	
Vinyl chloride	15.34	1.0	20	0	76.7	70 - 130	16.09	4.78	20	
Xylenes, Total	51.57	1.0	60	0	86.0	70 - 130	52.27	1.34	20	
Surr: 1,2-Dichloroethane-d4	*48.17*	*1.0*	*50*	*0*	*96.3*	*70 - 126*	*48.95*	*1.61*	*20*	
Surr: 4-Bromofluorobenzene	*51.55*	*1.0*	*50*	*0*	*103*	*81 - 113*	*50.73*	*1.61*	*20*	
Surr: Dibromofluoromethane	*50.79*	*1.0*	*50*	*0*	*102*	*77 - 123*	*52.02*	*2.39*	*20*	
Surr: Toluene-d8	*49*	*1.0*	*50*	*0*	*98.0*	*82 - 127*	*50.27*	*2.57*	*20*	

The following samples were analyzed in this batch:

HS19070994-01	HS19070994-02	HS19070994-03	HS19070994-04
HS19070994-05	HS19070994-06	HS19070994-07	HS19070994-08
HS19070994-09	HS19070994-10	HS19070994-11	HS19070994-12
HS19070994-13	HS19070994-14	HS19070994-15	HS19070994-16
HS19070994-17	HS19070994-18		

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS19070994**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
Oklahoma	2018-156	31-Aug-2019
Texas	TX104704231-19-23	30-Apr-2020

Sample Receipt Checklist

Client Name: PBW
Work Order: HS19070994

Date/Time Received: **19-Jul-2019 13:15**
Received by: **AC**

Checklist completed by: *Asad Chaudhry* eSignature 19-Jul-2019 Date

Reviewed by: *Dane J. Wacasey* eSignature 20-Jul-2019 Date

Matrices: **Water**

Carrier name: **Client**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	4 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:196129, 196108, 196107, 196109
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	3.5c, 0.4c, 0.3c, 03c, 0.4c, 0.5c, 0.4c C/UC	IR 25
Cooler(s)/Kit(s):	43620, 44883, 43052, 44142, 44164, 45160, 45144	
Date/Time sample(s) sent to storage:	07/19/2019 19:00	

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes: Extra trip blank received. Logged in with sample ID (TB06) and test code.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

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Chain of Custody Form

Page 1 of 4

COC ID: 196129

HS19070994

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-07-Rev0 SR 92688
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address	

A	8260_LL_W (5632528 Volatile Organics Site Specific)
B	8260_LL_W (5632528 VOC Site Specific + V.C.)
C	8270_LOW_W (5632532 SemiVolatiles Site specific)
D	ICP_TW (5636002 5652646 Metals - As, Pb)
E	MS/MSD
F	
G	
H	
I	
J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~WO-1620-TRIP_-201801~~			~~Water~~	←	~~2~~		X									
2	WG-1620-FB04-20190716	7-16-19	1820			6		X	X	X							
3	WG-1620-MW61A-20190717	7-17-19	0750			12		X	X	X	X						
4	WG-1620-MW60A-20190717		0835			6		X	X	X							
5	WG-1620-MW69A-20190717		0935			6		X	X	X							
6	WG-1620-MW47C-20190717		1025			6	X		X	X							
7	WG-1620-MW48C-20190717		1120			6	X		X	X							
8	WG-1620-MW59A-20190717		1220			6		X	X	X							
9	WG-1620-MW59B-20190717		1310			6		X	X	X							
10	WG-1620-MW44A-20190717		1400			6		X	X	X							

Sampler(s) Please Print & Sign: JOHN BRAYTON

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) ☐ Other ☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour

Results Due Date:

Relinquished by: Date: 7-19-19 Time: 1315

Relinquished by: Date: 7-19-19 Time: 13:15

Received by:

Received by (Laboratory): AC

Logged by (Laboratory): Date: Time:

Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.
43620	3.5
44883	0.4
43052	0.3
44142	0.3
44164	0.4
45160	0.5

QC Package: (Check One Box Below)

☐ Level II Std QC
☐ Level III Std QC/Raw Data
☐ Level IV SW846/CLP
☐ Other
☒ TRRP Checklist
☐ TRRP Level IV

IR#25

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
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Chain of Custody Form

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COC ID: 196108

HS19070994

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information			
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A	8260_LL_W (5632528 Volatile Organics Site Specific)
Work Order		Project Number	1620-07-Rev0 SR 92688	B	8260_LL_W (5632528 VOC Site Specific + V.C.)
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P	C	8270_LOW_W (5632532 SemiVolatiles Site specific)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	ICP_TW (5636002 5632646 Metals - As, Pb)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~WD-1620-TB0 20190[illegible]~~			~~Water~~	~~T~~	~~2~~		X									
2	WG-1620-MW87C-20190717	7-17-19	1540			6	X		X	X							
3	WG-1620-MW71B-20190717		1640			6	X		X	X							
4	WG-1620-MW33A-20190717		1750			6	X		X	X							
5	WG-1626-FD02-20190717		1750			6	X		X	X							
6	WG-1620-MW26A-20190717		1845			6	X		X	X							
7	WG-1620-FB05-20190717		1905			6	X		X	X							
8	WG-1620-MW68A-20190718	7-18-19	0755			6	X		X	X							
9	WG-1620-MW68B-20190718		0855			6	X		X	X							
10	WG-1620-FD03-20190718		0855			6	X		X	X							

Sampler(s) Please Print & Sign: JOHN BRAMTON

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) ☐ Other ☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour

Results Due Date:

Relinquished by: Date: 7-19-19 Time: 1315 Received by:

Relinquished by: Date: 7-19-19 Time: 13:15 Received by (Laboratory): A-C

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)
☐ Level II Std QC
☐ Level III Std QC/Raw Data
☐ Level IV SW846/CLP
☐ Other
☒ TRRP Checklist
☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

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Chain of Custody Form

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COC ID: 196107

HS19070994

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information			
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A	8260_LL_W (5632528 Volatile Organics Site Specific)
Work Order		Project Number	1620-07-Rev0 SR 92688	B	8260_LL_W (5632528 VOC Site Specific + V.C.)
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P	C	8270_LOW_W (5632532 SemiVolatiles Site specific)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	ICP_TW (5636002 5652646 Metals - As, Pb)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 68179-0750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~WG-1620-TRIP_20180[illegible]~~			~~Water~~	←	~~2~~		*									
2	WG-1620-MW68C-20190718	7-18-19	0945			6	X		X	X							
3	WG-1620-MW83B-20190718		1040			6	X		X	X							
4	WG-1620-MW83C-20190718		1130			6	X		X	X							
5	WG-1620-MW35A-20190718		1240			6	X		X	X							
6	WG-1620-MW35B-20190718		1330			6	X		X	X							
7	WG-1620-MW90B-20190718		1425			6	X		X	X							
8	WG-1620-MW89B-20190718		1515			6	X		X	X							
9	WG-1620-MW38B-20190718		1610			6	X		X	X							
10	WG-1620-MW27A-20190718		1715			6	X		X	X							

Sampler(s) Please Print & Sign: JOHN BRAYTON

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) ☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other

Results Due Date:

Relinquished by: Date: 7-19-19 Time: 1315 Received by:

Relinquished by: Date: 7-19-19 Time: 13:15 Received by (Laboratory): AC

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)

- ☐ Level II Std QC
- ☐ Level III Std QC/Raw Data
- ☐ Level IV SW846/CLP
- ☒ TRRP Check St
- ☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
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Chain of Custody For

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COC ID: 196109

HS19070994

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information			
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A	8260_LL_W (5632528 Volatile Organics Site Specific)
Work Order		Project Number	1620-07-Rev0 SR 92688	B	8260_LL_W (5632528 VOC Site Specific + V.C.)
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P	C	8270_LOW_W (5632632 SemiVolatiles Site specific)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	ICP_TW (5636002 5652646 Metals - As, Pb)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~WG-1620-TB0 -201301~~			~~Water~~	~~-~~	~~2~~		X									
2	WG-1620-MW27C-20190718	7-18-19	1805			6	X		X	X							
3	WG-1620-MW51A-20190719	7-19-19	0725			6	X		X	X							
4	WG-1620-MW51C-20190719		0855			6	X		X	X							
5	WG-1620-MW81B-20190719		0945			6	X		X	X							
6	WG-1620-MW50A-20190719		1040			6	X		X	X							
7	WG-1620-TB05-20190719					2		X									
8																	
9																	
10																	

Sampler(s) Please Print & Sign: JOHN BRADLEY

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) [X] STD 10 WK Days [ ] 5 WK Days [ ] 2 WK Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: Date: 7-19-19 Time: 1315 Received by:

Relinquished by: Date: 7-19-19 Time: 1315 Received by (Laboratory): AC

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR Houston MW/PW

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)

[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[X] TRRP Checklist
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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August 12, 2019

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS19080069**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 13 sample(s) on Aug 01, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: DAYNA.FISHER
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS19080069**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS19080069**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data								
Laboratory Name: ALS Laboratory Group			LRC Date: 08/12/2019					
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS19080069					
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 143727, 143772, R343615, R343708					
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?		X			1
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			2
		Were MS/MSD RPDs within laboratory QC limits?		X			3
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				4
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 08/12/2019				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS19080069				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 143727, 143772, R343615, R343708				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 08/12/2019
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS19080069
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 143727, 143772, R343615, R343708

ER#[5]	Description
1	Batch 143727, Semivolatiles by Method SW8270, Samples WG-1620-MW33BR-20190730, WG-1620-MW77A-20190730, WG-1620-MW74B-20190730, WG-1620-MW79A-20190730: Surrogate recoveries could not be determined due to dilution below the calibration range. Batch R343708, Volatiles by Method SW8260, Sample WG-1620-MW79A-20190730, surrogate 4-Bromofluorobenzene recovered above upper control limits die to possible matrix effect.
2	Batch R343708, Volatiles by Method SW8260, Sample HS19080060-04, MSD was performed on an unrelated sample
3	Batch 143727, Semivolatiles by Method SW8270, Sample WG-1620-MW82B-20190730, MS/MSD RPD recovered above control limits for Naphthalene.
4	Batch R343708, Volatiles by Method SW8260, Sample WG-1620-MW74B-20190730, lowest practical dilution performed due to high concentration of non-target analyte(s).

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS19080069

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19080069-01	WG-1620-MW32AR-20190730	Water		30-Jul-2019 07:25	01-Aug-2019 14:40	☐
HS19080069-02	WG-1620-MW33BR-20190730	Water		30-Jul-2019 08:20	01-Aug-2019 14:40	☐
HS19080069-03	WG-1620-MW84B-20190730	Water		30-Jul-2019 09:15	01-Aug-2019 14:40	☐
HS19080069-04	WG-1620-MW82B-20190730	Water		30-Jul-2019 10:10	01-Aug-2019 14:40	☐
HS19080069-05	WG-1620-MW80B-20190730	Water		30-Jul-2019 11:10	01-Aug-2019 14:40	☐
HS19080069-06	WG-1620-MW77A-20190730	Water		30-Jul-2019 11:55	01-Aug-2019 14:40	☐
HS19080069-07	WG-1620-MW85C-20190730	Water		30-Jul-2019 15:35	01-Aug-2019 14:40	☐
HS19080069-08	WG-1620-MW86C-20190730	Water		30-Jul-2019 16:40	01-Aug-2019 14:40	☐
HS19080069-09	WG-1620-FD04-20190730	Water		30-Jul-2019 16:40	01-Aug-2019 14:40	☐
HS19080069-10	WG-1620-MW76C-20190730	Water		30-Jul-2019 17:30	01-Aug-2019 14:40	☐
HS19080069-11	WG-1620-MW74B-20190730	Water		30-Jul-2019 18:20	01-Aug-2019 14:40	☐
HS19080069-12	WG-1620-MW79A-20190730	Water		30-Jul-2019 19:10	01-Aug-2019 14:40	☐
HS19080069-13	WG-1620-TB05-20190730	Water	CG 062119 -77	30-Jul-2019 00:00	01-Aug-2019 14:40	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW32AR-20190730
Collection Date: 30-Jul-2019 07:25

ANALYTICAL REPORT
WorkOrder:HS19080069
Lab ID:HS19080069-01
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	03-Aug-2019 06:33
Benzene		U	0.00020	0.0010	mg/L	1	03-Aug-2019 06:33
Chlorobenzene		U	0.00030	0.0010	mg/L	1	03-Aug-2019 06:33
Ethylbenzene		U	0.00030	0.0010	mg/L	1	03-Aug-2019 06:33
Methylene chloride		U	0.0010	0.0020	mg/L	1	03-Aug-2019 06:33
Toluene		U	0.00020	0.0010	mg/L	1	03-Aug-2019 06:33
Xylenes, Total		U	0.00030	0.0010	mg/L	1	03-Aug-2019 06:33
Surr: 1,2-Dichloroethane-d4	*96.7*			*70-126*	*%REC*	*1*	*03-Aug-2019 06:33*
Surr: 4-Bromofluorobenzene	*95.2*			*81-113*	*%REC*	*1*	*03-Aug-2019 06:33*
Surr: Dibromofluoromethane	*99.3*			*77-123*	*%REC*	*1*	*03-Aug-2019 06:33*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*1*	*03-Aug-2019 06:33*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW32AR-20190730
Collection Date: 30-Jul-2019 07:25

ANALYTICAL REPORT
WorkOrder:HS19080069
Lab ID:HS19080069-01
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 02-Aug-2019		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	02-Aug-2019 18:21
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	02-Aug-2019 18:21
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	02-Aug-2019 18:21
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	02-Aug-2019 18:21
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	02-Aug-2019 18:21
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	02-Aug-2019 18:21
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	02-Aug-2019 18:21
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	02-Aug-2019 18:21
Acenaphthene	U		0.000027	0.00010	mg/L	1	02-Aug-2019 18:21
Acenaphthylene	U		0.000015	0.00010	mg/L	1	02-Aug-2019 18:21
Anthracene	U		0.000014	0.00010	mg/L	1	02-Aug-2019 18:21
Benz(a)anthracene	**0.000054**	J	**0.000050**	**0.00010**	**mg/L**	1	02-Aug-2019 18:21
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	02-Aug-2019 18:21
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	02-Aug-2019 18:21
Bis(2-ethylhexyl)phthalate	**0.000074**	J	**0.000037**	**0.00020**	**mg/L**	1	02-Aug-2019 18:21
Chrysene	U		0.000021	0.00010	mg/L	1	02-Aug-2019 18:21
Dibenzofuran	U		0.000020	0.00010	mg/L	1	02-Aug-2019 18:21
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	02-Aug-2019 18:21
Fluoranthene	U		0.000010	0.00010	mg/L	1	02-Aug-2019 18:21
Fluorene	U		0.000030	0.00010	mg/L	1	02-Aug-2019 18:21
Naphthalene	U		0.000020	0.00010	mg/L	1	02-Aug-2019 18:21
Nitrobenzene	U		0.000024	0.00020	mg/L	1	02-Aug-2019 18:21
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	02-Aug-2019 18:21
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	02-Aug-2019 18:21
Phenanthrene	U		0.000021	0.00010	mg/L	1	02-Aug-2019 18:21
Phenol	U		0.000035	0.00020	mg/L	1	02-Aug-2019 18:21
Pyrene	**0.00045**		**0.000019**	**0.00010**	**mg/L**	1	02-Aug-2019 18:21
Surr: 2,4,6-Tribromophenol	*63.8*			*34-129*	*%REC*	*1*	*02-Aug-2019 18:21*
Surr: 2-Fluorobiphenyl	*74.7*			*40-125*	*%REC*	*1*	*02-Aug-2019 18:21*
Surr: 2-Fluorophenol	*59.9*			*20-120*	*%REC*	*1*	*02-Aug-2019 18:21*
Surr: 4-Terphenyl-d14	*80.7*			*40-135*	*%REC*	*1*	*02-Aug-2019 18:21*
Surr: Nitrobenzene-d5	*62.7*			*41-120*	*%REC*	*1*	*02-Aug-2019 18:21*
Surr: Phenol-d6	*63.3*			*20-120*	*%REC*	*1*	*02-Aug-2019 18:21*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 05-Aug-2019		Analyst: JHD
Arsenic	**0.0628**		**0.000400**	**0.00200**	**mg/L**	1	08-Aug-2019 22:50

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW33BR-20190730
Collection Date: 30-Jul-2019 08:20

ANALYTICAL REPORT
WorkOrder:HS19080069
Lab ID:HS19080069-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: PC
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	03-Aug-2019 00:29
Benzene	**0.25**		**0.0010**	**0.0050**	**mg/L**	5	03-Aug-2019 01:42
Chlorobenzene	U		0.00030	0.0010	mg/L	1	03-Aug-2019 00:29
Ethylbenzene	**0.065**		**0.00030**	**0.0010**	**mg/L**	1	03-Aug-2019 00:29
Methylene chloride	U		0.0010	0.0020	mg/L	1	03-Aug-2019 00:29
Toluene	**0.0031**		**0.00020**	**0.0010**	**mg/L**	1	03-Aug-2019 00:29
Vinyl chloride	U		0.00020	0.0010	mg/L	1	03-Aug-2019 00:29
Xylenes, Total	**0.016**		**0.00030**	**0.0010**	**mg/L**	1	03-Aug-2019 00:29
Surr: 1,2-Dichloroethane-d4	*97.3*			*70-126*	*%REC*	*1*	*03-Aug-2019 00:29*
Surr: 1,2-Dichloroethane-d4	*95.5*			*70-126*	*%REC*	*5*	*03-Aug-2019 01:42*
Surr: 4-Bromofluorobenzene	*98.9*			*81-113*	*%REC*	*1*	*03-Aug-2019 00:29*
Surr: 4-Bromofluorobenzene	*98.7*			*81-113*	*%REC*	*5*	*03-Aug-2019 01:42*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*03-Aug-2019 00:29*
Surr: Dibromofluoromethane	*97.8*			*77-123*	*%REC*	*5*	*03-Aug-2019 01:42*
Surr: Toluene-d8	*99.4*			*82-127*	*%REC*	*1*	*03-Aug-2019 00:29*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*5*	*03-Aug-2019 01:42*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW33BR-20190730
Collection Date: 30-Jul-2019 08:20

ANALYTICAL REPORT
WorkOrder:HS19080069
Lab ID:HS19080069-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 02-Aug-2019		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	02-Aug-2019 18:40
2,4-Dimethylphenol	**0.00028**		**0.000040**	**0.00020**	**mg/L**	1	02-Aug-2019 18:40
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	02-Aug-2019 18:40
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	02-Aug-2019 18:40
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	02-Aug-2019 18:40
2-Methylnaphthalene	**0.014**		**0.000095**	**0.00050**	**mg/L**	5	06-Aug-2019 21:12
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	02-Aug-2019 18:40
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	02-Aug-2019 18:40
Acenaphthene	**0.0078**		**0.000027**	**0.00010**	**mg/L**	1	02-Aug-2019 18:40
Acenaphthylene	U		0.000015	0.00010	mg/L	1	02-Aug-2019 18:40
Anthracene	**0.00055**		**0.000014**	**0.00010**	**mg/L**	1	02-Aug-2019 18:40
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	02-Aug-2019 18:40
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	02-Aug-2019 18:40
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	02-Aug-2019 18:40
Bis(2-ethylhexyl)phthalate	**0.000070**	J	**0.000037**	**0.00020**	**mg/L**	1	02-Aug-2019 18:40
Chrysene	U		0.000021	0.00010	mg/L	1	02-Aug-2019 18:40
Dibenzofuran	**0.012**		**0.00010**	**0.00050**	**mg/L**	5	06-Aug-2019 21:12
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	02-Aug-2019 18:40
Fluoranthene	**0.00039**		**0.000010**	**0.00010**	**mg/L**	1	02-Aug-2019 18:40
Fluorene	**0.0042**		**0.000030**	**0.00010**	**mg/L**	1	02-Aug-2019 18:40
Naphthalene	**0.53**		**0.0020**	**0.010**	**mg/L**	100	06-Aug-2019 21:31
Nitrobenzene	U		0.000024	0.00020	mg/L	1	02-Aug-2019 18:40
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	02-Aug-2019 18:40
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	02-Aug-2019 18:40
Phenanthrene	**0.0048**		**0.000021**	**0.00010**	**mg/L**	1	02-Aug-2019 18:40
Phenol	**0.00021**		**0.000035**	**0.00020**	**mg/L**	1	02-Aug-2019 18:40
Pyrene	**0.00026**		**0.000019**	**0.00010**	**mg/L**	1	02-Aug-2019 18:40
Surr: 2,4,6-Tribromophenol	*79.8*			*34-129*	*%REC*	*5*	*06-Aug-2019 21:12*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*06-Aug-2019 21:31*
Surr: 2,4,6-Tribromophenol	*67.0*			*34-129*	*%REC*	*1*	*02-Aug-2019 18:40*
Surr: 2-Fluorobiphenyl	*71.9*			*40-125*	*%REC*	*1*	*02-Aug-2019 18:40*
Surr: 2-Fluorobiphenyl	*78.3*			*40-125*	*%REC*	*5*	*06-Aug-2019 21:12*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*06-Aug-2019 21:31*
Surr: 2-Fluorophenol	*88.8*			*20-120*	*%REC*	*5*	*06-Aug-2019 21:12*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*06-Aug-2019 21:31*
Surr: 2-Fluorophenol	*80.7*			*20-120*	*%REC*	*1*	*02-Aug-2019 18:40*
Surr: 4-Terphenyl-d14	*84.8*			*40-135*	*%REC*	*1*	*02-Aug-2019 18:40*
Surr: 4-Terphenyl-d14	*91.4*			*40-135*	*%REC*	*5*	*06-Aug-2019 21:12*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*100*	*06-Aug-2019 21:31*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW33BR-20190730
Collection Date: 30-Jul-2019 08:20

ANALYTICAL REPORT
WorkOrder:HS19080069
Lab ID:HS19080069-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 02-Aug-2019		Analyst: LG
Surr: Nitrobenzene-d5	*71.1*			*41-120*	*%REC*	*1*	*02-Aug-2019 18:40*
Surr: Nitrobenzene-d5	*81.6*			*41-120*	*%REC*	*5*	*06-Aug-2019 21:12*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*06-Aug-2019 21:31*
Surr: Phenol-d6	*68.0*			*20-120*	*%REC*	*5*	*06-Aug-2019 21:12*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*06-Aug-2019 21:31*
Surr: Phenol-d6	*67.9*			*20-120*	*%REC*	*1*	*02-Aug-2019 18:40*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 05-Aug-2019		Analyst: JHD
Arsenic	**0.00117**	J	**0.000400**	**0.00200**	**mg/L**	1	08-Aug-2019 22:53

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW84B-20190730
Collection Date: 30-Jul-2019 09:15

ANALYTICAL REPORT
WorkOrder:HS19080069
Lab ID:HS19080069-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: PC
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	03-Aug-2019 06:58
Benzene	**0.010**		**0.00020**	**0.0010**	**mg/L**	1	03-Aug-2019 06:58
Chlorobenzene	U		0.00030	0.0010	mg/L	1	03-Aug-2019 06:58
Ethylbenzene	**0.013**		**0.00030**	**0.0010**	**mg/L**	1	03-Aug-2019 06:58
Methylene chloride	U		0.0010	0.0020	mg/L	1	03-Aug-2019 06:58
Toluene	**0.0015**		**0.00020**	**0.0010**	**mg/L**	1	03-Aug-2019 06:58
Xylenes, Total	**0.0041**		**0.00030**	**0.0010**	**mg/L**	1	03-Aug-2019 06:58
Surr: 1,2-Dichloroethane-d4	*98.2*			*70-126*	*%REC*	*1*	*03-Aug-2019 06:58*
Surr: 4-Bromofluorobenzene	*98.4*			*81-113*	*%REC*	*1*	*03-Aug-2019 06:58*
Surr: Dibromofluoromethane	*98.7*			*77-123*	*%REC*	*1*	*03-Aug-2019 06:58*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*1*	*03-Aug-2019 06:58*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW84B-20190730
Collection Date: 30-Jul-2019 09:15

ANALYTICAL REPORT
WorkOrder:HS19080069
Lab ID:HS19080069-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 02-Aug-2019		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	02-Aug-2019 18:59
2,4-Dimethylphenol	**0.00081**		**0.000040**	**0.00020**	**mg/L**	1	02-Aug-2019 18:59
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	02-Aug-2019 18:59
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	02-Aug-2019 18:59
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	02-Aug-2019 18:59
2-Methylnaphthalene	**0.0027**		**0.000019**	**0.00010**	**mg/L**	1	02-Aug-2019 18:59
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	02-Aug-2019 18:59
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	02-Aug-2019 18:59
Acenaphthene	**0.0080**		**0.000027**	**0.00010**	**mg/L**	1	02-Aug-2019 18:59
Acenaphthylene	**0.00030**		**0.000015**	**0.00010**	**mg/L**	1	02-Aug-2019 18:59
Anthracene	**0.00042**		**0.000014**	**0.00010**	**mg/L**	1	02-Aug-2019 18:59
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	02-Aug-2019 18:59
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	02-Aug-2019 18:59
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	02-Aug-2019 18:59
Bis(2-ethylhexyl)phthalate	**0.00026**		**0.000037**	**0.00020**	**mg/L**	1	02-Aug-2019 18:59
Chrysene	U		0.000021	0.00010	mg/L	1	02-Aug-2019 18:59
Dibenzofuran	**0.0054**		**0.000020**	**0.00010**	**mg/L**	1	02-Aug-2019 18:59
Di-n-butyl phthalate	**0.000055**	J	**0.000020**	**0.00020**	**mg/L**	1	02-Aug-2019 18:59
Fluoranthene	**0.00015**		**0.000010**	**0.00010**	**mg/L**	1	02-Aug-2019 18:59
Fluorene	**0.0026**		**0.000030**	**0.00010**	**mg/L**	1	02-Aug-2019 18:59
Naphthalene	**0.060**		**0.00020**	**0.0010**	**mg/L**	10	06-Aug-2019 18:21
Nitrobenzene	U		0.000024	0.00020	mg/L	1	02-Aug-2019 18:59
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	02-Aug-2019 18:59
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	02-Aug-2019 18:59
Phenanthrene	**0.0021**		**0.000021**	**0.00010**	**mg/L**	1	02-Aug-2019 18:59
Phenol	U		0.000035	0.00020	mg/L	1	02-Aug-2019 18:59
Pyrene	**0.00011**		**0.000019**	**0.00010**	**mg/L**	1	02-Aug-2019 18:59
Surr: 2,4,6-Tribromophenol	*74.5*			*34-129*	*%REC*	*1*	*02-Aug-2019 18:59*
Surr: 2,4,6-Tribromophenol	*66.0*			*34-129*	*%REC*	*10*	*06-Aug-2019 18:21*
Surr: 2-Fluorobiphenyl	*75.0*			*40-125*	*%REC*	*10*	*06-Aug-2019 18:21*
Surr: 2-Fluorobiphenyl	*66.3*			*40-125*	*%REC*	*1*	*02-Aug-2019 18:59*
Surr: 2-Fluorophenol	*67.6*			*20-120*	*%REC*	*1*	*02-Aug-2019 18:59*
Surr: 2-Fluorophenol	*71.6*			*20-120*	*%REC*	*10*	*06-Aug-2019 18:21*
Surr: 4-Terphenyl-d14	*113*			*40-135*	*%REC*	*10*	*06-Aug-2019 18:21*
Surr: 4-Terphenyl-d14	*92.1*			*40-135*	*%REC*	*1*	*02-Aug-2019 18:59*
Surr: Nitrobenzene-d5	*53.6*			*41-120*	*%REC*	*1*	*02-Aug-2019 18:59*
Surr: Nitrobenzene-d5	*74.0*			*41-120*	*%REC*	*10*	*06-Aug-2019 18:21*
Surr: Phenol-d6	*77.3*			*20-120*	*%REC*	*10*	*06-Aug-2019 18:21*
Surr: Phenol-d6	*53.5*			*20-120*	*%REC*	*1*	*02-Aug-2019 18:59*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS19080069
Sample ID:	WG-1620-MW84B-20190730	Lab ID:HS19080069-03
Collection Date:	30-Jul-2019 09:15	Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 05-Aug-2019		Analyst: JHD
Arsenic	**0.00838**		**0.000400**	**0.00200**	**mg/L**	1	08-Aug-2019 22:55

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW82B-20190730
Collection Date: 30-Jul-2019 10:10

ANALYTICAL REPORT
WorkOrder:HS19080069
Lab ID:HS19080069-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	03-Aug-2019 00:05
Benzene		U	0.00020	0.0010	mg/L	1	03-Aug-2019 00:05
Chlorobenzene		U	0.00030	0.0010	mg/L	1	03-Aug-2019 00:05
Ethylbenzene		U	0.00030	0.0010	mg/L	1	03-Aug-2019 00:05
Methylene chloride		U	0.0010	0.0020	mg/L	1	03-Aug-2019 00:05
Toluene		U	0.00020	0.0010	mg/L	1	03-Aug-2019 00:05
Xylenes, Total		U	0.00030	0.0010	mg/L	1	03-Aug-2019 00:05
Surr: 1,2-Dichloroethane-d4	*97.1*			*70-126*	*%REC*	*1*	*03-Aug-2019 00:05*
Surr: 4-Bromofluorobenzene	*96.3*			*81-113*	*%REC*	*1*	*03-Aug-2019 00:05*
Surr: Dibromofluoromethane	*99.0*			*77-123*	*%REC*	*1*	*03-Aug-2019 00:05*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*1*	*03-Aug-2019 00:05*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW82B-20190730
Collection Date: 30-Jul-2019 10:10

ANALYTICAL REPORT
WorkOrder:HS19080069
Lab ID:HS19080069-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 02-Aug-2019		Analyst: LG
1,2-Diphenylhydrazine		U	0.000021	0.00020	mg/L	1	02-Aug-2019 19:18
2,4-Dimethylphenol		U	0.000040	0.00020	mg/L	1	02-Aug-2019 19:18
2,4-Dinitrotoluene		U	0.000058	0.00020	mg/L	1	02-Aug-2019 19:18
2,6-Dinitrotoluene		U	0.000042	0.00020	mg/L	1	02-Aug-2019 19:18
2-Chloronaphthalene		U	0.000021	0.00020	mg/L	1	02-Aug-2019 19:18
2-Methylnaphthalene		U	0.000019	0.00010	mg/L	1	02-Aug-2019 19:18
4,6-Dinitro-2-methylphenol		U	0.000020	0.00020	mg/L	1	02-Aug-2019 19:18
4-Nitrophenol		U	0.000047	0.0010	mg/L	1	02-Aug-2019 19:18
Acenaphthene		U	0.000027	0.00010	mg/L	1	02-Aug-2019 19:18
Acenaphthylene		U	0.000015	0.00010	mg/L	1	02-Aug-2019 19:18
Anthracene		U	0.000014	0.00010	mg/L	1	02-Aug-2019 19:18
Benz(a)anthracene		U	0.000050	0.00010	mg/L	1	02-Aug-2019 19:18
Benzo(a)pyrene		U	0.000020	0.00010	mg/L	1	02-Aug-2019 19:18
Bis(2-chloroethoxy)methane		U	0.000030	0.00020	mg/L	1	02-Aug-2019 19:18
Bis(2-ethylhexyl)phthalate		U	0.000037	0.00020	mg/L	1	02-Aug-2019 19:18
Chrysene		U	0.000021	0.00010	mg/L	1	02-Aug-2019 19:18
Dibenzofuran		U	0.000020	0.00010	mg/L	1	02-Aug-2019 19:18
Di-n-butyl phthalate		U	0.000020	0.00020	mg/L	1	02-Aug-2019 19:18
Fluoranthene		U	0.000010	0.00010	mg/L	1	02-Aug-2019 19:18
Fluorene		U	0.000030	0.00010	mg/L	1	02-Aug-2019 19:18
Naphthalene		U	0.000020	0.00010	mg/L	1	02-Aug-2019 19:18
Nitrobenzene		U	0.000024	0.00020	mg/L	1	02-Aug-2019 19:18
N-Nitrosodiphenylamine		U	0.000025	0.00020	mg/L	1	02-Aug-2019 19:18
Pentachlorophenol		U	0.000079	0.00020	mg/L	1	02-Aug-2019 19:18
Phenanthrene		U	0.000021	0.00010	mg/L	1	02-Aug-2019 19:18
Phenol		U	0.000035	0.00020	mg/L	1	02-Aug-2019 19:18
Pyrene		U	0.000019	0.00010	mg/L	1	02-Aug-2019 19:18
Surr: 2,4,6-Tribromophenol	*78.5*			*34-129*	*%REC*	*1*	*02-Aug-2019 19:18*
Surr: 2-Fluorobiphenyl	*75.6*			*40-125*	*%REC*	*1*	*02-Aug-2019 19:18*
Surr: 2-Fluorophenol	*59.2*			*20-120*	*%REC*	*1*	*02-Aug-2019 19:18*
Surr: 4-Terphenyl-d14	*95.7*			*40-135*	*%REC*	*1*	*02-Aug-2019 19:18*
Surr: Nitrobenzene-d5	*68.6*			*41-120*	*%REC*	*1*	*02-Aug-2019 19:18*
Surr: Phenol-d6	*64.6*			*20-120*	*%REC*	*1*	*02-Aug-2019 19:18*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 05-Aug-2019		Analyst: JHD
Arsenic	**0.00873**		**0.000400**	**0.00200**	**mg/L**	1	08-Aug-2019 22:34

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW80B-20190730
Collection Date: 30-Jul-2019 11:10

ANALYTICAL REPORT
WorkOrder:HS19080069
Lab ID:HS19080069-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	03-Aug-2019 07:22
Benzene		U	0.00020	0.0010	mg/L	1	03-Aug-2019 07:22
Chlorobenzene		U	0.00030	0.0010	mg/L	1	03-Aug-2019 07:22
Ethylbenzene		U	0.00030	0.0010	mg/L	1	03-Aug-2019 07:22
Methylene chloride		U	0.0010	0.0020	mg/L	1	03-Aug-2019 07:22
Toluene		U	0.00020	0.0010	mg/L	1	03-Aug-2019 07:22
Xylenes, Total		U	0.00030	0.0010	mg/L	1	03-Aug-2019 07:22
Surr: 1,2-Dichloroethane-d4	*97.3*			*70-126*	*%REC*	*1*	*03-Aug-2019 07:22*
Surr: 4-Bromofluorobenzene	*96.4*			*81-113*	*%REC*	*1*	*03-Aug-2019 07:22*
Surr: Dibromofluoromethane	*99.9*			*77-123*	*%REC*	*1*	*03-Aug-2019 07:22*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*03-Aug-2019 07:22*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW80B-20190730
Collection Date: 30-Jul-2019 11:10

ANALYTICAL REPORT
WorkOrder:HS19080069
Lab ID:HS19080069-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 02-Aug-2019		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	02-Aug-2019 20:16
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	02-Aug-2019 20:16
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	02-Aug-2019 20:16
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	02-Aug-2019 20:16
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	02-Aug-2019 20:16
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	02-Aug-2019 20:16
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	02-Aug-2019 20:16
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	02-Aug-2019 20:16
Acenaphthene	U		0.000027	0.00010	mg/L	1	02-Aug-2019 20:16
Acenaphthylene	U		0.000015	0.00010	mg/L	1	02-Aug-2019 20:16
Anthracene	U		0.000014	0.00010	mg/L	1	02-Aug-2019 20:16
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	02-Aug-2019 20:16
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	02-Aug-2019 20:16
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	02-Aug-2019 20:16
Bis(2-ethylhexyl)phthalate	**0.000070**	J	**0.000037**	**0.00020**	**mg/L**	1	02-Aug-2019 20:16
Chrysene	U		0.000021	0.00010	mg/L	1	02-Aug-2019 20:16
Dibenzofuran	U		0.000020	0.00010	mg/L	1	02-Aug-2019 20:16
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	02-Aug-2019 20:16
Fluoranthene	U		0.000010	0.00010	mg/L	1	02-Aug-2019 20:16
Fluorene	U		0.000030	0.00010	mg/L	1	02-Aug-2019 20:16
Naphthalene	U		0.000020	0.00010	mg/L	1	02-Aug-2019 20:16
Nitrobenzene	U		0.000024	0.00020	mg/L	1	02-Aug-2019 20:16
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	02-Aug-2019 20:16
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	02-Aug-2019 20:16
Phenanthrene	U		0.000021	0.00010	mg/L	1	02-Aug-2019 20:16
Phenol	U		0.000035	0.00020	mg/L	1	02-Aug-2019 20:16
Pyrene	U		0.000019	0.00010	mg/L	1	02-Aug-2019 20:16
Surr: 2,4,6-Tribromophenol	*85.6*			*34-129*	*%REC*	*1*	*02-Aug-2019 20:16*
Surr: 2-Fluorobiphenyl	*81.8*			*40-125*	*%REC*	*1*	*02-Aug-2019 20:16*
Surr: 2-Fluorophenol	*55.8*			*20-120*	*%REC*	*1*	*02-Aug-2019 20:16*
Surr: 4-Terphenyl-d14	*86.8*			*40-135*	*%REC*	*1*	*02-Aug-2019 20:16*
Surr: Nitrobenzene-d5	*59.3*			*41-120*	*%REC*	*1*	*02-Aug-2019 20:16*
Surr: Phenol-d6	*65.2*			*20-120*	*%REC*	*1*	*02-Aug-2019 20:16*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 05-Aug-2019		Analyst: JHD
Arsenic	**0.00162**	J	**0.000400**	**0.00200**	**mg/L**	1	08-Aug-2019 22:57

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW77A-20190730
Collection Date: 30-Jul-2019 11:55

ANALYTICAL REPORT
WorkOrder:HS19080069
Lab ID:HS19080069-06
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: PC
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	03-Aug-2019 09:23
Benzene	**0.063**		**0.00020**	**0.0010**	**mg/L**	1	03-Aug-2019 09:23
Chlorobenzene	U		0.00030	0.0010	mg/L	1	03-Aug-2019 09:23
Ethylbenzene	**0.072**		**0.00030**	**0.0010**	**mg/L**	1	03-Aug-2019 09:23
Methylene chloride	U		0.0010	0.0020	mg/L	1	03-Aug-2019 09:23
Toluene	**0.012**		**0.00020**	**0.0010**	**mg/L**	1	03-Aug-2019 09:23
Xylenes, Total	**0.097**		**0.00030**	**0.0010**	**mg/L**	1	03-Aug-2019 09:23
Surr: 1,2-Dichloroethane-d4	*97.7*			*70-126*	*%REC*	*1*	*03-Aug-2019 09:23*
Surr: 4-Bromofluorobenzene	*101*			*81-113*	*%REC*	*1*	*03-Aug-2019 09:23*
Surr: Dibromofluoromethane	*99.8*			*77-123*	*%REC*	*1*	*03-Aug-2019 09:23*
Surr: Toluene-d8	*99.8*			*82-127*	*%REC*	*1*	*03-Aug-2019 09:23*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW77A-20190730
Collection Date: 30-Jul-2019 11:55

ANALYTICAL REPORT
WorkOrder:HS19080069
Lab ID:HS19080069-06
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 02-Aug-2019		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	02-Aug-2019 20:35
2,4-Dimethylphenol	**0.062**		**0.00080**	**0.0040**	**mg/L**	20	06-Aug-2019 18:40
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	02-Aug-2019 20:35
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	02-Aug-2019 20:35
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	02-Aug-2019 20:35
2-Methylnaphthalene	**0.20**		**0.00038**	**0.0020**	**mg/L**	20	06-Aug-2019 18:40
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	02-Aug-2019 20:35
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	02-Aug-2019 20:35
Acenaphthene	**0.16**		**0.00054**	**0.0020**	**mg/L**	20	06-Aug-2019 18:40
Acenaphthylene	**0.0013**		**0.000015**	**0.00010**	**mg/L**	1	02-Aug-2019 20:35
Anthracene	**0.0028**		**0.000014**	**0.00010**	**mg/L**	1	02-Aug-2019 20:35
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	02-Aug-2019 20:35
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	02-Aug-2019 20:35
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	02-Aug-2019 20:35
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	02-Aug-2019 20:35
Chrysene	U		0.000021	0.00010	mg/L	1	02-Aug-2019 20:35
Dibenzofuran	**0.096**		**0.00040**	**0.0020**	**mg/L**	20	06-Aug-2019 18:40
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	02-Aug-2019 20:35
Fluoranthene	**0.00052**		**0.000010**	**0.00010**	**mg/L**	1	02-Aug-2019 20:35
Fluorene	**0.078**		**0.00060**	**0.0020**	**mg/L**	20	06-Aug-2019 18:40
Naphthalene	**4.9**		**0.040**	**0.20**	**mg/L**	2000	06-Aug-2019 18:59
Nitrobenzene	U		0.000024	0.00020	mg/L	1	02-Aug-2019 20:35
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	02-Aug-2019 20:35
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	02-Aug-2019 20:35
Phenanthrene	**0.032**		**0.00042**	**0.0020**	**mg/L**	20	06-Aug-2019 18:40
Phenol	U		0.000035	0.00020	mg/L	1	02-Aug-2019 20:35
Pyrene	**0.00041**		**0.000019**	**0.00010**	**mg/L**	1	02-Aug-2019 20:35
Surr: 2,4,6-Tribromophenol	*78.6*			*34-129*	*%REC*	*1*	*02-Aug-2019 20:35*
Surr: 2,4,6-Tribromophenol	*125*			*34-129*	*%REC*	*20*	*06-Aug-2019 18:40*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*2000*	*06-Aug-2019 18:59*
Surr: 2-Fluorobiphenyl	*90.5*			*40-125*	*%REC*	*20*	*06-Aug-2019 18:40*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*2000*	*06-Aug-2019 18:59*
Surr: 2-Fluorobiphenyl	*69.1*			*40-125*	*%REC*	*1*	*02-Aug-2019 20:35*
Surr: 2-Fluorophenol	*50.6*			*20-120*	*%REC*	*1*	*02-Aug-2019 20:35*
Surr: 2-Fluorophenol	*109*			*20-120*	*%REC*	*20*	*06-Aug-2019 18:40*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*2000*	*06-Aug-2019 18:59*
Surr: 4-Terphenyl-d14	*121*			*40-135*	*%REC*	*20*	*06-Aug-2019 18:40*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*2000*	*06-Aug-2019 18:59*
Surr: 4-Terphenyl-d14	*84.8*			*40-135*	*%REC*	*1*	*02-Aug-2019 20:35*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW77A-20190730
Collection Date: 30-Jul-2019 11:55

ANALYTICAL REPORT
WorkOrder:HS19080069
Lab ID:HS19080069-06
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 02-Aug-2019		Analyst: LG
Surr: Nitrobenzene-d5	*99.9*			*41-120*	*%REC*	*1*	*02-Aug-2019 20:35*
Surr: Nitrobenzene-d5	*63.6*	*J*		*41-120*	*%REC*	*20*	*06-Aug-2019 18:40*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*2000*	*06-Aug-2019 18:59*
Surr: Phenol-d6	*51.9*	*J*		*20-120*	*%REC*	*20*	*06-Aug-2019 18:40*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*2000*	*06-Aug-2019 18:59*
Surr: Phenol-d6	*61.3*			*20-120*	*%REC*	*1*	*02-Aug-2019 20:35*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 05-Aug-2019		Analyst: JHD
Arsenic	**0.0231**		**0.000400**	**0.00200**	**mg/L**	1	08-Aug-2019 22:59

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW85C-20190730
Collection Date: 30-Jul-2019 15:35

ANALYTICAL REPORT
WorkOrder:HS19080069
Lab ID:HS19080069-07
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: PC
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	03-Aug-2019 07:46
Benzene	**0.00093**	J	**0.00020**	**0.0010**	**mg/L**	1	03-Aug-2019 07:46
Chlorobenzene	U		0.00030	0.0010	mg/L	1	03-Aug-2019 07:46
Ethylbenzene	U		0.00030	0.0010	mg/L	1	03-Aug-2019 07:46
Methylene chloride	U		0.0010	0.0020	mg/L	1	03-Aug-2019 07:46
Toluene	U		0.00020	0.0010	mg/L	1	03-Aug-2019 07:46
Xylenes, Total	U		0.00030	0.0010	mg/L	1	03-Aug-2019 07:46
Surr: 1,2-Dichloroethane-d4	*98.4*			*70-126*	*%REC*	*1*	*03-Aug-2019 07:46*
Surr: 4-Bromofluorobenzene	*98.2*			*81-113*	*%REC*	*1*	*03-Aug-2019 07:46*
Surr: Dibromofluoromethane	*100*			*77-123*	*%REC*	*1*	*03-Aug-2019 07:46*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*03-Aug-2019 07:46*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW85C-20190730
Collection Date: 30-Jul-2019 15:35

ANALYTICAL REPORT
WorkOrder:HS19080069
Lab ID:HS19080069-07
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 02-Aug-2019		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	02-Aug-2019 20:54
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	02-Aug-2019 20:54
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	02-Aug-2019 20:54
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	02-Aug-2019 20:54
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	02-Aug-2019 20:54
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	02-Aug-2019 20:54
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	02-Aug-2019 20:54
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	02-Aug-2019 20:54
Acenaphthene	U		0.000027	0.00010	mg/L	1	02-Aug-2019 20:54
Acenaphthylene	U		0.000015	0.00010	mg/L	1	02-Aug-2019 20:54
Anthracene	U		0.000014	0.00010	mg/L	1	02-Aug-2019 20:54
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	02-Aug-2019 20:54
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	02-Aug-2019 20:54
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	02-Aug-2019 20:54
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	02-Aug-2019 20:54
Chrysene	U		0.000021	0.00010	mg/L	1	02-Aug-2019 20:54
Dibenzofuran	U		0.000020	0.00010	mg/L	1	02-Aug-2019 20:54
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	02-Aug-2019 20:54
Fluoranthene	U		0.000010	0.00010	mg/L	1	02-Aug-2019 20:54
Fluorene	U		0.000030	0.00010	mg/L	1	02-Aug-2019 20:54
Naphthalene	**0.0012**		**0.000020**	**0.00010**	**mg/L**	1	02-Aug-2019 20:54
Nitrobenzene	U		0.000024	0.00020	mg/L	1	02-Aug-2019 20:54
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	02-Aug-2019 20:54
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	02-Aug-2019 20:54
Phenanthrene	U		0.000021	0.00010	mg/L	1	02-Aug-2019 20:54
Phenol	U		0.000035	0.00020	mg/L	1	02-Aug-2019 20:54
Pyrene	U		0.000019	0.00010	mg/L	1	02-Aug-2019 20:54
Surr: 2,4,6-Tribromophenol	*67.7*			*34-129*	*%REC*	*1*	*02-Aug-2019 20:54*
Surr: 2-Fluorobiphenyl	*67.0*			*40-125*	*%REC*	*1*	*02-Aug-2019 20:54*
Surr: 2-Fluorophenol	*55.2*			*20-120*	*%REC*	*1*	*02-Aug-2019 20:54*
Surr: 4-Terphenyl-d14	*87.2*			*40-135*	*%REC*	*1*	*02-Aug-2019 20:54*
Surr: Nitrobenzene-d5	*57.9*			*41-120*	*%REC*	*1*	*02-Aug-2019 20:54*
Surr: Phenol-d6	*56.2*			*20-120*	*%REC*	*1*	*02-Aug-2019 20:54*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 05-Aug-2019		Analyst: JHD
Arsenic	**0.000633**	J	**0.000400**	**0.00200**	**mg/L**	1	08-Aug-2019 23:01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW86C-20190730
Collection Date: 30-Jul-2019 16:40

ANALYTICAL REPORT
WorkOrder:HS19080069
Lab ID:HS19080069-08
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	03-Aug-2019 08:10
Benzene		U	0.00020	0.0010	mg/L	1	03-Aug-2019 08:10
Chlorobenzene		U	0.00030	0.0010	mg/L	1	03-Aug-2019 08:10
Ethylbenzene		U	0.00030	0.0010	mg/L	1	03-Aug-2019 08:10
Methylene chloride		U	0.0010	0.0020	mg/L	1	03-Aug-2019 08:10
Toluene		U	0.00020	0.0010	mg/L	1	03-Aug-2019 08:10
Xylenes, Total		U	0.00030	0.0010	mg/L	1	03-Aug-2019 08:10
Surr: 1,2-Dichloroethane-d4	*97.3*			*70-126*	*%REC*	*1*	*03-Aug-2019 08:10*
Surr: 4-Bromofluorobenzene	*98.0*			*81-113*	*%REC*	*1*	*03-Aug-2019 08:10*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*03-Aug-2019 08:10*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*1*	*03-Aug-2019 08:10*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW86C-20190730
Collection Date: 30-Jul-2019 16:40

ANALYTICAL REPORT
WorkOrder:HS19080069
Lab ID:HS19080069-08
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 02-Aug-2019		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	02-Aug-2019 21:13
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	02-Aug-2019 21:13
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	02-Aug-2019 21:13
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	02-Aug-2019 21:13
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	02-Aug-2019 21:13
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	02-Aug-2019 21:13
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	02-Aug-2019 21:13
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	02-Aug-2019 21:13
Acenaphthene	U		0.000027	0.00010	mg/L	1	02-Aug-2019 21:13
Acenaphthylene	U		0.000015	0.00010	mg/L	1	02-Aug-2019 21:13
Anthracene	U		0.000014	0.00010	mg/L	1	02-Aug-2019 21:13
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	02-Aug-2019 21:13
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	02-Aug-2019 21:13
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	02-Aug-2019 21:13
Bis(2-ethylhexyl)phthalate	**0.000060**	J	**0.000037**	**0.00020**	**mg/L**	1	02-Aug-2019 21:13
Chrysene	U		0.000021	0.00010	mg/L	1	02-Aug-2019 21:13
Dibenzofuran	U		0.000020	0.00010	mg/L	1	02-Aug-2019 21:13
Di-n-butyl phthalate	**0.00011**	J	**0.000020**	**0.00020**	**mg/L**	1	02-Aug-2019 21:13
Fluoranthene	U		0.000010	0.00010	mg/L	1	02-Aug-2019 21:13
Fluorene	U		0.000030	0.00010	mg/L	1	02-Aug-2019 21:13
Naphthalene	**0.00012**		**0.000020**	**0.00010**	**mg/L**	1	02-Aug-2019 21:13
Nitrobenzene	U		0.000024	0.00020	mg/L	1	02-Aug-2019 21:13
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	02-Aug-2019 21:13
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	02-Aug-2019 21:13
Phenanthrene	U		0.000021	0.00010	mg/L	1	02-Aug-2019 21:13
Phenol	U		0.000035	0.00020	mg/L	1	02-Aug-2019 21:13
Pyrene	U		0.000019	0.00010	mg/L	1	02-Aug-2019 21:13
Surr: 2,4,6-Tribromophenol	*52.2*			*34-129*	*%REC*	*1*	*02-Aug-2019 21:13*
Surr: 2-Fluorobiphenyl	*53.5*			*40-125*	*%REC*	*1*	*02-Aug-2019 21:13*
Surr: 2-Fluorophenol	*52.0*			*20-120*	*%REC*	*1*	*02-Aug-2019 21:13*
Surr: 4-Terphenyl-d14	*80.5*			*40-135*	*%REC*	*1*	*02-Aug-2019 21:13*
Surr: Nitrobenzene-d5	*49.3*			*41-120*	*%REC*	*1*	*02-Aug-2019 21:13*
Surr: Phenol-d6	*49.0*			*20-120*	*%REC*	*1*	*02-Aug-2019 21:13*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 05-Aug-2019		Analyst: JHD
Arsenic	**0.00236**		**0.000400**	**0.00200**	**mg/L**	1	08-Aug-2019 23:04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FD04-20190730
Collection Date: 30-Jul-2019 16:40

ANALYTICAL REPORT
WorkOrder:HS19080069
Lab ID:HS19080069-09
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	03-Aug-2019 08:35
Benzene		U	0.00020	0.0010	mg/L	1	03-Aug-2019 08:35
Chlorobenzene		U	0.00030	0.0010	mg/L	1	03-Aug-2019 08:35
Ethylbenzene		U	0.00030	0.0010	mg/L	1	03-Aug-2019 08:35
Methylene chloride		U	0.0010	0.0020	mg/L	1	03-Aug-2019 08:35
Toluene		U	0.00020	0.0010	mg/L	1	03-Aug-2019 08:35
Vinyl chloride		U	0.00020	0.0010	mg/L	1	03-Aug-2019 08:35
Xylenes, Total		U	0.00030	0.0010	mg/L	1	03-Aug-2019 08:35
Surr: 1,2-Dichloroethane-d4	*99.2*			*70-126*	*%REC*	*1*	*03-Aug-2019 08:35*
Surr: 4-Bromofluorobenzene	*97.4*			*81-113*	*%REC*	*1*	*03-Aug-2019 08:35*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*03-Aug-2019 08:35*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*1*	*03-Aug-2019 08:35*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FD04-20190730
Collection Date: 30-Jul-2019 16:40

ANALYTICAL REPORT
WorkOrder:HS19080069
Lab ID:HS19080069-09
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 02-Aug-2019		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	06-Aug-2019 17:05
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	06-Aug-2019 17:05
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	06-Aug-2019 17:05
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	06-Aug-2019 17:05
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	06-Aug-2019 17:05
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	06-Aug-2019 17:05
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	06-Aug-2019 17:05
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	06-Aug-2019 17:05
Acenaphthene	U		0.000027	0.00010	mg/L	1	06-Aug-2019 17:05
Acenaphthylene	U		0.000015	0.00010	mg/L	1	06-Aug-2019 17:05
Anthracene	U		0.000014	0.00010	mg/L	1	06-Aug-2019 17:05
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	06-Aug-2019 17:05
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	06-Aug-2019 17:05
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	06-Aug-2019 17:05
Bis(2-ethylhexyl)phthalate	**0.000050**	J	**0.000037**	**0.00020**	**mg/L**	1	06-Aug-2019 17:05
Chrysene	U		0.000021	0.00010	mg/L	1	06-Aug-2019 17:05
Dibenzofuran	U		0.000020	0.00010	mg/L	1	06-Aug-2019 17:05
Di-n-butyl phthalate	**0.000073**	J	**0.000020**	**0.00020**	**mg/L**	1	06-Aug-2019 17:05
Fluoranthene	U		0.000010	0.00010	mg/L	1	06-Aug-2019 17:05
Fluorene	U		0.000030	0.00010	mg/L	1	06-Aug-2019 17:05
Naphthalene	**0.00031**		**0.000020**	**0.00010**	**mg/L**	1	06-Aug-2019 17:05
Nitrobenzene	U		0.000024	0.00020	mg/L	1	06-Aug-2019 17:05
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	06-Aug-2019 17:05
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	06-Aug-2019 17:05
Phenanthrene	U		0.000021	0.00010	mg/L	1	06-Aug-2019 17:05
Phenol	U		0.000035	0.00020	mg/L	1	06-Aug-2019 17:05
Pyrene	U		0.000019	0.00010	mg/L	1	06-Aug-2019 17:05
Surr: 2,4,6-Tribromophenol	*56.1*			*34-129*	*%REC*	*1*	*06-Aug-2019 17:05*
Surr: 2-Fluorobiphenyl	*63.0*			*40-125*	*%REC*	*1*	*06-Aug-2019 17:05*
Surr: 2-Fluorophenol	*59.9*			*20-120*	*%REC*	*1*	*06-Aug-2019 17:05*
Surr: 4-Terphenyl-d14	*91.9*			*40-135*	*%REC*	*1*	*06-Aug-2019 17:05*
Surr: Nitrobenzene-d5	*56.6*			*41-120*	*%REC*	*1*	*06-Aug-2019 17:05*
Surr: Phenol-d6	*51.1*			*20-120*	*%REC*	*1*	*06-Aug-2019 17:05*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 05-Aug-2019		Analyst: JHD
Arsenic	**0.00190**	J	**0.000400**	**0.00200**	**mg/L**	1	08-Aug-2019 23:06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW76C-20190730
Collection Date: 30-Jul-2019 17:30

ANALYTICAL REPORT
WorkOrder:HS19080069
Lab ID:HS19080069-10
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	03-Aug-2019 08:59
Benzene		U	0.00020	0.0010	mg/L	1	03-Aug-2019 08:59
Chlorobenzene		U	0.00030	0.0010	mg/L	1	03-Aug-2019 08:59
Ethylbenzene		U	0.00030	0.0010	mg/L	1	03-Aug-2019 08:59
Methylene chloride		U	0.0010	0.0020	mg/L	1	03-Aug-2019 08:59
Toluene		U	0.00020	0.0010	mg/L	1	03-Aug-2019 08:59
Xylenes, Total		U	0.00030	0.0010	mg/L	1	03-Aug-2019 08:59
Surr: 1,2-Dichloroethane-d4	*97.7*			*70-126*	*%REC*	*1*	*03-Aug-2019 08:59*
Surr: 4-Bromofluorobenzene	*96.0*			*81-113*	*%REC*	*1*	*03-Aug-2019 08:59*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*03-Aug-2019 08:59*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*03-Aug-2019 08:59*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW76C-20190730
Collection Date: 30-Jul-2019 17:30

ANALYTICAL REPORT
WorkOrder:HS19080069
Lab ID:HS19080069-10
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 02-Aug-2019		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	06-Aug-2019 17:24
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	06-Aug-2019 17:24
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	06-Aug-2019 17:24
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	06-Aug-2019 17:24
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	06-Aug-2019 17:24
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	06-Aug-2019 17:24
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	06-Aug-2019 17:24
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	06-Aug-2019 17:24
Acenaphthene	U		0.000027	0.00010	mg/L	1	06-Aug-2019 17:24
Acenaphthylene	U		0.000015	0.00010	mg/L	1	06-Aug-2019 17:24
Anthracene	U		0.000014	0.00010	mg/L	1	06-Aug-2019 17:24
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	06-Aug-2019 17:24
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	06-Aug-2019 17:24
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	06-Aug-2019 17:24
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	06-Aug-2019 17:24
Chrysene	U		0.000021	0.00010	mg/L	1	06-Aug-2019 17:24
Dibenzofuran	U		0.000020	0.00010	mg/L	1	06-Aug-2019 17:24
Di-n-butyl phthalate	**0.000054**	J	**0.000020**	**0.00020**	**mg/L**	1	06-Aug-2019 17:24
Fluoranthene	U		0.000010	0.00010	mg/L	1	06-Aug-2019 17:24
Fluorene	U		0.000030	0.00010	mg/L	1	06-Aug-2019 17:24
Naphthalene	**0.00018**		**0.000020**	**0.00010**	**mg/L**	1	06-Aug-2019 17:24
Nitrobenzene	U		0.000024	0.00020	mg/L	1	06-Aug-2019 17:24
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	06-Aug-2019 17:24
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	06-Aug-2019 17:24
Phenanthrene	U		0.000021	0.00010	mg/L	1	06-Aug-2019 17:24
Phenol	U		0.000035	0.00020	mg/L	1	06-Aug-2019 17:24
Pyrene	U		0.000019	0.00010	mg/L	1	06-Aug-2019 17:24
Surr: 2,4,6-Tribromophenol	*47.2*			*34-129*	*%REC*	*1*	*06-Aug-2019 17:24*
Surr: 2-Fluorobiphenyl	*69.9*			*40-125*	*%REC*	*1*	*06-Aug-2019 17:24*
Surr: 2-Fluorophenol	*55.3*			*20-120*	*%REC*	*1*	*06-Aug-2019 17:24*
Surr: 4-Terphenyl-d14	*92.9*			*40-135*	*%REC*	*1*	*06-Aug-2019 17:24*
Surr: Nitrobenzene-d5	*63.1*			*41-120*	*%REC*	*1*	*06-Aug-2019 17:24*
Surr: Phenol-d6	*57.4*			*20-120*	*%REC*	*1*	*06-Aug-2019 17:24*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 05-Aug-2019		Analyst: JHD
Arsenic	**0.00216**		**0.000400**	**0.00200**	**mg/L**	1	08-Aug-2019 23:08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW74B-20190730
Collection Date: 30-Jul-2019 18:20

ANALYTICAL REPORT
WorkOrder:HS19080069
Lab ID:HS19080069-11
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.0010	0.0050	mg/L	5	05-Aug-2019 18:44
Benzene	**0.59**		**0.0010**	**0.0050**	**mg/L**	5	05-Aug-2019 18:44
Chlorobenzene	U		0.0015	0.0050	mg/L	5	05-Aug-2019 18:44
Ethylbenzene	**0.15**		**0.0015**	**0.0050**	**mg/L**	5	05-Aug-2019 18:44
Methylene chloride	U		0.0050	0.010	mg/L	5	05-Aug-2019 18:44
Toluene	**0.52**		**0.0010**	**0.0050**	**mg/L**	5	05-Aug-2019 18:44
Xylenes, Total	**0.42**		**0.0015**	**0.0050**	**mg/L**	5	05-Aug-2019 18:44
Surr: 1,2-Dichloroethane-d4	*97.0*			*70-126*	*%REC*	*5*	*05-Aug-2019 18:44*
Surr: 4-Bromofluorobenzene	*99.2*			*81-113*	*%REC*	*5*	*05-Aug-2019 18:44*
Surr: Dibromofluoromethane	*106*			*77-123*	*%REC*	*5*	*05-Aug-2019 18:44*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*5*	*05-Aug-2019 18:44*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW74B-20190730
Collection Date: 30-Jul-2019 18:20

ANALYTICAL REPORT
WorkOrder:HS19080069
Lab ID:HS19080069-11
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 02-Aug-2019		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	06-Aug-2019 15:43
2,4-Dimethylphenol	**37**		**0.40**	**2.0**	**mg/L**	10000	06-Aug-2019 19:56
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	06-Aug-2019 15:43
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	06-Aug-2019 15:43
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	06-Aug-2019 15:43
2-Methylnaphthalene	**0.48**		**0.0019**	**0.010**	**mg/L**	100	06-Aug-2019 19:37
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	06-Aug-2019 15:43
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	06-Aug-2019 15:43
Acenaphthene	**0.24**		**0.0027**	**0.010**	**mg/L**	100	06-Aug-2019 19:37
Acenaphthylene	**0.0037**		**0.000015**	**0.00010**	**mg/L**	1	06-Aug-2019 15:43
Anthracene	**0.0071**		**0.000014**	**0.00010**	**mg/L**	1	06-Aug-2019 15:43
Benz(a)anthracene	**0.00022**		**0.000050**	**0.00010**	**mg/L**	1	06-Aug-2019 15:43
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	06-Aug-2019 15:43
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	06-Aug-2019 15:43
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	06-Aug-2019 15:43
Chrysene	**0.00016**		**0.000021**	**0.00010**	**mg/L**	1	06-Aug-2019 15:43
Dibenzofuran	**0.19**		**0.0020**	**0.010**	**mg/L**	100	06-Aug-2019 19:37
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	06-Aug-2019 15:43
Fluoranthene	**0.0035**		**0.000010**	**0.00010**	**mg/L**	1	06-Aug-2019 15:43
Fluorene	**0.14**		**0.0030**	**0.010**	**mg/L**	100	06-Aug-2019 19:37
Naphthalene	**13**		**0.20**	**1.0**	**mg/L**	10000	06-Aug-2019 19:56
Nitrobenzene	U		0.000024	0.00020	mg/L	1	06-Aug-2019 15:43
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	06-Aug-2019 15:43
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	06-Aug-2019 15:43
Phenanthrene	**0.087**		**0.00021**	**0.0010**	**mg/L**	10	06-Aug-2019 19:18
Phenol	**33**		**0.35**	**2.0**	**mg/L**	10000	06-Aug-2019 19:56
Pyrene	**0.0023**		**0.000019**	**0.00010**	**mg/L**	1	06-Aug-2019 15:43
Surr: 2,4,6-Tribromophenol	*40.9*			*34-129*	*%REC*	*1*	*06-Aug-2019 15:43*
Surr: 2,4,6-Tribromophenol	*85.9*			*34-129*	*%REC*	*10*	*06-Aug-2019 19:18*
Surr: 2,4,6-Tribromophenol	*117*	*J*		*34-129*	*%REC*	*100*	*06-Aug-2019 19:37*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*10000*	*06-Aug-2019 19:56*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*10000*	*06-Aug-2019 19:56*
Surr: 2-Fluorobiphenyl	*89.7*			*40-125*	*%REC*	*10*	*06-Aug-2019 19:18*
Surr: 2-Fluorobiphenyl	*104*	*J*		*40-125*	*%REC*	*100*	*06-Aug-2019 19:37*
Surr: 2-Fluorobiphenyl	*49.7*			*40-125*	*%REC*	*1*	*06-Aug-2019 15:43*
Surr: 2-Fluorophenol	*102*			*20-120*	*%REC*	*1*	*06-Aug-2019 15:43*
Surr: 2-Fluorophenol	*87.1*			*20-120*	*%REC*	*10*	*06-Aug-2019 19:18*
Surr: 2-Fluorophenol	*117*	*J*		*20-120*	*%REC*	*100*	*06-Aug-2019 19:37*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*10000*	*06-Aug-2019 19:56*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW74B-20190730
Collection Date: 30-Jul-2019 18:20

ANALYTICAL REPORT
WorkOrder:HS19080069
Lab ID:HS19080069-11
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 02-Aug-2019		Analyst: LG
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*10000*	*06-Aug-2019 19:56*
Surr: 4-Terphenyl-d14	*95.1*			*40-135*	*%REC*	*10*	*06-Aug-2019 19:18*
Surr: 4-Terphenyl-d14	*120*	*J*		*40-135*	*%REC*	*100*	*06-Aug-2019 19:37*
Surr: 4-Terphenyl-d14	*58.4*			*40-135*	*%REC*	*1*	*06-Aug-2019 15:43*
Surr: Nitrobenzene-d5	*73.3*			*41-120*	*%REC*	*1*	*06-Aug-2019 15:43*
Surr: Nitrobenzene-d5	*61.6*			*41-120*	*%REC*	*10*	*06-Aug-2019 19:18*
Surr: Nitrobenzene-d5	*106*	*J*		*41-120*	*%REC*	*100*	*06-Aug-2019 19:37*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*10000*	*06-Aug-2019 19:56*
Surr: Phenol-d6	*72.9*			*20-120*	*%REC*	*1*	*06-Aug-2019 15:43*
Surr: Phenol-d6	*88.6*			*20-120*	*%REC*	*10*	*06-Aug-2019 19:18*
Surr: Phenol-d6	*117*	*J*		*20-120*	*%REC*	*100*	*06-Aug-2019 19:37*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*10000*	*06-Aug-2019 19:56*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 05-Aug-2019		Analyst: JHD
Arsenic	**0.00128**	J	**0.000400**	**0.00200**	**mg/L**	1	09-Aug-2019 16:08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW79A-20190730
Collection Date: 30-Jul-2019 19:10

ANALYTICAL REPORT
WorkOrder:HS19080069
Lab ID:HS19080069-12
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	05-Aug-2019 18:17
Benzene	**0.013**		**0.00020**	**0.0010**	**mg/L**	1	05-Aug-2019 18:17
Chlorobenzene	U		0.00030	0.0010	mg/L	1	05-Aug-2019 18:17
Ethylbenzene	**0.0067**		**0.00030**	**0.0010**	**mg/L**	1	05-Aug-2019 18:17
Methylene chloride	U		0.0010	0.0020	mg/L	1	05-Aug-2019 18:17
Toluene	**0.018**		**0.00020**	**0.0010**	**mg/L**	1	05-Aug-2019 18:17
Xylenes, Total	**0.023**		**0.00030**	**0.0010**	**mg/L**	1	05-Aug-2019 18:17
Surr: 1,2-Dichloroethane-d4	*102*			*70-126*	*%REC*	*1*	*05-Aug-2019 18:17*
Surr: 4-Bromofluorobenzene	*121*	*S*		*81-113*	*%REC*	*1*	*05-Aug-2019 18:17*
Surr: Dibromofluoromethane	*104*			*77-123*	*%REC*	*1*	*05-Aug-2019 18:17*
Surr: Toluene-d8	*96.2*			*82-127*	*%REC*	*1*	*05-Aug-2019 18:17*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW79A-20190730
Collection Date: 30-Jul-2019 19:10

ANALYTICAL REPORT
WorkOrder:HS19080069
Lab ID:HS19080069-12
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 02-Aug-2019		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	06-Aug-2019 16:02
2,4-Dimethylphenol	**0.33**		**0.0040**	**0.020**	**mg/L**	100	06-Aug-2019 20:34
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	06-Aug-2019 16:02
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	06-Aug-2019 16:02
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	06-Aug-2019 16:02
2-Methylnaphthalene	**0.051**		**0.00019**	**0.0010**	**mg/L**	10	06-Aug-2019 20:15
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	06-Aug-2019 16:02
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	06-Aug-2019 16:02
Acenaphthene	**0.034**		**0.00027**	**0.0010**	**mg/L**	10	06-Aug-2019 20:15
Acenaphthylene	**0.00076**		**0.000015**	**0.00010**	**mg/L**	1	06-Aug-2019 16:02
Anthracene	**0.0020**		**0.000014**	**0.00010**	**mg/L**	1	06-Aug-2019 16:02
Benz(a)anthracene	**0.00023**		**0.000050**	**0.00010**	**mg/L**	1	06-Aug-2019 16:02
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	06-Aug-2019 16:02
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	06-Aug-2019 16:02
Bis(2-ethylhexyl)phthalate	**0.00055**		**0.000037**	**0.00020**	**mg/L**	1	06-Aug-2019 16:02
Chrysene	**0.00027**		**0.000021**	**0.00010**	**mg/L**	1	06-Aug-2019 16:02
Dibenzofuran	**0.026**		**0.00020**	**0.0010**	**mg/L**	10	06-Aug-2019 20:15
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	06-Aug-2019 16:02
Fluoranthene	**0.0012**		**0.000010**	**0.00010**	**mg/L**	1	06-Aug-2019 16:02
Fluorene	**0.017**		**0.00030**	**0.0010**	**mg/L**	10	06-Aug-2019 20:15
Naphthalene	**0.74**		**0.0020**	**0.010**	**mg/L**	100	06-Aug-2019 20:34
Nitrobenzene	U		0.000024	0.00020	mg/L	1	06-Aug-2019 16:02
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	06-Aug-2019 16:02
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	06-Aug-2019 16:02
Phenanthrene	**0.0082**		**0.000021**	**0.00010**	**mg/L**	1	06-Aug-2019 16:02
Phenol	**0.063**		**0.00035**	**0.0020**	**mg/L**	10	06-Aug-2019 20:15
Pyrene	**0.0011**		**0.000019**	**0.00010**	**mg/L**	1	06-Aug-2019 16:02
Surr: 2,4,6-Tribromophenol	*124*			*34-129*	*%REC*	*10*	*06-Aug-2019 20:15*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*06-Aug-2019 20:34*
Surr: 2,4,6-Tribromophenol	*72.9*			*34-129*	*%REC*	*1*	*06-Aug-2019 16:02*
Surr: 2-Fluorobiphenyl	*95.2*			*40-125*	*%REC*	*1*	*06-Aug-2019 16:02*
Surr: 2-Fluorobiphenyl	*114*			*40-125*	*%REC*	*10*	*06-Aug-2019 20:15*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*06-Aug-2019 20:34*
Surr: 2-Fluorophenol	*84.7*			*20-120*	*%REC*	*10*	*06-Aug-2019 20:15*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*06-Aug-2019 20:34*
Surr: 2-Fluorophenol	*93.9*			*20-120*	*%REC*	*1*	*06-Aug-2019 16:02*
Surr: 4-Terphenyl-d14	*104*			*40-135*	*%REC*	*1*	*06-Aug-2019 16:02*
Surr: 4-Terphenyl-d14	*103*			*40-135*	*%REC*	*10*	*06-Aug-2019 20:15*
Surr: 4-Terphenyl-d14	*161*	*JS*		*40-135*	*%REC*	*100*	*06-Aug-2019 20:34*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19080069
Sample ID: WG-1620-MW79A-20190730
Lab ID:HS19080069-12
Collection Date: 30-Jul-2019 19:10
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 02-Aug-2019		Analyst: LG
Surr: Nitrobenzene-d5	*68.7*			*41-120*	*%REC*	*1*	*06-Aug-2019 16:02*
Surr: Nitrobenzene-d5	*103*			*41-120*	*%REC*	*10*	*06-Aug-2019 20:15*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*06-Aug-2019 20:34*
Surr: Phenol-d6	*92.9*			*20-120*	*%REC*	*10*	*06-Aug-2019 20:15*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*06-Aug-2019 20:34*
Surr: Phenol-d6	*85.4*			*20-120*	*%REC*	*1*	*06-Aug-2019 16:02*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 05-Aug-2019		Analyst: JHD
Arsenic	**0.00991**		**0.000400**	**0.00200**	**mg/L**	1	08-Aug-2019 23:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19080069
Sample ID: WG-1620-TB05-20190730
Lab ID:HS19080069-13
Collection Date: 30-Jul-2019 00:00
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	03-Aug-2019 06:09
Benzene		U	0.00020	0.0010	mg/L	1	03-Aug-2019 06:09
Chlorobenzene		U	0.00030	0.0010	mg/L	1	03-Aug-2019 06:09
Ethylbenzene		U	0.00030	0.0010	mg/L	1	03-Aug-2019 06:09
Methylene chloride		U	0.0010	0.0020	mg/L	1	03-Aug-2019 06:09
Toluene		U	0.00020	0.0010	mg/L	1	03-Aug-2019 06:09
Vinyl chloride		U	0.00020	0.0010	mg/L	1	03-Aug-2019 06:09
Xylenes, Total		U	0.00030	0.0010	mg/L	1	03-Aug-2019 06:09
Surr: 1,2-Dichloroethane-d4	*97.1*			*70-126*	*%REC*	*1*	*03-Aug-2019 06:09*
Surr: 4-Bromofluorobenzene	*97.1*			*81-113*	*%REC*	*1*	*03-Aug-2019 06:09*
Surr: Dibromofluoromethane	*99.8*			*77-123*	*%REC*	*1*	*03-Aug-2019 06:09*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*03-Aug-2019 06:09*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

WEIGHT LOG

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080069

Batch ID: 143727 **Method:** LOW-LEVEL SEMIVOLATILES BY 8270D **Prep:** 3510_B_LOW

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19080069-01	1	1000	1 (mL)	0.001
HS19080069-02	1	1000	1 (mL)	0.001
HS19080069-03	1	1000	1 (mL)	0.001
HS19080069-04	1	1000	1 (mL)	0.001
HS19080069-05	1	1000	1 (mL)	0.001
HS19080069-06	1	1000	1 (mL)	0.001
HS19080069-07	1	1000	1 (mL)	0.001
HS19080069-08	1	1000	1 (mL)	0.001
HS19080069-09	1	1000	1 (mL)	0.001
HS19080069-10	1	1000	1 (mL)	0.001
HS19080069-11	1	1000	1 (mL)	0.001
HS19080069-12	1	1000	1 (mL)	0.001

Batch ID: 143772 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19080069-01	1	10	10 (mL)	1
HS19080069-02	1	10	10 (mL)	1
HS19080069-03	1	10	10 (mL)	1
HS19080069-04	1	10	10 (mL)	1
HS19080069-05	1	10	10 (mL)	1
HS19080069-06	1	10	10 (mL)	1
HS19080069-07	1	10	10 (mL)	1
HS19080069-08	1	10	10 (mL)	1
HS19080069-09	1	10	10 (mL)	1
HS19080069-10	1	10	10 (mL)	1
HS19080069-11	1	10	10 (mL)	1
HS19080069-12	1	10	10 (mL)	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080069

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID: 143727 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Water	
HS19080069-01	WG-1620-MW32AR-20190730	30 Jul 2019 07:25		02 Aug 2019 07:00	02 Aug 2019 18:21	1
HS19080069-02	WG-1620-MW33BR-20190730	30 Jul 2019 08:20		02 Aug 2019 07:00	06 Aug 2019 21:31	100
HS19080069-02	WG-1620-MW33BR-20190730	30 Jul 2019 08:20		02 Aug 2019 07:00	06 Aug 2019 21:12	5
HS19080069-02	WG-1620-MW33BR-20190730	30 Jul 2019 08:20		02 Aug 2019 07:00	02 Aug 2019 18:40	1
HS19080069-03	WG-1620-MW84B-20190730	30 Jul 2019 09:15		02 Aug 2019 07:00	06 Aug 2019 18:21	10
HS19080069-03	WG-1620-MW84B-20190730	30 Jul 2019 09:15		02 Aug 2019 07:00	02 Aug 2019 18:59	1
HS19080069-04	WG-1620-MW82B-20190730	30 Jul 2019 10:10		02 Aug 2019 07:00	02 Aug 2019 19:18	1
HS19080069-05	WG-1620-MW80B-20190730	30 Jul 2019 11:10		02 Aug 2019 07:00	02 Aug 2019 20:16	1
HS19080069-06	WG-1620-MW77A-20190730	30 Jul 2019 11:55		02 Aug 2019 07:00	06 Aug 2019 18:59	2000
HS19080069-06	WG-1620-MW77A-20190730	30 Jul 2019 11:55		02 Aug 2019 07:00	06 Aug 2019 18:40	20
HS19080069-06	WG-1620-MW77A-20190730	30 Jul 2019 11:55		02 Aug 2019 07:00	02 Aug 2019 20:35	1
HS19080069-07	WG-1620-MW85C-20190730	30 Jul 2019 15:35		02 Aug 2019 07:00	02 Aug 2019 20:54	1
HS19080069-08	WG-1620-MW86C-20190730	30 Jul 2019 16:40		02 Aug 2019 07:00	02 Aug 2019 21:13	1
HS19080069-09	WG-1620-FD04-20190730	30 Jul 2019 16:40		02 Aug 2019 07:00	06 Aug 2019 17:05	1
HS19080069-10	WG-1620-MW76C-20190730	30 Jul 2019 17:30		02 Aug 2019 07:00	06 Aug 2019 17:24	1
HS19080069-11	WG-1620-MW74B-20190730	30 Jul 2019 18:20		02 Aug 2019 07:00	06 Aug 2019 19:56	10000
HS19080069-11	WG-1620-MW74B-20190730	30 Jul 2019 18:20		02 Aug 2019 07:00	06 Aug 2019 19:37	100
HS19080069-11	WG-1620-MW74B-20190730	30 Jul 2019 18:20		02 Aug 2019 07:00	06 Aug 2019 19:18	10
HS19080069-11	WG-1620-MW74B-20190730	30 Jul 2019 18:20		02 Aug 2019 07:00	06 Aug 2019 15:43	1
HS19080069-12	WG-1620-MW79A-20190730	30 Jul 2019 19:10		02 Aug 2019 07:00	06 Aug 2019 20:34	100
HS19080069-12	WG-1620-MW79A-20190730	30 Jul 2019 19:10		02 Aug 2019 07:00	06 Aug 2019 20:15	10
HS19080069-12	WG-1620-MW79A-20190730	30 Jul 2019 19:10		02 Aug 2019 07:00	06 Aug 2019 16:02	1
Batch ID: 143772 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS19080069-01	WG-1620-MW32AR-20190730	30 Jul 2019 07:25		05 Aug 2019 09:00	08 Aug 2019 22:50	1
HS19080069-02	WG-1620-MW33BR-20190730	30 Jul 2019 08:20		05 Aug 2019 09:00	08 Aug 2019 22:53	1
HS19080069-03	WG-1620-MW84B-20190730	30 Jul 2019 09:15		05 Aug 2019 09:00	08 Aug 2019 22:55	1
HS19080069-04	WG-1620-MW82B-20190730	30 Jul 2019 10:10		05 Aug 2019 09:00	08 Aug 2019 22:34	1
HS19080069-05	WG-1620-MW80B-20190730	30 Jul 2019 11:10		05 Aug 2019 09:00	08 Aug 2019 22:57	1
HS19080069-06	WG-1620-MW77A-20190730	30 Jul 2019 11:55		05 Aug 2019 09:00	08 Aug 2019 22:59	1
HS19080069-07	WG-1620-MW85C-20190730	30 Jul 2019 15:35		05 Aug 2019 09:00	08 Aug 2019 23:01	1
HS19080069-08	WG-1620-MW86C-20190730	30 Jul 2019 16:40		05 Aug 2019 09:00	08 Aug 2019 23:04	1
HS19080069-09	WG-1620-FD04-20190730	30 Jul 2019 16:40		05 Aug 2019 09:00	08 Aug 2019 23:06	1
HS19080069-10	WG-1620-MW76C-20190730	30 Jul 2019 17:30		05 Aug 2019 09:00	08 Aug 2019 23:08	1
HS19080069-11	WG-1620-MW74B-20190730	30 Jul 2019 18:20		05 Aug 2019 09:00	09 Aug 2019 16:08	1
HS19080069-12	WG-1620-MW79A-20190730	30 Jul 2019 19:10		05 Aug 2019 09:00	08 Aug 2019 23:17	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080069

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID: R343615 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS19080069-01	WG-1620-MW32AR-20190730	30 Jul 2019 07:25			03 Aug 2019 06:33	1
HS19080069-02	WG-1620-MW33BR-20190730	30 Jul 2019 08:20			03 Aug 2019 01:42	5
HS19080069-02	WG-1620-MW33BR-20190730	30 Jul 2019 08:20			03 Aug 2019 00:29	1
HS19080069-03	WG-1620-MW84B-20190730	30 Jul 2019 09:15			03 Aug 2019 06:58	1
HS19080069-04	WG-1620-MW82B-20190730	30 Jul 2019 10:10			03 Aug 2019 00:05	1
HS19080069-05	WG-1620-MW80B-20190730	30 Jul 2019 11:10			03 Aug 2019 07:22	1
HS19080069-06	WG-1620-MW77A-20190730	30 Jul 2019 11:55			03 Aug 2019 09:23	1
HS19080069-07	WG-1620-MW85C-20190730	30 Jul 2019 15:35			03 Aug 2019 07:46	1
HS19080069-08	WG-1620-MW86C-20190730	30 Jul 2019 16:40			03 Aug 2019 08:10	1
HS19080069-09	WG-1620-FD04-20190730	30 Jul 2019 16:40			03 Aug 2019 08:35	1
HS19080069-10	WG-1620-MW76C-20190730	30 Jul 2019 17:30			03 Aug 2019 08:59	1
HS19080069-13	WG-1620-TB05-20190730	30 Jul 2019 00:00			03 Aug 2019 06:09	1
Batch ID: R343708 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS19080069-11	WG-1620-MW74B-20190730	30 Jul 2019 18:20			05 Aug 2019 18:44	5
HS19080069-12	WG-1620-MW79A-20190730	30 Jul 2019 19:10			05 Aug 2019 18:17	1

WorkOrder: HS19080069
InstrumentID: ICPMS05
Test Code: ICP_TW
Test Number: SW6020
Test Name: ICP-MS Metals by SW6020A

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Arsenic	7440-38-2	0.000500	0.000547	0.000400	0.00200

WorkOrder: HS19080069
InstrumentID: SV-6
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Diphenylhydrazine	122-66-7	0.00010	0.00011	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.00013	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.00012	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.000053	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.00014	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.00010	0.00010	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.00016	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00010	0.00018	0.000047	0.0010
A	Acenaphthene	83-32-9	0.00010	0.00011	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.00010	0.00010	0.000015	0.00010
A	Anthracene	120-12-7	0.00010	0.00012	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.00010	0.00012	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.00010	0.00013	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.000091	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.000084	0.000037	0.00020
A	Chrysene	218-01-9	0.00010	0.00010	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.00010	0.00011	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.00011	0.000020	0.00020
A	Fluoranthene	206-44-0	0.00010	0.00011	0.000010	0.00010
A	Fluorene	86-73-7	0.00010	0.00010	0.000030	0.00010
A	Naphthalene	91-20-3	0.00010	0.00012	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.00017	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.00015	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.00015	0.000079	0.00020
A	Phenanthrene	85-01-8	0.00010	0.00011	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.00013	0.000035	0.00020
A	Pyrene	129-00-0	0.00010	0.000099	0.000019	0.00010
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0.00020
S	2-Fluorobiphenyl	321-60-8	0	0	0	0.00020
S	2-Fluorophenol	367-12-4	0	0	0	0.00020
S	4-Terphenyl-d14	1718-51-0	0	0	0	0.00020
S	Nitrobenzene-d5	4165-60-0	0	0	0	0.00020
S	Phenol-d6	13127-88-3	0	0	0	0.00020

WorkOrder: HS19080069
InstrumentID: VOA9
Test Code: 8260_LL_W
Test Number: SW8260
Test Name: Low Level Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.00050	0.00058	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00059	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00060	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00063	0.00030	0.0010
A	Methylene chloride	75-09-2	0.00050	0.00061	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00058	0.00020	0.0010
A	Vinyl chloride	75-01-4	0.00050	0.00052	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00063	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

WorkOrder: HS19080069
InstrumentID: VOA2
Test Code: 8260_LL_W
Test Number: SW8260
Test Name: Low Level Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.00050	0.00067	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00056	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00059	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00051	0.00030	0.0010
A	Methylene chloride	75-09-2	0.00050	0.00054	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00056	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00052	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080069

QC BATCH REPORT

Batch ID: 143772 (0) **Instrument: ICPMS05** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-143772** Units: **mg/L** Analysis Date: **08-Aug-2019 22:30**
Client ID: Run ID: **ICPMS05_343891** SeqNo: **5202657** PrepDate: **05-Aug-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								

LCS Sample ID: **LCS-143772** Units: **mg/L** Analysis Date: **08-Aug-2019 22:32**
Client ID: Run ID: **ICPMS05_343891** SeqNo: **5202658** PrepDate: **05-Aug-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0475	0.00200	0.05	0	95.0	80 - 120				

MS Sample ID: **HS19080069-04MS** Units: **mg/L** Analysis Date: **08-Aug-2019 22:39**
Client ID: **WG-1620-MW82B-20190730** Run ID: **ICPMS05_343891** SeqNo: **5202661** PrepDate: **05-Aug-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.06004	0.00200	0.05	0.008727	103	80 - 120				

MSD Sample ID: **HS19080069-04MSD** Units: **mg/L** Analysis Date: **08-Aug-2019 22:41**
Client ID: **WG-1620-MW82B-20190730** Run ID: **ICPMS05_343891** SeqNo: **5202662** PrepDate: **05-Aug-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05823	0.00200	0.05	0.008727	99.0	80 - 120	0.06004	3.06	20	

PDS Sample ID: **HS19080069-04PDS** Units: **mg/L** Analysis Date: **08-Aug-2019 22:44**
Client ID: **WG-1620-MW82B-20190730** Run ID: **ICPMS05_343891** SeqNo: **5202663** PrepDate: **05-Aug-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1112	0.00200	0.1	0.008727	103	75 - 125				

SD Sample ID: **HS19080069-04SD** Units: **mg/L** Analysis Date: **08-Aug-2019 22:37**
Client ID: **WG-1620-MW82B-20190730** Run ID: **ICPMS05_343891** SeqNo: **5202660** PrepDate: **05-Aug-2019** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.008077	0.0100					0.008727	0	10	J

The following samples were analyzed in this batch:

HS19080069-01	HS19080069-02	HS19080069-03	HS19080069-04
HS19080069-05	HS19080069-06	HS19080069-07	HS19080069-08
HS19080069-09	HS19080069-10	HS19080069-11	HS19080069-12

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080069

QC BATCH REPORT

Batch ID: 143727 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-143727** Units: **ug/L** Analysis Date: **02-Aug-2019 13:29**
Client ID: Run ID: **SV-6_343627** SeqNo: **5196073** PrepDate: **02-Aug-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	U	0.20								
2,4-Dimethylphenol	U	0.20								
2,4-Dinitrotoluene	U	0.20								
2,6-Dinitrotoluene	U	0.20								
2-Chloronaphthalene	U	0.20								
2-Methylnaphthalene	U	0.10								
4,6-Dinitro-2-methylphenol	U	0.20								
4-Nitrophenol	U	1.0								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Benz(a)anthracene	U	0.10								
Benzo(a)pyrene	U	0.10								
Bis(2-chloroethoxy)methane	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Chrysene	U	0.10								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Nitrobenzene	U	0.20								
N-Nitrosodiphenylamine	U	0.20								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*3.503*	*0.20*	*5*	*0*	*70.1*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.588*	*0.20*	*5*	*0*	*91.8*	*40 - 125*				
Surr: 2-Fluorophenol	*4.162*	*0.20*	*5*	*0*	*83.2*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.367*	*0.20*	*5*	*0*	*87.3*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.55*	*0.20*	*5*	*0*	*91.0*	*41 - 120*				
Surr: Phenol-d6	*4.055*	*0.20*	*5*	*0*	*81.1*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080069

QC BATCH REPORT

Batch ID: 143727 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCS Sample ID: **LCS-143727** Units: **ug/L** Analysis Date: **02-Aug-2019 13:48**
Client ID: Run ID: **SV-6_343627** SeqNo: **5196074** PrepDate: **02-Aug-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.518	0.20	5	0	90.4	39 - 127				
2,4-Dimethylphenol	4.308	0.20	5	0	86.2	35 - 120				
2,4-Dinitrotoluene	4.312	0.20	5	0	86.2	50 - 122				
2,6-Dinitrotoluene	4.261	0.20	5	0	85.2	50 - 120				
2-Chloronaphthalene	4.56	0.20	5	0	91.2	50 - 120				
2-Methylnaphthalene	4.221	0.10	5	0	84.4	50 - 120				
4,6-Dinitro-2-methylphenol	4.02	0.20	5	0	80.4	25 - 121				
4-Nitrophenol	4.598	1.0	5	0	92.0	30 - 130				
Acenaphthene	4.112	0.10	5	0	82.2	45 - 120				
Acenaphthylene	4.516	0.10	5	0	90.3	47 - 120				
Anthracene	4.121	0.10	5	0	82.4	45 - 120				
Benz(a)anthracene	4.275	0.10	5	0	85.5	40 - 120				
Benzo(a)pyrene	4.39	0.10	5	0	87.8	45 - 120				
Bis(2-chloroethoxy)methane	4.166	0.20	5	0	83.3	45 - 120				
Bis(2-ethylhexyl)phthalate	4.912	0.20	5	0	98.2	40 - 139				
Chrysene	4.374	0.10	5	0	87.5	43 - 120				
Dibenzofuran	4.495	0.10	5	0	89.9	50 - 120				
Di-n-butyl phthalate	4.752	0.20	5	0	95.0	45 - 123				
Fluoranthene	4.286	0.10	5	0	85.7	45 - 125				
Fluorene	4.419	0.10	5	0	88.4	49 - 120				
Naphthalene	4.236	0.10	5	0	84.7	45 - 120				
Nitrobenzene	3.994	0.20	5	0	79.9	44 - 120				
N-Nitrosodiphenylamine	4.38	0.20	5	0	87.6	40 - 125				
Pentachlorophenol	1.98	0.20	5	0	39.6	19 - 121				
Phenanthrene	4.208	0.10	5	0	84.2	45 - 121				
Phenol	4.791	0.20	5	0	95.8	20 - 124				
Pyrene	4.756	0.10	5	0	95.1	40 - 130				
Surr: 2,4,6-Tribromophenol	*4.335*	*0.20*	*5*	*0*	*86.7*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*5.065*	*0.20*	*5*	*0*	*101*	*40 - 125*				
Surr: 2-Fluorophenol	*4.627*	*0.20*	*5*	*0*	*92.5*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.919*	*0.20*	*5*	*0*	*98.4*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.524*	*0.20*	*5*	*0*	*90.5*	*41 - 120*				
Surr: Phenol-d6	*4.738*	*0.20*	*5*	*0*	*94.8*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080069

QC BATCH REPORT

Batch ID: 143727 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MS Sample ID: **HS19080069-04MS** Units: **ug/L** Analysis Date: **02-Aug-2019 19:37**
Client ID: **WG-1620-MW82B-20190730** Run ID: **SV-6_343627** SeqNo: **5196079** PrepDate: **02-Aug-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.089	0.20	5	0	81.8	39 - 127				
2,4-Dimethylphenol	3.156	0.20	5	0	63.1	35 - 120				
2,4-Dinitrotoluene	4.03	0.20	5	0	80.6	50 - 122				
2,6-Dinitrotoluene	3.94	0.20	5	0	78.8	50 - 120				
2-Chloronaphthalene	3.639	0.20	5	0	72.8	50 - 120				
2-Methylnaphthalene	3.38	0.10	5	0	67.6	50 - 120				
4,6-Dinitro-2-methylphenol	3.401	0.20	5	0	68.0	25 - 121				
4-Nitrophenol	4.39	1.0	5	0	87.8	30 - 130				
Acenaphthene	3.739	0.10	5	0	74.8	45 - 120				
Acenaphthylene	3.891	0.10	5	0	77.8	47 - 120				
Anthracene	3.992	0.10	5	0	79.8	45 - 120				
Benz(a)anthracene	4.248	0.10	5	0	85.0	40 - 120				
Benzo(a)pyrene	4.45	0.10	5	0	89.0	45 - 120				
Bis(2-chloroethoxy)methane	3.177	0.20	5	0	63.5	45 - 120				
Bis(2-ethylhexyl)phthalate	4.984	0.20	5	0	99.7	40 - 139				
Chrysene	4.216	0.10	5	0	84.3	43 - 120				
Dibenzofuran	3.933	0.10	5	0	78.7	50 - 120				
Di-n-butyl phthalate	4.711	0.20	5	0	94.2	45 - 123				
Fluoranthene	4.273	0.10	5	0	85.5	45 - 125				
Fluorene	4.049	0.10	5	0	81.0	49 - 120				
Naphthalene	3.253	0.10	5	0	65.1	45 - 120				
Nitrobenzene	3.184	0.20	5	0	63.7	44 - 120				
N-Nitrosodiphenylamine	4.228	0.20	5	0	84.6	40 - 125				
Pentachlorophenol	1.635	0.20	5	0	32.7	19 - 121				
Phenanthrene	4.215	0.10	5	0	84.3	45 - 121				
Phenol	3.315	0.20	5	0	66.3	20 - 124				
Pyrene	4.551	0.10	5	0	91.0	40 - 130				
Surr: 2,4,6-Tribromophenol	*4.145*	*0.20*	*5*	*0*	*82.9*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.013*	*0.20*	*5*	*0*	*80.3*	*40 - 125*				
Surr: 2-Fluorophenol	*3.282*	*0.20*	*5*	*0*	*65.6*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.438*	*0.20*	*5*	*0*	*88.8*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.521*	*0.20*	*5*	*0*	*70.4*	*41 - 120*				
Surr: Phenol-d6	*3.445*	*0.20*	*5*	*0*	*68.9*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080069

QC BATCH REPORT

Batch ID: 143727 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MSD Sample ID: **HS19080069-04MSD** Units: **ug/L** Analysis Date: **02-Aug-2019 19:57**
Client ID: **WG-1620-MW82B-20190730** Run ID: **SV-6_343627** SeqNo: **5196080** PrepDate: **02-Aug-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.066	0.20	5	0	81.3	39 - 127	4.089	0.576	20	
2,4-Dimethylphenol	3.175	0.20	5	0	63.5	35 - 120	3.156	0.601	20	
2,4-Dinitrotoluene	4.251	0.20	5	0	85.0	50 - 122	4.03	5.36	20	
2,6-Dinitrotoluene	3.931	0.20	5	0	78.6	50 - 120	3.94	0.236	20	
2-Chloronaphthalene	3.31	0.20	5	0	66.2	50 - 120	3.639	9.48	20	
2-Methylnaphthalene	3.116	0.10	5	0	62.3	50 - 120	3.38	8.15	20	
4,6-Dinitro-2-methylphenol	3.77	0.20	5	0	75.4	25 - 121	3.401	10.3	30	
4-Nitrophenol	4.608	1.0	5	0	92.2	30 - 130	4.39	4.86	20	
Acenaphthene	3.471	0.10	5	0	69.4	45 - 120	3.739	7.43	20	
Acenaphthylene	3.67	0.10	5	0	73.4	47 - 120	3.891	5.84	20	
Anthracene	3.982	0.10	5	0	79.6	45 - 120	3.992	0.252	20	
Benz(a)anthracene	4.498	0.10	5	0	90.0	40 - 120	4.248	5.71	20	
Benzo(a)pyrene	4.831	0.10	5	0	96.6	45 - 120	4.45	8.21	20	
Bis(2-chloroethoxy)methane	3.181	0.20	5	0	63.6	45 - 120	3.177	0.126	20	
Bis(2-ethylhexyl)phthalate	5.362	0.20	5	0	107	40 - 139	4.984	7.3	20	
Chrysene	4.526	0.10	5	0	90.5	43 - 120	4.216	7.1	20	
Dibenzofuran	3.769	0.10	5	0	75.4	50 - 120	3.933	4.26	20	
Di-n-butyl phthalate	4.984	0.20	5	0	99.7	45 - 123	4.711	5.63	20	
Fluoranthene	4.559	0.10	5	0	91.2	45 - 125	4.273	6.47	20	
Fluorene	4.064	0.10	5	0	81.3	49 - 120	4.049	0.359	20	
Naphthalene	5.202	0.10	5	0	104	45 - 120	3.253	46.1	20	R
Nitrobenzene	3.038	0.20	5	0	60.8	44 - 120	3.184	4.7	20	
N-Nitrosodiphenylamine	4.292	0.20	5	0	85.8	40 - 125	4.228	1.5	20	
Pentachlorophenol	1.991	0.20	5	0	39.8	19 - 121	1.635	19.6	20	
Phenanthrene	4.176	0.10	5	0	83.5	45 - 121	4.215	0.934	20	
Phenol	3.678	0.20	5	0	73.6	20 - 124	3.315	10.4	20	
Pyrene	4.807	0.10	5	0	96.1	40 - 130	4.551	5.49	20	
Surr: 2,4,6-Tribromophenol	*4.112*	*0.20*	*5*	*0*	*82.2*	*34 - 129*	*4.145*	*0.793*	*20*	
Surr: 2-Fluorobiphenyl	*3.568*	*0.20*	*5*	*0*	*71.4*	*40 - 125*	*4.013*	*11.7*	*20*	
Surr: 2-Fluorophenol	*3.662*	*0.20*	*5*	*0*	*73.2*	*20 - 120*	*3.282*	*11*	*20*	
Surr: 4-Terphenyl-d14	*4.548*	*0.20*	*5*	*0*	*91.0*	*40 - 135*	*4.438*	*2.46*	*20*	
Surr: Nitrobenzene-d5	*3.299*	*0.20*	*5*	*0*	*66.0*	*41 - 120*	*3.521*	*6.51*	*20*	
Surr: Phenol-d6	*3.547*	*0.20*	*5*	*0*	*70.9*	*20 - 120*	*3.445*	*2.91*	*20*	

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	HS19080069

QC BATCH REPORT

Batch ID: 143727 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

The following samples were analyzed in this batch:

HS19080069-01	HS19080069-02	HS19080069-03	HS19080069-04
HS19080069-05	HS19080069-06	HS19080069-07	HS19080069-08
HS19080069-09	HS19080069-10	HS19080069-11	HS19080069-12

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080069

QC BATCH REPORT

Batch ID: R343615 (0) **Instrument: VOA9** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-190802** Units: **ug/L** Analysis Date: **02-Aug-2019 23:41**
Client ID: Run ID: **VOA9_343615** SeqNo: **5195198** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*48.44*	*1.0*	*50*	*0*	*96.9*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*48.54*	*1.0*	*50*	*0*	*97.1*	*82 - 115*				
Surr: Dibromofluoromethane	*49.58*	*1.0*	*50*	*0*	*99.2*	*73 - 126*				
Surr: Toluene-d8	*50.72*	*1.0*	*50*	*0*	*101*	*81 - 120*				

LCS Sample ID: **VLCSW-190802** Units: **ug/L** Analysis Date: **02-Aug-2019 23:17**
Client ID: Run ID: **VOA9_343615** SeqNo: **5195197** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	17.43	1.0	20	0	87.1	70 - 124				
Benzene	19.45	1.0	20	0	97.2	74 - 120				
Chlorobenzene	18.2	1.0	20	0	91.0	76 - 113				
Ethylbenzene	18.86	1.0	20	0	94.3	77 - 117				
Methylene chloride	19.47	2.0	20	0	97.3	70 - 127				
Toluene	18.57	1.0	20	0	92.8	77 - 118				
Vinyl chloride	19.04	1.0	20	0	95.2	70 - 130				
Xylenes, Total	56.17	1.0	60	0	93.6	75 - 122				
Surr: 1,2-Dichloroethane-d4	*47.02*	*1.0*	*50*	*0*	*94.0*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*50.28*	*1.0*	*50*	*0*	*101*	*82 - 115*				
Surr: Dibromofluoromethane	*50.5*	*1.0*	*50*	*0*	*101*	*73 - 126*				
Surr: Toluene-d8	*49.89*	*1.0*	*50*	*0*	*99.8*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080069

QC BATCH REPORT

Batch ID: R343615 (0) **Instrument: VOA9** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS19080069-04MS** Units: **ug/L** Analysis Date: **03-Aug-2019 00:54**
Client ID: **WG-1620-MW82B-20190730** Run ID: **VOA9_343615** SeqNo: **5195201** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Dichloroethane	18.05	1.0	20	0	90.2	70 - 127				
Benzene	20.65	1.0	20	0	103	70 - 127				
Chlorobenzene	19.12	1.0	20	0	95.6	70 - 114				
Ethylbenzene	20.29	1.0	20	0	101	70 - 124				
Methylene chloride	19.82	2.0	20	0	99.1	70 - 128				
Toluene	19.74	1.0	20	0	98.7	70 - 123				
Vinyl chloride	16.73	1.0	20	0	83.7	70 - 130				
Xylenes, Total	60.26	1.0	60	0	100	70 - 130				
Surr: 1,2-Dichloroethane-d4	*47.31*	*1.0*	*50*	*0*	*94.6*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*50.26*	*1.0*	*50*	*0*	*101*	*81 - 113*				
Surr: Dibromofluoromethane	*50.29*	*1.0*	*50*	*0*	*101*	*77 - 123*				
Surr: Toluene-d8	*50.78*	*1.0*	*50*	*0*	*102*	*82 - 127*				

MSD Sample ID: **HS19080069-04MSD** Units: **ug/L** Analysis Date: **03-Aug-2019 01:18**
Client ID: **WG-1620-MW82B-20190730** Run ID: **VOA9_343615** SeqNo: **5195202** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Dichloroethane	16.6	1.0	20	0	83.0	70 - 127	18.05	8.33	20	
Benzene	18.87	1.0	20	0	94.3	70 - 127	20.65	9.02	20	
Chlorobenzene	18.21	1.0	20	0	91.1	70 - 114	19.12	4.87	20	
Ethylbenzene	18.92	1.0	20	0	94.6	70 - 124	20.29	6.95	20	
Methylene chloride	18.04	2.0	20	0	90.2	70 - 128	19.82	9.39	20	
Toluene	18.52	1.0	20	0	92.6	70 - 123	19.74	6.39	20	
Vinyl chloride	15.02	1.0	20	0	75.1	70 - 130	16.73	10.8	20	
Xylenes, Total	57.07	1.0	60	0	95.1	70 - 130	60.26	5.44	20	
Surr: 1,2-Dichloroethane-d4	*45.93*	*1.0*	*50*	*0*	*91.9*	*70 - 126*	*47.31*	*2.97*	*20*	
Surr: 4-Bromofluorobenzene	*51.08*	*1.0*	*50*	*0*	*102*	*81 - 113*	*50.26*	*1.62*	*20*	
Surr: Dibromofluoromethane	*49.36*	*1.0*	*50*	*0*	*98.7*	*77 - 123*	*50.29*	*1.87*	*20*	
Surr: Toluene-d8	*51.66*	*1.0*	*50*	*0*	*103*	*82 - 127*	*50.78*	*1.71*	*20*	

The following samples were analyzed in this batch:

HS19080069-01	HS19080069-02	HS19080069-03	HS19080069-04
HS19080069-05	HS19080069-06	HS19080069-07	HS19080069-08
HS19080069-09	HS19080069-10	HS19080069-13	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080069

QC BATCH REPORT

Batch ID: R343708 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-190805** Units: **ug/L** Analysis Date: **05-Aug-2019 13:43**
Client ID: Run ID: **VOA2_343708** SeqNo: **5197254** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*50.8*	*1.0*	*50*	*0*	*102*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*49.57*	*1.0*	*50*	*0*	*99.1*	*82 - 115*				
Surr: Dibromofluoromethane	*51.41*	*1.0*	*50*	*0*	*103*	*73 - 126*				
Surr: Toluene-d8	*51.64*	*1.0*	*50*	*0*	*103*	*81 - 120*				

LCS Sample ID: **VLCSW-190805** Units: **ug/L** Analysis Date: **05-Aug-2019 13:19**
Client ID: Run ID: **VOA2_343708** SeqNo: **5197253** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	19.63	1.0	20	0	98.2	70 - 124				
Benzene	19.95	1.0	20	0	99.7	74 - 120				
Chlorobenzene	20.62	1.0	20	0	103	76 - 113				
Ethylbenzene	20.77	1.0	20	0	104	77 - 117				
Methylene chloride	21.15	2.0	20	0	106	70 - 127				
Toluene	20.27	1.0	20	0	101	77 - 118				
Xylenes, Total	69.61	1.0	60	0	116	75 - 122				
Surr: 1,2-Dichloroethane-d4	*52.59*	*1.0*	*50*	*0*	*105*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*57.5*	*1.0*	*50*	*0*	*115*	*82 - 115*				
Surr: Dibromofluoromethane	*48.38*	*1.0*	*50*	*0*	*96.8*	*73 - 126*				
Surr: Toluene-d8	*48.64*	*1.0*	*50*	*0*	*97.3*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080069

QC BATCH REPORT

Batch ID: R343708 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS19080060-04MS** Units: **ug/L** Analysis Date: **05-Aug-2019 17:01**
Client ID: Run ID: **VOA2_343708** SeqNo: **5197262** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Dichloroethane	15.34	1.0	20	0	76.7	70 - 127				
Benzene	17.05	1.0	20	0	85.3	70 - 127				
Chlorobenzene	17.94	1.0	20	0	89.7	70 - 114				
Ethylbenzene	18.08	1.0	20	0	90.4	70 - 124				
Methylene chloride	15.91	2.0	20	0	79.5	70 - 128				
Toluene	18.72	1.0	20	0	93.6	70 - 123				
Xylenes, Total	56.34	1.0	60	0	93.9	70 - 130				
Surr: 1,2-Dichloroethane-d4	*47.1*	*1.0*	*50*	*0*	*94.2*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*48.39*	*1.0*	*50*	*0*	*96.8*	*81 - 113*				
Surr: Dibromofluoromethane	*50.39*	*1.0*	*50*	*0*	*101*	*77 - 123*				
Surr: Toluene-d8	*49.52*	*1.0*	*50*	*0*	*99.0*	*82 - 127*				

MSD Sample ID: **HS19080060-04MSD** Units: **ug/L** Analysis Date: **05-Aug-2019 17:26**
Client ID: Run ID: **VOA2_343708** SeqNo: **5197263** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Dichloroethane	18.1	1.0	20	0	90.5	70 - 127	15.34	16.5	20	
Benzene	20.16	1.0	20	0	101	70 - 127	17.05	16.7	20	
Chlorobenzene	17.72	1.0	20	0	88.6	70 - 114	17.94	1.22	20	
Ethylbenzene	19.47	1.0	20	0	97.3	70 - 124	18.08	7.39	20	
Methylene chloride	14.72	2.0	20	0	73.6	70 - 128	15.91	7.76	20	
Toluene	17.49	1.0	20	0	87.4	70 - 123	18.72	6.81	20	
Xylenes, Total	61.55	1.0	60	0	103	70 - 130	56.34	8.84	20	
Surr: 1,2-Dichloroethane-d4	*50.73*	*1.0*	*50*	*0*	*101*	*70 - 126*	*47.1*	*7.44*	*20*	
Surr: 4-Bromofluorobenzene	*57.94*	*1.0*	*50*	*0*	*116*	*81 - 113*	*48.39*	*18*	*20*	S
Surr: Dibromofluoromethane	*49.57*	*1.0*	*50*	*0*	*99.1*	*77 - 123*	*50.39*	*1.64*	*20*	
Surr: Toluene-d8	*48.82*	*1.0*	*50*	*0*	*97.6*	*82 - 127*	*49.52*	*1.43*	*20*	

The following samples were analyzed in this batch: HS19080069-11 HS19080069-12

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS19080069**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
Oklahoma	2018-156	31-Aug-2019
Texas	TX104704231-19-23	30-Apr-2020

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS19080069

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS19080069-01	WG-1620-MW32AR-20190730	Login	01/08/2019 17:01:24	JRM	MET074
HS19080069-01	WG-1620-MW32AR-20190730	Login	01/08/2019 17:01:24	JRM	EXT011
HS19080069-01	WG-1620-MW32AR-20190730	Login	01/08/2019 17:01:24	JRM	VOA153

Sample Receipt Checklist

Client Name: PBW
Work Order: HS19080069

Date/Time Received: **01-Aug-2019 14:40**
Received by: **AC**

Checklist completed by: *Jared R. Makan* eSignature 1-Aug-2019 Date

Reviewed by: *Dane J. Wacasey* eSignature 6-Aug-2019 Date

Matrices: **Water**

Carrier name: **Client**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	2 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:196137, 196130
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.9c/1.9c, 1.6c/1.6c, 1.7c/1.7c UC/C	IR25	
Cooler(s)/Kit(s):	45149, 44874, 45101		
Date/Time sample(s) sent to storage:	08/01/2019 17:20		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600
Holland, MI +1 616 399 6070

Chain of Custody Form

Page 1 of 2

COC ID: 196137

HS19080069

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information			
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A	8260_LL_W (5632528 Volatile Organics Site Specific)
Work Order		Project Number	1620-07-Rev0 SR 92688	B	8260_LL_W (5632528 VOC Site Specific + V.C.)
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P	C	8270_LOW_W (5632532 SemiVolatiles Site specific)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	ICP_TW (5636002 5652646 Metals - As, Pb)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	MS/MSD
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	WQ-1620-TB0__-201801___			Water	1	2		X									
2	WG-1620-MW32AR-20190730	7-30-19	0725			6	X		X	X							
3	WG-1620-MW33BR-20190730		0820			6		X	X	X							
4	WG-1620-MW84B-20190730		0915			6	X		X	X							
5	WG-1620-MW82B-20190730		1010			12	X		X	X	X						
6	WG-1620-MW80B-20190730		1110			6	X		X	X							
7	WG-1620-MW77A-20190730		1155			6	X		X	X							
8	WG-1620-MW85C-20190730		1535			6	X		X	X							
9	WG-1620-MW86C-20190730		1640			6	X		X	X							
10	WG-1620-FD04-20190730		1640			6		X	X	X							

Sampler(s) Please Print & Sign: JOHN BRAYTON

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: — Date: 8-1-19 — Time: 1440 — Received by:

Relinquished by: — Date: 8-1-19 — Time: 14:40 — Received by (Laboratory): AC

Logged by (Laboratory): — Date: — Time: — Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.
	0/C
45149	1.9
44874	1.6
45101	1.7

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[X] TRRP Checklist
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Holland, MI +1 616 399 6070

Chain of Custody Form

Page 2 of 2

COC ID: 196130

HS19080069

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information			
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A	8260_LL_W (5632528 Volatile Organics Site Specific)
Work Order		Project Number	1620-07-Rev0 SR 92688	B	8260_LL_W (5632528 VOC Site Specific + V.C.)
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- AVP	C	8270_LOW_W (5632532 SemiVolatiles Site specific)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	ICP_TW (5636002 5632646 Metals - As, Pb)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0756	E	
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	WQ-1620-TB0__-201801__			Water	1	2		X									
2	WG-1620-MW76C-20190730	7-30-19	1730			6	X		X	X							
3	WG-1620-MW74B-20190730		1820			6	X		X	X							
4	WG-1620-MW79A-20190730		1910			6	X		X	X							
5	WG-1620-TB05-20190730					2		X									
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: JOHN BRAMLETT

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) ☐ Other ☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour

Results Due Date:

Relinquished by:	Date: 8/1/19	Time: 1440	Received by:	
Relinquished by:	Date: 8-1-19	Time: 14:40	Received by (Laboratory): AC	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)

☐ Level II Std QC ☒ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Houston, TX 77099
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August 12, 2019

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS19080113**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 12 sample(s) on Aug 02, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: DAYNA.FISHER
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS19080113**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS19080113**	

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data								
Laboratory Name: ALS Laboratory Group			LRC Date: 08/12/2019					
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS19080113					
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 143759, 143819, 143865, R343626, R343632, R343643					
#[1]	A[2]	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			1
		Were MS/MSD RPDs within laboratory QC limits?		X			2
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 08/12/2019				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS19080113				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 143759, 143819, 143865, R343626, R343632, R343643				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?	X				
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports		
Laboratory Name: ALS Laboratory Group		LRC Date: 08/12/2019
Project Name: Houston TX-Wood Preserving Works		Laboratory Job Number: HS19080113
Reviewer Name: Dane Wacasey		Prep Batch Number(s): 143759, 143819, 143865, R343626, R343632, R343643
ER#[5]	**Description**	
1	Batch 143759, Semivolatiles by Method SW8270, Sample WG-1620-MW67B-20190731 and WG-1620-MW65D-20190731, MS and/or MSD recovered outside control limits for multiple compounds due to sample matrix interference.	
2	Batch 143759, Semivolatiles by Method SW8270, samples WG-1620-MW67B-20190731 and WG-1620-MW65D-20190731, MS/MSD RPD recovered above control limits for 4-Nitrophenol.	

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS19080113

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19080113-01	WG-1620-MW36D-20190731	Water		31-Jul-2019 07:40	02-Aug-2019 12:00	☐
HS19080113-02	WG-1620-MW38A-20190731	Water		31-Jul-2019 08:35	02-Aug-2019 12:00	☐
HS19080113-03	WG-1620-MW65D-20190731	Water		31-Jul-2019 09:45	02-Aug-2019 12:00	☐
HS19080113-04	WG-1620-MW66D-20190731	Water		31-Jul-2019 10:45	02-Aug-2019 12:00	☐
HS19080113-05	WG-1620-MW59D-20190731	Water		31-Jul-2019 11:50	02-Aug-2019 12:00	☐
HS19080113-06	WG-1620-FD05-20190731	Water		31-Jul-2019 11:50	02-Aug-2019 12:00	☐
HS19080113-07	WG-1620-MW22AR-20190731	Water		31-Jul-2019 13:05	02-Aug-2019 12:00	☐
HS19080113-08	WG-1620-MW22BR-20190731	Water		31-Jul-2019 13:50	02-Aug-2019 12:00	☐
HS19080113-09	WG-1620-MW88C-20190731	Water		31-Jul-2019 15:45	02-Aug-2019 12:00	☐
HS19080113-10	WG-1620-MW67B-20190731	Water		31-Jul-2019 16:45	02-Aug-2019 12:00	☐
HS19080113-11	WG-1620-MW49A-20190731	Water		31-Jul-2019 17:45	02-Aug-2019 12:00	☐
HS19080113-12	WG-1620-TB06-20190731	Water		31-Jul-2019 00:00	02-Aug-2019 12:00	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW36D-20190731
Collection Date: 31-Jul-2019 07:40

ANALYTICAL REPORT
WorkOrder:HS19080113
Lab ID:HS19080113-01
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	03-Aug-2019 19:20
Benzene		U	0.00020	0.0010	mg/L	1	03-Aug-2019 19:20
Chlorobenzene		U	0.00030	0.0010	mg/L	1	03-Aug-2019 19:20
Ethylbenzene		U	0.00030	0.0010	mg/L	1	03-Aug-2019 19:20
Methylene chloride		U	0.0010	0.0020	mg/L	1	03-Aug-2019 19:20
Toluene		U	0.00020	0.0010	mg/L	1	03-Aug-2019 19:20
Xylenes, Total		U	0.00030	0.0010	mg/L	1	03-Aug-2019 19:20
Surr: 1,2-Dichloroethane-d4	*98.9*			*70-126*	*%REC*	*1*	*03-Aug-2019 19:20*
Surr: 4-Bromofluorobenzene	*99.5*			*81-113*	*%REC*	*1*	*03-Aug-2019 19:20*
Surr: Dibromofluoromethane	*96.9*			*77-123*	*%REC*	*1*	*03-Aug-2019 19:20*
Surr: Toluene-d8	*99.7*			*82-127*	*%REC*	*1*	*03-Aug-2019 19:20*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW36D-20190731
Collection Date: 31-Jul-2019 07:40

ANALYTICAL REPORT
WorkOrder:HS19080113
Lab ID:HS19080113-01
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 05-Aug-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	05-Aug-2019 19:43
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	05-Aug-2019 19:43
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	05-Aug-2019 19:43
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	05-Aug-2019 19:43
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	05-Aug-2019 19:43
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	05-Aug-2019 19:43
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	05-Aug-2019 19:43
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	05-Aug-2019 19:43
Acenaphthene	U		0.000027	0.00010	mg/L	1	05-Aug-2019 19:43
Acenaphthylene	U		0.000015	0.00010	mg/L	1	05-Aug-2019 19:43
Anthracene	**0.000017**	J	**0.000014**	**0.00010**	**mg/L**	1	05-Aug-2019 19:43
Benz(a)anthracene	**0.000053**	J	**0.000050**	**0.00010**	**mg/L**	1	05-Aug-2019 19:43
Benzo(a)pyrene	**0.000087**	J	**0.000020**	**0.00010**	**mg/L**	1	05-Aug-2019 19:43
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	05-Aug-2019 19:43
Bis(2-ethylhexyl)phthalate	**0.000080**	J	**0.000037**	**0.00020**	**mg/L**	1	05-Aug-2019 19:43
Chrysene	**0.000058**	J	**0.000021**	**0.00010**	**mg/L**	1	05-Aug-2019 19:43
Dibenzofuran	U		0.000020	0.00010	mg/L	1	05-Aug-2019 19:43
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	05-Aug-2019 19:43
Fluoranthene	**0.00011**		**0.000010**	**0.00010**	**mg/L**	1	05-Aug-2019 19:43
Fluorene	U		0.000030	0.00010	mg/L	1	05-Aug-2019 19:43
Naphthalene	U		0.000020	0.00010	mg/L	1	05-Aug-2019 19:43
Nitrobenzene	U		0.000024	0.00020	mg/L	1	05-Aug-2019 19:43
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	05-Aug-2019 19:43
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	05-Aug-2019 19:43
Phenanthrene	**0.000066**	J	**0.000021**	**0.00010**	**mg/L**	1	05-Aug-2019 19:43
Phenol	U		0.000035	0.00020	mg/L	1	05-Aug-2019 19:43
Pyrene	**0.000099**	J	**0.000019**	**0.00010**	**mg/L**	1	05-Aug-2019 19:43
Surr: 2,4,6-Tribromophenol	*83.0*			*34-129*	*%REC*	*1*	*05-Aug-2019 19:43*
Surr: 2-Fluorobiphenyl	*90.2*			*40-125*	*%REC*	*1*	*05-Aug-2019 19:43*
Surr: 2-Fluorophenol	*80.4*			*20-120*	*%REC*	*1*	*05-Aug-2019 19:43*
Surr: 4-Terphenyl-d14	*85.2*			*40-135*	*%REC*	*1*	*05-Aug-2019 19:43*
Surr: Nitrobenzene-d5	*94.2*			*41-120*	*%REC*	*1*	*05-Aug-2019 19:43*
Surr: Phenol-d6	*91.1*			*20-120*	*%REC*	*1*	*05-Aug-2019 19:43*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 06-Aug-2019		Analyst: JHD
Arsenic	U		0.000400	0.00200	mg/L	1	08-Aug-2019 00:06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW38A-20190731
Collection Date: 31-Jul-2019 08:35

ANALYTICAL REPORT
WorkOrder:HS19080113
Lab ID:HS19080113-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	**0.00031**	J	**0.00020**	**0.0010**	**mg/L**	1	03-Aug-2019 19:44
Benzene	U		0.00020	0.0010	mg/L	1	03-Aug-2019 19:44
Chlorobenzene	U		0.00030	0.0010	mg/L	1	03-Aug-2019 19:44
Ethylbenzene	U		0.00030	0.0010	mg/L	1	03-Aug-2019 19:44
Methylene chloride	U		0.0010	0.0020	mg/L	1	03-Aug-2019 19:44
Toluene	U		0.00020	0.0010	mg/L	1	03-Aug-2019 19:44
Xylenes, Total	U		0.00030	0.0010	mg/L	1	03-Aug-2019 19:44
Surr: 1,2-Dichloroethane-d4	*98.7*			*70-126*	*%REC*	*1*	*03-Aug-2019 19:44*
Surr: 4-Bromofluorobenzene	*92.8*			*81-113*	*%REC*	*1*	*03-Aug-2019 19:44*
Surr: Dibromofluoromethane	*96.5*			*77-123*	*%REC*	*1*	*03-Aug-2019 19:44*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*03-Aug-2019 19:44*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW38A-20190731
Collection Date: 31-Jul-2019 08:35

ANALYTICAL REPORT
WorkOrder:HS19080113
Lab ID:HS19080113-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 05-Aug-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	05-Aug-2019 20:02
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	05-Aug-2019 20:02
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	05-Aug-2019 20:02
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	05-Aug-2019 20:02
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	05-Aug-2019 20:02
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	05-Aug-2019 20:02
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	05-Aug-2019 20:02
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	05-Aug-2019 20:02
Acenaphthene	U		0.000027	0.00010	mg/L	1	05-Aug-2019 20:02
Acenaphthylene	U		0.000015	0.00010	mg/L	1	05-Aug-2019 20:02
Anthracene	**0.000022**	J	**0.000014**	**0.00010**	**mg/L**	1	05-Aug-2019 20:02
Benz(a)anthracene	**0.000087**	J	**0.000050**	**0.00010**	**mg/L**	1	05-Aug-2019 20:02
Benzo(a)pyrene	**0.00012**		**0.000020**	**0.00010**	**mg/L**	1	05-Aug-2019 20:02
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	05-Aug-2019 20:02
Bis(2-ethylhexyl)phthalate	**0.000084**	J	**0.000037**	**0.00020**	**mg/L**	1	05-Aug-2019 20:02
Chrysene	**0.000092**	J	**0.000021**	**0.00010**	**mg/L**	1	05-Aug-2019 20:02
Dibenzofuran	U		0.000020	0.00010	mg/L	1	05-Aug-2019 20:02
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	05-Aug-2019 20:02
Fluoranthene	**0.00018**		**0.000010**	**0.00010**	**mg/L**	1	05-Aug-2019 20:02
Fluorene	U		0.000030	0.00010	mg/L	1	05-Aug-2019 20:02
Naphthalene	**0.000068**	J	**0.000020**	**0.00010**	**mg/L**	1	05-Aug-2019 20:02
Nitrobenzene	U		0.000024	0.00020	mg/L	1	05-Aug-2019 20:02
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	05-Aug-2019 20:02
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	05-Aug-2019 20:02
Phenanthrene	**0.00010**		**0.000021**	**0.00010**	**mg/L**	1	05-Aug-2019 20:02
Phenol	U		0.000035	0.00020	mg/L	1	05-Aug-2019 20:02
Pyrene	**0.00014**		**0.000019**	**0.00010**	**mg/L**	1	05-Aug-2019 20:02
Surr: 2,4,6-Tribromophenol	*82.1*			*34-129*	*%REC*	*1*	*05-Aug-2019 20:02*
Surr: 2-Fluorobiphenyl	*91.5*			*40-125*	*%REC*	*1*	*05-Aug-2019 20:02*
Surr: 2-Fluorophenol	*78.8*			*20-120*	*%REC*	*1*	*05-Aug-2019 20:02*
Surr: 4-Terphenyl-d14	*80.8*			*40-135*	*%REC*	*1*	*05-Aug-2019 20:02*
Surr: Nitrobenzene-d5	*90.5*			*41-120*	*%REC*	*1*	*05-Aug-2019 20:02*
Surr: Phenol-d6	*84.5*			*20-120*	*%REC*	*1*	*05-Aug-2019 20:02*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 06-Aug-2019		Analyst: JHD
Arsenic	U		0.000400	0.00200	mg/L	1	08-Aug-2019 00:08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW65D-20190731
Collection Date: 31-Jul-2019 09:45

ANALYTICAL REPORT
WorkOrder:HS19080113
Lab ID:HS19080113-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	03-Aug-2019 14:42
Benzene		U	0.00020	0.0010	mg/L	1	03-Aug-2019 14:42
Chlorobenzene		U	0.00030	0.0010	mg/L	1	03-Aug-2019 14:42
Ethylbenzene		U	0.00030	0.0010	mg/L	1	03-Aug-2019 14:42
Methylene chloride		U	0.0010	0.0020	mg/L	1	03-Aug-2019 14:42
Toluene		U	0.00020	0.0010	mg/L	1	03-Aug-2019 14:42
Xylenes, Total		U	0.00030	0.0010	mg/L	1	03-Aug-2019 14:42
Surr: 1,2-Dichloroethane-d4	*98.2*			*70-126*	*%REC*	*1*	*03-Aug-2019 14:42*
Surr: 4-Bromofluorobenzene	*99.6*			*81-113*	*%REC*	*1*	*03-Aug-2019 14:42*
Surr: Dibromofluoromethane	*103*			*77-123*	*%REC*	*1*	*03-Aug-2019 14:42*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*03-Aug-2019 14:42*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW65D-20190731
Collection Date: 31-Jul-2019 09:45

ANALYTICAL REPORT
WorkOrder:HS19080113
Lab ID:HS19080113-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 05-Aug-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	05-Aug-2019 20:21
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	05-Aug-2019 20:21
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	05-Aug-2019 20:21
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	05-Aug-2019 20:21
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	05-Aug-2019 20:21
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	05-Aug-2019 20:21
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	05-Aug-2019 20:21
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	05-Aug-2019 20:21
Acenaphthene	U		0.000027	0.00010	mg/L	1	05-Aug-2019 20:21
Acenaphthylene	U		0.000015	0.00010	mg/L	1	05-Aug-2019 20:21
Anthracene	U		0.000014	0.00010	mg/L	1	05-Aug-2019 20:21
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	05-Aug-2019 20:21
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	05-Aug-2019 20:21
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	05-Aug-2019 20:21
Bis(2-ethylhexyl)phthalate	**0.00016**	J	**0.000037**	**0.00020**	**mg/L**	1	05-Aug-2019 20:21
Chrysene	U		0.000021	0.00010	mg/L	1	05-Aug-2019 20:21
Dibenzofuran	U		0.000020	0.00010	mg/L	1	05-Aug-2019 20:21
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	05-Aug-2019 20:21
Fluoranthene	U		0.000010	0.00010	mg/L	1	05-Aug-2019 20:21
Fluorene	U		0.000030	0.00010	mg/L	1	05-Aug-2019 20:21
Naphthalene	U		0.000020	0.00010	mg/L	1	05-Aug-2019 20:21
Nitrobenzene	U		0.000024	0.00020	mg/L	1	05-Aug-2019 20:21
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	05-Aug-2019 20:21
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	05-Aug-2019 20:21
Phenanthrene	U		0.000021	0.00010	mg/L	1	05-Aug-2019 20:21
Phenol	U		0.000035	0.00020	mg/L	1	05-Aug-2019 20:21
Pyrene	U		0.000019	0.00010	mg/L	1	05-Aug-2019 20:21
Surr: 2,4,6-Tribromophenol	*91.0*			*34-129*	*%REC*	*1*	*05-Aug-2019 20:21*
Surr: 2-Fluorobiphenyl	*95.2*			*40-125*	*%REC*	*1*	*05-Aug-2019 20:21*
Surr: 2-Fluorophenol	*80.1*			*20-120*	*%REC*	*1*	*05-Aug-2019 20:21*
Surr: 4-Terphenyl-d14	*92.8*			*40-135*	*%REC*	*1*	*05-Aug-2019 20:21*
Surr: Nitrobenzene-d5	*102*			*41-120*	*%REC*	*1*	*05-Aug-2019 20:21*
Surr: Phenol-d6	*89.4*			*20-120*	*%REC*	*1*	*05-Aug-2019 20:21*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 06-Aug-2019		Analyst: JHD
Arsenic	**0.00135**	J	**0.000400**	**0.00200**	**mg/L**	1	07-Aug-2019 23:50

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW66D-20190731
Collection Date: 31-Jul-2019 10:45

ANALYTICAL REPORT
WorkOrder:HS19080113
Lab ID:HS19080113-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	03-Aug-2019 20:09
Benzene		U	0.00020	0.0010	mg/L	1	03-Aug-2019 20:09
Chlorobenzene		U	0.00030	0.0010	mg/L	1	03-Aug-2019 20:09
Ethylbenzene		U	0.00030	0.0010	mg/L	1	03-Aug-2019 20:09
Methylene chloride		U	0.0010	0.0020	mg/L	1	03-Aug-2019 20:09
Toluene		U	0.00020	0.0010	mg/L	1	03-Aug-2019 20:09
Xylenes, Total		U	0.00030	0.0010	mg/L	1	03-Aug-2019 20:09
Surr: 1,2-Dichloroethane-d4	*99.1*			*70-126*	*%REC*	*1*	*03-Aug-2019 20:09*
Surr: 4-Bromofluorobenzene	*93.0*			*81-113*	*%REC*	*1*	*03-Aug-2019 20:09*
Surr: Dibromofluoromethane	*97.2*			*77-123*	*%REC*	*1*	*03-Aug-2019 20:09*
Surr: Toluene-d8	*104*			*82-127*	*%REC*	*1*	*03-Aug-2019 20:09*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW66D-20190731
Collection Date: 31-Jul-2019 10:45

ANALYTICAL REPORT
WorkOrder:HS19080113
Lab ID:HS19080113-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 05-Aug-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	06-Aug-2019 13:29
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	06-Aug-2019 13:29
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	06-Aug-2019 13:29
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	06-Aug-2019 13:29
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	06-Aug-2019 13:29
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	06-Aug-2019 13:29
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	06-Aug-2019 13:29
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	06-Aug-2019 13:29
Acenaphthene	U		0.000027	0.00010	mg/L	1	06-Aug-2019 13:29
Acenaphthylene	U		0.000015	0.00010	mg/L	1	06-Aug-2019 13:29
Anthracene	U		0.000014	0.00010	mg/L	1	06-Aug-2019 13:29
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	06-Aug-2019 13:29
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	06-Aug-2019 13:29
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	06-Aug-2019 13:29
Bis(2-ethylhexyl)phthalate	**0.00022**		**0.000037**	**0.00020**	**mg/L**	1	06-Aug-2019 13:29
Chrysene	U		0.000021	0.00010	mg/L	1	06-Aug-2019 13:29
Dibenzofuran	U		0.000020	0.00010	mg/L	1	06-Aug-2019 13:29
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	06-Aug-2019 13:29
Fluoranthene	U		0.000010	0.00010	mg/L	1	06-Aug-2019 13:29
Fluorene	U		0.000030	0.00010	mg/L	1	06-Aug-2019 13:29
Naphthalene	U		0.000020	0.00010	mg/L	1	06-Aug-2019 13:29
Nitrobenzene	U		0.000024	0.00020	mg/L	1	06-Aug-2019 13:29
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	06-Aug-2019 13:29
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	06-Aug-2019 13:29
Phenanthrene	U		0.000021	0.00010	mg/L	1	06-Aug-2019 13:29
Phenol	U		0.000035	0.00020	mg/L	1	06-Aug-2019 13:29
Pyrene	U		0.000019	0.00010	mg/L	1	06-Aug-2019 13:29
Surr: 2,4,6-Tribromophenol	*82.7*			*34-129*	*%REC*	*1*	*06-Aug-2019 13:29*
Surr: 2-Fluorobiphenyl	*89.2*			*40-125*	*%REC*	*1*	*06-Aug-2019 13:29*
Surr: 2-Fluorophenol	*80.6*			*20-120*	*%REC*	*1*	*06-Aug-2019 13:29*
Surr: 4-Terphenyl-d14	*79.4*			*40-135*	*%REC*	*1*	*06-Aug-2019 13:29*
Surr: Nitrobenzene-d5	*91.2*			*41-120*	*%REC*	*1*	*06-Aug-2019 13:29*
Surr: Phenol-d6	*84.8*			*20-120*	*%REC*	*1*	*06-Aug-2019 13:29*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 06-Aug-2019		Analyst: JHD
Arsenic	**0.00124**	J	**0.000400**	**0.00200**	**mg/L**	1	08-Aug-2019 00:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW59D-20190731
Collection Date: 31-Jul-2019 11:50

ANALYTICAL REPORT
WorkOrder:HS19080113
Lab ID:HS19080113-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	03-Aug-2019 20:34
Benzene		U	0.00020	0.0010	mg/L	1	03-Aug-2019 20:34
Chlorobenzene		U	0.00030	0.0010	mg/L	1	03-Aug-2019 20:34
Ethylbenzene		U	0.00030	0.0010	mg/L	1	03-Aug-2019 20:34
Methylene chloride		U	0.0010	0.0020	mg/L	1	03-Aug-2019 20:34
Toluene		U	0.00020	0.0010	mg/L	1	03-Aug-2019 20:34
Xylenes, Total		U	0.00030	0.0010	mg/L	1	03-Aug-2019 20:34
Surr: 1,2-Dichloroethane-d4	*97.2*			*70-126*	*%REC*	*1*	*03-Aug-2019 20:34*
Surr: 4-Bromofluorobenzene	*96.4*			*81-113*	*%REC*	*1*	*03-Aug-2019 20:34*
Surr: Dibromofluoromethane	*95.5*			*77-123*	*%REC*	*1*	*03-Aug-2019 20:34*
Surr: Toluene-d8	*105*			*82-127*	*%REC*	*1*	*03-Aug-2019 20:34*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW59D-20190731
Collection Date: 31-Jul-2019 11:50

ANALYTICAL REPORT
WorkOrder:HS19080113
Lab ID:HS19080113-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 05-Aug-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	06-Aug-2019 13:48
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	06-Aug-2019 13:48
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	06-Aug-2019 13:48
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	06-Aug-2019 13:48
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	06-Aug-2019 13:48
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	06-Aug-2019 13:48
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	06-Aug-2019 13:48
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	06-Aug-2019 13:48
Acenaphthene	U		0.000027	0.00010	mg/L	1	06-Aug-2019 13:48
Acenaphthylene	U		0.000015	0.00010	mg/L	1	06-Aug-2019 13:48
Anthracene	U		0.000014	0.00010	mg/L	1	06-Aug-2019 13:48
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	06-Aug-2019 13:48
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	06-Aug-2019 13:48
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	06-Aug-2019 13:48
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	06-Aug-2019 13:48
Chrysene	U		0.000021	0.00010	mg/L	1	06-Aug-2019 13:48
Dibenzofuran	U		0.000020	0.00010	mg/L	1	06-Aug-2019 13:48
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	06-Aug-2019 13:48
Fluoranthene	U		0.000010	0.00010	mg/L	1	06-Aug-2019 13:48
Fluorene	U		0.000030	0.00010	mg/L	1	06-Aug-2019 13:48
Naphthalene	U		0.000020	0.00010	mg/L	1	06-Aug-2019 13:48
Nitrobenzene	U		0.000024	0.00020	mg/L	1	06-Aug-2019 13:48
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	06-Aug-2019 13:48
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	06-Aug-2019 13:48
Phenanthrene	U		0.000021	0.00010	mg/L	1	06-Aug-2019 13:48
Phenol	**0.00011**	J	**0.000035**	**0.00020**	**mg/L**	1	06-Aug-2019 13:48
Pyrene	U		0.000019	0.00010	mg/L	1	06-Aug-2019 13:48
Surr: 2,4,6-Tribromophenol	*87.8*			*34-129*	*%REC*	*1*	*06-Aug-2019 13:48*
Surr: 2-Fluorobiphenyl	*78.4*			*40-125*	*%REC*	*1*	*06-Aug-2019 13:48*
Surr: 2-Fluorophenol	*68.8*			*20-120*	*%REC*	*1*	*06-Aug-2019 13:48*
Surr: 4-Terphenyl-d14	*83.5*			*40-135*	*%REC*	*1*	*06-Aug-2019 13:48*
Surr: Nitrobenzene-d5	*81.9*			*41-120*	*%REC*	*1*	*06-Aug-2019 13:48*
Surr: Phenol-d6	*74.2*			*20-120*	*%REC*	*1*	*06-Aug-2019 13:48*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 06-Aug-2019		Analyst: JHD
Arsenic	U		0.000400	0.00200	mg/L	1	08-Aug-2019 00:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19080113
Sample ID: WG-1620-FD05-20190731
Lab ID:HS19080113-06
Collection Date: 31-Jul-2019 11:50
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	03-Aug-2019 20:58
Benzene		U	0.00020	0.0010	mg/L	1	03-Aug-2019 20:58
Chlorobenzene		U	0.00030	0.0010	mg/L	1	03-Aug-2019 20:58
Ethylbenzene		U	0.00030	0.0010	mg/L	1	03-Aug-2019 20:58
Methylene chloride		U	0.0010	0.0020	mg/L	1	03-Aug-2019 20:58
Toluene		U	0.00020	0.0010	mg/L	1	03-Aug-2019 20:58
Xylenes, Total		U	0.00030	0.0010	mg/L	1	03-Aug-2019 20:58
Surr: 1,2-Dichloroethane-d4	*97.7*			*70-126*	*%REC*	*1*	*03-Aug-2019 20:58*
Surr: 4-Bromofluorobenzene	*96.0*			*81-113*	*%REC*	*1*	*03-Aug-2019 20:58*
Surr: Dibromofluoromethane	*98.9*			*77-123*	*%REC*	*1*	*03-Aug-2019 20:58*
Surr: Toluene-d8	*103*			*82-127*	*%REC*	*1*	*03-Aug-2019 20:58*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FD05-20190731
Collection Date: 31-Jul-2019 11:50

ANALYTICAL REPORT
WorkOrder:HS19080113
Lab ID:HS19080113-06
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 05-Aug-2019		Analyst: GEY
1,2-Diphenylhydrazine		U	0.000021	0.00020	mg/L	1	06-Aug-2019 14:07
2,4-Dimethylphenol		U	0.000040	0.00020	mg/L	1	06-Aug-2019 14:07
2,4-Dinitrotoluene		U	0.000058	0.00020	mg/L	1	06-Aug-2019 14:07
2,6-Dinitrotoluene		U	0.000042	0.00020	mg/L	1	06-Aug-2019 14:07
2-Chloronaphthalene		U	0.000021	0.00020	mg/L	1	06-Aug-2019 14:07
2-Methylnaphthalene		U	0.000019	0.00010	mg/L	1	06-Aug-2019 14:07
4,6-Dinitro-2-methylphenol		U	0.000020	0.00020	mg/L	1	06-Aug-2019 14:07
4-Nitrophenol		U	0.000047	0.0010	mg/L	1	06-Aug-2019 14:07
Acenaphthene		U	0.000027	0.00010	mg/L	1	06-Aug-2019 14:07
Acenaphthylene		U	0.000015	0.00010	mg/L	1	06-Aug-2019 14:07
Anthracene		U	0.000014	0.00010	mg/L	1	06-Aug-2019 14:07
Benz(a)anthracene		U	0.000050	0.00010	mg/L	1	06-Aug-2019 14:07
Benzo(a)pyrene		U	0.000020	0.00010	mg/L	1	06-Aug-2019 14:07
Bis(2-chloroethoxy)methane		U	0.000030	0.00020	mg/L	1	06-Aug-2019 14:07
Bis(2-ethylhexyl)phthalate		U	0.000037	0.00020	mg/L	1	06-Aug-2019 14:07
Chrysene		U	0.000021	0.00010	mg/L	1	06-Aug-2019 14:07
Dibenzofuran		U	0.000020	0.00010	mg/L	1	06-Aug-2019 14:07
Di-n-butyl phthalate		U	0.000020	0.00020	mg/L	1	06-Aug-2019 14:07
Fluoranthene		U	0.000010	0.00010	mg/L	1	06-Aug-2019 14:07
Fluorene		U	0.000030	0.00010	mg/L	1	06-Aug-2019 14:07
Naphthalene		U	0.000020	0.00010	mg/L	1	06-Aug-2019 14:07
Nitrobenzene		U	0.000024	0.00020	mg/L	1	06-Aug-2019 14:07
N-Nitrosodiphenylamine		U	0.000025	0.00020	mg/L	1	06-Aug-2019 14:07
Pentachlorophenol		U	0.000079	0.00020	mg/L	1	06-Aug-2019 14:07
Phenanthrene		U	0.000021	0.00010	mg/L	1	06-Aug-2019 14:07
Phenol		U	0.000035	0.00020	mg/L	1	06-Aug-2019 14:07
Pyrene		U	0.000019	0.00010	mg/L	1	06-Aug-2019 14:07
Surr: 2,4,6-Tribromophenol	*82.7*			*34-129*	*%REC*	*1*	*06-Aug-2019 14:07*
Surr: 2-Fluorobiphenyl	*79.6*			*40-125*	*%REC*	*1*	*06-Aug-2019 14:07*
Surr: 2-Fluorophenol	*72.8*			*20-120*	*%REC*	*1*	*06-Aug-2019 14:07*
Surr: 4-Terphenyl-d14	*83.9*			*40-135*	*%REC*	*1*	*06-Aug-2019 14:07*
Surr: Nitrobenzene-d5	*83.3*			*41-120*	*%REC*	*1*	*06-Aug-2019 14:07*
Surr: Phenol-d6	*77.9*			*20-120*	*%REC*	*1*	*06-Aug-2019 14:07*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 07-Aug-2019		Analyst: JC
Arsenic	**0.000502**	J	**0.000400**	**0.00200**	**mg/L**	1	07-Aug-2019 18:26

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW22AR-20190731
Collection Date: 31-Jul-2019 13:05

ANALYTICAL REPORT
WorkOrder:HS19080113
Lab ID:HS19080113-07
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	04-Aug-2019 01:54
Benzene		U	0.00020	0.0010	mg/L	1	04-Aug-2019 01:54
Chlorobenzene		U	0.00030	0.0010	mg/L	1	04-Aug-2019 01:54
Ethylbenzene		U	0.00030	0.0010	mg/L	1	04-Aug-2019 01:54
Methylene chloride		U	0.0010	0.0020	mg/L	1	04-Aug-2019 01:54
Toluene		U	0.00020	0.0010	mg/L	1	04-Aug-2019 01:54
Xylenes, Total		U	0.00030	0.0010	mg/L	1	04-Aug-2019 01:54
Surr: 1,2-Dichloroethane-d4	*95.5*			*70-126*	*%REC*	*1*	*04-Aug-2019 01:54*
Surr: 4-Bromofluorobenzene	*99.1*			*81-113*	*%REC*	*1*	*04-Aug-2019 01:54*
Surr: Dibromofluoromethane	*95.4*			*77-123*	*%REC*	*1*	*04-Aug-2019 01:54*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*04-Aug-2019 01:54*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW22AR-20190731
Collection Date: 31-Jul-2019 13:05

ANALYTICAL REPORT
WorkOrder:HS19080113
Lab ID:HS19080113-07
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 05-Aug-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	06-Aug-2019 14:26
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	06-Aug-2019 14:26
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	06-Aug-2019 14:26
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	06-Aug-2019 14:26
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	06-Aug-2019 14:26
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	06-Aug-2019 14:26
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	06-Aug-2019 14:26
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	06-Aug-2019 14:26
Acenaphthene	U		0.000027	0.00010	mg/L	1	06-Aug-2019 14:26
Acenaphthylene	U		0.000015	0.00010	mg/L	1	06-Aug-2019 14:26
Anthracene	U		0.000014	0.00010	mg/L	1	06-Aug-2019 14:26
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	06-Aug-2019 14:26
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	06-Aug-2019 14:26
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	06-Aug-2019 14:26
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	06-Aug-2019 14:26
Chrysene	U		0.000021	0.00010	mg/L	1	06-Aug-2019 14:26
Dibenzofuran	U		0.000020	0.00010	mg/L	1	06-Aug-2019 14:26
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	06-Aug-2019 14:26
Fluoranthene	U		0.000010	0.00010	mg/L	1	06-Aug-2019 14:26
Fluorene	U		0.000030	0.00010	mg/L	1	06-Aug-2019 14:26
Naphthalene	U		0.000020	0.00010	mg/L	1	06-Aug-2019 14:26
Nitrobenzene	U		0.000024	0.00020	mg/L	1	06-Aug-2019 14:26
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	06-Aug-2019 14:26
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	06-Aug-2019 14:26
Phenanthrene	U		0.000021	0.00010	mg/L	1	06-Aug-2019 14:26
Phenol	U		0.000035	0.00020	mg/L	1	06-Aug-2019 14:26
Pyrene	U		0.000019	0.00010	mg/L	1	06-Aug-2019 14:26
Surr: 2,4,6-Tribromophenol	*85.8*			*34-129*	*%REC*	*1*	*06-Aug-2019 14:26*
Surr: 2-Fluorobiphenyl	*90.7*			*40-125*	*%REC*	*1*	*06-Aug-2019 14:26*
Surr: 2-Fluorophenol	*82.7*			*20-120*	*%REC*	*1*	*06-Aug-2019 14:26*
Surr: 4-Terphenyl-d14	*83.0*			*40-135*	*%REC*	*1*	*06-Aug-2019 14:26*
Surr: Nitrobenzene-d5	*93.4*			*41-120*	*%REC*	*1*	*06-Aug-2019 14:26*
Surr: Phenol-d6	*85.7*			*20-120*	*%REC*	*1*	*06-Aug-2019 14:26*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 07-Aug-2019		Analyst: JC
Arsenic	**0.000481**	J	**0.000400**	**0.00200**	**mg/L**	1	07-Aug-2019 18:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW22BR-20190731
Collection Date: 31-Jul-2019 13:50

ANALYTICAL REPORT
WorkOrder:HS19080113
Lab ID:HS19080113-08
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	04-Aug-2019 04:02
Benzene		U	0.00020	0.0010	mg/L	1	04-Aug-2019 04:02
Chlorobenzene		U	0.00030	0.0010	mg/L	1	04-Aug-2019 04:02
Ethylbenzene		U	0.00030	0.0010	mg/L	1	04-Aug-2019 04:02
Methylene chloride		U	0.0010	0.0020	mg/L	1	04-Aug-2019 04:02
Toluene		U	0.00020	0.0010	mg/L	1	04-Aug-2019 04:02
Xylenes, Total		U	0.00030	0.0010	mg/L	1	04-Aug-2019 04:02
Surr: 1,2-Dichloroethane-d4	*95.6*			*70-126*	*%REC*	*1*	*04-Aug-2019 04:02*
Surr: 4-Bromofluorobenzene	*96.4*			*81-113*	*%REC*	*1*	*04-Aug-2019 04:02*
Surr: Dibromofluoromethane	*98.5*			*77-123*	*%REC*	*1*	*04-Aug-2019 04:02*
Surr: Toluene-d8	*105*			*82-127*	*%REC*	*1*	*04-Aug-2019 04:02*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW22BR-20190731
Collection Date: 31-Jul-2019 13:50

ANALYTICAL REPORT
WorkOrder:HS19080113
Lab ID:HS19080113-08
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 05-Aug-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	06-Aug-2019 18:33
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	06-Aug-2019 18:33
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	06-Aug-2019 18:33
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	06-Aug-2019 18:33
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	06-Aug-2019 18:33
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	06-Aug-2019 18:33
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	06-Aug-2019 18:33
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	06-Aug-2019 18:33
Acenaphthene	U		0.000027	0.00010	mg/L	1	06-Aug-2019 18:33
Acenaphthylene	U		0.000015	0.00010	mg/L	1	06-Aug-2019 18:33
Anthracene	U		0.000014	0.00010	mg/L	1	06-Aug-2019 18:33
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	06-Aug-2019 18:33
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	06-Aug-2019 18:33
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	06-Aug-2019 18:33
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	06-Aug-2019 18:33
Chrysene	U		0.000021	0.00010	mg/L	1	06-Aug-2019 18:33
Dibenzofuran	U		0.000020	0.00010	mg/L	1	06-Aug-2019 18:33
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	06-Aug-2019 18:33
Fluoranthene	U		0.000010	0.00010	mg/L	1	06-Aug-2019 18:33
Fluorene	U		0.000030	0.00010	mg/L	1	06-Aug-2019 18:33
Naphthalene	U		0.000020	0.00010	mg/L	1	06-Aug-2019 18:33
Nitrobenzene	U		0.000024	0.00020	mg/L	1	06-Aug-2019 18:33
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	06-Aug-2019 18:33
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	06-Aug-2019 18:33
Phenanthrene	U		0.000021	0.00010	mg/L	1	06-Aug-2019 18:33
Phenol	**0.00069**		**0.000035**	**0.00020**	**mg/L**	1	06-Aug-2019 18:33
Pyrene	U		0.000019	0.00010	mg/L	1	06-Aug-2019 18:33
Surr: 2,4,6-Tribromophenol	*59.2*			*34-129*	*%REC*	*1*	*06-Aug-2019 18:33*
Surr: 2-Fluorobiphenyl	*82.9*			*40-125*	*%REC*	*1*	*06-Aug-2019 18:33*
Surr: 2-Fluorophenol	*68.9*			*20-120*	*%REC*	*1*	*06-Aug-2019 18:33*
Surr: 4-Terphenyl-d14	*86.5*			*40-135*	*%REC*	*1*	*06-Aug-2019 18:33*
Surr: Nitrobenzene-d5	*65.3*			*41-120*	*%REC*	*1*	*06-Aug-2019 18:33*
Surr: Phenol-d6	*72.2*			*20-120*	*%REC*	*1*	*06-Aug-2019 18:33*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 07-Aug-2019		Analyst: JC
Arsenic	**0.000559**	J	**0.000400**	**0.00200**	**mg/L**	1	07-Aug-2019 18:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW88C-20190731
Collection Date: 31-Jul-2019 15:45

ANALYTICAL REPORT
WorkOrder:HS19080113
Lab ID:HS19080113-09
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	04-Aug-2019 04:27
Benzene		U	0.00020	0.0010	mg/L	1	04-Aug-2019 04:27
Chlorobenzene		U	0.00030	0.0010	mg/L	1	04-Aug-2019 04:27
Ethylbenzene		U	0.00030	0.0010	mg/L	1	04-Aug-2019 04:27
Methylene chloride		U	0.0010	0.0020	mg/L	1	04-Aug-2019 04:27
Toluene		U	0.00020	0.0010	mg/L	1	04-Aug-2019 04:27
Xylenes, Total		U	0.00030	0.0010	mg/L	1	04-Aug-2019 04:27
Surr: 1,2-Dichloroethane-d4	*93.8*			*70-126*	*%REC*	*1*	*04-Aug-2019 04:27*
Surr: 4-Bromofluorobenzene	*100*			*81-113*	*%REC*	*1*	*04-Aug-2019 04:27*
Surr: Dibromofluoromethane	*94.0*			*77-123*	*%REC*	*1*	*04-Aug-2019 04:27*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*04-Aug-2019 04:27*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW88C-20190731
Collection Date: 31-Jul-2019 15:45

ANALYTICAL REPORT
WorkOrder:HS19080113
Lab ID:HS19080113-09
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 05-Aug-2019		Analyst: GEY
1,2-Diphenylhydrazine		U	0.000021	0.00020	mg/L	1	06-Aug-2019 18:52
2,4-Dimethylphenol		U	0.000040	0.00020	mg/L	1	06-Aug-2019 18:52
2,4-Dinitrotoluene		U	0.000058	0.00020	mg/L	1	06-Aug-2019 18:52
2,6-Dinitrotoluene		U	0.000042	0.00020	mg/L	1	06-Aug-2019 18:52
2-Chloronaphthalene		U	0.000021	0.00020	mg/L	1	06-Aug-2019 18:52
2-Methylnaphthalene		U	0.000019	0.00010	mg/L	1	06-Aug-2019 18:52
4,6-Dinitro-2-methylphenol		U	0.000020	0.00020	mg/L	1	06-Aug-2019 18:52
4-Nitrophenol		U	0.000047	0.0010	mg/L	1	06-Aug-2019 18:52
Acenaphthene		U	0.000027	0.00010	mg/L	1	06-Aug-2019 18:52
Acenaphthylene		U	0.000015	0.00010	mg/L	1	06-Aug-2019 18:52
Anthracene		U	0.000014	0.00010	mg/L	1	06-Aug-2019 18:52
Benz(a)anthracene		U	0.000050	0.00010	mg/L	1	06-Aug-2019 18:52
Benzo(a)pyrene		U	0.000020	0.00010	mg/L	1	06-Aug-2019 18:52
Bis(2-chloroethoxy)methane		U	0.000030	0.00020	mg/L	1	06-Aug-2019 18:52
Bis(2-ethylhexyl)phthalate		U	0.000037	0.00020	mg/L	1	06-Aug-2019 18:52
Chrysene		U	0.000021	0.00010	mg/L	1	06-Aug-2019 18:52
Dibenzofuran		U	0.000020	0.00010	mg/L	1	06-Aug-2019 18:52
Di-n-butyl phthalate		U	0.000020	0.00020	mg/L	1	06-Aug-2019 18:52
Fluoranthene		U	0.000010	0.00010	mg/L	1	06-Aug-2019 18:52
Fluorene		U	0.000030	0.00010	mg/L	1	06-Aug-2019 18:52
Naphthalene		U	0.000020	0.00010	mg/L	1	06-Aug-2019 18:52
Nitrobenzene		U	0.000024	0.00020	mg/L	1	06-Aug-2019 18:52
N-Nitrosodiphenylamine		U	0.000025	0.00020	mg/L	1	06-Aug-2019 18:52
Pentachlorophenol		U	0.000079	0.00020	mg/L	1	06-Aug-2019 18:52
Phenanthrene		U	0.000021	0.00010	mg/L	1	06-Aug-2019 18:52
Phenol	**0.00055**		**0.000035**	**0.00020**	**mg/L**	1	06-Aug-2019 18:52
Pyrene		U	0.000019	0.00010	mg/L	1	06-Aug-2019 18:52
Surr: 2,4,6-Tribromophenol	*46.6*			*34-129*	*%REC*	*1*	*06-Aug-2019 18:52*
Surr: 2-Fluorobiphenyl	*67.3*			*40-125*	*%REC*	*1*	*06-Aug-2019 18:52*
Surr: 2-Fluorophenol	*65.1*			*20-120*	*%REC*	*1*	*06-Aug-2019 18:52*
Surr: 4-Terphenyl-d14	*91.0*			*40-135*	*%REC*	*1*	*06-Aug-2019 18:52*
Surr: Nitrobenzene-d5	*58.8*			*41-120*	*%REC*	*1*	*06-Aug-2019 18:52*
Surr: Phenol-d6	*66.3*			*20-120*	*%REC*	*1*	*06-Aug-2019 18:52*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 07-Aug-2019		Analyst: JC
Arsenic		U	0.000400	0.00200	mg/L	1	07-Aug-2019 18:32

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW67B-20190731
Collection Date: 31-Jul-2019 16:45

ANALYTICAL REPORT
WorkOrder:HS19080113
Lab ID:HS19080113-10
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	03-Aug-2019 14:49
Benzene		U	0.00020	0.0010	mg/L	1	03-Aug-2019 14:49
Chlorobenzene		U	0.00030	0.0010	mg/L	1	03-Aug-2019 14:49
Ethylbenzene		U	0.00030	0.0010	mg/L	1	03-Aug-2019 14:49
Methylene chloride		U	0.0010	0.0020	mg/L	1	03-Aug-2019 14:49
Toluene		U	0.00020	0.0010	mg/L	1	03-Aug-2019 14:49
Xylenes, Total		U	0.00030	0.0010	mg/L	1	03-Aug-2019 14:49
Surr: 1,2-Dichloroethane-d4	*99.6*			*70-126*	*%REC*	*1*	*03-Aug-2019 14:49*
Surr: 4-Bromofluorobenzene	*94.2*			*81-113*	*%REC*	*1*	*03-Aug-2019 14:49*
Surr: Dibromofluoromethane	*97.0*			*77-123*	*%REC*	*1*	*03-Aug-2019 14:49*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*03-Aug-2019 14:49*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW67B-20190731
Collection Date: 31-Jul-2019 16:45

ANALYTICAL REPORT
WorkOrder:HS19080113
Lab ID:HS19080113-10
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 05-Aug-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	06-Aug-2019 19:11
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	06-Aug-2019 19:11
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	06-Aug-2019 19:11
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	06-Aug-2019 19:11
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	06-Aug-2019 19:11
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	06-Aug-2019 19:11
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	06-Aug-2019 19:11
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	06-Aug-2019 19:11
Acenaphthene	U		0.000027	0.00010	mg/L	1	06-Aug-2019 19:11
Acenaphthylene	U		0.000015	0.00010	mg/L	1	06-Aug-2019 19:11
Anthracene	U		0.000014	0.00010	mg/L	1	06-Aug-2019 19:11
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	06-Aug-2019 19:11
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	06-Aug-2019 19:11
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	06-Aug-2019 19:11
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	06-Aug-2019 19:11
Chrysene	U		0.000021	0.00010	mg/L	1	06-Aug-2019 19:11
Dibenzofuran	U		0.000020	0.00010	mg/L	1	06-Aug-2019 19:11
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	06-Aug-2019 19:11
Fluoranthene	U		0.000010	0.00010	mg/L	1	06-Aug-2019 19:11
Fluorene	U		0.000030	0.00010	mg/L	1	06-Aug-2019 19:11
Naphthalene	**0.000079**	J	**0.000020**	**0.00010**	**mg/L**	1	06-Aug-2019 19:11
Nitrobenzene	U		0.000024	0.00020	mg/L	1	06-Aug-2019 19:11
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	06-Aug-2019 19:11
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	06-Aug-2019 19:11
Phenanthrene	U		0.000021	0.00010	mg/L	1	06-Aug-2019 19:11
Phenol	U		0.000035	0.00020	mg/L	1	06-Aug-2019 19:11
Pyrene	U		0.000019	0.00010	mg/L	1	06-Aug-2019 19:11
Surr: 2,4,6-Tribromophenol	*66.1*			*34-129*	*%REC*	*1*	*06-Aug-2019 19:11*
Surr: 2-Fluorobiphenyl	*72.3*			*40-125*	*%REC*	*1*	*06-Aug-2019 19:11*
Surr: 2-Fluorophenol	*63.4*			*20-120*	*%REC*	*1*	*06-Aug-2019 19:11*
Surr: 4-Terphenyl-d14	*86.4*			*40-135*	*%REC*	*1*	*06-Aug-2019 19:11*
Surr: Nitrobenzene-d5	*58.1*			*41-120*	*%REC*	*1*	*06-Aug-2019 19:11*
Surr: Phenol-d6	*68.3*			*20-120*	*%REC*	*1*	*06-Aug-2019 19:11*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 07-Aug-2019		Analyst: JC
Arsenic	**0.000494**	J	**0.000400**	**0.00200**	**mg/L**	1	07-Aug-2019 18:34

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19080113
Sample ID: WG-1620-MW49A-20190731
Lab ID:HS19080113-11
Collection Date: 31-Jul-2019 17:45
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	04-Aug-2019 04:51
Benzene		U	0.00020	0.0010	mg/L	1	04-Aug-2019 04:51
Chlorobenzene		U	0.00030	0.0010	mg/L	1	04-Aug-2019 04:51
Ethylbenzene		U	0.00030	0.0010	mg/L	1	04-Aug-2019 04:51
Methylene chloride		U	0.0010	0.0020	mg/L	1	04-Aug-2019 04:51
Toluene		U	0.00020	0.0010	mg/L	1	04-Aug-2019 04:51
Vinyl chloride		U	0.00020	0.0010	mg/L	1	04-Aug-2019 04:51
Xylenes, Total		U	0.00030	0.0010	mg/L	1	04-Aug-2019 04:51
Surr: 1,2-Dichloroethane-d4	*95.1*			*70-126*	*%REC*	*1*	*04-Aug-2019 04:51*
Surr: 4-Bromofluorobenzene	*95.1*			*81-113*	*%REC*	*1*	*04-Aug-2019 04:51*
Surr: Dibromofluoromethane	*94.4*			*77-123*	*%REC*	*1*	*04-Aug-2019 04:51*
Surr: Toluene-d8	*103*			*82-127*	*%REC*	*1*	*04-Aug-2019 04:51*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW49A-20190731
Collection Date: 31-Jul-2019 17:45

ANALYTICAL REPORT
WorkOrder:HS19080113
Lab ID:HS19080113-11
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 05-Aug-2019		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	06-Aug-2019 19:30
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	06-Aug-2019 19:30
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	06-Aug-2019 19:30
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	06-Aug-2019 19:30
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	06-Aug-2019 19:30
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	06-Aug-2019 19:30
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	06-Aug-2019 19:30
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	06-Aug-2019 19:30
Acenaphthene	U		0.000027	0.00010	mg/L	1	06-Aug-2019 19:30
Acenaphthylene	U		0.000015	0.00010	mg/L	1	06-Aug-2019 19:30
Anthracene	U		0.000014	0.00010	mg/L	1	06-Aug-2019 19:30
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	06-Aug-2019 19:30
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	06-Aug-2019 19:30
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	06-Aug-2019 19:30
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	06-Aug-2019 19:30
Chrysene	U		0.000021	0.00010	mg/L	1	06-Aug-2019 19:30
Dibenzofuran	U		0.000020	0.00010	mg/L	1	06-Aug-2019 19:30
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	06-Aug-2019 19:30
Fluoranthene	U		0.000010	0.00010	mg/L	1	06-Aug-2019 19:30
Fluorene	U		0.000030	0.00010	mg/L	1	06-Aug-2019 19:30
Naphthalene	U		0.000020	0.00010	mg/L	1	06-Aug-2019 19:30
Nitrobenzene	U		0.000024	0.00020	mg/L	1	06-Aug-2019 19:30
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	06-Aug-2019 19:30
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	06-Aug-2019 19:30
Phenanthrene	U		0.000021	0.00010	mg/L	1	06-Aug-2019 19:30
Phenol	**0.00064**		**0.000035**	**0.00020**	**mg/L**	1	06-Aug-2019 19:30
Pyrene	U		0.000019	0.00010	mg/L	1	06-Aug-2019 19:30
Surr: 2,4,6-Tribromophenol	*56.2*			*34-129*	*%REC*	*1*	*06-Aug-2019 19:30*
Surr: 2-Fluorobiphenyl	*73.1*			*40-125*	*%REC*	*1*	*06-Aug-2019 19:30*
Surr: 2-Fluorophenol	*65.3*			*20-120*	*%REC*	*1*	*06-Aug-2019 19:30*
Surr: 4-Terphenyl-d14	*87.7*			*40-135*	*%REC*	*1*	*06-Aug-2019 19:30*
Surr: Nitrobenzene-d5	*58.7*			*41-120*	*%REC*	*1*	*06-Aug-2019 19:30*
Surr: Phenol-d6	*67.2*			*20-120*	*%REC*	*1*	*06-Aug-2019 19:30*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 07-Aug-2019		Analyst: JC
Arsenic	**0.000658**	J	**0.000400**	**0.00200**	**mg/L**	1	07-Aug-2019 18:50

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19080113
Sample ID: WG-1620-TB06-20190731
Lab ID:HS19080113-12
Collection Date: 31-Jul-2019 00:00
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	04-Aug-2019 00:40
Benzene		U	0.00020	0.0010	mg/L	1	04-Aug-2019 00:40
Chlorobenzene		U	0.00030	0.0010	mg/L	1	04-Aug-2019 00:40
Ethylbenzene		U	0.00030	0.0010	mg/L	1	04-Aug-2019 00:40
Methylene chloride		U	0.0010	0.0020	mg/L	1	04-Aug-2019 00:40
Toluene		U	0.00020	0.0010	mg/L	1	04-Aug-2019 00:40
Vinyl chloride		U	0.00020	0.0010	mg/L	1	04-Aug-2019 00:40
Xylenes, Total		U	0.00030	0.0010	mg/L	1	04-Aug-2019 00:40
Surr: 1,2-Dichloroethane-d4	*98.8*			*70-126*	*%REC*	*1*	*04-Aug-2019 00:40*
Surr: 4-Bromofluorobenzene	*94.4*			*81-113*	*%REC*	*1*	*04-Aug-2019 00:40*
Surr: Dibromofluoromethane	*98.3*			*77-123*	*%REC*	*1*	*04-Aug-2019 00:40*
Surr: Toluene-d8	*105*			*82-127*	*%REC*	*1*	*04-Aug-2019 00:40*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

WEIGHT LOG

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080113

Batch ID: 143759 **Method:** LOW-LEVEL SEMIVOLATILES BY 8270D **Prep:** 3510_B_LOW

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19080113-01	1	1000	1 (mL)	0.001
HS19080113-02	1	1000	1 (mL)	0.001
HS19080113-03	1	1000	1 (mL)	0.001
HS19080113-04	1	1000	1 (mL)	0.001
HS19080113-05	1	1000	1 (mL)	0.001
HS19080113-06	1	1000	1 (mL)	0.001
HS19080113-07	1	1000	1 (mL)	0.001
HS19080113-08	1	1000	1 (mL)	0.001
HS19080113-09	1	1000	1 (mL)	0.001
HS19080113-10	1	1000	1 (mL)	0.001
HS19080113-11	1	1000	1 (mL)	0.001

Batch ID: 143819 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19080113-01	1	10	10 (mL)	1
HS19080113-02	1	10	10 (mL)	1
HS19080113-03	1	10	10 (mL)	1
HS19080113-04	1	10	10 (mL)	1
HS19080113-05	1	10	10 (mL)	1

Batch ID: 143865 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19080113-06	1	10	10 (mL)	1
HS19080113-07	1	10	10 (mL)	1
HS19080113-08	1	10	10 (mL)	1
HS19080113-09	1	10	10 (mL)	1
HS19080113-10	1	10	10 (mL)	1
HS19080113-11	1	10	10 (mL)	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080113

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID: 143759 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Water	
HS19080113-01	WG-1620-MW36D-20190731	31 Jul 2019 07:40		05 Aug 2019 09:58	05 Aug 2019 19:43	1
HS19080113-02	WG-1620-MW38A-20190731	31 Jul 2019 08:35		05 Aug 2019 09:58	05 Aug 2019 20:02	1
HS19080113-03	WG-1620-MW65D-20190731	31 Jul 2019 09:45		05 Aug 2019 09:58	05 Aug 2019 20:21	1
HS19080113-04	WG-1620-MW66D-20190731	31 Jul 2019 10:45		05 Aug 2019 09:58	06 Aug 2019 13:29	1
HS19080113-05	WG-1620-MW59D-20190731	31 Jul 2019 11:50		05 Aug 2019 09:58	06 Aug 2019 13:48	1
HS19080113-06	WG-1620-FD05-20190731	31 Jul 2019 11:50		05 Aug 2019 09:58	06 Aug 2019 14:07	1
HS19080113-07	WG-1620-MW22AR-20190731	31 Jul 2019 13:05		05 Aug 2019 09:58	06 Aug 2019 14:26	1
HS19080113-08	WG-1620-MW22BR-20190731	31 Jul 2019 13:50		05 Aug 2019 09:58	06 Aug 2019 18:33	1
HS19080113-09	WG-1620-MW88C-20190731	31 Jul 2019 15:45		05 Aug 2019 09:58	06 Aug 2019 18:52	1
HS19080113-10	WG-1620-MW67B-20190731	31 Jul 2019 16:45		05 Aug 2019 09:58	06 Aug 2019 19:11	1
HS19080113-11	WG-1620-MW49A-20190731	31 Jul 2019 17:45		05 Aug 2019 09:58	06 Aug 2019 19:30	1
Batch ID: 143819 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS19080113-01	WG-1620-MW36D-20190731	31 Jul 2019 07:40		06 Aug 2019 09:00	08 Aug 2019 00:06	1
HS19080113-02	WG-1620-MW38A-20190731	31 Jul 2019 08:35		06 Aug 2019 09:00	08 Aug 2019 00:08	1
HS19080113-03	WG-1620-MW65D-20190731	31 Jul 2019 09:45		06 Aug 2019 09:00	07 Aug 2019 23:50	1
HS19080113-04	WG-1620-MW66D-20190731	31 Jul 2019 10:45		06 Aug 2019 09:00	08 Aug 2019 00:10	1
HS19080113-05	WG-1620-MW59D-20190731	31 Jul 2019 11:50		06 Aug 2019 09:00	08 Aug 2019 00:13	1
Batch ID: 143865 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS19080113-06	WG-1620-FD05-20190731	31 Jul 2019 11:50		07 Aug 2019 09:00	07 Aug 2019 18:26	1
HS19080113-07	WG-1620-MW22AR-20190731	31 Jul 2019 13:05		07 Aug 2019 09:00	07 Aug 2019 18:28	1
HS19080113-08	WG-1620-MW22BR-20190731	31 Jul 2019 13:50		07 Aug 2019 09:00	07 Aug 2019 18:30	1
HS19080113-09	WG-1620-MW88C-20190731	31 Jul 2019 15:45		07 Aug 2019 09:00	07 Aug 2019 18:32	1
HS19080113-10	WG-1620-MW67B-20190731	31 Jul 2019 16:45		07 Aug 2019 09:00	07 Aug 2019 18:34	1
HS19080113-11	WG-1620-MW49A-20190731	31 Jul 2019 17:45		07 Aug 2019 09:00	07 Aug 2019 18:50	1
Batch ID: R343626 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS19080113-01	WG-1620-MW36D-20190731	31 Jul 2019 07:40			03 Aug 2019 19:20	1
HS19080113-02	WG-1620-MW38A-20190731	31 Jul 2019 08:35			03 Aug 2019 19:44	1
HS19080113-04	WG-1620-MW66D-20190731	31 Jul 2019 10:45			03 Aug 2019 20:09	1
HS19080113-05	WG-1620-MW59D-20190731	31 Jul 2019 11:50			03 Aug 2019 20:34	1
HS19080113-06	WG-1620-FD05-20190731	31 Jul 2019 11:50			03 Aug 2019 20:58	1
HS19080113-10	WG-1620-MW67B-20190731	31 Jul 2019 16:45			03 Aug 2019 14:49	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080113

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID: R343632 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS19080113-07	WG-1620-MW22AR-20190731	31 Jul 2019 13:05			04 Aug 2019 01:54	1
HS19080113-08	WG-1620-MW22BR-20190731	31 Jul 2019 13:50			04 Aug 2019 04:02	1
HS19080113-09	WG-1620-MW88C-20190731	31 Jul 2019 15:45			04 Aug 2019 04:27	1
HS19080113-11	WG-1620-MW49A-20190731	31 Jul 2019 17:45			04 Aug 2019 04:51	1
HS19080113-12	WG-1620-TB06-20190731	31 Jul 2019 00:00			04 Aug 2019 00:40	1
Batch ID: R343643 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS19080113-03	WG-1620-MW65D-20190731	31 Jul 2019 09:45			03 Aug 2019 14:42	1

WorkOrder: HS19080113
InstrumentID: ICPMS05
Test Code: ICP_TW
Test Number: SW6020
Test Name: ICP-MS Metals by SW6020A

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Arsenic	7440-38-2	0.000500	0.000547	0.000400	0.00200

WorkOrder: HS19080113
InstrumentID: ICPMS04
Test Code: ICP_TW
Test Number: SW6020
Test Name: ICP-MS Metals by SW6020A

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Arsenic	7440-38-2	0.00100	0.000579	0.000400	0.00200

WorkOrder: HS19080113
InstrumentID: SV-7
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Diphenylhydrazine	122-66-7	0.00010	0.00011	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.00010	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.000096	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.00012	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.00011	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.000050	0.000049	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000013	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00010	0.00013	0.000047	0.0010
A	Acenaphthene	83-32-9	0.000050	0.000051	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000050	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.000055	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.000050	0.000068	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.000050	0.000053	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.00012	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.000086	0.000037	0.00020
A	Chrysene	218-01-9	0.000050	0.000066	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.000050	0.000052	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.000099	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000053	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.000052	0.000030	0.00010
A	Naphthalene	91-20-3	0.000050	0.000061	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.00013	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.00012	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.000085	0.000079	0.00020
A	Phenanthrene	85-01-8	0.000050	0.000055	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.000094	0.000035	0.00020
A	Pyrene	129-00-0	0.000050	0.000061	0.000019	0.00010
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0.00020
S	2-Fluorobiphenyl	321-60-8	0	0	0	0.00020
S	2-Fluorophenol	367-12-4	0	0	0	0.00020
S	4-Terphenyl-d14	1718-51-0	0	0	0	0.00020
S	Nitrobenzene-d5	4165-60-0	0	0	0	0.00020
S	Phenol-d6	13127-88-3	0	0	0	0.00020

WorkOrder: HS19080113
InstrumentID: VOA4
Test Code: 8260_LL_W
Test Number: SW8260
Test Name: Low Level Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.00050	0.00064	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00060	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00061	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00063	0.00030	0.0010
A	Methylene chloride	75-09-2	0.0010	0.00077	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00058	0.00020	0.0010
A	Vinyl chloride	75-01-4	0.00050	0.00070	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00062	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

WorkOrder: HS19080113
InstrumentID: VOA2
Test Code: 8260_LL_W
Test Number: SW8260
Test Name: Low Level Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.00050	0.00067	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00056	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00059	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00051	0.00030	0.0010
A	Methylene chloride	75-09-2	0.00050	0.00054	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00056	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00052	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080113

QC BATCH REPORT

Batch ID: 143819 (0) **Instrument: ICPMS05** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-143819** Units: **mg/L** Analysis Date: **07-Aug-2019 23:45**
Client ID: Run ID: **ICPMS05_343857** SeqNo: **5201038** PrepDate: **06-Aug-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								

LCS Sample ID: **LCS-143819** Units: **mg/L** Analysis Date: **07-Aug-2019 23:48**
Client ID: Run ID: **ICPMS05_343857** SeqNo: **5201039** PrepDate: **06-Aug-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04979	0.00200	0.05	0	99.6	80 - 120				

MS Sample ID: **HS19080113-03MS** Units: **mg/L** Analysis Date: **07-Aug-2019 23:55**
Client ID: **WG-1620-MW65D-20190731** Run ID: **ICPMS05_343857** SeqNo: **5201042** PrepDate: **06-Aug-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0508	0.00200	0.05	0.001348	98.9	80 - 120				

MSD Sample ID: **HS19080113-03MSD** Units: **mg/L** Analysis Date: **07-Aug-2019 23:57**
Client ID: **WG-1620-MW65D-20190731** Run ID: **ICPMS05_343857** SeqNo: **5201043** PrepDate: **06-Aug-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05054	0.00200	0.05	0.001348	98.4	80 - 120	0.0508	0.507	20	

PDS Sample ID: **HS19080113-03PDS** Units: **mg/L** Analysis Date: **07-Aug-2019 23:59**
Client ID: **WG-1620-MW65D-20190731** Run ID: **ICPMS05_343857** SeqNo: **5201044** PrepDate: **06-Aug-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1012	0.00200	0.1	0.001348	99.9	75 - 125				

SD Sample ID: **HS19080113-03SD** Units: **mg/L** Analysis Date: **07-Aug-2019 23:52**
Client ID: **WG-1620-MW65D-20190731** Run ID: **ICPMS05_343857** SeqNo: **5201041** PrepDate: **06-Aug-2019** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	U	0.0100					0.001348	0	10	

The following samples were analyzed in this batch: HS19080113-01 HS19080113-02 HS19080113-03 HS19080113-04 HS19080113-05

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080113

QC BATCH REPORT

Batch ID: 143865 (0) **Instrument: ICPMS04** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-143865** Units: **mg/L** Analysis Date: **07-Aug-2019 18:22**
Client ID: Run ID: **ICPMS04_343800** SeqNo: **5200782** PrepDate: **07-Aug-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								

LCS Sample ID: **LCS-143865** Units: **mg/L** Analysis Date: **07-Aug-2019 18:24**
Client ID: Run ID: **ICPMS04_343800** SeqNo: **5200783** PrepDate: **07-Aug-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0481	0.00200	0.05	0	96.2	80 - 120				

MS Sample ID: **HS19080113-10MS** Units: **mg/L** Analysis Date: **07-Aug-2019 18:38**
Client ID: **WG-1620-MW67B-20190731** Run ID: **ICPMS04_343800** SeqNo: **5200920** PrepDate: **07-Aug-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04857	0.00200	0.05	0.000494	96.2	80 - 120				

MSD Sample ID: **HS19080113-10MSD** Units: **mg/L** Analysis Date: **07-Aug-2019 18:46**
Client ID: **WG-1620-MW67B-20190731** Run ID: **ICPMS04_343800** SeqNo: **5200924** PrepDate: **07-Aug-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0492	0.00200	0.05	0.000494	97.4	80 - 120	0.04857	1.28	20	

PDS Sample ID: **HS19080113-10PDS** Units: **mg/L** Analysis Date: **07-Aug-2019 18:48**
Client ID: **WG-1620-MW67B-20190731** Run ID: **ICPMS04_343800** SeqNo: **5200925** PrepDate: **07-Aug-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1001	0.00200	0.1	0.000494	99.7	75 - 125				

SD Sample ID: **HS19080113-10SD** Units: **mg/L** Analysis Date: **07-Aug-2019 18:36**
Client ID: **WG-1620-MW67B-20190731** Run ID: **ICPMS04_343800** SeqNo: **5200919** PrepDate: **07-Aug-2019** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	U	0.0100					0.000494	0	10	

The following samples were analyzed in this batch: HS19080113-06 HS19080113-07 HS19080113-08 HS19080113-09 HS19080113-10 HS19080113-11

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080113

QC BATCH REPORT

Batch ID: 143759 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-143759** Units: **ug/L** Analysis Date: **05-Aug-2019 13:03**
Client ID: Run ID: **SV-7_343719** SeqNo: **5197915** PrepDate: **05-Aug-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	U	0.20								
2,4-Dimethylphenol	U	0.20								
2,4-Dinitrotoluene	U	0.20								
2,6-Dinitrotoluene	U	0.20								
2-Chloronaphthalene	U	0.20								
2-Methylnaphthalene	U	0.10								
4,6-Dinitro-2-methylphenol	U	0.20								
4-Nitrophenol	U	1.0								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Benz(a)anthracene	U	0.10								
Benzo(a)pyrene	U	0.10								
Bis(2-chloroethoxy)methane	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Chrysene	U	0.10								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Nitrobenzene	U	0.20								
N-Nitrosodiphenylamine	U	0.20								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*2.803*	*0.20*	*5*	*0*	*56.1*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.478*	*0.20*	*5*	*0*	*89.6*	*40 - 125*				
Surr: 2-Fluorophenol	*3.943*	*0.20*	*5*	*0*	*78.9*	*20 - 120*				
Surr: 4-Terphenyl-d14	*3.689*	*0.20*	*5*	*0*	*73.8*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.625*	*0.20*	*5*	*0*	*92.5*	*41 - 120*				
Surr: Phenol-d6	*4.474*	*0.20*	*5*	*0*	*89.5*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080113

QC BATCH REPORT

Batch ID: 143759 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCS Sample ID: **LCS-143759** Units: **ug/L** Analysis Date: **05-Aug-2019 13:23**
Client ID: Run ID: **SV-7_343719** SeqNo: **5197916** PrepDate: **05-Aug-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.596	0.20	5	0	91.9	39 - 127				
2,4-Dimethylphenol	4.075	0.20	5	0	81.5	35 - 120				
2,4-Dinitrotoluene	4.768	0.20	5	0	95.4	50 - 122				
2,6-Dinitrotoluene	4.413	0.20	5	0	88.3	50 - 120				
2-Chloronaphthalene	4.117	0.20	5	0	82.3	50 - 120				
2-Methylnaphthalene	4.007	0.10	5	0	80.1	50 - 120				
4,6-Dinitro-2-methylphenol	3.484	0.20	5	0	69.7	25 - 121				
4-Nitrophenol	3.601	1.0	5	0	72.0	30 - 130				
Acenaphthene	4.114	0.10	5	0	82.3	45 - 120				
Acenaphthylene	4.278	0.10	5	0	85.6	47 - 120				
Anthracene	3.67	0.10	5	0	73.4	45 - 120				
Benz(a)anthracene	3.909	0.10	5	0	78.2	40 - 120				
Benzo(a)pyrene	3.355	0.10	5	0	67.1	45 - 120				
Bis(2-chloroethoxy)methane	3.992	0.20	5	0	79.8	45 - 120				
Bis(2-ethylhexyl)phthalate	4.151	0.20	5	0	83.0	40 - 139				
Chrysene	3.817	0.10	5	0	76.3	43 - 120				
Dibenzofuran	4.17	0.10	5	0	83.4	50 - 120				
Di-n-butyl phthalate	4.069	0.20	5	0	81.4	45 - 123				
Fluoranthene	3.867	0.10	5	0	77.3	45 - 125				
Fluorene	4.032	0.10	5	0	80.6	49 - 120				
Naphthalene	4.025	0.10	5	0	80.5	45 - 120				
Nitrobenzene	4.643	0.20	5	0	92.9	44 - 120				
N-Nitrosodiphenylamine	4.413	0.20	5	0	88.3	40 - 125				
Pentachlorophenol	2.175	0.20	5	0	43.5	19 - 121				
Phenanthrene	3.605	0.10	5	0	72.1	45 - 121				
Phenol	4.362	0.20	5	0	87.2	20 - 124				
Pyrene	4.031	0.10	5	0	80.6	40 - 130				
Surr: 2,4,6-Tribromophenol	*3.862*	*0.20*	*5*	*0*	*77.2*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.737*	*0.20*	*5*	*0*	*94.7*	*40 - 125*				
Surr: 2-Fluorophenol	*4.407*	*0.20*	*5*	*0*	*88.1*	*20 - 120*				
Surr: 4-Terphenyl-d14	*3.975*	*0.20*	*5*	*0*	*79.5*	*40 - 135*				
Surr: Nitrobenzene-d5	*5.04*	*0.20*	*5*	*0*	*101*	*41 - 120*				
Surr: Phenol-d6	*4.673*	*0.20*	*5*	*0*	*93.5*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080113

QC BATCH REPORT

Batch ID: 143759 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MS Sample ID: **HS19080113-10MS** Units: **ug/L** Analysis Date: **06-Aug-2019 19:49**
Client ID: **WG-1620-MW67B-20190731** Run ID: **SV-7_343746** SeqNo: **5199678** PrepDate: **05-Aug-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	3.613	0.20	5	0	72.3	39 - 127				
2,4-Dimethylphenol	2.852	0.20	5	0	57.0	35 - 120				
2,4-Dinitrotoluene	1.958	0.20	5	0	39.2	50 - 122				S
2,6-Dinitrotoluene	2.042	0.20	5	0	40.8	50 - 120				S
2-Chloronaphthalene	2.937	0.20	5	0	58.7	50 - 120				
2-Methylnaphthalene	4.153	0.10	5	0	83.1	50 - 120				
4,6-Dinitro-2-methylphenol	0.1571	0.20	5	0	3.14	25 - 121				JS
4-Nitrophenol	1.936	1.0	5	0	38.7	30 - 130				
Acenaphthene	2.841	0.10	5	0	56.8	45 - 120				
Acenaphthylene	2.95	0.10	5	0	59.0	47 - 120				
Anthracene	3.441	0.10	5	0	68.8	45 - 120				
Benz(a)anthracene	4.006	0.10	5	0	80.1	40 - 120				
Benzo(a)pyrene	5.331	0.10	5	0	107	45 - 120				
Bis(2-chloroethoxy)methane	2.695	0.20	5	0	53.9	45 - 120				
Bis(2-ethylhexyl)phthalate	4.215	0.20	5	0	84.3	40 - 139				
Chrysene	4.288	0.10	5	0	85.8	43 - 120				
Dibenzofuran	3.094	0.10	5	0	61.9	50 - 120				
Di-n-butyl phthalate	3.623	0.20	5	0	72.5	45 - 123				
Fluoranthene	3.444	0.10	5	0	68.9	45 - 125				
Fluorene	3.039	0.10	5	0	60.8	49 - 120				
Naphthalene	2.939	0.10	5	0.07887	57.2	45 - 120				
Nitrobenzene	3.422	0.20	5	0	68.4	44 - 120				
N-Nitrosodiphenylamine	4.15	0.20	5	0	83.0	40 - 125				
Pentachlorophenol	U	0.20	5	0	0	19 - 121				S
Phenanthrene	3.357	0.10	5	0	67.1	45 - 121				
Phenol	3.387	0.20	5	0	67.7	20 - 124				
Pyrene	4.191	0.10	5	0	83.8	40 - 130				
Surr: 2,4,6-Tribromophenol	*3.616*	*0.20*	*5*	*0*	*72.3*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.153*	*0.20*	*5*	*0*	*63.1*	*40 - 125*				
Surr: 2-Fluorophenol	*3.019*	*0.20*	*5*	*0*	*60.4*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.415*	*0.20*	*5*	*0*	*88.3*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.077*	*0.20*	*5*	*0*	*61.5*	*41 - 120*				
Surr: Phenol-d6	*3.356*	*0.20*	*5*	*0*	*67.1*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080113

QC BATCH REPORT

Batch ID: 143759 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MS Sample ID: **HS19080113-03MS** Units: **ug/L** Analysis Date: **05-Aug-2019 20:40**
Client ID: **WG-1620-MW65D-20190731** Run ID: **SV-7_343719** SeqNo: **5197927** PrepDate: **05-Aug-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.676	0.20	5	0	93.5	39 - 127				
2,4-Dimethylphenol	3.928	0.20	5	0	78.6	35 - 120				
2,4-Dinitrotoluene	4.766	0.20	5	0	95.3	50 - 122				
2,6-Dinitrotoluene	4.315	0.20	5	0	86.3	50 - 120				
2-Chloronaphthalene	4.479	0.20	5	0	89.6	50 - 120				
2-Methylnaphthalene	4.225	0.10	5	0	84.5	50 - 120				
4,6-Dinitro-2-methylphenol	1.14	0.20	5	0	22.8	25 - 121				S
4-Nitrophenol	3.606	1.0	5	0	72.1	30 - 130				
Acenaphthene	4.307	0.10	5	0	86.1	45 - 120				
Acenaphthylene	4.323	0.10	5	0	86.5	47 - 120				
Anthracene	3.817	0.10	5	0	76.3	45 - 120				
Benz(a)anthracene	4.159	0.10	5	0	83.2	40 - 120				
Benzo(a)pyrene	5.611	0.10	5	0	112	45 - 120				
Bis(2-chloroethoxy)methane	4.08	0.20	5	0	81.6	45 - 120				
Bis(2-ethylhexyl)phthalate	4.747	0.20	5	0.1617	91.7	40 - 139				
Chrysene	4.332	0.10	5	0	86.6	43 - 120				
Dibenzofuran	4.302	0.10	5	0	86.0	50 - 120				
Di-n-butyl phthalate	4.32	0.20	5	0	86.4	45 - 123				
Fluoranthene	4.236	0.10	5	0	84.7	45 - 125				
Fluorene	4.113	0.10	5	0	82.3	49 - 120				
Naphthalene	4.197	0.10	5	0	83.9	45 - 120				
Nitrobenzene	4.907	0.20	5	0	98.1	44 - 120				
N-Nitrosodiphenylamine	4.519	0.20	5	0	90.4	40 - 125				
Pentachlorophenol	2.946	0.20	5	0	58.9	19 - 121				
Phenanthrene	3.762	0.10	5	0	75.2	45 - 121				
Phenol	4.887	0.20	5	0	97.7	20 - 124				
Pyrene	4.342	0.10	5	0	86.8	40 - 130				
Surr: 2,4,6-Tribromophenol	*4.707*	*0.20*	*5*	*0*	*94.1*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.927*	*0.20*	*5*	*0*	*98.5*	*40 - 125*				
Surr: 2-Fluorophenol	*4.542*	*0.20*	*5*	*0*	*90.8*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.579*	*0.20*	*5*	*0*	*91.6*	*40 - 135*				
Surr: Nitrobenzene-d5	*5.221*	*0.20*	*5*	*0*	*104*	*41 - 120*				
Surr: Phenol-d6	*5.092*	*0.20*	*5*	*0*	*102*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080113

QC BATCH REPORT

Batch ID: 143759 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MS Sample ID: **HS19071516-01MS** Units: **ug/L** Analysis Date: **05-Aug-2019 15:55**
Client ID: Run ID: **SV-7_343719** SeqNo: **5197918** PrepDate: **05-Aug-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.399	0.20	5	0	88.0	39 - 127				
2,4-Dimethylphenol	3.824	0.20	5	0	76.5	35 - 120				
2,4-Dinitrotoluene	4.519	0.20	5	0	90.4	50 - 122				
2,6-Dinitrotoluene	4.262	0.20	5	0	85.2	50 - 120				
2-Chloronaphthalene	3.69	0.20	5	0	73.8	50 - 120				
2-Methylnaphthalene	3.94	0.10	5	0	78.8	50 - 120				
4,6-Dinitro-2-methylphenol	3.498	0.20	5	0	70.0	25 - 121				
4-Nitrophenol	4.386	1.0	5	0	87.7	30 - 130				
Acenaphthene	3.859	0.10	5	0	77.2	45 - 120				
Acenaphthylene	3.976	0.10	5	0	79.5	47 - 120				
Anthracene	3.561	0.10	5	0	71.2	45 - 120				
Benz(a)anthracene	3.993	0.10	5	0	79.9	40 - 120				
Benzo(a)pyrene	5.251	0.10	5	0	105	45 - 120				
Bis(2-chloroethoxy)methane	3.715	0.20	5	0	74.3	45 - 120				
Bis(2-ethylhexyl)phthalate	4.166	0.20	5	0	83.3	40 - 139				
Chrysene	3.847	0.10	5	0	76.9	43 - 120				
Dibenzofuran	3.979	0.10	5	0	79.6	50 - 120				
Di-n-butyl phthalate	4.067	0.20	5	0	81.3	45 - 123				
Fluoranthene	3.908	0.10	5	0	78.2	45 - 125				
Fluorene	3.81	0.10	5	0	76.2	49 - 120				
Naphthalene	3.784	0.10	5	0.04766	74.7	45 - 120				
Nitrobenzene	4.386	0.20	5	0	87.7	44 - 120				
N-Nitrosodiphenylamine	4.007	0.20	5	0	80.1	40 - 125				
Pentachlorophenol	2.421	0.20	5	0	48.4	19 - 121				
Phenanthrene	3.562	0.10	5	0	71.2	45 - 121				
Phenol	4.081	0.20	5	0	81.6	20 - 124				
Pyrene	4.149	0.10	5	0	83.0	40 - 130				
Surr: 2,4,6-Tribromophenol	*3.919*	*0.20*	*5*	*0*	*78.4*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.26*	*0.20*	*5*	*0*	*85.2*	*40 - 125*				
Surr: 2-Fluorophenol	*3.798*	*0.20*	*5*	*0*	*76.0*	*20 - 120*				
Surr: 4-Terphenyl-d14	*3.946*	*0.20*	*5*	*0*	*78.9*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.496*	*0.20*	*5*	*0*	*89.9*	*41 - 120*				
Surr: Phenol-d6	*4.355*	*0.20*	*5*	*0*	*87.1*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080113

QC BATCH REPORT

Batch ID: 143759 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MSD Sample ID: **HS19080113-10MSD** Units: **ug/L** Analysis Date: **06-Aug-2019 20:08**
Client ID: **WG-1620-MW67B-20190731** Run ID: **SV-7_343746** SeqNo: **5199679** PrepDate: **05-Aug-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	3.667	0.20	5	0	73.3	39 - 127	3.613	1.47	20	
2,4-Dimethylphenol	2.94	0.20	5	0	58.8	35 - 120	2.852	3.03	20	
2,4-Dinitrotoluene	1.928	0.20	5	0	38.6	50 - 122	1.958	1.51	20	S
2,6-Dinitrotoluene	2.041	0.20	5	0	40.8	50 - 120	2.042	0.0463	20	S
2-Chloronaphthalene	2.621	0.20	5	0	52.4	50 - 120	2.937	11.4	20	
2-Methylnaphthalene	4.352	0.10	5	0	87.0	50 - 120	4.153	4.67	20	
4,6-Dinitro-2-methylphenol	0.1604	0.20	5	0	3.21	25 - 121	0.1571	0	30	JS
4-Nitrophenol	7.878	1.0	5	0	158	30 - 130	1.936	121	20	SR
Acenaphthene	3.025	0.10	5	0	60.5	45 - 120	2.841	6.28	20	
Acenaphthylene	3.102	0.10	5	0	62.0	47 - 120	2.95	5.03	20	
Anthracene	3.501	0.10	5	0	70.0	45 - 120	3.441	1.73	20	
Benz(a)anthracene	3.825	0.10	5	0	76.5	40 - 120	4.006	4.62	20	
Benzo(a)pyrene	5.442	0.10	5	0	109	45 - 120	5.331	2.07	20	
Bis(2-chloroethoxy)methane	2.818	0.20	5	0	56.4	45 - 120	2.695	4.49	20	
Bis(2-ethylhexyl)phthalate	4.233	0.20	5	0	84.7	40 - 139	4.215	0.428	20	
Chrysene	4.383	0.10	5	0	87.7	43 - 120	4.288	2.19	20	
Dibenzofuran	3.285	0.10	5	0	65.7	50 - 120	3.094	5.97	20	
Di-n-butyl phthalate	3.876	0.20	5	0	77.5	45 - 123	3.623	6.75	20	
Fluoranthene	3.519	0.10	5	0	70.4	45 - 125	3.444	2.15	20	
Fluorene	3.179	0.10	5	0	63.6	49 - 120	3.039	4.5	20	
Naphthalene	3.058	0.10	5	0.07887	59.6	45 - 120	2.939	3.98	20	
Nitrobenzene	3.425	0.20	5	0	68.5	44 - 120	3.422	0.0745	20	
N-Nitrosodiphenylamine	4.252	0.20	5	0	85.0	40 - 125	4.15	2.43	20	
Pentachlorophenol	0.1573	0.20	5	0	3.15	19 - 121	0	0	20	JS
Phenanthrene	3.467	0.10	5	0	69.3	45 - 121	3.357	3.24	20	
Phenol	3.699	0.20	5	0	74.0	20 - 124	3.387	8.79	20	
Pyrene	4.308	0.10	5	0	86.2	40 - 130	4.191	2.74	20	
Surr: 2,4,6-Tribromophenol	*3.722*	*0.20*	*5*	*0*	*74.4*	*34 - 129*	*3.616*	*2.89*	*20*	
Surr: 2-Fluorobiphenyl	*3.234*	*0.20*	*5*	*0*	*64.7*	*40 - 125*	*3.153*	*2.54*	*20*	
Surr: 2-Fluorophenol	*3.12*	*0.20*	*5*	*0*	*62.4*	*20 - 120*	*3.019*	*3.3*	*20*	
Surr: 4-Terphenyl-d14	*4.422*	*0.20*	*5*	*0*	*88.4*	*40 - 135*	*4.415*	*0.152*	*20*	
Surr: Nitrobenzene-d5	*3.095*	*0.20*	*5*	*0*	*61.9*	*41 - 120*	*3.077*	*0.565*	*20*	
Surr: Phenol-d6	*3.408*	*0.20*	*5*	*0*	*68.2*	*20 - 120*	*3.356*	*1.52*	*20*	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080113

QC BATCH REPORT

Batch ID: 143759 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MSD Sample ID: **HS19080113-03MSD** Units: **ug/L** Analysis Date: **05-Aug-2019 20:59**
Client ID: **WG-1620-MW65D-20190731** Run ID: **SV-7_343719** SeqNo: **5197928** PrepDate: **05-Aug-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.528	0.20	5	0	90.6	39 - 127	4.676	3.22	20	
2,4-Dimethylphenol	3.961	0.20	5	0	79.2	35 - 120	3.928	0.822	20	
2,4-Dinitrotoluene	4.569	0.20	5	0	91.4	50 - 122	4.766	4.2	20	
2,6-Dinitrotoluene	4.034	0.20	5	0	80.7	50 - 120	4.315	6.73	20	
2-Chloronaphthalene	3.744	0.20	5	0	74.9	50 - 120	4.479	17.9	20	
2-Methylnaphthalene	4.133	0.10	5	0	82.7	50 - 120	4.225	2.19	20	
4,6-Dinitro-2-methylphenol	1.177	0.20	5	0	23.5	25 - 121	1.14	3.14	30	S
4-Nitrophenol	4.763	1.0	5	0	95.3	30 - 130	3.606	27.6	20	R
Acenaphthene	4.07	0.10	5	0	81.4	45 - 120	4.307	5.64	20	
Acenaphthylene	4.207	0.10	5	0	84.1	47 - 120	4.323	2.72	20	
Anthracene	3.8	0.10	5	0	76.0	45 - 120	3.817	0.46	20	
Benz(a)anthracene	4.432	0.10	5	0	88.6	40 - 120	4.159	6.35	20	
Benzo(a)pyrene	6.166	0.10	5	0	123	45 - 120	5.611	9.42	20	S
Bis(2-chloroethoxy)methane	4.019	0.20	5	0	80.4	45 - 120	4.08	1.5	20	
Bis(2-ethylhexyl)phthalate	4.852	0.20	5	0.1617	93.8	40 - 139	4.747	2.19	20	
Chrysene	4.549	0.10	5	0	91.0	43 - 120	4.332	4.9	20	
Dibenzofuran	4.121	0.10	5	0	82.4	50 - 120	4.302	4.3	20	
Di-n-butyl phthalate	4.609	0.20	5	0	92.2	45 - 123	4.32	6.47	20	
Fluoranthene	4.319	0.10	5	0	86.4	45 - 125	4.236	1.94	20	
Fluorene	3.934	0.10	5	0	78.7	49 - 120	4.113	4.45	20	
Naphthalene	4.063	0.10	5	0	81.3	45 - 120	4.197	3.24	20	
Nitrobenzene	4.783	0.20	5	0	95.7	44 - 120	4.907	2.57	20	
N-Nitrosodiphenylamine	4.317	0.20	5	0	86.3	40 - 125	4.519	4.59	20	
Pentachlorophenol	2.948	0.20	5	0	59.0	19 - 121	2.946	0.0694	20	
Phenanthrene	3.74	0.10	5	0	74.8	45 - 121	3.762	0.598	20	
Phenol	4.613	0.20	5	0	92.3	20 - 124	4.887	5.78	20	
Pyrene	4.298	0.10	5	0	86.0	40 - 130	4.342	1.03	20	
Surr: 2,4,6-Tribromophenol	*4.088*	*0.20*	*5*	*0*	*81.8*	*34 - 129*	*4.707*	*14.1*	*20*	
Surr: 2-Fluorobiphenyl	*4.35*	*0.20*	*5*	*0*	*87.0*	*40 - 125*	*4.927*	*12.4*	*20*	
Surr: 2-Fluorophenol	*3.992*	*0.20*	*5*	*0*	*79.8*	*20 - 120*	*4.542*	*12.9*	*20*	
Surr: 4-Terphenyl-d14	*4.195*	*0.20*	*5*	*0*	*83.9*	*40 - 135*	*4.579*	*8.76*	*20*	
Surr: Nitrobenzene-d5	*4.806*	*0.20*	*5*	*0*	*96.1*	*41 - 120*	*5.221*	*8.28*	*20*	
Surr: Phenol-d6	*4.535*	*0.20*	*5*	*0*	*90.7*	*20 - 120*	*5.092*	*11.6*	*20*	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080113

QC BATCH REPORT

Batch ID: 143759 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MSD Sample ID: **HS19071516-01MSD** Units: **ug/L** Analysis Date: **05-Aug-2019 16:14**
Client ID: Run ID: **SV-7_343719** SeqNo: **5197919** PrepDate: **05-Aug-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.873	0.20	5	0	97.5	39 - 127	4.399	10.2	20	
2,4-Dimethylphenol	4.141	0.20	5	0	82.8	35 - 120	3.824	7.97	20	
2,4-Dinitrotoluene	4.836	0.20	5	0	96.7	50 - 122	4.519	6.77	20	
2,6-Dinitrotoluene	4.569	0.20	5	0	91.4	50 - 120	4.262	6.96	20	
2-Chloronaphthalene	4.261	0.20	5	0	85.2	50 - 120	3.69	14.4	20	
2-Methylnaphthalene	4.215	0.10	5	0	84.3	50 - 120	3.94	6.75	20	
4,6-Dinitro-2-methylphenol	3.803	0.20	5	0	76.1	25 - 121	3.498	8.35	30	
4-Nitrophenol	4.882	1.0	5	0	97.6	30 - 130	4.386	10.7	20	
Acenaphthene	4.269	0.10	5	0	85.4	45 - 120	3.859	10.1	20	
Acenaphthylene	4.432	0.10	5	0	88.6	47 - 120	3.976	10.9	20	
Anthracene	3.893	0.10	5	0	77.9	45 - 120	3.561	8.92	20	
Benz(a)anthracene	4.137	0.10	5	0	82.7	40 - 120	3.993	3.54	20	
Benzo(a)pyrene	5.708	0.10	5	0	114	45 - 120	5.251	8.34	20	
Bis(2-chloroethoxy)methane	4.091	0.20	5	0	81.8	45 - 120	3.715	9.62	20	
Bis(2-ethylhexyl)phthalate	4.551	0.20	5	0	91.0	40 - 139	4.166	8.83	20	
Chrysene	4.159	0.10	5	0	83.2	43 - 120	3.847	7.8	20	
Dibenzofuran	4.355	0.10	5	0	87.1	50 - 120	3.979	9.04	20	
Di-n-butyl phthalate	4.434	0.20	5	0	88.7	45 - 123	4.067	8.63	20	
Fluoranthene	4.184	0.10	5	0	83.7	45 - 125	3.908	6.82	20	
Fluorene	4.148	0.10	5	0	83.0	49 - 120	3.81	8.5	20	
Naphthalene	4.222	0.10	5	0.04766	83.5	45 - 120	3.784	11	20	
Nitrobenzene	4.847	0.20	5	0	96.9	44 - 120	4.386	9.97	20	
N-Nitrosodiphenylamine	4.594	0.20	5	0	91.9	40 - 125	4.007	13.6	20	
Pentachlorophenol	2.472	0.20	5	0	49.4	19 - 121	2.421	2.08	20	
Phenanthrene	3.882	0.10	5	0	77.6	45 - 121	3.562	8.6	20	
Phenol	4.803	0.20	5	0	96.1	20 - 124	4.081	16.2	20	
Pyrene	4.443	0.10	5	0	88.9	40 - 130	4.149	6.84	20	
Surr: 2,4,6-Tribromophenol	*4.157*	*0.20*	*5*	*0*	*83.1*	*34 - 129*	*3.919*	*5.88*	*20*	
Surr: 2-Fluorobiphenyl	*4.613*	*0.20*	*5*	*0*	*92.3*	*40 - 125*	*4.26*	*7.95*	*20*	
Surr: 2-Fluorophenol	*4.256*	*0.20*	*5*	*0*	*85.1*	*20 - 120*	*3.798*	*11.4*	*20*	
Surr: 4-Terphenyl-d14	*4.073*	*0.20*	*5*	*0*	*81.5*	*40 - 135*	*3.946*	*3.18*	*20*	
Surr: Nitrobenzene-d5	*4.919*	*0.20*	*5*	*0*	*98.4*	*41 - 120*	*4.496*	*8.99*	*20*	
Surr: Phenol-d6	*4.413*	*0.20*	*5*	*0*	*88.3*	*20 - 120*	*4.355*	*1.3*	*20*	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080113

QC BATCH REPORT

Batch ID: 143759 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

The following samples were analyzed in this batch:

HS19080113-01	HS19080113-02	HS19080113-03	HS19080113-04
HS19080113-05	HS19080113-06	HS19080113-07	HS19080113-08
HS19080113-09	HS19080113-10	HS19080113-11	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080113

QC BATCH REPORT

Batch ID: R343626 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-190803** Units: **ug/L** Analysis Date: **03-Aug-2019 11:32**
Client ID: Run ID: **VOA4_343626** SeqNo: **5195368** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*49.14*	*1.0*	*50*	*0*	*98.3*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*47.6*	*1.0*	*50*	*0*	*95.2*	*82 - 115*				
Surr: Dibromofluoromethane	*47.67*	*1.0*	*50*	*0*	*95.3*	*73 - 126*				
Surr: Toluene-d8	*52.25*	*1.0*	*50*	*0*	*104*	*81 - 120*				

LCS Sample ID: **VLCSW-190803** Units: **ug/L** Analysis Date: **03-Aug-2019 10:43**
Client ID: Run ID: **VOA4_343626** SeqNo: **5195366** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	17.53	1.0	20	0	87.7	70 - 124				
Benzene	17.53	1.0	20	0	87.6	74 - 120				
Chlorobenzene	19.08	1.0	20	0	95.4	76 - 113				
Ethylbenzene	20.7	1.0	20	0	104	77 - 117				
Methylene chloride	17.58	2.0	20	0	87.9	70 - 127				
Toluene	19.46	1.0	20	0	97.3	77 - 118				
Xylenes, Total	62.78	1.0	60	0	105	75 - 122				
Surr: 1,2-Dichloroethane-d4	*46.06*	*1.0*	*50*	*0*	*92.1*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*50.13*	*1.0*	*50*	*0*	*100*	*82 - 115*				
Surr: Dibromofluoromethane	*46.09*	*1.0*	*50*	*0*	*92.2*	*73 - 126*				
Surr: Toluene-d8	*52.04*	*1.0*	*50*	*0*	*104*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080113

QC BATCH REPORT

Batch ID: R343626 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS19080113-10MS** Units: **ug/L** Analysis Date: **03-Aug-2019 15:14**
Client ID: **WG-1620-MW67B-20190731** Run ID: **VOA4_343626** SeqNo: **5195377** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	14.8	1.0	20	0	74.0	70 - 127				
Benzene	15.06	1.0	20	0	75.3	70 - 127				
Chlorobenzene	16.65	1.0	20	0	83.3	70 - 114				
Ethylbenzene	17.5	1.0	20	0	87.5	70 - 124				
Methylene chloride	14.86	2.0	20	0	74.3	70 - 128				
Toluene	16.77	1.0	20	0	83.8	70 - 123				
Xylenes, Total	53.32	1.0	60	0	88.9	70 - 130				
Surr: 1,2-Dichloroethane-d4	*47.56*	*1.0*	*50*	*0*	*95.1*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*48.65*	*1.0*	*50*	*0*	*97.3*	*81 - 113*				
Surr: Dibromofluoromethane	*47.61*	*1.0*	*50*	*0*	*95.2*	*77 - 123*				
Surr: Toluene-d8	*52.52*	*1.0*	*50*	*0*	*105*	*82 - 127*				

MSD Sample ID: **HS19080113-10MSD** Units: **ug/L** Analysis Date: **03-Aug-2019 15:38**
Client ID: **WG-1620-MW67B-20190731** Run ID: **VOA4_343626** SeqNo: **5195378** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	14.38	1.0	20	0	71.9	70 - 127	14.8	2.86	20	
Benzene	14.66	1.0	20	0	73.3	70 - 127	15.06	2.74	20	
Chlorobenzene	16.08	1.0	20	0	80.4	70 - 114	16.65	3.48	20	
Ethylbenzene	17.23	1.0	20	0	86.1	70 - 124	17.5	1.53	20	
Methylene chloride	14.35	2.0	20	0	71.7	70 - 128	14.86	3.49	20	
Toluene	16.37	1.0	20	0	81.8	70 - 123	16.77	2.43	20	
Xylenes, Total	51.69	1.0	60	0	86.1	70 - 130	53.32	3.11	20	
Surr: 1,2-Dichloroethane-d4	*47.49*	*1.0*	*50*	*0*	*95.0*	*70 - 126*	*47.56*	*0.156*	*20*	
Surr: 4-Bromofluorobenzene	*48.71*	*1.0*	*50*	*0*	*97.4*	*81 - 113*	*48.65*	*0.105*	*20*	
Surr: Dibromofluoromethane	*47.86*	*1.0*	*50*	*0*	*95.7*	*77 - 123*	*47.61*	*0.52*	*20*	
Surr: Toluene-d8	*52.01*	*1.0*	*50*	*0*	*104*	*82 - 127*	*52.52*	*0.972*	*20*	

The following samples were analyzed in this batch: HS19080113-01 HS19080113-02 HS19080113-04 HS19080113-05 HS19080113-06 HS19080113-10

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080113

QC BATCH REPORT

Batch ID: R343632 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-190803** Units: **ug/L** Analysis Date: **03-Aug-2019 23:50**
Client ID: Run ID: **VOA4_343632** SeqNo: **5195438** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*48.83*	*1.0*	*50*	*0*	*97.7*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*47.55*	*1.0*	*50*	*0*	*95.1*	*82 - 115*				
Surr: Dibromofluoromethane	*48.6*	*1.0*	*50*	*0*	*97.2*	*73 - 126*				
Surr: Toluene-d8	*52.28*	*1.0*	*50*	*0*	*105*	*81 - 120*				

LCS Sample ID: **VLCSW-190803** Units: **ug/L** Analysis Date: **03-Aug-2019 23:01**
Client ID: Run ID: **VOA4_343632** SeqNo: **5195436** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.76	1.0	20	0	83.8	70 - 124				
Benzene	17.21	1.0	20	0	86.0	74 - 120				
Chlorobenzene	18.92	1.0	20	0	94.6	76 - 113				
Ethylbenzene	19.92	1.0	20	0	99.6	77 - 117				
Methylene chloride	16.69	2.0	20	0	83.4	70 - 127				
Toluene	18.81	1.0	20	0	94.1	77 - 118				
Vinyl chloride	16.62	1.0	20	0	83.1	70 - 130				
Xylenes, Total	59.58	1.0	60	0	99.3	75 - 122				
Surr: 1,2-Dichloroethane-d4	*45.68*	*1.0*	*50*	*0*	*91.4*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*49.82*	*1.0*	*50*	*0*	*99.6*	*82 - 115*				
Surr: Dibromofluoromethane	*46.67*	*1.0*	*50*	*0*	*93.3*	*73 - 126*				
Surr: Toluene-d8	*52.75*	*1.0*	*50*	*0*	*106*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080113

QC BATCH REPORT

Batch ID: R343632 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS19080113-07MS** Units: **ug/L** Analysis Date: **04-Aug-2019 02:45**
Client ID: **WG-1620-MW22AR-20190731** Run ID: **VOA4_343632** SeqNo: **5195445** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Dichloroethane	15.58	1.0	20	0	77.9	70 - 127				
Benzene	16.65	1.0	20	0	83.2	70 - 127				
Chlorobenzene	17.56	1.0	20	0	87.8	70 - 114				
Ethylbenzene	19.01	1.0	20	0	95.0	70 - 124				
Methylene chloride	16.97	2.0	20	0	84.9	70 - 128				
Toluene	18.42	1.0	20	0	92.1	70 - 123				
Vinyl chloride	17.57	1.0	20	0	87.9	70 - 130				
Xylenes, Total	56.24	1.0	60	0	93.7	70 - 130				
Surr: 1,2-Dichloroethane-d4	*46.2*	*1.0*	*50*	*0*	*92.4*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.44*	*1.0*	*50*	*0*	*98.9*	*81 - 113*				
Surr: Dibromofluoromethane	*47.38*	*1.0*	*50*	*0*	*94.8*	*77 - 123*				
Surr: Toluene-d8	*52.67*	*1.0*	*50*	*0*	*105*	*82 - 127*				

MSD Sample ID: **HS19080113-07MSD** Units: **ug/L** Analysis Date: **04-Aug-2019 03:10**
Client ID: **WG-1620-MW22AR-20190731** Run ID: **VOA4_343632** SeqNo: **5195446** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Dichloroethane	15.43	1.0	20	0	77.1	70 - 127	15.58	0.975	20	
Benzene	16.18	1.0	20	0	80.9	70 - 127	16.65	2.85	20	
Chlorobenzene	17.27	1.0	20	0	86.3	70 - 114	17.56	1.65	20	
Ethylbenzene	19.24	1.0	20	0	96.2	70 - 124	19.01	1.23	20	
Methylene chloride	15.86	2.0	20	0	79.3	70 - 128	16.97	6.8	20	
Toluene	17.3	1.0	20	0	86.5	70 - 123	18.42	6.27	20	
Vinyl chloride	16.33	1.0	20	0	81.7	70 - 130	17.57	7.31	20	
Xylenes, Total	56.89	1.0	60	0	94.8	70 - 130	56.24	1.15	20	
Surr: 1,2-Dichloroethane-d4	*46.64*	*1.0*	*50*	*0*	*93.3*	*70 - 126*	*46.2*	*0.937*	*20*	
Surr: 4-Bromofluorobenzene	*50.18*	*1.0*	*50*	*0*	*100*	*81 - 113*	*49.44*	*1.47*	*20*	
Surr: Dibromofluoromethane	*45.82*	*1.0*	*50*	*0*	*91.6*	*77 - 123*	*47.38*	*3.35*	*20*	
Surr: Toluene-d8	*50.65*	*1.0*	*50*	*0*	*101*	*82 - 127*	*52.67*	*3.91*	*20*	

The following samples were analyzed in this batch: HS19080113-07 HS19080113-08 HS19080113-09 HS19080113-11 HS19080113-12

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080113

QC BATCH REPORT

Batch ID: R343643 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-190803** Units: **ug/L** Analysis Date: **03-Aug-2019 11:02**
Client ID: Run ID: **VOA2_343643** SeqNo: **5195692** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*49.14*	*1.0*	*50*	*0*	*98.3*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*49.78*	*1.0*	*50*	*0*	*99.6*	*82 - 115*				
Surr: Dibromofluoromethane	*52.08*	*1.0*	*50*	*0*	*104*	*73 - 126*				
Surr: Toluene-d8	*51.74*	*1.0*	*50*	*0*	*103*	*81 - 120*				

LCS Sample ID: **VLCSW-190803** Units: **ug/L** Analysis Date: **03-Aug-2019 10:38**
Client ID: Run ID: **VOA2_343643** SeqNo: **5195691** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	18.9	1.0	20	0	94.5	70 - 124				
Benzene	19.91	1.0	20	0	99.5	74 - 120				
Chlorobenzene	20.14	1.0	20	0	101	76 - 113				
Ethylbenzene	20.43	1.0	20	0	102	77 - 117				
Methylene chloride	20.9	2.0	20	0	105	70 - 127				
Toluene	20.47	1.0	20	0	102	77 - 118				
Xylenes, Total	61.73	1.0	60	0	103	75 - 122				
Surr: 1,2-Dichloroethane-d4	*52.93*	*1.0*	*50*	*0*	*106*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*49.55*	*1.0*	*50*	*0*	*99.1*	*82 - 115*				
Surr: Dibromofluoromethane	*50.65*	*1.0*	*50*	*0*	*101*	*73 - 126*				
Surr: Toluene-d8	*49.94*	*1.0*	*50*	*0*	*99.9*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19080113

QC BATCH REPORT

Batch ID: R343643 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS19080113-03MS** Units: **ug/L** Analysis Date: **03-Aug-2019 15:07**
Client ID: **WG-1620-MW65D-20190731** Run ID: **VOA2_343643** SeqNo: **5195702** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	15.74	1.0	20	0	78.7	70 - 127				
Benzene	17.04	1.0	20	0	85.2	70 - 127				
Chlorobenzene	17.56	1.0	20	0	87.8	70 - 114				
Ethylbenzene	17.79	1.0	20	0	89.0	70 - 124				
Methylene chloride	16.71	2.0	20	0	83.5	70 - 128				
Toluene	17.73	1.0	20	0	88.7	70 - 123				
Xylenes, Total	54.55	1.0	60	0	90.9	70 - 130				
Surr: 1,2-Dichloroethane-d4	*50.62*	*1.0*	*50*	*0*	*101*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*48.95*	*1.0*	*50*	*0*	*97.9*	*81 - 113*				
Surr: Dibromofluoromethane	*50.18*	*1.0*	*50*	*0*	*100*	*77 - 123*				
Surr: Toluene-d8	*50.5*	*1.0*	*50*	*0*	*101*	*82 - 127*				

MSD Sample ID: **HS19080113-03MSD** Units: **ug/L** Analysis Date: **03-Aug-2019 15:31**
Client ID: **WG-1620-MW65D-20190731** Run ID: **VOA2_343643** SeqNo: **5195703** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	15.52	1.0	20	0	77.6	70 - 127	15.74	1.42	20	
Benzene	16.55	1.0	20	0	82.7	70 - 127	17.04	2.94	20	
Chlorobenzene	17.09	1.0	20	0	85.4	70 - 114	17.56	2.75	20	
Ethylbenzene	17.37	1.0	20	0	86.8	70 - 124	17.79	2.42	20	
Methylene chloride	16.66	2.0	20	0	83.3	70 - 128	16.71	0.3	20	
Toluene	17.45	1.0	20	0	87.3	70 - 123	17.73	1.61	20	
Xylenes, Total	52.42	1.0	60	0	87.4	70 - 130	54.55	3.99	20	
Surr: 1,2-Dichloroethane-d4	*50.41*	*1.0*	*50*	*0*	*101*	*70 - 126*	*50.62*	*0.421*	*20*	
Surr: 4-Bromofluorobenzene	*48.65*	*1.0*	*50*	*0*	*97.3*	*81 - 113*	*48.95*	*0.612*	*20*	
Surr: Dibromofluoromethane	*50.46*	*1.0*	*50*	*0*	*101*	*77 - 123*	*50.18*	*0.568*	*20*	
Surr: Toluene-d8	*49.74*	*1.0*	*50*	*0*	*99.5*	*82 - 127*	*50.5*	*1.53*	*20*	

The following samples were analyzed in this batch: HS19080113-03

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS19080113**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
Oklahoma	2018-156	31-Aug-2019
Texas	TX104704231-19-23	30-Apr-2020

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS19080113

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS19080113-01	WG-1620-MW36D-20190731	Login	02/08/2019 12:41:31	JRM	MET001
HS19080113-01	WG-1620-MW36D-20190731	Login	02/08/2019 12:41:31	JRM	EXT002
HS19080113-01	WG-1620-MW36D-20190731	Login	02/08/2019 12:41:31	JRM	VOA088

Sample Receipt Checklist

Client Name: PBW
Work Order: HS19080113
Date/Time Received: **02-Aug-2019 12:00**
Received by: **JRM**

Checklist completed by: *Jared R. Makan* eSignature 2-Aug-2019 Date
Reviewed by: *Dane J. Wacasey* eSignature 6-Aug-2019 Date

Matrices: **Water**
Carrier name: **Client**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	2 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:196136, 196124
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	0.3c/0.3c, 0.5c/0.5c, 0.6c/0.6c UC/C	IR25	
Cooler(s)/Kit(s):	45155, 444481, 7183		
Date/Time sample(s) sent to storage:	08/02/2019 14:10		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

Page 1 of 2

COC ID: 196136

HS19080113

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-07-Rev0 SR 92688
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address	

A	8260_LL_W (5632528 Volatile Organics Site Specific)
B	8260_LL_W (5632528 VOC Site Specific + V.C.)
C	8270_LOW_W (5632532 SemiVolatiles Site specific)
D	ICP_TW (5636002 5652646 Metals - As, Pb)
E	MS/MSD
F	
G	
H	
I	
J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~WG-1620-TB0-201801~~			Water	1	2		X									
2	WG-1620-MW36D-20190731	7-31-19	0740			6	X		X	X							
3	WG-1620-MW38A-20190731		0835			6	X		X	X							
4	WG-1620-MW65D-20190731		0945			12	X		X	X	X						
5	WG-1620-MW66D-20190731		1045			6	X		X	X							
6	WG-1620-MW59D-20190731		1150			6	X		X	X							
7	WG-1620-FD05-20190731		1150			6	X		X	X							
8	WG-1620-MW22AR-20190731		1305			6	X		X	X							
9	WG-1620-MW22BR-20190731		1350			6	X		X	X							
10	WG-1620-MW88C-20190731		1545			6	X		X	X							

Sampler(s) Please Print & Sign: JOHN BRAYTON

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: Date: 8-2-19 Time: 12:00 Received by:

Relinquished by: Date: 8/2/19 Time: 12:00 Received by (Laboratory): J. Munguia

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.
	UC
45156	0.3
44481	0.5
7183	0.6
1225	CF 0.0

QC Package: (Check One Box Below)

- [ ] Level II Std QC
- [ ] Level III Std QC/Raw Data
- [ ] Level IV SW846/CLP
- [ ] Other
- [X] TRRP Checklist
- [ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Holland, MI +1 616 399 6070

Chain of Custody Form

Page 2 of 2

COC ID: 196124

HS19080113

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-07-Rev0 SR 92688
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- AP
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address	

A: 8260_LL_W (5632528 Volatile Organics Site Specific)
B: 8260_LL_W (5632528 VOC Site Specific + V.C.)
C: 8270_LOW_W (5632532 SemiVolatiles Site specific)
D: ICP_TW (5636002 5652646 Metals - As, Pb)
E: MS/MSD
F:
G:
H:
I:
J:

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~WG-1620-TB0 -20190~~			Water	1	2		X									
2	WG-1620-MW67B-20190731	7-31-19	1645			12	X		X	X	X						
3	WG-1620-MW49A-20190731	↓	1745			6		X	X	X							
4	WG-1620-TB06-20190731					2		X									
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: JOHN BRAYTON

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 hour [ ] Other

Results Due Date:

Relinquished by: Date: 8-2-19 Time: 12:00 Received by:

Relinquished by: Date: 8/2/19 Time: 12:00 Received by (Laboratory):

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[X] TRRP Checklist
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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JANUARY-MARCH 2020

Memorandum

March 13, 2020
Revision: April 29, 2020

To:	Eric Matzner	Ref. No.:	11183954-1620
From:	Chris G. Knight/eew/557-NF	Tel:	512-506-8803
cc:	Jesse Orth, Jon Lang; Julie Lidstone		

Subject: **Data Usability Summary**
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January-February 2020

1. Scope of Data Usability Study

This document details a Data Usability Summary (DUS) of analytical results for groundwater samples collected in support of the HWPW - Site-Wide Monitoring at the Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works site during January-February 2020. Samples were submitted to ALS Environmental (ALS), located in Houston, Texas and are reported in data packages HS20010407, HS20010442, HS20010596, HS20010713, HS20010767, HS20010930, HS20010958, HS20011116, HS20011249, and HS20020456. The intended use of the data is to support the HWPW - Site-Wide Monitoring at the site by providing current concentration of chemicals of concern.

Data were reviewed and validated by Chris G. Knight of GHD, in accordance with Title 30 of the Texas Administrative Code Section 350.54 (30 TAC 350.54) as described in the Texas Commission on Environmental Quality (TCEQ) Regulatory Guidance document entitled "Review and Reporting of COC Concentration Data under TRRP", (RG-366/TRRP-13), revised May 2010, herein referred to as "TRRP-13 Guidance". Evaluation of the data was based on information obtained from the chain of custody forms, the finished report forms, method blank data, recovery data from surrogate spikes/laboratory control samples (LCS)/matrix spikes (MS), duplicate data, field quality assurance/quality control (QA/QC) samples, the laboratory review checklists (LRC), and the laboratory exception reports (ER).

A sample collection and analysis summary is presented in Table 1. This summary provides a cross-reference of field sample identification numbers and location identification. Each sample is assigned a unique field identification number.

The validated sample results are presented in Table 2. A summary of the analytical methodology is presented in Table 3.

2. Laboratory Qualifications

The Laboratory's quality assurance program is consistent with the quality standards outlined in the National Environmental Laboratory Accreditation Program (NELAP). This laboratory was accredited under Texas Certification number # TX104704231 at the time the analysis was performed and the certificate is included in Attachment A.

3. Project Objectives

3.1 Sampling/Analytical QA/QC Objectives

The QA/QC program was designed to identify contamination resulting from the sampling, sample transport and analytical process through the analysis of trip blank samples, field blank samples, field duplicate sample sets, and method blanks. The QA/QC program was designed to evaluate the quality of the resulting data with respect to bias and precision through analysis of LCS, MS, and duplicate analyses.

4. Data Review/Validation Results

4.1 Sample Holding Time and Preservation

Samples were shipped with a chain of custody and the paper work was filled out properly with the following exceptions:

i) HS20010407 – The chain of custody listed nine sample containers submitted for all samples, however only six were received. No sample vials for total petroleum hydrocarbons (TPH) were received for WG1620-MW49A-20200107 and WG-1620-MW-80B-20200107. The laboratory logged in two sample vials for volatile organic compounds (VOCs) and one sample vial TPH analyses. The sample date differed on the chain of custody from the sample date listed on the sample container for sample WG-1620-FB03-20200109. The sample date listed on the sample container was used for login. No further actions were required.

ii) HS20010442 - The sample time differed on the chain of custody from the sample time listed on the sample container for sample WG-1620 FB 0420200110. The sample time listed on the chain of custody was used for login. No further action was required.

iii) HS20010713 - The sample time differed on the chain of custody from the sample time listed on the sample container for sample WG-1620-MW25C-20200115. The sample time listed on the chain of custody was used for login. No further action was required.

iv) HS20010767 – The following samples were received but not listed on the chain of custody: MW48C (01/16/20 10:20), MW47C (01/16/20 11:05), and MW61A MS & MSD (01/16/20 12:00). The laboratory added these samples to the chain of custody. No further actions were required.

v) HS20010958 – WG-1620-MW38B-20200121 was misidentified on the chain of custody as WG-1620-MW38C-20200121. The sample label was used for login. No further action was required.

All samples were properly preserved, delivered on ice, and stored by the laboratory at the required temperature (0-6°C).

i) WG-1620-MW18C-20200108 was received in a properly preserved sample container for metals analysis. The included preservative was insufficient to reduce the pH to <2. Additional preservative was added by the laboratory bringing the pH to <2. No further action was required.

The sample chain of custody documents and the analytical report were used to determine sample holding times. All samples were prepared and analyzed within the required holding times.

4.2 Sample Containers

Sample containers used were certified pre-cleaned glass and plastic containers provided by the laboratory. These containers meet or exceed analyte specifications established in the United States Environmental Protection Agency (USEPA) *Specifications and Guidance for Contaminant-free Sample Containers*.

4.3 Calibrations

According to the LRC, initial calibration and continuing calibration data met the criteria for the selected method.

4.4 Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures. As these were not discrete samples handled in the field, these blanks are not listed on the sample identification cross-reference list found in the data packages.

For this study, laboratory method blanks were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch and results are reported in the laboratory data packages.

The method blank results were non-detect or below the method quantitation limit (MQL), indicating that laboratory contamination was not a factor for this investigation.

4.5 Internal Standard and Surrogate Spike Recoveries

Recoveries of internal standards are addressed in the LRC of the data packages. All internal standard recoveries associated with the compounds of interest were acceptable per the LRC.

In accordance with the methods employed, all samples, blanks, and QC samples analyzed for VOCs, semi-volatile organic compounds (SVOCs), and TPH are spiked with surrogate compounds prior to sample analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project. Each individual surrogate compound is expected to meet the laboratory control limits. According to the TRRP-13 Guidelines, one outlying surrogate is acceptable for methods with

multiple surrogate spike compounds as long as the recovery is at least ten percent. Sample analyzed at elevated sample dilutions (five times or greater) were not assessed.

Surrogate recoveries were assessed against laboratory control limits and/or the guidance in TRRP-13. All surrogate recoveries met the above criteria.

4.6 Laboratory Control Sample Analysis

LCS or LCS/laboratory control sample duplicate (LCSD) are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects. The relative percent difference (RPD) of the LCS/LCSD recoveries is used to evaluate analytical precision. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project.

For this study, LCS or LCS/LCSD were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch.

The LCS or LCS/LCSD contained all analytes specified in the methods. All LCS recoveries and/or RPDs were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision (where applicable) with the following exceptions (see Table 4):

i) One LCS was reported with an elevated recovery for vinyl chloride. The associated sample results was non-detect and not affected by the indicated high bias. No further action was required.

ii) One LCS was reported with elevated recoveries for 2,4-dinitrotoluene and 2,6-dinitrotoluene. Associated non-detect sample results would not be affected by the indicated high bias. No further actions were required. One associated detected sample results was qualified as estimated; biased high.

iii) One LCS/LCSD was reported with an elevated RPD for 2-methylnaphthalene. All associated sample results were qualified as estimated.

4.7 Matrix Spike Analysis

To evaluate the effects of sample matrices on the preparation process, measurement procedures, and accuracy of a particular analysis, samples are spiked with known concentrations of the analytes of interest and analyzed as MS/matrix spike duplicate (MSD) samples. The RPD between the MS and MSD is used to assess analytical precision.

MS/MSD analyses were performed as specified in Table 1. The recovery ranges established by the laboratory is adopted as the acceptance criteria for the project.

The MS/MSD samples were spiked with all analytes specified in the methods. All percent recoveries and the RPD value were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision with the following exceptions:

i) One MS/MSD was reported with an elevated RPD for 4,6-dinitro-2-methylphenol. The associated sample result was non-detect and not affected by the indicated variability. No further action was required.

ii) One MS/MSD was reported with elevated MS recoveries for 4,6-dinitro-2-methylphenol and di-n-butyl phthalate. If only the MS or MSD recovery was outside of control limits, no qualification of the data was performed based on the acceptable recovery of the companion spike and the acceptable RPD. No further action was required.

iii) One MS/MSD was reported with elevated recoveries and/or elevated RPDs for the following SVOCs due to possible matrix interferences and were not assessed: 4-Nitrophenol, bis(2-ethylhexyl)phthalate, and di-n-butyl phthalate

The laboratory also performed additional MS/MSD on non-site samples. These cannot be used to assess accuracy and precision for the site samples.

4.8 Duplicate Sample Analyses

Analytical precision is evaluated based on the analysis of laboratory duplicate samples. For this study, duplicate samples were prepared and analyzed by the laboratory as specified in Table 1 for arsenic. The RPD established by the laboratory are adopted as the acceptance criteria for the project.

All duplicate analyses performed were acceptable, demonstrating acceptable analytical precision with the following exception (see Table 5):

i) One duplicate analysis was reported with an elevated RPD for arsenic. All associated sample results were qualified as estimated.

The laboratory also performed additional duplicate analyses on non-site samples. These cannot be used to assess precision for the site samples.

4.9 Field QA/QC Samples

The field QA/QC consisted of ten trip blank samples, thirteen field blank samples, and five field duplicate sample sets.

Trip Blank Sample Analysis

To evaluate contamination from sample collection, transportation, storage, and analytical activities, ten trip blank samples were submitted to the laboratory for VOCs analysis. All results were non-detect for the compounds of interest.

Field Blank Sample Analysis

To assess ambient conditions at the site, thirteen field blank samples were submitted for analysis, as identified in Table 1. All results were non-detect for the compounds of interest with the following exceptions (see Table 6):

i) The following field blanks submitted yielded low level detections for various SVOCs: WG-1620-FB01-20200107, WG-1620-FB02-20200108, WG-1620-FB03-20200109, WG-1620-FB04-20200110, WG-1620-FB05-20200113, WG-1620-FB08-20200116, WG-1620-FB09-20200117, WG-1620-FB10-20200120, WG-1620-FB11-20200121,

WG-1620-FB12-20200123, and WG-1620-FB14-20200210. Associated sample results that were significantly greater than the concentrations found in the field blanks or were non-detect were not impacted. No further action was required. Associated sample results with comparable concentrations to the field blank detections were qualified as non-detect.

Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, five field duplicate sample sets were collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples must be less than thirty percent for water samples. The RPDs are only used when sample concentrations are above the estimated regions of detection.

Field duplicate summary data are presented in Table 2. All field duplicate results were within acceptable agreement, demonstrating acceptable sampling and analytical precision with the following exceptions (see Table 7):

i) WG-1620-MW35B-20200110 and WG-1620-FD01-20200110 did show some variability in VOCs and SVOCs results and were qualified as estimated.

ii) WG-1620-MW21C-20200114 and WG-1620-FD02-20200114 did show some variability in 2,6-dinitrotoluene results and were qualified as estimated.

iii) WG-1620-MW33A-20200120 and WG-1620-FD05-20200120 did show some variability in acenaphthene, fluoranthene, and pyrene results and were qualified as estimated.

4.10 Field Procedures

Golder Associates, Inc. collected groundwater samples in accordance with their Standard Operating Procedures (SOP) for sample collection.

4.11 Analyte Reporting

The laboratory reported detected results for each analyte down to the sample detection limit (SDL), which is defined as the method detection limit (MDL) with sample-specific adjustments for dilutions, aliquot size, volumes, etc. Positive analyte detections less than the MQL but greater than the SDL were qualified as estimated (J) in Table 2 unless qualified otherwise in this memorandum.

i) The following samples were analyzed at the lowest practical dilution for VOCs determinations due to sample matrix: WG-1620-MW18C-20200108, WG-1620-MW18A-20200108. No further actions were required.

ii) The following samples were analyzed at the lowest practical dilution for VOCs and/or SVOCs determinations due to elevated concentration of non-target analytes: WG-1620-MW32B-20200120, WG-1620-MW23C-20200109, WG-1620-MW49A-20200107, WG-1620-MW57B-20200108, WG-1620-MW70B-20200120, and WG-1620-MW72B-20200109. No further actions were required.

iii) The following samples were analyzed at the lowest practical dilution for VOCs determinations due to matrix interferences: WG-1620-MW57B-20200108, WG-1620-MW72B-20200109, WG-1620-MW23C-20200109. No further actions were required.

The detectability check standard (DCS) results supported the laboratory MDLs.

5. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are usable for the purpose of supporting the HWPW - Site-Wide Monitoring at the site by providing current concentration of chemicals of concern with the specific qualifications noted herein.

Table 1

Sample Collection and Analysis Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

					Analysis/Parameters				
Sample Identification	**Location**	**Matrix**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**VOCs**	**SVOCs**	**TPH**	**Arsenic**	**Comments**
WG-1620-MW49A-20200107	MW-49A	Water	01/07/2020	13:10	X	X	X	X	
WG-1620-MW80B-20200107	MW-80B	Water	01/07/2020	16:00	X	X	X	X	
WG-1620-FB01-20200107	-	Water	01/07/2020	16:30	X	X		X	Field Blank
WG-1620-FB02-20200108	-	Water	01/08/2020	09:00	X	X		X	Field Blank
WG-1620-MW18C-20200108	MW-18C	Water	01/08/2020	10:10	X	X		X	
WG-1620-MW18A-20200108	MW-18A	Water	01/08/2020	11:10	X	X		X	
WG-1620-MW58A-20200108	MW-58A	Water	01/08/2020	12:15	X	X		X	
WG-1620-MW57B-20200108	MW-57B	Water	01/08/2020	13:30	X	X		X	
WG-1620-MW57A-20200108	MW-57A	Water	01/08/2020	14:55	X	X		X	
WG-1620-FB03-20200109	-	Water	01/09/2020	07:30	X	X		X	Field Blank
WG-1620-MW72B-20200109	MW-72B	Water	01/09/2020	08:35	X	X		X	
WG-1620-MW23C-20200109	MW-23C	Water	01/09/2020	09:40	X	X		X	
WG-1620-MW19C-20200109	MW-19C	Water	01/09/2020	10:45	X	X		X	MS/MSD-P; DUP
WG-1620-MW53C-20200109	MW-53C	Water	01/09/2020	11:15	X	X		X	MS/MSD-P; DUP
WG-1620-MW51A-20200109	MW-51A	Water	01/09/2020	11:50	X	X	X	X	MS/MSD-P

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January-February 2020

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Sample Identification	**Location**	**Matrix**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**VOCs**	**SVOCs**	**TPH**	**Arsenic**	**Comments**
WG-1620-MW54C-20200109	MW-54C	Water	01/09/2020	12:35	X	X		X	
WG-1620-MW51C-20200109	MW-51C	Water	01/09/2020	12:40	X	X	X	X	
WG-1620-MW44A-20200109	MW-44A	Water	01/09/2020	13:30	X	X		X	MS/MSD-P
WG-1620-MW85C-20200109	MW-85C	Water	01/09/2020	13:35	X	X	X	X	
WG-1620-MW77A-20200109	MW-77A	Water	01/09/2020	14:25	X	X	X	X	
WG-1620-MW36B-20200109	MW-36B	Water	01/09/2020	14:40	X	X		X	
WG-1620-MW76C-20200109	MW-76C	Water	01/09/2020	15:20	X	X	X	X	
WG-1620-MW36A-20200109	MW-36A	Water	01/09/2020	16:00	X	X		X	
WG-1620-MW81B-20200109	MW-81B	Water	01/09/2020	16:20	X	X	X	X	
WG-1620-MW50A-20200109	MW-50A	Water	01/09/2020	17:15	X	X	X	X	
WG-1620-TB01-20200109	-	Water	01/09/2020	-	X				Trip Blank
WG-1620-MW83C-20200110	MW-83C	Water	01/10/2020	09:00	X	X		X	
WG-1620-MW83B-20200110	MW-83B	Water	01/10/2020	10:00	X	X		X	
WG-1620-FB04-20200110	-	Water	01/10/2020	10:30	X	X		X	Field Blank
WG-1620-MW35A-20200110	MW-35A	Water	01/10/2020	11:20	X	X		X	

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Sample Identification	**Location**	**Matrix**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**VOCs**	**SVOCs**	**TPH**	**Arsenic**	**Comments**
WG-1620-MW35B-20200110	MW-35B	Water	01/10/2020	12:45	X	X		X	
WG-1620-FD01-20200110	MW-35B	Water	01/10/2020	12:45	X	X		X	Field duplciate of MW35B
WQ-1620-TB01-20200110	-	Water	01/10/2020	-	X				Trip Blank
WG-1620-MW40B-20200113	MW-40B	Water	01/13/2020	12:10	X	X		X	MS/MSD-P; DUP
WG-1620-MW42B-20200113	MW-42B	Water	01/13/2020	13:10	X	X		X	
WG-1620-TW41B-20200113	TW-41B	Water	01/13/2020	14:00	X	X		X	
WG-1620-MW05-20200113	MW-05	Water	01/13/2020	14:55	X	X		X	
WG-1620-MW12C-20200113	MW-12C	Water	01/13/2020	15:55	X	X		X	
WG-1620-MW12A-20200113	MW-12A	Water	01/13/2020	16:45	X	X		X	
WG-1620-MW39B-20200113	MW-39B	Water	01/13/2020	17:35	X	X		X	
WG-1620-FB05-20200113	-	Water	01/13/2020	17:50	X	X		X	Field Blank
WG-1620-MW13-20200114	MW-13	Water	01/14/2020	08:10	X	X		X	MS/MSD-P
WG-1620-MW09-20200114	MW-09	Water	01/14/2020	09:00	X	X		X	
WG-1620-MW21C-20200114	MW-21C	Water	01/14/2020	10:00	X	X		X	
WG-1620-FD02-20200114	MW-21C	Water	01/14/2020	10:00	X	X		X	Field duplciate of MW21C

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January-February 2020

					Analysis/Parameters				
Sample Identification	**Location**	**Matrix**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**VOCs**	**SVOCs**	**TPH**	**Arsenic**	**Comments**
WG-1620-P11-20200114	P-11	Water	01/14/2020	10:55	X	X		X	
WG-1620-MW88C-20200114	MW-88C	Water	01/14/2020	11:50	X	X		X	
WG-1620-MW20A-20200114	MW-20A	Water	01/14/2020	12:55	X	X		X	
WG-1620-MW15A-20200114	MW-15A	Water	01/14/2020	13:45	X	X		X	
WG-1620-MW15B-20200114	MW-15B	Water	01/14/2020	14:30	X	X		X	
WG-1620-MW15C-20200114	MW-15C	Water	01/14/2020	15:20	X	X		X	
WG-1620-MW14-20200114	MW-14	Water	01/14/2020	16:15	X	X		X	
WG-1620-MW17-20200114	MW-17	Water	01/14/2020	17:10	X	X		X	
WG-1620-FB06-20200114	-	Water	01/14/2020	17:25	X	X		X	Field Blank
WG-1620-TB03-20200114	-	Water	01/14/2020	-	X				Trip Blank
WG-1620-MW17C-20200115	MW-17C	Water	01/15/2020	08:15	X	X		X	
WG-1620-MW67B-20200115	MW-67B	Water	01/15/2020	09:30	X	X		X	MS/MSD; DUP
WG-1620-MW46C-20200115	MW-46C	Water	01/15/2020	10:25	X	X		X	
WG-1620-MW25A-20200115	MW-25A	Water	01/15/2020	11:20	X	X		X	
WG-1620-MW44C-20200115	MW-44C	Water	01/15/2020	13:15	X	X		X	

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					Analysis/Parameters				
Sample Identification	**Location**	**Matrix**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**VOCs**	**SVOCs**	**TPH**	**Arsenic**	**Comments**
WG-1620-MW71B-20200115	MW-71B	Water	01/15/2020	14:00	X	X		X	
WG-1620-MW33BR-20200115	MW-33BR	Water	01/15/2020	15:00	X	X		X	
WG-1620-MW25C-20200115	MW-25C	Water	01/15/2020	15:50	X	X		X	
WG-1620-MW27A-20200115	MW-27A	Water	01/15/2020	16:40	X	X		X	
WG-1620-MW27C-20200115	MW-27C	Water	01/15/2020	17:20	X	X		X	
WQ-1620-TB04-20200115	-	Water	01/15/2020	-	X				Trip Blank
WG-1620-MW59A-20200116	MW-59A	Water	01/16/2020	08:05	X	X		X	
WG-1620-MW59B-20200116	MW-59B	Water	01/16/2020	09:00	X	X		X	
WG-1620-MW28A-20200116	MW-28A	Water	01/16/2020	09:10	X	X		X	
WG-1620-MW28C-20200116	MW-28C	Water	01/16/2020	10:15	X	X		X	MS/MSD; DUP
WG-1620-MW48C-20200116	MW-48C	Water	01/16/2020	10:20	X	X		X	
WG-1620-MW47C-20200116	MW-47C	Water	01/16/2020	11:05	X	X		X	
WG-1620-MW61A-20200116	MW-61A	Water	01/16/2020	12:00	X	X		X	MS/MSD; DUP
WG-1620-FB08-20200116	-	Water	01/16/2020	12:00	X	X		X	Field Blank
WG-1620-MW89B-20200116	MW-89B	Water	01/16/2020	12:45	X	X		X	

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					Analysis/Parameters				
Sample Identification	**Location**	**Matrix**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**VOCs**	**SVOCs**	**TPH**	**Arsenic**	**Comments**
WG-1620-MW84B-20200116	MW-84B	Water	01/16/2020	13:45	X	X		X	MS/MSD-P
WG-1620-MW59D-20200116	MW-59D	Water	01/16/2020	13:50	X	X		X	
WG-1620-FD03-20200116	MW-59D	Water	01/16/2020	13:50	X	X		X	Field duplciate of MW59D
WG-1620-MW63B-20200116	MW-63B	Water	01/16/2020	14:45	X	X		X	
WG-1620-MW66D-20200116	MW-66D	Water	01/16/2020	15:00	X	X		X	
WG-1620-MW26A-20200116	MW-26A	Water	01/16/2020	16:00	X	X		X	
WG-1620-MW65D-20200116	MW-65D	Water	01/16/2020	16:20	X	X		X	MS/MSD; DUP
WG-1620-MW36D-20200116	MW-36D	Water	01/16/2020	17:25	X	X		X	
WG-1620-MW86C-20200117	MW-86C	Water	01/17/2020	07:25	X	X	X	X	
WG-1620-FD04-20200117	MW-86C	Water	01/17/2020	07:25	X	X	X	X	Field duplicate of MW86C
WG-1620-MW75B-20200117	MW-75B	Water	01/17/2020	08:15	X	X	X	X	
WG-1620-MW68C-20200117	MW-68C	Water	01/17/2020	09:10	X	X		X	
WG-1620-MW79A-20200117	MW-79A	Water	01/17/2020	09:20	X	X	X	X	
WG-1620-FB09-20200117	-	Water	01/17/2020	10:00	X	X		X	Field Blank
WG-1620-MW68A-20200117	MW-68A	Water	01/17/2020	10:15	X	X		X	

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Sample Collection and Analysis Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

					Analysis/Parameters				
Sample Identification	**Location**	**Matrix**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**VOCs**	**SVOCs**	**TPH**	**Arsenic**	**Comments**
WG-1620-MW74B-20200117	MW-74B	Water	01/17/2020	10:20	X	X	X	X	
WG-1620-MW78A-20200117	MW-78A	Water	01/17/2020	11:25	X	X	X	X	
WQ-1620-TB05-2020117	-	Water	01/17/2020	-	X				Trip Blank
WG-1620-MW32AR-20200120	MW-32AR	Water	01/20/2020	09:10	X	X		X	MS/MSD-P; DUP
WG-1620-FB10-20200120	-	Water	01/20/2020	09:30	X	X		X	Field Blank
WG-1620-MW32B-20200120	MW-32B	Water	01/20/2020	10:15	X	X		X	
WG-1620-MW70B-20200120	MW-70B	Water	01/20/2020	11:30	X	X		X	
WG-1620-MW33A-20200120	MW-33A	Water	01/20/2020	12:45	X	X		X	
WG-1620-FD05-20200120	MW-33A	Water	01/20/2020	12:45	X	X		X	Field duplciate of MW-33A
WG-1620-MW87C-20200120	MW-87C	Water	01/20/2020	14:00	X	X		X	
WG-1620-MW90B-20200120	MW-90B	Water	01/20/2020	15:15	X	X		X	
WG-1620-MW45C-20200120	MW-45C	Water	01/20/2020	16:30	X	X		X	
WQ-1620-TB06-20200120	-	Water	01/20/2020	-	X				Trip Blank
WG-1620-MW82B-20200121	MW-82B	Water	01/21/2020	09:10	X	X		X	MS/MSD; DUP
WG-1620-MW38A-20200121	MW-38A	Water	01/21/2020	11:10	X	X		X	

Table 1

Sample Collection and Analysis Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

					Analysis/Parameters				
Sample Identification	**Location**	**Matrix**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**VOCs**	**SVOCs**	**TPH**	**Arsenic**	**Comments**
WG-1620-MW38B-20200121	MW-38B	Water	01/21/2020	13:45	X	X		X	
WG-1620-MW03-20200121	MW-03	Water	01/21/2020	15:00	X	X		X	
WG-1620-FB11-20200121	-	Water	01/21/2020	15:30	X	X		X	Field Blank
WG-1620-MW04-20200121	MW-04	Water	01/21/2020	16:00	X	X		X	
WQ-1620-TB07-20200121	-	Water	01/21/2020	-	X				Trip Blank
WG-1620-MW41B-20200123	MW-41B	Water	01/23/2020	12:40	X	X		X	MS/MSD-P; DUP
WG-1620-FB12-20200123	-	Water	01/23/2020	13:00	X	X		X	Field Blank
WG-1620-MW12B-20200123	MW-12B	Water	01/23/2020	14:00	X	X		X	
WG-1620-MW68B-20200123	MW-68B	Water	01/23/2020	15:25	X	X		X	
WQ-1620-TB08-20200123	-	Water	01/23/2020	-	X				Trip Blank
WG-1620-MW62B-20200127	MW-62B	Water	01/27/2020	09:25	X	X		X	
WG-1620-MW64A-20200127	MW-64A	Water	01/27/2020	11:15	X	X		X	
WG-1620-FB13-20200127	-	Water	01/27/2020	12:00	X	X		X	Field Blank
WG-1620-MW49B-20200127	MW-49B	Water	01/27/2020	13:30	X	X		X	
WQ-1620-TB09-20200127	-	Water	01/27/2020	-	X				Trip Blank

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Houston, Texas
January-February 2020

					Analysis/Parameters				
Sample Identification	**Location**	**Matrix**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**VOCs**	**SVOCs**	**TPH**	**Arsenic**	**Comments**
WG-1620-MW22AR-20200210	MW-22AR	Water	02/10/2020	10:00	X	X		X	
WG-1620-MW22BR-20200210	MW-22BR	Water	02/10/2020	11:00	X	X		X	
WG-1620-FB14-20200210	-	Water	02/10/2020	11:30	X	X		X	Field Blank
WQ-1620-TB11-20200211	-	Water	02/11/2020	-	X	X		X	Trip Blank

Notes:

VOCs - Volatile Organic Compounds
SVOCs - Semi-volatile Organic Compounds
TPH - Total Petroleum Hydrocarbons
MS/MSD - Matrix Spike/ Matrix Spike Duplicate
MS/MSD-P - Matrix Spike/ Matrix Spike Duplicate (partial parameters)
DUP - Laboratory Duplicate
"-" - Not Applicable

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:	MW-03	MW-04	MW-05	MW-09	MW-12A
Sample Name:	WG-1620-MW03-20200121	WG-1620-MW04-20200121	WG-1620-MW05-20200113	WG-1620-MW09-20200114	WG-1620-MW12A-20200113
Sample Date:	01/21/2020	01/21/2020	01/13/2020	01/14/2020	01/13/2020
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Vinyl chloride	mg/L	--	--	--	--	--
Xylenes (total)	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	0.000045 J	0.00026	<0.000019	<0.000019	0.0023
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	0.000061 J	0.00015	<0.000027	<0.000027	0.28
Acenaphthylene	mg/L	<0.000015	<0.000015	<0.000015	<0.000015	0.0012
Anthracene	mg/L	0.000069 J	0.00010	<0.000014	<0.000014	0.0097
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	0.00015
Benzo(a)pyrene	mg/L	0.000024 J	0.000033 J	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	0.00011 J	0.0018	<0.000037	<0.000037	0.00011 J
Chrysene	mg/L	<0.000021	0.000034 J	<0.000021	<0.000021	0.00015
Di-n-butylphthalate (DBP)	mg/L	0.000029 J	<0.000020	<0.000020	<0.000020	<0.000020
Dibenzofuran	mg/L	<0.000020	0.000097 J	<0.000020	<0.000020	0.23
Fluoranthene	mg/L	0.000055 J	0.00029	<0.000010	<0.000010	0.0067
Fluorene	mg/L	<0.000030	0.000067 J	<0.000030	<0.000030	0.28
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		MW-03	MW-04	MW-05	MW-09	MW-12A
Sample Name:		WG-1620-MW03-20200121	WG-1620-MW04-20200121	WG-1620-MW05-20200113	WG-1620-MW09-20200114	WG-1620-MW12A-20200113
Sample Date:		01/21/2020	01/21/2020	01/13/2020	01/14/2020	01/13/2020
Parameters	**Unit**					
Semi-volatile Organic Compounds (Continued)						
Naphthalene	mg/L	<0.00024	0.0013	<0.00012	0.00011	<0.00051
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	<0.000021	0.00017	<0.000021	<0.000021	0.082
Phenol	mg/L	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	mg/L	0.000036 J	0.00020	<0.000019	<0.000019	0.0031
Total Petroleum Hydrocarbons						
Total Petroleum Hydrocarbons	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (>C12-C28)	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (>C28-C35)	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (C6-C12)	mg/L	--	--	--	--	--
Metals						
Arsenic	mg/L	0.00207	0.00223	0.00146 J	0.00430	0.00134 J

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		MW-12B	MW-12C	MW-13	MW-14	MW-15A
Sample Name:		WG-1620-MW12B-20200123	WG-1620-MW12C-20200113	WG-1620-MW13-20200114	WG-1620-MW14-20200114	WG-1620-MW15A-20200114
Sample Date:		01/23/2020	01/13/2020	01/14/2020	01/14/2020	01/14/2020
Parameters	**Unit**					
Volatile Organic Compounds						
1,2-Dichloroethane	mg/L	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	0.030	<0.00020	<0.00020	<0.00020	0.00034 J
Chlorobenzene	mg/L	<0.0075	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	0.014 J	<0.00030	<0.00030	<0.00030	<0.00030
Methylene chloride	mg/L	<0.025	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.0050	<0.00020	<0.00020	<0.00020	<0.00020
Vinyl chloride	mg/L	<0.0050	--	--	--	--
Xylenes (total)	mg/L	<0.0075	<0.00030	<0.00030	<0.00030	0.00093 J
Semi-volatile Organic Compounds						
1,2-Diphenylhydrazine	mg/L	<0.0021	<0.000021	<0.000021	<0.000021	0.00036
2,4-Dimethylphenol	mg/L	<0.0040	<0.000040	<0.000040	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.0058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.0042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.0021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	320 J	0.00018	0.000054 J	<0.000019	0.018
4,6-Dinitro-2-methylphenol	mg/L	<0.0020	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.0047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	350	0.00015	0.00022	0.000091 J	0.14
Acenaphthylene	mg/L	5.7	<0.000015	<0.000015	<0.000015	0.00066
Anthracene	mg/L	160	<0.000014	<0.000014	<0.000014	0.0048
Benzo(a)anthracene	mg/L	79	<0.000050	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	22	<0.000020	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.0030	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.0037	<0.000037	<0.000037	<0.000037	<0.000037
Chrysene	mg/L	64	<0.000021	<0.000021	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.0020	<0.000020	<0.000020	<0.000020	<0.000020
Dibenzofuran	mg/L	320	0.00012	0.00016	<0.000020	0.036
Fluoranthene	mg/L	520	0.000091 J	<0.000010	0.000064 J	0.0031
Fluorene	mg/L	420	0.00019	0.00016	0.000057 J	0.065
N-Nitrosodiphenylamine	mg/L	<0.0025	<0.000025	<0.000025	<0.000025	<0.000025

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		MW-12B	MW-12C	MW-13	MW-14	MW-15A
Sample Name:		WG-1620-MW12B-20200123	WG-1620-MW12C-20200113	WG-1620-MW13-20200114	WG-1620-MW14-20200114	WG-1620-MW15A-20200114
Sample Date:		01/23/2020	01/13/2020	01/14/2020	01/14/2020	01/14/2020
Parameters	**Unit**					
Semi-volatile Organic Compounds (Continued)						
Naphthalene	mg/L	760	0.0017	0.00026	<0.000020	0.00022
Nitrobenzene	mg/L	<0.0024	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.0079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	1200	0.00015	<0.000021	<0.000021	0.025
Phenol	mg/L	<0.0035	0.00012 J	<0.000035	<0.000035	<0.000035
Pyrene	mg/L	330	0.000068 J	<0.000019	0.000060 J	0.0013
Total Petroleum Hydrocarbons						
Total Petroleum Hydrocarbons	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (>C12-C28)	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (>C28-C35)	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (C6-C12)	mg/L	--	--	--	--	--
Metals						
Arsenic	mg/L	0.0491 J	0.00195 J	0.0642	0.00185 J	0.0441

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		MW-15B	MW-15C	MW-17	MW-17C	MW-18A
Sample Name:		WG-1620-MW15B-20200114	WG-1620-MW15C-20200114	WG-1620-MW17-20200114	WG-1620-MW17C-20200115	WG-1620-MW18A-20200108
Sample Date:		01/14/2020	01/14/2020	01/14/2020	01/15/2020	01/08/2020
Parameters	**Unit**					
Volatile Organic Compounds						
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.0050
Benzene	mg/L	<0.00020	0.00059 J	<0.00020	<0.00020	0.41
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.0075
Ethylbenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	0.32
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.025
Toluene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	0.11
Vinyl chloride	mg/L	--	--	--	--	<0.0050
Xylenes (total)	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	0.50
Semi-volatile Organic Compounds						
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	<0.000040	<0.000040	1.8
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.000019	<0.000019	<0.000019	0.000073 J	0.36
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047	0.0042
Acenaphthene	mg/L	0.000073 J	0.016	<0.000027	0.00023	0.33
Acenaphthylene	mg/L	<0.000015	0.00089	<0.000015	<0.000015	0.0081
Anthracene	mg/L	0.00011	0.00057	<0.000014	<0.000014	0.0082
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	0.000055 J	<0.000037	<0.000037	<0.000037	<0.00043
Chrysene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Dibenzofuran	mg/L	<0.000020	0.0045	<0.000020	0.000065 J	0.20
Fluoranthene	mg/L	0.00011	0.00066	0.00011	0.00034	0.0023
Fluorene	mg/L	0.000062 J	0.00051	<0.000030	0.000061 J	0.16
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		MW-15B	MW-15C	MW-17	MW-17C	MW-18A
Sample Name:		WG-1620-MW15B-20200114	WG-1620-MW15C-20200114	WG-1620-MW17-20200114	WG-1620-MW17C-20200115	WG-1620-MW18A-20200108
Sample Date:		01/14/2020	01/14/2020	01/14/2020	01/15/2020	01/08/2020
Parameters	**Unit**					
Semi-volatile Organic Compounds (Continued)						
Naphthalene	mg/L	<0.000020	0.00024	<0.000020	0.00016	4.6
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	0.000050 J	0.000080 J	<0.000021	<0.000021	0.10
Phenol	mg/L	<0.000035	<0.000035	<0.000035	<0.000035	0.0014
Pyrene	mg/L	0.000060 J	0.00038	0.000066 J	0.00021	0.0013
Total Petroleum Hydrocarbons						
Total Petroleum Hydrocarbons	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (>C12-C28)	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (>C28-C35)	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (C6-C12)	mg/L	--	--	--	--	--
Metals						
Arsenic	mg/L	0.00343	0.000773 J	0.00154 J	0.00184 J	0.0236

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		MW-18C	MW-19C	MW-20A	MW-21C	MW-21C
Sample Name:		WG-1620-MW18C-20200108	WG-1620-MW19C-20200109	WG-1620-MW20A-20200114	WG-1620-MW21C-20200114	WG-1620-FD02-20200114
Sample Date:		01/08/2020	01/09/2020	01/14/2020	01/14/2020	01/14/2020
						Duplicate
Parameters	**Unit**					
Volatile Organic Compounds						
1,2-Dichloroethane	mg/L	<0.0020	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	1.1	0.00032 J	0.020	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.0030	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	0.31	0.00064 J	0.025	<0.00030	<0.00030
Methylene chloride	mg/L	<0.010	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	0.97	<0.00020	<0.00020	<0.00020	<0.00020
Vinyl chloride	mg/L	<0.0020	<0.00020	--	--	--
Xylenes (total)	mg/L	0.92	0.0012	0.024	<0.00030	<0.00030
Semi-volatile Organic Compounds						
1,2-Diphenylhydrazine	mg/L	<0.000021	0.000078 J	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	0.023	<0.000040	0.0018	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042 J	0.0030 J
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	0.31	<0.000019	0.075	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	0.093	0.00099	0.11	<0.000027	0.00020
Acenaphthylene	mg/L	0.0026	0.000050 J	0.00092	<0.000015	<0.000015
Anthracene	mg/L	0.020	<0.00017	0.0075	<0.000014	<0.000014
Benzo(a)anthracene	mg/L	0.0025	0.00026	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	0.00053	0.00010	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000037	<0.000071	<0.000037	0.00035	0.000065 J
Chrysene	mg/L	0.0027	0.00024	<0.000021	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	0.000021 J	<0.000020	<0.000020	<0.000020
Dibenzofuran	mg/L	0.085	0.00069	0.079	<0.000020	0.00017
Fluoranthene	mg/L	0.013	0.0011	0.00067	<0.000010	<0.000010
Fluorene	mg/L	0.043	0.00047	0.080	<0.000030	0.00018
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		MW-18C	MW-19C	MW-20A	MW-21C	MW-21C
Sample Name:		WG-1620-MW18C-20200108	WG-1620-MW19C-20200109	WG-1620-MW20A-20200114	WG-1620-MW21C-20200114	WG-1620-FD02-20200114
Sample Date:		01/08/2020	01/09/2020	01/14/2020	01/14/2020	01/14/2020 Duplicate
Parameters	**Unit**					
Semi-volatile Organic Compounds (Continued)						
Naphthalene	mg/L	14	<0.00011	2.0	0.00011	0.00013
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	0.023	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	0.065	<0.00045	0.028	<0.000021	0.000061 J
Phenol	mg/L	0.0062	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	mg/L	0.0066	0.0014	0.00030	<0.000019	<0.000019
Total Petroleum Hydrocarbons						
Total Petroleum Hydrocarbons	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (>C12-C28)	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (>C28-C35)	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (C6-C12)	mg/L	--	--	--	--	--
Metals						
Arsenic	mg/L	0.00283	0.00140 J	0.00808	0.00109 J	0.00109 J

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:	MW-22AR	MW-22BR	MW-23C	MW-25A	MW-25C
Sample Name:	WG-1620-MW22AR-20200210	WG-1620-MW22BR-20200210	WG-1620-MW23C-20200109	WG-1620-MW25A-20200115	WG-1620-MW25C-20200115
Sample Date:	02/10/2020	02/10/2020	01/09/2020	01/15/2020	01/15/2020
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.0010	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	0.0027 J	<0.00020	0.0017
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.0015	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	0.028	<0.00030	0.033
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	<0.0010	<0.00020	0.010
Vinyl chloride	mg/L	--	--	--	<0.00020	<0.00020
Xylenes (total)	mg/L	<0.00030	<0.00030	0.025	<0.00030	0.22
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.00021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	<0.047	<0.000040	0.0062
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.00058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.00042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	0.00011 J	<0.00021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.00012	<0.000043	0.12	<0.000019	0.96
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.00020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.00047	<0.000047	<0.000047
Acenaphthene	mg/L	<0.00015	0.018	0.21	<0.000027	0.36
Acenaphthylene	mg/L	<0.000015	0.00018	0.0029	<0.000015	0.0025
Anthracene	mg/L	0.00020	0.00042	0.035	0.000089 J	0.027
Benzo(a)anthracene	mg/L	0.00029	<0.000050	0.0080	0.00012	0.00057
Benzo(a)pyrene	mg/L	0.00010	<0.000020	0.0022	0.000038 J	0.00019
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.00030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	0.00011 J	0.000075 J	<0.00037	<0.000037	0.00066
Chrysene	mg/L	0.00032	<0.000021	0.0072	0.000097 J	0.00056
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	<0.00020	<0.000020	0.00068
Dibenzofuran	mg/L	<0.00015	<0.00029	0.17	<0.000020	0.34
Fluoranthene	mg/L	0.0015	0.0017	0.068	0.00045	0.0058
Fluorene	mg/L	0.00019	0.0026	0.12	<0.000030	0.15
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.00025	<0.000025	<0.000025

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:	MW-22AR	MW-22BR	MW-23C	MW-25A	MW-25C
Sample Name:	WG-1620-MW22AR-20200210	WG-1620-MW22BR-20200210	WG-1620-MW23C-20200109	WG-1620-MW25A-20200115	WG-1620-MW25C-20200115
Sample Date:	02/10/2020	02/10/2020	01/09/2020	01/15/2020	01/15/2020
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
Naphthalene	mg/L	<0.00044	<0.00013	0.66	0.00010	7.5
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.00024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.00079	<0.000079	0.17
Phenanthrene	mg/L	0.0015	<0.00013	0.25	0.00017	0.18
Phenol	mg/L	<0.000041	<0.000035	0.0079	<0.000035	<0.000035
Pyrene	mg/L	0.0010	0.00082	0.043	0.00035	0.0049
Total Petroleum Hydrocarbons						
Total Petroleum Hydrocarbons	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (>C12-C28)	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (>C28-C35)	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (C6-C12)	mg/L	--	--	--	--	--
Metals						
Arsenic	mg/L	0.00352	0.0160	0.00333	0.00216	0.00391

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		MW-26A	MW-27A	MW-27C	MW-28A	MW-28C
Sample Name:		WG-1620-MW26A-20200116	WG-1620-MW27A-20200115	WG-1620-MW27C-20200115	WG-1620-MW28A-20200116	WG-1620-MW28C-20200116
Sample Date:		01/16/2020	01/15/2020	01/15/2020	01/16/2020	01/16/2020
Parameters	**Unit**					
Volatile Organic Compounds						
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Vinyl chloride	mg/L	--	--	--	--	--
Xylenes (total)	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Semi-volatile Organic Compounds						
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	0.000034 J	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.000042	<0.000019	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	<0.00017	<0.000027	<0.000027	<0.00014	<0.000027
Acenaphthylene	mg/L	<0.000015	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	mg/L	<0.000087	<0.000014	<0.000014	<0.00013	<0.000014
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050	0.000073 J	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	0.000052 J	<0.000020	0.000057 J	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000037	0.000062 J	<0.000037	0.000090 J	0.000072 J
Chrysene	mg/L	<0.000021	<0.000021	<0.000021	0.000065 J	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	<0.000020	0.000032 J	<0.000020
Dibenzofuran	mg/L	<0.000044	<0.000020	<0.000020	<0.00010	<0.000020
Fluoranthene	mg/L	0.00073	<0.000010	<0.000010	0.00030	<0.000010
Fluorene	mg/L	<0.00029	<0.000030	<0.000030	<0.00014	<0.000030
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		MW-26A	MW-27A	MW-27C	MW-28A	MW-28C
Sample Name:		WG-1620-MW26A-20200116	WG-1620-MW27A-20200115	WG-1620-MW27C-20200115	WG-1620-MW28A-20200116	WG-1620-MW28C-20200116
Sample Date:		01/16/2020	01/15/2020	01/15/2020	01/16/2020	01/16/2020
Parameters	**Unit**					
Semi-volatile Organic Compounds (Continued)						
Naphthalene	mg/L	<0.00017	0.000053 J	0.000055 J	<0.00060	<0.00016
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	<0.000030	<0.000021	<0.000021	0.00048	<0.000021
Phenol	mg/L	<0.000035	<0.000035	<0.000035	<0.000035	0.000086 J
Pyrene	mg/L	0.00035	<0.000019	<0.000019	0.00021	<0.000019
Total Petroleum Hydrocarbons						
Total Petroleum Hydrocarbons	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (>C12-C28)	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (>C28-C35)	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (C6-C12)	mg/L	--	--	--	--	--
Metals						
Arsenic	mg/L	0.0217	0.000859 J	0.000623 J	0.00664	0.000937 J

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		MW-32AR	MW-32B	MW-33A	MW-33A	MW-33BR
Sample Name:		WG-1620-MW32AR-20200120	WG-1620-MW32B-20200120	WG-1620-MW33A-20200120	WG-1620-FD05-20200120	WG-1620-MW33BR-20200115
Sample Date:		01/20/2020	01/20/2020	01/20/2020	01/20/2020	01/15/2020
					Duplicate	
Parameters	**Unit**					
Volatile Organic Compounds						
1,2-Dichloroethane	mg/L	<0.00020	<0.0050	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	1.8	<0.00020	<0.00020	0.12
Chlorobenzene	mg/L	<0.00030	<0.0075	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	0.73	<0.00030	<0.00030	0.043
Methylene chloride	mg/L	<0.0010	<0.025	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	2.3	<0.00020	<0.00020	<0.00020
Vinyl chloride	mg/L	<0.00020	<0.0050	<0.00020	<0.00020	<0.00020
Xylenes (total)	mg/L	<0.00030	2.1	<0.00030	<0.00030	0.011
Semi-volatile Organic Compounds						
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.00042	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	26	<0.000040	<0.000040	0.00018 J
2,4-Dinitrotoluene	mg/L	<0.000058	<0.0012	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.00084	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.00042	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.000028	50	<0.000063	<0.000095	0.00025
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.00040	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.00094	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	0.0014	26	0.00073 J	0.0011 J	0.0051
Acenaphthylene	mg/L	<0.000015	<0.00030	0.000049 J	0.000038 J	0.00015
Anthracene	mg/L	<0.000014	23	0.000057 J	0.000044 J	0.00046
Benzo(a)anthracene	mg/L	<0.000050	2.2	0.00012	0.00012	0.00010
Benzo(a)pyrene	mg/L	0.000081 J	0.74	0.000066 J	0.000072 J	0.000039 J
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.00060	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	0.000043 J	<0.00074	<0.000037	<0.000037	0.00067
Chrysene	mg/L	0.000042 J	2.4	0.000078 J	0.000093 J	0.00011
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.00040	<0.000020	<0.000020	0.00099
Dibenzofuran	mg/L	<0.000020	28	0.000096 J	0.000067 J	0.0039
Fluoranthene	mg/L	<0.00029	21	0.00035 J	0.00057 H	0.00082
Fluorene	mg/L	0.000038 J	23	0.000059 J	0.000072 J	0.0018
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.00050	<0.000025	<0.000025	<0.000025

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		**MW-32AR**	**MW-32B**	**MW-33A**	**MW-33A**	**MW-33BR**
Sample Name:		**WG-1620-MW32AR-20200120**	**WG-1620-MW32B-20200120**	**WG-1620-MW33A-20200120**	**WG-1620-FD05-20200120**	**WG-1620-MW33BR-20200115**
Sample Date:		**01/20/2020**	**01/20/2020**	**01/20/2020**	**01/20/2020**	**01/15/2020**
					Duplicate	
Parameters	**Unit**					
Semi-volatile Organic Compounds (Continued)						
Naphthalene	mg/L	<0.00014	300	<0.00050	<0.00066	0.0051
Nitrobenzene	mg/L	<0.000024	<0.00048	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.0016	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	<0.000032	69	<0.000056	<0.000046	0.0013
Phenol	mg/L	<0.000035	17	<0.000035	<0.000035	0.00018 J
Pyrene	mg/L	0.00042	14	<0.00019 J	0.00052 J	0.00057
Total Petroleum Hydrocarbons						
Total Petroleum Hydrocarbons	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (>C12-C28)	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (>C28-C35)	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (C6-C12)	mg/L	--	--	--	--	--
Metals						
Arsenic	mg/L	0.00770	0.00193 J	0.00810	0.00755	0.000877 J

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		MW-35A	MW-35B	MW-35B	MW-36A	MW-36B
Sample Name:		WG-1620-MW35A-20200110	WG-1620-MW35B-20200110	WG-1620-FD01-20200110	WG-1620-MW36A-20200109	WG-1620-MW36B-20200109
Sample Date:		01/10/2020	01/10/2020	01/10/2020	01/09/2020	01/09/2020
				Duplicate		
Parameters	**Unit**					
Volatile Organic Compounds						
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	0.025 J	0.016 J	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	0.096	0.083	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Vinyl chloride	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Xylenes (total)	mg/L	<0.00030	0.058 J	0.041 J	<0.00030	<0.00030
Semi-volatile Organic Compounds						
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	0.00021	<0.000052	<0.000054
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.000019	0.14 J	0.062 J	<0.000019	<0.00013
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	<0.000027	0.059 J	0.033 J	<0.000027	<0.00017
Acenaphthylene	mg/L	<0.000015	0.00038	0.00027	<0.000015	<0.000015
Anthracene	mg/L	<0.000014	0.0029 J	0.0018 J	<0.000014	<0.000014
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	0.000061 J	<0.000037	<0.000037	<0.000037	<0.000037
Chrysene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Dibenzofuran	mg/L	<0.000020	0.054 J	0.031 J	<0.000020	<0.00012
Fluoranthene	mg/L	<0.000010	0.0015 J	0.00093 J	<0.000010	0.000051 J
Fluorene	mg/L	0.000065 J	0.028 J	0.015 J	<0.000030	<0.00012
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		MW-35A	MW-35B	MW-35B	MW-36A	MW-36B
Sample Name:		WG-1620-MW35A-20200110	WG-1620-MW35B-20200110	WG-1620-FD01-20200110	WG-1620-MW36A-20200109	WG-1620-MW36B-20200109
Sample Date:		01/10/2020	01/10/2020	01/10/2020 Duplicate	01/09/2020	01/09/2020
Parameters	**Unit**					
Semi-volatile Organic Compounds (Continued)						
Naphthalene	mg/L	<0.00020	2.0 J	0.13 J	<0.00034	<0.00093
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	<0.000021	0.024 J	0.013 J	<0.000021	<0.00010
Phenol	mg/L	<0.000035	<0.000035	<0.000035	<0.000035	<0.000075
Pyrene	mg/L	<0.000019	0.00070 J	0.00045 J	<0.000019	<0.000019
Total Petroleum Hydrocarbons						
Total Petroleum Hydrocarbons	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (>C12-C28)	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (>C28-C35)	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (C6-C12)	mg/L	--	--	--	--	--
Metals						
Arsenic	mg/L	0.0219	0.0120	0.0159	0.00354	0.00100 J

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:	MW-36D	MW-38A	MW-38B	MW-39B	MW-40B
Sample Name:	WG-1620-MW36D-20200116	WG-1620-MW38A-20200121	WG-1620-MW38B-20200121	WG-1620-MW39B-20200113	WG-1620-MW40B-20200113
Sample Date:	01/16/2020	01/21/2020	01/21/2020	01/13/2020	01/13/2020
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	0.011
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	0.089
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	0.022
Vinyl chloride	mg/L	--	--	--	--	--
Xylenes (total)	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	0.16
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	0.00025	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	<0.000040	<0.000040	0.0013
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.000019	0.00017	0.00017	0.00021	0.34
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	<0.000027	0.00068	0.054	0.0012	0.39
Acenaphthylene	mg/L	<0.000015	<0.000015	0.00045	<0.000015	0.0021
Anthracene	mg/L	<0.000033	0.00015	0.0012	0.00016	0.040
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	0.000055 J	<0.000050	0.000094 J
Benzo(a)pyrene	mg/L	<0.000020	0.000032 J	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000037	0.000063 J	<0.000037	<0.000037	<0.000037
Chrysene	mg/L	<0.000021	0.000060 J	0.000057 J	<0.000021	0.000051 J
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	0.000036 J	<0.000020	<0.000020
Dibenzofuran	mg/L	<0.000020	0.00036	0.0054	0.00019	0.29
Fluoranthene	mg/L	<0.000010	0.00018	0.0025	0.00023	0.017
Fluorene	mg/L	<0.000030	0.00029	0.015	0.00032	0.30
N-Nitrosodiphenylamine	mg/L	<0.000025	0.00011 J	<0.000025	<0.000025	<0.000025

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		MW-36D	MW-38A	MW-38B	MW-39B	MW-40B
Sample Name:		WG-1620-MW36D-20200116	WG-1620-MW38A-20200121	WG-1620-MW38B-20200121	WG-1620-MW39B-20200113	WG-1620-MW40B-20200113
Sample Date:		01/16/2020	01/21/2020	01/21/2020	01/13/2020	01/13/2020
Parameters	**Unit**					
Semi-volatile Organic Compounds (Continued)						
Naphthalene	mg/L	<0.000033	0.0011	0.00098	0.0023	7.9
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	<0.000047	0.00039	0.00095	0.00019	0.22
Phenol	mg/L	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	mg/L	<0.000019	0.00014	0.0015	0.00022	0.0037
Total Petroleum Hydrocarbons						
Total Petroleum Hydrocarbons	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (>C12-C28)	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (>C28-C35)	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (C6-C12)	mg/L	--	--	--	--	--
Metals						
Arsenic	mg/L	0.000533 J	0.0177	0.0173	0.00248	0.0523

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		MW-41B	MW-42B	MW-44A	MW-44C	MW-45C
Sample Name:		WG-1620-MW41B-20200123	WG-1620-MW42B-20200113	WG-1620-MW44A-20200109	WG-1620-MW44C-20200115	WG-1620-MW45C-20200120
Sample Date:		01/23/2020	01/13/2020	01/09/2020	01/15/2020	01/20/2020
Parameters	**Unit**					
Volatile Organic Compounds						
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	0.012	<0.00020	<0.00020	<0.00020	0.00050 J
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	0.066	<0.00030	<0.00030	<0.00030	0.00044 J
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	0.087	<0.00020	<0.00020	<0.00020	<0.00020
Vinyl chloride	mg/L	<0.00020	--	--	--	<0.00020
Xylenes (total)	mg/L	0.16	<0.00030	<0.00030	<0.00030	0.0051
Semi-volatile Organic Compounds						
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000085
2,4-Dimethylphenol	mg/L	0.043	<0.000040	<0.00042	0.00011 J	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042	0.0022 JH
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	0.67 J	0.000069 J	<0.00035	0.00012	<0.00013
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047	0.000067 J
Acenaphthene	mg/L	0.49	0.00012	0.064	0.00045	0.000084 J
Acenaphthylene	mg/L	0.0089	<0.000015	0.00097	0.00065	0.000037 J
Anthracene	mg/L	0.045	0.000049 J	0.00027	0.0086	0.00090
Benzo(a)anthracene	mg/L	0.0040	<0.000050	0.000054 J	0.0018	0.00039
Benzo(a)pyrene	mg/L	0.00090	<0.000020	<0.000020	0.00065	0.00042
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	0.00032	0.00013 J	<0.000037	0.0012	0.000067 J
Chrysene	mg/L	0.0033	<0.000021	<0.000021	0.0022	0.00062
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	<0.000020	0.0016	<0.000020
Dibenzofuran	mg/L	0.39	0.000065 J	<0.00033	0.00034	0.000075 J
Fluoranthene	mg/L	0.052	0.00018	0.0059	0.0095	0.00062
Fluorene	mg/L	0.35	0.000067 J	0.0078	0.00067	0.00023
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		MW-41B	MW-42B	MW-44A	MW-44C	MW-45C
Sample Name:		WG-1620-MW41B-20200123	WG-1620-MW42B-20200113	WG-1620-MW44A-20200109	WG-1620-MW44C-20200115	WG-1620-MW45C-20200120
Sample Date:		01/23/2020	01/13/2020	01/09/2020	01/15/2020	01/20/2020
Parameters	**Unit**					
Semi-volatile Organic Compounds (Continued)						
Naphthalene	mg/L	10	<0.00076	<0.0030	0.000097 J	<0.00061
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	0.41	0.00012	<0.00022	0.0077	<0.00027
Phenol	mg/L	<0.000035	<0.000035	<0.00013	<0.000035	<0.000035
Pyrene	mg/L	0.029	0.00013	0.0045	0.0060	0.00068
Total Petroleum Hydrocarbons						
Total Petroleum Hydrocarbons	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (>C12-C28)	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (>C28-C35)	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (C6-C12)	mg/L	--	--	--	--	--
Metals						
Arsenic	mg/L	0.0842 J	0.00133 J	0.00966	0.00314	0.000730 J

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		MW-46C	MW-47C	MW-48C	MW-49A	MW-49B
Sample Name:		WG-1620-MW46C-20200115	WG-1620-MW47C-20200116	WG-1620-MW48C-20200116	WG-1620-MW49A-20200107	WG-1620-MW49B-20200127
Sample Date:		01/15/2020	01/16/2020	01/16/2020	01/07/2020	01/27/2020
Parameters	**Unit**					
Volatile Organic Compounds						
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.0020	<0.010
Benzene	mg/L	0.028	<0.00020	<0.00020	0.30	0.60
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	0.0063 J	<0.015
Ethylbenzene	mg/L	0.051	<0.00030	<0.00030	0.10	0.26
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.010	<0.050
Toluene	mg/L	0.0047	<0.00020	<0.00020	0.19	0.72
Vinyl chloride	mg/L	--	--	--	<0.0020	<0.010
Xylenes (total)	mg/L	0.11	<0.00030	<0.00030	0.24	0.71
Semi-volatile Organic Compounds						
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.0013
2,4-Dimethylphenol	mg/L	0.00016 J	0.00020	<0.000040	5.7	25
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058	<0.0035
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042	<0.0025
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.0013
2-Methylnaphthalene	mg/L	0.20	<0.00010	<0.000076	0.13	250
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.0012
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047	<0.0028
Acenaphthene	mg/L	0.16	<0.000057	<0.000073	0.057	190
Acenaphthylene	mg/L	0.0016	<0.000015	<0.000015	0.00097	2.1
Anthracene	mg/L	0.073	<0.000014	<0.000014	0.0028	87
Benzo(a)anthracene	mg/L	0.0071	<0.000050	<0.000050	<0.000050	23
Benzo(a)pyrene	mg/L	0.0021	0.000040 J	0.000021 J	<0.000020	7.5
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030	<0.0018
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	0.0011	0.00079	0.000039 J	<0.00011	<0.0022
Chrysene	mg/L	0.0068	0.000060 J	0.000029 J	<0.000021	23
Di-n-butylphthalate (DBP)	mg/L	<0.000020	0.0014	<0.000020	<0.000020	<0.0012
Dibenzofuran	mg/L	0.16	<0.000049	<0.000054	0.037	160
Fluoranthene	mg/L	0.084	<0.00011	<0.000061	0.00056	170
Fluorene	mg/L	0.12	<0.000042	<0.000050	0.027	170
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025	<0.0015

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		MW-46C	MW-47C	MW-48C	MW-49A	MW-49B
Sample Name:		WG-1620-MW46C-20200115	WG-1620-MW47C-20200116	WG-1620-MW48C-20200116	WG-1620-MW49A-20200107	WG-1620-MW49B-20200127
Sample Date:		01/15/2020	01/16/2020	01/16/2020	01/07/2020	01/27/2020
Parameters	**Unit**					
Semi-volatile Organic Compounds (Continued)						
Naphthalene	mg/L	1.8	<0.00056	<0.00052	4.5	1200
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.00024	<0.0014
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079	<0.0047
Phenanthrene	mg/L	0.24	<0.000088	<0.000052	0.016	500
Phenol	mg/L	<0.000035	<0.000035	<0.000035	0.17	<0.0021
Pyrene	mg/L	0.053	<0.00010	<0.000065	0.00052	96
Total Petroleum Hydrocarbons						
Total Petroleum Hydrocarbons	mg/L	--	--	--	32.0	--
Total Petroleum Hydrocarbons (>C12-C28)	mg/L	--	--	--	11	--
Total Petroleum Hydrocarbons (>C28-C35)	mg/L	--	--	--	<0.19	--
Total Petroleum Hydrocarbons (C6-C12)	mg/L	--	--	--	21	--
Metals						
Arsenic	mg/L	0.00272	0.00234	0.00126 J	0.00463	0.0107

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:	MW-50A	MW-51A	MW-51C	MW-53C	MW-54C
Sample Name:	WG-1620-MW50A-20200109	WG-1620-MW51A-20200109	WG-1620-MW51C-20200109	WG-1620-MW53C-20200109	WG-1620-MW54C-20200109
Sample Date:	01/09/2020	01/09/2020	01/09/2020	01/09/2020	01/09/2020
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Vinyl chloride	mg/L	--	--	--	--	--
Xylenes (total)	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.00071	<0.000040	<0.000040	<0.0011	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.00019	<0.000044	<0.000055	<0.00025	0.0020
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	<0.00037	<0.000040	<0.000094	<0.00032	0.021
Acenaphthylene	mg/L	0.000022 J	<0.000015	<0.000015	<0.000015	0.00023
Anthracene	mg/L	<0.000014	<0.000063	<0.00010	<0.000028	0.0015
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	0.000027 J	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000085	<0.00014	<0.000085	<0.000037	<0.00018
Chrysene	mg/L	<0.000021	0.000050 J	<0.000021	<0.000021	0.000054 J
Di-n-butylphthalate (DBP)	mg/L	<0.000020	0.000034 J	<0.000020	<0.000020	<0.000020
Dibenzofuran	mg/L	<0.00013	<0.000049	<0.00011	<0.00027	0.020
Fluoranthene	mg/L	0.000052 J	0.00013	0.00018	0.000071 J	0.0026
Fluorene	mg/L	<0.00011	<0.000043	<0.00011	<0.00020	0.0095
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	0.000056 J	<0.000025

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		MW-50A	MW-51A	MW-51C	MW-53C	MW-54C
Sample Name:		WG-1620-MW50A-20200109	WG-1620-MW51A-20200109	WG-1620-MW51C-20200109	WG-1620-MW53C-20200109	WG-1620-MW54C-20200109
Sample Date:		01/09/2020	01/09/2020	01/09/2020	01/09/2020	01/09/2020
Parameters	**Unit**					
Semi-volatile Organic Compounds (Continued)						
Naphthalene	mg/L	<0.0020	<0.00032	<0.00030	<0.0012	<0.035
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	<0.000070	<0.00021	<0.00056	<0.00025	0.0056
Phenol	mg/L	<0.000066	<0.000035	<0.000035	0.00050	<0.000064
Pyrene	mg/L	<0.000034	<0.000083	<0.00011	<0.000061	0.0014
Total Petroleum Hydrocarbons						
Total Petroleum Hydrocarbons	mg/L	<0.19	<0.19	<0.19	--	--
Total Petroleum Hydrocarbons (>C12-C28)	mg/L	<0.19	<0.19	<0.19	--	--
Total Petroleum Hydrocarbons (>C28-C35)	mg/L	<0.19	<0.19	<0.19	--	--
Total Petroleum Hydrocarbons (C6-C12)	mg/L	<0.19	<0.19	<0.19	--	--
Metals						
Arsenic	mg/L	0.000718 J	0.00188 J	0.000452 J	0.000728 J	0.00122 J

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		MW-57A	MW-57B	MW-58A	MW-59A	MW-59B
Sample Name:		WG-1620-MW57A-20200108	WG-1620-MW57B-20200108	WG-1620-MW58A-20200108	WG-1620-MW59A-20200116	WG-1620-MW59B-20200116
Sample Date:		01/08/2020	01/08/2020	01/08/2020	01/16/2020	01/16/2020
Parameters	**Unit**					
Volatile Organic Compounds						
1,2-Dichloroethane	mg/L	<0.00020	<0.0020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	0.038	0.52	0.0053	<0.00020	<0.00020
Chlorobenzene	mg/L	0.00046 J	<0.0030	0.00072 J	<0.00030	<0.00030
Ethylbenzene	mg/L	0.015	0.25	0.0098	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	0.010	0.64	<0.00020	<0.00020	0.18
Vinyl chloride	mg/L	<0.00020	--	<0.00020	<0.00020	<0.00020
Xylenes (total)	mg/L	0.026	0.70	0.028	<0.00030	<0.00030
Semi-volatile Organic Compounds						
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.00021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	0.41	2.8	<0.000040	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.00058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.00042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.00021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	0.18	1.1	0.080	<0.00016	<0.000038
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.00020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.00047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	0.19	0.55	0.27	<0.00029	<0.000051
Acenaphthylene	mg/L	0.0025	0.0086	0.0015	<0.000015	<0.000015
Anthracene	mg/L	0.048	0.19	0.018	<0.000027	<0.000031
Benzo(a)anthracene	mg/L	0.0036	0.040	0.000091 J	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	0.0011	0.012	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.00030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.00037	<0.00037	<0.00011	<0.000037	<0.000037
Chrysene	mg/L	0.0030	0.042	0.000071 J	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.00020	<0.000020	<0.000020	<0.000020
Dibenzofuran	mg/L	0.15	0.49	0.13	<0.00016	<0.000050
Fluoranthene	mg/L	0.038	0.34	0.0099	<0.000032	<0.000025
Fluorene	mg/L	0.13	0.46	0.19	<0.00011	<0.000042
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.00025	<0.000025	<0.000025	<0.000025

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		MW-57A	MW-57B	MW-58A	MW-59A	MW-59B
Sample Name:		WG-1620-MW57A-20200108	WG-1620-MW57B-20200108	WG-1620-MW58A-20200108	WG-1620-MW59A-20200116	WG-1620-MW59B-20200116
Sample Date:		01/08/2020	01/08/2020	01/08/2020	01/16/2020	01/16/2020
Parameters	**Unit**					
Semi-volatile Organic Compounds (Continued)						
Naphthalene	mg/L	1.0	13	1.2	<0.0012	<0.00024
Nitrobenzene	mg/L	<0.000024	<0.00024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.00079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	0.17	1.1	0.062	<0.00012	<0.000099
Phenol	mg/L	0.0049	0.32	<0.000035	<0.000035	<0.000035
Pyrene	mg/L	0.025	0.21	0.0050	<0.000023	<0.000021
Total Petroleum Hydrocarbons						
Total Petroleum Hydrocarbons	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (>C12-C28)	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (>C28-C35)	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (C6-C12)	mg/L	--	--	--	--	--
Metals						
Arsenic	mg/L	0.0545	0.00404	0.000906 J	0.00368	0.000486 J

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		MW-59D	MW-59D	MW-61A	MW-62B	MW-63B
Sample Name:		WG-1620-MW59D-20200116	WG-1620-FD03-20200116	WG-1620-MW61A-20200116	WG-1620-MW62B-20200127	WG-1620-MW63B-20200116
Sample Date:		01/16/2020	01/16/2020	01/16/2020	01/27/2020	01/16/2020
			Duplicate			
Parameters	**Unit**					
Volatile Organic Compounds						
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	0.018
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	0.051
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Vinyl chloride	mg/L	--	--	<0.00020	--	--
Xylenes (total)	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	0.013
Semi-volatile Organic Compounds						
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	0.00016 J	<0.000021
2-Methylnaphthalene	mg/L	<0.000019	<0.000019	<0.000019	0.00011	<0.000056
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	<0.000036	<0.000027	<0.000052	0.040	<0.000059
Acenaphthylene	mg/L	<0.000015	<0.000015	<0.000015	0.00029	0.000032 J
Anthracene	mg/L	<0.000014	<0.000014	<0.000014	0.00096	<0.000081
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000037	<0.000037	0.000081 J	0.000095 J	0.000065 J
Chrysene	mg/L	<0.000021	<0.000021	<0.000021	0.000027 J	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	<0.000020	0.00014 J	0.000034 J
Dibenzofuran	mg/L	<0.000028	<0.000020	<0.000020	0.0042	<0.000063
Fluoranthene	mg/L	<0.000010	<0.000010	<0.000060	0.0020	<0.000023
Fluorene	mg/L	<0.000031	<0.000030	<0.000030	0.011	<0.00012
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		MW-59D	MW-59D	MW-61A	MW-62B	MW-63B
Sample Name:		WG-1620-MW59D-20200116	WG-1620-FD03-20200116	WG-1620-MW61A-20200116	WG-1620-MW62B-20200127	WG-1620-MW63B-20200116
Sample Date:		01/16/2020	01/16/2020	01/16/2020	01/27/2020	01/16/2020
			Duplicate			
Parameters	**Unit**					
Semi-volatile Organic Compounds (Continued)						
Naphthalene	mg/L	<0.00013	<0.000020	<0.00021	0.0010	<0.00035
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	<0.000043	<0.000021	<0.00010	0.00087	<0.000072
Phenol	mg/L	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	mg/L	<0.000019	<0.000019	<0.000059	0.0013	<0.000021
Total Petroleum Hydrocarbons						
Total Petroleum Hydrocarbons	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (>C12-C28)	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (>C28-C35)	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (C6-C12)	mg/L	--	--	--	--	--
Metals						
Arsenic	mg/L	0.000508 J	0.000478 J	0.00107 J	0.0161	0.00204

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

	Location ID:	MW-64A	MW-65D	MW-66D	MW-67B	MW-68A
	Sample Name:	WG-1620-MW64A-20200127	WG-1620-MW65D-20200116	WG-1620-MW66D-20200116	WG-1620-MW67B-20200115	WG-1620-MW68A-20200117
	Sample Date:	01/27/2020	01/16/2020	01/16/2020	01/15/2020	01/17/2020
Parameters	**Unit**					
Volatile Organic Compounds						
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Vinyl chloride	mg/L	--	--	--	--	--
Xylenes (total)	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Semi-volatile Organic Compounds						
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	0.00037	<0.000019	<0.000095	<0.000019	0.000048 J
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	0.00016	<0.000027	<0.000027	<0.000027	0.00030
Acenaphthylene	mg/L	<0.000015	<0.000015	<0.000015	<0.000015	0.000054 J
Anthracene	mg/L	0.000096 J	<0.000014	<0.000014	<0.000014	0.000059 J
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	0.00031	0.00026	0.000046 J	0.000090 J	<0.000061
Chrysene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	0.000079 J	<0.000020	<0.000020	<0.000020	0.000034 J
Dibenzofuran	mg/L	0.000100 J	<0.000020	<0.000020	<0.000020	<0.000020
Fluoranthene	mg/L	0.00028	<0.000010	<0.000010	<0.000010	0.00013
Fluorene	mg/L	0.000082 J	<0.000030	<0.000030	<0.000030	0.000069 J
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		**MW-64A**	**MW-65D**	**MW-66D**	**MW-67B**	**MW-68A**
Sample Name:		**WG-1620-MW64A-20200127**	**WG-1620-MW65D-20200116**	**WG-1620-MW66D-20200116**	**WG-1620-MW67B-20200115**	**WG-1620-MW68A-20200117**
Sample Date:		**01/27/2020**	**01/16/2020**	**01/16/2020**	**01/15/2020**	**01/17/2020**
Parameters	**Unit**					
Semi-volatile Organic Compounds (Continued)						
Naphthalene	mg/L	0.0020	<0.000020	<0.00013	<0.000020	<0.00022
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	0.00016
Phenol	mg/L	<0.000035	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	mg/L	0.00015	<0.000019	<0.000019	<0.000019	0.000068 J
Total Petroleum Hydrocarbons						
Total Petroleum Hydrocarbons	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (>C12-C28)	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (>C28-C35)	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (C6-C12)	mg/L	--	--	--	--	--
Metals						
Arsenic	mg/L	0.00126 J	0.000507 J	0.00138 J	0.000467 J	0.0423

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:	MW-68B	MW-68C	MW-70B	MW-71B	MW-72B
Sample Name:	WG-1620-MW68B-20200123	WG-1620-MW68C-20200117	WG-1620-MW70B-20200120	WG-1620-MW71B-20200115	WG-1620-MW72B-20200109
Sample Date:	01/23/2020	01/17/2020	01/20/2020	01/15/2020	01/09/2020
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.0050	<0.00020	<0.010	<0.00020	<0.0020
Benzene	mg/L	1.4	0.00056 J	1.9	0.0021	0.70
Chlorobenzene	mg/L	<0.0075	<0.00030	<0.015	<0.00030	<0.0030
Ethylbenzene	mg/L	0.39	0.00047 J	0.57	0.0013	0.13
Methylene chloride	mg/L	<0.025	<0.0010	<0.050	<0.0010	<0.010
Toluene	mg/L	0.23	<0.00020	2.1	<0.00020	0.58
Vinyl chloride	mg/L	<0.0050	--	<0.010	--	--
Xylenes (total)	mg/L	1.1	0.00062 J	1.5	0.0030	0.36
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.00042	<0.000021	<0.00021
2,4-Dimethylphenol	mg/L	0.075	<0.000040	49	<0.000040	13
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.0012	<0.000058	<0.00058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.00084	<0.000042	<0.00042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.00042	<0.000021	<0.00021
2-Methylnaphthalene	mg/L	1.1 J	0.00033	10	0.0060	0.22
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.00040	<0.000020	<0.00020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.00094	<0.000047	<0.00047
Acenaphthene	mg/L	0.44	0.000036 J	7.1	0.0053	0.079
Acenaphthylene	mg/L	0.0037	0.000023 J	0.079	0.00015	0.0023
Anthracene	mg/L	0.15	0.000036 J	5.8	0.0039	0.020
Benzo(a)anthracene	mg/L	0.047	0.000055 J	0.52	0.0011	0.0031
Benzo(a)pyrene	mg/L	0.0089	0.000063 J	0.13	0.00052	0.0011
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.00060	<0.000030	<0.00030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	0.0011	0.00029	0.0039 J	0.00063	<0.00037
Chrysene	mg/L	0.040	0.000054 J	0.63	0.0011	0.0033
Di-n-butylphthalate (DBP)	mg/L	0.00018 J	<0.000020	<0.00040	0.00098	<0.00020
Dibenzofuran	mg/L	0.50	0.000030 J	6.2	0.0049	0.061
Fluoranthene	mg/L	0.31	0.000074 J	4.7	0.0057	0.024
Fluorene	mg/L	0.32	0.000036 J	6.7	0.0038	0.049
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.00050	<0.000025	<0.00025

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		MW-68B	MW-68C	MW-70B	MW-71B	MW-72B
Sample Name:		WG-1620-MW68B-20200123	WG-1620-MW68C-20200117	WG-1620-MW70B-20200120	WG-1620-MW71B-20200115	WG-1620-MW72B-20200109
Sample Date:		01/23/2020	01/17/2020	01/20/2020	01/15/2020	01/09/2020
Parameters	**Unit**					
Semi-volatile Organic Compounds (Continued)						
Naphthalene	mg/L	12	<0.00052	71	0.0064	2.0
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.00048	<0.000024	<0.00024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.0016	<0.000079	<0.00079
Phenanthrene	mg/L	0.95	0.000042 J	14	0.017	0.075
Phenol	mg/L	<0.000035	<0.000035	3.4	<0.000035	5.2
Pyrene	mg/L	0.19	0.000092 J	3.2	0.0042	0.013
Total Petroleum Hydrocarbons						
Total Petroleum Hydrocarbons	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (>C12-C28)	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (>C28-C35)	mg/L	--	--	--	--	--
Total Petroleum Hydrocarbons (C6-C12)	mg/L	--	--	--	--	--
Metals						
Arsenic	mg/L	0.00944 J	<0.000400	0.00120 J	0.00279	0.00105 J

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		MW-74B	MW-75B	MW-76C	MW-77A	MW-78A
Sample Name:		WG-1620-MW74B-20200117	WG-1620-MW75B-20200117	WG-1620-MW76C-20200109	WG-1620-MW77A-20200109	WG-1620-MW78A-20200117
Sample Date:		01/17/2020	01/17/2020	01/09/2020	01/09/2020	01/17/2020
Parameters	**Unit**					
Volatile Organic Compounds						
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	0.12	0.12	<0.00020	0.058	0.018
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	0.076	0.037	<0.00030	0.063	0.011
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	0.29	0.13	<0.00020	0.0069	0.033
Vinyl chloride	mg/L	--	--	--	--	--
Xylenes (total)	mg/L	0.20	0.11	<0.00030	0.065	0.028
Semi-volatile Organic Compounds						
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	0.21	0.86	<0.00038	0.055	2.5
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	1.3	0.81	<0.00045	0.22	0.13
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	0.98	0.67	<0.00041	0.13	0.071
Acenaphthylene	mg/L	0.018	0.0086	0.000035 J	0.0013	0.0015
Anthracene	mg/L	0.42	0.39	<0.00017	0.0036	0.0040
Benzo(a)anthracene	mg/L	0.13	0.12	0.00014	<0.000050	0.00043
Benzo(a)pyrene	mg/L	0.034	0.035	0.000037 J	<0.000020	0.00014
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	0.0014	0.0021	<0.00016	<0.000077	0.00092
Chrysene	mg/L	0.082	0.095	0.00013	0.000041 J	0.00039
Di-n-butylphthalate (DBP)	mg/L	0.0022	0.0016	<0.000020	<0.000020	0.0016
Dibenzofuran	mg/L	0.72	0.54	<0.00029	0.079	0.055
Fluoranthene	mg/L	0.67	0.75	0.0010	0.00071	0.0029
Fluorene	mg/L	0.88	0.61	<0.00032	0.067	0.040
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		MW-74B	MW-75B	MW-76C	MW-77A	MW-78A
Sample Name:		WG-1620-MW74B-20200117	WG-1620-MW75B-20200117	WG-1620-MW76C-20200109	WG-1620-MW77A-20200109	WG-1620-MW78A-20200117
Sample Date:		01/17/2020	01/17/2020	01/09/2020	01/09/2020	01/17/2020
Parameters	**Unit**					
Semi-volatile Organic Compounds (Continued)						
Naphthalene	mg/L	8.5	7.5	<0.0038	4.7	3.1
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	2.3	1.9	<0.00069	0.031	0.031
Phenol	mg/L	0.048	0.0029	<0.000035	<0.000035	0.13
Pyrene	mg/L	0.44	0.51	0.00070	0.00046	0.0018
Total Petroleum Hydrocarbons						
Total Petroleum Hydrocarbons	mg/L	25.5	34.9	<0.19	12.1	4.30
Total Petroleum Hydrocarbons (>C12-C28)	mg/L	13	21	<0.19	3.8	1.6
Total Petroleum Hydrocarbons (>C28-C35)	mg/L	0.47 J	0.91	<0.19	<0.19	<0.19
Total Petroleum Hydrocarbons (C6-C12)	mg/L	12	13	<0.19	8.3	2.7
Metals						
Arsenic	mg/L	0.000443 J	0.00167 J	0.00299	0.0237	0.00991

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		MW-79A	MW-80B	MW-81B	MW-82B	MW-83B
Sample Name:		WG-1620-MW79A-20200117	WG-1620-MW80B-20200107	WG-1620-MW81B-20200109	WG-1620-MW82B-20200121	WG-1620-MW83B-20200110
Sample Date:		01/17/2020	01/07/2020	01/09/2020	01/21/2020	01/10/2020
Parameters	**Unit**					
Volatile Organic Compounds						
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	0.12	<0.00020	<0.00020	<0.00020	0.021
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	0.075	<0.00030	<0.00030	<0.00030	0.078
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	0.26	<0.00020	<0.00020	<0.00020	0.0052
Vinyl chloride	mg/L	--	--	--	--	<0.00020
Xylenes (total)	mg/L	0.20	<0.00030	<0.00030	<0.00030	0.098
Semi-volatile Organic Compounds						
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	6.7	0.00028	<0.000040	<0.000040	0.000072 J
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	0.43	<0.000036	<0.000019	0.00010	0.078
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	0.19	0.000046 J	<0.000077	0.000043 J	0.066
Acenaphthylene	mg/L	0.0036	<0.000015	<0.000015	<0.000015	0.00047
Anthracene	mg/L	0.0094	0.000026 J	<0.000014	0.000031 J	0.0039
Benzo(a)anthracene	mg/L	0.00081	<0.000050	<0.000050	<0.000050	0.000070 J
Benzo(a)pyrene	mg/L	0.00029	<0.000020	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000037	<0.000069	<0.000066	<0.000037	<0.000037
Chrysene	mg/L	0.00072	<0.000021	<0.000021	<0.000021	0.000065 J
Di-n-butylphthalate (DBP)	mg/L	0.00098	<0.000020	<0.000020	<0.000020	<0.000020
Dibenzofuran	mg/L	0.14	0.000048 J	<0.000020	0.000040 J	0.023
Fluoranthene	mg/L	0.0076	<0.000010	<0.000010	<0.000010	0.0033
Fluorene	mg/L	0.094	0.000032 J	<0.000030	0.000037 J	0.024
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025	<0.000025

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		MW-79A	MW-80B	MW-81B	MW-82B	MW-83B
Sample Name:		WG-1620-MW79A-20200117	WG-1620-MW80B-20200107	WG-1620-MW81B-20200109	WG-1620-MW82B-20200121	WG-1620-MW83B-20200110
Sample Date:		01/17/2020	01/07/2020	01/09/2020	01/21/2020	01/10/2020
Parameters	**Unit**					
Semi-volatile Organic Compounds (Continued)						
Naphthalene	mg/L	9.0	<0.00034	<0.00023	<0.00041	1.2
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	0.081	0.000027 J	<0.000021	0.00012	0.021
Phenol	mg/L	0.35	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	mg/L	0.0035	<0.000019	<0.000019	<0.000019	0.0022
Total Petroleum Hydrocarbons						
Total Petroleum Hydrocarbons	mg/L	37.0	<0.19	<0.19	--	--
Total Petroleum Hydrocarbons (>C12-C28)	mg/L	16	<0.19	<0.19	--	--
Total Petroleum Hydrocarbons (>C28-C35)	mg/L	<0.19	<0.19	<0.19	--	--
Total Petroleum Hydrocarbons (C6-C12)	mg/L	21	<0.19	<0.19	--	--
Metals						
Arsenic	mg/L	0.00893	0.00212	0.00130 J	0.00484	0.0709

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		MW-83C	MW-84B	MW-85C	MW-86C
Sample Name:		WG-1620-MW83C-20200110	WG-1620-MW84B-20200116	WG-1620-MW85C-20200109	WG-1620-MW86C-20200117
Sample Date:		01/10/2020	01/16/2020	01/09/2020	01/17/2020
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	0.0064	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	0.0094	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	<0.00020	0.0039
Vinyl chloride	mg/L	<0.00020	--	--	--
Xylenes (total)	mg/L	<0.00030	0.0032	<0.00030	<0.00030
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	0.00048	<0.000040	0.00018 J
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	0.00021	0.0065	<0.000041	0.000061 J
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	0.00035	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	0.00077 J	<0.000047
Acenaphthene	mg/L	0.00018	0.025	<0.000077	<0.000027
Acenaphthylene	mg/L	<0.000015	0.00031	<0.000015	<0.000015
Anthracene	mg/L	<0.000014	0.00095	<0.000014	<0.000014
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	0.000031 J	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000037	<0.000037	<0.00016	<0.000037
Chrysene	mg/L	<0.000021	<0.000021	0.000053 J	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
Dibenzofuran	mg/L	0.00015	0.015	<0.000059	<0.000020
Fluoranthene	mg/L	<0.000010	0.00037	0.00025	<0.000010
Fluorene	mg/L	0.00012	0.0063	<0.000055	<0.000030
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		**MW-83C**	**MW-84B**	**MW-85C**	**MW-86C**
Sample Name:		**WG-1620-MW83C-20200110**	**WG-1620-MW84B-20200116**	**WG-1620-MW85C-20200109**	**WG-1620-MW86C-20200117**
Sample Date:		**01/10/2020**	**01/16/2020**	**01/09/2020**	**01/17/2020**
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
Naphthalene	mg/L	0.0018	0.13	<0.00046	<0.00075
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	0.00017	0.0065	<0.000067	<0.000021
Phenol	mg/L	<0.000035	<0.000035	<0.000042	<0.000035
Pyrene	mg/L	<0.000019	0.00025	0.00021	<0.000019
Total Petroleum Hydrocarbons					
Total Petroleum Hydrocarbons	mg/L	--	--	<0.20	<0.19
Total Petroleum Hydrocarbons (>C12-C28)	mg/L	--	--	<0.20	<0.19
Total Petroleum Hydrocarbons (>C28-C35)	mg/L	--	--	<0.20	<0.19
Total Petroleum Hydrocarbons (C6-C12)	mg/L	--	--	<0.20	<0.19
Metals					
Arsenic	mg/L	0.00564	0.00363	0.00272	0.000645 J

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		MW-86C	MW-87C	MW-88C	MW-89B
Sample Name:		WG-1620-FD04-20200117	WG-1620-MW87C-20200120	WG-1620-MW88C-20200114	WG-1620-MW89B-20200116
Sample Date:		01/17/2020	01/20/2020	01/14/2020	01/16/2020
		Duplicate			
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	0.0045	<0.00020	<0.00020	<0.00020
Vinyl chloride	mg/L	--	<0.00020	--	--
Xylenes (total)	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	0.000066 J	0.00023	<0.000019	<0.000032
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	<0.000027	0.00011	<0.000027	<0.000083
Acenaphthylene	mg/L	<0.000015	<0.000015	<0.000015	0.000045 J
Anthracene	mg/L	0.00012	0.000088 J	<0.000014	0.00020
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050	0.00017
Benzo(a)pyrene	mg/L	<0.000020	0.000066 J	<0.000020	0.000079 J
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000053	<0.000037	0.000064 J	0.000099 J
Chrysene	mg/L	<0.000021	<0.000021	<0.000021	0.00024
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	<0.000020	0.000034 J
Dibenzofuran	mg/L	<0.000020	0.00011	<0.000020	<0.00011
Fluoranthene	mg/L	<0.000010	<0.000086	<0.000010	0.0012
Fluorene	mg/L	<0.000030	0.000093 J	<0.000030	<0.00018
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		MW-86C	MW-87C	MW-88C	MW-89B
Sample Name:		WG-1620-FD04-20200117	WG-1620-MW87C-20200120	WG-1620-MW88C-20200114	WG-1620-MW89B-20200116
Sample Date:		01/17/2020	01/20/2020	01/14/2020	01/16/2020
		Duplicate			
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
Naphthalene	mg/L	<0.00022	0.0011	<0.000020	<0.00029
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	0.00036	<0.00028	<0.000021	0.00083
Phenol	mg/L	<0.000035	0.00048	<0.000035	<0.000035
Pyrene	mg/L	<0.000019	<0.000057	<0.000019	0.00081
Total Petroleum Hydrocarbons					
Total Petroleum Hydrocarbons	mg/L	<0.19	--	--	--
Total Petroleum Hydrocarbons (>C12-C28)	mg/L	<0.19	--	--	--
Total Petroleum Hydrocarbons (>C28-C35)	mg/L	<0.19	--	--	--
Total Petroleum Hydrocarbons (C6-C12)	mg/L	<0.19	--	--	--
Metals					
Arsenic	mg/L	0.000699 J	0.00135 J	0.000862 J	0.000463 J

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

	Location ID:	MW-90B	P-11	TW-41B
	Sample Name:	WG-1620-MW90B-20200120	WG-1620-P11-20200114	WG-1620-TW41B-20200113
	Sample Date:	01/20/2020	01/14/2020	01/13/2020
Parameters	**Unit**			
Volatile Organic Compounds				
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	0.00039 J
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	<0.00020
Vinyl chloride	mg/L	<0.00020	--	--
Xylenes (total)	mg/L	<0.00030	<0.00030	0.0021
Semi-volatile Organic Compounds				
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	0.000075 J	<0.000040	0.00017 J
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	0.00012 J
2-Methylnaphthalene	mg/L	0.00034	0.000076 J	0.0071
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	0.00015	0.0046	0.12
Acenaphthylene	mg/L	<0.000015	<0.000015	0.0011
Anthracene	mg/L	0.00014	0.000081 J	0.0031
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	0.000052 J	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000037	<0.000037	<0.000037
Chrysene	mg/L	<0.000021	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	<0.000020
Dibenzofuran	mg/L	0.00011	0.00016	0.055
Fluoranthene	mg/L	<0.00012	<0.000010	0.0021
Fluorene	mg/L	0.00013	0.0013	0.078
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025

Table 2

Analytical Results Summary
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Location ID:		**MW-90B**	**P-11**	**TW-41B**
Sample Name:		**WG-1620-MW90B-20200120**	**WG-1620-P11-20200114**	**WG-1620-TW41B-20200113**
Sample Date:		**01/20/2020**	**01/14/2020**	**01/13/2020**
Parameters	**Unit**			
Semi-volatile Organic Compounds (Continued)				
Naphthalene	mg/L	0.0030	0.00048	0.058
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	0.00040	0.00035	0.0084
Phenol	mg/L	0.00019 J	<0.000035	<0.000035
Pyrene	mg/L	<0.000077	<0.000019	0.00082
Total Petroleum Hydrocarbons				
Total Petroleum Hydrocarbons	mg/L	--	--	--
Total Petroleum Hydrocarbons (>C12-C28)	mg/L	--	--	--
Total Petroleum Hydrocarbons (>C28-C35)	mg/L	--	--	--
Total Petroleum Hydrocarbons (C6-C12)	mg/L	--	--	--
Metals				
Arsenic	mg/L	0.00290	0.0360	0.0557

Notes:

< - Not detected at the associated reporting limit
J - Estimated concentration
JH - Estimated concentration; biased high
J - Estimated concentration
"--" - Not analyzed

Table 3

Analytical Methods
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

			Holding Time	
Parameter	**Method**	**Matrix**	**Collection to Extraction (Days)**	**Extraction to Analysis (Days)**
VOCs	SW-846 8260C	Water	-	14
SVOCs	SW-846 8270D	Water	7	40
TPH	TX1005	Water	14	40
Arsenic	SW-846 6020A	Water	-	180

Notes:

VOCs - Volatile Organic Compounds
SVOCs - Semi-volatile Organic Compounds
TPH - Total Petroleum Hydrocarbons
"-" - Not Applicable

Method References:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions

Table 4

Qualified Sample Results Due to Outlying LCS/LCSD Results
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Parameter	Analyte	LCS Date (mm/dd/yyyy)	LCS % Recovery	LCSD % Recovery	RPD (percent)	Control Limits % Recovery	Control Limits RPD	Associated Sample ID	Qualified Result		Units
SVOCs	2-Methylnaphthalene	01/31/2020	95.4	117	20.1	50-120	20	WG-1620-MW12B-20200123	320	J	mg/L
								WG-1620-MW41B-20200123	0.67	J	mg/L
								WG-1620-MW68B-20200123	1.1	J	mg/L

Notes:

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
RPD - Relative Percent Difference
SVOCs - Semi-volatile Organic Compounds
J - Estimated concentration

Table 5

Qualified Sample Data Due to Outlying Laboratory Duplicate Results
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Parameter	Sample ID	Analyte	RPD (percent)	RPD Control Limit (percent)	Associated Sample IDs	Qualified Result	Units
Metals	WG-1620-MW41B-20200123	Arsenic	11.1	10	WG-1620-MW12B-20200123	0.0491 J	mg/L
					WG-1620-MW41B-20200123	0.0842 J	mg/L
					WG-1620-MW68B-20200123	0.00944 J	mg/L

Notes:

RPD - Relative Percent Difference

J - Estimated concentration

Table 6

Qualified Sample Data Due to Analyte Concentrations in the Field Blanks
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Parameter	Field Blank ID	Blank Date (mm/dd/yyyy)	Analyte	Blank Result	Associated Sample ID	Original Result	Qualified Result	Units
SVOCs	WG-1620-FB01-20200107	01/07/2020	2-Methylnaphthalene	0.000031 J	WG-1620-MW80B-20200107	0.000036 J	<0.000036	mg/L
			bis(2-Ethylhexyl)phthalate (DEHP)	0.00017 J	WG-1620-MW49A-20200107	0.00011 J	<0.00011	mg/L
					WG-1620-MW80B-20200107	0.000069 J	<0.000069	mg/L
			Naphthalene	0.00019	WG-1620-MW80B-20200107	0.00034	<0.00034	mg/L
SVOCs	WG-1620-FB02-20200108	01/08/2020	bis(2-Ethylhexyl)phthalate (DEHP)	0.000099 J	WG-1620-MW18A-20200108	0.00043	<0.00043	mg/L
					WG-1620-MW57A-20200108	0.00037	<0.00037	mg/L
					WG-1620-MW58A-20200108	0.00011 J	<0.00011	mg/L
SVOCs	WG-1620-FB03-20200109	01/09/2020	2,4-Dimethylphenol	0.001	WG-1620-MW23C-20200109	0.047	<0.047	mg/L
					WG-1620-MW36A-20200109	0.000052 J	<0.000052	mg/L
					WG-1620-MW36B-20200109	0.000054 J	<0.000054	mg/L
					WG-1620-MW44A-20200109	0.00042	<0.00042	mg/L
					WG-1620-MW50A-20200109	0.00071	<0.00071	mg/L
					WG-1620-MW53C-20200109	0.0011	<0.0011	mg/L
					WG-1620-MW76C-20200109	0.00038	<0.00038	mg/L
			2-Methylnaphthalene	0.00038	WG-1620-MW36B-20200109	0.00013	<0.00013	mg/L
					WG-1620-MW44A-20200109	0.00035	<0.00035	mg/L
					WG-1620-MW50A-20200109	0.00019	<0.00019	mg/L

Table 6

Qualified Sample Data Due to Analyte Concentrations in the Field Blanks
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Parameter	Field Blank ID	Blank Date (mm/dd/yyyy)	Analyte	Blank Result	Associated Sample ID	Original Result	Qualified Result	Units
SVOCs	WG-1620-FB03-20200109	01/09/2020	2-Methylnaphthalene	0.00038	WG-1620-MW51A-20200109	0.000044 J	<0.000044	mg/L
					WG-1620-MW51C-20200109	0.000055 J	<0.000055	mg/L
					WG-1620-MW53C-20200109	0.00025	<0.00025	mg/L
					WG-1620-MW76C-20200109	0.00045	<0.00045	mg/L
					WG-1620-MW85C-20200109	0.000041 J	<0.000041	mg/L
			Acenaphthene	0.00015	WG-1620-MW36B-20200109	0.00017	<0.00017	mg/L
					WG-1620-MW50A-20200109	0.00037	<0.00037	mg/L
					WG-1620-MW51A-20200109	0.000040 J	<0.000040	mg/L
					WG-1620-MW51C-20200109	0.000094 J	<0.000094	mg/L
					WG-1620-MW53C-20200109	0.00032	<0.00032	mg/L
					WG-1620-MW76C-20200109	0.00041	<0.00041	mg/L
					WG-1620-MW81B-20200109	0.000077 J	<0.000077	mg/L
					WG-1620-MW85C-20200109	0.000077 J	<0.000077	mg/L
			Anthracene	0.000047 J	WG-1620-MW19C-20200109	0.00017	<0.00017	mg/L
					WG-1620-MW51A-20200109	0.000063 J	<0.000063	mg/L
					WG-1620-MW51C-20200109	0.00010	<0.00010	mg/L
					WG-1620-MW53C-20200109	0.000028 J	<0.000028	mg/L
					WG-1620-MW76C-20200109	0.00017	<0.00017	mg/L

Table 6

Qualified Sample Data Due to Analyte Concentrations in the Field Blanks
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Parameter	Field Blank ID	Blank Date (mm/dd/yyyy)	Analyte	Blank Result	Associated Sample ID	Original Result	Qualified Result	Units
SVOCs	WG-1620-FB03-20200109	01/09/2020	bis(2-Ethylhexyl)phthalate (DEHP)	0.00011 J	WG-1620-MW19C-20200109	0.000071 J	<0.000071	mg/L
					WG-1620-MW50A-20200109	0.000085 J	<0.000085	mg/L
					WG-1620-MW51A-20200109	0.00014 J	<0.00014	mg/L
					WG-1620-MW51C-20200109	0.000085 J	<0.000085	mg/L
					WG-1620-MW54C-20200109	0.00018 J	<0.00018	mg/L
					WG-1620-MW76C-20200109	0.00016 J	<0.00016	mg/L
					WG-1620-MW77A-20200109	0.000077 J	<0.000077	mg/L
					WG-1620-MW81B-20200109	0.000066 J	<0.000066	mg/L
					WG-1620-MW85C-20200109	0.00016 J	<0.00016	mg/L
			Dibenzofuran	0.00012	WG-1620-MW36B-20200109	0.00012	<0.00012	mg/L
					WG-1620-MW44A-20200109	0.00033	<0.00033	mg/L
					WG-1620-MW50A-20200109	0.00013	<0.00013	mg/L
					WG-1620-MW51A-20200109	0.000049 J	<0.000049	mg/L
					WG-1620-MW51C-20200109	0.00011	<0.00011	mg/L
					WG-1620-MW53C-20200109	0.00027	<0.00027	mg/L
					WG-1620-MW76C-20200109	0.00029	<0.00029	mg/L
SVOCs	WG-1620-FB03-20200109	01/09/2020	Dibenzofuran	0.00012	WG-1620-MW85C-20200109	0.000059 J	<0.000059	mg/L
			Fluorene	0.000092 J	WG-1620-MW36B-20200109	0.00012	<0.00012	mg/L
					WG-1620-MW50A-20200109	0.00011	<0.00011	mg/L

Table 6

Qualified Sample Data Due to Analyte Concentrations in the Field Blanks
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Parameter	Field Blank ID	Blank Date (mm/dd/yyyy)	Analyte	Blank Result	Associated Sample ID	Original Result	Qualified Result	Units
SVOCs	WG-1620-FB03-20200109	01/09/2020	Fluorene	0.000092 J	WG-1620-MW51A-20200109	0.000043 J	<0.000043	mg/L
					WG-1620-MW51C-20200109	0.00011	<0.00011	mg/L
					WG-1620-MW53C-20200109	0.00020	<0.00020	mg/L
					WG-1620-MW76C-20200109	0.00032	<0.00032	mg/L
					WG-1620-MW85C-20200109	0.000055 J	<0.000055	mg/L
			Naphthalene	0.0078	WG-1620-MW19C-20200109	0.00011	<0.00011	mg/L
					WG-1620-MW36A-20200109	0.00034	<0.00034	mg/L
					WG-1620-MW36B-20200109	0.00093	<0.00093	mg/L
					WG-1620-MW44A-20200109	0.0030	<0.0030	mg/L
					WG-1620-MW50A-20200109	0.0020	<0.0020	mg/L
					WG-1620-MW51A-20200109	0.00032	<0.00032	mg/L
					WG-1620-MW51C-20200109	0.00030	<0.00030	mg/L
					WG-1620-MW53C-20200109	0.0012	<0.0012	mg/L
					WG-1620-MW54C-20200109	0.035	<0.035	mg/L
					WG-1620-MW76C-20200109	0.0038	<0.0038	mg/L
					WG-1620-MW81B-20200109	0.00023	<0.00023	mg/L
					WG-1620-MW85C-20200109	0.00046	<0.00046	mg/L
			Phenanthrene	0.00019	WG-1620-MW19C-20200109	0.00045	<0.00045	mg/L
					WG-1620-MW36B-20200109	0.00010	<0.00010	mg/L

Table 6

Qualified Sample Data Due to Analyte Concentrations in the Field Blanks
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Parameter	Field Blank ID	Blank Date (mm/dd/yyyy)	Analyte	Blank Result	Associated Sample ID	Original Result	Qualified Result	Units
SVOCs	WG-1620-FB03-20200109	01/09/2020	Phenanthrene	0.00019	WG-1620-MW44A-20200109	0.00022	<0.00022	mg/L
					WG-1620-MW50A-20200109	0.000070 J	<0.000070	mg/L
					WG-1620-MW51A-20200109	0.00021	<0.00021	mg/L
					WG-1620-MW51C-20200109	0.00056	<0.00056	mg/L
					WG-1620-MW53C-20200109	0.00025	<0.00025	mg/L
					WG-1620-MW76C-20200109	0.00069	<0.00069	mg/L
					WG-1620-MW85C-20200109	0.000067 J	<0.000067	mg/L
			Phenol	0.000053 J	WG-1620-MW36B-20200109	0.000075 J	<0.000075	mg/L
					WG-1620-MW44A-20200109	0.00013 J	<0.00013	mg/L
					WG-1620-MW50A-20200109	0.000066 J	<0.000066	mg/L
					WG-1620-MW50A-20200109	0.000034 J	<0.000034	mg/L
					WG-1620-MW51A-20200109	0.000083 J	<0.000083	mg/L
					WG-1620-MW51C-20200109	0.00011	<0.00011	mg/L
					WG-1620-MW53C-20200109	0.000061 J	<0.000061	mg/L
					WG-1620-MW54C-20200109	0.000064 J	<0.000064	mg/L
					WG-1620-MW85C-20200109	0.000042 J	<0.000042	mg/L
SVOCs	WG-1620-FB04-20200110	01/10/2020	Naphthalene	0.00020	WG-1620-MW35A-20200110	0.00020	<0.00020	mg/L

Table 6

Qualified Sample Data Due to Analyte Concentrations in the Field Blanks
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Parameter	Field Blank ID	Blank Date (mm/dd/yyyy)	Analyte	Blank Result	Associated Sample ID	Original Result	Qualified Result	Units
SVOCs	WG-1620-FB05-20200113	01/13/2020	Naphthalene	0.00033	WG-1620-MW05-20200113	0.00012	<0.00012	mg/L
					WG-1620-MW12A-20200113	0.00051	<0.00051	mg/L
					WG-1620-MW42B-20200113	0.00076	<0.00076	mg/L
SVOCs	WG-1620-FB08-20200116	01/16/2020	2-Methylnaphthalene	0.000052 J	WG-1620-MW26A-20200116	0.000042 J	<0.000042	mg/L
					WG-1620-MW47C-20200116	0.00010	<0.00010	mg/L
					WG-1620-MW48C-20200116	0.000076 J	<0.000076	mg/L
					WG-1620-MW59A-20200116	0.00016	<0.00016	mg/L
					WG-1620-MW59B-20200116	0.000038 J	<0.000038	mg/L
					WG-1620-MW63B-20200116	0.000056 J	<0.000056	mg/L
					WG-1620-MW66D-20200116	0.000095 J	<0.000095	mg/L
SVOCs	WG-1620-FB08-20200116	01/16/2020	2-Methylnaphthalene	0.000052 J	WG-1620-MW89B-20200116	0.000032 J	<0.000032	mg/L
			Acenaphthene	0.000077 J	WG-1620-MW26A-20200116	0.00017	<0.00017	mg/L
					WG-1620-MW28A-20200116	0.00014	<0.00014	mg/L
					WG-1620-MW47C-20200116	0.000057 J	<0.000057	mg/L
					WG-1620-MW48C-20200116	0.000073 J	<0.000073	mg/L
					WG-1620-MW59A-20200116	0.00029	<0.00029	mg/L
					WG-1620-MW59B-20200116	0.000051 J	<0.000051	mg/L
					WG-1620-MW59D-20200116	0.000036 J	<0.000036	mg/L

Table 6

Qualified Sample Data Due to Analyte Concentrations in the Field Blanks
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Parameter	Field Blank ID	Blank Date (mm/dd/yyyy)	Analyte	Blank Result	Associated Sample ID	Original Result	Qualified Result	Units
SVOCs	WG-1620-FB08-20200116	01/16/2020	Acenaphthene	0.000077 J	WG-1620-MW61A-20200116	0.000052 J	<0.000052	mg/L
					WG-1620-MW63B-20200116	0.000059 J	<0.000059	mg/L
					WG-1620-MW89B-20200116	0.000083 J	<0.000083	mg/L
			Anthracene	0.000027 J	WG-1620-MW26A-20200116	0.000087 J	<0.000087	mg/L
					WG-1620-MW28A-20200116	0.00013	<0.00013	mg/L
					WG-1620-MW36D-20200116	0.000033 J	<0.000033	mg/L
					WG-1620-MW59A-20200116	0.000027 J	<0.000027	mg/L
					WG-1620-MW59B-20200116	0.000031 J	<0.000031	mg/L
					WG-1620-MW63B-20200116	0.000081 J	<0.000081	mg/L
			Dibenzofuran	0.000066 J	WG-1620-MW26A-20200116	0.000044 J	<0.000044	mg/L
					WG-1620-MW28A-20200116	0.00010	<0.00010	mg/L
					WG-1620-MW47C-20200116	0.000049 J	<0.000049	mg/L
					WG-1620-MW48C-20200116	0.000054 J	<0.000054	mg/L
					WG-1620-MW59A-20200116	0.00016	<0.00016	mg/L
					WG-1620-MW59B-20200116	0.000050 J	<0.000050	mg/L
					WG-1620-MW59D-20200116	0.000028 J	<0.000028	mg/L
					WG-1620-MW63B-20200116	0.000063 J	<0.000063	mg/L
					WG-1620-MW89B-20200116	0.00011	<0.00011	mg/L

Table 6

Qualified Sample Data Due to Analyte Concentrations in the Field Blanks
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Parameter	Field Blank ID	Blank Date (mm/dd/yyyy)	Analyte	Blank Result	Associated Sample ID	Original Result	Qualified Result	Units
SVOCs	WG-1620-FB08-20200116	01/16/2020	Fluoranthene	0.000033 J	WG-1620-MW47C-20200116	0.00011	<0.00011	mg/L
					WG-1620-MW48C-20200116	0.000061 J	<0.000061	mg/L
					WG-1620-MW59A-20200116	0.000032 J	<0.000032	mg/L
					WG-1620-MW59B-20200116	0.000025 J	<0.000025	mg/L
					WG-1620-MW61A-20200116	0.000060 J	<0.000060	mg/L
					WG-1620-MW63B-20200116	0.000023 J	<0.000023	mg/L
			Fluorene	0.000058 J	WG-1620-MW26A-20200116	0.00029	<0.00029	mg/L
					WG-1620-MW28A-20200116	0.00014	<0.00014	mg/L
					WG-1620-MW47C-20200116	0.000042 J	<0.000042	mg/L
					WG-1620-MW48C-20200116	0.000050 J	<0.000050	mg/L
					WG-1620-MW59A-20200116	0.00011	<0.00011	mg/L
					WG-1620-MW59B-20200116	0.000042 J	<0.000042	mg/L
					WG-1620-MW59D-20200116	0.000031 J	<0.000031	mg/L
					WG-1620-MW63B-20200116	0.00012	<0.00012	mg/L
					WG-1620-MW89B-20200116	0.00018	<0.00018	mg/L
			Naphthalene	0.00054	WG-1620-MW36D-20200116	0.000033 J	<0.000033	mg/L
					WG-1620-MW66D-20200116	0.00013	<0.00013	mg/L
					WG-1620-MW28C-20200116	0.00016	<0.00016	mg/L
					WG-1620-MW26A-20200116	0.00017	<0.00017	mg/L

Table 6

Qualified Sample Data Due to Analyte Concentrations in the Field Blanks
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Parameter	Field Blank ID	Blank Date (mm/dd/yyyy)	Analyte	Blank Result	Associated Sample ID	Original Result	Qualified Result	Units
SVOCs	WG-1620-FB08-20200116	01/16/2020	Naphthalene	0.00054	WG-1620-MW61A-20200116	0.00021	<0.00021	mg/L
					WG-1620-MW59B-20200116	0.00024	<0.00024	mg/L
					WG-1620-MW89B-20200116	0.00029	<0.00029	mg/L
					WG-1620-MW63B-20200116	0.00035	<0.00035	mg/L
					WG-1620-MW59D-20200116	0.00013	<0.00013	mg/L
					WG-1620-MW48C-20200116	0.00052	<0.00052	mg/L
					WG-1620-MW47C-20200116	0.00056	<0.00056	mg/L
					WG-1620-MW28A-20200116	0.00060	<0.00060	mg/L
					WG-1620-MW59A-20200116	0.0012	<0.0012	mg/L
			Phenanthrene	0.000067 J	WG-1620-MW26A-20200116	0.000030 J	<0.000030	mg/L
					WG-1620-MW36D-20200116	0.000047 J	<0.000047	mg/L
					WG-1620-MW47C-20200116	0.000088 J	<0.000088	mg/L
					WG-1620-MW48C-20200116	0.000052 J	<0.000052	mg/L
					WG-1620-MW59A-20200116	0.00012	<0.00012	mg/L
					WG-1620-MW59B-20200116	0.000099 J	<0.000099	mg/L
					WG-1620-MW59D-20200116	0.000043 J	<0.000043	mg/L
					WG-1620-MW61A-20200116	0.00010	<0.00010	mg/L
					WG-1620-MW63B-20200116	0.000072 J	<0.000072	mg/L

Table 6

Qualified Sample Data Due to Analyte Concentrations in the Field Blanks
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Parameter	Field Blank ID	Blank Date (mm/dd/yyyy)	Analyte	Blank Result	Associated Sample ID	Original Result	Qualified Result	Units
SVOCs	WG-1620-FB08-20200116	01/16/2020	Pyrene	0.000022 J	WG-1620-MW47C-20200116	0.00010	<0.00010	mg/L
					WG-1620-MW48C-20200116	0.000065 J	<0.000065	mg/L
					WG-1620-MW59A-20200116	0.000023 J	<0.000023	mg/L
					WG-1620-MW59B-20200116	0.000021 J	<0.000021	mg/L
					WG-1620-MW61A-20200116	0.000059 J	<0.000059	mg/L
					WG-1620-MW63B-20200116	0.000021 J	<0.000021	mg/L
SVOCs	WG-1620-FB09-20200117	01/17/2020	bis(2-Ethylhexyl)phthalate (DEHP)	0.000050 J	WG-1620-FD04-20200117	0.000053 J	<0.000053	mg/L
					WG-1620-MW68A-20200117	0.000061 J	<0.000061	mg/L
			Naphthalene	0.00017	WG-1620-FD04-20200117	0.00022	<0.00022	mg/L
					WG-1620-MW68A-20200117	0.00022	<0.00022	mg/L
					WG-1620-MW68C-20200117	0.00052	<0.00052	mg/L
					WG-1620-MW86C-20200117	0.00075	<0.00075	mg/L
SVOCs	WG-1620-FB10-20200120	01/20/2020	1,2-Diphenylhydrazine	0.000047 J	WG-1620-MW45C-20200120	0.000085 J	<0.000085	mg/L
			2-Methylnaphthalene	0.000035 J	WG-1620-FD05-20200120	0.000095 J	<0.000095	mg/L
SVOCs	WG-1620-FB10-20200120	01/20/2020	1,2-Diphenylhydrazine	0.000047 J	WG-1620-MW32AR-20200120	0.000028 J	<0.000028	mg/L
			2-Methylnaphthalene	0.000035 J	WG-1620-MW33A-20200120	0.000063 J	<0.000063	mg/L
					WG-1620-MW45C-20200120	0.00013	<0.00013	mg/L

Table 6

Qualified Sample Data Due to Analyte Concentrations in the Field Blanks
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Parameter	Field Blank ID	Blank Date (mm/dd/yyyy)	Analyte	Blank Result	Associated Sample ID	Original Result	Qualified Result	Units
SVOCs	WG-1620-FB10-20200120	01/20/2020	Fluoranthene	0.000060 J	WG-1620-MW32AR-20200120	0.00029	<0.00029	mg/L
					WG-1620-MW87C-20200120	0.000086 J	<0.000086	mg/L
					WG-1620-MW90B-20200120	0.00012	<0.00012	mg/L
			Naphthalene	0.00019	WG-1620-FD05-20200120	0.00066	<0.00066	mg/L
					WG-1620-MW32AR-20200120	0.00014	<0.00014	mg/L
					WG-1620-MW33A-20200120	0.00050	<0.00050	mg/L
					WG-1620-MW45C-20200120	0.00061	<0.00061	mg/L
			Phenanthrene	0.000066 J	WG-1620-FD05-20200120	0.000046 J	<0.000046	mg/L
					WG-1620-MW32AR-20200120	0.000032 J	<0.000032	mg/L
					WG-1620-MW33A-20200120	0.000056 J	<0.000056	mg/L
					WG-1620-MW45C-20200120	0.00027	<0.00027	mg/L
					WG-1620-MW87C-20200120	0.00028	<0.00028	mg/L
			Pyrene	0.000040 J	WG-1620-MW33A-20200120	0.00019	<0.00019 J	mg/L
					WG-1620-MW87C-20200120	0.000057 J	<0.000057	mg/L
					WG-1620-MW90B-20200120	0.000077 J	<0.000077	mg/L
SVOCs	WG-1620-FB11-20200121	01/21/2020	Naphthalene	0.00018	WG-1620-MW03-20200121	0.00024	<0.00024	mg/L
					WG-1620-MW82B-20200121	0.00041	<0.00041	mg/L

Table 6

Qualified Sample Data Due to Analyte Concentrations in the Field Blanks
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Parameter	Field Blank ID	Blank Date (mm/dd/yyyy)	Analyte	Blank Result	Associated Sample ID	Original Result	Qualified Result	Units
SVOCs	WG-1620-FB14-20200210	02/10/2020	2-Methylnaphthalene	0.00038	WG-1620-MW22AR-20200210	0.00012	<0.00012	mg/L
					WG-1620-MW22BR-20200210	0.000043 J	<0.000043	mg/L
SVOCs	WG-1620-FB14-20200210	02/10/2020	Acenaphthene	0.00020	WG-1620-MW22AR-20200210	0.00015	<0.00015	mg/L
			Dibenzofuran	0.00019	WG-1620-MW22AR-20200210	0.00015	<0.00015	mg/L
SVOCs	WG-1620-FB14-20200210	02/10/2020	Dibenzofuran	0.00019	WG-1620-MW22BR-20200210	0.00029	<0.00029	mg/L
			Naphthalene	0.0034	WG-1620-MW22AR-20200210	0.00044	<0.00044	mg/L
				0.0034	WG-1620-MW22BR-20200210	0.00013	<0.00013	mg/L
			Phenanthrene	0.000029 J	WG-1620-MW22BR-20200210	0.00013	<0.00013	mg/L
			Phenol	0.00053	WG-1620-MW22AR-20200210	0.000041 J	<0.000041	mg/L

Notes:

SVOCs - Semi-volatile Organic Compounds
VOCs - Volatile Organic Compounds
J - Estimated concentration
< - Not detected at the associated reporting limit

Table 7

Qualified Sample Data Due to Variability in Field Duplicate Results
HWPW - Site-Wide Monitoring
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January-February 2020

Parameter	Analyte	RPD	Diff	Sample ID	Qualified Result	Field Duplicate Sample ID	Qualified Result	Units
VOCs	Benzene	43.9	-	WG-1620-MW35B-20200110	0.025 J	WG-1620-FD01-20200110	0.016 J	mg/L
	Xylenes (total)	34.3	-		0.058 J		0.041 J	mg/L
SVOCs	2-Methylnaphthalene	77.2	-		0.14 J		0.062 J	mg/L
	Acenaphthene	56.5	-		0.059 J		0.033 J	mg/L
	Anthracene	46.8	-		0.0029 J		0.0018 J	mg/L
	Dibenzofuran	54.1	-		0.054 J		0.031 J	mg/L
	Fluoranthene	46.9	-		0.0015 J		0.00093 J	mg/L
	Fluorene	60.5	-		0.028 J		0.015 J	mg/L
	Naphthalene	175	-		2.0 J		0.13 J	mg/L
	Phenanthrene	59.5	-		0.024 J		0.013 J	mg/L
	Pyrene	43.5	-		0.00070 J		0.00045 J	mg/L
SVOCs	2,6-Dinitrotoluene	-	0.0028	WG-1620-MW21C-20200114	<0.00020 J	WG-1620-FD02-20200114	0.0030 J	mg/L
SVOCs	Acenaphthene	40.4	-	WG-1620-MW33A-20200120	0.00073 J	WG-1620-FD05-20200120	0.0011 J	mg/L
	Fluoranthene	47.8	-		0.00035 J		0.00057 J	mg/L
	Pyrene	-	0.00042		<0.00010 J		0.00052 J	mg/L

Notes:

RPD - Relative Percent Difference
Diff - Difference
VOCs - Volatile Organic Compounds
SVOCs - Semi-volatile Organic Compounds
J - Estimated concentration
< - Not detected at the associated reporting limit
"-" - Not Applicable

Attachment A
Laboratory NELAP Certificate

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-19-23

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

Expiration Date: 4/30/2020

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2019

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: ***Drinking Water***

Method EPA 1613

Analyte	AB	Analyte ID	Method ID
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10120408

Method EPA 200.8

Analyte	AB	Analyte ID	Method ID
Copper	TX	1055	10014605
Lead	TX	1075	10014605

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Matrix: ***Non-Potable Water***

Method EPA 1010

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10116606

Method EPA 120.1

Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	10006403

Method EPA 1311

Analyte	AB	Analyte ID	Method ID
TCLP	TX	849	10118806

Method EPA 1312

Analyte	AB	Analyte ID	Method ID
SPLP	TX	850	10119003

Method EPA 160.4

Analyte	AB	Analyte ID	Method ID
Residue-volatile	TX	1970	10010409

Method EPA 1613

Analyte	AB	Analyte ID	Method ID
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10120408
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10120408
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10120408
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10120408
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10120408
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10120408
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10120408
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10120408
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10120408
1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10120408
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10120408
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10120408
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10120408
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10120408

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Matrix: ***Non-Potable Water***

2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10120408
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10120408
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10120408
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10120408
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10120408
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10120408
Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10120408
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10120408
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10120408
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10120408
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10120408

Method EPA 1664

Analyte	**AB**	**Analyte ID**	**Method ID**
n-Hexane Extractable Material (HEM) (O&G)	TX	1803	10127807

Method EPA 180.1

Analyte	**AB**	**Analyte ID**	**Method ID**
Turbidity	TX	2055	10011606

Method EPA 200.8

Analyte	**AB**	**Analyte ID**	**Method ID**
Aluminum	TX	1000	10014605
Antimony	TX	1005	10014605
Arsenic	TX	1010	10014605
Barium	TX	1015	10014605
Beryllium	TX	1020	10014605
Boron	TX	1025	10014605
Cadmium	TX	1030	10014605
Calcium	TX	1035	10014605
Chromium	TX	1040	10014605
Cobalt	TX	1050	10014605
Copper	TX	1055	10014605
Iron	TX	1070	10014605

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Matrix: ***Non-Potable Water***

Lead	TX	1075	10014605
Magnesium	TX	1085	10014605
Manganese	TX	1090	10014605
Molybdenum	TX	1100	10014605
Nickel	TX	1105	10014605
Potassium	TX	1125	10014605
Selenium	TX	1140	10014605
Silver	TX	1150	10014605
Sodium	TX	1155	10014605
Strontium	TX	1160	10014605
Thallium	TX	1165	10014605
Tin	TX	1175	10014605
Titanium	TX	1180	10014605
Uranium	TX	3035	10014605
Vanadium	TX	1185	10014605
Zinc	TX	1190	10014605

Method EPA 245.1

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10036609

Method EPA 300.0

Analyte	**AB**	**Analyte ID**	**Method ID**
Bromide	TX	1540	10053200
Chloride	TX	1575	10053200
Fluoride	TX	1730	10053200
Nitrate as N	TX	1810	10053200
Nitrate-nitrite	TX	1820	10053200
Nitrite as N	TX	1840	10053200
Orthophosphate as P	TX	1870	10053200
Sulfate	TX	2000	10053200

Method EPA 325.1

Analyte	**AB**	**Analyte ID**	**Method ID**

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Matrix: ***Non-Potable Water***

Chloride	TX	1575	10056801

Method EPA 335.1

Analyte	AB	Analyte ID	Method ID
Amenable cyanide	TX	1510	10060001

Method EPA 335.2

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	10278203

Method EPA 335.4

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	10061402

Method EPA 350.3

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	10064401

Method EPA 365.3

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	10070801
Phosphorus	TX	1910	10070801

Method EPA 375.4

Analyte	AB	Analyte ID	Method ID
Sulfate	TX	2000	10073800

Method EPA 376.1

Analyte	AB	Analyte ID	Method ID
Sulfide	TX	2005	10074201

Method EPA 410.4

Analyte	AB	Analyte ID	Method ID
Chemical oxygen demand (COD)	TX	1565	10077404

Method EPA 415.1

Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	10078407

Method EPA 420.1

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10079400

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Matrix: ***Non-Potable Water***

Method EPA 420.4

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10080203

Method EPA 6020

Analyte	AB	Analyte ID	Method ID
Aluminum	TX	1000	10156419
Antimony	TX	1005	10156419
Arsenic	TX	1010	10156419
Barium	TX	1015	10156419
Beryllium	TX	1020	10156419
Boron	TX	1025	10156419
Cadmium	TX	1030	10156419
Calcium	TX	1035	10156419
Chromium	TX	1040	10156419
Cobalt	TX	1050	10156419
Copper	TX	1055	10156419
Iron	TX	1070	10156419
Lead	TX	1075	10156419
Lithium	TX	1080	10156419
Magnesium	TX	1085	10156419
Manganese	TX	1090	10156419
Molybdenum	TX	1100	10156419
Nickel	TX	1105	10156419
Potassium	TX	1125	10156419
Selenium	TX	1140	10156419
Silver	TX	1150	10156419
Sodium	TX	1155	10156419
Strontium	TX	1160	10156419
Thallium	TX	1165	10156419
Tin	TX	1175	10156419
Titanium	TX	1180	10156419

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NELAP - Recognized Laboratory Fields of Accreditation

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Matrix: ***Non-Potable Water***

Vanadium	TX	1185	10156419
Zinc	TX	1190	10156419

Method EPA 608

Analyte	AB	Analyte ID	Method ID
4,4'-DDD	TX	7355	10103603
4,4'-DDE	TX	7360	10103603
4,4'-DDT	TX	7365	10103603
Aldrin	TX	7025	10103603
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10103603
alpha-Chlordane	TX	7240	10103603
Aroclor-1016 (PCB-1016)	TX	8880	10103603
Aroclor-1221 (PCB-1221)	TX	8885	10103603
Aroclor-1232 (PCB-1232)	TX	8890	10103603
Aroclor-1242 (PCB-1242)	TX	8895	10103603
Aroclor-1248 (PCB-1248)	TX	8900	10103603
Aroclor-1254 (PCB-1254)	TX	8905	10103603
Aroclor-1260 (PCB-1260)	TX	8910	10103603
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10103603
Chlordane (tech.)	TX	7250	10103603
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10103603
Dieldrin	TX	7470	10103603
Endosulfan I	TX	7510	10103603
Endosulfan II	TX	7515	10103603
Endosulfan sulfate	TX	7520	10103603
Endrin	TX	7540	10103603
Endrin aldehyde	TX	7530	10103603
Endrin ketone	TX	7535	10103603
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10103603
gamma-Chlordane	TX	7245	10103603
Heptachlor	TX	7685	10103603

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-19-23

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

Expiration Date: 4/30/2020

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2019

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Matrix: ***Non-Potable Water***

Heptachlor epoxide	TX	7690	10103603
Methoxychlor	TX	7810	10103603
Toxaphene (Chlorinated camphene)	TX	8250	10103603

Method EPA 624

Analyte	AB	Analyte ID	Method ID
1,1,1-Trichloroethane	TX	5160	10107207
1,1,2,2-Tetrachloroethane	TX	5110	10107207
1,1,2-Trichloroethane	TX	5165	10107207
1,1-Dichloroethane	TX	4630	10107207
1,1-Dichloroethylene	TX	4640	10107207
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10107207
1,2-Dichlorobenzene	TX	4610	10107207
1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10107207
1,2-Dichloropropane	TX	4655	10107207
1,3-Dichlorobenzene	TX	4615	10107207
1,4-Dichlorobenzene	TX	4620	10107207
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10107207
2-Chloroethyl vinyl ether	TX	4500	10107207
Acetone (2-Propanone)	TX	4315	10107207
Acrolein (Propenal)	TX	4325	10107207
Acrylonitrile	TX	4340	10107207
Benzene	TX	4375	10107207
Bromodichloromethane	TX	4395	10107207
Bromoform	TX	4400	10107207
Carbon tetrachloride	TX	4455	10107207
Chlorobenzene	TX	4475	10107207
Chlorodibromomethane	TX	4575	10107207
Chloroethane (Ethyl chloride)	TX	4485	10107207
Chloroform	TX	4505	10107207
cis-1,2-Dichloroethylene	TX	4645	10107207

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Matrix: ***Non-Potable Water***

cis-1,3-Dichloropropene	TX	4680	10107207
Ethylbenzene	TX	4765	10107207
m+p-xylene	TX	5240	10107207
Methyl bromide (Bromomethane)	TX	4950	10107207
Methyl chloride (Chloromethane)	TX	4960	10107207
Methyl tert-butyl ether (MTBE)	TX	5000	10107207
Methylene chloride (Dichloromethane)	TX	4975	10107207
Naphthalene	TX	5005	10107207
o-Xylene	TX	5250	10107207
Tetrachloroethylene (Perchloroethylene)	TX	5115	10107207
Toluene	TX	5140	10107207
trans-1,2-Dichloroethylene	TX	4700	10107207
trans-1,3-Dichloropropylene	TX	4685	10107207
Trichloroethene (Trichloroethylene)	TX	5170	10107207
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10107207
Vinyl chloride	TX	5235	10107207
Xylene (total)	TX	5260	10107207

Method EPA 625

Analyte	**AB**	**Analyte ID**	**Method ID**
1,2,4,5-Tetrachlorobenzene	TX	6715	10107401
1,2,4-Trichlorobenzene	TX	5155	10107401
1,2-Dichlorobenzene	TX	4610	10107401
1,2-Diphenylhydrazine	TX	6220	10107401
1,3-Dichlorobenzene	TX	4615	10107401
1,4-Dichlorobenzene	TX	4620	10107401
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10107401
2,4,5-Trichlorophenol	TX	6835	10107401
2,4,6-Trichlorophenol	TX	6840	10107401
2,4-Dichlorophenol	TX	6000	10107401
2,4-Dimethylphenol	TX	6130	10107401

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Matrix: ***Non-Potable Water***

2,4-Dinitrophenol	TX	6175	10107401
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10107401
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10107401
2-Chloronaphthalene	TX	5795	10107401
2-Chlorophenol	TX	5800	10107401
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10107401
2-Methylphenol (o-Cresol)	TX	6400	10107401
2-Nitrophenol	TX	6490	10107401
3,3'-Dichlorobenzidine	TX	5945	10107401
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10107401
4-Chloro-3-methylphenol	TX	5700	10107401
4-Chlorophenyl phenylether	TX	5825	10107401
4-Methylphenol (p-Cresol)	TX	6410	10107401
4-Nitrophenol	TX	6500	10107401
Acenaphthene	TX	5500	10107401
Acenaphthylene	TX	5505	10107401
Anthracene	TX	5555	10107401
Benzidine	TX	5595	10107401
Benzo(a)anthracene	TX	5575	10107401
Benzo(a)pyrene	TX	5580	10107401
Benzo(b)fluoranthene	TX	5585	10107401
Benzo(g,h,i)perylene	TX	5590	10107401
Benzo(k)fluoranthene	TX	5600	10107401
bis(2-Chloroethoxy)methane	TX	5760	10107401
bis(2-Chloroethyl) ether	TX	5765	10107401
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10107401
Butyl benzyl phthalate	TX	5670	10107401
Chrysene	TX	5855	10107401
Dibenz(a,h) anthracene	TX	5895	10107401
Diethyl phthalate	TX	6070	10107401

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Matrix: ***Non-Potable Water***

Dimethyl phthalate	TX	6135	10107401
Di-n-butyl phthalate	TX	5925	10107401
Di-n-octyl phthalate	TX	6200	10107401
Fluoranthene	TX	6265	10107401
Fluorene	TX	6270	10107401
Hexachlorobenzene	TX	6275	10107401
Hexachlorobutadiene	TX	4835	10107401
Hexachlorocyclopentadiene	TX	6285	10107401
Hexachloroethane	TX	4840	10107401
Indeno(1,2,3-cd) pyrene	TX	6315	10107401
Isophorone	TX	6320	10107401
Naphthalene	TX	5005	10107401
Nitrobenzene	TX	5015	10107401
n-Nitrosodiethylamine	TX	6525	10107401
n-Nitrosodimethylamine	TX	6530	10107401
n-Nitrosodi-n-butylamine	TX	5025	10107401
n-Nitrosodi-n-propylamine	TX	6545	10107401
n-Nitrosodiphenylamine	TX	6535	10107401
Pentachlorobenzene	TX	6590	10107401
Pentachlorophenol	TX	6605	10107401
Phenanthrene	TX	6615	10107401
Phenol	TX	6625	10107401
Pyrene	TX	6665	10107401
Pyridine	TX	5095	10107401

Method EPA 7196

Analyte	**AB**	**Analyte ID**	**Method ID**
Chromium (VI)	TX	1045	10162206

Method EPA 7470

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10165603

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Matrix: ***Non-Potable Water***

Method EPA 8011

Analyte	AB	Analyte ID	Method ID
1,2,3-Trichloropropane	TX	5180	10173009
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10173009
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10173009

Method EPA 8015

Analyte	AB	Analyte ID	Method ID
Diesel range organics (DRO)	TX	9369	10173203
Ethanol	TX	4750	10173203
Ethylene glycol	TX	4785	10173203
Gasoline range organics (GRO)	TX	9408	10173203
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10173203
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10173203
Methanol	TX	4930	10173203
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10173203
n-Propanol (1-Propanol)	TX	5055	10173203
Propylene Glycol	TX	6657	10173203
tert-Butyl alcohol	TX	4420	10173203

Method EPA 8021

Analyte	AB	Analyte ID	Method ID
Benzene	TX	4375	10174400
Ethylbenzene	TX	4765	10174400
m+p-xylene	TX	5240	10174400
Methyl tert-butyl ether (MTBE)	TX	5000	10174400
o-Xylene	TX	5250	10174400
Toluene	TX	5140	10174400
Xylene (total)	TX	5260	10174400

Method EPA 8081

Analyte	AB	Analyte ID	Method ID
4,4'-DDD	TX	7355	10178402
4,4'-DDE	TX	7360	10178402

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Matrix: ***Non-Potable Water***

4,4'-DDT	TX	7365	10178402
Aldrin	TX	7025	10178402
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10178402
alpha-Chlordane	TX	7240	10178402
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10178402
Chlordane (tech.)	TX	7250	10178402
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10178402
Dieldrin	TX	7470	10178402
Endosulfan I	TX	7510	10178402
Endosulfan II	TX	7515	10178402
Endosulfan sulfate	TX	7520	10178402
Endrin	TX	7540	10178402
Endrin aldehyde	TX	7530	10178402
Endrin ketone	TX	7535	10178402
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10178402
gamma-Chlordane	TX	7245	10178402
Heptachlor	TX	7685	10178402
Heptachlor epoxide	TX	7690	10178402
Hexachlorobenzene	TX	6275	10178402
Methoxychlor	TX	7810	10178402
Mirex	TX	7870	10178402
Toxaphene (Chlorinated camphene)	TX	8250	10178402

Method EPA 8082

Analyte	**AB**	**Analyte ID**	**Method ID**
Aroclor-1016 (PCB-1016)	TX	8880	10179201
Aroclor-1221 (PCB-1221)	TX	8885	10179201
Aroclor-1232 (PCB-1232)	TX	8890	10179201
Aroclor-1242 (PCB-1242)	TX	8895	10179201
Aroclor-1248 (PCB-1248)	TX	8900	10179201
Aroclor-1254 (PCB-1254)	TX	8905	10179201

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Matrix: ***Non-Potable Water***

Aroclor-1260 (PCB-1260)	TX	8910	10179201
PCBs (total)	TX	8870	10179201

Method EPA 8151

Analyte	AB	Analyte ID	Method ID
2,4,5-T	TX	8655	10183003
2,4-D	TX	8545	10183003
2,4-DB	TX	8560	10183003
Dalapon	TX	8555	10183003
Dicamba	TX	8595	10183003
Dichloroprop (Dichlorprop, Weedone)	TX	8605	10183003
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10183003
MCPA	TX	7775	10183003
MCPP	TX	7780	10183003
Silvex (2,4,5-TP)	TX	8650	10183003

Method EPA 8260

Analyte	AB	Analyte ID	Method ID
1,1,1,2-Tetrachloroethane	TX	5105	10184404
1,1,1-Trichloroethane	TX	5160	10184404
1,1,2,2-Tetrachloroethane	TX	5110	10184404
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	TX	5195	10184404
1,1,2-Trichloroethane	TX	5165	10184404
1,1-Dichloroethane	TX	4630	10184404
1,1-Dichloroethylene	TX	4640	10184404
1,1-Dichloropropene	TX	4670	10184404
1,2,3-Trichlorobenzene	TX	5150	10184404
1,2,3-Trichloropropane	TX	5180	10184404
1,2,4-Trichlorobenzene	TX	5155	10184404
1,2,4-Trimethylbenzene	TX	5210	10184404
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10184404
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10184404
1,2-Dichlorobenzene	TX	4610	10184404

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Matrix: ***Non-Potable Water***

1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10184404
1,2-Dichloropropane	TX	4655	10184404
1,3,5-Trimethylbenzene	TX	5215	10184404
1,3-Dichlorobenzene	TX	4615	10184404
1,3-Dichloropropane	TX	4660	10184404
1,4-Dichlorobenzene	TX	4620	10184404
1,4-Dioxane (1,4-Diethyleneoxide)	TX	4735	10184404
1-Chlorohexane	TX	4510	10184404
1-Propanol	TX	5060	10184404
2,2-Dichloropropane	TX	4665	10184404
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10184404
2-Chloroethyl vinyl ether	TX	4500	10184404
2-Chlorotoluene	TX	4535	10184404
2-Hexanone (MBK)	TX	4860	10184404
2-Pentanone	TX	5045	10184404
4-Chlorotoluene	TX	4540	10184404
4-Isopropyltoluene (p-Cymene)	TX	4915	10184404
4-Methyl-2-pentanone (MIBK)	TX	4995	10184404
Acetone (2-Propanone)	TX	4315	10184404
Acetonitrile	TX	4320	10184404
Acrolein (Propenal)	TX	4325	10184404
Acrylonitrile	TX	4340	10184404
Allyl alcohol	TX	4350	10184404
Allyl chloride (3-Chloropropene)	TX	4355	10184404
Benzene	TX	4375	10184404
Benzyl chloride	TX	5635	10184404
Bromobenzene	TX	4385	10184404
Bromochloromethane	TX	4390	10184404
Bromodichloromethane	TX	4395	10184404
Bromoform	TX	4400	10184404

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Matrix: ***Non-Potable Water***

Carbon disulfide	TX	4450	10184404
Carbon tetrachloride	TX	4455	10184404
Chlorobenzene	TX	4475	10184404
Chlorodibromomethane	TX	4575	10184404
Chloroethane (Ethyl chloride)	TX	4485	10184404
Chloroform	TX	4505	10184404
Chloroprene (2-Chloro-1,3-butadiene)	TX	4525	10184404
cis-1,2-Dichloroethylene	TX	4645	10184404
cis-1,3-Dichloropropene	TX	4680	10184404
Dibromofluoromethane	TX	4590	10184404
Dibromomethane (Methylene bromide)	TX	4595	10184404
Dichlorodifluoromethane (Freon-12)	TX	4625	10184404
Diethyl ether	TX	4725	10184404
Di-isopropylether (DIPE)	TX	9375	10184404
Epichlorohydrin (1-Chloro-2,3-epoxypropane)	TX	4745	10184404
Ethanol	TX	4750	10184404
Ethyl acetate	TX	4755	10184404
Ethyl methacrylate	TX	4810	10184404
Ethylbenzene	TX	4765	10184404
Ethylene oxide	TX	4795	10184404
Ethyl-t-butylether (ETBE) (2-Ethoxy-2-methylpropane)	TX	4770	10184404
Hexachlorobutadiene	TX	4835	10184404
Iodomethane (Methyl iodide)	TX	4870	10184404
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10184404
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10184404
Isopropylbenzene (Cumene)	TX	4900	10184404
m+p-xylene	TX	5240	10184404
Methacrylonitrile	TX	4925	10184404
Methyl acetate	TX	4940	10184404
Methyl acrylate	TX	4945	10184404

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Matrix: ***Non-Potable Water***

Methyl bromide (Bromomethane)	TX	4950	10184404
Methyl chloride (Chloromethane)	TX	4960	10184404
Methyl methacrylate	TX	4990	10184404
Methyl tert-butyl ether (MTBE)	TX	5000	10184404
Methylcyclohexane	TX	4965	10184404
Methylene chloride (Dichloromethane)	TX	4975	10184404
Naphthalene	TX	5005	10184404
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10184404
n-Butylbenzene	TX	4435	10184404
n-Propylbenzene	TX	5090	10184404
o-Xylene	TX	5250	10184404
Pentachloroethane	TX	5035	10184404
Propionitrile (Ethyl cyanide)	TX	5080	10184404
Pyridine	TX	5095	10184404
sec-Butylbenzene	TX	4440	10184404
Styrene	TX	5100	10184404
T-amylmethylether (TAME)	TX	4370	10184404
tert-Butyl alcohol	TX	4420	10184404
tert-Butylbenzene	TX	4445	10184404
Tetrachloroethylene (Perchloroethylene)	TX	5115	10184404
Toluene	TX	5140	10184404
trans-1,2-Dichloroethylene	TX	4700	10184404
trans-1,3-Dichloropropylene	TX	4685	10184404
trans-1,4-Dichloro-2-butene	TX	4605	10184404
Trichloroethene (Trichloroethylene)	TX	5170	10184404
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10184404
Vinyl acetate	TX	5225	10184404
Vinyl chloride	TX	5235	10184404
Xylene (total)	TX	5260	10184404

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Matrix: ***Non-Potable Water***

Method EPA 8270

Analyte	AB	Analyte ID	Method ID
1,2,4,5-Tetrachlorobenzene	TX	6715	10185203
1,2,4-Trichlorobenzene	TX	5155	10185203
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10185203
1,2-Dichlorobenzene	TX	4610	10185203
1,2-Dinitrobenzene	TX	6155	10185203
1,2-Diphenylhydrazine	TX	6220	10185203
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10185203
1,3-Dichlorobenzene	TX	4615	10185203
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10185203
1,4-Dichlorobenzene	TX	4620	10185203
1,4-Dinitrobenzene	TX	6165	10185203
1,4-Naphthoquinone	TX	6420	10185203
1,4-Phenylenediamine	TX	6630	10185203
1-Chloronaphthalene	TX	5790	10185203
1-Naphthylamine	TX	6425	10185203
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10185203
2,3,4,6-Tetrachlorophenol	TX	6735	10185203
2,4,5-Trichlorophenol	TX	6835	10185203
2,4,5-Trimethylaniline	TX	6880	10185203
2,4,6-Trichlorophenol	TX	6840	10185203
2,4-Diaminotoluene	TX	5880	10185203
2,4-Dichlorophenol	TX	6000	10185203
2,4-Dimethylphenol	TX	6130	10185203
2,4-Dinitrophenol	TX	6175	10185203
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10185203
2,6-Dichlorophenol	TX	6005	10185203
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10185203
2-Acetylaminofluorene	TX	5515	10185203

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Matrix: ***Non-Potable Water***

2-Chloronaphthalene	TX	5795	10185203
2-Chlorophenol	TX	5800	10185203
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10185203
2-Methylaniline (o-Toluidine)	TX	5145	10185203
2-Methylnaphthalene	TX	6385	10185203
2-Methylphenol (o-Cresol)	TX	6400	10185203
2-Naphthylamine	TX	6430	10185203
2-Nitroaniline	TX	6460	10185203
2-Nitrophenol	TX	6490	10185203
2-Picoline (2-Methylpyridine)	TX	5050	10185203
3,3'-Dichlorobenzidine	TX	5945	10185203
3,3'-Dimethylbenzidine	TX	6120	10185203
3-Methylcholanthrene	TX	6355	10185203
3-Methylphenol (m-Cresol)	TX	6405	10185203
3-Nitroaniline	TX	6465	10185203
4-Aminobiphenyl	TX	5540	10185203
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10185203
4-Chloro-3-methylphenol	TX	5700	10185203
4-Chloroaniline	TX	5745	10185203
4-Chlorophenyl phenylether	TX	5825	10185203
4-Dimethyl aminoazobenzene	TX	6105	10185203
4-Methylphenol (p-Cresol)	TX	6410	10185203
4-Nitroaniline	TX	6470	10185203
4-Nitrobiphenyl	TX	6480	10185203
4-Nitrophenol	TX	6500	10185203
4-Nitroquinoline-1-oxide	TX	6510	10185203
5-Chloro-2-methylaniline	TX	5695	10185203
5-Nitro-o-toluidine	TX	6570	10185203
7,12-Dimethylbenz(a) anthracene	TX	6115	10185203
a-a-Dimethylphenethylamine	TX	6125	10185203

Texas Commission on Environmental Quality

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Issue Date: 5/1/2019

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Matrix: ***Non-Potable Water***

Acenaphthene	TX	5500	10185203
Acenaphthylene	TX	5505	10185203
Acetophenone	TX	5510	10185203
Aniline	TX	5545	10185203
Anthracene	TX	5555	10185203
Aramite	TX	5560	10185203
Atrazine	TX	7065	10185203
Azinphos-methyl (Guthion)	TX	7075	10185203
Azobenzene	TX	5562	10185203
Benzenethiol (Thiophenol)	TX	6750	10185203
Benzidine	TX	5595	10185203
Benzo(a)anthracene	TX	5575	10185203
Benzo(a)pyrene	TX	5580	10185203
Benzo(b)fluoranthene	TX	5585	10185203
Benzo(e)pyrene	TX	5605	10185203
Benzo(g,h,i)perylene	TX	5590	10185203
Benzo(k)fluoranthene	TX	5600	10185203
Benzoic acid	TX	5610	10185203
Benzyl alcohol	TX	5630	10185203
Biphenyl	TX	5640	10185203
bis(2-Chloroethoxy)methane	TX	5760	10185203
bis(2-Chloroethyl) ether	TX	5765	10185203
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10185203
Butyl benzyl phthalate	TX	5670	10185203
Caprolactam	TX	7180	10185203
Captan	TX	7190	10185203
Carbaryl (Sevin)	TX	7195	10185203
Carbazole	TX	5680	10185203
Carbophenothion	TX	7220	10185203
Chlorobenzilate	TX	7260	10185203

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Chrysene	TX	5855	10185203
Coumaphos	TX	7315	10185203
Demeton	TX	7390	10185203
Demeton	TX	7390	10185203
Demeton-o	TX	7395	10185203
Demeton-s	TX	7385	10185203
Diallate	TX	7405	10185203
Dibenz(a,h) anthracene	TX	5895	10185203
Dibenz(a,j) acridine	TX	5900	10185203
Dibenzofuran	TX	5905	10185203
Dichlorovos (DDVP, Dichlorvos)	TX	8610	10185203
Diethyl phthalate	TX	6070	10185203
Dimethoate	TX	7475	10185203
Dimethoate	TX	7475	10185203
Dimethyl phthalate	TX	6135	10185203
Di-n-butyl phthalate	TX	5925	10185203
Di-n-octyl phthalate	TX	6200	10185203
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10185203
Dioxathion	TX	7495	10185203
Diphenylamine	TX	6205	10185203
Disulfoton	TX	8625	10185203
Ethion	TX	7565	10185203
Ethyl methanesulfonate	TX	6260	10185203
Famphur	TX	7580	10185203
Fluoranthene	TX	6265	10185203
Fluorene	TX	6270	10185203
Hexachlorobenzene	TX	6275	10185203
Hexachlorobutadiene	TX	4835	10185203
Hexachlorocyclopentadiene	TX	6285	10185203
Hexachloroethane	TX	4840	10185203

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Matrix: ***Non-Potable Water***

Hexachlorophene	TX	6290	10185203
Hexachloropropene	TX	6295	10185203
Indeno(1,2,3-cd) pyrene	TX	6315	10185203
Isodrin	TX	7725	10185203
Isophorone	TX	6320	10185203
Isosafrole	TX	6325	10185203
Kepone	TX	7740	10185203
Maleic anhydride	TX	6335	10185203
Methapyrilene	TX	6345	10185203
Methyl methanesulfonate	TX	6375	10185203
Methyl parathion (Parathion, methyl)	TX	7825	10185203
Mevinphos	TX	7850	10185203
Naled	TX	7905	10185203
Naphthalene	TX	5005	10185203
Nitrobenzene	TX	5015	10185203
n-Nitrosodiethylamine	TX	6525	10185203
n-Nitrosodimethylamine	TX	6530	10185203
n-Nitrosodi-n-butylamine	TX	5025	10185203
n-Nitrosodi-n-propylamine	TX	6545	10185203
n-Nitrosodiphenylamine	TX	6535	10185203
n-Nitrosomethylethylamine	TX	6550	10185203
n-Nitrosomorpholine	TX	6555	10185203
n-Nitrosopiperidine	TX	6560	10185203
n-Nitrosopyrrolidine	TX	6565	10185203
o,o,o-Triethyl phosphorothioate	TX	8290	10185203
o-Anisidine	TX	5550	10185203
Parathion, ethyl	TX	7955	10185203
p-Cresidine	TX	5860	10185203
Pentachlorobenzene	TX	6590	10185203
Pentachloronitrobenzene (PCNB)	TX	6600	10185203

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Pentachlorophenol	TX	6605	10185203
Phenacetin	TX	6610	10185203
Phenanthrene	TX	6615	10185203
Phenol	TX	6625	10185203
Phorate	TX	7985	10185203
Phosmet (Imidan)	TX	8000	10185203
Phthalic anhydride	TX	6640	10185203
Pronamide (Kerb)	TX	6650	10185203
Pyrene	TX	6665	10185203
Pyridine	TX	5095	10185203
Quinoline	TX	6670	10185203
Resorcinol	TX	6680	10185203
Safrole	TX	6685	10185203
Sulfotepp	TX	8155	10185203
Terbufos	TX	8185	10185203
Tetrachlorvinphos (Stirophos, Gardona)	TX	8197	10185203
Thionazin (Zinophos)	TX	8235	10185203
Toluene diisocyanate	TX	6775	10185203
Trifluralin (Treflan)	TX	8295	10185203

Method EPA 8290

Analyte	**AB**	**Analyte ID**	**Method ID**
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10187209
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10187209
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10187209
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10187209
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10187209
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10187209
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10187209
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10187209
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10187209

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Matrix: ***Non-Potable Water***

1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10187209
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10187209
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10187209
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10187209
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10187209
2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10187209
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10187209
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10187209
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10187209
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10187209
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10187209
Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10187209
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10187209
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10187209
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10187209
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10187209

Method EPA 8316

Analyte	**AB**	**Analyte ID**	**Method ID**
Acrylamide	TX	4330	10188202

Method EPA 8330

Analyte	**AB**	**Analyte ID**	**Method ID**
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10189807
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10189807
2,4,6-Trinitrotoluene (2,4,6-TNT)	TX	9651	10189807
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10189807
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10189807
2-Amino-4,6-dinitrotoluene (2-am-dnt)	TX	9303	10189807
2-Nitrotoluene	TX	9507	10189807
3-Nitrotoluene	TX	9510	10189807
4-Amino-2,6-dinitrotoluene (4-am-dnt)	TX	9306	10189807
4-Nitrotoluene	TX	9513	10189807

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Matrix: ***Non-Potable Water***

Methyl-2,4,6-trinitrophenylnitramine (tetryl)	TX	6415	10189807
Nitrobenzene	TX	5015	10189807
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	TX	9522	10189807
RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine)	TX	9432	10189807

Method EPA 9014

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	10193803
Total cyanide	TX	1645	10193803

Method EPA 9038

Analyte	**AB**	**Analyte ID**	**Method ID**
Sulfate	TX	2000	10196608

Method EPA 9040

Analyte	**AB**	**Analyte ID**	**Method ID**
pH	TX	1900	10196802

Method EPA 9050

Analyte	**AB**	**Analyte ID**	**Method ID**
Conductivity	TX	1610	10198604

Method EPA 9056

Analyte	**AB**	**Analyte ID**	**Method ID**
Bromide	TX	1540	10199209
Chloride	TX	1575	10199209
Fluoride	TX	1730	10199209
Nitrate as N	TX	1810	10199209
Nitrate-nitrite	TX	1820	10199209
Nitrite as N	TX	1840	10199209
Orthophosphate as P	TX	1870	10199209
Sulfate	TX	2000	10199209

Method EPA 9060

Analyte	**AB**	**Analyte ID**	**Method ID**
Total Organic Carbon (TOC)	TX	2040	10200201

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Matrix: ***Non-Potable Water***

Method EPA 9065

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200405

Method EPA 9066

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200609

Method EPA 9250

Analyte	AB	Analyte ID	Method ID
Chloride	TX	1575	10207202

Method EPA RSK 175

Analyte	AB	Analyte ID	Method ID
2-methylpropane (Isobutane)	TX	4942	10212905
Ethane	TX	4747	10212905
Ethene	TX	4752	10212905
Methane	TX	4926	10212905
n-Butane	TX	5007	10212905
n-Propane	TX	5029	10212905

Method HACH 8000

Analyte	AB	Analyte ID	Method ID
Chemical oxygen demand (COD)	TX	1565	60003001

Method SM 2120 B

Analyte	AB	Analyte ID	Method ID
Color	TX	1605	20223807

Method SM 2310 B (4a)

Analyte	AB	Analyte ID	Method ID
Acidity, as CaCO3	TX	1500	20002806

Method SM 2320 B

Analyte	AB	Analyte ID	Method ID
Alkalinity as CaCO3	TX	1505	20045005

Method SM 2340 B

Analyte	AB	Analyte ID	Method ID

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Matrix: ***Non-Potable Water***

Total hardness as CaCO3	TX	1755	20046008

Method SM 2510 B

Analyte	**AB**	**Analyte ID**	**Method ID**
Conductivity	TX	1610	20048004

Method SM 2540 B

Analyte	**AB**	**Analyte ID**	**Method ID**
Residue-total (total solids)	TX	1950	20004608

Method SM 2540 C

Analyte	**AB**	**Analyte ID**	**Method ID**
Residue-filterable (TDS)	TX	1955	20049803

Method SM 2540 D

Analyte	**AB**	**Analyte ID**	**Method ID**
Residue-nonfilterable (TSS)	TX	1960	20004802

Method SM 3500-Cr B

Analyte	**AB**	**Analyte ID**	**Method ID**
Chromium (VI)	TX	1045	20065809

Method SM 4500-Cl F

Analyte	**AB**	**Analyte ID**	**Method ID**
Total residual chlorine	TX	1940	20080482

Method SM 4500-Cl^- E

Analyte	**AB**	**Analyte ID**	**Method ID**
Chloride	TX	1575	20019209

Method SM 4500-CN^- C

Analyte	**AB**	**Analyte ID**	**Method ID**
Total cyanide	TX	1645	20020808

Method SM 4500-CN^- E

Analyte	**AB**	**Analyte ID**	**Method ID**
Total cyanide	TX	1645	20021209

Method SM 4500-CN^- G

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	20021607

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Matrix: ***Non-Potable Water***

Method SM 4500-H+ B

Analyte	AB	Analyte ID	Method ID
pH	TX	1900	20104603

Method SM 4500-NH3 D

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	20108809
Kjeldahl Nitrogen (Total Kjeldahl Nitrogen-TKN)	TX	1790	20108809

Method SM 4500-NH3 F

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	20023001

Method SM 4500-O G

Analyte	AB	Analyte ID	Method ID
Oxygen, dissolved	TX	1880	20025405

Method SM 4500-P E

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	20025803
Phosphorus	TX	1910	20025803

Method SM 4500-$S2^{-}$ F

Analyte	AB	Analyte ID	Method ID
Sulfide	TX	2005	20126209

Method SM 4500-SiO2 D

Analyte	AB	Analyte ID	Method ID
Silica as SiO2	TX	1990	20127202

Method SM 4500-$SO3^{-}$ B

Analyte	AB	Analyte ID	Method ID
Sulfite	TX	2015	20026806

Method SM 5210 B

Analyte	AB	Analyte ID	Method ID
Biochemical oxygen demand (BOD)	TX	1530	20027401
Carbonaceous BOD, CBOD	TX	1555	20027401

Method SM 5310 B

Analyte	AB	Analyte ID	Method ID

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Matrix: ***Non-Potable Water***

Total Organic Carbon (TOC)	TX	2040	20137206

Method SM 5310 C

Analyte	**AB**	**Analyte ID**	**Method ID**
Total Organic Carbon (TOC)	TX	2040	20138209

Method SM 5540 C

Analyte	**AB**	**Analyte ID**	**Method ID**
Surfactants - MBAS	TX	2025	20144405

Method TCEQ 1005

Analyte	**AB**	**Analyte ID**	**Method ID**
Total Petroleum Hydrocarbons (TPH)	TX	2050	90019208

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Matrix: ***Solid & Chemical Materials***

Method ASTM D2216

Analyte	AB	Analyte ID	Method ID
Moisture	TX	10337	ASTM D2216-05

Method EPA 1010

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10116606

Method EPA 1030

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10117201

Method EPA 1311

Analyte	AB	Analyte ID	Method ID
TCLP	TX	849	10118806

Method EPA 1312

Analyte	AB	Analyte ID	Method ID
SPLP	TX	850	10119003

Method EPA 1668

Analyte	AB	Analyte ID	Method ID
Decachlorobiphenyls	TX	10332	10262007
Dichlorobiphenyls	TX	464	10262007
Heptachlorobiphenyls	TX	486	10262007
Hexachlorobiphenyls	TX	487	10262007
Monochlorobiphenyls	TX	501	10262007
Nonachlorobiphenyls	TX	507	10262007
Octachlorobiphenyls	TX	508	10262007
Pentachlorobiphenyls	TX	515	10262007
Tetrachlorobiphenyls	TX	528	10262007
Trichlorobiphenyls	TX	541	10262007

Method EPA 200.8

Analyte	AB	Analyte ID	Method ID
Uranium	TX	3035	10014605

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Matrix: ***Solid & Chemical Materials***

Method EPA 300.0

Analyte	AB	Analyte ID	Method ID
Bromide	TX	1540	10053200
Chloride	TX	1575	10053200
Fluoride	TX	1730	10053200
Nitrate as N	TX	1810	10053200
Nitrate-nitrite	TX	1820	10053200
Nitrite as N	TX	1840	10053200
Orthophosphate as P	TX	1870	10053200
Sulfate	TX	2000	10053200

Method EPA 310.1

Analyte	AB	Analyte ID	Method ID
Alkalinity as CaCO3	TX	1505	10054805

Method EPA 350.3

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	10064401

Method EPA 365.3

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	10070801
Phosphorus	TX	1910	10070801

Method EPA 6020

Analyte	AB	Analyte ID	Method ID
Aluminum	TX	1000	10156204
Antimony	TX	1005	10156204
Arsenic	TX	1010	10156204
Barium	TX	1015	10156204
Beryllium	TX	1020	10156204
Boron	TX	1025	10156204
Cadmium	TX	1030	10156204
Calcium	TX	1035	10156204
Chromium	TX	1040	10156204

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NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-19-23

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

Expiration Date: 4/30/2020

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2019

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Matrix: ***Solid & Chemical Materials***

Cobalt	TX	1050	10156204
Copper	TX	1055	10156204
Iron	TX	1070	10156204
Lead	TX	1075	10156204
Lithium	TX	1080	10156204
Magnesium	TX	1085	10156204
Manganese	TX	1090	10156204
Molybdenum	TX	1100	10156204
Nickel	TX	1105	10156204
Potassium	TX	1125	10156204
Selenium	TX	1140	10156204
Silver	TX	1150	10156204
Sodium	TX	1155	10156204
Strontium	TX	1160	10156204
Thallium	TX	1165	10156204
Tin	TX	1175	10156204
Titanium	TX	1180	10156204
Vanadium	TX	1185	10156204
Zinc	TX	1190	10156204

Method EPA 7196

Analyte	**AB**	**Analyte ID**	**Method ID**
Chromium (VI)	TX	1045	10162206

Method EPA 7470

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10165603

Method EPA 7471

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10166004

Method EPA 8015

Analyte	**AB**	**Analyte ID**	**Method ID**
Diesel range organics (DRO)	TX	9369	10173203

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Matrix: ***Solid & Chemical Materials***

Ethanol	TX	4750	10173203
Ethylene glycol	TX	4785	10173203
Gasoline range organics (GRO)	TX	9408	10173203
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10173203
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10173203
Methanol	TX	4930	10173203
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10173203
n-Propanol (1-Propanol)	TX	5055	10173203
Propylene Glycol	TX	6657	10173203
tert-Butyl alcohol	TX	4420	10173203

Method EPA 8021

Analyte	**AB**	**Analyte ID**	**Method ID**
Benzene	TX	4375	10174400
Ethylbenzene	TX	4765	10174400
m+p-xylene	TX	5240	10174400
Methyl tert-butyl ether (MTBE)	TX	5000	10174400
o-Xylene	TX	5250	10174400
Toluene	TX	5140	10174400
Xylene (total)	TX	5260	10174400

Method EPA 8081

Analyte	**AB**	**Analyte ID**	**Method ID**
4,4'-DDD	TX	7355	10178402
4,4'-DDE	TX	7360	10178402
4,4'-DDT	TX	7365	10178402
Aldrin	TX	7025	10178402
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10178402
alpha-Chlordane	TX	7240	10178402
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10178402
Chlordane (tech.)	TX	7250	10178402
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10178402
Dieldrin	TX	7470	10178402

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Matrix: ***Solid & Chemical Materials***

Endosulfan I	TX	7510	10178402
Endosulfan II	TX	7515	10178402
Endosulfan sulfate	TX	7520	10178402
Endrin	TX	7540	10178402
Endrin aldehyde	TX	7530	10178402
Endrin ketone	TX	7535	10178402
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10178402
gamma-Chlordane	TX	7245	10178402
Heptachlor	TX	7685	10178402
Heptachlor epoxide	TX	7690	10178402
Methoxychlor	TX	7810	10178402
Mirex	TX	7870	10178402
Toxaphene (Chlorinated camphene)	TX	8250	10178402

Method EPA 8082

Analyte	**AB**	**Analyte ID**	**Method ID**
Aroclor-1016 (PCB-1016)	TX	8880	10179201
Aroclor-1221 (PCB-1221)	TX	8885	10179201
Aroclor-1232 (PCB-1232)	TX	8890	10179201
Aroclor-1242 (PCB-1242)	TX	8895	10179201
Aroclor-1248 (PCB-1248)	TX	8900	10179201
Aroclor-1254 (PCB-1254)	TX	8905	10179201
Aroclor-1260 (PCB-1260)	TX	8910	10179201
PCBs (total)	TX	8870	10179201

Method EPA 8260

Analyte	**AB**	**Analyte ID**	**Method ID**
1,1,1,2-Tetrachloroethane	TX	5105	10184404
1,1,1-Trichloroethane	TX	5160	10184404
1,1,2,2-Tetrachloroethane	TX	5110	10184404
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	TX	5195	10184404
1,1,2-Trichloroethane	TX	5165	10184404
1,1-Dichloroethane	TX	4630	10184404

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Matrix: ***Solid & Chemical Materials***

1,1-Dichloroethylene	TX	4640	10184404
1,1-Dichloropropene	TX	4670	10184404
1,2,3-Trichlorobenzene	TX	5150	10184404
1,2,3-Trichloropropane	TX	5180	10184404
1,2,4-Trichlorobenzene	TX	5155	10184404
1,2,4-Trimethylbenzene	TX	5210	10184404
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10184404
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10184404
1,2-Dichlorobenzene	TX	4610	10184404
1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10184404
1,2-Dichloropropane	TX	4655	10184404
1,3,5-Trimethylbenzene	TX	5215	10184404
1,3-Dichlorobenzene	TX	4615	10184404
1,3-Dichloropropane	TX	4660	10184404
1,4-Dichlorobenzene	TX	4620	10184404
1,4-Dioxane (1,4-Diethyleneoxide)	TX	4735	10184404
1-Chlorohexane	TX	4510	10184404
1-Propanol	TX	5060	10184404
2,2-Dichloropropane	TX	4665	10184404
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10184404
2-Chloroethyl vinyl ether	TX	4500	10184404
2-Chlorotoluene	TX	4535	10184404
2-Hexanone (MBK)	TX	4860	10184404
4-Chlorotoluene	TX	4540	10184404
4-Isopropyltoluene (p-Cymene)	TX	4915	10184404
4-Methyl-2-pentanone (MIBK)	TX	4995	10184404
Acetone (2-Propanone)	TX	4315	10184404
Acetonitrile	TX	4320	10184404
Acrolein (Propenal)	TX	4325	10184404
Acrylonitrile	TX	4340	10184404

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Matrix: ***Solid & Chemical Materials***

Allyl chloride (3-Chloropropene)	TX	4355	10184404
Benzene	TX	4375	10184404
Benzyl chloride	TX	5635	10184404
Bromobenzene	TX	4385	10184404
Bromochloromethane	TX	4390	10184404
Bromodichloromethane	TX	4395	10184404
Bromoform	TX	4400	10184404
Carbon disulfide	TX	4450	10184404
Carbon tetrachloride	TX	4455	10184404
Chlorobenzene	TX	4475	10184404
Chlorodibromomethane	TX	4575	10184404
Chloroethane (Ethyl chloride)	TX	4485	10184404
Chloroform	TX	4505	10184404
Chloroprene (2-Chloro-1,3-butadiene)	TX	4525	10184404
cis-1,2-Dichloroethylene	TX	4645	10184404
cis-1,3-Dichloropropene	TX	4680	10184404
Dibromofluoromethane	TX	4590	10184404
Dibromomethane (Methylene bromide)	TX	4595	10184404
Dichlorodifluoromethane (Freon-12)	TX	4625	10184404
Diethyl ether	TX	4725	10184404
Epichlorohydrin (1-Chloro-2,3-epoxypropane)	TX	4745	10184404
Ethanol	TX	4750	10184404
Ethyl acetate	TX	4755	10184404
Ethyl methacrylate	TX	4810	10184404
Ethylbenzene	TX	4765	10184404
Ethylene oxide	TX	4795	10184404
Hexachlorobutadiene	TX	4835	10184404
Iodomethane (Methyl iodide)	TX	4870	10184404
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10184404
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10184404

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Matrix: ***Solid & Chemical Materials***

Isopropylbenzene (Cumene)	TX	4900	10184404
m+p-xylene	TX	5240	10184404
Methacrylonitrile	TX	4925	10184404
Methyl acetate	TX	4940	10184404
Methyl acrylate	TX	4945	10184404
Methyl bromide (Bromomethane)	TX	4950	10184404
Methyl chloride (Chloromethane)	TX	4960	10184404
Methyl methacrylate	TX	4990	10184404
Methyl tert-butyl ether (MTBE)	TX	5000	10184404
Methylcyclohexane	TX	4965	10184404
Methylene chloride (Dichloromethane)	TX	4975	10184404
Naphthalene	TX	5005	10184404
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10184404
n-Butylbenzene	TX	4435	10184404
n-Propylbenzene	TX	5090	10184404
o-Xylene	TX	5250	10184404
Pentachloroethane	TX	5035	10184404
Propionitrile (Ethyl cyanide)	TX	5080	10184404
Pyridine	TX	5095	10184404
sec-Butylbenzene	TX	4440	10184404
Styrene	TX	5100	10184404
tert-Butyl alcohol	TX	4420	10184404
tert-Butylbenzene	TX	4445	10184404
Tetrachloroethylene (Perchloroethylene)	TX	5115	10184404
Toluene	TX	5140	10184404
trans-1,2-Dichloroethylene	TX	4700	10184404
trans-1,3-Dichloropropylene	TX	4685	10184404
trans-1,4-Dichloro-2-butene	TX	4605	10184404
Trichloroethene (Trichloroethylene)	TX	5170	10184404
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10184404

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Matrix: ***Solid & Chemical Materials***

Vinyl acetate	TX	5225	10184404
Vinyl chloride	TX	5235	10184404
Xylene (total)	TX	5260	10184404

Method EPA 8270

Analyte	AB	Analyte ID	Method ID
1,2,4,5-Tetrachlorobenzene	TX	6715	10185203
1,2,4-Trichlorobenzene	TX	5155	10185203
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10185203
1,2-Dichlorobenzene	TX	4610	10185203
1,2-Dinitrobenzene	TX	6155	10185203
1,2-Diphenylhydrazine	TX	6220	10185203
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10185203
1,3-Dichlorobenzene	TX	4615	10185203
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10185203
1,4-Dichlorobenzene	TX	4620	10185203
1,4-Dinitrobenzene	TX	6165	10185203
1,4-Naphthoquinone	TX	6420	10185203
1,4-Phenylenediamine	TX	6630	10185203
1-Chloronaphthalene	TX	5790	10185203
1-Naphthylamine	TX	6425	10185203
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10185203
2,3,4,6-Tetrachlorophenol	TX	6735	10185203
2,4,5-Trichlorophenol	TX	6835	10185203
2,4,5-Trimethylaniline	TX	6880	10185203
2,4,6-Trichlorophenol	TX	6840	10185203
2,4-Diaminotoluene	TX	5880	10185203
2,4-Dichlorophenol	TX	6000	10185203
2,4-Dimethylphenol	TX	6130	10185203
2,4-Dinitrophenol	TX	6175	10185203
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10185203

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Matrix: ***Solid & Chemical Materials***

2,6-Dichlorophenol	TX	6005	10185203
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10185203
2-Acetylaminofluorene	TX	5515	10185203
2-Chloronaphthalene	TX	5795	10185203
2-Chlorophenol	TX	5800	10185203
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10185203
2-Methylaniline (o-Toluidine)	TX	5145	10185203
2-Methylnaphthalene	TX	6385	10185203
2-Methylphenol (o-Cresol)	TX	6400	10185203
2-Naphthylamine	TX	6430	10185203
2-Nitroaniline	TX	6460	10185203
2-Nitrophenol	TX	6490	10185203
2-Picoline (2-Methylpyridine)	TX	5050	10185203
3,3'-Dichlorobenzidine	TX	5945	10185203
3,3'-Dimethylbenzidine	TX	6120	10185203
3-Methylcholanthrene	TX	6355	10185203
3-Methylphenol (m-Cresol)	TX	6405	10185203
3-Nitroaniline	TX	6465	10185203
4-Aminobiphenyl	TX	5540	10185203
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10185203
4-Chloro-3-methylphenol	TX	5700	10185203
4-Chloroaniline	TX	5745	10185203
4-Chlorophenyl phenylether	TX	5825	10185203
4-Methylphenol (p-Cresol)	TX	6410	10185203
4-Nitroaniline	TX	6470	10185203
4-Nitrophenol	TX	6500	10185203
4-Nitroquinoline-1-oxide	TX	6510	10185203
5-Nitro-o-toluidine	TX	6570	10185203
7,12-Dimethylbenz(a) anthracene	TX	6115	10185203
a-a-Dimethylphenethylamine	TX	6125	10185203

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Matrix: ***Solid & Chemical Materials***

Acenaphthene	TX	5500	10185203
Acenaphthylene	TX	5505	10185203
Acetophenone	TX	5510	10185203
Aniline	TX	5545	10185203
Anthracene	TX	5555	10185203
Aramite	TX	5560	10185203
Atrazine	TX	7065	10185203
Azinphos-methyl (Guthion)	TX	7075	10185203
Azobenzene	TX	5562	10185203
Benzenethiol (Thiophenol)	TX	6750	10185203
Benzidine	TX	5595	10185203
Benzo(a)anthracene	TX	5575	10185203
Benzo(a)pyrene	TX	5580	10185203
Benzo(b)fluoranthene	TX	5585	10185203
Benzo(e)pyrene	TX	5605	10185203
Benzo(g,h,i)perylene	TX	5590	10185203
Benzo(k)fluoranthene	TX	5600	10185203
Benzoic acid	TX	5610	10185203
Benzyl alcohol	TX	5630	10185203
Biphenyl	TX	5640	10185203
bis(2-Chloroethoxy)methane	TX	5760	10185203
bis(2-Chloroethyl) ether	TX	5765	10185203
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10185203
Butyl benzyl phthalate	TX	5670	10185203
Caprolactam	TX	7180	10185203
Carbaryl (Sevin)	TX	7195	10185203
Carbazole	TX	5680	10185203
Carbophenothion	TX	7220	10185203
Chlorobenzilate	TX	7260	10185203
Chrysene	TX	5855	10185203

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Matrix: ***Solid & Chemical Materials***

Demeton	TX	7390	10185203
Demeton-o	TX	7395	10185203
Demeton-s	TX	7385	10185203
Diallate	TX	7405	10185203
Dibenz(a,h) anthracene	TX	5895	10185203
Dibenz(a,j) acridine	TX	5900	10185203
Dibenzo(a,e) pyrene	TX	5890	10185203
Dibenzofuran	TX	5905	10185203
Dichlorovos (DDVP, Dichlorvos)	TX	8610	10185203
Diethyl phthalate	TX	6070	10185203
Dimethoate	TX	7475	10185203
Dimethyl phthalate	TX	6135	10185203
Di-n-butyl phthalate	TX	5925	10185203
Di-n-octyl phthalate	TX	6200	10185203
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10185203
Diphenylamine	TX	6205	10185203
Disulfoton	TX	8625	10185203
Ethyl methanesulfonate	TX	6260	10185203
Fluoranthene	TX	6265	10185203
Fluorene	TX	6270	10185203
Hexachlorobenzene	TX	6275	10185203
Hexachlorobutadiene	TX	4835	10185203
Hexachlorocyclopentadiene	TX	6285	10185203
Hexachloroethane	TX	4840	10185203
Hexachlorophene	TX	6290	10185203
Hexachloropropene	TX	6295	10185203
Indeno(1,2,3-cd) pyrene	TX	6315	10185203
Isodrin	TX	7725	10185203
Isophorone	TX	6320	10185203
Isosafrole	TX	6325	10185203

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Matrix: ***Solid & Chemical Materials***

Kepone	TX	7740	10185203
Malathion	TX	7770	10185203
Methapyrilene	TX	6345	10185203
Methyl methanesulfonate	TX	6375	10185203
Methyl parathion (Parathion, methyl)	TX	7825	10185203
Mevinphos	TX	7850	10185203
Naphthalene	TX	5005	10185203
Nitrobenzene	TX	5015	10185203
n-Nitrosodiethylamine	TX	6525	10185203
n-Nitrosodimethylamine	TX	6530	10185203
n-Nitrosodi-n-butylamine	TX	5025	10185203
n-Nitrosodi-n-propylamine	TX	6545	10185203
n-Nitrosodiphenylamine	TX	6535	10185203
n-Nitrosomethylethylamine	TX	6550	10185203
n-Nitrosomorpholine	TX	6555	10185203
n-Nitrosopiperidine	TX	6560	10185203
n-Nitrosopyrrolidine	TX	6565	10185203
o,o,o-Triethyl phosphorothioate	TX	8290	10185203
o-Anisidine	TX	5550	10185203
Parathion, ethyl	TX	7955	10185203
p-Cresidine	TX	5860	10185203
Pentachlorobenzene	TX	6590	10185203
Pentachloronitrobenzene (PCNB)	TX	6600	10185203
Pentachlorophenol	TX	6605	10185203
Phenacetin	TX	6610	10185203
Phenanthrene	TX	6615	10185203
Phenol	TX	6625	10185203
Phorate	TX	7985	10185203
Pronamide (Kerb)	TX	6650	10185203
Pyrene	TX	6665	10185203

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Matrix: ***Solid & Chemical Materials***

Pyridine	TX	5095	10185203
Quinoline	TX	6670	10185203
Safrole	TX	6685	10185203
Sulfotepp	TX	8155	10185203
Terbufos	TX	8185	10185203
Tetrachlorvinphos (Stirophos, Gardona)	TX	8197	10185203
Thionazin (Zinophos)	TX	8235	10185203
Toluene diisocyanate	TX	6775	10185203

Method EPA 8290

Analyte	AB	Analyte ID	Method ID
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10187209
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10187209
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10187209
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10187209
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10187209
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10187209
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10187209
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10187209
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10187209
1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10187209
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10187209
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10187209
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10187209
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10187209
2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10187209
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10187209
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10187209
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10187209
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10187209
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10187209

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-19-23

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

Expiration Date: 4/30/2020

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2019

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: ***Solid & Chemical Materials***

Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10187209
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10187209
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10187209
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10187209
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10187209

Method EPA 8316

Analyte	**AB**	**Analyte ID**	**Method ID**
Acrylamide	TX	4330	10188202

Method EPA 8330

Analyte	**AB**	**Analyte ID**	**Method ID**
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10189807
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10189807
2,4,6-Trinitrotoluene (2,4,6-TNT)	TX	9651	10189807
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10189807
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10189807
2-Amino-4,6-dinitrotoluene (2-am-dnt)	TX	9303	10189807
2-Nitrotoluene	TX	9507	10189807
3-Nitrotoluene	TX	9510	10189807
4-Amino-2,6-dinitrotoluene (4-am-dnt)	TX	9306	10189807
4-Nitrotoluene	TX	9513	10189807
Methyl-2,4,6-trinitrophenylnitramine (tetryl)	TX	6415	10189807
Nitrobenzene	TX	5015	10189807
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	TX	9522	10189807
RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine)	TX	9432	10189807

Method EPA 9014

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	10193803
Total cyanide	TX	1645	10193803

Method EPA 9038

Analyte	**AB**	**Analyte ID**	**Method ID**
Sulfate	TX	2000	10196608

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Matrix: ***Solid & Chemical Materials***

Method EPA 9040

Analyte	AB	Analyte ID	Method ID
Corrosivity	TX	1615	10197203
pH	TX	1900	10196802

Method EPA 9045

Analyte	AB	Analyte ID	Method ID
Corrosivity	TX	1615	10197805
pH	TX	1900	10197805

Method EPA 9050

Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	10198604

Method EPA 9056

Analyte	AB	Analyte ID	Method ID
Bromide	TX	1540	10199209
Chloride	TX	1575	10199209
Fluoride	TX	1730	10199209
Nitrate as N	TX	1810	10199209
Nitrate-nitrite	TX	1820	10199209
Nitrite as N	TX	1840	10199209
Orthophosphate as P	TX	1870	10199209
Sulfate	TX	2000	10199209

Method EPA 9060

Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	10200201

Method EPA 9065

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200405

Method EPA 9071

Analyte	AB	Analyte ID	Method ID
n-Hexane Extractable Material (HEM) (O&G)	TX	1803	10201204

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-19-23

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Expiration Date: 4/30/2020

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Matrix: ***Solid & Chemical Materials***

Method	Analyte	AB	Analyte ID	Method ID
EPA 9095	Paint Filter Liquids Test	TX	10312	10204009
EPA 9250	Chloride	TX	1575	10207202
SM 2320 B	Alkalinity as CaCO3	TX	1505	20045005
SM 2510 B	Conductivity	TX	1610	20048004
SM 2540 G	Residue-total (total solids)	TX	1950	20005203
SSA/ASA Part 3:34	Carbon, organic (Walkley-Black)	TX	10340	SSA/ASA Pt 3:34
TCEQ 1005	Total Petroleum Hydrocarbons (TPH)	TX	2050	90019208

10450 Stancliff Rd. Suite 210
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T: +1 281 530 5656
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January 20, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20010407**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 27 sample(s) on Jan 10, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: DAYNA.FISHER
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20010407**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20010407**	

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data								
Laboratory Name: ALS Laboratory Group			LRC Date: 01/20/2020					
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20010407					
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 149585, 149592, 149618, 149624, 149670, R354349, R354396, R354399, R354465					
#[1]	A[2]	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?		X			1
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			2
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				3
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 01/20/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20010407				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 149585, 149592, 149618, 149624, 149670, R354349, R354396, R354399, R354465				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?	X				
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 01/20/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20010407
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 149585, 149592, 149618, 149624, 149670, R354349, R354396, R354399, R354465

ER#[5]	Description
1	Batch 149624 and 149670, Semivolatiles by Method SW8270, Samples WG-1620-MW77A-20200109, WG-1620-MW49A-20200107, WG-1620-MW18C-20200108, WG-1620-MW18A-20200108, WG-1620-MW58A-20200108, WG-1620-MW57A-20200108, WG-1620-MW57B-20200108, WG-1620-MW72B-20200109: Surrogate recoveries could not be determined due to dilution below the calibration range. Batch 149670, Semivolatiles by Method SW8270, Sample WG-1620-MW23C-20200109, Surrogate Nitrobenzene-d5 recovered above upper control limits. This was due to a dilution required for sample analysis.
2	Batch R354396, Volatiles by Method SW8260, Sample HS20010411-10, MS and MSD were performed on an unrelated sample.
3	Batch R354396, Volatiles by Method SW8260, Samples WG-1620-MW18C-20200108, WG-1620-MW18A-20200108: Lowest practical dilution due to sample matrix. Batch R354465, Volatiles by Method SW8260, Samples WG-1620-MW23C-20200109, WG-1620-MW49A-20200107, WG-1620-MW57B-20200108, WG-1620-MW72B-20200109: Lowest practical dilution due to high concentration of non-target analyte(s). Batch 149670, Semivolatiles by Method SW8270, Sample WG-1620-MW57B-20200108, WG-1620-MW72B-20200109, WG-1620-MW23C-20200109: The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20010407

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20010407-01	WG-1620-MW19C-20200109	Water		09-Jan-2020 10:45	10-Jan-2020 09:35	
HS20010407-02	WG-1620-MW51A-20200109	Water		09-Jan-2020 11:50	10-Jan-2020 09:35	
HS20010407-03	WG-1620-MW51C-20200109	Water		09-Jan-2020 12:40	10-Jan-2020 09:35	
HS20010407-04	WG-1620-MW85C-20200109	Water		09-Jan-2020 13:35	10-Jan-2020 09:35	
HS20010407-05	WG-1620-MW77A-20200109	Water		09-Jan-2020 14:25	10-Jan-2020 09:35	
HS20010407-06	WG-1620-MW76C-20200109	Water		09-Jan-2020 15:20	10-Jan-2020 09:35	
HS20010407-07	WG-1620-MW81B-20200109	Water		09-Jan-2020 16:20	10-Jan-2020 09:35	
HS20010407-08	WG-1620-MW50A-20200109	Water		09-Jan-2020 17:15	10-Jan-2020 09:35	
HS20010407-09	WG-1620-MW49A-20200107	Water		07-Jan-2020 13:10	10-Jan-2020 09:35	
HS20010407-10	WG-1620-MW80B-20200107	Water		07-Jan-2020 16:00	10-Jan-2020 09:35	
HS20010407-11	WG-1620-FB01-20200107	Water		07-Jan-2020 16:30	10-Jan-2020 09:35	
HS20010407-12	WG-1620-FB02-20200108	Water		08-Jan-2020 09:00	10-Jan-2020 09:35	
HS20010407-13	WG-1620-MW18C-20200108	Water		08-Jan-2020 10:10	10-Jan-2020 09:35	
HS20010407-14	WG-1620-MW18A-20200108	Water		08-Jan-2020 11:10	10-Jan-2020 09:35	
HS20010407-15	WG-1620-MW58A-20200108	Water		08-Jan-2020 12:15	10-Jan-2020 09:35	
HS20010407-16	WG-1620-MW57A-20200108	Water		08-Jan-2020 14:55	10-Jan-2020 09:35	
HS20010407-17	WG-1620-MW57B-20200108	Water		08-Jan-2020 13:30	10-Jan-2020 09:35	
HS20010407-18	WG-1620-FB03-20200109	Water		09-Jan-2020 07:30	10-Jan-2020 09:35	
HS20010407-19	WG-1620-MW49B-20200107	Water		07-Jan-2020 14:30	10-Jan-2020 09:35	
HS20010407-20	WG-1620-MW72B-20200109	Water		09-Jan-2020 08:35	10-Jan-2020 09:35	
HS20010407-21	WG-1620-MW23C-20200109	Water		09-Jan-2020 09:40	10-Jan-2020 09:35	
HS20010407-22	WG-1620-MW53C-20200109	Water		09-Jan-2020 11:15	10-Jan-2020 09:35	
HS20010407-23	WG-1620-MW54C-20200109	Water		09-Jan-2020 12:35	10-Jan-2020 09:35	
HS20010407-24	WG-1620-MW44A-20200109	Water		09-Jan-2020 13:30	10-Jan-2020 09:35	
HS20010407-25	WG-1620-MW36B-20200109	Water		09-Jan-2020 14:40	10-Jan-2020 09:35	
HS20010407-26	WG-1620-MW36A-20200109	Water		09-Jan-2020 16:00	10-Jan-2020 09:35	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20010407

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20010407-27	WG-1620-TB01-20200109	Water		09-Jan-2020 00:00	10-Jan-2020 09:35	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW19C-20200109
Collection Date: 09-Jan-2020 10:45

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-01
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	14-Jan-2020 23:06
Benzene	**0.00032**	J	**0.00020**	**0.0010**	**mg/L**	1	14-Jan-2020 23:06
Chlorobenzene	U		0.00030	0.0010	mg/L	1	14-Jan-2020 23:06
Ethylbenzene	**0.00064**	J	**0.00030**	**0.0010**	**mg/L**	1	14-Jan-2020 23:06
Methylene chloride	U		0.0010	0.0020	mg/L	1	14-Jan-2020 23:06
Toluene	U		0.00020	0.0010	mg/L	1	14-Jan-2020 23:06
Vinyl chloride	U		0.00020	0.0010	mg/L	1	14-Jan-2020 23:06
Xylenes, Total	**0.0012**		**0.00030**	**0.0010**	**mg/L**	1	14-Jan-2020 23:06
Surr: 1,2-Dichloroethane-d4	*97.3*			*70-126*	*%REC*	*1*	*14-Jan-2020 23:06*
Surr: 4-Bromofluorobenzene	*95.1*			*81-113*	*%REC*	*1*	*14-Jan-2020 23:06*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*14-Jan-2020 23:06*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*14-Jan-2020 23:06*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW19C-20200109
Collection Date: 09-Jan-2020 10:45

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-01
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 14-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	**0.000078**	J	**0.000021**	**0.00020**	**mg/L**	1	15-Jan-2020 08:50
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	15-Jan-2020 08:50
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	15-Jan-2020 08:50
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	15-Jan-2020 08:50
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	15-Jan-2020 08:50
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	15-Jan-2020 08:50
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	15-Jan-2020 08:50
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	15-Jan-2020 08:50
Acenaphthene	**0.00099**		**0.000027**	**0.00010**	**mg/L**	1	15-Jan-2020 08:50
Acenaphthylene	**0.000050**	J	**0.000015**	**0.00010**	**mg/L**	1	15-Jan-2020 08:50
Anthracene	**0.00017**		**0.000014**	**0.00010**	**mg/L**	1	15-Jan-2020 08:50
Benz(a)anthracene	**0.00026**		**0.000050**	**0.00010**	**mg/L**	1	15-Jan-2020 08:50
Benzo(a)pyrene	**0.00010**		**0.000020**	**0.00010**	**mg/L**	1	15-Jan-2020 08:50
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	15-Jan-2020 08:50
Bis(2-ethylhexyl)phthalate	**0.000071**	J	**0.000037**	**0.00020**	**mg/L**	1	15-Jan-2020 08:50
Chrysene	**0.00024**		**0.000021**	**0.00010**	**mg/L**	1	15-Jan-2020 08:50
Dibenzofuran	**0.00069**		**0.000020**	**0.00010**	**mg/L**	1	15-Jan-2020 08:50
Di-n-butyl phthalate	**0.000021**	J	**0.000020**	**0.00020**	**mg/L**	1	15-Jan-2020 08:50
Fluoranthene	**0.0011**		**0.000010**	**0.00010**	**mg/L**	1	15-Jan-2020 08:50
Fluorene	**0.00047**		**0.000030**	**0.00010**	**mg/L**	1	15-Jan-2020 08:50
Naphthalene	**0.00011**		**0.000020**	**0.00010**	**mg/L**	1	15-Jan-2020 08:50
Nitrobenzene	U		0.000024	0.00020	mg/L	1	15-Jan-2020 08:50
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	15-Jan-2020 08:50
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	15-Jan-2020 08:50
Phenanthrene	**0.00045**		**0.000021**	**0.00010**	**mg/L**	1	15-Jan-2020 08:50
Phenol	U		0.000035	0.00020	mg/L	1	15-Jan-2020 08:50
Pyrene	**0.0014**		**0.000019**	**0.00010**	**mg/L**	1	15-Jan-2020 08:50
Surr: 2,4,6-Tribromophenol	*65.3*			*34-129*	*%REC*	*1*	*15-Jan-2020 08:50*
Surr: 2-Fluorobiphenyl	*61.5*			*40-125*	*%REC*	*1*	*15-Jan-2020 08:50*
Surr: 2-Fluorophenol	*54.7*			*20-120*	*%REC*	*1*	*15-Jan-2020 08:50*
Surr: 4-Terphenyl-d14	*82.1*			*40-135*	*%REC*	*1*	*15-Jan-2020 08:50*
Surr: Nitrobenzene-d5	*50.1*			*41-120*	*%REC*	*1*	*15-Jan-2020 08:50*
Surr: Phenol-d6	*52.1*			*20-120*	*%REC*	*1*	*15-Jan-2020 08:50*
ICP-MS METALS BY SW6020A	**Method:SW6020**				Prep:SW3010A / 13-Jan-2020		Analyst: JHD
Arsenic	**0.00140**	J	**0.000400**	**0.00200**	**mg/L**	1	13-Jan-2020 22:09

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW51A-20200109
Collection Date: 09-Jan-2020 11:50

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	14-Jan-2020 01:27
Benzene		U	0.00020	0.0010	mg/L	1	14-Jan-2020 01:27
Chlorobenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2020 01:27
Ethylbenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2020 01:27
Methylene chloride		U	0.0010	0.0020	mg/L	1	14-Jan-2020 01:27
Toluene		U	0.00020	0.0010	mg/L	1	14-Jan-2020 01:27
Xylenes, Total		U	0.00030	0.0010	mg/L	1	14-Jan-2020 01:27
Surr: 1,2-Dichloroethane-d4	*98.2*			*70-126*	*%REC*	*1*	*14-Jan-2020 01:27*
Surr: 4-Bromofluorobenzene	*95.0*			*81-113*	*%REC*	*1*	*14-Jan-2020 01:27*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*14-Jan-2020 01:27*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*14-Jan-2020 01:27*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW51A-20200109
Collection Date: 09-Jan-2020 11:50

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 14-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	15-Jan-2020 09:09
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	15-Jan-2020 09:09
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	15-Jan-2020 09:09
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	15-Jan-2020 09:09
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	15-Jan-2020 09:09
2-Methylnaphthalene	**0.000044**	J	**0.000019**	**0.00010**	**mg/L**	1	15-Jan-2020 09:09
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	15-Jan-2020 09:09
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	15-Jan-2020 09:09
Acenaphthene	**0.000040**	J	**0.000027**	**0.00010**	**mg/L**	1	15-Jan-2020 09:09
Acenaphthylene	U		0.000015	0.00010	mg/L	1	15-Jan-2020 09:09
Anthracene	**0.000063**	J	**0.000014**	**0.00010**	**mg/L**	1	15-Jan-2020 09:09
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	15-Jan-2020 09:09
Benzo(a)pyrene	**0.000027**	J	**0.000020**	**0.00010**	**mg/L**	1	15-Jan-2020 09:09
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	15-Jan-2020 09:09
Bis(2-ethylhexyl)phthalate	**0.00014**	J	**0.000037**	**0.00020**	**mg/L**	1	15-Jan-2020 09:09
Chrysene	**0.000050**	J	**0.000021**	**0.00010**	**mg/L**	1	15-Jan-2020 09:09
Dibenzofuran	**0.000049**	J	**0.000020**	**0.00010**	**mg/L**	1	15-Jan-2020 09:09
Di-n-butyl phthalate	**0.000034**	J	**0.000020**	**0.00020**	**mg/L**	1	15-Jan-2020 09:09
Fluoranthene	**0.00013**		**0.000010**	**0.00010**	**mg/L**	1	15-Jan-2020 09:09
Fluorene	**0.000043**	J	**0.000030**	**0.00010**	**mg/L**	1	15-Jan-2020 09:09
Naphthalene	**0.00032**		**0.000020**	**0.00010**	**mg/L**	1	15-Jan-2020 09:09
Nitrobenzene	U		0.000024	0.00020	mg/L	1	15-Jan-2020 09:09
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	15-Jan-2020 09:09
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	15-Jan-2020 09:09
Phenanthrene	**0.00021**		**0.000021**	**0.00010**	**mg/L**	1	15-Jan-2020 09:09
Phenol	U		0.000035	0.00020	mg/L	1	15-Jan-2020 09:09
Pyrene	**0.000083**	J	**0.000019**	**0.00010**	**mg/L**	1	15-Jan-2020 09:09
Surr: 2,4,6-Tribromophenol	*74.3*			*34-129*	*%REC*	*1*	*15-Jan-2020 09:09*
Surr: 2-Fluorobiphenyl	*79.5*			*40-125*	*%REC*	*1*	*15-Jan-2020 09:09*
Surr: 2-Fluorophenol	*53.3*			*20-120*	*%REC*	*1*	*15-Jan-2020 09:09*
Surr: 4-Terphenyl-d14	*91.9*			*40-135*	*%REC*	*1*	*15-Jan-2020 09:09*
Surr: Nitrobenzene-d5	*63.9*			*41-120*	*%REC*	*1*	*15-Jan-2020 09:09*
Surr: Phenol-d6	*66.7*			*20-120*	*%REC*	*1*	*15-Jan-2020 09:09*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW51A-20200109
Collection Date: 09-Jan-2020 11:50

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 13-Jan-2020		Analyst: MBG
nC6 to nC12	U		0.19	0.48	mg/L	1	13-Jan-2020 21:36
>nC12 to nC28	U		0.19	0.48	mg/L	1	13-Jan-2020 21:36
>nC28 to nC35	U		0.19	0.48	mg/L	1	13-Jan-2020 21:36
Total Petroleum Hydrocarbon	U		0.19	0.48	mg/L	1	13-Jan-2020 21:36
Surr: 2-Fluorobiphenyl	*104*			*70-130*	*%REC*	*1*	*13-Jan-2020 21:36*
Surr: Trifluoromethyl benzene	*106*			*70-130*	*%REC*	*1*	*13-Jan-2020 21:36*
ICP-MS METALS BY SW6020A	**Method:SW6020**				Prep:SW3010A / 13-Jan-2020		Analyst: JHD
Arsenic	**0.00188**	J	**0.000400**	**0.00200**	**mg/L**	1	13-Jan-2020 22:25

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW51C-20200109
Collection Date: 09-Jan-2020 12:40

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	14-Jan-2020 03:29
Benzene		U	0.00020	0.0010	mg/L	1	14-Jan-2020 03:29
Chlorobenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2020 03:29
Ethylbenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2020 03:29
Methylene chloride		U	0.0010	0.0020	mg/L	1	14-Jan-2020 03:29
Toluene		U	0.00020	0.0010	mg/L	1	14-Jan-2020 03:29
Xylenes, Total		U	0.00030	0.0010	mg/L	1	14-Jan-2020 03:29
Surr: 1,2-Dichloroethane-d4	*97.8*			*70-126*	*%REC*	*1*	*14-Jan-2020 03:29*
Surr: 4-Bromofluorobenzene	*94.5*			*81-113*	*%REC*	*1*	*14-Jan-2020 03:29*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*14-Jan-2020 03:29*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*14-Jan-2020 03:29*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW51C-20200109
Collection Date: 09-Jan-2020 12:40

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 14-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	15-Jan-2020 09:28
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	15-Jan-2020 09:28
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	15-Jan-2020 09:28
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	15-Jan-2020 09:28
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	15-Jan-2020 09:28
2-Methylnaphthalene	**0.000055**	J	**0.000019**	**0.00010**	**mg/L**	1	15-Jan-2020 09:28
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	15-Jan-2020 09:28
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	15-Jan-2020 09:28
Acenaphthene	**0.000094**	J	**0.000027**	**0.00010**	**mg/L**	1	15-Jan-2020 09:28
Acenaphthylene	U		0.000015	0.00010	mg/L	1	15-Jan-2020 09:28
Anthracene	**0.00010**		**0.000014**	**0.00010**	**mg/L**	1	15-Jan-2020 09:28
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	15-Jan-2020 09:28
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	15-Jan-2020 09:28
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	15-Jan-2020 09:28
Bis(2-ethylhexyl)phthalate	**0.000085**	J	**0.000037**	**0.00020**	**mg/L**	1	15-Jan-2020 09:28
Chrysene	U		0.000021	0.00010	mg/L	1	15-Jan-2020 09:28
Dibenzofuran	**0.00011**		**0.000020**	**0.00010**	**mg/L**	1	15-Jan-2020 09:28
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	15-Jan-2020 09:28
Fluoranthene	**0.00018**		**0.000010**	**0.00010**	**mg/L**	1	15-Jan-2020 09:28
Fluorene	**0.00011**		**0.000030**	**0.00010**	**mg/L**	1	15-Jan-2020 09:28
Naphthalene	**0.00030**		**0.000020**	**0.00010**	**mg/L**	1	15-Jan-2020 09:28
Nitrobenzene	U		0.000024	0.00020	mg/L	1	15-Jan-2020 09:28
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	15-Jan-2020 09:28
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	15-Jan-2020 09:28
Phenanthrene	**0.00056**		**0.000021**	**0.00010**	**mg/L**	1	15-Jan-2020 09:28
Phenol	U		0.000035	0.00020	mg/L	1	15-Jan-2020 09:28
Pyrene	**0.00011**		**0.000019**	**0.00010**	**mg/L**	1	15-Jan-2020 09:28
Surr: 2,4,6-Tribromophenol	*64.9*			*34-129*	*%REC*	*1*	*15-Jan-2020 09:28*
Surr: 2-Fluorobiphenyl	*73.5*			*40-125*	*%REC*	*1*	*15-Jan-2020 09:28*
Surr: 2-Fluorophenol	*68.8*			*20-120*	*%REC*	*1*	*15-Jan-2020 09:28*
Surr: 4-Terphenyl-d14	*80.4*			*40-135*	*%REC*	*1*	*15-Jan-2020 09:28*
Surr: Nitrobenzene-d5	*55.9*			*41-120*	*%REC*	*1*	*15-Jan-2020 09:28*
Surr: Phenol-d6	*61.2*			*20-120*	*%REC*	*1*	*15-Jan-2020 09:28*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW51C-20200109
Collection Date: 09-Jan-2020 12:40

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL TEXAS TPH BY TX1005		**Method:TX1005**			Prep:TX1005PR / 13-Jan-2020		Analyst: MBG
nC6 to nC12		U	0.19	0.48	mg/L	1	13-Jan-2020 22:05
>nC12 to nC28		U	0.19	0.48	mg/L	1	13-Jan-2020 22:05
>nC28 to nC35		U	0.19	0.48	mg/L	1	13-Jan-2020 22:05
Total Petroleum Hydrocarbon		U	0.19	0.48	mg/L	1	13-Jan-2020 22:05
Surr: 2-Fluorobiphenyl	*108*			*70-130*	*%REC*	*1*	*13-Jan-2020 22:05*
Surr: Trifluoromethyl benzene	*110*			*70-130*	*%REC*	*1*	*13-Jan-2020 22:05*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 13-Jan-2020		Analyst: JHD
Arsenic	**0.000452**	J	**0.000400**	**0.00200**	**mg/L**	1	13-Jan-2020 22:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW85C-20200109
Collection Date: 09-Jan-2020 13:35

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	14-Jan-2020 23:31
Benzene		U	0.00020	0.0010	mg/L	1	14-Jan-2020 23:31
Chlorobenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2020 23:31
Ethylbenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2020 23:31
Methylene chloride		U	0.0010	0.0020	mg/L	1	14-Jan-2020 23:31
Toluene		U	0.00020	0.0010	mg/L	1	14-Jan-2020 23:31
Xylenes, Total		U	0.00030	0.0010	mg/L	1	14-Jan-2020 23:31
Surr: 1,2-Dichloroethane-d4	*96.4*			*70-126*	*%REC*	*1*	*14-Jan-2020 23:31*
Surr: 4-Bromofluorobenzene	*95.7*			*81-113*	*%REC*	*1*	*14-Jan-2020 23:31*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*14-Jan-2020 23:31*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*14-Jan-2020 23:31*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW85C-20200109
Collection Date: 09-Jan-2020 13:35

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 14-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	15-Jan-2020 09:46
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	15-Jan-2020 09:46
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	15-Jan-2020 09:46
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	15-Jan-2020 09:46
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	15-Jan-2020 09:46
2-Methylnaphthalene	**0.000041**	J	**0.000019**	**0.00010**	**mg/L**	1	15-Jan-2020 09:46
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	15-Jan-2020 09:46
4-Nitrophenol	**0.00077**	J	**0.000047**	**0.0010**	**mg/L**	1	15-Jan-2020 09:46
Acenaphthene	**0.000077**	J	**0.000027**	**0.00010**	**mg/L**	1	15-Jan-2020 09:46
Acenaphthylene	U		0.000015	0.00010	mg/L	1	15-Jan-2020 09:46
Anthracene	U		0.000014	0.00010	mg/L	1	15-Jan-2020 09:46
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	15-Jan-2020 09:46
Benzo(a)pyrene	**0.000031**	J	**0.000020**	**0.00010**	**mg/L**	1	15-Jan-2020 09:46
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	15-Jan-2020 09:46
Bis(2-ethylhexyl)phthalate	**0.00016**	J	**0.000037**	**0.00020**	**mg/L**	1	15-Jan-2020 09:46
Chrysene	**0.000053**	J	**0.000021**	**0.00010**	**mg/L**	1	15-Jan-2020 09:46
Dibenzofuran	**0.000059**	J	**0.000020**	**0.00010**	**mg/L**	1	15-Jan-2020 09:46
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	15-Jan-2020 09:46
Fluoranthene	**0.00025**		**0.000010**	**0.00010**	**mg/L**	1	15-Jan-2020 09:46
Fluorene	**0.000055**	J	**0.000030**	**0.00010**	**mg/L**	1	15-Jan-2020 09:46
Naphthalene	**0.00046**		**0.000020**	**0.00010**	**mg/L**	1	15-Jan-2020 09:46
Nitrobenzene	U		0.000024	0.00020	mg/L	1	15-Jan-2020 09:46
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	15-Jan-2020 09:46
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	15-Jan-2020 09:46
Phenanthrene	**0.000067**	J	**0.000021**	**0.00010**	**mg/L**	1	15-Jan-2020 09:46
Phenol	**0.000042**	J	**0.000035**	**0.00020**	**mg/L**	1	15-Jan-2020 09:46
Pyrene	**0.00021**		**0.000019**	**0.00010**	**mg/L**	1	15-Jan-2020 09:46
Surr: 2,4,6-Tribromophenol	*84.0*			*34-129*	*%REC*	*1*	*15-Jan-2020 09:46*
Surr: 2-Fluorobiphenyl	*78.5*			*40-125*	*%REC*	*1*	*15-Jan-2020 09:46*
Surr: 2-Fluorophenol	*74.7*			*20-120*	*%REC*	*1*	*15-Jan-2020 09:46*
Surr: 4-Terphenyl-d14	*98.6*			*40-135*	*%REC*	*1*	*15-Jan-2020 09:46*
Surr: Nitrobenzene-d5	*62.9*			*41-120*	*%REC*	*1*	*15-Jan-2020 09:46*
Surr: Phenol-d6	*69.6*			*20-120*	*%REC*	*1*	*15-Jan-2020 09:46*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW85C-20200109
Collection Date: 09-Jan-2020 13:35

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL TEXAS TPH BY TX1005		**Method:TX1005**			Prep:TX1005PR / 13-Jan-2020		Analyst: MBG
nC6 to nC12		U	0.20	0.49	mg/L	1	13-Jan-2020 22:34
>nC12 to nC28		U	0.20	0.49	mg/L	1	13-Jan-2020 22:34
>nC28 to nC35		U	0.20	0.49	mg/L	1	13-Jan-2020 22:34
Total Petroleum Hydrocarbon		U	0.20	0.49	mg/L	1	13-Jan-2020 22:34
Surr: 2-Fluorobiphenyl	*108*			*70-130*	*%REC*	*1*	*13-Jan-2020 22:34*
Surr: Trifluoromethyl benzene	*108*			*70-130*	*%REC*	*1*	*13-Jan-2020 22:34*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 13-Jan-2020		Analyst: JHD
Arsenic	**0.00272**		**0.000400**	**0.00200**	**mg/L**	1	13-Jan-2020 22:29

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW77A-20200109
Collection Date: 09-Jan-2020 14:25

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	15-Jan-2020 12:58
Benzene	**0.058**		**0.00020**	**0.0010**	**mg/L**	1	15-Jan-2020 12:58
Chlorobenzene	U		0.00030	0.0010	mg/L	1	15-Jan-2020 12:58
Ethylbenzene	**0.063**		**0.00030**	**0.0010**	**mg/L**	1	15-Jan-2020 12:58
Methylene chloride	U		0.0010	0.0020	mg/L	1	15-Jan-2020 12:58
Toluene	**0.0069**		**0.00020**	**0.0010**	**mg/L**	1	15-Jan-2020 12:58
Xylenes, Total	**0.065**		**0.00030**	**0.0010**	**mg/L**	1	15-Jan-2020 12:58
Surr: 1,2-Dichloroethane-d4	*99.0*			*70-126*	*%REC*	*1*	*15-Jan-2020 12:58*
Surr: 4-Bromofluorobenzene	*103*			*81-113*	*%REC*	*1*	*15-Jan-2020 12:58*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*15-Jan-2020 12:58*
Surr: Toluene-d8	*99.2*			*82-127*	*%REC*	*1*	*15-Jan-2020 12:58*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW77A-20200109
Collection Date: 09-Jan-2020 14:25

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 14-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	15-Jan-2020 10:05
2,4-Dimethylphenol	**0.055**		**0.00080**	**0.0040**	**mg/L**	20	15-Jan-2020 14:11
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	15-Jan-2020 10:05
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	15-Jan-2020 10:05
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	15-Jan-2020 10:05
2-Methylnaphthalene	**0.22**		**0.0019**	**0.010**	**mg/L**	100	15-Jan-2020 16:04
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	15-Jan-2020 10:05
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	15-Jan-2020 10:05
Acenaphthene	**0.13**		**0.00054**	**0.0020**	**mg/L**	20	15-Jan-2020 14:11
Acenaphthylene	**0.0013**		**0.000015**	**0.00010**	**mg/L**	1	15-Jan-2020 10:05
Anthracene	**0.0036**		**0.000014**	**0.00010**	**mg/L**	1	15-Jan-2020 10:05
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	15-Jan-2020 10:05
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	15-Jan-2020 10:05
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	15-Jan-2020 10:05
Bis(2-ethylhexyl)phthalate	**0.000077**	J	**0.000037**	**0.00020**	**mg/L**	1	15-Jan-2020 10:05
Chrysene	**0.000041**	J	**0.000021**	**0.00010**	**mg/L**	1	15-Jan-2020 10:05
Dibenzofuran	**0.079**		**0.00040**	**0.0020**	**mg/L**	20	15-Jan-2020 14:11
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	15-Jan-2020 10:05
Fluoranthene	**0.00071**		**0.000010**	**0.00010**	**mg/L**	1	15-Jan-2020 10:05
Fluorene	**0.067**		**0.00060**	**0.0020**	**mg/L**	20	15-Jan-2020 14:11
Naphthalene	**4.7**		**0.020**	**0.10**	**mg/L**	1000	15-Jan-2020 17:57
Nitrobenzene	U		0.000024	0.00020	mg/L	1	15-Jan-2020 10:05
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	15-Jan-2020 10:05
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	15-Jan-2020 10:05
Phenanthrene	**0.031**		**0.00042**	**0.0020**	**mg/L**	20	15-Jan-2020 14:11
Phenol	U		0.000035	0.00020	mg/L	1	15-Jan-2020 10:05
Pyrene	**0.00046**		**0.000019**	**0.00010**	**mg/L**	1	15-Jan-2020 10:05
Surr: 2,4,6-Tribromophenol	*90.3*	*J*		*34-129*	*%REC*	*100*	*15-Jan-2020 16:04*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*1000*	*15-Jan-2020 17:57*
Surr: 2,4,6-Tribromophenol	*82.0*			*34-129*	*%REC*	*1*	*15-Jan-2020 10:05*
Surr: 2,4,6-Tribromophenol	*96.4*			*34-129*	*%REC*	*20*	*15-Jan-2020 14:11*
Surr: 2-Fluorobiphenyl	*80.0*			*40-125*	*%REC*	*1*	*15-Jan-2020 10:05*
Surr: 2-Fluorobiphenyl	*96.1*			*40-125*	*%REC*	*20*	*15-Jan-2020 14:11*
Surr: 2-Fluorobiphenyl	*101*	*J*		*40-125*	*%REC*	*100*	*15-Jan-2020 16:04*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*1000*	*15-Jan-2020 17:57*
Surr: 2-Fluorophenol	*79.1*	*J*		*20-120*	*%REC*	*20*	*15-Jan-2020 14:11*
Surr: 2-Fluorophenol	*110*	*J*		*20-120*	*%REC*	*100*	*15-Jan-2020 16:04*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*1000*	*15-Jan-2020 17:57*
Surr: 2-Fluorophenol	*67.3*			*20-120*	*%REC*	*1*	*15-Jan-2020 10:05*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW77A-20200109
Collection Date: 09-Jan-2020 14:25

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 14-Jan-2020		Analyst: LG
Surr: 4-Terphenyl-d14	*102*			*40-135*	*%REC*	*1*	*15-Jan-2020 10:05*
Surr: 4-Terphenyl-d14	*112*			*40-135*	*%REC*	*20*	*15-Jan-2020 14:11*
Surr: 4-Terphenyl-d14	*115*	*J*		*40-135*	*%REC*	*100*	*15-Jan-2020 16:04*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*1000*	*15-Jan-2020 17:57*
Surr: Nitrobenzene-d5	*93.9*			*41-120*	*%REC*	*20*	*15-Jan-2020 14:11*
Surr: Nitrobenzene-d5	*66.8*	*J*		*41-120*	*%REC*	*100*	*15-Jan-2020 16:04*
Surr: Nitrobenzene-d5	*95.0*			*41-120*	*%REC*	*1*	*15-Jan-2020 10:05*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*1000*	*15-Jan-2020 17:57*
Surr: Phenol-d6	*72.0*			*20-120*	*%REC*	*1*	*15-Jan-2020 10:05*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*1000*	*15-Jan-2020 17:57*
Surr: Phenol-d6	*77.0*	*J*		*20-120*	*%REC*	*20*	*15-Jan-2020 14:11*
Surr: Phenol-d6	*60.7*	*J*		*20-120*	*%REC*	*100*	*15-Jan-2020 16:04*
LOW-LEVEL TEXAS TPH BY TX1005		**Method:TX1005**			Prep:TX1005PR / 13-Jan-2020		Analyst: MBG
nC6 to nC12	**8.3**		**0.19**	**0.48**	**mg/L**	1	13-Jan-2020 23:03
>nC12 to nC28	**3.8**		**0.19**	**0.48**	**mg/L**	1	13-Jan-2020 23:03
>nC28 to nC35	U		0.19	0.48	mg/L	1	13-Jan-2020 23:03
Total Petroleum Hydrocarbon	**12.1**		**0.19**	**0.48**	**mg/L**	1	13-Jan-2020 23:03
Surr: 2-Fluorobiphenyl	*108*			*70-130*	*%REC*	*1*	*13-Jan-2020 23:03*
Surr: Trifluoromethyl benzene	*108*			*70-130*	*%REC*	*1*	*13-Jan-2020 23:03*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 13-Jan-2020		Analyst: JHD
Arsenic	**0.0237**		**0.000400**	**0.00200**	**mg/L**	1	13-Jan-2020 22:31

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW76C-20200109
Collection Date: 09-Jan-2020 15:20

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-06
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	14-Jan-2020 23:55
Benzene		U	0.00020	0.0010	mg/L	1	14-Jan-2020 23:55
Chlorobenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2020 23:55
Ethylbenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2020 23:55
Methylene chloride		U	0.0010	0.0020	mg/L	1	14-Jan-2020 23:55
Toluene		U	0.00020	0.0010	mg/L	1	14-Jan-2020 23:55
Xylenes, Total		U	0.00030	0.0010	mg/L	1	14-Jan-2020 23:55
Surr: 1,2-Dichloroethane-d4	*97.7*			*70-126*	*%REC*	*1*	*14-Jan-2020 23:55*
Surr: 4-Bromofluorobenzene	*94.4*			*81-113*	*%REC*	*1*	*14-Jan-2020 23:55*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*14-Jan-2020 23:55*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*1*	*14-Jan-2020 23:55*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW76C-20200109
Collection Date: 09-Jan-2020 15:20

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-06
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 14-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	15-Jan-2020 10:24
2,4-Dimethylphenol	**0.00038**		**0.000040**	**0.00020**	**mg/L**	1	15-Jan-2020 10:24
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	15-Jan-2020 10:24
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	15-Jan-2020 10:24
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	15-Jan-2020 10:24
2-Methylnaphthalene	**0.00045**		**0.000019**	**0.00010**	**mg/L**	1	15-Jan-2020 10:24
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	15-Jan-2020 10:24
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	15-Jan-2020 10:24
Acenaphthene	**0.00041**		**0.000027**	**0.00010**	**mg/L**	1	15-Jan-2020 10:24
Acenaphthylene	**0.000035**	J	**0.000015**	**0.00010**	**mg/L**	1	15-Jan-2020 10:24
Anthracene	**0.00017**		**0.000014**	**0.00010**	**mg/L**	1	15-Jan-2020 10:24
Benz(a)anthracene	**0.00014**		**0.000050**	**0.00010**	**mg/L**	1	15-Jan-2020 10:24
Benzo(a)pyrene	**0.000037**	J	**0.000020**	**0.00010**	**mg/L**	1	15-Jan-2020 10:24
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	15-Jan-2020 10:24
Bis(2-ethylhexyl)phthalate	**0.00016**	J	**0.000037**	**0.00020**	**mg/L**	1	15-Jan-2020 10:24
Chrysene	**0.00013**		**0.000021**	**0.00010**	**mg/L**	1	15-Jan-2020 10:24
Dibenzofuran	**0.00029**		**0.000020**	**0.00010**	**mg/L**	1	15-Jan-2020 10:24
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	15-Jan-2020 10:24
Fluoranthene	**0.0010**		**0.000010**	**0.00010**	**mg/L**	1	15-Jan-2020 10:24
Fluorene	**0.00032**		**0.000030**	**0.00010**	**mg/L**	1	15-Jan-2020 10:24
Naphthalene	**0.0038**		**0.000020**	**0.00010**	**mg/L**	1	15-Jan-2020 10:24
Nitrobenzene	U		0.000024	0.00020	mg/L	1	15-Jan-2020 10:24
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	15-Jan-2020 10:24
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	15-Jan-2020 10:24
Phenanthrene	**0.00069**		**0.000021**	**0.00010**	**mg/L**	1	15-Jan-2020 10:24
Phenol	U		0.000035	0.00020	mg/L	1	15-Jan-2020 10:24
Pyrene	**0.00070**		**0.000019**	**0.00010**	**mg/L**	1	15-Jan-2020 10:24
Surr: 2,4,6-Tribromophenol	*78.0*			*34-129*	*%REC*	*1*	*15-Jan-2020 10:24*
Surr: 2-Fluorobiphenyl	*72.0*			*40-125*	*%REC*	*1*	*15-Jan-2020 10:24*
Surr: 2-Fluorophenol	*52.2*			*20-120*	*%REC*	*1*	*15-Jan-2020 10:24*
Surr: 4-Terphenyl-d14	*91.3*			*40-135*	*%REC*	*1*	*15-Jan-2020 10:24*
Surr: Nitrobenzene-d5	*56.3*			*41-120*	*%REC*	*1*	*15-Jan-2020 10:24*
Surr: Phenol-d6	*58.5*			*20-120*	*%REC*	*1*	*15-Jan-2020 10:24*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW76C-20200109
Collection Date: 09-Jan-2020 15:20

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-06
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL TEXAS TPH BY TX1005		**Method:TX1005**			Prep:TX1005PR / 13-Jan-2020		Analyst: MBG
nC6 to nC12		U	0.19	0.48	mg/L	1	13-Jan-2020 23:33
>nC12 to nC28		U	0.19	0.48	mg/L	1	13-Jan-2020 23:33
>nC28 to nC35		U	0.19	0.48	mg/L	1	13-Jan-2020 23:33
Total Petroleum Hydrocarbon		U	0.19	0.48	mg/L	1	13-Jan-2020 23:33
Surr: 2-Fluorobiphenyl	*116*			*70-130*	*%REC*	*1*	*13-Jan-2020 23:33*
Surr: Trifluoromethyl benzene	*116*			*70-130*	*%REC*	*1*	*13-Jan-2020 23:33*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 13-Jan-2020		Analyst: JHD
Arsenic	**0.00299**		**0.000400**	**0.00200**	**mg/L**	1	13-Jan-2020 22:34

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW81B-20200109
Collection Date: 09-Jan-2020 16:20

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-07
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	14-Jan-2020 03:54
Benzene		U	0.00020	0.0010	mg/L	1	14-Jan-2020 03:54
Chlorobenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2020 03:54
Ethylbenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2020 03:54
Methylene chloride		U	0.0010	0.0020	mg/L	1	14-Jan-2020 03:54
Toluene		U	0.00020	0.0010	mg/L	1	14-Jan-2020 03:54
Xylenes, Total		U	0.00030	0.0010	mg/L	1	14-Jan-2020 03:54
Surr: 1,2-Dichloroethane-d4	*99.1*			*70-126*	*%REC*	*1*	*14-Jan-2020 03:54*
Surr: 4-Bromofluorobenzene	*94.1*			*81-113*	*%REC*	*1*	*14-Jan-2020 03:54*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*14-Jan-2020 03:54*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*14-Jan-2020 03:54*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW81B-20200109
Collection Date: 09-Jan-2020 16:20

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-07
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 14-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	15-Jan-2020 10:43
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	15-Jan-2020 10:43
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	15-Jan-2020 10:43
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	15-Jan-2020 10:43
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	15-Jan-2020 10:43
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	15-Jan-2020 10:43
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	15-Jan-2020 10:43
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	15-Jan-2020 10:43
Acenaphthene	**0.000077**	J	**0.000027**	**0.00010**	**mg/L**	1	15-Jan-2020 10:43
Acenaphthylene	U		0.000015	0.00010	mg/L	1	15-Jan-2020 10:43
Anthracene	U		0.000014	0.00010	mg/L	1	15-Jan-2020 10:43
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	15-Jan-2020 10:43
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	15-Jan-2020 10:43
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	15-Jan-2020 10:43
Bis(2-ethylhexyl)phthalate	**0.000066**	J	**0.000037**	**0.00020**	**mg/L**	1	15-Jan-2020 10:43
Chrysene	U		0.000021	0.00010	mg/L	1	15-Jan-2020 10:43
Dibenzofuran	U		0.000020	0.00010	mg/L	1	15-Jan-2020 10:43
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	15-Jan-2020 10:43
Fluoranthene	U		0.000010	0.00010	mg/L	1	15-Jan-2020 10:43
Fluorene	U		0.000030	0.00010	mg/L	1	15-Jan-2020 10:43
Naphthalene	**0.00023**		**0.000020**	**0.00010**	**mg/L**	1	15-Jan-2020 10:43
Nitrobenzene	U		0.000024	0.00020	mg/L	1	15-Jan-2020 10:43
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	15-Jan-2020 10:43
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	15-Jan-2020 10:43
Phenanthrene	U		0.000021	0.00010	mg/L	1	15-Jan-2020 10:43
Phenol	U		0.000035	0.00020	mg/L	1	15-Jan-2020 10:43
Pyrene	U		0.000019	0.00010	mg/L	1	15-Jan-2020 10:43
Surr: 2,4,6-Tribromophenol	*65.6*			*34-129*	*%REC*	*1*	*15-Jan-2020 10:43*
Surr: 2-Fluorobiphenyl	*65.2*			*40-125*	*%REC*	*1*	*15-Jan-2020 10:43*
Surr: 2-Fluorophenol	*63.5*			*20-120*	*%REC*	*1*	*15-Jan-2020 10:43*
Surr: 4-Terphenyl-d14	*85.7*			*40-135*	*%REC*	*1*	*15-Jan-2020 10:43*
Surr: Nitrobenzene-d5	*53.1*			*41-120*	*%REC*	*1*	*15-Jan-2020 10:43*
Surr: Phenol-d6	*56.4*			*20-120*	*%REC*	*1*	*15-Jan-2020 10:43*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW81B-20200109
Collection Date: 09-Jan-2020 16:20

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-07
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 13-Jan-2020		Analyst: MBG
nC6 to nC12	U		0.19	0.48	mg/L	1	14-Jan-2020 00:02
>nC12 to nC28	U		0.19	0.48	mg/L	1	14-Jan-2020 00:02
>nC28 to nC35	U		0.19	0.48	mg/L	1	14-Jan-2020 00:02
Total Petroleum Hydrocarbon	U		0.19	0.48	mg/L	1	14-Jan-2020 00:02
Surr: 2-Fluorobiphenyl	*105*			*70-130*	*%REC*	*1*	*14-Jan-2020 00:02*
Surr: Trifluoromethyl benzene	*106*			*70-130*	*%REC*	*1*	*14-Jan-2020 00:02*
ICP-MS METALS BY SW6020A	**Method:SW6020**				Prep:SW3010A / 13-Jan-2020		Analyst: JHD
Arsenic	**0.00130**	J	**0.000400**	**0.00200**	**mg/L**	1	13-Jan-2020 22:36

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW50A-20200109
Collection Date: 09-Jan-2020 17:15

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-08
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	14-Jan-2020 04:18
Benzene		U	0.00020	0.0010	mg/L	1	14-Jan-2020 04:18
Chlorobenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2020 04:18
Ethylbenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2020 04:18
Methylene chloride		U	0.0010	0.0020	mg/L	1	14-Jan-2020 04:18
Toluene		U	0.00020	0.0010	mg/L	1	14-Jan-2020 04:18
Xylenes, Total		U	0.00030	0.0010	mg/L	1	14-Jan-2020 04:18
Surr: 1,2-Dichloroethane-d4	*95.8*			*70-126*	*%REC*	*1*	*14-Jan-2020 04:18*
Surr: 4-Bromofluorobenzene	*95.5*			*81-113*	*%REC*	*1*	*14-Jan-2020 04:18*
Surr: Dibromofluoromethane	*100*			*77-123*	*%REC*	*1*	*14-Jan-2020 04:18*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*14-Jan-2020 04:18*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW50A-20200109
Collection Date: 09-Jan-2020 17:15

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-08
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 14-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	15-Jan-2020 11:02
2,4-Dimethylphenol	**0.00071**		**0.000040**	**0.00020**	**mg/L**	1	15-Jan-2020 11:02
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	15-Jan-2020 11:02
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	15-Jan-2020 11:02
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	15-Jan-2020 11:02
2-Methylnaphthalene	**0.00019**		**0.000019**	**0.00010**	**mg/L**	1	15-Jan-2020 11:02
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	15-Jan-2020 11:02
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	15-Jan-2020 11:02
Acenaphthene	**0.00037**		**0.000027**	**0.00010**	**mg/L**	1	15-Jan-2020 11:02
Acenaphthylene	**0.000022**	J	**0.000015**	**0.00010**	**mg/L**	1	15-Jan-2020 11:02
Anthracene	U		0.000014	0.00010	mg/L	1	15-Jan-2020 11:02
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	15-Jan-2020 11:02
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	15-Jan-2020 11:02
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	15-Jan-2020 11:02
Bis(2-ethylhexyl)phthalate	**0.000085**	J	**0.000037**	**0.00020**	**mg/L**	1	15-Jan-2020 11:02
Chrysene	U		0.000021	0.00010	mg/L	1	15-Jan-2020 11:02
Dibenzofuran	**0.00013**		**0.000020**	**0.00010**	**mg/L**	1	15-Jan-2020 11:02
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	15-Jan-2020 11:02
Fluoranthene	**0.000052**	J	**0.000010**	**0.00010**	**mg/L**	1	15-Jan-2020 11:02
Fluorene	**0.00011**		**0.000030**	**0.00010**	**mg/L**	1	15-Jan-2020 11:02
Naphthalene	**0.0020**		**0.000020**	**0.00010**	**mg/L**	1	15-Jan-2020 11:02
Nitrobenzene	U		0.000024	0.00020	mg/L	1	15-Jan-2020 11:02
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	15-Jan-2020 11:02
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	15-Jan-2020 11:02
Phenanthrene	**0.000070**	J	**0.000021**	**0.00010**	**mg/L**	1	15-Jan-2020 11:02
Phenol	**0.000066**	J	**0.000035**	**0.00020**	**mg/L**	1	15-Jan-2020 11:02
Pyrene	**0.000034**	J	**0.000019**	**0.00010**	**mg/L**	1	15-Jan-2020 11:02
Surr: 2,4,6-Tribromophenol	*83.6*			*34-129*	*%REC*	*1*	*15-Jan-2020 11:02*
Surr: 2-Fluorobiphenyl	*81.2*			*40-125*	*%REC*	*1*	*15-Jan-2020 11:02*
Surr: 2-Fluorophenol	*57.4*			*20-120*	*%REC*	*1*	*15-Jan-2020 11:02*
Surr: 4-Terphenyl-d14	*93.2*			*40-135*	*%REC*	*1*	*15-Jan-2020 11:02*
Surr: Nitrobenzene-d5	*64.4*			*41-120*	*%REC*	*1*	*15-Jan-2020 11:02*
Surr: Phenol-d6	*63.4*			*20-120*	*%REC*	*1*	*15-Jan-2020 11:02*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW50A-20200109
Collection Date: 09-Jan-2020 17:15

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-08
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL TEXAS TPH BY TX1005		**Method:TX1005**			Prep:TX1005PR / 13-Jan-2020		Analyst: MBG
nC6 to nC12	U		0.19	0.48	mg/L	1	14-Jan-2020 00:31
>nC12 to nC28	U		0.19	0.48	mg/L	1	14-Jan-2020 00:31
>nC28 to nC35	U		0.19	0.48	mg/L	1	14-Jan-2020 00:31
Total Petroleum Hydrocarbon	U		0.19	0.48	mg/L	1	14-Jan-2020 00:31
Surr: 2-Fluorobiphenyl	*103*			*70-130*	*%REC*	*1*	*14-Jan-2020 00:31*
Surr: Trifluoromethyl benzene	*103*			*70-130*	*%REC*	*1*	*14-Jan-2020 00:31*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 13-Jan-2020		Analyst: JHD
Arsenic	**0.000718**	J	**0.000400**	**0.00200**	**mg/L**	1	13-Jan-2020 22:38

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW49A-20200107
Collection Date: 07-Jan-2020 13:10

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-09
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.0020	0.010	mg/L	10	15-Jan-2020 14:41
Benzene	**0.30**		**0.0020**	**0.010**	**mg/L**	10	15-Jan-2020 14:41
Chlorobenzene	**0.0063**	J	**0.0030**	**0.010**	**mg/L**	10	15-Jan-2020 14:41
Ethylbenzene	**0.10**		**0.0030**	**0.010**	**mg/L**	10	15-Jan-2020 14:41
Methylene chloride	U		0.010	0.020	mg/L	10	15-Jan-2020 14:41
Toluene	**0.19**		**0.0020**	**0.010**	**mg/L**	10	15-Jan-2020 14:41
Vinyl chloride	U		0.0020	0.010	mg/L	10	15-Jan-2020 14:41
Xylenes, Total	**0.24**		**0.0030**	**0.010**	**mg/L**	10	15-Jan-2020 14:41
Surr: 1,2-Dichloroethane-d4	*94.4*			*70-126*	*%REC*	*10*	*15-Jan-2020 14:41*
Surr: 4-Bromofluorobenzene	*97.4*			*81-113*	*%REC*	*10*	*15-Jan-2020 14:41*
Surr: Dibromofluoromethane	*99.4*			*77-123*	*%REC*	*10*	*15-Jan-2020 14:41*
Surr: Toluene-d8	*98.8*			*82-127*	*%REC*	*10*	*15-Jan-2020 14:41*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW49A-20200107
Collection Date: 07-Jan-2020 13:10

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-09
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 14-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	15-Jan-2020 11:21
2,4-Dimethylphenol	**5.7**		**0.040**	**0.20**	**mg/L**	1000	15-Jan-2020 18:16
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	15-Jan-2020 11:21
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	15-Jan-2020 11:21
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	15-Jan-2020 11:21
2-Methylnaphthalene	**0.13**		**0.0019**	**0.010**	**mg/L**	100	15-Jan-2020 16:23
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	15-Jan-2020 11:21
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	15-Jan-2020 11:21
Acenaphthene	**0.057**		**0.00027**	**0.0010**	**mg/L**	10	15-Jan-2020 14:30
Acenaphthylene	**0.00097**		**0.000015**	**0.00010**	**mg/L**	1	15-Jan-2020 11:21
Anthracene	**0.0028**		**0.000014**	**0.00010**	**mg/L**	1	15-Jan-2020 11:21
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	15-Jan-2020 11:21
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	15-Jan-2020 11:21
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	15-Jan-2020 11:21
Bis(2-ethylhexyl)phthalate	**0.00011**	J	**0.000037**	**0.00020**	**mg/L**	1	15-Jan-2020 11:21
Chrysene	U		0.000021	0.00010	mg/L	1	15-Jan-2020 11:21
Dibenzofuran	**0.037**		**0.00020**	**0.0010**	**mg/L**	10	15-Jan-2020 14:30
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	15-Jan-2020 11:21
Fluoranthene	**0.00056**		**0.000010**	**0.00010**	**mg/L**	1	15-Jan-2020 11:21
Fluorene	**0.027**		**0.00030**	**0.0010**	**mg/L**	10	15-Jan-2020 14:30
Naphthalene	**4.5**		**0.020**	**0.10**	**mg/L**	1000	15-Jan-2020 18:16
Nitrobenzene	U		0.00024	0.0020	mg/L	10	15-Jan-2020 14:30
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	15-Jan-2020 11:21
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	15-Jan-2020 11:21
Phenanthrene	**0.016**		**0.00021**	**0.0010**	**mg/L**	10	15-Jan-2020 14:30
Phenol	**0.17**		**0.0035**	**0.020**	**mg/L**	100	15-Jan-2020 16:23
Pyrene	**0.00052**		**0.000019**	**0.00010**	**mg/L**	1	15-Jan-2020 11:21
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*1000*	*15-Jan-2020 18:16*
Surr: 2,4,6-Tribromophenol	*69.4*			*34-129*	*%REC*	*1*	*15-Jan-2020 11:21*
Surr: 2,4,6-Tribromophenol	*101*			*34-129*	*%REC*	*10*	*15-Jan-2020 14:30*
Surr: 2,4,6-Tribromophenol	*86.8*	*J*		*34-129*	*%REC*	*100*	*15-Jan-2020 16:23*
Surr: 2-Fluorobiphenyl	*59.3*			*40-125*	*%REC*	*1*	*15-Jan-2020 11:21*
Surr: 2-Fluorobiphenyl	*107*			*40-125*	*%REC*	*10*	*15-Jan-2020 14:30*
Surr: 2-Fluorobiphenyl	*107*	*J*		*40-125*	*%REC*	*100*	*15-Jan-2020 16:23*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*1000*	*15-Jan-2020 18:16*
Surr: 2-Fluorophenol	*75.3*			*20-120*	*%REC*	*1*	*15-Jan-2020 11:21*
Surr: 2-Fluorophenol	*83.0*			*20-120*	*%REC*	*10*	*15-Jan-2020 14:30*
Surr: 2-Fluorophenol	*86.4*	*J*		*20-120*	*%REC*	*100*	*15-Jan-2020 16:23*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*1000*	*15-Jan-2020 18:16*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW49A-20200107
Collection Date: 07-Jan-2020 13:10

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-09
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 14-Jan-2020		Analyst: LG
Surr: 4-Terphenyl-d14	*84.6*			*40-135*	*%REC*	*1*	*15-Jan-2020 11:21*
Surr: 4-Terphenyl-d14	*112*			*40-135*	*%REC*	*10*	*15-Jan-2020 14:30*
Surr: 4-Terphenyl-d14	*120*	*J*		*40-135*	*%REC*	*100*	*15-Jan-2020 16:23*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*1000*	*15-Jan-2020 18:16*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*1000*	*15-Jan-2020 18:16*
Surr: Nitrobenzene-d5	*55.3*			*41-120*	*%REC*	*1*	*15-Jan-2020 11:21*
Surr: Nitrobenzene-d5	*65.6*			*41-120*	*%REC*	*10*	*15-Jan-2020 14:30*
Surr: Nitrobenzene-d5	*65.6*	*J*		*41-120*	*%REC*	*100*	*15-Jan-2020 16:23*
Surr: Phenol-d6	*66.3*			*20-120*	*%REC*	*1*	*15-Jan-2020 11:21*
Surr: Phenol-d6	*87.2*			*20-120*	*%REC*	*10*	*15-Jan-2020 14:30*
Surr: Phenol-d6	*82.2*	*J*		*20-120*	*%REC*	*100*	*15-Jan-2020 16:23*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*1000*	*15-Jan-2020 18:16*
LOW-LEVEL TEXAS TPH BY TX1005		**Method:TX1005**			Prep:TX1005PR / 13-Jan-2020		Analyst: MBG
nC6 to nC12	**21**		**0.19**	**0.48**	**mg/L**	1	14-Jan-2020 01:00
>nC12 to nC28	**11**		**0.19**	**0.48**	**mg/L**	1	14-Jan-2020 01:00
>nC28 to nC35	U		0.19	0.48	mg/L	1	14-Jan-2020 01:00
Total Petroleum Hydrocarbon	**32.0**		**0.19**	**0.48**	**mg/L**	1	14-Jan-2020 01:00
Surr: 2-Fluorobiphenyl	*112*			*70-130*	*%REC*	*1*	*14-Jan-2020 01:00*
Surr: Trifluoromethyl benzene	*113*			*70-130*	*%REC*	*1*	*14-Jan-2020 01:00*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 13-Jan-2020		Analyst: JHD
Arsenic	**0.00463**		**0.000400**	**0.00200**	**mg/L**	1	13-Jan-2020 22:40

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW80B-20200107
Collection Date: 07-Jan-2020 16:00

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-10
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	14-Jan-2020 04:42
Benzene		U	0.00020	0.0010	mg/L	1	14-Jan-2020 04:42
Chlorobenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2020 04:42
Ethylbenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2020 04:42
Methylene chloride		U	0.0010	0.0020	mg/L	1	14-Jan-2020 04:42
Toluene		U	0.00020	0.0010	mg/L	1	14-Jan-2020 04:42
Xylenes, Total		U	0.00030	0.0010	mg/L	1	14-Jan-2020 04:42
Surr: 1,2-Dichloroethane-d4	*98.3*			*70-126*	*%REC*	*1*	*14-Jan-2020 04:42*
Surr: 4-Bromofluorobenzene	*95.5*			*81-113*	*%REC*	*1*	*14-Jan-2020 04:42*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*14-Jan-2020 04:42*
Surr: Toluene-d8	*99.7*			*82-127*	*%REC*	*1*	*14-Jan-2020 04:42*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW80B-20200107
Collection Date: 07-Jan-2020 16:00

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-10
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 14-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	15-Jan-2020 11:40
2,4-Dimethylphenol	**0.00028**		**0.000040**	**0.00020**	**mg/L**	1	15-Jan-2020 11:40
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	15-Jan-2020 11:40
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	15-Jan-2020 11:40
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	15-Jan-2020 11:40
2-Methylnaphthalene	**0.000036**	J	**0.000019**	**0.00010**	**mg/L**	1	15-Jan-2020 11:40
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	15-Jan-2020 11:40
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	15-Jan-2020 11:40
Acenaphthene	**0.000046**	J	**0.000027**	**0.00010**	**mg/L**	1	15-Jan-2020 11:40
Acenaphthylene	U		0.000015	0.00010	mg/L	1	15-Jan-2020 11:40
Anthracene	**0.000026**	J	**0.000014**	**0.00010**	**mg/L**	1	15-Jan-2020 11:40
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	15-Jan-2020 11:40
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	15-Jan-2020 11:40
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	15-Jan-2020 11:40
Bis(2-ethylhexyl)phthalate	**0.000069**	J	**0.000037**	**0.00020**	**mg/L**	1	15-Jan-2020 11:40
Chrysene	U		0.000021	0.00010	mg/L	1	15-Jan-2020 11:40
Dibenzofuran	**0.000048**	J	**0.000020**	**0.00010**	**mg/L**	1	15-Jan-2020 11:40
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	15-Jan-2020 11:40
Fluoranthene	U		0.000010	0.00010	mg/L	1	15-Jan-2020 11:40
Fluorene	**0.000032**	J	**0.000030**	**0.00010**	**mg/L**	1	15-Jan-2020 11:40
Naphthalene	**0.00034**		**0.000020**	**0.00010**	**mg/L**	1	15-Jan-2020 11:40
Nitrobenzene	U		0.000024	0.00020	mg/L	1	15-Jan-2020 11:40
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	15-Jan-2020 11:40
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	15-Jan-2020 11:40
Phenanthrene	**0.000027**	J	**0.000021**	**0.00010**	**mg/L**	1	15-Jan-2020 11:40
Phenol	U		0.000035	0.00020	mg/L	1	15-Jan-2020 11:40
Pyrene	U		0.000019	0.00010	mg/L	1	15-Jan-2020 11:40
Surr: 2,4,6-Tribromophenol	*85.1*			*34-129*	*%REC*	*1*	*15-Jan-2020 11:40*
Surr: 2-Fluorobiphenyl	*74.9*			*40-125*	*%REC*	*1*	*15-Jan-2020 11:40*
Surr: 2-Fluorophenol	*62.2*			*20-120*	*%REC*	*1*	*15-Jan-2020 11:40*
Surr: 4-Terphenyl-d14	*93.7*			*40-135*	*%REC*	*1*	*15-Jan-2020 11:40*
Surr: Nitrobenzene-d5	*56.4*			*41-120*	*%REC*	*1*	*15-Jan-2020 11:40*
Surr: Phenol-d6	*63.5*			*20-120*	*%REC*	*1*	*15-Jan-2020 11:40*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW80B-20200107
Collection Date: 07-Jan-2020 16:00

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-10
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL TEXAS TPH BY TX1005		**Method:TX1005**			Prep:TX1005PR / 13-Jan-2020		Analyst: MBG
nC6 to nC12		U	0.19	0.48	mg/L	1	14-Jan-2020 01:29
>nC12 to nC28		U	0.19	0.48	mg/L	1	14-Jan-2020 01:29
>nC28 to nC35		U	0.19	0.48	mg/L	1	14-Jan-2020 01:29
Total Petroleum Hydrocarbon		U	0.19	0.48	mg/L	1	14-Jan-2020 01:29
Surr: 2-Fluorobiphenyl	*105*			*70-130*	*%REC*	*1*	*14-Jan-2020 01:29*
Surr: Trifluoromethyl benzene	*104*			*70-130*	*%REC*	*1*	*14-Jan-2020 01:29*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 13-Jan-2020		Analyst: JHD
Arsenic	**0.00212**		**0.000400**	**0.00200**	**mg/L**	1	13-Jan-2020 22:42

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB01-20200107
Collection Date: 07-Jan-2020 16:30

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-11
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	14-Jan-2020 17:30
Benzene		U	0.00020	0.0010	mg/L	1	14-Jan-2020 17:30
Chlorobenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2020 17:30
Ethylbenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2020 17:30
Methylene chloride		U	0.0010	0.0020	mg/L	1	14-Jan-2020 17:30
Toluene		U	0.00020	0.0010	mg/L	1	14-Jan-2020 17:30
Vinyl chloride		U	0.00020	0.0010	mg/L	1	14-Jan-2020 17:30
Xylenes, Total		U	0.00030	0.0010	mg/L	1	14-Jan-2020 17:30
Surr: 1,2-Dichloroethane-d4	*116*			*70-126*	*%REC*	*1*	*14-Jan-2020 17:30*
Surr: 4-Bromofluorobenzene	*103*			*81-113*	*%REC*	*1*	*14-Jan-2020 17:30*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*14-Jan-2020 17:30*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*14-Jan-2020 17:30*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB01-20200107
Collection Date: 07-Jan-2020 16:30

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-11
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 14-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	**0.000041**	J	**0.000021**	**0.00020**	**mg/L**	1	15-Jan-2020 11:59
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	15-Jan-2020 11:59
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	15-Jan-2020 11:59
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	15-Jan-2020 11:59
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	15-Jan-2020 11:59
2-Methylnaphthalene	**0.000031**	J	**0.000019**	**0.00010**	**mg/L**	1	15-Jan-2020 11:59
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	15-Jan-2020 11:59
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	15-Jan-2020 11:59
Acenaphthene	U		0.000027	0.00010	mg/L	1	15-Jan-2020 11:59
Acenaphthylene	U		0.000015	0.00010	mg/L	1	15-Jan-2020 11:59
Anthracene	U		0.000014	0.00010	mg/L	1	15-Jan-2020 11:59
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	15-Jan-2020 11:59
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	15-Jan-2020 11:59
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	15-Jan-2020 11:59
Bis(2-ethylhexyl)phthalate	**0.00017**	J	**0.000037**	**0.00020**	**mg/L**	1	15-Jan-2020 11:59
Chrysene	U		0.000021	0.00010	mg/L	1	15-Jan-2020 11:59
Dibenzofuran	U		0.000020	0.00010	mg/L	1	15-Jan-2020 11:59
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	15-Jan-2020 11:59
Fluoranthene	U		0.000010	0.00010	mg/L	1	15-Jan-2020 11:59
Fluorene	U		0.000030	0.00010	mg/L	1	15-Jan-2020 11:59
Naphthalene	**0.00019**		**0.000020**	**0.00010**	**mg/L**	1	15-Jan-2020 11:59
Nitrobenzene	U		0.000024	0.00020	mg/L	1	15-Jan-2020 11:59
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	15-Jan-2020 11:59
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	15-Jan-2020 11:59
Phenanthrene	U		0.000021	0.00010	mg/L	1	15-Jan-2020 11:59
Phenol	U		0.000035	0.00020	mg/L	1	15-Jan-2020 11:59
Pyrene	U		0.000019	0.00010	mg/L	1	15-Jan-2020 11:59
Surr: 2,4,6-Tribromophenol	*77.5*			*34-129*	*%REC*	*1*	*15-Jan-2020 11:59*
Surr: 2-Fluorobiphenyl	*86.8*			*40-125*	*%REC*	*1*	*15-Jan-2020 11:59*
Surr: 2-Fluorophenol	*77.9*			*20-120*	*%REC*	*1*	*15-Jan-2020 11:59*
Surr: 4-Terphenyl-d14	*92.5*			*40-135*	*%REC*	*1*	*15-Jan-2020 11:59*
Surr: Nitrobenzene-d5	*68.9*			*41-120*	*%REC*	*1*	*15-Jan-2020 11:59*
Surr: Phenol-d6	*73.1*			*20-120*	*%REC*	*1*	*15-Jan-2020 11:59*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 13-Jan-2020		Analyst: JHD
Arsenic	U		0.000400	0.00200	mg/L	1	13-Jan-2020 22:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB02-20200108
Collection Date: 08-Jan-2020 09:00

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-12
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	14-Jan-2020 17:55
Benzene		U	0.00020	0.0010	mg/L	1	14-Jan-2020 17:55
Chlorobenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2020 17:55
Ethylbenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2020 17:55
Methylene chloride		U	0.0010	0.0020	mg/L	1	14-Jan-2020 17:55
Toluene		U	0.00020	0.0010	mg/L	1	14-Jan-2020 17:55
Vinyl chloride		U	0.00020	0.0010	mg/L	1	14-Jan-2020 17:55
Xylenes, Total		U	0.00030	0.0010	mg/L	1	14-Jan-2020 17:55
Surr: 1,2-Dichloroethane-d4	*118*			*70-126*	*%REC*	*1*	*14-Jan-2020 17:55*
Surr: 4-Bromofluorobenzene	*101*			*81-113*	*%REC*	*1*	*14-Jan-2020 17:55*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*14-Jan-2020 17:55*
Surr: Toluene-d8	*99.3*			*82-127*	*%REC*	*1*	*14-Jan-2020 17:55*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB02-20200108
Collection Date: 08-Jan-2020 09:00

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-12
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 14-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	**0.000044**	J	**0.000021**	**0.00020**	**mg/L**	1	15-Jan-2020 12:17
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	15-Jan-2020 12:17
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	15-Jan-2020 12:17
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	15-Jan-2020 12:17
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	15-Jan-2020 12:17
2-Methylnaphthalene	**0.000038**	J	**0.000019**	**0.00010**	**mg/L**	1	15-Jan-2020 12:17
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	15-Jan-2020 12:17
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	15-Jan-2020 12:17
Acenaphthene	**0.000053**	J	**0.000027**	**0.00010**	**mg/L**	1	15-Jan-2020 12:17
Acenaphthylene	U		0.000015	0.00010	mg/L	1	15-Jan-2020 12:17
Anthracene	U		0.000014	0.00010	mg/L	1	15-Jan-2020 12:17
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	15-Jan-2020 12:17
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	15-Jan-2020 12:17
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	15-Jan-2020 12:17
Bis(2-ethylhexyl)phthalate	**0.000099**	J	**0.000037**	**0.00020**	**mg/L**	1	15-Jan-2020 12:17
Chrysene	U		0.000021	0.00010	mg/L	1	15-Jan-2020 12:17
Dibenzofuran	U		0.000020	0.00010	mg/L	1	15-Jan-2020 12:17
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	15-Jan-2020 12:17
Fluoranthene	U		0.000010	0.00010	mg/L	1	15-Jan-2020 12:17
Fluorene	U		0.000030	0.00010	mg/L	1	15-Jan-2020 12:17
Naphthalene	**0.00030**		**0.000020**	**0.00010**	**mg/L**	1	15-Jan-2020 12:17
Nitrobenzene	U		0.000024	0.00020	mg/L	1	15-Jan-2020 12:17
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	15-Jan-2020 12:17
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	15-Jan-2020 12:17
Phenanthrene	U		0.000021	0.00010	mg/L	1	15-Jan-2020 12:17
Phenol	U		0.000035	0.00020	mg/L	1	15-Jan-2020 12:17
Pyrene	U		0.000019	0.00010	mg/L	1	15-Jan-2020 12:17
Surr: 2,4,6-Tribromophenol	*67.4*			*34-129*	*%REC*	*1*	*15-Jan-2020 12:17*
Surr: 2-Fluorobiphenyl	*84.8*			*40-125*	*%REC*	*1*	*15-Jan-2020 12:17*
Surr: 2-Fluorophenol	*75.6*			*20-120*	*%REC*	*1*	*15-Jan-2020 12:17*
Surr: 4-Terphenyl-d14	*91.8*			*40-135*	*%REC*	*1*	*15-Jan-2020 12:17*
Surr: Nitrobenzene-d5	*71.7*			*41-120*	*%REC*	*1*	*15-Jan-2020 12:17*
Surr: Phenol-d6	*70.0*			*20-120*	*%REC*	*1*	*15-Jan-2020 12:17*
ICP-MS METALS BY SW6020A	**Method:SW6020**				Prep:SW3010A / 13-Jan-2020		Analyst: JHD
Arsenic	U		0.000400	0.00200	mg/L	1	13-Jan-2020 22:58

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW18C-20200108
Collection Date: 08-Jan-2020 10:10

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-13
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.0020	0.010	mg/L	10	14-Jan-2020 17:22
Benzene	**1.1**		**0.0020**	**0.010**	**mg/L**	10	14-Jan-2020 17:22
Chlorobenzene	U		0.0030	0.010	mg/L	10	14-Jan-2020 17:22
Ethylbenzene	**0.31**		**0.0030**	**0.010**	**mg/L**	10	14-Jan-2020 17:22
Methylene chloride	U		0.010	0.020	mg/L	10	14-Jan-2020 17:22
Toluene	**0.97**		**0.0020**	**0.010**	**mg/L**	10	14-Jan-2020 17:22
Vinyl chloride	U		0.0020	0.010	mg/L	10	14-Jan-2020 17:22
Xylenes, Total	**0.92**		**0.0030**	**0.010**	**mg/L**	10	14-Jan-2020 17:22
Surr: 1,2-Dichloroethane-d4	*94.1*			*70-126*	*%REC*	*10*	*14-Jan-2020 17:22*
Surr: 4-Bromofluorobenzene	*97.9*			*81-113*	*%REC*	*10*	*14-Jan-2020 17:22*
Surr: Dibromofluoromethane	*100*			*77-123*	*%REC*	*10*	*14-Jan-2020 17:22*
Surr: Toluene-d8	*98.9*			*82-127*	*%REC*	*10*	*14-Jan-2020 17:22*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW18C-20200108
Collection Date: 08-Jan-2020 10:10

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-13
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 14-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	15-Jan-2020 12:36
2,4-Dimethylphenol	**0.023**		**0.00040**	**0.0020**	**mg/L**	10	15-Jan-2020 14:48
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	15-Jan-2020 12:36
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	15-Jan-2020 12:36
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	15-Jan-2020 12:36
2-Methylnaphthalene	**0.31**		**0.0019**	**0.010**	**mg/L**	100	15-Jan-2020 16:41
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	15-Jan-2020 12:36
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	15-Jan-2020 12:36
Acenaphthene	**0.093**		**0.00027**	**0.0010**	**mg/L**	10	15-Jan-2020 14:48
Acenaphthylene	**0.0026**		**0.000015**	**0.00010**	**mg/L**	1	15-Jan-2020 12:36
Anthracene	**0.020**		**0.00014**	**0.0010**	**mg/L**	10	15-Jan-2020 14:48
Benz(a)anthracene	**0.0025**		**0.000050**	**0.00010**	**mg/L**	1	15-Jan-2020 12:36
Benzo(a)pyrene	**0.00053**		**0.000020**	**0.00010**	**mg/L**	1	15-Jan-2020 12:36
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	15-Jan-2020 12:36
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	15-Jan-2020 12:36
Chrysene	**0.0027**		**0.000021**	**0.00010**	**mg/L**	1	15-Jan-2020 12:36
Dibenzofuran	**0.085**		**0.00020**	**0.0010**	**mg/L**	10	15-Jan-2020 14:48
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	15-Jan-2020 12:36
Fluoranthene	**0.013**		**0.00010**	**0.0010**	**mg/L**	10	15-Jan-2020 14:48
Fluorene	**0.043**		**0.00030**	**0.0010**	**mg/L**	10	15-Jan-2020 14:48
Naphthalene	**14**		**0.040**	**0.20**	**mg/L**	2000	15-Jan-2020 18:35
Nitrobenzene	U		0.000024	0.00020	mg/L	1	15-Jan-2020 12:36
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	15-Jan-2020 12:36
Pentachlorophenol	**0.023**		**0.00079**	**0.0020**	**mg/L**	10	15-Jan-2020 14:48
Phenanthrene	**0.065**		**0.00021**	**0.0010**	**mg/L**	10	15-Jan-2020 14:48
Phenol	**0.0062**		**0.000035**	**0.00020**	**mg/L**	1	15-Jan-2020 12:36
Pyrene	**0.0066**		**0.000019**	**0.00010**	**mg/L**	1	15-Jan-2020 12:36
Surr: 2,4,6-Tribromophenol	*66.4*			*34-129*	*%REC*	*1*	*15-Jan-2020 12:36*
Surr: 2,4,6-Tribromophenol	*86.5*			*34-129*	*%REC*	*10*	*15-Jan-2020 14:48*
Surr: 2,4,6-Tribromophenol	*112*	*J*		*34-129*	*%REC*	*100*	*15-Jan-2020 16:41*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*2000*	*15-Jan-2020 18:35*
Surr: 2-Fluorobiphenyl	*64.7*			*40-125*	*%REC*	*1*	*15-Jan-2020 12:36*
Surr: 2-Fluorobiphenyl	*92.7*			*40-125*	*%REC*	*10*	*15-Jan-2020 14:48*
Surr: 2-Fluorobiphenyl	*108*	*J*		*40-125*	*%REC*	*100*	*15-Jan-2020 16:41*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*2000*	*15-Jan-2020 18:35*
Surr: 2-Fluorophenol	*97.6*			*20-120*	*%REC*	*1*	*15-Jan-2020 12:36*
Surr: 2-Fluorophenol	*56.1*			*20-120*	*%REC*	*10*	*15-Jan-2020 14:48*
Surr: 2-Fluorophenol	*71.0*	*J*		*20-120*	*%REC*	*100*	*15-Jan-2020 16:41*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*2000*	*15-Jan-2020 18:35*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW18C-20200108
Collection Date: 08-Jan-2020 10:10

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-13
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 14-Jan-2020		Analyst: LG
Surr: 4-Terphenyl-d14	*70.5*			*40-135*	*%REC*	*1*	*15-Jan-2020 12:36*
Surr: 4-Terphenyl-d14	*105*			*40-135*	*%REC*	*10*	*15-Jan-2020 14:48*
Surr: 4-Terphenyl-d14	*104*	*J*		*40-135*	*%REC*	*100*	*15-Jan-2020 16:41*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*2000*	*15-Jan-2020 18:35*
Surr: Nitrobenzene-d5	*108*			*41-120*	*%REC*	*1*	*15-Jan-2020 12:36*
Surr: Nitrobenzene-d5	*78.6*			*41-120*	*%REC*	*10*	*15-Jan-2020 14:48*
Surr: Nitrobenzene-d5	*97.5*	*J*		*41-120*	*%REC*	*100*	*15-Jan-2020 16:41*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*2000*	*15-Jan-2020 18:35*
Surr: Phenol-d6	*59.5*	*J*		*20-120*	*%REC*	*100*	*15-Jan-2020 16:41*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*2000*	*15-Jan-2020 18:35*
Surr: Phenol-d6	*63.0*			*20-120*	*%REC*	*1*	*15-Jan-2020 12:36*
Surr: Phenol-d6	*73.0*			*20-120*	*%REC*	*10*	*15-Jan-2020 14:48*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 13-Jan-2020		Analyst: JHD
Arsenic	**0.00283**		**0.000400**	**0.00200**	**mg/L**	1	13-Jan-2020 23:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW18A-20200108
Collection Date: 08-Jan-2020 11:10

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-14
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.0050	0.025	mg/L	25	14-Jan-2020 17:49
Benzene	**0.41**		**0.0050**	**0.025**	**mg/L**	25	14-Jan-2020 17:49
Chlorobenzene	U		0.0075	0.025	mg/L	25	14-Jan-2020 17:49
Ethylbenzene	**0.32**		**0.0075**	**0.025**	**mg/L**	25	14-Jan-2020 17:49
Methylene chloride	U		0.025	0.050	mg/L	25	14-Jan-2020 17:49
Toluene	**0.11**		**0.0050**	**0.025**	**mg/L**	25	14-Jan-2020 17:49
Vinyl chloride	U		0.0050	0.025	mg/L	25	14-Jan-2020 17:49
Xylenes, Total	**0.50**		**0.0075**	**0.025**	**mg/L**	25	14-Jan-2020 17:49
Surr: 1,2-Dichloroethane-d4	*94.3*			*70-126*	*%REC*	*25*	*14-Jan-2020 17:49*
Surr: 4-Bromofluorobenzene	*97.1*			*81-113*	*%REC*	*25*	*14-Jan-2020 17:49*
Surr: Dibromofluoromethane	*99.1*			*77-123*	*%REC*	*25*	*14-Jan-2020 17:49*
Surr: Toluene-d8	*99.4*			*82-127*	*%REC*	*25*	*14-Jan-2020 17:49*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW18A-20200108
Collection Date: 08-Jan-2020 11:10

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-14
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 14-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	15-Jan-2020 12:55
2,4-Dimethylphenol	**1.8**		**0.020**	**0.10**	**mg/L**	500	15-Jan-2020 17:00
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	15-Jan-2020 12:55
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	15-Jan-2020 12:55
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	15-Jan-2020 12:55
2-Methylnaphthalene	**0.36**		**0.00095**	**0.0050**	**mg/L**	50	15-Jan-2020 15:07
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	15-Jan-2020 12:55
4-Nitrophenol	**0.0042**		**0.000047**	**0.0010**	**mg/L**	1	15-Jan-2020 12:55
Acenaphthene	**0.33**		**0.0014**	**0.0050**	**mg/L**	50	15-Jan-2020 15:07
Acenaphthylene	**0.0081**		**0.000015**	**0.00010**	**mg/L**	1	15-Jan-2020 12:55
Anthracene	**0.0082**		**0.000014**	**0.00010**	**mg/L**	1	15-Jan-2020 12:55
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	15-Jan-2020 12:55
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	15-Jan-2020 12:55
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	15-Jan-2020 12:55
Bis(2-ethylhexyl)phthalate	**0.00043**		**0.000037**	**0.00020**	**mg/L**	1	15-Jan-2020 12:55
Chrysene	U		0.000021	0.00010	mg/L	1	15-Jan-2020 12:55
Dibenzofuran	**0.20**		**0.0010**	**0.0050**	**mg/L**	50	15-Jan-2020 15:07
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	15-Jan-2020 12:55
Fluoranthene	**0.0023**		**0.000010**	**0.00010**	**mg/L**	1	15-Jan-2020 12:55
Fluorene	**0.16**		**0.0015**	**0.0050**	**mg/L**	50	15-Jan-2020 15:07
Naphthalene	**4.6**		**0.010**	**0.050**	**mg/L**	500	15-Jan-2020 17:00
Nitrobenzene	U		0.000024	0.00020	mg/L	1	15-Jan-2020 12:55
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	15-Jan-2020 12:55
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	15-Jan-2020 12:55
Phenanthrene	**0.10**		**0.0010**	**0.0050**	**mg/L**	50	15-Jan-2020 15:07
Phenol	**0.0014**		**0.000035**	**0.00020**	**mg/L**	1	15-Jan-2020 12:55
Pyrene	**0.0013**		**0.000019**	**0.00010**	**mg/L**	1	15-Jan-2020 12:55
Surr: 2,4,6-Tribromophenol	*70.4*			*34-129*	*%REC*	*1*	*15-Jan-2020 12:55*
Surr: 2,4,6-Tribromophenol	*97.3*	*J*		*34-129*	*%REC*	*50*	*15-Jan-2020 15:07*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*500*	*15-Jan-2020 17:00*
Surr: 2-Fluorobiphenyl	*97.7*	*J*		*40-125*	*%REC*	*50*	*15-Jan-2020 15:07*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*500*	*15-Jan-2020 17:00*
Surr: 2-Fluorobiphenyl	*62.0*			*40-125*	*%REC*	*1*	*15-Jan-2020 12:55*
Surr: 2-Fluorophenol	*81.6*			*20-120*	*%REC*	*1*	*15-Jan-2020 12:55*
Surr: 2-Fluorophenol	*97.2*	*J*		*20-120*	*%REC*	*50*	*15-Jan-2020 15:07*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*500*	*15-Jan-2020 17:00*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*500*	*15-Jan-2020 17:00*
Surr: 4-Terphenyl-d14	*86.6*			*40-135*	*%REC*	*1*	*15-Jan-2020 12:55*
Surr: 4-Terphenyl-d14	*108*	*J*		*40-135*	*%REC*	*50*	*15-Jan-2020 15:07*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW18A-20200108
Collection Date: 08-Jan-2020 11:10

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-14
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 14-Jan-2020		Analyst: LG
Surr: Nitrobenzene-d5	*88.0*			*41-120*	*%REC*	*1*	*15-Jan-2020 12:55*
Surr: Nitrobenzene-d5	*77.8*	*J*		*41-120*	*%REC*	*50*	*15-Jan-2020 15:07*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*500*	*15-Jan-2020 17:00*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*500*	*15-Jan-2020 17:00*
Surr: Phenol-d6	*66.3*			*20-120*	*%REC*	*1*	*15-Jan-2020 12:55*
Surr: Phenol-d6	*79.6*	*J*		*20-120*	*%REC*	*50*	*15-Jan-2020 15:07*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 13-Jan-2020		Analyst: JHD
Arsenic	**0.0236**		**0.000400**	**0.00200**	**mg/L**	1	13-Jan-2020 23:03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW58A-20200108
Collection Date: 08-Jan-2020 12:15

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-15
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	15-Jan-2020 13:22
Benzene	**0.0053**		**0.00020**	**0.0010**	**mg/L**	1	15-Jan-2020 13:22
Chlorobenzene	**0.00072**	J	**0.00030**	**0.0010**	**mg/L**	1	15-Jan-2020 13:22
Ethylbenzene	**0.0098**		**0.00030**	**0.0010**	**mg/L**	1	15-Jan-2020 13:22
Methylene chloride	U		0.0010	0.0020	mg/L	1	15-Jan-2020 13:22
Toluene	U		0.00020	0.0010	mg/L	1	15-Jan-2020 13:22
Vinyl chloride	U		0.00020	0.0010	mg/L	1	15-Jan-2020 13:22
Xylenes, Total	**0.028**		**0.00030**	**0.0010**	**mg/L**	1	15-Jan-2020 13:22
Surr: 1,2-Dichloroethane-d4	*94.8*			*70-126*	*%REC*	*1*	*15-Jan-2020 13:22*
Surr: 4-Bromofluorobenzene	*101*			*81-113*	*%REC*	*1*	*15-Jan-2020 13:22*
Surr: Dibromofluoromethane	*100*			*77-123*	*%REC*	*1*	*15-Jan-2020 13:22*
Surr: Toluene-d8	*98.8*			*82-127*	*%REC*	*1*	*15-Jan-2020 13:22*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW58A-20200108
Collection Date: 08-Jan-2020 12:15

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-15
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 14-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	15-Jan-2020 13:14
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	15-Jan-2020 13:14
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	15-Jan-2020 13:14
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	15-Jan-2020 13:14
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	15-Jan-2020 13:14
2-Methylnaphthalene	**0.080**		**0.00038**	**0.0020**	**mg/L**	20	15-Jan-2020 15:26
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	15-Jan-2020 13:14
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	15-Jan-2020 13:14
Acenaphthene	**0.27**		**0.0054**	**0.020**	**mg/L**	200	15-Jan-2020 17:19
Acenaphthylene	**0.0015**		**0.000015**	**0.00010**	**mg/L**	1	15-Jan-2020 13:14
Anthracene	**0.018**		**0.00028**	**0.0020**	**mg/L**	20	15-Jan-2020 15:26
Benz(a)anthracene	**0.000091**	J	**0.000050**	**0.00010**	**mg/L**	1	15-Jan-2020 13:14
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	15-Jan-2020 13:14
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	15-Jan-2020 13:14
Bis(2-ethylhexyl)phthalate	**0.00011**	J	**0.000037**	**0.00020**	**mg/L**	1	15-Jan-2020 13:14
Chrysene	**0.000071**	J	**0.000021**	**0.00010**	**mg/L**	1	15-Jan-2020 13:14
Dibenzofuran	**0.13**		**0.00040**	**0.0020**	**mg/L**	20	15-Jan-2020 15:26
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	15-Jan-2020 13:14
Fluoranthene	**0.0099**		**0.000010**	**0.00010**	**mg/L**	1	15-Jan-2020 13:14
Fluorene	**0.19**		**0.00060**	**0.0020**	**mg/L**	20	15-Jan-2020 15:26
Naphthalene	**1.2**		**0.0040**	**0.020**	**mg/L**	200	15-Jan-2020 17:19
Nitrobenzene	U		0.000024	0.00020	mg/L	1	15-Jan-2020 13:14
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	15-Jan-2020 13:14
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	15-Jan-2020 13:14
Phenanthrene	**0.062**		**0.00042**	**0.0020**	**mg/L**	20	15-Jan-2020 15:26
Phenol	U		0.000035	0.00020	mg/L	1	15-Jan-2020 13:14
Pyrene	**0.0050**		**0.000019**	**0.00010**	**mg/L**	1	15-Jan-2020 13:14
Surr: 2,4,6-Tribromophenol	*82.3*			*34-129*	*%REC*	*20*	*15-Jan-2020 15:26*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*200*	*15-Jan-2020 17:19*
Surr: 2,4,6-Tribromophenol	*73.5*			*34-129*	*%REC*	*1*	*15-Jan-2020 13:14*
Surr: 2-Fluorobiphenyl	*59.5*			*40-125*	*%REC*	*1*	*15-Jan-2020 13:14*
Surr: 2-Fluorobiphenyl	*87.0*			*40-125*	*%REC*	*20*	*15-Jan-2020 15:26*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*200*	*15-Jan-2020 17:19*
Surr: 2-Fluorophenol	*52.6*	*J*		*20-120*	*%REC*	*20*	*15-Jan-2020 15:26*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*200*	*15-Jan-2020 17:19*
Surr: 2-Fluorophenol	*50.4*			*20-120*	*%REC*	*1*	*15-Jan-2020 13:14*
Surr: 4-Terphenyl-d14	*87.2*			*40-135*	*%REC*	*1*	*15-Jan-2020 13:14*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*200*	*15-Jan-2020 17:19*
Surr: 4-Terphenyl-d14	*104*			*40-135*	*%REC*	*20*	*15-Jan-2020 15:26*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW58A-20200108
Collection Date: 08-Jan-2020 12:15

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-15
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 14-Jan-2020		Analyst: LG
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*200*	*15-Jan-2020 17:19*
Surr: Nitrobenzene-d5	*54.3*			*41-120*	*%REC*	*1*	*15-Jan-2020 13:14*
Surr: Nitrobenzene-d5	*66.9*	*J*		*41-120*	*%REC*	*20*	*15-Jan-2020 15:26*
Surr: Phenol-d6	*52.1*			*20-120*	*%REC*	*1*	*15-Jan-2020 13:14*
Surr: Phenol-d6	*56.2*	*J*		*20-120*	*%REC*	*20*	*15-Jan-2020 15:26*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*200*	*15-Jan-2020 17:19*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 13-Jan-2020		Analyst: JHD
Arsenic	**0.000906**	J	**0.000400**	**0.00200**	**mg/L**	1	13-Jan-2020 23:05

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW57A-20200108
Collection Date: 08-Jan-2020 14:55

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-16
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	15-Jan-2020 13:47
Benzene	**0.038**		**0.00020**	**0.0010**	**mg/L**	1	15-Jan-2020 13:47
Chlorobenzene	**0.00046**	J	**0.00030**	**0.0010**	**mg/L**	1	15-Jan-2020 13:47
Ethylbenzene	**0.015**		**0.00030**	**0.0010**	**mg/L**	1	15-Jan-2020 13:47
Methylene chloride	U		0.0010	0.0020	mg/L	1	15-Jan-2020 13:47
Toluene	**0.010**		**0.00020**	**0.0010**	**mg/L**	1	15-Jan-2020 13:47
Vinyl chloride	U		0.00020	0.0010	mg/L	1	15-Jan-2020 13:47
Xylenes, Total	**0.026**		**0.00030**	**0.0010**	**mg/L**	1	15-Jan-2020 13:47
Surr: 1,2-Dichloroethane-d4	*92.4*			*70-126*	*%REC*	*1*	*15-Jan-2020 13:47*
Surr: 4-Bromofluorobenzene	*101*			*81-113*	*%REC*	*1*	*15-Jan-2020 13:47*
Surr: Dibromofluoromethane	*99.1*			*77-123*	*%REC*	*1*	*15-Jan-2020 13:47*
Surr: Toluene-d8	*97.9*			*82-127*	*%REC*	*1*	*15-Jan-2020 13:47*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW57A-20200108
Collection Date: 08-Jan-2020 14:55

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-16
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 14-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	15-Jan-2020 13:33
2,4-Dimethylphenol	**0.41**		**0.0080**	**0.040**	**mg/L**	200	15-Jan-2020 17:38
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	15-Jan-2020 13:33
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	15-Jan-2020 13:33
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	15-Jan-2020 13:33
2-Methylnaphthalene	**0.18**		**0.00038**	**0.0020**	**mg/L**	20	15-Jan-2020 15:45
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	15-Jan-2020 13:33
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	15-Jan-2020 13:33
Acenaphthene	**0.19**		**0.00054**	**0.0020**	**mg/L**	20	15-Jan-2020 15:45
Acenaphthylene	**0.0025**		**0.000015**	**0.00010**	**mg/L**	1	15-Jan-2020 13:33
Anthracene	**0.048**		**0.00028**	**0.0020**	**mg/L**	20	15-Jan-2020 15:45
Benz(a)anthracene	**0.0036**		**0.000050**	**0.00010**	**mg/L**	1	15-Jan-2020 13:33
Benzo(a)pyrene	**0.0011**		**0.000020**	**0.00010**	**mg/L**	1	15-Jan-2020 13:33
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	15-Jan-2020 13:33
Bis(2-ethylhexyl)phthalate	**0.00037**		**0.000037**	**0.00020**	**mg/L**	1	15-Jan-2020 13:33
Chrysene	**0.0030**		**0.000021**	**0.00010**	**mg/L**	1	15-Jan-2020 13:33
Dibenzofuran	**0.15**		**0.00040**	**0.0020**	**mg/L**	20	15-Jan-2020 15:45
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	15-Jan-2020 13:33
Fluoranthene	**0.038**		**0.00020**	**0.0020**	**mg/L**	20	15-Jan-2020 15:45
Fluorene	**0.13**		**0.00060**	**0.0020**	**mg/L**	20	15-Jan-2020 15:45
Naphthalene	**1.0**		**0.0040**	**0.020**	**mg/L**	200	15-Jan-2020 17:38
Nitrobenzene	U		0.000024	0.00020	mg/L	1	15-Jan-2020 13:33
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	15-Jan-2020 13:33
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	15-Jan-2020 13:33
Phenanthrene	**0.17**		**0.00042**	**0.0020**	**mg/L**	20	15-Jan-2020 15:45
Phenol	**0.0049**		**0.000035**	**0.00020**	**mg/L**	1	15-Jan-2020 13:33
Pyrene	**0.025**		**0.00038**	**0.0020**	**mg/L**	20	15-Jan-2020 15:45
Surr: 2,4,6-Tribromophenol	*66.0*			*34-129*	*%REC*	*1*	*15-Jan-2020 13:33*
Surr: 2,4,6-Tribromophenol	*102*			*34-129*	*%REC*	*20*	*15-Jan-2020 15:45*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*200*	*15-Jan-2020 17:38*
Surr: 2-Fluorobiphenyl	*93.8*			*40-125*	*%REC*	*20*	*15-Jan-2020 15:45*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*200*	*15-Jan-2020 17:38*
Surr: 2-Fluorobiphenyl	*56.7*			*40-125*	*%REC*	*1*	*15-Jan-2020 13:33*
Surr: 2-Fluorophenol	*65.2*			*20-120*	*%REC*	*1*	*15-Jan-2020 13:33*
Surr: 2-Fluorophenol	*85.2*			*20-120*	*%REC*	*20*	*15-Jan-2020 15:45*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*200*	*15-Jan-2020 17:38*
Surr: 4-Terphenyl-d14	*115*			*40-135*	*%REC*	*20*	*15-Jan-2020 15:45*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*200*	*15-Jan-2020 17:38*
Surr: 4-Terphenyl-d14	*87.2*			*40-135*	*%REC*	*1*	*15-Jan-2020 13:33*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW57A-20200108
Collection Date: 08-Jan-2020 14:55

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-16
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 14-Jan-2020		Analyst: LG
Surr: Nitrobenzene-d5	*67.2*			*41-120*	*%REC*	*1*	*15-Jan-2020 13:33*
Surr: Nitrobenzene-d5	*75.6*	*J*		*41-120*	*%REC*	*20*	*15-Jan-2020 15:45*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*200*	*15-Jan-2020 17:38*
Surr: Phenol-d6	*59.7*			*20-120*	*%REC*	*1*	*15-Jan-2020 13:33*
Surr: Phenol-d6	*80.7*			*20-120*	*%REC*	*20*	*15-Jan-2020 15:45*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*200*	*15-Jan-2020 17:38*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 13-Jan-2020		Analyst: JHD
Arsenic	**0.0545**		**0.000400**	**0.00200**	**mg/L**	1	13-Jan-2020 23:07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW57B-20200108
Collection Date: 08-Jan-2020 13:30

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-17
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.0020	0.010	mg/L	10	15-Jan-2020 15:07
Benzene	**0.52**		**0.0020**	**0.010**	**mg/L**	10	15-Jan-2020 15:07
Chlorobenzene	U		0.0030	0.010	mg/L	10	15-Jan-2020 15:07
Ethylbenzene	**0.25**		**0.0030**	**0.010**	**mg/L**	10	15-Jan-2020 15:07
Methylene chloride	U		0.010	0.020	mg/L	10	15-Jan-2020 15:07
Toluene	**0.64**		**0.0020**	**0.010**	**mg/L**	10	15-Jan-2020 15:07
Xylenes, Total	**0.70**		**0.0030**	**0.010**	**mg/L**	10	15-Jan-2020 15:07
Surr: 1,2-Dichloroethane-d4	*95.6*			*70-126*	*%REC*	*10*	*15-Jan-2020 15:07*
Surr: 4-Bromofluorobenzene	*99.3*			*81-113*	*%REC*	*10*	*15-Jan-2020 15:07*
Surr: Dibromofluoromethane	*99.6*			*77-123*	*%REC*	*10*	*15-Jan-2020 15:07*
Surr: Toluene-d8	*98.9*			*82-127*	*%REC*	*10*	*15-Jan-2020 15:07*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW57B-20200108
Collection Date: 08-Jan-2020 13:30

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-17
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 15-Jan-2020		Analyst: GEY
1,2-Diphenylhydrazine	U		0.00021	0.0020	mg/L	10	17-Jan-2020 04:40
2,4-Dimethylphenol	**2.8**		**0.040**	**0.20**	**mg/L**	1000	17-Jan-2020 12:49
2,4-Dinitrotoluene	U		0.00058	0.0020	mg/L	10	17-Jan-2020 04:40
2,6-Dinitrotoluene	U		0.00042	0.0020	mg/L	10	17-Jan-2020 04:40
2-Chloronaphthalene	U		0.00021	0.0020	mg/L	10	17-Jan-2020 04:40
2-Methylnaphthalene	**1.1**		**0.019**	**0.10**	**mg/L**	1000	17-Jan-2020 12:49
4,6-Dinitro-2-methylphenol	U		0.00020	0.0020	mg/L	10	17-Jan-2020 04:40
4-Nitrophenol	U		0.00047	0.010	mg/L	10	17-Jan-2020 04:40
Acenaphthene	**0.55**		**0.0027**	**0.010**	**mg/L**	100	17-Jan-2020 12:29
Acenaphthylene	**0.0086**		**0.00015**	**0.0010**	**mg/L**	10	17-Jan-2020 04:40
Anthracene	**0.19**		**0.0014**	**0.010**	**mg/L**	100	17-Jan-2020 12:29
Benz(a)anthracene	**0.040**		**0.00050**	**0.0010**	**mg/L**	10	17-Jan-2020 04:40
Benzo(a)pyrene	**0.012**		**0.00020**	**0.0010**	**mg/L**	10	17-Jan-2020 04:40
Bis(2-chloroethoxy)methane	U		0.00030	0.0020	mg/L	10	17-Jan-2020 04:40
Bis(2-ethylhexyl)phthalate	U		0.00037	0.0020	mg/L	10	17-Jan-2020 04:40
Chrysene	**0.042**		**0.00021**	**0.0010**	**mg/L**	10	17-Jan-2020 04:40
Dibenzofuran	**0.49**		**0.0020**	**0.010**	**mg/L**	100	17-Jan-2020 12:29
Di-n-butyl phthalate	U		0.00020	0.0020	mg/L	10	17-Jan-2020 04:40
Fluoranthene	**0.34**		**0.0010**	**0.010**	**mg/L**	100	17-Jan-2020 12:29
Fluorene	**0.46**		**0.0030**	**0.010**	**mg/L**	100	17-Jan-2020 12:29
Naphthalene	**13**		**0.20**	**1.0**	**mg/L**	10000	17-Jan-2020 16:07
Nitrobenzene	U		0.00024	0.0020	mg/L	10	17-Jan-2020 04:40
N-Nitrosodiphenylamine	U		0.00025	0.0020	mg/L	10	17-Jan-2020 04:40
Pentachlorophenol	U		0.00079	0.0020	mg/L	10	17-Jan-2020 04:40
Phenanthrene	**1.1**		**0.021**	**0.10**	**mg/L**	1000	17-Jan-2020 12:49
Phenol	**0.32**		**0.0035**	**0.020**	**mg/L**	100	17-Jan-2020 12:29
Pyrene	**0.21**		**0.0019**	**0.010**	**mg/L**	100	17-Jan-2020 12:29
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*10000*	*17-Jan-2020 16:07*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*17-Jan-2020 12:29*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*1000*	*17-Jan-2020 12:49*
Surr: 2,4,6-Tribromophenol	*91.9*			*34-129*	*%REC*	*10*	*17-Jan-2020 04:40*
Surr: 2-Fluorobiphenyl	*80.9*			*40-125*	*%REC*	*10*	*17-Jan-2020 04:40*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*17-Jan-2020 12:29*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*1000*	*17-Jan-2020 12:49*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*10000*	*17-Jan-2020 16:07*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*10000*	*17-Jan-2020 16:07*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*17-Jan-2020 12:29*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*1000*	*17-Jan-2020 12:49*
Surr: 2-Fluorophenol	*117*			*20-120*	*%REC*	*10*	*17-Jan-2020 04:40*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW57B-20200108
Collection Date: 08-Jan-2020 13:30

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-17
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 15-Jan-2020		Analyst: GEY
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*100*	*17-Jan-2020 12:29*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*1000*	*17-Jan-2020 12:49*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*10000*	*17-Jan-2020 16:07*
Surr: 4-Terphenyl-d14	*112*			*40-135*	*%REC*	*10*	*17-Jan-2020 04:40*
Surr: Nitrobenzene-d5	*119*			*41-120*	*%REC*	*10*	*17-Jan-2020 04:40*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*1000*	*17-Jan-2020 12:49*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*10000*	*17-Jan-2020 16:07*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*17-Jan-2020 12:29*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*10000*	*17-Jan-2020 16:07*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*17-Jan-2020 12:29*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*1000*	*17-Jan-2020 12:49*
Surr: Phenol-d6	*99.2*			*20-120*	*%REC*	*10*	*17-Jan-2020 04:40*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 13-Jan-2020		Analyst: JHD
Arsenic	**0.00404**		**0.000400**	**0.00200**	**mg/L**	1	13-Jan-2020 23:09

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB03-20200109
Collection Date: 09-Jan-2020 07:30

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-18
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	14-Jan-2020 20:40
Benzene		U	0.00020	0.0010	mg/L	1	14-Jan-2020 20:40
Chlorobenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2020 20:40
Ethylbenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2020 20:40
Methylene chloride		U	0.0010	0.0020	mg/L	1	14-Jan-2020 20:40
Toluene		U	0.00020	0.0010	mg/L	1	14-Jan-2020 20:40
Vinyl chloride		U	0.00020	0.0010	mg/L	1	14-Jan-2020 20:40
Xylenes, Total		U	0.00030	0.0010	mg/L	1	14-Jan-2020 20:40
Surr: 1,2-Dichloroethane-d4	*97.6*			*70-126*	*%REC*	*1*	*14-Jan-2020 20:40*
Surr: 4-Bromofluorobenzene	*94.5*			*81-113*	*%REC*	*1*	*14-Jan-2020 20:40*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*14-Jan-2020 20:40*
Surr: Toluene-d8	*103*			*82-127*	*%REC*	*1*	*14-Jan-2020 20:40*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB03-20200109
Collection Date: 09-Jan-2020 07:30

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-18
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 15-Jan-2020		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	17-Jan-2020 04:59
2,4-Dimethylphenol	**0.0010**		**0.000040**	**0.00020**	**mg/L**	1	17-Jan-2020 04:59
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	17-Jan-2020 04:59
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	17-Jan-2020 04:59
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	17-Jan-2020 04:59
2-Methylnaphthalene	**0.00038**		**0.000019**	**0.00010**	**mg/L**	1	17-Jan-2020 04:59
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	17-Jan-2020 04:59
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	17-Jan-2020 04:59
Acenaphthene	**0.00015**		**0.000027**	**0.00010**	**mg/L**	1	17-Jan-2020 04:59
Acenaphthylene	U		0.000015	0.00010	mg/L	1	17-Jan-2020 04:59
Anthracene	**0.000047**	J	**0.000014**	**0.00010**	**mg/L**	1	17-Jan-2020 04:59
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	17-Jan-2020 04:59
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	17-Jan-2020 04:59
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	17-Jan-2020 04:59
Bis(2-ethylhexyl)phthalate	**0.00011**	J	**0.000037**	**0.00020**	**mg/L**	1	17-Jan-2020 04:59
Chrysene	U		0.000021	0.00010	mg/L	1	17-Jan-2020 04:59
Dibenzofuran	**0.00012**		**0.000020**	**0.00010**	**mg/L**	1	17-Jan-2020 04:59
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	17-Jan-2020 04:59
Fluoranthene	**0.000069**	J	**0.000010**	**0.00010**	**mg/L**	1	17-Jan-2020 04:59
Fluorene	**0.000092**	J	**0.000030**	**0.00010**	**mg/L**	1	17-Jan-2020 04:59
Naphthalene	**0.0078**		**0.000020**	**0.00010**	**mg/L**	1	17-Jan-2020 04:59
Nitrobenzene	U		0.000024	0.00020	mg/L	1	17-Jan-2020 04:59
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	17-Jan-2020 04:59
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	17-Jan-2020 04:59
Phenanthrene	**0.00019**		**0.000021**	**0.00010**	**mg/L**	1	17-Jan-2020 04:59
Phenol	**0.000053**	J	**0.000035**	**0.00020**	**mg/L**	1	17-Jan-2020 04:59
Pyrene	**0.000039**	J	**0.000019**	**0.00010**	**mg/L**	1	17-Jan-2020 04:59
Surr: 2,4,6-Tribromophenol	*67.8*			*34-129*	*%REC*	*1*	*17-Jan-2020 04:59*
Surr: 2-Fluorobiphenyl	*77.4*			*40-125*	*%REC*	*1*	*17-Jan-2020 04:59*
Surr: 2-Fluorophenol	*78.0*			*20-120*	*%REC*	*1*	*17-Jan-2020 04:59*
Surr: 4-Terphenyl-d14	*81.2*			*40-135*	*%REC*	*1*	*17-Jan-2020 04:59*
Surr: Nitrobenzene-d5	*78.3*			*41-120*	*%REC*	*1*	*17-Jan-2020 04:59*
Surr: Phenol-d6	*78.5*			*20-120*	*%REC*	*1*	*17-Jan-2020 04:59*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 13-Jan-2020		Analyst: JHD
Arsenic	U		0.000400	0.00200	mg/L	1	13-Jan-2020 23:11

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW72B-20200109
Collection Date: 09-Jan-2020 08:35

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-20
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.0020	0.010	mg/L	10	15-Jan-2020 15:34
Benzene	**0.70**		**0.0020**	**0.010**	**mg/L**	10	15-Jan-2020 15:34
Chlorobenzene	U		0.0030	0.010	mg/L	10	15-Jan-2020 15:34
Ethylbenzene	**0.13**		**0.0030**	**0.010**	**mg/L**	10	15-Jan-2020 15:34
Methylene chloride	U		0.010	0.020	mg/L	10	15-Jan-2020 15:34
Toluene	**0.58**		**0.0020**	**0.010**	**mg/L**	10	15-Jan-2020 15:34
Xylenes, Total	**0.36**		**0.0030**	**0.010**	**mg/L**	10	15-Jan-2020 15:34
Surr: 1,2-Dichloroethane-d4	*95.1*			*70-126*	*%REC*	*10*	*15-Jan-2020 15:34*
Surr: 4-Bromofluorobenzene	*98.7*			*81-113*	*%REC*	*10*	*15-Jan-2020 15:34*
Surr: Dibromofluoromethane	*99.8*			*77-123*	*%REC*	*10*	*15-Jan-2020 15:34*
Surr: Toluene-d8	*99.0*			*82-127*	*%REC*	*10*	*15-Jan-2020 15:34*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW72B-20200109
Collection Date: 09-Jan-2020 08:35

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-20
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 15-Jan-2020		Analyst: GEY
1,2-Diphenylhydrazine	U		0.00021	0.0020	mg/L	10	17-Jan-2020 13:08
2,4-Dimethylphenol	**13**		**0.40**	**2.0**	**mg/L**	10000	17-Jan-2020 16:26
2,4-Dinitrotoluene	U		0.00058	0.0020	mg/L	10	17-Jan-2020 13:08
2,6-Dinitrotoluene	U		0.00042	0.0020	mg/L	10	17-Jan-2020 13:08
2-Chloronaphthalene	U		0.00021	0.0020	mg/L	10	17-Jan-2020 13:08
2-Methylnaphthalene	**0.22**		**0.0019**	**0.010**	**mg/L**	100	17-Jan-2020 13:28
4,6-Dinitro-2-methylphenol	U		0.00020	0.0020	mg/L	10	17-Jan-2020 13:08
4-Nitrophenol	U		0.00047	0.010	mg/L	10	17-Jan-2020 13:08
Acenaphthene	**0.079**		**0.00027**	**0.0010**	**mg/L**	10	17-Jan-2020 13:08
Acenaphthylene	**0.0023**		**0.00015**	**0.0010**	**mg/L**	10	17-Jan-2020 13:08
Anthracene	**0.020**		**0.00014**	**0.0010**	**mg/L**	10	17-Jan-2020 13:08
Benz(a)anthracene	**0.0031**		**0.00050**	**0.0010**	**mg/L**	10	17-Jan-2020 13:08
Benzo(a)pyrene	**0.0011**		**0.00020**	**0.0010**	**mg/L**	10	17-Jan-2020 13:08
Bis(2-chloroethoxy)methane	U		0.00030	0.0020	mg/L	10	17-Jan-2020 13:08
Bis(2-ethylhexyl)phthalate	U		0.00037	0.0020	mg/L	10	17-Jan-2020 13:08
Chrysene	**0.0033**		**0.00021**	**0.0010**	**mg/L**	10	17-Jan-2020 13:08
Dibenzofuran	**0.061**		**0.00020**	**0.0010**	**mg/L**	10	17-Jan-2020 13:08
Di-n-butyl phthalate	U		0.00020	0.0020	mg/L	10	17-Jan-2020 13:08
Fluoranthene	**0.024**		**0.00010**	**0.0010**	**mg/L**	10	17-Jan-2020 13:08
Fluorene	**0.049**		**0.00030**	**0.0010**	**mg/L**	10	17-Jan-2020 13:08
Naphthalene	**2.0**		**0.020**	**0.10**	**mg/L**	1000	17-Jan-2020 13:48
Nitrobenzene	U		0.00024	0.0020	mg/L	10	17-Jan-2020 13:08
N-Nitrosodiphenylamine	U		0.00025	0.0020	mg/L	10	17-Jan-2020 13:08
Pentachlorophenol	U		0.00079	0.0020	mg/L	10	17-Jan-2020 13:08
Phenanthrene	**0.075**		**0.00021**	**0.0010**	**mg/L**	10	17-Jan-2020 13:08
Phenol	**5.2**		**0.035**	**0.20**	**mg/L**	1000	17-Jan-2020 13:48
Pyrene	**0.013**		**0.00019**	**0.0010**	**mg/L**	10	17-Jan-2020 13:08
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*10000*	*17-Jan-2020 16:26*
Surr: 2,4,6-Tribromophenol	*82.1*			*34-129*	*%REC*	*10*	*17-Jan-2020 13:08*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*17-Jan-2020 13:28*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*1000*	*17-Jan-2020 13:48*
Surr: 2-Fluorobiphenyl	*88.2*			*40-125*	*%REC*	*10*	*17-Jan-2020 13:08*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*17-Jan-2020 13:28*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*1000*	*17-Jan-2020 13:48*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*10000*	*17-Jan-2020 16:26*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*10000*	*17-Jan-2020 16:26*
Surr: 2-Fluorophenol	*108*			*20-120*	*%REC*	*10*	*17-Jan-2020 13:08*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*17-Jan-2020 13:28*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*1000*	*17-Jan-2020 13:48*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW72B-20200109
Collection Date: 09-Jan-2020 08:35

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-20
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 15-Jan-2020		Analyst: GEY
Surr: 4-Terphenyl-d14	*87.4*			*40-135*	*%REC*	*10*	*17-Jan-2020 13:08*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*100*	*17-Jan-2020 13:28*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*1000*	*17-Jan-2020 13:48*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*10000*	*17-Jan-2020 16:26*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*10000*	*17-Jan-2020 16:26*
Surr: Nitrobenzene-d5	*82.9*			*41-120*	*%REC*	*10*	*17-Jan-2020 13:08*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*17-Jan-2020 13:28*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*1000*	*17-Jan-2020 13:48*
Surr: Phenol-d6	*81.9*			*20-120*	*%REC*	*10*	*17-Jan-2020 13:08*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*17-Jan-2020 13:28*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*1000*	*17-Jan-2020 13:48*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*10000*	*17-Jan-2020 16:26*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 13-Jan-2020		Analyst: JHD
Arsenic	**0.00105**	J	**0.000400**	**0.00200**	**mg/L**	1	13-Jan-2020 23:14

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW23C-20200109
Collection Date: 09-Jan-2020 09:40

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-21
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.0010	0.0050	mg/L	5	15-Jan-2020 14:14
Benzene	**0.0027**	J	**0.0010**	**0.0050**	**mg/L**	5	15-Jan-2020 14:14
Chlorobenzene	U		0.0015	0.0050	mg/L	5	15-Jan-2020 14:14
Ethylbenzene	**0.028**		**0.0015**	**0.0050**	**mg/L**	5	15-Jan-2020 14:14
Methylene chloride	U		0.0050	0.010	mg/L	5	15-Jan-2020 14:14
Toluene	U		0.0010	0.0050	mg/L	5	15-Jan-2020 14:14
Xylenes, Total	**0.025**		**0.0015**	**0.0050**	**mg/L**	5	15-Jan-2020 14:14
Surr: 1,2-Dichloroethane-d4	*94.0*			*70-126*	*%REC*	*5*	*15-Jan-2020 14:14*
Surr: 4-Bromofluorobenzene	*95.8*			*81-113*	*%REC*	*5*	*15-Jan-2020 14:14*
Surr: Dibromofluoromethane	*99.0*			*77-123*	*%REC*	*5*	*15-Jan-2020 14:14*
Surr: Toluene-d8	*98.9*			*82-127*	*%REC*	*5*	*15-Jan-2020 14:14*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW23C-20200109
Collection Date: 09-Jan-2020 09:40

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-21
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 15-Jan-2020		Analyst: GEY
1,2-Diphenylhydrazine	U		0.00021	0.0020	mg/L	10	17-Jan-2020 14:08
2,4-Dimethylphenol	**0.047**		**0.00040**	**0.0020**	**mg/L**	10	17-Jan-2020 14:08
2,4-Dinitrotoluene	U		0.00058	0.0020	mg/L	10	17-Jan-2020 14:08
2,6-Dinitrotoluene	U		0.00042	0.0020	mg/L	10	17-Jan-2020 14:08
2-Chloronaphthalene	U		0.00021	0.0020	mg/L	10	17-Jan-2020 14:08
2-Methylnaphthalene	**0.12**		**0.0019**	**0.010**	**mg/L**	100	17-Jan-2020 16:46
4,6-Dinitro-2-methylphenol	U		0.00020	0.0020	mg/L	10	17-Jan-2020 14:08
4-Nitrophenol	U		0.00047	0.010	mg/L	10	17-Jan-2020 14:08
Acenaphthene	**0.21**		**0.0027**	**0.010**	**mg/L**	100	17-Jan-2020 16:46
Acenaphthylene	**0.0029**		**0.00015**	**0.0010**	**mg/L**	10	17-Jan-2020 14:08
Anthracene	**0.035**		**0.00014**	**0.0010**	**mg/L**	10	17-Jan-2020 14:08
Benz(a)anthracene	**0.0080**		**0.00050**	**0.0010**	**mg/L**	10	17-Jan-2020 14:08
Benzo(a)pyrene	**0.0022**		**0.00020**	**0.0010**	**mg/L**	10	17-Jan-2020 14:08
Bis(2-chloroethoxy)methane	U		0.00030	0.0020	mg/L	10	17-Jan-2020 14:08
Bis(2-ethylhexyl)phthalate	U		0.00037	0.0020	mg/L	10	17-Jan-2020 14:08
Chrysene	**0.0072**		**0.00021**	**0.0010**	**mg/L**	10	17-Jan-2020 14:08
Dibenzofuran	**0.17**		**0.0020**	**0.010**	**mg/L**	100	17-Jan-2020 16:46
Di-n-butyl phthalate	U		0.00020	0.0020	mg/L	10	17-Jan-2020 14:08
Fluoranthene	**0.068**		**0.00010**	**0.0010**	**mg/L**	10	17-Jan-2020 14:08
Fluorene	**0.12**		**0.0030**	**0.010**	**mg/L**	100	17-Jan-2020 16:46
Naphthalene	**0.66**		**0.0020**	**0.010**	**mg/L**	100	17-Jan-2020 16:46
Nitrobenzene	U		0.00024	0.0020	mg/L	10	17-Jan-2020 14:08
N-Nitrosodiphenylamine	U		0.00025	0.0020	mg/L	10	17-Jan-2020 14:08
Pentachlorophenol	U		0.00079	0.0020	mg/L	10	17-Jan-2020 14:08
Phenanthrene	**0.25**		**0.0021**	**0.010**	**mg/L**	100	17-Jan-2020 16:46
Phenol	**0.0079**		**0.00035**	**0.0020**	**mg/L**	10	17-Jan-2020 14:08
Pyrene	**0.043**		**0.00019**	**0.0010**	**mg/L**	10	17-Jan-2020 14:08
Surr: 2,4,6-Tribromophenol	*87.3*			*34-129*	*%REC*	*10*	*17-Jan-2020 14:08*
Surr: 2,4,6-Tribromophenol	*103*	*J*		*34-129*	*%REC*	*100*	*17-Jan-2020 16:46*
Surr: 2-Fluorobiphenyl	*67.3*	*J*		*40-125*	*%REC*	*100*	*17-Jan-2020 16:46*
Surr: 2-Fluorobiphenyl	*72.8*			*40-125*	*%REC*	*10*	*17-Jan-2020 14:08*
Surr: 2-Fluorophenol	*81.0*			*20-120*	*%REC*	*10*	*17-Jan-2020 14:08*
Surr: 2-Fluorophenol	*80.8*	*J*		*20-120*	*%REC*	*100*	*17-Jan-2020 16:46*
Surr: 4-Terphenyl-d14	*97.6*	*J*		*40-135*	*%REC*	*100*	*17-Jan-2020 16:46*
Surr: 4-Terphenyl-d14	*89.4*			*40-135*	*%REC*	*10*	*17-Jan-2020 14:08*
Surr: Nitrobenzene-d5	*131*	*JS*		*41-120*	*%REC*	*100*	*17-Jan-2020 16:46*
Surr: Nitrobenzene-d5	*116*			*41-120*	*%REC*	*10*	*17-Jan-2020 14:08*
Surr: Phenol-d6	*71.5*			*20-120*	*%REC*	*10*	*17-Jan-2020 14:08*
Surr: Phenol-d6	*84.0*	*J*		*20-120*	*%REC*	*100*	*17-Jan-2020 16:46*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW23C-20200109
Collection Date: 09-Jan-2020 09:40

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-21
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 13-Jan-2020		Analyst: JHD
Arsenic	**0.00333**		**0.000400**	**0.00200**	**mg/L**	1	13-Jan-2020 23:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW53C-20200109
Collection Date: 09-Jan-2020 11:15

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-22
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	14-Jan-2020 05:56
Benzene		U	0.00020	0.0010	mg/L	1	14-Jan-2020 05:56
Chlorobenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2020 05:56
Ethylbenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2020 05:56
Methylene chloride		U	0.0010	0.0020	mg/L	1	14-Jan-2020 05:56
Toluene		U	0.00020	0.0010	mg/L	1	14-Jan-2020 05:56
Xylenes, Total		U	0.00030	0.0010	mg/L	1	14-Jan-2020 05:56
Surr: 1,2-Dichloroethane-d4	*97.9*			*70-126*	*%REC*	*1*	*14-Jan-2020 05:56*
Surr: 4-Bromofluorobenzene	*94.9*			*81-113*	*%REC*	*1*	*14-Jan-2020 05:56*
Surr: Dibromofluoromethane	*100*			*77-123*	*%REC*	*1*	*14-Jan-2020 05:56*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*14-Jan-2020 05:56*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW53C-20200109
Collection Date: 09-Jan-2020 11:15

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-22
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 15-Jan-2020		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	17-Jan-2020 14:27
2,4-Dimethylphenol	**0.0011**		**0.000040**	**0.00020**	**mg/L**	1	17-Jan-2020 14:27
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	17-Jan-2020 14:27
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	17-Jan-2020 14:27
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	17-Jan-2020 14:27
2-Methylnaphthalene	**0.00025**		**0.000019**	**0.00010**	**mg/L**	1	17-Jan-2020 14:27
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	17-Jan-2020 14:27
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	17-Jan-2020 14:27
Acenaphthene	**0.00032**		**0.000027**	**0.00010**	**mg/L**	1	17-Jan-2020 14:27
Acenaphthylene	U		0.000015	0.00010	mg/L	1	17-Jan-2020 14:27
Anthracene	**0.000028**	J	**0.000014**	**0.00010**	**mg/L**	1	17-Jan-2020 14:27
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	17-Jan-2020 14:27
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	17-Jan-2020 14:27
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	17-Jan-2020 14:27
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	17-Jan-2020 14:27
Chrysene	U		0.000021	0.00010	mg/L	1	17-Jan-2020 14:27
Dibenzofuran	**0.00027**		**0.000020**	**0.00010**	**mg/L**	1	17-Jan-2020 14:27
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	17-Jan-2020 14:27
Fluoranthene	**0.000071**	J	**0.000010**	**0.00010**	**mg/L**	1	17-Jan-2020 14:27
Fluorene	**0.00020**		**0.000030**	**0.00010**	**mg/L**	1	17-Jan-2020 14:27
Naphthalene	**0.0012**		**0.000020**	**0.00010**	**mg/L**	1	17-Jan-2020 14:27
Nitrobenzene	U		0.000024	0.00020	mg/L	1	17-Jan-2020 14:27
N-Nitrosodiphenylamine	**0.000056**	J	**0.000025**	**0.00020**	**mg/L**	1	17-Jan-2020 14:27
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	17-Jan-2020 14:27
Phenanthrene	**0.00025**		**0.000021**	**0.00010**	**mg/L**	1	17-Jan-2020 14:27
Phenol	**0.00050**		**0.000035**	**0.00020**	**mg/L**	1	17-Jan-2020 14:27
Pyrene	**0.000061**	J	**0.000019**	**0.00010**	**mg/L**	1	17-Jan-2020 14:27
Surr: 2,4,6-Tribromophenol	*65.4*			*34-129*	*%REC*	*1*	*17-Jan-2020 14:27*
Surr: 2-Fluorobiphenyl	*64.0*			*40-125*	*%REC*	*1*	*17-Jan-2020 14:27*
Surr: 2-Fluorophenol	*66.8*			*20-120*	*%REC*	*1*	*17-Jan-2020 14:27*
Surr: 4-Terphenyl-d14	*91.4*			*40-135*	*%REC*	*1*	*17-Jan-2020 14:27*
Surr: Nitrobenzene-d5	*64.9*			*41-120*	*%REC*	*1*	*17-Jan-2020 14:27*
Surr: Phenol-d6	*68.0*			*20-120*	*%REC*	*1*	*17-Jan-2020 14:27*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 14-Jan-2020		Analyst: ALR
Arsenic	**0.000728**	J	**0.000400**	**0.00200**	**mg/L**	1	14-Jan-2020 21:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW54C-20200109
Collection Date: 09-Jan-2020 12:35

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-23
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	14-Jan-2020 06:20
Benzene		U	0.00020	0.0010	mg/L	1	14-Jan-2020 06:20
Chlorobenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2020 06:20
Ethylbenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2020 06:20
Methylene chloride		U	0.0010	0.0020	mg/L	1	14-Jan-2020 06:20
Toluene		U	0.00020	0.0010	mg/L	1	14-Jan-2020 06:20
Xylenes, Total		U	0.00030	0.0010	mg/L	1	14-Jan-2020 06:20
Surr: 1,2-Dichloroethane-d4	*98.5*			*70-126*	*%REC*	*1*	*14-Jan-2020 06:20*
Surr: 4-Bromofluorobenzene	*95.3*			*81-113*	*%REC*	*1*	*14-Jan-2020 06:20*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*14-Jan-2020 06:20*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*14-Jan-2020 06:20*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW54C-20200109
Collection Date: 09-Jan-2020 12:35

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-23
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 15-Jan-2020		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	17-Jan-2020 14:47
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	17-Jan-2020 14:47
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	17-Jan-2020 14:47
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	17-Jan-2020 14:47
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	17-Jan-2020 14:47
2-Methylnaphthalene	**0.0020**		**0.000019**	**0.00010**	**mg/L**	1	17-Jan-2020 14:47
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	17-Jan-2020 14:47
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	17-Jan-2020 14:47
Acenaphthene	**0.021**		**0.00014**	**0.00050**	**mg/L**	5	17-Jan-2020 17:06
Acenaphthylene	**0.00023**		**0.000015**	**0.00010**	**mg/L**	1	17-Jan-2020 14:47
Anthracene	**0.0015**		**0.000014**	**0.00010**	**mg/L**	1	17-Jan-2020 14:47
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	17-Jan-2020 14:47
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	17-Jan-2020 14:47
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	17-Jan-2020 14:47
Bis(2-ethylhexyl)phthalate	**0.00018**	J	**0.000037**	**0.00020**	**mg/L**	1	17-Jan-2020 14:47
Chrysene	**0.000054**	J	**0.000021**	**0.00010**	**mg/L**	1	17-Jan-2020 14:47
Dibenzofuran	**0.020**		**0.00010**	**0.00050**	**mg/L**	5	17-Jan-2020 17:06
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	17-Jan-2020 14:47
Fluoranthene	**0.0026**		**0.000010**	**0.00010**	**mg/L**	1	17-Jan-2020 14:47
Fluorene	**0.0095**		**0.000030**	**0.00010**	**mg/L**	1	17-Jan-2020 14:47
Naphthalene	**0.035**		**0.00010**	**0.00050**	**mg/L**	5	17-Jan-2020 17:06
Nitrobenzene	U		0.000024	0.00020	mg/L	1	17-Jan-2020 14:47
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	17-Jan-2020 14:47
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	17-Jan-2020 14:47
Phenanthrene	**0.0056**		**0.000021**	**0.00010**	**mg/L**	1	17-Jan-2020 14:47
Phenol	**0.000064**	J	**0.000035**	**0.00020**	**mg/L**	1	17-Jan-2020 14:47
Pyrene	**0.0014**		**0.000019**	**0.00010**	**mg/L**	1	17-Jan-2020 14:47
Surr: 2,4,6-Tribromophenol	*58.6*			*34-129*	*%REC*	*1*	*17-Jan-2020 14:47*
Surr: 2,4,6-Tribromophenol	*71.5*			*34-129*	*%REC*	*5*	*17-Jan-2020 17:06*
Surr: 2-Fluorobiphenyl	*65.7*			*40-125*	*%REC*	*5*	*17-Jan-2020 17:06*
Surr: 2-Fluorobiphenyl	*52.3*			*40-125*	*%REC*	*1*	*17-Jan-2020 14:47*
Surr: 2-Fluorophenol	*66.8*			*20-120*	*%REC*	*5*	*17-Jan-2020 17:06*
Surr: 2-Fluorophenol	*52.0*			*20-120*	*%REC*	*1*	*17-Jan-2020 14:47*
Surr: 4-Terphenyl-d14	*81.0*			*40-135*	*%REC*	*1*	*17-Jan-2020 14:47*
Surr: 4-Terphenyl-d14	*102*			*40-135*	*%REC*	*5*	*17-Jan-2020 17:06*
Surr: Nitrobenzene-d5	*58.3*			*41-120*	*%REC*	*1*	*17-Jan-2020 14:47*
Surr: Nitrobenzene-d5	*71.5*			*41-120*	*%REC*	*5*	*17-Jan-2020 17:06*
Surr: Phenol-d6	*54.6*			*20-120*	*%REC*	*1*	*17-Jan-2020 14:47*
Surr: Phenol-d6	*69.4*			*20-120*	*%REC*	*5*	*17-Jan-2020 17:06*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW54C-20200109
Collection Date: 09-Jan-2020 12:35

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-23
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A	**Method:SW6020**				Prep:SW3010A / 14-Jan-2020		Analyst: ALR
Arsenic	**0.00122**	J	**0.000400**	**0.00200**	**mg/L**	1	14-Jan-2020 21:52

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW44A-20200109
Collection Date: 09-Jan-2020 13:30

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-24
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	15-Jan-2020 12:33
Benzene		U	0.00020	0.0010	mg/L	1	15-Jan-2020 12:33
Chlorobenzene		U	0.00030	0.0010	mg/L	1	15-Jan-2020 12:33
Ethylbenzene		U	0.00030	0.0010	mg/L	1	15-Jan-2020 12:33
Methylene chloride		U	0.0010	0.0020	mg/L	1	15-Jan-2020 12:33
Toluene		U	0.00020	0.0010	mg/L	1	15-Jan-2020 12:33
Xylenes, Total		U	0.00030	0.0010	mg/L	1	15-Jan-2020 12:33
Surr: 1,2-Dichloroethane-d4	*100*			*70-126*	*%REC*	*1*	*15-Jan-2020 12:33*
Surr: 4-Bromofluorobenzene	*97.0*			*81-113*	*%REC*	*1*	*15-Jan-2020 12:33*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*15-Jan-2020 12:33*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*15-Jan-2020 12:33*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW44A-20200109
Collection Date: 09-Jan-2020 13:30

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-24
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 15-Jan-2020		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	17-Jan-2020 15:07
2,4-Dimethylphenol	**0.00042**		**0.000040**	**0.00020**	**mg/L**	1	17-Jan-2020 15:07
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	17-Jan-2020 15:07
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	17-Jan-2020 15:07
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	17-Jan-2020 15:07
2-Methylnaphthalene	**0.00035**		**0.000019**	**0.00010**	**mg/L**	1	17-Jan-2020 15:07
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	17-Jan-2020 15:07
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	17-Jan-2020 15:07
Acenaphthene	**0.064**		**0.00027**	**0.0010**	**mg/L**	10	17-Jan-2020 17:26
Acenaphthylene	**0.00097**		**0.000015**	**0.00010**	**mg/L**	1	17-Jan-2020 15:07
Anthracene	**0.00027**		**0.000014**	**0.00010**	**mg/L**	1	17-Jan-2020 15:07
Benz(a)anthracene	**0.000054**	J	**0.000050**	**0.00010**	**mg/L**	1	17-Jan-2020 15:07
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	17-Jan-2020 15:07
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	17-Jan-2020 15:07
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	17-Jan-2020 15:07
Chrysene	U		0.000021	0.00010	mg/L	1	17-Jan-2020 15:07
Dibenzofuran	**0.00033**		**0.000020**	**0.00010**	**mg/L**	1	17-Jan-2020 15:07
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	17-Jan-2020 15:07
Fluoranthene	**0.0059**		**0.000010**	**0.00010**	**mg/L**	1	17-Jan-2020 15:07
Fluorene	**0.0078**		**0.000030**	**0.00010**	**mg/L**	1	17-Jan-2020 15:07
Naphthalene	**0.0030**		**0.000020**	**0.00010**	**mg/L**	1	17-Jan-2020 15:07
Nitrobenzene	U		0.000024	0.00020	mg/L	1	17-Jan-2020 15:07
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	17-Jan-2020 15:07
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	17-Jan-2020 15:07
Phenanthrene	**0.00022**		**0.000021**	**0.00010**	**mg/L**	1	17-Jan-2020 15:07
Phenol	**0.00013**	J	**0.000035**	**0.00020**	**mg/L**	1	17-Jan-2020 15:07
Pyrene	**0.0045**		**0.000019**	**0.00010**	**mg/L**	1	17-Jan-2020 15:07
Surr: 2,4,6-Tribromophenol	*75.5*			*34-129*	*%REC*	*1*	*17-Jan-2020 15:07*
Surr: 2,4,6-Tribromophenol	*95.3*			*34-129*	*%REC*	*10*	*17-Jan-2020 17:26*
Surr: 2-Fluorobiphenyl	*64.7*			*40-125*	*%REC*	*1*	*17-Jan-2020 15:07*
Surr: 2-Fluorobiphenyl	*79.8*			*40-125*	*%REC*	*10*	*17-Jan-2020 17:26*
Surr: 2-Fluorophenol	*59.8*			*20-120*	*%REC*	*1*	*17-Jan-2020 15:07*
Surr: 2-Fluorophenol	*83.8*			*20-120*	*%REC*	*10*	*17-Jan-2020 17:26*
Surr: 4-Terphenyl-d14	*82.7*			*40-135*	*%REC*	*1*	*17-Jan-2020 15:07*
Surr: 4-Terphenyl-d14	*114*			*40-135*	*%REC*	*10*	*17-Jan-2020 17:26*
Surr: Nitrobenzene-d5	*87.6*			*41-120*	*%REC*	*10*	*17-Jan-2020 17:26*
Surr: Nitrobenzene-d5	*61.3*			*41-120*	*%REC*	*1*	*17-Jan-2020 15:07*
Surr: Phenol-d6	*64.2*			*20-120*	*%REC*	*1*	*17-Jan-2020 15:07*
Surr: Phenol-d6	*82.5*			*20-120*	*%REC*	*10*	*17-Jan-2020 17:26*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW44A-20200109
Collection Date: 09-Jan-2020 13:30

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-24
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 14-Jan-2020		Analyst: ALR
Arsenic	**0.00966**		**0.000400**	**0.00200**	**mg/L**	1	14-Jan-2020 21:55

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW36B-20200109
Collection Date: 09-Jan-2020 14:40

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-25
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	14-Jan-2020 18:20
Benzene		U	0.00020	0.0010	mg/L	1	14-Jan-2020 18:20
Chlorobenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2020 18:20
Ethylbenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2020 18:20
Methylene chloride		U	0.0010	0.0020	mg/L	1	14-Jan-2020 18:20
Toluene		U	0.00020	0.0010	mg/L	1	14-Jan-2020 18:20
Vinyl chloride		U	0.00020	0.0010	mg/L	1	14-Jan-2020 18:20
Xylenes, Total		U	0.00030	0.0010	mg/L	1	14-Jan-2020 18:20
Surr: 1,2-Dichloroethane-d4	*112*			*70-126*	*%REC*	*1*	*14-Jan-2020 18:20*
Surr: 4-Bromofluorobenzene	*98.0*			*81-113*	*%REC*	*1*	*14-Jan-2020 18:20*
Surr: Dibromofluoromethane	*105*			*77-123*	*%REC*	*1*	*14-Jan-2020 18:20*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*14-Jan-2020 18:20*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW36B-20200109
Collection Date: 09-Jan-2020 14:40

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-25
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 15-Jan-2020		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	17-Jan-2020 15:27
2,4-Dimethylphenol	**0.000054**	J	**0.000040**	**0.00020**	**mg/L**	1	17-Jan-2020 15:27
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	17-Jan-2020 15:27
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	17-Jan-2020 15:27
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	17-Jan-2020 15:27
2-Methylnaphthalene	**0.00013**		**0.000019**	**0.00010**	**mg/L**	1	17-Jan-2020 15:27
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	17-Jan-2020 15:27
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	17-Jan-2020 15:27
Acenaphthene	**0.00017**		**0.000027**	**0.00010**	**mg/L**	1	17-Jan-2020 15:27
Acenaphthylene	U		0.000015	0.00010	mg/L	1	17-Jan-2020 15:27
Anthracene	U		0.000014	0.00010	mg/L	1	17-Jan-2020 15:27
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	17-Jan-2020 15:27
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	17-Jan-2020 15:27
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	17-Jan-2020 15:27
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	17-Jan-2020 15:27
Chrysene	U		0.000021	0.00010	mg/L	1	17-Jan-2020 15:27
Dibenzofuran	**0.00012**		**0.000020**	**0.00010**	**mg/L**	1	17-Jan-2020 15:27
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	17-Jan-2020 15:27
Fluoranthene	**0.000051**	J	**0.000010**	**0.00010**	**mg/L**	1	17-Jan-2020 15:27
Fluorene	**0.00012**		**0.000030**	**0.00010**	**mg/L**	1	17-Jan-2020 15:27
Naphthalene	**0.00093**		**0.000020**	**0.00010**	**mg/L**	1	17-Jan-2020 15:27
Nitrobenzene	U		0.000024	0.00020	mg/L	1	17-Jan-2020 15:27
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	17-Jan-2020 15:27
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	17-Jan-2020 15:27
Phenanthrene	**0.00010**		**0.000021**	**0.00010**	**mg/L**	1	17-Jan-2020 15:27
Phenol	**0.000075**	J	**0.000035**	**0.00020**	**mg/L**	1	17-Jan-2020 15:27
Pyrene	U		0.000019	0.00010	mg/L	1	17-Jan-2020 15:27
Surr: 2,4,6-Tribromophenol	*70.4*			*34-129*	*%REC*	*1*	*17-Jan-2020 15:27*
Surr: 2-Fluorobiphenyl	*56.0*			*40-125*	*%REC*	*1*	*17-Jan-2020 15:27*
Surr: 2-Fluorophenol	*50.6*			*20-120*	*%REC*	*1*	*17-Jan-2020 15:27*
Surr: 4-Terphenyl-d14	*79.3*			*40-135*	*%REC*	*1*	*17-Jan-2020 15:27*
Surr: Nitrobenzene-d5	*56.4*			*41-120*	*%REC*	*1*	*17-Jan-2020 15:27*
Surr: Phenol-d6	*50.2*			*20-120*	*%REC*	*1*	*17-Jan-2020 15:27*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 14-Jan-2020		Analyst: ALR
Arsenic	**0.00100**	J	**0.000400**	**0.00200**	**mg/L**	1	14-Jan-2020 21:57

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW36A-20200109
Collection Date: 09-Jan-2020 16:00

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-26
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	14-Jan-2020 18:44
Benzene		U	0.00020	0.0010	mg/L	1	14-Jan-2020 18:44
Chlorobenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2020 18:44
Ethylbenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2020 18:44
Methylene chloride		U	0.0010	0.0020	mg/L	1	14-Jan-2020 18:44
Toluene		U	0.00020	0.0010	mg/L	1	14-Jan-2020 18:44
Vinyl chloride		U	0.00020	0.0010	mg/L	1	14-Jan-2020 18:44
Xylenes, Total		U	0.00030	0.0010	mg/L	1	14-Jan-2020 18:44
Surr: 1,2-Dichloroethane-d4	*118*			*70-126*	*%REC*	*1*	*14-Jan-2020 18:44*
Surr: 4-Bromofluorobenzene	*99.4*			*81-113*	*%REC*	*1*	*14-Jan-2020 18:44*
Surr: Dibromofluoromethane	*109*			*77-123*	*%REC*	*1*	*14-Jan-2020 18:44*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*14-Jan-2020 18:44*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW36A-20200109
Collection Date: 09-Jan-2020 16:00

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-26
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 15-Jan-2020		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	17-Jan-2020 15:47
2,4-Dimethylphenol	**0.000052**	J	**0.000040**	**0.00020**	**mg/L**	1	17-Jan-2020 15:47
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	17-Jan-2020 15:47
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	17-Jan-2020 15:47
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	17-Jan-2020 15:47
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	17-Jan-2020 15:47
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	17-Jan-2020 15:47
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	17-Jan-2020 15:47
Acenaphthene	U		0.000027	0.00010	mg/L	1	17-Jan-2020 15:47
Acenaphthylene	U		0.000015	0.00010	mg/L	1	17-Jan-2020 15:47
Anthracene	U		0.000014	0.00010	mg/L	1	17-Jan-2020 15:47
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	17-Jan-2020 15:47
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	17-Jan-2020 15:47
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	17-Jan-2020 15:47
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	17-Jan-2020 15:47
Chrysene	U		0.000021	0.00010	mg/L	1	17-Jan-2020 15:47
Dibenzofuran	U		0.000020	0.00010	mg/L	1	17-Jan-2020 15:47
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	17-Jan-2020 15:47
Fluoranthene	U		0.000010	0.00010	mg/L	1	17-Jan-2020 15:47
Fluorene	U		0.000030	0.00010	mg/L	1	17-Jan-2020 15:47
Naphthalene	**0.00034**		**0.000020**	**0.00010**	**mg/L**	1	17-Jan-2020 15:47
Nitrobenzene	U		0.000024	0.00020	mg/L	1	17-Jan-2020 15:47
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	17-Jan-2020 15:47
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	17-Jan-2020 15:47
Phenanthrene	U		0.000021	0.00010	mg/L	1	17-Jan-2020 15:47
Phenol	U		0.000035	0.00020	mg/L	1	17-Jan-2020 15:47
Pyrene	U		0.000019	0.00010	mg/L	1	17-Jan-2020 15:47
Surr: 2,4,6-Tribromophenol	*54.7*			*34-129*	*%REC*	*1*	*17-Jan-2020 15:47*
Surr: 2-Fluorobiphenyl	*61.7*			*40-125*	*%REC*	*1*	*17-Jan-2020 15:47*
Surr: 2-Fluorophenol	*61.9*			*20-120*	*%REC*	*1*	*17-Jan-2020 15:47*
Surr: 4-Terphenyl-d14	*79.7*			*40-135*	*%REC*	*1*	*17-Jan-2020 15:47*
Surr: Nitrobenzene-d5	*62.1*			*41-120*	*%REC*	*1*	*17-Jan-2020 15:47*
Surr: Phenol-d6	*60.0*			*20-120*	*%REC*	*1*	*17-Jan-2020 15:47*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 14-Jan-2020		Analyst: ALR
Arsenic	**0.00354**		**0.000400**	**0.00200**	**mg/L**	1	14-Jan-2020 21:59

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-TB01-20200109
Collection Date: 09-Jan-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20010407
Lab ID:HS20010407-27
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	15-Jan-2020 12:09
Benzene		U	0.00020	0.0010	mg/L	1	15-Jan-2020 12:09
Chlorobenzene		U	0.00030	0.0010	mg/L	1	15-Jan-2020 12:09
Ethylbenzene		U	0.00030	0.0010	mg/L	1	15-Jan-2020 12:09
Methylene chloride		U	0.0010	0.0020	mg/L	1	15-Jan-2020 12:09
Toluene		U	0.00020	0.0010	mg/L	1	15-Jan-2020 12:09
Vinyl chloride		U	0.00020	0.0010	mg/L	1	15-Jan-2020 12:09
Xylenes, Total		U	0.00030	0.0010	mg/L	1	15-Jan-2020 12:09
Surr: 1,2-Dichloroethane-d4	*99.6*			*70-126*	*%REC*	*1*	*15-Jan-2020 12:09*
Surr: 4-Bromofluorobenzene	*95.3*			*81-113*	*%REC*	*1*	*15-Jan-2020 12:09*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*15-Jan-2020 12:09*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*15-Jan-2020 12:09*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010407

Batch ID: 149585 **Start Date:** 13 Jan 2020 10:30 **End Date:** 13 Jan 2020 13:30
Method: TX 1005 PREP **Prep Code:** TX 1005_W PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20010407-02	1	31.02 (g)	3 (mL)	0.09671
HS20010407-03	1	31.1 (g)	3 (mL)	0.09646
HS20010407-04	1	30.67 (g)	3 (mL)	0.09782
HS20010407-05	1	31.05 (g)	3 (mL)	0.09662
HS20010407-06	1	31.3 (g)	3 (mL)	0.09585
HS20010407-07	1	31.21 (g)	3 (mL)	0.09612
HS20010407-08	1	31.12 (g)	3 (mL)	0.0964
HS20010407-09	1	31.54 (g)	3 (mL)	0.09512
HS20010407-10	1	31.32 (g)	3 (mL)	0.09579

Batch ID: 149592 **Start Date:** 13 Jan 2020 11:00 **End Date:** 13 Jan 2020 15:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20010407-01		10 (mL)	10 (mL)	1
HS20010407-02		10 (mL)	10 (mL)	1
HS20010407-03		10 (mL)	10 (mL)	1
HS20010407-04		10 (mL)	10 (mL)	1
HS20010407-05		10 (mL)	10 (mL)	1
HS20010407-06		10 (mL)	10 (mL)	1
HS20010407-07		10 (mL)	10 (mL)	1
HS20010407-08		10 (mL)	10 (mL)	1
HS20010407-09		10 (mL)	10 (mL)	1
HS20010407-10		10 (mL)	10 (mL)	1
HS20010407-11		10 (mL)	10 (mL)	1
HS20010407-12		10 (mL)	10 (mL)	1
HS20010407-13		10 (mL)	10 (mL)	1
HS20010407-14		10 (mL)	10 (mL)	1
HS20010407-15		10 (mL)	10 (mL)	1
HS20010407-16		10 (mL)	10 (mL)	1
HS20010407-17		10 (mL)	10 (mL)	1
HS20010407-18		10 (mL)	10 (mL)	1
HS20010407-20		10 (mL)	10 (mL)	1
HS20010407-21		10 (mL)	10 (mL)	1

Batch ID: 149618 **Start Date:** 14 Jan 2020 08:30 **End Date:** 14 Jan 2020 16:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20010407-22		10 (mL)	10 (mL)	1
HS20010407-23		10 (mL)	10 (mL)	1
HS20010407-24		10 (mL)	10 (mL)	1
HS20010407-25		10 (mL)	10 (mL)	1
HS20010407-26		10 (mL)	10 (mL)	1

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010407

Batch ID: 149624 **Start Date:** 14 Jan 2020 07:00 **End Date:** 14 Jan 2020 12:00
Method: SV AQ SEP FUN EXTRACT-LOWLEV - 3510C **Prep Code:** 3510_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20010407-01	1	1000 (mL)	1 (mL)	0.001
HS20010407-02	1	1000 (mL)	1 (mL)	0.001
HS20010407-03	1	1000 (mL)	1 (mL)	0.001
HS20010407-04	1	1000 (mL)	1 (mL)	0.001
HS20010407-05	1	1000 (mL)	1 (mL)	0.001
HS20010407-06	1	1000 (mL)	1 (mL)	0.001
HS20010407-07	1	1000 (mL)	1 (mL)	0.001
HS20010407-08	1	1000 (mL)	1 (mL)	0.001
HS20010407-09	1	1000 (mL)	1 (mL)	0.001
HS20010407-10	1	1000 (mL)	1 (mL)	0.001
HS20010407-11	1	1000 (mL)	1 (mL)	0.001
HS20010407-12	1	1000 (mL)	1 (mL)	0.001
HS20010407-13	1	1000 (mL)	1 (mL)	0.001
HS20010407-14	1	1000 (mL)	1 (mL)	0.001
HS20010407-15	1	1000 (mL)	1 (mL)	0.001
HS20010407-16	1	1000 (mL)	1 (mL)	0.001

Batch ID: 149670 **Start Date:** 15 Jan 2020 08:00 **End Date:** 15 Jan 2020 14:00
Method: SV AQ SEP FUN EXTRACT-LOWLEV - 3510C **Prep Code:** 3510_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20010407-17		1000 (mL)	1 (mL)	0.001
HS20010407-18		1000 (mL)	1 (mL)	0.001
HS20010407-20		1000 (mL)	1 (mL)	0.001
HS20010407-21		1000 (mL)	1 (mL)	0.001
HS20010407-22		1000 (mL)	1 (mL)	0.001
HS20010407-23		1000 (mL)	1 (mL)	0.001
HS20010407-24		1000 (mL)	1 (mL)	0.001
HS20010407-25		1000 (mL)	1 (mL)	0.001
HS20010407-26		1000 (mL)	1 (mL)	0.001

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010407

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 149585 (0)	**Test Name :** LOW-LEVEL TEXAS TPH BY TX1005				**Matrix:** Water	
HS20010407-02	WG-1620-MW51A-20200109	09 Jan 2020 11:50		13 Jan 2020 10:30	13 Jan 2020 21:36	1
HS20010407-03	WG-1620-MW51C-20200109	09 Jan 2020 12:40		13 Jan 2020 10:30	13 Jan 2020 22:05	1
HS20010407-04	WG-1620-MW85C-20200109	09 Jan 2020 13:35		13 Jan 2020 10:30	13 Jan 2020 22:34	1
HS20010407-05	WG-1620-MW77A-20200109	09 Jan 2020 14:25		13 Jan 2020 10:30	13 Jan 2020 23:03	1
HS20010407-06	WG-1620-MW76C-20200109	09 Jan 2020 15:20		13 Jan 2020 10:30	13 Jan 2020 23:33	1
HS20010407-07	WG-1620-MW81B-20200109	09 Jan 2020 16:20		13 Jan 2020 10:30	14 Jan 2020 00:02	1
HS20010407-08	WG-1620-MW50A-20200109	09 Jan 2020 17:15		13 Jan 2020 10:30	14 Jan 2020 00:31	1
HS20010407-09	WG-1620-MW49A-20200107	07 Jan 2020 13:10		13 Jan 2020 10:30	14 Jan 2020 01:00	1
HS20010407-10	WG-1620-MW80B-20200107	07 Jan 2020 16:00		13 Jan 2020 10:30	14 Jan 2020 01:29	1
Batch ID: 149592 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS20010407-01	WG-1620-MW19C-20200109	09 Jan 2020 10:45		13 Jan 2020 15:00	13 Jan 2020 22:09	1
HS20010407-02	WG-1620-MW51A-20200109	09 Jan 2020 11:50		13 Jan 2020 15:00	13 Jan 2020 22:25	1
HS20010407-03	WG-1620-MW51C-20200109	09 Jan 2020 12:40		13 Jan 2020 15:00	13 Jan 2020 22:27	1
HS20010407-04	WG-1620-MW85C-20200109	09 Jan 2020 13:35		13 Jan 2020 15:00	13 Jan 2020 22:29	1
HS20010407-05	WG-1620-MW77A-20200109	09 Jan 2020 14:25		13 Jan 2020 15:00	13 Jan 2020 22:31	1
HS20010407-06	WG-1620-MW76C-20200109	09 Jan 2020 15:20		13 Jan 2020 15:00	13 Jan 2020 22:34	1
HS20010407-07	WG-1620-MW81B-20200109	09 Jan 2020 16:20		13 Jan 2020 15:00	13 Jan 2020 22:36	1
HS20010407-08	WG-1620-MW50A-20200109	09 Jan 2020 17:15		13 Jan 2020 15:00	13 Jan 2020 22:38	1
HS20010407-09	WG-1620-MW49A-20200107	07 Jan 2020 13:10		13 Jan 2020 15:00	13 Jan 2020 22:40	1
HS20010407-10	WG-1620-MW80B-20200107	07 Jan 2020 16:00		13 Jan 2020 15:00	13 Jan 2020 22:42	1
HS20010407-11	WG-1620-FB01-20200107	07 Jan 2020 16:30		13 Jan 2020 15:00	13 Jan 2020 22:45	1
HS20010407-12	WG-1620-FB02-20200108	08 Jan 2020 09:00		13 Jan 2020 15:00	13 Jan 2020 22:58	1
HS20010407-13	WG-1620-MW18C-20200108	08 Jan 2020 10:10		13 Jan 2020 15:00	13 Jan 2020 23:00	1
HS20010407-14	WG-1620-MW18A-20200108	08 Jan 2020 11:10		13 Jan 2020 15:00	13 Jan 2020 23:03	1
HS20010407-15	WG-1620-MW58A-20200108	08 Jan 2020 12:15		13 Jan 2020 15:00	13 Jan 2020 23:05	1
HS20010407-16	WG-1620-MW57A-20200108	08 Jan 2020 14:55		13 Jan 2020 15:00	13 Jan 2020 23:07	1
HS20010407-17	WG-1620-MW57B-20200108	08 Jan 2020 13:30		13 Jan 2020 15:00	13 Jan 2020 23:09	1
HS20010407-18	WG-1620-FB03-20200109	09 Jan 2020 07:30		13 Jan 2020 15:00	13 Jan 2020 23:11	1
HS20010407-20	WG-1620-MW72B-20200109	09 Jan 2020 08:35		13 Jan 2020 15:00	13 Jan 2020 23:14	1
HS20010407-21	WG-1620-MW23C-20200109	09 Jan 2020 09:40		13 Jan 2020 15:00	13 Jan 2020 23:16	1
Batch ID: 149618 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS20010407-22	WG-1620-MW53C-20200109	09 Jan 2020 11:15		14 Jan 2020 16:00	14 Jan 2020 21:37	1
HS20010407-23	WG-1620-MW54C-20200109	09 Jan 2020 12:35		14 Jan 2020 16:00	14 Jan 2020 21:52	1
HS20010407-24	WG-1620-MW44A-20200109	09 Jan 2020 13:30		14 Jan 2020 16:00	14 Jan 2020 21:55	1
HS20010407-25	WG-1620-MW36B-20200109	09 Jan 2020 14:40		14 Jan 2020 16:00	14 Jan 2020 21:57	1
HS20010407-26	WG-1620-MW36A-20200109	09 Jan 2020 16:00		14 Jan 2020 16:00	14 Jan 2020 21:59	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010407

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 149624 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Water	
HS20010407-01	WG-1620-MW19C-20200109	09 Jan 2020 10:45		14 Jan 2020 11:05	15 Jan 2020 08:50	1
HS20010407-02	WG-1620-MW51A-20200109	09 Jan 2020 11:50		14 Jan 2020 11:05	15 Jan 2020 09:09	1
HS20010407-03	WG-1620-MW51C-20200109	09 Jan 2020 12:40		14 Jan 2020 11:05	15 Jan 2020 09:28	1
HS20010407-04	WG-1620-MW85C-20200109	09 Jan 2020 13:35		14 Jan 2020 11:05	15 Jan 2020 09:46	1
HS20010407-05	WG-1620-MW77A-20200109	09 Jan 2020 14:25		14 Jan 2020 11:05	15 Jan 2020 17:57	1000
HS20010407-05	WG-1620-MW77A-20200109	09 Jan 2020 14:25		14 Jan 2020 11:05	15 Jan 2020 16:04	100
HS20010407-05	WG-1620-MW77A-20200109	09 Jan 2020 14:25		14 Jan 2020 11:05	15 Jan 2020 14:11	20
HS20010407-05	WG-1620-MW77A-20200109	09 Jan 2020 14:25		14 Jan 2020 11:05	15 Jan 2020 10:05	1
HS20010407-06	WG-1620-MW76C-20200109	09 Jan 2020 15:20		14 Jan 2020 11:05	15 Jan 2020 10:24	1
HS20010407-07	WG-1620-MW81B-20200109	09 Jan 2020 16:20		14 Jan 2020 11:05	15 Jan 2020 10:43	1
HS20010407-08	WG-1620-MW50A-20200109	09 Jan 2020 17:15		14 Jan 2020 11:05	15 Jan 2020 11:02	1
HS20010407-09	WG-1620-MW49A-20200107	07 Jan 2020 13:10		14 Jan 2020 11:05	15 Jan 2020 16:23	100
HS20010407-09	WG-1620-MW49A-20200107	07 Jan 2020 13:10		14 Jan 2020 11:05	15 Jan 2020 18:16	1000
HS20010407-09	WG-1620-MW49A-20200107	07 Jan 2020 13:10		14 Jan 2020 11:05	15 Jan 2020 14:30	10
HS20010407-09	WG-1620-MW49A-20200107	07 Jan 2020 13:10		14 Jan 2020 11:05	15 Jan 2020 11:21	1
HS20010407-10	WG-1620-MW80B-20200107	07 Jan 2020 16:00		14 Jan 2020 11:05	15 Jan 2020 11:40	1
HS20010407-11	WG-1620-FB01-20200107	07 Jan 2020 16:30		14 Jan 2020 11:05	15 Jan 2020 11:59	1
HS20010407-12	WG-1620-FB02-20200108	08 Jan 2020 09:00		14 Jan 2020 11:05	15 Jan 2020 12:17	1
HS20010407-13	WG-1620-MW18C-20200108	08 Jan 2020 10:10		14 Jan 2020 11:05	15 Jan 2020 16:41	100
HS20010407-13	WG-1620-MW18C-20200108	08 Jan 2020 10:10		14 Jan 2020 11:05	15 Jan 2020 18:35	2000
HS20010407-13	WG-1620-MW18C-20200108	08 Jan 2020 10:10		14 Jan 2020 11:05	15 Jan 2020 14:48	10
HS20010407-13	WG-1620-MW18C-20200108	08 Jan 2020 10:10		14 Jan 2020 11:05	15 Jan 2020 12:36	1
HS20010407-14	WG-1620-MW18A-20200108	08 Jan 2020 11:10		14 Jan 2020 11:05	15 Jan 2020 17:00	500
HS20010407-14	WG-1620-MW18A-20200108	08 Jan 2020 11:10		14 Jan 2020 11:05	15 Jan 2020 15:07	50
HS20010407-14	WG-1620-MW18A-20200108	08 Jan 2020 11:10		14 Jan 2020 11:05	15 Jan 2020 12:55	1
HS20010407-15	WG-1620-MW58A-20200108	08 Jan 2020 12:15		14 Jan 2020 11:05	15 Jan 2020 17:19	200
HS20010407-15	WG-1620-MW58A-20200108	08 Jan 2020 12:15		14 Jan 2020 11:05	15 Jan 2020 15:26	20
HS20010407-15	WG-1620-MW58A-20200108	08 Jan 2020 12:15		14 Jan 2020 11:05	15 Jan 2020 13:14	1
HS20010407-16	WG-1620-MW57A-20200108	08 Jan 2020 14:55		14 Jan 2020 11:05	15 Jan 2020 17:38	200
HS20010407-16	WG-1620-MW57A-20200108	08 Jan 2020 14:55		14 Jan 2020 11:05	15 Jan 2020 15:45	20
HS20010407-16	WG-1620-MW57A-20200108	08 Jan 2020 14:55		14 Jan 2020 11:05	15 Jan 2020 13:33	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010407

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 149670 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Water	
HS20010407-17	WG-1620-MW57B-20200108	08 Jan 2020 13:30		15 Jan 2020 10:11	17 Jan 2020 16:07	10000
HS20010407-17	WG-1620-MW57B-20200108	08 Jan 2020 13:30		15 Jan 2020 10:11	17 Jan 2020 12:49	1000
HS20010407-17	WG-1620-MW57B-20200108	08 Jan 2020 13:30		15 Jan 2020 10:11	17 Jan 2020 12:29	100
HS20010407-17	WG-1620-MW57B-20200108	08 Jan 2020 13:30		15 Jan 2020 10:11	17 Jan 2020 04:40	10
HS20010407-18	WG-1620-FB03-20200109	09 Jan 2020 07:30		15 Jan 2020 10:11	17 Jan 2020 04:59	1
HS20010407-20	WG-1620-MW72B-20200109	09 Jan 2020 08:35		15 Jan 2020 10:11	17 Jan 2020 16:26	10000
HS20010407-20	WG-1620-MW72B-20200109	09 Jan 2020 08:35		15 Jan 2020 10:11	17 Jan 2020 13:48	1000
HS20010407-20	WG-1620-MW72B-20200109	09 Jan 2020 08:35		15 Jan 2020 10:11	17 Jan 2020 13:28	100
HS20010407-20	WG-1620-MW72B-20200109	09 Jan 2020 08:35		15 Jan 2020 10:11	17 Jan 2020 13:08	10
HS20010407-21	WG-1620-MW23C-20200109	09 Jan 2020 09:40		15 Jan 2020 10:11	17 Jan 2020 16:46	100
HS20010407-21	WG-1620-MW23C-20200109	09 Jan 2020 09:40		15 Jan 2020 10:11	17 Jan 2020 14:08	10
HS20010407-22	WG-1620-MW53C-20200109	09 Jan 2020 11:15		15 Jan 2020 10:11	17 Jan 2020 14:27	1
HS20010407-23	WG-1620-MW54C-20200109	09 Jan 2020 12:35		15 Jan 2020 10:11	17 Jan 2020 17:06	5
HS20010407-23	WG-1620-MW54C-20200109	09 Jan 2020 12:35		15 Jan 2020 10:11	17 Jan 2020 14:47	1
HS20010407-24	WG-1620-MW44A-20200109	09 Jan 2020 13:30		15 Jan 2020 10:11	17 Jan 2020 17:26	10
HS20010407-24	WG-1620-MW44A-20200109	09 Jan 2020 13:30		15 Jan 2020 10:11	17 Jan 2020 15:07	1
HS20010407-25	WG-1620-MW36B-20200109	09 Jan 2020 14:40		15 Jan 2020 10:11	17 Jan 2020 15:27	1
HS20010407-26	WG-1620-MW36A-20200109	09 Jan 2020 16:00		15 Jan 2020 10:11	17 Jan 2020 15:47	1
Batch ID: R354349 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20010407-02	WG-1620-MW51A-20200109	09 Jan 2020 11:50			14 Jan 2020 01:27	1
HS20010407-03	WG-1620-MW51C-20200109	09 Jan 2020 12:40			14 Jan 2020 03:29	1
HS20010407-07	WG-1620-MW81B-20200109	09 Jan 2020 16:20			14 Jan 2020 03:54	1
HS20010407-08	WG-1620-MW50A-20200109	09 Jan 2020 17:15			14 Jan 2020 04:18	1
HS20010407-10	WG-1620-MW80B-20200107	07 Jan 2020 16:00			14 Jan 2020 04:42	1
HS20010407-22	WG-1620-MW53C-20200109	09 Jan 2020 11:15			14 Jan 2020 05:56	1
HS20010407-23	WG-1620-MW54C-20200109	09 Jan 2020 12:35			14 Jan 2020 06:20	1
Batch ID: R354396 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20010407-01	WG-1620-MW19C-20200109	09 Jan 2020 10:45			14 Jan 2020 23:06	1
HS20010407-04	WG-1620-MW85C-20200109	09 Jan 2020 13:35			14 Jan 2020 23:31	1
HS20010407-06	WG-1620-MW76C-20200109	09 Jan 2020 15:20			14 Jan 2020 23:55	1
HS20010407-13	WG-1620-MW18C-20200108	08 Jan 2020 10:10			14 Jan 2020 17:22	10
HS20010407-14	WG-1620-MW18A-20200108	08 Jan 2020 11:10			14 Jan 2020 17:49	25
HS20010407-18	WG-1620-FB03-20200109	09 Jan 2020 07:30			14 Jan 2020 20:40	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010407

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R354399 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20010407-11	WG-1620-FB01-20200107	07 Jan 2020 16:30			14 Jan 2020 17:30	1
HS20010407-12	WG-1620-FB02-20200108	08 Jan 2020 09:00			14 Jan 2020 17:55	1
HS20010407-25	WG-1620-MW36B-20200109	09 Jan 2020 14:40			14 Jan 2020 18:20	1
HS20010407-26	WG-1620-MW36A-20200109	09 Jan 2020 16:00			14 Jan 2020 18:44	1
Batch ID: R354465 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20010407-05	WG-1620-MW77A-20200109	09 Jan 2020 14:25			15 Jan 2020 12:58	1
HS20010407-09	WG-1620-MW49A-20200107	07 Jan 2020 13:10			15 Jan 2020 14:41	10
HS20010407-15	WG-1620-MW58A-20200108	08 Jan 2020 12:15			15 Jan 2020 13:22	1
HS20010407-16	WG-1620-MW57A-20200108	08 Jan 2020 14:55			15 Jan 2020 13:47	1
HS20010407-17	WG-1620-MW57B-20200108	08 Jan 2020 13:30			15 Jan 2020 15:07	10
HS20010407-20	WG-1620-MW72B-20200109	09 Jan 2020 08:35			15 Jan 2020 15:34	10
HS20010407-21	WG-1620-MW23C-20200109	09 Jan 2020 09:40			15 Jan 2020 14:14	5
HS20010407-24	WG-1620-MW44A-20200109	09 Jan 2020 13:30			15 Jan 2020 12:33	1
HS20010407-27	WG-1620-TB01-20200109	09 Jan 2020 00:00			15 Jan 2020 12:09	1

WorkOrder: HS20010407
InstrumentID: FID-11
Test Code: TX1005_W_Low
Test Number: TX1005
Test Name: Low-level Texas TPH by TX1005

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	nC6 to nC12	TPH-1005-1	0.25	0.25	0.20	0.50
A	>nC12 to nC28	TPH-1005-2	0.25	0.29	0.20	0.50
A	>nC28 to nC35	TPH-1005-4	0.25	0.25	0.20	0.50
A	Total Petroleum Hydrocarbon	TPH	0.25	0.25	0.20	0.50
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	Trifluoromethyl benzene	98-08-8	0	0	0	0

WorkOrder: HS20010407
InstrumentID: ICPMS05
Test Code: ICP_TW
Test Number: SW6020
Test Name: ICP-MS Metals by SW6020A

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Arsenic	7440-38-2	0.000500	0.000499	0.000400	0.00200

WorkOrder: HS20010407
InstrumentID: ICPMS04
Test Code: ICP_TW
Test Number: SW6020
Test Name: ICP-MS Metals by SW6020A

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Arsenic	7440-38-2	0.000500	0.000456	0.000400	0.00200

WorkOrder: HS20010407
InstrumentID: SV-6
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Diphenylhydrazine	122-66-7	0.00010	0.000098	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.000051	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.000094	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.000083	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.000093	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.000050	0.000060	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000031	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00010	0.000037	0.000047	0.0010
A	Acenaphthene	83-32-9	0.000050	0.000059	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000050	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.000047	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.000050	0.000059	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.000050	0.000050	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.000081	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.00012	0.000037	0.00020
A	Chrysene	218-01-9	0.000050	0.000060	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.000050	0.000050	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.00011	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000049	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.000053	0.000030	0.00010
A	Naphthalene	91-20-3	0.000050	0.000049	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.00012	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.00011	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.0000094	0.000079	0.00020
A	Phenanthrene	85-01-8	0.000050	0.000049	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.000096	0.000035	0.00020
A	Pyrene	129-00-0	0.000050	0.000047	0.000019	0.00010
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0.00020
S	2-Fluorobiphenyl	321-60-8	0	0	0	0.00020
S	2-Fluorophenol	367-12-4	0	0	0	0.00020
S	4-Terphenyl-d14	1718-51-0	0	0	0	0.00020
S	Nitrobenzene-d5	4165-60-0	0	0	0	0.00020
S	Phenol-d6	13127-88-3	0	0	0	0.00020

WorkOrder: HS20010407
InstrumentID: SV-7
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Diphenylhydrazine	122-66-7	0.00010	0.00013	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.000081	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.00010	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.00010	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.00012	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.000050	0.000052	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000060	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00010	0.000069	0.000047	0.0010
A	Acenaphthene	83-32-9	0.000050	0.000050	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000046	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.000046	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.000050	0.000057	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.000050	0.000047	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.00012	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.00014	0.000037	0.00020
A	Chrysene	218-01-9	0.000050	0.000049	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.000050	0.000050	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.00012	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000053	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.000050	0.000030	0.00010
A	Naphthalene	91-20-3	0.000050	0.000048	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.00014	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.00012	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.000057	0.000079	0.00020
A	Phenanthrene	85-01-8	0.000050	0.000047	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.00012	0.000035	0.00020
A	Pyrene	129-00-0	0.000050	0.000051	0.000019	0.00010
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0.00020
S	2-Fluorobiphenyl	321-60-8	0	0	0	0.00020
S	2-Fluorophenol	367-12-4	0	0	0	0.00020
S	4-Terphenyl-d14	1718-51-0	0	0	0	0.00020
S	Nitrobenzene-d5	4165-60-0	0	0	0	0.00020
S	Phenol-d6	13127-88-3	0	0	0	0.00020

WorkOrder: HS20010407
InstrumentID: VOA2
Test Code: 8260_LL_W
Test Number: SW8260
Test Name: Low Level Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.00050	0.00062	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00059	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00071	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00063	0.00030	0.0010
A	Methylene chloride	75-09-2	0.0010	0.00075	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00069	0.00020	0.0010
A	Vinyl chloride	75-01-4	0.00050	0.00044	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00059	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

WorkOrder: HS20010407
InstrumentID: VOA4
Test Code: 8260_LL_W
Test Number: SW8260
Test Name: Low Level Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.00050	0.00061	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00057	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00058	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00048	0.00030	0.0010
A	Methylene chloride	75-09-2	0.0010	0.00070	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00050	0.00020	0.0010
A	Vinyl chloride	75-01-4	0.00050	0.00045	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00070	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010407

QC BATCH REPORT

Batch ID: 149585 (0) **Instrument: FID-11** **Method: LOW-LEVEL TEXAS TPH BY TX1005**

MBLK Sample ID: **MBLK-149585** Units: **mg/L** Analysis Date: **13-Jan-2020 18:11**
Client ID: Run ID: **FID-11_354328** SeqNo: **5433689** PrepDate: **13-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	U	0.50								
>nC12 to nC28	U	0.50								
>nC28 to nC35	U	0.50								
Total Petroleum Hydrocarbon	U	0.50								
Surr: 2-Fluorobiphenyl	*2.667*	*0*	*2.5*	*0*	*107*	*70 - 130*				
Surr: Trifluoromethyl benzene	*2.689*	*0*	*2.5*	*0*	*108*	*70 - 130*				

LCS Sample ID: **LCS-149585** Units: **mg/L** Analysis Date: **13-Jan-2020 18:40**
Client ID: Run ID: **FID-11_354328** SeqNo: **5433690** PrepDate: **13-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	25.62	0.50	25	0	102	75 - 125				
>nC12 to nC28	23.57	0.50	25	0	94.3	75 - 125				
Surr: 2-Fluorobiphenyl	*2.945*	*0*	*2.5*	*0*	*118*	*70 - 130*				
Surr: Trifluoromethyl benzene	*2.74*	*0*	*2.5*	*0*	*110*	*70 - 130*				

LCSD Sample ID: **LCSD-149585** Units: **mg/L** Analysis Date: **13-Jan-2020 19:09**
Client ID: Run ID: **FID-11_354328** SeqNo: **5433691** PrepDate: **13-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	27.82	0.50	25	0	111	75 - 125	25.62	8.24	20	
>nC12 to nC28	22.91	0.50	25	0	91.6	75 - 125	23.57	2.87	20	
Surr: 2-Fluorobiphenyl	*3.003*	*0*	*2.5*	*0*	*120*	*70 - 130*	*2.945*	*1.96*	*20*	
Surr: Trifluoromethyl benzene	*2.941*	*0*	*2.5*	*0*	*118*	*70 - 130*	*2.74*	*7.09*	*20*	

MS Sample ID: **HS20010449-05MS** Units: **mg/L** Analysis Date: **13-Jan-2020 20:08**
Client ID: Run ID: **FID-11_354328** SeqNo: **5433693** PrepDate: **13-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	25.84	0.48	23.79	0	109	75 - 125				
>nC12 to nC28	21.53	0.48	23.79	0	90.5	75 - 125				
Surr: 2-Fluorobiphenyl	*2.988*	*0*	*2.379*	*0*	*126*	*70 - 130*				
Surr: Trifluoromethyl benzene	*2.864*	*0*	*2.379*	*0*	*120*	*70 - 130*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010407

QC BATCH REPORT

Batch ID: 149585 (0) **Instrument: FID-11** **Method: LOW-LEVEL TEXAS TPH BY TX1005**

MSD Sample ID: **HS20010449-05MSD** Units: **mg/L** Analysis Date: **13-Jan-2020 20:37**
Client ID: Run ID: **FID-11_354328** SeqNo: **5433694** PrepDate: **13-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	26.05	0.48	24.06	0	108	75 - 125	25.84	0.8	20	
>nC12 to nC28	22.27	0.48	24.06	0	92.6	75 - 125	21.53	3.38	20	
Surr: 2-Fluorobiphenyl	*3.117*	*0*	*2.406*	*0*	*130*	*70 - 130*	*2.988*	*4.23*	*20*	
Surr: Trifluoromethyl benzene	*3.06*	*0*	*2.406*	*0*	*127*	*70 - 130*	*2.864*	*6.62*	*20*	

The following samples were analyzed in this batch: HS20010407-02, HS20010407-03, HS20010407-04, HS20010407-05, HS20010407-06, HS20010407-07, HS20010407-08, HS20010407-09, HS20010407-10

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010407

QC BATCH REPORT

Batch ID: 149592 (0) **Instrument: ICPMS05** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-149592** Units: **mg/L** Analysis Date: **13-Jan-2020 22:05**
Client ID: Run ID: **ICPMS05_354278** SeqNo: **5433457** PrepDate: **13-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								

LCS Sample ID: **LCS-149592** Units: **mg/L** Analysis Date: **13-Jan-2020 22:07**
Client ID: Run ID: **ICPMS05_354278** SeqNo: **5433458** PrepDate: **13-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04766	0.00200	0.05	0	95.3	80 - 120				

MS Sample ID: **HS20010407-01MS** Units: **mg/L** Analysis Date: **13-Jan-2020 22:14**
Client ID: **WG-1620-MW19C-20200109** Run ID: **ICPMS05_354278** SeqNo: **5433463** PrepDate: **13-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05662	0.00200	0.05	0.001405	110	80 - 120				

MSD Sample ID: **HS20010407-01MSD** Units: **mg/L** Analysis Date: **13-Jan-2020 22:16**
Client ID: **WG-1620-MW19C-20200109** Run ID: **ICPMS05_354278** SeqNo: **5433464** PrepDate: **13-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0493	0.00200	0.05	0.001405	95.8	80 - 120	0.05662	13.8	20	

PDS Sample ID: **HS20010407-01PDS** Units: **mg/L** Analysis Date: **13-Jan-2020 22:18**
Client ID: **WG-1620-MW19C-20200109** Run ID: **ICPMS05_354278** SeqNo: **5433465** PrepDate: **13-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1219	0.00200	0.1	0.001405	121	75 - 125				

SD Sample ID: **HS20010407-01SD** Units: **mg/L** Analysis Date: **13-Jan-2020 22:11**
Client ID: **WG-1620-MW19C-20200109** Run ID: **ICPMS05_354278** SeqNo: **5433460** PrepDate: **13-Jan-2020** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	U	0.0100					0.001405	0	10	

The following samples were analyzed in this batch:

HS20010407-01	HS20010407-02	HS20010407-03	HS20010407-04
HS20010407-05	HS20010407-06	HS20010407-07	HS20010407-08
HS20010407-09	HS20010407-10	HS20010407-11	HS20010407-12
HS20010407-13	HS20010407-14	HS20010407-15	HS20010407-16
HS20010407-17	HS20010407-18	HS20010407-20	HS20010407-21

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010407

QC BATCH REPORT

Batch ID: 149618 (0) **Instrument: ICPMS04** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-149618** Units: **mg/L** Analysis Date: **14-Jan-2020 21:28**
Client ID: Run ID: **ICPMS04_354392** SeqNo: **5434990** PrepDate: **14-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								

LCS Sample ID: **LCS-149618** Units: **mg/L** Analysis Date: **14-Jan-2020 21:30**
Client ID: Run ID: **ICPMS04_354392** SeqNo: **5434991** PrepDate: **14-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05218	0.00200	0.05	0	104	80 - 120				

MS Sample ID: **HS20010407-22MS** Units: **mg/L** Analysis Date: **14-Jan-2020 21:41**
Client ID: **WG-1620-MW53C-20200109** Run ID: **ICPMS04_354392** SeqNo: **5434996** PrepDate: **14-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05347	0.00200	0.05	0.000728	105	80 - 120				

MSD Sample ID: **HS20010407-22MSD** Units: **mg/L** Analysis Date: **14-Jan-2020 21:44**
Client ID: **WG-1620-MW53C-20200109** Run ID: **ICPMS04_354392** SeqNo: **5434997** PrepDate: **14-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05102	0.00200	0.05	0.000728	101	80 - 120	0.05347	4.68	20	

PDS Sample ID: **HS20010407-22PDS** Units: **mg/L** Analysis Date: **14-Jan-2020 21:46**
Client ID: **WG-1620-MW53C-20200109** Run ID: **ICPMS04_354392** SeqNo: **5434998** PrepDate: **14-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1134	0.00200	0.1	0.000728	113	75 - 125				

SD Sample ID: **HS20010407-22SD** Units: **mg/L** Analysis Date: **14-Jan-2020 21:39**
Client ID: **WG-1620-MW53C-20200109** Run ID: **ICPMS04_354392** SeqNo: **5434995** PrepDate: **14-Jan-2020** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	U	0.0100					0.000728	0	10	

The following samples were analyzed in this batch: HS20010407-22 HS20010407-23 HS20010407-24 HS20010407-25 HS20010407-26

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010407

QC BATCH REPORT

Batch ID: 149624 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-149624** Units: **ug/L** Analysis Date: **14-Jan-2020 11:54**
Client ID: Run ID: **SV-6_354345** SeqNo: **5435594** PrepDate: **14-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	U	0.20								
2,4-Dimethylphenol	U	0.20								
2,4-Dinitrotoluene	U	0.20								
2,6-Dinitrotoluene	U	0.20								
2-Chloronaphthalene	U	0.20								
2-Methylnaphthalene	U	0.10								
4,6-Dinitro-2-methylphenol	U	0.20								
4-Nitrophenol	U	1.0								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Benz(a)anthracene	U	0.10								
Benzo(a)pyrene	U	0.10								
Bis(2-chloroethoxy)methane	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Chrysene	U	0.10								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Nitrobenzene	U	0.20								
N-Nitrosodiphenylamine	U	0.20								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*3.342*	*0.20*	*5*	*0*	*66.8*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.576*	*0.20*	*5*	*0*	*91.5*	*40 - 125*				
Surr: 2-Fluorophenol	*3.643*	*0.20*	*5*	*0*	*72.9*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.605*	*0.20*	*5*	*0*	*92.1*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.631*	*0.20*	*5*	*0*	*72.6*	*41 - 120*				
Surr: Phenol-d6	*3.457*	*0.20*	*5*	*0*	*69.1*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010407

QC BATCH REPORT

Batch ID: 149624 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCS Sample ID: **LCS-149624** Units: **ug/L** Analysis Date: **14-Jan-2020 12:13**
Client ID: Run ID: **SV-6_354345** SeqNo: **5435595** PrepDate: **14-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.509	0.20	5	0	90.2	39 - 127				
2,4-Dimethylphenol	4.222	0.20	5	0	84.4	35 - 120				
2,4-Dinitrotoluene	5.427	0.20	5	0	109	50 - 122				
2,6-Dinitrotoluene	5.379	0.20	5	0	108	50 - 120				
2-Chloronaphthalene	4.621	0.20	5	0	92.4	50 - 120				
2-Methylnaphthalene	4.461	0.10	5	0	89.2	50 - 120				
4,6-Dinitro-2-methylphenol	5.218	0.20	5	0	104	25 - 121				
4-Nitrophenol	4.957	1.0	5	0	99.1	30 - 130				
Acenaphthene	4.67	0.10	5	0	93.4	45 - 120				
Acenaphthylene	4.934	0.10	5	0	98.7	47 - 120				
Anthracene	5.352	0.10	5	0	107	45 - 120				
Benz(a)anthracene	4.963	0.10	5	0	99.3	40 - 120				
Benzo(a)pyrene	4.889	0.10	5	0	97.8	45 - 120				
Bis(2-chloroethoxy)methane	4.092	0.20	5	0	81.8	45 - 120				
Bis(2-ethylhexyl)phthalate	5.661	0.20	5	0	113	40 - 139				
Chrysene	5.074	0.10	5	0	101	43 - 120				
Dibenzofuran	4.846	0.10	5	0	96.9	50 - 120				
Di-n-butyl phthalate	5.647	0.20	5	0	113	45 - 123				
Fluoranthene	4.974	0.10	5	0	99.5	45 - 125				
Fluorene	5.112	0.10	5	0	102	49 - 120				
Naphthalene	4.743	0.10	5	0	94.9	45 - 120				
Nitrobenzene	4	0.20	5	0	80.0	44 - 120				
N-Nitrosodiphenylamine	5.745	0.20	5	0	115	40 - 125				
Pentachlorophenol	3.506	0.20	5	0	70.1	19 - 121				
Phenanthrene	4.852	0.10	5	0	97.0	45 - 121				
Phenol	3.759	0.20	5	0	75.2	20 - 124				
Pyrene	5.037	0.10	5	0	101	40 - 130				
Surr: 2,4,6-Tribromophenol	*4.25*	*0.20*	*5*	*0*	*85.0*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.482*	*0.20*	*5*	*0*	*89.6*	*40 - 125*				
Surr: 2-Fluorophenol	*3.707*	*0.20*	*5*	*0*	*74.1*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.481*	*0.20*	*5*	*0*	*89.6*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.639*	*0.20*	*5*	*0*	*72.8*	*41 - 120*				
Surr: Phenol-d6	*3.704*	*0.20*	*5*	*0*	*74.1*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010407

QC BATCH REPORT

Batch ID: 149624 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCSD Sample ID: **LCSD-149624** Units: **ug/L** Analysis Date: **14-Jan-2020 12:31**
Client ID: Run ID: **SV-6_354345** SeqNo: **5435596** PrepDate: **14-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.829	0.20	5	0	96.6	39 - 127	4.509	6.83	20	
2,4-Dimethylphenol	4.34	0.20	5	0	86.8	35 - 120	4.222	2.76	20	
2,4-Dinitrotoluene	5.633	0.20	5	0	113	50 - 122	5.427	3.73	20	
2,6-Dinitrotoluene	5.545	0.20	5	0	111	50 - 120	5.379	3.02	20	
2-Chloronaphthalene	5.172	0.20	5	0	103	50 - 120	4.621	11.2	20	
2-Methylnaphthalene	4.729	0.10	5	0	94.6	50 - 120	4.461	5.83	20	
4,6-Dinitro-2-methylphenol	5.955	0.20	5	0	119	25 - 121	5.218	13.2	30	
4-Nitrophenol	5.539	1.0	5	0	111	30 - 130	4.957	11.1	20	
Acenaphthene	4.912	0.10	5	0	98.2	45 - 120	4.67	5.04	20	
Acenaphthylene	5.119	0.10	5	0	102	47 - 120	4.934	3.68	20	
Anthracene	5.346	0.10	5	0	107	45 - 120	5.352	0.112	20	
Benz(a)anthracene	5.559	0.10	5	0	111	40 - 120	4.963	11.3	20	
Benzo(a)pyrene	5.228	0.10	5	0	105	45 - 120	4.889	6.72	20	
Bis(2-chloroethoxy)methane	4.243	0.20	5	0	84.9	45 - 120	4.092	3.63	20	
Bis(2-ethylhexyl)phthalate	6.111	0.20	5	0	122	40 - 139	5.661	7.65	20	
Chrysene	5.131	0.10	5	0	103	43 - 120	5.074	1.12	20	
Dibenzofuran	5.09	0.10	5	0	102	50 - 120	4.846	4.91	20	
Di-n-butyl phthalate	6.115	0.20	5	0	122	45 - 123	5.647	7.97	20	
Fluoranthene	5.298	0.10	5	0	106	45 - 125	4.974	6.3	20	
Fluorene	5.396	0.10	5	0	108	49 - 120	5.112	5.4	20	
Naphthalene	4.921	0.10	5	0	98.4	45 - 120	4.743	3.68	20	
Nitrobenzene	4.07	0.20	5	0	81.4	44 - 120	4	1.75	20	
N-Nitrosodiphenylamine	5.768	0.20	5	0	115	40 - 125	5.745	0.406	20	
Pentachlorophenol	3.936	0.20	5	0	78.7	19 - 121	3.506	11.6	20	
Phenanthrene	5.216	0.10	5	0	104	45 - 121	4.852	7.23	20	
Phenol	4.067	0.20	5	0	81.3	20 - 124	3.759	7.87	20	
Pyrene	5.47	0.10	5	0	109	40 - 130	5.037	8.23	20	
Surr: 2,4,6-Tribromophenol	*4.446*	*0.20*	*5*	*0*	*88.9*	*34 - 129*	*4.25*	*4.5*	*20*	
Surr: 2-Fluorobiphenyl	*4.64*	*0.20*	*5*	*0*	*92.8*	*40 - 125*	*4.482*	*3.46*	*20*	
Surr: 2-Fluorophenol	*4.254*	*0.20*	*5*	*0*	*85.1*	*20 - 120*	*3.707*	*13.8*	*20*	
Surr: 4-Terphenyl-d14	*4.914*	*0.20*	*5*	*0*	*98.3*	*40 - 135*	*4.481*	*9.21*	*20*	
Surr: Nitrobenzene-d5	*3.552*	*0.20*	*5*	*0*	*71.0*	*41 - 120*	*3.639*	*2.42*	*20*	
Surr: Phenol-d6	*3.871*	*0.20*	*5*	*0*	*77.4*	*20 - 120*	*3.704*	*4.4*	*20*	

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	HS20010407

QC BATCH REPORT

Batch ID: 149624 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

The following samples were analyzed in this batch:

HS20010407-01	HS20010407-02	HS20010407-03	HS20010407-04
HS20010407-05	HS20010407-06	HS20010407-07	HS20010407-08
HS20010407-09	HS20010407-10	HS20010407-11	HS20010407-12
HS20010407-13	HS20010407-14	HS20010407-15	HS20010407-16

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010407

QC BATCH REPORT

Batch ID: 149670 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-149670** Units: **ug/L** Analysis Date: **15-Jan-2020 10:42**
Client ID: Run ID: **SV-7_354430** SeqNo: **5436172** PrepDate: **15-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	U	0.20								
2,4-Dimethylphenol	U	0.20								
2,4-Dinitrotoluene	U	0.20								
2,6-Dinitrotoluene	U	0.20								
2-Chloronaphthalene	U	0.20								
2-Methylnaphthalene	U	0.10								
4,6-Dinitro-2-methylphenol	U	0.20								
4-Nitrophenol	U	1.0								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Benz(a)anthracene	U	0.10								
Benzo(a)pyrene	U	0.10								
Bis(2-chloroethoxy)methane	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Chrysene	U	0.10								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Nitrobenzene	U	0.20								
N-Nitrosodiphenylamine	U	0.20								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*5.283*	*0.20*	*5*	*0*	*106*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.701*	*0.20*	*5*	*0*	*94.0*	*40 - 125*				
Surr: 2-Fluorophenol	*3.816*	*0.20*	*5*	*0*	*76.3*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.833*	*0.20*	*5*	*0*	*96.7*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.164*	*0.20*	*5*	*0*	*63.3*	*41 - 120*				
Surr: Phenol-d6	*3.547*	*0.20*	*5*	*0*	*70.9*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010407

QC BATCH REPORT

Batch ID: 149670 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCS Sample ID: **LCS-149670** Units: **ug/L** Analysis Date: **15-Jan-2020 11:21**
Client ID: Run ID: **SV-7_354430** SeqNo: **5436173** PrepDate: **15-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	3.467	0.20	5	0	69.3	39 - 127				
2,4-Dimethylphenol	3.994	0.20	5	0	79.9	35 - 120				
2,4-Dinitrotoluene	4.458	0.20	5	0	89.2	50 - 122				
2,6-Dinitrotoluene	4.495	0.20	5	0	89.9	50 - 120				
2-Chloronaphthalene	4.578	0.20	5	0	91.6	50 - 120				
2-Methylnaphthalene	4.353	0.10	5	0	87.1	50 - 120				
4,6-Dinitro-2-methylphenol	4.277	0.20	5	0	85.5	25 - 121				
4-Nitrophenol	4.553	1.0	5	0	91.1	30 - 130				
Acenaphthene	4.129	0.10	5	0	82.6	45 - 120				
Acenaphthylene	4.347	0.10	5	0	86.9	47 - 120				
Anthracene	4.583	0.10	5	0	91.7	45 - 120				
Benz(a)anthracene	4.026	0.10	5	0	80.5	40 - 120				
Benzo(a)pyrene	4.379	0.10	5	0	87.6	45 - 120				
Bis(2-chloroethoxy)methane	3.263	0.20	5	0	65.3	45 - 120				
Bis(2-ethylhexyl)phthalate	4.686	0.20	5	0	93.7	40 - 139				
Chrysene	4.461	0.10	5	0	89.2	43 - 120				
Dibenzofuran	4.41	0.10	5	0	88.2	50 - 120				
Di-n-butyl phthalate	4.842	0.20	5	0	96.8	45 - 123				
Fluoranthene	4.447	0.10	5	0	88.9	45 - 125				
Fluorene	4.442	0.10	5	0	88.8	49 - 120				
Naphthalene	4.37	0.10	5	0	87.4	45 - 120				
Nitrobenzene	2.972	0.20	5	0	59.4	44 - 120				
N-Nitrosodiphenylamine	4.559	0.20	5	0	91.2	40 - 125				
Pentachlorophenol	2.864	0.20	5	0	57.3	19 - 121				
Phenanthrene	4.457	0.10	5	0	89.1	45 - 121				
Phenol	3.476	0.20	5	0	69.5	20 - 124				
Pyrene	4.412	0.10	5	0	88.2	40 - 130				
Surr: 2,4,6-Tribromophenol	*5.275*	*0.20*	*5*	*0*	*105*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.513*	*0.20*	*5*	*0*	*90.3*	*40 - 125*				
Surr: 2-Fluorophenol	*3.534*	*0.20*	*5*	*0*	*70.7*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.504*	*0.20*	*5*	*0*	*90.1*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.162*	*0.20*	*5*	*0*	*63.2*	*41 - 120*				
Surr: Phenol-d6	*3.471*	*0.20*	*5*	*0*	*69.4*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010407

QC BATCH REPORT

Batch ID: 149670 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCSD Sample ID: **LCSD-149670** Units: **ug/L** Analysis Date: **15-Jan-2020 11:40**
Client ID: Run ID: **SV-7_354430** SeqNo: **5436174** PrepDate: **15-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	3.453	0.20	5	0	69.1	39 - 127	3.467	0.41	20	
2,4-Dimethylphenol	3.884	0.20	5	0	77.7	35 - 120	3.994	2.81	20	
2,4-Dinitrotoluene	4.441	0.20	5	0	88.8	50 - 122	4.458	0.366	20	
2,6-Dinitrotoluene	4.362	0.20	5	0	87.2	50 - 120	4.495	3.01	20	
2-Chloronaphthalene	4.546	0.20	5	0	90.9	50 - 120	4.578	0.706	20	
2-Methylnaphthalene	4.339	0.10	5	0	86.8	50 - 120	4.353	0.309	20	
4,6-Dinitro-2-methylphenol	4.522	0.20	5	0	90.4	25 - 121	4.277	5.58	30	
4-Nitrophenol	4.659	1.0	5	0	93.2	30 - 130	4.553	2.31	20	
Acenaphthene	4.083	0.10	5	0	81.7	45 - 120	4.129	1.1	20	
Acenaphthylene	4.304	0.10	5	0	86.1	47 - 120	4.347	1	20	
Anthracene	4.551	0.10	5	0	91.0	45 - 120	4.583	0.688	20	
Benz(a)anthracene	4.096	0.10	5	0	81.9	40 - 120	4.026	1.71	20	
Benzo(a)pyrene	4.392	0.10	5	0	87.8	45 - 120	4.379	0.304	20	
Bis(2-chloroethoxy)methane	3.282	0.20	5	0	65.6	45 - 120	3.263	0.583	20	
Bis(2-ethylhexyl)phthalate	4.83	0.20	5	0	96.6	40 - 139	4.686	3.03	20	
Chrysene	4.427	0.10	5	0	88.5	43 - 120	4.461	0.775	20	
Dibenzofuran	4.305	0.10	5	0	86.1	50 - 120	4.41	2.43	20	
Di-n-butyl phthalate	4.945	0.20	5	0	98.9	45 - 123	4.842	2.11	20	
Fluoranthene	4.517	0.10	5	0	90.3	45 - 125	4.447	1.55	20	
Fluorene	4.431	0.10	5	0	88.6	49 - 120	4.442	0.249	20	
Naphthalene	4.337	0.10	5	0	86.7	45 - 120	4.37	0.757	20	
Nitrobenzene	2.885	0.20	5	0	57.7	44 - 120	2.972	2.99	20	
N-Nitrosodiphenylamine	4.481	0.20	5	0	89.6	40 - 125	4.559	1.74	20	
Pentachlorophenol	2.789	0.20	5	0	55.8	19 - 121	2.864	2.66	20	
Phenanthrene	4.556	0.10	5	0	91.1	45 - 121	4.457	2.19	20	
Phenol	3.665	0.20	5	0	73.3	20 - 124	3.476	5.3	20	
Pyrene	4.528	0.10	5	0	90.6	40 - 130	4.412	2.6	20	
Surr: 2,4,6-Tribromophenol	*5.124*	*0.20*	*5*	*0*	*102*	*34 - 129*	*5.275*	*2.9*	*20*	
Surr: 2-Fluorobiphenyl	*4.48*	*0.20*	*5*	*0*	*89.6*	*40 - 125*	*4.513*	*0.72*	*20*	
Surr: 2-Fluorophenol	*3.744*	*0.20*	*5*	*0*	*74.9*	*20 - 120*	*3.534*	*5.78*	*20*	
Surr: 4-Terphenyl-d14	*4.601*	*0.20*	*5*	*0*	*92.0*	*40 - 135*	*4.504*	*2.14*	*20*	
Surr: Nitrobenzene-d5	*3.042*	*0.20*	*5*	*0*	*60.8*	*41 - 120*	*3.162*	*3.86*	*20*	
Surr: Phenol-d6	*3.574*	*0.20*	*5*	*0*	*71.5*	*20 - 120*	*3.471*	*2.92*	*20*	

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	HS20010407

QC BATCH REPORT

Batch ID: 149670 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

The following samples were analyzed in this batch:

HS20010407-17	HS20010407-18	HS20010407-20	HS20010407-21
HS20010407-22	HS20010407-23	HS20010407-24	HS20010407-25
HS20010407-26			

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010407

QC BATCH REPORT

Batch ID: R354349 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200113** Units: **ug/L** Analysis Date: **13-Jan-2020 23:49**
Client ID: Run ID: **VOA2_354349** SeqNo: **5434111** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*48.84*	*1.0*	*50*	*0*	*97.7*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*47.45*	*1.0*	*50*	*0*	*94.9*	*82 - 115*				
Surr: Dibromofluoromethane	*50.51*	*1.0*	*50*	*0*	*101*	*73 - 126*				
Surr: Toluene-d8	*50.14*	*1.0*	*50*	*0*	*100*	*81 - 120*				

LCS Sample ID: **VLCSW-200113** Units: **ug/L** Analysis Date: **13-Jan-2020 23:00**
Client ID: Run ID: **VOA2_354349** SeqNo: **5434110** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	18.96	1.0	20	0	94.8	70 - 124				
Benzene	18.2	1.0	20	0	91.0	74 - 120				
Chlorobenzene	19.65	1.0	20	0	98.2	76 - 113				
Ethylbenzene	19.26	1.0	20	0	96.3	77 - 117				
Methylene chloride	18.51	2.0	20	0	92.5	70 - 127				
Toluene	20.36	1.0	20	0	102	77 - 118				
Xylenes, Total	57.72	1.0	60	0	96.2	75 - 122				
Surr: 1,2-Dichloroethane-d4	*47.89*	*1.0*	*50*	*0*	*95.8*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*48.36*	*1.0*	*50*	*0*	*96.7*	*82 - 115*				
Surr: Dibromofluoromethane	*49.14*	*1.0*	*50*	*0*	*98.3*	*73 - 126*				
Surr: Toluene-d8	*49.24*	*1.0*	*50*	*0*	*98.5*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010407

QC BATCH REPORT

Batch ID: R354349 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS20010407-02MS** Units: **ug/L** Analysis Date: **14-Jan-2020 01:51**
Client ID: **WG-1620-MW51A-20200109** Run ID: **VOA2_354349** SeqNo: **5434116** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	17.57	1.0	20	0	87.8	70 - 127				
Benzene	17.81	1.0	20	0	89.0	70 - 127				
Chlorobenzene	18.54	1.0	20	0	92.7	70 - 114				
Ethylbenzene	18.26	1.0	20	0	91.3	70 - 124				
Methylene chloride	16.96	2.0	20	0	84.8	70 - 128				
Toluene	19.27	1.0	20	0	96.3	70 - 123				
Xylenes, Total	55.25	1.0	60	0	92.1	70 - 130				
Surr: 1,2-Dichloroethane-d4	*48.95*	*1.0*	*50*	*0*	*97.9*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.03*	*1.0*	*50*	*0*	*98.1*	*81 - 113*				
Surr: Dibromofluoromethane	*50.01*	*1.0*	*50*	*0*	*100*	*77 - 123*				
Surr: Toluene-d8	*48.69*	*1.0*	*50*	*0*	*97.4*	*82 - 127*				

MSD Sample ID: **HS20010407-02MSD** Units: **ug/L** Analysis Date: **14-Jan-2020 02:16**
Client ID: **WG-1620-MW51A-20200109** Run ID: **VOA2_354349** SeqNo: **5434117** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	17.38	1.0	20	0	86.9	70 - 127	17.57	1.05	20	
Benzene	17.31	1.0	20	0	86.5	70 - 127	17.81	2.84	20	
Chlorobenzene	18.55	1.0	20	0	92.8	70 - 114	18.54	0.0788	20	
Ethylbenzene	18.19	1.0	20	0	91.0	70 - 124	18.26	0.356	20	
Methylene chloride	15.63	2.0	20	0	78.2	70 - 128	16.96	8.15	20	
Toluene	19.36	1.0	20	0	96.8	70 - 123	19.27	0.472	20	
Xylenes, Total	55.39	1.0	60	0	92.3	70 - 130	55.25	0.244	20	
Surr: 1,2-Dichloroethane-d4	*47.78*	*1.0*	*50*	*0*	*95.6*	*70 - 126*	*48.95*	*2.43*	*20*	
Surr: 4-Bromofluorobenzene	*48.28*	*1.0*	*50*	*0*	*96.6*	*81 - 113*	*49.03*	*1.55*	*20*	
Surr: Dibromofluoromethane	*49.18*	*1.0*	*50*	*0*	*98.4*	*77 - 123*	*50.01*	*1.67*	*20*	
Surr: Toluene-d8	*49.56*	*1.0*	*50*	*0*	*99.1*	*82 - 127*	*48.69*	*1.77*	*20*	

The following samples were analyzed in this batch:

HS20010407-02	HS20010407-03	HS20010407-07	HS20010407-08
HS20010407-10	HS20010407-22	HS20010407-23	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010407

QC BATCH REPORT

Batch ID: R354396 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200114** Units: **ug/L** Analysis Date: **14-Jan-2020 14:53**
Client ID: Run ID: **VOA2_354396** SeqNo: **5435103** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*48.5*	*1.0*	*50*	*0*	*97.0*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*47.21*	*1.0*	*50*	*0*	*94.4*	*82 - 115*				
Surr: Dibromofluoromethane	*49.74*	*1.0*	*50*	*0*	*99.5*	*73 - 126*				
Surr: Toluene-d8	*50.39*	*1.0*	*50*	*0*	*101*	*81 - 120*				

LCS Sample ID: **VLCSW-200214** Units: **ug/L** Analysis Date: **14-Jan-2020 14:04**
Client ID: Run ID: **VOA2_354396** SeqNo: **5435102** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	18	1.0	20	0	90.0	70 - 124				
Benzene	17.81	1.0	20	0	89.1	74 - 120				
Chlorobenzene	18.74	1.0	20	0	93.7	76 - 113				
Ethylbenzene	18.45	1.0	20	0	92.3	77 - 117				
Methylene chloride	18.59	2.0	20	0	93.0	70 - 127				
Toluene	19.5	1.0	20	0	97.5	77 - 118				
Vinyl chloride	17.32	1.0	20	0	86.6	70 - 130				
Xylenes, Total	56.46	1.0	60	0	94.1	75 - 122				
Surr: 1,2-Dichloroethane-d4	*49.52*	*1.0*	*50*	*0*	*99.0*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*48.68*	*1.0*	*50*	*0*	*97.4*	*82 - 115*				
Surr: Dibromofluoromethane	*49.44*	*1.0*	*50*	*0*	*98.9*	*73 - 126*				
Surr: Toluene-d8	*48.75*	*1.0*	*50*	*0*	*97.5*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010407

QC BATCH REPORT

Batch ID: R354396 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS20010411-10MS** Units: **ug/L** Analysis Date: **14-Jan-2020 18:13**
Client ID: Run ID: **VOA2_354396** SeqNo: **5435111** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.57	1.0	20	0	82.9	70 - 127				
Benzene	18.27	1.0	20	0.9903	86.4	70 - 127				
Chlorobenzene	17.64	1.0	20	0	88.2	70 - 114				
Ethylbenzene	22.73	1.0	20	5.13	88.0	70 - 124				
Methylene chloride	16.6	2.0	20	0	83.0	70 - 128				
Toluene	19.16	1.0	20	0	95.8	70 - 123				
Vinyl chloride	16.93	1.0	20	0	84.6	70 - 130				
Xylenes, Total	344.6	1.0	60	319.7	41.5	70 - 130				SO
Surr: 1,2-Dichloroethane-d4	*48.09*	*1.0*	*50*	*0*	*96.2*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*52.3*	*1.0*	*50*	*0*	*105*	*81 - 113*				
Surr: Dibromofluoromethane	*48.53*	*1.0*	*50*	*0*	*97.1*	*77 - 123*				
Surr: Toluene-d8	*47.83*	*1.0*	*50*	*0*	*95.7*	*82 - 127*				

MSD Sample ID: **HS20010411-10MSD** Units: **ug/L** Analysis Date: **14-Jan-2020 18:37**
Client ID: Run ID: **VOA2_354396** SeqNo: **5435112** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.84	1.0	20	0	84.2	70 - 127	16.57	1.58	20	
Benzene	17.96	1.0	20	0.9903	84.9	70 - 127	18.27	1.68	20	
Chlorobenzene	17.63	1.0	20	0	88.1	70 - 114	17.64	0.0493	20	
Ethylbenzene	22.1	1.0	20	5.13	84.8	70 - 124	22.73	2.82	20	
Methylene chloride	16.24	2.0	20	0	81.2	70 - 128	16.6	2.19	20	
Toluene	18.83	1.0	20	0	94.2	70 - 123	19.16	1.72	20	
Vinyl chloride	16.95	1.0	20	0	84.8	70 - 130	16.93	0.151	20	
Xylenes, Total	335.7	1.0	60	319.7	26.5	70 - 130	344.6	2.64	20	SO
Surr: 1,2-Dichloroethane-d4	*47.45*	*1.0*	*50*	*0*	*94.9*	*70 - 126*	*48.09*	*1.33*	*20*	
Surr: 4-Bromofluorobenzene	*51.4*	*1.0*	*50*	*0*	*103*	*81 - 113*	*52.3*	*1.73*	*20*	
Surr: Dibromofluoromethane	*48*	*1.0*	*50*	*0*	*96.0*	*77 - 123*	*48.53*	*1.09*	*20*	
Surr: Toluene-d8	*48.3*	*1.0*	*50*	*0*	*96.6*	*82 - 127*	*47.83*	*0.978*	*20*	

The following samples were analyzed in this batch: HS20010407-01 HS20010407-04 HS20010407-06 HS20010407-13 HS20010407-14 HS20010407-18

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010407

QC BATCH REPORT

Batch ID: R354399 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200114** Units: **ug/L** Analysis Date: **14-Jan-2020 12:50**
Client ID: Run ID: **VOA4_354399** SeqNo: **5435154** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*57.34*	*1.0*	*50*	*0*	*115*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*49.44*	*1.0*	*50*	*0*	*98.9*	*82 - 115*				
Surr: Dibromofluoromethane	*52.52*	*1.0*	*50*	*0*	*105*	*73 - 126*				
Surr: Toluene-d8	*51.53*	*1.0*	*50*	*0*	*103*	*81 - 120*				

LCS Sample ID: **VLCSW-200114** Units: **ug/L** Analysis Date: **14-Jan-2020 12:01**
Client ID: Run ID: **VOA4_354399** SeqNo: **5435153** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	23.08	1.0	20	0	115	70 - 124				
Benzene	20.28	1.0	20	0	101	74 - 120				
Chlorobenzene	18.89	1.0	20	0	94.5	76 - 113				
Ethylbenzene	19.37	1.0	20	0	96.8	77 - 117				
Methylene chloride	21.61	2.0	20	0	108	70 - 127				
Toluene	21.14	1.0	20	0	106	77 - 118				
Vinyl chloride	21.93	1.0	20	0	110	70 - 130				
Xylenes, Total	61.14	1.0	60	0	102	75 - 122				
Surr: 1,2-Dichloroethane-d4	*56.63*	*1.0*	*50*	*0*	*113*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*50.69*	*1.0*	*50*	*0*	*101*	*82 - 115*				
Surr: Dibromofluoromethane	*53.13*	*1.0*	*50*	*0*	*106*	*73 - 126*				
Surr: Toluene-d8	*51.51*	*1.0*	*50*	*0*	*103*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010407

QC BATCH REPORT

Batch ID: R354399 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS20010411-05MS** Units: **ug/L** Analysis Date: **14-Jan-2020 15:47**
Client ID: Run ID: **VOA4_354399** SeqNo: **5435161** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Dichloroethane	20.56	1.0	20	0	103	70 - 127				
Benzene	19.01	1.0	20	0	95.0	70 - 127				
Chlorobenzene	17.18	1.0	20	0	85.9	70 - 114				
Ethylbenzene	20.13	1.0	20	0	101	70 - 124				
Methylene chloride	17.46	2.0	20	0	87.3	70 - 128				
Toluene	22.65	1.0	20	0	113	70 - 123				
Vinyl chloride	24.4	1.0	20	0	122	70 - 130				
Xylenes, Total	69.5	1.0	60	0	116	70 - 130				
Surr: 1,2-Dichloroethane-d4	*57.78*	*1.0*	*50*	*0*	*116*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*51.46*	*1.0*	*50*	*0*	*103*	*81 - 113*				
Surr: Dibromofluoromethane	*54.66*	*1.0*	*50*	*0*	*109*	*77 - 123*				
Surr: Toluene-d8	*50.14*	*1.0*	*50*	*0*	*100*	*82 - 127*				

MSD Sample ID: **HS20010411-05MSD** Units: **ug/L** Analysis Date: **14-Jan-2020 16:11**
Client ID: Run ID: **VOA4_354399** SeqNo: **5435162** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Dichloroethane	22.07	1.0	20	0	110	70 - 127	20.56	7.1	20	
Benzene	19.34	1.0	20	0	96.7	70 - 127	19.01	1.72	20	
Chlorobenzene	17.77	1.0	20	0	88.8	70 - 114	17.18	3.33	20	
Ethylbenzene	18.83	1.0	20	0	94.2	70 - 124	20.13	6.64	20	
Methylene chloride	17.52	2.0	20	0	87.6	70 - 128	17.46	0.372	20	
Toluene	21.23	1.0	20	0	106	70 - 123	22.65	6.47	20	
Vinyl chloride	23.62	1.0	20	0	118	70 - 130	24.4	3.26	20	
Xylenes, Total	63.98	1.0	60	0	107	70 - 130	69.5	8.28	20	
Surr: 1,2-Dichloroethane-d4	*57.39*	*1.0*	*50*	*0*	*115*	*70 - 126*	*57.78*	*0.68*	*20*	
Surr: 4-Bromofluorobenzene	*51.73*	*1.0*	*50*	*0*	*103*	*81 - 113*	*51.46*	*0.515*	*20*	
Surr: Dibromofluoromethane	*54.13*	*1.0*	*50*	*0*	*108*	*77 - 123*	*54.66*	*0.963*	*20*	
Surr: Toluene-d8	*50.24*	*1.0*	*50*	*0*	*100*	*82 - 127*	*50.14*	*0.198*	*20*	

The following samples were analyzed in this batch: HS20010407-11 HS20010407-12 HS20010407-25 HS20010407-26

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010407

QC BATCH REPORT

Batch ID: R354465 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200115** Units: **ug/L** Analysis Date: **15-Jan-2020 11:45**
Client ID: Run ID: **VOA2_354465** SeqNo: **5436426** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*49.42*	*1.0*	*50*	*0*	*98.8*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*47.35*	*1.0*	*50*	*0*	*94.7*	*82 - 115*				
Surr: Dibromofluoromethane	*50.91*	*1.0*	*50*	*0*	*102*	*73 - 126*				
Surr: Toluene-d8	*50.78*	*1.0*	*50*	*0*	*102*	*81 - 120*				

LCS Sample ID: **VLCSW-200215** Units: **ug/L** Analysis Date: **15-Jan-2020 10:56**
Client ID: Run ID: **VOA2_354465** SeqNo: **5436425** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	18.44	1.0	20	0	92.2	70 - 124				
Benzene	17.88	1.0	20	0	89.4	74 - 120				
Chlorobenzene	18.53	1.0	20	0	92.6	76 - 113				
Ethylbenzene	18.15	1.0	20	0	90.8	77 - 117				
Methylene chloride	19.11	2.0	20	0	95.6	70 - 127				
Toluene	19.34	1.0	20	0	96.7	77 - 118				
Vinyl chloride	17.21	1.0	20	0	86.0	70 - 130				
Xylenes, Total	54.69	1.0	60	0	91.2	75 - 122				
Surr: 1,2-Dichloroethane-d4	*48.66*	*1.0*	*50*	*0*	*97.3*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*48.37*	*1.0*	*50*	*0*	*96.7*	*82 - 115*				
Surr: Dibromofluoromethane	*49.09*	*1.0*	*50*	*0*	*98.2*	*73 - 126*				
Surr: Toluene-d8	*48.37*	*1.0*	*50*	*0*	*96.7*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010407

QC BATCH REPORT

Batch ID: R354465 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS20010407-24MS** Units: **ug/L** Analysis Date: **15-Jan-2020 16:50**
Client ID: **WG-1620-MW44A-20200109** Run ID: **VOA2_354465** SeqNo: **5436438** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.97	1.0	20	0	84.8	70 - 127				
Benzene	17.78	1.0	20	0	88.9	70 - 127				
Chlorobenzene	17.83	1.0	20	0	89.2	70 - 114				
Ethylbenzene	17.86	1.0	20	0	89.3	70 - 124				
Methylene chloride	16.86	2.0	20	0	84.3	70 - 128				
Toluene	19.06	1.0	20	0	95.3	70 - 123				
Vinyl chloride	17.26	1.0	20	0	86.3	70 - 130				
Xylenes, Total	54.2	1.0	60	0	90.3	70 - 130				
Surr: 1,2-Dichloroethane-d4	*48.67*	*1.0*	*50*	*0*	*97.3*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*48.96*	*1.0*	*50*	*0*	*97.9*	*81 - 113*				
Surr: Dibromofluoromethane	*49.55*	*1.0*	*50*	*0*	*99.1*	*77 - 123*				
Surr: Toluene-d8	*47.85*	*1.0*	*50*	*0*	*95.7*	*82 - 127*				

MSD Sample ID: **HS20010407-24MSD** Units: **ug/L** Analysis Date: **15-Jan-2020 17:15**
Client ID: **WG-1620-MW44A-20200109** Run ID: **VOA2_354465** SeqNo: **5436439** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	17.39	1.0	20	0	87.0	70 - 127	16.97	2.48	20	
Benzene	17.36	1.0	20	0	86.8	70 - 127	17.78	2.36	20	
Chlorobenzene	18.08	1.0	20	0	90.4	70 - 114	17.83	1.36	20	
Ethylbenzene	18.24	1.0	20	0	91.2	70 - 124	17.86	2.1	20	
Methylene chloride	16.44	2.0	20	0	82.2	70 - 128	16.86	2.52	20	
Toluene	19.31	1.0	20	0	96.5	70 - 123	19.06	1.3	20	
Vinyl chloride	16.59	1.0	20	0	82.9	70 - 130	17.26	4	20	
Xylenes, Total	54.24	1.0	60	0	90.4	70 - 130	54.2	0.0713	20	
Surr: 1,2-Dichloroethane-d4	*47.49*	*1.0*	*50*	*0*	*95.0*	*70 - 126*	*48.67*	*2.44*	*20*	
Surr: 4-Bromofluorobenzene	*48.84*	*1.0*	*50*	*0*	*97.7*	*81 - 113*	*48.96*	*0.246*	*20*	
Surr: Dibromofluoromethane	*48.36*	*1.0*	*50*	*0*	*96.7*	*77 - 123*	*49.55*	*2.43*	*20*	
Surr: Toluene-d8	*48.82*	*1.0*	*50*	*0*	*97.6*	*82 - 127*	*47.85*	*2.01*	*20*	

The following samples were analyzed in this batch:

HS20010407-05	HS20010407-09	HS20010407-15	HS20010407-16
HS20010407-17	HS20010407-20	HS20010407-21	HS20010407-24
HS20010407-27			

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20010407**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

ALS Houston, US Date: 20-Jan-20

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20010407

Date/Time Received: **10-Jan-2020 09:35**
Received by: **NDR**

Checklist completed by: *Nilesh D. Ranchod* eSignature — 10-Jan-2020 Date

Reviewed by: *Corey Grandits* eSignature — 13-Jan-2020 Date

Matrices: **Water**

Carrier name: **Client**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	3 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:206389/206388/206386
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s): 0.8C/0.8C,1.2C/1.2C,1.0C/1.0C,1.0C/1.0C,0.8C/0.8C,0.8C/0.8C UC/C — IR # 25

Cooler(s)/Kit(s): 45678/45710/45492/45533/44308/45063

Date/Time sample(s) sent to storage: 01/10/2020 18:00

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☑	N/A ☐
pH adjusted?	Yes ☑	No ☐	N/A ☐

pH adjusted by: Si Ma

Login Notes: Sx WG1620-MW49A-20200107, WG-1620-MW-80B-20200107 No TPH Vials Rec'd COC= 9 Rec'd =6 Logged in 2 vials for VOC 1 vial for TPH .
Sx Date differ WG-1620-FB03-20200109 COC= 1/8/20 Label =1/9/20.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20010407
Date/Time Received: **10-Jan-2020 09:35**
Received by: **NDR**

Checklist completed by: *Nilesh D. Ranchod* eSignature — 10-Jan-2020 Date
Reviewed by: *Corey Grandits* eSignature — 13-Jan-2020 Date

Matrices: **Water**
Carrier name: **Client**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	C		
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	01/10/2020 18:00		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☑	N/A ☐
pH adjusted?	Yes ☑	No ☐	N/A ☐
pH adjusted by:	Si Ma		

Login Notes:
SX # WG-1620-MW18C-20200108
Metal pH>(7) Preserved with 0.5mil HNO3
on 01/10/2020 @ 01:30pm
Lot #312090209 By Sima
After preserved pH (1)

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

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Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

COC ID: 206389

HS20010407

Golder Associates Inc.
Houston TX-Wood Preserving Works

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-07-Rev0 SR 92688
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address	

ALS Project Manager:

A 8260_LL_W (5632528 Volatile Organics Site Specific)
B 8260_LL_W (5632528 VOC Site Specific + V.C.)
C 8270_LOW_W (5632532 SemiVolatiles Site specific)
D ICP_TW (5636002 5652646 Metals - As)
E TPH TX 1005
F
G
H
I
J

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~WG-1620-TB0[illegible]20200109~~	—	—	~~Water~~		2		X									
2	WG-1620-MW19C-20200109	1-9-20	1045	W		6		X	X	X							
3	WG-1620-MW51A-20200109		1150	W		9	X		X	X	X						
4	WG-1620-MW51C-20200109		1240	W		9	X		X	X	X						
5	WG-1620-MW85C-20200109		1335	W		9	X		X	X	X						
6	WG-1620-MW77A-20200109		1425	W		9	X		X	X	X						
7	WG-1620-MW76C-20200109		1520	W		9	X		X	X	X						
8	WG-1620-MW81B-20200109		1620	W		9	X		X	X	X						
9	WG-1620-MW50A-20200109		1715	W		9	X		X	X	X						
10	WG-1620-MW49A-20200107	1-7-20	1310	W		9		X	X	X	X						

Sampler(s) Please Print & Sign: JOHN BRAYDON

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) ☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 -hour ☐ Other

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
	1-10-20	0935	
Relinquished by:	Date:	Time:	Received by (Laboratory):
	1.10.20	09.35	NA
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.
45673	0.3
45710	1.2
45492	1.0
45535	1.0
44303	0.8

QC Package: (Check One Box Below)
☐ Level II Std QC
☐ Level III Std QC/Raw Data
☐ Level IV SW846/CLP
☐ Other
☒ TRRP Checklist
☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Holland, MI +1 616 399 6070

Chain of Custody Form

Page 2 of ____

COC ID: 206388

HS20010407

Golder Associates Inc.
Houston TX-Wood Preserving Works

Customer Information		Project Information		ALS Project Manager:
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	
Work Order		Project Number	1620-07-Rev0 SR 92688	
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P	
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	
Phone	(512) 671-3434	Phone		
Fax	(512) 671-3446	Fax		
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address		

A 8260_LL_W (5632528 Volatile Organics Site Specific)
B 8260_LL_W (5632528 VOC Site Specific + V.C.)
C 8270_LOW_W (5632532 SemiVolatiles Site specific)
D ICP_TW (5636002 5652646 Metals - As)
E TPH TX1005
F
G
H
I
J

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~WG-1620-TB0__202001~~			~~Water~~	1	2		X									
2	WG-1620-MW80B-20200107	1-7-20	1600	W		9	X		X	X	X						
3	WG-1620-FB01-20200107	1-7-20	1630	W		6	X		X	X	~~X~~ JB						
4	WG-1620-FB02-20200108	1-8-20	0900	W		6	X		X	X	~~X~~ JB						
5	WG-1620-MW18C-20200108		1010	W		6		X	X	X							
6	WG-1620-MW18A-20200108		1110	W		6		X	X	X							
7	WG-1620-MW58A-20200108		1215	W		6		X	X	X							
8	WG-1620-MW57A-20200108		1455	W		6		X	X	X							
9	WG-1620-MW57B-20200108		1330	W		6	X		X	X							
10	WG-1620-FB03-20200109		0730	W		6		X	X	X							

Sampler(s) Please Print & Sign: JOHN BRAYTON

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 -hour [ ] Other ____

Results Due Date:

Relinquished by: Date: 1-10-20 Time: 0935

Relinquished by: Date: 1.10.20 Time: 09.35

Received by:

Received by (Laboratory): N.A.

Checked by (Laboratory):

Logged by (Laboratory): Date: Time:

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[X] TRRP Checklist
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Holland, MI +1 616 399 6070

Chain of Custody Form

COC ID: 206386

HS20010407

Golder Associates Inc.
Houston TX-Wood Preserving Works

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-07-RevO SR 92688
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address	

ALS Project Manager:

A 8260_LL_W (5632528 Volatile Organics Site Specific)
B 8260_LL_W (5632528 VOC Site Specific + V.C.)
C 8270_LOW_W (5632532 SemiVolatiles Site specific)
D ICP_TW (5636002 5652646 Metals - As)
E TPH TX 1005
F
G
H
I
J

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~MW-1620-TB0__202001~~																
2	~~WG-1620-MW49B-20200109~~	~~1-7-20~~	~~1430~~	Water	1	2		X									
3	WG-1620-MW72B-20200109	1-9-20	1430	W		9	X	X	X	X							WILL RESAMPLE WELL ONCE DNAPL CLEARS SAMPLE
4	WG-1620-MW23C-20200109		0835	W		6	X		X	X							
5	WG-1620-MW53C-20200109		0940	W		6	X		X	X							
6	WG-1620-MW54C-20200109		1115	W		6	X		X	X							
7	WG-1620-MW44A-20200109		1235	W		6	X		X	X							
8	WG-1620-MW36B-20200109		1330	W		6	X		X	X							
9	WG-1620-MW36A-20200109		1440	W		6		X	X	X							
10	WG-1620-TB01-20200109		1600	W		6		X	X	X							
				W		2		X	X	X							

Sampler(s) Please Print & Sign
JOHN BRADLEY

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Notes: UPRR Houston MWPW

	Date:	Time:	
Relinquished by:	1-10-20	0935	Received by:
Relinquished by:	1.10.20	07.35	Received by (Laboratory): Nin
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[X] TRRP Checklist
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the
3. The Chain of Custody is a legal document. All information must be completed accurately.

Copyright 2011

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January 20, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20010442**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 7 sample(s) on Jan 10, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: DAYNA.FISHER
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20010442**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20010442**	

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data								
Laboratory Name: ALS Laboratory Group			LRC Date: 01/20/2020					
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20010442					
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 149618, 149706, R354396, R354484					
#[1]	A[2]	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?		X			1
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			2
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 01/20/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20010442				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 149618, 149706, R354396, R354484				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?	X				
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 01/20/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20010442
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 149618, 149706, R354396, R354484

ER#[5]	Description
1	Semivolatiles by Method SW8270, Sample WG-1620-MW35B-20200110, WG-1620-MW83B-20200110: surrogate recoveries could not be determined due to dilution below the calibration range.
2	Batch R354396, Volatiles by Method SW8260, Sample HS20010411-10, MS and MSD were performed on an unrelated sample

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20010442

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20010442-02	WQ-1620-TB01-20200110	Water	CG-121719-74	10-Jan-2020 14:00	10-Jan-2020 15:11	☐
HS20010442-03	WG-1620-FD01-20200110	Water		10-Jan-2020 00:00	10-Jan-2020 15:11	☐
HS20010442-04	WG-1620-MW35B-20200110	Water		10-Jan-2020 12:45	10-Jan-2020 15:11	☐
HS20010442-05	WG-1620-MW35A-20200110	Water		10-Jan-2020 11:20	10-Jan-2020 15:11	☐
HS20010442-06	WG-1620-FB04-20200110	Water		10-Jan-2020 10:30	10-Jan-2020 15:11	☐
HS20010442-07	WG-1620-MW83B-20200110	Water		10-Jan-2020 10:00	10-Jan-2020 15:11	☐
HS20010442-08	WG-1620-MW83C-20200110	Water		10-Jan-2020 09:00	10-Jan-2020 15:11	☐

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20010442
Sample ID: WQ-1620-TB01-20200110
Lab ID:HS20010442-02
Collection Date: 10-Jan-2020 14:00
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	14-Jan-2020 22:42
Benzene		U	0.00020	0.0010	mg/L	1	14-Jan-2020 22:42
Chlorobenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2020 22:42
Ethylbenzene		U	0.00030	0.0010	mg/L	1	14-Jan-2020 22:42
Methylene chloride		U	0.0010	0.0020	mg/L	1	14-Jan-2020 22:42
Toluene		U	0.00020	0.0010	mg/L	1	14-Jan-2020 22:42
Vinyl chloride		U	0.00020	0.0010	mg/L	1	14-Jan-2020 22:42
Xylenes, Total		U	0.00030	0.0010	mg/L	1	14-Jan-2020 22:42
Surr: 1,2-Dichloroethane-d4	*97.4*			*70-126*	*%REC*	*1*	*14-Jan-2020 22:42*
Surr: 4-Bromofluorobenzene	*93.4*			*81-113*	*%REC*	*1*	*14-Jan-2020 22:42*
Surr: Dibromofluoromethane	*100*			*77-123*	*%REC*	*1*	*14-Jan-2020 22:42*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*14-Jan-2020 22:42*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FD01-20200110
Collection Date: 10-Jan-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20010442
Lab ID:HS20010442-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	15-Jan-2020 15:45
Benzene	**0.016**		**0.00020**	**0.0010**	**mg/L**	1	15-Jan-2020 15:45
Chlorobenzene	U		0.00030	0.0010	mg/L	1	15-Jan-2020 15:45
Ethylbenzene	**0.083**		**0.00030**	**0.0010**	**mg/L**	1	15-Jan-2020 15:45
Methylene chloride	U		0.0010	0.0020	mg/L	1	15-Jan-2020 15:45
Toluene	U		0.00020	0.0010	mg/L	1	15-Jan-2020 15:45
Vinyl chloride	U		0.00020	0.0010	mg/L	1	15-Jan-2020 15:45
Xylenes, Total	**0.041**		**0.00030**	**0.0010**	**mg/L**	1	15-Jan-2020 15:45
Surr: 1,2-Dichloroethane-d4	*121*			*70-126*	*%REC*	*1*	*15-Jan-2020 15:45*
Surr: 4-Bromofluorobenzene	*102*			*81-113*	*%REC*	*1*	*15-Jan-2020 15:45*
Surr: Dibromofluoromethane	*110*			*77-123*	*%REC*	*1*	*15-Jan-2020 15:45*
Surr: Toluene-d8	*99.1*			*82-127*	*%REC*	*1*	*15-Jan-2020 15:45*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FD01-20200110
Collection Date: 10-Jan-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20010442
Lab ID:HS20010442-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 16-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	20-Jan-2020 09:44
2,4-Dimethylphenol	**0.00021**		**0.000040**	**0.00020**	**mg/L**	1	20-Jan-2020 09:44
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	20-Jan-2020 09:44
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	20-Jan-2020 09:44
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	20-Jan-2020 09:44
2-Methylnaphthalene	**0.062**		**0.00019**	**0.0010**	**mg/L**	10	20-Jan-2020 10:03
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	20-Jan-2020 09:44
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	20-Jan-2020 09:44
Acenaphthene	**0.033**		**0.00027**	**0.0010**	**mg/L**	10	20-Jan-2020 10:03
Acenaphthylene	**0.00027**		**0.000015**	**0.00010**	**mg/L**	1	20-Jan-2020 09:44
Anthracene	**0.0018**		**0.000014**	**0.00010**	**mg/L**	1	20-Jan-2020 09:44
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	20-Jan-2020 09:44
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	20-Jan-2020 09:44
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	20-Jan-2020 09:44
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	20-Jan-2020 09:44
Chrysene	U		0.000021	0.00010	mg/L	1	20-Jan-2020 09:44
Dibenzofuran	**0.031**		**0.00020**	**0.0010**	**mg/L**	10	20-Jan-2020 10:03
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	20-Jan-2020 09:44
Fluoranthene	**0.00093**		**0.000010**	**0.00010**	**mg/L**	1	20-Jan-2020 09:44
Fluorene	**0.015**		**0.00030**	**0.0010**	**mg/L**	10	20-Jan-2020 10:03
Naphthalene	**0.13**		**0.00040**	**0.0020**	**mg/L**	20	20-Jan-2020 11:20
Nitrobenzene	U		0.000024	0.00020	mg/L	1	20-Jan-2020 09:44
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	20-Jan-2020 09:44
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	20-Jan-2020 09:44
Phenanthrene	**0.013**		**0.00021**	**0.0010**	**mg/L**	10	20-Jan-2020 10:03
Phenol	U		0.000035	0.00020	mg/L	1	20-Jan-2020 09:44
Pyrene	**0.00045**		**0.000019**	**0.00010**	**mg/L**	1	20-Jan-2020 09:44
Surr: 2,4,6-Tribromophenol	*49.5*	*J*		*34-129*	*%REC*	*20*	*20-Jan-2020 11:20*
Surr: 2,4,6-Tribromophenol	*81.1*			*34-129*	*%REC*	*1*	*20-Jan-2020 09:44*
Surr: 2,4,6-Tribromophenol	*62.7*			*34-129*	*%REC*	*10*	*20-Jan-2020 10:03*
Surr: 2-Fluorobiphenyl	*80.1*			*40-125*	*%REC*	*1*	*20-Jan-2020 09:44*
Surr: 2-Fluorobiphenyl	*72.0*			*40-125*	*%REC*	*10*	*20-Jan-2020 10:03*
Surr: 2-Fluorobiphenyl	*72.9*	*J*		*40-125*	*%REC*	*20*	*20-Jan-2020 11:20*
Surr: 2-Fluorophenol	*78.7*	*J*		*20-120*	*%REC*	*20*	*20-Jan-2020 11:20*
Surr: 2-Fluorophenol	*85.0*			*20-120*	*%REC*	*1*	*20-Jan-2020 09:44*
Surr: 2-Fluorophenol	*71.8*			*20-120*	*%REC*	*10*	*20-Jan-2020 10:03*
Surr: 4-Terphenyl-d14	*94.6*			*40-135*	*%REC*	*1*	*20-Jan-2020 09:44*
Surr: 4-Terphenyl-d14	*78.2*			*40-135*	*%REC*	*10*	*20-Jan-2020 10:03*
Surr: 4-Terphenyl-d14	*79.1*	*J*		*40-135*	*%REC*	*20*	*20-Jan-2020 11:20*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FD01-20200110
Collection Date: 10-Jan-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20010442
Lab ID:HS20010442-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Jan-2020		Analyst: LG
Surr: Nitrobenzene-d5	*107*			*41-120*	*%REC*	*1*	*20-Jan-2020 09:44*
Surr: Nitrobenzene-d5	*83.7*			*41-120*	*%REC*	*10*	*20-Jan-2020 10:03*
Surr: Nitrobenzene-d5	*96.3*			*41-120*	*%REC*	*20*	*20-Jan-2020 11:20*
Surr: Phenol-d6	*72.7*	*J*		*20-120*	*%REC*	*20*	*20-Jan-2020 11:20*
Surr: Phenol-d6	*74.0*			*20-120*	*%REC*	*1*	*20-Jan-2020 09:44*
Surr: Phenol-d6	*73.6*			*20-120*	*%REC*	*10*	*20-Jan-2020 10:03*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 14-Jan-2020		Analyst: ALR
Arsenic	**0.0159**		**0.000400**	**0.00200**	**mg/L**	1	14-Jan-2020 22:01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW35B-20200110
Collection Date: 10-Jan-2020 12:45

ANALYTICAL REPORT
WorkOrder:HS20010442
Lab ID:HS20010442-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	15-Jan-2020 16:10
Benzene	**0.025**		**0.00020**	**0.0010**	**mg/L**	1	15-Jan-2020 16:10
Chlorobenzene	U		0.00030	0.0010	mg/L	1	15-Jan-2020 16:10
Ethylbenzene	**0.096**		**0.00030**	**0.0010**	**mg/L**	1	15-Jan-2020 16:10
Methylene chloride	U		0.0010	0.0020	mg/L	1	15-Jan-2020 16:10
Toluene	U		0.00020	0.0010	mg/L	1	15-Jan-2020 16:10
Vinyl chloride	U		0.00020	0.0010	mg/L	1	15-Jan-2020 16:10
Xylenes, Total	**0.058**		**0.00030**	**0.0010**	**mg/L**	1	15-Jan-2020 16:10
Surr: 1,2-Dichloroethane-d4	*121*			*70-126*	*%REC*	*1*	*15-Jan-2020 16:10*
Surr: 4-Bromofluorobenzene	*103*			*81-113*	*%REC*	*1*	*15-Jan-2020 16:10*
Surr: Dibromofluoromethane	*110*			*77-123*	*%REC*	*1*	*15-Jan-2020 16:10*
Surr: Toluene-d8	*98.6*			*82-127*	*%REC*	*1*	*15-Jan-2020 16:10*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW35B-20200110
Collection Date: 10-Jan-2020 12:45

ANALYTICAL REPORT
WorkOrder:HS20010442
Lab ID:HS20010442-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 16-Jan-2020		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	17-Jan-2020 18:05
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	17-Jan-2020 18:05
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	17-Jan-2020 18:05
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	17-Jan-2020 18:05
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	17-Jan-2020 18:05
2-Methylnaphthalene	**0.14**		**0.00095**	**0.0050**	**mg/L**	50	20-Jan-2020 11:40
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	17-Jan-2020 18:05
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	17-Jan-2020 18:05
Acenaphthene	**0.059**		**0.00027**	**0.0010**	**mg/L**	10	20-Jan-2020 10:23
Acenaphthylene	**0.00038**		**0.000015**	**0.00010**	**mg/L**	1	17-Jan-2020 18:05
Anthracene	**0.0029**		**0.000014**	**0.00010**	**mg/L**	1	17-Jan-2020 18:05
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	17-Jan-2020 18:05
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	17-Jan-2020 18:05
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	17-Jan-2020 18:05
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	17-Jan-2020 18:05
Chrysene	U		0.000021	0.00010	mg/L	1	17-Jan-2020 18:05
Dibenzofuran	**0.054**		**0.00020**	**0.0010**	**mg/L**	10	20-Jan-2020 10:23
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	17-Jan-2020 18:05
Fluoranthene	**0.0015**		**0.000010**	**0.00010**	**mg/L**	1	17-Jan-2020 18:05
Fluorene	**0.028**		**0.00030**	**0.0010**	**mg/L**	10	20-Jan-2020 10:23
Naphthalene	**2.0**		**0.0050**	**0.025**	**mg/L**	250	20-Jan-2020 12:18
Nitrobenzene	U		0.000024	0.00020	mg/L	1	17-Jan-2020 18:05
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	17-Jan-2020 18:05
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	17-Jan-2020 18:05
Phenanthrene	**0.024**		**0.00021**	**0.0010**	**mg/L**	10	20-Jan-2020 10:23
Phenol	U		0.000035	0.00020	mg/L	1	17-Jan-2020 18:05
Pyrene	**0.00070**		**0.000019**	**0.00010**	**mg/L**	1	17-Jan-2020 18:05
Surr: 2,4,6-Tribromophenol	*78.3*			*34-129*	*%REC*	*1*	*17-Jan-2020 18:05*
Surr: 2,4,6-Tribromophenol	*86.2*			*34-129*	*%REC*	*10*	*20-Jan-2020 10:23*
Surr: 2,4,6-Tribromophenol	*71.2*	*J*		*34-129*	*%REC*	*50*	*20-Jan-2020 11:40*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*250*	*20-Jan-2020 12:18*
Surr: 2-Fluorobiphenyl	*87.2*	*J*		*40-125*	*%REC*	*50*	*20-Jan-2020 11:40*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*250*	*20-Jan-2020 12:18*
Surr: 2-Fluorobiphenyl	*73.4*			*40-125*	*%REC*	*10*	*20-Jan-2020 10:23*
Surr: 2-Fluorobiphenyl	*74.3*			*40-125*	*%REC*	*1*	*17-Jan-2020 18:05*
Surr: 2-Fluorophenol	*70.9*			*20-120*	*%REC*	*1*	*17-Jan-2020 18:05*
Surr: 2-Fluorophenol	*76.9*			*20-120*	*%REC*	*10*	*20-Jan-2020 10:23*
Surr: 2-Fluorophenol	*83.1*	*J*		*20-120*	*%REC*	*50*	*20-Jan-2020 11:40*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*250*	*20-Jan-2020 12:18*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW35B-20200110
Collection Date: 10-Jan-2020 12:45

ANALYTICAL REPORT
WorkOrder:HS20010442
Lab ID:HS20010442-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Jan-2020		Analyst: GEY
Surr: 4-Terphenyl-d14	*88.9*	*J*		*40-135*	*%REC*	*50*	*20-Jan-2020 11:40*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*250*	*20-Jan-2020 12:18*
Surr: 4-Terphenyl-d14	*88.6*			*40-135*	*%REC*	*10*	*20-Jan-2020 10:23*
Surr: 4-Terphenyl-d14	*88.9*			*40-135*	*%REC*	*1*	*17-Jan-2020 18:05*
Surr: Nitrobenzene-d5	*95.7*			*41-120*	*%REC*	*10*	*20-Jan-2020 10:23*
Surr: Nitrobenzene-d5	*102*	*J*		*41-120*	*%REC*	*50*	*20-Jan-2020 11:40*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*250*	*20-Jan-2020 12:18*
Surr: Nitrobenzene-d5	*68.2*			*41-120*	*%REC*	*1*	*17-Jan-2020 18:05*
Surr: Phenol-d6	*69.0*			*20-120*	*%REC*	*1*	*17-Jan-2020 18:05*
Surr: Phenol-d6	*67.6*			*20-120*	*%REC*	*10*	*20-Jan-2020 10:23*
Surr: Phenol-d6	*80.1*	*J*		*20-120*	*%REC*	*50*	*20-Jan-2020 11:40*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*250*	*20-Jan-2020 12:18*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 14-Jan-2020		Analyst: ALR
Arsenic	**0.0120**		**0.000400**	**0.00200**	**mg/L**	1	14-Jan-2020 22:03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW35A-20200110
Collection Date: 10-Jan-2020 11:20

ANALYTICAL REPORT
WorkOrder:HS20010442
Lab ID:HS20010442-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	15-Jan-2020 16:35
Benzene		U	0.00020	0.0010	mg/L	1	15-Jan-2020 16:35
Chlorobenzene		U	0.00030	0.0010	mg/L	1	15-Jan-2020 16:35
Ethylbenzene		U	0.00030	0.0010	mg/L	1	15-Jan-2020 16:35
Methylene chloride		U	0.0010	0.0020	mg/L	1	15-Jan-2020 16:35
Toluene		U	0.00020	0.0010	mg/L	1	15-Jan-2020 16:35
Vinyl chloride		U	0.00020	0.0010	mg/L	1	15-Jan-2020 16:35
Xylenes, Total		U	0.00030	0.0010	mg/L	1	15-Jan-2020 16:35
Surr: 1,2-Dichloroethane-d4	*117*			*70-126*	*%REC*	*1*	*15-Jan-2020 16:35*
Surr: 4-Bromofluorobenzene	*99.2*			*81-113*	*%REC*	*1*	*15-Jan-2020 16:35*
Surr: Dibromofluoromethane	*109*			*77-123*	*%REC*	*1*	*15-Jan-2020 16:35*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*15-Jan-2020 16:35*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW35A-20200110
Collection Date: 10-Jan-2020 11:20

ANALYTICAL REPORT
WorkOrder:HS20010442
Lab ID:HS20010442-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Jan-2020		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	17-Jan-2020 18:25
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	17-Jan-2020 18:25
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	17-Jan-2020 18:25
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	17-Jan-2020 18:25
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	17-Jan-2020 18:25
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	17-Jan-2020 18:25
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	17-Jan-2020 18:25
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	17-Jan-2020 18:25
Acenaphthene	U		0.000027	0.00010	mg/L	1	17-Jan-2020 18:25
Acenaphthylene	U		0.000015	0.00010	mg/L	1	17-Jan-2020 18:25
Anthracene	U		0.000014	0.00010	mg/L	1	17-Jan-2020 18:25
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	17-Jan-2020 18:25
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	17-Jan-2020 18:25
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	17-Jan-2020 18:25
Bis(2-ethylhexyl)phthalate	**0.000061**	J	**0.000037**	**0.00020**	**mg/L**	1	17-Jan-2020 18:25
Chrysene	U		0.000021	0.00010	mg/L	1	17-Jan-2020 18:25
Dibenzofuran	U		0.000020	0.00010	mg/L	1	17-Jan-2020 18:25
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	17-Jan-2020 18:25
Fluoranthene	U		0.000010	0.00010	mg/L	1	17-Jan-2020 18:25
Fluorene	**0.000065**	J	**0.000030**	**0.00010**	**mg/L**	1	17-Jan-2020 18:25
Naphthalene	**0.00020**		**0.000020**	**0.00010**	**mg/L**	1	17-Jan-2020 18:25
Nitrobenzene	U		0.000024	0.00020	mg/L	1	17-Jan-2020 18:25
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	17-Jan-2020 18:25
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	17-Jan-2020 18:25
Phenanthrene	U		0.000021	0.00010	mg/L	1	17-Jan-2020 18:25
Phenol	U		0.000035	0.00020	mg/L	1	17-Jan-2020 18:25
Pyrene	U		0.000019	0.00010	mg/L	1	17-Jan-2020 18:25
Surr: 2,4,6-Tribromophenol	*81.3*			*34-129*	*%REC*	*1*	*17-Jan-2020 18:25*
Surr: 2-Fluorobiphenyl	*76.3*			*40-125*	*%REC*	*1*	*17-Jan-2020 18:25*
Surr: 2-Fluorophenol	*67.4*			*20-120*	*%REC*	*1*	*17-Jan-2020 18:25*
Surr: 4-Terphenyl-d14	*90.2*			*40-135*	*%REC*	*1*	*17-Jan-2020 18:25*
Surr: Nitrobenzene-d5	*72.9*			*41-120*	*%REC*	*1*	*17-Jan-2020 18:25*
Surr: Phenol-d6	*71.7*			*20-120*	*%REC*	*1*	*17-Jan-2020 18:25*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 14-Jan-2020		Analyst: ALR
Arsenic	**0.0219**		**0.000400**	**0.00200**	**mg/L**	1	14-Jan-2020 22:06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB04-20200110
Collection Date: 10-Jan-2020 10:30

ANALYTICAL REPORT
WorkOrder:HS20010442
Lab ID:HS20010442-06
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	15-Jan-2020 12:51
Benzene		U	0.00020	0.0010	mg/L	1	15-Jan-2020 12:51
Chlorobenzene		U	0.00030	0.0010	mg/L	1	15-Jan-2020 12:51
Ethylbenzene		U	0.00030	0.0010	mg/L	1	15-Jan-2020 12:51
Methylene chloride		U	0.0010	0.0020	mg/L	1	15-Jan-2020 12:51
Toluene		U	0.00020	0.0010	mg/L	1	15-Jan-2020 12:51
Vinyl chloride		U	0.00020	0.0010	mg/L	1	15-Jan-2020 12:51
Xylenes, Total		U	0.00030	0.0010	mg/L	1	15-Jan-2020 12:51
Surr: 1,2-Dichloroethane-d4	*119*			*70-126*	*%REC*	*1*	*15-Jan-2020 12:51*
Surr: 4-Bromofluorobenzene	*99.3*			*81-113*	*%REC*	*1*	*15-Jan-2020 12:51*
Surr: Dibromofluoromethane	*109*			*77-123*	*%REC*	*1*	*15-Jan-2020 12:51*
Surr: Toluene-d8	*99.9*			*82-127*	*%REC*	*1*	*15-Jan-2020 12:51*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB04-20200110
Collection Date: 10-Jan-2020 10:30

ANALYTICAL REPORT
WorkOrder:HS20010442
Lab ID:HS20010442-06
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine		U	0.000021	0.00020	mg/L	1	20-Jan-2020 10:42
2,4-Dimethylphenol		U	0.000040	0.00020	mg/L	1	20-Jan-2020 10:42
2,4-Dinitrotoluene		U	0.000058	0.00020	mg/L	1	20-Jan-2020 10:42
2,6-Dinitrotoluene		U	0.000042	0.00020	mg/L	1	20-Jan-2020 10:42
2-Chloronaphthalene		U	0.000021	0.00020	mg/L	1	20-Jan-2020 10:42
2-Methylnaphthalene		U	0.000019	0.00010	mg/L	1	20-Jan-2020 10:42
4,6-Dinitro-2-methylphenol		U	0.000020	0.00020	mg/L	1	20-Jan-2020 10:42
4-Nitrophenol		U	0.000047	0.0010	mg/L	1	20-Jan-2020 10:42
Acenaphthene		U	0.000027	0.00010	mg/L	1	20-Jan-2020 10:42
Acenaphthylene		U	0.000015	0.00010	mg/L	1	20-Jan-2020 10:42
Anthracene		U	0.000014	0.00010	mg/L	1	20-Jan-2020 10:42
Benz(a)anthracene		U	0.000050	0.00010	mg/L	1	20-Jan-2020 10:42
Benzo(a)pyrene		U	0.000020	0.00010	mg/L	1	20-Jan-2020 10:42
Bis(2-chloroethoxy)methane		U	0.000030	0.00020	mg/L	1	20-Jan-2020 10:42
Bis(2-ethylhexyl)phthalate		U	0.000037	0.00020	mg/L	1	20-Jan-2020 10:42
Chrysene		U	0.000021	0.00010	mg/L	1	20-Jan-2020 10:42
Dibenzofuran		U	0.000020	0.00010	mg/L	1	20-Jan-2020 10:42
Di-n-butyl phthalate		U	0.000020	0.00020	mg/L	1	20-Jan-2020 10:42
Fluoranthene		U	0.000010	0.00010	mg/L	1	20-Jan-2020 10:42
Fluorene		U	0.000030	0.00010	mg/L	1	20-Jan-2020 10:42
Naphthalene	**0.00020**		**0.000020**	**0.00010**	**mg/L**	1	20-Jan-2020 10:42
Nitrobenzene		U	0.000024	0.00020	mg/L	1	20-Jan-2020 10:42
N-Nitrosodiphenylamine		U	0.000025	0.00020	mg/L	1	20-Jan-2020 10:42
Pentachlorophenol		U	0.000079	0.00020	mg/L	1	20-Jan-2020 10:42
Phenanthrene		U	0.000021	0.00010	mg/L	1	20-Jan-2020 10:42
Phenol		U	0.000035	0.00020	mg/L	1	20-Jan-2020 10:42
Pyrene		U	0.000019	0.00010	mg/L	1	20-Jan-2020 10:42
Surr: 2,4,6-Tribromophenol	*67.6*			*34-129*	*%REC*	*1*	*20-Jan-2020 10:42*
Surr: 2-Fluorobiphenyl	*93.0*			*40-125*	*%REC*	*1*	*20-Jan-2020 10:42*
Surr: 2-Fluorophenol	*73.7*			*20-120*	*%REC*	*1*	*20-Jan-2020 10:42*
Surr: 4-Terphenyl-d14	*93.4*			*40-135*	*%REC*	*1*	*20-Jan-2020 10:42*
Surr: Nitrobenzene-d5	*89.7*			*41-120*	*%REC*	*1*	*20-Jan-2020 10:42*
Surr: Phenol-d6	*79.9*			*20-120*	*%REC*	*1*	*20-Jan-2020 10:42*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 14-Jan-2020		Analyst: ALR
Arsenic		U	0.000400	0.00200	mg/L	1	14-Jan-2020 22:08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW83B-20200110
Collection Date: 10-Jan-2020 10:00

ANALYTICAL REPORT
WorkOrder:HS20010442
Lab ID:HS20010442-07
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	15-Jan-2020 16:59
Benzene	**0.021**		**0.00020**	**0.0010**	**mg/L**	1	15-Jan-2020 16:59
Chlorobenzene	U		0.00030	0.0010	mg/L	1	15-Jan-2020 16:59
Ethylbenzene	**0.078**		**0.00030**	**0.0010**	**mg/L**	1	15-Jan-2020 16:59
Methylene chloride	U		0.0010	0.0020	mg/L	1	15-Jan-2020 16:59
Toluene	**0.0052**		**0.00020**	**0.0010**	**mg/L**	1	15-Jan-2020 16:59
Vinyl chloride	U		0.00020	0.0010	mg/L	1	15-Jan-2020 16:59
Xylenes, Total	**0.098**		**0.00030**	**0.0010**	**mg/L**	1	15-Jan-2020 16:59
Surr: 1,2-Dichloroethane-d4	*124*			*70-126*	*%REC*	*1*	*15-Jan-2020 16:59*
Surr: 4-Bromofluorobenzene	*105*			*81-113*	*%REC*	*1*	*15-Jan-2020 16:59*
Surr: Dibromofluoromethane	*109*			*77-123*	*%REC*	*1*	*15-Jan-2020 16:59*
Surr: Toluene-d8	*99.1*			*82-127*	*%REC*	*1*	*15-Jan-2020 16:59*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW83B-20200110
Collection Date: 10-Jan-2020 10:00

ANALYTICAL REPORT
WorkOrder:HS20010442
Lab ID:HS20010442-07
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 16-Jan-2020		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	17-Jan-2020 19:04
2,4-Dimethylphenol	**0.000072**	J	**0.000040**	**0.00020**	**mg/L**	1	17-Jan-2020 19:04
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	17-Jan-2020 19:04
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	17-Jan-2020 19:04
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	17-Jan-2020 19:04
2-Methylnaphthalene	**0.078**		**0.00019**	**0.0010**	**mg/L**	10	20-Jan-2020 11:01
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	17-Jan-2020 19:04
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	17-Jan-2020 19:04
Acenaphthene	**0.066**		**0.00027**	**0.0010**	**mg/L**	10	20-Jan-2020 11:01
Acenaphthylene	**0.00047**		**0.000015**	**0.00010**	**mg/L**	1	17-Jan-2020 19:04
Anthracene	**0.0039**		**0.000014**	**0.00010**	**mg/L**	1	17-Jan-2020 19:04
Benz(a)anthracene	**0.000070**	J	**0.000050**	**0.00010**	**mg/L**	1	17-Jan-2020 19:04
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	17-Jan-2020 19:04
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	17-Jan-2020 19:04
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	17-Jan-2020 19:04
Chrysene	**0.000065**	J	**0.000021**	**0.00010**	**mg/L**	1	17-Jan-2020 19:04
Dibenzofuran	**0.023**		**0.00020**	**0.0010**	**mg/L**	10	20-Jan-2020 11:01
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	17-Jan-2020 19:04
Fluoranthene	**0.0033**		**0.000010**	**0.00010**	**mg/L**	1	17-Jan-2020 19:04
Fluorene	**0.024**		**0.00030**	**0.0010**	**mg/L**	10	20-Jan-2020 11:01
Naphthalene	**1.2**		**0.0050**	**0.025**	**mg/L**	250	20-Jan-2020 11:59
Nitrobenzene	U		0.000024	0.00020	mg/L	1	17-Jan-2020 19:04
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	17-Jan-2020 19:04
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	17-Jan-2020 19:04
Phenanthrene	**0.021**		**0.00021**	**0.0010**	**mg/L**	10	20-Jan-2020 11:01
Phenol	U		0.000035	0.00020	mg/L	1	17-Jan-2020 19:04
Pyrene	**0.0022**		**0.000019**	**0.00010**	**mg/L**	1	17-Jan-2020 19:04
Surr: 2,4,6-Tribromophenol	*72.8*			*34-129*	*%REC*	*1*	*17-Jan-2020 19:04*
Surr: 2,4,6-Tribromophenol	*59.3*			*34-129*	*%REC*	*10*	*20-Jan-2020 11:01*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*250*	*20-Jan-2020 11:59*
Surr: 2-Fluorobiphenyl	*60.1*			*40-125*	*%REC*	*10*	*20-Jan-2020 11:01*
Surr: 2-Fluorobiphenyl	*64.9*			*40-125*	*%REC*	*1*	*17-Jan-2020 19:04*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*250*	*20-Jan-2020 11:59*
Surr: 2-Fluorophenol	*63.7*			*20-120*	*%REC*	*10*	*20-Jan-2020 11:01*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*250*	*20-Jan-2020 11:59*
Surr: 2-Fluorophenol	*70.7*			*20-120*	*%REC*	*1*	*17-Jan-2020 19:04*
Surr: 4-Terphenyl-d14	*88.4*			*40-135*	*%REC*	*1*	*17-Jan-2020 19:04*
Surr: 4-Terphenyl-d14	*79.1*			*40-135*	*%REC*	*10*	*20-Jan-2020 11:01*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*250*	*20-Jan-2020 11:59*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW83B-20200110
Collection Date: 10-Jan-2020 10:00

ANALYTICAL REPORT
WorkOrder:HS20010442
Lab ID:HS20010442-07
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Jan-2020		Analyst: GEY
Surr: Nitrobenzene-d5	*82.9*			*41-120*	*%REC*	*10*	*20-Jan-2020 11:01*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*250*	*20-Jan-2020 11:59*
Surr: Nitrobenzene-d5	*116*			*41-120*	*%REC*	*1*	*17-Jan-2020 19:04*
Surr: Phenol-d6	*62.3*			*20-120*	*%REC*	*1*	*17-Jan-2020 19:04*
Surr: Phenol-d6	*54.0*			*20-120*	*%REC*	*10*	*20-Jan-2020 11:01*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*250*	*20-Jan-2020 11:59*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 14-Jan-2020		Analyst: ALR
Arsenic	**0.0709**		**0.000400**	**0.00200**	**mg/L**	1	14-Jan-2020 22:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW83C-20200110
Collection Date: 10-Jan-2020 09:00

ANALYTICAL REPORT
WorkOrder:HS20010442
Lab ID:HS20010442-08
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	15-Jan-2020 17:24
Benzene		U	0.00020	0.0010	mg/L	1	15-Jan-2020 17:24
Chlorobenzene		U	0.00030	0.0010	mg/L	1	15-Jan-2020 17:24
Ethylbenzene		U	0.00030	0.0010	mg/L	1	15-Jan-2020 17:24
Methylene chloride		U	0.0010	0.0020	mg/L	1	15-Jan-2020 17:24
Toluene		U	0.00020	0.0010	mg/L	1	15-Jan-2020 17:24
Vinyl chloride		U	0.00020	0.0010	mg/L	1	15-Jan-2020 17:24
Xylenes, Total		U	0.00030	0.0010	mg/L	1	15-Jan-2020 17:24
Surr: 1,2-Dichloroethane-d4	*122*			*70-126*	*%REC*	*1*	*15-Jan-2020 17:24*
Surr: 4-Bromofluorobenzene	*98.8*			*81-113*	*%REC*	*1*	*15-Jan-2020 17:24*
Surr: Dibromofluoromethane	*110*			*77-123*	*%REC*	*1*	*15-Jan-2020 17:24*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*15-Jan-2020 17:24*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW83C-20200110
Collection Date: 10-Jan-2020 09:00

ANALYTICAL REPORT
WorkOrder:HS20010442
Lab ID:HS20010442-08
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Jan-2020		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	17-Jan-2020 19:24
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	17-Jan-2020 19:24
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	17-Jan-2020 19:24
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	17-Jan-2020 19:24
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	17-Jan-2020 19:24
2-Methylnaphthalene	**0.00021**		**0.000019**	**0.00010**	**mg/L**	1	17-Jan-2020 19:24
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	17-Jan-2020 19:24
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	17-Jan-2020 19:24
Acenaphthene	**0.00018**		**0.000027**	**0.00010**	**mg/L**	1	17-Jan-2020 19:24
Acenaphthylene	U		0.000015	0.00010	mg/L	1	17-Jan-2020 19:24
Anthracene	U		0.000014	0.00010	mg/L	1	17-Jan-2020 19:24
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	17-Jan-2020 19:24
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	17-Jan-2020 19:24
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	17-Jan-2020 19:24
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	17-Jan-2020 19:24
Chrysene	U		0.000021	0.00010	mg/L	1	17-Jan-2020 19:24
Dibenzofuran	**0.00015**		**0.000020**	**0.00010**	**mg/L**	1	17-Jan-2020 19:24
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	17-Jan-2020 19:24
Fluoranthene	U		0.000010	0.00010	mg/L	1	17-Jan-2020 19:24
Fluorene	**0.00012**		**0.000030**	**0.00010**	**mg/L**	1	17-Jan-2020 19:24
Naphthalene	**0.0018**		**0.000020**	**0.00010**	**mg/L**	1	17-Jan-2020 19:24
Nitrobenzene	U		0.000024	0.00020	mg/L	1	17-Jan-2020 19:24
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	17-Jan-2020 19:24
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	17-Jan-2020 19:24
Phenanthrene	**0.00017**		**0.000021**	**0.00010**	**mg/L**	1	17-Jan-2020 19:24
Phenol	U		0.000035	0.00020	mg/L	1	17-Jan-2020 19:24
Pyrene	U		0.000019	0.00010	mg/L	1	17-Jan-2020 19:24
Surr: 2,4,6-Tribromophenol	*66.3*			*34-129*	*%REC*	*1*	*17-Jan-2020 19:24*
Surr: 2-Fluorobiphenyl	*59.9*			*40-125*	*%REC*	*1*	*17-Jan-2020 19:24*
Surr: 2-Fluorophenol	*62.5*			*20-120*	*%REC*	*1*	*17-Jan-2020 19:24*
Surr: 4-Terphenyl-d14	*80.2*			*40-135*	*%REC*	*1*	*17-Jan-2020 19:24*
Surr: Nitrobenzene-d5	*63.9*			*41-120*	*%REC*	*1*	*17-Jan-2020 19:24*
Surr: Phenol-d6	*61.8*			*20-120*	*%REC*	*1*	*17-Jan-2020 19:24*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 14-Jan-2020		Analyst: ALR
Arsenic	**0.00564**		**0.000400**	**0.00200**	**mg/L**	1	14-Jan-2020 22:12

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010442

Batch ID: 149618 **Start Date:** 14 Jan 2020 08:30 **End Date:** 14 Jan 2020 16:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20010442-03		10 (mL)	10 (mL)	1
HS20010442-04		10 (mL)	10 (mL)	1
HS20010442-05		10 (mL)	10 (mL)	1
HS20010442-06		10 (mL)	10 (mL)	1
HS20010442-07		10 (mL)	10 (mL)	1
HS20010442-08		10 (mL)	10 (mL)	1

Batch ID: 149706 **Start Date:** 16 Jan 2020 07:00 **End Date:** 16 Jan 2020 11:30
Method: SV AQ SEP FUN EXTRACT-LOWLEV - 3510C **Prep Code:** 3510_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20010442-03	1	1000 (mL)	1 (mL)	0.001
HS20010442-04	1	1000 (mL)	1 (mL)	0.001
HS20010442-05	1	1000 (mL)	1 (mL)	0.001
HS20010442-06	1	1000 (mL)	1 (mL)	0.001
HS20010442-07	1	1000 (mL)	1 (mL)	0.001
HS20010442-08	1	1000 (mL)	1 (mL)	0.001

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010442

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 149618 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS20010442-03	WG-1620-FD01-20200110	10 Jan 2020 00:00		14 Jan 2020 16:00	14 Jan 2020 22:01	1
HS20010442-04	WG-1620-MW35B-20200110	10 Jan 2020 12:45		14 Jan 2020 16:00	14 Jan 2020 22:03	1
HS20010442-05	WG-1620-MW35A-20200110	10 Jan 2020 11:20		14 Jan 2020 16:00	14 Jan 2020 22:06	1
HS20010442-06	WG-1620-FB04-20200110	10 Jan 2020 10:30		14 Jan 2020 16:00	14 Jan 2020 22:08	1
HS20010442-07	WG-1620-MW83B-20200110	10 Jan 2020 10:00		14 Jan 2020 16:00	14 Jan 2020 22:10	1
HS20010442-08	WG-1620-MW83C-20200110	10 Jan 2020 09:00		14 Jan 2020 16:00	14 Jan 2020 22:12	1
Batch ID: 149706 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Water	
HS20010442-03	WG-1620-FD01-20200110	10 Jan 2020 00:00		16 Jan 2020 10:59	20 Jan 2020 11:20	20
HS20010442-03	WG-1620-FD01-20200110	10 Jan 2020 00:00		16 Jan 2020 10:59	20 Jan 2020 10:03	10
HS20010442-03	WG-1620-FD01-20200110	10 Jan 2020 00:00		16 Jan 2020 10:59	20 Jan 2020 09:44	1
HS20010442-04	WG-1620-MW35B-20200110	10 Jan 2020 12:45		16 Jan 2020 10:59	20 Jan 2020 11:40	50
HS20010442-04	WG-1620-MW35B-20200110	10 Jan 2020 12:45		16 Jan 2020 10:59	20 Jan 2020 12:18	250
HS20010442-04	WG-1620-MW35B-20200110	10 Jan 2020 12:45		16 Jan 2020 10:59	20 Jan 2020 10:23	10
HS20010442-04	WG-1620-MW35B-20200110	10 Jan 2020 12:45		16 Jan 2020 10:59	17 Jan 2020 18:05	1
HS20010442-05	WG-1620-MW35A-20200110	10 Jan 2020 11:20		16 Jan 2020 10:59	17 Jan 2020 18:25	1
HS20010442-06	WG-1620-FB04-20200110	10 Jan 2020 10:30		16 Jan 2020 10:59	20 Jan 2020 10:42	1
HS20010442-07	WG-1620-MW83B-20200110	10 Jan 2020 10:00		16 Jan 2020 10:59	20 Jan 2020 11:59	250
HS20010442-07	WG-1620-MW83B-20200110	10 Jan 2020 10:00		16 Jan 2020 10:59	20 Jan 2020 11:01	10
HS20010442-07	WG-1620-MW83B-20200110	10 Jan 2020 10:00		16 Jan 2020 10:59	17 Jan 2020 19:04	1
HS20010442-08	WG-1620-MW83C-20200110	10 Jan 2020 09:00		16 Jan 2020 10:59	17 Jan 2020 19:24	1
Batch ID: R354396 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20010442-02	WQ-1620-TB01-20200110	10 Jan 2020 14:00			14 Jan 2020 22:42	1
Batch ID: R354484 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20010442-03	WG-1620-FD01-20200110	10 Jan 2020 00:00			15 Jan 2020 15:45	1
HS20010442-04	WG-1620-MW35B-20200110	10 Jan 2020 12:45			15 Jan 2020 16:10	1
HS20010442-05	WG-1620-MW35A-20200110	10 Jan 2020 11:20			15 Jan 2020 16:35	1
HS20010442-06	WG-1620-FB04-20200110	10 Jan 2020 10:30			15 Jan 2020 12:51	1
HS20010442-07	WG-1620-MW83B-20200110	10 Jan 2020 10:00			15 Jan 2020 16:59	1
HS20010442-08	WG-1620-MW83C-20200110	10 Jan 2020 09:00			15 Jan 2020 17:24	1

WorkOrder: HS20010442
InstrumentID: ICPMS04
Test Code: ICP_TW
Test Number: SW6020
Test Name: ICP-MS Metals by SW6020A

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Arsenic	7440-38-2	0.000500	0.000456	0.000400	0.00200

WorkOrder: HS20010442
InstrumentID: SV-7
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Diphenylhydrazine	122-66-7	0.00010	0.00013	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.000081	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.00010	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.00010	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.00012	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.000050	0.000052	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000060	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00010	0.000069	0.000047	0.0010
A	Acenaphthene	83-32-9	0.000050	0.000050	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000046	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.000046	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.000050	0.000057	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.000050	0.000047	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.00012	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.00014	0.000037	0.00020
A	Chrysene	218-01-9	0.000050	0.000049	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.000050	0.000050	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.00012	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000053	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.000050	0.000030	0.00010
A	Naphthalene	91-20-3	0.000050	0.000048	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.00014	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.00012	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.000057	0.000079	0.00020
A	Phenanthrene	85-01-8	0.000050	0.000047	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.00012	0.000035	0.00020
A	Pyrene	129-00-0	0.000050	0.000051	0.000019	0.00010
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0.00020
S	2-Fluorobiphenyl	321-60-8	0	0	0	0.00020
S	2-Fluorophenol	367-12-4	0	0	0	0.00020
S	4-Terphenyl-d14	1718-51-0	0	0	0	0.00020
S	Nitrobenzene-d5	4165-60-0	0	0	0	0.00020
S	Phenol-d6	13127-88-3	0	0	0	0.00020

WorkOrder: HS20010442
InstrumentID: VOA2
Test Code: 8260_LL_W
Test Number: SW8260
Test Name: Low Level Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.00050	0.00062	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00059	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00071	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00063	0.00030	0.0010
A	Methylene chloride	75-09-2	0.0010	0.00075	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00069	0.00020	0.0010
A	Vinyl chloride	75-01-4	0.00050	0.00044	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00059	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

WorkOrder: HS20010442
InstrumentID: VOA4
Test Code: 8260_LL_W
Test Number: SW8260
Test Name: Low Level Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.00050	0.00061	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00057	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00058	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00048	0.00030	0.0010
A	Methylene chloride	75-09-2	0.0010	0.00070	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00050	0.00020	0.0010
A	Vinyl chloride	75-01-4	0.00050	0.00045	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00070	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010442

QC BATCH REPORT

Batch ID: 149618 (0) **Instrument: ICPMS04** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-149618** Units: **mg/L** Analysis Date: **14-Jan-2020 21:28**
Client ID: Run ID: **ICPMS04_354392** SeqNo: **5434990** PrepDate: **14-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								

LCS Sample ID: **LCS-149618** Units: **mg/L** Analysis Date: **14-Jan-2020 21:30**
Client ID: Run ID: **ICPMS04_354392** SeqNo: **5434991** PrepDate: **14-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05218	0.00200	0.05	0	104	80 - 120				

MS Sample ID: **HS20010407-22MS** Units: **mg/L** Analysis Date: **14-Jan-2020 21:41**
Client ID: Run ID: **ICPMS04_354392** SeqNo: **5434996** PrepDate: **14-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05347	0.00200	0.05	0.000728	105	80 - 120				

MSD Sample ID: **HS20010407-22MSD** Units: **mg/L** Analysis Date: **14-Jan-2020 21:44**
Client ID: Run ID: **ICPMS04_354392** SeqNo: **5434997** PrepDate: **14-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05102	0.00200	0.05	0.000728	101	80 - 120	0.05347	4.68	20	

PDS Sample ID: **HS20010407-22PDS** Units: **mg/L** Analysis Date: **14-Jan-2020 21:46**
Client ID: Run ID: **ICPMS04_354392** SeqNo: **5434998** PrepDate: **14-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1134	0.00200	0.1	0.000728	113	75 - 125				

SD Sample ID: **HS20010407-22SD** Units: **mg/L** Analysis Date: **14-Jan-2020 21:39**
Client ID: Run ID: **ICPMS04_354392** SeqNo: **5434995** PrepDate: **14-Jan-2020** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	U	0.0100					0.000728	0	10	

The following samples were analyzed in this batch: HS20010442-03 HS20010442-04 HS20010442-05 HS20010442-06 HS20010442-07 HS20010442-08

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010442

QC BATCH REPORT

Batch ID: 149706 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-149706** Units: **ug/L** Analysis Date: **17-Jan-2020 11:10**
Client ID: Run ID: **SV-7_354580** SeqNo: **5438870** PrepDate: **16-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	U	0.20								
2,4-Dimethylphenol	U	0.20								
2,4-Dinitrotoluene	U	0.20								
2,6-Dinitrotoluene	U	0.20								
2-Chloronaphthalene	U	0.20								
2-Methylnaphthalene	U	0.10								
4,6-Dinitro-2-methylphenol	U	0.20								
4-Nitrophenol	U	1.0								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Benz(a)anthracene	U	0.10								
Benzo(a)pyrene	U	0.10								
Bis(2-chloroethoxy)methane	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Chrysene	U	0.10								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Nitrobenzene	U	0.20								
N-Nitrosodiphenylamine	U	0.20								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*3.801*	*0.20*	*5*	*0*	*76.0*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.834*	*0.20*	*5*	*0*	*96.7*	*40 - 125*				
Surr: 2-Fluorophenol	*5.028*	*0.20*	*5*	*0*	*101*	*20 - 120*				
Surr: 4-Terphenyl-d14	*5.043*	*0.20*	*5*	*0*	*101*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.556*	*0.20*	*5*	*0*	*91.1*	*41 - 120*				
Surr: Phenol-d6	*4.987*	*0.20*	*5*	*0*	*99.7*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010442

QC BATCH REPORT

Batch ID: 149706 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCS Sample ID: **LCS-149706** Units: **ug/L** Analysis Date: **17-Jan-2020 11:29**
Client ID: Run ID: **SV-7_354580** SeqNo: **5438871** PrepDate: **16-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	5.272	0.20	5	0	105	39 - 127				
2,4-Dimethylphenol	4.201	0.20	5	0	84.0	35 - 120				
2,4-Dinitrotoluene	4.666	0.20	5	0	93.3	50 - 122				
2,6-Dinitrotoluene	4.42	0.20	5	0	88.4	50 - 120				
2-Chloronaphthalene	4.636	0.20	5	0	92.7	50 - 120				
2-Methylnaphthalene	4.065	0.10	5	0	81.3	50 - 120				
4,6-Dinitro-2-methylphenol	5.471	0.20	5	0	109	25 - 121				
4-Nitrophenol	4.842	1.0	5	0	96.8	30 - 130				
Acenaphthene	4.398	0.10	5	0	88.0	45 - 120				
Acenaphthylene	4.139	0.10	5	0	82.8	47 - 120				
Anthracene	4.609	0.10	5	0	92.2	45 - 120				
Benz(a)anthracene	4.284	0.10	5	0	85.7	40 - 120				
Benzo(a)pyrene	4.099	0.10	5	0	82.0	45 - 120				
Bis(2-chloroethoxy)methane	4.466	0.20	5	0	89.3	45 - 120				
Bis(2-ethylhexyl)phthalate	4.202	0.20	5	0	84.0	40 - 139				
Chrysene	4.745	0.10	5	0	94.9	43 - 120				
Dibenzofuran	4.287	0.10	5	0	85.7	50 - 120				
Di-n-butyl phthalate	4.89	0.20	5	0	97.8	45 - 123				
Fluoranthene	4.866	0.10	5	0	97.3	45 - 125				
Fluorene	4.384	0.10	5	0	87.7	49 - 120				
Naphthalene	4.293	0.10	5	0	85.9	45 - 120				
Nitrobenzene	4.568	0.20	5	0	91.4	44 - 120				
N-Nitrosodiphenylamine	4.806	0.20	5	0	96.1	40 - 125				
Pentachlorophenol	3.923	0.20	5	0	78.5	19 - 121				
Phenanthrene	4.546	0.10	5	0	90.9	45 - 121				
Phenol	4.568	0.20	5	0	91.4	20 - 124				
Pyrene	4.445	0.10	5	0	88.9	40 - 130				
Surr: 2,4,6-Tribromophenol	*4.171*	*0.20*	*5*	*0*	*83.4*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.609*	*0.20*	*5*	*0*	*92.2*	*40 - 125*				
Surr: 2-Fluorophenol	*4.848*	*0.20*	*5*	*0*	*97.0*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.705*	*0.20*	*5*	*0*	*94.1*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.603*	*0.20*	*5*	*0*	*92.1*	*41 - 120*				
Surr: Phenol-d6	*4.591*	*0.20*	*5*	*0*	*91.8*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010442

QC BATCH REPORT

Batch ID: 149706 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCSD Sample ID: **LCSD-149706** Units: **ug/L** Analysis Date: **17-Jan-2020 11:49**
Client ID: Run ID: **SV-7_354580** SeqNo: **5438872** PrepDate: **16-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	5.285	0.20	5	0	106	39 - 127	5.272	0.234	20	
2,4-Dimethylphenol	4.2	0.20	5	0	84.0	35 - 120	4.201	0.0176	20	
2,4-Dinitrotoluene	4.635	0.20	5	0	92.7	50 - 122	4.666	0.65	20	
2,6-Dinitrotoluene	4.325	0.20	5	0	86.5	50 - 120	4.42	2.17	20	
2-Chloronaphthalene	4.49	0.20	5	0	89.8	50 - 120	4.636	3.19	20	
2-Methylnaphthalene	4.163	0.10	5	0	83.3	50 - 120	4.065	2.37	20	
4,6-Dinitro-2-methylphenol	5.588	0.20	5	0	112	25 - 121	5.471	2.13	30	
4-Nitrophenol	4.79	1.0	5	0	95.8	30 - 130	4.842	1.07	20	
Acenaphthene	3.978	0.10	5	0	79.6	45 - 120	4.398	10	20	
Acenaphthylene	4.124	0.10	5	0	82.5	47 - 120	4.139	0.368	20	
Anthracene	4.564	0.10	5	0	91.3	45 - 120	4.609	0.985	20	
Benz(a)anthracene	4.402	0.10	5	0	88.0	40 - 120	4.284	2.73	20	
Benzo(a)pyrene	4.633	0.10	5	0	92.7	45 - 120	4.099	12.2	20	
Bis(2-chloroethoxy)methane	4.431	0.20	5	0	88.6	45 - 120	4.466	0.783	20	
Bis(2-ethylhexyl)phthalate	4.39	0.20	5	0	87.8	40 - 139	4.202	4.38	20	
Chrysene	4.79	0.10	5	0	95.8	43 - 120	4.745	0.959	20	
Dibenzofuran	4.261	0.10	5	0	85.2	50 - 120	4.287	0.602	20	
Di-n-butyl phthalate	4.792	0.20	5	0	95.8	45 - 123	4.89	2.02	20	
Fluoranthene	4.792	0.10	5	0	95.8	45 - 125	4.866	1.52	20	
Fluorene	4.279	0.10	5	0	85.6	49 - 120	4.384	2.42	20	
Naphthalene	4.282	0.10	5	0	85.6	45 - 120	4.293	0.27	20	
Nitrobenzene	4.617	0.20	5	0	92.3	44 - 120	4.568	1.08	20	
N-Nitrosodiphenylamine	4.664	0.20	5	0	93.3	40 - 125	4.806	2.99	20	
Pentachlorophenol	4.065	0.20	5	0	81.3	19 - 121	3.923	3.53	20	
Phenanthrene	4.457	0.10	5	0	89.1	45 - 121	4.546	1.98	20	
Phenol	4.533	0.20	5	0	90.7	20 - 124	4.568	0.761	20	
Pyrene	4.594	0.10	5	0	91.9	40 - 130	4.445	3.3	20	
Surr: 2,4,6-Tribromophenol	*4.334*	*0.20*	*5*	*0*	*86.7*	*34 - 129*	*4.171*	*3.83*	*20*	
Surr: 2-Fluorobiphenyl	*4.596*	*0.20*	*5*	*0*	*91.9*	*40 - 125*	*4.609*	*0.292*	*20*	
Surr: 2-Fluorophenol	*4.641*	*0.20*	*5*	*0*	*92.8*	*20 - 120*	*4.848*	*4.37*	*20*	
Surr: 4-Terphenyl-d14	*4.77*	*0.20*	*5*	*0*	*95.4*	*40 - 135*	*4.705*	*1.38*	*20*	
Surr: Nitrobenzene-d5	*4.549*	*0.20*	*5*	*0*	*91.0*	*41 - 120*	*4.603*	*1.19*	*20*	
Surr: Phenol-d6	*4.75*	*0.20*	*5*	*0*	*95.0*	*20 - 120*	*4.591*	*3.41*	*20*	

The following samples were analyzed in this batch: HS20010442-03 HS20010442-04 HS20010442-05 HS20010442-06 HS20010442-07 HS20010442-08

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010442

QC BATCH REPORT

Batch ID: R354396 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200114** Units: **ug/L** Analysis Date: **14-Jan-2020 14:53**
Client ID: Run ID: **VOA2_354396** SeqNo: **5435103** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*48.5*	*1.0*	*50*	*0*	*97.0*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*47.21*	*1.0*	*50*	*0*	*94.4*	*82 - 115*				
Surr: Dibromofluoromethane	*49.74*	*1.0*	*50*	*0*	*99.5*	*73 - 126*				
Surr: Toluene-d8	*50.39*	*1.0*	*50*	*0*	*101*	*81 - 120*				

LCS Sample ID: **VLCSW-200214** Units: **ug/L** Analysis Date: **14-Jan-2020 14:04**
Client ID: Run ID: **VOA2_354396** SeqNo: **5435102** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	18	1.0	20	0	90.0	70 - 124				
Benzene	17.81	1.0	20	0	89.1	74 - 120				
Chlorobenzene	18.74	1.0	20	0	93.7	76 - 113				
Ethylbenzene	18.45	1.0	20	0	92.3	77 - 117				
Methylene chloride	18.59	2.0	20	0	93.0	70 - 127				
Toluene	19.5	1.0	20	0	97.5	77 - 118				
Vinyl chloride	17.32	1.0	20	0	86.6	70 - 130				
Xylenes, Total	56.46	1.0	60	0	94.1	75 - 122				
Surr: 1,2-Dichloroethane-d4	*49.52*	*1.0*	*50*	*0*	*99.0*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*48.68*	*1.0*	*50*	*0*	*97.4*	*82 - 115*				
Surr: Dibromofluoromethane	*49.44*	*1.0*	*50*	*0*	*98.9*	*73 - 126*				
Surr: Toluene-d8	*48.75*	*1.0*	*50*	*0*	*97.5*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010442

QC BATCH REPORT

Batch ID: R354396 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS20010411-10MS** Units: **ug/L** Analysis Date: **14-Jan-2020 18:13**
Client ID: Run ID: **VOA2_354396** SeqNo: **5435111** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Dichloroethane	16.57	1.0	20	0	82.9	70 - 127				
Benzene	18.27	1.0	20	0.9903	86.4	70 - 127				
Chlorobenzene	17.64	1.0	20	0	88.2	70 - 114				
Ethylbenzene	22.73	1.0	20	5.13	88.0	70 - 124				
Methylene chloride	16.6	2.0	20	0	83.0	70 - 128				
Toluene	19.16	1.0	20	0	95.8	70 - 123				
Vinyl chloride	16.93	1.0	20	0	84.6	70 - 130				
Xylenes, Total	344.6	1.0	60	319.7	41.5	70 - 130				SO
Surr: 1,2-Dichloroethane-d4	*48.09*	*1.0*	*50*	*0*	*96.2*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*52.3*	*1.0*	*50*	*0*	*105*	*81 - 113*				
Surr: Dibromofluoromethane	*48.53*	*1.0*	*50*	*0*	*97.1*	*77 - 123*				
Surr: Toluene-d8	*47.83*	*1.0*	*50*	*0*	*95.7*	*82 - 127*				

MSD Sample ID: **HS20010411-10MSD** Units: **ug/L** Analysis Date: **14-Jan-2020 18:37**
Client ID: Run ID: **VOA2_354396** SeqNo: **5435112** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Dichloroethane	16.84	1.0	20	0	84.2	70 - 127	16.57	1.58	20	
Benzene	17.96	1.0	20	0.9903	84.9	70 - 127	18.27	1.68	20	
Chlorobenzene	17.63	1.0	20	0	88.1	70 - 114	17.64	0.0493	20	
Ethylbenzene	22.1	1.0	20	5.13	84.8	70 - 124	22.73	2.82	20	
Methylene chloride	16.24	2.0	20	0	81.2	70 - 128	16.6	2.19	20	
Toluene	18.83	1.0	20	0	94.2	70 - 123	19.16	1.72	20	
Vinyl chloride	16.95	1.0	20	0	84.8	70 - 130	16.93	0.151	20	
Xylenes, Total	335.7	1.0	60	319.7	26.5	70 - 130	344.6	2.64	20	SO
Surr: 1,2-Dichloroethane-d4	*47.45*	*1.0*	*50*	*0*	*94.9*	*70 - 126*	*48.09*	*1.33*	*20*	
Surr: 4-Bromofluorobenzene	*51.4*	*1.0*	*50*	*0*	*103*	*81 - 113*	*52.3*	*1.73*	*20*	
Surr: Dibromofluoromethane	*48*	*1.0*	*50*	*0*	*96.0*	*77 - 123*	*48.53*	*1.09*	*20*	
Surr: Toluene-d8	*48.3*	*1.0*	*50*	*0*	*96.6*	*82 - 127*	*47.83*	*0.978*	*20*	

The following samples were analyzed in this batch: HS20010442-02

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010442

QC BATCH REPORT

Batch ID: R354484 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200115** Units: **ug/L** Analysis Date: **15-Jan-2020 12:01**
Client ID: Run ID: **VOA4_354484** SeqNo: **5436851** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*59.67*	*1.0*	*50*	*0*	*119*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*48.73*	*1.0*	*50*	*0*	*97.5*	*82 - 115*				
Surr: Dibromofluoromethane	*54.2*	*1.0*	*50*	*0*	*108*	*73 - 126*				
Surr: Toluene-d8	*50.29*	*1.0*	*50*	*0*	*101*	*81 - 120*				

LCS Sample ID: **VLCSW-200115** Units: **ug/L** Analysis Date: **15-Jan-2020 11:12**
Client ID: Run ID: **VOA4_354484** SeqNo: **5436850** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	22.86	1.0	20	0	114	70 - 124				
Benzene	20.41	1.0	20	0	102	74 - 120				
Chlorobenzene	18.46	1.0	20	0	92.3	76 - 113				
Ethylbenzene	18.52	1.0	20	0	92.6	77 - 117				
Methylene chloride	22.58	2.0	20	0	113	70 - 127				
Toluene	20.42	1.0	20	0	102	77 - 118				
Vinyl chloride	22.6	1.0	20	0	113	70 - 130				
Xylenes, Total	58.07	1.0	60	0	96.8	75 - 122				
Surr: 1,2-Dichloroethane-d4	*58.94*	*1.0*	*50*	*0*	*118*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*49.6*	*1.0*	*50*	*0*	*99.2*	*82 - 115*				
Surr: Dibromofluoromethane	*54.97*	*1.0*	*50*	*0*	*110*	*73 - 126*				
Surr: Toluene-d8	*50.15*	*1.0*	*50*	*0*	*100*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010442

QC BATCH REPORT

Batch ID: R354484 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS20010445-02MS** Units: **ug/L** Analysis Date: **15-Jan-2020 14:30**
Client ID: Run ID: **VOA4_354484** SeqNo: **5436856** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	22.11	1.0	20	0	111	70 - 127				
Benzene	19.85	1.0	20	0	99.3	70 - 127				
Chlorobenzene	17.99	1.0	20	0	90.0	70 - 114				
Ethylbenzene	18.05	1.0	20	0	90.3	70 - 124				
Methylene chloride	19.71	2.0	20	0	98.5	70 - 128				
Toluene	20.34	1.0	20	0	102	70 - 123				
Vinyl chloride	24.78	1.0	20	0	124	70 - 130				
Xylenes, Total	59.57	1.0	60	0	99.3	70 - 130				
Surr: 1,2-Dichloroethane-d4	*61.92*	*1.0*	*50*	*0*	*124*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*48.65*	*1.0*	*50*	*0*	*97.3*	*81 - 113*				
Surr: Dibromofluoromethane	*57.28*	*1.0*	*50*	*0*	*115*	*77 - 123*				
Surr: Toluene-d8	*50.46*	*1.0*	*50*	*0*	*101*	*82 - 127*				

MSD Sample ID: **HS20010445-02MSD** Units: **ug/L** Analysis Date: **15-Jan-2020 14:55**
Client ID: Run ID: **VOA4_354484** SeqNo: **5436857** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	22.53	1.0	20	0	113	70 - 127	22.11	1.85	20	
Benzene	19.22	1.0	20	0	96.1	70 - 127	19.85	3.24	20	
Chlorobenzene	17.29	1.0	20	0	86.5	70 - 114	17.99	3.97	20	
Ethylbenzene	18.2	1.0	20	0	91.0	70 - 124	18.05	0.8	20	
Methylene chloride	18.57	2.0	20	0	92.9	70 - 128	19.71	5.91	20	
Toluene	19.32	1.0	20	0	96.6	70 - 123	20.34	5.14	20	
Vinyl chloride	23.69	1.0	20	0	118	70 - 130	24.78	4.49	20	
Xylenes, Total	57.75	1.0	60	0	96.3	70 - 130	59.57	3.11	20	
Surr: 1,2-Dichloroethane-d4	*60.02*	*1.0*	*50*	*0*	*120*	*70 - 126*	*61.92*	*3.12*	*20*	
Surr: 4-Bromofluorobenzene	*48.71*	*1.0*	*50*	*0*	*97.4*	*81 - 113*	*48.65*	*0.125*	*20*	
Surr: Dibromofluoromethane	*55.62*	*1.0*	*50*	*0*	*111*	*77 - 123*	*57.28*	*2.95*	*20*	
Surr: Toluene-d8	*49.72*	*1.0*	*50*	*0*	*99.4*	*82 - 127*	*50.46*	*1.46*	*20*	

The following samples were analyzed in this batch: HS20010442-03 HS20010442-04 HS20010442-05 HS20010442-06 HS20010442-07 HS20010442-08

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20010442**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20010442

Date/Time Received: **10-Jan-2020 15:11**
Received by: **PMG**

Checklist completed by: *Asad Chaudhry* eSignature — 11-Jan-2020 Date

Reviewed by: *Corey Grandits* eSignature — 13-Jan-2020 Date

Matrices: **Water**

Carrier name: **Client**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:206384
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	1.7c, 1.1c U/C	IR 25
Cooler(s)/Kit(s):	24593, 25283	
Date/Time sample(s) sent to storage:	01/10/2020 19:00	

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes: Sx WG-1620 FB 0420200110 time differs: COC= 10:30, Label= 10:00. Logged in per COC.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600
Holland, MI +1 616 399 6070

Chain of Custody Form

Page 1 of 1

COC ID: 206384

HS20010442

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-07-Rev0 SR 92688
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address	

A 8260_LL_W (5632528 Volatile Organics Site Specific)
B 8260_LL_W (5632528 VOC Site Specific + V.C.)
C 8270_LOW_W (5632532 SemiVolatiles Site specific)
D ICP_TW (5636002 5652646 Metals - As)
E
F
G
H
J

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
~~1~~	~~WQ-1620-TB0-202001~~			Water	1	2		X									
2	WQ 1620 TBCG121719-7420200110	1-10-2020	14:00	X	1	2		X									
3	WQ 1620 TBCG121719-8920200110	1-10-2020	14:00	X	1	2		X									
4	WG 1620 FD01 20200110	1-10-2020	-	X	1	6	X	X	X	X							
5	WG 1620 MW353 20200110	1-10-2020	12:45	X	1	6	X	X	X	X							
6	WG-1620 MW35A 20200110	1-10-2020	11:20	X	1	6	X	X	X	X							
7	WG-1620 EB04 20200110	1-10-2020	10:30	X	1	6	X	X	X	X							
8	WG-1620 MW 83B 20200110	1-10-2020	10:00	X	1	6	X	X	X	X							
9	WG-1620 MW 83C 20200110	1-10-2020	9:00	X	1	6	X	X	X	X							
10																	

Sampler(s) Please Print & Sign: Tim McSpadden T. McSpadden

Shipment Method:

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 -hour [ ] Other

Results Due Date:

Relinquished by: T. McSpadden Date: 1-10-20 Time: 15:11

Received by:

Relinquished by: Date: Time:

Received by (Laboratory): 1/10/2020 15:11

Notes: UPRR Houston MWPW

Logged by (Laboratory): Date: Time:

Checked by (Laboratory):

Cooler ID	Cooler Temp.
24593	1.7°
25283	1.1°
	2°

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[X] TRRP Checklist
[ ] TRRP Level IV
[ ] Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

January 23, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20010596**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 16 sample(s) on Jan 15, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20010596**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS20010596**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data								
Laboratory Name: ALS Laboratory Group			LRC Date: aaa					
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20010596					
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 149706,149707,149749,R354616,R354637,R354652,R354723,R354799					
#[1]	A[2]	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?		X			1
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?		X			2
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: aaa				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20010596				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 149706,149707,149749,R354616,R354637,R354652,R354723,R354799				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?	X				
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports		
Laboratory Name: ALS Laboratory Group		LRC Date: aaa
Project Name: Houston TX-Wood Preserving Works		Laboratory Job Number: HS20010596
Reviewer Name: Dane Wacasey		Prep Batch Number(s): 149706,149707,149749,R354616,R354637,R354652,R354723,R354799
ER#[5]	**Description**	
1	Semivolatile Organics Method SW8270, samples WG-1620-MW40B-20200113, WG-1620-MW20A-20200114, the surrogate recoveries could not be determined due to dilution below the calibration range. Semivolatile Organics Method SW8270, samples WG-1620-TW41B-20200113, WG-1620-MW12A-20200113 surrogates: 2,4,6-Tribromophenol, 4-Terphenyl-d14 due to a dilution required for sample analysis.	
2	Batch 149706, Semivolatile Organics Method SW8270: LCS/LCSD were analyzed and reported in lieu of an MS/MSD for this batch. Batch 149707, Semivolatile Organics Method SW8270: LCS/LCSD were analyzed and reported in lieu of an MS/MSD for this batch	

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20010596

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20010596-01	WG-1620-MW40B-20200113	Water		13-Jan-2020 12:10	15-Jan-2020 11:50	☐
HS20010596-02	WG-1620-MW42B-20200113	Water		13-Jan-2020 13:10	15-Jan-2020 11:50	☐
HS20010596-03	WG-1620-TW41B-20200113	Water		13-Jan-2020 14:00	15-Jan-2020 11:50	☐
HS20010596-04	WG-1620-MW05-20200113	Water		13-Jan-2020 14:55	15-Jan-2020 11:50	☐
HS20010596-05	WG-1620-MW12C-20200113	Water		13-Jan-2020 15:55	15-Jan-2020 11:50	☐
HS20010596-06	WG-1620-MW12A-20200113	Water		13-Jan-2020 16:45	15-Jan-2020 11:50	☐
HS20010596-07	WG-1620-MW39B-20200113	Water		13-Jan-2020 17:35	15-Jan-2020 11:50	☐
HS20010596-08	WG-1620-FB05-20200113	Water		13-Jan-2020 17:50	15-Jan-2020 11:50	☐
HS20010596-09	WG-1620-MW13-20200114	Water		14-Jan-2020 08:10	15-Jan-2020 11:50	☐
HS20010596-10	WG-1620-MW09-20200114	Water		14-Jan-2020 09:00	15-Jan-2020 11:50	☐
HS20010596-11	WG-1620-MW21C-20200114	Water		14-Jan-2020 10:00	15-Jan-2020 11:50	☐
HS20010596-12	WG-1620-FD02-20200114	Water		14-Jan-2020 10:00	15-Jan-2020 11:50	☐
HS20010596-13	WG-1620-P11-20200114	Water		14-Jan-2020 10:55	15-Jan-2020 11:50	☐
HS20010596-14	WG-1620-MW88C-20200114	Water		14-Jan-2020 11:50	15-Jan-2020 11:50	☐
HS20010596-15	WG-1620-MW20A-20200114	Water		14-Jan-2020 12:55	15-Jan-2020 11:50	☐
HS20010596-16	WG-1620-TB03-20200114	Water		14-Jan-2020 00:00	15-Jan-2020 11:50	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW40B-20200113
Collection Date: 13-Jan-2020 12:10

ANALYTICAL REPORT
WorkOrder:HS20010596
Lab ID:HS20010596-01
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	17-Jan-2020 06:51
Benzene	**0.011**		**0.00020**	**0.0010**	**mg/L**	1	17-Jan-2020 06:51
Chlorobenzene	U		0.00030	0.0010	mg/L	1	17-Jan-2020 06:51
Ethylbenzene	**0.089**		**0.00030**	**0.0010**	**mg/L**	1	17-Jan-2020 06:51
Methylene chloride	U		0.0010	0.0020	mg/L	1	17-Jan-2020 06:51
Toluene	**0.022**		**0.00020**	**0.0010**	**mg/L**	1	17-Jan-2020 06:51
Xylenes, Total	**0.16**		**0.00030**	**0.0010**	**mg/L**	1	17-Jan-2020 06:51
Surr: 1,2-Dichloroethane-d4	*120*			*70-126*	*%REC*	*1*	*17-Jan-2020 06:51*
Surr: 4-Bromofluorobenzene	*112*			*81-113*	*%REC*	*1*	*17-Jan-2020 06:51*
Surr: Dibromofluoromethane	*111*			*77-123*	*%REC*	*1*	*17-Jan-2020 06:51*
Surr: Toluene-d8	*99.5*			*82-127*	*%REC*	*1*	*17-Jan-2020 06:51*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW40B-20200113
Collection Date: 13-Jan-2020 12:10

ANALYTICAL REPORT
WorkOrder:HS20010596
Lab ID:HS20010596-01
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 16-Jan-2020		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	17-Jan-2020 19:44
2,4-Dimethylphenol	**0.0013**		**0.000040**	**0.00020**	**mg/L**	1	17-Jan-2020 19:44
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	17-Jan-2020 19:44
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	17-Jan-2020 19:44
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	17-Jan-2020 19:44
2-Methylnaphthalene	**0.34**		**0.0019**	**0.010**	**mg/L**	100	21-Jan-2020 18:41
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	17-Jan-2020 19:44
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	17-Jan-2020 19:44
Acenaphthene	**0.39**		**0.0027**	**0.010**	**mg/L**	100	21-Jan-2020 18:41
Acenaphthylene	**0.0021**		**0.000015**	**0.00010**	**mg/L**	1	17-Jan-2020 19:44
Anthracene	**0.040**		**0.0014**	**0.010**	**mg/L**	100	21-Jan-2020 18:41
Benz(a)anthracene	**0.000094**	J	**0.000050**	**0.00010**	**mg/L**	1	17-Jan-2020 19:44
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	17-Jan-2020 19:44
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	17-Jan-2020 19:44
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	17-Jan-2020 19:44
Chrysene	**0.000051**	J	**0.000021**	**0.00010**	**mg/L**	1	17-Jan-2020 19:44
Dibenzofuran	**0.29**		**0.0020**	**0.010**	**mg/L**	100	21-Jan-2020 18:41
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	17-Jan-2020 19:44
Fluoranthene	**0.017**		**0.0010**	**0.010**	**mg/L**	100	21-Jan-2020 18:41
Fluorene	**0.30**		**0.0030**	**0.010**	**mg/L**	100	21-Jan-2020 18:41
Naphthalene	**7.9**		**0.020**	**0.10**	**mg/L**	1000	21-Jan-2020 19:00
Nitrobenzene	U		0.000024	0.00020	mg/L	1	17-Jan-2020 19:44
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	17-Jan-2020 19:44
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	17-Jan-2020 19:44
Phenanthrene	**0.22**		**0.0021**	**0.010**	**mg/L**	100	21-Jan-2020 18:41
Phenol	U		0.000035	0.00020	mg/L	1	17-Jan-2020 19:44
Pyrene	**0.0037**		**0.000019**	**0.00010**	**mg/L**	1	17-Jan-2020 19:44
Surr: 2,4,6-Tribromophenol	*72.4*			*34-129*	*%REC*	*1*	*17-Jan-2020 19:44*
Surr: 2,4,6-Tribromophenol	*69.8*	*J*		*34-129*	*%REC*	*100*	*21-Jan-2020 18:41*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*1000*	*21-Jan-2020 19:00*
Surr: 2-Fluorobiphenyl	*68.1*	*J*		*40-125*	*%REC*	*100*	*21-Jan-2020 18:41*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*1000*	*21-Jan-2020 19:00*
Surr: 2-Fluorobiphenyl	*67.2*			*40-125*	*%REC*	*1*	*17-Jan-2020 19:44*
Surr: 2-Fluorophenol	*96.2*			*20-120*	*%REC*	*1*	*17-Jan-2020 19:44*
Surr: 2-Fluorophenol	*54.9*	*J*		*20-120*	*%REC*	*100*	*21-Jan-2020 18:41*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*1000*	*21-Jan-2020 19:00*
Surr: 4-Terphenyl-d14	*115*	*J*		*40-135*	*%REC*	*100*	*21-Jan-2020 18:41*
Surr: 4-Terphenyl-d14	*88.9*			*40-135*	*%REC*	*1*	*17-Jan-2020 19:44*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*1000*	*21-Jan-2020 19:00*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW40B-20200113
Collection Date: 13-Jan-2020 12:10

ANALYTICAL REPORT
WorkOrder:HS20010596
Lab ID:HS20010596-01
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Jan-2020		Analyst: GEY
Surr: Nitrobenzene-d5	*114*	*J*		*41-120*	*%REC*	*100*	*21-Jan-2020 18:41*
Surr: Nitrobenzene-d5	*91.7*			*41-120*	*%REC*	*1*	*17-Jan-2020 19:44*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*1000*	*21-Jan-2020 19:00*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*1000*	*21-Jan-2020 19:00*
Surr: Phenol-d6	*72.7*			*20-120*	*%REC*	*1*	*17-Jan-2020 19:44*
Surr: Phenol-d6	*117*	*J*		*20-120*	*%REC*	*100*	*21-Jan-2020 18:41*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2020		Analyst: JHD
Arsenic	**0.0523**		**0.000400**	**0.00200**	**mg/L**	1	20-Jan-2020 15:19

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20010596
Sample ID: WG-1620-MW42B-20200113
Lab ID:HS20010596-02
Collection Date: 13-Jan-2020 13:10
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	20-Jan-2020 16:46
Benzene		U	0.00020	0.0010	mg/L	1	20-Jan-2020 16:46
Chlorobenzene		U	0.00030	0.0010	mg/L	1	20-Jan-2020 16:46
Ethylbenzene		U	0.00030	0.0010	mg/L	1	20-Jan-2020 16:46
Methylene chloride		U	0.0010	0.0020	mg/L	1	20-Jan-2020 16:46
Toluene		U	0.00020	0.0010	mg/L	1	20-Jan-2020 16:46
Xylenes, Total		U	0.00030	0.0010	mg/L	1	20-Jan-2020 16:46
Surr: 1,2-Dichloroethane-d4	*95.7*			*70-126*	*%REC*	*1*	*20-Jan-2020 16:46*
Surr: 4-Bromofluorobenzene	*94.8*			*81-113*	*%REC*	*1*	*20-Jan-2020 16:46*
Surr: Dibromofluoromethane	*99.1*			*77-123*	*%REC*	*1*	*20-Jan-2020 16:46*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*20-Jan-2020 16:46*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW42B-20200113
Collection Date: 13-Jan-2020 13:10

ANALYTICAL REPORT
WorkOrder:HS20010596
Lab ID:HS20010596-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Jan-2020		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	17-Jan-2020 20:04
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	17-Jan-2020 20:04
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	17-Jan-2020 20:04
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	17-Jan-2020 20:04
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	17-Jan-2020 20:04
2-Methylnaphthalene	**0.000069**	J	**0.000019**	**0.00010**	**mg/L**	1	17-Jan-2020 20:04
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	17-Jan-2020 20:04
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	17-Jan-2020 20:04
Acenaphthene	**0.00012**		**0.000027**	**0.00010**	**mg/L**	1	17-Jan-2020 20:04
Acenaphthylene	U		0.000015	0.00010	mg/L	1	17-Jan-2020 20:04
Anthracene	**0.000049**	J	**0.000014**	**0.00010**	**mg/L**	1	17-Jan-2020 20:04
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	17-Jan-2020 20:04
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	17-Jan-2020 20:04
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	17-Jan-2020 20:04
Bis(2-ethylhexyl)phthalate	**0.00013**	J	**0.000037**	**0.00020**	**mg/L**	1	17-Jan-2020 20:04
Chrysene	U		0.000021	0.00010	mg/L	1	17-Jan-2020 20:04
Dibenzofuran	**0.000065**	J	**0.000020**	**0.00010**	**mg/L**	1	17-Jan-2020 20:04
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	17-Jan-2020 20:04
Fluoranthene	**0.00018**		**0.000010**	**0.00010**	**mg/L**	1	17-Jan-2020 20:04
Fluorene	**0.000067**	J	**0.000030**	**0.00010**	**mg/L**	1	17-Jan-2020 20:04
Naphthalene	**0.00076**		**0.000020**	**0.00010**	**mg/L**	1	17-Jan-2020 20:04
Nitrobenzene	U		0.000024	0.00020	mg/L	1	17-Jan-2020 20:04
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	17-Jan-2020 20:04
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	17-Jan-2020 20:04
Phenanthrene	**0.00012**		**0.000021**	**0.00010**	**mg/L**	1	17-Jan-2020 20:04
Phenol	U		0.000035	0.00020	mg/L	1	17-Jan-2020 20:04
Pyrene	**0.00013**		**0.000019**	**0.00010**	**mg/L**	1	17-Jan-2020 20:04
Surr: 2,4,6-Tribromophenol	*67.8*			*34-129*	*%REC*	*1*	*17-Jan-2020 20:04*
Surr: 2-Fluorobiphenyl	*65.5*			*40-125*	*%REC*	*1*	*17-Jan-2020 20:04*
Surr: 2-Fluorophenol	*60.6*			*20-120*	*%REC*	*1*	*17-Jan-2020 20:04*
Surr: 4-Terphenyl-d14	*92.4*			*40-135*	*%REC*	*1*	*17-Jan-2020 20:04*
Surr: Nitrobenzene-d5	*63.9*			*41-120*	*%REC*	*1*	*17-Jan-2020 20:04*
Surr: Phenol-d6	*65.2*			*20-120*	*%REC*	*1*	*17-Jan-2020 20:04*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2020		Analyst: JHD
Arsenic	**0.00133**	J	**0.000400**	**0.00200**	**mg/L**	1	20-Jan-2020 16:18

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-TW41B-20200113
Collection Date: 13-Jan-2020 14:00

ANALYTICAL REPORT
WorkOrder:HS20010596
Lab ID:HS20010596-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	20-Jan-2020 14:15
Benzene	**0.00039**	J	**0.00020**	**0.0010**	**mg/L**	1	20-Jan-2020 14:15
Chlorobenzene	U		0.00030	0.0010	mg/L	1	20-Jan-2020 14:15
Ethylbenzene	U		0.00030	0.0010	mg/L	1	20-Jan-2020 14:15
Methylene chloride	U		0.0010	0.0020	mg/L	1	20-Jan-2020 14:15
Toluene	U		0.00020	0.0010	mg/L	1	20-Jan-2020 14:15
Xylenes, Total	**0.0021**		**0.00030**	**0.0010**	**mg/L**	1	20-Jan-2020 14:15
Surr: 1,2-Dichloroethane-d4	*96.7*			*70-126*	*%REC*	*1*	*20-Jan-2020 14:15*
Surr: 4-Bromofluorobenzene	*97.2*			*81-113*	*%REC*	*1*	*20-Jan-2020 14:15*
Surr: Dibromofluoromethane	*99.8*			*77-123*	*%REC*	*1*	*20-Jan-2020 14:15*
Surr: Toluene-d8	*99.6*			*82-127*	*%REC*	*1*	*20-Jan-2020 14:15*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-TW41B-20200113
Collection Date: 13-Jan-2020 14:00

ANALYTICAL REPORT
WorkOrder:HS20010596
Lab ID:HS20010596-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 16-Jan-2020		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	17-Jan-2020 20:24
2,4-Dimethylphenol	**0.00017**	J	**0.000040**	**0.00020**	**mg/L**	1	17-Jan-2020 20:24
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	17-Jan-2020 20:24
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	17-Jan-2020 20:24
2-Chloronaphthalene	**0.00012**	J	**0.000021**	**0.00020**	**mg/L**	1	17-Jan-2020 20:24
2-Methylnaphthalene	**0.0071**		**0.000019**	**0.00010**	**mg/L**	1	17-Jan-2020 20:24
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	17-Jan-2020 20:24
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	17-Jan-2020 20:24
Acenaphthene	**0.12**		**0.00054**	**0.0020**	**mg/L**	20	21-Jan-2020 19:19
Acenaphthylene	**0.0011**		**0.000015**	**0.00010**	**mg/L**	1	17-Jan-2020 20:24
Anthracene	**0.0031**		**0.000014**	**0.00010**	**mg/L**	1	17-Jan-2020 20:24
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	17-Jan-2020 20:24
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	17-Jan-2020 20:24
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	17-Jan-2020 20:24
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	17-Jan-2020 20:24
Chrysene	U		0.000021	0.00010	mg/L	1	17-Jan-2020 20:24
Dibenzofuran	**0.055**		**0.00020**	**0.0010**	**mg/L**	10	21-Jan-2020 17:42
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	17-Jan-2020 20:24
Fluoranthene	**0.0021**		**0.000010**	**0.00010**	**mg/L**	1	17-Jan-2020 20:24
Fluorene	**0.078**		**0.00030**	**0.0010**	**mg/L**	10	21-Jan-2020 17:42
Naphthalene	**0.058**		**0.00020**	**0.0010**	**mg/L**	10	21-Jan-2020 17:42
Nitrobenzene	U		0.000024	0.00020	mg/L	1	17-Jan-2020 20:24
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	17-Jan-2020 20:24
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	17-Jan-2020 20:24
Phenanthrene	**0.0084**		**0.000021**	**0.00010**	**mg/L**	1	17-Jan-2020 20:24
Phenol	U		0.000035	0.00020	mg/L	1	17-Jan-2020 20:24
Pyrene	**0.00082**		**0.000019**	**0.00010**	**mg/L**	1	17-Jan-2020 20:24
Surr: 2,4,6-Tribromophenol	*156*	*S*		*34-129*	*%REC*	*10*	*21-Jan-2020 17:42*
Surr: 2,4,6-Tribromophenol	*60.3*	*J*		*34-129*	*%REC*	*20*	*21-Jan-2020 19:19*
Surr: 2,4,6-Tribromophenol	*83.3*			*34-129*	*%REC*	*1*	*17-Jan-2020 20:24*
Surr: 2-Fluorobiphenyl	*68.0*			*40-125*	*%REC*	*1*	*17-Jan-2020 20:24*
Surr: 2-Fluorobiphenyl	*118*			*40-125*	*%REC*	*10*	*21-Jan-2020 17:42*
Surr: 2-Fluorobiphenyl	*118*			*40-125*	*%REC*	*20*	*21-Jan-2020 19:19*
Surr: 2-Fluorophenol	*92.0*			*20-120*	*%REC*	*10*	*21-Jan-2020 17:42*
Surr: 2-Fluorophenol	*85.3*			*20-120*	*%REC*	*20*	*21-Jan-2020 19:19*
Surr: 2-Fluorophenol	*66.9*			*20-120*	*%REC*	*1*	*17-Jan-2020 20:24*
Surr: 4-Terphenyl-d14	*92.6*			*40-135*	*%REC*	*1*	*17-Jan-2020 20:24*
Surr: 4-Terphenyl-d14	*155*	*S*		*40-135*	*%REC*	*10*	*21-Jan-2020 17:42*
Surr: 4-Terphenyl-d14	*101*			*40-135*	*%REC*	*20*	*21-Jan-2020 19:19*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-TW41B-20200113
Collection Date: 13-Jan-2020 14:00

ANALYTICAL REPORT
WorkOrder:HS20010596
Lab ID:HS20010596-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Jan-2020		Analyst: GEY
Surr: Nitrobenzene-d5	*82.3*			*41-120*	*%REC*	*10*	*21-Jan-2020 17:42*
Surr: Nitrobenzene-d5	*83.5*			*41-120*	*%REC*	*20*	*21-Jan-2020 19:19*
Surr: Nitrobenzene-d5	*81.4*			*41-120*	*%REC*	*1*	*17-Jan-2020 20:24*
Surr: Phenol-d6	*71.7*			*20-120*	*%REC*	*1*	*17-Jan-2020 20:24*
Surr: Phenol-d6	*83.3*			*20-120*	*%REC*	*10*	*21-Jan-2020 17:42*
Surr: Phenol-d6	*91.0*			*20-120*	*%REC*	*20*	*21-Jan-2020 19:19*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2020		Analyst: JHD
Arsenic	**0.0557**		**0.000400**	**0.00200**	**mg/L**	1	20-Jan-2020 16:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW05-20200113
Collection Date: 13-Jan-2020 14:55

ANALYTICAL REPORT
WorkOrder:HS20010596
Lab ID:HS20010596-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	17-Jan-2020 07:40
Benzene		U	0.00020	0.0010	mg/L	1	17-Jan-2020 07:40
Chlorobenzene		U	0.00030	0.0010	mg/L	1	17-Jan-2020 07:40
Ethylbenzene		U	0.00030	0.0010	mg/L	1	17-Jan-2020 07:40
Methylene chloride		U	0.0010	0.0020	mg/L	1	17-Jan-2020 07:40
Toluene		U	0.00020	0.0010	mg/L	1	17-Jan-2020 07:40
Xylenes, Total		U	0.00030	0.0010	mg/L	1	17-Jan-2020 07:40
Surr: 1,2-Dichloroethane-d4	*116*			*70-126*	*%REC*	*1*	*17-Jan-2020 07:40*
Surr: 4-Bromofluorobenzene	*98.7*			*81-113*	*%REC*	*1*	*17-Jan-2020 07:40*
Surr: Dibromofluoromethane	*111*			*77-123*	*%REC*	*1*	*17-Jan-2020 07:40*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*17-Jan-2020 07:40*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW05-20200113
Collection Date: 13-Jan-2020 14:55

ANALYTICAL REPORT
WorkOrder:HS20010596
Lab ID:HS20010596-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Jan-2020		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	17-Jan-2020 20:43
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	17-Jan-2020 20:43
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	17-Jan-2020 20:43
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	17-Jan-2020 20:43
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	17-Jan-2020 20:43
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	17-Jan-2020 20:43
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	17-Jan-2020 20:43
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	17-Jan-2020 20:43
Acenaphthene	U		0.000027	0.00010	mg/L	1	17-Jan-2020 20:43
Acenaphthylene	U		0.000015	0.00010	mg/L	1	17-Jan-2020 20:43
Anthracene	U		0.000014	0.00010	mg/L	1	17-Jan-2020 20:43
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	17-Jan-2020 20:43
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	17-Jan-2020 20:43
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	17-Jan-2020 20:43
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	17-Jan-2020 20:43
Chrysene	U		0.000021	0.00010	mg/L	1	17-Jan-2020 20:43
Dibenzofuran	U		0.000020	0.00010	mg/L	1	17-Jan-2020 20:43
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	17-Jan-2020 20:43
Fluoranthene	U		0.000010	0.00010	mg/L	1	17-Jan-2020 20:43
Fluorene	U		0.000030	0.00010	mg/L	1	17-Jan-2020 20:43
Naphthalene	**0.00012**		**0.000020**	**0.00010**	**mg/L**	1	17-Jan-2020 20:43
Nitrobenzene	U		0.000024	0.00020	mg/L	1	17-Jan-2020 20:43
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	17-Jan-2020 20:43
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	17-Jan-2020 20:43
Phenanthrene	U		0.000021	0.00010	mg/L	1	17-Jan-2020 20:43
Phenol	U		0.000035	0.00020	mg/L	1	17-Jan-2020 20:43
Pyrene	U		0.000019	0.00010	mg/L	1	17-Jan-2020 20:43
Surr: 2,4,6-Tribromophenol	*77.4*			*34-129*	*%REC*	*1*	*17-Jan-2020 20:43*
Surr: 2-Fluorobiphenyl	*75.6*			*40-125*	*%REC*	*1*	*17-Jan-2020 20:43*
Surr: 2-Fluorophenol	*71.1*			*20-120*	*%REC*	*1*	*17-Jan-2020 20:43*
Surr: 4-Terphenyl-d14	*86.2*			*40-135*	*%REC*	*1*	*17-Jan-2020 20:43*
Surr: Nitrobenzene-d5	*72.7*			*41-120*	*%REC*	*1*	*17-Jan-2020 20:43*
Surr: Phenol-d6	*68.4*			*20-120*	*%REC*	*1*	*17-Jan-2020 20:43*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2020		Analyst: JHD
Arsenic	**0.00146**	J	**0.000400**	**0.00200**	**mg/L**	1	20-Jan-2020 16:46

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW12C-20200113
Collection Date: 13-Jan-2020 15:55

ANALYTICAL REPORT
WorkOrder:HS20010596
Lab ID:HS20010596-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	17-Jan-2020 08:04
Benzene		U	0.00020	0.0010	mg/L	1	17-Jan-2020 08:04
Chlorobenzene		U	0.00030	0.0010	mg/L	1	17-Jan-2020 08:04
Ethylbenzene		U	0.00030	0.0010	mg/L	1	17-Jan-2020 08:04
Methylene chloride		U	0.0010	0.0020	mg/L	1	17-Jan-2020 08:04
Toluene		U	0.00020	0.0010	mg/L	1	17-Jan-2020 08:04
Xylenes, Total		U	0.00030	0.0010	mg/L	1	17-Jan-2020 08:04
Surr: 1,2-Dichloroethane-d4	*126*			*70-126*	*%REC*	*1*	*17-Jan-2020 08:04*
Surr: 4-Bromofluorobenzene	*103*			*81-113*	*%REC*	*1*	*17-Jan-2020 08:04*
Surr: Dibromofluoromethane	*110*			*77-123*	*%REC*	*1*	*17-Jan-2020 08:04*
Surr: Toluene-d8	*100.0*			*82-127*	*%REC*	*1*	*17-Jan-2020 08:04*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW12C-20200113
Collection Date: 13-Jan-2020 15:55

ANALYTICAL REPORT
WorkOrder:HS20010596
Lab ID:HS20010596-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Jan-2020		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	17-Jan-2020 21:03
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	17-Jan-2020 21:03
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	17-Jan-2020 21:03
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	17-Jan-2020 21:03
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	17-Jan-2020 21:03
2-Methylnaphthalene	**0.00018**		**0.000019**	**0.00010**	**mg/L**	1	17-Jan-2020 21:03
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	17-Jan-2020 21:03
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	17-Jan-2020 21:03
Acenaphthene	**0.00015**		**0.000027**	**0.00010**	**mg/L**	1	17-Jan-2020 21:03
Acenaphthylene	U		0.000015	0.00010	mg/L	1	17-Jan-2020 21:03
Anthracene	U		0.000014	0.00010	mg/L	1	17-Jan-2020 21:03
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	17-Jan-2020 21:03
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	17-Jan-2020 21:03
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	17-Jan-2020 21:03
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	17-Jan-2020 21:03
Chrysene	U		0.000021	0.00010	mg/L	1	17-Jan-2020 21:03
Dibenzofuran	**0.00012**		**0.000020**	**0.00010**	**mg/L**	1	17-Jan-2020 21:03
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	17-Jan-2020 21:03
Fluoranthene	**0.000091**	J	**0.000010**	**0.00010**	**mg/L**	1	17-Jan-2020 21:03
Fluorene	**0.00019**		**0.000030**	**0.00010**	**mg/L**	1	17-Jan-2020 21:03
Naphthalene	**0.0017**		**0.000020**	**0.00010**	**mg/L**	1	17-Jan-2020 21:03
Nitrobenzene	U		0.000024	0.00020	mg/L	1	17-Jan-2020 21:03
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	17-Jan-2020 21:03
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	17-Jan-2020 21:03
Phenanthrene	**0.00015**		**0.000021**	**0.00010**	**mg/L**	1	17-Jan-2020 21:03
Phenol	**0.00012**	J	**0.000035**	**0.00020**	**mg/L**	1	17-Jan-2020 21:03
Pyrene	**0.000068**	J	**0.000019**	**0.00010**	**mg/L**	1	17-Jan-2020 21:03
Surr: 2,4,6-Tribromophenol	*75.4*			*34-129*	*%REC*	*1*	*17-Jan-2020 21:03*
Surr: 2-Fluorobiphenyl	*62.8*			*40-125*	*%REC*	*1*	*17-Jan-2020 21:03*
Surr: 2-Fluorophenol	*59.3*			*20-120*	*%REC*	*1*	*17-Jan-2020 21:03*
Surr: 4-Terphenyl-d14	*85.7*			*40-135*	*%REC*	*1*	*17-Jan-2020 21:03*
Surr: Nitrobenzene-d5	*61.5*			*41-120*	*%REC*	*1*	*17-Jan-2020 21:03*
Surr: Phenol-d6	*61.6*			*20-120*	*%REC*	*1*	*17-Jan-2020 21:03*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2020		Analyst: JHD
Arsenic	**0.00195**	J	**0.000400**	**0.00200**	**mg/L**	1	20-Jan-2020 16:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW12A-20200113
Collection Date: 13-Jan-2020 16:45

ANALYTICAL REPORT
WorkOrder:HS20010596
Lab ID:HS20010596-06
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	17-Jan-2020 08:29
Benzene		U	0.00020	0.0010	mg/L	1	17-Jan-2020 08:29
Chlorobenzene		U	0.00030	0.0010	mg/L	1	17-Jan-2020 08:29
Ethylbenzene		U	0.00030	0.0010	mg/L	1	17-Jan-2020 08:29
Methylene chloride		U	0.0010	0.0020	mg/L	1	17-Jan-2020 08:29
Toluene		U	0.00020	0.0010	mg/L	1	17-Jan-2020 08:29
Xylenes, Total		U	0.00030	0.0010	mg/L	1	17-Jan-2020 08:29
Surr: 1,2-Dichloroethane-d4	*119*			*70-126*	*%REC*	*1*	*17-Jan-2020 08:29*
Surr: 4-Bromofluorobenzene	*98.9*			*81-113*	*%REC*	*1*	*17-Jan-2020 08:29*
Surr: Dibromofluoromethane	*113*			*77-123*	*%REC*	*1*	*17-Jan-2020 08:29*
Surr: Toluene-d8	*99.2*			*82-127*	*%REC*	*1*	*17-Jan-2020 08:29*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW12A-20200113
Collection Date: 13-Jan-2020 16:45

ANALYTICAL REPORT
WorkOrder:HS20010596
Lab ID:HS20010596-06
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 16-Jan-2020		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	17-Jan-2020 21:23
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	17-Jan-2020 21:23
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	17-Jan-2020 21:23
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	17-Jan-2020 21:23
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	17-Jan-2020 21:23
2-Methylnaphthalene	**0.0023**		**0.000019**	**0.00010**	**mg/L**	1	17-Jan-2020 21:23
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	17-Jan-2020 21:23
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	17-Jan-2020 21:23
Acenaphthene	**0.28**		**0.0011**	**0.0040**	**mg/L**	40	21-Jan-2020 19:39
Acenaphthylene	**0.0012**		**0.000015**	**0.00010**	**mg/L**	1	17-Jan-2020 21:23
Anthracene	**0.0097**		**0.000014**	**0.00010**	**mg/L**	1	17-Jan-2020 21:23
Benz(a)anthracene	**0.00015**		**0.000050**	**0.00010**	**mg/L**	1	17-Jan-2020 21:23
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	17-Jan-2020 21:23
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	17-Jan-2020 21:23
Bis(2-ethylhexyl)phthalate	**0.00011**	J	**0.000037**	**0.00020**	**mg/L**	1	17-Jan-2020 21:23
Chrysene	**0.00015**		**0.000021**	**0.00010**	**mg/L**	1	17-Jan-2020 21:23
Dibenzofuran	**0.23**		**0.00080**	**0.0040**	**mg/L**	40	21-Jan-2020 19:39
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	17-Jan-2020 21:23
Fluoranthene	**0.0067**		**0.000010**	**0.00010**	**mg/L**	1	17-Jan-2020 21:23
Fluorene	**0.28**		**0.0012**	**0.0040**	**mg/L**	40	21-Jan-2020 19:39
Naphthalene	**0.00051**		**0.000020**	**0.00010**	**mg/L**	1	17-Jan-2020 21:23
Nitrobenzene	U		0.000024	0.00020	mg/L	1	17-Jan-2020 21:23
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	17-Jan-2020 21:23
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	17-Jan-2020 21:23
Phenanthrene	**0.082**		**0.00042**	**0.0020**	**mg/L**	20	21-Jan-2020 18:02
Phenol	U		0.000035	0.00020	mg/L	1	17-Jan-2020 21:23
Pyrene	**0.0031**		**0.000019**	**0.00010**	**mg/L**	1	17-Jan-2020 21:23
Surr: 2,4,6-Tribromophenol	*74.7*			*34-129*	*%REC*	*1*	*17-Jan-2020 21:23*
Surr: 2,4,6-Tribromophenol	*135*	*S*		*34-129*	*%REC*	*20*	*21-Jan-2020 18:02*
Surr: 2,4,6-Tribromophenol	*93.5*	*J*		*34-129*	*%REC*	*40*	*21-Jan-2020 19:39*
Surr: 2-Fluorobiphenyl	*122*			*40-125*	*%REC*	*20*	*21-Jan-2020 18:02*
Surr: 2-Fluorobiphenyl	*115*	*J*		*40-125*	*%REC*	*40*	*21-Jan-2020 19:39*
Surr: 2-Fluorobiphenyl	*62.6*			*40-125*	*%REC*	*1*	*17-Jan-2020 21:23*
Surr: 2-Fluorophenol	*60.8*			*20-120*	*%REC*	*1*	*17-Jan-2020 21:23*
Surr: 2-Fluorophenol	*88.7*			*20-120*	*%REC*	*20*	*21-Jan-2020 18:02*
Surr: 2-Fluorophenol	*99.4*	*J*		*20-120*	*%REC*	*40*	*21-Jan-2020 19:39*
Surr: 4-Terphenyl-d14	*165*	*S*		*40-135*	*%REC*	*20*	*21-Jan-2020 18:02*
Surr: 4-Terphenyl-d14	*106*	*J*		*40-135*	*%REC*	*40*	*21-Jan-2020 19:39*
Surr: 4-Terphenyl-d14	*89.3*			*40-135*	*%REC*	*1*	*17-Jan-2020 21:23*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW12A-20200113
Collection Date: 13-Jan-2020 16:45

ANALYTICAL REPORT
WorkOrder:HS20010596
Lab ID:HS20010596-06
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Jan-2020		Analyst: GEY
Surr: Nitrobenzene-d5	*72.0*			*41-120*	*%REC*	*1*	*17-Jan-2020 21:23*
Surr: Nitrobenzene-d5	*91.6*			*41-120*	*%REC*	*20*	*21-Jan-2020 18:02*
Surr: Nitrobenzene-d5	*89.2*	*J*		*41-120*	*%REC*	*40*	*21-Jan-2020 19:39*
Surr: Phenol-d6	*95.1*			*20-120*	*%REC*	*20*	*21-Jan-2020 18:02*
Surr: Phenol-d6	*79.5*	*J*		*20-120*	*%REC*	*40*	*21-Jan-2020 19:39*
Surr: Phenol-d6	*62.0*			*20-120*	*%REC*	*1*	*17-Jan-2020 21:23*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2020		Analyst: JHD
Arsenic	**0.00134**	J	**0.000400**	**0.00200**	**mg/L**	1	20-Jan-2020 16:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW39B-20200113
Collection Date: 13-Jan-2020 17:35

ANALYTICAL REPORT
WorkOrder:HS20010596
Lab ID:HS20010596-07
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	21-Jan-2020 13:19
Benzene		U	0.00020	0.0010	mg/L	1	21-Jan-2020 13:19
Chlorobenzene		U	0.00030	0.0010	mg/L	1	21-Jan-2020 13:19
Ethylbenzene		U	0.00030	0.0010	mg/L	1	21-Jan-2020 13:19
Methylene chloride		U	0.0010	0.0020	mg/L	1	21-Jan-2020 13:19
Toluene		U	0.00020	0.0010	mg/L	1	21-Jan-2020 13:19
Xylenes, Total		U	0.00030	0.0010	mg/L	1	21-Jan-2020 13:19
Surr: 1,2-Dichloroethane-d4	*92.0*			*70-126*	*%REC*	*1*	*21-Jan-2020 13:19*
Surr: 4-Bromofluorobenzene	*95.0*			*81-113*	*%REC*	*1*	*21-Jan-2020 13:19*
Surr: Dibromofluoromethane	*98.4*			*77-123*	*%REC*	*1*	*21-Jan-2020 13:19*
Surr: Toluene-d8	*99.2*			*82-127*	*%REC*	*1*	*21-Jan-2020 13:19*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW39B-20200113
Collection Date: 13-Jan-2020 17:35

ANALYTICAL REPORT
WorkOrder:HS20010596
Lab ID:HS20010596-07
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Jan-2020		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	17-Jan-2020 21:43
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	17-Jan-2020 21:43
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	17-Jan-2020 21:43
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	17-Jan-2020 21:43
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	17-Jan-2020 21:43
2-Methylnaphthalene	**0.00021**		**0.000019**	**0.00010**	**mg/L**	1	17-Jan-2020 21:43
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	17-Jan-2020 21:43
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	17-Jan-2020 21:43
Acenaphthene	**0.0012**		**0.000027**	**0.00010**	**mg/L**	1	17-Jan-2020 21:43
Acenaphthylene	U		0.000015	0.00010	mg/L	1	17-Jan-2020 21:43
Anthracene	**0.00016**		**0.000014**	**0.00010**	**mg/L**	1	17-Jan-2020 21:43
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	17-Jan-2020 21:43
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	17-Jan-2020 21:43
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	17-Jan-2020 21:43
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	17-Jan-2020 21:43
Chrysene	U		0.000021	0.00010	mg/L	1	17-Jan-2020 21:43
Dibenzofuran	**0.00019**		**0.000020**	**0.00010**	**mg/L**	1	17-Jan-2020 21:43
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	17-Jan-2020 21:43
Fluoranthene	**0.00023**		**0.000010**	**0.00010**	**mg/L**	1	17-Jan-2020 21:43
Fluorene	**0.00032**		**0.000030**	**0.00010**	**mg/L**	1	17-Jan-2020 21:43
Naphthalene	**0.0023**		**0.000020**	**0.00010**	**mg/L**	1	17-Jan-2020 21:43
Nitrobenzene	U		0.000024	0.00020	mg/L	1	17-Jan-2020 21:43
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	17-Jan-2020 21:43
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	17-Jan-2020 21:43
Phenanthrene	**0.00019**		**0.000021**	**0.00010**	**mg/L**	1	17-Jan-2020 21:43
Phenol	U		0.000035	0.00020	mg/L	1	17-Jan-2020 21:43
Pyrene	**0.00022**		**0.000019**	**0.00010**	**mg/L**	1	17-Jan-2020 21:43
Surr: 2,4,6-Tribromophenol	*81.4*			*34-129*	*%REC*	*1*	*17-Jan-2020 21:43*
Surr: 2-Fluorobiphenyl	*81.7*			*40-125*	*%REC*	*1*	*17-Jan-2020 21:43*
Surr: 2-Fluorophenol	*76.3*			*20-120*	*%REC*	*1*	*17-Jan-2020 21:43*
Surr: 4-Terphenyl-d14	*89.4*			*40-135*	*%REC*	*1*	*17-Jan-2020 21:43*
Surr: Nitrobenzene-d5	*81.4*			*41-120*	*%REC*	*1*	*17-Jan-2020 21:43*
Surr: Phenol-d6	*75.2*			*20-120*	*%REC*	*1*	*17-Jan-2020 21:43*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2020		Analyst: JHD
Arsenic	**0.00248**		**0.000400**	**0.00200**	**mg/L**	1	20-Jan-2020 16:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB05-20200113
Collection Date: 13-Jan-2020 17:50

ANALYTICAL REPORT
WorkOrder:HS20010596
Lab ID:HS20010596-08
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	18-Jan-2020 11:25
Benzene		U	0.00020	0.0010	mg/L	1	18-Jan-2020 11:25
Chlorobenzene		U	0.00030	0.0010	mg/L	1	18-Jan-2020 11:25
Ethylbenzene		U	0.00030	0.0010	mg/L	1	18-Jan-2020 11:25
Methylene chloride		U	0.0010	0.0020	mg/L	1	18-Jan-2020 11:25
Toluene		U	0.00020	0.0010	mg/L	1	18-Jan-2020 11:25
Xylenes, Total		U	0.00030	0.0010	mg/L	1	18-Jan-2020 11:25
Surr: 1,2-Dichloroethane-d4	*97.2*			*70-126*	*%REC*	*1*	*18-Jan-2020 11:25*
Surr: 4-Bromofluorobenzene	*96.0*			*81-113*	*%REC*	*1*	*18-Jan-2020 11:25*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*18-Jan-2020 11:25*
Surr: Toluene-d8	*99.6*			*82-127*	*%REC*	*1*	*18-Jan-2020 11:25*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB05-20200113
Collection Date: 13-Jan-2020 17:50

ANALYTICAL REPORT
WorkOrder:HS20010596
Lab ID:HS20010596-08
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine		U	0.000021	0.00020	mg/L	1	21-Jan-2020 13:09
2,4-Dimethylphenol		U	0.000040	0.00020	mg/L	1	21-Jan-2020 13:09
2,4-Dinitrotoluene		U	0.000058	0.00020	mg/L	1	21-Jan-2020 13:09
2,6-Dinitrotoluene		U	0.000042	0.00020	mg/L	1	21-Jan-2020 13:09
2-Chloronaphthalene		U	0.000021	0.00020	mg/L	1	21-Jan-2020 13:09
2-Methylnaphthalene		U	0.000019	0.00010	mg/L	1	21-Jan-2020 13:09
4,6-Dinitro-2-methylphenol		U	0.000020	0.00020	mg/L	1	21-Jan-2020 13:09
4-Nitrophenol		U	0.000047	0.0010	mg/L	1	21-Jan-2020 13:09
Acenaphthene		U	0.000027	0.00010	mg/L	1	21-Jan-2020 13:09
Acenaphthylene		U	0.000015	0.00010	mg/L	1	21-Jan-2020 13:09
Anthracene		U	0.000014	0.00010	mg/L	1	21-Jan-2020 13:09
Benz(a)anthracene		U	0.000050	0.00010	mg/L	1	21-Jan-2020 13:09
Benzo(a)pyrene		U	0.000020	0.00010	mg/L	1	21-Jan-2020 13:09
Bis(2-chloroethoxy)methane		U	0.000030	0.00020	mg/L	1	21-Jan-2020 13:09
Bis(2-ethylhexyl)phthalate		U	0.000037	0.00020	mg/L	1	21-Jan-2020 13:09
Chrysene		U	0.000021	0.00010	mg/L	1	21-Jan-2020 13:09
Dibenzofuran		U	0.000020	0.00010	mg/L	1	21-Jan-2020 13:09
Di-n-butyl phthalate		U	0.000020	0.00020	mg/L	1	21-Jan-2020 13:09
Fluoranthene		U	0.000010	0.00010	mg/L	1	21-Jan-2020 13:09
Fluorene		U	0.000030	0.00010	mg/L	1	21-Jan-2020 13:09
Naphthalene	**0.00033**		**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 13:09
Nitrobenzene		U	0.000024	0.00020	mg/L	1	21-Jan-2020 13:09
N-Nitrosodiphenylamine		U	0.000025	0.00020	mg/L	1	21-Jan-2020 13:09
Pentachlorophenol		U	0.000079	0.00020	mg/L	1	21-Jan-2020 13:09
Phenanthrene		U	0.000021	0.00010	mg/L	1	21-Jan-2020 13:09
Phenol		U	0.000035	0.00020	mg/L	1	21-Jan-2020 13:09
Pyrene		U	0.000019	0.00010	mg/L	1	21-Jan-2020 13:09
Surr: 2,4,6-Tribromophenol	*79.2*			*34-129*	*%REC*	*1*	*21-Jan-2020 13:09*
Surr: 2-Fluorobiphenyl	*79.4*			*40-125*	*%REC*	*1*	*21-Jan-2020 13:09*
Surr: 2-Fluorophenol	*67.5*			*20-120*	*%REC*	*1*	*21-Jan-2020 13:09*
Surr: 4-Terphenyl-d14	*87.4*			*40-135*	*%REC*	*1*	*21-Jan-2020 13:09*
Surr: Nitrobenzene-d5	*83.5*			*41-120*	*%REC*	*1*	*21-Jan-2020 13:09*
Surr: Phenol-d6	*66.4*			*20-120*	*%REC*	*1*	*21-Jan-2020 13:09*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2020		Analyst: JHD
Arsenic		U	0.000400	0.00200	mg/L	1	20-Jan-2020 16:53

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW13-20200114
Collection Date: 14-Jan-2020 08:10

ANALYTICAL REPORT
WorkOrder:HS20010596
Lab ID:HS20010596-09
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	18-Jan-2020 11:49
Benzene		U	0.00020	0.0010	mg/L	1	18-Jan-2020 11:49
Chlorobenzene		U	0.00030	0.0010	mg/L	1	18-Jan-2020 11:49
Ethylbenzene		U	0.00030	0.0010	mg/L	1	18-Jan-2020 11:49
Methylene chloride		U	0.0010	0.0020	mg/L	1	18-Jan-2020 11:49
Toluene		U	0.00020	0.0010	mg/L	1	18-Jan-2020 11:49
Xylenes, Total		U	0.00030	0.0010	mg/L	1	18-Jan-2020 11:49
Surr: 1,2-Dichloroethane-d4	*96.7*			*70-126*	*%REC*	*1*	*18-Jan-2020 11:49*
Surr: 4-Bromofluorobenzene	*95.4*			*81-113*	*%REC*	*1*	*18-Jan-2020 11:49*
Surr: Dibromofluoromethane	*99.8*			*77-123*	*%REC*	*1*	*18-Jan-2020 11:49*
Surr: Toluene-d8	*98.9*			*82-127*	*%REC*	*1*	*18-Jan-2020 11:49*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW13-20200114
Collection Date: 14-Jan-2020 08:10

ANALYTICAL REPORT
WorkOrder:HS20010596
Lab ID:HS20010596-09
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	21-Jan-2020 13:29
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	21-Jan-2020 13:29
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	21-Jan-2020 13:29
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	21-Jan-2020 13:29
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	21-Jan-2020 13:29
2-Methylnaphthalene	**0.000054**	J	**0.000019**	**0.00010**	**mg/L**	1	21-Jan-2020 13:29
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	21-Jan-2020 13:29
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	21-Jan-2020 13:29
Acenaphthene	**0.00022**		**0.000027**	**0.00010**	**mg/L**	1	21-Jan-2020 13:29
Acenaphthylene	U		0.000015	0.00010	mg/L	1	21-Jan-2020 13:29
Anthracene	U		0.000014	0.00010	mg/L	1	21-Jan-2020 13:29
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	21-Jan-2020 13:29
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	21-Jan-2020 13:29
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	21-Jan-2020 13:29
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	21-Jan-2020 13:29
Chrysene	U		0.000021	0.00010	mg/L	1	21-Jan-2020 13:29
Dibenzofuran	**0.00016**		**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 13:29
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	21-Jan-2020 13:29
Fluoranthene	U		0.000010	0.00010	mg/L	1	21-Jan-2020 13:29
Fluorene	**0.00016**		**0.000030**	**0.00010**	**mg/L**	1	21-Jan-2020 13:29
Naphthalene	**0.00026**		**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 13:29
Nitrobenzene	U		0.000024	0.00020	mg/L	1	21-Jan-2020 13:29
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	21-Jan-2020 13:29
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	21-Jan-2020 13:29
Phenanthrene	U		0.000021	0.00010	mg/L	1	21-Jan-2020 13:29
Phenol	U		0.000035	0.00020	mg/L	1	21-Jan-2020 13:29
Pyrene	U		0.000019	0.00010	mg/L	1	21-Jan-2020 13:29
Surr: 2,4,6-Tribromophenol	*99.9*			*34-129*	*%REC*	*1*	*21-Jan-2020 13:29*
Surr: 2-Fluorobiphenyl	*77.8*			*40-125*	*%REC*	*1*	*21-Jan-2020 13:29*
Surr: 2-Fluorophenol	*58.8*			*20-120*	*%REC*	*1*	*21-Jan-2020 13:29*
Surr: 4-Terphenyl-d14	*91.0*			*40-135*	*%REC*	*1*	*21-Jan-2020 13:29*
Surr: Nitrobenzene-d5	*86.5*			*41-120*	*%REC*	*1*	*21-Jan-2020 13:29*
Surr: Phenol-d6	*52.4*			*20-120*	*%REC*	*1*	*21-Jan-2020 13:29*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2020		Analyst: JHD
Arsenic	**0.0642**		**0.000400**	**0.00200**	**mg/L**	1	20-Jan-2020 16:55

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20010596
Sample ID: WG-1620-MW09-20200114
Lab ID:HS20010596-10
Collection Date: 14-Jan-2020 09:00
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	18-Jan-2020 13:02
Benzene		U	0.00020	0.0010	mg/L	1	18-Jan-2020 13:02
Chlorobenzene		U	0.00030	0.0010	mg/L	1	18-Jan-2020 13:02
Ethylbenzene		U	0.00030	0.0010	mg/L	1	18-Jan-2020 13:02
Methylene chloride		U	0.0010	0.0020	mg/L	1	18-Jan-2020 13:02
Toluene		U	0.00020	0.0010	mg/L	1	18-Jan-2020 13:02
Xylenes, Total		U	0.00030	0.0010	mg/L	1	18-Jan-2020 13:02
Surr: 1,2-Dichloroethane-d4	*94.7*			*70-126*	*%REC*	*1*	*18-Jan-2020 13:02*
Surr: 4-Bromofluorobenzene	*95.2*			*81-113*	*%REC*	*1*	*18-Jan-2020 13:02*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*18-Jan-2020 13:02*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*1*	*18-Jan-2020 13:02*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW09-20200114
Collection Date: 14-Jan-2020 09:00

ANALYTICAL REPORT
WorkOrder:HS20010596
Lab ID:HS20010596-10
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine		U	0.000021	0.00020	mg/L	1	20-Jan-2020 09:25
2,4-Dimethylphenol		U	0.000040	0.00020	mg/L	1	20-Jan-2020 09:25
2,4-Dinitrotoluene		U	0.000058	0.00020	mg/L	1	20-Jan-2020 09:25
2,6-Dinitrotoluene		U	0.000042	0.00020	mg/L	1	20-Jan-2020 09:25
2-Chloronaphthalene		U	0.000021	0.00020	mg/L	1	20-Jan-2020 09:25
2-Methylnaphthalene		U	0.000019	0.00010	mg/L	1	20-Jan-2020 09:25
4,6-Dinitro-2-methylphenol		U	0.000020	0.00020	mg/L	1	20-Jan-2020 09:25
4-Nitrophenol		U	0.000047	0.0010	mg/L	1	20-Jan-2020 09:25
Acenaphthene		U	0.000027	0.00010	mg/L	1	20-Jan-2020 09:25
Acenaphthylene		U	0.000015	0.00010	mg/L	1	20-Jan-2020 09:25
Anthracene		U	0.000014	0.00010	mg/L	1	20-Jan-2020 09:25
Benz(a)anthracene		U	0.000050	0.00010	mg/L	1	20-Jan-2020 09:25
Benzo(a)pyrene		U	0.000020	0.00010	mg/L	1	20-Jan-2020 09:25
Bis(2-chloroethoxy)methane		U	0.000030	0.00020	mg/L	1	20-Jan-2020 09:25
Bis(2-ethylhexyl)phthalate		U	0.000037	0.00020	mg/L	1	20-Jan-2020 09:25
Chrysene		U	0.000021	0.00010	mg/L	1	20-Jan-2020 09:25
Dibenzofuran		U	0.000020	0.00010	mg/L	1	20-Jan-2020 09:25
Di-n-butyl phthalate		U	0.000020	0.00020	mg/L	1	20-Jan-2020 09:25
Fluoranthene		U	0.000010	0.00010	mg/L	1	20-Jan-2020 09:25
Fluorene		U	0.000030	0.00010	mg/L	1	20-Jan-2020 09:25
Naphthalene	**0.00011**		**0.000020**	**0.00010**	**mg/L**	1	20-Jan-2020 09:25
Nitrobenzene		U	0.000024	0.00020	mg/L	1	20-Jan-2020 09:25
N-Nitrosodiphenylamine		U	0.000025	0.00020	mg/L	1	20-Jan-2020 09:25
Pentachlorophenol		U	0.000079	0.00020	mg/L	1	20-Jan-2020 09:25
Phenanthrene		U	0.000021	0.00010	mg/L	1	20-Jan-2020 09:25
Phenol		U	0.000035	0.00020	mg/L	1	20-Jan-2020 09:25
Pyrene		U	0.000019	0.00010	mg/L	1	20-Jan-2020 09:25
Surr: 2,4,6-Tribromophenol	*82.8*			*34-129*	*%REC*	*1*	*20-Jan-2020 09:25*
Surr: 2-Fluorobiphenyl	*79.9*			*40-125*	*%REC*	*1*	*20-Jan-2020 09:25*
Surr: 2-Fluorophenol	*71.7*			*20-120*	*%REC*	*1*	*20-Jan-2020 09:25*
Surr: 4-Terphenyl-d14	*98.4*			*40-135*	*%REC*	*1*	*20-Jan-2020 09:25*
Surr: Nitrobenzene-d5	*76.8*			*41-120*	*%REC*	*1*	*20-Jan-2020 09:25*
Surr: Phenol-d6	*71.6*			*20-120*	*%REC*	*1*	*20-Jan-2020 09:25*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2020		Analyst: JHD
Arsenic	**0.00430**		**0.000400**	**0.00200**	**mg/L**	1	20-Jan-2020 16:58

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20010596
Sample ID: WG-1620-MW21C-20200114
Lab ID:HS20010596-11
Collection Date: 14-Jan-2020 10:00
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	17-Jan-2020 02:20
Benzene		U	0.00020	0.0010	mg/L	1	17-Jan-2020 02:20
Chlorobenzene		U	0.00030	0.0010	mg/L	1	17-Jan-2020 02:20
Ethylbenzene		U	0.00030	0.0010	mg/L	1	17-Jan-2020 02:20
Methylene chloride		U	0.0010	0.0020	mg/L	1	17-Jan-2020 02:20
Toluene		U	0.00020	0.0010	mg/L	1	17-Jan-2020 02:20
Xylenes, Total		U	0.00030	0.0010	mg/L	1	17-Jan-2020 02:20
Surr: 1,2-Dichloroethane-d4	*95.7*			*70-126*	*%REC*	*1*	*17-Jan-2020 02:20*
Surr: 4-Bromofluorobenzene	*95.0*			*81-113*	*%REC*	*1*	*17-Jan-2020 02:20*
Surr: Dibromofluoromethane	*99.2*			*77-123*	*%REC*	*1*	*17-Jan-2020 02:20*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*1*	*17-Jan-2020 02:20*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW21C-20200114
Collection Date: 14-Jan-2020 10:00

ANALYTICAL REPORT
WorkOrder:HS20010596
Lab ID:HS20010596-11
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	21-Jan-2020 13:48
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	21-Jan-2020 13:48
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	21-Jan-2020 13:48
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	21-Jan-2020 13:48
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	21-Jan-2020 13:48
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	21-Jan-2020 13:48
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	21-Jan-2020 13:48
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	21-Jan-2020 13:48
Acenaphthene	U		0.000027	0.00010	mg/L	1	21-Jan-2020 13:48
Acenaphthylene	U		0.000015	0.00010	mg/L	1	21-Jan-2020 13:48
Anthracene	U		0.000014	0.00010	mg/L	1	21-Jan-2020 13:48
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	21-Jan-2020 13:48
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	21-Jan-2020 13:48
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	21-Jan-2020 13:48
Bis(2-ethylhexyl)phthalate	**0.00035**		**0.000037**	**0.00020**	**mg/L**	1	21-Jan-2020 13:48
Chrysene	U		0.000021	0.00010	mg/L	1	21-Jan-2020 13:48
Dibenzofuran	U		0.000020	0.00010	mg/L	1	21-Jan-2020 13:48
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	21-Jan-2020 13:48
Fluoranthene	U		0.000010	0.00010	mg/L	1	21-Jan-2020 13:48
Fluorene	U		0.000030	0.00010	mg/L	1	21-Jan-2020 13:48
Naphthalene	**0.00011**		**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 13:48
Nitrobenzene	U		0.000024	0.00020	mg/L	1	21-Jan-2020 13:48
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	21-Jan-2020 13:48
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	21-Jan-2020 13:48
Phenanthrene	U		0.000021	0.00010	mg/L	1	21-Jan-2020 13:48
Phenol	U		0.000035	0.00020	mg/L	1	21-Jan-2020 13:48
Pyrene	U		0.000019	0.00010	mg/L	1	21-Jan-2020 13:48
Surr: 2,4,6-Tribromophenol	*92.5*			*34-129*	*%REC*	*1*	*21-Jan-2020 13:48*
Surr: 2-Fluorobiphenyl	*81.6*			*40-125*	*%REC*	*1*	*21-Jan-2020 13:48*
Surr: 2-Fluorophenol	*64.3*			*20-120*	*%REC*	*1*	*21-Jan-2020 13:48*
Surr: 4-Terphenyl-d14	*104*			*40-135*	*%REC*	*1*	*21-Jan-2020 13:48*
Surr: Nitrobenzene-d5	*87.3*			*41-120*	*%REC*	*1*	*21-Jan-2020 13:48*
Surr: Phenol-d6	*64.2*			*20-120*	*%REC*	*1*	*21-Jan-2020 13:48*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2020		Analyst: JHD
Arsenic	**0.00109**	J	**0.000400**	**0.00200**	**mg/L**	1	20-Jan-2020 17:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FD02-20200114
Collection Date: 14-Jan-2020 10:00

ANALYTICAL REPORT
WorkOrder:HS20010596
Lab ID:HS20010596-12
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	17-Jan-2020 02:44
Benzene		U	0.00020	0.0010	mg/L	1	17-Jan-2020 02:44
Chlorobenzene		U	0.00030	0.0010	mg/L	1	17-Jan-2020 02:44
Ethylbenzene		U	0.00030	0.0010	mg/L	1	17-Jan-2020 02:44
Methylene chloride		U	0.0010	0.0020	mg/L	1	17-Jan-2020 02:44
Toluene		U	0.00020	0.0010	mg/L	1	17-Jan-2020 02:44
Xylenes, Total		U	0.00030	0.0010	mg/L	1	17-Jan-2020 02:44
Surr: 1,2-Dichloroethane-d4	*96.4*			*70-126*	*%REC*	*1*	*17-Jan-2020 02:44*
Surr: 4-Bromofluorobenzene	*94.1*			*81-113*	*%REC*	*1*	*17-Jan-2020 02:44*
Surr: Dibromofluoromethane	*99.4*			*77-123*	*%REC*	*1*	*17-Jan-2020 02:44*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*17-Jan-2020 02:44*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FD02-20200114
Collection Date: 14-Jan-2020 10:00

ANALYTICAL REPORT
WorkOrder:HS20010596
Lab ID:HS20010596-12
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	21-Jan-2020 14:08
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	21-Jan-2020 14:08
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	21-Jan-2020 14:08
2,6-Dinitrotoluene	**0.0030**		**0.000042**	**0.00020**	**mg/L**	1	21-Jan-2020 14:08
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	21-Jan-2020 14:08
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	21-Jan-2020 14:08
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	21-Jan-2020 14:08
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	21-Jan-2020 14:08
Acenaphthene	**0.00020**		**0.000027**	**0.00010**	**mg/L**	1	21-Jan-2020 14:08
Acenaphthylene	U		0.000015	0.00010	mg/L	1	21-Jan-2020 14:08
Anthracene	U		0.000014	0.00010	mg/L	1	21-Jan-2020 14:08
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	21-Jan-2020 14:08
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	21-Jan-2020 14:08
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	21-Jan-2020 14:08
Bis(2-ethylhexyl)phthalate	**0.000065**	J	**0.000037**	**0.00020**	**mg/L**	1	21-Jan-2020 14:08
Chrysene	U		0.000021	0.00010	mg/L	1	21-Jan-2020 14:08
Dibenzofuran	**0.00017**		**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 14:08
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	21-Jan-2020 14:08
Fluoranthene	U		0.000010	0.00010	mg/L	1	21-Jan-2020 14:08
Fluorene	**0.00018**		**0.000030**	**0.00010**	**mg/L**	1	21-Jan-2020 14:08
Naphthalene	**0.00013**		**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 14:08
Nitrobenzene	U		0.000024	0.00020	mg/L	1	21-Jan-2020 14:08
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	21-Jan-2020 14:08
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	21-Jan-2020 14:08
Phenanthrene	**0.000061**	J	**0.000021**	**0.00010**	**mg/L**	1	21-Jan-2020 14:08
Phenol	U		0.000035	0.00020	mg/L	1	21-Jan-2020 14:08
Pyrene	U		0.000019	0.00010	mg/L	1	21-Jan-2020 14:08
Surr: 2,4,6-Tribromophenol	*83.7*			*34-129*	*%REC*	*1*	*21-Jan-2020 14:08*
Surr: 2-Fluorobiphenyl	*75.4*			*40-125*	*%REC*	*1*	*21-Jan-2020 14:08*
Surr: 2-Fluorophenol	*65.2*			*20-120*	*%REC*	*1*	*21-Jan-2020 14:08*
Surr: 4-Terphenyl-d14	*107*			*40-135*	*%REC*	*1*	*21-Jan-2020 14:08*
Surr: Nitrobenzene-d5	*76.8*			*41-120*	*%REC*	*1*	*21-Jan-2020 14:08*
Surr: Phenol-d6	*66.7*			*20-120*	*%REC*	*1*	*21-Jan-2020 14:08*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2020		Analyst: JHD
Arsenic	**0.00109**	J	**0.000400**	**0.00200**	**mg/L**	1	20-Jan-2020 17:02

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-P11-20200114
Collection Date: 14-Jan-2020 10:55

ANALYTICAL REPORT
WorkOrder:HS20010596
Lab ID:HS20010596-13
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	17-Jan-2020 03:09
Benzene		U	0.00020	0.0010	mg/L	1	17-Jan-2020 03:09
Chlorobenzene		U	0.00030	0.0010	mg/L	1	17-Jan-2020 03:09
Ethylbenzene		U	0.00030	0.0010	mg/L	1	17-Jan-2020 03:09
Methylene chloride		U	0.0010	0.0020	mg/L	1	17-Jan-2020 03:09
Toluene		U	0.00020	0.0010	mg/L	1	17-Jan-2020 03:09
Xylenes, Total		U	0.00030	0.0010	mg/L	1	17-Jan-2020 03:09
Surr: 1,2-Dichloroethane-d4	*96.2*			*70-126*	*%REC*	*1*	*17-Jan-2020 03:09*
Surr: 4-Bromofluorobenzene	*94.7*			*81-113*	*%REC*	*1*	*17-Jan-2020 03:09*
Surr: Dibromofluoromethane	*99.1*			*77-123*	*%REC*	*1*	*17-Jan-2020 03:09*
Surr: Toluene-d8	*99.9*			*82-127*	*%REC*	*1*	*17-Jan-2020 03:09*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-P11-20200114
Collection Date: 14-Jan-2020 10:55

ANALYTICAL REPORT
WorkOrder:HS20010596
Lab ID:HS20010596-13
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	21-Jan-2020 14:27
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	21-Jan-2020 14:27
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	21-Jan-2020 14:27
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	21-Jan-2020 14:27
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	21-Jan-2020 14:27
2-Methylnaphthalene	**0.000076**	J	**0.000019**	**0.00010**	**mg/L**	1	21-Jan-2020 14:27
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	21-Jan-2020 14:27
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	21-Jan-2020 14:27
Acenaphthene	**0.0046**		**0.000027**	**0.00010**	**mg/L**	1	21-Jan-2020 14:27
Acenaphthylene	U		0.000015	0.00010	mg/L	1	21-Jan-2020 14:27
Anthracene	**0.000081**	J	**0.000014**	**0.00010**	**mg/L**	1	21-Jan-2020 14:27
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	21-Jan-2020 14:27
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	21-Jan-2020 14:27
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	21-Jan-2020 14:27
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	21-Jan-2020 14:27
Chrysene	U		0.000021	0.00010	mg/L	1	21-Jan-2020 14:27
Dibenzofuran	**0.00016**		**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 14:27
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	21-Jan-2020 14:27
Fluoranthene	U		0.000010	0.00010	mg/L	1	21-Jan-2020 14:27
Fluorene	**0.0013**		**0.000030**	**0.00010**	**mg/L**	1	21-Jan-2020 14:27
Naphthalene	**0.00048**		**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 14:27
Nitrobenzene	U		0.000024	0.00020	mg/L	1	21-Jan-2020 14:27
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	21-Jan-2020 14:27
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	21-Jan-2020 14:27
Phenanthrene	**0.00035**		**0.000021**	**0.00010**	**mg/L**	1	21-Jan-2020 14:27
Phenol	U		0.000035	0.00020	mg/L	1	21-Jan-2020 14:27
Pyrene	U		0.000019	0.00010	mg/L	1	21-Jan-2020 14:27
Surr: 2,4,6-Tribromophenol	*116*			*34-129*	*%REC*	*1*	*21-Jan-2020 14:27*
Surr: 2-Fluorobiphenyl	*75.1*			*40-125*	*%REC*	*1*	*21-Jan-2020 14:27*
Surr: 2-Fluorophenol	*58.8*			*20-120*	*%REC*	*1*	*21-Jan-2020 14:27*
Surr: 4-Terphenyl-d14	*120*			*40-135*	*%REC*	*1*	*21-Jan-2020 14:27*
Surr: Nitrobenzene-d5	*82.4*			*41-120*	*%REC*	*1*	*21-Jan-2020 14:27*
Surr: Phenol-d6	*58.0*			*20-120*	*%REC*	*1*	*21-Jan-2020 14:27*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2020		Analyst: JHD
Arsenic	**0.0360**		**0.000400**	**0.00200**	**mg/L**	1	20-Jan-2020 17:19

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW88C-20200114
Collection Date: 14-Jan-2020 11:50

ANALYTICAL REPORT
WorkOrder:HS20010596
Lab ID:HS20010596-14
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	17-Jan-2020 03:33
Benzene		U	0.00020	0.0010	mg/L	1	17-Jan-2020 03:33
Chlorobenzene		U	0.00030	0.0010	mg/L	1	17-Jan-2020 03:33
Ethylbenzene		U	0.00030	0.0010	mg/L	1	17-Jan-2020 03:33
Methylene chloride		U	0.0010	0.0020	mg/L	1	17-Jan-2020 03:33
Toluene		U	0.00020	0.0010	mg/L	1	17-Jan-2020 03:33
Xylenes, Total		U	0.00030	0.0010	mg/L	1	17-Jan-2020 03:33
Surr: 1,2-Dichloroethane-d4	*96.9*			*70-126*	*%REC*	*1*	*17-Jan-2020 03:33*
Surr: 4-Bromofluorobenzene	*93.0*			*81-113*	*%REC*	*1*	*17-Jan-2020 03:33*
Surr: Dibromofluoromethane	*100*			*77-123*	*%REC*	*1*	*17-Jan-2020 03:33*
Surr: Toluene-d8	*99.8*			*82-127*	*%REC*	*1*	*17-Jan-2020 03:33*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW88C-20200114
Collection Date: 14-Jan-2020 11:50

ANALYTICAL REPORT
WorkOrder:HS20010596
Lab ID:HS20010596-14
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	21-Jan-2020 14:46
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	21-Jan-2020 14:46
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	21-Jan-2020 14:46
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	21-Jan-2020 14:46
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	21-Jan-2020 14:46
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	21-Jan-2020 14:46
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	21-Jan-2020 14:46
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	21-Jan-2020 14:46
Acenaphthene	U		0.000027	0.00010	mg/L	1	21-Jan-2020 14:46
Acenaphthylene	U		0.000015	0.00010	mg/L	1	21-Jan-2020 14:46
Anthracene	U		0.000014	0.00010	mg/L	1	21-Jan-2020 14:46
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	21-Jan-2020 14:46
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	21-Jan-2020 14:46
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	21-Jan-2020 14:46
Bis(2-ethylhexyl)phthalate	**0.000064**	J	**0.000037**	**0.00020**	**mg/L**	1	21-Jan-2020 14:46
Chrysene	U		0.000021	0.00010	mg/L	1	21-Jan-2020 14:46
Dibenzofuran	U		0.000020	0.00010	mg/L	1	21-Jan-2020 14:46
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	21-Jan-2020 14:46
Fluoranthene	U		0.000010	0.00010	mg/L	1	21-Jan-2020 14:46
Fluorene	U		0.000030	0.00010	mg/L	1	21-Jan-2020 14:46
Naphthalene	U		0.000020	0.00010	mg/L	1	21-Jan-2020 14:46
Nitrobenzene	U		0.000024	0.00020	mg/L	1	21-Jan-2020 14:46
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	21-Jan-2020 14:46
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	21-Jan-2020 14:46
Phenanthrene	U		0.000021	0.00010	mg/L	1	21-Jan-2020 14:46
Phenol	U		0.000035	0.00020	mg/L	1	21-Jan-2020 14:46
Pyrene	U		0.000019	0.00010	mg/L	1	21-Jan-2020 14:46
Surr: 2,4,6-Tribromophenol	*110*			*34-129*	*%REC*	*1*	*21-Jan-2020 14:46*
Surr: 2-Fluorobiphenyl	*87.4*			*40-125*	*%REC*	*1*	*21-Jan-2020 14:46*
Surr: 2-Fluorophenol	*73.0*			*20-120*	*%REC*	*1*	*21-Jan-2020 14:46*
Surr: 4-Terphenyl-d14	*114*			*40-135*	*%REC*	*1*	*21-Jan-2020 14:46*
Surr: Nitrobenzene-d5	*81.2*			*41-120*	*%REC*	*1*	*21-Jan-2020 14:46*
Surr: Phenol-d6	*73.2*			*20-120*	*%REC*	*1*	*21-Jan-2020 14:46*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2020		Analyst: JHD
Arsenic	**0.000862**	J	**0.000400**	**0.00200**	**mg/L**	1	20-Jan-2020 17:22

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW20A-20200114
Collection Date: 14-Jan-2020 12:55

ANALYTICAL REPORT
WorkOrder:HS20010596
Lab ID:HS20010596-15
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	17-Jan-2020 03:58
Benzene	**0.020**		**0.00020**	**0.0010**	**mg/L**	1	17-Jan-2020 03:58
Chlorobenzene	U		0.00030	0.0010	mg/L	1	17-Jan-2020 03:58
Ethylbenzene	**0.025**		**0.00030**	**0.0010**	**mg/L**	1	17-Jan-2020 03:58
Methylene chloride	U		0.0010	0.0020	mg/L	1	17-Jan-2020 03:58
Toluene	U		0.00020	0.0010	mg/L	1	17-Jan-2020 03:58
Xylenes, Total	**0.024**		**0.00030**	**0.0010**	**mg/L**	1	17-Jan-2020 03:58
Surr: 1,2-Dichloroethane-d4	*97.1*			*70-126*	*%REC*	*1*	*17-Jan-2020 03:58*
Surr: 4-Bromofluorobenzene	*99.3*			*81-113*	*%REC*	*1*	*17-Jan-2020 03:58*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*17-Jan-2020 03:58*
Surr: Toluene-d8	*98.4*			*82-127*	*%REC*	*1*	*17-Jan-2020 03:58*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW20A-20200114
Collection Date: 14-Jan-2020 12:55

ANALYTICAL REPORT
WorkOrder:HS20010596
Lab ID:HS20010596-15
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 16-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	20-Jan-2020 18:24
2,4-Dimethylphenol	**0.0018**		**0.000040**	**0.00020**	**mg/L**	1	20-Jan-2020 18:24
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	20-Jan-2020 18:24
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	20-Jan-2020 18:24
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	20-Jan-2020 18:24
2-Methylnaphthalene	**0.075**		**0.00048**	**0.0025**	**mg/L**	25	21-Jan-2020 18:21
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	20-Jan-2020 18:24
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	20-Jan-2020 18:24
Acenaphthene	**0.11**		**0.00068**	**0.0025**	**mg/L**	25	21-Jan-2020 18:21
Acenaphthylene	**0.00092**		**0.000015**	**0.00010**	**mg/L**	1	20-Jan-2020 18:24
Anthracene	**0.0075**		**0.000014**	**0.00010**	**mg/L**	1	20-Jan-2020 18:24
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	20-Jan-2020 18:24
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	20-Jan-2020 18:24
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	20-Jan-2020 18:24
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	20-Jan-2020 18:24
Chrysene	U		0.000021	0.00010	mg/L	1	20-Jan-2020 18:24
Dibenzofuran	**0.079**		**0.00050**	**0.0025**	**mg/L**	25	21-Jan-2020 18:21
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	20-Jan-2020 18:24
Fluoranthene	**0.00067**		**0.000010**	**0.00010**	**mg/L**	1	20-Jan-2020 18:24
Fluorene	**0.080**		**0.00075**	**0.0025**	**mg/L**	25	21-Jan-2020 18:21
Naphthalene	**2.0**		**0.010**	**0.050**	**mg/L**	500	21-Jan-2020 19:58
Nitrobenzene	U		0.000024	0.00020	mg/L	1	20-Jan-2020 18:24
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	20-Jan-2020 18:24
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	20-Jan-2020 18:24
Phenanthrene	**0.028**		**0.00052**	**0.0025**	**mg/L**	25	21-Jan-2020 18:21
Phenol	U		0.000035	0.00020	mg/L	1	20-Jan-2020 18:24
Pyrene	**0.00030**		**0.000019**	**0.00010**	**mg/L**	1	20-Jan-2020 18:24
Surr: 2,4,6-Tribromophenol	*116*			*34-129*	*%REC*	*1*	*20-Jan-2020 18:24*
Surr: 2,4,6-Tribromophenol	*114*			*34-129*	*%REC*	*25*	*21-Jan-2020 18:21*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*500*	*21-Jan-2020 19:58*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*500*	*21-Jan-2020 19:58*
Surr: 2-Fluorobiphenyl	*116*			*40-125*	*%REC*	*25*	*21-Jan-2020 18:21*
Surr: 2-Fluorobiphenyl	*109*			*40-125*	*%REC*	*1*	*20-Jan-2020 18:24*
Surr: 2-Fluorophenol	*110*			*20-120*	*%REC*	*1*	*20-Jan-2020 18:24*
Surr: 2-Fluorophenol	*112*			*20-120*	*%REC*	*25*	*21-Jan-2020 18:21*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*500*	*21-Jan-2020 19:58*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*500*	*21-Jan-2020 19:58*
Surr: 4-Terphenyl-d14	*124*			*40-135*	*%REC*	*25*	*21-Jan-2020 18:21*
Surr: 4-Terphenyl-d14	*112*			*40-135*	*%REC*	*1*	*20-Jan-2020 18:24*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW20A-20200114
Collection Date: 14-Jan-2020 12:55

ANALYTICAL REPORT
WorkOrder:HS20010596
Lab ID:HS20010596-15
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Jan-2020		Analyst: LG
Surr: Nitrobenzene-d5	*113*			*41-120*	*%REC*	*1*	*20-Jan-2020 18:24*
Surr: Nitrobenzene-d5	*107*			*41-120*	*%REC*	*25*	*21-Jan-2020 18:21*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*500*	*21-Jan-2020 19:58*
Surr: Phenol-d6	*99.1*	*J*		*20-120*	*%REC*	*25*	*21-Jan-2020 18:21*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*500*	*21-Jan-2020 19:58*
Surr: Phenol-d6	*107*			*20-120*	*%REC*	*1*	*20-Jan-2020 18:24*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Jan-2020		Analyst: JHD
Arsenic	**0.00808**		**0.000400**	**0.00200**	**mg/L**	1	20-Jan-2020 17:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-TB03-20200114
Collection Date: 14-Jan-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20010596
Lab ID:HS20010596-16
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	16-Jan-2020 23:53
Benzene		U	0.00020	0.0010	mg/L	1	16-Jan-2020 23:53
Chlorobenzene		U	0.00030	0.0010	mg/L	1	16-Jan-2020 23:53
Ethylbenzene		U	0.00030	0.0010	mg/L	1	16-Jan-2020 23:53
Methylene chloride		U	0.0010	0.0020	mg/L	1	16-Jan-2020 23:53
Toluene		U	0.00020	0.0010	mg/L	1	16-Jan-2020 23:53
Xylenes, Total		U	0.00030	0.0010	mg/L	1	16-Jan-2020 23:53
Surr: 1,2-Dichloroethane-d4	*95.4*			*70-126*	*%REC*	*1*	*16-Jan-2020 23:53*
Surr: 4-Bromofluorobenzene	*94.2*			*81-113*	*%REC*	*1*	*16-Jan-2020 23:53*
Surr: Dibromofluoromethane	*100.0*			*77-123*	*%REC*	*1*	*16-Jan-2020 23:53*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*16-Jan-2020 23:53*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010596

Batch ID: 149706 **Start Date:** 16 Jan 2020 07:00 **End Date:** 16 Jan 2020 11:30
Method: SV AQ SEP FUN EXTRACT-LOWLEV - 3510C **Prep Code:** 3510_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20010596-01	1	1000 (mL)	1 (mL)	0.001
HS20010596-02	1	1000 (mL)	1 (mL)	0.001
HS20010596-03	1	1000 (mL)	1 (mL)	0.001
HS20010596-04	1	1000 (mL)	1 (mL)	0.001
HS20010596-05	1	1000 (mL)	1 (mL)	0.001
HS20010596-06	1	1000 (mL)	1 (mL)	0.001
HS20010596-07	1	1000 (mL)	1 (mL)	0.001
HS20010596-08	1	1000 (mL)	1 (mL)	0.001
HS20010596-09	1	1000 (mL)	1 (mL)	0.001
HS20010596-10	1	1000 (mL)	1 (mL)	0.001
HS20010596-11	1	1000 (mL)	1 (mL)	0.001
HS20010596-12	1	1000 (mL)	1 (mL)	0.001
HS20010596-13	1	1000 (mL)	1 (mL)	0.001
HS20010596-14	1	1000 (mL)	1 (mL)	0.001

Batch ID: 149707 **Start Date:** 16 Jan 2020 11:00 **End Date:** 16 Jan 2020 13:30
Method: SV AQ SEP FUN EXTRACT-LOWLEV - 3510C **Prep Code:** 3510_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20010596-15	1	1000 (mL)	1 (mL)	0.001

Batch ID: 149749 **Start Date:** 17 Jan 2020 08:00 **End Date:** 17 Jan 2020 12:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20010596-01		10 (mL)	10 (mL)	1
HS20010596-02		10 (mL)	10 (mL)	1
HS20010596-03		10 (mL)	10 (mL)	1
HS20010596-04		10 (mL)	10 (mL)	1
HS20010596-05		10 (mL)	10 (mL)	1
HS20010596-06		10 (mL)	10 (mL)	1
HS20010596-07		10 (mL)	10 (mL)	1
HS20010596-08		10 (mL)	10 (mL)	1
HS20010596-09		10 (mL)	10 (mL)	1
HS20010596-10		10 (mL)	10 (mL)	1
HS20010596-11		10 (mL)	10 (mL)	1
HS20010596-12		10 (mL)	10 (mL)	1
HS20010596-13		10 (mL)	10 (mL)	1
HS20010596-14		10 (mL)	10 (mL)	1
HS20010596-15		10 (mL)	10 (mL)	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010596

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 149706 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Water	
HS20010596-01	WG-1620-MW40B-20200113	13 Jan 2020 12:10		16 Jan 2020 10:59	21 Jan 2020 19:00	1000
HS20010596-01	WG-1620-MW40B-20200113	13 Jan 2020 12:10		16 Jan 2020 10:59	21 Jan 2020 18:41	100
HS20010596-01	WG-1620-MW40B-20200113	13 Jan 2020 12:10		16 Jan 2020 10:59	17 Jan 2020 19:44	1
HS20010596-02	WG-1620-MW42B-20200113	13 Jan 2020 13:10		16 Jan 2020 10:59	17 Jan 2020 20:04	1
HS20010596-03	WG-1620-TW41B-20200113	13 Jan 2020 14:00		16 Jan 2020 10:59	21 Jan 2020 19:19	20
HS20010596-03	WG-1620-TW41B-20200113	13 Jan 2020 14:00		16 Jan 2020 10:59	21 Jan 2020 17:42	10
HS20010596-03	WG-1620-TW41B-20200113	13 Jan 2020 14:00		16 Jan 2020 10:59	17 Jan 2020 20:24	1
HS20010596-04	WG-1620-MW05-20200113	13 Jan 2020 14:55		16 Jan 2020 10:59	17 Jan 2020 20:43	1
HS20010596-05	WG-1620-MW12C-20200113	13 Jan 2020 15:55		16 Jan 2020 10:59	17 Jan 2020 21:03	1
HS20010596-06	WG-1620-MW12A-20200113	13 Jan 2020 16:45		16 Jan 2020 10:59	21 Jan 2020 19:39	40
HS20010596-06	WG-1620-MW12A-20200113	13 Jan 2020 16:45		16 Jan 2020 10:59	21 Jan 2020 18:02	20
HS20010596-06	WG-1620-MW12A-20200113	13 Jan 2020 16:45		16 Jan 2020 10:59	17 Jan 2020 21:23	1
HS20010596-07	WG-1620-MW39B-20200113	13 Jan 2020 17:35		16 Jan 2020 10:59	17 Jan 2020 21:43	1
HS20010596-08	WG-1620-FB05-20200113	13 Jan 2020 17:50		16 Jan 2020 10:59	21 Jan 2020 13:09	1
HS20010596-09	WG-1620-MW13-20200114	14 Jan 2020 08:10		16 Jan 2020 10:59	21 Jan 2020 13:29	1
HS20010596-10	WG-1620-MW09-20200114	14 Jan 2020 09:00		16 Jan 2020 10:59	20 Jan 2020 09:25	1
HS20010596-11	WG-1620-MW21C-20200114	14 Jan 2020 10:00		16 Jan 2020 10:59	21 Jan 2020 13:48	1
HS20010596-12	WG-1620-FD02-20200114	14 Jan 2020 10:00		16 Jan 2020 10:59	21 Jan 2020 14:08	1
HS20010596-13	WG-1620-P11-20200114	14 Jan 2020 10:55		16 Jan 2020 10:59	21 Jan 2020 14:27	1
HS20010596-14	WG-1620-MW88C-20200114	14 Jan 2020 11:50		16 Jan 2020 10:59	21 Jan 2020 14:46	1
Batch ID: 149707 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Water	
HS20010596-15	WG-1620-MW20A-20200114	14 Jan 2020 12:55		16 Jan 2020 11:00	21 Jan 2020 19:58	500
HS20010596-15	WG-1620-MW20A-20200114	14 Jan 2020 12:55		16 Jan 2020 11:00	21 Jan 2020 18:21	25
HS20010596-15	WG-1620-MW20A-20200114	14 Jan 2020 12:55		16 Jan 2020 11:00	20 Jan 2020 18:24	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010596

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 149749 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS20010596-01	WG-1620-MW40B-20200113	13 Jan 2020 12:10		17 Jan 2020 12:00	20 Jan 2020 15:19	1
HS20010596-02	WG-1620-MW42B-20200113	13 Jan 2020 13:10		17 Jan 2020 12:00	20 Jan 2020 16:18	1
HS20010596-03	WG-1620-TW41B-20200113	13 Jan 2020 14:00		17 Jan 2020 12:00	20 Jan 2020 16:20	1
HS20010596-04	WG-1620-MW05-20200113	13 Jan 2020 14:55		17 Jan 2020 12:00	20 Jan 2020 16:46	1
HS20010596-05	WG-1620-MW12C-20200113	13 Jan 2020 15:55		17 Jan 2020 12:00	20 Jan 2020 16:39	1
HS20010596-06	WG-1620-MW12A-20200113	13 Jan 2020 16:45		17 Jan 2020 12:00	20 Jan 2020 16:49	1
HS20010596-07	WG-1620-MW39B-20200113	13 Jan 2020 17:35		17 Jan 2020 12:00	20 Jan 2020 16:51	1
HS20010596-08	WG-1620-FB05-20200113	13 Jan 2020 17:50		17 Jan 2020 12:00	20 Jan 2020 16:53	1
HS20010596-09	WG-1620-MW13-20200114	14 Jan 2020 08:10		17 Jan 2020 12:00	20 Jan 2020 16:55	1
HS20010596-10	WG-1620-MW09-20200114	14 Jan 2020 09:00		17 Jan 2020 12:00	20 Jan 2020 16:58	1
HS20010596-11	WG-1620-MW21C-20200114	14 Jan 2020 10:00		17 Jan 2020 12:00	20 Jan 2020 17:00	1
HS20010596-12	WG-1620-FD02-20200114	14 Jan 2020 10:00		17 Jan 2020 12:00	20 Jan 2020 17:02	1
HS20010596-13	WG-1620-P11-20200114	14 Jan 2020 10:55		17 Jan 2020 12:00	20 Jan 2020 17:19	1
HS20010596-14	WG-1620-MW88C-20200114	14 Jan 2020 11:50		17 Jan 2020 12:00	20 Jan 2020 17:22	1
HS20010596-15	WG-1620-MW20A-20200114	14 Jan 2020 12:55		17 Jan 2020 12:00	20 Jan 2020 17:24	1
Batch ID: R354616 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20010596-11	WG-1620-MW21C-20200114	14 Jan 2020 10:00			17 Jan 2020 02:20	1
HS20010596-12	WG-1620-FD02-20200114	14 Jan 2020 10:00			17 Jan 2020 02:44	1
HS20010596-13	WG-1620-P11-20200114	14 Jan 2020 10:55			17 Jan 2020 03:09	1
HS20010596-14	WG-1620-MW88C-20200114	14 Jan 2020 11:50			17 Jan 2020 03:33	1
HS20010596-15	WG-1620-MW20A-20200114	14 Jan 2020 12:55			17 Jan 2020 03:58	1
HS20010596-16	WG-1620-TB03-20200114	14 Jan 2020 00:00			16 Jan 2020 23:53	1
Batch ID: R354637 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20010596-01	WG-1620-MW40B-20200113	13 Jan 2020 12:10			17 Jan 2020 06:51	1
HS20010596-04	WG-1620-MW05-20200113	13 Jan 2020 14:55			17 Jan 2020 07:40	1
HS20010596-05	WG-1620-MW12C-20200113	13 Jan 2020 15:55			17 Jan 2020 08:04	1
HS20010596-06	WG-1620-MW12A-20200113	13 Jan 2020 16:45			17 Jan 2020 08:29	1
Batch ID: R354652 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20010596-08	WG-1620-FB05-20200113	13 Jan 2020 17:50			18 Jan 2020 11:25	1
HS20010596-09	WG-1620-MW13-20200114	14 Jan 2020 08:10			18 Jan 2020 11:49	1
HS20010596-10	WG-1620-MW09-20200114	14 Jan 2020 09:00			18 Jan 2020 13:02	1
Batch ID: R354723 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20010596-02	WG-1620-MW42B-20200113	13 Jan 2020 13:10			20 Jan 2020 16:46	1
HS20010596-03	WG-1620-TW41B-20200113	13 Jan 2020 14:00			20 Jan 2020 14:15	1
Batch ID: R354799 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20010596-07	WG-1620-MW39B-20200113	13 Jan 2020 17:35			21 Jan 2020 13:19	1

WorkOrder: HS20010596
InstrumentID: ICPMS05
Test Code: ICP_TW
Test Number: SW6020
Test Name: ICP-MS Metals by SW6020A

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Arsenic	7440-38-2	0.000500	0.000499	0.000400	0.00200

WorkOrder: HS20010596
InstrumentID: SV-7
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Diphenylhydrazine	122-66-7	0.00010	0.00013	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.000081	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.00010	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.00010	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.00012	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.000050	0.000052	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000060	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00010	0.000069	0.000047	0.0010
A	Acenaphthene	83-32-9	0.000050	0.000050	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000046	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.000046	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.000050	0.000057	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.000050	0.000047	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.00012	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.00014	0.000037	0.00020
A	Chrysene	218-01-9	0.000050	0.000049	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.000050	0.000050	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.00012	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000053	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.000050	0.000030	0.00010
A	Naphthalene	91-20-3	0.000050	0.000048	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.00014	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.00012	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.000057	0.000079	0.00020
A	Phenanthrene	85-01-8	0.000050	0.000047	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.00012	0.000035	0.00020
A	Pyrene	129-00-0	0.000050	0.000051	0.000019	0.00010
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0.00020
S	2-Fluorobiphenyl	321-60-8	0	0	0	0.00020
S	2-Fluorophenol	367-12-4	0	0	0	0.00020
S	4-Terphenyl-d14	1718-51-0	0	0	0	0.00020
S	Nitrobenzene-d5	4165-60-0	0	0	0	0.00020
S	Phenol-d6	13127-88-3	0	0	0	0.00020

WorkOrder: HS20010596
InstrumentID: VOA4
Test Code: 8260_LL_W
Test Number: SW8260
Test Name: Low Level Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.00050	0.00061	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00057	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00058	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00048	0.00030	0.0010
A	Methylene chloride	75-09-2	0.0010	0.00070	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00050	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00070	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

WorkOrder: HS20010596
InstrumentID: VOA2
Test Code: 8260_LL_W
Test Number: SW8260
Test Name: Low Level Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.00050	0.00062	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00059	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00071	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00063	0.00030	0.0010
A	Methylene chloride	75-09-2	0.0010	0.00075	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00069	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00059	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010596

QC BATCH REPORT

Batch ID: 149749 (0) **Instrument: ICPMS05** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-149749** Units: **mg/L** Analysis Date: **20-Jan-2020 15:14**
Client ID: Run ID: **ICPMS05_354648** SeqNo: **5441099** PrepDate: **17-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								

LCS Sample ID: **LCS-149749** Units: **mg/L** Analysis Date: **20-Jan-2020 15:16**
Client ID: Run ID: **ICPMS05_354648** SeqNo: **5441100** PrepDate: **17-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04712	0.00200	0.05	0	94.2	80 - 120				

MS Sample ID: **HS20010596-01MS** Units: **mg/L** Analysis Date: **20-Jan-2020 15:23**
Client ID: **WG-1620-MW40B-20200113** Run ID: **ICPMS05_354648** SeqNo: **5441103** PrepDate: **17-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1024	0.00200	0.05	0.05228	100	80 - 120				

MSD Sample ID: **HS20010596-01MSD** Units: **mg/L** Analysis Date: **20-Jan-2020 15:25**
Client ID: **WG-1620-MW40B-20200113** Run ID: **ICPMS05_354648** SeqNo: **5441104** PrepDate: **17-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.09984	0.00200	0.05	0.05228	95.1	80 - 120	0.1024	2.56	20	

PDS Sample ID: **HS20010596-01PDS** Units: **mg/L** Analysis Date: **20-Jan-2020 15:27**
Client ID: **WG-1620-MW40B-20200113** Run ID: **ICPMS05_354648** SeqNo: **5441105** PrepDate: **17-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1486	0.00200	0.1	0.05228	96.4	75 - 125				

SD Sample ID: **HS20010596-01SD** Units: **mg/L** Analysis Date: **20-Jan-2020 15:21**
Client ID: **WG-1620-MW40B-20200113** Run ID: **ICPMS05_354648** SeqNo: **5441102** PrepDate: **17-Jan-2020** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.05319	0.0100					0.05228	1.75	10	

The following samples were analyzed in this batch:

HS20010596-01	HS20010596-02	HS20010596-03	HS20010596-04
HS20010596-05	HS20010596-06	HS20010596-07	HS20010596-08
HS20010596-09	HS20010596-10	HS20010596-11	HS20010596-12
HS20010596-13	HS20010596-14	HS20010596-15	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010596

QC BATCH REPORT

Batch ID: 149706 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-149706** Units: **ug/L** Analysis Date: **17-Jan-2020 11:10**
Client ID: Run ID: **SV-7_354580** SeqNo: **5438870** PrepDate: **16-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	U	0.20								
2,4-Dimethylphenol	U	0.20								
2,4-Dinitrotoluene	U	0.20								
2,6-Dinitrotoluene	U	0.20								
2-Chloronaphthalene	U	0.20								
2-Methylnaphthalene	U	0.10								
4,6-Dinitro-2-methylphenol	U	0.20								
4-Nitrophenol	U	1.0								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Benz(a)anthracene	U	0.10								
Benzo(a)pyrene	U	0.10								
Bis(2-chloroethoxy)methane	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Chrysene	U	0.10								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Nitrobenzene	U	0.20								
N-Nitrosodiphenylamine	U	0.20								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*3.801*	*0.20*	*5*	*0*	*76.0*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.834*	*0.20*	*5*	*0*	*96.7*	*40 - 125*				
Surr: 2-Fluorophenol	*5.028*	*0.20*	*5*	*0*	*101*	*20 - 120*				
Surr: 4-Terphenyl-d14	*5.043*	*0.20*	*5*	*0*	*101*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.556*	*0.20*	*5*	*0*	*91.1*	*41 - 120*				
Surr: Phenol-d6	*4.987*	*0.20*	*5*	*0*	*99.7*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010596

QC BATCH REPORT

Batch ID: 149706 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCS Sample ID: **LCS-149706** Units: **ug/L** Analysis Date: **17-Jan-2020 11:29**
Client ID: Run ID: **SV-7_354580** SeqNo: **5438871** PrepDate: **16-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	5.272	0.20	5	0	105	39 - 127				
2,4-Dimethylphenol	4.201	0.20	5	0	84.0	35 - 120				
2,4-Dinitrotoluene	4.666	0.20	5	0	93.3	50 - 122				
2,6-Dinitrotoluene	4.42	0.20	5	0	88.4	50 - 120				
2-Chloronaphthalene	4.636	0.20	5	0	92.7	50 - 120				
2-Methylnaphthalene	4.065	0.10	5	0	81.3	50 - 120				
4,6-Dinitro-2-methylphenol	5.471	0.20	5	0	109	25 - 121				
4-Nitrophenol	4.842	1.0	5	0	96.8	30 - 130				
Acenaphthene	4.398	0.10	5	0	88.0	45 - 120				
Acenaphthylene	4.139	0.10	5	0	82.8	47 - 120				
Anthracene	4.609	0.10	5	0	92.2	45 - 120				
Benz(a)anthracene	4.284	0.10	5	0	85.7	40 - 120				
Benzo(a)pyrene	4.099	0.10	5	0	82.0	45 - 120				
Bis(2-chloroethoxy)methane	4.466	0.20	5	0	89.3	45 - 120				
Bis(2-ethylhexyl)phthalate	4.202	0.20	5	0	84.0	40 - 139				
Chrysene	4.745	0.10	5	0	94.9	43 - 120				
Dibenzofuran	4.287	0.10	5	0	85.7	50 - 120				
Di-n-butyl phthalate	4.89	0.20	5	0	97.8	45 - 123				
Fluoranthene	4.866	0.10	5	0	97.3	45 - 125				
Fluorene	4.384	0.10	5	0	87.7	49 - 120				
Naphthalene	4.293	0.10	5	0	85.9	45 - 120				
Nitrobenzene	4.568	0.20	5	0	91.4	44 - 120				
N-Nitrosodiphenylamine	4.806	0.20	5	0	96.1	40 - 125				
Pentachlorophenol	3.923	0.20	5	0	78.5	19 - 121				
Phenanthrene	4.546	0.10	5	0	90.9	45 - 121				
Phenol	4.568	0.20	5	0	91.4	20 - 124				
Pyrene	4.445	0.10	5	0	88.9	40 - 130				
Surr: 2,4,6-Tribromophenol	*4.171*	*0.20*	*5*	*0*	*83.4*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.609*	*0.20*	*5*	*0*	*92.2*	*40 - 125*				
Surr: 2-Fluorophenol	*4.848*	*0.20*	*5*	*0*	*97.0*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.705*	*0.20*	*5*	*0*	*94.1*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.603*	*0.20*	*5*	*0*	*92.1*	*41 - 120*				
Surr: Phenol-d6	*4.591*	*0.20*	*5*	*0*	*91.8*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010596

QC BATCH REPORT

Batch ID: 149706 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCSD Sample ID: **LCSD-149706** Units: **ug/L** Analysis Date: **17-Jan-2020 11:49**
Client ID: Run ID: **SV-7_354580** SeqNo: **5438872** PrepDate: **16-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	5.285	0.20	5	0	106	39 - 127	5.272	0.234	20	
2,4-Dimethylphenol	4.2	0.20	5	0	84.0	35 - 120	4.201	0.0176	20	
2,4-Dinitrotoluene	4.635	0.20	5	0	92.7	50 - 122	4.666	0.65	20	
2,6-Dinitrotoluene	4.325	0.20	5	0	86.5	50 - 120	4.42	2.17	20	
2-Chloronaphthalene	4.49	0.20	5	0	89.8	50 - 120	4.636	3.19	20	
2-Methylnaphthalene	4.163	0.10	5	0	83.3	50 - 120	4.065	2.37	20	
4,6-Dinitro-2-methylphenol	5.588	0.20	5	0	112	25 - 121	5.471	2.13	30	
4-Nitrophenol	4.79	1.0	5	0	95.8	30 - 130	4.842	1.07	20	
Acenaphthene	3.978	0.10	5	0	79.6	45 - 120	4.398	10	20	
Acenaphthylene	4.124	0.10	5	0	82.5	47 - 120	4.139	0.368	20	
Anthracene	4.564	0.10	5	0	91.3	45 - 120	4.609	0.985	20	
Benz(a)anthracene	4.402	0.10	5	0	88.0	40 - 120	4.284	2.73	20	
Benzo(a)pyrene	4.633	0.10	5	0	92.7	45 - 120	4.099	12.2	20	
Bis(2-chloroethoxy)methane	4.431	0.20	5	0	88.6	45 - 120	4.466	0.783	20	
Bis(2-ethylhexyl)phthalate	4.39	0.20	5	0	87.8	40 - 139	4.202	4.38	20	
Chrysene	4.79	0.10	5	0	95.8	43 - 120	4.745	0.959	20	
Dibenzofuran	4.261	0.10	5	0	85.2	50 - 120	4.287	0.602	20	
Di-n-butyl phthalate	4.792	0.20	5	0	95.8	45 - 123	4.89	2.02	20	
Fluoranthene	4.792	0.10	5	0	95.8	45 - 125	4.866	1.52	20	
Fluorene	4.279	0.10	5	0	85.6	49 - 120	4.384	2.42	20	
Naphthalene	4.282	0.10	5	0	85.6	45 - 120	4.293	0.27	20	
Nitrobenzene	4.617	0.20	5	0	92.3	44 - 120	4.568	1.08	20	
N-Nitrosodiphenylamine	4.664	0.20	5	0	93.3	40 - 125	4.806	2.99	20	
Pentachlorophenol	4.065	0.20	5	0	81.3	19 - 121	3.923	3.53	20	
Phenanthrene	4.457	0.10	5	0	89.1	45 - 121	4.546	1.98	20	
Phenol	4.533	0.20	5	0	90.7	20 - 124	4.568	0.761	20	
Pyrene	4.594	0.10	5	0	91.9	40 - 130	4.445	3.3	20	
Surr: 2,4,6-Tribromophenol	*4.334*	*0.20*	*5*	*0*	*86.7*	*34 - 129*	*4.171*	*3.83*	*20*	
Surr: 2-Fluorobiphenyl	*4.596*	*0.20*	*5*	*0*	*91.9*	*40 - 125*	*4.609*	*0.292*	*20*	
Surr: 2-Fluorophenol	*4.641*	*0.20*	*5*	*0*	*92.8*	*20 - 120*	*4.848*	*4.37*	*20*	
Surr: 4-Terphenyl-d14	*4.77*	*0.20*	*5*	*0*	*95.4*	*40 - 135*	*4.705*	*1.38*	*20*	
Surr: Nitrobenzene-d5	*4.549*	*0.20*	*5*	*0*	*91.0*	*41 - 120*	*4.603*	*1.19*	*20*	
Surr: Phenol-d6	*4.75*	*0.20*	*5*	*0*	*95.0*	*20 - 120*	*4.591*	*3.41*	*20*	

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	HS20010596

QC BATCH REPORT

Batch ID: 149706 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

The following samples were analyzed in this batch:

HS20010596-01	HS20010596-02	HS20010596-03	HS20010596-04
HS20010596-05	HS20010596-06	HS20010596-07	HS20010596-08
HS20010596-09	HS20010596-10	HS20010596-11	HS20010596-12
HS20010596-13	HS20010596-14		

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010596

QC BATCH REPORT

Batch ID: 149707 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-149707** Units: **ug/L** Analysis Date: **20-Jan-2020 08:28**
Client ID: Run ID: **SV-7_354654** SeqNo: **5440530** PrepDate: **16-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	U	0.20								
2,4-Dimethylphenol	U	0.20								
2,4-Dinitrotoluene	U	0.20								
2,6-Dinitrotoluene	U	0.20								
2-Chloronaphthalene	U	0.20								
2-Methylnaphthalene	U	0.10								
4,6-Dinitro-2-methylphenol	U	0.20								
4-Nitrophenol	U	1.0								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Benz(a)anthracene	U	0.10								
Benzo(a)pyrene	U	0.10								
Bis(2-chloroethoxy)methane	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Chrysene	U	0.10								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Nitrobenzene	U	0.20								
N-Nitrosodiphenylamine	U	0.20								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*4.747*	*0.20*	*5*	*0*	*94.9*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*5.366*	*0.20*	*5*	*0*	*107*	*40 - 125*				
Surr: 2-Fluorophenol	*5.041*	*0.20*	*5*	*0*	*101*	*20 - 120*				
Surr: 4-Terphenyl-d14	*5.519*	*0.20*	*5*	*0*	*110*	*40 - 135*				
Surr: Nitrobenzene-d5	*5.119*	*0.20*	*5*	*0*	*102*	*41 - 120*				
Surr: Phenol-d6	*5*	*0.20*	*5*	*0*	*100*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010596

QC BATCH REPORT

Batch ID: 149707 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCS Sample ID: **LCS-149707** Units: **ug/L** Analysis Date: **20-Jan-2020 08:47**
Client ID: Run ID: **SV-7_354654** SeqNo: **5440531** PrepDate: **16-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	5.534	0.20	5	0	111	39 - 127				
2,4-Dimethylphenol	4.512	0.20	5	0	90.2	35 - 120				
2,4-Dinitrotoluene	4.88	0.20	5	0	97.6	50 - 122				
2,6-Dinitrotoluene	4.738	0.20	5	0	94.8	50 - 120				
2-Chloronaphthalene	4.954	0.20	5	0	99.1	50 - 120				
2-Methylnaphthalene	4.718	0.10	5	0	94.4	50 - 120				
4,6-Dinitro-2-methylphenol	5.655	0.20	5	0	113	25 - 121				
4-Nitrophenol	5.049	1.0	5	0	101	30 - 130				
Acenaphthene	4.562	0.10	5	0	91.2	45 - 120				
Acenaphthylene	4.507	0.10	5	0	90.1	47 - 120				
Anthracene	4.822	0.10	5	0	96.4	45 - 120				
Benz(a)anthracene	4.637	0.10	5	0	92.7	40 - 120				
Benzo(a)pyrene	5.218	0.10	5	0	104	45 - 120				
Bis(2-chloroethoxy)methane	5.043	0.20	5	0	101	45 - 120				
Bis(2-ethylhexyl)phthalate	4.719	0.20	5	0	94.4	40 - 139				
Chrysene	5.07	0.10	5	0	101	43 - 120				
Dibenzofuran	4.702	0.10	5	0	94.0	50 - 120				
Di-n-butyl phthalate	5.079	0.20	5	0	102	45 - 123				
Fluoranthene	5.109	0.10	5	0	102	45 - 125				
Fluorene	4.754	0.10	5	0	95.1	49 - 120				
Naphthalene	4.92	0.10	5	0	98.4	45 - 120				
Nitrobenzene	5.121	0.20	5	0	102	44 - 120				
N-Nitrosodiphenylamine	4.699	0.20	5	0	94.0	40 - 125				
Pentachlorophenol	4.518	0.20	5	0	90.4	19 - 121				
Phenanthrene	4.712	0.10	5	0	94.2	45 - 121				
Phenol	4.916	0.20	5	0	98.3	20 - 124				
Pyrene	4.925	0.10	5	0	98.5	40 - 130				
Surr: 2,4,6-Tribromophenol	*4.598*	*0.20*	*5*	*0*	*92.0*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*5.126*	*0.20*	*5*	*0*	*103*	*40 - 125*				
Surr: 2-Fluorophenol	*5.058*	*0.20*	*5*	*0*	*101*	*20 - 120*				
Surr: 4-Terphenyl-d14	*5.147*	*0.20*	*5*	*0*	*103*	*40 - 135*				
Surr: Nitrobenzene-d5	*5.089*	*0.20*	*5*	*0*	*102*	*41 - 120*				
Surr: Phenol-d6	*5.146*	*0.20*	*5*	*0*	*103*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010596

QC BATCH REPORT

Batch ID: 149707 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCSD Sample ID: **LCSD-149707** Units: **ug/L** Analysis Date: **20-Jan-2020 09:06**
Client ID: Run ID: **SV-7_354654** SeqNo: **5440532** PrepDate: **16-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	5.629	0.20	5	0	113	39 - 127	5.534	1.7	20	
2,4-Dimethylphenol	4.912	0.20	5	0	98.2	35 - 120	4.512	8.47	20	
2,4-Dinitrotoluene	5.416	0.20	5	0	108	50 - 122	4.88	10.4	20	
2,6-Dinitrotoluene	5.437	0.20	5	0	109	50 - 120	4.738	13.7	20	
2-Chloronaphthalene	5.688	0.20	5	0	114	50 - 120	4.954	13.8	20	
2-Methylnaphthalene	5.246	0.10	5	0	105	50 - 120	4.718	10.6	20	
4,6-Dinitro-2-methylphenol	5.603	0.20	5	0	112	25 - 121	5.655	0.93	30	
4-Nitrophenol	5.664	1.0	5	0	113	30 - 130	5.049	11.5	20	
Acenaphthene	4.935	0.10	5	0	98.7	45 - 120	4.562	7.85	20	
Acenaphthylene	5.162	0.10	5	0	103	47 - 120	4.507	13.6	20	
Anthracene	5.621	0.10	5	0	112	45 - 120	4.822	15.3	20	
Benz(a)anthracene	5.332	0.10	5	0	107	40 - 120	4.637	13.9	20	
Benzo(a)pyrene	5.606	0.10	5	0	112	45 - 120	5.218	7.16	20	
Bis(2-chloroethoxy)methane	5.487	0.20	5	0	110	45 - 120	5.043	8.43	20	
Bis(2-ethylhexyl)phthalate	5.4	0.20	5	0	108	40 - 139	4.719	13.5	20	
Chrysene	5.245	0.10	5	0	105	43 - 120	5.07	3.39	20	
Dibenzofuran	5.301	0.10	5	0	106	50 - 120	4.702	12	20	
Di-n-butyl phthalate	5.877	0.20	5	0	118	45 - 123	5.079	14.6	20	
Fluoranthene	5.965	0.10	5	0	119	45 - 125	5.109	15.4	20	
Fluorene	5.457	0.10	5	0	109	49 - 120	4.754	13.8	20	
Naphthalene	5.483	0.10	5	0	110	45 - 120	4.92	10.8	20	
Nitrobenzene	5.637	0.20	5	0	113	44 - 120	5.121	9.6	20	
N-Nitrosodiphenylamine	5.74	0.20	5	0	115	40 - 125	4.699	19.9	20	
Pentachlorophenol	4.914	0.20	5	0	98.3	19 - 121	4.518	8.4	20	
Phenanthrene	5.503	0.10	5	0	110	45 - 121	4.712	15.5	20	
Phenol	5.438	0.20	5	0	109	20 - 124	4.916	10.1	20	
Pyrene	5.793	0.10	5	0	116	40 - 130	4.925	16.2	20	
Surr: 2,4,6-Tribromophenol	*5.247*	*0.20*	*5*	*0*	*105*	*34 - 129*	*4.598*	*13.2*	*20*	
Surr: 2-Fluorobiphenyl	*5.627*	*0.20*	*5*	*0*	*113*	*40 - 125*	*5.126*	*9.31*	*20*	
Surr: 2-Fluorophenol	*5.548*	*0.20*	*5*	*0*	*111*	*20 - 120*	*5.058*	*9.25*	*20*	
Surr: 4-Terphenyl-d14	*5.667*	*0.20*	*5*	*0*	*113*	*40 - 135*	*5.147*	*9.62*	*20*	
Surr: Nitrobenzene-d5	*5.474*	*0.20*	*5*	*0*	*109*	*41 - 120*	*5.089*	*7.3*	*20*	
Surr: Phenol-d6	*5.535*	*0.20*	*5*	*0*	*111*	*20 - 120*	*5.146*	*7.28*	*20*	

The following samples were analyzed in this batch: HS20010596-15

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010596

QC BATCH REPORT

Batch ID: R354616 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200116** Units: **ug/L** Analysis Date: **16-Jan-2020 23:29**
Client ID: Run ID: **VOA2_354616** SeqNo: **5439503** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*48.3*	*1.0*	*50*	*0*	*96.6*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*48.06*	*1.0*	*50*	*0*	*96.1*	*82 - 115*				
Surr: Dibromofluoromethane	*50.7*	*1.0*	*50*	*0*	*101*	*73 - 126*				
Surr: Toluene-d8	*50.27*	*1.0*	*50*	*0*	*101*	*81 - 120*				

LCS Sample ID: **VLCSW-200116** Units: **ug/L** Analysis Date: **16-Jan-2020 22:40**
Client ID: Run ID: **VOA2_354616** SeqNo: **5439502** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	17.44	1.0	20	0	87.2	70 - 124				
Benzene	17.15	1.0	20	0	85.8	74 - 120				
Chlorobenzene	17.99	1.0	20	0	89.9	76 - 113				
Ethylbenzene	17.67	1.0	20	0	88.3	77 - 117				
Methylene chloride	16.86	2.0	20	0	84.3	70 - 127				
Toluene	18.73	1.0	20	0	93.6	77 - 118				
Xylenes, Total	53.91	1.0	60	0	89.8	75 - 122				
Surr: 1,2-Dichloroethane-d4	*47.73*	*1.0*	*50*	*0*	*95.5*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*48.52*	*1.0*	*50*	*0*	*97.0*	*82 - 115*				
Surr: Dibromofluoromethane	*49.26*	*1.0*	*50*	*0*	*98.5*	*73 - 126*				
Surr: Toluene-d8	*48.43*	*1.0*	*50*	*0*	*96.9*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010596

QC BATCH REPORT

Batch ID: R354616 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS20010635-14MS** Units: **ug/L** Analysis Date: **17-Jan-2020 00:42**
Client ID: Run ID: **VOA2_354616** SeqNo: **5439506** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	17.11	1.0	20	0	85.6	70 - 127				
Benzene	19.13	1.0	20	2.986	80.7	70 - 127				
Chlorobenzene	17.69	1.0	20	0	88.4	70 - 114				
Ethylbenzene	20.6	1.0	20	3.085	87.6	70 - 124				
Methylene chloride	16.17	2.0	20	0	80.8	70 - 128				
Toluene	18.76	1.0	20	0	93.8	70 - 123				
Xylenes, Total	53.49	1.0	60	0	89.2	70 - 130				
Surr: 1,2-Dichloroethane-d4	*48.95*	*1.0*	*50*	*0*	*97.9*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*53.28*	*1.0*	*50*	*0*	*107*	*81 - 113*				
Surr: Dibromofluoromethane	*48.18*	*1.0*	*50*	*0*	*96.4*	*77 - 123*				
Surr: Toluene-d8	*47.62*	*1.0*	*50*	*0*	*95.2*	*82 - 127*				

MSD Sample ID: **HS20010635-14MSD** Units: **ug/L** Analysis Date: **17-Jan-2020 01:06**
Client ID: Run ID: **VOA2_354616** SeqNo: **5439507** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.92	1.0	20	0	84.6	70 - 127	17.11	1.15	20	
Benzene	18.68	1.0	20	2.986	78.5	70 - 127	19.13	2.35	20	
Chlorobenzene	17.71	1.0	20	0	88.5	70 - 114	17.69	0.0902	20	
Ethylbenzene	20.29	1.0	20	3.085	86.0	70 - 124	20.6	1.51	20	
Methylene chloride	16.17	2.0	20	0	80.9	70 - 128	16.17	0.0223	20	
Toluene	18.59	1.0	20	0	92.9	70 - 123	18.76	0.918	20	
Xylenes, Total	52.95	1.0	60	0	88.2	70 - 130	53.49	1.02	20	
Surr: 1,2-Dichloroethane-d4	*47.83*	*1.0*	*50*	*0*	*95.7*	*70 - 126*	*48.95*	*2.31*	*20*	
Surr: 4-Bromofluorobenzene	*53.3*	*1.0*	*50*	*0*	*107*	*81 - 113*	*53.28*	*0.0339*	*20*	
Surr: Dibromofluoromethane	*47.53*	*1.0*	*50*	*0*	*95.1*	*77 - 123*	*48.18*	*1.36*	*20*	
Surr: Toluene-d8	*48.37*	*1.0*	*50*	*0*	*96.7*	*82 - 127*	*47.62*	*1.57*	*20*	

The following samples were analyzed in this batch: HS20010596-11 HS20010596-12 HS20010596-13 HS20010596-14 HS20010596-15 HS20010596-16

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010596

QC BATCH REPORT

Batch ID: R354637 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200116** Units: **ug/L** Analysis Date: **16-Jan-2020 23:37**
Client ID: Run ID: **VOA4_354637** SeqNo: **5440160** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*60.85*	*1.0*	*50*	*0*	*122*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*49.27*	*1.0*	*50*	*0*	*98.5*	*82 - 115*				
Surr: Dibromofluoromethane	*55.4*	*1.0*	*50*	*0*	*111*	*73 - 126*				
Surr: Toluene-d8	*49.67*	*1.0*	*50*	*0*	*99.3*	*81 - 120*				

LCS Sample ID: **VLCSW-200116** Units: **ug/L** Analysis Date: **16-Jan-2020 22:48**
Client ID: Run ID: **VOA4_354637** SeqNo: **5440159** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	23.82	1.0	20	0	119	70 - 124				
Benzene	19.98	1.0	20	0	99.9	74 - 120				
Chlorobenzene	17.86	1.0	20	0	89.3	76 - 113				
Ethylbenzene	18.9	1.0	20	0	94.5	77 - 117				
Methylene chloride	21.28	2.0	20	0	106	70 - 127				
Toluene	19.92	1.0	20	0	99.6	77 - 118				
Xylenes, Total	59.83	1.0	60	0	99.7	75 - 122				
Surr: 1,2-Dichloroethane-d4	*59.5*	*1.0*	*50*	*0*	*119*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*52.1*	*1.0*	*50*	*0*	*104*	*82 - 115*				
Surr: Dibromofluoromethane	*58.76*	*1.0*	*50*	*0*	*118*	*73 - 126*				
Surr: Toluene-d8	*49.69*	*1.0*	*50*	*0*	*99.4*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010596

QC BATCH REPORT

Batch ID: R354637 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS20010637-09MS** Units: **ug/L** Analysis Date: **17-Jan-2020 01:15**
Client ID: Run ID: **VOA4_354637** SeqNo: **5440164** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	20.59	1.0	20	0	103	70 - 127				
Benzene	18.49	1.0	20	0	92.4	70 - 127				
Chlorobenzene	16.6	1.0	20	0	83.0	70 - 114				
Ethylbenzene	17.67	1.0	20	0	88.3	70 - 124				
Methylene chloride	18.28	2.0	20	0	91.4	70 - 128				
Toluene	18.89	1.0	20	0	94.5	70 - 123				
Xylenes, Total	56.99	1.0	60	0	95.0	70 - 130				
Surr: 1,2-Dichloroethane-d4	*58.31*	*1.0*	*50*	*0*	*117*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*54.73*	*1.0*	*50*	*0*	*109*	*81 - 113*				
Surr: Dibromofluoromethane	*56.34*	*1.0*	*50*	*0*	*113*	*77 - 123*				
Surr: Toluene-d8	*48.7*	*1.0*	*50*	*0*	*97.4*	*82 - 127*				

MSD Sample ID: **HS20010637-09MSD** Units: **ug/L** Analysis Date: **17-Jan-2020 01:40**
Client ID: Run ID: **VOA4_354637** SeqNo: **5440165** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	20.81	1.0	20	0	104	70 - 127	20.59	1.1	20	
Benzene	17.85	1.0	20	0	89.2	70 - 127	18.49	3.52	20	
Chlorobenzene	16.04	1.0	20	0	80.2	70 - 114	16.6	3.42	20	
Ethylbenzene	16.79	1.0	20	0	83.9	70 - 124	17.67	5.11	20	
Methylene chloride	17.07	2.0	20	0	85.3	70 - 128	18.28	6.86	20	
Toluene	18.48	1.0	20	0	92.4	70 - 123	18.89	2.22	20	
Xylenes, Total	53.81	1.0	60	0	89.7	70 - 130	56.99	5.73	20	
Surr: 1,2-Dichloroethane-d4	*60.51*	*1.0*	*50*	*0*	*121*	*70 - 126*	*58.31*	*3.71*	*20*	
Surr: 4-Bromofluorobenzene	*50.05*	*1.0*	*50*	*0*	*100*	*81 - 113*	*54.73*	*8.93*	*20*	
Surr: Dibromofluoromethane	*58.14*	*1.0*	*50*	*0*	*116*	*77 - 123*	*56.34*	*3.13*	*20*	
Surr: Toluene-d8	*50.27*	*1.0*	*50*	*0*	*101*	*82 - 127*	*48.7*	*3.17*	*20*	

The following samples were analyzed in this batch: HS20010596-01 HS20010596-04 HS20010596-05 HS20010596-06

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010596

QC BATCH REPORT

Batch ID: R354652 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200118** Units: **ug/L** Analysis Date: **18-Jan-2020 11:00**
Client ID: Run ID: **VOA2_354652** SeqNo: **5440487** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*47.8*	*1.0*	*50*	*0*	*95.6*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*47.76*	*1.0*	*50*	*0*	*95.5*	*82 - 115*				
Surr: Dibromofluoromethane	*50.12*	*1.0*	*50*	*0*	*100*	*73 - 126*				
Surr: Toluene-d8	*50.21*	*1.0*	*50*	*0*	*100*	*81 - 120*				

LCS Sample ID: **VLCSW-200218** Units: **ug/L** Analysis Date: **18-Jan-2020 10:11**
Client ID: Run ID: **VOA2_354652** SeqNo: **5440486** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	18.58	1.0	20	0	92.9	70 - 124				
Benzene	18.58	1.0	20	0	92.9	74 - 120				
Chlorobenzene	19.59	1.0	20	0	98.0	76 - 113				
Ethylbenzene	19.02	1.0	20	0	95.1	77 - 117				
Methylene chloride	18.17	2.0	20	0	90.9	70 - 127				
Toluene	20.48	1.0	20	0	102	77 - 118				
Xylenes, Total	58.37	1.0	60	0	97.3	75 - 122				
Surr: 1,2-Dichloroethane-d4	*48.57*	*1.0*	*50*	*0*	*97.1*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*48.85*	*1.0*	*50*	*0*	*97.7*	*82 - 115*				
Surr: Dibromofluoromethane	*48.64*	*1.0*	*50*	*0*	*97.3*	*73 - 126*				
Surr: Toluene-d8	*48.94*	*1.0*	*50*	*0*	*97.9*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010596

QC BATCH REPORT

Batch ID: R354652 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS20010596-09MS** Units: **ug/L** Analysis Date: **18-Jan-2020 12:14**
Client ID: **WG-1620-MW13-20200114** Run ID: **VOA2_354652** SeqNo: **5440490** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	17.12	1.0	20	0	85.6	70 - 127				
Benzene	17.46	1.0	20	0	87.3	70 - 127				
Chlorobenzene	18.21	1.0	20	0	91.0	70 - 114				
Ethylbenzene	18.38	1.0	20	0	91.9	70 - 124				
Methylene chloride	16.38	2.0	20	0	81.9	70 - 128				
Toluene	19.35	1.0	20	0	96.7	70 - 123				
Xylenes, Total	54.94	1.0	60	0	91.6	70 - 130				
Surr: 1,2-Dichloroethane-d4	*49.23*	*1.0*	*50*	*0*	*98.5*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*48.62*	*1.0*	*50*	*0*	*97.2*	*81 - 113*				
Surr: Dibromofluoromethane	*49.52*	*1.0*	*50*	*0*	*99.0*	*77 - 123*				
Surr: Toluene-d8	*49.04*	*1.0*	*50*	*0*	*98.1*	*82 - 127*				

MSD Sample ID: **HS20010596-09MSD** Units: **ug/L** Analysis Date: **18-Jan-2020 12:38**
Client ID: **WG-1620-MW13-20200114** Run ID: **VOA2_354652** SeqNo: **5440491** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.21	1.0	20	0	81.0	70 - 127	17.12	5.49	20	
Benzene	16.36	1.0	20	0	81.8	70 - 127	17.46	6.51	20	
Chlorobenzene	17.12	1.0	20	0	85.6	70 - 114	18.21	6.16	20	
Ethylbenzene	16.92	1.0	20	0	84.6	70 - 124	18.38	8.25	20	
Methylene chloride	15.64	2.0	20	0	78.2	70 - 128	16.38	4.6	20	
Toluene	17.97	1.0	20	0	89.8	70 - 123	19.35	7.39	20	
Xylenes, Total	51.5	1.0	60	0	85.8	70 - 130	54.94	6.46	20	
Surr: 1,2-Dichloroethane-d4	*48.39*	*1.0*	*50*	*0*	*96.8*	*70 - 126*	*49.23*	*1.71*	*20*	
Surr: 4-Bromofluorobenzene	*48.19*	*1.0*	*50*	*0*	*96.4*	*81 - 113*	*48.62*	*0.878*	*20*	
Surr: Dibromofluoromethane	*48.92*	*1.0*	*50*	*0*	*97.8*	*77 - 123*	*49.52*	*1.23*	*20*	
Surr: Toluene-d8	*48.72*	*1.0*	*50*	*0*	*97.4*	*82 - 127*	*49.04*	*0.665*	*20*	

The following samples were analyzed in this batch: HS20010596-08 HS20010596-09 HS20010596-10

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010596

QC BATCH REPORT

Batch ID: R354723 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200120** Units: **ug/L** Analysis Date: **20-Jan-2020 11:48**
Client ID: Run ID: **VOA2_354723** SeqNo: **5441718** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*46.88*	*1.0*	*50*	*0*	*93.8*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*47.29*	*1.0*	*50*	*0*	*94.6*	*82 - 115*				
Surr: Dibromofluoromethane	*49.09*	*1.0*	*50*	*0*	*98.2*	*73 - 126*				
Surr: Toluene-d8	*50.28*	*1.0*	*50*	*0*	*101*	*81 - 120*				

LCS Sample ID: **VLCSW-200220** Units: **ug/L** Analysis Date: **20-Jan-2020 10:59**
Client ID: Run ID: **VOA2_354723** SeqNo: **5441717** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	18.96	1.0	20	0	94.8	70 - 124				
Benzene	18.33	1.0	20	0	91.6	74 - 120				
Chlorobenzene	19.14	1.0	20	0	95.7	76 - 113				
Ethylbenzene	19.07	1.0	20	0	95.3	77 - 117				
Methylene chloride	17.72	2.0	20	0	88.6	70 - 127				
Toluene	20.46	1.0	20	0	102	77 - 118				
Xylenes, Total	57.84	1.0	60	0	96.4	75 - 122				
Surr: 1,2-Dichloroethane-d4	*48.54*	*1.0*	*50*	*0*	*97.1*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*48.55*	*1.0*	*50*	*0*	*97.1*	*82 - 115*				
Surr: Dibromofluoromethane	*48.3*	*1.0*	*50*	*0*	*96.6*	*73 - 126*				
Surr: Toluene-d8	*49.04*	*1.0*	*50*	*0*	*98.1*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010596

QC BATCH REPORT

Batch ID: R354723 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS20010752-03MS** Units: **ug/L** Analysis Date: **20-Jan-2020 15:04**
Client ID: Run ID: **VOA2_354723** SeqNo: **5441726** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.27	1.0	20	0	81.4	70 - 127				
Benzene	16.74	1.0	20	0	83.7	70 - 127				
Chlorobenzene	17.35	1.0	20	0	86.8	70 - 114				
Ethylbenzene	17.58	1.0	20	0	87.9	70 - 124				
Methylene chloride	18.31	2.0	20	0	91.6	70 - 128				
Toluene	18.62	1.0	20	0	93.1	70 - 123				
Xylenes, Total	52.79	1.0	60	0	88.0	70 - 130				
Surr: 1,2-Dichloroethane-d4	*47.72*	*1.0*	*50*	*0*	*95.4*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*48.21*	*1.0*	*50*	*0*	*96.4*	*81 - 113*				
Surr: Dibromofluoromethane	*48.74*	*1.0*	*50*	*0*	*97.5*	*77 - 123*				
Surr: Toluene-d8	*48.92*	*1.0*	*50*	*0*	*97.8*	*82 - 127*				

MSD Sample ID: **HS20010752-03MSD** Units: **ug/L** Analysis Date: **20-Jan-2020 15:28**
Client ID: Run ID: **VOA2_354723** SeqNo: **5441727** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.28	1.0	20	0	81.4	70 - 127	16.27	0.0341	20	
Benzene	16.22	1.0	20	0	81.1	70 - 127	16.74	3.16	20	
Chlorobenzene	16.88	1.0	20	0	84.4	70 - 114	17.35	2.76	20	
Ethylbenzene	17	1.0	20	0	85.0	70 - 124	17.58	3.35	20	
Methylene chloride	17.83	2.0	20	0	89.1	70 - 128	18.31	2.68	20	
Toluene	17.86	1.0	20	0	89.3	70 - 123	18.62	4.19	20	
Xylenes, Total	51.27	1.0	60	0	85.4	70 - 130	52.79	2.92	20	
Surr: 1,2-Dichloroethane-d4	*47.12*	*1.0*	*50*	*0*	*94.2*	*70 - 126*	*47.72*	*1.28*	*20*	
Surr: 4-Bromofluorobenzene	*48.62*	*1.0*	*50*	*0*	*97.2*	*81 - 113*	*48.21*	*0.842*	*20*	
Surr: Dibromofluoromethane	*48.87*	*1.0*	*50*	*0*	*97.7*	*77 - 123*	*48.74*	*0.256*	*20*	
Surr: Toluene-d8	*48.42*	*1.0*	*50*	*0*	*96.8*	*82 - 127*	*48.92*	*1.01*	*20*	

The following samples were analyzed in this batch: HS20010596-02 HS20010596-03

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010596

QC BATCH REPORT

Batch ID: R354799 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200121** Units: **ug/L** Analysis Date: **21-Jan-2020 12:55**
Client ID: Run ID: **VOA2_354799** SeqNo: **5443190** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*45.22*	*1.0*	*50*	*0*	*90.4*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*46.91*	*1.0*	*50*	*0*	*93.8*	*82 - 115*				
Surr: Dibromofluoromethane	*48.57*	*1.0*	*50*	*0*	*97.1*	*73 - 126*				
Surr: Toluene-d8	*50.32*	*1.0*	*50*	*0*	*101*	*81 - 120*				

LCS Sample ID: **VLCSW-200221** Units: **ug/L** Analysis Date: **21-Jan-2020 12:06**
Client ID: Run ID: **VOA2_354799** SeqNo: **5443189** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	17.66	1.0	20	0	88.3	70 - 124				
Benzene	17.2	1.0	20	0	86.0	74 - 120				
Chlorobenzene	18.44	1.0	20	0	92.2	76 - 113				
Ethylbenzene	17.94	1.0	20	0	89.7	77 - 117				
Methylene chloride	17.49	2.0	20	0	87.4	70 - 127				
Toluene	19.3	1.0	20	0	96.5	77 - 118				
Xylenes, Total	54.82	1.0	60	0	91.4	75 - 122				
Surr: 1,2-Dichloroethane-d4	*46.76*	*1.0*	*50*	*0*	*93.5*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*48.36*	*1.0*	*50*	*0*	*96.7*	*82 - 115*				
Surr: Dibromofluoromethane	*48.03*	*1.0*	*50*	*0*	*96.1*	*73 - 126*				
Surr: Toluene-d8	*49.46*	*1.0*	*50*	*0*	*98.9*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010596

QC BATCH REPORT

Batch ID: R354799 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS20010767-05MS** Units: **ug/L** Analysis Date: **21-Jan-2020 17:48**
Client ID: Run ID: **VOA2_354799** SeqNo: **5443202** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.36	1.0	20	0	81.8	70 - 127				
Benzene	24.4	1.0	20	6.383	90.1	70 - 127				
Chlorobenzene	17.96	1.0	20	0	89.8	70 - 114				
Ethylbenzene	28.72	1.0	20	9.361	96.8	70 - 124				
Methylene chloride	15.89	2.0	20	0	79.4	70 - 128				
Toluene	20.5	1.0	20	0	102	70 - 123				
Xylenes, Total	57.71	1.0	60	3.181	90.9	70 - 130				
Surr: 1,2-Dichloroethane-d4	*46.04*	*1.0*	*50*	*0*	*92.1*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*48.8*	*1.0*	*50*	*0*	*97.6*	*81 - 113*				
Surr: Dibromofluoromethane	*47.49*	*1.0*	*50*	*0*	*95.0*	*77 - 123*				
Surr: Toluene-d8	*49.2*	*1.0*	*50*	*0*	*98.4*	*82 - 127*				

MSD Sample ID: **HS20010767-05MSD** Units: **ug/L** Analysis Date: **21-Jan-2020 18:12**
Client ID: Run ID: **VOA2_354799** SeqNo: **5443203** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.51	1.0	20	0	82.6	70 - 127	16.36	0.908	20	
Benzene	24.24	1.0	20	6.383	89.3	70 - 127	24.4	0.678	20	
Chlorobenzene	17.68	1.0	20	0	88.4	70 - 114	17.96	1.54	20	
Ethylbenzene	28.32	1.0	20	9.361	94.8	70 - 124	28.72	1.41	20	
Methylene chloride	15.24	2.0	20	0	76.2	70 - 128	15.89	4.15	20	
Toluene	20.18	1.0	20	0	101	70 - 123	20.5	1.56	20	
Xylenes, Total	56.81	1.0	60	3.181	89.4	70 - 130	57.71	1.57	20	
Surr: 1,2-Dichloroethane-d4	*46.11*	*1.0*	*50*	*0*	*92.2*	*70 - 126*	*46.04*	*0.147*	*20*	
Surr: 4-Bromofluorobenzene	*49.23*	*1.0*	*50*	*0*	*98.5*	*81 - 113*	*48.8*	*0.867*	*20*	
Surr: Dibromofluoromethane	*47.4*	*1.0*	*50*	*0*	*94.8*	*77 - 123*	*47.49*	*0.191*	*20*	
Surr: Toluene-d8	*49.04*	*1.0*	*50*	*0*	*98.1*	*82 - 127*	*49.2*	*0.339*	*20*	

The following samples were analyzed in this batch: HS20010596-07

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20010596**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20010596

Date/Time Received: **15-Jan-2020 11:50**
Received by: **AC**

Checklist completed by: *Paris Frazier* 15-Jan-2020
eSignature | Date

Reviewed by: *Dane J. Wacasey* 21-Jan-2020
eSignature | Date

Matrices: **WATER**

Carrier name: **Client**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	2 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:206396/206383
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.3C/1.3C ,3.1C/3.1C 1.8C/1.8C. 2.5C/2.5C UC/C	IR25	
Cooler(s)/Kit(s):	45442/45146/44319/45562		
Date/Time sample(s) sent to storage:	01.15.2020 11:50		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600
Holland, MI +1 616 399 6070

Chain of Custody Form

Page 1 of 2

COC ID: 206396

HS20010596

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information			
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A	8260_LL_W (5632528 Volatile Organics Site Specific)
Work Order		Project Number	1620-07-Rev0 SR 92688	B	8260_LL_W (5632528 VOC Site Specific + V.C.)
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P	C	8270_LOW_W (5632532 SemiVolatiles Site specific)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	ICP_TW (5636002 5652646 Metals - As)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~WG-1620-TB6-202001~~			~~Water~~	*	*		*									
2	WG-1620-MW40B-20200113	1-13-20	1210	W		6	X		X	X							
3	WG-1620-MW42B-20200113		1310	W		6	X		X	X							
4	WG-1620-TW41B-20200113		1400	W		6	X		X	X							
5	WG-1620-MW05-20200113		1455	W		6	X		X	X							
6	WG-1620-MW12C-20200113		1555	W		6	X		X	X							
7	WG-1620-MW12A-20200113		1645	W		6	X		X	X							
8	WG-1620-MW39B-20200113		1735	W		6	X		X	X							
9	WG-1620-FB05-20200113		1750	W		6	X		X	X							
10	WG-1620-MW13-20200114	1-14-20	0810	W		6	X		X	X							

Sampler(s) Please Print & Sign: JOHN BRAYTON

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) ☐ Other ____ ☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour

Results Due Date:

Relinquished by: Date: 1-15-20 Time: 1150 Received by:

Relinquished by: Date: 1-15-2020 Time: 11:50 Received by (Laboratory): AC

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.
455442	1.3
451446	3.1
443199	1.8
455562	2.5

QC Package: (Check One Box Below)

☐ Level II Std QC ☐ Level III Std QC/Raw Data ☐ Level IV SW846/CLP ☐ Other ____ ☒ TRRP Checklist ☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Chain of Custody Form

Page 2 of 2

COC ID: 206383

HS20010596

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-07-Rev0 SR 92688
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address	

A: 8260_LL_W (5632528 Volatile Organics Site Specific)
B: 8260_LL_W (5632528 VOC Site Specific + V.C.)
C: 8270_LOW_W (5632532 SemiVolatiles Site specific)
D: ICP_TW (5636002 5652646 Metals - As)
E:
F:
G:
H:
I:
J:

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~WG-1620-TB0__-202001~~			~~Water~~	*	*		*									
2	WG-1620-MW09-20200114	1-14-20	0900	W		6	X		X	X							
3	WG-1620-MW21C-20200114		1000	W		6	X		X	X							
4	WG-1620-FD02-20200114		1000	W		6	X		X	X							
5	WG-1620-P11-20200114		1055	W		6	X		X	X							
6	WG-1620-MW88C-20200114		1150	W		6	X		X	X							
7	WG-1620-MW20A-20200114		1255	W		6	X		X	X							
8	WG-1620-TB03-20200114		—	W		2	X										
9																	
10																	

Sampler(s) Please Print & Sign: JOHN BRAUDIS

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 -hour [ ] Other

Results Due Date:

Relinquished by: John Braudis — Date: 1-15-20 — Time: 1150 — Received by:

Relinquished by: John Braudis — Date: 1-15-2020 — Time: 11:50 — Received by (Laboratory): AC

Logged by (Laboratory): — Date: — Time: — Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[X] TRRP Checklist
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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January 29, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20010713**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 15 sample(s) on Jan 16, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: DAYNA.FISHER
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20010713**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS20010713**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data								
Laboratory Name: ALS Laboratory Group			LRC Date: 01/29/2020					
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20010713					
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 149790, 149807, 149808, R354726, R354799, R355099, R355193					
#[1]	A[2]	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?		X			1
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		Were MS/MSD RPDs within laboratory QC limits?		X			2
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 01/29/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20010713				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 149790, 149807, 149808, R354726, R354799, R355099, R355193				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?	X				
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports		
Laboratory Name: ALS Laboratory Group		LRC Date: 01/29/2020
Project Name: Houston TX-Wood Preserving Works		Laboratory Job Number: HS20010713
Reviewer Name: Dane Wacasey		Prep Batch Number(s): 149790, 149807, 149808, R354726, R354799, R355099, R355193
ER#[5]	**Description**	
1	Semivolatiles by Method SW8270, Sample WG-1620-MW15A-20200114, Surrogate 4-Terphenyl-d14 recovered above upper control limits due to possible matrix effect. Semivolatiles by Method SW8270, Samples WG-1620-MW46C-20200115, WG-1620-MW25C-20200115, surrogate recoveries could not be determined due to dilution below the calibration range.	
2	Batch 149790, Semivolatiles by Method SW8270, Sample WG-1620-MW67B-20200115, MS/MSD RPD recovered above limits for 4,6-Dinitro-2-methylphenol due to possible matrix effect.	

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20010713

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20010713-01	WG-1620-MW15A-20200114	Water		14-Jan-2020 13:45	16-Jan-2020 12:40	☐
HS20010713-02	WG-1620-MW15B-20200114	Water		14-Jan-2020 14:30	16-Jan-2020 12:40	☐
HS20010713-03	WG-1620-MW15C-20200114	Water		14-Jan-2020 15:20	16-Jan-2020 12:40	☐
HS20010713-04	WG-1620-MW14-20200114	Water		14-Jan-2020 16:15	16-Jan-2020 12:40	☐
HS20010713-05	WG-1620-MW17-20200114	Water		14-Jan-2020 17:10	16-Jan-2020 12:40	☐
HS20010713-06	WG-1620-FB06-20200114	Water		14-Jan-2020 17:25	16-Jan-2020 12:40	☐
HS20010713-07	WG-1620-MW17C-20200115	Water		15-Jan-2020 08:15	16-Jan-2020 12:40	☐
HS20010713-08	WG-1620-MW67B-20200115	Water		15-Jan-2020 09:30	16-Jan-2020 12:40	☐
HS20010713-09	WG-1620-MW46C-20200115	Water		15-Jan-2020 10:25	16-Jan-2020 12:40	☐
HS20010713-10	WG-1620-MW25A-20200115	Water		15-Jan-2020 11:20	16-Jan-2020 12:40	☐
HS20010713-11	WG-1620-MW44C-20200115	Water		15-Jan-2020 13:15	16-Jan-2020 12:40	☐
HS20010713-12	WG-1620-MW71B-20200115	Water		15-Jan-2020 14:00	16-Jan-2020 12:40	☐
HS20010713-13	WG-1620-MW33BR-20200115	Water		15-Jan-2020 15:00	16-Jan-2020 12:40	☐
HS20010713-14	WG-1620-MW25C-20200115	Water		15-Jan-2020 15:50	16-Jan-2020 12:40	☐
HS20010713-15	WQ-1620-TB04-20200115	Water		15-Jan-2020 00:00	16-Jan-2020 12:40	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW15A-20200114
Collection Date: 14-Jan-2020 13:45

ANALYTICAL REPORT
WorkOrder:HS20010713
Lab ID:HS20010713-01
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	21-Jan-2020 15:46
Benzene	**0.00034**	J	**0.00020**	**0.0010**	**mg/L**	1	21-Jan-2020 15:46
Chlorobenzene	U		0.00030	0.0010	mg/L	1	21-Jan-2020 15:46
Ethylbenzene	U		0.00030	0.0010	mg/L	1	21-Jan-2020 15:46
Methylene chloride	U		0.0010	0.0020	mg/L	1	21-Jan-2020 15:46
Toluene	U		0.00020	0.0010	mg/L	1	21-Jan-2020 15:46
Xylenes, Total	**0.00093**	J	**0.00030**	**0.0010**	**mg/L**	1	21-Jan-2020 15:46
Surr: 1,2-Dichloroethane-d4	*93.1*			*70-126*	*%REC*	*1*	*21-Jan-2020 15:46*
Surr: 4-Bromofluorobenzene	*95.3*			*81-113*	*%REC*	*1*	*21-Jan-2020 15:46*
Surr: Dibromofluoromethane	*99.8*			*77-123*	*%REC*	*1*	*21-Jan-2020 15:46*
Surr: Toluene-d8	*99.6*			*82-127*	*%REC*	*1*	*21-Jan-2020 15:46*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW15A-20200114
Collection Date: 14-Jan-2020 13:45

ANALYTICAL REPORT
WorkOrder:HS20010713
Lab ID:HS20010713-01
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	**0.00036**		**0.000021**	**0.00020**	**mg/L**	1	21-Jan-2020 20:32
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	21-Jan-2020 20:32
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	21-Jan-2020 20:32
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	21-Jan-2020 20:32
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	21-Jan-2020 20:32
2-Methylnaphthalene	**0.018**		**0.00038**	**0.0020**	**mg/L**	20	22-Jan-2020 13:19
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	21-Jan-2020 20:32
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	21-Jan-2020 20:32
Acenaphthene	**0.14**		**0.00054**	**0.0020**	**mg/L**	20	22-Jan-2020 13:19
Acenaphthylene	**0.00066**		**0.000015**	**0.00010**	**mg/L**	1	21-Jan-2020 20:32
Anthracene	**0.0048**		**0.000014**	**0.00010**	**mg/L**	1	21-Jan-2020 20:32
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	21-Jan-2020 20:32
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	21-Jan-2020 20:32
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	21-Jan-2020 20:32
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	21-Jan-2020 20:32
Chrysene	U		0.000021	0.00010	mg/L	1	21-Jan-2020 20:32
Dibenzofuran	**0.036**		**0.00040**	**0.0020**	**mg/L**	20	22-Jan-2020 13:19
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	21-Jan-2020 20:32
Fluoranthene	**0.0031**		**0.000010**	**0.00010**	**mg/L**	1	21-Jan-2020 20:32
Fluorene	**0.065**		**0.00060**	**0.0020**	**mg/L**	20	22-Jan-2020 13:19
Naphthalene	**0.00022**		**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 20:32
Nitrobenzene	U		0.000024	0.00020	mg/L	1	21-Jan-2020 20:32
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	21-Jan-2020 20:32
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	21-Jan-2020 20:32
Phenanthrene	**0.025**		**0.00042**	**0.0020**	**mg/L**	20	22-Jan-2020 13:19
Phenol	U		0.000035	0.00020	mg/L	1	21-Jan-2020 20:32
Pyrene	**0.0013**		**0.000019**	**0.00010**	**mg/L**	1	21-Jan-2020 20:32
Surr: 2,4,6-Tribromophenol	*113*			*34-129*	*%REC*	*20*	*22-Jan-2020 13:19*
Surr: 2,4,6-Tribromophenol	*107*			*34-129*	*%REC*	*1*	*21-Jan-2020 20:32*
Surr: 2-Fluorobiphenyl	*72.9*			*40-125*	*%REC*	*1*	*21-Jan-2020 20:32*
Surr: 2-Fluorobiphenyl	*93.8*			*40-125*	*%REC*	*20*	*22-Jan-2020 13:19*
Surr: 2-Fluorophenol	*70.7*	*J*		*20-120*	*%REC*	*20*	*22-Jan-2020 13:19*
Surr: 2-Fluorophenol	*51.9*			*20-120*	*%REC*	*1*	*21-Jan-2020 20:32*
Surr: 4-Terphenyl-d14	*128*			*40-135*	*%REC*	*1*	*21-Jan-2020 20:32*
Surr: 4-Terphenyl-d14	*163*	*S*		*40-135*	*%REC*	*20*	*22-Jan-2020 13:19*
Surr: Nitrobenzene-d5	*58.0*			*41-120*	*%REC*	*1*	*21-Jan-2020 20:32*
Surr: Nitrobenzene-d5	*69.9*	*J*		*41-120*	*%REC*	*20*	*22-Jan-2020 13:19*
Surr: Phenol-d6	*71.8*	*J*		*20-120*	*%REC*	*20*	*22-Jan-2020 13:19*
Surr: Phenol-d6	*63.1*			*20-120*	*%REC*	*1*	*21-Jan-2020 20:32*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW15A-20200114
Collection Date: 14-Jan-2020 13:45

ANALYTICAL REPORT
WorkOrder:HS20010713
Lab ID:HS20010713-01
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A	**Method:SW6020**				Prep:SW3010A / 20-Jan-2020		Analyst: JC
Arsenic	**0.0441**		**0.000400**	**0.00200**	**mg/L**	1	22-Jan-2020 16:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW15B-20200114
Collection Date: 14-Jan-2020 14:30

ANALYTICAL REPORT
WorkOrder:HS20010713
Lab ID:HS20010713-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	21-Jan-2020 02:09
Benzene		U	0.00020	0.0010	mg/L	1	21-Jan-2020 02:09
Chlorobenzene		U	0.00030	0.0010	mg/L	1	21-Jan-2020 02:09
Ethylbenzene		U	0.00030	0.0010	mg/L	1	21-Jan-2020 02:09
Methylene chloride		U	0.0010	0.0020	mg/L	1	21-Jan-2020 02:09
Toluene		U	0.00020	0.0010	mg/L	1	21-Jan-2020 02:09
Xylenes, Total		U	0.00030	0.0010	mg/L	1	21-Jan-2020 02:09
Surr: 1,2-Dichloroethane-d4	*91.9*			*70-126*	*%REC*	*1*	*21-Jan-2020 02:09*
Surr: 4-Bromofluorobenzene	*94.7*			*81-113*	*%REC*	*1*	*21-Jan-2020 02:09*
Surr: Dibromofluoromethane	*98.8*			*77-123*	*%REC*	*1*	*21-Jan-2020 02:09*
Surr: Toluene-d8	*99.8*			*82-127*	*%REC*	*1*	*21-Jan-2020 02:09*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW15B-20200114
Collection Date: 14-Jan-2020 14:30

ANALYTICAL REPORT
WorkOrder:HS20010713
Lab ID:HS20010713-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 19-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	21-Jan-2020 20:51
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	21-Jan-2020 20:51
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	21-Jan-2020 20:51
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	21-Jan-2020 20:51
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	21-Jan-2020 20:51
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	21-Jan-2020 20:51
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	21-Jan-2020 20:51
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	21-Jan-2020 20:51
Acenaphthene	**0.000073**	J	**0.000027**	**0.00010**	**mg/L**	1	21-Jan-2020 20:51
Acenaphthylene	U		0.000015	0.00010	mg/L	1	21-Jan-2020 20:51
Anthracene	**0.00011**		**0.000014**	**0.00010**	**mg/L**	1	21-Jan-2020 20:51
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	21-Jan-2020 20:51
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	21-Jan-2020 20:51
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	21-Jan-2020 20:51
Bis(2-ethylhexyl)phthalate	**0.000055**	J	**0.000037**	**0.00020**	**mg/L**	1	21-Jan-2020 20:51
Chrysene	U		0.000021	0.00010	mg/L	1	21-Jan-2020 20:51
Dibenzofuran	U		0.000020	0.00010	mg/L	1	21-Jan-2020 20:51
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	21-Jan-2020 20:51
Fluoranthene	**0.00011**		**0.000010**	**0.00010**	**mg/L**	1	21-Jan-2020 20:51
Fluorene	**0.000062**	J	**0.000030**	**0.00010**	**mg/L**	1	21-Jan-2020 20:51
Naphthalene	U		0.000020	0.00010	mg/L	1	21-Jan-2020 20:51
Nitrobenzene	U		0.000024	0.00020	mg/L	1	21-Jan-2020 20:51
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	21-Jan-2020 20:51
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	21-Jan-2020 20:51
Phenanthrene	**0.000050**	J	**0.000021**	**0.00010**	**mg/L**	1	21-Jan-2020 20:51
Phenol	U		0.000035	0.00020	mg/L	1	21-Jan-2020 20:51
Pyrene	**0.000060**	J	**0.000019**	**0.00010**	**mg/L**	1	21-Jan-2020 20:51
Surr: 2,4,6-Tribromophenol	*95.7*			*34-129*	*%REC*	*1*	*21-Jan-2020 20:51*
Surr: 2-Fluorobiphenyl	*84.2*			*40-125*	*%REC*	*1*	*21-Jan-2020 20:51*
Surr: 2-Fluorophenol	*52.8*			*20-120*	*%REC*	*1*	*21-Jan-2020 20:51*
Surr: 4-Terphenyl-d14	*110*			*40-135*	*%REC*	*1*	*21-Jan-2020 20:51*
Surr: Nitrobenzene-d5	*58.2*			*41-120*	*%REC*	*1*	*21-Jan-2020 20:51*
Surr: Phenol-d6	*66.1*			*20-120*	*%REC*	*1*	*21-Jan-2020 20:51*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 20-Jan-2020		Analyst: JC
Arsenic	**0.00343**		**0.000400**	**0.00200**	**mg/L**	1	22-Jan-2020 16:12

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW15C-20200114
Collection Date: 14-Jan-2020 15:20

ANALYTICAL REPORT
WorkOrder:HS20010713
Lab ID:HS20010713-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	21-Jan-2020 02:33
Benzene	**0.00059**	J	**0.00020**	**0.0010**	**mg/L**	1	21-Jan-2020 02:33
Chlorobenzene	U		0.00030	0.0010	mg/L	1	21-Jan-2020 02:33
Ethylbenzene	U		0.00030	0.0010	mg/L	1	21-Jan-2020 02:33
Methylene chloride	U		0.0010	0.0020	mg/L	1	21-Jan-2020 02:33
Toluene	U		0.00020	0.0010	mg/L	1	21-Jan-2020 02:33
Xylenes, Total	U		0.00030	0.0010	mg/L	1	21-Jan-2020 02:33
Surr: 1,2-Dichloroethane-d4	*94.8*			*70-126*	*%REC*	*1*	*21-Jan-2020 02:33*
Surr: 4-Bromofluorobenzene	*96.7*			*81-113*	*%REC*	*1*	*21-Jan-2020 02:33*
Surr: Dibromofluoromethane	*99.9*			*77-123*	*%REC*	*1*	*21-Jan-2020 02:33*
Surr: Toluene-d8	*99.9*			*82-127*	*%REC*	*1*	*21-Jan-2020 02:33*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW15C-20200114
Collection Date: 14-Jan-2020 15:20

ANALYTICAL REPORT
WorkOrder:HS20010713
Lab ID:HS20010713-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	21-Jan-2020 21:10
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	21-Jan-2020 21:10
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	21-Jan-2020 21:10
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	21-Jan-2020 21:10
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	21-Jan-2020 21:10
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	21-Jan-2020 21:10
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	21-Jan-2020 21:10
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	21-Jan-2020 21:10
Acenaphthene	**0.016**		**0.00011**	**0.00040**	**mg/L**	4	22-Jan-2020 13:38
Acenaphthylene	**0.00089**		**0.000015**	**0.00010**	**mg/L**	1	21-Jan-2020 21:10
Anthracene	**0.00057**		**0.000014**	**0.00010**	**mg/L**	1	21-Jan-2020 21:10
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	21-Jan-2020 21:10
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	21-Jan-2020 21:10
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	21-Jan-2020 21:10
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	21-Jan-2020 21:10
Chrysene	U		0.000021	0.00010	mg/L	1	21-Jan-2020 21:10
Dibenzofuran	**0.0045**		**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 21:10
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	21-Jan-2020 21:10
Fluoranthene	**0.00066**		**0.000010**	**0.00010**	**mg/L**	1	21-Jan-2020 21:10
Fluorene	**0.00051**		**0.000030**	**0.00010**	**mg/L**	1	21-Jan-2020 21:10
Naphthalene	**0.00024**		**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 21:10
Nitrobenzene	U		0.000024	0.00020	mg/L	1	21-Jan-2020 21:10
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	21-Jan-2020 21:10
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	21-Jan-2020 21:10
Phenanthrene	**0.000080**	J	**0.000021**	**0.00010**	**mg/L**	1	21-Jan-2020 21:10
Phenol	U		0.000035	0.00020	mg/L	1	21-Jan-2020 21:10
Pyrene	**0.00038**		**0.000019**	**0.00010**	**mg/L**	1	21-Jan-2020 21:10
Surr: 2,4,6-Tribromophenol	*69.8*			*34-129*	*%REC*	*4*	*22-Jan-2020 13:38*
Surr: 2,4,6-Tribromophenol	*55.2*			*34-129*	*%REC*	*1*	*21-Jan-2020 21:10*
Surr: 2-Fluorobiphenyl	*53.0*			*40-125*	*%REC*	*1*	*21-Jan-2020 21:10*
Surr: 2-Fluorobiphenyl	*64.5*			*40-125*	*%REC*	*4*	*22-Jan-2020 13:38*
Surr: 2-Fluorophenol	*66.0*			*20-120*	*%REC*	*4*	*22-Jan-2020 13:38*
Surr: 2-Fluorophenol	*47.6*			*20-120*	*%REC*	*1*	*21-Jan-2020 21:10*
Surr: 4-Terphenyl-d14	*90.3*			*40-135*	*%REC*	*4*	*22-Jan-2020 13:38*
Surr: 4-Terphenyl-d14	*78.0*			*40-135*	*%REC*	*1*	*21-Jan-2020 21:10*
Surr: Nitrobenzene-d5	*51.0*			*41-120*	*%REC*	*1*	*21-Jan-2020 21:10*
Surr: Nitrobenzene-d5	*62.1*			*41-120*	*%REC*	*4*	*22-Jan-2020 13:38*
Surr: Phenol-d6	*62.6*			*20-120*	*%REC*	*4*	*22-Jan-2020 13:38*
Surr: Phenol-d6	*47.4*			*20-120*	*%REC*	*1*	*21-Jan-2020 21:10*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW15C-20200114
Collection Date: 14-Jan-2020 15:20

ANALYTICAL REPORT
WorkOrder:HS20010713
Lab ID:HS20010713-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A	**Method:SW6020**				Prep:SW3010A / 20-Jan-2020		Analyst: JC
Arsenic	**0.000773**	J	**0.000400**	**0.00200**	**mg/L**	1	21-Jan-2020 15:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW14-20200114
Collection Date: 14-Jan-2020 16:15

ANALYTICAL REPORT
WorkOrder:HS20010713
Lab ID:HS20010713-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	21-Jan-2020 02:58
Benzene		U	0.00020	0.0010	mg/L	1	21-Jan-2020 02:58
Chlorobenzene		U	0.00030	0.0010	mg/L	1	21-Jan-2020 02:58
Ethylbenzene		U	0.00030	0.0010	mg/L	1	21-Jan-2020 02:58
Methylene chloride		U	0.0010	0.0020	mg/L	1	21-Jan-2020 02:58
Toluene		U	0.00020	0.0010	mg/L	1	21-Jan-2020 02:58
Xylenes, Total		U	0.00030	0.0010	mg/L	1	21-Jan-2020 02:58
Surr: 1,2-Dichloroethane-d4	*93.3*			*70-126*	*%REC*	*1*	*21-Jan-2020 02:58*
Surr: 4-Bromofluorobenzene	*94.3*			*81-113*	*%REC*	*1*	*21-Jan-2020 02:58*
Surr: Dibromofluoromethane	*98.7*			*77-123*	*%REC*	*1*	*21-Jan-2020 02:58*
Surr: Toluene-d8	*99.8*			*82-127*	*%REC*	*1*	*21-Jan-2020 02:58*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW14-20200114
Collection Date: 14-Jan-2020 16:15

ANALYTICAL REPORT
WorkOrder:HS20010713
Lab ID:HS20010713-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 19-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	21-Jan-2020 21:29
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	21-Jan-2020 21:29
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	21-Jan-2020 21:29
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	21-Jan-2020 21:29
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	21-Jan-2020 21:29
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	21-Jan-2020 21:29
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	21-Jan-2020 21:29
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	21-Jan-2020 21:29
Acenaphthene	**0.000091**	J	**0.000027**	**0.00010**	**mg/L**	1	21-Jan-2020 21:29
Acenaphthylene	U		0.000015	0.00010	mg/L	1	21-Jan-2020 21:29
Anthracene	U		0.000014	0.00010	mg/L	1	21-Jan-2020 21:29
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	21-Jan-2020 21:29
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	21-Jan-2020 21:29
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	21-Jan-2020 21:29
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	21-Jan-2020 21:29
Chrysene	U		0.000021	0.00010	mg/L	1	21-Jan-2020 21:29
Dibenzofuran	U		0.000020	0.00010	mg/L	1	21-Jan-2020 21:29
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	21-Jan-2020 21:29
Fluoranthene	**0.000064**	J	**0.000010**	**0.00010**	**mg/L**	1	21-Jan-2020 21:29
Fluorene	**0.000057**	J	**0.000030**	**0.00010**	**mg/L**	1	21-Jan-2020 21:29
Naphthalene	U		0.000020	0.00010	mg/L	1	21-Jan-2020 21:29
Nitrobenzene	U		0.000024	0.00020	mg/L	1	21-Jan-2020 21:29
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	21-Jan-2020 21:29
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	21-Jan-2020 21:29
Phenanthrene	U		0.000021	0.00010	mg/L	1	21-Jan-2020 21:29
Phenol	U		0.000035	0.00020	mg/L	1	21-Jan-2020 21:29
Pyrene	**0.000060**	J	**0.000019**	**0.00010**	**mg/L**	1	21-Jan-2020 21:29
Surr: 2,4,6-Tribromophenol	*63.5*			*34-129*	*%REC*	*1*	*21-Jan-2020 21:29*
Surr: 2-Fluorobiphenyl	*86.0*			*40-125*	*%REC*	*1*	*21-Jan-2020 21:29*
Surr: 2-Fluorophenol	*71.4*			*20-120*	*%REC*	*1*	*21-Jan-2020 21:29*
Surr: 4-Terphenyl-d14	*88.9*			*40-135*	*%REC*	*1*	*21-Jan-2020 21:29*
Surr: Nitrobenzene-d5	*81.4*			*41-120*	*%REC*	*1*	*21-Jan-2020 21:29*
Surr: Phenol-d6	*74.5*			*20-120*	*%REC*	*1*	*21-Jan-2020 21:29*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 20-Jan-2020		Analyst: JC
Arsenic	**0.00185**	J	**0.000400**	**0.00200**	**mg/L**	1	21-Jan-2020 15:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW17-20200114
Collection Date: 14-Jan-2020 17:10

ANALYTICAL REPORT
WorkOrder:HS20010713
Lab ID:HS20010713-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	21-Jan-2020 08:16
Benzene		U	0.00020	0.0010	mg/L	1	21-Jan-2020 08:16
Chlorobenzene		U	0.00030	0.0010	mg/L	1	21-Jan-2020 08:16
Ethylbenzene		U	0.00030	0.0010	mg/L	1	21-Jan-2020 08:16
Methylene chloride		U	0.0010	0.0020	mg/L	1	21-Jan-2020 08:16
Toluene		U	0.00020	0.0010	mg/L	1	21-Jan-2020 08:16
Xylenes, Total		U	0.00030	0.0010	mg/L	1	21-Jan-2020 08:16
Surr: 1,2-Dichloroethane-d4	*91.7*			*70-126*	*%REC*	*1*	*21-Jan-2020 08:16*
Surr: 4-Bromofluorobenzene	*94.2*			*81-113*	*%REC*	*1*	*21-Jan-2020 08:16*
Surr: Dibromofluoromethane	*97.7*			*77-123*	*%REC*	*1*	*21-Jan-2020 08:16*
Surr: Toluene-d8	*99.6*			*82-127*	*%REC*	*1*	*21-Jan-2020 08:16*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW17-20200114
Collection Date: 14-Jan-2020 17:10

ANALYTICAL REPORT
WorkOrder:HS20010713
Lab ID:HS20010713-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 19-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	21-Jan-2020 21:48
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	21-Jan-2020 21:48
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	21-Jan-2020 21:48
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	21-Jan-2020 21:48
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	21-Jan-2020 21:48
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	21-Jan-2020 21:48
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	21-Jan-2020 21:48
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	21-Jan-2020 21:48
Acenaphthene	U		0.000027	0.00010	mg/L	1	21-Jan-2020 21:48
Acenaphthylene	U		0.000015	0.00010	mg/L	1	21-Jan-2020 21:48
Anthracene	U		0.000014	0.00010	mg/L	1	21-Jan-2020 21:48
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	21-Jan-2020 21:48
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	21-Jan-2020 21:48
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	21-Jan-2020 21:48
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	21-Jan-2020 21:48
Chrysene	U		0.000021	0.00010	mg/L	1	21-Jan-2020 21:48
Dibenzofuran	U		0.000020	0.00010	mg/L	1	21-Jan-2020 21:48
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	21-Jan-2020 21:48
Fluoranthene	**0.00011**		**0.000010**	**0.00010**	**mg/L**	1	21-Jan-2020 21:48
Fluorene	U		0.000030	0.00010	mg/L	1	21-Jan-2020 21:48
Naphthalene	U		0.000020	0.00010	mg/L	1	21-Jan-2020 21:48
Nitrobenzene	U		0.000024	0.00020	mg/L	1	21-Jan-2020 21:48
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	21-Jan-2020 21:48
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	21-Jan-2020 21:48
Phenanthrene	U		0.000021	0.00010	mg/L	1	21-Jan-2020 21:48
Phenol	U		0.000035	0.00020	mg/L	1	21-Jan-2020 21:48
Pyrene	**0.000066**	J	**0.000019**	**0.00010**	**mg/L**	1	21-Jan-2020 21:48
Surr: 2,4,6-Tribromophenol	*67.6*			*34-129*	*%REC*	*1*	*21-Jan-2020 21:48*
Surr: 2-Fluorobiphenyl	*96.0*			*40-125*	*%REC*	*1*	*21-Jan-2020 21:48*
Surr: 2-Fluorophenol	*79.7*			*20-120*	*%REC*	*1*	*21-Jan-2020 21:48*
Surr: 4-Terphenyl-d14	*92.6*			*40-135*	*%REC*	*1*	*21-Jan-2020 21:48*
Surr: Nitrobenzene-d5	*83.2*			*41-120*	*%REC*	*1*	*21-Jan-2020 21:48*
Surr: Phenol-d6	*79.0*			*20-120*	*%REC*	*1*	*21-Jan-2020 21:48*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 20-Jan-2020		Analyst: JC
Arsenic	**0.00154**	J	**0.000400**	**0.00200**	**mg/L**	1	21-Jan-2020 15:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB06-20200114
Collection Date: 14-Jan-2020 17:25

ANALYTICAL REPORT
WorkOrder:HS20010713
Lab ID:HS20010713-06
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	27-Jan-2020 12:30
Benzene		U	0.00020	0.0010	mg/L	1	27-Jan-2020 12:30
Chlorobenzene		U	0.00030	0.0010	mg/L	1	27-Jan-2020 12:30
Ethylbenzene		U	0.00030	0.0010	mg/L	1	27-Jan-2020 12:30
Methylene chloride		U	0.0010	0.0020	mg/L	1	27-Jan-2020 12:30
Toluene		U	0.00020	0.0010	mg/L	1	27-Jan-2020 12:30
Vinyl chloride		U	0.00020	0.0010	mg/L	1	27-Jan-2020 12:30
Xylenes, Total		U	0.00030	0.0010	mg/L	1	27-Jan-2020 12:30
Surr: 1,2-Dichloroethane-d4	*106*			*70-126*	*%REC*	*1*	*27-Jan-2020 12:30*
Surr: 4-Bromofluorobenzene	*96.0*			*81-113*	*%REC*	*1*	*27-Jan-2020 12:30*
Surr: Dibromofluoromethane	*104*			*77-123*	*%REC*	*1*	*27-Jan-2020 12:30*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*27-Jan-2020 12:30*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB06-20200114
Collection Date: 14-Jan-2020 17:25

ANALYTICAL REPORT
WorkOrder:HS20010713
Lab ID:HS20010713-06
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 19-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine		U	0.000021	0.00020	mg/L	1	21-Jan-2020 22:07
2,4-Dimethylphenol		U	0.000040	0.00020	mg/L	1	21-Jan-2020 22:07
2,4-Dinitrotoluene		U	0.000058	0.00020	mg/L	1	21-Jan-2020 22:07
2,6-Dinitrotoluene		U	0.000042	0.00020	mg/L	1	21-Jan-2020 22:07
2-Chloronaphthalene		U	0.000021	0.00020	mg/L	1	21-Jan-2020 22:07
2-Methylnaphthalene		U	0.000019	0.00010	mg/L	1	21-Jan-2020 22:07
4,6-Dinitro-2-methylphenol		U	0.000020	0.00020	mg/L	1	21-Jan-2020 22:07
4-Nitrophenol		U	0.000047	0.0010	mg/L	1	21-Jan-2020 22:07
Acenaphthene		U	0.000027	0.00010	mg/L	1	21-Jan-2020 22:07
Acenaphthylene		U	0.000015	0.00010	mg/L	1	21-Jan-2020 22:07
Anthracene		U	0.000014	0.00010	mg/L	1	21-Jan-2020 22:07
Benz(a)anthracene		U	0.000050	0.00010	mg/L	1	21-Jan-2020 22:07
Benzo(a)pyrene		U	0.000020	0.00010	mg/L	1	21-Jan-2020 22:07
Bis(2-chloroethoxy)methane		U	0.000030	0.00020	mg/L	1	21-Jan-2020 22:07
Bis(2-ethylhexyl)phthalate		U	0.000037	0.00020	mg/L	1	21-Jan-2020 22:07
Chrysene		U	0.000021	0.00010	mg/L	1	21-Jan-2020 22:07
Dibenzofuran		U	0.000020	0.00010	mg/L	1	21-Jan-2020 22:07
Di-n-butyl phthalate		U	0.000020	0.00020	mg/L	1	21-Jan-2020 22:07
Fluoranthene		U	0.000010	0.00010	mg/L	1	21-Jan-2020 22:07
Fluorene		U	0.000030	0.00010	mg/L	1	21-Jan-2020 22:07
Naphthalene		U	0.000020	0.00010	mg/L	1	21-Jan-2020 22:07
Nitrobenzene		U	0.000024	0.00020	mg/L	1	21-Jan-2020 22:07
N-Nitrosodiphenylamine		U	0.000025	0.00020	mg/L	1	21-Jan-2020 22:07
Pentachlorophenol		U	0.000079	0.00020	mg/L	1	21-Jan-2020 22:07
Phenanthrene		U	0.000021	0.00010	mg/L	1	21-Jan-2020 22:07
Phenol		U	0.000035	0.00020	mg/L	1	21-Jan-2020 22:07
Pyrene		U	0.000019	0.00010	mg/L	1	21-Jan-2020 22:07
Surr: 2,4,6-Tribromophenol	*64.6*			*34-129*	*%REC*	*1*	*21-Jan-2020 22:07*
Surr: 2-Fluorobiphenyl	*97.3*			*40-125*	*%REC*	*1*	*21-Jan-2020 22:07*
Surr: 2-Fluorophenol	*74.6*			*20-120*	*%REC*	*1*	*21-Jan-2020 22:07*
Surr: 4-Terphenyl-d14	*95.7*			*40-135*	*%REC*	*1*	*21-Jan-2020 22:07*
Surr: Nitrobenzene-d5	*85.3*			*41-120*	*%REC*	*1*	*21-Jan-2020 22:07*
Surr: Phenol-d6	*77.5*			*20-120*	*%REC*	*1*	*21-Jan-2020 22:07*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 20-Jan-2020		Analyst: JC
Arsenic		U	0.000400	0.00200	mg/L	1	21-Jan-2020 15:41

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW17C-20200115
Collection Date: 15-Jan-2020 08:15

ANALYTICAL REPORT
WorkOrder:HS20010713
Lab ID:HS20010713-07
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	21-Jan-2020 03:22
Benzene		U	0.00020	0.0010	mg/L	1	21-Jan-2020 03:22
Chlorobenzene		U	0.00030	0.0010	mg/L	1	21-Jan-2020 03:22
Ethylbenzene		U	0.00030	0.0010	mg/L	1	21-Jan-2020 03:22
Methylene chloride		U	0.0010	0.0020	mg/L	1	21-Jan-2020 03:22
Toluene		U	0.00020	0.0010	mg/L	1	21-Jan-2020 03:22
Xylenes, Total		U	0.00030	0.0010	mg/L	1	21-Jan-2020 03:22
Surr: 1,2-Dichloroethane-d4	*93.4*			*70-126*	*%REC*	*1*	*21-Jan-2020 03:22*
Surr: 4-Bromofluorobenzene	*95.0*			*81-113*	*%REC*	*1*	*21-Jan-2020 03:22*
Surr: Dibromofluoromethane	*97.3*			*77-123*	*%REC*	*1*	*21-Jan-2020 03:22*
Surr: Toluene-d8	*98.9*			*82-127*	*%REC*	*1*	*21-Jan-2020 03:22*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW17C-20200115
Collection Date: 15-Jan-2020 08:15

ANALYTICAL REPORT
WorkOrder:HS20010713
Lab ID:HS20010713-07
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 19-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	21-Jan-2020 22:26
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	21-Jan-2020 22:26
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	21-Jan-2020 22:26
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	21-Jan-2020 22:26
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	21-Jan-2020 22:26
2-Methylnaphthalene	**0.000073**	J	**0.000019**	**0.00010**	**mg/L**	1	21-Jan-2020 22:26
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	21-Jan-2020 22:26
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	21-Jan-2020 22:26
Acenaphthene	**0.00023**		**0.000027**	**0.00010**	**mg/L**	1	21-Jan-2020 22:26
Acenaphthylene	U		0.000015	0.00010	mg/L	1	21-Jan-2020 22:26
Anthracene	U		0.000014	0.00010	mg/L	1	21-Jan-2020 22:26
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	21-Jan-2020 22:26
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	21-Jan-2020 22:26
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	21-Jan-2020 22:26
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	21-Jan-2020 22:26
Chrysene	U		0.000021	0.00010	mg/L	1	21-Jan-2020 22:26
Dibenzofuran	**0.000065**	J	**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 22:26
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	21-Jan-2020 22:26
Fluoranthene	**0.00034**		**0.000010**	**0.00010**	**mg/L**	1	21-Jan-2020 22:26
Fluorene	**0.000061**	J	**0.000030**	**0.00010**	**mg/L**	1	21-Jan-2020 22:26
Naphthalene	**0.00016**		**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 22:26
Nitrobenzene	U		0.000024	0.00020	mg/L	1	21-Jan-2020 22:26
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	21-Jan-2020 22:26
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	21-Jan-2020 22:26
Phenanthrene	U		0.000021	0.00010	mg/L	1	21-Jan-2020 22:26
Phenol	U		0.000035	0.00020	mg/L	1	21-Jan-2020 22:26
Pyrene	**0.00021**		**0.000019**	**0.00010**	**mg/L**	1	21-Jan-2020 22:26
Surr: 2,4,6-Tribromophenol	*68.4*			*34-129*	*%REC*	*1*	*21-Jan-2020 22:26*
Surr: 2-Fluorobiphenyl	*101*			*40-125*	*%REC*	*1*	*21-Jan-2020 22:26*
Surr: 2-Fluorophenol	*79.2*			*20-120*	*%REC*	*1*	*21-Jan-2020 22:26*
Surr: 4-Terphenyl-d14	*101*			*40-135*	*%REC*	*1*	*21-Jan-2020 22:26*
Surr: Nitrobenzene-d5	*87.4*			*41-120*	*%REC*	*1*	*21-Jan-2020 22:26*
Surr: Phenol-d6	*82.4*			*20-120*	*%REC*	*1*	*21-Jan-2020 22:26*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 20-Jan-2020		Analyst: JC
Arsenic	**0.00184**	J	**0.000400**	**0.00200**	**mg/L**	1	21-Jan-2020 15:44

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW67B-20200115
Collection Date: 15-Jan-2020 09:30

ANALYTICAL REPORT
WorkOrder:HS20010713
Lab ID:HS20010713-08
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	21-Jan-2020 00:55
Benzene		U	0.00020	0.0010	mg/L	1	21-Jan-2020 00:55
Chlorobenzene		U	0.00030	0.0010	mg/L	1	21-Jan-2020 00:55
Ethylbenzene		U	0.00030	0.0010	mg/L	1	21-Jan-2020 00:55
Methylene chloride		U	0.0010	0.0020	mg/L	1	21-Jan-2020 00:55
Toluene		U	0.00020	0.0010	mg/L	1	21-Jan-2020 00:55
Xylenes, Total		U	0.00030	0.0010	mg/L	1	21-Jan-2020 00:55
Surr: 1,2-Dichloroethane-d4	*94.4*			*70-126*	*%REC*	*1*	*21-Jan-2020 00:55*
Surr: 4-Bromofluorobenzene	*96.4*			*81-113*	*%REC*	*1*	*21-Jan-2020 00:55*
Surr: Dibromofluoromethane	*99.5*			*77-123*	*%REC*	*1*	*21-Jan-2020 00:55*
Surr: Toluene-d8	*98.6*			*82-127*	*%REC*	*1*	*21-Jan-2020 00:55*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW67B-20200115
Collection Date: 15-Jan-2020 09:30

ANALYTICAL REPORT
WorkOrder:HS20010713
Lab ID:HS20010713-08
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 19-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	21-Jan-2020 14:49
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	21-Jan-2020 14:49
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	21-Jan-2020 14:49
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	21-Jan-2020 14:49
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	21-Jan-2020 14:49
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	21-Jan-2020 14:49
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	21-Jan-2020 14:49
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	21-Jan-2020 14:49
Acenaphthene	U		0.000027	0.00010	mg/L	1	21-Jan-2020 14:49
Acenaphthylene	U		0.000015	0.00010	mg/L	1	21-Jan-2020 14:49
Anthracene	U		0.000014	0.00010	mg/L	1	21-Jan-2020 14:49
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	21-Jan-2020 14:49
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	21-Jan-2020 14:49
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	21-Jan-2020 14:49
Bis(2-ethylhexyl)phthalate	**0.000090**	J	**0.000037**	**0.00020**	**mg/L**	1	21-Jan-2020 14:49
Chrysene	U		0.000021	0.00010	mg/L	1	21-Jan-2020 14:49
Dibenzofuran	U		0.000020	0.00010	mg/L	1	21-Jan-2020 14:49
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	21-Jan-2020 14:49
Fluoranthene	U		0.000010	0.00010	mg/L	1	21-Jan-2020 14:49
Fluorene	U		0.000030	0.00010	mg/L	1	21-Jan-2020 14:49
Naphthalene	U		0.000020	0.00010	mg/L	1	21-Jan-2020 14:49
Nitrobenzene	U		0.000024	0.00020	mg/L	1	21-Jan-2020 14:49
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	21-Jan-2020 14:49
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	21-Jan-2020 14:49
Phenanthrene	U		0.000021	0.00010	mg/L	1	21-Jan-2020 14:49
Phenol	U		0.000035	0.00020	mg/L	1	21-Jan-2020 14:49
Pyrene	U		0.000019	0.00010	mg/L	1	21-Jan-2020 14:49
Surr: 2,4,6-Tribromophenol	*66.9*			*34-129*	*%REC*	*1*	*21-Jan-2020 14:49*
Surr: 2-Fluorobiphenyl	*78.9*			*40-125*	*%REC*	*1*	*21-Jan-2020 14:49*
Surr: 2-Fluorophenol	*59.7*			*20-120*	*%REC*	*1*	*21-Jan-2020 14:49*
Surr: 4-Terphenyl-d14	*100*			*40-135*	*%REC*	*1*	*21-Jan-2020 14:49*
Surr: Nitrobenzene-d5	*71.9*			*41-120*	*%REC*	*1*	*21-Jan-2020 14:49*
Surr: Phenol-d6	*70.9*			*20-120*	*%REC*	*1*	*21-Jan-2020 14:49*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 20-Jan-2020		Analyst: JC
Arsenic	**0.000467**	J	**0.000400**	**0.00200**	**mg/L**	1	21-Jan-2020 15:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW46C-20200115
Collection Date: 15-Jan-2020 10:25

ANALYTICAL REPORT
WorkOrder:HS20010713
Lab ID:HS20010713-09
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	21-Jan-2020 07:27
Benzene	**0.028**		**0.00020**	**0.0010**	**mg/L**	1	21-Jan-2020 07:27
Chlorobenzene	U		0.00030	0.0010	mg/L	1	21-Jan-2020 07:27
Ethylbenzene	**0.051**		**0.00030**	**0.0010**	**mg/L**	1	21-Jan-2020 07:27
Methylene chloride	U		0.0010	0.0020	mg/L	1	21-Jan-2020 07:27
Toluene	**0.0047**		**0.00020**	**0.0010**	**mg/L**	1	21-Jan-2020 07:27
Xylenes, Total	**0.11**		**0.00030**	**0.0010**	**mg/L**	1	21-Jan-2020 07:27
Surr: 1,2-Dichloroethane-d4	*92.2*			*70-126*	*%REC*	*1*	*21-Jan-2020 07:27*
Surr: 4-Bromofluorobenzene	*98.8*			*81-113*	*%REC*	*1*	*21-Jan-2020 07:27*
Surr: Dibromofluoromethane	*98.1*			*77-123*	*%REC*	*1*	*21-Jan-2020 07:27*
Surr: Toluene-d8	*98.3*			*82-127*	*%REC*	*1*	*21-Jan-2020 07:27*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW46C-20200115
Collection Date: 15-Jan-2020 10:25

ANALYTICAL REPORT
WorkOrder:HS20010713
Lab ID:HS20010713-09
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	21-Jan-2020 22:45
2,4-Dimethylphenol	**0.00016**	J	**0.000040**	**0.00020**	**mg/L**	1	21-Jan-2020 22:45
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	21-Jan-2020 22:45
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	21-Jan-2020 22:45
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	21-Jan-2020 22:45
2-Methylnaphthalene	**0.20**		**0.0038**	**0.020**	**mg/L**	200	22-Jan-2020 15:37
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	21-Jan-2020 22:45
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	21-Jan-2020 22:45
Acenaphthene	**0.16**		**0.00054**	**0.0020**	**mg/L**	20	22-Jan-2020 13:57
Acenaphthylene	**0.0016**		**0.000015**	**0.00010**	**mg/L**	1	21-Jan-2020 22:45
Anthracene	**0.073**		**0.00028**	**0.0020**	**mg/L**	20	22-Jan-2020 13:57
Benz(a)anthracene	**0.0071**		**0.000050**	**0.00010**	**mg/L**	1	21-Jan-2020 22:45
Benzo(a)pyrene	**0.0021**		**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 22:45
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	21-Jan-2020 22:45
Bis(2-ethylhexyl)phthalate	**0.0011**		**0.000037**	**0.00020**	**mg/L**	1	21-Jan-2020 22:45
Chrysene	**0.0068**		**0.000021**	**0.00010**	**mg/L**	1	21-Jan-2020 22:45
Dibenzofuran	**0.16**		**0.00040**	**0.0020**	**mg/L**	20	22-Jan-2020 13:57
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	21-Jan-2020 22:45
Fluoranthene	**0.084**		**0.00020**	**0.0020**	**mg/L**	20	22-Jan-2020 13:57
Fluorene	**0.12**		**0.00060**	**0.0020**	**mg/L**	20	22-Jan-2020 13:57
Naphthalene	**1.8**		**0.0040**	**0.020**	**mg/L**	200	22-Jan-2020 15:37
Nitrobenzene	U		0.000024	0.00020	mg/L	1	21-Jan-2020 22:45
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	21-Jan-2020 22:45
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	21-Jan-2020 22:45
Phenanthrene	**0.24**		**0.0042**	**0.020**	**mg/L**	200	22-Jan-2020 15:37
Phenol	U		0.000035	0.00020	mg/L	1	21-Jan-2020 22:45
Pyrene	**0.053**		**0.00038**	**0.0020**	**mg/L**	20	22-Jan-2020 13:57
Surr: 2,4,6-Tribromophenol	*104*			*34-129*	*%REC*	*20*	*22-Jan-2020 13:57*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*200*	*22-Jan-2020 15:37*
Surr: 2,4,6-Tribromophenol	*68.3*			*34-129*	*%REC*	*1*	*21-Jan-2020 22:45*
Surr: 2-Fluorobiphenyl	*53.9*			*40-125*	*%REC*	*1*	*21-Jan-2020 22:45*
Surr: 2-Fluorobiphenyl	*95.2*			*40-125*	*%REC*	*20*	*22-Jan-2020 13:57*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*200*	*22-Jan-2020 15:37*
Surr: 2-Fluorophenol	*98.2*			*20-120*	*%REC*	*20*	*22-Jan-2020 13:57*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*200*	*22-Jan-2020 15:37*
Surr: 2-Fluorophenol	*58.6*			*20-120*	*%REC*	*1*	*21-Jan-2020 22:45*
Surr: 4-Terphenyl-d14	*94.7*			*40-135*	*%REC*	*1*	*21-Jan-2020 22:45*
Surr: 4-Terphenyl-d14	*122*			*40-135*	*%REC*	*20*	*22-Jan-2020 13:57*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*200*	*22-Jan-2020 15:37*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW46C-20200115
Collection Date: 15-Jan-2020 10:25

ANALYTICAL REPORT
WorkOrder:HS20010713
Lab ID:HS20010713-09
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 19-Jan-2020		Analyst: LG
Surr: Nitrobenzene-d5	*87.1*			*41-120*	*%REC*	*20*	*22-Jan-2020 13:57*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*200*	*22-Jan-2020 15:37*
Surr: Nitrobenzene-d5	*46.7*			*41-120*	*%REC*	*1*	*21-Jan-2020 22:45*
Surr: Phenol-d6	*56.3*			*20-120*	*%REC*	*1*	*21-Jan-2020 22:45*
Surr: Phenol-d6	*83.5*			*20-120*	*%REC*	*20*	*22-Jan-2020 13:57*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*200*	*22-Jan-2020 15:37*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 20-Jan-2020		Analyst: JC
Arsenic	**0.00272**		**0.000400**	**0.00200**	**mg/L**	1	21-Jan-2020 15:46

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW25A-20200115
Collection Date: 15-Jan-2020 11:20

ANALYTICAL REPORT
WorkOrder:HS20010713
Lab ID:HS20010713-10
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	21-Jan-2020 16:10
Benzene		U	0.00020	0.0010	mg/L	1	21-Jan-2020 16:10
Chlorobenzene		U	0.00030	0.0010	mg/L	1	21-Jan-2020 16:10
Ethylbenzene		U	0.00030	0.0010	mg/L	1	21-Jan-2020 16:10
Methylene chloride		U	0.0010	0.0020	mg/L	1	21-Jan-2020 16:10
Toluene		U	0.00020	0.0010	mg/L	1	21-Jan-2020 16:10
Vinyl chloride		U	0.00020	0.0010	mg/L	1	21-Jan-2020 16:10
Xylenes, Total		U	0.00030	0.0010	mg/L	1	21-Jan-2020 16:10
Surr: 1,2-Dichloroethane-d4	*93.0*			*70-126*	*%REC*	*1*	*21-Jan-2020 16:10*
Surr: 4-Bromofluorobenzene	*93.2*			*81-113*	*%REC*	*1*	*21-Jan-2020 16:10*
Surr: Dibromofluoromethane	*98.8*			*77-123*	*%REC*	*1*	*21-Jan-2020 16:10*
Surr: Toluene-d8	*99.1*			*82-127*	*%REC*	*1*	*21-Jan-2020 16:10*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW25A-20200115
Collection Date: 15-Jan-2020 11:20

ANALYTICAL REPORT
WorkOrder:HS20010713
Lab ID:HS20010713-10
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 19-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	21-Jan-2020 23:04
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	21-Jan-2020 23:04
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	21-Jan-2020 23:04
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	21-Jan-2020 23:04
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	21-Jan-2020 23:04
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	21-Jan-2020 23:04
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	21-Jan-2020 23:04
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	21-Jan-2020 23:04
Acenaphthene	U		0.000027	0.00010	mg/L	1	21-Jan-2020 23:04
Acenaphthylene	U		0.000015	0.00010	mg/L	1	21-Jan-2020 23:04
Anthracene	**0.000089**	J	**0.000014**	**0.00010**	**mg/L**	1	21-Jan-2020 23:04
Benz(a)anthracene	**0.00012**		**0.000050**	**0.00010**	**mg/L**	1	21-Jan-2020 23:04
Benzo(a)pyrene	**0.000038**	J	**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 23:04
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	21-Jan-2020 23:04
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	21-Jan-2020 23:04
Chrysene	**0.000097**	J	**0.000021**	**0.00010**	**mg/L**	1	21-Jan-2020 23:04
Dibenzofuran	U		0.000020	0.00010	mg/L	1	21-Jan-2020 23:04
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	21-Jan-2020 23:04
Fluoranthene	**0.00045**		**0.000010**	**0.00010**	**mg/L**	1	21-Jan-2020 23:04
Fluorene	U		0.000030	0.00010	mg/L	1	21-Jan-2020 23:04
Naphthalene	**0.00010**		**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 23:04
Nitrobenzene	U		0.000024	0.00020	mg/L	1	21-Jan-2020 23:04
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	21-Jan-2020 23:04
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	21-Jan-2020 23:04
Phenanthrene	**0.00017**		**0.000021**	**0.00010**	**mg/L**	1	21-Jan-2020 23:04
Phenol	U		0.000035	0.00020	mg/L	1	21-Jan-2020 23:04
Pyrene	**0.00035**		**0.000019**	**0.00010**	**mg/L**	1	21-Jan-2020 23:04
Surr: 2,4,6-Tribromophenol	*46.9*			*34-129*	*%REC*	*1*	*21-Jan-2020 23:04*
Surr: 2-Fluorobiphenyl	*68.3*			*40-125*	*%REC*	*1*	*21-Jan-2020 23:04*
Surr: 2-Fluorophenol	*48.4*			*20-120*	*%REC*	*1*	*21-Jan-2020 23:04*
Surr: 4-Terphenyl-d14	*97.4*			*40-135*	*%REC*	*1*	*21-Jan-2020 23:04*
Surr: Nitrobenzene-d5	*60.2*			*41-120*	*%REC*	*1*	*21-Jan-2020 23:04*
Surr: Phenol-d6	*61.0*			*20-120*	*%REC*	*1*	*21-Jan-2020 23:04*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 20-Jan-2020		Analyst: JC
Arsenic	**0.00216**		**0.000400**	**0.00200**	**mg/L**	1	21-Jan-2020 15:48

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW44C-20200115
Collection Date: 15-Jan-2020 13:15

ANALYTICAL REPORT
WorkOrder:HS20010713
Lab ID:HS20010713-11
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	21-Jan-2020 07:51
Benzene		U	0.00020	0.0010	mg/L	1	21-Jan-2020 07:51
Chlorobenzene		U	0.00030	0.0010	mg/L	1	21-Jan-2020 07:51
Ethylbenzene		U	0.00030	0.0010	mg/L	1	21-Jan-2020 07:51
Methylene chloride		U	0.0010	0.0020	mg/L	1	21-Jan-2020 07:51
Toluene		U	0.00020	0.0010	mg/L	1	21-Jan-2020 07:51
Xylenes, Total		U	0.00030	0.0010	mg/L	1	21-Jan-2020 07:51
Surr: 1,2-Dichloroethane-d4	*89.6*			*70-126*	*%REC*	*1*	*21-Jan-2020 07:51*
Surr: 4-Bromofluorobenzene	*94.3*			*81-113*	*%REC*	*1*	*21-Jan-2020 07:51*
Surr: Dibromofluoromethane	*96.0*			*77-123*	*%REC*	*1*	*21-Jan-2020 07:51*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*1*	*21-Jan-2020 07:51*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW44C-20200115
Collection Date: 15-Jan-2020 13:15

ANALYTICAL REPORT
WorkOrder:HS20010713
Lab ID:HS20010713-11
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 19-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	21-Jan-2020 23:23
2,4-Dimethylphenol	**0.00011**	J	**0.000040**	**0.00020**	**mg/L**	1	21-Jan-2020 23:23
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	21-Jan-2020 23:23
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	21-Jan-2020 23:23
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	21-Jan-2020 23:23
2-Methylnaphthalene	**0.00012**		**0.000019**	**0.00010**	**mg/L**	1	21-Jan-2020 23:23
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	21-Jan-2020 23:23
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	21-Jan-2020 23:23
Acenaphthene	**0.00045**		**0.000027**	**0.00010**	**mg/L**	1	21-Jan-2020 23:23
Acenaphthylene	**0.00065**		**0.000015**	**0.00010**	**mg/L**	1	21-Jan-2020 23:23
Anthracene	**0.0086**		**0.000014**	**0.00010**	**mg/L**	1	21-Jan-2020 23:23
Benz(a)anthracene	**0.0018**		**0.000050**	**0.00010**	**mg/L**	1	21-Jan-2020 23:23
Benzo(a)pyrene	**0.00065**		**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 23:23
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	21-Jan-2020 23:23
Bis(2-ethylhexyl)phthalate	**0.0012**		**0.000037**	**0.00020**	**mg/L**	1	21-Jan-2020 23:23
Chrysene	**0.0022**		**0.000021**	**0.00010**	**mg/L**	1	21-Jan-2020 23:23
Dibenzofuran	**0.00034**		**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 23:23
Di-n-butyl phthalate	**0.0016**		**0.000020**	**0.00020**	**mg/L**	1	21-Jan-2020 23:23
Fluoranthene	**0.0095**		**0.000010**	**0.00010**	**mg/L**	1	21-Jan-2020 23:23
Fluorene	**0.00067**		**0.000030**	**0.00010**	**mg/L**	1	21-Jan-2020 23:23
Naphthalene	**0.000097**	J	**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 23:23
Nitrobenzene	U		0.000024	0.00020	mg/L	1	21-Jan-2020 23:23
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	21-Jan-2020 23:23
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	21-Jan-2020 23:23
Phenanthrene	**0.0077**		**0.000021**	**0.00010**	**mg/L**	1	21-Jan-2020 23:23
Phenol	U		0.000035	0.00020	mg/L	1	21-Jan-2020 23:23
Pyrene	**0.0060**		**0.000019**	**0.00010**	**mg/L**	1	21-Jan-2020 23:23
Surr: 2,4,6-Tribromophenol	*77.6*			*34-129*	*%REC*	*1*	*21-Jan-2020 23:23*
Surr: 2-Fluorobiphenyl	*72.4*			*40-125*	*%REC*	*1*	*21-Jan-2020 23:23*
Surr: 2-Fluorophenol	*59.3*			*20-120*	*%REC*	*1*	*21-Jan-2020 23:23*
Surr: 4-Terphenyl-d14	*90.5*			*40-135*	*%REC*	*1*	*21-Jan-2020 23:23*
Surr: Nitrobenzene-d5	*61.5*			*41-120*	*%REC*	*1*	*21-Jan-2020 23:23*
Surr: Phenol-d6	*61.1*			*20-120*	*%REC*	*1*	*21-Jan-2020 23:23*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 20-Jan-2020		Analyst: JC
Arsenic	**0.00314**		**0.000400**	**0.00200**	**mg/L**	1	21-Jan-2020 15:50

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW71B-20200115
Collection Date: 15-Jan-2020 14:00

ANALYTICAL REPORT
WorkOrder:HS20010713
Lab ID:HS20010713-12
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	21-Jan-2020 04:11
Benzene	**0.0021**		**0.00020**	**0.0010**	**mg/L**	1	21-Jan-2020 04:11
Chlorobenzene	U		0.00030	0.0010	mg/L	1	21-Jan-2020 04:11
Ethylbenzene	**0.0013**		**0.00030**	**0.0010**	**mg/L**	1	21-Jan-2020 04:11
Methylene chloride	U		0.0010	0.0020	mg/L	1	21-Jan-2020 04:11
Toluene	U		0.00020	0.0010	mg/L	1	21-Jan-2020 04:11
Xylenes, Total	**0.0030**		**0.00030**	**0.0010**	**mg/L**	1	21-Jan-2020 04:11
Surr: 1,2-Dichloroethane-d4	*94.1*			*70-126*	*%REC*	*1*	*21-Jan-2020 04:11*
Surr: 4-Bromofluorobenzene	*95.8*			*81-113*	*%REC*	*1*	*21-Jan-2020 04:11*
Surr: Dibromofluoromethane	*98.7*			*77-123*	*%REC*	*1*	*21-Jan-2020 04:11*
Surr: Toluene-d8	*98.2*			*82-127*	*%REC*	*1*	*21-Jan-2020 04:11*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW71B-20200115
Collection Date: 15-Jan-2020 14:00

ANALYTICAL REPORT
WorkOrder:HS20010713
Lab ID:HS20010713-12
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	21-Jan-2020 23:42
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	21-Jan-2020 23:42
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	21-Jan-2020 23:42
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	21-Jan-2020 23:42
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	21-Jan-2020 23:42
2-Methylnaphthalene	**0.0060**		**0.000019**	**0.00010**	**mg/L**	1	21-Jan-2020 23:42
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	21-Jan-2020 23:42
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	21-Jan-2020 23:42
Acenaphthene	**0.0053**		**0.000027**	**0.00010**	**mg/L**	1	21-Jan-2020 23:42
Acenaphthylene	**0.00015**		**0.000015**	**0.00010**	**mg/L**	1	21-Jan-2020 23:42
Anthracene	**0.0039**		**0.000014**	**0.00010**	**mg/L**	1	21-Jan-2020 23:42
Benz(a)anthracene	**0.0011**		**0.000050**	**0.00010**	**mg/L**	1	21-Jan-2020 23:42
Benzo(a)pyrene	**0.00052**		**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 23:42
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	21-Jan-2020 23:42
Bis(2-ethylhexyl)phthalate	**0.00063**		**0.000037**	**0.00020**	**mg/L**	1	21-Jan-2020 23:42
Chrysene	**0.0011**		**0.000021**	**0.00010**	**mg/L**	1	21-Jan-2020 23:42
Dibenzofuran	**0.0049**		**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 23:42
Di-n-butyl phthalate	**0.00098**		**0.000020**	**0.00020**	**mg/L**	1	21-Jan-2020 23:42
Fluoranthene	**0.0057**		**0.000010**	**0.00010**	**mg/L**	1	21-Jan-2020 23:42
Fluorene	**0.0038**		**0.000030**	**0.00010**	**mg/L**	1	21-Jan-2020 23:42
Naphthalene	**0.0064**		**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 23:42
Nitrobenzene	U		0.000024	0.00020	mg/L	1	21-Jan-2020 23:42
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	21-Jan-2020 23:42
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	21-Jan-2020 23:42
Phenanthrene	**0.017**		**0.000084**	**0.00040**	**mg/L**	4	22-Jan-2020 14:16
Phenol	U		0.000035	0.00020	mg/L	1	21-Jan-2020 23:42
Pyrene	**0.0042**		**0.000019**	**0.00010**	**mg/L**	1	21-Jan-2020 23:42
Surr: 2,4,6-Tribromophenol	*88.6*			*34-129*	*%REC*	*4*	*22-Jan-2020 14:16*
Surr: 2,4,6-Tribromophenol	*71.8*			*34-129*	*%REC*	*1*	*21-Jan-2020 23:42*
Surr: 2-Fluorobiphenyl	*81.4*			*40-125*	*%REC*	*1*	*21-Jan-2020 23:42*
Surr: 2-Fluorobiphenyl	*93.3*			*40-125*	*%REC*	*4*	*22-Jan-2020 14:16*
Surr: 2-Fluorophenol	*71.3*			*20-120*	*%REC*	*4*	*22-Jan-2020 14:16*
Surr: 2-Fluorophenol	*62.8*			*20-120*	*%REC*	*1*	*21-Jan-2020 23:42*
Surr: 4-Terphenyl-d14	*93.9*			*40-135*	*%REC*	*1*	*21-Jan-2020 23:42*
Surr: 4-Terphenyl-d14	*108*			*40-135*	*%REC*	*4*	*22-Jan-2020 14:16*
Surr: Nitrobenzene-d5	*80.2*			*41-120*	*%REC*	*4*	*22-Jan-2020 14:16*
Surr: Nitrobenzene-d5	*67.2*			*41-120*	*%REC*	*1*	*21-Jan-2020 23:42*
Surr: Phenol-d6	*66.1*			*20-120*	*%REC*	*1*	*21-Jan-2020 23:42*
Surr: Phenol-d6	*74.8*			*20-120*	*%REC*	*4*	*22-Jan-2020 14:16*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW71B-20200115
Collection Date: 15-Jan-2020 14:00

ANALYTICAL REPORT
WorkOrder:HS20010713
Lab ID:HS20010713-12
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 20-Jan-2020		Analyst: JC
Arsenic	**0.00279**		**0.000400**	**0.00200**	**mg/L**	1	21-Jan-2020 15:53

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW33BR-20200115
Collection Date: 15-Jan-2020 15:00

ANALYTICAL REPORT
WorkOrder:HS20010713
Lab ID:HS20010713-13
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	21-Jan-2020 16:34
Benzene	**0.12**		**0.00020**	**0.0010**	**mg/L**	1	21-Jan-2020 16:34
Chlorobenzene	U		0.00030	0.0010	mg/L	1	21-Jan-2020 16:34
Ethylbenzene	**0.043**		**0.00030**	**0.0010**	**mg/L**	1	21-Jan-2020 16:34
Methylene chloride	U		0.0010	0.0020	mg/L	1	21-Jan-2020 16:34
Toluene	U		0.00020	0.0010	mg/L	1	21-Jan-2020 16:34
Vinyl chloride	U		0.00020	0.0010	mg/L	1	21-Jan-2020 16:34
Xylenes, Total	**0.011**		**0.00030**	**0.0010**	**mg/L**	1	21-Jan-2020 16:34
Surr: 1,2-Dichloroethane-d4	*92.8*			*70-126*	*%REC*	*1*	*21-Jan-2020 16:34*
Surr: 4-Bromofluorobenzene	*95.6*			*81-113*	*%REC*	*1*	*21-Jan-2020 16:34*
Surr: Dibromofluoromethane	*99.6*			*77-123*	*%REC*	*1*	*21-Jan-2020 16:34*
Surr: Toluene-d8	*99.2*			*82-127*	*%REC*	*1*	*21-Jan-2020 16:34*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW33BR-20200115
Collection Date: 15-Jan-2020 15:00

ANALYTICAL REPORT
WorkOrder:HS20010713
Lab ID:HS20010713-13
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 19-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	22-Jan-2020 00:01
2,4-Dimethylphenol	**0.00018**	J	**0.000040**	**0.00020**	**mg/L**	1	22-Jan-2020 00:01
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	22-Jan-2020 00:01
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	22-Jan-2020 00:01
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	22-Jan-2020 00:01
2-Methylnaphthalene	**0.00025**		**0.000019**	**0.00010**	**mg/L**	1	22-Jan-2020 00:01
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	22-Jan-2020 00:01
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	22-Jan-2020 00:01
Acenaphthene	**0.0051**		**0.000027**	**0.00010**	**mg/L**	1	22-Jan-2020 00:01
Acenaphthylene	**0.00015**		**0.000015**	**0.00010**	**mg/L**	1	22-Jan-2020 00:01
Anthracene	**0.00046**		**0.000014**	**0.00010**	**mg/L**	1	22-Jan-2020 00:01
Benz(a)anthracene	**0.00010**		**0.000050**	**0.00010**	**mg/L**	1	22-Jan-2020 00:01
Benzo(a)pyrene	**0.000039**	J	**0.000020**	**0.00010**	**mg/L**	1	22-Jan-2020 00:01
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	22-Jan-2020 00:01
Bis(2-ethylhexyl)phthalate	**0.00067**		**0.000037**	**0.00020**	**mg/L**	1	22-Jan-2020 00:01
Chrysene	**0.00011**		**0.000021**	**0.00010**	**mg/L**	1	22-Jan-2020 00:01
Dibenzofuran	**0.0039**		**0.000020**	**0.00010**	**mg/L**	1	22-Jan-2020 00:01
Di-n-butyl phthalate	**0.00099**		**0.000020**	**0.00020**	**mg/L**	1	22-Jan-2020 00:01
Fluoranthene	**0.00082**		**0.000010**	**0.00010**	**mg/L**	1	22-Jan-2020 00:01
Fluorene	**0.0018**		**0.000030**	**0.00010**	**mg/L**	1	22-Jan-2020 00:01
Naphthalene	**0.0051**		**0.000020**	**0.00010**	**mg/L**	1	22-Jan-2020 00:01
Nitrobenzene	U		0.000024	0.00020	mg/L	1	22-Jan-2020 00:01
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	22-Jan-2020 00:01
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	22-Jan-2020 00:01
Phenanthrene	**0.0013**		**0.000021**	**0.00010**	**mg/L**	1	22-Jan-2020 00:01
Phenol	**0.00018**	J	**0.000035**	**0.00020**	**mg/L**	1	22-Jan-2020 00:01
Pyrene	**0.00057**		**0.000019**	**0.00010**	**mg/L**	1	22-Jan-2020 00:01
Surr: 2,4,6-Tribromophenol	*74.6*			*34-129*	*%REC*	*1*	*22-Jan-2020 00:01*
Surr: 2-Fluorobiphenyl	*78.9*			*40-125*	*%REC*	*1*	*22-Jan-2020 00:01*
Surr: 2-Fluorophenol	*64.1*			*20-120*	*%REC*	*1*	*22-Jan-2020 00:01*
Surr: 4-Terphenyl-d14	*93.1*			*40-135*	*%REC*	*1*	*22-Jan-2020 00:01*
Surr: Nitrobenzene-d5	*75.8*			*41-120*	*%REC*	*1*	*22-Jan-2020 00:01*
Surr: Phenol-d6	*68.5*			*20-120*	*%REC*	*1*	*22-Jan-2020 00:01*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 20-Jan-2020		Analyst: JC
Arsenic	**0.000877**	J	**0.000400**	**0.00200**	**mg/L**	1	21-Jan-2020 15:55

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW25C-20200115
Collection Date: 15-Jan-2020 15:50

ANALYTICAL REPORT
WorkOrder:HS20010713
Lab ID:HS20010713-14
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	21-Jan-2020 16:59
Benzene	**0.0017**		**0.00020**	**0.0010**	**mg/L**	1	21-Jan-2020 16:59
Chlorobenzene	U		0.00030	0.0010	mg/L	1	21-Jan-2020 16:59
Ethylbenzene	**0.033**		**0.00030**	**0.0010**	**mg/L**	1	21-Jan-2020 16:59
Methylene chloride	U		0.0010	0.0020	mg/L	1	21-Jan-2020 16:59
Toluene	**0.010**		**0.00020**	**0.0010**	**mg/L**	1	21-Jan-2020 16:59
Vinyl chloride	U		0.00020	0.0010	mg/L	1	21-Jan-2020 16:59
Xylenes, Total	**0.22**		**0.00030**	**0.0010**	**mg/L**	1	21-Jan-2020 16:59
Surr: 1,2-Dichloroethane-d4	*91.5*			*70-126*	*%REC*	*1*	*21-Jan-2020 16:59*
Surr: 4-Bromofluorobenzene	*102*			*81-113*	*%REC*	*1*	*21-Jan-2020 16:59*
Surr: Dibromofluoromethane	*98.6*			*77-123*	*%REC*	*1*	*21-Jan-2020 16:59*
Surr: Toluene-d8	*99.0*			*82-127*	*%REC*	*1*	*21-Jan-2020 16:59*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW25C-20200115
Collection Date: 15-Jan-2020 15:50

ANALYTICAL REPORT
WorkOrder:HS20010713
Lab ID:HS20010713-14
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	22-Jan-2020 00:20
2,4-Dimethylphenol	**0.0062**		**0.000040**	**0.00020**	**mg/L**	1	22-Jan-2020 00:20
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	22-Jan-2020 00:20
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	22-Jan-2020 00:20
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	22-Jan-2020 00:20
2-Methylnaphthalene	**0.96**		**0.0038**	**0.020**	**mg/L**	200	22-Jan-2020 15:56
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	22-Jan-2020 00:20
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	22-Jan-2020 00:20
Acenaphthene	**0.36**		**0.0054**	**0.020**	**mg/L**	200	22-Jan-2020 15:56
Acenaphthylene	**0.0025**		**0.000015**	**0.00010**	**mg/L**	1	22-Jan-2020 00:20
Anthracene	**0.027**		**0.00028**	**0.0020**	**mg/L**	20	22-Jan-2020 14:35
Benz(a)anthracene	**0.00057**		**0.000050**	**0.00010**	**mg/L**	1	22-Jan-2020 00:20
Benzo(a)pyrene	**0.00019**		**0.000020**	**0.00010**	**mg/L**	1	22-Jan-2020 00:20
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	22-Jan-2020 00:20
Bis(2-ethylhexyl)phthalate	**0.00066**		**0.000037**	**0.00020**	**mg/L**	1	22-Jan-2020 00:20
Chrysene	**0.00056**		**0.000021**	**0.00010**	**mg/L**	1	22-Jan-2020 00:20
Dibenzofuran	**0.34**		**0.0040**	**0.020**	**mg/L**	200	22-Jan-2020 15:56
Di-n-butyl phthalate	**0.00068**		**0.000020**	**0.00020**	**mg/L**	1	22-Jan-2020 00:20
Fluoranthene	**0.0058**		**0.000010**	**0.00010**	**mg/L**	1	22-Jan-2020 00:20
Fluorene	**0.15**		**0.00060**	**0.0020**	**mg/L**	20	22-Jan-2020 14:35
Naphthalene	**7.5**		**0.040**	**0.20**	**mg/L**	2000	22-Jan-2020 16:15
Nitrobenzene	U		0.000024	0.00020	mg/L	1	22-Jan-2020 00:20
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	22-Jan-2020 00:20
Pentachlorophenol	**0.17**		**0.0016**	**0.0040**	**mg/L**	20	22-Jan-2020 14:35
Phenanthrene	**0.18**		**0.00042**	**0.0020**	**mg/L**	20	22-Jan-2020 14:35
Phenol	U		0.000035	0.00020	mg/L	1	22-Jan-2020 00:20
Pyrene	**0.0049**		**0.000019**	**0.00010**	**mg/L**	1	22-Jan-2020 00:20
Surr: 2,4,6-Tribromophenol	*56.9*			*34-129*	*%REC*	*1*	*22-Jan-2020 00:20*
Surr: 2,4,6-Tribromophenol	*104*			*34-129*	*%REC*	*20*	*22-Jan-2020 14:35*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*200*	*22-Jan-2020 15:56*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*2000*	*22-Jan-2020 16:15*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*2000*	*22-Jan-2020 16:15*
Surr: 2-Fluorobiphenyl	*84.3*			*40-125*	*%REC*	*20*	*22-Jan-2020 14:35*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*200*	*22-Jan-2020 15:56*
Surr: 2-Fluorobiphenyl	*60.9*			*40-125*	*%REC*	*1*	*22-Jan-2020 00:20*
Surr: 2-Fluorophenol	*65.0*			*20-120*	*%REC*	*1*	*22-Jan-2020 00:20*
Surr: 2-Fluorophenol	*98.3*			*20-120*	*%REC*	*20*	*22-Jan-2020 14:35*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*200*	*22-Jan-2020 15:56*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*2000*	*22-Jan-2020 16:15*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW25C-20200115
Collection Date: 15-Jan-2020 15:50

ANALYTICAL REPORT
WorkOrder:HS20010713
Lab ID:HS20010713-14
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 19-Jan-2020		Analyst: LG
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*2000*	*22-Jan-2020 16:15*
Surr: 4-Terphenyl-d14	*87.3*			*40-135*	*%REC*	*1*	*22-Jan-2020 00:20*
Surr: 4-Terphenyl-d14	*111*			*40-135*	*%REC*	*20*	*22-Jan-2020 14:35*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*200*	*22-Jan-2020 15:56*
Surr: Nitrobenzene-d5	*99.3*			*41-120*	*%REC*	*20*	*22-Jan-2020 14:35*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*200*	*22-Jan-2020 15:56*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*2000*	*22-Jan-2020 16:15*
Surr: Nitrobenzene-d5	*49.3*			*41-120*	*%REC*	*1*	*22-Jan-2020 00:20*
Surr: Phenol-d6	*65.7*			*20-120*	*%REC*	*1*	*22-Jan-2020 00:20*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*200*	*22-Jan-2020 15:56*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*2000*	*22-Jan-2020 16:15*
Surr: Phenol-d6	*110*			*20-120*	*%REC*	*20*	*22-Jan-2020 14:35*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 20-Jan-2020		Analyst: JC
Arsenic	**0.00391**		**0.000400**	**0.00200**	**mg/L**	1	21-Jan-2020 16:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WQ-1620-TB04-20200115
Collection Date: 15-Jan-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20010713
Lab ID:HS20010713-15
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	21-Jan-2020 00:06
Benzene		U	0.00020	0.0010	mg/L	1	21-Jan-2020 00:06
Chlorobenzene		U	0.00030	0.0010	mg/L	1	21-Jan-2020 00:06
Ethylbenzene		U	0.00030	0.0010	mg/L	1	21-Jan-2020 00:06
Methylene chloride		U	0.0010	0.0020	mg/L	1	21-Jan-2020 00:06
Toluene		U	0.00020	0.0010	mg/L	1	21-Jan-2020 00:06
Vinyl chloride		U	0.00020	0.0010	mg/L	1	28-Jan-2020 15:35
Xylenes, Total		U	0.00030	0.0010	mg/L	1	21-Jan-2020 00:06
Surr: 1,2-Dichloroethane-d4	*92.6*			*70-126*	*%REC*	*1*	*21-Jan-2020 00:06*
Surr: 1,2-Dichloroethane-d4	*100*			*70-126*	*%REC*	*1*	*28-Jan-2020 15:35*
Surr: 4-Bromofluorobenzene	*95.9*			*81-113*	*%REC*	*1*	*21-Jan-2020 00:06*
Surr: 4-Bromofluorobenzene	*98.1*			*81-113*	*%REC*	*1*	*28-Jan-2020 15:35*
Surr: Dibromofluoromethane	*98.5*			*77-123*	*%REC*	*1*	*21-Jan-2020 00:06*
Surr: Dibromofluoromethane	*99.9*			*77-123*	*%REC*	*1*	*28-Jan-2020 15:35*
Surr: Toluene-d8	*99.2*			*82-127*	*%REC*	*1*	*21-Jan-2020 00:06*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*28-Jan-2020 15:35*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010713

Batch ID: 149790 **Start Date:** 19 Jan 2020 09:00 **End Date:** 19 Jan 2020 16:00
Method: SV AQ SEP FUN EXTRACT-LOWLEV - 3510C **Prep Code:** 3510_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20010713-01	1	1000 (mL)	1 (mL)	0.001
HS20010713-02	1	1000 (mL)	1 (mL)	0.001
HS20010713-03	1	1000 (mL)	1 (mL)	0.001
HS20010713-04	1	1000 (mL)	1 (mL)	0.001
HS20010713-05	1	1000 (mL)	1 (mL)	0.001
HS20010713-06	1	1000 (mL)	1 (mL)	0.001
HS20010713-07	1	1000 (mL)	1 (mL)	0.001
HS20010713-08	1	1000 (mL)	1 (mL)	0.001
HS20010713-09	1	1000 (mL)	1 (mL)	0.001
HS20010713-10	1	1000 (mL)	1 (mL)	0.001
HS20010713-11	1	1000 (mL)	1 (mL)	0.001
HS20010713-12	1	1000 (mL)	1 (mL)	0.001
HS20010713-13	1	1000 (mL)	1 (mL)	0.001
HS20010713-14	1	1000 (mL)	1 (mL)	0.001

Batch ID: 149807 **Start Date:** 20 Jan 2020 10:00 **End Date:** 20 Jan 2020 14:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20010713-01		10 (mL)	10 (mL)	1
HS20010713-02		10 (mL)	10 (mL)	1

Batch ID: 149808 **Start Date:** 20 Jan 2020 10:00 **End Date:** 20 Jan 2020 14:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20010713-03		10 (mL)	10 (mL)	1
HS20010713-04		10 (mL)	10 (mL)	1
HS20010713-05		10 (mL)	10 (mL)	1
HS20010713-06		10 (mL)	10 (mL)	1
HS20010713-07		10 (mL)	10 (mL)	1
HS20010713-08		10 (mL)	10 (mL)	1
HS20010713-09		10 (mL)	10 (mL)	1
HS20010713-10		10 (mL)	10 (mL)	1
HS20010713-11		10 (mL)	10 (mL)	1
HS20010713-12		10 (mL)	10 (mL)	1
HS20010713-13		10 (mL)	10 (mL)	1
HS20010713-14		10 (mL)	10 (mL)	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010713

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 149790 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Water	
HS20010713-01	WG-1620-MW15A-20200114	14 Jan 2020 13:45		19 Jan 2020 15:03	22 Jan 2020 13:19	20
HS20010713-01	WG-1620-MW15A-20200114	14 Jan 2020 13:45		19 Jan 2020 15:03	21 Jan 2020 20:32	1
HS20010713-02	WG-1620-MW15B-20200114	14 Jan 2020 14:30		19 Jan 2020 15:03	21 Jan 2020 20:51	1
HS20010713-03	WG-1620-MW15C-20200114	14 Jan 2020 15:20		19 Jan 2020 15:03	22 Jan 2020 13:38	4
HS20010713-03	WG-1620-MW15C-20200114	14 Jan 2020 15:20		19 Jan 2020 15:03	21 Jan 2020 21:10	1
HS20010713-04	WG-1620-MW14-20200114	14 Jan 2020 16:15		19 Jan 2020 15:03	21 Jan 2020 21:29	1
HS20010713-05	WG-1620-MW17-20200114	14 Jan 2020 17:10		19 Jan 2020 15:03	21 Jan 2020 21:48	1
HS20010713-06	WG-1620-FB06-20200114	14 Jan 2020 17:25		19 Jan 2020 15:03	21 Jan 2020 22:07	1
HS20010713-07	WG-1620-MW17C-20200115	15 Jan 2020 08:15		19 Jan 2020 15:03	21 Jan 2020 22:26	1
HS20010713-08	WG-1620-MW67B-20200115	15 Jan 2020 09:30		19 Jan 2020 15:03	21 Jan 2020 14:49	1
HS20010713-09	WG-1620-MW46C-20200115	15 Jan 2020 10:25		19 Jan 2020 15:03	22 Jan 2020 15:37	200
HS20010713-09	WG-1620-MW46C-20200115	15 Jan 2020 10:25		19 Jan 2020 15:03	22 Jan 2020 13:57	20
HS20010713-09	WG-1620-MW46C-20200115	15 Jan 2020 10:25		19 Jan 2020 15:03	21 Jan 2020 22:45	1
HS20010713-10	WG-1620-MW25A-20200115	15 Jan 2020 11:20		19 Jan 2020 15:03	21 Jan 2020 23:04	1
HS20010713-11	WG-1620-MW44C-20200115	15 Jan 2020 13:15		19 Jan 2020 15:03	21 Jan 2020 23:23	1
HS20010713-12	WG-1620-MW71B-20200115	15 Jan 2020 14:00		19 Jan 2020 15:03	22 Jan 2020 14:16	4
HS20010713-12	WG-1620-MW71B-20200115	15 Jan 2020 14:00		19 Jan 2020 15:03	21 Jan 2020 23:42	1
HS20010713-13	WG-1620-MW33BR-20200115	15 Jan 2020 15:00		19 Jan 2020 15:03	22 Jan 2020 00:01	1
HS20010713-14	WG-1620-MW25C-20200115	15 Jan 2020 15:50		19 Jan 2020 15:03	22 Jan 2020 16:15	2000
HS20010713-14	WG-1620-MW25C-20200115	15 Jan 2020 15:50		19 Jan 2020 15:03	22 Jan 2020 15:56	200
HS20010713-14	WG-1620-MW25C-20200115	15 Jan 2020 15:50		19 Jan 2020 15:03	22 Jan 2020 14:35	20
HS20010713-14	WG-1620-MW25C-20200115	15 Jan 2020 15:50		19 Jan 2020 15:03	22 Jan 2020 00:20	1
Batch ID: 149807 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS20010713-01	WG-1620-MW15A-20200114	14 Jan 2020 13:45		20 Jan 2020 14:00	22 Jan 2020 16:10	1
HS20010713-02	WG-1620-MW15B-20200114	14 Jan 2020 14:30		20 Jan 2020 14:00	22 Jan 2020 16:12	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010713

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 149808 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS20010713-03	WG-1620-MW15C-20200114	14 Jan 2020 15:20		20 Jan 2020 14:00	21 Jan 2020 15:27	1
HS20010713-04	WG-1620-MW14-20200114	14 Jan 2020 16:15		20 Jan 2020 14:00	21 Jan 2020 15:37	1
HS20010713-05	WG-1620-MW17-20200114	14 Jan 2020 17:10		20 Jan 2020 14:00	21 Jan 2020 15:39	1
HS20010713-06	WG-1620-FB06-20200114	14 Jan 2020 17:25		20 Jan 2020 14:00	21 Jan 2020 15:41	1
HS20010713-07	WG-1620-MW17C-20200115	15 Jan 2020 08:15		20 Jan 2020 14:00	21 Jan 2020 15:44	1
HS20010713-08	WG-1620-MW67B-20200115	15 Jan 2020 09:30		20 Jan 2020 14:00	21 Jan 2020 15:16	1
HS20010713-09	WG-1620-MW46C-20200115	15 Jan 2020 10:25		20 Jan 2020 14:00	21 Jan 2020 15:46	1
HS20010713-10	WG-1620-MW25A-20200115	15 Jan 2020 11:20		20 Jan 2020 14:00	21 Jan 2020 15:48	1
HS20010713-11	WG-1620-MW44C-20200115	15 Jan 2020 13:15		20 Jan 2020 14:00	21 Jan 2020 15:50	1
HS20010713-12	WG-1620-MW71B-20200115	15 Jan 2020 14:00		20 Jan 2020 14:00	21 Jan 2020 15:53	1
HS20010713-13	WG-1620-MW33BR-20200115	15 Jan 2020 15:00		20 Jan 2020 14:00	21 Jan 2020 15:55	1
HS20010713-14	WG-1620-MW25C-20200115	15 Jan 2020 15:50		20 Jan 2020 14:00	21 Jan 2020 16:16	1
Batch ID: R354726 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20010713-02	WG-1620-MW15B-20200114	14 Jan 2020 14:30			21 Jan 2020 02:09	1
HS20010713-03	WG-1620-MW15C-20200114	14 Jan 2020 15:20			21 Jan 2020 02:33	1
HS20010713-04	WG-1620-MW14-20200114	14 Jan 2020 16:15			21 Jan 2020 02:58	1
HS20010713-05	WG-1620-MW17-20200114	14 Jan 2020 17:10			21 Jan 2020 08:16	1
HS20010713-07	WG-1620-MW17C-20200115	15 Jan 2020 08:15			21 Jan 2020 03:22	1
HS20010713-08	WG-1620-MW67B-20200115	15 Jan 2020 09:30			21 Jan 2020 00:55	1
HS20010713-09	WG-1620-MW46C-20200115	15 Jan 2020 10:25			21 Jan 2020 07:27	1
HS20010713-11	WG-1620-MW44C-20200115	15 Jan 2020 13:15			21 Jan 2020 07:51	1
HS20010713-12	WG-1620-MW71B-20200115	15 Jan 2020 14:00			21 Jan 2020 04:11	1
HS20010713-15	WQ-1620-TB04-20200115	15 Jan 2020 00:00			21 Jan 2020 00:06	1
Batch ID: R354799 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20010713-01	WG-1620-MW15A-20200114	14 Jan 2020 13:45			21 Jan 2020 15:46	1
HS20010713-10	WG-1620-MW25A-20200115	15 Jan 2020 11:20			21 Jan 2020 16:10	1
HS20010713-13	WG-1620-MW33BR-20200115	15 Jan 2020 15:00			21 Jan 2020 16:34	1
HS20010713-14	WG-1620-MW25C-20200115	15 Jan 2020 15:50			21 Jan 2020 16:59	1
Batch ID: R355099 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20010713-06	WG-1620-FB06-20200114	14 Jan 2020 17:25			27 Jan 2020 12:30	1
Batch ID: R355193 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20010713-15	WQ-1620-TB04-20200115	15 Jan 2020 00:00			28 Jan 2020 15:35	1

WorkOrder: HS20010713
InstrumentID: ICPMS04
Test Code: ICP_TW
Test Number: SW6020
Test Name: ICP-MS Metals by SW6020A

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Arsenic	7440-38-2	0.000500	0.000456	0.000400	0.00200

WorkOrder: HS20010713
InstrumentID: ICPMS05
Test Code: ICP_TW
Test Number: SW6020
Test Name: ICP-MS Metals by SW6020A

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Arsenic	7440-38-2	0.000500	0.000499	0.000400	0.00200

WorkOrder: HS20010713
InstrumentID: SV-6
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Diphenylhydrazine	122-66-7	0.00010	0.000098	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.000051	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.000094	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.000083	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.000093	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.000050	0.000060	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000031	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00010	0.000037	0.000047	0.0010
A	Acenaphthene	83-32-9	0.000050	0.000059	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000050	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.000047	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.000050	0.000059	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.000050	0.000050	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.000081	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.00012	0.000037	0.00020
A	Chrysene	218-01-9	0.000050	0.000060	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.000050	0.000050	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.00011	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000049	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.000053	0.000030	0.00010
A	Naphthalene	91-20-3	0.000050	0.000049	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.00012	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.00011	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.0000094	0.000079	0.00020
A	Phenanthrene	85-01-8	0.000050	0.000049	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.000096	0.000035	0.00020
A	Pyrene	129-00-0	0.000050	0.000047	0.000019	0.00010
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0.00020
S	2-Fluorobiphenyl	321-60-8	0	0	0	0.00020
S	2-Fluorophenol	367-12-4	0	0	0	0.00020
S	4-Terphenyl-d14	1718-51-0	0	0	0	0.00020
S	Nitrobenzene-d5	4165-60-0	0	0	0	0.00020
S	Phenol-d6	13127-88-3	0	0	0	0.00020

WorkOrder: HS20010713
InstrumentID: VOA2
Test Code: 8260_LL_W
Test Number: SW8260
Test Name: Low Level Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.00050	0.00062	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00059	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00071	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00063	0.00030	0.0010
A	Methylene chloride	75-09-2	0.0010	0.00075	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00069	0.00020	0.0010
A	Vinyl chloride	75-01-4	0.00050	0.00044	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00059	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

WorkOrder: HS20010713
InstrumentID: VOA4
Test Code: 8260_LL_W
Test Number: SW8260
Test Name: Low Level Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.00050	0.00061	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00057	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00058	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00048	0.00030	0.0010
A	Methylene chloride	75-09-2	0.0010	0.00070	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00050	0.00020	0.0010
A	Vinyl chloride	75-01-4	0.00050	0.00045	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00070	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010713

QC BATCH REPORT

Batch ID: 149807 (0) **Instrument: ICPMS04** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-149807** Units: **mg/L** Analysis Date: **22-Jan-2020 14:20**
Client ID: Run ID: **ICPMS04_354801** SeqNo: **5443749** PrepDate: **20-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								

LCS Sample ID: **LCS-149807** Units: **mg/L** Analysis Date: **22-Jan-2020 14:22**
Client ID: Run ID: **ICPMS04_354801** SeqNo: **5443750** PrepDate: **20-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0482	0.00200	0.05	0	96.4	80 - 120				

MS Sample ID: **HS20010683-01MS** Units: **mg/L** Analysis Date: **22-Jan-2020 14:31**
Client ID: Run ID: **ICPMS04_354801** SeqNo: **5443754** PrepDate: **20-Jan-2020** DF: **10**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05208	0.0200	0.05	0.00263	98.9	80 - 120				

MSD Sample ID: **HS20010683-01MSD** Units: **mg/L** Analysis Date: **22-Jan-2020 16:28**
Client ID: Run ID: **ICPMS04_354801** SeqNo: **5444073** PrepDate: **20-Jan-2020** DF: **10**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05405	0.0200	0.05	0	108	80 - 120	0.05208	3.72	20	

PDS Sample ID: **HS20010683-01PDS** Units: **mg/L** Analysis Date: **22-Jan-2020 14:36**
Client ID: Run ID: **ICPMS04_354801** SeqNo: **5443756** PrepDate: **20-Jan-2020** DF: **10**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	1.031	0.0200	1	0	103	75 - 125				

SD Sample ID: **HS20010683-01SD** Units: **mg/L** Analysis Date: **22-Jan-2020 14:29**
Client ID: Run ID: **ICPMS04_354801** SeqNo: **5443753** PrepDate: **20-Jan-2020** DF: **50**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	U	0.100					0.00263	0	10	

The following samples were analyzed in this batch: HS20010713-01 HS20010713-02

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010713

QC BATCH REPORT

Batch ID: 149808 (0) **Instrument: ICPMS05** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-149808** Units: **mg/L** Analysis Date: **21-Jan-2020 15:12**
Client ID: Run ID: **ICPMS05_354727** SeqNo: **5442639** PrepDate: **20-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								

LCS Sample ID: **LCS-149808** Units: **mg/L** Analysis Date: **21-Jan-2020 15:14**
Client ID: Run ID: **ICPMS05_354727** SeqNo: **5442640** PrepDate: **20-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04553	0.00200	0.05	0	91.1	80 - 120				

MS Sample ID: **HS20010713-08MS** Units: **mg/L** Analysis Date: **21-Jan-2020 15:20**
Client ID: **WG-1620-MW67B-20200115** Run ID: **ICPMS05_354727** SeqNo: **5442643** PrepDate: **20-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04636	0.00200	0.05	0.000467	91.8	80 - 120				

MSD Sample ID: **HS20010713-08MSD** Units: **mg/L** Analysis Date: **21-Jan-2020 15:23**
Client ID: **WG-1620-MW67B-20200115** Run ID: **ICPMS05_354727** SeqNo: **5442644** PrepDate: **20-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04707	0.00200	0.05	0.000467	93.2	80 - 120	0.04636	1.51	20	

PDS Sample ID: **HS20010713-08PDS** Units: **mg/L** Analysis Date: **21-Jan-2020 15:25**
Client ID: **WG-1620-MW67B-20200115** Run ID: **ICPMS05_354727** SeqNo: **5442645** PrepDate: **20-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.09734	0.00200	0.1	0.000467	96.9	75 - 125				

SD Sample ID: **HS20010713-08SD** Units: **mg/L** Analysis Date: **21-Jan-2020 15:18**
Client ID: **WG-1620-MW67B-20200115** Run ID: **ICPMS05_354727** SeqNo: **5442642** PrepDate: **20-Jan-2020** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	U	0.0100					0.000467	0	10	

The following samples were analyzed in this batch:

HS20010713-03	HS20010713-04	HS20010713-05	HS20010713-06
HS20010713-07	HS20010713-08	HS20010713-09	HS20010713-10
HS20010713-11	HS20010713-12	HS20010713-13	HS20010713-14

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010713

QC BATCH REPORT

Batch ID: 149790 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-149790** Units: **ug/L** Analysis Date: **21-Jan-2020 14:11**
Client ID: Run ID: **SV-6_354783** SeqNo: **5442894** PrepDate: **19-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	U	0.20								
2,4-Dimethylphenol	U	0.20								
2,4-Dinitrotoluene	U	0.20								
2,6-Dinitrotoluene	U	0.20								
2-Chloronaphthalene	U	0.20								
2-Methylnaphthalene	U	0.10								
4,6-Dinitro-2-methylphenol	U	0.20								
4-Nitrophenol	U	1.0								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Benz(a)anthracene	U	0.10								
Benzo(a)pyrene	U	0.10								
Bis(2-chloroethoxy)methane	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Chrysene	U	0.10								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Nitrobenzene	U	0.20								
N-Nitrosodiphenylamine	U	0.20								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*3.802*	*0.20*	*5*	*0*	*76.0*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.693*	*0.20*	*5*	*0*	*93.9*	*40 - 125*				
Surr: 2-Fluorophenol	*4.333*	*0.20*	*5*	*0*	*86.7*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.586*	*0.20*	*5*	*0*	*91.7*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.975*	*0.20*	*5*	*0*	*79.5*	*41 - 120*				
Surr: Phenol-d6	*4.137*	*0.20*	*5*	*0*	*82.7*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010713

QC BATCH REPORT

Batch ID: 149790 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCS Sample ID: **LCS-149790** Units: **ug/L** Analysis Date: **21-Jan-2020 14:30**
Client ID: Run ID: **SV-6_354783** SeqNo: **5442895** PrepDate: **19-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.591	0.20	5	0	91.8	39 - 127				
2,4-Dimethylphenol	4.25	0.20	5	0	85.0	35 - 120				
2,4-Dinitrotoluene	5.089	0.20	5	0	102	50 - 122				
2,6-Dinitrotoluene	5.095	0.20	5	0	102	50 - 120				
2-Chloronaphthalene	4.451	0.20	5	0	89.0	50 - 120				
2-Methylnaphthalene	4.393	0.10	5	0	87.9	50 - 120				
4,6-Dinitro-2-methylphenol	5.82	0.20	5	0	116	25 - 121				
4-Nitrophenol	4.859	1.0	5	0	97.2	30 - 130				
Acenaphthene	4.701	0.10	5	0	94.0	45 - 120				
Acenaphthylene	4.377	0.10	5	0	87.5	47 - 120				
Anthracene	5.109	0.10	5	0	102	45 - 120				
Benz(a)anthracene	4.959	0.10	5	0	99.2	40 - 120				
Benzo(a)pyrene	4.774	0.10	5	0	95.5	45 - 120				
Bis(2-chloroethoxy)methane	4.305	0.20	5	0	86.1	45 - 120				
Bis(2-ethylhexyl)phthalate	6.051	0.20	5	0	121	40 - 139				
Chrysene	4.991	0.10	5	0	99.8	43 - 120				
Dibenzofuran	4.274	0.10	5	0	85.5	50 - 120				
Di-n-butyl phthalate	5.708	0.20	5	0	114	45 - 123				
Fluoranthene	4.84	0.10	5	0	96.8	45 - 125				
Fluorene	4.308	0.10	5	0	86.2	49 - 120				
Naphthalene	4.351	0.10	5	0	87.0	45 - 120				
Nitrobenzene	4.173	0.20	5	0	83.5	44 - 120				
N-Nitrosodiphenylamine	4.822	0.20	5	0	96.4	40 - 125				
Pentachlorophenol	4.568	0.20	5	0	91.4	19 - 121				
Phenanthrene	4.864	0.10	5	0	97.3	45 - 121				
Phenol	4.143	0.20	5	0	82.9	20 - 124				
Pyrene	5.11	0.10	5	0	102	40 - 130				
Surr: 2,4,6-Tribromophenol	*3.644*	*0.20*	*5*	*0*	*72.9*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.364*	*0.20*	*5*	*0*	*87.3*	*40 - 125*				
Surr: 2-Fluorophenol	*3.709*	*0.20*	*5*	*0*	*74.2*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.728*	*0.20*	*5*	*0*	*94.6*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.07*	*0.20*	*5*	*0*	*81.4*	*41 - 120*				
Surr: Phenol-d6	*3.948*	*0.20*	*5*	*0*	*79.0*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010713

QC BATCH REPORT

Batch ID: 149790 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MS Sample ID: **HS20010713-08MS** Units: **ug/L** Analysis Date: **21-Jan-2020 15:08**
Client ID: **WG-1620-MW67B-20200115** Run ID: **SV-6_354783** SeqNo: **5442897** PrepDate: **19-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.019	0.20	5	0	80.4	39 - 127				
2,4-Dimethylphenol	2.936	0.20	5	0	58.7	35 - 120				
2,4-Dinitrotoluene	4.832	0.20	5	0	96.6	50 - 122				
2,6-Dinitrotoluene	4.816	0.20	5	0	96.3	50 - 120				
2-Chloronaphthalene	3.838	0.20	5	0	76.8	50 - 120				
2-Methylnaphthalene	3.517	0.10	5	0	70.3	50 - 120				
4,6-Dinitro-2-methylphenol	5.71	0.20	5	0	114	25 - 121				
4-Nitrophenol	4.92	1.0	5	0	98.4	30 - 130				
Acenaphthene	4.264	0.10	5	0	85.3	45 - 120				
Acenaphthylene	3.808	0.10	5	0	76.2	47 - 120				
Anthracene	4.668	0.10	5	0	93.4	45 - 120				
Benz(a)anthracene	4.683	0.10	5	0	93.7	40 - 120				
Benzo(a)pyrene	4.504	0.10	5	0	90.1	45 - 120				
Bis(2-chloroethoxy)methane	3.413	0.20	5	0	68.3	45 - 120				
Bis(2-ethylhexyl)phthalate	5.894	0.20	5	0.08957	116	40 - 139				
Chrysene	4.496	0.10	5	0	89.9	43 - 120				
Dibenzofuran	3.835	0.10	5	0	76.7	50 - 120				
Di-n-butyl phthalate	5.43	0.20	5	0	109	45 - 123				
Fluoranthene	4.612	0.10	5	0	92.2	45 - 125				
Fluorene	4.02	0.10	5	0	80.4	49 - 120				
Naphthalene	3.538	0.10	5	0	70.8	45 - 120				
Nitrobenzene	3.265	0.20	5	0	65.3	44 - 120				
N-Nitrosodiphenylamine	4.782	0.20	5	0	95.6	40 - 125				
Pentachlorophenol	4.303	0.20	5	0	86.1	19 - 121				
Phenanthrene	4.398	0.10	5	0	88.0	45 - 121				
Phenol	3.368	0.20	5	0	67.4	20 - 124				
Pyrene	4.822	0.10	5	0	96.4	40 - 130				
Surr: 2,4,6-Tribromophenol	*3.785*	*0.20*	*5*	*0*	*75.7*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.928*	*0.20*	*5*	*0*	*78.6*	*40 - 125*				
Surr: 2-Fluorophenol	*3.33*	*0.20*	*5*	*0*	*66.6*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.641*	*0.20*	*5*	*0*	*92.8*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.323*	*0.20*	*5*	*0*	*66.5*	*41 - 120*				
Surr: Phenol-d6	*3.289*	*0.20*	*5*	*0*	*65.8*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010713

QC BATCH REPORT

Batch ID: 149790 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MSD Sample ID: **HS20010713-08MSD** Units: **ug/L** Analysis Date: **21-Jan-2020 15:27**
Client ID: **WG-1620-MW67B-20200115** Run ID: **SV-6_354783** SeqNo: **5442898** PrepDate: **19-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.253	0.20	5	0	85.1	39 - 127	4.019	5.65	20	
2,4-Dimethylphenol	2.99	0.20	5	0	59.8	35 - 120	2.936	1.82	20	
2,4-Dinitrotoluene	5.313	0.20	5	0	106	50 - 122	4.832	9.49	20	
2,6-Dinitrotoluene	4.866	0.20	5	0	97.3	50 - 120	4.816	1.02	20	
2-Chloronaphthalene	3.489	0.20	5	0	69.8	50 - 120	3.838	9.55	20	
2-Methylnaphthalene	3.303	0.10	5	0	66.1	50 - 120	3.517	6.29	20	
4,6-Dinitro-2-methylphenol	3.819	0.20	5	0	76.4	25 - 121	5.71	39.7	30	R
4-Nitrophenol	5.384	1.0	5	0	108	30 - 130	4.92	9.01	20	
Acenaphthene	3.975	0.10	5	0	79.5	45 - 120	4.264	7.01	20	
Acenaphthylene	3.616	0.10	5	0	72.3	47 - 120	3.808	5.17	20	
Anthracene	5.25	0.10	5	0	105	45 - 120	4.668	11.7	20	
Benz(a)anthracene	5.359	0.10	5	0	107	40 - 120	4.683	13.4	20	
Benzo(a)pyrene	5.276	0.10	5	0	106	45 - 120	4.504	15.8	20	
Bis(2-chloroethoxy)methane	3.093	0.20	5	0	61.9	45 - 120	3.413	9.83	20	
Bis(2-ethylhexyl)phthalate	6.076	0.20	5	0.08957	120	40 - 139	5.894	3.04	20	
Chrysene	5.125	0.10	5	0	102	43 - 120	4.496	13.1	20	
Dibenzofuran	3.691	0.10	5	0	73.8	50 - 120	3.835	3.84	20	
Di-n-butyl phthalate	6.04	0.20	5	0	121	45 - 123	5.43	10.6	20	
Fluoranthene	5.332	0.10	5	0	107	45 - 125	4.612	14.5	20	
Fluorene	4.082	0.10	5	0	81.6	49 - 120	4.02	1.53	20	
Naphthalene	3.323	0.10	5	0	66.5	45 - 120	3.538	6.29	20	
Nitrobenzene	3.067	0.20	5	0	61.3	44 - 120	3.265	6.27	20	
N-Nitrosodiphenylamine	5.371	0.20	5	0	107	40 - 125	4.782	11.6	20	
Pentachlorophenol	5.167	0.20	5	0	103	19 - 121	4.303	18.3	20	
Phenanthrene	4.947	0.10	5	0	98.9	45 - 121	4.398	11.7	20	
Phenol	3.164	0.20	5	0	63.3	20 - 124	3.368	6.23	20	
Pyrene	5.367	0.10	5	0	107	40 - 130	4.822	10.7	20	
Surr: 2,4,6-Tribromophenol	*4.064*	*0.20*	*5*	*0*	*81.3*	*34 - 129*	*3.785*	*7.11*	*20*	
Surr: 2-Fluorobiphenyl	*3.411*	*0.20*	*5*	*0*	*68.2*	*40 - 125*	*3.928*	*14.1*	*20*	
Surr: 2-Fluorophenol	*2.871*	*0.20*	*5*	*0*	*57.4*	*20 - 120*	*3.33*	*14.8*	*20*	
Surr: 4-Terphenyl-d14	*5.181*	*0.20*	*5*	*0*	*104*	*40 - 135*	*4.641*	*11*	*20*	
Surr: Nitrobenzene-d5	*3.015*	*0.20*	*5*	*0*	*60.3*	*41 - 120*	*3.323*	*9.7*	*20*	
Surr: Phenol-d6	*3.041*	*0.20*	*5*	*0*	*60.8*	*20 - 120*	*3.289*	*7.86*	*20*	

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	HS20010713

QC BATCH REPORT

Batch ID: 149790 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

The following samples were analyzed in this batch:

HS20010713-01	HS20010713-02	HS20010713-03	HS20010713-04
HS20010713-05	HS20010713-06	HS20010713-07	HS20010713-08
HS20010713-09	HS20010713-10	HS20010713-11	HS20010713-12
HS20010713-13	HS20010713-14		

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010713

QC BATCH REPORT

Batch ID: R354726 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200120** Units: **ug/L** Analysis Date: **20-Jan-2020 23:42**
Client ID: Run ID: **VOA2_354726** SeqNo: **5441781** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*45.99*	*1.0*	*50*	*0*	*92.0*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*46.95*	*1.0*	*50*	*0*	*93.9*	*82 - 115*				
Surr: Dibromofluoromethane	*49.23*	*1.0*	*50*	*0*	*98.5*	*73 - 126*				
Surr: Toluene-d8	*50.95*	*1.0*	*50*	*0*	*102*	*81 - 120*				

LCS Sample ID: **VLCSW-200120** Units: **ug/L** Analysis Date: **20-Jan-2020 22:53**
Client ID: Run ID: **VOA2_354726** SeqNo: **5441780** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	17.43	1.0	20	0	87.1	70 - 124				
Benzene	17.19	1.0	20	0	86.0	74 - 120				
Chlorobenzene	18.11	1.0	20	0	90.5	76 - 113				
Ethylbenzene	17.79	1.0	20	0	89.0	77 - 117				
Methylene chloride	17.05	2.0	20	0	85.3	70 - 127				
Toluene	18.88	1.0	20	0	94.4	77 - 118				
Xylenes, Total	54.29	1.0	60	0	90.5	75 - 122				
Surr: 1,2-Dichloroethane-d4	*47.02*	*1.0*	*50*	*0*	*94.0*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*48.41*	*1.0*	*50*	*0*	*96.8*	*82 - 115*				
Surr: Dibromofluoromethane	*48.05*	*1.0*	*50*	*0*	*96.1*	*73 - 126*				
Surr: Toluene-d8	*49.15*	*1.0*	*50*	*0*	*98.3*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010713

QC BATCH REPORT

Batch ID: R354726 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS20010713-08MS** Units: **ug/L** Analysis Date: **21-Jan-2020 01:20**
Client ID: **WG-1620-MW67B-20200115** Run ID: **VOA2_354726** SeqNo: **5441843** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.86	1.0	20	0	84.3	70 - 127				
Benzene	17.23	1.0	20	0	86.2	70 - 127				
Chlorobenzene	17.78	1.0	20	0	88.9	70 - 114				
Ethylbenzene	17.83	1.0	20	0	89.1	70 - 124				
Methylene chloride	16.49	2.0	20	0	82.5	70 - 128				
Toluene	18.93	1.0	20	0	94.7	70 - 123				
Xylenes, Total	53.55	1.0	60	0	89.2	70 - 130				
Surr: 1,2-Dichloroethane-d4	*47.67*	*1.0*	*50*	*0*	*95.3*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.02*	*1.0*	*50*	*0*	*98.0*	*81 - 113*				
Surr: Dibromofluoromethane	*49.19*	*1.0*	*50*	*0*	*98.4*	*77 - 123*				
Surr: Toluene-d8	*48.27*	*1.0*	*50*	*0*	*96.5*	*82 - 127*				

MSD Sample ID: **HS20010713-08MSD** Units: **ug/L** Analysis Date: **21-Jan-2020 01:44**
Client ID: **WG-1620-MW67B-20200115** Run ID: **VOA2_354726** SeqNo: **5441844** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.39	1.0	20	0	82.0	70 - 127	16.86	2.79	20	
Benzene	16.52	1.0	20	0	82.6	70 - 127	17.23	4.21	20	
Chlorobenzene	17.4	1.0	20	0	87.0	70 - 114	17.78	2.16	20	
Ethylbenzene	17.35	1.0	20	0	86.8	70 - 124	17.83	2.72	20	
Methylene chloride	15.73	2.0	20	0	78.7	70 - 128	16.49	4.72	20	
Toluene	18.13	1.0	20	0	90.6	70 - 123	18.93	4.35	20	
Xylenes, Total	52.34	1.0	60	0	87.2	70 - 130	53.55	2.27	20	
Surr: 1,2-Dichloroethane-d4	*47.39*	*1.0*	*50*	*0*	*94.8*	*70 - 126*	*47.67*	*0.57*	*20*	
Surr: 4-Bromofluorobenzene	*48.39*	*1.0*	*50*	*0*	*96.8*	*81 - 113*	*49.02*	*1.3*	*20*	
Surr: Dibromofluoromethane	*48.16*	*1.0*	*50*	*0*	*96.3*	*77 - 123*	*49.19*	*2.12*	*20*	
Surr: Toluene-d8	*49.01*	*1.0*	*50*	*0*	*98.0*	*82 - 127*	*48.27*	*1.52*	*20*	

The following samples were analyzed in this batch:

HS20010713-02	HS20010713-03	HS20010713-04	HS20010713-05
HS20010713-07	HS20010713-08	HS20010713-09	HS20010713-11
HS20010713-12	HS20010713-15		

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010713

QC BATCH REPORT

Batch ID: R354799 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200121** Units: **ug/L** Analysis Date: **21-Jan-2020 12:55**
Client ID: Run ID: **VOA2_354799** SeqNo: **5443190** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*45.22*	*1.0*	*50*	*0*	*90.4*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*46.91*	*1.0*	*50*	*0*	*93.8*	*82 - 115*				
Surr: Dibromofluoromethane	*48.57*	*1.0*	*50*	*0*	*97.1*	*73 - 126*				
Surr: Toluene-d8	*50.32*	*1.0*	*50*	*0*	*101*	*81 - 120*				

LCS Sample ID: **VLCSW-200221** Units: **ug/L** Analysis Date: **21-Jan-2020 12:06**
Client ID: Run ID: **VOA2_354799** SeqNo: **5443189** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	17.66	1.0	20	0	88.3	70 - 124				
Benzene	17.2	1.0	20	0	86.0	74 - 120				
Chlorobenzene	18.44	1.0	20	0	92.2	76 - 113				
Ethylbenzene	17.94	1.0	20	0	89.7	77 - 117				
Methylene chloride	17.49	2.0	20	0	87.4	70 - 127				
Toluene	19.3	1.0	20	0	96.5	77 - 118				
Vinyl chloride	15.17	1.0	20	0	75.8	70 - 130				
Xylenes, Total	54.82	1.0	60	0	91.4	75 - 122				
Surr: 1,2-Dichloroethane-d4	*46.76*	*1.0*	*50*	*0*	*93.5*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*48.36*	*1.0*	*50*	*0*	*96.7*	*82 - 115*				
Surr: Dibromofluoromethane	*48.03*	*1.0*	*50*	*0*	*96.1*	*73 - 126*				
Surr: Toluene-d8	*49.46*	*1.0*	*50*	*0*	*98.9*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010713

QC BATCH REPORT

Batch ID: R354799 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS20010767-05MS** Units: **ug/L** Analysis Date: **21-Jan-2020 17:48**
Client ID: Run ID: **VOA2_354799** SeqNo: **5443202** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.36	1.0	20	0	81.8	70 - 127				
Benzene	24.4	1.0	20	6.383	90.1	70 - 127				
Chlorobenzene	17.96	1.0	20	0	89.8	70 - 114				
Ethylbenzene	28.72	1.0	20	9.361	96.8	70 - 124				
Methylene chloride	15.89	2.0	20	0	79.4	70 - 128				
Toluene	20.5	1.0	20	0	102	70 - 123				
Vinyl chloride	17.82	1.0	20	0	89.1	70 - 130				
Xylenes, Total	57.71	1.0	60	3.181	90.9	70 - 130				
Surr: 1,2-Dichloroethane-d4	*46.04*	*1.0*	*50*	*0*	*92.1*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*48.8*	*1.0*	*50*	*0*	*97.6*	*81 - 113*				
Surr: Dibromofluoromethane	*47.49*	*1.0*	*50*	*0*	*95.0*	*77 - 123*				
Surr: Toluene-d8	*49.2*	*1.0*	*50*	*0*	*98.4*	*82 - 127*				

MSD Sample ID: **HS20010767-05MSD** Units: **ug/L** Analysis Date: **21-Jan-2020 18:12**
Client ID: Run ID: **VOA2_354799** SeqNo: **5443203** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.51	1.0	20	0	82.6	70 - 127	16.36	0.908	20	
Benzene	24.24	1.0	20	6.383	89.3	70 - 127	24.4	0.678	20	
Chlorobenzene	17.68	1.0	20	0	88.4	70 - 114	17.96	1.54	20	
Ethylbenzene	28.32	1.0	20	9.361	94.8	70 - 124	28.72	1.41	20	
Methylene chloride	15.24	2.0	20	0	76.2	70 - 128	15.89	4.15	20	
Toluene	20.18	1.0	20	0	101	70 - 123	20.5	1.56	20	
Vinyl chloride	16.8	1.0	20	0	84.0	70 - 130	17.82	5.89	20	
Xylenes, Total	56.81	1.0	60	3.181	89.4	70 - 130	57.71	1.57	20	
Surr: 1,2-Dichloroethane-d4	*46.11*	*1.0*	*50*	*0*	*92.2*	*70 - 126*	*46.04*	*0.147*	*20*	
Surr: 4-Bromofluorobenzene	*49.23*	*1.0*	*50*	*0*	*98.5*	*81 - 113*	*48.8*	*0.867*	*20*	
Surr: Dibromofluoromethane	*47.4*	*1.0*	*50*	*0*	*94.8*	*77 - 123*	*47.49*	*0.191*	*20*	
Surr: Toluene-d8	*49.04*	*1.0*	*50*	*0*	*98.1*	*82 - 127*	*49.2*	*0.339*	*20*	

The following samples were analyzed in this batch: HS20010713-01 HS20010713-10 HS20010713-13 HS20010713-14

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010713

QC BATCH REPORT

Batch ID: R355099 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200127** Units: **ug/L** Analysis Date: **27-Jan-2020 11:41**
Client ID: Run ID: **VOA4_355099** SeqNo: **5448362** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*52.5*	*1.0*	*50*	*0*	*105*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*48.24*	*1.0*	*50*	*0*	*96.5*	*82 - 115*				
Surr: Dibromofluoromethane	*52.83*	*1.0*	*50*	*0*	*106*	*73 - 126*				
Surr: Toluene-d8	*50.98*	*1.0*	*50*	*0*	*102*	*81 - 120*				

LCS Sample ID: **VLCSW-200127** Units: **ug/L** Analysis Date: **27-Jan-2020 10:51**
Client ID: Run ID: **VOA4_355099** SeqNo: **5448361** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	18.52	1.0	20	0	92.6	70 - 124				
Benzene	19.58	1.0	20	0	97.9	74 - 120				
Chlorobenzene	19.39	1.0	20	0	97.0	76 - 113				
Ethylbenzene	19.72	1.0	20	0	98.6	77 - 117				
Methylene chloride	20.33	2.0	20	0	102	70 - 127				
Toluene	19.39	1.0	20	0	97.0	77 - 118				
Vinyl chloride	18.36	1.0	20	0	91.8	70 - 130				
Xylenes, Total	59.29	1.0	60	0	98.8	75 - 122				
Surr: 1,2-Dichloroethane-d4	*50.77*	*1.0*	*50*	*0*	*102*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*51.28*	*1.0*	*50*	*0*	*103*	*82 - 115*				
Surr: Dibromofluoromethane	*50.71*	*1.0*	*50*	*0*	*101*	*73 - 126*				
Surr: Toluene-d8	*49.35*	*1.0*	*50*	*0*	*98.7*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010713

QC BATCH REPORT

Batch ID: R355099 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS20010947-02MS** Units: **ug/L** Analysis Date: **27-Jan-2020 14:11**
Client ID: Run ID: **VOA4_355099** SeqNo: **5448368** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.79	1.0	20	0	84.0	70 - 127				
Benzene	18.52	1.0	20	0	92.6	70 - 127				
Chlorobenzene	18.12	1.0	20	0	90.6	70 - 114				
Ethylbenzene	18.26	1.0	20	0	91.3	70 - 124				
Methylene chloride	19.39	2.0	20	0	97.0	70 - 128				
Toluene	19.1	1.0	20	0	95.5	70 - 123				
Vinyl chloride	18.48	1.0	20	0	92.4	70 - 130				
Xylenes, Total	55.63	1.0	60	0	92.7	70 - 130				
Surr: 1,2-Dichloroethane-d4	*50.93*	*1.0*	*50*	*0*	*102*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*50.89*	*1.0*	*50*	*0*	*102*	*81 - 113*				
Surr: Dibromofluoromethane	*52.13*	*1.0*	*50*	*0*	*104*	*77 - 123*				
Surr: Toluene-d8	*50.6*	*1.0*	*50*	*0*	*101*	*82 - 127*				

MSD Sample ID: **HS20010947-02MSD** Units: **ug/L** Analysis Date: **27-Jan-2020 14:36**
Client ID: Run ID: **VOA4_355099** SeqNo: **5448394** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.27	1.0	20	0	81.4	70 - 127	16.79	3.15	20	
Benzene	18.05	1.0	20	0	90.3	70 - 127	18.52	2.54	20	
Chlorobenzene	18	1.0	20	0	90.0	70 - 114	18.12	0.656	20	
Ethylbenzene	18.17	1.0	20	0	90.9	70 - 124	18.26	0.491	20	
Methylene chloride	18.89	2.0	20	0	94.4	70 - 128	19.39	2.63	20	
Toluene	18.46	1.0	20	0	92.3	70 - 123	19.1	3.39	20	
Vinyl chloride	17.75	1.0	20	0	88.7	70 - 130	18.48	4.06	20	
Xylenes, Total	54.43	1.0	60	0	90.7	70 - 130	55.63	2.19	20	
Surr: 1,2-Dichloroethane-d4	*51.2*	*1.0*	*50*	*0*	*102*	*70 - 126*	*50.93*	*0.53*	*20*	
Surr: 4-Bromofluorobenzene	*50.95*	*1.0*	*50*	*0*	*102*	*81 - 113*	*50.89*	*0.119*	*20*	
Surr: Dibromofluoromethane	*51.77*	*1.0*	*50*	*0*	*104*	*77 - 123*	*52.13*	*0.708*	*20*	
Surr: Toluene-d8	*49.97*	*1.0*	*50*	*0*	*99.9*	*82 - 127*	*50.6*	*1.23*	*20*	

The following samples were analyzed in this batch: HS20010713-06

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010713

QC BATCH REPORT

Batch ID: R355193 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200128** Units: **ug/L** Analysis Date: **28-Jan-2020 13:04**
Client ID: Run ID: **VOA4_355193** SeqNo: **5450213** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Vinyl chloride	U	1.0								
Surr: 1,2-Dichloroethane-d4	*50.07*	*1.0*	*50*	*0*	*100*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*48.31*	*1.0*	*50*	*0*	*96.6*	*82 - 115*				
Surr: Dibromofluoromethane	*48.67*	*1.0*	*50*	*0*	*97.3*	*73 - 126*				
Surr: Toluene-d8	*50.19*	*1.0*	*50*	*0*	*100*	*81 - 120*				

LCS Sample ID: **VLCSW-200128** Units: **ug/L** Analysis Date: **28-Jan-2020 12:15**
Client ID: Run ID: **VOA4_355193** SeqNo: **5450212** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Vinyl chloride	18.75	1.0	20	0	93.7	70 - 130				
Surr: 1,2-Dichloroethane-d4	*49.15*	*1.0*	*50*	*0*	*98.3*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*50*	*1.0*	*50*	*0*	*100.0*	*82 - 115*				
Surr: Dibromofluoromethane	*49.33*	*1.0*	*50*	*0*	*98.7*	*73 - 126*				
Surr: Toluene-d8	*49.88*	*1.0*	*50*	*0*	*99.8*	*81 - 120*				

MS Sample ID: **HS20011178-01MS** Units: **ug/L** Analysis Date: **28-Jan-2020 14:18**
Client ID: Run ID: **VOA4_355193** SeqNo: **5450501** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Vinyl chloride	17.86	1.0	20	0	89.3	70 - 130				
Surr: 1,2-Dichloroethane-d4	*49.02*	*1.0*	*50*	*0*	*98.0*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*50.12*	*1.0*	*50*	*0*	*100*	*81 - 113*				
Surr: Dibromofluoromethane	*49.15*	*1.0*	*50*	*0*	*98.3*	*77 - 123*				
Surr: Toluene-d8	*48.65*	*1.0*	*50*	*0*	*97.3*	*82 - 127*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010713

QC BATCH REPORT

Batch ID: R355193 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MSD Sample ID: **HS20011178-01MSD** Units: **ug/L** Analysis Date: **28-Jan-2020 14:43**
Client ID: Run ID: **VOA4_355193** SeqNo: **5450502** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Vinyl chloride	16.89	1.0	20	0	84.4	70 - 130	17.86	5.6	20	
Surr: 1,2-Dichloroethane-d4	*49*	*1.0*	*50*	*0*	*98.0*	*70 - 126*	*49.02*	*0.0445*	*20*	
Surr: 4-Bromofluorobenzene	*50.74*	*1.0*	*50*	*0*	*101*	*81 - 113*	*50.12*	*1.24*	*20*	
Surr: Dibromofluoromethane	*49.79*	*1.0*	*50*	*0*	*99.6*	*77 - 123*	*49.15*	*1.29*	*20*	
Surr: Toluene-d8	*49.76*	*1.0*	*50*	*0*	*99.5*	*82 - 127*	*48.65*	*2.25*	*20*	

The following samples were analyzed in this batch: HS20010713-15

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20010713**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20010713
Date/Time Received: **16-Jan-2020 12:40**
Received by: **NDD**

Checklist completed by: *Nelson D. Dusara* eSignature 17-Jan-2020 Date
Reviewed by: *Dane J. Wacasey* eSignature 21-Jan-2020 Date

Matrices: **Water**
Carrier name: **Client**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	0.5,0.7,0.8,1.2 c UC/c	IR 11
Cooler(s)/Kit(s):	45645,25638,45624,45665	
Date/Time sample(s) sent to storage:	Jan/17/2020 08:45	

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes: WG-1620-MW25C-20200115 time differs: COC =15:50 Label=12:15; logged per COC.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

Page 1 of 2

COC ID: 206377

HS20010713

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information			
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A	8260_LL_W (5632528 Volatile Organics Site Specific)
Work Order		Project Number	1620-07-Rev0 SR 92688	B	8260_LL_W (5632528 VOC Site Specific + V.C.)
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P	C	8270_LOW_W (5632532 SemiVolatiles Site specific)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	ICP_TW (5636002 5652646 Metals - As)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~WG-1620-TB0__202001~~			~~Water~~	1	2	~~X~~	~~X~~	~~X~~								
2	WG-1620-MW15A-20200114	1-14-20	1345	W		6	X		X	X							
3	WG-1620-MW15B-20200114		1430	W		6	X		X	X							
4	WG-1620-MW15C-20200114		1520	W		6	X		X	X							
5	WG-1620-MW14-20200114		1615	W		6	X		X	X							
6	WG-1620-MW17-20200114		1710	W		6	X		X	X							
7	WG-1620-FB06-20200114		1725	W		6	X		X	X							
8	WG-1620-MW17C-20200115	1-15-20	0815	W		6	X		X	X							
9	WG-1620-MW67B-20200115		0930	W		6	X		X	X							
10	WG-1620-MW67BMS-20200115		0930	W		6	X		X	X							

Sampler(s) Please Print & Sign: JOHN BRAYTON

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by:	Date: 1-16-20	Time:	Received by:	
Relinquished by:	Date: 1/16/20	Time: 12:40	Received by (Laboratory):	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.
	4.1C
45645	0.5
25638	0.7
45624	0.8
45665	1.2

QC Package: (Check One Box Below)

- [ ] Level II Std QC
- [ ] Level III Std QC/Raw Data
- [ ] Level IV SW846/CLP
- [ ] Other
- [X] TRRP Checklist
- [ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Chain of Custody Form

Page 2 of 2

COC ID: 206378

HS20010713

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-07-Rev0 SR 92688
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	eric.matzner@ptwllc.com	e-Mail Address	

A	8260_LL_W (5632528 Volatile Organics Site Specific)
B	8260_LL_W (5632528 VOC Site Specific + V.C.)
C	8270_LOW_W (5632532 SemiVolatiles Site specific)
D	ICP_TW (5636002 5652646 Metals - As)
E	
F	
G	
H	
I	
J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~WG-1620-TB0__-202001___~~			~~Water~~	~~6~~	~~12~~		~~X~~									
2	WG-1620-MW67BMSD-20200115	1-15-20	0930	W		6	X		X	X							
3	WG-1620-MW46C-20200115		1025	W		6	X		X	X							
4	WG-1620-MW25A-20200115		1120	W		6		X	X	X							
5	WG-1620-MW44C-20200115		1315	W		6	X		X	X							
6	WG-1620-MW71B-20200115		1400	W		6	X		X	X							
7	WG-1620-MW33BR-20200115		1500	W		6		X	X	X							
8	WG-1620-MW25C-20200115		1550	W		6		X	X	X							
9	WG-1620-TB04-20200115		—	W		2	X										
10																	

Sampler(s) Please Print & Sign: JOHN BRAYTON — John Bray

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) ☐ Other ____ ☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 -hour

Results Due Date:

Relinquished by: John Bray — Date: 1-16-20 — Time: — Received by:

Relinquished by: — Date: Jan/16/20 — Time: 12:40 — Received by (Laboratory): Nelson

Logged by (Laboratory): — Date: — Time: — Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)

☐ Level II Std QC
☐ Level III Std QC/Raw Data
☐ Level IV SW846/CLP
☐ Other ____
☒ TRRP Checklist
☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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January 28, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20010767**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 29 sample(s) on Jan 17, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: DANE.WACASEY
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20010767**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20010767**	

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data								
Laboratory Name: ALS Laboratory Group			LRC Date: 01/28/2020					
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20010767					
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 149797,149831,149832,149881,149912,149913,149936,R354794,R354799,R354902,R354859,R355066					
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]	
R1	OI	**Chain-of-custody (C-O-C)**						
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X					
		Were all departures from standard conditions described in an exception report?	X					
R2	OI	**Sample and quality control (QC) identification**						
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X					
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X					
R3	OI	**Test reports**						
		Were all samples prepared and analyzed within holding times?	X					
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X					
		Were calculations checked by a peer or supervisor?	X					
		Were all analyte identifications checked by a peer or supervisor?	X					
		Were sample detection limits reported for all analytes not detected?	X					
		Were all results for soil and sediment samples reported on a dry weight basis?			X			
		Were % moisture (or solids) reported for all soil and sediment samples?			X			
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X			
		If required for the project, TICs reported?			X			
R4	O	**Surrogate recovery data**						
		Were surrogates added prior to extraction?	X					
		Were surrogate percent recoveries in all samples within the laboratory QC limits?		X			1	
R5	OI	**Test reports/summary forms for blank samples**						
		Were appropriate type(s) of blanks analyzed?	X					
		Were blanks analyzed at the appropriate frequency?	X					
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X					
		Were blank concentrations < MQL?	X					
R6	OI	**Laboratory control samples (LCS):**						
		Were all COCs included in the LCS?	X					
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X					
		Were LCSs analyzed at the required frequency?	X					
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X					
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X					
		Was the LCSD RPD within QC limits?	X					
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**						
		Were the project/method specified analytes included in the MS and MSD?	X					
		Were MS/MSD analyzed at the appropriate frequency?	X					
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			2	
		Were MS/MSD RPDs within laboratory QC limits?	X					
R8	OI	**Analytical duplicate data**						
		Were appropriate analytical duplicates analyzed for each matrix?			X			
		Were analytical duplicates analyzed at the appropriate frequency?			X			
		Were RPDs or relative standard deviations within the laboratory QC limits?			X			
R9	OI	**Method quantitation limits (MQLs):**						
		Are the MQLs for each method analyte included in the laboratory data package?	X					
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X					
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X					
R10	OI	**Other problems/anomalies**						
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X					
		Were all necessary corrective actions performed for the reported data?	X					
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X					
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X					

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 01/28/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20010767				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 149797,149831,149832,149881,149912,149913,149936,R354794,R354799,R354902,R354859,R355066				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?	X				
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 01/28/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20010767
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 149797,149831,149832,149881,149912,149913,149936,R354794,R354799,R354902,R354859,R355066

ER#[5]	Description
1	Semivolatile Organics Method SW8270, samples WG-1620-MW75B-20200117, WG-1620-MW79A-20200117, WG-1620-MW74B-20200117, WG-1620-MW78A-20200117, the surrogate recoveries could not be determined due to dilution below the calibration range. Semivolatile Organics Method SW8270, sample WG-1620-MW75B-20200117, surrogate Phenol-d6 recovered above the upper control limit. This was due to a dilution required for sample analysis.
2	Batch 149881, Metals Method SW6020, sample HS20010752-08, MS was performed on unrelated sample. Batch 149912, Semivolatile Organics Method SW8270, sample WG-1620-MW28C-20200116, MS recovered above the control limits for 4,6-Dinitro-2-methylphenol and Di-n-butyl phthalate due to suspect matrix effect.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20010767

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20010767-01	WG-1620-MW28A-20200116	Water		16-Jan-2020 09:10	17-Jan-2020 13:11	☐
HS20010767-02	WG-1620-MW28C-20200116	Water		16-Jan-2020 10:15	17-Jan-2020 13:11	☐
HS20010767-03	WG-1620-FB08-20200116	Water		16-Jan-2020 12:00	17-Jan-2020 13:11	☐
HS20010767-04	WG-1620-MW89B-20200116	Water		16-Jan-2020 12:45	17-Jan-2020 13:11	☐
HS20010767-05	WG-1620-MW84B-20200116	Water		16-Jan-2020 13:45	17-Jan-2020 13:11	☐
HS20010767-06	WG-1620-MW63B-20200116	Water		16-Jan-2020 14:45	17-Jan-2020 13:11	☐
HS20010767-07	WG-1620-MW26A-20200116	Water		16-Jan-2020 16:00	17-Jan-2020 13:11	☐
HS20010767-08	WG-1620-MW68C-20200117	Water		17-Jan-2020 09:10	17-Jan-2020 13:11	☐
HS20010767-09	WG-1620-MW68A-20200117	Water		17-Jan-2020 10:15	17-Jan-2020 13:11	☐
HS20010767-10	WG-1620-FB09-20200117	Water		17-Jan-2020 10:00	17-Jan-2020 13:11	☐
HS20010767-11	WG-1620-MW27A-20200115	Water		15-Jan-2020 16:40	17-Jan-2020 13:11	☐
HS20010767-12	WG-1620-MW27C-20200115	Water		15-Jan-2020 17:20	17-Jan-2020 13:11	☐
HS20010767-13	WG-1620-MW59A-20200116	Water		16-Jan-2020 08:05	17-Jan-2020 13:11	☐
HS20010767-14	WG-1620-MW59B-20200116	Water		16-Jan-2020 09:00	17-Jan-2020 13:11	☐
HS20010767-15	WG-1620-MW59D-20200116	Water		16-Jan-2020 13:50	17-Jan-2020 13:11	☐
HS20010767-16	WG-1620-FD03-20200116	Water		16-Jan-2020 13:50	17-Jan-2020 13:11	☐
HS20010767-17	WG-1620-MW66D-20200116	Water		16-Jan-2020 15:00	17-Jan-2020 13:11	☐
HS20010767-18	WG-1620-MW65D-20200116	Water		16-Jan-2020 16:20	17-Jan-2020 13:11	☐
HS20010767-19	WG-1620-MW36D-20200116	Water		16-Jan-2020 17:25	17-Jan-2020 13:11	☐
HS20010767-20	WG-1620-MW86C-20200117	Water		17-Jan-2020 07:25	17-Jan-2020 13:11	☐
HS20010767-21	WG-1620-FD04-20200117	Water		17-Jan-2020 07:25	17-Jan-2020 13:11	☐
HS20010767-22	WG-1620-MW75B-20200117	Water		17-Jan-2020 08:15	17-Jan-2020 13:11	☐
HS20010767-23	WG-1620-MW79A-20200117	Water		17-Jan-2020 09:20	17-Jan-2020 13:11	☐
HS20010767-24	WG-1620-MW74B-20200117	Water		17-Jan-2020 10:20	17-Jan-2020 13:11	☐
HS20010767-25	WG-1620-MW78A-20200117	Water		17-Jan-2020 11:25	17-Jan-2020 13:11	☐
HS20010767-26	WQ-1620-TB05-2020117	Water		17-Jan-2020 00:00	17-Jan-2020 13:11	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20010767

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20010767-27	WG-1620-MW48C-20200116	Water		16-Jan-2020 10:20	17-Jan-2020 13:11	☐
HS20010767-28	WG-1620-MW47C-20200116	Water		16-Jan-2020 11:05	17-Jan-2020 13:11	☐
HS20010767-29	WG-1620-MW61A-20200116	Water		16-Jan-2020 12:00	17-Jan-2020 13:11	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW28A-20200116
Collection Date: 16-Jan-2020 09:10

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-01
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	22-Jan-2020 00:55
Benzene		U	0.00020	0.0010	mg/L	1	22-Jan-2020 00:55
Chlorobenzene		U	0.00030	0.0010	mg/L	1	22-Jan-2020 00:55
Ethylbenzene		U	0.00030	0.0010	mg/L	1	22-Jan-2020 00:55
Methylene chloride		U	0.0010	0.0020	mg/L	1	22-Jan-2020 00:55
Toluene		U	0.00020	0.0010	mg/L	1	22-Jan-2020 00:55
Xylenes, Total		U	0.00030	0.0010	mg/L	1	22-Jan-2020 00:55
Surr: 1,2-Dichloroethane-d4	*101*			*70-126*	*%REC*	*1*	*22-Jan-2020 00:55*
Surr: 4-Bromofluorobenzene	*95.6*			*81-113*	*%REC*	*1*	*22-Jan-2020 00:55*
Surr: Dibromofluoromethane	*100*			*77-123*	*%REC*	*1*	*22-Jan-2020 00:55*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*22-Jan-2020 00:55*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW28A-20200116
Collection Date: 16-Jan-2020 09:10

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-01
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 22-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	**0.000034**	J	**0.000021**	**0.00020**	**mg/L**	1	25-Jan-2020 18:43
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	25-Jan-2020 18:43
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	25-Jan-2020 18:43
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	25-Jan-2020 18:43
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	25-Jan-2020 18:43
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	25-Jan-2020 18:43
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	25-Jan-2020 18:43
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	25-Jan-2020 18:43
Acenaphthene	**0.00014**		**0.000027**	**0.00010**	**mg/L**	1	25-Jan-2020 18:43
Acenaphthylene	U		0.000015	0.00010	mg/L	1	25-Jan-2020 18:43
Anthracene	**0.00013**		**0.000014**	**0.00010**	**mg/L**	1	25-Jan-2020 18:43
Benz(a)anthracene	**0.000073**	J	**0.000050**	**0.00010**	**mg/L**	1	25-Jan-2020 18:43
Benzo(a)pyrene	**0.000057**	J	**0.000020**	**0.00010**	**mg/L**	1	25-Jan-2020 18:43
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	25-Jan-2020 18:43
Bis(2-ethylhexyl)phthalate	**0.000090**	J	**0.000037**	**0.00020**	**mg/L**	1	25-Jan-2020 18:43
Chrysene	**0.000065**	J	**0.000021**	**0.00010**	**mg/L**	1	25-Jan-2020 18:43
Dibenzofuran	**0.00010**		**0.000020**	**0.00010**	**mg/L**	1	25-Jan-2020 18:43
Di-n-butyl phthalate	**0.000032**	J	**0.000020**	**0.00020**	**mg/L**	1	25-Jan-2020 18:43
Fluoranthene	**0.00030**		**0.000010**	**0.00010**	**mg/L**	1	25-Jan-2020 18:43
Fluorene	**0.00014**		**0.000030**	**0.00010**	**mg/L**	1	25-Jan-2020 18:43
Naphthalene	**0.00060**		**0.000020**	**0.00010**	**mg/L**	1	25-Jan-2020 18:43
Nitrobenzene	U		0.000024	0.00020	mg/L	1	25-Jan-2020 18:43
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	25-Jan-2020 18:43
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	25-Jan-2020 18:43
Phenanthrene	**0.00048**		**0.000021**	**0.00010**	**mg/L**	1	25-Jan-2020 18:43
Phenol	U		0.000035	0.00020	mg/L	1	25-Jan-2020 18:43
Pyrene	**0.00021**		**0.000019**	**0.00010**	**mg/L**	1	25-Jan-2020 18:43
Surr: 2,4,6-Tribromophenol	*69.8*			*34-129*	*%REC*	*1*	*25-Jan-2020 18:43*
Surr: 2-Fluorobiphenyl	*78.4*			*40-125*	*%REC*	*1*	*25-Jan-2020 18:43*
Surr: 2-Fluorophenol	*61.6*			*20-120*	*%REC*	*1*	*25-Jan-2020 18:43*
Surr: 4-Terphenyl-d14	*87.8*			*40-135*	*%REC*	*1*	*25-Jan-2020 18:43*
Surr: Nitrobenzene-d5	*72.2*			*41-120*	*%REC*	*1*	*25-Jan-2020 18:43*
Surr: Phenol-d6	*66.5*			*20-120*	*%REC*	*1*	*25-Jan-2020 18:43*
ICP-MS METALS BY SW6020A	**Method:SW6020**				Prep:SW3010A / 21-Jan-2020		Analyst: JC
Arsenic	**0.00664**		**0.000400**	**0.00200**	**mg/L**	1	22-Jan-2020 23:52

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW28C-20200116
Collection Date: 16-Jan-2020 10:15

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	21-Jan-2020 23:41
Benzene		U	0.00020	0.0010	mg/L	1	21-Jan-2020 23:41
Chlorobenzene		U	0.00030	0.0010	mg/L	1	21-Jan-2020 23:41
Ethylbenzene		U	0.00030	0.0010	mg/L	1	21-Jan-2020 23:41
Methylene chloride		U	0.0010	0.0020	mg/L	1	21-Jan-2020 23:41
Toluene		U	0.00020	0.0010	mg/L	1	21-Jan-2020 23:41
Xylenes, Total		U	0.00030	0.0010	mg/L	1	21-Jan-2020 23:41
Surr: 1,2-Dichloroethane-d4	*101*			*70-126*	*%REC*	*1*	*21-Jan-2020 23:41*
Surr: 4-Bromofluorobenzene	*99.6*			*81-113*	*%REC*	*1*	*21-Jan-2020 23:41*
Surr: Dibromofluoromethane	*98.8*			*77-123*	*%REC*	*1*	*21-Jan-2020 23:41*
Surr: Toluene-d8	*97.8*			*82-127*	*%REC*	*1*	*21-Jan-2020 23:41*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW28C-20200116
Collection Date: 16-Jan-2020 10:15

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	25-Jan-2020 12:03
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	25-Jan-2020 12:03
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	25-Jan-2020 12:03
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	25-Jan-2020 12:03
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	25-Jan-2020 12:03
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	25-Jan-2020 12:03
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	25-Jan-2020 12:03
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	25-Jan-2020 12:03
Acenaphthene	U		0.000027	0.00010	mg/L	1	25-Jan-2020 12:03
Acenaphthylene	U		0.000015	0.00010	mg/L	1	25-Jan-2020 12:03
Anthracene	U		0.000014	0.00010	mg/L	1	25-Jan-2020 12:03
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	25-Jan-2020 12:03
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	25-Jan-2020 12:03
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	25-Jan-2020 12:03
Bis(2-ethylhexyl)phthalate	**0.000072**	J	**0.000037**	**0.00020**	**mg/L**	1	25-Jan-2020 12:03
Chrysene	U		0.000021	0.00010	mg/L	1	25-Jan-2020 12:03
Dibenzofuran	U		0.000020	0.00010	mg/L	1	25-Jan-2020 12:03
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	25-Jan-2020 12:03
Fluoranthene	U		0.000010	0.00010	mg/L	1	25-Jan-2020 12:03
Fluorene	U		0.000030	0.00010	mg/L	1	25-Jan-2020 12:03
Naphthalene	**0.00016**		**0.000020**	**0.00010**	**mg/L**	1	25-Jan-2020 12:03
Nitrobenzene	U		0.000024	0.00020	mg/L	1	25-Jan-2020 12:03
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	25-Jan-2020 12:03
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	25-Jan-2020 12:03
Phenanthrene	U		0.000021	0.00010	mg/L	1	25-Jan-2020 12:03
Phenol	**0.000086**	J	**0.000035**	**0.00020**	**mg/L**	1	25-Jan-2020 12:03
Pyrene	U		0.000019	0.00010	mg/L	1	25-Jan-2020 12:03
Surr: 2,4,6-Tribromophenol	*74.4*			*34-129*	*%REC*	*1*	*25-Jan-2020 12:03*
Surr: 2-Fluorobiphenyl	*71.4*			*40-125*	*%REC*	*1*	*25-Jan-2020 12:03*
Surr: 2-Fluorophenol	*67.3*			*20-120*	*%REC*	*1*	*25-Jan-2020 12:03*
Surr: 4-Terphenyl-d14	*96.7*			*40-135*	*%REC*	*1*	*25-Jan-2020 12:03*
Surr: Nitrobenzene-d5	*63.5*			*41-120*	*%REC*	*1*	*25-Jan-2020 12:03*
Surr: Phenol-d6	*71.2*			*20-120*	*%REC*	*1*	*25-Jan-2020 12:03*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 21-Jan-2020		Analyst: JC
Arsenic	**0.000937**	J	**0.000400**	**0.00200**	**mg/L**	1	22-Jan-2020 23:32

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20010767
Sample ID: WG-1620-FB08-20200116
Lab ID:HS20010767-03
Collection Date: 16-Jan-2020 12:00
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	22-Jan-2020 02:58
Benzene		U	0.00020	0.0010	mg/L	1	22-Jan-2020 02:58
Chlorobenzene		U	0.00030	0.0010	mg/L	1	22-Jan-2020 02:58
Ethylbenzene		U	0.00030	0.0010	mg/L	1	22-Jan-2020 02:58
Methylene chloride		U	0.0010	0.0020	mg/L	1	22-Jan-2020 02:58
Toluene		U	0.00020	0.0010	mg/L	1	22-Jan-2020 02:58
Vinyl chloride		U	0.00020	0.0010	mg/L	1	22-Jan-2020 02:58
Xylenes, Total		U	0.00030	0.0010	mg/L	1	22-Jan-2020 02:58
Surr: 1,2-Dichloroethane-d4	*101*			*70-126*	*%REC*	*1*	*22-Jan-2020 02:58*
Surr: 4-Bromofluorobenzene	*94.5*			*81-113*	*%REC*	*1*	*22-Jan-2020 02:58*
Surr: Dibromofluoromethane	*98.2*			*77-123*	*%REC*	*1*	*22-Jan-2020 02:58*
Surr: Toluene-d8	*99.9*			*82-127*	*%REC*	*1*	*22-Jan-2020 02:58*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB08-20200116
Collection Date: 16-Jan-2020 12:00

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	25-Jan-2020 19:02
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	25-Jan-2020 19:02
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	25-Jan-2020 19:02
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	25-Jan-2020 19:02
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	25-Jan-2020 19:02
2-Methylnaphthalene	**0.000052**	J	**0.000019**	**0.00010**	**mg/L**	1	25-Jan-2020 19:02
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	25-Jan-2020 19:02
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	25-Jan-2020 19:02
Acenaphthene	**0.000077**	J	**0.000027**	**0.00010**	**mg/L**	1	25-Jan-2020 19:02
Acenaphthylene	U		0.000015	0.00010	mg/L	1	25-Jan-2020 19:02
Anthracene	**0.000027**	J	**0.000014**	**0.00010**	**mg/L**	1	25-Jan-2020 19:02
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	25-Jan-2020 19:02
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	25-Jan-2020 19:02
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	25-Jan-2020 19:02
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	25-Jan-2020 19:02
Chrysene	U		0.000021	0.00010	mg/L	1	25-Jan-2020 19:02
Dibenzofuran	**0.000066**	J	**0.000020**	**0.00010**	**mg/L**	1	25-Jan-2020 19:02
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	25-Jan-2020 19:02
Fluoranthene	**0.000033**	J	**0.000010**	**0.00010**	**mg/L**	1	25-Jan-2020 19:02
Fluorene	**0.000058**	J	**0.000030**	**0.00010**	**mg/L**	1	25-Jan-2020 19:02
Naphthalene	**0.00054**		**0.000020**	**0.00010**	**mg/L**	1	25-Jan-2020 19:02
Nitrobenzene	U		0.000024	0.00020	mg/L	1	25-Jan-2020 19:02
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	25-Jan-2020 19:02
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	25-Jan-2020 19:02
Phenanthrene	**0.000067**	J	**0.000021**	**0.00010**	**mg/L**	1	25-Jan-2020 19:02
Phenol	U		0.000035	0.00020	mg/L	1	25-Jan-2020 19:02
Pyrene	**0.000022**	J	**0.000019**	**0.00010**	**mg/L**	1	25-Jan-2020 19:02
Surr: 2,4,6-Tribromophenol	*61.1*			*34-129*	*%REC*	*1*	*25-Jan-2020 19:02*
Surr: 2-Fluorobiphenyl	*92.5*			*40-125*	*%REC*	*1*	*25-Jan-2020 19:02*
Surr: 2-Fluorophenol	*71.4*			*20-120*	*%REC*	*1*	*25-Jan-2020 19:02*
Surr: 4-Terphenyl-d14	*93.8*			*40-135*	*%REC*	*1*	*25-Jan-2020 19:02*
Surr: Nitrobenzene-d5	*91.0*			*41-120*	*%REC*	*1*	*25-Jan-2020 19:02*
Surr: Phenol-d6	*79.1*			*20-120*	*%REC*	*1*	*25-Jan-2020 19:02*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 22-Jan-2020		Analyst: JC
Arsenic	U		0.000400	0.00200	mg/L	1	24-Jan-2020 16:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW89B-20200116
Collection Date: 16-Jan-2020 12:45

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	21-Jan-2020 18:37
Benzene		U	0.00020	0.0010	mg/L	1	21-Jan-2020 18:37
Chlorobenzene		U	0.00030	0.0010	mg/L	1	21-Jan-2020 18:37
Ethylbenzene		U	0.00030	0.0010	mg/L	1	21-Jan-2020 18:37
Methylene chloride		U	0.0010	0.0020	mg/L	1	21-Jan-2020 18:37
Toluene		U	0.00020	0.0010	mg/L	1	21-Jan-2020 18:37
Xylenes, Total		U	0.00030	0.0010	mg/L	1	21-Jan-2020 18:37
Surr: 1,2-Dichloroethane-d4	*89.2*			*70-126*	*%REC*	*1*	*21-Jan-2020 18:37*
Surr: 4-Bromofluorobenzene	*94.6*			*81-113*	*%REC*	*1*	*21-Jan-2020 18:37*
Surr: Dibromofluoromethane	*96.3*			*77-123*	*%REC*	*1*	*21-Jan-2020 18:37*
Surr: Toluene-d8	*99.4*			*82-127*	*%REC*	*1*	*21-Jan-2020 18:37*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW89B-20200116
Collection Date: 16-Jan-2020 12:45

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	25-Jan-2020 19:22
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	25-Jan-2020 19:22
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	25-Jan-2020 19:22
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	25-Jan-2020 19:22
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	25-Jan-2020 19:22
2-Methylnaphthalene	**0.000032**	J	**0.000019**	**0.00010**	**mg/L**	1	25-Jan-2020 19:22
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	25-Jan-2020 19:22
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	25-Jan-2020 19:22
Acenaphthene	**0.000083**	J	**0.000027**	**0.00010**	**mg/L**	1	25-Jan-2020 19:22
Acenaphthylene	**0.000045**	J	**0.000015**	**0.00010**	**mg/L**	1	25-Jan-2020 19:22
Anthracene	**0.00020**		**0.000014**	**0.00010**	**mg/L**	1	25-Jan-2020 19:22
Benz(a)anthracene	**0.00017**		**0.000050**	**0.00010**	**mg/L**	1	25-Jan-2020 19:22
Benzo(a)pyrene	**0.000079**	J	**0.000020**	**0.00010**	**mg/L**	1	25-Jan-2020 19:22
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	25-Jan-2020 19:22
Bis(2-ethylhexyl)phthalate	**0.000099**	J	**0.000037**	**0.00020**	**mg/L**	1	25-Jan-2020 19:22
Chrysene	**0.00024**		**0.000021**	**0.00010**	**mg/L**	1	25-Jan-2020 19:22
Dibenzofuran	**0.00011**		**0.000020**	**0.00010**	**mg/L**	1	25-Jan-2020 19:22
Di-n-butyl phthalate	**0.000034**	J	**0.000020**	**0.00020**	**mg/L**	1	25-Jan-2020 19:22
Fluoranthene	**0.0012**		**0.000010**	**0.00010**	**mg/L**	1	25-Jan-2020 19:22
Fluorene	**0.00018**		**0.000030**	**0.00010**	**mg/L**	1	25-Jan-2020 19:22
Naphthalene	**0.00029**		**0.000020**	**0.00010**	**mg/L**	1	25-Jan-2020 19:22
Nitrobenzene	U		0.000024	0.00020	mg/L	1	25-Jan-2020 19:22
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	25-Jan-2020 19:22
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	25-Jan-2020 19:22
Phenanthrene	**0.00083**		**0.000021**	**0.00010**	**mg/L**	1	25-Jan-2020 19:22
Phenol	U		0.000035	0.00020	mg/L	1	25-Jan-2020 19:22
Pyrene	**0.00081**		**0.000019**	**0.00010**	**mg/L**	1	25-Jan-2020 19:22
Surr: 2,4,6-Tribromophenol	*73.7*			*34-129*	*%REC*	*1*	*25-Jan-2020 19:22*
Surr: 2-Fluorobiphenyl	*74.9*			*40-125*	*%REC*	*1*	*25-Jan-2020 19:22*
Surr: 2-Fluorophenol	*61.8*			*20-120*	*%REC*	*1*	*25-Jan-2020 19:22*
Surr: 4-Terphenyl-d14	*90.7*			*40-135*	*%REC*	*1*	*25-Jan-2020 19:22*
Surr: Nitrobenzene-d5	*75.3*			*41-120*	*%REC*	*1*	*25-Jan-2020 19:22*
Surr: Phenol-d6	*72.4*			*20-120*	*%REC*	*1*	*25-Jan-2020 19:22*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 21-Jan-2020		Analyst: JC
Arsenic	**0.000463**	J	**0.000400**	**0.00200**	**mg/L**	1	22-Jan-2020 23:54

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW84B-20200116
Collection Date: 16-Jan-2020 13:45

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	21-Jan-2020 17:23
Benzene	**0.0064**		**0.00020**	**0.0010**	**mg/L**	1	21-Jan-2020 17:23
Chlorobenzene	U		0.00030	0.0010	mg/L	1	21-Jan-2020 17:23
Ethylbenzene	**0.0094**		**0.00030**	**0.0010**	**mg/L**	1	21-Jan-2020 17:23
Methylene chloride	U		0.0010	0.0020	mg/L	1	21-Jan-2020 17:23
Toluene	U		0.00020	0.0010	mg/L	1	21-Jan-2020 17:23
Xylenes, Total	**0.0032**		**0.00030**	**0.0010**	**mg/L**	1	21-Jan-2020 17:23
Surr: 1,2-Dichloroethane-d4	*88.3*			*70-126*	*%REC*	*1*	*21-Jan-2020 17:23*
Surr: 4-Bromofluorobenzene	*95.9*			*81-113*	*%REC*	*1*	*21-Jan-2020 17:23*
Surr: Dibromofluoromethane	*95.4*			*77-123*	*%REC*	*1*	*21-Jan-2020 17:23*
Surr: Toluene-d8	*99.6*			*82-127*	*%REC*	*1*	*21-Jan-2020 17:23*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW84B-20200116
Collection Date: 16-Jan-2020 13:45

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 22-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	25-Jan-2020 19:41
2,4-Dimethylphenol	**0.00048**		**0.000040**	**0.00020**	**mg/L**	1	25-Jan-2020 19:41
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	25-Jan-2020 19:41
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	25-Jan-2020 19:41
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	25-Jan-2020 19:41
2-Methylnaphthalene	**0.0065**		**0.000019**	**0.00010**	**mg/L**	1	25-Jan-2020 19:41
4,6-Dinitro-2-methylphenol	**0.00035**		**0.000020**	**0.00020**	**mg/L**	1	25-Jan-2020 19:41
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	25-Jan-2020 19:41
Acenaphthene	**0.025**		**0.00054**	**0.0020**	**mg/L**	20	27-Jan-2020 16:43
Acenaphthylene	**0.00031**		**0.000015**	**0.00010**	**mg/L**	1	25-Jan-2020 19:41
Anthracene	**0.00095**		**0.000014**	**0.00010**	**mg/L**	1	25-Jan-2020 19:41
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	25-Jan-2020 19:41
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	25-Jan-2020 19:41
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	25-Jan-2020 19:41
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	25-Jan-2020 19:41
Chrysene	U		0.000021	0.00010	mg/L	1	25-Jan-2020 19:41
Dibenzofuran	**0.015**		**0.00040**	**0.0020**	**mg/L**	20	27-Jan-2020 16:43
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	25-Jan-2020 19:41
Fluoranthene	**0.00037**		**0.000010**	**0.00010**	**mg/L**	1	25-Jan-2020 19:41
Fluorene	**0.0063**		**0.000030**	**0.00010**	**mg/L**	1	25-Jan-2020 19:41
Naphthalene	**0.13**		**0.00040**	**0.0020**	**mg/L**	20	27-Jan-2020 16:43
Nitrobenzene	U		0.000024	0.00020	mg/L	1	25-Jan-2020 19:41
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	25-Jan-2020 19:41
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	25-Jan-2020 19:41
Phenanthrene	**0.0065**		**0.000021**	**0.00010**	**mg/L**	1	25-Jan-2020 19:41
Phenol	U		0.000035	0.00020	mg/L	1	25-Jan-2020 19:41
Pyrene	**0.00025**		**0.000019**	**0.00010**	**mg/L**	1	25-Jan-2020 19:41
Surr: 2,4,6-Tribromophenol	*98.0*			*34-129*	*%REC*	*20*	*27-Jan-2020 16:43*
Surr: 2,4,6-Tribromophenol	*73.3*			*34-129*	*%REC*	*1*	*25-Jan-2020 19:41*
Surr: 2-Fluorobiphenyl	*62.7*			*40-125*	*%REC*	*1*	*25-Jan-2020 19:41*
Surr: 2-Fluorobiphenyl	*69.4*	*J*		*40-125*	*%REC*	*20*	*27-Jan-2020 16:43*
Surr: 2-Fluorophenol	*85.3*			*20-120*	*%REC*	*20*	*27-Jan-2020 16:43*
Surr: 2-Fluorophenol	*55.1*			*20-120*	*%REC*	*1*	*25-Jan-2020 19:41*
Surr: 4-Terphenyl-d14	*98.7*			*40-135*	*%REC*	*1*	*25-Jan-2020 19:41*
Surr: 4-Terphenyl-d14	*104*			*40-135*	*%REC*	*20*	*27-Jan-2020 16:43*
Surr: Nitrobenzene-d5	*62.9*	*J*		*41-120*	*%REC*	*20*	*27-Jan-2020 16:43*
Surr: Nitrobenzene-d5	*62.3*			*41-120*	*%REC*	*1*	*25-Jan-2020 19:41*
Surr: Phenol-d6	*62.2*			*20-120*	*%REC*	*1*	*25-Jan-2020 19:41*
Surr: Phenol-d6	*40.8*	*J*		*20-120*	*%REC*	*20*	*27-Jan-2020 16:43*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW84B-20200116
Collection Date: 16-Jan-2020 13:45

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 22-Jan-2020		Analyst: JC
Arsenic	**0.00363**		**0.000400**	**0.00200**	**mg/L**	1	24-Jan-2020 16:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW63B-20200116
Collection Date: 16-Jan-2020 14:45

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-06
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	21-Jan-2020 19:01
Benzene	**0.018**		**0.00020**	**0.0010**	**mg/L**	1	21-Jan-2020 19:01
Chlorobenzene	U		0.00030	0.0010	mg/L	1	21-Jan-2020 19:01
Ethylbenzene	**0.051**		**0.00030**	**0.0010**	**mg/L**	1	21-Jan-2020 19:01
Methylene chloride	U		0.0010	0.0020	mg/L	1	21-Jan-2020 19:01
Toluene	U		0.00020	0.0010	mg/L	1	21-Jan-2020 19:01
Xylenes, Total	**0.013**		**0.00030**	**0.0010**	**mg/L**	1	21-Jan-2020 19:01
Surr: 1,2-Dichloroethane-d4	*90.7*			*70-126*	*%REC*	*1*	*21-Jan-2020 19:01*
Surr: 4-Bromofluorobenzene	*97.0*			*81-113*	*%REC*	*1*	*21-Jan-2020 19:01*
Surr: Dibromofluoromethane	*97.8*			*77-123*	*%REC*	*1*	*21-Jan-2020 19:01*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*1*	*21-Jan-2020 19:01*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW63B-20200116
Collection Date: 16-Jan-2020 14:45

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-06
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	25-Jan-2020 20:00
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	25-Jan-2020 20:00
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	25-Jan-2020 20:00
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	25-Jan-2020 20:00
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	25-Jan-2020 20:00
2-Methylnaphthalene	**0.000056**	J	**0.000019**	**0.00010**	**mg/L**	1	25-Jan-2020 20:00
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	25-Jan-2020 20:00
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	25-Jan-2020 20:00
Acenaphthene	**0.000059**	J	**0.000027**	**0.00010**	**mg/L**	1	25-Jan-2020 20:00
Acenaphthylene	**0.000032**	J	**0.000015**	**0.00010**	**mg/L**	1	25-Jan-2020 20:00
Anthracene	**0.000081**	J	**0.000014**	**0.00010**	**mg/L**	1	25-Jan-2020 20:00
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	25-Jan-2020 20:00
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	25-Jan-2020 20:00
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	25-Jan-2020 20:00
Bis(2-ethylhexyl)phthalate	**0.000065**	J	**0.000037**	**0.00020**	**mg/L**	1	25-Jan-2020 20:00
Chrysene	U		0.000021	0.00010	mg/L	1	25-Jan-2020 20:00
Dibenzofuran	**0.000063**	J	**0.000020**	**0.00010**	**mg/L**	1	25-Jan-2020 20:00
Di-n-butyl phthalate	**0.000034**	J	**0.000020**	**0.00020**	**mg/L**	1	25-Jan-2020 20:00
Fluoranthene	**0.000023**	J	**0.000010**	**0.00010**	**mg/L**	1	25-Jan-2020 20:00
Fluorene	**0.00012**		**0.000030**	**0.00010**	**mg/L**	1	25-Jan-2020 20:00
Naphthalene	**0.00035**		**0.000020**	**0.00010**	**mg/L**	1	25-Jan-2020 20:00
Nitrobenzene	U		0.000024	0.00020	mg/L	1	25-Jan-2020 20:00
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	25-Jan-2020 20:00
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	25-Jan-2020 20:00
Phenanthrene	**0.000072**	J	**0.000021**	**0.00010**	**mg/L**	1	25-Jan-2020 20:00
Phenol	U		0.000035	0.00020	mg/L	1	25-Jan-2020 20:00
Pyrene	**0.000021**	J	**0.000019**	**0.00010**	**mg/L**	1	25-Jan-2020 20:00
Surr: 2,4,6-Tribromophenol	*63.5*			*34-129*	*%REC*	*1*	*25-Jan-2020 20:00*
Surr: 2-Fluorobiphenyl	*57.6*			*40-125*	*%REC*	*1*	*25-Jan-2020 20:00*
Surr: 2-Fluorophenol	*51.8*			*20-120*	*%REC*	*1*	*25-Jan-2020 20:00*
Surr: 4-Terphenyl-d14	*87.3*			*40-135*	*%REC*	*1*	*25-Jan-2020 20:00*
Surr: Nitrobenzene-d5	*57.4*			*41-120*	*%REC*	*1*	*25-Jan-2020 20:00*
Surr: Phenol-d6	*58.3*			*20-120*	*%REC*	*1*	*25-Jan-2020 20:00*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 22-Jan-2020		Analyst: JC
Arsenic	**0.00204**		**0.000400**	**0.00200**	**mg/L**	1	24-Jan-2020 16:15

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20010767
Sample ID: WG-1620-MW26A-20200116
Lab ID:HS20010767-07
Collection Date: 16-Jan-2020 16:00
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	22-Jan-2020 09:17
Benzene		U	0.00020	0.0010	mg/L	1	22-Jan-2020 09:17
Chlorobenzene		U	0.00030	0.0010	mg/L	1	22-Jan-2020 09:17
Ethylbenzene		U	0.00030	0.0010	mg/L	1	22-Jan-2020 09:17
Methylene chloride		U	0.0010	0.0020	mg/L	1	22-Jan-2020 09:17
Toluene		U	0.00020	0.0010	mg/L	1	22-Jan-2020 09:17
Xylenes, Total		U	0.00030	0.0010	mg/L	1	22-Jan-2020 09:17
Surr: 1,2-Dichloroethane-d4	*91.2*			*70-126*	*%REC*	*1*	*22-Jan-2020 09:17*
Surr: 4-Bromofluorobenzene	*94.9*			*81-113*	*%REC*	*1*	*22-Jan-2020 09:17*
Surr: Dibromofluoromethane	*97.2*			*77-123*	*%REC*	*1*	*22-Jan-2020 09:17*
Surr: Toluene-d8	*99.4*			*82-127*	*%REC*	*1*	*22-Jan-2020 09:17*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW26A-20200116
Collection Date: 16-Jan-2020 16:00

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-07
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	25-Jan-2020 20:19
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	25-Jan-2020 20:19
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	25-Jan-2020 20:19
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	25-Jan-2020 20:19
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	25-Jan-2020 20:19
2-Methylnaphthalene	**0.000042**	J	**0.000019**	**0.00010**	**mg/L**	1	25-Jan-2020 20:19
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	25-Jan-2020 20:19
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	25-Jan-2020 20:19
Acenaphthene	**0.00017**		**0.000027**	**0.00010**	**mg/L**	1	25-Jan-2020 20:19
Acenaphthylene	U		0.000015	0.00010	mg/L	1	25-Jan-2020 20:19
Anthracene	**0.000087**	J	**0.000014**	**0.00010**	**mg/L**	1	25-Jan-2020 20:19
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	25-Jan-2020 20:19
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	25-Jan-2020 20:19
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	25-Jan-2020 20:19
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	25-Jan-2020 20:19
Chrysene	U		0.000021	0.00010	mg/L	1	25-Jan-2020 20:19
Dibenzofuran	**0.000044**	J	**0.000020**	**0.00010**	**mg/L**	1	25-Jan-2020 20:19
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	25-Jan-2020 20:19
Fluoranthene	**0.00073**		**0.000010**	**0.00010**	**mg/L**	1	25-Jan-2020 20:19
Fluorene	**0.00029**		**0.000030**	**0.00010**	**mg/L**	1	25-Jan-2020 20:19
Naphthalene	**0.00017**		**0.000020**	**0.00010**	**mg/L**	1	25-Jan-2020 20:19
Nitrobenzene	U		0.000024	0.00020	mg/L	1	25-Jan-2020 20:19
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	25-Jan-2020 20:19
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	25-Jan-2020 20:19
Phenanthrene	**0.000030**	J	**0.000021**	**0.00010**	**mg/L**	1	25-Jan-2020 20:19
Phenol	U		0.000035	0.00020	mg/L	1	25-Jan-2020 20:19
Pyrene	**0.00035**		**0.000019**	**0.00010**	**mg/L**	1	25-Jan-2020 20:19
Surr: 2,4,6-Tribromophenol	*77.9*			*34-129*	*%REC*	*1*	*25-Jan-2020 20:19*
Surr: 2-Fluorobiphenyl	*85.4*			*40-125*	*%REC*	*1*	*25-Jan-2020 20:19*
Surr: 2-Fluorophenol	*72.2*			*20-120*	*%REC*	*1*	*25-Jan-2020 20:19*
Surr: 4-Terphenyl-d14	*88.9*			*40-135*	*%REC*	*1*	*25-Jan-2020 20:19*
Surr: Nitrobenzene-d5	*78.4*			*41-120*	*%REC*	*1*	*25-Jan-2020 20:19*
Surr: Phenol-d6	*72.2*			*20-120*	*%REC*	*1*	*25-Jan-2020 20:19*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 22-Jan-2020		Analyst: JC
Arsenic	**0.0217**		**0.000400**	**0.00200**	**mg/L**	1	24-Jan-2020 16:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW68C-20200117
Collection Date: 17-Jan-2020 09:10

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-08
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	21-Jan-2020 19:26
Benzene	**0.00056**	J	**0.00020**	**0.0010**	**mg/L**	1	21-Jan-2020 19:26
Chlorobenzene	U		0.00030	0.0010	mg/L	1	21-Jan-2020 19:26
Ethylbenzene	**0.00047**	J	**0.00030**	**0.0010**	**mg/L**	1	21-Jan-2020 19:26
Methylene chloride	U		0.0010	0.0020	mg/L	1	21-Jan-2020 19:26
Toluene	U		0.00020	0.0010	mg/L	1	21-Jan-2020 19:26
Xylenes, Total	**0.00062**	J	**0.00030**	**0.0010**	**mg/L**	1	21-Jan-2020 19:26
Surr: 1,2-Dichloroethane-d4	*91.4*			*70-126*	*%REC*	*1*	*21-Jan-2020 19:26*
Surr: 4-Bromofluorobenzene	*94.8*			*81-113*	*%REC*	*1*	*21-Jan-2020 19:26*
Surr: Dibromofluoromethane	*97.6*			*77-123*	*%REC*	*1*	*21-Jan-2020 19:26*
Surr: Toluene-d8	*99.0*			*82-127*	*%REC*	*1*	*21-Jan-2020 19:26*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW68C-20200117
Collection Date: 17-Jan-2020 09:10

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-08
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	25-Jan-2020 20:38
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	25-Jan-2020 20:38
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	25-Jan-2020 20:38
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	25-Jan-2020 20:38
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	25-Jan-2020 20:38
2-Methylnaphthalene	**0.00033**		**0.000019**	**0.00010**	**mg/L**	1	25-Jan-2020 20:38
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	25-Jan-2020 20:38
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	25-Jan-2020 20:38
Acenaphthene	**0.000036**	J	**0.000027**	**0.00010**	**mg/L**	1	25-Jan-2020 20:38
Acenaphthylene	**0.000023**	J	**0.000015**	**0.00010**	**mg/L**	1	25-Jan-2020 20:38
Anthracene	**0.000036**	J	**0.000014**	**0.00010**	**mg/L**	1	25-Jan-2020 20:38
Benz(a)anthracene	**0.000055**	J	**0.000050**	**0.00010**	**mg/L**	1	25-Jan-2020 20:38
Benzo(a)pyrene	**0.000063**	J	**0.000020**	**0.00010**	**mg/L**	1	25-Jan-2020 20:38
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	25-Jan-2020 20:38
Bis(2-ethylhexyl)phthalate	**0.00029**		**0.000037**	**0.00020**	**mg/L**	1	25-Jan-2020 20:38
Chrysene	**0.000054**	J	**0.000021**	**0.00010**	**mg/L**	1	25-Jan-2020 20:38
Dibenzofuran	**0.000030**	J	**0.000020**	**0.00010**	**mg/L**	1	25-Jan-2020 20:38
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	25-Jan-2020 20:38
Fluoranthene	**0.000074**	J	**0.000010**	**0.00010**	**mg/L**	1	25-Jan-2020 20:38
Fluorene	**0.000036**	J	**0.000030**	**0.00010**	**mg/L**	1	25-Jan-2020 20:38
Naphthalene	**0.00052**		**0.000020**	**0.00010**	**mg/L**	1	25-Jan-2020 20:38
Nitrobenzene	U		0.000024	0.00020	mg/L	1	25-Jan-2020 20:38
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	25-Jan-2020 20:38
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	25-Jan-2020 20:38
Phenanthrene	**0.000042**	J	**0.000021**	**0.00010**	**mg/L**	1	25-Jan-2020 20:38
Phenol	U		0.000035	0.00020	mg/L	1	25-Jan-2020 20:38
Pyrene	**0.000092**	J	**0.000019**	**0.00010**	**mg/L**	1	25-Jan-2020 20:38
Surr: 2,4,6-Tribromophenol	*69.6*			*34-129*	*%REC*	*1*	*25-Jan-2020 20:38*
Surr: 2-Fluorobiphenyl	*71.4*			*40-125*	*%REC*	*1*	*25-Jan-2020 20:38*
Surr: 2-Fluorophenol	*61.9*			*20-120*	*%REC*	*1*	*25-Jan-2020 20:38*
Surr: 4-Terphenyl-d14	*96.7*			*40-135*	*%REC*	*1*	*25-Jan-2020 20:38*
Surr: Nitrobenzene-d5	*73.4*			*41-120*	*%REC*	*1*	*25-Jan-2020 20:38*
Surr: Phenol-d6	*65.8*			*20-120*	*%REC*	*1*	*25-Jan-2020 20:38*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 22-Jan-2020		Analyst: JC
Arsenic	U		0.000400	0.00200	mg/L	1	24-Jan-2020 16:21

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20010767
Sample ID: WG-1620-MW68A-20200117
Lab ID:HS20010767-09
Collection Date: 17-Jan-2020 10:15
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	21-Jan-2020 19:50
Benzene		U	0.00020	0.0010	mg/L	1	21-Jan-2020 19:50
Chlorobenzene		U	0.00030	0.0010	mg/L	1	21-Jan-2020 19:50
Ethylbenzene		U	0.00030	0.0010	mg/L	1	21-Jan-2020 19:50
Methylene chloride		U	0.0010	0.0020	mg/L	1	21-Jan-2020 19:50
Toluene		U	0.00020	0.0010	mg/L	1	21-Jan-2020 19:50
Xylenes, Total		U	0.00030	0.0010	mg/L	1	21-Jan-2020 19:50
Surr: 1,2-Dichloroethane-d4	*90.9*			*70-126*	*%REC*	*1*	*21-Jan-2020 19:50*
Surr: 4-Bromofluorobenzene	*95.3*			*81-113*	*%REC*	*1*	*21-Jan-2020 19:50*
Surr: Dibromofluoromethane	*97.8*			*77-123*	*%REC*	*1*	*21-Jan-2020 19:50*
Surr: Toluene-d8	*98.5*			*82-127*	*%REC*	*1*	*21-Jan-2020 19:50*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW68A-20200117
Collection Date: 17-Jan-2020 10:15

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-09
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	25-Jan-2020 20:57
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	25-Jan-2020 20:57
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	25-Jan-2020 20:57
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	25-Jan-2020 20:57
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	25-Jan-2020 20:57
2-Methylnaphthalene	**0.000048**	J	**0.000019**	**0.00010**	**mg/L**	1	25-Jan-2020 20:57
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	25-Jan-2020 20:57
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	25-Jan-2020 20:57
Acenaphthene	**0.00030**		**0.000027**	**0.00010**	**mg/L**	1	25-Jan-2020 20:57
Acenaphthylene	**0.000054**	J	**0.000015**	**0.00010**	**mg/L**	1	25-Jan-2020 20:57
Anthracene	**0.000059**	J	**0.000014**	**0.00010**	**mg/L**	1	25-Jan-2020 20:57
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	25-Jan-2020 20:57
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	25-Jan-2020 20:57
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	25-Jan-2020 20:57
Bis(2-ethylhexyl)phthalate	**0.000061**	J	**0.000037**	**0.00020**	**mg/L**	1	25-Jan-2020 20:57
Chrysene	U		0.000021	0.00010	mg/L	1	25-Jan-2020 20:57
Dibenzofuran	U		0.000020	0.00010	mg/L	1	25-Jan-2020 20:57
Di-n-butyl phthalate	**0.000034**	J	**0.000020**	**0.00020**	**mg/L**	1	25-Jan-2020 20:57
Fluoranthene	**0.00013**		**0.000010**	**0.00010**	**mg/L**	1	25-Jan-2020 20:57
Fluorene	**0.000069**	J	**0.000030**	**0.00010**	**mg/L**	1	25-Jan-2020 20:57
Naphthalene	**0.00022**		**0.000020**	**0.00010**	**mg/L**	1	25-Jan-2020 20:57
Nitrobenzene	U		0.000024	0.00020	mg/L	1	25-Jan-2020 20:57
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	25-Jan-2020 20:57
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	25-Jan-2020 20:57
Phenanthrene	**0.00016**		**0.000021**	**0.00010**	**mg/L**	1	25-Jan-2020 20:57
Phenol	U		0.000035	0.00020	mg/L	1	25-Jan-2020 20:57
Pyrene	**0.000068**	J	**0.000019**	**0.00010**	**mg/L**	1	25-Jan-2020 20:57
Surr: 2,4,6-Tribromophenol	*80.6*			*34-129*	*%REC*	*1*	*25-Jan-2020 20:57*
Surr: 2-Fluorobiphenyl	*97.3*			*40-125*	*%REC*	*1*	*25-Jan-2020 20:57*
Surr: 2-Fluorophenol	*78.4*			*20-120*	*%REC*	*1*	*25-Jan-2020 20:57*
Surr: 4-Terphenyl-d14	*100*			*40-135*	*%REC*	*1*	*25-Jan-2020 20:57*
Surr: Nitrobenzene-d5	*95.8*			*41-120*	*%REC*	*1*	*25-Jan-2020 20:57*
Surr: Phenol-d6	*86.3*			*20-120*	*%REC*	*1*	*25-Jan-2020 20:57*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2020		Analyst: ALR
Arsenic	**0.0423**		**0.000400**	**0.00200**	**mg/L**	1	24-Jan-2020 03:07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB09-20200117
Collection Date: 17-Jan-2020 10:00

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-10
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	22-Jan-2020 01:08
Benzene		U	0.00020	0.0010	mg/L	1	22-Jan-2020 01:08
Chlorobenzene		U	0.00030	0.0010	mg/L	1	22-Jan-2020 01:08
Ethylbenzene		U	0.00030	0.0010	mg/L	1	22-Jan-2020 01:08
Methylene chloride		U	0.0010	0.0020	mg/L	1	22-Jan-2020 01:08
Toluene		U	0.00020	0.0010	mg/L	1	22-Jan-2020 01:08
Vinyl chloride		U	0.00020	0.0010	mg/L	1	22-Jan-2020 13:50
Xylenes, Total		U	0.00030	0.0010	mg/L	1	22-Jan-2020 01:08
Surr: 1,2-Dichloroethane-d4	*91.4*			*70-126*	*%REC*	*1*	*22-Jan-2020 01:08*
Surr: 1,2-Dichloroethane-d4	*103*			*70-126*	*%REC*	*1*	*22-Jan-2020 13:50*
Surr: 4-Bromofluorobenzene	*95.8*			*81-113*	*%REC*	*1*	*22-Jan-2020 01:08*
Surr: 4-Bromofluorobenzene	*97.3*			*81-113*	*%REC*	*1*	*22-Jan-2020 13:50*
Surr: Dibromofluoromethane	*98.2*			*77-123*	*%REC*	*1*	*22-Jan-2020 01:08*
Surr: Dibromofluoromethane	*98.4*			*77-123*	*%REC*	*1*	*22-Jan-2020 13:50*
Surr: Toluene-d8	*99.8*			*82-127*	*%REC*	*1*	*22-Jan-2020 01:08*
Surr: Toluene-d8	*97.1*			*82-127*	*%REC*	*1*	*22-Jan-2020 13:50*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB09-20200117
Collection Date: 17-Jan-2020 10:00

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-10
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	25-Jan-2020 21:16
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	25-Jan-2020 21:16
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	25-Jan-2020 21:16
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	25-Jan-2020 21:16
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	25-Jan-2020 21:16
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	25-Jan-2020 21:16
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	25-Jan-2020 21:16
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	25-Jan-2020 21:16
Acenaphthene	U		0.000027	0.00010	mg/L	1	25-Jan-2020 21:16
Acenaphthylene	U		0.000015	0.00010	mg/L	1	25-Jan-2020 21:16
Anthracene	U		0.000014	0.00010	mg/L	1	25-Jan-2020 21:16
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	25-Jan-2020 21:16
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	25-Jan-2020 21:16
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	25-Jan-2020 21:16
Bis(2-ethylhexyl)phthalate	**0.000050**	J	**0.000037**	**0.00020**	**mg/L**	1	25-Jan-2020 21:16
Chrysene	U		0.000021	0.00010	mg/L	1	25-Jan-2020 21:16
Dibenzofuran	U		0.000020	0.00010	mg/L	1	25-Jan-2020 21:16
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	25-Jan-2020 21:16
Fluoranthene	U		0.000010	0.00010	mg/L	1	25-Jan-2020 21:16
Fluorene	U		0.000030	0.00010	mg/L	1	25-Jan-2020 21:16
Naphthalene	**0.00017**		**0.000020**	**0.00010**	**mg/L**	1	25-Jan-2020 21:16
Nitrobenzene	U		0.000024	0.00020	mg/L	1	25-Jan-2020 21:16
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	25-Jan-2020 21:16
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	25-Jan-2020 21:16
Phenanthrene	U		0.000021	0.00010	mg/L	1	25-Jan-2020 21:16
Phenol	U		0.000035	0.00020	mg/L	1	25-Jan-2020 21:16
Pyrene	U		0.000019	0.00010	mg/L	1	25-Jan-2020 21:16
Surr: 2,4,6-Tribromophenol	*65.7*			*34-129*	*%REC*	*1*	*25-Jan-2020 21:16*
Surr: 2-Fluorobiphenyl	*93.5*			*40-125*	*%REC*	*1*	*25-Jan-2020 21:16*
Surr: 2-Fluorophenol	*79.4*			*20-120*	*%REC*	*1*	*25-Jan-2020 21:16*
Surr: 4-Terphenyl-d14	*98.5*			*40-135*	*%REC*	*1*	*25-Jan-2020 21:16*
Surr: Nitrobenzene-d5	*93.5*			*41-120*	*%REC*	*1*	*25-Jan-2020 21:16*
Surr: Phenol-d6	*86.0*			*20-120*	*%REC*	*1*	*25-Jan-2020 21:16*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2020		Analyst: ALR
Arsenic	U		0.000400	0.00200	mg/L	1	24-Jan-2020 03:09

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW27A-20200115
Collection Date: 15-Jan-2020 16:40

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-11
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	21-Jan-2020 20:14
Benzene		U	0.00020	0.0010	mg/L	1	21-Jan-2020 20:14
Chlorobenzene		U	0.00030	0.0010	mg/L	1	21-Jan-2020 20:14
Ethylbenzene		U	0.00030	0.0010	mg/L	1	21-Jan-2020 20:14
Methylene chloride		U	0.0010	0.0020	mg/L	1	21-Jan-2020 20:14
Toluene		U	0.00020	0.0010	mg/L	1	21-Jan-2020 20:14
Xylenes, Total		U	0.00030	0.0010	mg/L	1	21-Jan-2020 20:14
Surr: 1,2-Dichloroethane-d4	*90.5*			*70-126*	*%REC*	*1*	*21-Jan-2020 20:14*
Surr: 4-Bromofluorobenzene	*95.9*			*81-113*	*%REC*	*1*	*21-Jan-2020 20:14*
Surr: Dibromofluoromethane	*98.7*			*77-123*	*%REC*	*1*	*21-Jan-2020 20:14*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*1*	*21-Jan-2020 20:14*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW27A-20200115
Collection Date: 15-Jan-2020 16:40

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-11
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	25-Jan-2020 21:35
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	25-Jan-2020 21:35
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	25-Jan-2020 21:35
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	25-Jan-2020 21:35
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	25-Jan-2020 21:35
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	25-Jan-2020 21:35
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	25-Jan-2020 21:35
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	25-Jan-2020 21:35
Acenaphthene	U		0.000027	0.00010	mg/L	1	25-Jan-2020 21:35
Acenaphthylene	U		0.000015	0.00010	mg/L	1	25-Jan-2020 21:35
Anthracene	U		0.000014	0.00010	mg/L	1	25-Jan-2020 21:35
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	25-Jan-2020 21:35
Benzo(a)pyrene	**0.000052**	J	**0.000020**	**0.00010**	**mg/L**	1	25-Jan-2020 21:35
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	25-Jan-2020 21:35
Bis(2-ethylhexyl)phthalate	**0.000062**	J	**0.000037**	**0.00020**	**mg/L**	1	25-Jan-2020 21:35
Chrysene	U		0.000021	0.00010	mg/L	1	25-Jan-2020 21:35
Dibenzofuran	U		0.000020	0.00010	mg/L	1	25-Jan-2020 21:35
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	25-Jan-2020 21:35
Fluoranthene	U		0.000010	0.00010	mg/L	1	25-Jan-2020 21:35
Fluorene	U		0.000030	0.00010	mg/L	1	25-Jan-2020 21:35
Naphthalene	**0.000053**	J	**0.000020**	**0.00010**	**mg/L**	1	25-Jan-2020 21:35
Nitrobenzene	U		0.000024	0.00020	mg/L	1	25-Jan-2020 21:35
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	25-Jan-2020 21:35
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	25-Jan-2020 21:35
Phenanthrene	U		0.000021	0.00010	mg/L	1	25-Jan-2020 21:35
Phenol	U		0.000035	0.00020	mg/L	1	25-Jan-2020 21:35
Pyrene	U		0.000019	0.00010	mg/L	1	25-Jan-2020 21:35
Surr: 2,4,6-Tribromophenol	*53.3*			*34-129*	*%REC*	*1*	*25-Jan-2020 21:35*
Surr: 2-Fluorobiphenyl	*68.5*			*40-125*	*%REC*	*1*	*25-Jan-2020 21:35*
Surr: 2-Fluorophenol	*57.2*			*20-120*	*%REC*	*1*	*25-Jan-2020 21:35*
Surr: 4-Terphenyl-d14	*99.1*			*40-135*	*%REC*	*1*	*25-Jan-2020 21:35*
Surr: Nitrobenzene-d5	*68.2*			*41-120*	*%REC*	*1*	*25-Jan-2020 21:35*
Surr: Phenol-d6	*65.0*			*20-120*	*%REC*	*1*	*25-Jan-2020 21:35*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2020		Analyst: ALR
Arsenic	**0.000859**	J	**0.000400**	**0.00200**	**mg/L**	1	24-Jan-2020 03:11

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20010767
Sample ID: WG-1620-MW27C-20200115
Lab ID:HS20010767-12
Collection Date: 15-Jan-2020 17:20
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	21-Jan-2020 20:39
Benzene		U	0.00020	0.0010	mg/L	1	21-Jan-2020 20:39
Chlorobenzene		U	0.00030	0.0010	mg/L	1	21-Jan-2020 20:39
Ethylbenzene		U	0.00030	0.0010	mg/L	1	21-Jan-2020 20:39
Methylene chloride		U	0.0010	0.0020	mg/L	1	21-Jan-2020 20:39
Toluene		U	0.00020	0.0010	mg/L	1	21-Jan-2020 20:39
Xylenes, Total		U	0.00030	0.0010	mg/L	1	21-Jan-2020 20:39
Surr: 1,2-Dichloroethane-d4	*91.9*			*70-126*	*%REC*	*1*	*21-Jan-2020 20:39*
Surr: 4-Bromofluorobenzene	*94.7*			*81-113*	*%REC*	*1*	*21-Jan-2020 20:39*
Surr: Dibromofluoromethane	*97.4*			*77-123*	*%REC*	*1*	*21-Jan-2020 20:39*
Surr: Toluene-d8	*99.5*			*82-127*	*%REC*	*1*	*21-Jan-2020 20:39*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW27C-20200115
Collection Date: 15-Jan-2020 17:20

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-12
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	26-Jan-2020 13:17
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	26-Jan-2020 13:17
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	26-Jan-2020 13:17
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	26-Jan-2020 13:17
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	26-Jan-2020 13:17
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	26-Jan-2020 13:17
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	26-Jan-2020 13:17
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	26-Jan-2020 13:17
Acenaphthene	U		0.000027	0.00010	mg/L	1	26-Jan-2020 13:17
Acenaphthylene	U		0.000015	0.00010	mg/L	1	26-Jan-2020 13:17
Anthracene	U		0.000014	0.00010	mg/L	1	26-Jan-2020 13:17
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	26-Jan-2020 13:17
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	26-Jan-2020 13:17
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	26-Jan-2020 13:17
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	26-Jan-2020 13:17
Chrysene	U		0.000021	0.00010	mg/L	1	26-Jan-2020 13:17
Dibenzofuran	U		0.000020	0.00010	mg/L	1	26-Jan-2020 13:17
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	26-Jan-2020 13:17
Fluoranthene	U		0.000010	0.00010	mg/L	1	26-Jan-2020 13:17
Fluorene	U		0.000030	0.00010	mg/L	1	26-Jan-2020 13:17
Naphthalene	**0.000055**	J	**0.000020**	**0.00010**	**mg/L**	1	26-Jan-2020 13:17
Nitrobenzene	U		0.000024	0.00020	mg/L	1	26-Jan-2020 13:17
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	26-Jan-2020 13:17
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	26-Jan-2020 13:17
Phenanthrene	U		0.000021	0.00010	mg/L	1	26-Jan-2020 13:17
Phenol	U		0.000035	0.00020	mg/L	1	26-Jan-2020 13:17
Pyrene	U		0.000019	0.00010	mg/L	1	26-Jan-2020 13:17
Surr: 2,4,6-Tribromophenol	*67.5*			*34-129*	*%REC*	*1*	*26-Jan-2020 13:17*
Surr: 2-Fluorobiphenyl	*85.4*			*40-125*	*%REC*	*1*	*26-Jan-2020 13:17*
Surr: 2-Fluorophenol	*66.4*			*20-120*	*%REC*	*1*	*26-Jan-2020 13:17*
Surr: 4-Terphenyl-d14	*94.8*			*40-135*	*%REC*	*1*	*26-Jan-2020 13:17*
Surr: Nitrobenzene-d5	*74.1*			*41-120*	*%REC*	*1*	*26-Jan-2020 13:17*
Surr: Phenol-d6	*71.6*			*20-120*	*%REC*	*1*	*26-Jan-2020 13:17*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2020		Analyst: ALR
Arsenic	**0.000623**	J	**0.000400**	**0.00200**	**mg/L**	1	24-Jan-2020 03:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20010767
Sample ID: WG-1620-MW59A-20200116
Lab ID:HS20010767-13
Collection Date: 16-Jan-2020 08:05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	21-Jan-2020 21:03
Benzene		U	0.00020	0.0010	mg/L	1	21-Jan-2020 21:03
Chlorobenzene		U	0.00030	0.0010	mg/L	1	21-Jan-2020 21:03
Ethylbenzene		U	0.00030	0.0010	mg/L	1	21-Jan-2020 21:03
Methylene chloride		U	0.0010	0.0020	mg/L	1	21-Jan-2020 21:03
Toluene		U	0.00020	0.0010	mg/L	1	21-Jan-2020 21:03
Vinyl chloride		U	0.00020	0.0010	mg/L	1	21-Jan-2020 21:03
Xylenes, Total		U	0.00030	0.0010	mg/L	1	21-Jan-2020 21:03
Surr: 1,2-Dichloroethane-d4	*90.7*			*70-126*	*%REC*	*1*	*21-Jan-2020 21:03*
Surr: 4-Bromofluorobenzene	*94.6*			*81-113*	*%REC*	*1*	*21-Jan-2020 21:03*
Surr: Dibromofluoromethane	*98.4*			*77-123*	*%REC*	*1*	*21-Jan-2020 21:03*
Surr: Toluene-d8	*99.3*			*82-127*	*%REC*	*1*	*21-Jan-2020 21:03*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW59A-20200116
Collection Date: 16-Jan-2020 08:05

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-13
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	26-Jan-2020 13:36
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	26-Jan-2020 13:36
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	26-Jan-2020 13:36
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	26-Jan-2020 13:36
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	26-Jan-2020 13:36
2-Methylnaphthalene	**0.00016**		**0.000019**	**0.00010**	**mg/L**	1	26-Jan-2020 13:36
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	26-Jan-2020 13:36
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	26-Jan-2020 13:36
Acenaphthene	**0.00029**		**0.000027**	**0.00010**	**mg/L**	1	26-Jan-2020 13:36
Acenaphthylene	U		0.000015	0.00010	mg/L	1	26-Jan-2020 13:36
Anthracene	**0.000027**	J	**0.000014**	**0.00010**	**mg/L**	1	26-Jan-2020 13:36
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	26-Jan-2020 13:36
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	26-Jan-2020 13:36
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	26-Jan-2020 13:36
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	26-Jan-2020 13:36
Chrysene	U		0.000021	0.00010	mg/L	1	26-Jan-2020 13:36
Dibenzofuran	**0.00016**		**0.000020**	**0.00010**	**mg/L**	1	26-Jan-2020 13:36
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	26-Jan-2020 13:36
Fluoranthene	**0.000032**	J	**0.000010**	**0.00010**	**mg/L**	1	26-Jan-2020 13:36
Fluorene	**0.00011**		**0.000030**	**0.00010**	**mg/L**	1	26-Jan-2020 13:36
Naphthalene	**0.0012**		**0.000020**	**0.00010**	**mg/L**	1	26-Jan-2020 13:36
Nitrobenzene	U		0.000024	0.00020	mg/L	1	26-Jan-2020 13:36
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	26-Jan-2020 13:36
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	26-Jan-2020 13:36
Phenanthrene	**0.00012**		**0.000021**	**0.00010**	**mg/L**	1	26-Jan-2020 13:36
Phenol	U		0.000035	0.00020	mg/L	1	26-Jan-2020 13:36
Pyrene	**0.000023**	J	**0.000019**	**0.00010**	**mg/L**	1	26-Jan-2020 13:36
Surr: 2,4,6-Tribromophenol	*59.7*			*34-129*	*%REC*	*1*	*26-Jan-2020 13:36*
Surr: 2-Fluorobiphenyl	*63.2*			*40-125*	*%REC*	*1*	*26-Jan-2020 13:36*
Surr: 2-Fluorophenol	*55.1*			*20-120*	*%REC*	*1*	*26-Jan-2020 13:36*
Surr: 4-Terphenyl-d14	*85.8*			*40-135*	*%REC*	*1*	*26-Jan-2020 13:36*
Surr: Nitrobenzene-d5	*57.0*			*41-120*	*%REC*	*1*	*26-Jan-2020 13:36*
Surr: Phenol-d6	*56.8*			*20-120*	*%REC*	*1*	*26-Jan-2020 13:36*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2020		Analyst: ALR
Arsenic	**0.00368**		**0.000400**	**0.00200**	**mg/L**	1	24-Jan-2020 03:15

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW59B-20200116
Collection Date: 16-Jan-2020 09:00

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-14
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	21-Jan-2020 21:28
Benzene		U	0.00020	0.0010	mg/L	1	21-Jan-2020 21:28
Chlorobenzene		U	0.00030	0.0010	mg/L	1	21-Jan-2020 21:28
Ethylbenzene		U	0.00030	0.0010	mg/L	1	21-Jan-2020 21:28
Methylene chloride		U	0.0010	0.0020	mg/L	1	21-Jan-2020 21:28
Toluene	**0.18**		**0.00020**	**0.0010**	**mg/L**	1	21-Jan-2020 21:28
Vinyl chloride		U	0.00020	0.0010	mg/L	1	21-Jan-2020 21:28
Xylenes, Total		U	0.00030	0.0010	mg/L	1	21-Jan-2020 21:28
Surr: 1,2-Dichloroethane-d4	*91.2*			*70-126*	*%REC*	*1*	*21-Jan-2020 21:28*
Surr: 4-Bromofluorobenzene	*94.7*			*81-113*	*%REC*	*1*	*21-Jan-2020 21:28*
Surr: Dibromofluoromethane	*99.0*			*77-123*	*%REC*	*1*	*21-Jan-2020 21:28*
Surr: Toluene-d8	*99.0*			*82-127*	*%REC*	*1*	*21-Jan-2020 21:28*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW59B-20200116
Collection Date: 16-Jan-2020 09:00

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-14
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	27-Jan-2020 08:31
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	27-Jan-2020 08:31
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	27-Jan-2020 08:31
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	27-Jan-2020 08:31
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	27-Jan-2020 08:31
2-Methylnaphthalene	**0.000038**	J	**0.000019**	**0.00010**	**mg/L**	1	27-Jan-2020 08:31
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	27-Jan-2020 08:31
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	27-Jan-2020 08:31
Acenaphthene	**0.000051**	J	**0.000027**	**0.00010**	**mg/L**	1	27-Jan-2020 08:31
Acenaphthylene	U		0.000015	0.00010	mg/L	1	27-Jan-2020 08:31
Anthracene	**0.000031**	J	**0.000014**	**0.00010**	**mg/L**	1	27-Jan-2020 08:31
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	27-Jan-2020 08:31
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	27-Jan-2020 08:31
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	27-Jan-2020 08:31
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	27-Jan-2020 08:31
Chrysene	U		0.000021	0.00010	mg/L	1	27-Jan-2020 08:31
Dibenzofuran	**0.000050**	J	**0.000020**	**0.00010**	**mg/L**	1	27-Jan-2020 08:31
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	27-Jan-2020 08:31
Fluoranthene	**0.000025**	J	**0.000010**	**0.00010**	**mg/L**	1	27-Jan-2020 08:31
Fluorene	**0.000042**	J	**0.000030**	**0.00010**	**mg/L**	1	27-Jan-2020 08:31
Naphthalene	**0.00024**		**0.000020**	**0.00010**	**mg/L**	1	27-Jan-2020 08:31
Nitrobenzene	U		0.000024	0.00020	mg/L	1	27-Jan-2020 08:31
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	27-Jan-2020 08:31
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	27-Jan-2020 08:31
Phenanthrene	**0.000099**	J	**0.000021**	**0.00010**	**mg/L**	1	27-Jan-2020 08:31
Phenol	U		0.000035	0.00020	mg/L	1	27-Jan-2020 08:31
Pyrene	**0.000021**	J	**0.000019**	**0.00010**	**mg/L**	1	27-Jan-2020 08:31
Surr: 2,4,6-Tribromophenol	*71.4*			*34-129*	*%REC*	*1*	*27-Jan-2020 08:31*
Surr: 2-Fluorobiphenyl	*74.1*			*40-125*	*%REC*	*1*	*27-Jan-2020 08:31*
Surr: 2-Fluorophenol	*65.1*			*20-120*	*%REC*	*1*	*27-Jan-2020 08:31*
Surr: 4-Terphenyl-d14	*92.4*			*40-135*	*%REC*	*1*	*27-Jan-2020 08:31*
Surr: Nitrobenzene-d5	*68.0*			*41-120*	*%REC*	*1*	*27-Jan-2020 08:31*
Surr: Phenol-d6	*68.0*			*20-120*	*%REC*	*1*	*27-Jan-2020 08:31*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2020		Analyst: ALR
Arsenic	**0.000486**	J	**0.000400**	**0.00200**	**mg/L**	1	24-Jan-2020 03:18

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20010767
Sample ID: WG-1620-MW59D-20200116
Lab ID:HS20010767-15
Collection Date: 16-Jan-2020 13:50
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	21-Jan-2020 21:52
Benzene		U	0.00020	0.0010	mg/L	1	21-Jan-2020 21:52
Chlorobenzene		U	0.00030	0.0010	mg/L	1	21-Jan-2020 21:52
Ethylbenzene		U	0.00030	0.0010	mg/L	1	21-Jan-2020 21:52
Methylene chloride		U	0.0010	0.0020	mg/L	1	21-Jan-2020 21:52
Toluene		U	0.00020	0.0010	mg/L	1	21-Jan-2020 21:52
Xylenes, Total		U	0.00030	0.0010	mg/L	1	21-Jan-2020 21:52
Surr: 1,2-Dichloroethane-d4	*91.1*			*70-126*	*%REC*	*1*	*21-Jan-2020 21:52*
Surr: 4-Bromofluorobenzene	*95.0*			*81-113*	*%REC*	*1*	*21-Jan-2020 21:52*
Surr: Dibromofluoromethane	*97.8*			*77-123*	*%REC*	*1*	*21-Jan-2020 21:52*
Surr: Toluene-d8	*99.4*			*82-127*	*%REC*	*1*	*21-Jan-2020 21:52*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW59D-20200116
Collection Date: 16-Jan-2020 13:50

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-15
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	26-Jan-2020 14:14
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	26-Jan-2020 14:14
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	26-Jan-2020 14:14
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	26-Jan-2020 14:14
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	26-Jan-2020 14:14
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	26-Jan-2020 14:14
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	26-Jan-2020 14:14
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	26-Jan-2020 14:14
Acenaphthene	**0.000036**	J	**0.000027**	**0.00010**	**mg/L**	1	26-Jan-2020 14:14
Acenaphthylene	U		0.000015	0.00010	mg/L	1	26-Jan-2020 14:14
Anthracene	U		0.000014	0.00010	mg/L	1	26-Jan-2020 14:14
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	26-Jan-2020 14:14
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	26-Jan-2020 14:14
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	26-Jan-2020 14:14
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	26-Jan-2020 14:14
Chrysene	U		0.000021	0.00010	mg/L	1	26-Jan-2020 14:14
Dibenzofuran	**0.000028**	J	**0.000020**	**0.00010**	**mg/L**	1	26-Jan-2020 14:14
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	26-Jan-2020 14:14
Fluoranthene	U		0.000010	0.00010	mg/L	1	26-Jan-2020 14:14
Fluorene	**0.000031**	J	**0.000030**	**0.00010**	**mg/L**	1	26-Jan-2020 14:14
Naphthalene	**0.00013**		**0.000020**	**0.00010**	**mg/L**	1	26-Jan-2020 14:14
Nitrobenzene	U		0.000024	0.00020	mg/L	1	26-Jan-2020 14:14
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	26-Jan-2020 14:14
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	26-Jan-2020 14:14
Phenanthrene	**0.000043**	J	**0.000021**	**0.00010**	**mg/L**	1	26-Jan-2020 14:14
Phenol	U		0.000035	0.00020	mg/L	1	26-Jan-2020 14:14
Pyrene	U		0.000019	0.00010	mg/L	1	26-Jan-2020 14:14
Surr: 2,4,6-Tribromophenol	*60.5*			*34-129*	*%REC*	*1*	*26-Jan-2020 14:14*
Surr: 2-Fluorobiphenyl	*67.3*			*40-125*	*%REC*	*1*	*26-Jan-2020 14:14*
Surr: 2-Fluorophenol	*49.4*			*20-120*	*%REC*	*1*	*26-Jan-2020 14:14*
Surr: 4-Terphenyl-d14	*82.6*			*40-135*	*%REC*	*1*	*26-Jan-2020 14:14*
Surr: Nitrobenzene-d5	*59.4*			*41-120*	*%REC*	*1*	*26-Jan-2020 14:14*
Surr: Phenol-d6	*52.5*			*20-120*	*%REC*	*1*	*26-Jan-2020 14:14*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2020		Analyst: ALR
Arsenic	**0.000508**	J	**0.000400**	**0.00200**	**mg/L**	1	24-Jan-2020 03:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FD03-20200116
Collection Date: 16-Jan-2020 13:50

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-16
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	22-Jan-2020 03:10
Benzene		U	0.00020	0.0010	mg/L	1	22-Jan-2020 03:10
Chlorobenzene		U	0.00030	0.0010	mg/L	1	22-Jan-2020 03:10
Ethylbenzene		U	0.00030	0.0010	mg/L	1	22-Jan-2020 03:10
Methylene chloride		U	0.0010	0.0020	mg/L	1	22-Jan-2020 03:10
Toluene		U	0.00020	0.0010	mg/L	1	22-Jan-2020 03:10
Xylenes, Total		U	0.00030	0.0010	mg/L	1	22-Jan-2020 03:10
Surr: 1,2-Dichloroethane-d4	*90.9*			*70-126*	*%REC*	*1*	*22-Jan-2020 03:10*
Surr: 4-Bromofluorobenzene	*95.3*			*81-113*	*%REC*	*1*	*22-Jan-2020 03:10*
Surr: Dibromofluoromethane	*97.1*			*77-123*	*%REC*	*1*	*22-Jan-2020 03:10*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*1*	*22-Jan-2020 03:10*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FD03-20200116
Collection Date: 16-Jan-2020 13:50

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-16
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine		U	0.000021	0.00020	mg/L	1	26-Jan-2020 14:34
2,4-Dimethylphenol		U	0.000040	0.00020	mg/L	1	26-Jan-2020 14:34
2,4-Dinitrotoluene		U	0.000058	0.00020	mg/L	1	26-Jan-2020 14:34
2,6-Dinitrotoluene		U	0.000042	0.00020	mg/L	1	26-Jan-2020 14:34
2-Chloronaphthalene		U	0.000021	0.00020	mg/L	1	26-Jan-2020 14:34
2-Methylnaphthalene		U	0.000019	0.00010	mg/L	1	26-Jan-2020 14:34
4,6-Dinitro-2-methylphenol		U	0.000020	0.00020	mg/L	1	26-Jan-2020 14:34
4-Nitrophenol		U	0.000047	0.0010	mg/L	1	26-Jan-2020 14:34
Acenaphthene		U	0.000027	0.00010	mg/L	1	26-Jan-2020 14:34
Acenaphthylene		U	0.000015	0.00010	mg/L	1	26-Jan-2020 14:34
Anthracene		U	0.000014	0.00010	mg/L	1	26-Jan-2020 14:34
Benz(a)anthracene		U	0.000050	0.00010	mg/L	1	26-Jan-2020 14:34
Benzo(a)pyrene		U	0.000020	0.00010	mg/L	1	26-Jan-2020 14:34
Bis(2-chloroethoxy)methane		U	0.000030	0.00020	mg/L	1	26-Jan-2020 14:34
Bis(2-ethylhexyl)phthalate		U	0.000037	0.00020	mg/L	1	26-Jan-2020 14:34
Chrysene		U	0.000021	0.00010	mg/L	1	26-Jan-2020 14:34
Dibenzofuran		U	0.000020	0.00010	mg/L	1	26-Jan-2020 14:34
Di-n-butyl phthalate		U	0.000020	0.00020	mg/L	1	26-Jan-2020 14:34
Fluoranthene		U	0.000010	0.00010	mg/L	1	26-Jan-2020 14:34
Fluorene		U	0.000030	0.00010	mg/L	1	26-Jan-2020 14:34
Naphthalene		U	0.000020	0.00010	mg/L	1	26-Jan-2020 14:34
Nitrobenzene		U	0.000024	0.00020	mg/L	1	26-Jan-2020 14:34
N-Nitrosodiphenylamine		U	0.000025	0.00020	mg/L	1	26-Jan-2020 14:34
Pentachlorophenol		U	0.000079	0.00020	mg/L	1	26-Jan-2020 14:34
Phenanthrene		U	0.000021	0.00010	mg/L	1	26-Jan-2020 14:34
Phenol		U	0.000035	0.00020	mg/L	1	26-Jan-2020 14:34
Pyrene		U	0.000019	0.00010	mg/L	1	26-Jan-2020 14:34
Surr: 2,4,6-Tribromophenol	*43.8*			*34-129*	*%REC*	*1*	*26-Jan-2020 14:34*
Surr: 2-Fluorobiphenyl	*69.2*			*40-125*	*%REC*	*1*	*26-Jan-2020 14:34*
Surr: 2-Fluorophenol	*46.4*			*20-120*	*%REC*	*1*	*26-Jan-2020 14:34*
Surr: 4-Terphenyl-d14	*93.1*			*40-135*	*%REC*	*1*	*26-Jan-2020 14:34*
Surr: Nitrobenzene-d5	*62.8*			*41-120*	*%REC*	*1*	*26-Jan-2020 14:34*
Surr: Phenol-d6	*54.7*			*20-120*	*%REC*	*1*	*26-Jan-2020 14:34*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2020		Analyst: ALR
Arsenic	**0.000478**	J	**0.000400**	**0.00200**	**mg/L**	1	24-Jan-2020 03:22

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20010767
Sample ID: WG-1620-MW66D-20200116
Lab ID:HS20010767-17
Collection Date: 16-Jan-2020 15:00
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	22-Jan-2020 03:35
Benzene		U	0.00020	0.0010	mg/L	1	22-Jan-2020 03:35
Chlorobenzene		U	0.00030	0.0010	mg/L	1	22-Jan-2020 03:35
Ethylbenzene		U	0.00030	0.0010	mg/L	1	22-Jan-2020 03:35
Methylene chloride		U	0.0010	0.0020	mg/L	1	22-Jan-2020 03:35
Toluene		U	0.00020	0.0010	mg/L	1	22-Jan-2020 03:35
Xylenes, Total		U	0.00030	0.0010	mg/L	1	22-Jan-2020 03:35
Surr: 1,2-Dichloroethane-d4	*91.9*			*70-126*	*%REC*	*1*	*22-Jan-2020 03:35*
Surr: 4-Bromofluorobenzene	*94.7*			*81-113*	*%REC*	*1*	*22-Jan-2020 03:35*
Surr: Dibromofluoromethane	*97.7*			*77-123*	*%REC*	*1*	*22-Jan-2020 03:35*
Surr: Toluene-d8	*98.3*			*82-127*	*%REC*	*1*	*22-Jan-2020 03:35*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW66D-20200116
Collection Date: 16-Jan-2020 15:00

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-17
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	27-Jan-2020 08:50
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	27-Jan-2020 08:50
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	27-Jan-2020 08:50
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	27-Jan-2020 08:50
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	27-Jan-2020 08:50
2-Methylnaphthalene	**0.000095**	J	**0.000019**	**0.00010**	**mg/L**	1	27-Jan-2020 08:50
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	27-Jan-2020 08:50
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	27-Jan-2020 08:50
Acenaphthene	U		0.000027	0.00010	mg/L	1	27-Jan-2020 08:50
Acenaphthylene	U		0.000015	0.00010	mg/L	1	27-Jan-2020 08:50
Anthracene	U		0.000014	0.00010	mg/L	1	27-Jan-2020 08:50
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	27-Jan-2020 08:50
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	27-Jan-2020 08:50
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	27-Jan-2020 08:50
Bis(2-ethylhexyl)phthalate	**0.000046**	J	**0.000037**	**0.00020**	**mg/L**	1	27-Jan-2020 08:50
Chrysene	U		0.000021	0.00010	mg/L	1	27-Jan-2020 08:50
Dibenzofuran	U		0.000020	0.00010	mg/L	1	27-Jan-2020 08:50
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	27-Jan-2020 08:50
Fluoranthene	U		0.000010	0.00010	mg/L	1	27-Jan-2020 08:50
Fluorene	U		0.000030	0.00010	mg/L	1	27-Jan-2020 08:50
Naphthalene	**0.00013**		**0.000020**	**0.00010**	**mg/L**	1	27-Jan-2020 08:50
Nitrobenzene	U		0.000024	0.00020	mg/L	1	27-Jan-2020 08:50
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	27-Jan-2020 08:50
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	27-Jan-2020 08:50
Phenanthrene	U		0.000021	0.00010	mg/L	1	27-Jan-2020 08:50
Phenol	U		0.000035	0.00020	mg/L	1	27-Jan-2020 08:50
Pyrene	U		0.000019	0.00010	mg/L	1	27-Jan-2020 08:50
Surr: 2,4,6-Tribromophenol	*66.3*			*34-129*	*%REC*	*1*	*27-Jan-2020 08:50*
Surr: 2-Fluorobiphenyl	*85.4*			*40-125*	*%REC*	*1*	*27-Jan-2020 08:50*
Surr: 2-Fluorophenol	*73.2*			*20-120*	*%REC*	*1*	*27-Jan-2020 08:50*
Surr: 4-Terphenyl-d14	*86.5*			*40-135*	*%REC*	*1*	*27-Jan-2020 08:50*
Surr: Nitrobenzene-d5	*79.4*			*41-120*	*%REC*	*1*	*27-Jan-2020 08:50*
Surr: Phenol-d6	*74.4*			*20-120*	*%REC*	*1*	*27-Jan-2020 08:50*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2020		Analyst: ALR
Arsenic	**0.00138**	J	**0.000400**	**0.00200**	**mg/L**	1	24-Jan-2020 03:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20010767
Sample ID: WG-1620-MW65D-20200116
Lab ID:HS20010767-18
Collection Date: 16-Jan-2020 16:20
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	22-Jan-2020 01:57
Benzene		U	0.00020	0.0010	mg/L	1	22-Jan-2020 01:57
Chlorobenzene		U	0.00030	0.0010	mg/L	1	22-Jan-2020 01:57
Ethylbenzene		U	0.00030	0.0010	mg/L	1	22-Jan-2020 01:57
Methylene chloride		U	0.0010	0.0020	mg/L	1	22-Jan-2020 01:57
Toluene		U	0.00020	0.0010	mg/L	1	22-Jan-2020 01:57
Xylenes, Total		U	0.00030	0.0010	mg/L	1	22-Jan-2020 01:57
Surr: 1,2-Dichloroethane-d4	*90.4*			*70-126*	*%REC*	*1*	*22-Jan-2020 01:57*
Surr: 4-Bromofluorobenzene	*93.4*			*81-113*	*%REC*	*1*	*22-Jan-2020 01:57*
Surr: Dibromofluoromethane	*96.5*			*77-123*	*%REC*	*1*	*22-Jan-2020 01:57*
Surr: Toluene-d8	*99.4*			*82-127*	*%REC*	*1*	*22-Jan-2020 01:57*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW65D-20200116
Collection Date: 16-Jan-2020 16:20

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-18
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	23-Jan-2020 09:40
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	23-Jan-2020 09:40
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	23-Jan-2020 09:40
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	23-Jan-2020 09:40
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	23-Jan-2020 09:40
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	23-Jan-2020 09:40
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	23-Jan-2020 09:40
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	23-Jan-2020 09:40
Acenaphthene	U		0.000027	0.00010	mg/L	1	23-Jan-2020 09:40
Acenaphthylene	U		0.000015	0.00010	mg/L	1	23-Jan-2020 09:40
Anthracene	U		0.000014	0.00010	mg/L	1	23-Jan-2020 09:40
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	23-Jan-2020 09:40
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	23-Jan-2020 09:40
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	23-Jan-2020 09:40
Bis(2-ethylhexyl)phthalate	**0.00026**		**0.000037**	**0.00020**	**mg/L**	1	23-Jan-2020 09:40
Chrysene	U		0.000021	0.00010	mg/L	1	23-Jan-2020 09:40
Dibenzofuran	U		0.000020	0.00010	mg/L	1	23-Jan-2020 09:40
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	23-Jan-2020 09:40
Fluoranthene	U		0.000010	0.00010	mg/L	1	23-Jan-2020 09:40
Fluorene	U		0.000030	0.00010	mg/L	1	23-Jan-2020 09:40
Naphthalene	U		0.000020	0.00010	mg/L	1	23-Jan-2020 09:40
Nitrobenzene	U		0.000024	0.00020	mg/L	1	23-Jan-2020 09:40
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	23-Jan-2020 09:40
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	23-Jan-2020 09:40
Phenanthrene	U		0.000021	0.00010	mg/L	1	23-Jan-2020 09:40
Phenol	U		0.000035	0.00020	mg/L	1	23-Jan-2020 09:40
Pyrene	U		0.000019	0.00010	mg/L	1	23-Jan-2020 09:40
Surr: 2,4,6-Tribromophenol	*111*			*34-129*	*%REC*	*1*	*23-Jan-2020 09:40*
Surr: 2-Fluorobiphenyl	*110*			*40-125*	*%REC*	*1*	*23-Jan-2020 09:40*
Surr: 2-Fluorophenol	*80.7*			*20-120*	*%REC*	*1*	*23-Jan-2020 09:40*
Surr: 4-Terphenyl-d14	*123*			*40-135*	*%REC*	*1*	*23-Jan-2020 09:40*
Surr: Nitrobenzene-d5	*89.8*			*41-120*	*%REC*	*1*	*23-Jan-2020 09:40*
Surr: Phenol-d6	*87.2*			*20-120*	*%REC*	*1*	*23-Jan-2020 09:40*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 21-Jan-2020		Analyst: JC
Arsenic	**0.000507**	J	**0.000400**	**0.00200**	**mg/L**	1	23-Jan-2020 00:56

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20010767
Sample ID: WG-1620-MW36D-20200116
Lab ID:HS20010767-19
Collection Date: 16-Jan-2020 17:25
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	22-Jan-2020 03:59
Benzene		U	0.00020	0.0010	mg/L	1	22-Jan-2020 03:59
Chlorobenzene		U	0.00030	0.0010	mg/L	1	22-Jan-2020 03:59
Ethylbenzene		U	0.00030	0.0010	mg/L	1	22-Jan-2020 03:59
Methylene chloride		U	0.0010	0.0020	mg/L	1	22-Jan-2020 03:59
Toluene		U	0.00020	0.0010	mg/L	1	22-Jan-2020 03:59
Xylenes, Total		U	0.00030	0.0010	mg/L	1	22-Jan-2020 03:59
Surr: 1,2-Dichloroethane-d4	*91.0*			*70-126*	*%REC*	*1*	*22-Jan-2020 03:59*
Surr: 4-Bromofluorobenzene	*93.4*			*81-113*	*%REC*	*1*	*22-Jan-2020 03:59*
Surr: Dibromofluoromethane	*97.7*			*77-123*	*%REC*	*1*	*22-Jan-2020 03:59*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*1*	*22-Jan-2020 03:59*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW36D-20200116
Collection Date: 16-Jan-2020 17:25

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-19
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	26-Jan-2020 15:12
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	26-Jan-2020 15:12
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	26-Jan-2020 15:12
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	26-Jan-2020 15:12
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	26-Jan-2020 15:12
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	26-Jan-2020 15:12
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	26-Jan-2020 15:12
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	26-Jan-2020 15:12
Acenaphthene	U		0.000027	0.00010	mg/L	1	26-Jan-2020 15:12
Acenaphthylene	U		0.000015	0.00010	mg/L	1	26-Jan-2020 15:12
Anthracene	**0.000033**	J	**0.000014**	**0.00010**	**mg/L**	1	26-Jan-2020 15:12
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	26-Jan-2020 15:12
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	26-Jan-2020 15:12
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	26-Jan-2020 15:12
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	26-Jan-2020 15:12
Chrysene	U		0.000021	0.00010	mg/L	1	26-Jan-2020 15:12
Dibenzofuran	U		0.000020	0.00010	mg/L	1	26-Jan-2020 15:12
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	26-Jan-2020 15:12
Fluoranthene	U		0.000010	0.00010	mg/L	1	26-Jan-2020 15:12
Fluorene	U		0.000030	0.00010	mg/L	1	26-Jan-2020 15:12
Naphthalene	**0.000033**	J	**0.000020**	**0.00010**	**mg/L**	1	26-Jan-2020 15:12
Nitrobenzene	U		0.000024	0.00020	mg/L	1	26-Jan-2020 15:12
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	26-Jan-2020 15:12
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	26-Jan-2020 15:12
Phenanthrene	**0.000047**	J	**0.000021**	**0.00010**	**mg/L**	1	26-Jan-2020 15:12
Phenol	U		0.000035	0.00020	mg/L	1	26-Jan-2020 15:12
Pyrene	U		0.000019	0.00010	mg/L	1	26-Jan-2020 15:12
Surr: 2,4,6-Tribromophenol	*60.1*			*34-129*	*%REC*	*1*	*26-Jan-2020 15:12*
Surr: 2-Fluorobiphenyl	*80.9*			*40-125*	*%REC*	*1*	*26-Jan-2020 15:12*
Surr: 2-Fluorophenol	*71.7*			*20-120*	*%REC*	*1*	*26-Jan-2020 15:12*
Surr: 4-Terphenyl-d14	*88.3*			*40-135*	*%REC*	*1*	*26-Jan-2020 15:12*
Surr: Nitrobenzene-d5	*76.5*			*41-120*	*%REC*	*1*	*26-Jan-2020 15:12*
Surr: Phenol-d6	*68.3*			*20-120*	*%REC*	*1*	*26-Jan-2020 15:12*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2020		Analyst: ALR
Arsenic	**0.000533**	J	**0.000400**	**0.00200**	**mg/L**	1	24-Jan-2020 03:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20010767
Sample ID: WG-1620-MW86C-20200117
Lab ID:HS20010767-20
Collection Date: 17-Jan-2020 07:25
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	22-Jan-2020 04:24
Benzene		U	0.00020	0.0010	mg/L	1	22-Jan-2020 04:24
Chlorobenzene		U	0.00030	0.0010	mg/L	1	22-Jan-2020 04:24
Ethylbenzene		U	0.00030	0.0010	mg/L	1	22-Jan-2020 04:24
Methylene chloride		U	0.0010	0.0020	mg/L	1	22-Jan-2020 04:24
Toluene	**0.0039**		**0.00020**	**0.0010**	**mg/L**	1	22-Jan-2020 04:24
Xylenes, Total		U	0.00030	0.0010	mg/L	1	22-Jan-2020 04:24
Surr: 1,2-Dichloroethane-d4	*91.1*			*70-126*	*%REC*	*1*	*22-Jan-2020 04:24*
Surr: 4-Bromofluorobenzene	*94.6*			*81-113*	*%REC*	*1*	*22-Jan-2020 04:24*
Surr: Dibromofluoromethane	*96.7*			*77-123*	*%REC*	*1*	*22-Jan-2020 04:24*
Surr: Toluene-d8	*99.4*			*82-127*	*%REC*	*1*	*22-Jan-2020 04:24*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW86C-20200117
Collection Date: 17-Jan-2020 07:25

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-20
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 22-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	23-Jan-2020 18:00
2,4-Dimethylphenol	**0.00018**	J	**0.000040**	**0.00020**	**mg/L**	1	23-Jan-2020 18:00
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	23-Jan-2020 18:00
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	23-Jan-2020 18:00
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	23-Jan-2020 18:00
2-Methylnaphthalene	**0.000061**	J	**0.000019**	**0.00010**	**mg/L**	1	23-Jan-2020 18:00
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	23-Jan-2020 18:00
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	23-Jan-2020 18:00
Acenaphthene	U		0.000027	0.00010	mg/L	1	23-Jan-2020 18:00
Acenaphthylene	U		0.000015	0.00010	mg/L	1	23-Jan-2020 18:00
Anthracene	U		0.000014	0.00010	mg/L	1	23-Jan-2020 18:00
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	23-Jan-2020 18:00
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	23-Jan-2020 18:00
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	23-Jan-2020 18:00
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	23-Jan-2020 18:00
Chrysene	U		0.000021	0.00010	mg/L	1	23-Jan-2020 18:00
Dibenzofuran	U		0.000020	0.00010	mg/L	1	23-Jan-2020 18:00
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	23-Jan-2020 18:00
Fluoranthene	U		0.000010	0.00010	mg/L	1	23-Jan-2020 18:00
Fluorene	U		0.000030	0.00010	mg/L	1	23-Jan-2020 18:00
Naphthalene	**0.00075**		**0.000020**	**0.00010**	**mg/L**	1	23-Jan-2020 18:00
Nitrobenzene	U		0.000024	0.00020	mg/L	1	23-Jan-2020 18:00
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	23-Jan-2020 18:00
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	23-Jan-2020 18:00
Phenanthrene	U		0.000021	0.00010	mg/L	1	23-Jan-2020 18:00
Phenol	U		0.000035	0.00020	mg/L	1	23-Jan-2020 18:00
Pyrene	U		0.000019	0.00010	mg/L	1	23-Jan-2020 18:00
Surr: 2,4,6-Tribromophenol	*86.0*			*34-129*	*%REC*	*1*	*23-Jan-2020 18:00*
Surr: 2-Fluorobiphenyl	*79.0*			*40-125*	*%REC*	*1*	*23-Jan-2020 18:00*
Surr: 2-Fluorophenol	*53.8*			*20-120*	*%REC*	*1*	*23-Jan-2020 18:00*
Surr: 4-Terphenyl-d14	*107*			*40-135*	*%REC*	*1*	*23-Jan-2020 18:00*
Surr: Nitrobenzene-d5	*64.8*			*41-120*	*%REC*	*1*	*23-Jan-2020 18:00*
Surr: Phenol-d6	*59.8*			*20-120*	*%REC*	*1*	*23-Jan-2020 18:00*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW86C-20200117
Collection Date: 17-Jan-2020 07:25

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-20
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL TEXAS TPH BY TX1005		**Method:TX1005**			Prep:TX1005PR / 20-Jan-2020		Analyst: MBG
nC6 to nC12		U	0.19	0.48	mg/L	1	21-Jan-2020 05:19
>nC12 to nC28		U	0.19	0.48	mg/L	1	21-Jan-2020 05:19
>nC28 to nC35		U	0.19	0.48	mg/L	1	21-Jan-2020 05:19
Total Petroleum Hydrocarbon		U	0.19	0.48	mg/L	1	21-Jan-2020 05:19
Surr: 2-Fluorobiphenyl	*109*			*70-130*	*%REC*	*1*	*21-Jan-2020 05:19*
Surr: Trifluoromethyl benzene	*114*			*70-130*	*%REC*	*1*	*21-Jan-2020 05:19*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2020		Analyst: ALR
Arsenic	**0.000645**	J	**0.000400**	**0.00200**	**mg/L**	1	24-Jan-2020 03:33

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FD04-20200117
Collection Date: 17-Jan-2020 07:25

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-21
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	22-Jan-2020 04:48
Benzene		U	0.00020	0.0010	mg/L	1	22-Jan-2020 04:48
Chlorobenzene		U	0.00030	0.0010	mg/L	1	22-Jan-2020 04:48
Ethylbenzene		U	0.00030	0.0010	mg/L	1	22-Jan-2020 04:48
Methylene chloride		U	0.0010	0.0020	mg/L	1	22-Jan-2020 04:48
Toluene	**0.0045**		**0.00020**	**0.0010**	**mg/L**	1	22-Jan-2020 04:48
Xylenes, Total		U	0.00030	0.0010	mg/L	1	22-Jan-2020 04:48
Surr: 1,2-Dichloroethane-d4	*90.8*			*70-126*	*%REC*	*1*	*22-Jan-2020 04:48*
Surr: 4-Bromofluorobenzene	*93.9*			*81-113*	*%REC*	*1*	*22-Jan-2020 04:48*
Surr: Dibromofluoromethane	*98.7*			*77-123*	*%REC*	*1*	*22-Jan-2020 04:48*
Surr: Toluene-d8	*99.0*			*82-127*	*%REC*	*1*	*22-Jan-2020 04:48*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FD04-20200117
Collection Date: 17-Jan-2020 07:25

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-21
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 22-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	23-Jan-2020 18:19
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	23-Jan-2020 18:19
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	23-Jan-2020 18:19
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	23-Jan-2020 18:19
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	23-Jan-2020 18:19
2-Methylnaphthalene	**0.000066**	J	**0.000019**	**0.00010**	**mg/L**	1	23-Jan-2020 18:19
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	23-Jan-2020 18:19
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	23-Jan-2020 18:19
Acenaphthene	U		0.000027	0.00010	mg/L	1	23-Jan-2020 18:19
Acenaphthylene	U		0.000015	0.00010	mg/L	1	23-Jan-2020 18:19
Anthracene	**0.00012**		**0.000014**	**0.00010**	**mg/L**	1	23-Jan-2020 18:19
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	23-Jan-2020 18:19
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	23-Jan-2020 18:19
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	23-Jan-2020 18:19
Bis(2-ethylhexyl)phthalate	**0.000053**	J	**0.000037**	**0.00020**	**mg/L**	1	23-Jan-2020 18:19
Chrysene	U		0.000021	0.00010	mg/L	1	23-Jan-2020 18:19
Dibenzofuran	U		0.000020	0.00010	mg/L	1	23-Jan-2020 18:19
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	23-Jan-2020 18:19
Fluoranthene	U		0.000010	0.00010	mg/L	1	23-Jan-2020 18:19
Fluorene	U		0.000030	0.00010	mg/L	1	23-Jan-2020 18:19
Naphthalene	**0.00022**		**0.000020**	**0.00010**	**mg/L**	1	23-Jan-2020 18:19
Nitrobenzene	U		0.000024	0.00020	mg/L	1	23-Jan-2020 18:19
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	23-Jan-2020 18:19
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	23-Jan-2020 18:19
Phenanthrene	**0.00036**		**0.000021**	**0.00010**	**mg/L**	1	23-Jan-2020 18:19
Phenol	U		0.000035	0.00020	mg/L	1	23-Jan-2020 18:19
Pyrene	U		0.000019	0.00010	mg/L	1	23-Jan-2020 18:19
Surr: 2,4,6-Tribromophenol	*78.2*			*34-129*	*%REC*	*1*	*23-Jan-2020 18:19*
Surr: 2-Fluorobiphenyl	*79.5*			*40-125*	*%REC*	*1*	*23-Jan-2020 18:19*
Surr: 2-Fluorophenol	*61.1*			*20-120*	*%REC*	*1*	*23-Jan-2020 18:19*
Surr: 4-Terphenyl-d14	*101*			*40-135*	*%REC*	*1*	*23-Jan-2020 18:19*
Surr: Nitrobenzene-d5	*63.6*			*41-120*	*%REC*	*1*	*23-Jan-2020 18:19*
Surr: Phenol-d6	*58.5*			*20-120*	*%REC*	*1*	*23-Jan-2020 18:19*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FD04-20200117
Collection Date: 17-Jan-2020 07:25

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-21
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL TEXAS TPH BY TX1005		**Method:TX1005**			Prep:TX1005PR / 20-Jan-2020		Analyst: MBG
nC6 to nC12	U		0.19	0.48	mg/L	1	21-Jan-2020 05:48
>nC12 to nC28	U		0.19	0.48	mg/L	1	21-Jan-2020 05:48
>nC28 to nC35	U		0.19	0.48	mg/L	1	21-Jan-2020 05:48
Total Petroleum Hydrocarbon	U		0.19	0.48	mg/L	1	21-Jan-2020 05:48
Surr: 2-Fluorobiphenyl	*106*			*70-130*	*%REC*	*1*	*21-Jan-2020 05:48*
Surr: Trifluoromethyl benzene	*113*			*70-130*	*%REC*	*1*	*21-Jan-2020 05:48*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2020		Analyst: ALR
Arsenic	**0.000699**	J	**0.000400**	**0.00200**	**mg/L**	1	24-Jan-2020 03:35

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW75B-20200117
Collection Date: 17-Jan-2020 08:15

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-22
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	22-Jan-2020 05:13
Benzene	**0.12**		**0.00020**	**0.0010**	**mg/L**	1	22-Jan-2020 05:13
Chlorobenzene	U		0.00030	0.0010	mg/L	1	22-Jan-2020 05:13
Ethylbenzene	**0.037**		**0.00030**	**0.0010**	**mg/L**	1	22-Jan-2020 05:13
Methylene chloride	U		0.0010	0.0020	mg/L	1	22-Jan-2020 05:13
Toluene	**0.13**		**0.00020**	**0.0010**	**mg/L**	1	22-Jan-2020 05:13
Xylenes, Total	**0.11**		**0.00030**	**0.0010**	**mg/L**	1	22-Jan-2020 05:13
Surr: 1,2-Dichloroethane-d4	*90.2*			*70-126*	*%REC*	*1*	*22-Jan-2020 05:13*
Surr: 4-Bromofluorobenzene	*100*			*81-113*	*%REC*	*1*	*22-Jan-2020 05:13*
Surr: Dibromofluoromethane	*98.4*			*77-123*	*%REC*	*1*	*22-Jan-2020 05:13*
Surr: Toluene-d8	*97.5*			*82-127*	*%REC*	*1*	*22-Jan-2020 05:13*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW75B-20200117
Collection Date: 17-Jan-2020 08:15

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-22
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 22-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	23-Jan-2020 18:38
2,4-Dimethylphenol	**0.86**		**0.0080**	**0.040**	**mg/L**	200	27-Jan-2020 09:47
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	23-Jan-2020 18:38
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	23-Jan-2020 18:38
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	23-Jan-2020 18:38
2-Methylnaphthalene	**0.81**		**0.0038**	**0.020**	**mg/L**	200	27-Jan-2020 09:47
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	23-Jan-2020 18:38
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	23-Jan-2020 18:38
Acenaphthene	**0.67**		**0.0054**	**0.020**	**mg/L**	200	27-Jan-2020 09:47
Acenaphthylene	**0.0086**		**0.000015**	**0.00010**	**mg/L**	1	23-Jan-2020 18:38
Anthracene	**0.39**		**0.0028**	**0.020**	**mg/L**	200	27-Jan-2020 09:47
Benz(a)anthracene	**0.12**		**0.0010**	**0.0020**	**mg/L**	20	27-Jan-2020 09:28
Benzo(a)pyrene	**0.035**		**0.00040**	**0.0020**	**mg/L**	20	27-Jan-2020 09:28
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	23-Jan-2020 18:38
Bis(2-ethylhexyl)phthalate	**0.0021**		**0.000037**	**0.00020**	**mg/L**	1	23-Jan-2020 18:38
Chrysene	**0.095**		**0.00042**	**0.0020**	**mg/L**	20	27-Jan-2020 09:28
Dibenzofuran	**0.54**		**0.0040**	**0.020**	**mg/L**	200	27-Jan-2020 09:47
Di-n-butyl phthalate	**0.0016**		**0.000020**	**0.00020**	**mg/L**	1	23-Jan-2020 18:38
Fluoranthene	**0.75**		**0.0020**	**0.020**	**mg/L**	200	27-Jan-2020 09:47
Fluorene	**0.61**		**0.0060**	**0.020**	**mg/L**	200	27-Jan-2020 09:47
Naphthalene	**7.5**		**0.040**	**0.20**	**mg/L**	2000	25-Jan-2020 21:55
Nitrobenzene	U		0.000024	0.00020	mg/L	1	23-Jan-2020 18:38
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	23-Jan-2020 18:38
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	23-Jan-2020 18:38
Phenanthrene	**1.9**		**0.0042**	**0.020**	**mg/L**	200	27-Jan-2020 09:47
Phenol	**0.0029**		**0.000035**	**0.00020**	**mg/L**	1	23-Jan-2020 18:38
Pyrene	**0.51**		**0.0038**	**0.020**	**mg/L**	200	27-Jan-2020 09:47
Surr: 2,4,6-Tribromophenol	*64.8*			*34-129*	*%REC*	*1*	*23-Jan-2020 18:38*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*2000*	*25-Jan-2020 21:55*
Surr: 2,4,6-Tribromophenol	*109*			*34-129*	*%REC*	*20*	*27-Jan-2020 09:28*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*200*	*27-Jan-2020 09:47*
Surr: 2-Fluorobiphenyl	*120*			*40-125*	*%REC*	*20*	*27-Jan-2020 09:28*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*200*	*27-Jan-2020 09:47*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*2000*	*25-Jan-2020 21:55*
Surr: 2-Fluorobiphenyl	*61.3*			*40-125*	*%REC*	*1*	*23-Jan-2020 18:38*
Surr: 2-Fluorophenol	*95.5*			*20-120*	*%REC*	*1*	*23-Jan-2020 18:38*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*2000*	*25-Jan-2020 21:55*
Surr: 2-Fluorophenol	*111*			*20-120*	*%REC*	*20*	*27-Jan-2020 09:28*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*200*	*27-Jan-2020 09:47*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW75B-20200117
Collection Date: 17-Jan-2020 08:15

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-22
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jan-2020		Analyst: LG
Surr: 4-Terphenyl-d14	*111*			*40-135*	*%REC*	*20*	*27-Jan-2020 09:28*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*200*	*27-Jan-2020 09:47*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*2000*	*25-Jan-2020 21:55*
Surr: 4-Terphenyl-d14	*115*			*40-135*	*%REC*	*1*	*23-Jan-2020 18:38*
Surr: Nitrobenzene-d5	*72.8*			*41-120*	*%REC*	*1*	*23-Jan-2020 18:38*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*2000*	*25-Jan-2020 21:55*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*200*	*27-Jan-2020 09:47*
Surr: Nitrobenzene-d5	*100*			*41-120*	*%REC*	*20*	*27-Jan-2020 09:28*
Surr: Phenol-d6	*121*	*S*		*20-120*	*%REC*	*20*	*27-Jan-2020 09:28*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*200*	*27-Jan-2020 09:47*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*2000*	*25-Jan-2020 21:55*
Surr: Phenol-d6	*91.1*			*20-120*	*%REC*	*1*	*23-Jan-2020 18:38*
LOW-LEVEL TEXAS TPH BY TX1005		**Method:TX1005**			Prep:TX1005PR / 20-Jan-2020		Analyst: MBG
nC6 to nC12	**13**		**0.19**	**0.49**	**mg/L**	1	21-Jan-2020 06:16
>nC12 to nC28	**21**		**0.19**	**0.49**	**mg/L**	1	21-Jan-2020 06:16
>nC28 to nC35	**0.91**		**0.19**	**0.49**	**mg/L**	1	21-Jan-2020 06:16
Total Petroleum Hydrocarbon	**34.9**		**0.19**	**0.49**	**mg/L**	1	21-Jan-2020 06:16
Surr: 2-Fluorobiphenyl	*111*			*70-130*	*%REC*	*1*	*21-Jan-2020 06:16*
Surr: Trifluoromethyl benzene	*111*			*70-130*	*%REC*	*1*	*21-Jan-2020 06:16*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2020		Analyst: ALR
Arsenic	**0.00167**	J	**0.000400**	**0.00200**	**mg/L**	1	24-Jan-2020 03:38

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW79A-20200117
Collection Date: 17-Jan-2020 09:20

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-23
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	22-Jan-2020 05:37
Benzene	**0.12**		**0.00020**	**0.0010**	**mg/L**	1	22-Jan-2020 05:37
Chlorobenzene	U		0.00030	0.0010	mg/L	1	22-Jan-2020 05:37
Ethylbenzene	**0.075**		**0.00030**	**0.0010**	**mg/L**	1	22-Jan-2020 05:37
Methylene chloride	U		0.0010	0.0020	mg/L	1	22-Jan-2020 05:37
Toluene	**0.26**		**0.0010**	**0.0050**	**mg/L**	5	22-Jan-2020 16:23
Xylenes, Total	**0.20**		**0.00030**	**0.0010**	**mg/L**	1	22-Jan-2020 05:37
Surr: 1,2-Dichloroethane-d4	*86.8*			*70-126*	*%REC*	*1*	*22-Jan-2020 05:37*
Surr: 1,2-Dichloroethane-d4	*107*			*70-126*	*%REC*	*5*	*22-Jan-2020 16:23*
Surr: 4-Bromofluorobenzene	*102*			*81-113*	*%REC*	*1*	*22-Jan-2020 05:37*
Surr: 4-Bromofluorobenzene	*101*			*81-113*	*%REC*	*5*	*22-Jan-2020 16:23*
Surr: Dibromofluoromethane	*95.8*			*77-123*	*%REC*	*1*	*22-Jan-2020 05:37*
Surr: Dibromofluoromethane	*98.8*			*77-123*	*%REC*	*5*	*22-Jan-2020 16:23*
Surr: Toluene-d8	*98.6*			*82-127*	*%REC*	*1*	*22-Jan-2020 05:37*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*5*	*22-Jan-2020 16:23*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW79A-20200117
Collection Date: 17-Jan-2020 09:20

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-23
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 22-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	23-Jan-2020 18:57
2,4-Dimethylphenol	**6.7**		**0.080**	**0.40**	**mg/L**	2000	26-Jan-2020 18:43
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	23-Jan-2020 18:57
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	23-Jan-2020 18:57
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	23-Jan-2020 18:57
2-Methylnaphthalene	**0.43**		**0.0038**	**0.020**	**mg/L**	200	27-Jan-2020 10:24
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	23-Jan-2020 18:57
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	23-Jan-2020 18:57
Acenaphthene	**0.19**		**0.00054**	**0.0020**	**mg/L**	20	27-Jan-2020 10:06
Acenaphthylene	**0.0036**		**0.000015**	**0.00010**	**mg/L**	1	23-Jan-2020 18:57
Anthracene	**0.0094**		**0.000014**	**0.00010**	**mg/L**	1	23-Jan-2020 18:57
Benz(a)anthracene	**0.00081**		**0.000050**	**0.00010**	**mg/L**	1	23-Jan-2020 18:57
Benzo(a)pyrene	**0.00029**		**0.000020**	**0.00010**	**mg/L**	1	23-Jan-2020 18:57
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	23-Jan-2020 18:57
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	23-Jan-2020 18:57
Chrysene	**0.00072**		**0.000021**	**0.00010**	**mg/L**	1	23-Jan-2020 18:57
Dibenzofuran	**0.14**		**0.00040**	**0.0020**	**mg/L**	20	27-Jan-2020 10:06
Di-n-butyl phthalate	**0.00098**		**0.000020**	**0.00020**	**mg/L**	1	23-Jan-2020 18:57
Fluoranthene	**0.0076**		**0.000010**	**0.00010**	**mg/L**	1	23-Jan-2020 18:57
Fluorene	**0.094**		**0.00060**	**0.0020**	**mg/L**	20	27-Jan-2020 10:06
Naphthalene	**9.0**		**0.040**	**0.20**	**mg/L**	2000	26-Jan-2020 18:43
Nitrobenzene	U		0.000024	0.00020	mg/L	1	23-Jan-2020 18:57
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	23-Jan-2020 18:57
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	23-Jan-2020 18:57
Phenanthrene	**0.081**		**0.00042**	**0.0020**	**mg/L**	20	27-Jan-2020 10:06
Phenol	**0.35**		**0.0070**	**0.040**	**mg/L**	200	27-Jan-2020 10:24
Pyrene	**0.0035**		**0.000019**	**0.00010**	**mg/L**	1	23-Jan-2020 18:57
Surr: 2,4,6-Tribromophenol	*98.7*			*34-129*	*%REC*	*1*	*23-Jan-2020 18:57*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*200*	*27-Jan-2020 10:24*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*2000*	*26-Jan-2020 18:43*
Surr: 2,4,6-Tribromophenol	*110*			*34-129*	*%REC*	*20*	*27-Jan-2020 10:06*
Surr: 2-Fluorobiphenyl	*114*			*40-125*	*%REC*	*20*	*27-Jan-2020 10:06*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*2000*	*26-Jan-2020 18:43*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*200*	*27-Jan-2020 10:24*
Surr: 2-Fluorobiphenyl	*103*			*40-125*	*%REC*	*1*	*23-Jan-2020 18:57*
Surr: 2-Fluorophenol	*105*			*20-120*	*%REC*	*1*	*23-Jan-2020 18:57*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*200*	*27-Jan-2020 10:24*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*2000*	*26-Jan-2020 18:43*
Surr: 2-Fluorophenol	*114*			*20-120*	*%REC*	*20*	*27-Jan-2020 10:06*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW79A-20200117
Collection Date: 17-Jan-2020 09:20

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-23
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jan-2020		Analyst: LG
Surr: 4-Terphenyl-d14	*101*			*40-135*	*%REC*	*20*	*27-Jan-2020 10:06*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*2000*	*26-Jan-2020 18:43*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*200*	*27-Jan-2020 10:24*
Surr: 4-Terphenyl-d14	*105*			*40-135*	*%REC*	*1*	*23-Jan-2020 18:57*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*2000*	*26-Jan-2020 18:43*
Surr: Nitrobenzene-d5	*91.5*			*41-120*	*%REC*	*1*	*23-Jan-2020 18:57*
Surr: Nitrobenzene-d5	*72.4*	*J*		*41-120*	*%REC*	*20*	*27-Jan-2020 10:06*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*200*	*27-Jan-2020 10:24*
Surr: Phenol-d6	*86.6*			*20-120*	*%REC*	*20*	*27-Jan-2020 10:06*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*200*	*27-Jan-2020 10:24*
Surr: Phenol-d6	*84.0*			*20-120*	*%REC*	*1*	*23-Jan-2020 18:57*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*2000*	*26-Jan-2020 18:43*
LOW-LEVEL TEXAS TPH BY TX1005		**Method:TX1005**			Prep:TX1005PR / 20-Jan-2020		Analyst: MBG
nC6 to nC12	**21**		**0.19**	**0.47**	**mg/L**	1	21-Jan-2020 06:45
>nC12 to nC28	**16**		**0.19**	**0.47**	**mg/L**	1	21-Jan-2020 06:45
>nC28 to nC35	U		0.19	0.47	mg/L	1	21-Jan-2020 06:45
Total Petroleum Hydrocarbon	**37.0**		**0.19**	**0.47**	**mg/L**	1	21-Jan-2020 06:45
Surr: 2-Fluorobiphenyl	*117*			*70-130*	*%REC*	*1*	*21-Jan-2020 06:45*
Surr: Trifluoromethyl benzene	*113*			*70-130*	*%REC*	*1*	*21-Jan-2020 06:45*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2020		Analyst: ALR
Arsenic	**0.00893**		**0.000400**	**0.00200**	**mg/L**	1	24-Jan-2020 03:40

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW74B-20200117
Collection Date: 17-Jan-2020 10:20

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-24
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	22-Jan-2020 06:01
Benzene	**0.12**		**0.00020**	**0.0010**	**mg/L**	1	22-Jan-2020 06:01
Chlorobenzene	U		0.00030	0.0010	mg/L	1	22-Jan-2020 06:01
Ethylbenzene	**0.076**		**0.00030**	**0.0010**	**mg/L**	1	22-Jan-2020 06:01
Methylene chloride	U		0.0010	0.0020	mg/L	1	22-Jan-2020 06:01
Toluene	**0.29**		**0.0010**	**0.0050**	**mg/L**	5	22-Jan-2020 16:50
Xylenes, Total	**0.20**		**0.00030**	**0.0010**	**mg/L**	1	22-Jan-2020 06:01
Surr: 1,2-Dichloroethane-d4	*88.4*			*70-126*	*%REC*	*1*	*22-Jan-2020 06:01*
Surr: 1,2-Dichloroethane-d4	*103*			*70-126*	*%REC*	*5*	*22-Jan-2020 16:50*
Surr: 4-Bromofluorobenzene	*102*			*81-113*	*%REC*	*1*	*22-Jan-2020 06:01*
Surr: 4-Bromofluorobenzene	*99.3*			*81-113*	*%REC*	*5*	*22-Jan-2020 16:50*
Surr: Dibromofluoromethane	*94.6*			*77-123*	*%REC*	*1*	*22-Jan-2020 06:01*
Surr: Dibromofluoromethane	*99.0*			*77-123*	*%REC*	*5*	*22-Jan-2020 16:50*
Surr: Toluene-d8	*97.8*			*82-127*	*%REC*	*1*	*22-Jan-2020 06:01*
Surr: Toluene-d8	*99.9*			*82-127*	*%REC*	*5*	*22-Jan-2020 16:50*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW74B-20200117
Collection Date: 17-Jan-2020 10:20

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-24
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 22-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	23-Jan-2020 19:17
2,4-Dimethylphenol	**0.21**		**0.0040**	**0.020**	**mg/L**	100	27-Jan-2020 11:02
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	23-Jan-2020 19:17
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	23-Jan-2020 19:17
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	23-Jan-2020 19:17
2-Methylnaphthalene	**1.3**		**0.019**	**0.10**	**mg/L**	1000	26-Jan-2020 19:40
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	23-Jan-2020 19:17
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	23-Jan-2020 19:17
Acenaphthene	**0.98**		**0.0027**	**0.010**	**mg/L**	100	27-Jan-2020 11:02
Acenaphthylene	**0.018**		**0.00015**	**0.0010**	**mg/L**	10	27-Jan-2020 10:43
Anthracene	**0.42**		**0.0014**	**0.010**	**mg/L**	100	27-Jan-2020 11:02
Benz(a)anthracene	**0.13**		**0.0050**	**0.010**	**mg/L**	100	27-Jan-2020 11:02
Benzo(a)pyrene	**0.034**		**0.00020**	**0.0010**	**mg/L**	10	27-Jan-2020 10:43
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	23-Jan-2020 19:17
Bis(2-ethylhexyl)phthalate	**0.0014**		**0.000037**	**0.00020**	**mg/L**	1	23-Jan-2020 19:17
Chrysene	**0.082**		**0.00021**	**0.0010**	**mg/L**	10	27-Jan-2020 10:43
Dibenzofuran	**0.72**		**0.0020**	**0.010**	**mg/L**	100	27-Jan-2020 11:02
Di-n-butyl phthalate	**0.0022**		**0.000020**	**0.00020**	**mg/L**	1	23-Jan-2020 19:17
Fluoranthene	**0.67**		**0.0010**	**0.010**	**mg/L**	100	27-Jan-2020 11:02
Fluorene	**0.88**		**0.0030**	**0.010**	**mg/L**	100	27-Jan-2020 11:02
Naphthalene	**8.5**		**0.020**	**0.10**	**mg/L**	1000	26-Jan-2020 19:40
Nitrobenzene	U		0.000024	0.00020	mg/L	1	23-Jan-2020 19:17
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	23-Jan-2020 19:17
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	23-Jan-2020 19:17
Phenanthrene	**2.3**		**0.021**	**0.10**	**mg/L**	1000	26-Jan-2020 19:40
Phenol	**0.048**		**0.00035**	**0.0020**	**mg/L**	10	27-Jan-2020 10:43
Pyrene	**0.44**		**0.0019**	**0.010**	**mg/L**	100	27-Jan-2020 11:02
Surr: 2,4,6-Tribromophenol	*78.6*			*34-129*	*%REC*	*1*	*23-Jan-2020 19:17*
Surr: 2,4,6-Tribromophenol	*86.1*			*34-129*	*%REC*	*10*	*27-Jan-2020 10:43*
Surr: 2,4,6-Tribromophenol	*115*	*J*		*34-129*	*%REC*	*100*	*27-Jan-2020 11:02*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*1000*	*26-Jan-2020 19:40*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*1000*	*26-Jan-2020 19:40*
Surr: 2-Fluorobiphenyl	*94.5*			*40-125*	*%REC*	*10*	*27-Jan-2020 10:43*
Surr: 2-Fluorobiphenyl	*120*	*J*		*40-125*	*%REC*	*100*	*27-Jan-2020 11:02*
Surr: 2-Fluorobiphenyl	*64.4*			*40-125*	*%REC*	*1*	*23-Jan-2020 19:17*
Surr: 2-Fluorophenol	*70.1*			*20-120*	*%REC*	*1*	*23-Jan-2020 19:17*
Surr: 2-Fluorophenol	*105*			*20-120*	*%REC*	*10*	*27-Jan-2020 10:43*
Surr: 2-Fluorophenol	*110*	*J*		*20-120*	*%REC*	*100*	*27-Jan-2020 11:02*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*1000*	*26-Jan-2020 19:40*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW74B-20200117
Collection Date: 17-Jan-2020 10:20

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-24
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jan-2020		Analyst: LG
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*1000*	*26-Jan-2020 19:40*
Surr: 4-Terphenyl-d14	*115*			*40-135*	*%REC*	*1*	*23-Jan-2020 19:17*
Surr: 4-Terphenyl-d14	*104*			*40-135*	*%REC*	*10*	*27-Jan-2020 10:43*
Surr: 4-Terphenyl-d14	*87.9*	*J*		*40-135*	*%REC*	*100*	*27-Jan-2020 11:02*
Surr: Nitrobenzene-d5	*95.5*			*41-120*	*%REC*	*10*	*27-Jan-2020 10:43*
Surr: Nitrobenzene-d5	*108*	*J*		*41-120*	*%REC*	*100*	*27-Jan-2020 11:02*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*1000*	*26-Jan-2020 19:40*
Surr: Nitrobenzene-d5	*118*			*41-120*	*%REC*	*1*	*23-Jan-2020 19:17*
Surr: Phenol-d6	*62.2*			*20-120*	*%REC*	*1*	*23-Jan-2020 19:17*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*1000*	*26-Jan-2020 19:40*
Surr: Phenol-d6	*101*			*20-120*	*%REC*	*10*	*27-Jan-2020 10:43*
Surr: Phenol-d6	*111*	*J*		*20-120*	*%REC*	*100*	*27-Jan-2020 11:02*
LOW-LEVEL TEXAS TPH BY TX1005		**Method:TX1005**			Prep:TX1005PR / 20-Jan-2020		Analyst: MBG
nC6 to nC12	**12**		**0.19**	**0.48**	**mg/L**	1	21-Jan-2020 07:14
>nC12 to nC28	**13**		**0.19**	**0.48**	**mg/L**	1	21-Jan-2020 07:14
>nC28 to nC35	**0.47**	J	**0.19**	**0.48**	**mg/L**	1	21-Jan-2020 07:14
Total Petroleum Hydrocarbon	**25.5**		**0.19**	**0.48**	**mg/L**	1	21-Jan-2020 07:14
Surr: 2-Fluorobiphenyl	*113*			*70-130*	*%REC*	*1*	*21-Jan-2020 07:14*
Surr: Trifluoromethyl benzene	*112*			*70-130*	*%REC*	*1*	*21-Jan-2020 07:14*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2020		Analyst: ALR
Arsenic	**0.000443**	J	**0.000400**	**0.00200**	**mg/L**	1	24-Jan-2020 03:42

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW78A-20200117
Collection Date: 17-Jan-2020 11:25

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-25
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	22-Jan-2020 06:26
Benzene	**0.018**		**0.00020**	**0.0010**	**mg/L**	1	22-Jan-2020 06:26
Chlorobenzene	U		0.00030	0.0010	mg/L	1	22-Jan-2020 06:26
Ethylbenzene	**0.011**		**0.00030**	**0.0010**	**mg/L**	1	22-Jan-2020 06:26
Methylene chloride	U		0.0010	0.0020	mg/L	1	22-Jan-2020 06:26
Toluene	**0.033**		**0.00020**	**0.0010**	**mg/L**	1	22-Jan-2020 06:26
Xylenes, Total	**0.028**		**0.00030**	**0.0010**	**mg/L**	1	22-Jan-2020 06:26
Surr: 1,2-Dichloroethane-d4	*91.1*			*70-126*	*%REC*	*1*	*22-Jan-2020 06:26*
Surr: 4-Bromofluorobenzene	*100.0*			*81-113*	*%REC*	*1*	*22-Jan-2020 06:26*
Surr: Dibromofluoromethane	*96.6*			*77-123*	*%REC*	*1*	*22-Jan-2020 06:26*
Surr: Toluene-d8	*99.8*			*82-127*	*%REC*	*1*	*22-Jan-2020 06:26*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW78A-20200117
Collection Date: 17-Jan-2020 11:25

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-25
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 22-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	26-Jan-2020 15:31
2,4-Dimethylphenol	**2.5**		**0.016**	**0.080**	**mg/L**	400	28-Jan-2020 09:03
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	26-Jan-2020 15:31
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	26-Jan-2020 15:31
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	26-Jan-2020 15:31
2-Methylnaphthalene	**0.13**		**0.00038**	**0.0020**	**mg/L**	20	28-Jan-2020 08:25
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	26-Jan-2020 15:31
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	26-Jan-2020 15:31
Acenaphthene	**0.071**		**0.00054**	**0.0020**	**mg/L**	20	28-Jan-2020 08:25
Acenaphthylene	**0.0015**		**0.000015**	**0.00010**	**mg/L**	1	26-Jan-2020 15:31
Anthracene	**0.0040**		**0.000014**	**0.00010**	**mg/L**	1	26-Jan-2020 15:31
Benz(a)anthracene	**0.00043**		**0.000050**	**0.00010**	**mg/L**	1	26-Jan-2020 15:31
Benzo(a)pyrene	**0.00014**		**0.000020**	**0.00010**	**mg/L**	1	26-Jan-2020 15:31
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	26-Jan-2020 15:31
Bis(2-ethylhexyl)phthalate	**0.00092**		**0.000037**	**0.00020**	**mg/L**	1	26-Jan-2020 15:31
Chrysene	**0.00039**		**0.000021**	**0.00010**	**mg/L**	1	26-Jan-2020 15:31
Dibenzofuran	**0.055**		**0.00040**	**0.0020**	**mg/L**	20	28-Jan-2020 08:25
Di-n-butyl phthalate	**0.0016**		**0.000020**	**0.00020**	**mg/L**	1	26-Jan-2020 15:31
Fluoranthene	**0.0029**		**0.000010**	**0.00010**	**mg/L**	1	26-Jan-2020 15:31
Fluorene	**0.040**		**0.00060**	**0.0020**	**mg/L**	20	28-Jan-2020 08:25
Naphthalene	**3.1**		**0.0080**	**0.040**	**mg/L**	400	28-Jan-2020 09:03
Nitrobenzene	U		0.000024	0.00020	mg/L	1	26-Jan-2020 15:31
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	26-Jan-2020 15:31
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	26-Jan-2020 15:31
Phenanthrene	**0.031**		**0.00042**	**0.0020**	**mg/L**	20	28-Jan-2020 08:25
Phenol	**0.13**		**0.00070**	**0.0040**	**mg/L**	20	28-Jan-2020 08:25
Pyrene	**0.0018**		**0.000019**	**0.00010**	**mg/L**	1	26-Jan-2020 15:31
Surr: 2,4,6-Tribromophenol	*96.7*			*34-129*	*%REC*	*20*	*28-Jan-2020 08:25*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*400*	*28-Jan-2020 09:03*
Surr: 2,4,6-Tribromophenol	*68.2*			*34-129*	*%REC*	*1*	*26-Jan-2020 15:31*
Surr: 2-Fluorobiphenyl	*70.7*			*40-125*	*%REC*	*1*	*26-Jan-2020 15:31*
Surr: 2-Fluorobiphenyl	*115*			*40-125*	*%REC*	*20*	*28-Jan-2020 08:25*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*400*	*28-Jan-2020 09:03*
Surr: 2-Fluorophenol	*87.6*			*20-120*	*%REC*	*20*	*28-Jan-2020 08:25*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*400*	*28-Jan-2020 09:03*
Surr: 2-Fluorophenol	*59.4*			*20-120*	*%REC*	*1*	*26-Jan-2020 15:31*
Surr: 4-Terphenyl-d14	*86.7*			*40-135*	*%REC*	*1*	*26-Jan-2020 15:31*
Surr: 4-Terphenyl-d14	*110*			*40-135*	*%REC*	*20*	*28-Jan-2020 08:25*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*400*	*28-Jan-2020 09:03*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW78A-20200117
Collection Date: 17-Jan-2020 11:25

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-25
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jan-2020		Analyst: LG
Surr: Nitrobenzene-d5	*66.7*			*41-120*	*%REC*	*1*	*26-Jan-2020 15:31*
Surr: Nitrobenzene-d5	*93.6*			*41-120*	*%REC*	*20*	*28-Jan-2020 08:25*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*400*	*28-Jan-2020 09:03*
Surr: Phenol-d6	*102*			*20-120*	*%REC*	*20*	*28-Jan-2020 08:25*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*400*	*28-Jan-2020 09:03*
Surr: Phenol-d6	*71.1*			*20-120*	*%REC*	*1*	*26-Jan-2020 15:31*
LOW-LEVEL TEXAS TPH BY TX1005		**Method:TX1005**			Prep:TX1005PR / 20-Jan-2020		Analyst: MBG
nC6 to nC12	**2.7**		**0.19**	**0.48**	**mg/L**	1	21-Jan-2020 07:42
>nC12 to nC28	**1.6**		**0.19**	**0.48**	**mg/L**	1	21-Jan-2020 07:42
>nC28 to nC35	U		0.19	0.48	mg/L	1	21-Jan-2020 07:42
Total Petroleum Hydrocarbon	**4.30**		**0.19**	**0.48**	**mg/L**	1	21-Jan-2020 07:42
Surr: 2-Fluorobiphenyl	*108*			*70-130*	*%REC*	*1*	*21-Jan-2020 07:42*
Surr: Trifluoromethyl benzene	*107*			*70-130*	*%REC*	*1*	*21-Jan-2020 07:42*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2020		Analyst: ALR
Arsenic	**0.00991**		**0.000400**	**0.00200**	**mg/L**	1	24-Jan-2020 03:44

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WQ-1620-TB05-2020117
Collection Date: 17-Jan-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-26
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	22-Jan-2020 01:32
Benzene		U	0.00020	0.0010	mg/L	1	22-Jan-2020 01:32
Chlorobenzene		U	0.00030	0.0010	mg/L	1	22-Jan-2020 01:32
Ethylbenzene		U	0.00030	0.0010	mg/L	1	22-Jan-2020 01:32
Methylene chloride		U	0.0010	0.0020	mg/L	1	22-Jan-2020 01:32
Toluene		U	0.00020	0.0010	mg/L	1	22-Jan-2020 01:32
Vinyl chloride		U	0.00020	0.0010	mg/L	1	22-Jan-2020 14:15
Xylenes, Total		U	0.00030	0.0010	mg/L	1	22-Jan-2020 01:32
Surr: 1,2-Dichloroethane-d4	*90.8*			*70-126*	*%REC*	*1*	*22-Jan-2020 01:32*
Surr: 1,2-Dichloroethane-d4	*103*			*70-126*	*%REC*	*1*	*22-Jan-2020 14:15*
Surr: 4-Bromofluorobenzene	*93.3*			*81-113*	*%REC*	*1*	*22-Jan-2020 01:32*
Surr: 4-Bromofluorobenzene	*100*			*81-113*	*%REC*	*1*	*22-Jan-2020 14:15*
Surr: Dibromofluoromethane	*97.6*			*77-123*	*%REC*	*1*	*22-Jan-2020 01:32*
Surr: Dibromofluoromethane	*100*			*77-123*	*%REC*	*1*	*22-Jan-2020 14:15*
Surr: Toluene-d8	*99.2*			*82-127*	*%REC*	*1*	*22-Jan-2020 01:32*
Surr: Toluene-d8	*99.1*			*82-127*	*%REC*	*1*	*22-Jan-2020 14:15*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW48C-20200116
Collection Date: 16-Jan-2020 10:20

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-27
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	22-Jan-2020 06:50
Benzene		U	0.00020	0.0010	mg/L	1	22-Jan-2020 06:50
Chlorobenzene		U	0.00030	0.0010	mg/L	1	22-Jan-2020 06:50
Ethylbenzene		U	0.00030	0.0010	mg/L	1	22-Jan-2020 06:50
Methylene chloride		U	0.0010	0.0020	mg/L	1	22-Jan-2020 06:50
Toluene		U	0.00020	0.0010	mg/L	1	22-Jan-2020 06:50
Xylenes, Total		U	0.00030	0.0010	mg/L	1	22-Jan-2020 06:50
Surr: 1,2-Dichloroethane-d4	*89.4*			*70-126*	*%REC*	*1*	*22-Jan-2020 06:50*
Surr: 4-Bromofluorobenzene	*96.9*			*81-113*	*%REC*	*1*	*22-Jan-2020 06:50*
Surr: Dibromofluoromethane	*95.4*			*77-123*	*%REC*	*1*	*22-Jan-2020 06:50*
Surr: Toluene-d8	*98.7*			*82-127*	*%REC*	*1*	*22-Jan-2020 06:50*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW48C-20200116
Collection Date: 16-Jan-2020 10:20

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-27
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	26-Jan-2020 15:50
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	26-Jan-2020 15:50
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	26-Jan-2020 15:50
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	26-Jan-2020 15:50
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	26-Jan-2020 15:50
2-Methylnaphthalene	**0.000076**	J	**0.000019**	**0.00010**	**mg/L**	1	26-Jan-2020 15:50
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	26-Jan-2020 15:50
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	26-Jan-2020 15:50
Acenaphthene	**0.000073**	J	**0.000027**	**0.00010**	**mg/L**	1	26-Jan-2020 15:50
Acenaphthylene	U		0.000015	0.00010	mg/L	1	26-Jan-2020 15:50
Anthracene	U		0.000014	0.00010	mg/L	1	26-Jan-2020 15:50
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	26-Jan-2020 15:50
Benzo(a)pyrene	**0.000021**	J	**0.000020**	**0.00010**	**mg/L**	1	26-Jan-2020 15:50
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	26-Jan-2020 15:50
Bis(2-ethylhexyl)phthalate	**0.000039**	J	**0.000037**	**0.00020**	**mg/L**	1	26-Jan-2020 15:50
Chrysene	**0.000029**	J	**0.000021**	**0.00010**	**mg/L**	1	26-Jan-2020 15:50
Dibenzofuran	**0.000054**	J	**0.000020**	**0.00010**	**mg/L**	1	26-Jan-2020 15:50
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	26-Jan-2020 15:50
Fluoranthene	**0.000061**	J	**0.000010**	**0.00010**	**mg/L**	1	26-Jan-2020 15:50
Fluorene	**0.000050**	J	**0.000030**	**0.00010**	**mg/L**	1	26-Jan-2020 15:50
Naphthalene	**0.00052**		**0.000020**	**0.00010**	**mg/L**	1	26-Jan-2020 15:50
Nitrobenzene	U		0.000024	0.00020	mg/L	1	26-Jan-2020 15:50
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	26-Jan-2020 15:50
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	26-Jan-2020 15:50
Phenanthrene	**0.000052**	J	**0.000021**	**0.00010**	**mg/L**	1	26-Jan-2020 15:50
Phenol	U		0.000035	0.00020	mg/L	1	26-Jan-2020 15:50
Pyrene	**0.000065**	J	**0.000019**	**0.00010**	**mg/L**	1	26-Jan-2020 15:50
Surr: 2,4,6-Tribromophenol	*54.9*			*34-129*	*%REC*	*1*	*26-Jan-2020 15:50*
Surr: 2-Fluorobiphenyl	*73.6*			*40-125*	*%REC*	*1*	*26-Jan-2020 15:50*
Surr: 2-Fluorophenol	*54.3*			*20-120*	*%REC*	*1*	*26-Jan-2020 15:50*
Surr: 4-Terphenyl-d14	*89.8*			*40-135*	*%REC*	*1*	*26-Jan-2020 15:50*
Surr: Nitrobenzene-d5	*66.1*			*41-120*	*%REC*	*1*	*26-Jan-2020 15:50*
Surr: Phenol-d6	*64.4*			*20-120*	*%REC*	*1*	*26-Jan-2020 15:50*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2020		Analyst: ALR
Arsenic	**0.00126**	J	**0.000400**	**0.00200**	**mg/L**	1	24-Jan-2020 03:46

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW47C-20200116
Collection Date: 16-Jan-2020 11:05

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-28
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	22-Jan-2020 07:15
Benzene		U	0.00020	0.0010	mg/L	1	22-Jan-2020 07:15
Chlorobenzene		U	0.00030	0.0010	mg/L	1	22-Jan-2020 07:15
Ethylbenzene		U	0.00030	0.0010	mg/L	1	22-Jan-2020 07:15
Methylene chloride		U	0.0010	0.0020	mg/L	1	22-Jan-2020 07:15
Toluene		U	0.00020	0.0010	mg/L	1	22-Jan-2020 07:15
Xylenes, Total		U	0.00030	0.0010	mg/L	1	22-Jan-2020 07:15
Surr: 1,2-Dichloroethane-d4	*89.5*			*70-126*	*%REC*	*1*	*22-Jan-2020 07:15*
Surr: 4-Bromofluorobenzene	*95.1*			*81-113*	*%REC*	*1*	*22-Jan-2020 07:15*
Surr: Dibromofluoromethane	*95.7*			*77-123*	*%REC*	*1*	*22-Jan-2020 07:15*
Surr: Toluene-d8	*99.5*			*82-127*	*%REC*	*1*	*22-Jan-2020 07:15*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW47C-20200116
Collection Date: 16-Jan-2020 11:05

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-28
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	27-Jan-2020 09:09
2,4-Dimethylphenol	**0.00020**		**0.000040**	**0.00020**	**mg/L**	1	27-Jan-2020 09:09
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	27-Jan-2020 09:09
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	27-Jan-2020 09:09
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	27-Jan-2020 09:09
2-Methylnaphthalene	**0.00010**		**0.000019**	**0.00010**	**mg/L**	1	27-Jan-2020 09:09
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	27-Jan-2020 09:09
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	27-Jan-2020 09:09
Acenaphthene	**0.000057**	J	**0.000027**	**0.00010**	**mg/L**	1	27-Jan-2020 09:09
Acenaphthylene	U		0.000015	0.00010	mg/L	1	27-Jan-2020 09:09
Anthracene	U		0.000014	0.00010	mg/L	1	27-Jan-2020 09:09
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	27-Jan-2020 09:09
Benzo(a)pyrene	**0.000040**	J	**0.000020**	**0.00010**	**mg/L**	1	27-Jan-2020 09:09
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	27-Jan-2020 09:09
Bis(2-ethylhexyl)phthalate	**0.00079**		**0.000037**	**0.00020**	**mg/L**	1	27-Jan-2020 09:09
Chrysene	**0.000060**	J	**0.000021**	**0.00010**	**mg/L**	1	27-Jan-2020 09:09
Dibenzofuran	**0.000049**	J	**0.000020**	**0.00010**	**mg/L**	1	27-Jan-2020 09:09
Di-n-butyl phthalate	**0.0014**		**0.000020**	**0.00020**	**mg/L**	1	27-Jan-2020 09:09
Fluoranthene	**0.00011**		**0.000010**	**0.00010**	**mg/L**	1	27-Jan-2020 09:09
Fluorene	**0.000042**	J	**0.000030**	**0.00010**	**mg/L**	1	27-Jan-2020 09:09
Naphthalene	**0.00056**		**0.000020**	**0.00010**	**mg/L**	1	27-Jan-2020 09:09
Nitrobenzene	U		0.000024	0.00020	mg/L	1	27-Jan-2020 09:09
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	27-Jan-2020 09:09
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	27-Jan-2020 09:09
Phenanthrene	**0.000088**	J	**0.000021**	**0.00010**	**mg/L**	1	27-Jan-2020 09:09
Phenol	U		0.000035	0.00020	mg/L	1	27-Jan-2020 09:09
Pyrene	**0.00010**		**0.000019**	**0.00010**	**mg/L**	1	27-Jan-2020 09:09
Surr: 2,4,6-Tribromophenol	*69.8*			*34-129*	*%REC*	*1*	*27-Jan-2020 09:09*
Surr: 2-Fluorobiphenyl	*72.1*			*40-125*	*%REC*	*1*	*27-Jan-2020 09:09*
Surr: 2-Fluorophenol	*62.5*			*20-120*	*%REC*	*1*	*27-Jan-2020 09:09*
Surr: 4-Terphenyl-d14	*85.6*			*40-135*	*%REC*	*1*	*27-Jan-2020 09:09*
Surr: Nitrobenzene-d5	*67.8*			*41-120*	*%REC*	*1*	*27-Jan-2020 09:09*
Surr: Phenol-d6	*67.4*			*20-120*	*%REC*	*1*	*27-Jan-2020 09:09*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2020		Analyst: ALR
Arsenic	**0.00234**		**0.000400**	**0.00200**	**mg/L**	1	24-Jan-2020 03:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW61A-20200116
Collection Date: 16-Jan-2020 12:00

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-29
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	25-Jan-2020 12:37
Benzene		U	0.00020	0.0010	mg/L	1	25-Jan-2020 12:37
Chlorobenzene		U	0.00030	0.0010	mg/L	1	25-Jan-2020 12:37
Ethylbenzene		U	0.00030	0.0010	mg/L	1	25-Jan-2020 12:37
Methylene chloride		U	0.0010	0.0020	mg/L	1	25-Jan-2020 12:37
Toluene		U	0.00020	0.0010	mg/L	1	25-Jan-2020 12:37
Vinyl chloride		U	0.00020	0.0010	mg/L	1	25-Jan-2020 12:37
Xylenes, Total		U	0.00030	0.0010	mg/L	1	25-Jan-2020 12:37
Surr: 1,2-Dichloroethane-d4	*99.1*			*70-126*	*%REC*	*1*	*25-Jan-2020 12:37*
Surr: 4-Bromofluorobenzene	*95.5*			*81-113*	*%REC*	*1*	*25-Jan-2020 12:37*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*25-Jan-2020 12:37*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*25-Jan-2020 12:37*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW61A-20200116
Collection Date: 16-Jan-2020 12:00

ANALYTICAL REPORT
WorkOrder:HS20010767
Lab ID:HS20010767-29
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 22-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	23-Jan-2020 10:37
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	23-Jan-2020 10:37
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	23-Jan-2020 10:37
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	23-Jan-2020 10:37
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	23-Jan-2020 10:37
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	23-Jan-2020 10:37
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	23-Jan-2020 10:37
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	23-Jan-2020 10:37
Acenaphthene	**0.000052**	J	**0.000027**	**0.00010**	**mg/L**	1	23-Jan-2020 10:37
Acenaphthylene	U		0.000015	0.00010	mg/L	1	23-Jan-2020 10:37
Anthracene	U		0.000014	0.00010	mg/L	1	23-Jan-2020 10:37
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	23-Jan-2020 10:37
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	23-Jan-2020 10:37
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	23-Jan-2020 10:37
Bis(2-ethylhexyl)phthalate	**0.000081**	J	**0.000037**	**0.00020**	**mg/L**	1	23-Jan-2020 10:37
Chrysene	U		0.000021	0.00010	mg/L	1	23-Jan-2020 10:37
Dibenzofuran	U		0.000020	0.00010	mg/L	1	23-Jan-2020 10:37
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	23-Jan-2020 10:37
Fluoranthene	**0.000060**	J	**0.000010**	**0.00010**	**mg/L**	1	23-Jan-2020 10:37
Fluorene	U		0.000030	0.00010	mg/L	1	23-Jan-2020 10:37
Naphthalene	**0.00021**		**0.000020**	**0.00010**	**mg/L**	1	23-Jan-2020 10:37
Nitrobenzene	U		0.000024	0.00020	mg/L	1	23-Jan-2020 10:37
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	23-Jan-2020 10:37
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	23-Jan-2020 10:37
Phenanthrene	**0.00010**		**0.000021**	**0.00010**	**mg/L**	1	23-Jan-2020 10:37
Phenol	U		0.000035	0.00020	mg/L	1	23-Jan-2020 10:37
Pyrene	**0.000059**	J	**0.000019**	**0.00010**	**mg/L**	1	23-Jan-2020 10:37
Surr: 2,4,6-Tribromophenol	*112*			*34-129*	*%REC*	*1*	*23-Jan-2020 10:37*
Surr: 2-Fluorobiphenyl	*100*			*40-125*	*%REC*	*1*	*23-Jan-2020 10:37*
Surr: 2-Fluorophenol	*67.9*			*20-120*	*%REC*	*1*	*23-Jan-2020 10:37*
Surr: 4-Terphenyl-d14	*110*			*40-135*	*%REC*	*1*	*23-Jan-2020 10:37*
Surr: Nitrobenzene-d5	*77.2*			*41-120*	*%REC*	*1*	*23-Jan-2020 10:37*
Surr: Phenol-d6	*80.4*			*20-120*	*%REC*	*1*	*23-Jan-2020 10:37*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 23-Jan-2020		Analyst: ALR
Arsenic	**0.00107**	J	**0.000400**	**0.00200**	**mg/L**	1	24-Jan-2020 02:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010767

Batch ID: 149797 **Start Date:** 20 Jan 2020 12:00 **End Date:** 20 Jan 2020 16:30
Method: TX 1005 PREP **Prep Code:** TX 1005_W PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20010767-20	1	30.95 (g)	3 (mL)	0.09693
HS20010767-21	1	31.02 (g)	3 (mL)	0.09671
HS20010767-22	1	30.9 (g)	3 (mL)	0.09709
HS20010767-23	1	31.7 (g)	3 (mL)	0.09464
HS20010767-24	1	30.99 (g)	3 (mL)	0.09681
HS20010767-25	1	31.01 (g)	3 (mL)	0.09674

Batch ID: 149831 **Start Date:** 21 Jan 2020 08:30 **End Date:** 21 Jan 2020 12:30
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20010767-18		10 (mL)	10 (mL)	1

Batch ID: 149832 **Start Date:** 21 Jan 2020 13:00 **End Date:** 21 Jan 2020 17:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20010767-01		10 (mL)	10 (mL)	1
HS20010767-02		10 (mL)	10 (mL)	1
HS20010767-04		10 (mL)	10 (mL)	1

Batch ID: 149881 **Start Date:** 22 Jan 2020 09:00 **End Date:** 22 Jan 2020 13:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20010767-03		10 (mL)	10 (mL)	1
HS20010767-05		10 (mL)	10 (mL)	1
HS20010767-06		10 (mL)	10 (mL)	1
HS20010767-07		10 (mL)	10 (mL)	1
HS20010767-08		10 (mL)	10 (mL)	1

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010767

Batch ID: 149912 **Start Date:** 22 Jan 2020 10:00 **End Date:** 22 Jan 2020 17:30
Method: SV AQ SEP FUN EXTRACT-LOWLEV - 3510C **Prep Code:** 3510_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20010767-01	1	1000 (mL)	1 (mL)	0.001
HS20010767-02	1	1000 (mL)	1 (mL)	0.001
HS20010767-03	1	1000 (mL)	1 (mL)	0.001
HS20010767-04	1	1000 (mL)	1 (mL)	0.001
HS20010767-05	1	1000 (mL)	1 (mL)	0.001
HS20010767-06	1	1000 (mL)	1 (mL)	0.001
HS20010767-07	1	1000 (mL)	1 (mL)	0.001
HS20010767-08	1	1000 (mL)	1 (mL)	0.001
HS20010767-09	1	1000 (mL)	1 (mL)	0.001
HS20010767-10	1	1000 (mL)	1 (mL)	0.001
HS20010767-11	1	1000 (mL)	1 (mL)	0.001
HS20010767-12	1	1000 (mL)	1 (mL)	0.001
HS20010767-13	1	1000 (mL)	1 (mL)	0.001
HS20010767-14	1	1000 (mL)	1 (mL)	0.001
HS20010767-15	1	1000 (mL)	1 (mL)	0.001
HS20010767-16	1	1000 (mL)	1 (mL)	0.001
HS20010767-17	1	1000 (mL)	1 (mL)	0.001
HS20010767-18	1	1000 (mL)	1 (mL)	0.001
HS20010767-19	1	1000 (mL)	1 (mL)	0.001

Batch ID: 149913 **Start Date:** 22 Jan 2020 11:30 **End Date:** 22 Jan 2020 17:30
Method: SV AQ SEP FUN EXTRACT-LOWLEV - 3510C **Prep Code:** 3510_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20010767-20	1	1000 (mL)	1 (mL)	0.001
HS20010767-21	1	1000 (mL)	1 (mL)	0.001
HS20010767-22	1	1000 (mL)	1 (mL)	0.001
HS20010767-23	1	1000 (mL)	1 (mL)	0.001
HS20010767-24	1	1000 (mL)	1 (mL)	0.001
HS20010767-25	1	1000 (mL)	1 (mL)	0.001
HS20010767-27	1	1000 (mL)	1 (mL)	0.001
HS20010767-28	1	1000 (mL)	1 (mL)	0.001
HS20010767-29	1	1000 (mL)	1 (mL)	0.001

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010767

Batch ID: 149936 **Start Date:** 23 Jan 2020 08:00 **End Date:** 23 Jan 2020 12:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20010767-09		10 (mL)	10 (mL)	1
HS20010767-10		10 (mL)	10 (mL)	1
HS20010767-11		10 (mL)	10 (mL)	1
HS20010767-12		10 (mL)	10 (mL)	1
HS20010767-13		10 (mL)	10 (mL)	1
HS20010767-14		10 (mL)	10 (mL)	1
HS20010767-15		10 (mL)	10 (mL)	1
HS20010767-16		10 (mL)	10 (mL)	1
HS20010767-17		10 (mL)	10 (mL)	1
HS20010767-19		10 (mL)	10 (mL)	1
HS20010767-20		10 (mL)	10 (mL)	1
HS20010767-21		10 (mL)	10 (mL)	1
HS20010767-22		10 (mL)	10 (mL)	1
HS20010767-23		10 (mL)	10 (mL)	1
HS20010767-24		10 (mL)	10 (mL)	1
HS20010767-25		10 (mL)	10 (mL)	1
HS20010767-27		10 (mL)	10 (mL)	1
HS20010767-28		10 (mL)	10 (mL)	1
HS20010767-29		10 (mL)	10 (mL)	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010767

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 149797 (0)	**Test Name :** LOW-LEVEL TEXAS TPH BY TX1005				**Matrix:** Water	
HS20010767-20	WG-1620-MW86C-20200117	17 Jan 2020 07:25		20 Jan 2020 12:00	21 Jan 2020 05:19	1
HS20010767-21	WG-1620-FD04-20200117	17 Jan 2020 07:25		20 Jan 2020 12:00	21 Jan 2020 05:48	1
HS20010767-22	WG-1620-MW75B-20200117	17 Jan 2020 08:15		20 Jan 2020 12:00	21 Jan 2020 06:16	1
HS20010767-23	WG-1620-MW79A-20200117	17 Jan 2020 09:20		20 Jan 2020 12:00	21 Jan 2020 06:45	1
HS20010767-24	WG-1620-MW74B-20200117	17 Jan 2020 10:20		20 Jan 2020 12:00	21 Jan 2020 07:14	1
HS20010767-25	WG-1620-MW78A-20200117	17 Jan 2020 11:25		20 Jan 2020 12:00	21 Jan 2020 07:42	1
Batch ID: 149831 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS20010767-18	WG-1620-MW65D-20200116	16 Jan 2020 16:20		21 Jan 2020 12:30	23 Jan 2020 00:56	1
Batch ID: 149832 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS20010767-01	WG-1620-MW28A-20200116	16 Jan 2020 09:10		21 Jan 2020 17:00	22 Jan 2020 23:52	1
HS20010767-02	WG-1620-MW28C-20200116	16 Jan 2020 10:15		21 Jan 2020 17:00	22 Jan 2020 23:32	1
HS20010767-04	WG-1620-MW89B-20200116	16 Jan 2020 12:45		21 Jan 2020 17:00	22 Jan 2020 23:54	1
Batch ID: 149881 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS20010767-03	WG-1620-FB08-20200116	16 Jan 2020 12:00		22 Jan 2020 13:00	24 Jan 2020 16:10	1
HS20010767-05	WG-1620-MW84B-20200116	16 Jan 2020 13:45		22 Jan 2020 13:00	24 Jan 2020 16:13	1
HS20010767-06	WG-1620-MW63B-20200116	16 Jan 2020 14:45		22 Jan 2020 13:00	24 Jan 2020 16:15	1
HS20010767-07	WG-1620-MW26A-20200116	16 Jan 2020 16:00		22 Jan 2020 13:00	24 Jan 2020 16:17	1
HS20010767-08	WG-1620-MW68C-20200117	17 Jan 2020 09:10		22 Jan 2020 13:00	24 Jan 2020 16:21	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010767

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 149912 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Water	
HS20010767-01	WG-1620-MW28A-20200116	16 Jan 2020 09:10		22 Jan 2020 10:00	25 Jan 2020 18:43	1
HS20010767-02	WG-1620-MW28C-20200116	16 Jan 2020 10:15		22 Jan 2020 10:00	25 Jan 2020 12:03	1
HS20010767-03	WG-1620-FB08-20200116	16 Jan 2020 12:00		22 Jan 2020 10:00	25 Jan 2020 19:02	1
HS20010767-04	WG-1620-MW89B-20200116	16 Jan 2020 12:45		22 Jan 2020 10:00	25 Jan 2020 19:22	1
HS20010767-05	WG-1620-MW84B-20200116	16 Jan 2020 13:45		22 Jan 2020 10:00	27 Jan 2020 16:43	20
HS20010767-05	WG-1620-MW84B-20200116	16 Jan 2020 13:45		22 Jan 2020 10:00	25 Jan 2020 19:41	1
HS20010767-06	WG-1620-MW63B-20200116	16 Jan 2020 14:45		22 Jan 2020 10:00	25 Jan 2020 20:00	1
HS20010767-07	WG-1620-MW26A-20200116	16 Jan 2020 16:00		22 Jan 2020 10:00	25 Jan 2020 20:19	1
HS20010767-08	WG-1620-MW68C-20200117	17 Jan 2020 09:10		22 Jan 2020 10:00	25 Jan 2020 20:38	1
HS20010767-09	WG-1620-MW68A-20200117	17 Jan 2020 10:15		22 Jan 2020 10:00	25 Jan 2020 20:57	1
HS20010767-10	WG-1620-FB09-20200117	17 Jan 2020 10:00		22 Jan 2020 10:00	25 Jan 2020 21:16	1
HS20010767-11	WG-1620-MW27A-20200115	15 Jan 2020 16:40		22 Jan 2020 10:00	25 Jan 2020 21:35	1
HS20010767-12	WG-1620-MW27C-20200115	15 Jan 2020 17:20		22 Jan 2020 10:00	26 Jan 2020 13:17	1
HS20010767-13	WG-1620-MW59A-20200116	16 Jan 2020 08:05		22 Jan 2020 10:00	26 Jan 2020 13:36	1
HS20010767-14	WG-1620-MW59B-20200116	16 Jan 2020 09:00		22 Jan 2020 10:00	27 Jan 2020 08:31	1
HS20010767-15	WG-1620-MW59D-20200116	16 Jan 2020 13:50		22 Jan 2020 10:00	26 Jan 2020 14:14	1
HS20010767-16	WG-1620-FD03-20200116	16 Jan 2020 13:50		22 Jan 2020 10:00	26 Jan 2020 14:34	1
HS20010767-17	WG-1620-MW66D-20200116	16 Jan 2020 15:00		22 Jan 2020 10:00	27 Jan 2020 08:50	1
HS20010767-18	WG-1620-MW65D-20200116	16 Jan 2020 16:20		22 Jan 2020 10:00	23 Jan 2020 09:40	1
HS20010767-19	WG-1620-MW36D-20200116	16 Jan 2020 17:25		22 Jan 2020 10:00	26 Jan 2020 15:12	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010767

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 149913 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Water	
HS20010767-20	WG-1620-MW86C-20200117	17 Jan 2020 07:25		22 Jan 2020 11:30	23 Jan 2020 18:00	1
HS20010767-21	WG-1620-FD04-20200117	17 Jan 2020 07:25		22 Jan 2020 11:30	23 Jan 2020 18:19	1
HS20010767-22	WG-1620-MW75B-20200117	17 Jan 2020 08:15		22 Jan 2020 11:30	27 Jan 2020 09:47	200
HS20010767-22	WG-1620-MW75B-20200117	17 Jan 2020 08:15		22 Jan 2020 11:30	27 Jan 2020 09:28	20
HS20010767-22	WG-1620-MW75B-20200117	17 Jan 2020 08:15		22 Jan 2020 11:30	25 Jan 2020 21:55	2000
HS20010767-22	WG-1620-MW75B-20200117	17 Jan 2020 08:15		22 Jan 2020 11:30	23 Jan 2020 18:38	1
HS20010767-23	WG-1620-MW79A-20200117	17 Jan 2020 09:20		22 Jan 2020 11:30	27 Jan 2020 10:24	200
HS20010767-23	WG-1620-MW79A-20200117	17 Jan 2020 09:20		22 Jan 2020 11:30	27 Jan 2020 10:06	20
HS20010767-23	WG-1620-MW79A-20200117	17 Jan 2020 09:20		22 Jan 2020 11:30	26 Jan 2020 18:43	2000
HS20010767-23	WG-1620-MW79A-20200117	17 Jan 2020 09:20		22 Jan 2020 11:30	23 Jan 2020 18:57	1
HS20010767-24	WG-1620-MW74B-20200117	17 Jan 2020 10:20		22 Jan 2020 11:30	27 Jan 2020 10:43	10
HS20010767-24	WG-1620-MW74B-20200117	17 Jan 2020 10:20		22 Jan 2020 11:30	27 Jan 2020 11:02	100
HS20010767-24	WG-1620-MW74B-20200117	17 Jan 2020 10:20		22 Jan 2020 11:30	26 Jan 2020 19:40	1000
HS20010767-24	WG-1620-MW74B-20200117	17 Jan 2020 10:20		22 Jan 2020 11:30	23 Jan 2020 19:17	1
HS20010767-25	WG-1620-MW78A-20200117	17 Jan 2020 11:25		22 Jan 2020 11:30	28 Jan 2020 09:03	400
HS20010767-25	WG-1620-MW78A-20200117	17 Jan 2020 11:25		22 Jan 2020 11:30	28 Jan 2020 08:25	20
HS20010767-25	WG-1620-MW78A-20200117	17 Jan 2020 11:25		22 Jan 2020 11:30	26 Jan 2020 15:31	1
HS20010767-27	WG-1620-MW48C-20200116	16 Jan 2020 10:20		22 Jan 2020 11:30	26 Jan 2020 15:50	1
HS20010767-28	WG-1620-MW47C-20200116	16 Jan 2020 11:05		22 Jan 2020 11:30	27 Jan 2020 09:09	1
HS20010767-29	WG-1620-MW61A-20200116	16 Jan 2020 12:00		22 Jan 2020 11:30	23 Jan 2020 10:37	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010767

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 149936 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS20010767-09	WG-1620-MW68A-20200117	17 Jan 2020 10:15		23 Jan 2020 12:00	24 Jan 2020 03:07	1
HS20010767-10	WG-1620-FB09-20200117	17 Jan 2020 10:00		23 Jan 2020 12:00	24 Jan 2020 03:09	1
HS20010767-11	WG-1620-MW27A-20200115	15 Jan 2020 16:40		23 Jan 2020 12:00	24 Jan 2020 03:11	1
HS20010767-12	WG-1620-MW27C-20200115	15 Jan 2020 17:20		23 Jan 2020 12:00	24 Jan 2020 03:13	1
HS20010767-13	WG-1620-MW59A-20200116	16 Jan 2020 08:05		23 Jan 2020 12:00	24 Jan 2020 03:15	1
HS20010767-14	WG-1620-MW59B-20200116	16 Jan 2020 09:00		23 Jan 2020 12:00	24 Jan 2020 03:18	1
HS20010767-15	WG-1620-MW59D-20200116	16 Jan 2020 13:50		23 Jan 2020 12:00	24 Jan 2020 03:20	1
HS20010767-16	WG-1620-FD03-20200116	16 Jan 2020 13:50		23 Jan 2020 12:00	24 Jan 2020 03:22	1
HS20010767-17	WG-1620-MW66D-20200116	16 Jan 2020 15:00		23 Jan 2020 12:00	24 Jan 2020 03:24	1
HS20010767-19	WG-1620-MW36D-20200116	16 Jan 2020 17:25		23 Jan 2020 12:00	24 Jan 2020 03:27	1
HS20010767-20	WG-1620-MW86C-20200117	17 Jan 2020 07:25		23 Jan 2020 12:00	24 Jan 2020 03:33	1
HS20010767-21	WG-1620-FD04-20200117	17 Jan 2020 07:25		23 Jan 2020 12:00	24 Jan 2020 03:35	1
HS20010767-22	WG-1620-MW75B-20200117	17 Jan 2020 08:15		23 Jan 2020 12:00	24 Jan 2020 03:38	1
HS20010767-23	WG-1620-MW79A-20200117	17 Jan 2020 09:20		23 Jan 2020 12:00	24 Jan 2020 03:40	1
HS20010767-24	WG-1620-MW74B-20200117	17 Jan 2020 10:20		23 Jan 2020 12:00	24 Jan 2020 03:42	1
HS20010767-25	WG-1620-MW78A-20200117	17 Jan 2020 11:25		23 Jan 2020 12:00	24 Jan 2020 03:44	1
HS20010767-27	WG-1620-MW48C-20200116	16 Jan 2020 10:20		23 Jan 2020 12:00	24 Jan 2020 03:46	1
HS20010767-28	WG-1620-MW47C-20200116	16 Jan 2020 11:05		23 Jan 2020 12:00	24 Jan 2020 03:49	1
HS20010767-29	WG-1620-MW61A-20200116	16 Jan 2020 12:00		23 Jan 2020 12:00	24 Jan 2020 02:51	1
Batch ID: R354794 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20010767-01	WG-1620-MW28A-20200116	16 Jan 2020 09:10			22 Jan 2020 00:55	1
HS20010767-02	WG-1620-MW28C-20200116	16 Jan 2020 10:15			21 Jan 2020 23:41	1
HS20010767-03	WG-1620-FB08-20200116	16 Jan 2020 12:00			22 Jan 2020 02:58	1
Batch ID: R354799 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20010767-04	WG-1620-MW89B-20200116	16 Jan 2020 12:45			21 Jan 2020 18:37	1
HS20010767-05	WG-1620-MW84B-20200116	16 Jan 2020 13:45			21 Jan 2020 17:23	1
HS20010767-06	WG-1620-MW63B-20200116	16 Jan 2020 14:45			21 Jan 2020 19:01	1
HS20010767-08	WG-1620-MW68C-20200117	17 Jan 2020 09:10			21 Jan 2020 19:26	1
HS20010767-09	WG-1620-MW68A-20200117	17 Jan 2020 10:15			21 Jan 2020 19:50	1
HS20010767-11	WG-1620-MW27A-20200115	15 Jan 2020 16:40			21 Jan 2020 20:14	1
HS20010767-12	WG-1620-MW27C-20200115	15 Jan 2020 17:20			21 Jan 2020 20:39	1
HS20010767-13	WG-1620-MW59A-20200116	16 Jan 2020 08:05			21 Jan 2020 21:03	1
HS20010767-14	WG-1620-MW59B-20200116	16 Jan 2020 09:00			21 Jan 2020 21:28	1
HS20010767-15	WG-1620-MW59D-20200116	16 Jan 2020 13:50			21 Jan 2020 21:52	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010767

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R354802 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20010767-07	WG-1620-MW26A-20200116	16 Jan 2020 16:00			22 Jan 2020 09:17	1
HS20010767-10	WG-1620-FB09-20200117	17 Jan 2020 10:00			22 Jan 2020 01:08	1
HS20010767-16	WG-1620-FD03-20200116	16 Jan 2020 13:50			22 Jan 2020 03:10	1
HS20010767-17	WG-1620-MW66D-20200116	16 Jan 2020 15:00			22 Jan 2020 03:35	1
HS20010767-18	WG-1620-MW65D-20200116	16 Jan 2020 16:20			22 Jan 2020 01:57	1
HS20010767-19	WG-1620-MW36D-20200116	16 Jan 2020 17:25			22 Jan 2020 03:59	1
HS20010767-20	WG-1620-MW86C-20200117	17 Jan 2020 07:25			22 Jan 2020 04:24	1
HS20010767-21	WG-1620-FD04-20200117	17 Jan 2020 07:25			22 Jan 2020 04:48	1
HS20010767-22	WG-1620-MW75B-20200117	17 Jan 2020 08:15			22 Jan 2020 05:13	1
HS20010767-23	WG-1620-MW79A-20200117	17 Jan 2020 09:20			22 Jan 2020 05:37	1
HS20010767-24	WG-1620-MW74B-20200117	17 Jan 2020 10:20			22 Jan 2020 06:01	1
HS20010767-25	WG-1620-MW78A-20200117	17 Jan 2020 11:25			22 Jan 2020 06:26	1
HS20010767-26	WQ-1620-TB05-2020117	17 Jan 2020 00:00			22 Jan 2020 01:32	1
HS20010767-27	WG-1620-MW48C-20200116	16 Jan 2020 10:20			22 Jan 2020 06:50	1
HS20010767-28	WG-1620-MW47C-20200116	16 Jan 2020 11:05			22 Jan 2020 07:15	1
Batch ID: R354859 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20010767-10	WG-1620-FB09-20200117	17 Jan 2020 10:00			22 Jan 2020 13:50	1
HS20010767-23	WG-1620-MW79A-20200117	17 Jan 2020 09:20			22 Jan 2020 16:23	5
HS20010767-24	WG-1620-MW74B-20200117	17 Jan 2020 10:20			22 Jan 2020 16:50	5
HS20010767-26	WQ-1620-TB05-2020117	17 Jan 2020 00:00			22 Jan 2020 14:15	1
Batch ID: R355066 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20010767-29	WG-1620-MW61A-20200116	16 Jan 2020 12:00			25 Jan 2020 12:37	1

WorkOrder: HS20010767
InstrumentID: FID-10
Test Code: TX1005_W_Low
Test Number: TX1005
Test Name: Low-level Texas TPH by TX1005

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	nC6 to nC12	TPH-1005-1	0.25	0.26	0.20	0.50
A	>nC12 to nC28	TPH-1005-2	0.25	0.31	0.20	0.50
A	>nC28 to nC35	TPH-1005-4	0.25	0.26	0.20	0.50
A	Total Petroleum Hydrocarbon	TPH	0.25	0.26	0.20	0.50
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	Trifluoromethyl benzene	98-08-8	0	0	0	0

WorkOrder: HS20010767
InstrumentID: ICPMS04
Test Code: ICP_TW
Test Number: SW6020
Test Name: ICP-MS Metals by SW6020A

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Arsenic	7440-38-2	0.000500	0.000456	0.000400	0.00200

WorkOrder: HS20010767
InstrumentID: ICPMS05
Test Code: ICP_TW
Test Number: SW6020
Test Name: ICP-MS Metals by SW6020A

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Arsenic	7440-38-2	0.000500	0.000499	0.000400	0.00200

WorkOrder: HS20010767
InstrumentID: SV-6
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Diphenylhydrazine	122-66-7	0.00010	0.000098	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.000051	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.000094	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.000083	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.000093	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.000050	0.000060	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000031	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00010	0.000037	0.000047	0.0010
A	Acenaphthene	83-32-9	0.000050	0.000059	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000050	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.000047	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.000050	0.000059	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.000050	0.000050	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.000081	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.00012	0.000037	0.00020
A	Chrysene	218-01-9	0.000050	0.000060	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.000050	0.000050	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.00011	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000049	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.000053	0.000030	0.00010
A	Naphthalene	91-20-3	0.000050	0.000049	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.00012	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.00011	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.0000094	0.000079	0.00020
A	Phenanthrene	85-01-8	0.000050	0.000049	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.000096	0.000035	0.00020
A	Pyrene	129-00-0	0.000050	0.000047	0.000019	0.00010
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0.00020
S	2-Fluorobiphenyl	321-60-8	0	0	0	0.00020
S	2-Fluorophenol	367-12-4	0	0	0	0.00020
S	4-Terphenyl-d14	1718-51-0	0	0	0	0.00020
S	Nitrobenzene-d5	4165-60-0	0	0	0	0.00020
S	Phenol-d6	13127-88-3	0	0	0	0.00020

WorkOrder: HS20010767
InstrumentID: SV-7
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Diphenylhydrazine	122-66-7	0.00010	0.00013	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.000081	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.00010	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.00010	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.00012	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.000050	0.000052	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000060	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00010	0.000069	0.000047	0.0010
A	Acenaphthene	83-32-9	0.000050	0.000050	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000046	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.000046	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.000050	0.000057	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.000050	0.000047	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.00012	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.00014	0.000037	0.00020
A	Chrysene	218-01-9	0.000050	0.000049	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.000050	0.000050	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.00012	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000053	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.000050	0.000030	0.00010
A	Naphthalene	91-20-3	0.000050	0.000048	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.00014	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.00012	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.000057	0.000079	0.00020
A	Phenanthrene	85-01-8	0.000050	0.000047	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.00012	0.000035	0.00020
A	Pyrene	129-00-0	0.000050	0.000051	0.000019	0.00010
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0.00020
S	2-Fluorobiphenyl	321-60-8	0	0	0	0.00020
S	2-Fluorophenol	367-12-4	0	0	0	0.00020
S	4-Terphenyl-d14	1718-51-0	0	0	0	0.00020
S	Nitrobenzene-d5	4165-60-0	0	0	0	0.00020
S	Phenol-d6	13127-88-3	0	0	0	0.00020

WorkOrder: HS20010767
InstrumentID: VOA4
Test Code: 8260_LL_W
Test Number: SW8260
Test Name: Low Level Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.00050	0.00061	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00057	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00058	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00048	0.00030	0.0010
A	Methylene chloride	75-09-2	0.0010	0.00070	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00050	0.00020	0.0010
A	Vinyl chloride	75-01-4	0.00050	0.00045	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00070	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

WorkOrder: HS20010767
InstrumentID: VOA2
Test Code: 8260_LL_W
Test Number: SW8260
Test Name: Low Level Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.00050	0.00062	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00059	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00071	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00063	0.00030	0.0010
A	Methylene chloride	75-09-2	0.0010	0.00075	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00069	0.00020	0.0010
A	Vinyl chloride	75-01-4	0.00050	0.00044	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00059	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010767

QC BATCH REPORT

Batch ID: 149797 (0) **Instrument: FID-10** **Method: LOW-LEVEL TEXAS TPH BY TX1005**

MBLK Sample ID: **MBLK-149797** Units: **mg/L** Analysis Date: **21-Jan-2020 04:50**
Client ID: Run ID: **FID-10_354806** SeqNo: **5443281** PrepDate: **20-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	U	0.50								
>nC12 to nC28	U	0.50								
>nC28 to nC35	U	0.50								
Total Petroleum Hydrocarbon	U	0.50								
Surr: 2-Fluorobiphenyl	*2.764*	*0*	*2.5*	*0*	*111*	*70 - 130*				
Surr: Trifluoromethyl benzene	*2.717*	*0*	*2.5*	*0*	*109*	*70 - 130*				

LCS Sample ID: **LCS-149797** Units: **mg/L** Analysis Date: **21-Jan-2020 05:19**
Client ID: Run ID: **FID-10_354806** SeqNo: **5443282** PrepDate: **20-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	28.98	0.50	25	0	116	75 - 125				
>nC12 to nC28	25.19	0.50	25	0	101	75 - 125				
Surr: 2-Fluorobiphenyl	*3.022*	*0*	*2.5*	*0*	*121*	*70 - 130*				
Surr: Trifluoromethyl benzene	*2.779*	*0*	*2.5*	*0*	*111*	*70 - 130*				

LCSD Sample ID: **LCSD-149797** Units: **mg/L** Analysis Date: **21-Jan-2020 05:48**
Client ID: Run ID: **FID-10_354806** SeqNo: **5443283** PrepDate: **20-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	28.84	0.50	25	0	115	75 - 125	28.98	0.499	20	
>nC12 to nC28	21.62	0.50	25	0	86.5	75 - 125	25.19	15.3	20	
Surr: 2-Fluorobiphenyl	*2.954*	*0*	*2.5*	*0*	*118*	*70 - 130*	*3.022*	*2.25*	*20*	
Surr: Trifluoromethyl benzene	*2.626*	*0*	*2.5*	*0*	*105*	*70 - 130*	*2.779*	*5.68*	*20*	

MS Sample ID: **HS20010754-08MS** Units: **mg/L** Analysis Date: **21-Jan-2020 06:45**
Client ID: Run ID: **FID-10_354806** SeqNo: **5443285** PrepDate: **20-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	28.22	0.48	24.23	0	116	75 - 125				
>nC12 to nC28	24.36	0.48	24.23	0	101	75 - 125				
Surr: 2-Fluorobiphenyl	*3.105*	*0*	*2.423*	*0*	*128*	*70 - 130*				
Surr: Trifluoromethyl benzene	*2.633*	*0*	*2.423*	*0*	*109*	*70 - 130*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010767

QC BATCH REPORT

Batch ID: 149797 (0) **Instrument: FID-10** **Method: LOW-LEVEL TEXAS TPH BY TX1005**

MSD Sample ID: **HS20010754-08MSD** Units: **mg/L** Analysis Date: **21-Jan-2020 07:14**
Client ID: Run ID: **FID-10_354806** SeqNo: **5443286** PrepDate: **20-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	28.04	0.48	23.96	0	117	75 - 125	28.22	0.644	20	
>nC12 to nC28	22.82	0.48	23.96	0	95.2	75 - 125	24.36	6.52	20	
Surr: 2-Fluorobiphenyl	*2.928*	*0*	*2.396*	*0*	*122*	*70 - 130*	*3.105*	*5.88*	*20*	
Surr: Trifluoromethyl benzene	*2.517*	*0*	*2.396*	*0*	*105*	*70 - 130*	*2.633*	*4.52*	*20*	

The following samples were analyzed in this batch: HS20010767-20 HS20010767-21 HS20010767-22 HS20010767-23 HS20010767-24 HS20010767-25

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010767

QC BATCH REPORT

Batch ID: 149831 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-149831** Units: **mg/L** Analysis Date: **23-Jan-2020 13:06**
Client ID: Run ID: **ICPMS06_354915** SeqNo: **5445305** PrepDate: **21-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								

LCS Sample ID: **LCS-149831** Units: **mg/L** Analysis Date: **23-Jan-2020 00:54**
Client ID: Run ID: **ICPMS04_354801** SeqNo: **5444295** PrepDate: **21-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04846	0.00200	0.05	0	96.9	80 - 120				

MS Sample ID: **HS20010767-18MS** Units: **mg/L** Analysis Date: **23-Jan-2020 01:01**
Client ID: **WG-1620-MW65D-20200116** Run ID: **ICPMS04_354801** SeqNo: **5444244** PrepDate: **21-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04904	0.00200	0.05	0.000507	97.1	80 - 120				

MSD Sample ID: **HS20010767-18MSD** Units: **mg/L** Analysis Date: **23-Jan-2020 01:03**
Client ID: **WG-1620-MW65D-20200116** Run ID: **ICPMS04_354801** SeqNo: **5444245** PrepDate: **21-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04827	0.00200	0.05	0.000507	95.5	80 - 120	0.04904	1.58	20	

PDS Sample ID: **HS20010767-18PDS** Units: **mg/L** Analysis Date: **23-Jan-2020 01:05**
Client ID: **WG-1620-MW65D-20200116** Run ID: **ICPMS04_354801** SeqNo: **5444246** PrepDate: **21-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.09677	0.00200	0.1	0.000507	96.3	75 - 125				

SD Sample ID: **HS20010767-18SD** Units: **mg/L** Analysis Date: **23-Jan-2020 00:59**
Client ID: **WG-1620-MW65D-20200116** Run ID: **ICPMS04_354801** SeqNo: **5444297** PrepDate: **21-Jan-2020** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	U	0.0100					0.000507	0	10	

The following samples were analyzed in this batch: HS20010767-18

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010767

QC BATCH REPORT

Batch ID: 149832 (0) **Instrument: ICPMS04** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLKF1-149832** Units: **mg/L** Analysis Date: **22-Jan-2020 23:27**
Client ID: Run ID: **ICPMS04_354801** SeqNo: **5444345** PrepDate: **21-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								

MBLK Sample ID: **MBLK-149832** Units: **mg/L** Analysis Date: **22-Jan-2020 23:25**
Client ID: Run ID: **ICPMS04_354801** SeqNo: **5444228** PrepDate: **21-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								

LCS Sample ID: **LCS-149832** Units: **mg/L** Analysis Date: **22-Jan-2020 23:30**
Client ID: Run ID: **ICPMS04_354801** SeqNo: **5444230** PrepDate: **21-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0493	0.00200	0.05	0	98.6	80 - 120				

MS Sample ID: **HS20010767-02MS** Units: **mg/L** Analysis Date: **22-Jan-2020 23:36**
Client ID: **WG-1620-MW28C-20200116** Run ID: **ICPMS04_354801** SeqNo: **5444233** PrepDate: **21-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04794	0.00200	0.05	0.000937	94.0	80 - 120				

MSD Sample ID: **HS20010767-02MSD** Units: **mg/L** Analysis Date: **22-Jan-2020 23:39**
Client ID: **WG-1620-MW28C-20200116** Run ID: **ICPMS04_354801** SeqNo: **5444234** PrepDate: **21-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05018	0.00200	0.05	0.000937	98.5	80 - 120	0.04794	4.57	20	

PDS Sample ID: **HS20010767-02PDS** Units: **mg/L** Analysis Date: **22-Jan-2020 23:41**
Client ID: **WG-1620-MW28C-20200116** Run ID: **ICPMS04_354801** SeqNo: **5444235** PrepDate: **21-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.09536	0.00200	0.1	0.000937	94.4	75 - 125				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010767

QC BATCH REPORT

Batch ID: 149832 (0) **Instrument:** ICPMS04 **Method:** ICP-MS METALS BY SW6020A

SD Sample ID: **HS20010767-02SD** Units: **mg/L** Analysis Date: **22-Jan-2020 23:34**
Client ID: **WG-1620-MW28C-20200116** Run ID: **ICPMS04_354801** SeqNo: **5444232** PrepDate: **21-Jan-2020** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	U	0.0100					0.000937	0	10	

The following samples were analyzed in this batch: HS20010767-01 HS20010767-02 HS20010767-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010767

QC BATCH REPORT

Batch ID: 149881 (0) **Instrument: ICPMS05** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLKF1-149881** Units: **mg/L** Analysis Date: **24-Jan-2020 14:21**
Client ID: Run ID: **ICPMS05_354996** SeqNo: **5447636** PrepDate: **22-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								

MBLK Sample ID: **MBLK-149881** Units: **mg/L** Analysis Date: **24-Jan-2020 14:18**
Client ID: Run ID: **ICPMS05_354996** SeqNo: **5447635** PrepDate: **22-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								

LCS Sample ID: **LCS-149881** Units: **mg/L** Analysis Date: **24-Jan-2020 14:23**
Client ID: Run ID: **ICPMS05_354996** SeqNo: **5447637** PrepDate: **22-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04927	0.00200	0.05	0	98.6	80 - 120				

MS Sample ID: **HS20010752-08MS** Units: **mg/L** Analysis Date: **24-Jan-2020 15:26**
Client ID: Run ID: **ICPMS05_354996** SeqNo: **5447650** PrepDate: **22-Jan-2020** DF: **10**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1068	0.0200	0.05	0.06877	76.0	80 - 120				S

MSD Sample ID: **HS20010752-08MSD** Units: **mg/L** Analysis Date: **27-Jan-2020 14:34**
Client ID: Run ID: **ICPMS05_355087** SeqNo: **5448409** PrepDate: **22-Jan-2020** DF: **10**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1141	0.0200	0.05	0.06877	90.6	80 - 120	0.1068	6.58	20	

PDS Sample ID: **HS20010752-08PDS** Units: **mg/L** Analysis Date: **27-Jan-2020 14:39**
Client ID: Run ID: **ICPMS05_355087** SeqNo: **5448411** PrepDate: **22-Jan-2020** DF: **10**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	1.132	0.0200	1	0.06877	106	75 - 125				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010767

QC BATCH REPORT

Batch ID: 149881 (0) **Instrument: ICPMS05** **Method: ICP-MS METALS BY SW6020A**

SD Sample ID: **HS20010752-08SD** Units: **mg/L** Analysis Date: **24-Jan-2020 15:24**
Client ID: Run ID: **ICPMS05_354996** SeqNo: **5447649** PrepDate: **22-Jan-2020** DF: **50**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.07175	0.100					0.06877	0	10	J

The following samples were analyzed in this batch: HS20010767-03 HS20010767-05 HS20010767-06 HS20010767-07 HS20010767-08

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010767

QC BATCH REPORT

Batch ID: 149936 (0) **Instrument: ICPMS05** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-149936** Units: **mg/L** Analysis Date: **24-Jan-2020 02:47**
Client ID: Run ID: **ICPMS05_354962** SeqNo: **5446103** PrepDate: **23-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								

LCS Sample ID: **LCS-149936** Units: **mg/L** Analysis Date: **24-Jan-2020 02:49**
Client ID: Run ID: **ICPMS05_354962** SeqNo: **5446104** PrepDate: **23-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04886	0.00200	0.05	0	97.7	80 - 120				

MS Sample ID: **HS20010767-29MS** Units: **mg/L** Analysis Date: **24-Jan-2020 02:56**
Client ID: **WG-1620-MW61A-20200116** Run ID: **ICPMS05_354962** SeqNo: **5446107** PrepDate: **23-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05254	0.00200	0.05	0.00107	103	80 - 120				

MSD Sample ID: **HS20010767-29MSD** Units: **mg/L** Analysis Date: **24-Jan-2020 02:58**
Client ID: **WG-1620-MW61A-20200116** Run ID: **ICPMS05_354962** SeqNo: **5446108** PrepDate: **23-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05469	0.00200	0.05	0.00107	107	80 - 120	0.05254	4	20	

PDS Sample ID: **HS20010767-29PDS** Units: **mg/L** Analysis Date: **24-Jan-2020 03:00**
Client ID: **WG-1620-MW61A-20200116** Run ID: **ICPMS05_354962** SeqNo: **5446109** PrepDate: **23-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1055	0.00200	0.1	0.00107	104	75 - 125				

SD Sample ID: **HS20010767-29SD** Units: **mg/L** Analysis Date: **24-Jan-2020 02:53**
Client ID: **WG-1620-MW61A-20200116** Run ID: **ICPMS05_354962** SeqNo: **5446106** PrepDate: **23-Jan-2020** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	U	0.0100					0.00107	0	10	

The following samples were analyzed in this batch:

HS20010767-09	HS20010767-10	HS20010767-11	HS20010767-12
HS20010767-13	HS20010767-14	HS20010767-15	HS20010767-16
HS20010767-17	HS20010767-19	HS20010767-20	HS20010767-21
HS20010767-22	HS20010767-23	HS20010767-24	HS20010767-25
HS20010767-27	HS20010767-28	HS20010767-29	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010767

QC BATCH REPORT

Batch ID: 149912 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-149912** Units: **ug/L** Analysis Date: **23-Jan-2020 08:56**
Client ID: Run ID: **SV-7_354913** SeqNo: **5445204** PrepDate: **22-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	U	0.20								
2,4-Dimethylphenol	U	0.20								
2,4-Dinitrotoluene	U	0.20								
2,6-Dinitrotoluene	U	0.20								
2-Chloronaphthalene	U	0.20								
2-Methylnaphthalene	U	0.10								
4,6-Dinitro-2-methylphenol	U	0.20								
4-Nitrophenol	U	1.0								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Benz(a)anthracene	U	0.10								
Benzo(a)pyrene	U	0.10								
Bis(2-chloroethoxy)methane	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Chrysene	U	0.10								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Nitrobenzene	U	0.20								
N-Nitrosodiphenylamine	U	0.20								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*5.765*	*0.20*	*5*	*0*	*115*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*5.735*	*0.20*	*5*	*0*	*115*	*40 - 125*				
Surr: 2-Fluorophenol	*4.308*	*0.20*	*5*	*0*	*86.2*	*20 - 120*				
Surr: 4-Terphenyl-d14	*6.463*	*0.20*	*5*	*0*	*129*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.615*	*0.20*	*5*	*0*	*92.3*	*41 - 120*				
Surr: Phenol-d6	*4.471*	*0.20*	*5*	*0*	*89.4*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010767

QC BATCH REPORT

Batch ID: 149912 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCS Sample ID: **LCS-149912** Units: **ug/L** Analysis Date: **23-Jan-2020 09:15**
Client ID: Run ID: **SV-7_354913** SeqNo: **5445205** PrepDate: **22-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.941	0.20	5	0	98.8	39 - 127				
2,4-Dimethylphenol	4.975	0.20	5	0	99.5	35 - 120				
2,4-Dinitrotoluene	5.465	0.20	5	0	109	50 - 122				
2,6-Dinitrotoluene	5.315	0.20	5	0	106	50 - 120				
2-Chloronaphthalene	5.375	0.20	5	0	108	50 - 120				
2-Methylnaphthalene	5.452	0.10	5	0	109	50 - 120				
4,6-Dinitro-2-methylphenol	4.139	0.20	5	0	82.8	25 - 121				
4-Nitrophenol	4.795	1.0	5	0	95.9	30 - 130				
Acenaphthene	5.261	0.10	5	0	105	45 - 120				
Acenaphthylene	5.595	0.10	5	0	112	47 - 120				
Anthracene	5.443	0.10	5	0	109	45 - 120				
Benz(a)anthracene	5.163	0.10	5	0	103	40 - 120				
Benzo(a)pyrene	5.388	0.10	5	0	108	45 - 120				
Bis(2-chloroethoxy)methane	4.569	0.20	5	0	91.4	45 - 120				
Bis(2-ethylhexyl)phthalate	6.14	0.20	5	0	123	40 - 139				
Chrysene	5.073	0.10	5	0	101	43 - 120				
Dibenzofuran	5.456	0.10	5	0	109	50 - 120				
Di-n-butyl phthalate	6.076	0.20	5	0	122	45 - 123				
Fluoranthene	5.46	0.10	5	0	109	45 - 125				
Fluorene	5.591	0.10	5	0	112	49 - 120				
Naphthalene	5.915	0.10	5	0	118	45 - 120				
Nitrobenzene	4.369	0.20	5	0	87.4	44 - 120				
N-Nitrosodiphenylamine	5.411	0.20	5	0	108	40 - 125				
Pentachlorophenol	2.724	0.20	5	0	54.5	19 - 121				
Phenanthrene	5.334	0.10	5	0	107	45 - 121				
Phenol	4.829	0.20	5	0	96.6	20 - 124				
Pyrene	5.438	0.10	5	0	109	40 - 130				
Surr: 2,4,6-Tribromophenol	*6.301*	*0.20*	*5*	*0*	*126*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*6.146*	*0.20*	*5*	*0*	*123*	*40 - 125*				
Surr: 2-Fluorophenol	*4.409*	*0.20*	*5*	*0*	*88.2*	*20 - 120*				
Surr: 4-Terphenyl-d14	*6.275*	*0.20*	*5*	*0*	*126*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.93*	*0.20*	*5*	*0*	*98.6*	*41 - 120*				
Surr: Phenol-d6	*4.815*	*0.20*	*5*	*0*	*96.3*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010767

QC BATCH REPORT

Batch ID: 149912 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MS Sample ID: **HS20010767-18MS** Units: **ug/L** Analysis Date: **23-Jan-2020 09:59**
Client ID: **WG-1620-MW65D-20200116** Run ID: **SV-7_354913** SeqNo: **5445207** PrepDate: **22-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.323	0.20	5	0	86.5	39 - 127				
2,4-Dimethylphenol	4.078	0.20	5	0	81.6	35 - 120				
2,4-Dinitrotoluene	4.77	0.20	5	0	95.4	50 - 122				
2,6-Dinitrotoluene	4.895	0.20	5	0	97.9	50 - 120				
2-Chloronaphthalene	4.764	0.20	5	0	95.3	50 - 120				
2-Methylnaphthalene	4.519	0.10	5	0	90.4	50 - 120				
4,6-Dinitro-2-methylphenol	4.287	0.20	5	0	85.7	25 - 121				
4-Nitrophenol	4.37	1.0	5	0	87.4	30 - 130				
Acenaphthene	4.646	0.10	5	0	92.9	45 - 120				
Acenaphthylene	4.886	0.10	5	0	97.7	47 - 120				
Anthracene	4.867	0.10	5	0	97.3	45 - 120				
Benz(a)anthracene	4.722	0.10	5	0	94.4	40 - 120				
Benzo(a)pyrene	4.84	0.10	5	0	96.8	45 - 120				
Bis(2-chloroethoxy)methane	3.874	0.20	5	0	77.5	45 - 120				
Bis(2-ethylhexyl)phthalate	5.758	0.20	5	0.2648	110	40 - 139				
Chrysene	4.566	0.10	5	0	91.3	43 - 120				
Dibenzofuran	4.741	0.10	5	0	94.8	50 - 120				
Di-n-butyl phthalate	5.562	0.20	5	0	111	45 - 123				
Fluoranthene	4.981	0.10	5	0	99.6	45 - 125				
Fluorene	4.89	0.10	5	0	97.8	49 - 120				
Naphthalene	4.673	0.10	5	0	93.5	45 - 120				
Nitrobenzene	3.616	0.20	5	0	72.3	44 - 120				
N-Nitrosodiphenylamine	4.609	0.20	5	0	92.2	40 - 125				
Pentachlorophenol	3.229	0.20	5	0	64.6	19 - 121				
Phenanthrene	4.672	0.10	5	0	93.4	45 - 121				
Phenol	4.224	0.20	5	0	84.5	20 - 124				
Pyrene	4.975	0.10	5	0	99.5	40 - 130				
Surr: 2,4,6-Tribromophenol	*5.909*	*0.20*	*5*	*0*	*118*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*5.365*	*0.20*	*5*	*0*	*107*	*40 - 125*				
Surr: 2-Fluorophenol	*4.067*	*0.20*	*5*	*0*	*81.3*	*20 - 120*				
Surr: 4-Terphenyl-d14	*5.888*	*0.20*	*5*	*0*	*118*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.346*	*0.20*	*5*	*0*	*86.9*	*41 - 120*				
Surr: Phenol-d6	*4.567*	*0.20*	*5*	*0*	*91.3*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010767

QC BATCH REPORT

Batch ID: 149912 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MS Sample ID: **HS20010767-02MS** Units: **ug/L** Analysis Date: **25-Jan-2020 12:22**
Client ID: **WG-1620-MW28C-20200116** Run ID: **SV-6_355049** SeqNo: **5448627** PrepDate: **22-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	5.094	0.20	5	0	102	39 - 127				
2,4-Dimethylphenol	3.359	0.20	5	0	67.2	35 - 120				
2,4-Dinitrotoluene	5.668	0.20	5	0	113	50 - 122				
2,6-Dinitrotoluene	4.959	0.20	5	0	99.2	50 - 120				
2-Chloronaphthalene	4.264	0.20	5	0	85.3	50 - 120				
2-Methylnaphthalene	4.045	0.10	5	0	80.9	50 - 120				
4,6-Dinitro-2-methylphenol	6.467	0.20	5	0	129	25 - 121				S
4-Nitrophenol	5.942	1.0	5	0	119	30 - 130				
Acenaphthene	4.553	0.10	5	0	91.1	45 - 120				
Acenaphthylene	4.175	0.10	5	0	83.5	47 - 120				
Anthracene	5.523	0.10	5	0	110	45 - 120				
Benz(a)anthracene	5.628	0.10	5	0	113	40 - 120				
Benzo(a)pyrene	5.453	0.10	5	0	109	45 - 120				
Bis(2-chloroethoxy)methane	4.015	0.20	5	0	80.3	45 - 120				
Bis(2-ethylhexyl)phthalate	5.277	0.20	5	0.07179	104	40 - 139				
Chrysene	5.372	0.10	5	0	107	43 - 120				
Dibenzofuran	4.21	0.10	5	0	84.2	50 - 120				
Di-n-butyl phthalate	6.154	0.20	5	0	123	45 - 123				S
Fluoranthene	5.615	0.10	5	0	112	45 - 125				
Fluorene	4.421	0.10	5	0	88.4	49 - 120				
Naphthalene	3.715	0.10	5	0.1556	71.2	45 - 120				
Nitrobenzene	3.908	0.20	5	0	78.2	44 - 120				
N-Nitrosodiphenylamine	5.898	0.20	5	0	118	40 - 125				
Pentachlorophenol	5.126	0.20	5	0	103	19 - 121				
Phenanthrene	5.305	0.10	5	0	106	45 - 121				
Phenol	3.48	0.20	5	0.08592	67.9	20 - 124				
Pyrene	5.61	0.10	5	0	112	40 - 130				
Surr: 2,4,6-Tribromophenol	*4.646*	*0.20*	*5*	*0*	*92.9*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.968*	*0.20*	*5*	*0*	*79.4*	*40 - 125*				
Surr: 2-Fluorophenol	*2.894*	*0.20*	*5*	*0*	*57.9*	*20 - 120*				
Surr: 4-Terphenyl-d14	*5.42*	*0.20*	*5*	*0*	*108*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.91*	*0.20*	*5*	*0*	*78.2*	*41 - 120*				
Surr: Phenol-d6	*3.403*	*0.20*	*5*	*0*	*68.1*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010767

QC BATCH REPORT

Batch ID: 149912 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MSD Sample ID: **HS20010767-18MSD** Units: **ug/L** Analysis Date: **23-Jan-2020 10:18**
Client ID: **WG-1620-MW65D-20200116** Run ID: **SV-7_354913** SeqNo: **5445208** PrepDate: **22-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.677	0.20	5	0	93.5	39 - 127	4.323	7.87	20	
2,4-Dimethylphenol	4.291	0.20	5	0	85.8	35 - 120	4.078	5.09	20	
2,4-Dinitrotoluene	4.91	0.20	5	0	98.2	50 - 122	4.77	2.9	20	
2,6-Dinitrotoluene	4.907	0.20	5	0	98.1	50 - 120	4.895	0.258	20	
2-Chloronaphthalene	4.818	0.20	5	0	96.4	50 - 120	4.764	1.14	20	
2-Methylnaphthalene	4.716	0.10	5	0	94.3	50 - 120	4.519	4.27	20	
4,6-Dinitro-2-methylphenol	4.275	0.20	5	0	85.5	25 - 121	4.287	0.282	30	
4-Nitrophenol	4.178	1.0	5	0	83.6	30 - 130	4.37	4.5	20	
Acenaphthene	4.732	0.10	5	0	94.6	45 - 120	4.646	1.83	20	
Acenaphthylene	5.037	0.10	5	0	101	47 - 120	4.886	3.04	20	
Anthracene	4.947	0.10	5	0	98.9	45 - 120	4.867	1.63	20	
Benz(a)anthracene	4.832	0.10	5	0	96.6	40 - 120	4.722	2.32	20	
Benzo(a)pyrene	4.934	0.10	5	0	98.7	45 - 120	4.84	1.92	20	
Bis(2-chloroethoxy)methane	4.109	0.20	5	0	82.2	45 - 120	3.874	5.88	20	
Bis(2-ethylhexyl)phthalate	5.819	0.20	5	0.2648	111	40 - 139	5.758	1.06	20	
Chrysene	4.668	0.10	5	0	93.4	43 - 120	4.566	2.2	20	
Dibenzofuran	4.871	0.10	5	0	97.4	50 - 120	4.741	2.7	20	
Di-n-butyl phthalate	5.586	0.20	5	0	112	45 - 123	5.562	0.444	20	
Fluoranthene	4.883	0.10	5	0	97.7	45 - 125	4.981	1.97	20	
Fluorene	4.983	0.10	5	0	99.7	49 - 120	4.89	1.88	20	
Naphthalene	4.894	0.10	5	0	97.9	45 - 120	4.673	4.61	20	
Nitrobenzene	3.889	0.20	5	0	77.8	44 - 120	3.616	7.28	20	
N-Nitrosodiphenylamine	4.885	0.20	5	0	97.7	40 - 125	4.609	5.82	20	
Pentachlorophenol	3.134	0.20	5	0	62.7	19 - 121	3.229	3	20	
Phenanthrene	4.996	0.10	5	0	99.9	45 - 121	4.672	6.69	20	
Phenol	4.351	0.20	5	0	87.0	20 - 124	4.224	2.96	20	
Pyrene	5.082	0.10	5	0	102	40 - 130	4.975	2.14	20	
Surr: 2,4,6-Tribromophenol	*5.731*	*0.20*	*5*	*0*	*115*	*34 - 129*	*5.909*	*3.05*	*20*	
Surr: 2-Fluorobiphenyl	*5.483*	*0.20*	*5*	*0*	*110*	*40 - 125*	*5.365*	*2.17*	*20*	
Surr: 2-Fluorophenol	*4.007*	*0.20*	*5*	*0*	*80.1*	*20 - 120*	*4.067*	*1.48*	*20*	
Surr: 4-Terphenyl-d14	*5.938*	*0.20*	*5*	*0*	*119*	*40 - 135*	*5.888*	*0.844*	*20*	
Surr: Nitrobenzene-d5	*4.206*	*0.20*	*5*	*0*	*84.1*	*41 - 120*	*4.346*	*3.27*	*20*	
Surr: Phenol-d6	*4.422*	*0.20*	*5*	*0*	*88.4*	*20 - 120*	*4.567*	*3.23*	*20*	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010767

QC BATCH REPORT

Batch ID: 149912 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MSD Sample ID: **HS20010767-02MSD** Units: **ug/L** Analysis Date: **25-Jan-2020 12:41**
Client ID: **WG-1620-MW28C-20200116** Run ID: **SV-6_355049** SeqNo: **5448628** PrepDate: **22-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.722	0.20	5	0	94.4	39 - 127	5.094	7.57	20	
2,4-Dimethylphenol	3.021	0.20	5	0	60.4	35 - 120	3.359	10.6	20	
2,4-Dinitrotoluene	5.415	0.20	5	0	108	50 - 122	5.668	4.56	20	
2,6-Dinitrotoluene	5.001	0.20	5	0	100	50 - 120	4.959	0.848	20	
2-Chloronaphthalene	4.118	0.20	5	0	82.4	50 - 120	4.264	3.49	20	
2-Methylnaphthalene	3.849	0.10	5	0	77.0	50 - 120	4.045	4.97	20	
4,6-Dinitro-2-methylphenol	5.971	0.20	5	0	119	25 - 121	6.467	7.97	30	
4-Nitrophenol	5.634	1.0	5	0	113	30 - 130	5.942	5.33	20	
Acenaphthene	4.507	0.10	5	0	90.1	45 - 120	4.553	1.02	20	
Acenaphthylene	4.003	0.10	5	0	80.1	47 - 120	4.175	4.2	20	
Anthracene	5.093	0.10	5	0	102	45 - 120	5.523	8.1	20	
Benz(a)anthracene	5.227	0.10	5	0	105	40 - 120	5.628	7.39	20	
Benzo(a)pyrene	5.12	0.10	5	0	102	45 - 120	5.453	6.31	20	
Bis(2-chloroethoxy)methane	3.329	0.20	5	0	66.6	45 - 120	4.015	18.7	20	
Bis(2-ethylhexyl)phthalate	6.092	0.20	5	0.07179	120	40 - 139	5.277	14.3	20	
Chrysene	5.384	0.10	5	0	108	43 - 120	5.372	0.21	20	
Dibenzofuran	4.23	0.10	5	0	84.6	50 - 120	4.21	0.471	20	
Di-n-butyl phthalate	6.028	0.20	5	0	121	45 - 123	6.154	2.06	20	
Fluoranthene	5.168	0.10	5	0	103	45 - 125	5.615	8.29	20	
Fluorene	4.566	0.10	5	0	91.3	49 - 120	4.421	3.21	20	
Naphthalene	3.661	0.10	5	0.1556	70.1	45 - 120	3.715	1.46	20	
Nitrobenzene	3.397	0.20	5	0	67.9	44 - 120	3.908	14	20	
N-Nitrosodiphenylamine	5.397	0.20	5	0	108	40 - 125	5.898	8.86	20	
Pentachlorophenol	4.902	0.20	5	0	98.0	19 - 121	5.126	4.48	20	
Phenanthrene	4.949	0.10	5	0	99.0	45 - 121	5.305	6.95	20	
Phenol	3.956	0.20	5	0.08592	77.4	20 - 124	3.48	12.8	20	
Pyrene	5.27	0.10	5	0	105	40 - 130	5.61	6.25	20	
Surr: 2,4,6-Tribromophenol	*4.371*	*0.20*	*5*	*0*	*87.4*	*34 - 129*	*4.646*	*6.08*	*20*	
Surr: 2-Fluorobiphenyl	*3.867*	*0.20*	*5*	*0*	*77.3*	*40 - 125*	*3.968*	*2.56*	*20*	
Surr: 2-Fluorophenol	*3.454*	*0.20*	*5*	*0*	*69.1*	*20 - 120*	*2.894*	*17.6*	*20*	
Surr: 4-Terphenyl-d14	*5.15*	*0.20*	*5*	*0*	*103*	*40 - 135*	*5.42*	*5.1*	*20*	
Surr: Nitrobenzene-d5	*3.342*	*0.20*	*5*	*0*	*66.8*	*41 - 120*	*3.91*	*15.7*	*20*	
Surr: Phenol-d6	*3.686*	*0.20*	*5*	*0*	*73.7*	*20 - 120*	*3.403*	*8*	*20*	

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	HS20010767

QC BATCH REPORT

Batch ID: 149912 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

The following samples were analyzed in this batch:

HS20010767-01	HS20010767-02	HS20010767-03	HS20010767-04
HS20010767-05	HS20010767-06	HS20010767-07	HS20010767-08
HS20010767-09	HS20010767-10	HS20010767-11	HS20010767-12
HS20010767-13	HS20010767-14	HS20010767-15	HS20010767-16
HS20010767-17	HS20010767-18	HS20010767-19	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010767

QC BATCH REPORT

Batch ID: 149913 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-149913** Units: **ug/L** Analysis Date: **23-Jan-2020 08:18**
Client ID: Run ID: **SV-7_354913** SeqNo: **5447234** PrepDate: **22-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	U	0.20								
2,4-Dimethylphenol	U	0.20								
2,4-Dinitrotoluene	U	0.20								
2,6-Dinitrotoluene	U	0.20								
2-Chloronaphthalene	U	0.20								
2-Methylnaphthalene	U	0.10								
4,6-Dinitro-2-methylphenol	U	0.20								
4-Nitrophenol	U	1.0								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Benz(a)anthracene	U	0.10								
Benzo(a)pyrene	U	0.10								
Bis(2-chloroethoxy)methane	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Chrysene	U	0.10								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Nitrobenzene	U	0.20								
N-Nitrosodiphenylamine	U	0.20								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*5.682*	*0.20*	*5*	*0*	*114*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*5.86*	*0.20*	*5*	*0*	*117*	*40 - 125*				
Surr: 2-Fluorophenol	*4.972*	*0.20*	*5*	*0*	*99.4*	*20 - 120*				
Surr: 4-Terphenyl-d14	*5.966*	*0.20*	*5*	*0*	*119*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.68*	*0.20*	*5*	*0*	*93.6*	*41 - 120*				
Surr: Phenol-d6	*4.665*	*0.20*	*5*	*0*	*93.3*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010767

QC BATCH REPORT

Batch ID: 149913 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCS Sample ID: **LCS-149913** Units: **ug/L** Analysis Date: **23-Jan-2020 08:37**
Client ID: Run ID: **SV-7_354913** SeqNo: **5447235** PrepDate: **22-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.666	0.20	5	0	93.3	39 - 127				
2,4-Dimethylphenol	4.637	0.20	5	0	92.7	35 - 120				
2,4-Dinitrotoluene	4.853	0.20	5	0	97.1	50 - 122				
2,6-Dinitrotoluene	4.895	0.20	5	0	97.9	50 - 120				
2-Chloronaphthalene	5.237	0.20	5	0	105	50 - 120				
2-Methylnaphthalene	4.811	0.10	5	0	96.2	50 - 120				
4,6-Dinitro-2-methylphenol	3.833	0.20	5	0	76.7	25 - 121				
4-Nitrophenol	4.307	1.0	5	0	86.1	30 - 130				
Acenaphthene	4.824	0.10	5	0	96.5	45 - 120				
Acenaphthylene	4.998	0.10	5	0	100.0	47 - 120				
Anthracene	5.009	0.10	5	0	100	45 - 120				
Benz(a)anthracene	4.636	0.10	5	0	92.7	40 - 120				
Benzo(a)pyrene	4.899	0.10	5	0	98.0	45 - 120				
Bis(2-chloroethoxy)methane	4.26	0.20	5	0	85.2	45 - 120				
Bis(2-ethylhexyl)phthalate	5.545	0.20	5	0	111	40 - 139				
Chrysene	4.739	0.10	5	0	94.8	43 - 120				
Dibenzofuran	4.863	0.10	5	0	97.3	50 - 120				
Di-n-butyl phthalate	5.557	0.20	5	0	111	45 - 123				
Fluoranthene	4.941	0.10	5	0	98.8	45 - 125				
Fluorene	4.979	0.10	5	0	99.6	49 - 120				
Naphthalene	5.181	0.10	5	0	104	45 - 120				
Nitrobenzene	3.945	0.20	5	0	78.9	44 - 120				
N-Nitrosodiphenylamine	4.857	0.20	5	0	97.1	40 - 125				
Pentachlorophenol	2.362	0.20	5	0	47.2	19 - 121				
Phenanthrene	4.929	0.10	5	0	98.6	45 - 121				
Phenol	4.554	0.20	5	0	91.1	20 - 124				
Pyrene	4.944	0.10	5	0	98.9	40 - 130				
Surr: 2,4,6-Tribromophenol	*5.524*	*0.20*	*5*	*0*	*110*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*5.551*	*0.20*	*5*	*0*	*111*	*40 - 125*				
Surr: 2-Fluorophenol	*4.237*	*0.20*	*5*	*0*	*84.7*	*20 - 120*				
Surr: 4-Terphenyl-d14	*5.865*	*0.20*	*5*	*0*	*117*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.474*	*0.20*	*5*	*0*	*89.5*	*41 - 120*				
Surr: Phenol-d6	*4.723*	*0.20*	*5*	*0*	*94.5*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010767

QC BATCH REPORT

Batch ID: 149913 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MS Sample ID: **HS20010767-29MS** Units: **ug/L** Analysis Date: **23-Jan-2020 10:57**
Client ID: **WG-1620-MW61A-20200116** Run ID: **SV-7_354913** SeqNo: **5447237** PrepDate: **22-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.127	0.20	5	0	82.5	39 - 127				
2,4-Dimethylphenol	3.82	0.20	5	0	76.4	35 - 120				
2,4-Dinitrotoluene	4.735	0.20	5	0	94.7	50 - 122				
2,6-Dinitrotoluene	4.441	0.20	5	0	88.8	50 - 120				
2-Chloronaphthalene	4.418	0.20	5	0	88.4	50 - 120				
2-Methylnaphthalene	4.114	0.10	5	0	82.3	50 - 120				
4,6-Dinitro-2-methylphenol	4.515	0.20	5	0	90.3	25 - 121				
4-Nitrophenol	4.885	1.0	5	0	97.7	30 - 130				
Acenaphthene	4.136	0.10	5	0.05203	81.7	45 - 120				
Acenaphthylene	4.391	0.10	5	0	87.8	47 - 120				
Anthracene	4.875	0.10	5	0	97.5	45 - 120				
Benz(a)anthracene	4.904	0.10	5	0	98.1	40 - 120				
Benzo(a)pyrene	4.989	0.10	5	0	99.8	45 - 120				
Bis(2-chloroethoxy)methane	3.628	0.20	5	0	72.6	45 - 120				
Bis(2-ethylhexyl)phthalate	5.934	0.20	5	0.08059	117	40 - 139				
Chrysene	4.795	0.10	5	0	95.9	43 - 120				
Dibenzofuran	4.243	0.10	5	0	84.9	50 - 120				
Di-n-butyl phthalate	5.583	0.20	5	0	112	45 - 123				
Fluoranthene	5.114	0.10	5	0.06004	101	45 - 125				
Fluorene	4.513	0.10	5	0	90.3	49 - 120				
Naphthalene	4.262	0.10	5	0.2136	81.0	45 - 120				
Nitrobenzene	3.349	0.20	5	0	67.0	44 - 120				
N-Nitrosodiphenylamine	4.286	0.20	5	0	85.7	40 - 125				
Pentachlorophenol	3.54	0.20	5	0	70.8	19 - 121				
Phenanthrene	4.755	0.10	5	0.1016	93.1	45 - 121				
Phenol	3.665	0.20	5	0	73.3	20 - 124				
Pyrene	5.074	0.10	5	0.0591	100	40 - 130				
Surr: 2,4,6-Tribromophenol	*5.896*	*0.20*	*5*	*0*	*118*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.696*	*0.20*	*5*	*0*	*93.9*	*40 - 125*				
Surr: 2-Fluorophenol	*3.424*	*0.20*	*5*	*0*	*68.5*	*20 - 120*				
Surr: 4-Terphenyl-d14	*6.154*	*0.20*	*5*	*0*	*123*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.847*	*0.20*	*5*	*0*	*76.9*	*41 - 120*				
Surr: Phenol-d6	*3.851*	*0.20*	*5*	*0*	*77.0*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010767

QC BATCH REPORT

Batch ID: 149913 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MSD Sample ID: **HS20010767-29MSD** Units: **ug/L** Analysis Date: **23-Jan-2020 11:16**
Client ID: **WG-1620-MW61A-20200116** Run ID: **SV-7_354913** SeqNo: **5447238** PrepDate: **22-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.446	0.20	5	0	88.9	39 - 127	4.127	7.43	20	
2,4-Dimethylphenol	4.161	0.20	5	0	83.2	35 - 120	3.82	8.54	20	
2,4-Dinitrotoluene	4.907	0.20	5	0	98.1	50 - 122	4.735	3.57	20	
2,6-Dinitrotoluene	4.699	0.20	5	0	94.0	50 - 120	4.441	5.64	20	
2-Chloronaphthalene	4.799	0.20	5	0	96.0	50 - 120	4.418	8.26	20	
2-Methylnaphthalene	4.319	0.10	5	0	86.4	50 - 120	4.114	4.88	20	
4,6-Dinitro-2-methylphenol	4.43	0.20	5	0	88.6	25 - 121	4.515	1.91	30	
4-Nitrophenol	4.913	1.0	5	0	98.3	30 - 130	4.885	0.58	20	
Acenaphthene	4.492	0.10	5	0.05203	88.8	45 - 120	4.136	8.24	20	
Acenaphthylene	4.652	0.10	5	0	93.0	47 - 120	4.391	5.76	20	
Anthracene	4.969	0.10	5	0	99.4	45 - 120	4.875	1.9	20	
Benz(a)anthracene	5.055	0.10	5	0	101	40 - 120	4.904	3.05	20	
Benzo(a)pyrene	4.885	0.10	5	0	97.7	45 - 120	4.989	2.12	20	
Bis(2-chloroethoxy)methane	3.667	0.20	5	0	73.3	45 - 120	3.628	1.06	20	
Bis(2-ethylhexyl)phthalate	6.102	0.20	5	0.08059	120	40 - 139	5.934	2.79	20	
Chrysene	4.891	0.10	5	0	97.8	43 - 120	4.795	2	20	
Dibenzofuran	4.52	0.10	5	0	90.4	50 - 120	4.243	6.32	20	
Di-n-butyl phthalate	5.617	0.20	5	0	112	45 - 123	5.583	0.62	20	
Fluoranthene	5.088	0.10	5	0.06004	101	45 - 125	5.114	0.51	20	
Fluorene	4.732	0.10	5	0	94.6	49 - 120	4.513	4.73	20	
Naphthalene	4.399	0.10	5	0.2136	83.7	45 - 120	4.262	3.17	20	
Nitrobenzene	3.289	0.20	5	0	65.8	44 - 120	3.349	1.8	20	
N-Nitrosodiphenylamine	4.566	0.20	5	0	91.3	40 - 125	4.286	6.33	20	
Pentachlorophenol	3.743	0.20	5	0	74.9	19 - 121	3.54	5.57	20	
Phenanthrene	4.944	0.10	5	0.1016	96.8	45 - 121	4.755	3.89	20	
Phenol	3.887	0.20	5	0	77.7	20 - 124	3.665	5.87	20	
Pyrene	5.317	0.10	5	0.0591	105	40 - 130	5.074	4.68	20	
Surr: 2,4,6-Tribromophenol	*5.221*	*0.20*	*5*	*0*	*104*	*34 - 129*	*5.896*	*12.2*	*20*	
Surr: 2-Fluorobiphenyl	*4.822*	*0.20*	*5*	*0*	*96.4*	*40 - 125*	*4.696*	*2.65*	*20*	
Surr: 2-Fluorophenol	*3.562*	*0.20*	*5*	*0*	*71.2*	*20 - 120*	*3.424*	*3.95*	*20*	
Surr: 4-Terphenyl-d14	*6.108*	*0.20*	*5*	*0*	*122*	*40 - 135*	*6.154*	*0.75*	*20*	
Surr: Nitrobenzene-d5	*3.608*	*0.20*	*5*	*0*	*72.2*	*41 - 120*	*3.847*	*6.42*	*20*	
Surr: Phenol-d6	*4.046*	*0.20*	*5*	*0*	*80.9*	*20 - 120*	*3.851*	*4.95*	*20*	

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	HS20010767

QC BATCH REPORT

Batch ID: 149913 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

The following samples were analyzed in this batch:

HS20010767-20	HS20010767-21	HS20010767-22	HS20010767-23
HS20010767-24	HS20010767-25	HS20010767-27	HS20010767-28
HS20010767-29			

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010767

QC BATCH REPORT

Batch ID: R354794 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200121** Units: **ug/L** Analysis Date: **21-Jan-2020 21:37**
Client ID: Run ID: **VOA4_354794** SeqNo: **5443118** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*51.87*	*1.0*	*50*	*0*	*104*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*47.88*	*1.0*	*50*	*0*	*95.8*	*82 - 115*				
Surr: Dibromofluoromethane	*49.49*	*1.0*	*50*	*0*	*99.0*	*73 - 126*				
Surr: Toluene-d8	*50.61*	*1.0*	*50*	*0*	*101*	*81 - 120*				

LCS Sample ID: **VLCSW-200121** Units: **ug/L** Analysis Date: **21-Jan-2020 20:48**
Client ID: Run ID: **VOA4_354794** SeqNo: **5443117** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	19.81	1.0	20	0	99.0	70 - 124				
Benzene	20.07	1.0	20	0	100	74 - 120				
Chlorobenzene	19.38	1.0	20	0	96.9	76 - 113				
Ethylbenzene	19.76	1.0	20	0	98.8	77 - 117				
Methylene chloride	21.54	2.0	20	0	108	70 - 127				
Toluene	19.62	1.0	20	0	98.1	77 - 118				
Vinyl chloride	19.87	1.0	20	0	99.3	70 - 130				
Xylenes, Total	62.57	1.0	60	0	104	75 - 122				
Surr: 1,2-Dichloroethane-d4	*51.57*	*1.0*	*50*	*0*	*103*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*49.97*	*1.0*	*50*	*0*	*99.9*	*82 - 115*				
Surr: Dibromofluoromethane	*49.85*	*1.0*	*50*	*0*	*99.7*	*73 - 126*				
Surr: Toluene-d8	*49.58*	*1.0*	*50*	*0*	*99.2*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010767

QC BATCH REPORT

Batch ID: R354794 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS20010767-02MS** Units: **ug/L** Analysis Date: **22-Jan-2020 00:05**
Client ID: **WG-1620-MW28C-20200116** Run ID: **VOA4_354794** SeqNo: **5443123** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Dichloroethane	17.06	1.0	20	0	85.3	70 - 127				
Benzene	17.8	1.0	20	0	89.0	70 - 127				
Chlorobenzene	17.78	1.0	20	0	88.9	70 - 114				
Ethylbenzene	18.09	1.0	20	0	90.5	70 - 124				
Methylene chloride	16.05	2.0	20	0	80.2	70 - 128				
Toluene	17.93	1.0	20	0	89.6	70 - 123				
Vinyl chloride	22.17	1.0	20	0.477	108	70 - 130				
Xylenes, Total	56.44	1.0	60	0	94.1	70 - 130				
Surr: 1,2-Dichloroethane-d4	*49.09*	*1.0*	*50*	*0*	*98.2*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.59*	*1.0*	*50*	*0*	*99.2*	*81 - 113*				
Surr: Dibromofluoromethane	*49.87*	*1.0*	*50*	*0*	*99.7*	*77 - 123*				
Surr: Toluene-d8	*50.43*	*1.0*	*50*	*0*	*101*	*82 - 127*				

MSD Sample ID: **HS20010767-02MSD** Units: **ug/L** Analysis Date: **22-Jan-2020 00:30**
Client ID: **WG-1620-MW28C-20200116** Run ID: **VOA4_354794** SeqNo: **5443124** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Dichloroethane	17.07	1.0	20	0	85.3	70 - 127	17.06	0.0484	20	
Benzene	17.72	1.0	20	0	88.6	70 - 127	17.8	0.415	20	
Chlorobenzene	17.36	1.0	20	0	86.8	70 - 114	17.78	2.36	20	
Ethylbenzene	17.78	1.0	20	0	88.9	70 - 124	18.09	1.74	20	
Methylene chloride	15.15	2.0	20	0	75.8	70 - 128	16.05	5.74	20	
Toluene	17.64	1.0	20	0	88.2	70 - 123	17.93	1.64	20	
Vinyl chloride	21.02	1.0	20	0.477	103	70 - 130	22.17	5.33	20	
Xylenes, Total	55.22	1.0	60	0	92.0	70 - 130	56.44	2.18	20	
Surr: 1,2-Dichloroethane-d4	*50.01*	*1.0*	*50*	*0*	*100*	*70 - 126*	*49.09*	*1.85*	*20*	
Surr: 4-Bromofluorobenzene	*49.69*	*1.0*	*50*	*0*	*99.4*	*81 - 113*	*49.59*	*0.216*	*20*	
Surr: Dibromofluoromethane	*49.6*	*1.0*	*50*	*0*	*99.2*	*77 - 123*	*49.87*	*0.535*	*20*	
Surr: Toluene-d8	*50.93*	*1.0*	*50*	*0*	*102*	*82 - 127*	*50.43*	*0.976*	*20*	

The following samples were analyzed in this batch: HS20010767-01 HS20010767-02 HS20010767-03

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010767

QC BATCH REPORT

Batch ID: R354799 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200121** Units: **ug/L** Analysis Date: **21-Jan-2020 12:55**
Client ID: Run ID: **VOA2_354799** SeqNo: **5443190** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*45.22*	*1.0*	*50*	*0*	*90.4*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*46.91*	*1.0*	*50*	*0*	*93.8*	*82 - 115*				
Surr: Dibromofluoromethane	*48.57*	*1.0*	*50*	*0*	*97.1*	*73 - 126*				
Surr: Toluene-d8	*50.32*	*1.0*	*50*	*0*	*101*	*81 - 120*				

LCS Sample ID: **VLCSW-200221** Units: **ug/L** Analysis Date: **21-Jan-2020 12:06**
Client ID: Run ID: **VOA2_354799** SeqNo: **5443189** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	17.66	1.0	20	0	88.3	70 - 124				
Benzene	17.2	1.0	20	0	86.0	74 - 120				
Chlorobenzene	18.44	1.0	20	0	92.2	76 - 113				
Ethylbenzene	17.94	1.0	20	0	89.7	77 - 117				
Methylene chloride	17.49	2.0	20	0	87.4	70 - 127				
Toluene	19.3	1.0	20	0	96.5	77 - 118				
Vinyl chloride	15.17	1.0	20	0	75.8	70 - 130				
Xylenes, Total	54.82	1.0	60	0	91.4	75 - 122				
Surr: 1,2-Dichloroethane-d4	*46.76*	*1.0*	*50*	*0*	*93.5*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*48.36*	*1.0*	*50*	*0*	*96.7*	*82 - 115*				
Surr: Dibromofluoromethane	*48.03*	*1.0*	*50*	*0*	*96.1*	*73 - 126*				
Surr: Toluene-d8	*49.46*	*1.0*	*50*	*0*	*98.9*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010767

QC BATCH REPORT

Batch ID: R354799 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS20010767-05MS** Units: **ug/L** Analysis Date: **21-Jan-2020 17:48**
Client ID: **WG-1620-MW84B-20200116** Run ID: **VOA2_354799** SeqNo: **5443202** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.36	1.0	20	0	81.8	70 - 127				
Benzene	24.4	1.0	20	6.383	90.1	70 - 127				
Chlorobenzene	17.96	1.0	20	0	89.8	70 - 114				
Ethylbenzene	28.72	1.0	20	9.361	96.8	70 - 124				
Methylene chloride	15.89	2.0	20	0	79.4	70 - 128				
Toluene	20.5	1.0	20	0	102	70 - 123				
Vinyl chloride	17.82	1.0	20	0	89.1	70 - 130				
Xylenes, Total	57.71	1.0	60	3.181	90.9	70 - 130				
Surr: 1,2-Dichloroethane-d4	*46.04*	*1.0*	*50*	*0*	*92.1*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*48.8*	*1.0*	*50*	*0*	*97.6*	*81 - 113*				
Surr: Dibromofluoromethane	*47.49*	*1.0*	*50*	*0*	*95.0*	*77 - 123*				
Surr: Toluene-d8	*49.2*	*1.0*	*50*	*0*	*98.4*	*82 - 127*				

MSD Sample ID: **HS20010767-05MSD** Units: **ug/L** Analysis Date: **21-Jan-2020 18:12**
Client ID: **WG-1620-MW84B-20200116** Run ID: **VOA2_354799** SeqNo: **5443203** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.51	1.0	20	0	82.6	70 - 127	16.36	0.908	20	
Benzene	24.24	1.0	20	6.383	89.3	70 - 127	24.4	0.678	20	
Chlorobenzene	17.68	1.0	20	0	88.4	70 - 114	17.96	1.54	20	
Ethylbenzene	28.32	1.0	20	9.361	94.8	70 - 124	28.72	1.41	20	
Methylene chloride	15.24	2.0	20	0	76.2	70 - 128	15.89	4.15	20	
Toluene	20.18	1.0	20	0	101	70 - 123	20.5	1.56	20	
Vinyl chloride	16.8	1.0	20	0	84.0	70 - 130	17.82	5.89	20	
Xylenes, Total	56.81	1.0	60	3.181	89.4	70 - 130	57.71	1.57	20	
Surr: 1,2-Dichloroethane-d4	*46.11*	*1.0*	*50*	*0*	*92.2*	*70 - 126*	*46.04*	*0.147*	*20*	
Surr: 4-Bromofluorobenzene	*49.23*	*1.0*	*50*	*0*	*98.5*	*81 - 113*	*48.8*	*0.867*	*20*	
Surr: Dibromofluoromethane	*47.4*	*1.0*	*50*	*0*	*94.8*	*77 - 123*	*47.49*	*0.191*	*20*	
Surr: Toluene-d8	*49.04*	*1.0*	*50*	*0*	*98.1*	*82 - 127*	*49.2*	*0.339*	*20*	

The following samples were analyzed in this batch:

HS20010767-04	HS20010767-05	HS20010767-06	HS20010767-08
HS20010767-09	HS20010767-11	HS20010767-12	HS20010767-13
HS20010767-14	HS20010767-15		

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010767

QC BATCH REPORT

Batch ID: R354802 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200121** Units: **ug/L** Analysis Date: **22-Jan-2020 00:44**
Client ID: Run ID: **VOA2_354802** SeqNo: **5443239** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*45.01*	*1.0*	*50*	*0*	*90.0*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*47.23*	*1.0*	*50*	*0*	*94.5*	*82 - 115*				
Surr: Dibromofluoromethane	*48.17*	*1.0*	*50*	*0*	*96.3*	*73 - 126*				
Surr: Toluene-d8	*49.91*	*1.0*	*50*	*0*	*99.8*	*81 - 120*				

LCS Sample ID: **VLCSW-200121** Units: **ug/L** Analysis Date: **21-Jan-2020 23:55**
Client ID: Run ID: **VOA2_354802** SeqNo: **5443238** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	17.23	1.0	20	0	86.2	70 - 124				
Benzene	17.15	1.0	20	0	85.8	74 - 120				
Chlorobenzene	18.1	1.0	20	0	90.5	76 - 113				
Ethylbenzene	17.55	1.0	20	0	87.7	77 - 117				
Methylene chloride	18.45	2.0	20	0	92.3	70 - 127				
Toluene	19.21	1.0	20	0	96.0	77 - 118				
Xylenes, Total	53.45	1.0	60	0	89.1	75 - 122				
Surr: 1,2-Dichloroethane-d4	*46.09*	*1.0*	*50*	*0*	*92.2*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*48.89*	*1.0*	*50*	*0*	*97.8*	*82 - 115*				
Surr: Dibromofluoromethane	*47.27*	*1.0*	*50*	*0*	*94.5*	*73 - 126*				
Surr: Toluene-d8	*49.15*	*1.0*	*50*	*0*	*98.3*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010767

QC BATCH REPORT

Batch ID: R354802 (0) **Instrument:** VOA2 **Method:** LOW LEVEL VOLATILES BY SW8260C

MS Sample ID: **HS20010767-18MS** Units: **ug/L** Analysis Date: **22-Jan-2020 02:21**
Client ID: **WG-1620-MW65D-20200116** Run ID: **VOA2_354802** SeqNo: **5443243** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.51	1.0	20	0	82.6	70 - 127				
Benzene	16.52	1.0	20	0	82.6	70 - 127				
Chlorobenzene	17.7	1.0	20	0	88.5	70 - 114				
Ethylbenzene	17.86	1.0	20	0	89.3	70 - 124				
Methylene chloride	15.38	2.0	20	0	76.9	70 - 128				
Toluene	18.94	1.0	20	0	94.7	70 - 123				
Xylenes, Total	53.57	1.0	60	0	89.3	70 - 130				
Surr: 1,2-Dichloroethane-d4	*46.68*	*1.0*	*50*	*0*	*93.4*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.26*	*1.0*	*50*	*0*	*98.5*	*81 - 113*				
Surr: Dibromofluoromethane	*48.04*	*1.0*	*50*	*0*	*96.1*	*77 - 123*				
Surr: Toluene-d8	*49.45*	*1.0*	*50*	*0*	*98.9*	*82 - 127*				

MSD Sample ID: **HS20010767-18MSD** Units: **ug/L** Analysis Date: **22-Jan-2020 02:46**
Client ID: **WG-1620-MW65D-20200116** Run ID: **VOA2_354802** SeqNo: **5443244** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.43	1.0	20	0	82.2	70 - 127	16.51	0.508	20	
Benzene	16.5	1.0	20	0	82.5	70 - 127	16.52	0.127	20	
Chlorobenzene	17.09	1.0	20	0	85.5	70 - 114	17.7	3.52	20	
Ethylbenzene	17.06	1.0	20	0	85.3	70 - 124	17.86	4.58	20	
Methylene chloride	15.4	2.0	20	0	77.0	70 - 128	15.38	0.0821	20	
Toluene	18.34	1.0	20	0	91.7	70 - 123	18.94	3.23	20	
Xylenes, Total	51.58	1.0	60	0	86.0	70 - 130	53.57	3.78	20	
Surr: 1,2-Dichloroethane-d4	*46.38*	*1.0*	*50*	*0*	*92.8*	*70 - 126*	*46.68*	*0.626*	*20*	
Surr: 4-Bromofluorobenzene	*48.86*	*1.0*	*50*	*0*	*97.7*	*81 - 113*	*49.26*	*0.814*	*20*	
Surr: Dibromofluoromethane	*47.8*	*1.0*	*50*	*0*	*95.6*	*77 - 123*	*48.04*	*0.511*	*20*	
Surr: Toluene-d8	*48.6*	*1.0*	*50*	*0*	*97.2*	*82 - 127*	*49.45*	*1.73*	*20*	

The following samples were analyzed in this batch:

HS20010767-07	HS20010767-10	HS20010767-16	HS20010767-17
HS20010767-18	HS20010767-19	HS20010767-20	HS20010767-21
HS20010767-22	HS20010767-23	HS20010767-24	HS20010767-25
HS20010767-26	HS20010767-27	HS20010767-28	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010767

QC BATCH REPORT

Batch ID: R354859 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200122** Units: **ug/L** Analysis Date: **22-Jan-2020 13:01**
Client ID: Run ID: **VOA4_354859** SeqNo: **5444319** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Surr: 1,2-Dichloroethane-d4	*49.62*	*1.0*	*50*	*0*	*99.2*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*48.7*	*1.0*	*50*	*0*	*97.4*	*82 - 115*				
Surr: Dibromofluoromethane	*48.78*	*1.0*	*50*	*0*	*97.6*	*73 - 126*				
Surr: Toluene-d8	*51.64*	*1.0*	*50*	*0*	*103*	*81 - 120*				

LCS Sample ID: **VLCSW-200122** Units: **ug/L** Analysis Date: **22-Jan-2020 12:12**
Client ID: Run ID: **VOA4_354859** SeqNo: **5444318** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Toluene	20.43	1.0	20	0	102	77 - 118				
Vinyl chloride	20.42	1.0	20	0	102	70 - 130				
Surr: 1,2-Dichloroethane-d4	*49.37*	*1.0*	*50*	*0*	*98.7*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*50.11*	*1.0*	*50*	*0*	*100*	*82 - 115*				
Surr: Dibromofluoromethane	*49.33*	*1.0*	*50*	*0*	*98.7*	*73 - 126*				
Surr: Toluene-d8	*50.79*	*1.0*	*50*	*0*	*102*	*81 - 120*				

MS Sample ID: **HS20010767-29MS** Units: **ug/L** Analysis Date: **22-Jan-2020 15:31**
Client ID: **WG-1620-MW61A-20200116** Run ID: **VOA4_354859** SeqNo: **5444325** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Toluene	18.26	1.0	20	0	91.3	70 - 123				
Vinyl chloride	23.34	1.0	20	0	117	70 - 130				
Surr: 1,2-Dichloroethane-d4	*48.8*	*1.0*	*50*	*0*	*97.6*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.91*	*1.0*	*50*	*0*	*99.8*	*81 - 113*				
Surr: Dibromofluoromethane	*49.62*	*1.0*	*50*	*0*	*99.2*	*77 - 123*				
Surr: Toluene-d8	*51.16*	*1.0*	*50*	*0*	*102*	*82 - 127*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010767

QC BATCH REPORT

Batch ID: R354859 (0) **Instrument:** VOA4 **Method:** LOW LEVEL VOLATILES BY SW8260C

MSD Sample ID: **HS20010767-29MSD** Units: **ug/L** Analysis Date: **22-Jan-2020 15:56**
Client ID: **WG-1620-MW61A-20200116** Run ID: **VOA4_354859** SeqNo: **5444326** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Toluene	17.93	1.0	20	0	89.7	70 - 123	18.26	1.81	20	
Vinyl chloride	22.63	1.0	20	0	113	70 - 130	23.34	3.09	20	
Surr: 1,2-Dichloroethane-d4	*49.43*	*1.0*	*50*	*0*	*98.9*	*70 - 126*	*48.8*	*1.28*	*20*	
Surr: 4-Bromofluorobenzene	*50.04*	*1.0*	*50*	*0*	*100*	*81 - 113*	*49.91*	*0.267*	*20*	
Surr: Dibromofluoromethane	*49.46*	*1.0*	*50*	*0*	*98.9*	*77 - 123*	*49.62*	*0.325*	*20*	
Surr: Toluene-d8	*51.24*	*1.0*	*50*	*0*	*102*	*82 - 127*	*51.16*	*0.159*	*20*	

The following samples were analyzed in this batch: HS20010767-10 HS20010767-23 HS20010767-24 HS20010767-26

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010767

QC BATCH REPORT

Batch ID: R355066 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200125** Units: **ug/L** Analysis Date: **25-Jan-2020 11:48**
Client ID: Run ID: **VOA2_355066** SeqNo: **5447954** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*50.24*	*1.0*	*50*	*0*	*100*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*47.97*	*1.0*	*50*	*0*	*95.9*	*82 - 115*				
Surr: Dibromofluoromethane	*51.29*	*1.0*	*50*	*0*	*103*	*73 - 126*				
Surr: Toluene-d8	*51.05*	*1.0*	*50*	*0*	*102*	*81 - 120*				

LCS Sample ID: **VLCSW-200225** Units: **ug/L** Analysis Date: **25-Jan-2020 10:59**
Client ID: Run ID: **VOA2_355066** SeqNo: **5447953** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	18.57	1.0	20	0	92.9	70 - 124				
Benzene	18.24	1.0	20	0	91.2	74 - 120				
Chlorobenzene	18.75	1.0	20	0	93.8	76 - 113				
Ethylbenzene	18.83	1.0	20	0	94.1	77 - 117				
Methylene chloride	18.77	2.0	20	0	93.8	70 - 127				
Toluene	20.88	1.0	20	0	104	77 - 118				
Vinyl chloride	19.59	1.0	20	0	98.0	70 - 130				
Xylenes, Total	58.21	1.0	60	0	97.0	75 - 122				
Surr: 1,2-Dichloroethane-d4	*50.59*	*1.0*	*50*	*0*	*101*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*49.95*	*1.0*	*50*	*0*	*99.9*	*82 - 115*				
Surr: Dibromofluoromethane	*48.84*	*1.0*	*50*	*0*	*97.7*	*73 - 126*				
Surr: Toluene-d8	*50.26*	*1.0*	*50*	*0*	*101*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010767

QC BATCH REPORT

Batch ID: R355066 (0) **Instrument:** VOA2 **Method:** LOW LEVEL VOLATILES BY SW8260C

MS Sample ID: **HS20010767-29MS** Units: **ug/L** Analysis Date: **25-Jan-2020 13:28**
Client ID: **WG-1620-MW61A-20200116** Run ID: **VOA2_355066** SeqNo: **5447958** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Dichloroethane	17.72	1.0	20	0	88.6	70 - 127				
Benzene	17.87	1.0	20	0	89.3	70 - 127				
Chlorobenzene	18.14	1.0	20	0	90.7	70 - 114				
Ethylbenzene	18.64	1.0	20	0	93.2	70 - 124				
Methylene chloride	18.41	2.0	20	0	92.0	70 - 128				
Toluene	20.39	1.0	20	0	102	70 - 123				
Vinyl chloride	18.29	1.0	20	0	91.4	70 - 130				
Xylenes, Total	57.1	1.0	60	0	95.2	70 - 130				
Surr: 1,2-Dichloroethane-d4	*51.56*	*1.0*	*50*	*0*	*103*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*50.55*	*1.0*	*50*	*0*	*101*	*81 - 113*				
Surr: Dibromofluoromethane	*50.1*	*1.0*	*50*	*0*	*100*	*77 - 123*				
Surr: Toluene-d8	*49.72*	*1.0*	*50*	*0*	*99.4*	*82 - 127*				

MSD Sample ID: **HS20010767-29MSD** Units: **ug/L** Analysis Date: **25-Jan-2020 13:52**
Client ID: **WG-1620-MW61A-20200116** Run ID: **VOA2_355066** SeqNo: **5447959** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Dichloroethane	17.67	1.0	20	0	88.4	70 - 127	17.72	0.267	20	
Benzene	17.9	1.0	20	0	89.5	70 - 127	17.87	0.197	20	
Chlorobenzene	18.23	1.0	20	0	91.2	70 - 114	18.14	0.504	20	
Ethylbenzene	18.75	1.0	20	0	93.8	70 - 124	18.64	0.579	20	
Methylene chloride	17.79	2.0	20	0	88.9	70 - 128	18.41	3.41	20	
Toluene	20.63	1.0	20	0	103	70 - 123	20.39	1.13	20	
Vinyl chloride	18.66	1.0	20	0	93.3	70 - 130	18.29	2	20	
Xylenes, Total	57.29	1.0	60	0	95.5	70 - 130	57.1	0.342	20	
Surr: 1,2-Dichloroethane-d4	*50.81*	*1.0*	*50*	*0*	*102*	*70 - 126*	*51.56*	*1.47*	*20*	
Surr: 4-Bromofluorobenzene	*49.73*	*1.0*	*50*	*0*	*99.5*	*81 - 113*	*50.55*	*1.63*	*20*	
Surr: Dibromofluoromethane	*49.79*	*1.0*	*50*	*0*	*99.6*	*77 - 123*	*50.1*	*0.63*	*20*	
Surr: Toluene-d8	*50.3*	*1.0*	*50*	*0*	*101*	*82 - 127*	*49.72*	*1.16*	*20*	

The following samples were analyzed in this batch: HS20010767-29

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20010767**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20010767

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS20010767-01	WG-1620-MW28A-20200116	Login	1/17/2020 2:56:40 PM	JRM	MET002
HS20010767-01	WG-1620-MW28A-20200116	Login	1/17/2020 2:56:40 PM	JRM	EXT090
HS20010767-01	WG-1620-MW28A-20200116	Login	1/17/2020 2:56:40 PM	JRM	VOA239

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20010767

Date/Time Received: **17-Jan-2020 13:11**
Received by: **PMG**

Checklist completed by: *Jared R. Makan* eSignature — 17-Jan-2020 Date

Reviewed by: *Dane J. Wacasey* eSignature — 21-Jan-2020 Date

Matrices: **Water**

Carrier name: **Client**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	4 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:206390, 215871, 215867, 215868
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	1.7°C, 1.8°C, 1.3°C, 2.0°C, 1.3°C, 1.4°C, 1.7°C Corrected Temp	IR25
Cooler(s)/Kit(s):	45153, 43016, 5236, 42700, 45137, 45594, 45067	
Date/Time sample(s) sent to storage:	01/07/2020 19:30	

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:
All VOCs received in cooler 45153 w/Trip Blank.
Samples received, not listed on COC:
MW48C - 01/16/20 10:20
MW47C - 01/16/20 11:05
MW61A (MS & MSD) - 01/16/20 12:00
Samples logged for analysis. IDs added to COC by ALS

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

Page 1 of 4

COC ID: 206390

HS20010767

WV

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-07-Rev0 SR 92688
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address	

A: 8260_LL_W (5632528 Volatile Organics Site Specific)
B: 8260_LL_W (5632528 VOC Site Specific + V.C.)
C: 8270_LOW_W (5632532 SemiVolatiles Site specific)
D: ICP_TW (5636002 5652646 Metals - As)
E:
F:
G:
H:
I:
J:

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~WG-1620-TB0-202001~~			Water	1	2		X									
2	WG-1620-MW28A-20200116	1-16-20	0910	W		6	X		X	X							
3	WG-1620-MW28C-20200116		1015	W		6	X		X	X							
4	WG-1620-MW28CMS-20200116		1015	W		6	X		X	X							
5	WG-1620-MW28MSD-20200116		1015	W		6	X		X	X							
6	WG-1620-FB08-20200116		1200	W		6	X		X	X							
7	WG-1620-MW89B-20200116		1245	W		6	X		X	X							
8	WG-1620-84B-20200116		1345	W		6	X		X	X							
9	WG-1620-63B-20200116		1445	W		6	X		X	X							
10	WG-1620-MW26A-20200116		1600	W		6	X		X	X							

Sampler(s) Please Print & Sign: JOHN BRAYDON

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 -hour [ ] Other

Results Due Date:

Relinquished by: Date: 1-17-20 Time: 1311 Received by:

Relinquished by: Date: Time: Received by (Laboratory): 1/17/2020 13:11

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.
45236	1.30.
43016	1.80.
45153	1.70

QC Package: (Check One Box Below)

- [ ] Level II Std QC
- [ ] Level III Std QC/Raw Data
- [ ] Level IV SW846/CLP
- [ ] Other
- [X] TRRP Checklist
- [ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

COC ID: 215871

HS20010767

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-07-Rev0 SR 92688
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address	

A	8260_LL_W (5632528 Volatile Organics Site Specific)
B	8260_LL_W (5632528 VOC Site Specific + V.C.)
C	8270_LOW_W (5632532 SemiVolatiles Site specific)
D	ICP_TW (5636002 5652646 Metals - As)
E	
F	
G	
H	
I	
J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~WG-1620-TB0__202001~~			Water	1	2		X									
2	WG-1620-MW68C-20200117	1-17-20	0910	W		6	X		X	X							
3	WG-1620-MW68A-20200117	"	1015	W		6	X		X	X							
4	WG-1620-FB09-20200117	"	1000	W		6	X		X	X							
5	WG-1620-MW27A-20200115	1-15-20	1640	W		6	X		X	X							
6	WG-1620-MW27C-20200115	"	1720	W		6	X		X	X							
7	WG-1620-MW59A-20200116	1-16-20	0805	W		6		X	X	X							
8	WG-1620-MW59B-20200116		0900	W		6		X	X	X							
9	WG-1620-MW59D-20200116		1350	W		6	X		X	X							
10	WG-1620-FD03-20200116	"	1350	W		6	X		X	X							

Sampler(s) Please Print & Sign: JOHN BRAYTON

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by:	Date: 1-17-20	Time: 311	Received by:	
Relinquished by:	Date:	Time:	Received by (Laboratory): 1/17/2020 13:11	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.
42700	2.0°
45137	1.3°
45594	1.4°
45067	1.7°

QC Package: (Check One Box Below)

- [ ] Level II Std QC
- [ ] Level III Std QC/Raw Data
- [ ] Level IV SW846/CLP
- [ ] Other
- [X] TRRP Checklist
- [ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Holland, MI +1 616 399 6070

Chain of Custody Form

Page 3 of 4

COC ID: 215867

HS20010767

Golder Associates Inc.
Houston TX-Wood Preserving Works

WV

ALS Project Manager:

Customer Information		Project Information			
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A	8260_LL_W (5632528 Volatile Organics Site Specific)
Work Order		Project Number	1620-07-Rev0 SR 92688	B	8260_LL_W (5632528 VOC Site Specific + V.C.)
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P	C	8270_LOW_W (5632532 SemiVolatiles Site specific)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	ICP_TW (5636002 5652646 Metals - As)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	TPH TR 1005
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~WQ-1620-TB0__202001~~			Water	1	2		X									
2	WG-1620-MW66D-20200116	1-16-20	1500	W		6	X		X	X							
3	WG-1620-MW65D-20200116		1620	W		6	X		X	X							
4	WG-1620-MW65DMS-20200116		1620	W		6	X		X	X							
5	WG-1620-MW65DMSD-20200116		1620	W		6	X		X	X							
6	WG-1620-MW36D-20200116		1725	W		6	X		X	X							
7	WG-1620-MW86C-20200117	1-17-20	0725	W		9	X		X	X	X						
8	WG-1620-~~FB~~FD04-20200117		0725	W		9	X		X	X	X						
9	WG-1620-MW75B-20200117		0815	W		9	X		X	X	X						
10	WG-1620-MW79A-20200117		0920	W		9	X		X	X	X						

Sampler(s) Please Print & Sign: JOHN BRAMTON

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: Date: 1-17-20 Time: 1311 Received by:

Relinquished by: Date: Time: Received by (Laboratory): 1/17/2020 13:11

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)

- [ ] Level II Std QC
- [ ] Level III Std QC/Raw Data
- [ ] Level IV SW846/CLP
- [ ] Other
- [X] TRRP Checklist
- [ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

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Chain of Custody Form

Page 4 of 4

COC ID: 215868

HS20010767

IV

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-07-Rev0 SR 92688
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address	

A	8260_LL_W (5632528 Volatile Organics Site Specific)
B	8260_LL_W (5632528 VOC Site Specific + V.C.)
C	8270_LOW_W (5632532 SemiVolatiles Site specific)
D	ICP_TW (5636002 5652646 Metals - As)
E	TPH TX1005
F	MS | MSD
G	
H	
I	
J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~WG-1620-TB0__-202001__~~			Water	1	2		X									
2	WG-1620-MW74B-20200117	1-17-20	1020			9	X		X	X	X						
3	WG-1620-MW78A-20200117	"	1125			9	X		X	X	X						
4	WG-1620-TB05-20200117	"	—			2	X										
5	WG-1620-MW61A-20200116	1-16-20	1200	Ground Water	1,2,8	18	—	X	X	X		X					
6	WG-1620-MW47C-20200116	1-16-20	1105	Ground Water	1,2,8	6	X		X	X							
7	WG-1620-MW48C-20200116	1-16-20	1020	Ground Water	1,2,8	6	X		X	X							
8																	
9																	
10																	

Sampler(s) Please Print & Sign: JOHN BRAUNAN

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: John Braunan — Date: 1-17-20 — Time: 1311

Received by: —

Relinquished by: — Date: — Time: —

Received by (Laboratory): 1/17/2020 13:11

Logged by (Laboratory): — Date: — Time: —

Checked by (Laboratory): —

Notes: UPRR Houston MW/PW

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)

- [ ] Level II Std QC
- [ ] Level III Std QC/Raw Data
- [ ] Level IV SW846/CLP
- [ ] Other
- [X] TRRP Checklist
- [ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

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January 29, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20010930**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 10 sample(s) on Jan 21, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20010930**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20010930**	

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 01/29/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20010930				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 149963,149998,R355061,R355066,R355150				
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?		X			1
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?		X			2
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		Were MS/MSD RPDs within laboratory QC limits?		X			3
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				4
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 01/29/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20010930				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 149963,149998,R355061,R355066,R355150				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?	X				
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 01/29/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20010930
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 149963,149998,R355061,R355066,R355150

ER#[5]	Description
1	Semivolatile Organics Method SW8270, sample WG-1620-MW32B-20200120, WG-1620-MW70B-20200120; the surrogate recoveries could not be determined due to dilution below the calibration range in the higher dilutions.
2	Batch 149998, Semivolatile Organics Method SW8260, LCS recovery was above the control limits for 2,4-Dinitrotoluene and 2,6-Dinitrotoluene. The analytes were not detected in the associated samples.
3	Batch 149998, Semivolatile Organics Method SW8260, sample HS20010910-03, MS/MSD RPD is for an unrelated sample.
4	Batch R355150, Volatile Organics Method SW8260, samples WG-1620-MW32B-20200120 and WG-1620-MW70B-20200120: Lowest practical dilution of 25x/50x performed due to high concentration of non-target analyte(s). Batch 149998, Semivolatile Organics Method SW8270, samples WG-1620-MW32B-20200120, WG-1620-MW70B-20200120; The GCMS semi-volatile extract of the samples were run at a dilution due to a high level of matrix interference.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20010930

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20010930-01	WQ-1620-TB06-20200120	Water	CG-121719-108	20-Jan-2020 00:00	21-Jan-2020 17:10	☐
HS20010930-02	WG-1620-MW32AR-20200120	Water		20-Jan-2020 09:10	21-Jan-2020 17:10	☐
HS20010930-03	WG-1620-MW32B-20200120	Water		20-Jan-2020 10:15	21-Jan-2020 17:10	☐
HS20010930-04	WG-1620-MW70B-20200120	Water		20-Jan-2020 11:30	21-Jan-2020 17:10	☐
HS20010930-05	WG-1620-MW33A-20200120	Water		20-Jan-2020 12:45	21-Jan-2020 17:10	☐
HS20010930-06	WG-1620-MW87C-20200120	Water		20-Jan-2020 14:00	21-Jan-2020 17:10	☐
HS20010930-07	WG-1620-MW90B-20200120	Water		20-Jan-2020 15:15	21-Jan-2020 17:10	☐
HS20010930-08	WG-1620-MW45C-20200120	Water		20-Jan-2020 16:30	21-Jan-2020 17:10	☐
HS20010930-09	WG-1620-FB10-20200120	Water		20-Jan-2020 09:30	21-Jan-2020 17:10	☐
HS20010930-10	WG-1620-FD05-20200120	Water		20-Jan-2020 00:00	21-Jan-2020 17:10	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WQ-1620-TB06-20200120
Collection Date: 20-Jan-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20010930
Lab ID:HS20010930-01
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	25-Jan-2020 12:41
Benzene		U	0.00020	0.0010	mg/L	1	25-Jan-2020 12:41
Chlorobenzene		U	0.00030	0.0010	mg/L	1	25-Jan-2020 12:41
Ethylbenzene		U	0.00030	0.0010	mg/L	1	25-Jan-2020 12:41
Methylene chloride		U	0.0010	0.0020	mg/L	1	25-Jan-2020 12:41
Toluene		U	0.00020	0.0010	mg/L	1	25-Jan-2020 12:41
Vinyl chloride		U	0.00020	0.0010	mg/L	1	25-Jan-2020 12:41
Xylenes, Total		U	0.00030	0.0010	mg/L	1	25-Jan-2020 12:41
Surr: 1,2-Dichloroethane-d4	*103*			*70-126*	*%REC*	*1*	*25-Jan-2020 12:41*
Surr: 4-Bromofluorobenzene	*97.3*			*81-113*	*%REC*	*1*	*25-Jan-2020 12:41*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*25-Jan-2020 12:41*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*25-Jan-2020 12:41*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW32AR-20200120
Collection Date: 20-Jan-2020 09:10

ANALYTICAL REPORT
WorkOrder:HS20010930
Lab ID:HS20010930-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	25-Jan-2020 19:22
Benzene		U	0.00020	0.0010	mg/L	1	25-Jan-2020 19:22
Chlorobenzene		U	0.00030	0.0010	mg/L	1	25-Jan-2020 19:22
Ethylbenzene		U	0.00030	0.0010	mg/L	1	25-Jan-2020 19:22
Methylene chloride		U	0.0010	0.0020	mg/L	1	25-Jan-2020 19:22
Toluene		U	0.00020	0.0010	mg/L	1	25-Jan-2020 19:22
Vinyl chloride		U	0.00020	0.0010	mg/L	1	25-Jan-2020 19:22
Xylenes, Total		U	0.00030	0.0010	mg/L	1	25-Jan-2020 19:22
Surr: 1,2-Dichloroethane-d4	*97.3*			*70-126*	*%REC*	*1*	*25-Jan-2020 19:22*
Surr: 4-Bromofluorobenzene	*96.7*			*81-113*	*%REC*	*1*	*25-Jan-2020 19:22*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*25-Jan-2020 19:22*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*25-Jan-2020 19:22*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW32AR-20200120
Collection Date: 20-Jan-2020 09:10

ANALYTICAL REPORT
WorkOrder:HS20010930
Lab ID:HS20010930-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 27-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	29-Jan-2020 00:59
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	29-Jan-2020 00:59
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	29-Jan-2020 00:59
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	29-Jan-2020 00:59
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	29-Jan-2020 00:59
2-Methylnaphthalene	**0.000028**	J	**0.000019**	**0.00010**	**mg/L**	1	29-Jan-2020 00:59
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	29-Jan-2020 00:59
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	29-Jan-2020 00:59
Acenaphthene	**0.0014**		**0.000027**	**0.00010**	**mg/L**	1	29-Jan-2020 00:59
Acenaphthylene	U		0.000015	0.00010	mg/L	1	29-Jan-2020 00:59
Anthracene	U		0.000014	0.00010	mg/L	1	29-Jan-2020 00:59
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	29-Jan-2020 00:59
Benzo(a)pyrene	**0.000081**	J	**0.000020**	**0.00010**	**mg/L**	1	29-Jan-2020 00:59
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	29-Jan-2020 00:59
Bis(2-ethylhexyl)phthalate	**0.000043**	J	**0.000037**	**0.00020**	**mg/L**	1	29-Jan-2020 00:59
Chrysene	**0.000042**	J	**0.000021**	**0.00010**	**mg/L**	1	29-Jan-2020 00:59
Dibenzofuran	U		0.000020	0.00010	mg/L	1	29-Jan-2020 00:59
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	29-Jan-2020 00:59
Fluoranthene	**0.00029**		**0.000010**	**0.00010**	**mg/L**	1	29-Jan-2020 00:59
Fluorene	**0.000038**	J	**0.000030**	**0.00010**	**mg/L**	1	29-Jan-2020 00:59
Naphthalene	**0.00014**		**0.000020**	**0.00010**	**mg/L**	1	29-Jan-2020 00:59
Nitrobenzene	U		0.000024	0.00020	mg/L	1	29-Jan-2020 00:59
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	29-Jan-2020 00:59
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	29-Jan-2020 00:59
Phenanthrene	**0.000032**	J	**0.000021**	**0.00010**	**mg/L**	1	29-Jan-2020 00:59
Phenol	U		0.000035	0.00020	mg/L	1	29-Jan-2020 00:59
Pyrene	**0.00042**		**0.000019**	**0.00010**	**mg/L**	1	29-Jan-2020 00:59
Surr: 2,4,6-Tribromophenol	*75.9*			*34-129*	*%REC*	*1*	*29-Jan-2020 00:59*
Surr: 2-Fluorobiphenyl	*86.4*			*40-125*	*%REC*	*1*	*29-Jan-2020 00:59*
Surr: 2-Fluorophenol	*72.7*			*20-120*	*%REC*	*1*	*29-Jan-2020 00:59*
Surr: 4-Terphenyl-d14	*99.3*			*40-135*	*%REC*	*1*	*29-Jan-2020 00:59*
Surr: Nitrobenzene-d5	*75.2*			*41-120*	*%REC*	*1*	*29-Jan-2020 00:59*
Surr: Phenol-d6	*70.0*			*20-120*	*%REC*	*1*	*29-Jan-2020 00:59*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 24-Jan-2020		Analyst: JC
Arsenic	**0.00770**		**0.000400**	**0.00200**	**mg/L**	1	24-Jan-2020 23:38

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW32B-20200120
Collection Date: 20-Jan-2020 10:15

ANALYTICAL REPORT
WorkOrder:HS20010930
Lab ID:HS20010930-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.0050	0.025	mg/L	25	28-Jan-2020 08:52
Benzene	**1.8**		**0.0050**	**0.025**	**mg/L**	25	28-Jan-2020 08:52
Chlorobenzene	U		0.0075	0.025	mg/L	25	28-Jan-2020 08:52
Ethylbenzene	**0.73**		**0.0075**	**0.025**	**mg/L**	25	28-Jan-2020 08:52
Methylene chloride	U		0.025	0.050	mg/L	25	28-Jan-2020 08:52
Toluene	**2.3**		**0.0050**	**0.025**	**mg/L**	25	28-Jan-2020 08:52
Vinyl chloride	U		0.0050	0.025	mg/L	25	28-Jan-2020 08:52
Xylenes, Total	**2.1**		**0.0075**	**0.025**	**mg/L**	25	28-Jan-2020 08:52
Surr: 1,2-Dichloroethane-d4	*102*			*70-126*	*%REC*	*25*	*28-Jan-2020 08:52*
Surr: 4-Bromofluorobenzene	*104*			*81-113*	*%REC*	*25*	*28-Jan-2020 08:52*
Surr: Dibromofluoromethane	*97.9*			*77-123*	*%REC*	*25*	*28-Jan-2020 08:52*
Surr: Toluene-d8	*95.4*			*82-127*	*%REC*	*25*	*28-Jan-2020 08:52*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW32B-20200120
Collection Date: 20-Jan-2020 10:15

ANALYTICAL REPORT
WorkOrder:HS20010930
Lab ID:HS20010930-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 27-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.00042	0.0040	mg/L	10	29-Jan-2020 13:29
2,4-Dimethylphenol	**26**		**0.16**	**0.80**	**mg/L**	2000	29-Jan-2020 15:03
2,4-Dinitrotoluene	U		0.0012	0.0040	mg/L	10	29-Jan-2020 13:29
2,6-Dinitrotoluene	U		0.00084	0.0040	mg/L	10	29-Jan-2020 13:29
2-Chloronaphthalene	U		0.00042	0.0040	mg/L	10	29-Jan-2020 13:29
2-Methylnaphthalene	**50**		**0.76**	**4.0**	**mg/L**	20000	29-Jan-2020 15:40
4,6-Dinitro-2-methylphenol	U		0.00040	0.0040	mg/L	10	29-Jan-2020 13:29
4-Nitrophenol	U		0.00094	0.020	mg/L	10	29-Jan-2020 13:29
Acenaphthene	**26**		**0.11**	**0.40**	**mg/L**	2000	29-Jan-2020 15:03
Acenaphthylene	U		0.00030	0.0020	mg/L	10	29-Jan-2020 13:29
Anthracene	**23**		**0.056**	**0.40**	**mg/L**	2000	29-Jan-2020 15:03
Benz(a)anthracene	**2.2**		**0.020**	**0.040**	**mg/L**	200	29-Jan-2020 14:44
Benzo(a)pyrene	**0.74**		**0.0080**	**0.040**	**mg/L**	200	29-Jan-2020 14:44
Bis(2-chloroethoxy)methane	U		0.00060	0.0040	mg/L	10	29-Jan-2020 13:29
Bis(2-ethylhexyl)phthalate	U		0.00074	0.0040	mg/L	10	29-Jan-2020 13:29
Chrysene	**2.4**		**0.0084**	**0.040**	**mg/L**	200	29-Jan-2020 14:44
Dibenzofuran	**28**		**0.080**	**0.40**	**mg/L**	2000	29-Jan-2020 15:03
Di-n-butyl phthalate	U		0.00040	0.0040	mg/L	10	29-Jan-2020 13:29
Fluoranthene	**21**		**0.040**	**0.40**	**mg/L**	2000	29-Jan-2020 15:03
Fluorene	**23**		**0.12**	**0.40**	**mg/L**	2000	29-Jan-2020 15:03
Naphthalene	**300**		**0.80**	**4.0**	**mg/L**	20000	29-Jan-2020 15:40
Nitrobenzene	U		0.00048	0.0040	mg/L	10	29-Jan-2020 13:29
N-Nitrosodiphenylamine	U		0.00050	0.0040	mg/L	10	29-Jan-2020 13:29
Pentachlorophenol	U		0.0016	0.0040	mg/L	10	29-Jan-2020 13:29
Phenanthrene	**69**		**0.84**	**4.0**	**mg/L**	20000	29-Jan-2020 15:40
Phenol	**17**		**0.14**	**0.80**	**mg/L**	2000	29-Jan-2020 15:03
Pyrene	**14**		**0.076**	**0.40**	**mg/L**	2000	29-Jan-2020 15:03
Surr: 2,4,6-Tribromophenol	*83.0*			*34-129*	*%REC*	*10*	*29-Jan-2020 13:29*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*200*	*29-Jan-2020 14:44*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*2000*	*29-Jan-2020 15:03*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*20000*	*29-Jan-2020 15:40*
Surr: 2-Fluorobiphenyl	*112*			*40-125*	*%REC*	*10*	*29-Jan-2020 13:29*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*200*	*29-Jan-2020 14:44*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*2000*	*29-Jan-2020 15:03*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*20000*	*29-Jan-2020 15:40*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*20000*	*29-Jan-2020 15:40*
Surr: 2-Fluorophenol	*98.6*			*20-120*	*%REC*	*10*	*29-Jan-2020 13:29*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*200*	*29-Jan-2020 14:44*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*2000*	*29-Jan-2020 15:03*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW32B-20200120
Collection Date: 20-Jan-2020 10:15

ANALYTICAL REPORT
WorkOrder:HS20010930
Lab ID:HS20010930-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 27-Jan-2020		Analyst: LG
Surr: 4-Terphenyl-d14	*79.5*	*J*		*40-135*	*%REC*	*10*	*29-Jan-2020 13:29*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*200*	*29-Jan-2020 14:44*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*2000*	*29-Jan-2020 15:03*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*20000*	*29-Jan-2020 15:40*
Surr: Nitrobenzene-d5	*84.4*			*41-120*	*%REC*	*10*	*29-Jan-2020 13:29*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*200*	*29-Jan-2020 14:44*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*2000*	*29-Jan-2020 15:03*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*20000*	*29-Jan-2020 15:40*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*2000*	*29-Jan-2020 15:03*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*20000*	*29-Jan-2020 15:40*
Surr: Phenol-d6	*105*			*20-120*	*%REC*	*10*	*29-Jan-2020 13:29*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*200*	*29-Jan-2020 14:44*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 24-Jan-2020		Analyst: JHD
Arsenic	**0.00193**	J	**0.000400**	**0.00200**	**mg/L**	1	27-Jan-2020 14:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW70B-20200120
Collection Date: 20-Jan-2020 11:30

ANALYTICAL REPORT
WorkOrder:HS20010930
Lab ID:HS20010930-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.010	0.050	mg/L	50	28-Jan-2020 09:19
Benzene	**1.9**		**0.010**	**0.050**	**mg/L**	50	28-Jan-2020 09:19
Chlorobenzene	U		0.015	0.050	mg/L	50	28-Jan-2020 09:19
Ethylbenzene	**0.57**		**0.015**	**0.050**	**mg/L**	50	28-Jan-2020 09:19
Methylene chloride	U		0.050	0.10	mg/L	50	28-Jan-2020 09:19
Toluene	**2.1**		**0.010**	**0.050**	**mg/L**	50	28-Jan-2020 09:19
Vinyl chloride	U		0.010	0.050	mg/L	50	28-Jan-2020 09:19
Xylenes, Total	**1.5**		**0.015**	**0.050**	**mg/L**	50	28-Jan-2020 09:19
Surr: 1,2-Dichloroethane-d4	*103*			*70-126*	*%REC*	*50*	*28-Jan-2020 09:19*
Surr: 4-Bromofluorobenzene	*101*			*81-113*	*%REC*	*50*	*28-Jan-2020 09:19*
Surr: Dibromofluoromethane	*95.7*			*77-123*	*%REC*	*50*	*28-Jan-2020 09:19*
Surr: Toluene-d8	*97.6*			*82-127*	*%REC*	*50*	*28-Jan-2020 09:19*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW70B-20200120
Collection Date: 20-Jan-2020 11:30

ANALYTICAL REPORT
WorkOrder:HS20010930
Lab ID:HS20010930-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 27-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.00042	0.0040	mg/L	10	29-Jan-2020 14:06
2,4-Dimethylphenol	**49**		**0.64**	**3.2**	**mg/L**	8000	29-Jan-2020 15:59
2,4-Dinitrotoluene	U		0.0012	0.0040	mg/L	10	29-Jan-2020 14:06
2,6-Dinitrotoluene	U		0.00084	0.0040	mg/L	10	29-Jan-2020 14:06
2-Chloronaphthalene	U		0.00042	0.0040	mg/L	10	29-Jan-2020 14:06
2-Methylnaphthalene	**10**		**0.076**	**0.40**	**mg/L**	2000	29-Jan-2020 15:21
4,6-Dinitro-2-methylphenol	U		0.00040	0.0040	mg/L	10	29-Jan-2020 14:06
4-Nitrophenol	U		0.00094	0.020	mg/L	10	29-Jan-2020 14:06
Acenaphthene	**7.1**		**0.11**	**0.40**	**mg/L**	2000	29-Jan-2020 15:21
Acenaphthylene	**0.079**		**0.00030**	**0.0020**	**mg/L**	10	29-Jan-2020 14:06
Anthracene	**5.8**		**0.056**	**0.40**	**mg/L**	2000	29-Jan-2020 15:21
Benz(a)anthracene	**0.52**		**0.020**	**0.040**	**mg/L**	200	29-Jan-2020 14:25
Benzo(a)pyrene	**0.13**		**0.00040**	**0.0020**	**mg/L**	10	29-Jan-2020 14:06
Bis(2-chloroethoxy)methane	U		0.00060	0.0040	mg/L	10	29-Jan-2020 14:06
Bis(2-ethylhexyl)phthalate	**0.0039**	J	**0.00074**	**0.0040**	**mg/L**	10	29-Jan-2020 14:06
Chrysene	**0.63**		**0.0084**	**0.040**	**mg/L**	200	29-Jan-2020 14:25
Dibenzofuran	**6.2**		**0.080**	**0.40**	**mg/L**	2000	29-Jan-2020 15:21
Di-n-butyl phthalate	U		0.00040	0.0040	mg/L	10	29-Jan-2020 14:06
Fluoranthene	**4.7**		**0.040**	**0.40**	**mg/L**	2000	29-Jan-2020 15:21
Fluorene	**6.7**		**0.12**	**0.40**	**mg/L**	2000	29-Jan-2020 15:21
Naphthalene	**71**		**0.32**	**1.6**	**mg/L**	8000	29-Jan-2020 15:59
Nitrobenzene	U		0.00048	0.0040	mg/L	10	29-Jan-2020 14:06
N-Nitrosodiphenylamine	U		0.00050	0.0040	mg/L	10	29-Jan-2020 14:06
Pentachlorophenol	U		0.0016	0.0040	mg/L	10	29-Jan-2020 14:06
Phenanthrene	**14**		**0.084**	**0.40**	**mg/L**	2000	29-Jan-2020 15:21
Phenol	**3.4**		**0.014**	**0.080**	**mg/L**	200	29-Jan-2020 14:25
Pyrene	**3.2**		**0.0076**	**0.040**	**mg/L**	200	29-Jan-2020 14:25
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*2000*	*29-Jan-2020 15:21*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*8000*	*29-Jan-2020 15:59*
Surr: 2,4,6-Tribromophenol	*82.9*			*34-129*	*%REC*	*10*	*29-Jan-2020 14:06*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*200*	*29-Jan-2020 14:25*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*200*	*29-Jan-2020 14:25*
Surr: 2-Fluorobiphenyl	*98.3*			*40-125*	*%REC*	*10*	*29-Jan-2020 14:06*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*2000*	*29-Jan-2020 15:21*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*8000*	*29-Jan-2020 15:59*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*2000*	*29-Jan-2020 15:21*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*8000*	*29-Jan-2020 15:59*
Surr: 2-Fluorophenol	*94.2*			*20-120*	*%REC*	*10*	*29-Jan-2020 14:06*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*200*	*29-Jan-2020 14:25*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW70B-20200120
Collection Date: 20-Jan-2020 11:30

ANALYTICAL REPORT
WorkOrder:HS20010930
Lab ID:HS20010930-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 27-Jan-2020		Analyst: LG
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*200*	*29-Jan-2020 14:25*
Surr: 4-Terphenyl-d14	*77.9*	*J*		*40-135*	*%REC*	*10*	*29-Jan-2020 14:06*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*2000*	*29-Jan-2020 15:21*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*8000*	*29-Jan-2020 15:59*
Surr: Nitrobenzene-d5	*82.7*			*41-120*	*%REC*	*10*	*29-Jan-2020 14:06*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*200*	*29-Jan-2020 14:25*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*2000*	*29-Jan-2020 15:21*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*8000*	*29-Jan-2020 15:59*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*200*	*29-Jan-2020 14:25*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*2000*	*29-Jan-2020 15:21*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*8000*	*29-Jan-2020 15:59*
Surr: Phenol-d6	*98.9*			*20-120*	*%REC*	*10*	*29-Jan-2020 14:06*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 24-Jan-2020		Analyst: JHD
Arsenic	**0.00120**	J	**0.000400**	**0.00200**	**mg/L**	1	27-Jan-2020 14:43

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW33A-20200120
Collection Date: 20-Jan-2020 12:45

ANALYTICAL REPORT
WorkOrder:HS20010930
Lab ID:HS20010930-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	25-Jan-2020 19:47
Benzene		U	0.00020	0.0010	mg/L	1	25-Jan-2020 19:47
Chlorobenzene		U	0.00030	0.0010	mg/L	1	25-Jan-2020 19:47
Ethylbenzene		U	0.00030	0.0010	mg/L	1	25-Jan-2020 19:47
Methylene chloride		U	0.0010	0.0020	mg/L	1	25-Jan-2020 19:47
Toluene		U	0.00020	0.0010	mg/L	1	25-Jan-2020 19:47
Vinyl chloride		U	0.00020	0.0010	mg/L	1	25-Jan-2020 19:47
Xylenes, Total		U	0.00030	0.0010	mg/L	1	25-Jan-2020 19:47
Surr: 1,2-Dichloroethane-d4	*96.7*			*70-126*	*%REC*	*1*	*25-Jan-2020 19:47*
Surr: 4-Bromofluorobenzene	*95.9*			*81-113*	*%REC*	*1*	*25-Jan-2020 19:47*
Surr: Dibromofluoromethane	*100*			*77-123*	*%REC*	*1*	*25-Jan-2020 19:47*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*25-Jan-2020 19:47*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW33A-20200120
Collection Date: 20-Jan-2020 12:45

ANALYTICAL REPORT
WorkOrder:HS20010930
Lab ID:HS20010930-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 27-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	29-Jan-2020 01:18
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	29-Jan-2020 01:18
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	29-Jan-2020 01:18
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	29-Jan-2020 01:18
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	29-Jan-2020 01:18
2-Methylnaphthalene	**0.000063**	J	**0.000019**	**0.00010**	**mg/L**	1	29-Jan-2020 01:18
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	29-Jan-2020 01:18
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	29-Jan-2020 01:18
Acenaphthene	**0.00073**		**0.000027**	**0.00010**	**mg/L**	1	29-Jan-2020 01:18
Acenaphthylene	**0.000049**	J	**0.000015**	**0.00010**	**mg/L**	1	29-Jan-2020 01:18
Anthracene	**0.000057**	J	**0.000014**	**0.00010**	**mg/L**	1	29-Jan-2020 01:18
Benz(a)anthracene	**0.00012**		**0.000050**	**0.00010**	**mg/L**	1	29-Jan-2020 01:18
Benzo(a)pyrene	**0.000066**	J	**0.000020**	**0.00010**	**mg/L**	1	29-Jan-2020 01:18
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	29-Jan-2020 01:18
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	29-Jan-2020 01:18
Chrysene	**0.000078**	J	**0.000021**	**0.00010**	**mg/L**	1	29-Jan-2020 01:18
Dibenzofuran	**0.000096**	J	**0.000020**	**0.00010**	**mg/L**	1	29-Jan-2020 01:18
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	29-Jan-2020 01:18
Fluoranthene	**0.00035**		**0.000010**	**0.00010**	**mg/L**	1	29-Jan-2020 01:18
Fluorene	**0.000059**	J	**0.000030**	**0.00010**	**mg/L**	1	29-Jan-2020 01:18
Naphthalene	**0.00050**		**0.000020**	**0.00010**	**mg/L**	1	29-Jan-2020 01:18
Nitrobenzene	U		0.000024	0.00020	mg/L	1	29-Jan-2020 01:18
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	29-Jan-2020 01:18
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	29-Jan-2020 01:18
Phenanthrene	**0.000056**	J	**0.000021**	**0.00010**	**mg/L**	1	29-Jan-2020 01:18
Phenol	U		0.000035	0.00020	mg/L	1	29-Jan-2020 01:18
Pyrene	**0.00019**		**0.000019**	**0.00010**	**mg/L**	1	29-Jan-2020 01:18
Surr: 2,4,6-Tribromophenol	*81.6*			*34-129*	*%REC*	*1*	*29-Jan-2020 01:18*
Surr: 2-Fluorobiphenyl	*101*			*40-125*	*%REC*	*1*	*29-Jan-2020 01:18*
Surr: 2-Fluorophenol	*75.3*			*20-120*	*%REC*	*1*	*29-Jan-2020 01:18*
Surr: 4-Terphenyl-d14	*100*			*40-135*	*%REC*	*1*	*29-Jan-2020 01:18*
Surr: Nitrobenzene-d5	*86.8*			*41-120*	*%REC*	*1*	*29-Jan-2020 01:18*
Surr: Phenol-d6	*73.9*			*20-120*	*%REC*	*1*	*29-Jan-2020 01:18*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 24-Jan-2020		Analyst: JC
Arsenic	**0.00810**		**0.000400**	**0.00200**	**mg/L**	1	24-Jan-2020 23:58

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW87C-20200120
Collection Date: 20-Jan-2020 14:00

ANALYTICAL REPORT
WorkOrder:HS20010930
Lab ID:HS20010930-06
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	25-Jan-2020 20:11
Benzene		U	0.00020	0.0010	mg/L	1	25-Jan-2020 20:11
Chlorobenzene		U	0.00030	0.0010	mg/L	1	25-Jan-2020 20:11
Ethylbenzene		U	0.00030	0.0010	mg/L	1	25-Jan-2020 20:11
Methylene chloride		U	0.0010	0.0020	mg/L	1	25-Jan-2020 20:11
Toluene		U	0.00020	0.0010	mg/L	1	25-Jan-2020 20:11
Vinyl chloride		U	0.00020	0.0010	mg/L	1	25-Jan-2020 20:11
Xylenes, Total		U	0.00030	0.0010	mg/L	1	25-Jan-2020 20:11
Surr: 1,2-Dichloroethane-d4	*98.1*			*70-126*	*%REC*	*1*	*25-Jan-2020 20:11*
Surr: 4-Bromofluorobenzene	*94.8*			*81-113*	*%REC*	*1*	*25-Jan-2020 20:11*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*25-Jan-2020 20:11*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*25-Jan-2020 20:11*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW87C-20200120
Collection Date: 20-Jan-2020 14:00

ANALYTICAL REPORT
WorkOrder:HS20010930
Lab ID:HS20010930-06
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 27-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	29-Jan-2020 01:37
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	29-Jan-2020 01:37
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	29-Jan-2020 01:37
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	29-Jan-2020 01:37
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	29-Jan-2020 01:37
2-Methylnaphthalene	**0.00023**		**0.000019**	**0.00010**	**mg/L**	1	29-Jan-2020 01:37
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	29-Jan-2020 01:37
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	29-Jan-2020 01:37
Acenaphthene	**0.00011**		**0.000027**	**0.00010**	**mg/L**	1	29-Jan-2020 01:37
Acenaphthylene	U		0.000015	0.00010	mg/L	1	29-Jan-2020 01:37
Anthracene	**0.000088**	J	**0.000014**	**0.00010**	**mg/L**	1	29-Jan-2020 01:37
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	29-Jan-2020 01:37
Benzo(a)pyrene	**0.000066**	J	**0.000020**	**0.00010**	**mg/L**	1	29-Jan-2020 01:37
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	29-Jan-2020 01:37
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	29-Jan-2020 01:37
Chrysene	U		0.000021	0.00010	mg/L	1	29-Jan-2020 01:37
Dibenzofuran	**0.00011**		**0.000020**	**0.00010**	**mg/L**	1	29-Jan-2020 01:37
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	29-Jan-2020 01:37
Fluoranthene	**0.000086**	J	**0.000010**	**0.00010**	**mg/L**	1	29-Jan-2020 01:37
Fluorene	**0.000093**	J	**0.000030**	**0.00010**	**mg/L**	1	29-Jan-2020 01:37
Naphthalene	**0.0011**		**0.000020**	**0.00010**	**mg/L**	1	29-Jan-2020 01:37
Nitrobenzene	U		0.000024	0.00020	mg/L	1	29-Jan-2020 01:37
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	29-Jan-2020 01:37
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	29-Jan-2020 01:37
Phenanthrene	**0.00028**		**0.000021**	**0.00010**	**mg/L**	1	29-Jan-2020 01:37
Phenol	**0.00048**		**0.000035**	**0.00020**	**mg/L**	1	29-Jan-2020 01:37
Pyrene	**0.000057**	J	**0.000019**	**0.00010**	**mg/L**	1	29-Jan-2020 01:37
Surr: 2,4,6-Tribromophenol	*69.4*			*34-129*	*%REC*	*1*	*29-Jan-2020 01:37*
Surr: 2-Fluorobiphenyl	*94.4*			*40-125*	*%REC*	*1*	*29-Jan-2020 01:37*
Surr: 2-Fluorophenol	*79.6*			*20-120*	*%REC*	*1*	*29-Jan-2020 01:37*
Surr: 4-Terphenyl-d14	*99.6*			*40-135*	*%REC*	*1*	*29-Jan-2020 01:37*
Surr: Nitrobenzene-d5	*85.2*			*41-120*	*%REC*	*1*	*29-Jan-2020 01:37*
Surr: Phenol-d6	*78.9*			*20-120*	*%REC*	*1*	*29-Jan-2020 01:37*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 24-Jan-2020		Analyst: JC
Arsenic	**0.00135**	J	**0.000400**	**0.00200**	**mg/L**	1	25-Jan-2020 00:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW90B-20200120
Collection Date: 20-Jan-2020 15:15

ANALYTICAL REPORT
WorkOrder:HS20010930
Lab ID:HS20010930-07
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	25-Jan-2020 20:36
Benzene		U	0.00020	0.0010	mg/L	1	25-Jan-2020 20:36
Chlorobenzene		U	0.00030	0.0010	mg/L	1	25-Jan-2020 20:36
Ethylbenzene		U	0.00030	0.0010	mg/L	1	25-Jan-2020 20:36
Methylene chloride		U	0.0010	0.0020	mg/L	1	25-Jan-2020 20:36
Toluene		U	0.00020	0.0010	mg/L	1	25-Jan-2020 20:36
Vinyl chloride		U	0.00020	0.0010	mg/L	1	25-Jan-2020 20:36
Xylenes, Total		U	0.00030	0.0010	mg/L	1	25-Jan-2020 20:36
Surr: 1,2-Dichloroethane-d4	*96.4*			*70-126*	*%REC*	*1*	*25-Jan-2020 20:36*
Surr: 4-Bromofluorobenzene	*94.7*			*81-113*	*%REC*	*1*	*25-Jan-2020 20:36*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*25-Jan-2020 20:36*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*25-Jan-2020 20:36*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW90B-20200120
Collection Date: 20-Jan-2020 15:15

ANALYTICAL REPORT
WorkOrder:HS20010930
Lab ID:HS20010930-07
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 27-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	29-Jan-2020 01:55
2,4-Dimethylphenol	**0.000075**	J	**0.000040**	**0.00020**	**mg/L**	1	29-Jan-2020 01:55
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	29-Jan-2020 01:55
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	29-Jan-2020 01:55
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	29-Jan-2020 01:55
2-Methylnaphthalene	**0.00034**		**0.000019**	**0.00010**	**mg/L**	1	29-Jan-2020 01:55
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	29-Jan-2020 01:55
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	29-Jan-2020 01:55
Acenaphthene	**0.00015**		**0.000027**	**0.00010**	**mg/L**	1	29-Jan-2020 01:55
Acenaphthylene	U		0.000015	0.00010	mg/L	1	29-Jan-2020 01:55
Anthracene	**0.00014**		**0.000014**	**0.00010**	**mg/L**	1	29-Jan-2020 01:55
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	29-Jan-2020 01:55
Benzo(a)pyrene	**0.000052**	J	**0.000020**	**0.00010**	**mg/L**	1	29-Jan-2020 01:55
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	29-Jan-2020 01:55
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	29-Jan-2020 01:55
Chrysene	U		0.000021	0.00010	mg/L	1	29-Jan-2020 01:55
Dibenzofuran	**0.00011**		**0.000020**	**0.00010**	**mg/L**	1	29-Jan-2020 01:55
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	29-Jan-2020 01:55
Fluoranthene	**0.00012**		**0.000010**	**0.00010**	**mg/L**	1	29-Jan-2020 01:55
Fluorene	**0.00013**		**0.000030**	**0.00010**	**mg/L**	1	29-Jan-2020 01:55
Naphthalene	**0.0030**		**0.000020**	**0.00010**	**mg/L**	1	29-Jan-2020 01:55
Nitrobenzene	U		0.000024	0.00020	mg/L	1	29-Jan-2020 01:55
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	29-Jan-2020 01:55
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	29-Jan-2020 01:55
Phenanthrene	**0.00040**		**0.000021**	**0.00010**	**mg/L**	1	29-Jan-2020 01:55
Phenol	**0.00019**	J	**0.000035**	**0.00020**	**mg/L**	1	29-Jan-2020 01:55
Pyrene	**0.000077**	J	**0.000019**	**0.00010**	**mg/L**	1	29-Jan-2020 01:55
Surr: 2,4,6-Tribromophenol	*67.0*			*34-129*	*%REC*	*1*	*29-Jan-2020 01:55*
Surr: 2-Fluorobiphenyl	*90.7*			*40-125*	*%REC*	*1*	*29-Jan-2020 01:55*
Surr: 2-Fluorophenol	*68.7*			*20-120*	*%REC*	*1*	*29-Jan-2020 01:55*
Surr: 4-Terphenyl-d14	*108*			*40-135*	*%REC*	*1*	*29-Jan-2020 01:55*
Surr: Nitrobenzene-d5	*79.6*			*41-120*	*%REC*	*1*	*29-Jan-2020 01:55*
Surr: Phenol-d6	*73.0*			*20-120*	*%REC*	*1*	*29-Jan-2020 01:55*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 24-Jan-2020		Analyst: JC
Arsenic	**0.00290**		**0.000400**	**0.00200**	**mg/L**	1	25-Jan-2020 00:02

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW45C-20200120
Collection Date: 20-Jan-2020 16:30

ANALYTICAL REPORT
WorkOrder:HS20010930
Lab ID:HS20010930-08
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	25-Jan-2020 21:00
Benzene	**0.00050**	J	**0.00020**	**0.0010**	**mg/L**	1	25-Jan-2020 21:00
Chlorobenzene	U		0.00030	0.0010	mg/L	1	25-Jan-2020 21:00
Ethylbenzene	**0.00044**	J	**0.00030**	**0.0010**	**mg/L**	1	25-Jan-2020 21:00
Methylene chloride	U		0.0010	0.0020	mg/L	1	25-Jan-2020 21:00
Toluene	U		0.00020	0.0010	mg/L	1	25-Jan-2020 21:00
Vinyl chloride	U		0.00020	0.0010	mg/L	1	25-Jan-2020 21:00
Xylenes, Total	**0.0051**		**0.00030**	**0.0010**	**mg/L**	1	25-Jan-2020 21:00
Surr: 1,2-Dichloroethane-d4	*98.0*			*70-126*	*%REC*	*1*	*25-Jan-2020 21:00*
Surr: 4-Bromofluorobenzene	*97.8*			*81-113*	*%REC*	*1*	*25-Jan-2020 21:00*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*25-Jan-2020 21:00*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*1*	*25-Jan-2020 21:00*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW45C-20200120
Collection Date: 20-Jan-2020 16:30

ANALYTICAL REPORT
WorkOrder:HS20010930
Lab ID:HS20010930-08
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 27-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	**0.000085**	J	**0.000021**	**0.00020**	**mg/L**	1	29-Jan-2020 13:10
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	29-Jan-2020 13:10
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	29-Jan-2020 13:10
2,6-Dinitrotoluene	**0.0022**		**0.000042**	**0.00020**	**mg/L**	1	29-Jan-2020 13:10
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	29-Jan-2020 13:10
2-Methylnaphthalene	**0.00013**		**0.000019**	**0.00010**	**mg/L**	1	29-Jan-2020 13:10
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	29-Jan-2020 13:10
4-Nitrophenol	**0.000067**	J	**0.000047**	**0.0010**	**mg/L**	1	29-Jan-2020 13:10
Acenaphthene	**0.000084**	J	**0.000027**	**0.00010**	**mg/L**	1	29-Jan-2020 13:10
Acenaphthylene	**0.000037**	J	**0.000015**	**0.00010**	**mg/L**	1	29-Jan-2020 13:10
Anthracene	**0.00090**		**0.000014**	**0.00010**	**mg/L**	1	29-Jan-2020 13:10
Benz(a)anthracene	**0.00039**		**0.000050**	**0.00010**	**mg/L**	1	29-Jan-2020 13:10
Benzo(a)pyrene	**0.00042**		**0.000020**	**0.00010**	**mg/L**	1	29-Jan-2020 13:10
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	29-Jan-2020 13:10
Bis(2-ethylhexyl)phthalate	**0.000067**	J	**0.000037**	**0.00020**	**mg/L**	1	29-Jan-2020 13:10
Chrysene	**0.00062**		**0.000021**	**0.00010**	**mg/L**	1	29-Jan-2020 13:10
Dibenzofuran	**0.000075**	J	**0.000020**	**0.00010**	**mg/L**	1	29-Jan-2020 13:10
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	29-Jan-2020 13:10
Fluoranthene	**0.00062**		**0.000010**	**0.00010**	**mg/L**	1	29-Jan-2020 13:10
Fluorene	**0.00023**		**0.000030**	**0.00010**	**mg/L**	1	29-Jan-2020 13:10
Naphthalene	**0.00061**		**0.000020**	**0.00010**	**mg/L**	1	29-Jan-2020 13:10
Nitrobenzene	U		0.000024	0.00020	mg/L	1	29-Jan-2020 13:10
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	29-Jan-2020 13:10
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	29-Jan-2020 13:10
Phenanthrene	**0.00027**		**0.000021**	**0.00010**	**mg/L**	1	29-Jan-2020 13:10
Phenol	U		0.000035	0.00020	mg/L	1	29-Jan-2020 13:10
Pyrene	**0.00068**		**0.000019**	**0.00010**	**mg/L**	1	29-Jan-2020 13:10
Surr: 2,4,6-Tribromophenol	*85.3*			*34-129*	*%REC*	*1*	*29-Jan-2020 13:10*
Surr: 2-Fluorobiphenyl	*95.0*			*40-125*	*%REC*	*1*	*29-Jan-2020 13:10*
Surr: 2-Fluorophenol	*75.8*			*20-120*	*%REC*	*1*	*29-Jan-2020 13:10*
Surr: 4-Terphenyl-d14	*112*			*40-135*	*%REC*	*1*	*29-Jan-2020 13:10*
Surr: Nitrobenzene-d5	*91.7*			*41-120*	*%REC*	*1*	*29-Jan-2020 13:10*
Surr: Phenol-d6	*81.6*			*20-120*	*%REC*	*1*	*29-Jan-2020 13:10*
ICP-MS METALS BY SW6020A	**Method:SW6020**				Prep:SW3010A / 24-Jan-2020		Analyst: JC
Arsenic	**0.000730**	J	**0.000400**	**0.00200**	**mg/L**	1	25-Jan-2020 00:05

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB10-20200120
Collection Date: 20-Jan-2020 09:30

ANALYTICAL REPORT
WorkOrder:HS20010930
Lab ID:HS20010930-09
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	25-Jan-2020 13:06
Benzene		U	0.00020	0.0010	mg/L	1	25-Jan-2020 13:06
Chlorobenzene		U	0.00030	0.0010	mg/L	1	25-Jan-2020 13:06
Ethylbenzene		U	0.00030	0.0010	mg/L	1	25-Jan-2020 13:06
Methylene chloride		U	0.0010	0.0020	mg/L	1	25-Jan-2020 13:06
Toluene		U	0.00020	0.0010	mg/L	1	25-Jan-2020 13:06
Vinyl chloride		U	0.00020	0.0010	mg/L	1	25-Jan-2020 13:06
Xylenes, Total		U	0.00030	0.0010	mg/L	1	25-Jan-2020 13:06
Surr: 1,2-Dichloroethane-d4	*104*			*70-126*	*%REC*	*1*	*25-Jan-2020 13:06*
Surr: 4-Bromofluorobenzene	*97.7*			*81-113*	*%REC*	*1*	*25-Jan-2020 13:06*
Surr: Dibromofluoromethane	*99.2*			*77-123*	*%REC*	*1*	*25-Jan-2020 13:06*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*25-Jan-2020 13:06*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB10-20200120
Collection Date: 20-Jan-2020 09:30

ANALYTICAL REPORT
WorkOrder:HS20010930
Lab ID:HS20010930-09
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 27-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	**0.000047**	J	**0.000021**	**0.00020**	**mg/L**	1	29-Jan-2020 02:33
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	29-Jan-2020 02:33
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	29-Jan-2020 02:33
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	29-Jan-2020 02:33
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	29-Jan-2020 02:33
2-Methylnaphthalene	**0.000035**	J	**0.000019**	**0.00010**	**mg/L**	1	29-Jan-2020 02:33
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	29-Jan-2020 02:33
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	29-Jan-2020 02:33
Acenaphthene	U		0.000027	0.00010	mg/L	1	29-Jan-2020 02:33
Acenaphthylene	U		0.000015	0.00010	mg/L	1	29-Jan-2020 02:33
Anthracene	U		0.000014	0.00010	mg/L	1	29-Jan-2020 02:33
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	29-Jan-2020 02:33
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	29-Jan-2020 02:33
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	29-Jan-2020 02:33
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	29-Jan-2020 02:33
Chrysene	U		0.000021	0.00010	mg/L	1	29-Jan-2020 02:33
Dibenzofuran	U		0.000020	0.00010	mg/L	1	29-Jan-2020 02:33
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	29-Jan-2020 02:33
Fluoranthene	**0.000060**	J	**0.000010**	**0.00010**	**mg/L**	1	29-Jan-2020 02:33
Fluorene	U		0.000030	0.00010	mg/L	1	29-Jan-2020 02:33
Naphthalene	**0.00019**		**0.000020**	**0.00010**	**mg/L**	1	29-Jan-2020 02:33
Nitrobenzene	U		0.000024	0.00020	mg/L	1	29-Jan-2020 02:33
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	29-Jan-2020 02:33
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	29-Jan-2020 02:33
Phenanthrene	**0.000066**	J	**0.000021**	**0.00010**	**mg/L**	1	29-Jan-2020 02:33
Phenol	U		0.000035	0.00020	mg/L	1	29-Jan-2020 02:33
Pyrene	**0.000040**	J	**0.000019**	**0.00010**	**mg/L**	1	29-Jan-2020 02:33
Surr: 2,4,6-Tribromophenol	*68.3*			*34-129*	*%REC*	*1*	*29-Jan-2020 02:33*
Surr: 2-Fluorobiphenyl	*95.0*			*40-125*	*%REC*	*1*	*29-Jan-2020 02:33*
Surr: 2-Fluorophenol	*88.9*			*20-120*	*%REC*	*1*	*29-Jan-2020 02:33*
Surr: 4-Terphenyl-d14	*106*			*40-135*	*%REC*	*1*	*29-Jan-2020 02:33*
Surr: Nitrobenzene-d5	*92.6*			*41-120*	*%REC*	*1*	*29-Jan-2020 02:33*
Surr: Phenol-d6	*85.1*			*20-120*	*%REC*	*1*	*29-Jan-2020 02:33*
ICP-MS METALS BY SW6020A	**Method:SW6020**				Prep:SW3010A / 24-Jan-2020		Analyst: JC
Arsenic	U		0.000400	0.00200	mg/L	1	25-Jan-2020 00:07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FD05-20200120
Collection Date: 20-Jan-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20010930
Lab ID:HS20010930-10
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	25-Jan-2020 19:44
Benzene		U	0.00020	0.0010	mg/L	1	25-Jan-2020 19:44
Chlorobenzene		U	0.00030	0.0010	mg/L	1	25-Jan-2020 19:44
Ethylbenzene		U	0.00030	0.0010	mg/L	1	25-Jan-2020 19:44
Methylene chloride		U	0.0010	0.0020	mg/L	1	25-Jan-2020 19:44
Toluene		U	0.00020	0.0010	mg/L	1	25-Jan-2020 19:44
Vinyl chloride		U	0.00020	0.0010	mg/L	1	25-Jan-2020 19:44
Xylenes, Total		U	0.00030	0.0010	mg/L	1	25-Jan-2020 19:44
Surr: 1,2-Dichloroethane-d4	*106*			*70-126*	*%REC*	*1*	*25-Jan-2020 19:44*
Surr: 4-Bromofluorobenzene	*96.6*			*81-113*	*%REC*	*1*	*25-Jan-2020 19:44*
Surr: Dibromofluoromethane	*103*			*77-123*	*%REC*	*1*	*25-Jan-2020 19:44*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*25-Jan-2020 19:44*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FD05-20200120
Collection Date: 20-Jan-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20010930
Lab ID:HS20010930-10
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 27-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	29-Jan-2020 02:52
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	29-Jan-2020 02:52
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	29-Jan-2020 02:52
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	29-Jan-2020 02:52
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	29-Jan-2020 02:52
2-Methylnaphthalene	**0.000095**	J	**0.000019**	**0.00010**	**mg/L**	1	29-Jan-2020 02:52
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	29-Jan-2020 02:52
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	29-Jan-2020 02:52
Acenaphthene	**0.0011**		**0.000027**	**0.00010**	**mg/L**	1	29-Jan-2020 02:52
Acenaphthylene	**0.000038**	J	**0.000015**	**0.00010**	**mg/L**	1	29-Jan-2020 02:52
Anthracene	**0.000044**	J	**0.000014**	**0.00010**	**mg/L**	1	29-Jan-2020 02:52
Benz(a)anthracene	**0.00012**		**0.000050**	**0.00010**	**mg/L**	1	29-Jan-2020 02:52
Benzo(a)pyrene	**0.000072**	J	**0.000020**	**0.00010**	**mg/L**	1	29-Jan-2020 02:52
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	29-Jan-2020 02:52
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	29-Jan-2020 02:52
Chrysene	**0.000093**	J	**0.000021**	**0.00010**	**mg/L**	1	29-Jan-2020 02:52
Dibenzofuran	**0.000067**	J	**0.000020**	**0.00010**	**mg/L**	1	29-Jan-2020 02:52
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	29-Jan-2020 02:52
Fluoranthene	**0.00057**		**0.000010**	**0.00010**	**mg/L**	1	29-Jan-2020 02:52
Fluorene	**0.000072**	J	**0.000030**	**0.00010**	**mg/L**	1	29-Jan-2020 02:52
Naphthalene	**0.00066**		**0.000020**	**0.00010**	**mg/L**	1	29-Jan-2020 02:52
Nitrobenzene	U		0.000024	0.00020	mg/L	1	29-Jan-2020 02:52
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	29-Jan-2020 02:52
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	29-Jan-2020 02:52
Phenanthrene	**0.000046**	J	**0.000021**	**0.00010**	**mg/L**	1	29-Jan-2020 02:52
Phenol	U		0.000035	0.00020	mg/L	1	29-Jan-2020 02:52
Pyrene	**0.00052**		**0.000019**	**0.00010**	**mg/L**	1	29-Jan-2020 02:52
Surr: 2,4,6-Tribromophenol	*63.6*			*34-129*	*%REC*	*1*	*29-Jan-2020 02:52*
Surr: 2-Fluorobiphenyl	*80.8*			*40-125*	*%REC*	*1*	*29-Jan-2020 02:52*
Surr: 2-Fluorophenol	*72.7*			*20-120*	*%REC*	*1*	*29-Jan-2020 02:52*
Surr: 4-Terphenyl-d14	*98.1*			*40-135*	*%REC*	*1*	*29-Jan-2020 02:52*
Surr: Nitrobenzene-d5	*86.5*			*41-120*	*%REC*	*1*	*29-Jan-2020 02:52*
Surr: Phenol-d6	*77.2*			*20-120*	*%REC*	*1*	*29-Jan-2020 02:52*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 24-Jan-2020		Analyst: JC
Arsenic	**0.00755**		**0.000400**	**0.00200**	**mg/L**	1	25-Jan-2020 00:09

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010930

Batch ID: 149963 **Start Date:** 24 Jan 2020 09:00 **End Date:** 24 Jan 2020 13:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20010930-02		10 (mL)	10 (mL)	1
HS20010930-03		10 (mL)	10 (mL)	1
HS20010930-04		10 (mL)	10 (mL)	1
HS20010930-05		10 (mL)	10 (mL)	1
HS20010930-06		10 (mL)	10 (mL)	1
HS20010930-07		10 (mL)	10 (mL)	1
HS20010930-08		10 (mL)	10 (mL)	1
HS20010930-09		10 (mL)	10 (mL)	1
HS20010930-10		10 (mL)	10 (mL)	1

Batch ID: 149998 **Start Date:** 27 Jan 2020 07:00 **End Date:** 27 Jan 2020 13:30
Method: SV AQ SEP FUN EXTRACT-LOWLEV - 3510C **Prep Code:** 3510_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20010930-02	1	1000 (mL)	1 (mL)	0.001
HS20010930-03	1	1000 (mL)	2 (mL)	0.002
HS20010930-04	1	1000 (mL)	2 (mL)	0.002
HS20010930-05	1	1000 (mL)	1 (mL)	0.001
HS20010930-06	1	1000 (mL)	1 (mL)	0.001
HS20010930-07	1	1000 (mL)	1 (mL)	0.001
HS20010930-08	1	1000 (mL)	1 (mL)	0.001
HS20010930-09	1	1000 (mL)	1 (mL)	0.001
HS20010930-10	1	1000 (mL)	1 (mL)	0.001

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010930

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 149963 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS20010930-02	WG-1620-MW32AR-20200120	20 Jan 2020 09:10		24 Jan 2020 13:00	24 Jan 2020 23:38	1
HS20010930-03	WG-1620-MW32B-20200120	20 Jan 2020 10:15		24 Jan 2020 13:00	27 Jan 2020 14:37	1
HS20010930-04	WG-1620-MW70B-20200120	20 Jan 2020 11:30		24 Jan 2020 13:00	27 Jan 2020 14:43	1
HS20010930-05	WG-1620-MW33A-20200120	20 Jan 2020 12:45		24 Jan 2020 13:00	24 Jan 2020 23:58	1
HS20010930-06	WG-1620-MW87C-20200120	20 Jan 2020 14:00		24 Jan 2020 13:00	25 Jan 2020 00:00	1
HS20010930-07	WG-1620-MW90B-20200120	20 Jan 2020 15:15		24 Jan 2020 13:00	25 Jan 2020 00:02	1
HS20010930-08	WG-1620-MW45C-20200120	20 Jan 2020 16:30		24 Jan 2020 13:00	25 Jan 2020 00:05	1
HS20010930-09	WG-1620-FB10-20200120	20 Jan 2020 09:30		24 Jan 2020 13:00	25 Jan 2020 00:07	1
HS20010930-10	WG-1620-FD05-20200120	20 Jan 2020 00:00		24 Jan 2020 13:00	25 Jan 2020 00:09	1
Batch ID: 149998 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Water	
HS20010930-02	WG-1620-MW32AR-20200120	20 Jan 2020 09:10		27 Jan 2020 10:49	29 Jan 2020 00:59	1
HS20010930-03	WG-1620-MW32B-20200120	20 Jan 2020 10:15		27 Jan 2020 10:49	29 Jan 2020 15:03	2000
HS20010930-03	WG-1620-MW32B-20200120	20 Jan 2020 10:15		27 Jan 2020 10:49	29 Jan 2020 15:40	20000
HS20010930-03	WG-1620-MW32B-20200120	20 Jan 2020 10:15		27 Jan 2020 10:49	29 Jan 2020 14:44	200
HS20010930-03	WG-1620-MW32B-20200120	20 Jan 2020 10:15		27 Jan 2020 10:49	29 Jan 2020 13:29	10
HS20010930-04	WG-1620-MW70B-20200120	20 Jan 2020 11:30		27 Jan 2020 10:49	29 Jan 2020 15:59	8000
HS20010930-04	WG-1620-MW70B-20200120	20 Jan 2020 11:30		27 Jan 2020 10:49	29 Jan 2020 15:21	2000
HS20010930-04	WG-1620-MW70B-20200120	20 Jan 2020 11:30		27 Jan 2020 10:49	29 Jan 2020 14:25	200
HS20010930-04	WG-1620-MW70B-20200120	20 Jan 2020 11:30		27 Jan 2020 10:49	29 Jan 2020 14:06	10
HS20010930-05	WG-1620-MW33A-20200120	20 Jan 2020 12:45		27 Jan 2020 10:49	29 Jan 2020 01:18	1
HS20010930-06	WG-1620-MW87C-20200120	20 Jan 2020 14:00		27 Jan 2020 10:49	29 Jan 2020 01:37	1
HS20010930-07	WG-1620-MW90B-20200120	20 Jan 2020 15:15		27 Jan 2020 10:49	29 Jan 2020 01:55	1
HS20010930-08	WG-1620-MW45C-20200120	20 Jan 2020 16:30		27 Jan 2020 10:49	29 Jan 2020 13:10	1
HS20010930-09	WG-1620-FB10-20200120	20 Jan 2020 09:30		27 Jan 2020 10:49	29 Jan 2020 02:33	1
HS20010930-10	WG-1620-FD05-20200120	20 Jan 2020 00:00		27 Jan 2020 10:49	29 Jan 2020 02:52	1
Batch ID: R355061 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20010930-01	WQ-1620-TB06-20200120	20 Jan 2020 00:00			25 Jan 2020 12:41	1
HS20010930-09	WG-1620-FB10-20200120	20 Jan 2020 09:30			25 Jan 2020 13:06	1
HS20010930-10	WG-1620-FD05-20200120	20 Jan 2020 00:00			25 Jan 2020 19:44	1
Batch ID: R355066 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20010930-02	WG-1620-MW32AR-20200120	20 Jan 2020 09:10			25 Jan 2020 19:22	1
HS20010930-05	WG-1620-MW33A-20200120	20 Jan 2020 12:45			25 Jan 2020 19:47	1
HS20010930-06	WG-1620-MW87C-20200120	20 Jan 2020 14:00			25 Jan 2020 20:11	1
HS20010930-07	WG-1620-MW90B-20200120	20 Jan 2020 15:15			25 Jan 2020 20:36	1
HS20010930-08	WG-1620-MW45C-20200120	20 Jan 2020 16:30			25 Jan 2020 21:00	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010930

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R355150 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20010930-03	WG-1620-MW32B-20200120	20 Jan 2020 10:15			28 Jan 2020 08:52	25
HS20010930-04	WG-1620-MW70B-20200120	20 Jan 2020 11:30			28 Jan 2020 09:19	50

WorkOrder: HS20010930
InstrumentID: ICPMS05
Test Code: ICP_TW
Test Number: SW6020
Test Name: ICP-MS Metals by SW6020A

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Arsenic	7440-38-2	0.000500	0.000499	0.000400	0.00200

WorkOrder: HS20010930
InstrumentID: SV-6
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Diphenylhydrazine	122-66-7	0.00010	0.000098	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.000051	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.000094	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.000083	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.000093	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.000050	0.000060	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000031	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00010	0.000037	0.000047	0.0010
A	Acenaphthene	83-32-9	0.000050	0.000059	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000050	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.000047	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.000050	0.000059	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.000050	0.000050	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.000081	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.00012	0.000037	0.00020
A	Chrysene	218-01-9	0.000050	0.000060	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.000050	0.000050	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.00011	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000049	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.000053	0.000030	0.00010
A	Naphthalene	91-20-3	0.000050	0.000049	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.00012	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.00011	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.0000094	0.000079	0.00020
A	Phenanthrene	85-01-8	0.000050	0.000049	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.000096	0.000035	0.00020
A	Pyrene	129-00-0	0.000050	0.000047	0.000019	0.00010
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0.00020
S	2-Fluorobiphenyl	321-60-8	0	0	0	0.00020
S	2-Fluorophenol	367-12-4	0	0	0	0.00020
S	4-Terphenyl-d14	1718-51-0	0	0	0	0.00020
S	Nitrobenzene-d5	4165-60-0	0	0	0	0.00020
S	Phenol-d6	13127-88-3	0	0	0	0.00020

WorkOrder: HS20010930
InstrumentID: VOA4
Test Code: 8260_LL_W
Test Number: SW8260
Test Name: Low Level Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.00050	0.00061	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00057	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00058	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00048	0.00030	0.0010
A	Methylene chloride	75-09-2	0.0010	0.00070	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00050	0.00020	0.0010
A	Vinyl chloride	75-01-4	0.00050	0.00045	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00070	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

WorkOrder: HS20010930
InstrumentID: VOA2
Test Code: 8260_LL_W
Test Number: SW8260
Test Name: Low Level Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.00050	0.00062	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00059	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00071	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00063	0.00030	0.0010
A	Methylene chloride	75-09-2	0.0010	0.00075	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00069	0.00020	0.0010
A	Vinyl chloride	75-01-4	0.00050	0.00044	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00059	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010930

QC BATCH REPORT

Batch ID: 149963 (0) **Instrument: ICPMS05** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-149963** Units: **mg/L** Analysis Date: **24-Jan-2020 23:34**
Client ID: Run ID: **ICPMS05_354996** SeqNo: **5447747** PrepDate: **24-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								

LCS Sample ID: **LCS-149963** Units: **mg/L** Analysis Date: **24-Jan-2020 23:36**
Client ID: Run ID: **ICPMS05_354996** SeqNo: **5447748** PrepDate: **24-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.043	0.00200	0.05	0	86.0	80 - 120				

MS Sample ID: **HS20010930-02MS** Units: **mg/L** Analysis Date: **24-Jan-2020 23:42**
Client ID: **WG-1620-MW32AR-20200120** Run ID: **ICPMS05_354996** SeqNo: **5447751** PrepDate: **24-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05468	0.00200	0.05	0.007701	94.0	80 - 120				

MSD Sample ID: **HS20010930-02MSD** Units: **mg/L** Analysis Date: **24-Jan-2020 23:45**
Client ID: **WG-1620-MW32AR-20200120** Run ID: **ICPMS05_354996** SeqNo: **5447752** PrepDate: **24-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05348	0.00200	0.05	0.007701	91.6	80 - 120	0.05468	2.22	20	

PDS Sample ID: **HS20010930-02PDS** Units: **mg/L** Analysis Date: **24-Jan-2020 23:47**
Client ID: **WG-1620-MW32AR-20200120** Run ID: **ICPMS05_354996** SeqNo: **5447753** PrepDate: **24-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.09766	0.00200	0.1	0.007701	90.0	75 - 125				

SD Sample ID: **HS20010930-02SD** Units: **mg/L** Analysis Date: **24-Jan-2020 23:40**
Client ID: **WG-1620-MW32AR-20200120** Run ID: **ICPMS05_354996** SeqNo: **5447750** PrepDate: **24-Jan-2020** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.007533	0.0100					0.007701	0	10	J

The following samples were analyzed in this batch: HS20010930-02, HS20010930-03, HS20010930-04, HS20010930-05, HS20010930-06, HS20010930-07, HS20010930-08, HS20010930-09, HS20010930-10

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010930

QC BATCH REPORT

Batch ID: 149998 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-149998** Units: **ug/L** Analysis Date: **28-Jan-2020 19:21**
Client ID: Run ID: **SV-6_355238** SeqNo: **5452454** PrepDate: **27-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	U	0.20								
2,4-Dimethylphenol	U	0.20								
2,4-Dinitrotoluene	U	0.20								
2,6-Dinitrotoluene	U	0.20								
2-Chloronaphthalene	U	0.20								
2-Methylnaphthalene	U	0.10								
4,6-Dinitro-2-methylphenol	U	0.20								
4-Nitrophenol	U	1.0								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Benz(a)anthracene	U	0.10								
Benzo(a)pyrene	U	0.10								
Bis(2-chloroethoxy)methane	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Chrysene	U	0.10								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Nitrobenzene	U	0.20								
N-Nitrosodiphenylamine	U	0.20								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*4.165*	*0.20*	*5*	*0*	*83.3*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*5.567*	*0.20*	*5*	*0*	*111*	*40 - 125*				
Surr: 2-Fluorophenol	*4.869*	*0.20*	*5*	*0*	*97.4*	*20 - 120*				
Surr: 4-Terphenyl-d14	*5.797*	*0.20*	*5*	*0*	*116*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.964*	*0.20*	*5*	*0*	*99.3*	*41 - 120*				
Surr: Phenol-d6	*4.941*	*0.20*	*5*	*0*	*98.8*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010930

QC BATCH REPORT

Batch ID: 149998 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCS Sample ID: **LCS-149998** Units: **ug/L** Analysis Date: **28-Jan-2020 19:40**
Client ID: Run ID: **SV-6_355238** SeqNo: **5452455** PrepDate: **27-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	5.783	0.20	5	0	116	39 - 127				
2,4-Dimethylphenol	5.012	0.20	5	0	100	35 - 120				
2,4-Dinitrotoluene	6.415	0.20	5	0	128	50 - 122				S
2,6-Dinitrotoluene	6.03	0.20	5	0	121	50 - 120				S
2-Chloronaphthalene	5.424	0.20	5	0	108	50 - 120				
2-Methylnaphthalene	5.383	0.10	5	0	108	50 - 120				
4,6-Dinitro-2-methylphenol	5.692	0.20	5	0	114	25 - 121				
4-Nitrophenol	5.835	1.0	5	0	117	30 - 130				
Acenaphthene	5.432	0.10	5	0	109	45 - 120				
Acenaphthylene	5.667	0.10	5	0	113	47 - 120				
Anthracene	5.847	0.10	5	0	117	45 - 120				
Benz(a)anthracene	5.919	0.10	5	0	118	40 - 120				
Benzo(a)pyrene	5.832	0.10	5	0	117	45 - 120				
Bis(2-chloroethoxy)methane	5.315	0.20	5	0	106	45 - 120				
Bis(2-ethylhexyl)phthalate	5.645	0.20	5	0	113	40 - 139				
Chrysene	5.825	0.10	5	0	117	43 - 120				
Dibenzofuran	5.475	0.10	5	0	109	50 - 120				
Di-n-butyl phthalate	5.996	0.20	5	0	120	45 - 123				
Fluoranthene	5.728	0.10	5	0	115	45 - 125				
Fluorene	5.748	0.10	5	0	115	49 - 120				
Naphthalene	5.43	0.10	5	0	109	45 - 120				
Nitrobenzene	5.209	0.20	5	0	104	44 - 120				
N-Nitrosodiphenylamine	5.868	0.20	5	0	117	40 - 125				
Pentachlorophenol	2.037	0.20	5	0	40.7	19 - 121				
Phenanthrene	5.866	0.10	5	0	117	45 - 121				
Phenol	5.563	0.20	5	0	111	20 - 124				
Pyrene	5.924	0.10	5	0	118	40 - 130				
Surr: 2,4,6-Tribromophenol	*4.466*	*0.20*	*5*	*0*	*89.3*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*5.582*	*0.20*	*5*	*0*	*112*	*40 - 125*				
Surr: 2-Fluorophenol	*4.846*	*0.20*	*5*	*0*	*96.9*	*20 - 120*				
Surr: 4-Terphenyl-d14	*5.609*	*0.20*	*5*	*0*	*112*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.978*	*0.20*	*5*	*0*	*99.6*	*41 - 120*				
Surr: Phenol-d6	*4.891*	*0.20*	*5*	*0*	*97.8*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010930

QC BATCH REPORT

Batch ID: 149998 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MS Sample ID: **HS20010910-03MS** Units: **ug/L** Analysis Date: **28-Jan-2020 23:44**
Client ID: Run ID: **SV-6_355238** SeqNo: **5452170** PrepDate: **27-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.258	0.20	5	0	85.2	39 - 127				
2,4-Dimethylphenol	2.953	0.20	5	0.09533	57.1	35 - 120				
2,4-Dinitrotoluene	5.24	0.20	5	0	105	50 - 122				
2,6-Dinitrotoluene	4.544	0.20	5	0	90.9	50 - 120				
2-Chloronaphthalene	3.621	0.20	5	0	72.4	50 - 120				
2-Methylnaphthalene	3.197	0.10	5	0	63.9	50 - 120				
4,6-Dinitro-2-methylphenol	5.327	0.20	5	0	107	25 - 121				
4-Nitrophenol	5.515	1.0	5	0	110	30 - 130				
Acenaphthene	3.484	0.10	5	0	69.7	45 - 120				
Acenaphthylene	3.505	0.10	5	0	70.1	47 - 120				
Anthracene	5.162	0.10	5	0	103	45 - 120				
Benz(a)anthracene	5.438	0.10	5	0	109	40 - 120				
Benzo(a)pyrene	5.398	0.10	5	0	108	45 - 120				
Bis(2-chloroethoxy)methane	2.957	0.20	5	0	59.1	45 - 120				
Bis(2-ethylhexyl)phthalate	5.76	0.20	5	0	115	40 - 139				
Chrysene	5.195	0.10	5	0	104	43 - 120				
Dibenzofuran	3.564	0.10	5	0	71.3	50 - 120				
Di-n-butyl phthalate	6.041	0.20	5	0	121	45 - 123				
Fluoranthene	5.294	0.10	5	0.02986	105	45 - 125				
Fluorene	3.974	0.10	5	0	79.5	49 - 120				
Naphthalene	3.352	0.10	5	0.22	62.6	45 - 120				
Nitrobenzene	3.206	0.20	5	0	64.1	44 - 120				
N-Nitrosodiphenylamine	5.464	0.20	5	0	109	40 - 125				
Pentachlorophenol	3.381	0.20	5	0	67.6	19 - 121				
Phenanthrene	4.995	0.10	5	0	99.9	45 - 121				
Phenol	3.121	0.20	5	0	62.4	20 - 124				
Pyrene	5.526	0.10	5	0.02733	110	40 - 130				
Surr: 2,4,6-Tribromophenol	*4.181*	*0.20*	*5*	*0*	*83.6*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.463*	*0.20*	*5*	*0*	*69.3*	*40 - 125*				
Surr: 2-Fluorophenol	*3.1*	*0.20*	*5*	*0*	*62.0*	*20 - 120*				
Surr: 4-Terphenyl-d14	*5.541*	*0.20*	*5*	*0*	*111*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.186*	*0.20*	*5*	*0*	*63.7*	*41 - 120*				
Surr: Phenol-d6	*3.21*	*0.20*	*5*	*0*	*64.2*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010930

QC BATCH REPORT

Batch ID: 149998 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MSD Sample ID: **HS20010910-03MSD** Units: **ug/L** Analysis Date: **29-Jan-2020 00:03**
Client ID: Run ID: **SV-6_355238** SeqNo: **5452171** PrepDate: **27-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	5.047	0.20	5	0	101	39 - 127	4.258	17	20	
2,4-Dimethylphenol	3.862	0.20	5	0.09533	75.3	35 - 120	2.953	26.7	20	R
2,4-Dinitrotoluene	5.46	0.20	5	0	109	50 - 122	5.24	4.12	20	
2,6-Dinitrotoluene	5.056	0.20	5	0	101	50 - 120	4.544	10.7	20	
2-Chloronaphthalene	4.215	0.20	5	0	84.3	50 - 120	3.621	15.2	20	
2-Methylnaphthalene	3.899	0.10	5	0	78.0	50 - 120	3.197	19.8	20	
4,6-Dinitro-2-methylphenol	5.595	0.20	5	0	112	25 - 121	5.327	4.9	30	
4-Nitrophenol	5.641	1.0	5	0	113	30 - 130	5.515	2.26	20	
Acenaphthene	4.245	0.10	5	0	84.9	45 - 120	3.484	19.7	20	
Acenaphthylene	4.266	0.10	5	0	85.3	47 - 120	3.505	19.6	20	
Anthracene	5.342	0.10	5	0	107	45 - 120	5.162	3.43	20	
Benz(a)anthracene	5.45	0.10	5	0	109	40 - 120	5.438	0.221	20	
Benzo(a)pyrene	5.228	0.10	5	0	105	45 - 120	5.398	3.2	20	
Bis(2-chloroethoxy)methane	3.686	0.20	5	0	73.7	45 - 120	2.957	21.9	20	R
Bis(2-ethylhexyl)phthalate	5.666	0.20	5	0	113	40 - 139	5.76	1.64	20	
Chrysene	5.136	0.10	5	0	103	43 - 120	5.195	1.14	20	
Dibenzofuran	4.314	0.10	5	0	86.3	50 - 120	3.564	19	20	
Di-n-butyl phthalate	6.065	0.20	5	0	121	45 - 123	6.041	0.393	20	
Fluoranthene	5.068	0.10	5	0.02986	101	45 - 125	5.294	4.37	20	
Fluorene	4.577	0.10	5	0	91.5	49 - 120	3.974	14.1	20	
Naphthalene	4.118	0.10	5	0.22	78.0	45 - 120	3.352	20.5	20	R
Nitrobenzene	3.792	0.20	5	0	75.8	44 - 120	3.206	16.7	20	
N-Nitrosodiphenylamine	5.62	0.20	5	0	112	40 - 125	5.464	2.8	20	
Pentachlorophenol	3.323	0.20	5	0	66.5	19 - 121	3.381	1.74	20	
Phenanthrene	5.142	0.10	5	0	103	45 - 121	4.995	2.9	20	
Phenol	3.883	0.20	5	0	77.7	20 - 124	3.121	21.7	20	R
Pyrene	5.443	0.10	5	0.02733	108	40 - 130	5.526	1.51	20	
Surr: 2,4,6-Tribromophenol	*4.11*	*0.20*	*5*	*0*	*82.2*	*34 - 129*	*4.181*	*1.73*	*20*	
Surr: 2-Fluorobiphenyl	*4.108*	*0.20*	*5*	*0*	*82.2*	*40 - 125*	*3.463*	*17*	*20*	
Surr: 2-Fluorophenol	*3.476*	*0.20*	*5*	*0*	*69.5*	*20 - 120*	*3.1*	*11.4*	*20*	
Surr: 4-Terphenyl-d14	*5.339*	*0.20*	*5*	*0*	*107*	*40 - 135*	*5.541*	*3.71*	*20*	
Surr: Nitrobenzene-d5	*3.75*	*0.20*	*5*	*0*	*75.0*	*41 - 120*	*3.186*	*16.3*	*20*	
Surr: Phenol-d6	*3.663*	*0.20*	*5*	*0*	*73.3*	*20 - 120*	*3.21*	*13.2*	*20*	

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	HS20010930

QC BATCH REPORT

Batch ID: 149998 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

The following samples were analyzed in this batch:

HS20010930-02	HS20010930-03	HS20010930-04	HS20010930-05
HS20010930-06	HS20010930-07	HS20010930-08	HS20010930-09
HS20010930-10			

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010930

QC BATCH REPORT

Batch ID: R355061 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200125** Units: **ug/L** Analysis Date: **25-Jan-2020 11:52**
Client ID: Run ID: **VOA4_355061** SeqNo: **5447903** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*51.99*	*1.0*	*50*	*0*	*104*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*48.39*	*1.0*	*50*	*0*	*96.8*	*82 - 115*				
Surr: Dibromofluoromethane	*50.4*	*1.0*	*50*	*0*	*101*	*73 - 126*				
Surr: Toluene-d8	*48.94*	*1.0*	*50*	*0*	*97.9*	*81 - 120*				

LCS Sample ID: **VLCSW-200125** Units: **ug/L** Analysis Date: **25-Jan-2020 11:02**
Client ID: Run ID: **VOA4_355061** SeqNo: **5447902** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	18.78	1.0	20	0	93.9	70 - 124				
Benzene	19.4	1.0	20	0	97.0	74 - 120				
Chlorobenzene	19.61	1.0	20	0	98.0	76 - 113				
Ethylbenzene	19.57	1.0	20	0	97.8	77 - 117				
Methylene chloride	20.36	2.0	20	0	102	70 - 127				
Toluene	19.83	1.0	20	0	99.1	77 - 118				
Vinyl chloride	19.46	1.0	20	0	97.3	70 - 130				
Xylenes, Total	58.33	1.0	60	0	97.2	75 - 122				
Surr: 1,2-Dichloroethane-d4	*49.57*	*1.0*	*50*	*0*	*99.1*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*49.72*	*1.0*	*50*	*0*	*99.4*	*82 - 115*				
Surr: Dibromofluoromethane	*49.96*	*1.0*	*50*	*0*	*99.9*	*73 - 126*				
Surr: Toluene-d8	*50.95*	*1.0*	*50*	*0*	*102*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010930

QC BATCH REPORT

Batch ID: R355061 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS20010937-01MS** Units: **ug/L** Analysis Date: **25-Jan-2020 15:09**
Client ID: Run ID: **VOA4_355061** SeqNo: **5447911** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.24	1.0	20	0	81.2	70 - 127				
Benzene	17.71	1.0	20	0	88.5	70 - 127				
Chlorobenzene	17.17	1.0	20	0	85.8	70 - 114				
Ethylbenzene	17.53	1.0	20	0	87.6	70 - 124				
Methylene chloride	18.41	2.0	20	0	92.1	70 - 128				
Toluene	18.12	1.0	20	0	90.6	70 - 123				
Vinyl chloride	17.88	1.0	20	0	89.4	70 - 130				
Xylenes, Total	51.84	1.0	60	0	86.4	70 - 130				
Surr: 1,2-Dichloroethane-d4	*51.17*	*1.0*	*50*	*0*	*102*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.86*	*1.0*	*50*	*0*	*99.7*	*81 - 113*				
Surr: Dibromofluoromethane	*50.64*	*1.0*	*50*	*0*	*101*	*77 - 123*				
Surr: Toluene-d8	*51.21*	*1.0*	*50*	*0*	*102*	*82 - 127*				

MSD Sample ID: **HS20010937-01MSD** Units: **ug/L** Analysis Date: **25-Jan-2020 15:34**
Client ID: Run ID: **VOA4_355061** SeqNo: **5447912** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	15.9	1.0	20	0	79.5	70 - 127	16.24	2.11	20	
Benzene	17.13	1.0	20	0	85.6	70 - 127	17.71	3.33	20	
Chlorobenzene	17.02	1.0	20	0	85.1	70 - 114	17.17	0.844	20	
Ethylbenzene	16.92	1.0	20	0	84.6	70 - 124	17.53	3.5	20	
Methylene chloride	17.25	2.0	20	0	86.3	70 - 128	18.41	6.49	20	
Toluene	16.89	1.0	20	0	84.4	70 - 123	18.12	7.08	20	
Vinyl chloride	16.93	1.0	20	0	84.6	70 - 130	17.88	5.47	20	
Xylenes, Total	50.49	1.0	60	0	84.1	70 - 130	51.84	2.64	20	
Surr: 1,2-Dichloroethane-d4	*51.37*	*1.0*	*50*	*0*	*103*	*70 - 126*	*51.17*	*0.402*	*20*	
Surr: 4-Bromofluorobenzene	*51.63*	*1.0*	*50*	*0*	*103*	*81 - 113*	*49.86*	*3.48*	*20*	
Surr: Dibromofluoromethane	*51.81*	*1.0*	*50*	*0*	*104*	*77 - 123*	*50.64*	*2.29*	*20*	
Surr: Toluene-d8	*49.4*	*1.0*	*50*	*0*	*98.8*	*82 - 127*	*51.21*	*3.59*	*20*	

The following samples were analyzed in this batch: HS20010930-01 HS20010930-09 HS20010930-10

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010930

QC BATCH REPORT

Batch ID: R355066 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200125** Units: **ug/L** Analysis Date: **25-Jan-2020 11:48**
Client ID: Run ID: **VOA2_355066** SeqNo: **5447954** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*50.24*	*1.0*	*50*	*0*	*100*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*47.97*	*1.0*	*50*	*0*	*95.9*	*82 - 115*				
Surr: Dibromofluoromethane	*51.29*	*1.0*	*50*	*0*	*103*	*73 - 126*				
Surr: Toluene-d8	*51.05*	*1.0*	*50*	*0*	*102*	*81 - 120*				

LCS Sample ID: **VLCSW-200225** Units: **ug/L** Analysis Date: **25-Jan-2020 10:59**
Client ID: Run ID: **VOA2_355066** SeqNo: **5447953** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	18.57	1.0	20	0	92.9	70 - 124				
Benzene	18.24	1.0	20	0	91.2	74 - 120				
Chlorobenzene	18.75	1.0	20	0	93.8	76 - 113				
Ethylbenzene	18.83	1.0	20	0	94.1	77 - 117				
Methylene chloride	18.77	2.0	20	0	93.8	70 - 127				
Toluene	20.88	1.0	20	0	104	77 - 118				
Vinyl chloride	19.59	1.0	20	0	98.0	70 - 130				
Xylenes, Total	58.21	1.0	60	0	97.0	75 - 122				
Surr: 1,2-Dichloroethane-d4	*50.59*	*1.0*	*50*	*0*	*101*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*49.95*	*1.0*	*50*	*0*	*99.9*	*82 - 115*				
Surr: Dibromofluoromethane	*48.84*	*1.0*	*50*	*0*	*97.7*	*73 - 126*				
Surr: Toluene-d8	*50.26*	*1.0*	*50*	*0*	*101*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010930

QC BATCH REPORT

Batch ID: R355066 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS20010767-29MS** Units: **ug/L** Analysis Date: **25-Jan-2020 13:28**
Client ID: Run ID: **VOA2_355066** SeqNo: **5447958** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	17.72	1.0	20	0	88.6	70 - 127				
Benzene	17.87	1.0	20	0	89.3	70 - 127				
Chlorobenzene	18.14	1.0	20	0	90.7	70 - 114				
Ethylbenzene	18.64	1.0	20	0	93.2	70 - 124				
Methylene chloride	18.41	2.0	20	0	92.0	70 - 128				
Toluene	20.39	1.0	20	0	102	70 - 123				
Vinyl chloride	18.29	1.0	20	0	91.4	70 - 130				
Xylenes, Total	57.1	1.0	60	0	95.2	70 - 130				
Surr: 1,2-Dichloroethane-d4	*51.56*	*1.0*	*50*	*0*	*103*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*50.55*	*1.0*	*50*	*0*	*101*	*81 - 113*				
Surr: Dibromofluoromethane	*50.1*	*1.0*	*50*	*0*	*100*	*77 - 123*				
Surr: Toluene-d8	*49.72*	*1.0*	*50*	*0*	*99.4*	*82 - 127*				

MSD Sample ID: **HS20010767-29MSD** Units: **ug/L** Analysis Date: **25-Jan-2020 13:52**
Client ID: Run ID: **VOA2_355066** SeqNo: **5447959** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	17.67	1.0	20	0	88.4	70 - 127	17.72	0.267	20	
Benzene	17.9	1.0	20	0	89.5	70 - 127	17.87	0.197	20	
Chlorobenzene	18.23	1.0	20	0	91.2	70 - 114	18.14	0.504	20	
Ethylbenzene	18.75	1.0	20	0	93.8	70 - 124	18.64	0.579	20	
Methylene chloride	17.79	2.0	20	0	88.9	70 - 128	18.41	3.41	20	
Toluene	20.63	1.0	20	0	103	70 - 123	20.39	1.13	20	
Vinyl chloride	18.66	1.0	20	0	93.3	70 - 130	18.29	2	20	
Xylenes, Total	57.29	1.0	60	0	95.5	70 - 130	57.1	0.342	20	
Surr: 1,2-Dichloroethane-d4	*50.81*	*1.0*	*50*	*0*	*102*	*70 - 126*	*51.56*	*1.47*	*20*	
Surr: 4-Bromofluorobenzene	*49.73*	*1.0*	*50*	*0*	*99.5*	*81 - 113*	*50.55*	*1.63*	*20*	
Surr: Dibromofluoromethane	*49.79*	*1.0*	*50*	*0*	*99.6*	*77 - 123*	*50.1*	*0.63*	*20*	
Surr: Toluene-d8	*50.3*	*1.0*	*50*	*0*	*101*	*82 - 127*	*49.72*	*1.16*	*20*	

The following samples were analyzed in this batch: HS20010930-02 HS20010930-05 HS20010930-06 HS20010930-07 HS20010930-08

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010930

QC BATCH REPORT

Batch ID: R355150 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200127** Units: **ug/L** Analysis Date: **28-Jan-2020 00:04**
Client ID: Run ID: **VOA4_355150** SeqNo: **5449458** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*53.74*	*1.0*	*50*	*0*	*107*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*49.81*	*1.0*	*50*	*0*	*99.6*	*82 - 115*				
Surr: Dibromofluoromethane	*51.4*	*1.0*	*50*	*0*	*103*	*73 - 126*				
Surr: Toluene-d8	*51.46*	*1.0*	*50*	*0*	*103*	*81 - 120*				

LCS Sample ID: **VLCSW-200127** Units: **ug/L** Analysis Date: **27-Jan-2020 23:14**
Client ID: Run ID: **VOA4_355150** SeqNo: **5449457** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	17.77	1.0	20	0	88.9	70 - 124				
Benzene	18.82	1.0	20	0	94.1	74 - 120				
Chlorobenzene	18.67	1.0	20	0	93.4	76 - 113				
Ethylbenzene	18.47	1.0	20	0	92.3	77 - 117				
Methylene chloride	20	2.0	20	0	100.0	70 - 127				
Toluene	18.6	1.0	20	0	93.0	77 - 118				
Vinyl chloride	17.6	1.0	20	0	88.0	70 - 130				
Xylenes, Total	57.11	1.0	60	0	95.2	75 - 122				
Surr: 1,2-Dichloroethane-d4	*50.88*	*1.0*	*50*	*0*	*102*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*50.8*	*1.0*	*50*	*0*	*102*	*82 - 115*				
Surr: Dibromofluoromethane	*51.31*	*1.0*	*50*	*0*	*103*	*73 - 126*				
Surr: Toluene-d8	*49.36*	*1.0*	*50*	*0*	*98.7*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010930

QC BATCH REPORT

Batch ID: R355150 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS20010958-02MS** Units: **ug/L** Analysis Date: **28-Jan-2020 02:07**
Client ID: Run ID: **VOA4_355150** SeqNo: **5449463** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.91	1.0	20	0	84.5	70 - 127				
Benzene	18.82	1.0	20	0	94.1	70 - 127				
Chlorobenzene	17.88	1.0	20	0	89.4	70 - 114				
Ethylbenzene	17.99	1.0	20	0	89.9	70 - 124				
Methylene chloride	18.93	2.0	20	0	94.6	70 - 128				
Toluene	18.76	1.0	20	0	93.8	70 - 123				
Vinyl chloride	17.58	1.0	20	0	87.9	70 - 130				
Xylenes, Total	54.55	1.0	60	0	90.9	70 - 130				
Surr: 1,2-Dichloroethane-d4	*51.55*	*1.0*	*50*	*0*	*103*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*50.92*	*1.0*	*50*	*0*	*102*	*81 - 113*				
Surr: Dibromofluoromethane	*51.17*	*1.0*	*50*	*0*	*102*	*77 - 123*				
Surr: Toluene-d8	*50.57*	*1.0*	*50*	*0*	*101*	*82 - 127*				

MSD Sample ID: **HS20010958-02MSD** Units: **ug/L** Analysis Date: **28-Jan-2020 02:32**
Client ID: Run ID: **VOA4_355150** SeqNo: **5449464** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.29	1.0	20	0	81.4	70 - 127	16.91	3.76	20	
Benzene	17.94	1.0	20	0	89.7	70 - 127	18.82	4.77	20	
Chlorobenzene	17.53	1.0	20	0	87.7	70 - 114	17.88	1.94	20	
Ethylbenzene	17.71	1.0	20	0	88.5	70 - 124	17.99	1.57	20	
Methylene chloride	18.74	2.0	20	0	93.7	70 - 128	18.93	0.98	20	
Toluene	17.72	1.0	20	0	88.6	70 - 123	18.76	5.69	20	
Vinyl chloride	16.97	1.0	20	0	84.8	70 - 130	17.58	3.57	20	
Xylenes, Total	53.22	1.0	60	0	88.7	70 - 130	54.55	2.47	20	
Surr: 1,2-Dichloroethane-d4	*51.67*	*1.0*	*50*	*0*	*103*	*70 - 126*	*51.55*	*0.229*	*20*	
Surr: 4-Bromofluorobenzene	*51.04*	*1.0*	*50*	*0*	*102*	*81 - 113*	*50.92*	*0.238*	*20*	
Surr: Dibromofluoromethane	*51.48*	*1.0*	*50*	*0*	*103*	*77 - 123*	*51.17*	*0.604*	*20*	
Surr: Toluene-d8	*50.25*	*1.0*	*50*	*0*	*100*	*82 - 127*	*50.57*	*0.637*	*20*	

The following samples were analyzed in this batch: HS20010930-03 HS20010930-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20010930**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20010930

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS20010930-01	WQ-1620-TB06-20200120	Login	1/21/2020 6:41:02 PM	JRM	VOA232
HS20010930-02	WG-1620-MW32AR-20200120	Login	1/21/2020 6:41:02 PM	JRM	MET074
HS20010930-02	WG-1620-MW32AR-20200120	Login	1/21/2020 6:41:02 PM	JRM	EXT106
HS20010930-02	WG-1620-MW32AR-20200120	Login	1/21/2020 6:41:02 PM	JRM	VOA252
HS20010930-03	WG-1620-MW32B-20200120	Login	1/21/2020 6:41:02 PM	JRM	MET074
HS20010930-03	WG-1620-MW32B-20200120	Login	1/21/2020 6:41:02 PM	JRM	EXT106
HS20010930-03	WG-1620-MW32B-20200120	Login	1/21/2020 6:41:02 PM	JRM	VOA252
HS20010930-04	WG-1620-MW70B-20200120	Login	1/21/2020 6:41:02 PM	JRM	MET074
HS20010930-04	WG-1620-MW70B-20200120	Login	1/21/2020 6:41:02 PM	JRM	EXT106
HS20010930-04	WG-1620-MW70B-20200120	Login	1/21/2020 6:41:02 PM	JRM	VOA252
HS20010930-05	WG-1620-MW33A-20200120	Login	1/21/2020 6:41:02 PM	JRM	MET074
HS20010930-05	WG-1620-MW33A-20200120	Login	1/21/2020 6:41:02 PM	JRM	EXT106
HS20010930-05	WG-1620-MW33A-20200120	Login	1/21/2020 6:41:02 PM	JRM	VOA252
HS20010930-06	WG-1620-MW87C-20200120	Login	1/21/2020 6:41:02 PM	JRM	MET074
HS20010930-06	WG-1620-MW87C-20200120	Login	1/21/2020 6:41:02 PM	JRM	EXT106
HS20010930-06	WG-1620-MW87C-20200120	Login	1/21/2020 6:41:02 PM	JRM	VOA252
HS20010930-07	WG-1620-MW90B-20200120	Login	1/21/2020 6:41:02 PM	JRM	MET074
HS20010930-07	WG-1620-MW90B-20200120	Login	1/21/2020 6:41:02 PM	JRM	EXT106
HS20010930-07	WG-1620-MW90B-20200120	Login	1/21/2020 6:41:02 PM	JRM	VOA252
HS20010930-08	WG-1620-MW45C-20200120	Login	1/21/2020 6:41:02 PM	JRM	MET074
HS20010930-08	WG-1620-MW45C-20200120	Login	1/21/2020 6:41:02 PM	JRM	EXT111
HS20010930-08	WG-1620-MW45C-20200120	Login	1/21/2020 6:41:02 PM	JRM	VOA252
HS20010930-09	WG-1620-FB10-20200120	Login	1/21/2020 6:41:02 PM	JRM	MET074
HS20010930-09	WG-1620-FB10-20200120	Login	1/21/2020 6:41:02 PM	JRM	EXT111
HS20010930-09	WG-1620-FB10-20200120	Login	1/21/2020 6:41:02 PM	JRM	VOA252
HS20010930-10	WG-1620-FD05-20200120	Login	1/21/2020 6:41:02 PM	JRM	MET074
HS20010930-10	WG-1620-FD05-20200120	Login	1/21/2020 6:41:02 PM	JRM	EXT111
HS20010930-10	WG-1620-FD05-20200120	Login	1/21/2020 6:41:02 PM	JRM	VOA252

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20010930

Date/Time Received: **21-Jan-2020 17:10**
Received by: **DDG**

Checklist completed by: *Jared R. Makan* eSignature — 21-Jan-2020 Date

Reviewed by: *Dane J. Wacasey* eSignature — 27-Jan-2020 Date

Matrices: **Water**

Carrier name: **ALS Courier**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:206397
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.3°C/1.3°C, 2.0°C/2.0°C, 1.6°C/1.6°C UC/C	IR25	
Cooler(s)/Kit(s):	45675, 45543, 44845		
Date/Time sample(s) sent to storage:	01/21/2020 18:52		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

Page 1 of ____

COC ID: 206397

HS20010930

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information			
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A	8260_LL_W (5632528 Volatile Organics Site Specific)
Work Order		Project Number	1620-07-Rev0 SR 92688	B	8260_LL_W (5632528 VOC Site Specific + V.C.)
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P	C	8270_LOW_W (5632532 SemiVolatiles Site specific)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	ICP_TW (5636002 5652646 Metals - As)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	F	
Phone	(512) 671-3434	Phone		G	
Fax	(512) 671-3446	Fax		H	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address		I	
				J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	WQ-1620-TB006-20200121	1-20-20		Water	1	2		X									
2	WG-1620-MW-32AR-20200120	1-20-20	9:10	water	1	6	X	X	X	X							
3	WG-1620-MW-32B-20200120	1-20-20	10:15	H2O	1	6	X	X	X	X							
4	WG-1620-MW-70B-20200120	1-20-20	11:30	H2O	1	6	X	X	X	X							
5	WG-1620-MW-33A-20200120	1-20-20	12:45	H2O	1	6	X	X	X	X							
6	WG-1620-MW-87D-20200120	1-20-20	14:00	H2O	1	6	X	X	X	X							
7	WG-1620-MW-90B-20200120	1-20-20	15:15	H2O	1	6	X	X	X	X							
8	WG-1620-MW-45C-20200120	1-20-20	16:30	H2O	1	6	X	X	X	X							
9	WG-1620-FB-10-20200120	1-20-20	9:30	H2O	1	6	X	X	X	X							
10	WG-1620-FD-05-20200120	1-20-20	—	H2O	1	6	X	X	X	X							

Sampler(s) Please Print & Sign: Tim McGuckin T. McGuckin

Shipment Method:

Required Turnaround Time: (Check Box) ☐ Other ____ ☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour

Results Due Date:

Relinquished by: Date: 1-20-20 Time: 16:20 Received by:

Relinquished by: Date: 1-21-20 Time: 1710 Received by (Laboratory):

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.
45643	2.2
44815	1.6
45675	1.5

QC Package: (Check One Box Below)

☐ Level II Std QC
☐ Level III Std QC/Raw Data
☐ Level IV SVM43/CLP
☐ Other
☒ TRRP Check st
☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

Copyright 2011 by ALS Environmental.

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

January 30, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20010958**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 7 sample(s) on Jan 22, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20010958**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS20010958**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 01/30/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20010958				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 149970,149998,R355061,R355150				
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?		X			1
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			2
		Were MS/MSD RPDs within laboratory QC limits?		X			3
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 01/30/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20010958				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 149970,149998,R355061,R355150				
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?	X				
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?		X			4
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 01/30/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20010958
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 149970,149998,R355061,R355150

ER#[5]	Description
1	Batch 149998, Semivolatile Organics Method SW8270, LCS recovery was above the control limits for 2,4-Dinitrotoluene and 2,6-Dinitrotoluene. The analytes were not detected in the associated samples.
2	Batch 149998, Semivolatile Organics Method SW8270, sample WG-1620-MW82B-20200121, MS recovered outside the control limit for 4-Nitrophenol due to possible matrix effect.
3	Batch 149998, Semivolatile Organics Method SW8270, sample WG-1620-MW82B-20200121, MS/MSD RPD recovered above the RPD limits for select compounds due to possible matrix effect.
4	Batch 149970, Metals Method SW6020, sample WG-1620-MW82B-20200121, PDS recovered above the control limit for Arsenic.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20010958

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20010958-01	WQ-1620-TB07-20200121	Water	CG-121719-114	21-Jan-2020 00:00	22-Jan-2020 11:30	☐
HS20010958-02	WG-1620-MW82B-20200121	Water		21-Jan-2020 09:10	22-Jan-2020 11:30	☐
HS20010958-03	WG-1620-MW38A-20200121	Water		21-Jan-2020 11:10	22-Jan-2020 11:30	☐
HS20010958-04	WG-1620-MW38B-20200121	Water		21-Jan-2020 13:45	22-Jan-2020 11:30	☐
HS20010958-05	WG-1620-MW03-20200121	Water		21-Jan-2020 15:00	22-Jan-2020 11:30	☐
HS20010958-06	WG-1620-MW04-20200121	Water		21-Jan-2020 16:00	22-Jan-2020 11:30	☐
HS20010958-07	WG-1620-FB11-20200121	Water		21-Jan-2020 15:30	22-Jan-2020 11:30	☐

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20010958
Sample ID: WQ-1620-TB07-20200121
Lab ID:HS20010958-01
Collection Date: 21-Jan-2020 00:00
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	28-Jan-2020 00:28
Benzene		U	0.00020	0.0010	mg/L	1	28-Jan-2020 00:28
Chlorobenzene		U	0.00030	0.0010	mg/L	1	28-Jan-2020 00:28
Ethylbenzene		U	0.00030	0.0010	mg/L	1	28-Jan-2020 00:28
Methylene chloride		U	0.0010	0.0020	mg/L	1	28-Jan-2020 00:28
Toluene		U	0.00020	0.0010	mg/L	1	28-Jan-2020 00:28
Xylenes, Total		U	0.00030	0.0010	mg/L	1	28-Jan-2020 00:28
Surr: 1,2-Dichloroethane-d4	*108*			*70-126*	*%REC*	*1*	*28-Jan-2020 00:28*
Surr: 4-Bromofluorobenzene	*101*			*81-113*	*%REC*	*1*	*28-Jan-2020 00:28*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*28-Jan-2020 00:28*
Surr: Toluene-d8	*99.8*			*82-127*	*%REC*	*1*	*28-Jan-2020 00:28*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20010958
Sample ID: WG-1620-MW82B-20200121
Lab ID:HS20010958-02
Collection Date: 21-Jan-2020 09:10
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	28-Jan-2020 01:42
Benzene		U	0.00020	0.0010	mg/L	1	28-Jan-2020 01:42
Chlorobenzene		U	0.00030	0.0010	mg/L	1	28-Jan-2020 01:42
Ethylbenzene		U	0.00030	0.0010	mg/L	1	28-Jan-2020 01:42
Methylene chloride		U	0.0010	0.0020	mg/L	1	28-Jan-2020 01:42
Toluene		U	0.00020	0.0010	mg/L	1	28-Jan-2020 01:42
Xylenes, Total		U	0.00030	0.0010	mg/L	1	28-Jan-2020 01:42
Surr: 1,2-Dichloroethane-d4	*108*			*70-126*	*%REC*	*1*	*28-Jan-2020 01:42*
Surr: 4-Bromofluorobenzene	*99.0*			*81-113*	*%REC*	*1*	*28-Jan-2020 01:42*
Surr: Dibromofluoromethane	*105*			*77-123*	*%REC*	*1*	*28-Jan-2020 01:42*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*28-Jan-2020 01:42*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW82B-20200121
Collection Date: 21-Jan-2020 09:10

ANALYTICAL REPORT
WorkOrder:HS20010958
Lab ID:HS20010958-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 27-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	29-Jan-2020 22:17
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	29-Jan-2020 22:17
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	29-Jan-2020 22:17
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	29-Jan-2020 22:17
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	29-Jan-2020 22:17
2-Methylnaphthalene	**0.00010**		**0.000019**	**0.00010**	**mg/L**	1	29-Jan-2020 22:17
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	29-Jan-2020 22:17
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	29-Jan-2020 22:17
Acenaphthene	**0.000043**	J	**0.000027**	**0.00010**	**mg/L**	1	29-Jan-2020 22:17
Acenaphthylene	U		0.000015	0.00010	mg/L	1	29-Jan-2020 22:17
Anthracene	**0.000031**	J	**0.000014**	**0.00010**	**mg/L**	1	29-Jan-2020 22:17
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	29-Jan-2020 22:17
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	29-Jan-2020 22:17
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	29-Jan-2020 22:17
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	29-Jan-2020 22:17
Chrysene	U		0.000021	0.00010	mg/L	1	29-Jan-2020 22:17
Dibenzofuran	**0.000040**	J	**0.000020**	**0.00010**	**mg/L**	1	29-Jan-2020 22:17
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	29-Jan-2020 22:17
Fluoranthene	U		0.000010	0.00010	mg/L	1	29-Jan-2020 22:17
Fluorene	**0.000037**	J	**0.000030**	**0.00010**	**mg/L**	1	29-Jan-2020 22:17
Naphthalene	**0.00041**		**0.000020**	**0.00010**	**mg/L**	1	29-Jan-2020 22:17
Nitrobenzene	U		0.000024	0.00020	mg/L	1	29-Jan-2020 22:17
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	29-Jan-2020 22:17
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	29-Jan-2020 22:17
Phenanthrene	**0.00012**		**0.000021**	**0.00010**	**mg/L**	1	29-Jan-2020 22:17
Phenol	U		0.000035	0.00020	mg/L	1	29-Jan-2020 22:17
Pyrene	U		0.000019	0.00010	mg/L	1	29-Jan-2020 22:17
Surr: 2,4,6-Tribromophenol	*93.1*			*34-129*	*%REC*	*1*	*29-Jan-2020 22:17*
Surr: 2-Fluorobiphenyl	*93.3*			*40-125*	*%REC*	*1*	*29-Jan-2020 22:17*
Surr: 2-Fluorophenol	*68.9*			*20-120*	*%REC*	*1*	*29-Jan-2020 22:17*
Surr: 4-Terphenyl-d14	*115*			*40-135*	*%REC*	*1*	*29-Jan-2020 22:17*
Surr: Nitrobenzene-d5	*79.2*			*41-120*	*%REC*	*1*	*29-Jan-2020 22:17*
Surr: Phenol-d6	*74.6*			*20-120*	*%REC*	*1*	*29-Jan-2020 22:17*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 24-Jan-2020		Analyst: JHD
Arsenic	**0.00484**		**0.000400**	**0.00200**	**mg/L**	1	27-Jan-2020 21:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20010958
Sample ID: WG-1620-MW38A-20200121
Lab ID:HS20010958-03
Collection Date: 21-Jan-2020 11:10
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	25-Jan-2020 20:08
Benzene		U	0.00020	0.0010	mg/L	1	25-Jan-2020 20:08
Chlorobenzene		U	0.00030	0.0010	mg/L	1	25-Jan-2020 20:08
Ethylbenzene		U	0.00030	0.0010	mg/L	1	25-Jan-2020 20:08
Methylene chloride		U	0.0010	0.0020	mg/L	1	25-Jan-2020 20:08
Toluene		U	0.00020	0.0010	mg/L	1	25-Jan-2020 20:08
Xylenes, Total		U	0.00030	0.0010	mg/L	1	25-Jan-2020 20:08
Surr: 1,2-Dichloroethane-d4	*105*			*70-126*	*%REC*	*1*	*25-Jan-2020 20:08*
Surr: 4-Bromofluorobenzene	*99.5*			*81-113*	*%REC*	*1*	*25-Jan-2020 20:08*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*25-Jan-2020 20:08*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*1*	*25-Jan-2020 20:08*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW38A-20200121
Collection Date: 21-Jan-2020 11:10

ANALYTICAL REPORT
WorkOrder:HS20010958
Lab ID:HS20010958-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 27-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	29-Jan-2020 23:14
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	29-Jan-2020 23:14
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	29-Jan-2020 23:14
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	29-Jan-2020 23:14
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	29-Jan-2020 23:14
2-Methylnaphthalene	**0.00017**		**0.000019**	**0.00010**	**mg/L**	1	29-Jan-2020 23:14
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	29-Jan-2020 23:14
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	29-Jan-2020 23:14
Acenaphthene	**0.00068**		**0.000027**	**0.00010**	**mg/L**	1	29-Jan-2020 23:14
Acenaphthylene	U		0.000015	0.00010	mg/L	1	29-Jan-2020 23:14
Anthracene	**0.00015**		**0.000014**	**0.00010**	**mg/L**	1	29-Jan-2020 23:14
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	29-Jan-2020 23:14
Benzo(a)pyrene	**0.000032**	J	**0.000020**	**0.00010**	**mg/L**	1	29-Jan-2020 23:14
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	29-Jan-2020 23:14
Bis(2-ethylhexyl)phthalate	**0.000063**	J	**0.000037**	**0.00020**	**mg/L**	1	29-Jan-2020 23:14
Chrysene	**0.000060**	J	**0.000021**	**0.00010**	**mg/L**	1	29-Jan-2020 23:14
Dibenzofuran	**0.00036**		**0.000020**	**0.00010**	**mg/L**	1	29-Jan-2020 23:14
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	29-Jan-2020 23:14
Fluoranthene	**0.00018**		**0.000010**	**0.00010**	**mg/L**	1	29-Jan-2020 23:14
Fluorene	**0.00029**		**0.000030**	**0.00010**	**mg/L**	1	29-Jan-2020 23:14
Naphthalene	**0.0011**		**0.000020**	**0.00010**	**mg/L**	1	29-Jan-2020 23:14
Nitrobenzene	U		0.000024	0.00020	mg/L	1	29-Jan-2020 23:14
N-Nitrosodiphenylamine	**0.00011**	J	**0.000025**	**0.00020**	**mg/L**	1	29-Jan-2020 23:14
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	29-Jan-2020 23:14
Phenanthrene	**0.00039**		**0.000021**	**0.00010**	**mg/L**	1	29-Jan-2020 23:14
Phenol	U		0.000035	0.00020	mg/L	1	29-Jan-2020 23:14
Pyrene	**0.00014**		**0.000019**	**0.00010**	**mg/L**	1	29-Jan-2020 23:14
Surr: 2,4,6-Tribromophenol	*68.4*			*34-129*	*%REC*	*1*	*29-Jan-2020 23:14*
Surr: 2-Fluorobiphenyl	*72.4*			*40-125*	*%REC*	*1*	*29-Jan-2020 23:14*
Surr: 2-Fluorophenol	*63.9*			*20-120*	*%REC*	*1*	*29-Jan-2020 23:14*
Surr: 4-Terphenyl-d14	*92.4*			*40-135*	*%REC*	*1*	*29-Jan-2020 23:14*
Surr: Nitrobenzene-d5	*67.8*			*41-120*	*%REC*	*1*	*29-Jan-2020 23:14*
Surr: Phenol-d6	*66.4*			*20-120*	*%REC*	*1*	*29-Jan-2020 23:14*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 24-Jan-2020		Analyst: JHD
Arsenic	**0.0177**		**0.000400**	**0.00200**	**mg/L**	1	27-Jan-2020 21:44

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW38B-20200121
Collection Date: 21-Jan-2020 13:45

ANALYTICAL REPORT
WorkOrder:HS20010958
Lab ID:HS20010958-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	25-Jan-2020 20:33
Benzene		U	0.00020	0.0010	mg/L	1	25-Jan-2020 20:33
Chlorobenzene		U	0.00030	0.0010	mg/L	1	25-Jan-2020 20:33
Ethylbenzene		U	0.00030	0.0010	mg/L	1	25-Jan-2020 20:33
Methylene chloride		U	0.0010	0.0020	mg/L	1	25-Jan-2020 20:33
Toluene		U	0.00020	0.0010	mg/L	1	25-Jan-2020 20:33
Xylenes, Total		U	0.00030	0.0010	mg/L	1	25-Jan-2020 20:33
Surr: 1,2-Dichloroethane-d4	*104*			*70-126*	*%REC*	*1*	*25-Jan-2020 20:33*
Surr: 4-Bromofluorobenzene	*99.4*			*81-113*	*%REC*	*1*	*25-Jan-2020 20:33*
Surr: Dibromofluoromethane	*98.8*			*77-123*	*%REC*	*1*	*25-Jan-2020 20:33*
Surr: Toluene-d8	*96.9*			*82-127*	*%REC*	*1*	*25-Jan-2020 20:33*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW38B-20200121
Collection Date: 21-Jan-2020 13:45

ANALYTICAL REPORT
WorkOrder:HS20010958
Lab ID:HS20010958-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 27-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	**0.00025**		**0.000021**	**0.00020**	**mg/L**	1	29-Jan-2020 23:33
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	29-Jan-2020 23:33
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	29-Jan-2020 23:33
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	29-Jan-2020 23:33
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	29-Jan-2020 23:33
2-Methylnaphthalene	**0.00017**		**0.000019**	**0.00010**	**mg/L**	1	29-Jan-2020 23:33
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	29-Jan-2020 23:33
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	29-Jan-2020 23:33
Acenaphthene	**0.054**		**0.00027**	**0.0010**	**mg/L**	10	30-Jan-2020 14:04
Acenaphthylene	**0.00045**		**0.000015**	**0.00010**	**mg/L**	1	29-Jan-2020 23:33
Anthracene	**0.0012**		**0.000014**	**0.00010**	**mg/L**	1	29-Jan-2020 23:33
Benz(a)anthracene	**0.000055**	J	**0.000050**	**0.00010**	**mg/L**	1	29-Jan-2020 23:33
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	29-Jan-2020 23:33
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	29-Jan-2020 23:33
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	29-Jan-2020 23:33
Chrysene	**0.000057**	J	**0.000021**	**0.00010**	**mg/L**	1	29-Jan-2020 23:33
Dibenzofuran	**0.0054**		**0.000020**	**0.00010**	**mg/L**	1	29-Jan-2020 23:33
Di-n-butyl phthalate	**0.000036**	J	**0.000020**	**0.00020**	**mg/L**	1	29-Jan-2020 23:33
Fluoranthene	**0.0025**		**0.000010**	**0.00010**	**mg/L**	1	29-Jan-2020 23:33
Fluorene	**0.015**		**0.00030**	**0.0010**	**mg/L**	10	30-Jan-2020 14:04
Naphthalene	**0.00098**		**0.000020**	**0.00010**	**mg/L**	1	29-Jan-2020 23:33
Nitrobenzene	U		0.000024	0.00020	mg/L	1	29-Jan-2020 23:33
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	29-Jan-2020 23:33
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	29-Jan-2020 23:33
Phenanthrene	**0.00095**		**0.000021**	**0.00010**	**mg/L**	1	29-Jan-2020 23:33
Phenol	U		0.000035	0.00020	mg/L	1	29-Jan-2020 23:33
Pyrene	**0.0015**		**0.000019**	**0.00010**	**mg/L**	1	29-Jan-2020 23:33
Surr: 2,4,6-Tribromophenol	*80.6*			*34-129*	*%REC*	*1*	*29-Jan-2020 23:33*
Surr: 2,4,6-Tribromophenol	*93.5*			*34-129*	*%REC*	*10*	*30-Jan-2020 14:04*
Surr: 2-Fluorobiphenyl	*106*			*40-125*	*%REC*	*10*	*30-Jan-2020 14:04*
Surr: 2-Fluorobiphenyl	*87.7*			*40-125*	*%REC*	*1*	*29-Jan-2020 23:33*
Surr: 2-Fluorophenol	*71.8*			*20-120*	*%REC*	*1*	*29-Jan-2020 23:33*
Surr: 2-Fluorophenol	*74.8*			*20-120*	*%REC*	*10*	*30-Jan-2020 14:04*
Surr: 4-Terphenyl-d14	*117*			*40-135*	*%REC*	*10*	*30-Jan-2020 14:04*
Surr: 4-Terphenyl-d14	*95.1*			*40-135*	*%REC*	*1*	*29-Jan-2020 23:33*
Surr: Nitrobenzene-d5	*75.9*			*41-120*	*%REC*	*1*	*29-Jan-2020 23:33*
Surr: Nitrobenzene-d5	*94.3*			*41-120*	*%REC*	*10*	*30-Jan-2020 14:04*
Surr: Phenol-d6	*93.3*			*20-120*	*%REC*	*10*	*30-Jan-2020 14:04*
Surr: Phenol-d6	*79.3*			*20-120*	*%REC*	*1*	*29-Jan-2020 23:33*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW38B-20200121
Collection Date: 21-Jan-2020 13:45

ANALYTICAL REPORT
WorkOrder:HS20010958
Lab ID:HS20010958-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 24-Jan-2020		Analyst: JHD
Arsenic	**0.0173**		**0.000400**	**0.00200**	**mg/L**	1	27-Jan-2020 21:46

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20010958
Sample ID: WG-1620-MW03-20200121
Lab ID:HS20010958-05
Collection Date: 21-Jan-2020 15:00
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	25-Jan-2020 20:58
Benzene		U	0.00020	0.0010	mg/L	1	25-Jan-2020 20:58
Chlorobenzene		U	0.00030	0.0010	mg/L	1	25-Jan-2020 20:58
Ethylbenzene		U	0.00030	0.0010	mg/L	1	25-Jan-2020 20:58
Methylene chloride		U	0.0010	0.0020	mg/L	1	25-Jan-2020 20:58
Toluene		U	0.00020	0.0010	mg/L	1	25-Jan-2020 20:58
Xylenes, Total		U	0.00030	0.0010	mg/L	1	25-Jan-2020 20:58
Surr: 1,2-Dichloroethane-d4	*104*			*70-126*	*%REC*	*1*	*25-Jan-2020 20:58*
Surr: 4-Bromofluorobenzene	*97.5*			*81-113*	*%REC*	*1*	*25-Jan-2020 20:58*
Surr: Dibromofluoromethane	*100*			*77-123*	*%REC*	*1*	*25-Jan-2020 20:58*
Surr: Toluene-d8	*99.2*			*82-127*	*%REC*	*1*	*25-Jan-2020 20:58*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW03-20200121
Collection Date: 21-Jan-2020 15:00

ANALYTICAL REPORT
WorkOrder:HS20010958
Lab ID:HS20010958-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 27-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	29-Jan-2020 23:52
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	29-Jan-2020 23:52
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	29-Jan-2020 23:52
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	29-Jan-2020 23:52
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	29-Jan-2020 23:52
2-Methylnaphthalene	**0.000045**	J	**0.000019**	**0.00010**	**mg/L**	1	29-Jan-2020 23:52
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	29-Jan-2020 23:52
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	29-Jan-2020 23:52
Acenaphthene	**0.000061**	J	**0.000027**	**0.00010**	**mg/L**	1	29-Jan-2020 23:52
Acenaphthylene	U		0.000015	0.00010	mg/L	1	29-Jan-2020 23:52
Anthracene	**0.000069**	J	**0.000014**	**0.00010**	**mg/L**	1	29-Jan-2020 23:52
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	29-Jan-2020 23:52
Benzo(a)pyrene	**0.000024**	J	**0.000020**	**0.00010**	**mg/L**	1	29-Jan-2020 23:52
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	29-Jan-2020 23:52
Bis(2-ethylhexyl)phthalate	**0.00011**	J	**0.000037**	**0.00020**	**mg/L**	1	29-Jan-2020 23:52
Chrysene	U		0.000021	0.00010	mg/L	1	29-Jan-2020 23:52
Dibenzofuran	U		0.000020	0.00010	mg/L	1	29-Jan-2020 23:52
Di-n-butyl phthalate	**0.000029**	J	**0.000020**	**0.00020**	**mg/L**	1	29-Jan-2020 23:52
Fluoranthene	**0.000055**	J	**0.000010**	**0.00010**	**mg/L**	1	29-Jan-2020 23:52
Fluorene	U		0.000030	0.00010	mg/L	1	29-Jan-2020 23:52
Naphthalene	**0.00024**		**0.000020**	**0.00010**	**mg/L**	1	29-Jan-2020 23:52
Nitrobenzene	U		0.000024	0.00020	mg/L	1	29-Jan-2020 23:52
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	29-Jan-2020 23:52
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	29-Jan-2020 23:52
Phenanthrene	U		0.000021	0.00010	mg/L	1	29-Jan-2020 23:52
Phenol	U		0.000035	0.00020	mg/L	1	29-Jan-2020 23:52
Pyrene	**0.000036**	J	**0.000019**	**0.00010**	**mg/L**	1	29-Jan-2020 23:52
Surr: 2,4,6-Tribromophenol	*68.7*			*34-129*	*%REC*	*1*	*29-Jan-2020 23:52*
Surr: 2-Fluorobiphenyl	*91.9*			*40-125*	*%REC*	*1*	*29-Jan-2020 23:52*
Surr: 2-Fluorophenol	*75.5*			*20-120*	*%REC*	*1*	*29-Jan-2020 23:52*
Surr: 4-Terphenyl-d14	*94.9*			*40-135*	*%REC*	*1*	*29-Jan-2020 23:52*
Surr: Nitrobenzene-d5	*80.4*			*41-120*	*%REC*	*1*	*29-Jan-2020 23:52*
Surr: Phenol-d6	*77.0*			*20-120*	*%REC*	*1*	*29-Jan-2020 23:52*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 24-Jan-2020		Analyst: JHD
Arsenic	**0.00207**		**0.000400**	**0.00200**	**mg/L**	1	27-Jan-2020 21:48

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20010958
Sample ID: WG-1620-MW04-20200121
Lab ID:HS20010958-06
Collection Date: 21-Jan-2020 16:00
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	28-Jan-2020 02:56
Benzene		U	0.00020	0.0010	mg/L	1	28-Jan-2020 02:56
Chlorobenzene		U	0.00030	0.0010	mg/L	1	28-Jan-2020 02:56
Ethylbenzene		U	0.00030	0.0010	mg/L	1	28-Jan-2020 02:56
Methylene chloride		U	0.0010	0.0020	mg/L	1	28-Jan-2020 02:56
Toluene		U	0.00020	0.0010	mg/L	1	28-Jan-2020 02:56
Xylenes, Total		U	0.00030	0.0010	mg/L	1	28-Jan-2020 02:56
Surr: 1,2-Dichloroethane-d4	*105*			*70-126*	*%REC*	*1*	*28-Jan-2020 02:56*
Surr: 4-Bromofluorobenzene	*98.5*			*81-113*	*%REC*	*1*	*28-Jan-2020 02:56*
Surr: Dibromofluoromethane	*103*			*77-123*	*%REC*	*1*	*28-Jan-2020 02:56*
Surr: Toluene-d8	*99.1*			*82-127*	*%REC*	*1*	*28-Jan-2020 02:56*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW04-20200121
Collection Date: 21-Jan-2020 16:00

ANALYTICAL REPORT
WorkOrder:HS20010958
Lab ID:HS20010958-06
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 27-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	30-Jan-2020 00:11
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	30-Jan-2020 00:11
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	30-Jan-2020 00:11
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	30-Jan-2020 00:11
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	30-Jan-2020 00:11
2-Methylnaphthalene	**0.00026**		**0.000019**	**0.00010**	**mg/L**	1	30-Jan-2020 00:11
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	30-Jan-2020 00:11
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	30-Jan-2020 00:11
Acenaphthene	**0.00015**		**0.000027**	**0.00010**	**mg/L**	1	30-Jan-2020 00:11
Acenaphthylene	U		0.000015	0.00010	mg/L	1	30-Jan-2020 00:11
Anthracene	**0.00010**		**0.000014**	**0.00010**	**mg/L**	1	30-Jan-2020 00:11
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	30-Jan-2020 00:11
Benzo(a)pyrene	**0.000033**	J	**0.000020**	**0.00010**	**mg/L**	1	30-Jan-2020 00:11
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	30-Jan-2020 00:11
Bis(2-ethylhexyl)phthalate	**0.0018**		**0.000037**	**0.00020**	**mg/L**	1	30-Jan-2020 00:11
Chrysene	**0.000034**	J	**0.000021**	**0.00010**	**mg/L**	1	30-Jan-2020 00:11
Dibenzofuran	**0.000097**	J	**0.000020**	**0.00010**	**mg/L**	1	30-Jan-2020 00:11
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	30-Jan-2020 00:11
Fluoranthene	**0.00029**		**0.000010**	**0.00010**	**mg/L**	1	30-Jan-2020 00:11
Fluorene	**0.000067**	J	**0.000030**	**0.00010**	**mg/L**	1	30-Jan-2020 00:11
Naphthalene	**0.0013**		**0.000020**	**0.00010**	**mg/L**	1	30-Jan-2020 00:11
Nitrobenzene	U		0.000024	0.00020	mg/L	1	30-Jan-2020 00:11
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	30-Jan-2020 00:11
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	30-Jan-2020 00:11
Phenanthrene	**0.00017**		**0.000021**	**0.00010**	**mg/L**	1	30-Jan-2020 00:11
Phenol	U		0.000035	0.00020	mg/L	1	30-Jan-2020 00:11
Pyrene	**0.00020**		**0.000019**	**0.00010**	**mg/L**	1	30-Jan-2020 00:11
Surr: 2,4,6-Tribromophenol	*70.9*			*34-129*	*%REC*	*1*	*30-Jan-2020 00:11*
Surr: 2-Fluorobiphenyl	*85.8*			*40-125*	*%REC*	*1*	*30-Jan-2020 00:11*
Surr: 2-Fluorophenol	*62.6*			*20-120*	*%REC*	*1*	*30-Jan-2020 00:11*
Surr: 4-Terphenyl-d14	*95.4*			*40-135*	*%REC*	*1*	*30-Jan-2020 00:11*
Surr: Nitrobenzene-d5	*71.1*			*41-120*	*%REC*	*1*	*30-Jan-2020 00:11*
Surr: Phenol-d6	*71.4*			*20-120*	*%REC*	*1*	*30-Jan-2020 00:11*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 24-Jan-2020		Analyst: JHD
Arsenic	**0.00223**		**0.000400**	**0.00200**	**mg/L**	1	27-Jan-2020 21:50

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20010958
Sample ID: WG-1620-FB11-20200121
Lab ID:HS20010958-07
Collection Date: 21-Jan-2020 15:30
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	28-Jan-2020 00:53
Benzene		U	0.00020	0.0010	mg/L	1	28-Jan-2020 00:53
Chlorobenzene		U	0.00030	0.0010	mg/L	1	28-Jan-2020 00:53
Ethylbenzene		U	0.00030	0.0010	mg/L	1	28-Jan-2020 00:53
Methylene chloride		U	0.0010	0.0020	mg/L	1	28-Jan-2020 00:53
Toluene		U	0.00020	0.0010	mg/L	1	28-Jan-2020 00:53
Xylenes, Total		U	0.00030	0.0010	mg/L	1	28-Jan-2020 00:53
Surr: 1,2-Dichloroethane-d4	*108*			*70-126*	*%REC*	*1*	*28-Jan-2020 00:53*
Surr: 4-Bromofluorobenzene	*98.0*			*81-113*	*%REC*	*1*	*28-Jan-2020 00:53*
Surr: Dibromofluoromethane	*104*			*77-123*	*%REC*	*1*	*28-Jan-2020 00:53*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*28-Jan-2020 00:53*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB11-20200121
Collection Date: 21-Jan-2020 15:30

ANALYTICAL REPORT
WorkOrder:HS20010958
Lab ID:HS20010958-07
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 27-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine		U	0.000021	0.00020	mg/L	1	30-Jan-2020 00:30
2,4-Dimethylphenol		U	0.000040	0.00020	mg/L	1	30-Jan-2020 00:30
2,4-Dinitrotoluene		U	0.000058	0.00020	mg/L	1	30-Jan-2020 00:30
2,6-Dinitrotoluene		U	0.000042	0.00020	mg/L	1	30-Jan-2020 00:30
2-Chloronaphthalene		U	0.000021	0.00020	mg/L	1	30-Jan-2020 00:30
2-Methylnaphthalene		U	0.000019	0.00010	mg/L	1	30-Jan-2020 00:30
4,6-Dinitro-2-methylphenol		U	0.000020	0.00020	mg/L	1	30-Jan-2020 00:30
4-Nitrophenol		U	0.000047	0.0010	mg/L	1	30-Jan-2020 00:30
Acenaphthene		U	0.000027	0.00010	mg/L	1	30-Jan-2020 00:30
Acenaphthylene		U	0.000015	0.00010	mg/L	1	30-Jan-2020 00:30
Anthracene		U	0.000014	0.00010	mg/L	1	30-Jan-2020 00:30
Benz(a)anthracene		U	0.000050	0.00010	mg/L	1	30-Jan-2020 00:30
Benzo(a)pyrene		U	0.000020	0.00010	mg/L	1	30-Jan-2020 00:30
Bis(2-chloroethoxy)methane		U	0.000030	0.00020	mg/L	1	30-Jan-2020 00:30
Bis(2-ethylhexyl)phthalate		U	0.000037	0.00020	mg/L	1	30-Jan-2020 00:30
Chrysene		U	0.000021	0.00010	mg/L	1	30-Jan-2020 00:30
Dibenzofuran		U	0.000020	0.00010	mg/L	1	30-Jan-2020 00:30
Di-n-butyl phthalate		U	0.000020	0.00020	mg/L	1	30-Jan-2020 00:30
Fluoranthene		U	0.000010	0.00010	mg/L	1	30-Jan-2020 00:30
Fluorene		U	0.000030	0.00010	mg/L	1	30-Jan-2020 00:30
Naphthalene	**0.00018**		**0.000020**	**0.00010**	**mg/L**	1	30-Jan-2020 00:30
Nitrobenzene		U	0.000024	0.00020	mg/L	1	30-Jan-2020 00:30
N-Nitrosodiphenylamine		U	0.000025	0.00020	mg/L	1	30-Jan-2020 00:30
Pentachlorophenol		U	0.000079	0.00020	mg/L	1	30-Jan-2020 00:30
Phenanthrene		U	0.000021	0.00010	mg/L	1	30-Jan-2020 00:30
Phenol		U	0.000035	0.00020	mg/L	1	30-Jan-2020 00:30
Pyrene		U	0.000019	0.00010	mg/L	1	30-Jan-2020 00:30
Surr: 2,4,6-Tribromophenol	*69.2*			*34-129*	*%REC*	*1*	*30-Jan-2020 00:30*
Surr: 2-Fluorobiphenyl	*94.6*			*40-125*	*%REC*	*1*	*30-Jan-2020 00:30*
Surr: 2-Fluorophenol	*80.3*			*20-120*	*%REC*	*1*	*30-Jan-2020 00:30*
Surr: 4-Terphenyl-d14	*92.1*			*40-135*	*%REC*	*1*	*30-Jan-2020 00:30*
Surr: Nitrobenzene-d5	*86.0*			*41-120*	*%REC*	*1*	*30-Jan-2020 00:30*
Surr: Phenol-d6	*81.8*			*20-120*	*%REC*	*1*	*30-Jan-2020 00:30*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 24-Jan-2020		Analyst: JHD
Arsenic		U	0.000400	0.00200	mg/L	1	27-Jan-2020 21:52

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010958

Batch ID: 149970 **Start Date:** 24 Jan 2020 09:00 **End Date:** 24 Jan 2020 13:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20010958-02		10 (mL)	10 (mL)	1
HS20010958-03		10 (mL)	10 (mL)	1
HS20010958-04		10 (mL)	10 (mL)	1
HS20010958-05		10 (mL)	10 (mL)	1
HS20010958-06		10 (mL)	10 (mL)	1
HS20010958-07		10 (mL)	10 (mL)	1

Batch ID: 149998 **Start Date:** 27 Jan 2020 07:00 **End Date:** 27 Jan 2020 13:30
Method: SV AQ SEP FUN EXTRACT-LOWLEV - 3510C **Prep Code:** 3510_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20010958-02	1	1000 (mL)	1 (mL)	0.001
HS20010958-03	1	1000 (mL)	1 (mL)	0.001
HS20010958-04	1	1000 (mL)	1 (mL)	0.001
HS20010958-05	1	1000 (mL)	1 (mL)	0.001
HS20010958-06	1	1000 (mL)	1 (mL)	0.001
HS20010958-07	1	1000 (mL)	1 (mL)	0.001

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010958

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 149970 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS20010958-02	WG-1620-MW82B-20200121	21 Jan 2020 09:10		24 Jan 2020 13:00	27 Jan 2020 21:28	1
HS20010958-03	WG-1620-MW38A-20200121	21 Jan 2020 11:10		24 Jan 2020 13:00	27 Jan 2020 21:44	1
HS20010958-04	WG-1620-MW38B-20200121	21 Jan 2020 13:45		24 Jan 2020 13:00	27 Jan 2020 21:46	1
HS20010958-05	WG-1620-MW03-20200121	21 Jan 2020 15:00		24 Jan 2020 13:00	27 Jan 2020 21:48	1
HS20010958-06	WG-1620-MW04-20200121	21 Jan 2020 16:00		24 Jan 2020 13:00	27 Jan 2020 21:50	1
HS20010958-07	WG-1620-FB11-20200121	21 Jan 2020 15:30		24 Jan 2020 13:00	27 Jan 2020 21:52	1
Batch ID: 149998 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Water	
HS20010958-02	WG-1620-MW82B-20200121	21 Jan 2020 09:10		27 Jan 2020 10:49	29 Jan 2020 22:17	1
HS20010958-03	WG-1620-MW38A-20200121	21 Jan 2020 11:10		27 Jan 2020 10:49	29 Jan 2020 23:14	1
HS20010958-04	WG-1620-MW38B-20200121	21 Jan 2020 13:45		27 Jan 2020 10:49	30 Jan 2020 14:04	10
HS20010958-04	WG-1620-MW38B-20200121	21 Jan 2020 13:45		27 Jan 2020 10:49	29 Jan 2020 23:33	1
HS20010958-05	WG-1620-MW03-20200121	21 Jan 2020 15:00		27 Jan 2020 10:49	29 Jan 2020 23:52	1
HS20010958-06	WG-1620-MW04-20200121	21 Jan 2020 16:00		27 Jan 2020 10:49	30 Jan 2020 00:11	1
HS20010958-07	WG-1620-FB11-20200121	21 Jan 2020 15:30		27 Jan 2020 10:49	30 Jan 2020 00:30	1
Batch ID: R355061 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20010958-03	WG-1620-MW38A-20200121	21 Jan 2020 11:10			25 Jan 2020 20:08	1
HS20010958-04	WG-1620-MW38B-20200121	21 Jan 2020 13:45			25 Jan 2020 20:33	1
HS20010958-05	WG-1620-MW03-20200121	21 Jan 2020 15:00			25 Jan 2020 20:58	1
Batch ID: R355150 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20010958-01	WQ-1620-TB07-20200121	21 Jan 2020 00:00			28 Jan 2020 00:28	1
HS20010958-02	WG-1620-MW82B-20200121	21 Jan 2020 09:10			28 Jan 2020 01:42	1
HS20010958-06	WG-1620-MW04-20200121	21 Jan 2020 16:00			28 Jan 2020 02:56	1
HS20010958-07	WG-1620-FB11-20200121	21 Jan 2020 15:30			28 Jan 2020 00:53	1

WorkOrder: HS20010958
InstrumentID: ICPMS05
Test Code: ICP_TW
Test Number: SW6020
Test Name: ICP-MS Metals by SW6020A

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Arsenic	7440-38-2	0.000500	0.000499	0.000400	0.00200

WorkOrder: HS20010958
InstrumentID: SV-6
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Diphenylhydrazine	122-66-7	0.00010	0.000098	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.000051	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.000094	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.000083	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.000093	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.000050	0.000060	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000031	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00010	0.000037	0.000047	0.0010
A	Acenaphthene	83-32-9	0.000050	0.000059	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000050	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.000047	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.000050	0.000059	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.000050	0.000050	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.000081	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.00012	0.000037	0.00020
A	Chrysene	218-01-9	0.000050	0.000060	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.000050	0.000050	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.00011	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000049	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.000053	0.000030	0.00010
A	Naphthalene	91-20-3	0.000050	0.000049	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.00012	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.00011	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.0000094	0.000079	0.00020
A	Phenanthrene	85-01-8	0.000050	0.000049	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.000096	0.000035	0.00020
A	Pyrene	129-00-0	0.000050	0.000047	0.000019	0.00010
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0.00020
S	2-Fluorobiphenyl	321-60-8	0	0	0	0.00020
S	2-Fluorophenol	367-12-4	0	0	0	0.00020
S	4-Terphenyl-d14	1718-51-0	0	0	0	0.00020
S	Nitrobenzene-d5	4165-60-0	0	0	0	0.00020
S	Phenol-d6	13127-88-3	0	0	0	0.00020

WorkOrder: HS20010958
InstrumentID: VOA4
Test Code: 8260_LL_W
Test Number: SW8260
Test Name: Low Level Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.00050	0.00061	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00057	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00058	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00048	0.00030	0.0010
A	Methylene chloride	75-09-2	0.0010	0.00070	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00050	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00070	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010958

QC BATCH REPORT

Batch ID: 149970 (0) **Instrument: ICPMS05** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-149970** Units: **mg/L** Analysis Date: **27-Jan-2020 21:24**
Client ID: Run ID: **ICPMS05_355087** SeqNo: **5449127** PrepDate: **24-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								

MBLK Sample ID: **MBLK-149970** Units: **mg/L** Analysis Date: **28-Jan-2020 13:11**
Client ID: Run ID: **ICPMS05_355152** SeqNo: **5450164** PrepDate: **24-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								

LCS Sample ID: **LCS-149970** Units: **mg/L** Analysis Date: **27-Jan-2020 21:26**
Client ID: Run ID: **ICPMS05_355087** SeqNo: **5449128** PrepDate: **24-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04847	0.00200	0.05	0	96.9	80 - 120				

MS Sample ID: **HS20010958-02MS** Units: **mg/L** Analysis Date: **27-Jan-2020 21:33**
Client ID: **WG-1620-MW82B-20200121** Run ID: **ICPMS05_355087** SeqNo: **5449131** PrepDate: **24-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05447	0.00200	0.05	0.004841	99.3	80 - 120				

MSD Sample ID: **HS20010958-02MSD** Units: **mg/L** Analysis Date: **27-Jan-2020 21:35**
Client ID: **WG-1620-MW82B-20200121** Run ID: **ICPMS05_355087** SeqNo: **5449132** PrepDate: **24-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05461	0.00200	0.05	0.004841	99.5	80 - 120	0.05447	0.248	20	

PDS Sample ID: **HS20010958-02PDS** Units: **mg/L** Analysis Date: **28-Jan-2020 13:18**
Client ID: **WG-1620-MW82B-20200121** Run ID: **ICPMS05_355152** SeqNo: **5450167** PrepDate: **24-Jan-2020** DF: **20**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	1.996	0.0400	0.1	0.00472	1990	75 - 125				S

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010958

QC BATCH REPORT

Batch ID: 149970 (0) **Instrument: ICPMS05** **Method: ICP-MS METALS BY SW6020A**

PDS Sample ID: **HS20010958-02PDS** Units: **mg/L** Analysis Date: **27-Jan-2020 21:37**
Client ID: **WG-1620-MW82B-20200121** Run ID: **ICPMS05_355087** SeqNo: **5449133** PrepDate: **24-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1045	0.00200	0.1	0.004841	99.6	75 - 125				

SD Sample ID: **HS20010958-02SD** Units: **mg/L** Analysis Date: **27-Jan-2020 21:30**
Client ID: **WG-1620-MW82B-20200121** Run ID: **ICPMS05_355087** SeqNo: **5449130** PrepDate: **24-Jan-2020** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.005043	0.0100					0.004841	0	10	J

SD Sample ID: **HS20010958-02SD** Units: **mg/L** Analysis Date: **28-Jan-2020 13:15**
Client ID: **WG-1620-MW82B-20200121** Run ID: **ICPMS05_355152** SeqNo: **5450166** PrepDate: **24-Jan-2020** DF: **100**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	U	0.200					0.00472	0	10	

The following samples were analyzed in this batch: HS20010958-02 HS20010958-03 HS20010958-04 HS20010958-05 HS20010958-06 HS20010958-07

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010958

QC BATCH REPORT

Batch ID: 149998 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-149998** Units: **ug/L** Analysis Date: **28-Jan-2020 19:21**
Client ID: Run ID: **SV-6_355238** SeqNo: **5452454** PrepDate: **27-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	U	0.20								
2,4-Dimethylphenol	U	0.20								
2,4-Dinitrotoluene	U	0.20								
2,6-Dinitrotoluene	U	0.20								
2-Chloronaphthalene	U	0.20								
2-Methylnaphthalene	U	0.10								
4,6-Dinitro-2-methylphenol	U	0.20								
4-Nitrophenol	U	1.0								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Benz(a)anthracene	U	0.10								
Benzo(a)pyrene	U	0.10								
Bis(2-chloroethoxy)methane	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Chrysene	U	0.10								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Nitrobenzene	U	0.20								
N-Nitrosodiphenylamine	U	0.20								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*4.165*	*0.20*	*5*	*0*	*83.3*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*5.567*	*0.20*	*5*	*0*	*111*	*40 - 125*				
Surr: 2-Fluorophenol	*4.869*	*0.20*	*5*	*0*	*97.4*	*20 - 120*				
Surr: 4-Terphenyl-d14	*5.797*	*0.20*	*5*	*0*	*116*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.964*	*0.20*	*5*	*0*	*99.3*	*41 - 120*				
Surr: Phenol-d6	*4.941*	*0.20*	*5*	*0*	*98.8*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010958

QC BATCH REPORT

Batch ID: 149998 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCS Sample ID: **LCS-149998** Units: **ug/L** Analysis Date: **28-Jan-2020 19:40**
Client ID: Run ID: **SV-6_355238** SeqNo: **5452455** PrepDate: **27-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	5.783	0.20	5	0	116	39 - 127				
2,4-Dimethylphenol	5.012	0.20	5	0	100	35 - 120				
2,4-Dinitrotoluene	6.415	0.20	5	0	128	50 - 122				S
2,6-Dinitrotoluene	6.03	0.20	5	0	121	50 - 120				S
2-Chloronaphthalene	5.424	0.20	5	0	108	50 - 120				
2-Methylnaphthalene	5.383	0.10	5	0	108	50 - 120				
4,6-Dinitro-2-methylphenol	5.692	0.20	5	0	114	25 - 121				
4-Nitrophenol	5.835	1.0	5	0	117	30 - 130				
Acenaphthene	5.432	0.10	5	0	109	45 - 120				
Acenaphthylene	5.667	0.10	5	0	113	47 - 120				
Anthracene	5.847	0.10	5	0	117	45 - 120				
Benz(a)anthracene	5.919	0.10	5	0	118	40 - 120				
Benzo(a)pyrene	5.832	0.10	5	0	117	45 - 120				
Bis(2-chloroethoxy)methane	5.315	0.20	5	0	106	45 - 120				
Bis(2-ethylhexyl)phthalate	5.645	0.20	5	0	113	40 - 139				
Chrysene	5.825	0.10	5	0	117	43 - 120				
Dibenzofuran	5.475	0.10	5	0	109	50 - 120				
Di-n-butyl phthalate	5.996	0.20	5	0	120	45 - 123				
Fluoranthene	5.728	0.10	5	0	115	45 - 125				
Fluorene	5.748	0.10	5	0	115	49 - 120				
Naphthalene	5.43	0.10	5	0	109	45 - 120				
Nitrobenzene	5.209	0.20	5	0	104	44 - 120				
N-Nitrosodiphenylamine	5.868	0.20	5	0	117	40 - 125				
Pentachlorophenol	2.037	0.20	5	0	40.7	19 - 121				
Phenanthrene	5.866	0.10	5	0	117	45 - 121				
Phenol	5.563	0.20	5	0	111	20 - 124				
Pyrene	5.924	0.10	5	0	118	40 - 130				
Surr: 2,4,6-Tribromophenol	*4.466*	*0.20*	*5*	*0*	*89.3*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*5.582*	*0.20*	*5*	*0*	*112*	*40 - 125*				
Surr: 2-Fluorophenol	*4.846*	*0.20*	*5*	*0*	*96.9*	*20 - 120*				
Surr: 4-Terphenyl-d14	*5.609*	*0.20*	*5*	*0*	*112*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.978*	*0.20*	*5*	*0*	*99.6*	*41 - 120*				
Surr: Phenol-d6	*4.891*	*0.20*	*5*	*0*	*97.8*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010958

QC BATCH REPORT

Batch ID: 149998 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MS Sample ID: **HS20010958-02MS** Units: **ug/L** Analysis Date: **29-Jan-2020 22:36**
Client ID: **WG-1620-MW82B-20200121** Run ID: **SV-6_355351** SeqNo: **5453263** PrepDate: **27-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	5.036	0.20	5	0	101	39 - 127				
2,4-Dimethylphenol	3.403	0.20	5	0	68.1	35 - 120				
2,4-Dinitrotoluene	6.071	0.20	5	0	121	50 - 122				
2,6-Dinitrotoluene	5.246	0.20	5	0	105	50 - 120				
2-Chloronaphthalene	3.81	0.20	5	0	76.2	50 - 120				
2-Methylnaphthalene	3.528	0.10	5	0.1009	68.5	50 - 120				
4,6-Dinitro-2-methylphenol	4.25	0.20	5	0	85.0	25 - 121				
4-Nitrophenol	6.787	1.0	5	0	136	30 - 130				S
Acenaphthene	4.374	0.10	5	0.04257	86.6	45 - 120				
Acenaphthylene	4.018	0.10	5	0	80.4	47 - 120				
Anthracene	5.906	0.10	5	0.03111	117	45 - 120				
Benz(a)anthracene	5.831	0.10	5	0	117	40 - 120				
Benzo(a)pyrene	5.639	0.10	5	0	113	45 - 120				
Bis(2-chloroethoxy)methane	3.489	0.20	5	0	69.8	45 - 120				
Bis(2-ethylhexyl)phthalate	3.59	0.20	5	0	71.8	40 - 139				
Chrysene	5.562	0.10	5	0	111	43 - 120				
Dibenzofuran	4.131	0.10	5	0.04005	81.8	50 - 120				
Di-n-butyl phthalate	4.49	0.20	5	0	89.8	45 - 123				
Fluoranthene	5.834	0.10	5	0	117	45 - 125				
Fluorene	4.534	0.10	5	0.03736	89.9	49 - 120				
Naphthalene	3.669	0.10	5	0.4092	65.2	45 - 120				
Nitrobenzene	3.406	0.20	5	0	68.1	44 - 120				
N-Nitrosodiphenylamine	5.951	0.20	5	0	119	40 - 125				
Pentachlorophenol	5.92	0.20	5	0	118	19 - 121				
Phenanthrene	5.624	0.10	5	0.1179	110	45 - 121				
Phenol	3.512	0.20	5	0	70.2	20 - 124				
Pyrene	5.934	0.10	5	0	119	40 - 130				
Surr: 2,4,6-Tribromophenol	*4.8*	*0.20*	*5*	*0*	*96.0*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.948*	*0.20*	*5*	*0*	*79.0*	*40 - 125*				
Surr: 2-Fluorophenol	*3.307*	*0.20*	*5*	*0*	*66.1*	*20 - 120*				
Surr: 4-Terphenyl-d14	*5.739*	*0.20*	*5*	*0*	*115*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.377*	*0.20*	*5*	*0*	*67.5*	*41 - 120*				
Surr: Phenol-d6	*3.333*	*0.20*	*5*	*0*	*66.7*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010958

QC BATCH REPORT

Batch ID: 149998 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MS Sample ID: **HS20010910-03MS** Units: **ug/L** Analysis Date: **28-Jan-2020 23:44**
Client ID: Run ID: **SV-6_355238** SeqNo: **5452170** PrepDate: **27-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.258	0.20	5	0	85.2	39 - 127				
2,4-Dimethylphenol	2.953	0.20	5	0.09533	57.1	35 - 120				
2,4-Dinitrotoluene	5.24	0.20	5	0	105	50 - 122				
2,6-Dinitrotoluene	4.544	0.20	5	0	90.9	50 - 120				
2-Chloronaphthalene	3.621	0.20	5	0	72.4	50 - 120				
2-Methylnaphthalene	3.197	0.10	5	0	63.9	50 - 120				
4,6-Dinitro-2-methylphenol	5.327	0.20	5	0	107	25 - 121				
4-Nitrophenol	5.515	1.0	5	0	110	30 - 130				
Acenaphthene	3.484	0.10	5	0	69.7	45 - 120				
Acenaphthylene	3.505	0.10	5	0	70.1	47 - 120				
Anthracene	5.162	0.10	5	0	103	45 - 120				
Benz(a)anthracene	5.438	0.10	5	0	109	40 - 120				
Benzo(a)pyrene	5.398	0.10	5	0	108	45 - 120				
Bis(2-chloroethoxy)methane	2.957	0.20	5	0	59.1	45 - 120				
Bis(2-ethylhexyl)phthalate	5.76	0.20	5	0	115	40 - 139				
Chrysene	5.195	0.10	5	0	104	43 - 120				
Dibenzofuran	3.564	0.10	5	0	71.3	50 - 120				
Di-n-butyl phthalate	6.041	0.20	5	0	121	45 - 123				
Fluoranthene	5.294	0.10	5	0.02986	105	45 - 125				
Fluorene	3.974	0.10	5	0	79.5	49 - 120				
Naphthalene	3.352	0.10	5	0.22	62.6	45 - 120				
Nitrobenzene	3.206	0.20	5	0	64.1	44 - 120				
N-Nitrosodiphenylamine	5.464	0.20	5	0	109	40 - 125				
Pentachlorophenol	3.381	0.20	5	0	67.6	19 - 121				
Phenanthrene	4.995	0.10	5	0	99.9	45 - 121				
Phenol	3.121	0.20	5	0	62.4	20 - 124				
Pyrene	5.526	0.10	5	0.02733	110	40 - 130				
Surr: 2,4,6-Tribromophenol	*4.181*	*0.20*	*5*	*0*	*83.6*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.463*	*0.20*	*5*	*0*	*69.3*	*40 - 125*				
Surr: 2-Fluorophenol	*3.1*	*0.20*	*5*	*0*	*62.0*	*20 - 120*				
Surr: 4-Terphenyl-d14	*5.541*	*0.20*	*5*	*0*	*111*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.186*	*0.20*	*5*	*0*	*63.7*	*41 - 120*				
Surr: Phenol-d6	*3.21*	*0.20*	*5*	*0*	*64.2*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010958

QC BATCH REPORT

Batch ID: 149998 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MSD Sample ID: **HS20010958-02MSD** Units: **ug/L** Analysis Date: **29-Jan-2020 22:55**
Client ID: **WG-1620-MW82B-20200121** Run ID: **SV-6_355351** SeqNo: **5453264** PrepDate: **27-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.703	0.20	5	0	94.1	39 - 127	5.036	6.83	20	
2,4-Dimethylphenol	3.362	0.20	5	0	67.2	35 - 120	3.403	1.21	20	
2,4-Dinitrotoluene	5.237	0.20	5	0	105	50 - 122	6.071	14.8	20	
2,6-Dinitrotoluene	4.788	0.20	5	0	95.8	50 - 120	5.246	9.14	20	
2-Chloronaphthalene	3.704	0.20	5	0	74.1	50 - 120	3.81	2.82	20	
2-Methylnaphthalene	3.424	0.10	5	0.1009	66.5	50 - 120	3.528	2.98	20	
4,6-Dinitro-2-methylphenol	4.301	0.20	5	0	86.0	25 - 121	4.25	1.18	30	
4-Nitrophenol	4.754	1.0	5	0	95.1	30 - 130	6.787	35.2	20	R
Acenaphthene	4.092	0.10	5	0.04257	81.0	45 - 120	4.374	6.66	20	
Acenaphthylene	3.822	0.10	5	0	76.4	47 - 120	4.018	4.98	20	
Anthracene	5.18	0.10	5	0.03111	103	45 - 120	5.906	13.1	20	
Benz(a)anthracene	5.424	0.10	5	0	108	40 - 120	5.831	7.23	20	
Benzo(a)pyrene	5.25	0.10	5	0	105	45 - 120	5.639	7.13	20	
Bis(2-chloroethoxy)methane	3.359	0.20	5	0	67.2	45 - 120	3.489	3.81	20	
Bis(2-ethylhexyl)phthalate	6.024	0.20	5	0	120	40 - 139	3.59	50.6	20	R
Chrysene	4.985	0.10	5	0	99.7	43 - 120	5.562	10.9	20	
Dibenzofuran	3.858	0.10	5	0.04005	76.4	50 - 120	4.131	6.83	20	
Di-n-butyl phthalate	6.119	0.20	5	0	122	45 - 123	4.49	30.7	20	R
Fluoranthene	5.225	0.10	5	0	105	45 - 125	5.834	11	20	
Fluorene	4.231	0.10	5	0.03736	83.9	49 - 120	4.534	6.92	20	
Naphthalene	3.7	0.10	5	0.4092	65.8	45 - 120	3.669	0.855	20	
Nitrobenzene	3.342	0.20	5	0	66.8	44 - 120	3.406	1.89	20	
N-Nitrosodiphenylamine	5.416	0.20	5	0	108	40 - 125	5.951	9.43	20	
Pentachlorophenol	5.036	0.20	5	0	101	19 - 121	5.92	16.1	20	
Phenanthrene	5.126	0.10	5	0.1179	100	45 - 121	5.624	9.27	20	
Phenol	3.5	0.20	5	0	70.0	20 - 124	3.512	0.332	20	
Pyrene	5.407	0.10	5	0	108	40 - 130	5.934	9.3	20	
Surr: 2,4,6-Tribromophenol	*4.064*	*0.20*	*5*	*0*	*81.3*	*34 - 129*	*4.8*	*16.6*	*20*	
Surr: 2-Fluorobiphenyl	*3.604*	*0.20*	*5*	*0*	*72.1*	*40 - 125*	*3.948*	*9.1*	*20*	
Surr: 2-Fluorophenol	*3.185*	*0.20*	*5*	*0*	*63.7*	*20 - 120*	*3.307*	*3.77*	*20*	
Surr: 4-Terphenyl-d14	*5.088*	*0.20*	*5*	*0*	*102*	*40 - 135*	*5.739*	*12*	*20*	
Surr: Nitrobenzene-d5	*3.252*	*0.20*	*5*	*0*	*65.0*	*41 - 120*	*3.377*	*3.77*	*20*	
Surr: Phenol-d6	*3.158*	*0.20*	*5*	*0*	*63.2*	*20 - 120*	*3.333*	*5.39*	*20*	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010958

QC BATCH REPORT

Batch ID: 149998 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MSD Sample ID: **HS20010910-03MSD** Units: **ug/L** Analysis Date: **29-Jan-2020 00:03**
Client ID: Run ID: **SV-6_355238** SeqNo: **5452171** PrepDate: **27-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	5.047	0.20	5	0	101	39 - 127	4.258	17	20	
2,4-Dimethylphenol	3.862	0.20	5	0.09533	75.3	35 - 120	2.953	26.7	20	R
2,4-Dinitrotoluene	5.46	0.20	5	0	109	50 - 122	5.24	4.12	20	
2,6-Dinitrotoluene	5.056	0.20	5	0	101	50 - 120	4.544	10.7	20	
2-Chloronaphthalene	4.215	0.20	5	0	84.3	50 - 120	3.621	15.2	20	
2-Methylnaphthalene	3.899	0.10	5	0	78.0	50 - 120	3.197	19.8	20	
4,6-Dinitro-2-methylphenol	5.595	0.20	5	0	112	25 - 121	5.327	4.9	30	
4-Nitrophenol	5.641	1.0	5	0	113	30 - 130	5.515	2.26	20	
Acenaphthene	4.245	0.10	5	0	84.9	45 - 120	3.484	19.7	20	
Acenaphthylene	4.266	0.10	5	0	85.3	47 - 120	3.505	19.6	20	
Anthracene	5.342	0.10	5	0	107	45 - 120	5.162	3.43	20	
Benz(a)anthracene	5.45	0.10	5	0	109	40 - 120	5.438	0.221	20	
Benzo(a)pyrene	5.228	0.10	5	0	105	45 - 120	5.398	3.2	20	
Bis(2-chloroethoxy)methane	3.686	0.20	5	0	73.7	45 - 120	2.957	21.9	20	R
Bis(2-ethylhexyl)phthalate	5.666	0.20	5	0	113	40 - 139	5.76	1.64	20	
Chrysene	5.136	0.10	5	0	103	43 - 120	5.195	1.14	20	
Dibenzofuran	4.314	0.10	5	0	86.3	50 - 120	3.564	19	20	
Di-n-butyl phthalate	6.065	0.20	5	0	121	45 - 123	6.041	0.393	20	
Fluoranthene	5.068	0.10	5	0.02986	101	45 - 125	5.294	4.37	20	
Fluorene	4.577	0.10	5	0	91.5	49 - 120	3.974	14.1	20	
Naphthalene	4.118	0.10	5	0.22	78.0	45 - 120	3.352	20.5	20	R
Nitrobenzene	3.792	0.20	5	0	75.8	44 - 120	3.206	16.7	20	
N-Nitrosodiphenylamine	5.62	0.20	5	0	112	40 - 125	5.464	2.8	20	
Pentachlorophenol	3.323	0.20	5	0	66.5	19 - 121	3.381	1.74	20	
Phenanthrene	5.142	0.10	5	0	103	45 - 121	4.995	2.9	20	
Phenol	3.883	0.20	5	0	77.7	20 - 124	3.121	21.7	20	R
Pyrene	5.443	0.10	5	0.02733	108	40 - 130	5.526	1.51	20	
Surr: 2,4,6-Tribromophenol	*4.11*	*0.20*	*5*	*0*	*82.2*	*34 - 129*	*4.181*	*1.73*	*20*	
Surr: 2-Fluorobiphenyl	*4.108*	*0.20*	*5*	*0*	*82.2*	*40 - 125*	*3.463*	*17*	*20*	
Surr: 2-Fluorophenol	*3.476*	*0.20*	*5*	*0*	*69.5*	*20 - 120*	*3.1*	*11.4*	*20*	
Surr: 4-Terphenyl-d14	*5.339*	*0.20*	*5*	*0*	*107*	*40 - 135*	*5.541*	*3.71*	*20*	
Surr: Nitrobenzene-d5	*3.75*	*0.20*	*5*	*0*	*75.0*	*41 - 120*	*3.186*	*16.3*	*20*	
Surr: Phenol-d6	*3.663*	*0.20*	*5*	*0*	*73.3*	*20 - 120*	*3.21*	*13.2*	*20*	

The following samples were analyzed in this batch: HS20010958-02 HS20010958-03 HS20010958-04 HS20010958-05 HS20010958-06 HS20010958-07

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010958

QC BATCH REPORT

Batch ID: R355061 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200125** Units: **ug/L** Analysis Date: **25-Jan-2020 11:52**
Client ID: Run ID: **VOA4_355061** SeqNo: **5447903** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*51.99*	*1.0*	*50*	*0*	*104*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*48.39*	*1.0*	*50*	*0*	*96.8*	*82 - 115*				
Surr: Dibromofluoromethane	*50.4*	*1.0*	*50*	*0*	*101*	*73 - 126*				
Surr: Toluene-d8	*48.94*	*1.0*	*50*	*0*	*97.9*	*81 - 120*				

LCS Sample ID: **VLCSW-200125** Units: **ug/L** Analysis Date: **25-Jan-2020 11:02**
Client ID: Run ID: **VOA4_355061** SeqNo: **5447902** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	18.78	1.0	20	0	93.9	70 - 124				
Benzene	19.4	1.0	20	0	97.0	74 - 120				
Chlorobenzene	19.61	1.0	20	0	98.0	76 - 113				
Ethylbenzene	19.57	1.0	20	0	97.8	77 - 117				
Methylene chloride	20.36	2.0	20	0	102	70 - 127				
Toluene	19.83	1.0	20	0	99.1	77 - 118				
Vinyl chloride	19.46	1.0	20	0	97.3	70 - 130				
Xylenes, Total	58.33	1.0	60	0	97.2	75 - 122				
Surr: 1,2-Dichloroethane-d4	*49.57*	*1.0*	*50*	*0*	*99.1*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*49.72*	*1.0*	*50*	*0*	*99.4*	*82 - 115*				
Surr: Dibromofluoromethane	*49.96*	*1.0*	*50*	*0*	*99.9*	*73 - 126*				
Surr: Toluene-d8	*50.95*	*1.0*	*50*	*0*	*102*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010958

QC BATCH REPORT

Batch ID: R355061 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS20010937-01MS** Units: **ug/L** Analysis Date: **25-Jan-2020 15:09**
Client ID: Run ID: **VOA4_355061** SeqNo: **5447911** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.24	1.0	20	0	81.2	70 - 127				
Benzene	17.71	1.0	20	0	88.5	70 - 127				
Chlorobenzene	17.17	1.0	20	0	85.8	70 - 114				
Ethylbenzene	17.53	1.0	20	0	87.6	70 - 124				
Methylene chloride	18.41	2.0	20	0	92.1	70 - 128				
Toluene	18.12	1.0	20	0	90.6	70 - 123				
Vinyl chloride	17.88	1.0	20	0	89.4	70 - 130				
Xylenes, Total	51.84	1.0	60	0	86.4	70 - 130				
Surr: 1,2-Dichloroethane-d4	*51.17*	*1.0*	*50*	*0*	*102*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.86*	*1.0*	*50*	*0*	*99.7*	*81 - 113*				
Surr: Dibromofluoromethane	*50.64*	*1.0*	*50*	*0*	*101*	*77 - 123*				
Surr: Toluene-d8	*51.21*	*1.0*	*50*	*0*	*102*	*82 - 127*				

MSD Sample ID: **HS20010937-01MSD** Units: **ug/L** Analysis Date: **25-Jan-2020 15:34**
Client ID: Run ID: **VOA4_355061** SeqNo: **5447912** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	15.9	1.0	20	0	79.5	70 - 127	16.24	2.11	20	
Benzene	17.13	1.0	20	0	85.6	70 - 127	17.71	3.33	20	
Chlorobenzene	17.02	1.0	20	0	85.1	70 - 114	17.17	0.844	20	
Ethylbenzene	16.92	1.0	20	0	84.6	70 - 124	17.53	3.5	20	
Methylene chloride	17.25	2.0	20	0	86.3	70 - 128	18.41	6.49	20	
Toluene	16.89	1.0	20	0	84.4	70 - 123	18.12	7.08	20	
Vinyl chloride	16.93	1.0	20	0	84.6	70 - 130	17.88	5.47	20	
Xylenes, Total	50.49	1.0	60	0	84.1	70 - 130	51.84	2.64	20	
Surr: 1,2-Dichloroethane-d4	*51.37*	*1.0*	*50*	*0*	*103*	*70 - 126*	*51.17*	*0.402*	*20*	
Surr: 4-Bromofluorobenzene	*51.63*	*1.0*	*50*	*0*	*103*	*81 - 113*	*49.86*	*3.48*	*20*	
Surr: Dibromofluoromethane	*51.81*	*1.0*	*50*	*0*	*104*	*77 - 123*	*50.64*	*2.29*	*20*	
Surr: Toluene-d8	*49.4*	*1.0*	*50*	*0*	*98.8*	*82 - 127*	*51.21*	*3.59*	*20*	

The following samples were analyzed in this batch: HS20010958-03 HS20010958-04 HS20010958-05

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010958

QC BATCH REPORT

Batch ID: R355150 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200127** Units: **ug/L** Analysis Date: **28-Jan-2020 00:04**
Client ID: Run ID: **VOA4_355150** SeqNo: **5449458** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*53.74*	*1.0*	*50*	*0*	*107*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*49.81*	*1.0*	*50*	*0*	*99.6*	*82 - 115*				
Surr: Dibromofluoromethane	*51.4*	*1.0*	*50*	*0*	*103*	*73 - 126*				
Surr: Toluene-d8	*51.46*	*1.0*	*50*	*0*	*103*	*81 - 120*				

LCS Sample ID: **VLCSW-200127** Units: **ug/L** Analysis Date: **27-Jan-2020 23:14**
Client ID: Run ID: **VOA4_355150** SeqNo: **5449457** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	17.77	1.0	20	0	88.9	70 - 124				
Benzene	18.82	1.0	20	0	94.1	74 - 120				
Chlorobenzene	18.67	1.0	20	0	93.4	76 - 113				
Ethylbenzene	18.47	1.0	20	0	92.3	77 - 117				
Methylene chloride	20	2.0	20	0	100.0	70 - 127				
Toluene	18.6	1.0	20	0	93.0	77 - 118				
Xylenes, Total	57.11	1.0	60	0	95.2	75 - 122				
Surr: 1,2-Dichloroethane-d4	*50.88*	*1.0*	*50*	*0*	*102*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*50.8*	*1.0*	*50*	*0*	*102*	*82 - 115*				
Surr: Dibromofluoromethane	*51.31*	*1.0*	*50*	*0*	*103*	*73 - 126*				
Surr: Toluene-d8	*49.36*	*1.0*	*50*	*0*	*98.7*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010958

QC BATCH REPORT

Batch ID: R355150 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS20010958-02MS** Units: **ug/L** Analysis Date: **28-Jan-2020 02:07**
Client ID: **WG-1620-MW82B-20200121** Run ID: **VOA4_355150** SeqNo: **5449463** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.91	1.0	20	0	84.5	70 - 127				
Benzene	18.82	1.0	20	0	94.1	70 - 127				
Chlorobenzene	17.88	1.0	20	0	89.4	70 - 114				
Ethylbenzene	17.99	1.0	20	0	89.9	70 - 124				
Methylene chloride	18.93	2.0	20	0	94.6	70 - 128				
Toluene	18.76	1.0	20	0	93.8	70 - 123				
Xylenes, Total	54.55	1.0	60	0	90.9	70 - 130				
Surr: 1,2-Dichloroethane-d4	*51.55*	*1.0*	*50*	*0*	*103*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*50.92*	*1.0*	*50*	*0*	*102*	*81 - 113*				
Surr: Dibromofluoromethane	*51.17*	*1.0*	*50*	*0*	*102*	*77 - 123*				
Surr: Toluene-d8	*50.57*	*1.0*	*50*	*0*	*101*	*82 - 127*				

MSD Sample ID: **HS20010958-02MSD** Units: **ug/L** Analysis Date: **28-Jan-2020 02:32**
Client ID: **WG-1620-MW82B-20200121** Run ID: **VOA4_355150** SeqNo: **5449464** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.29	1.0	20	0	81.4	70 - 127	16.91	3.76	20	
Benzene	17.94	1.0	20	0	89.7	70 - 127	18.82	4.77	20	
Chlorobenzene	17.53	1.0	20	0	87.7	70 - 114	17.88	1.94	20	
Ethylbenzene	17.71	1.0	20	0	88.5	70 - 124	17.99	1.57	20	
Methylene chloride	18.74	2.0	20	0	93.7	70 - 128	18.93	0.98	20	
Toluene	17.72	1.0	20	0	88.6	70 - 123	18.76	5.69	20	
Xylenes, Total	53.22	1.0	60	0	88.7	70 - 130	54.55	2.47	20	
Surr: 1,2-Dichloroethane-d4	*51.67*	*1.0*	*50*	*0*	*103*	*70 - 126*	*51.55*	*0.229*	*20*	
Surr: 4-Bromofluorobenzene	*51.04*	*1.0*	*50*	*0*	*102*	*81 - 113*	*50.92*	*0.238*	*20*	
Surr: Dibromofluoromethane	*51.48*	*1.0*	*50*	*0*	*103*	*77 - 123*	*51.17*	*0.604*	*20*	
Surr: Toluene-d8	*50.25*	*1.0*	*50*	*0*	*100*	*82 - 127*	*50.57*	*0.637*	*20*	

The following samples were analyzed in this batch: HS20010958-01 HS20010958-02 HS20010958-06 HS20010958-07

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20010958**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20010958
Date/Time Received: **22-Jan-2020 11:30**
Received by: **AC**

Checklist completed by: *Paresh M. Giga* eSignature 22-Jan-2020 Date
Reviewed by: *Dane J. Wacasey* eSignature 27-Jan-2020 Date

Matrices: **Water**
Carrier name: **Client**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:206376
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	0.6C; 1.7C; 1.4C u/c	IR25
Cooler(s)/Kit(s):	44257/4197/42818	
Date/Time sample(s) sent to storage:	1/22/2020 13:25	

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes: ID Differs. Samples identified using collection times: COC=WG-1620-MW38C-20200121 LBL=WG-1620-MW38B-20200121. Logged ID/date/time per Label, per client direction.

Client Contacted: Golder Associates Date Contacted: 27-Jan-2020 Person Contacted: Michelle Hermiston

Contacted By: 369 Regarding: anlayte list

Comments: No sample in this WO requires reporting of vinyl chloride.

Corrective Action: Logged per client instructions to report site list VOCs only. Log in sample ID as MW38B per sample labels.

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Holland, MI +1 616 399 6070

Chain of Custody Form

Page ____ of ____

COC ID: 206376

HS20010958

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information			
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A	8260_LL_W (5632528 Volatile Organics Site Specific)
Work Order		Project Number	1620-07-Rev0 SR 92688	B	8260_LL_W (5632528 VOC Site Specific + V.C.)
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P	C	8270_LOW_W (5632532 SemiVolatiles Site specific)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	ICP_TW (5636002 5652646 Metals - As)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	WG-1620-TB07-20200121	1-21-20	-	Water	1	2		X									
2	WG1620MW828 20200121	1-21-20	9:10		1	6	X	X	X	X							
3	WG1620 MW828MS 20200121	1-21-20	9:10		1	6	X	X	X	X							
4	WG1620 MW828MSD 20200121	1-21-20	9:10		1	6	X	X	X	X							
5	WG1620 MW38A 20200121	1-21-20	11:10		1	6	X	X	X	X							
6	WG1620 MW 38C 20200121	1-21-20	13:45		1	6	X	X	X	X							
7	WG 1620 MW 03 20200121	1-21-20	15:00		1	6	X	X	X	X							
8	WG 1620 MW 04 20200121	1-21-20	16:00		1	6	X	X	X	X							
9	WG 1620 FB 11 20200121	1-21-20	15:30		1	6	X	X	X	X							
10																	

Sampler(s) Please Print & Sign: TIM McSpadden T. McSpadden

Shipment Method:

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 -hour [ ] Other ____

Results Due Date:

Relinquished by: T. McSpadden Date: 1/22/20 Time: 11:30 Received by:

Relinquished by: Date: 1/22/2020 Time: 11:30 Received by (Laboratory): AC

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.
	°C
44251	0.6
4197	1.7
42818	1.4

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[X] TRRP Checklist
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

IR#25 COC

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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January 31, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20011116**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 5 sample(s) on Jan 23, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: DAYNA.FISHER
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20011116**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20011116**	

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 01/31/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20011116				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150059, 150108, R355244, R355245				
#[1]	A[2]	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?		X			1
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?		X			2
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			3
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				4
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 01/31/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20011116				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150059, 150108, R355244, R355245				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?	X				
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?		X			5
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 01/31/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20011116
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 150059, 150108, R355244, R355245

ER#[5]	Description
1	Batch 150108, Semivolatile Organics Method SW8270, samples WG-1620-MW41B-20200123, WG-1620-MW12B-20200123, WG-1620-MW68B-20200123: surrogate recoveries could not be determined due to dilution below the calibration range.
2	Batch 150108, Semivolatiles by Method SW8270, LCSD RPD recovered above upper limits for 2-Methylnaphthalene due to possible matrix effect.
3	Batch 150059, Metals by method SW6020, Sample WG-1620-MW41B-20200123, MSD recovered below lower limits for Arsenic; however, the result in the parent sample is greater than 4x the spike amount.
4	Batch R355245, Volatiles by Method SW8260, Samples WG-1620-MW68B-20200123, WG-1620-MW12B-20200123: Lowest practical dilution due to high concentration of non-target analyte(s). Batch 150108, Semivolatiles by Method SW8270, Sample WG-1620-MW12B-20200123, The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.
5	Batch 150059, Metals by method SW6020, Sample WG-1620-MW41B-20200123, The percent difference between the results of the sample and the serial dilution were greater than 10% for Arsenic due to possible matrix effect.

Items identified by the letter “R” must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter “S” should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if “NR” or “No” is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20011116

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20011116-01	WQ-1620-TB08-20200123	Water		23-Jan-2020 16:00	23-Jan-2020 17:50	☐
HS20011116-02	WG-1620-MW41B-20200123	Water		23-Jan-2020 12:40	23-Jan-2020 17:50	☐
HS20011116-03	WG-1620-MW12B-20200123	Water		23-Jan-2020 14:00	23-Jan-2020 17:50	☐
HS20011116-04	WG-1620-MW68B-20200123	Water		23-Jan-2020 15:25	23-Jan-2020 17:50	☐
HS20011116-05	WG-1620-FB12-20200123	Water		23-Jan-2020 13:00	23-Jan-2020 17:50	☐

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20011116
Sample ID: WQ-1620-TB08-20200123
Lab ID:HS20011116-01
Collection Date: 23-Jan-2020 16:00
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	28-Jan-2020 14:27
Benzene		U	0.00020	0.0010	mg/L	1	28-Jan-2020 14:27
Chlorobenzene		U	0.00030	0.0010	mg/L	1	28-Jan-2020 14:27
Ethylbenzene		U	0.00030	0.0010	mg/L	1	28-Jan-2020 14:27
Methylene chloride		U	0.0010	0.0020	mg/L	1	28-Jan-2020 14:27
Toluene		U	0.00020	0.0010	mg/L	1	28-Jan-2020 14:27
Vinyl chloride		U	0.00020	0.0010	mg/L	1	28-Jan-2020 14:27
Xylenes, Total		U	0.00030	0.0010	mg/L	1	28-Jan-2020 14:27
Surr: 1,2-Dichloroethane-d4	*97.1*			*70-126*	*%REC*	*1*	*28-Jan-2020 14:27*
Surr: 4-Bromofluorobenzene	*95.3*			*81-113*	*%REC*	*1*	*28-Jan-2020 14:27*
Surr: Dibromofluoromethane	*99.8*			*77-123*	*%REC*	*1*	*28-Jan-2020 14:27*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*28-Jan-2020 14:27*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW41B-20200123
Collection Date: 23-Jan-2020 12:40

ANALYTICAL REPORT
WorkOrder:HS20011116
Lab ID:HS20011116-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	28-Jan-2020 15:14
Benzene	**0.012**		**0.00020**	**0.0010**	**mg/L**	1	28-Jan-2020 15:14
Chlorobenzene	U		0.00030	0.0010	mg/L	1	28-Jan-2020 15:14
Ethylbenzene	**0.066**		**0.00030**	**0.0010**	**mg/L**	1	28-Jan-2020 15:14
Methylene chloride	U		0.0010	0.0020	mg/L	1	28-Jan-2020 15:14
Toluene	**0.087**		**0.00020**	**0.0010**	**mg/L**	1	28-Jan-2020 15:14
Vinyl chloride	U		0.00020	0.0010	mg/L	1	28-Jan-2020 15:14
Xylenes, Total	**0.16**		**0.00030**	**0.0010**	**mg/L**	1	28-Jan-2020 15:14
Surr: 1,2-Dichloroethane-d4	*98.2*			*70-126*	*%REC*	*1*	*28-Jan-2020 15:14*
Surr: 4-Bromofluorobenzene	*102*			*81-113*	*%REC*	*1*	*28-Jan-2020 15:14*
Surr: Dibromofluoromethane	*100*			*77-123*	*%REC*	*1*	*28-Jan-2020 15:14*
Surr: Toluene-d8	*99.5*			*82-127*	*%REC*	*1*	*28-Jan-2020 15:14*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW41B-20200123
Collection Date: 23-Jan-2020 12:40

ANALYTICAL REPORT
WorkOrder:HS20011116
Lab ID:HS20011116-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 29-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	30-Jan-2020 18:04
2,4-Dimethylphenol	**0.043**		**0.00080**	**0.0040**	**mg/L**	20	31-Jan-2020 11:30
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	30-Jan-2020 18:04
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	30-Jan-2020 18:04
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	30-Jan-2020 18:04
2-Methylnaphthalene	**0.67**		**0.0038**	**0.020**	**mg/L**	200	31-Jan-2020 12:27
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	30-Jan-2020 18:04
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	30-Jan-2020 18:04
Acenaphthene	**0.49**		**0.0054**	**0.020**	**mg/L**	200	31-Jan-2020 12:27
Acenaphthylene	**0.0089**		**0.000015**	**0.00010**	**mg/L**	1	30-Jan-2020 18:04
Anthracene	**0.045**		**0.00028**	**0.0020**	**mg/L**	20	31-Jan-2020 11:30
Benz(a)anthracene	**0.0040**		**0.000050**	**0.00010**	**mg/L**	1	30-Jan-2020 18:04
Benzo(a)pyrene	**0.00090**		**0.000020**	**0.00010**	**mg/L**	1	30-Jan-2020 18:04
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	30-Jan-2020 18:04
Bis(2-ethylhexyl)phthalate	**0.00032**		**0.000037**	**0.00020**	**mg/L**	1	30-Jan-2020 18:04
Chrysene	**0.0033**		**0.000021**	**0.00010**	**mg/L**	1	30-Jan-2020 18:04
Dibenzofuran	**0.39**		**0.0040**	**0.020**	**mg/L**	200	31-Jan-2020 12:27
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	30-Jan-2020 18:04
Fluoranthene	**0.052**		**0.00020**	**0.0020**	**mg/L**	20	31-Jan-2020 11:30
Fluorene	**0.35**		**0.0060**	**0.020**	**mg/L**	200	31-Jan-2020 12:27
Naphthalene	**10**		**0.040**	**0.20**	**mg/L**	2000	31-Jan-2020 13:24
Nitrobenzene	U		0.000024	0.00020	mg/L	1	30-Jan-2020 18:04
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	30-Jan-2020 18:04
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	30-Jan-2020 18:04
Phenanthrene	**0.41**		**0.0042**	**0.020**	**mg/L**	200	31-Jan-2020 12:27
Phenol	U		0.000035	0.00020	mg/L	1	30-Jan-2020 18:04
Pyrene	**0.029**		**0.00038**	**0.0020**	**mg/L**	20	31-Jan-2020 11:30
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*2000*	*31-Jan-2020 13:24*
Surr: 2,4,6-Tribromophenol	*86.5*			*34-129*	*%REC*	*1*	*30-Jan-2020 18:04*
Surr: 2,4,6-Tribromophenol	*114*			*34-129*	*%REC*	*20*	*31-Jan-2020 11:30*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*200*	*31-Jan-2020 12:27*
Surr: 2-Fluorobiphenyl	*104*			*40-125*	*%REC*	*20*	*31-Jan-2020 11:30*
Surr: 2-Fluorobiphenyl	*112*			*40-125*	*%REC*	*1*	*30-Jan-2020 18:04*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*200*	*31-Jan-2020 12:27*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*2000*	*31-Jan-2020 13:24*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*200*	*31-Jan-2020 12:27*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*2000*	*31-Jan-2020 13:24*
Surr: 2-Fluorophenol	*104*			*20-120*	*%REC*	*1*	*30-Jan-2020 18:04*
Surr: 2-Fluorophenol	*110*			*20-120*	*%REC*	*20*	*31-Jan-2020 11:30*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW41B-20200123
Collection Date: 23-Jan-2020 12:40

ANALYTICAL REPORT
WorkOrder:HS20011116
Lab ID:HS20011116-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 29-Jan-2020		Analyst: LG
Surr: 4-Terphenyl-d14	*111*			*40-135*	*%REC*	*20*	*31-Jan-2020 11:30*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*200*	*31-Jan-2020 12:27*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*2000*	*31-Jan-2020 13:24*
Surr: 4-Terphenyl-d14	*108*			*40-135*	*%REC*	*1*	*30-Jan-2020 18:04*
Surr: Nitrobenzene-d5	*109*			*41-120*	*%REC*	*20*	*31-Jan-2020 11:30*
Surr: Nitrobenzene-d5	*84.4*			*41-120*	*%REC*	*1*	*30-Jan-2020 18:04*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*200*	*31-Jan-2020 12:27*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*2000*	*31-Jan-2020 13:24*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*200*	*31-Jan-2020 12:27*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*2000*	*31-Jan-2020 13:24*
Surr: Phenol-d6	*92.3*			*20-120*	*%REC*	*1*	*30-Jan-2020 18:04*
Surr: Phenol-d6	*116*			*20-120*	*%REC*	*20*	*31-Jan-2020 11:30*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 28-Jan-2020		Analyst: JHD
Arsenic	**0.0842**		**0.000400**	**0.00200**	**mg/L**	1	29-Jan-2020 15:59

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW12B-20200123
Collection Date: 23-Jan-2020 14:00

ANALYTICAL REPORT
WorkOrder:HS20011116
Lab ID:HS20011116-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.0050	0.025	mg/L	25	29-Jan-2020 07:52
Benzene	**0.030**		**0.0050**	**0.025**	**mg/L**	25	29-Jan-2020 07:52
Chlorobenzene	U		0.0075	0.025	mg/L	25	29-Jan-2020 07:52
Ethylbenzene	**0.014**	J	**0.0075**	**0.025**	**mg/L**	25	29-Jan-2020 07:52
Methylene chloride	U		0.025	0.050	mg/L	25	29-Jan-2020 07:52
Toluene	U		0.0050	0.025	mg/L	25	29-Jan-2020 07:52
Vinyl chloride	U		0.0050	0.025	mg/L	25	29-Jan-2020 07:52
Xylenes, Total	U		0.0075	0.025	mg/L	25	29-Jan-2020 07:52
Surr: 1,2-Dichloroethane-d4	*96.7*			*70-126*	*%REC*	*25*	*29-Jan-2020 07:52*
Surr: 4-Bromofluorobenzene	*97.4*			*81-113*	*%REC*	*25*	*29-Jan-2020 07:52*
Surr: Dibromofluoromethane	*98.6*			*77-123*	*%REC*	*25*	*29-Jan-2020 07:52*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*25*	*29-Jan-2020 07:52*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW12B-20200123
Collection Date: 23-Jan-2020 14:00

ANALYTICAL REPORT
WorkOrder:HS20011116
Lab ID:HS20011116-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 29-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.0021	0.020	mg/L	10	30-Jan-2020 18:23
2,4-Dimethylphenol	U		0.0040	0.020	mg/L	10	30-Jan-2020 18:23
2,4-Dinitrotoluene	U		0.0058	0.020	mg/L	10	30-Jan-2020 18:23
2,6-Dinitrotoluene	U		0.0042	0.020	mg/L	10	30-Jan-2020 18:23
2-Chloronaphthalene	U		0.0021	0.020	mg/L	10	30-Jan-2020 18:23
2-Methylnaphthalene	**320**		**3.8**	**20**	**mg/L**	20000	31-Jan-2020 12:46
4,6-Dinitro-2-methylphenol	U		0.0020	0.020	mg/L	10	30-Jan-2020 18:23
4-Nitrophenol	U		0.0047	0.10	mg/L	10	30-Jan-2020 18:23
Acenaphthene	**350**		**5.4**	**20**	**mg/L**	20000	31-Jan-2020 12:46
Acenaphthylene	**5.7**		**0.015**	**0.10**	**mg/L**	100	30-Jan-2020 18:42
Anthracene	**160**		**0.28**	**2.0**	**mg/L**	2000	31-Jan-2020 11:49
Benz(a)anthracene	**79**		**1.0**	**2.0**	**mg/L**	2000	31-Jan-2020 11:49
Benzo(a)pyrene	**22**		**0.40**	**2.0**	**mg/L**	2000	31-Jan-2020 11:49
Bis(2-chloroethoxy)methane	U		0.0030	0.020	mg/L	10	30-Jan-2020 18:23
Bis(2-ethylhexyl)phthalate	U		0.0037	0.020	mg/L	10	30-Jan-2020 18:23
Chrysene	**64**		**0.42**	**2.0**	**mg/L**	2000	31-Jan-2020 11:49
Dibenzofuran	**320**		**4.0**	**20**	**mg/L**	20000	31-Jan-2020 12:46
Di-n-butyl phthalate	U		0.0020	0.020	mg/L	10	30-Jan-2020 18:23
Fluoranthene	**520**		**2.0**	**20**	**mg/L**	20000	31-Jan-2020 12:46
Fluorene	**420**		**6.0**	**20**	**mg/L**	20000	31-Jan-2020 12:46
Naphthalene	**760**		**4.0**	**20**	**mg/L**	20000	31-Jan-2020 12:46
Nitrobenzene	U		0.0024	0.020	mg/L	10	30-Jan-2020 18:23
N-Nitrosodiphenylamine	U		0.0025	0.020	mg/L	10	30-Jan-2020 18:23
Pentachlorophenol	U		0.0079	0.020	mg/L	10	30-Jan-2020 18:23
Phenanthrene	**1,200**		**4.2**	**20**	**mg/L**	20000	31-Jan-2020 12:46
Phenol	U		0.0035	0.020	mg/L	10	30-Jan-2020 18:23
Pyrene	**330**		**3.8**	**20**	**mg/L**	20000	31-Jan-2020 12:46
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*20000*	*31-Jan-2020 12:46*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*2000*	*31-Jan-2020 11:49*
Surr: 2,4,6-Tribromophenol	*40.5*	*J*		*34-129*	*%REC*	*10*	*30-Jan-2020 18:23*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*30-Jan-2020 18:42*
Surr: 2-Fluorobiphenyl	*71.2*	*J*		*40-125*	*%REC*	*10*	*30-Jan-2020 18:23*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*30-Jan-2020 18:42*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*2000*	*31-Jan-2020 11:49*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*20000*	*31-Jan-2020 12:46*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*20000*	*31-Jan-2020 12:46*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*2000*	*31-Jan-2020 11:49*
Surr: 2-Fluorophenol	*101*	*J*		*20-120*	*%REC*	*10*	*30-Jan-2020 18:23*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*30-Jan-2020 18:42*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW12B-20200123
Collection Date: 23-Jan-2020 14:00

ANALYTICAL REPORT
WorkOrder:HS20011116
Lab ID:HS20011116-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 29-Jan-2020		Analyst: LG
Surr: 4-Terphenyl-d14	*99.5*	*J*		*40-135*	*%REC*	*10*	*30-Jan-2020 18:23*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*2000*	*31-Jan-2020 11:49*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*20000*	*31-Jan-2020 12:46*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*100*	*30-Jan-2020 18:42*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*20000*	*31-Jan-2020 12:46*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*30-Jan-2020 18:42*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*2000*	*31-Jan-2020 11:49*
Surr: Nitrobenzene-d5	*111*	*J*		*41-120*	*%REC*	*10*	*30-Jan-2020 18:23*
Surr: Phenol-d6	*105*	*J*		*20-120*	*%REC*	*10*	*30-Jan-2020 18:23*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*30-Jan-2020 18:42*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*20000*	*31-Jan-2020 12:46*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*2000*	*31-Jan-2020 11:49*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 28-Jan-2020		Analyst: JC
Arsenic	**0.0491**		**0.000400**	**0.00200**	**mg/L**	1	29-Jan-2020 16:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW68B-20200123
Collection Date: 23-Jan-2020 15:25

ANALYTICAL REPORT
WorkOrder:HS20011116
Lab ID:HS20011116-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.0050	0.025	mg/L	25	29-Jan-2020 07:26
Benzene	**1.4**		**0.0050**	**0.025**	**mg/L**	25	29-Jan-2020 07:26
Chlorobenzene	U		0.0075	0.025	mg/L	25	29-Jan-2020 07:26
Ethylbenzene	**0.39**		**0.0075**	**0.025**	**mg/L**	25	29-Jan-2020 07:26
Methylene chloride	U		0.025	0.050	mg/L	25	29-Jan-2020 07:26
Toluene	**0.23**		**0.0050**	**0.025**	**mg/L**	25	29-Jan-2020 07:26
Vinyl chloride	U		0.0050	0.025	mg/L	25	29-Jan-2020 07:26
Xylenes, Total	**1.1**		**0.0075**	**0.025**	**mg/L**	25	29-Jan-2020 07:26
Surr: 1,2-Dichloroethane-d4	*96.7*			*70-126*	*%REC*	*25*	*29-Jan-2020 07:26*
Surr: 4-Bromofluorobenzene	*99.4*			*81-113*	*%REC*	*25*	*29-Jan-2020 07:26*
Surr: Dibromofluoromethane	*98.3*			*77-123*	*%REC*	*25*	*29-Jan-2020 07:26*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*25*	*29-Jan-2020 07:26*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW68B-20200123
Collection Date: 23-Jan-2020 15:25

ANALYTICAL REPORT
WorkOrder:HS20011116
Lab ID:HS20011116-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 29-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	30-Jan-2020 19:01
2,4-Dimethylphenol	**0.075**		**0.00080**	**0.0040**	**mg/L**	20	31-Jan-2020 12:08
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	30-Jan-2020 19:01
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	30-Jan-2020 19:01
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	30-Jan-2020 19:01
2-Methylnaphthalene	**1.1**		**0.0038**	**0.020**	**mg/L**	200	31-Jan-2020 13:05
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	30-Jan-2020 19:01
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	30-Jan-2020 19:01
Acenaphthene	**0.44**		**0.0054**	**0.020**	**mg/L**	200	31-Jan-2020 13:05
Acenaphthylene	**0.0037**		**0.000015**	**0.00010**	**mg/L**	1	30-Jan-2020 19:01
Anthracene	**0.15**		**0.00028**	**0.0020**	**mg/L**	20	31-Jan-2020 12:08
Benz(a)anthracene	**0.047**		**0.0010**	**0.0020**	**mg/L**	20	31-Jan-2020 12:08
Benzo(a)pyrene	**0.0089**		**0.000020**	**0.00010**	**mg/L**	1	30-Jan-2020 19:01
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	30-Jan-2020 19:01
Bis(2-ethylhexyl)phthalate	**0.0011**		**0.000037**	**0.00020**	**mg/L**	1	30-Jan-2020 19:01
Chrysene	**0.040**		**0.00042**	**0.0020**	**mg/L**	20	31-Jan-2020 12:08
Dibenzofuran	**0.50**		**0.0040**	**0.020**	**mg/L**	200	31-Jan-2020 13:05
Di-n-butyl phthalate	**0.00018**	J	**0.000020**	**0.00020**	**mg/L**	1	30-Jan-2020 19:01
Fluoranthene	**0.31**		**0.0020**	**0.020**	**mg/L**	200	31-Jan-2020 13:05
Fluorene	**0.32**		**0.0060**	**0.020**	**mg/L**	200	31-Jan-2020 13:05
Naphthalene	**12**		**0.040**	**0.20**	**mg/L**	2000	31-Jan-2020 13:43
Nitrobenzene	U		0.000024	0.00020	mg/L	1	30-Jan-2020 19:01
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	30-Jan-2020 19:01
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	30-Jan-2020 19:01
Phenanthrene	**0.95**		**0.0042**	**0.020**	**mg/L**	200	31-Jan-2020 13:05
Phenol	U		0.000035	0.00020	mg/L	1	30-Jan-2020 19:01
Pyrene	**0.19**		**0.00038**	**0.0020**	**mg/L**	20	31-Jan-2020 12:08
Surr: 2,4,6-Tribromophenol	*112*			*34-129*	*%REC*	*20*	*31-Jan-2020 12:08*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*200*	*31-Jan-2020 13:05*
Surr: 2,4,6-Tribromophenol	*53.8*			*34-129*	*%REC*	*1*	*30-Jan-2020 19:01*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*2000*	*31-Jan-2020 13:43*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*2000*	*31-Jan-2020 13:43*
Surr: 2-Fluorobiphenyl	*56.6*			*40-125*	*%REC*	*1*	*30-Jan-2020 19:01*
Surr: 2-Fluorobiphenyl	*115*			*40-125*	*%REC*	*20*	*31-Jan-2020 12:08*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*200*	*31-Jan-2020 13:05*
Surr: 2-Fluorophenol	*113*			*20-120*	*%REC*	*20*	*31-Jan-2020 12:08*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*200*	*31-Jan-2020 13:05*
Surr: 2-Fluorophenol	*54.5*			*20-120*	*%REC*	*1*	*30-Jan-2020 19:01*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*2000*	*31-Jan-2020 13:43*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW68B-20200123
Collection Date: 23-Jan-2020 15:25

ANALYTICAL REPORT
WorkOrder:HS20011116
Lab ID:HS20011116-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 29-Jan-2020		Analyst: LG
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*2000*	*31-Jan-2020 13:43*
Surr: 4-Terphenyl-d14	*89.9*			*40-135*	*%REC*	*1*	*30-Jan-2020 19:01*
Surr: 4-Terphenyl-d14	*106*			*40-135*	*%REC*	*20*	*31-Jan-2020 12:08*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*200*	*31-Jan-2020 13:05*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*2000*	*31-Jan-2020 13:43*
Surr: Nitrobenzene-d5	*110*			*41-120*	*%REC*	*1*	*30-Jan-2020 19:01*
Surr: Nitrobenzene-d5	*93.0*			*41-120*	*%REC*	*20*	*31-Jan-2020 12:08*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*200*	*31-Jan-2020 13:05*
Surr: Phenol-d6	*99.0*			*20-120*	*%REC*	*20*	*31-Jan-2020 12:08*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*200*	*31-Jan-2020 13:05*
Surr: Phenol-d6	*48.7*			*20-120*	*%REC*	*1*	*30-Jan-2020 19:01*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*2000*	*31-Jan-2020 13:43*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 28-Jan-2020		Analyst: JC
Arsenic	**0.00944**		**0.000400**	**0.00200**	**mg/L**	1	29-Jan-2020 16:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB12-20200123
Collection Date: 23-Jan-2020 13:00

ANALYTICAL REPORT
WorkOrder:HS20011116
Lab ID:HS20011116-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	28-Jan-2020 14:50
Benzene		U	0.00020	0.0010	mg/L	1	28-Jan-2020 14:50
Chlorobenzene		U	0.00030	0.0010	mg/L	1	28-Jan-2020 14:50
Ethylbenzene		U	0.00030	0.0010	mg/L	1	28-Jan-2020 14:50
Methylene chloride		U	0.0010	0.0020	mg/L	1	28-Jan-2020 14:50
Toluene		U	0.00020	0.0010	mg/L	1	28-Jan-2020 14:50
Vinyl chloride		U	0.00020	0.0010	mg/L	1	28-Jan-2020 14:50
Xylenes, Total		U	0.00030	0.0010	mg/L	1	28-Jan-2020 14:50
Surr: 1,2-Dichloroethane-d4	*96.0*			*70-126*	*%REC*	*1*	*28-Jan-2020 14:50*
Surr: 4-Bromofluorobenzene	*94.7*			*81-113*	*%REC*	*1*	*28-Jan-2020 14:50*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*28-Jan-2020 14:50*
Surr: Toluene-d8	*99.9*			*82-127*	*%REC*	*1*	*28-Jan-2020 14:50*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB12-20200123
Collection Date: 23-Jan-2020 13:00

ANALYTICAL REPORT
WorkOrder:HS20011116
Lab ID:HS20011116-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 29-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	31-Jan-2020 10:33
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	31-Jan-2020 10:33
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	31-Jan-2020 10:33
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	31-Jan-2020 10:33
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	31-Jan-2020 10:33
2-Methylnaphthalene	**0.000099**	J	**0.000019**	**0.00010**	**mg/L**	1	31-Jan-2020 10:33
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	31-Jan-2020 10:33
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	31-Jan-2020 10:33
Acenaphthene	U		0.000027	0.00010	mg/L	1	31-Jan-2020 10:33
Acenaphthylene	U		0.000015	0.00010	mg/L	1	31-Jan-2020 10:33
Anthracene	U		0.000014	0.00010	mg/L	1	31-Jan-2020 10:33
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	31-Jan-2020 10:33
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	31-Jan-2020 10:33
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	31-Jan-2020 10:33
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	31-Jan-2020 10:33
Chrysene	U		0.000021	0.00010	mg/L	1	31-Jan-2020 10:33
Dibenzofuran	U		0.000020	0.00010	mg/L	1	31-Jan-2020 10:33
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	31-Jan-2020 10:33
Fluoranthene	U		0.000010	0.00010	mg/L	1	31-Jan-2020 10:33
Fluorene	U		0.000030	0.00010	mg/L	1	31-Jan-2020 10:33
Naphthalene	**0.00083**		**0.000020**	**0.00010**	**mg/L**	1	31-Jan-2020 10:33
Nitrobenzene	U		0.000024	0.00020	mg/L	1	31-Jan-2020 10:33
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	31-Jan-2020 10:33
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	31-Jan-2020 10:33
Phenanthrene	**0.000073**	J	**0.000021**	**0.00010**	**mg/L**	1	31-Jan-2020 10:33
Phenol	U		0.000035	0.00020	mg/L	1	31-Jan-2020 10:33
Pyrene	U		0.000019	0.00010	mg/L	1	31-Jan-2020 10:33
Surr: 2,4,6-Tribromophenol	*75.4*			*34-129*	*%REC*	*1*	*31-Jan-2020 10:33*
Surr: 2-Fluorobiphenyl	*107*			*40-125*	*%REC*	*1*	*31-Jan-2020 10:33*
Surr: 2-Fluorophenol	*86.1*			*20-120*	*%REC*	*1*	*31-Jan-2020 10:33*
Surr: 4-Terphenyl-d14	*107*			*40-135*	*%REC*	*1*	*31-Jan-2020 10:33*
Surr: Nitrobenzene-d5	*94.4*			*41-120*	*%REC*	*1*	*31-Jan-2020 10:33*
Surr: Phenol-d6	*91.6*			*20-120*	*%REC*	*1*	*31-Jan-2020 10:33*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 28-Jan-2020		Analyst: JC
Arsenic	U		0.000400	0.00200	mg/L	1	29-Jan-2020 16:52

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011116

Batch ID: 150059 **Start Date:** 28 Jan 2020 11:00 **End Date:** 28 Jan 2020 15:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20011116-02		10 (mL)	10 (mL)	1
HS20011116-03		10 (mL)	10 (mL)	1
HS20011116-04		10 (mL)	10 (mL)	1
HS20011116-05		10 (mL)	10 (mL)	1

Batch ID: 150108 **Start Date:** 29 Jan 2020 08:59 **End Date:** 29 Jan 2020 14:30
Method: SV AQ SEP FUN EXTRACT-LOWLEV - 3510C **Prep Code:** 3510_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20011116-02	1	1000 (mL)	1 (mL)	0.001
HS20011116-03	1	1000 (mL)	10 (mL)	0.01
HS20011116-04	1	1000 (mL)	1 (mL)	0.001
HS20011116-05	1	1000 (mL)	1 (mL)	0.001

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011116

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 150059 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS20011116-02	WG-1620-MW41B-20200123	23 Jan 2020 12:40		28 Jan 2020 11:00	29 Jan 2020 15:59	1
HS20011116-03	WG-1620-MW12B-20200123	23 Jan 2020 14:00		28 Jan 2020 11:00	29 Jan 2020 16:37	1
HS20011116-04	WG-1620-MW68B-20200123	23 Jan 2020 15:25		28 Jan 2020 11:00	29 Jan 2020 16:39	1
HS20011116-05	WG-1620-FB12-20200123	23 Jan 2020 13:00		28 Jan 2020 11:00	29 Jan 2020 16:52	1
Batch ID: 150108 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Water	
HS20011116-02	WG-1620-MW41B-20200123	23 Jan 2020 12:40		29 Jan 2020 08:59	31 Jan 2020 12:27	200
HS20011116-02	WG-1620-MW41B-20200123	23 Jan 2020 12:40		29 Jan 2020 08:59	31 Jan 2020 13:24	2000
HS20011116-02	WG-1620-MW41B-20200123	23 Jan 2020 12:40		29 Jan 2020 08:59	31 Jan 2020 11:30	20
HS20011116-02	WG-1620-MW41B-20200123	23 Jan 2020 12:40		29 Jan 2020 08:59	30 Jan 2020 18:04	1
HS20011116-03	WG-1620-MW12B-20200123	23 Jan 2020 14:00		29 Jan 2020 08:59	31 Jan 2020 12:46	20000
HS20011116-03	WG-1620-MW12B-20200123	23 Jan 2020 14:00		29 Jan 2020 08:59	31 Jan 2020 11:49	2000
HS20011116-03	WG-1620-MW12B-20200123	23 Jan 2020 14:00		29 Jan 2020 08:59	30 Jan 2020 18:42	100
HS20011116-03	WG-1620-MW12B-20200123	23 Jan 2020 14:00		29 Jan 2020 08:59	30 Jan 2020 18:23	10
HS20011116-04	WG-1620-MW68B-20200123	23 Jan 2020 15:25		29 Jan 2020 08:59	31 Jan 2020 13:05	200
HS20011116-04	WG-1620-MW68B-20200123	23 Jan 2020 15:25		29 Jan 2020 08:59	31 Jan 2020 13:43	2000
HS20011116-04	WG-1620-MW68B-20200123	23 Jan 2020 15:25		29 Jan 2020 08:59	31 Jan 2020 12:08	20
HS20011116-04	WG-1620-MW68B-20200123	23 Jan 2020 15:25		29 Jan 2020 08:59	30 Jan 2020 19:01	1
HS20011116-05	WG-1620-FB12-20200123	23 Jan 2020 13:00		29 Jan 2020 08:59	31 Jan 2020 10:33	1
Batch ID: R355244 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20011116-01	WQ-1620-TB08-20200123	23 Jan 2020 16:00			28 Jan 2020 14:27	1
HS20011116-02	WG-1620-MW41B-20200123	23 Jan 2020 12:40			28 Jan 2020 15:14	1
HS20011116-05	WG-1620-FB12-20200123	23 Jan 2020 13:00			28 Jan 2020 14:50	1
Batch ID: R355245 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20011116-03	WG-1620-MW12B-20200123	23 Jan 2020 14:00			29 Jan 2020 07:52	25
HS20011116-04	WG-1620-MW68B-20200123	23 Jan 2020 15:25			29 Jan 2020 07:26	25

WorkOrder: HS20011116
InstrumentID: ICPMS06
Test Code: ICP_TW
Test Number: SW6020
Test Name: ICP-MS Metals by SW6020A

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Arsenic	7440-38-2	0.000500	0.000479	0.000400	0.00200

WorkOrder: HS20011116
InstrumentID: ICPMS05
Test Code: ICP_TW
Test Number: SW6020
Test Name: ICP-MS Metals by SW6020A

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Arsenic	7440-38-2	0.000500	0.000499	0.000400	0.00200

WorkOrder: HS20011116
InstrumentID: SV-6
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Diphenylhydrazine	122-66-7	0.00010	0.000098	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.000051	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.000094	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.000083	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.000093	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.000050	0.000060	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000031	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00010	0.000037	0.000047	0.0010
A	Acenaphthene	83-32-9	0.000050	0.000059	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000050	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.000047	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.000050	0.000059	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.000050	0.000050	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.000081	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.00012	0.000037	0.00020
A	Chrysene	218-01-9	0.000050	0.000060	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.000050	0.000050	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.00011	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000049	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.000053	0.000030	0.00010
A	Naphthalene	91-20-3	0.000050	0.000049	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.00012	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.00011	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.0000094	0.000079	0.00020
A	Phenanthrene	85-01-8	0.000050	0.000049	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.000096	0.000035	0.00020
A	Pyrene	129-00-0	0.000050	0.000047	0.000019	0.00010
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0.00020
S	2-Fluorobiphenyl	321-60-8	0	0	0	0.00020
S	2-Fluorophenol	367-12-4	0	0	0	0.00020
S	4-Terphenyl-d14	1718-51-0	0	0	0	0.00020
S	Nitrobenzene-d5	4165-60-0	0	0	0	0.00020
S	Phenol-d6	13127-88-3	0	0	0	0.00020

WorkOrder: HS20011116
InstrumentID: VOA2
Test Code: 8260_LL_W
Test Number: SW8260
Test Name: Low Level Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.00050	0.00062	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00059	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00071	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00063	0.00030	0.0010
A	Methylene chloride	75-09-2	0.0010	0.00075	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00069	0.00020	0.0010
A	Vinyl chloride	75-01-4	0.00050	0.00044	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00059	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011116

QC BATCH REPORT

Batch ID: 150059 (0) **Instrument: ICPMS06** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-150059** Units: **mg/L** Analysis Date: **29-Jan-2020 15:56**
Client ID: Run ID: **ICPMS06_355299** SeqNo: **5452423** PrepDate: **28-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								

LCS Sample ID: **LCS-150059** Units: **mg/L** Analysis Date: **29-Jan-2020 15:58**
Client ID: Run ID: **ICPMS06_355299** SeqNo: **5452424** PrepDate: **28-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04514	0.00200	0.05	0	90.3	80 - 120				

MS Sample ID: **HS20011116-02MS** Units: **mg/L** Analysis Date: **29-Jan-2020 16:03**
Client ID: **WG-1620-MW41B-20200123** Run ID: **ICPMS06_355299** SeqNo: **5452427** PrepDate: **28-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1253	0.00200	0.05	0.08425	82.0	80 - 120				

MSD Sample ID: **HS20011116-02MSD** Units: **mg/L** Analysis Date: **29-Jan-2020 16:04**
Client ID: **WG-1620-MW41B-20200123** Run ID: **ICPMS06_355299** SeqNo: **5452428** PrepDate: **28-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1164	0.00200	0.05	0.08425	64.3	80 - 120	0.1253	7.35	20	S

PDS Sample ID: **HS20011116-02PDS** Units: **mg/L** Analysis Date: **29-Jan-2020 16:06**
Client ID: **WG-1620-MW41B-20200123** Run ID: **ICPMS06_355299** SeqNo: **5452429** PrepDate: **28-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1758	0.00200	0.1	0.08425	91.6	75 - 125				

SD Sample ID: **HS20011116-02SD** Units: **mg/L** Analysis Date: **29-Jan-2020 16:01**
Client ID: **WG-1620-MW41B-20200123** Run ID: **ICPMS06_355299** SeqNo: **5452426** PrepDate: **28-Jan-2020** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.07491	0.0100					0.08425	11.1	10	R

The following samples were analyzed in this batch: HS20011116-02 HS20011116-03 HS20011116-04 HS20011116-05

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011116

QC BATCH REPORT

Batch ID: 150108 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-150108** Units: **ug/L** Analysis Date: **29-Jan-2020 20:03**
Client ID: Run ID: **SV-6_355351** SeqNo: **5453256** PrepDate: **29-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	U	0.20								
2,4-Dimethylphenol	U	0.20								
2,4-Dinitrotoluene	U	0.20								
2,6-Dinitrotoluene	U	0.20								
2-Chloronaphthalene	U	0.20								
2-Methylnaphthalene	U	0.10								
4,6-Dinitro-2-methylphenol	U	0.20								
4-Nitrophenol	U	1.0								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Benz(a)anthracene	U	0.10								
Benzo(a)pyrene	U	0.10								
Bis(2-chloroethoxy)methane	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Chrysene	U	0.10								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Nitrobenzene	U	0.20								
N-Nitrosodiphenylamine	U	0.20								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*4.224*	*0.20*	*5*	*0*	*84.5*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*5.201*	*0.20*	*5*	*0*	*104*	*40 - 125*				
Surr: 2-Fluorophenol	*4.679*	*0.20*	*5*	*0*	*93.6*	*20 - 120*				
Surr: 4-Terphenyl-d14	*5.066*	*0.20*	*5*	*0*	*101*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.664*	*0.20*	*5*	*0*	*93.3*	*41 - 120*				
Surr: Phenol-d6	*4.624*	*0.20*	*5*	*0*	*92.5*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011116

QC BATCH REPORT

Batch ID: 150108 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCS Sample ID: **LCS-150108** Units: **ug/L** Analysis Date: **29-Jan-2020 20:23**
Client ID: Run ID: **SV-6_355351** SeqNo: **5453257** PrepDate: **29-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	5.107	0.20	5	0	102	39 - 127				
2,4-Dimethylphenol	4.701	0.20	5	0	94.0	35 - 120				
2,4-Dinitrotoluene	5.219	0.20	5	0	104	50 - 122				
2,6-Dinitrotoluene	5.149	0.20	5	0	103	50 - 120				
2-Chloronaphthalene	4.991	0.20	5	0	99.8	50 - 120				
2-Methylnaphthalene	4.769	0.10	5	0	95.4	50 - 120				
4,6-Dinitro-2-methylphenol	5.839	0.20	5	0	117	25 - 121				
4-Nitrophenol	5.028	1.0	5	0	101	30 - 130				
Acenaphthene	5.038	0.10	5	0	101	45 - 120				
Acenaphthylene	4.847	0.10	5	0	96.9	47 - 120				
Anthracene	5.231	0.10	5	0	105	45 - 120				
Benz(a)anthracene	4.934	0.10	5	0	98.7	40 - 120				
Benzo(a)pyrene	4.902	0.10	5	0	98.0	45 - 120				
Bis(2-chloroethoxy)methane	4.639	0.20	5	0	92.8	45 - 120				
Bis(2-ethylhexyl)phthalate	5.985	0.20	5	0	120	40 - 139				
Chrysene	4.767	0.10	5	0	95.3	43 - 120				
Dibenzofuran	4.752	0.10	5	0	95.0	50 - 120				
Di-n-butyl phthalate	5.839	0.20	5	0	117	45 - 123				
Fluoranthene	5.012	0.10	5	0	100	45 - 125				
Fluorene	4.867	0.10	5	0	97.3	49 - 120				
Naphthalene	4.782	0.10	5	0	95.6	45 - 120				
Nitrobenzene	4.42	0.20	5	0	88.4	44 - 120				
N-Nitrosodiphenylamine	5.618	0.20	5	0	112	40 - 125				
Pentachlorophenol	4.372	0.20	5	0	87.4	19 - 121				
Phenanthrene	4.959	0.10	5	0	99.2	45 - 121				
Phenol	4.747	0.20	5	0	94.9	20 - 124				
Pyrene	5.005	0.10	5	0	100	40 - 130				
Surr: 2,4,6-Tribromophenol	*4.299*	*0.20*	*5*	*0*	*86.0*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*5.038*	*0.20*	*5*	*0*	*101*	*40 - 125*				
Surr: 2-Fluorophenol	*4.503*	*0.20*	*5*	*0*	*90.1*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.95*	*0.20*	*5*	*0*	*99.0*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.54*	*0.20*	*5*	*0*	*90.8*	*41 - 120*				
Surr: Phenol-d6	*4.729*	*0.20*	*5*	*0*	*94.6*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011116

QC BATCH REPORT

Batch ID: 150108 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCSD Sample ID: **LCSD-150108** Units: **ug/L** Analysis Date: **29-Jan-2020 20:42**
Client ID: Run ID: **SV-6_355351** SeqNo: **5453258** PrepDate: **29-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	5.262	0.20	5	0	105	39 - 127	5.107	3	20	
2,4-Dimethylphenol	4.491	0.20	5	0	89.8	35 - 120	4.701	4.56	20	
2,4-Dinitrotoluene	5.375	0.20	5	0	107	50 - 122	5.219	2.94	20	
2,6-Dinitrotoluene	5.408	0.20	5	0	108	50 - 120	5.149	4.9	20	
2-Chloronaphthalene	4.958	0.20	5	0	99.2	50 - 120	4.991	0.651	20	
2-Methylnaphthalene	5.835	0.10	5	0	117	50 - 120	4.769	20.1	20	R
4,6-Dinitro-2-methylphenol	5.428	0.20	5	0	109	25 - 121	5.839	7.3	30	
4-Nitrophenol	5.067	1.0	5	0	101	30 - 130	5.028	0.77	20	
Acenaphthene	5.053	0.10	5	0	101	45 - 120	5.038	0.302	20	
Acenaphthylene	4.875	0.10	5	0	97.5	47 - 120	4.847	0.584	20	
Anthracene	5.218	0.10	5	0	104	45 - 120	5.231	0.257	20	
Benz(a)anthracene	5.073	0.10	5	0	101	40 - 120	4.934	2.78	20	
Benzo(a)pyrene	4.915	0.10	5	0	98.3	45 - 120	4.902	0.266	20	
Bis(2-chloroethoxy)methane	4.715	0.20	5	0	94.3	45 - 120	4.639	1.63	20	
Bis(2-ethylhexyl)phthalate	5.942	0.20	5	0	119	40 - 139	5.985	0.725	20	
Chrysene	4.855	0.10	5	0	97.1	43 - 120	4.767	1.83	20	
Dibenzofuran	4.808	0.10	5	0	96.2	50 - 120	4.752	1.19	20	
Di-n-butyl phthalate	5.854	0.20	5	0	117	45 - 123	5.839	0.253	20	
Fluoranthene	4.9	0.10	5	0	98.0	45 - 125	5.012	2.27	20	
Fluorene	4.841	0.10	5	0	96.8	49 - 120	4.867	0.542	20	
Naphthalene	4.712	0.10	5	0	94.2	45 - 120	4.782	1.48	20	
Nitrobenzene	4.576	0.20	5	0	91.5	44 - 120	4.42	3.47	20	
N-Nitrosodiphenylamine	5.763	0.20	5	0	115	40 - 125	5.618	2.55	20	
Pentachlorophenol	4.251	0.20	5	0	85.0	19 - 121	4.372	2.79	20	
Phenanthrene	4.876	0.10	5	0	97.5	45 - 121	4.959	1.69	20	
Phenol	4.406	0.20	5	0	88.1	20 - 124	4.747	7.46	20	
Pyrene	4.965	0.10	5	0	99.3	40 - 130	5.005	0.811	20	
Surr: 2,4,6-Tribromophenol	*4.039*	*0.20*	*5*	*0*	*80.8*	*34 - 129*	*4.299*	*6.25*	*20*	
Surr: 2-Fluorobiphenyl	*4.979*	*0.20*	*5*	*0*	*99.6*	*40 - 125*	*5.038*	*1.19*	*20*	
Surr: 2-Fluorophenol	*4.378*	*0.20*	*5*	*0*	*87.6*	*20 - 120*	*4.503*	*2.81*	*20*	
Surr: 4-Terphenyl-d14	*4.766*	*0.20*	*5*	*0*	*95.3*	*40 - 135*	*4.95*	*3.77*	*20*	
Surr: Nitrobenzene-d5	*4.575*	*0.20*	*5*	*0*	*91.5*	*41 - 120*	*4.54*	*0.784*	*20*	
Surr: Phenol-d6	*4.363*	*0.20*	*5*	*0*	*87.3*	*20 - 120*	*4.729*	*8.06*	*20*	

The following samples were analyzed in this batch: HS20011116-02 HS20011116-03 HS20011116-04 HS20011116-05

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011116

QC BATCH REPORT

Batch ID: R355244 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200128** Units: **ug/L** Analysis Date: **28-Jan-2020 13:40**
Client ID: Run ID: **VOA2_355244** SeqNo: **5451226** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*47.88*	*1.0*	*50*	*0*	*95.8*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*46.96*	*1.0*	*50*	*0*	*93.9*	*82 - 115*				
Surr: Dibromofluoromethane	*50*	*1.0*	*50*	*0*	*100*	*73 - 126*				
Surr: Toluene-d8	*51.02*	*1.0*	*50*	*0*	*102*	*81 - 120*				

LCS Sample ID: **VLCSW-200128** Units: **ug/L** Analysis Date: **28-Jan-2020 12:53**
Client ID: Run ID: **VOA2_355244** SeqNo: **5451225** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	18.02	1.0	20	0	90.1	70 - 124				
Benzene	17.64	1.0	20	0	88.2	74 - 120				
Chlorobenzene	17.96	1.0	20	0	89.8	76 - 113				
Ethylbenzene	17.99	1.0	20	0	90.0	77 - 117				
Methylene chloride	19.04	2.0	20	0	95.2	70 - 127				
Toluene	19.88	1.0	20	0	99.4	77 - 118				
Vinyl chloride	17.17	1.0	20	0	85.9	70 - 130				
Xylenes, Total	55.27	1.0	60	0	92.1	75 - 122				
Surr: 1,2-Dichloroethane-d4	*50.45*	*1.0*	*50*	*0*	*101*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*50.02*	*1.0*	*50*	*0*	*100*	*82 - 115*				
Surr: Dibromofluoromethane	*49.41*	*1.0*	*50*	*0*	*98.8*	*73 - 126*				
Surr: Toluene-d8	*50.46*	*1.0*	*50*	*0*	*101*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011116

QC BATCH REPORT

Batch ID: R355244 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS20011116-02MS** Units: **ug/L** Analysis Date: **28-Jan-2020 15:37**
Client ID: **WG-1620-MW41B-20200123** Run ID: **VOA2_355244** SeqNo: **5451231** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Dichloroethane	16.84	1.0	20	0	84.2	70 - 127				
Benzene	29.47	1.0	20	12.37	85.5	70 - 127				
Chlorobenzene	17.11	1.0	20	0	85.5	70 - 114				
Ethylbenzene	84.99	1.0	20	66.49	92.5	70 - 124				
Methylene chloride	17.37	2.0	20	0	86.9	70 - 128				
Toluene	110.3	1.0	20	86.56	119	70 - 123				O
Vinyl chloride	20.48	1.0	20	0	102	70 - 130				
Xylenes, Total	219.7	1.0	60	164.8	91.4	70 - 130				
Surr: 1,2-Dichloroethane-d4	*50.84*	*1.0*	*50*	*0*	*102*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*51.97*	*1.0*	*50*	*0*	*104*	*81 - 113*				
Surr: Dibromofluoromethane	*49.5*	*1.0*	*50*	*0*	*99.0*	*77 - 123*				
Surr: Toluene-d8	*50.03*	*1.0*	*50*	*0*	*100*	*82 - 127*				

MSD Sample ID: **HS20011116-02MSD** Units: **ug/L** Analysis Date: **28-Jan-2020 16:01**
Client ID: **WG-1620-MW41B-20200123** Run ID: **VOA2_355244** SeqNo: **5451232** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Dichloroethane	16.56	1.0	20	0	82.8	70 - 127	16.84	1.64	20	
Benzene	28.93	1.0	20	12.37	82.8	70 - 127	29.47	1.84	20	
Chlorobenzene	16.61	1.0	20	0	83.0	70 - 114	17.11	2.97	20	
Ethylbenzene	82.23	1.0	20	66.49	78.7	70 - 124	84.99	3.3	20	
Methylene chloride	17.54	2.0	20	0	87.7	70 - 128	17.37	0.981	20	
Toluene	106.3	1.0	20	86.56	98.7	70 - 123	110.3	3.69	20	O
Vinyl chloride	19.88	1.0	20	0	99.4	70 - 130	20.48	2.99	20	
Xylenes, Total	212.9	1.0	60	164.8	80.1	70 - 130	219.7	3.15	20	
Surr: 1,2-Dichloroethane-d4	*51.45*	*1.0*	*50*	*0*	*103*	*70 - 126*	*50.84*	*1.18*	*20*	
Surr: 4-Bromofluorobenzene	*51.73*	*1.0*	*50*	*0*	*103*	*81 - 113*	*51.97*	*0.464*	*20*	
Surr: Dibromofluoromethane	*49.79*	*1.0*	*50*	*0*	*99.6*	*77 - 123*	*49.5*	*0.578*	*20*	
Surr: Toluene-d8	*49.75*	*1.0*	*50*	*0*	*99.5*	*82 - 127*	*50.03*	*0.56*	*20*	

The following samples were analyzed in this batch: HS20011116-01 HS20011116-02 HS20011116-05

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011116

QC BATCH REPORT

Batch ID: R355245 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200128** Units: **ug/L** Analysis Date: **29-Jan-2020 01:03**
Client ID: Run ID: **VOA2_355245** SeqNo: **5451281** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*48.86*	*1.0*	*50*	*0*	*97.7*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*48.26*	*1.0*	*50*	*0*	*96.5*	*82 - 115*				
Surr: Dibromofluoromethane	*50.02*	*1.0*	*50*	*0*	*100*	*73 - 126*				
Surr: Toluene-d8	*50.6*	*1.0*	*50*	*0*	*101*	*81 - 120*				

LCS Sample ID: **VLCSW-200128** Units: **ug/L** Analysis Date: **29-Jan-2020 00:16**
Client ID: Run ID: **VOA2_355245** SeqNo: **5451280** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	19.02	1.0	20	0	95.1	70 - 124				
Benzene	18.45	1.0	20	0	92.3	74 - 120				
Chlorobenzene	18.55	1.0	20	0	92.7	76 - 113				
Ethylbenzene	18.58	1.0	20	0	92.9	77 - 117				
Methylene chloride	19.05	2.0	20	0	95.2	70 - 127				
Toluene	20.61	1.0	20	0	103	77 - 118				
Vinyl chloride	17.95	1.0	20	0	89.8	70 - 130				
Xylenes, Total	57.33	1.0	60	0	95.6	75 - 122				
Surr: 1,2-Dichloroethane-d4	*51.22*	*1.0*	*50*	*0*	*102*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*50.26*	*1.0*	*50*	*0*	*101*	*82 - 115*				
Surr: Dibromofluoromethane	*49.32*	*1.0*	*50*	*0*	*98.6*	*73 - 126*				
Surr: Toluene-d8	*49.83*	*1.0*	*50*	*0*	*99.7*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011116

QC BATCH REPORT

Batch ID: R355245 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS20011181-02MS** Units: **ug/L** Analysis Date: **29-Jan-2020 03:23**
Client ID: Run ID: **VOA2_355245** SeqNo: **5451287** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	18.01	1.0	20	0	90.1	70 - 127				
Benzene	18.01	1.0	20	0	90.0	70 - 127				
Chlorobenzene	18.25	1.0	20	0	91.2	70 - 114				
Ethylbenzene	18.69	1.0	20	0	93.4	70 - 124				
Methylene chloride	18.42	2.0	20	0	92.1	70 - 128				
Toluene	20.55	1.0	20	0	103	70 - 123				
Vinyl chloride	17.79	1.0	20	0	89.0	70 - 130				
Xylenes, Total	57.19	1.0	60	0	95.3	70 - 130				
Surr: 1,2-Dichloroethane-d4	*51.14*	*1.0*	*50*	*0*	*102*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.9*	*1.0*	*50*	*0*	*99.8*	*81 - 113*				
Surr: Dibromofluoromethane	*49.79*	*1.0*	*50*	*0*	*99.6*	*77 - 123*				
Surr: Toluene-d8	*50.38*	*1.0*	*50*	*0*	*101*	*82 - 127*				

MSD Sample ID: **HS20011181-02MSD** Units: **ug/L** Analysis Date: **29-Jan-2020 03:47**
Client ID: Run ID: **VOA2_355245** SeqNo: **5451288** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	17.35	1.0	20	0	86.7	70 - 127	18.01	3.74	20	
Benzene	17.3	1.0	20	0	86.5	70 - 127	18.01	3.99	20	
Chlorobenzene	17.41	1.0	20	0	87.0	70 - 114	18.25	4.73	20	
Ethylbenzene	17.98	1.0	20	0	89.9	70 - 124	18.69	3.85	20	
Methylene chloride	17.49	2.0	20	0	87.5	70 - 128	18.42	5.17	20	
Toluene	19.27	1.0	20	0	96.3	70 - 123	20.55	6.44	20	
Vinyl chloride	16.9	1.0	20	0	84.5	70 - 130	17.79	5.17	20	
Xylenes, Total	54.86	1.0	60	0	91.4	70 - 130	57.19	4.16	20	
Surr: 1,2-Dichloroethane-d4	*49.72*	*1.0*	*50*	*0*	*99.4*	*70 - 126*	*51.14*	*2.81*	*20*	
Surr: 4-Bromofluorobenzene	*49.96*	*1.0*	*50*	*0*	*99.9*	*81 - 113*	*49.9*	*0.117*	*20*	
Surr: Dibromofluoromethane	*49.63*	*1.0*	*50*	*0*	*99.3*	*77 - 123*	*49.79*	*0.325*	*20*	
Surr: Toluene-d8	*50.46*	*1.0*	*50*	*0*	*101*	*82 - 127*	*50.38*	*0.144*	*20*	

The following samples were analyzed in this batch: HS20011116-03 HS20011116-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20011116**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20011116

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS20011116-01	WQ-1620-TB08-20200123	Login	1/24/2020 2:47:57 PM	JRM	VOA160
HS20011116-02	WG-1620-MW41B-20200123	Login	1/24/2020 2:47:57 PM	JRM	MET011
HS20011116-02	WG-1620-MW41B-20200123	Login	1/24/2020 2:47:57 PM	JRM	EXT043
HS20011116-02	WG-1620-MW41B-20200123	Login	1/24/2020 2:47:57 PM	JRM	VOA160
HS20011116-03	WG-1620-MW12B-20200123	Login	1/24/2020 2:47:57 PM	JRM	MET011
HS20011116-03	WG-1620-MW12B-20200123	Login	1/24/2020 2:47:57 PM	JRM	EXT043
HS20011116-03	WG-1620-MW12B-20200123	Login	1/24/2020 2:47:57 PM	JRM	VOA160
HS20011116-04	WG-1620-MW68B-20200123	Login	1/24/2020 2:47:57 PM	JRM	MET011
HS20011116-04	WG-1620-MW68B-20200123	Login	1/24/2020 2:47:57 PM	JRM	EXT043
HS20011116-04	WG-1620-MW68B-20200123	Login	1/24/2020 2:47:57 PM	JRM	VOA160
HS20011116-05	WG-1620-FB12-20200123	Login	1/24/2020 2:47:57 PM	JRM	MET011
HS20011116-05	WG-1620-FB12-20200123	Login	1/24/2020 2:47:57 PM	JRM	EXT043
HS20011116-05	WG-1620-FB12-20200123	Login	1/24/2020 2:47:57 PM	JRM	VOA160

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20011116

Date/Time Received: **23-Jan-2020 17:50**
Received by: **DDG**

Checklist completed by: *Jared R. Makan* eSignature — 24-Jan-2020 Date

Reviewed by: *Dane J. Wacasey* eSignature — 27-Jan-2020 Date

Matrices: **Water**

Carrier name: **ALS Courier**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:214254
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	2.0°C/2.0°C UC/C	IR25
Cooler(s)/Kit(s):	44479	
Date/Time sample(s) sent to storage:	01/24/2020 14:55	

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes: Samples refrigerated prior to login.

Client Contacted: Golder Associates — Date Contacted: 27-Jan-2020 — Person Contacted: Michelle Hermiston

Contacted By: 369 — Regarding: anlayte list

Comments: No sample in this WO requires reporting of vinyl chloride.

Corrective Action: Logged per client instructions to report site list VOCs only.

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

Page 1 of 1

COC ID: 214254

HS20011116 WV

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-07-Rev0 SR 92688
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address	

A 8260_LL_W (5632528 Volatile Organics Site Specific)
B 8260_LL_W (5632528 VOC Site Specific + V.C.)
C 8270_LOW_W (5632532 SemiVolatiles Site specific)
D ICP_TW (5636002 5652646 Metals - As)
E
F
G
H
I
J

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	WQ-1620-TB0 8-20200123	1-23-20	1600	Water	1	2		X									
2	WG-1620 MW 41B 20200123	1-23-20	12:40	H2O	1	6	X	X	X	X							
3	WG-1620 MW 12B 20200123	1-23-20	14:00	H2O	1	6	X	X	X	X							
4	WG 1620 MW 68B 20200123	1-23-20	15:25	H2O	1	6	X	X	X	X							
5	WG-1620 FB 12 20200123	1-23-20	13:00	H2O	1	6	X	X	X	X							
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Tim McSpadden T. McSpadden

Shipment Method:

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: T. McSpadden Date: 1-23-20 Time: 16:30 Received by: D.S

Relinquished by: D.S Date: 1-23-20 Time: 17:50 Received by (Laboratory): D.S

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.
444-70	4C
	2.0

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[X] TRRP Checklist
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

1625

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10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

February 04, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20011249**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 5 sample(s) on Jan 27, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20011249**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS20011249**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data								
Laboratory Name: ALS Laboratory Group			LRC Date: 02/04/2020					
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20011249					
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150153,150187,R355340,R355399					
#[1]	A[2]	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?		X			1
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?		X			2
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			3
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				4
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/04/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20011249				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150153,150187,R355340,R355399				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?		X			5
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?	X				
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 02/04/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20011249
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 150153,150187,R355340,R355399

ER#[5]	Description
1	Semivolatile Organics Method SW8270, sample WG-1620-MW49B-20200127, the surrogate recoveries could not be determined due to dilution below the calibration range.
2	Batch R355399, Volatile Organics Method SW8260, LCS recovery was above the control limits for Vinyl chloride. The analyte was not detected in the associated samples.
3	Batch 150187, Semivolatile Organics Method SW8270, sample HS20011317-01, MS and MSD were performed on unrelated sample.
4	Batch 150187, Semivolatile Organics Method SW8270, sample WG-1620-MW49B-20200127: The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.
5	Batch R355399, Volatile Organics Method SW8260, Vinyl chloride exceeded % recovery limits on CCV. The analyte was not detected in the associated samples.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20011249

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20011249-01	WQ-1620-TB09-20200127	Water		27-Jan-2020 15:00	27-Jan-2020 17:15	☐
HS20011249-02	WG-1620-MW62B-20200127	Water		27-Jan-2020 09:25	27-Jan-2020 17:15	☐
HS20011249-03	WG-1620-MW64A-20200127	Water		27-Jan-2020 11:15	27-Jan-2020 17:15	☐
HS20011249-04	WG-1620-MW49B-20200127	Water		27-Jan-2020 13:30	27-Jan-2020 17:15	☐
HS20011249-05	WG-1620-FB13-20200127	Water		27-Jan-2020 12:00	27-Jan-2020 17:15	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WQ-1620-TB09-20200127
Collection Date: 27-Jan-2020 15:00

ANALYTICAL REPORT
WorkOrder:HS20011249
Lab ID:HS20011249-01
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	29-Jan-2020 13:55
Benzene		U	0.00020	0.0010	mg/L	1	29-Jan-2020 13:55
Chlorobenzene		U	0.00030	0.0010	mg/L	1	29-Jan-2020 13:55
Ethylbenzene		U	0.00030	0.0010	mg/L	1	29-Jan-2020 13:55
Methylene chloride		U	0.0010	0.0020	mg/L	1	29-Jan-2020 13:55
Toluene		U	0.00020	0.0010	mg/L	1	29-Jan-2020 13:55
Vinyl chloride		U	0.00020	0.0010	mg/L	1	29-Jan-2020 13:55
Xylenes, Total		U	0.00030	0.0010	mg/L	1	29-Jan-2020 13:55
Surr: 1,2-Dichloroethane-d4	*97.2*			*70-126*	*%REC*	*1*	*29-Jan-2020 13:55*
Surr: 4-Bromofluorobenzene	*94.5*			*81-113*	*%REC*	*1*	*29-Jan-2020 13:55*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*29-Jan-2020 13:55*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*29-Jan-2020 13:55*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW62B-20200127
Collection Date: 27-Jan-2020 09:25

ANALYTICAL REPORT
WorkOrder:HS20011249
Lab ID:HS20011249-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	30-Jan-2020 17:20
Benzene		U	0.00020	0.0010	mg/L	1	30-Jan-2020 17:20
Chlorobenzene		U	0.00030	0.0010	mg/L	1	30-Jan-2020 17:20
Ethylbenzene		U	0.00030	0.0010	mg/L	1	30-Jan-2020 17:20
Methylene chloride		U	0.0010	0.0020	mg/L	1	30-Jan-2020 17:20
Toluene		U	0.00020	0.0010	mg/L	1	30-Jan-2020 17:20
Xylenes, Total		U	0.00030	0.0010	mg/L	1	30-Jan-2020 17:20
Surr: 1,2-Dichloroethane-d4	*97.9*			*70-126*	*%REC*	*1*	*30-Jan-2020 17:20*
Surr: 4-Bromofluorobenzene	*98.4*			*81-113*	*%REC*	*1*	*30-Jan-2020 17:20*
Surr: Dibromofluoromethane	*100*			*77-123*	*%REC*	*1*	*30-Jan-2020 17:20*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*30-Jan-2020 17:20*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW62B-20200127
Collection Date: 27-Jan-2020 09:25

ANALYTICAL REPORT
WorkOrder:HS20011249
Lab ID:HS20011249-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 31-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	03-Feb-2020 12:44
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	03-Feb-2020 12:44
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	03-Feb-2020 12:44
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	03-Feb-2020 12:44
2-Chloronaphthalene	**0.00016**	J	**0.000021**	**0.00020**	**mg/L**	1	03-Feb-2020 12:44
2-Methylnaphthalene	**0.00011**		**0.000019**	**0.00010**	**mg/L**	1	03-Feb-2020 12:44
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	03-Feb-2020 12:44
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	03-Feb-2020 12:44
Acenaphthene	**0.040**		**0.00011**	**0.00040**	**mg/L**	4	04-Feb-2020 12:03
Acenaphthylene	**0.00029**		**0.000015**	**0.00010**	**mg/L**	1	03-Feb-2020 12:44
Anthracene	**0.00096**		**0.000014**	**0.00010**	**mg/L**	1	03-Feb-2020 12:44
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	03-Feb-2020 12:44
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	03-Feb-2020 12:44
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	03-Feb-2020 12:44
Bis(2-ethylhexyl)phthalate	**0.000095**	J	**0.000037**	**0.00020**	**mg/L**	1	03-Feb-2020 12:44
Chrysene	**0.000027**	J	**0.000021**	**0.00010**	**mg/L**	1	03-Feb-2020 12:44
Dibenzofuran	**0.0042**		**0.000020**	**0.00010**	**mg/L**	1	03-Feb-2020 12:44
Di-n-butyl phthalate	**0.00014**	J	**0.000020**	**0.00020**	**mg/L**	1	03-Feb-2020 12:44
Fluoranthene	**0.0020**		**0.000010**	**0.00010**	**mg/L**	1	03-Feb-2020 12:44
Fluorene	**0.011**		**0.00012**	**0.00040**	**mg/L**	4	04-Feb-2020 12:03
Naphthalene	**0.0010**		**0.000020**	**0.00010**	**mg/L**	1	03-Feb-2020 12:44
Nitrobenzene	U		0.000024	0.00020	mg/L	1	03-Feb-2020 12:44
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	03-Feb-2020 12:44
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	03-Feb-2020 12:44
Phenanthrene	**0.00087**		**0.000021**	**0.00010**	**mg/L**	1	03-Feb-2020 12:44
Phenol	U		0.000035	0.00020	mg/L	1	03-Feb-2020 12:44
Pyrene	**0.0013**		**0.000019**	**0.00010**	**mg/L**	1	03-Feb-2020 12:44
Surr: 2,4,6-Tribromophenol	*73.7*			*34-129*	*%REC*	*1*	*03-Feb-2020 12:44*
Surr: 2,4,6-Tribromophenol	*65.6*			*34-129*	*%REC*	*4*	*04-Feb-2020 12:03*
Surr: 2-Fluorobiphenyl	*83.1*			*40-125*	*%REC*	*4*	*04-Feb-2020 12:03*
Surr: 2-Fluorobiphenyl	*79.2*			*40-125*	*%REC*	*1*	*03-Feb-2020 12:44*
Surr: 2-Fluorophenol	*64.6*			*20-120*	*%REC*	*1*	*03-Feb-2020 12:44*
Surr: 2-Fluorophenol	*52.6*			*20-120*	*%REC*	*4*	*04-Feb-2020 12:03*
Surr: 4-Terphenyl-d14	*89.6*			*40-135*	*%REC*	*4*	*04-Feb-2020 12:03*
Surr: 4-Terphenyl-d14	*94.4*			*40-135*	*%REC*	*1*	*03-Feb-2020 12:44*
Surr: Nitrobenzene-d5	*71.9*			*41-120*	*%REC*	*4*	*04-Feb-2020 12:03*
Surr: Nitrobenzene-d5	*72.8*			*41-120*	*%REC*	*1*	*03-Feb-2020 12:44*
Surr: Phenol-d6	*71.5*			*20-120*	*%REC*	*1*	*03-Feb-2020 12:44*
Surr: Phenol-d6	*69.0*			*20-120*	*%REC*	*4*	*04-Feb-2020 12:03*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client:	Golder Associates Inc.	**ANALYTICAL REPORT**
Project:	Houston TX-Wood Preserving Works	WorkOrder:HS20011249
Sample ID:	WG-1620-MW62B-20200127	Lab ID:HS20011249-02
Collection Date:	27-Jan-2020 09:25	Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 30-Jan-2020		Analyst: JHD
Arsenic	**0.0161**		**0.000400**	**0.00200**	**mg/L**	1	31-Jan-2020 16:08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW64A-20200127
Collection Date: 27-Jan-2020 11:15

ANALYTICAL REPORT
WorkOrder:HS20011249
Lab ID:HS20011249-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	30-Jan-2020 17:44
Benzene		U	0.00020	0.0010	mg/L	1	30-Jan-2020 17:44
Chlorobenzene		U	0.00030	0.0010	mg/L	1	30-Jan-2020 17:44
Ethylbenzene		U	0.00030	0.0010	mg/L	1	30-Jan-2020 17:44
Methylene chloride		U	0.0010	0.0020	mg/L	1	30-Jan-2020 17:44
Toluene		U	0.00020	0.0010	mg/L	1	30-Jan-2020 17:44
Xylenes, Total		U	0.00030	0.0010	mg/L	1	30-Jan-2020 17:44
Surr: 1,2-Dichloroethane-d4	*98.9*			*70-126*	*%REC*	*1*	*30-Jan-2020 17:44*
Surr: 4-Bromofluorobenzene	*97.3*			*81-113*	*%REC*	*1*	*30-Jan-2020 17:44*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*30-Jan-2020 17:44*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*30-Jan-2020 17:44*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW64A-20200127
Collection Date: 27-Jan-2020 11:15

ANALYTICAL REPORT
WorkOrder:HS20011249
Lab ID:HS20011249-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 31-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	03-Feb-2020 13:04
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	03-Feb-2020 13:04
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	03-Feb-2020 13:04
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	03-Feb-2020 13:04
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	03-Feb-2020 13:04
2-Methylnaphthalene	**0.00037**		**0.000019**	**0.00010**	**mg/L**	1	03-Feb-2020 13:04
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	03-Feb-2020 13:04
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	03-Feb-2020 13:04
Acenaphthene	**0.00016**		**0.000027**	**0.00010**	**mg/L**	1	03-Feb-2020 13:04
Acenaphthylene	U		0.000015	0.00010	mg/L	1	03-Feb-2020 13:04
Anthracene	**0.000096**	J	**0.000014**	**0.00010**	**mg/L**	1	03-Feb-2020 13:04
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	03-Feb-2020 13:04
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	03-Feb-2020 13:04
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	03-Feb-2020 13:04
Bis(2-ethylhexyl)phthalate	**0.00031**		**0.000037**	**0.00020**	**mg/L**	1	03-Feb-2020 13:04
Chrysene	U		0.000021	0.00010	mg/L	1	03-Feb-2020 13:04
Dibenzofuran	**0.000100**	J	**0.000020**	**0.00010**	**mg/L**	1	03-Feb-2020 13:04
Di-n-butyl phthalate	**0.000079**	J	**0.000020**	**0.00020**	**mg/L**	1	03-Feb-2020 13:04
Fluoranthene	**0.00028**		**0.000010**	**0.00010**	**mg/L**	1	03-Feb-2020 13:04
Fluorene	**0.000082**	J	**0.000030**	**0.00010**	**mg/L**	1	03-Feb-2020 13:04
Naphthalene	**0.0020**		**0.000020**	**0.00010**	**mg/L**	1	03-Feb-2020 13:04
Nitrobenzene	U		0.000024	0.00020	mg/L	1	03-Feb-2020 13:04
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	03-Feb-2020 13:04
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	03-Feb-2020 13:04
Phenanthrene	U		0.000021	0.00010	mg/L	1	03-Feb-2020 13:04
Phenol	U		0.000035	0.00020	mg/L	1	03-Feb-2020 13:04
Pyrene	**0.00015**		**0.000019**	**0.00010**	**mg/L**	1	03-Feb-2020 13:04
Surr: 2,4,6-Tribromophenol	*67.5*			*34-129*	*%REC*	*1*	*03-Feb-2020 13:04*
Surr: 2-Fluorobiphenyl	*75.1*			*40-125*	*%REC*	*1*	*03-Feb-2020 13:04*
Surr: 2-Fluorophenol	*64.8*			*20-120*	*%REC*	*1*	*03-Feb-2020 13:04*
Surr: 4-Terphenyl-d14	*86.0*			*40-135*	*%REC*	*1*	*03-Feb-2020 13:04*
Surr: Nitrobenzene-d5	*71.0*			*41-120*	*%REC*	*1*	*03-Feb-2020 13:04*
Surr: Phenol-d6	*69.5*			*20-120*	*%REC*	*1*	*03-Feb-2020 13:04*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 30-Jan-2020		Analyst: JHD
Arsenic	**0.00126**	J	**0.000400**	**0.00200**	**mg/L**	1	31-Jan-2020 16:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW49B-20200127
Collection Date: 27-Jan-2020 13:30

ANALYTICAL REPORT
WorkOrder:HS20011249
Lab ID:HS20011249-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.010	0.050	mg/L	50	30-Jan-2020 18:07
Benzene	**0.60**		**0.010**	**0.050**	**mg/L**	50	30-Jan-2020 18:07
Chlorobenzene	U		0.015	0.050	mg/L	50	30-Jan-2020 18:07
Ethylbenzene	**0.26**		**0.015**	**0.050**	**mg/L**	50	30-Jan-2020 18:07
Methylene chloride	U		0.050	0.10	mg/L	50	30-Jan-2020 18:07
Toluene	**0.72**		**0.010**	**0.050**	**mg/L**	50	30-Jan-2020 18:07
Vinyl chloride	U		0.010	0.050	mg/L	50	30-Jan-2020 18:07
Xylenes, Total	**0.71**		**0.015**	**0.050**	**mg/L**	50	30-Jan-2020 18:07
Surr: 1,2-Dichloroethane-d4	*95.9*			*70-126*	*%REC*	*50*	*30-Jan-2020 18:07*
Surr: 4-Bromofluorobenzene	*98.8*			*81-113*	*%REC*	*50*	*30-Jan-2020 18:07*
Surr: Dibromofluoromethane	*99.0*			*77-123*	*%REC*	*50*	*30-Jan-2020 18:07*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*50*	*30-Jan-2020 18:07*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW49B-20200127
Collection Date: 27-Jan-2020 13:30

ANALYTICAL REPORT
WorkOrder:HS20011249
Lab ID:HS20011249-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 31-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.0013	0.012	mg/L	10	03-Feb-2020 19:05
2,4-Dimethylphenol	**25**		**0.48**	**2.4**	**mg/L**	2000	04-Feb-2020 12:22
2,4-Dinitrotoluene	U		0.0035	0.012	mg/L	10	03-Feb-2020 19:05
2,6-Dinitrotoluene	U		0.0025	0.012	mg/L	10	03-Feb-2020 19:05
2-Chloronaphthalene	U		0.0013	0.012	mg/L	10	03-Feb-2020 19:05
2-Methylnaphthalene	**250**		**2.3**	**12**	**mg/L**	20000	04-Feb-2020 12:40
4,6-Dinitro-2-methylphenol	U		0.0012	0.012	mg/L	10	03-Feb-2020 19:05
4-Nitrophenol	U		0.0028	0.060	mg/L	10	03-Feb-2020 19:05
Acenaphthene	**190**		**3.2**	**12**	**mg/L**	20000	04-Feb-2020 12:40
Acenaphthylene	**2.1**		**0.018**	**0.12**	**mg/L**	200	04-Feb-2020 11:44
Anthracene	**87**		**0.17**	**1.2**	**mg/L**	2000	04-Feb-2020 12:22
Benz(a)anthracene	**23**		**0.60**	**1.2**	**mg/L**	2000	04-Feb-2020 12:22
Benzo(a)pyrene	**7.5**		**0.024**	**0.12**	**mg/L**	200	04-Feb-2020 11:44
Bis(2-chloroethoxy)methane	U		0.0018	0.012	mg/L	10	03-Feb-2020 19:05
Bis(2-ethylhexyl)phthalate	U		0.0022	0.012	mg/L	10	03-Feb-2020 19:05
Chrysene	**23**		**0.25**	**1.2**	**mg/L**	2000	04-Feb-2020 12:22
Dibenzofuran	**160**		**2.4**	**12**	**mg/L**	20000	04-Feb-2020 12:40
Di-n-butyl phthalate	U		0.0012	0.012	mg/L	10	03-Feb-2020 19:05
Fluoranthene	**170**		**1.2**	**12**	**mg/L**	20000	04-Feb-2020 12:40
Fluorene	**170**		**3.6**	**12**	**mg/L**	20000	04-Feb-2020 12:40
Naphthalene	**1,200**		**2.4**	**12**	**mg/L**	20000	04-Feb-2020 12:40
Nitrobenzene	U		0.0014	0.012	mg/L	10	03-Feb-2020 19:05
N-Nitrosodiphenylamine	U		0.0015	0.012	mg/L	10	03-Feb-2020 19:05
Pentachlorophenol	U		0.0047	0.012	mg/L	10	03-Feb-2020 19:05
Phenanthrene	**500**		**2.5**	**12**	**mg/L**	20000	04-Feb-2020 12:40
Phenol	U		0.0021	0.012	mg/L	10	03-Feb-2020 19:05
Pyrene	**96**		**0.23**	**1.2**	**mg/L**	2000	04-Feb-2020 12:22
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*200*	*04-Feb-2020 11:44*
Surr: 2,4,6-Tribromophenol	*125*	*J*		*34-129*	*%REC*	*10*	*03-Feb-2020 19:05*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*2000*	*04-Feb-2020 12:22*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*20000*	*04-Feb-2020 12:40*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*2000*	*04-Feb-2020 12:22*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*20000*	*04-Feb-2020 12:40*
Surr: 2-Fluorobiphenyl	*95.1*	*J*		*40-125*	*%REC*	*10*	*03-Feb-2020 19:05*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*200*	*04-Feb-2020 11:44*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*200*	*04-Feb-2020 11:44*
Surr: 2-Fluorophenol	*94.0*	*J*		*20-120*	*%REC*	*10*	*03-Feb-2020 19:05*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*2000*	*04-Feb-2020 12:22*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*20000*	*04-Feb-2020 12:40*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW49B-20200127
Collection Date: 27-Jan-2020 13:30

ANALYTICAL REPORT
WorkOrder:HS20011249
Lab ID:HS20011249-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 31-Jan-2020		Analyst: LG
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*2000*	*04-Feb-2020 12:22*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*20000*	*04-Feb-2020 12:40*
Surr: 4-Terphenyl-d14	*67.0*	*J*		*40-135*	*%REC*	*10*	*03-Feb-2020 19:05*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*200*	*04-Feb-2020 11:44*
Surr: Nitrobenzene-d5	*86.3*	*J*		*41-120*	*%REC*	*10*	*03-Feb-2020 19:05*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*200*	*04-Feb-2020 11:44*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*2000*	*04-Feb-2020 12:22*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*20000*	*04-Feb-2020 12:40*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*200*	*04-Feb-2020 11:44*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*2000*	*04-Feb-2020 12:22*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*20000*	*04-Feb-2020 12:40*
Surr: Phenol-d6	*51.0*	*J*		*20-120*	*%REC*	*10*	*03-Feb-2020 19:05*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 30-Jan-2020		Analyst: JHD
Arsenic	**0.0107**		**0.000400**	**0.00200**	**mg/L**	1	31-Jan-2020 16:29

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20011249
Sample ID: WG-1620-FB13-20200127
Lab ID:HS20011249-05
Collection Date: 27-Jan-2020 12:00
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	29-Jan-2020 14:18
Benzene		U	0.00020	0.0010	mg/L	1	29-Jan-2020 14:18
Chlorobenzene		U	0.00030	0.0010	mg/L	1	29-Jan-2020 14:18
Ethylbenzene		U	0.00030	0.0010	mg/L	1	29-Jan-2020 14:18
Methylene chloride		U	0.0010	0.0020	mg/L	1	29-Jan-2020 14:18
Toluene		U	0.00020	0.0010	mg/L	1	29-Jan-2020 14:18
Vinyl chloride		U	0.00020	0.0010	mg/L	1	29-Jan-2020 14:18
Xylenes, Total		U	0.00030	0.0010	mg/L	1	29-Jan-2020 14:18
Surr: 1,2-Dichloroethane-d4	*95.7*			*70-126*	*%REC*	*1*	*29-Jan-2020 14:18*
Surr: 4-Bromofluorobenzene	*95.1*			*81-113*	*%REC*	*1*	*29-Jan-2020 14:18*
Surr: Dibromofluoromethane	*98.6*			*77-123*	*%REC*	*1*	*29-Jan-2020 14:18*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*29-Jan-2020 14:18*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB13-20200127
Collection Date: 27-Jan-2020 12:00

ANALYTICAL REPORT
WorkOrder:HS20011249
Lab ID:HS20011249-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 31-Jan-2020		Analyst: LG
1,2-Diphenylhydrazine		U	0.000021	0.00020	mg/L	1	03-Feb-2020 13:23
2,4-Dimethylphenol		U	0.000040	0.00020	mg/L	1	03-Feb-2020 13:23
2,4-Dinitrotoluene		U	0.000058	0.00020	mg/L	1	03-Feb-2020 13:23
2,6-Dinitrotoluene		U	0.000042	0.00020	mg/L	1	03-Feb-2020 13:23
2-Chloronaphthalene		U	0.000021	0.00020	mg/L	1	03-Feb-2020 13:23
2-Methylnaphthalene		U	0.000019	0.00010	mg/L	1	03-Feb-2020 13:23
4,6-Dinitro-2-methylphenol		U	0.000020	0.00020	mg/L	1	03-Feb-2020 13:23
4-Nitrophenol		U	0.000047	0.0010	mg/L	1	03-Feb-2020 13:23
Acenaphthene		U	0.000027	0.00010	mg/L	1	03-Feb-2020 13:23
Acenaphthylene		U	0.000015	0.00010	mg/L	1	03-Feb-2020 13:23
Anthracene		U	0.000014	0.00010	mg/L	1	03-Feb-2020 13:23
Benz(a)anthracene		U	0.000050	0.00010	mg/L	1	03-Feb-2020 13:23
Benzo(a)pyrene		U	0.000020	0.00010	mg/L	1	03-Feb-2020 13:23
Bis(2-chloroethoxy)methane		U	0.000030	0.00020	mg/L	1	03-Feb-2020 13:23
Bis(2-ethylhexyl)phthalate		U	0.000037	0.00020	mg/L	1	03-Feb-2020 13:23
Chrysene		U	0.000021	0.00010	mg/L	1	03-Feb-2020 13:23
Dibenzofuran		U	0.000020	0.00010	mg/L	1	03-Feb-2020 13:23
Di-n-butyl phthalate		U	0.000020	0.00020	mg/L	1	03-Feb-2020 13:23
Fluoranthene		U	0.000010	0.00010	mg/L	1	03-Feb-2020 13:23
Fluorene		U	0.000030	0.00010	mg/L	1	03-Feb-2020 13:23
Naphthalene		U	0.000020	0.00010	mg/L	1	03-Feb-2020 13:23
Nitrobenzene		U	0.000024	0.00020	mg/L	1	03-Feb-2020 13:23
N-Nitrosodiphenylamine		U	0.000025	0.00020	mg/L	1	03-Feb-2020 13:23
Pentachlorophenol		U	0.000079	0.00020	mg/L	1	03-Feb-2020 13:23
Phenanthrene		U	0.000021	0.00010	mg/L	1	03-Feb-2020 13:23
Phenol		U	0.000035	0.00020	mg/L	1	03-Feb-2020 13:23
Pyrene		U	0.000019	0.00010	mg/L	1	03-Feb-2020 13:23
Surr: 2,4,6-Tribromophenol	*55.7*			*34-129*	*%REC*	*1*	*03-Feb-2020 13:23*
Surr: 2-Fluorobiphenyl	*83.6*			*40-125*	*%REC*	*1*	*03-Feb-2020 13:23*
Surr: 2-Fluorophenol	*68.1*			*20-120*	*%REC*	*1*	*03-Feb-2020 13:23*
Surr: 4-Terphenyl-d14	*92.5*			*40-135*	*%REC*	*1*	*03-Feb-2020 13:23*
Surr: Nitrobenzene-d5	*83.5*			*41-120*	*%REC*	*1*	*03-Feb-2020 13:23*
Surr: Phenol-d6	*69.4*			*20-120*	*%REC*	*1*	*03-Feb-2020 13:23*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 30-Jan-2020		Analyst: JHD
Arsenic		U	0.000400	0.00200	mg/L	1	31-Jan-2020 16:31

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011249

Batch ID: 150153 **Start Date:** 30 Jan 2020 09:00 **End Date:** 30 Jan 2020 13:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20011249-02		10 (mL)	10 (mL)	1
HS20011249-03		10 (mL)	10 (mL)	1
HS20011249-04		10 (mL)	10 (mL)	1
HS20011249-05		10 (mL)	10 (mL)	1

Batch ID: 150187 **Start Date:** 31 Jan 2020 08:41 **End Date:** 31 Jan 2020 14:00
Method: SV AQ SEP FUN EXTRACT-LOWLEV - 3510C **Prep Code:** 3510_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20011249-02	1	1000 (mL)	1 (mL)	0.001
HS20011249-03	1	1000 (mL)	1 (mL)	0.001
HS20011249-04	1	1000 (mL)	6 (mL)	0.006
HS20011249-05	1	1000 (mL)	1 (mL)	0.001

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011249

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 150153 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS20011249-02	WG-1620-MW62B-20200127	27 Jan 2020 09:25		30 Jan 2020 13:00	31 Jan 2020 16:08	1
HS20011249-03	WG-1620-MW64A-20200127	27 Jan 2020 11:15		30 Jan 2020 13:00	31 Jan 2020 16:27	1
HS20011249-04	WG-1620-MW49B-20200127	27 Jan 2020 13:30		30 Jan 2020 13:00	31 Jan 2020 16:29	1
HS20011249-05	WG-1620-FB13-20200127	27 Jan 2020 12:00		30 Jan 2020 13:00	31 Jan 2020 16:31	1
Batch ID: 150187 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Water	
HS20011249-02	WG-1620-MW62B-20200127	27 Jan 2020 09:25		31 Jan 2020 08:41	04 Feb 2020 12:03	4
HS20011249-02	WG-1620-MW62B-20200127	27 Jan 2020 09:25		31 Jan 2020 08:41	03 Feb 2020 12:44	1
HS20011249-03	WG-1620-MW64A-20200127	27 Jan 2020 11:15		31 Jan 2020 08:41	03 Feb 2020 13:04	1
HS20011249-04	WG-1620-MW49B-20200127	27 Jan 2020 13:30		31 Jan 2020 08:41	04 Feb 2020 12:40	20000
HS20011249-04	WG-1620-MW49B-20200127	27 Jan 2020 13:30		31 Jan 2020 08:41	04 Feb 2020 12:22	2000
HS20011249-04	WG-1620-MW49B-20200127	27 Jan 2020 13:30		31 Jan 2020 08:41	04 Feb 2020 11:44	200
HS20011249-04	WG-1620-MW49B-20200127	27 Jan 2020 13:30		31 Jan 2020 08:41	03 Feb 2020 19:05	10
HS20011249-05	WG-1620-FB13-20200127	27 Jan 2020 12:00		31 Jan 2020 08:41	03 Feb 2020 13:23	1
Batch ID: R355340 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20011249-01	WQ-1620-TB09-20200127	27 Jan 2020 15:00			29 Jan 2020 13:55	1
HS20011249-05	WG-1620-FB13-20200127	27 Jan 2020 12:00			29 Jan 2020 14:18	1
Batch ID: R355399 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20011249-02	WG-1620-MW62B-20200127	27 Jan 2020 09:25			30 Jan 2020 17:20	1
HS20011249-03	WG-1620-MW64A-20200127	27 Jan 2020 11:15			30 Jan 2020 17:44	1
HS20011249-04	WG-1620-MW49B-20200127	27 Jan 2020 13:30			30 Jan 2020 18:07	50

WorkOrder: HS20011249
InstrumentID: ICPMS05
Test Code: ICP_TW
Test Number: SW6020
Test Name: ICP-MS Metals by SW6020A

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Arsenic	7440-38-2	0.000500	0.000499	0.000400	0.00200

WorkOrder: HS20011249
InstrumentID: SV-6
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Diphenylhydrazine	122-66-7	0.00010	0.000098	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.000051	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.000094	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.000083	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.000093	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.000050	0.000060	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000031	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00010	0.000037	0.000047	0.0010
A	Acenaphthene	83-32-9	0.000050	0.000059	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000050	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.000047	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.000050	0.000059	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.000050	0.000050	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.000081	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.00012	0.000037	0.00020
A	Chrysene	218-01-9	0.000050	0.000060	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.000050	0.000050	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.00011	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000049	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.000053	0.000030	0.00010
A	Naphthalene	91-20-3	0.000050	0.000049	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.00012	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.00011	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.0000094	0.000079	0.00020
A	Phenanthrene	85-01-8	0.000050	0.000049	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.000096	0.000035	0.00020
A	Pyrene	129-00-0	0.000050	0.000047	0.000019	0.00010
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0.00020
S	2-Fluorobiphenyl	321-60-8	0	0	0	0.00020
S	2-Fluorophenol	367-12-4	0	0	0	0.00020
S	4-Terphenyl-d14	1718-51-0	0	0	0	0.00020
S	Nitrobenzene-d5	4165-60-0	0	0	0	0.00020
S	Phenol-d6	13127-88-3	0	0	0	0.00020

WorkOrder: HS20011249
InstrumentID: VOA2
Test Code: 8260_LL_W
Test Number: SW8260
Test Name: Low Level Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.00050	0.00062	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00059	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00071	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00063	0.00030	0.0010
A	Methylene chloride	75-09-2	0.0010	0.00075	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00069	0.00020	0.0010
A	Vinyl chloride	75-01-4	0.00050	0.00044	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00059	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011249

QC BATCH REPORT

Batch ID: 150153 (0) **Instrument: ICPMS05** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-150153** Units: **mg/L** Analysis Date: **31-Jan-2020 15:23**
Client ID: Run ID: **ICPMS05_355457** SeqNo: **5456059** PrepDate: **30-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								

LCS Sample ID: **LCS-150153** Units: **mg/L** Analysis Date: **31-Jan-2020 15:25**
Client ID: Run ID: **ICPMS05_355457** SeqNo: **5456060** PrepDate: **30-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04913	0.00200	0.05	0	98.3	80 - 120				

MS Sample ID: **HS20011246-19MS** Units: **mg/L** Analysis Date: **31-Jan-2020 15:32**
Client ID: Run ID: **ICPMS05_355457** SeqNo: **5456063** PrepDate: **30-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05845	0.00200	0.05	0.01101	94.9	80 - 120				

MSD Sample ID: **HS20011246-19MSD** Units: **mg/L** Analysis Date: **31-Jan-2020 15:34**
Client ID: Run ID: **ICPMS05_355457** SeqNo: **5456064** PrepDate: **30-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.06129	0.00200	0.05	0.01101	101	80 - 120	0.05845	4.73	20	

PDS Sample ID: **HS20011246-19PDS** Units: **mg/L** Analysis Date: **31-Jan-2020 15:36**
Client ID: Run ID: **ICPMS05_355457** SeqNo: **5456065** PrepDate: **30-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1101	0.00200	0.1	0.01101	99.1	75 - 125				

SD Sample ID: **HS20011246-19SD** Units: **mg/L** Analysis Date: **31-Jan-2020 15:30**
Client ID: Run ID: **ICPMS05_355457** SeqNo: **5456062** PrepDate: **30-Jan-2020** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.01196	0.0100					0.01101	8.65	10	

The following samples were analyzed in this batch: HS20011249-02 HS20011249-03 HS20011249-04 HS20011249-05

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011249

QC BATCH REPORT

Batch ID: 150187 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-150187** Units: **ug/L** Analysis Date: **03-Feb-2020 10:47**
Client ID: Run ID: **SV-6_355515** SeqNo: **5458500** PrepDate: **31-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	U	0.20								
2,4-Dimethylphenol	U	0.20								
2,4-Dinitrotoluene	U	0.20								
2,6-Dinitrotoluene	U	0.20								
2-Chloronaphthalene	U	0.20								
2-Methylnaphthalene	U	0.10								
4,6-Dinitro-2-methylphenol	U	0.20								
4-Nitrophenol	U	1.0								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Benz(a)anthracene	U	0.10								
Benzo(a)pyrene	U	0.10								
Bis(2-chloroethoxy)methane	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Chrysene	U	0.10								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Nitrobenzene	U	0.20								
N-Nitrosodiphenylamine	U	0.20								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*3.568*	*0.20*	*5*	*0*	*71.4*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.784*	*0.20*	*5*	*0*	*95.7*	*40 - 125*				
Surr: 2-Fluorophenol	*3.407*	*0.20*	*5*	*0*	*68.1*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.819*	*0.20*	*5*	*0*	*96.4*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.429*	*0.20*	*5*	*0*	*88.6*	*41 - 120*				
Surr: Phenol-d6	*4.155*	*0.20*	*5*	*0*	*83.1*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011249

QC BATCH REPORT

Batch ID: 150187 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCS Sample ID: **LCS-150187** Units: **ug/L** Analysis Date: **03-Feb-2020 11:06**
Client ID: Run ID: **SV-6_355515** SeqNo: **5458501** PrepDate: **31-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.974	0.20	5	0	99.5	39 - 127				
2,4-Dimethylphenol	4.102	0.20	5	0	82.0	35 - 120				
2,4-Dinitrotoluene	5.156	0.20	5	0	103	50 - 122				
2,6-Dinitrotoluene	5.308	0.20	5	0	106	50 - 120				
2-Chloronaphthalene	4.849	0.20	5	0	97.0	50 - 120				
2-Methylnaphthalene	4.446	0.10	5	0	88.9	50 - 120				
4,6-Dinitro-2-methylphenol	5.753	0.20	5	0	115	25 - 121				
4-Nitrophenol	5.112	1.0	5	0	102	30 - 130				
Acenaphthene	4.544	0.10	5	0	90.9	45 - 120				
Acenaphthylene	4.692	0.10	5	0	93.8	47 - 120				
Anthracene	4.942	0.10	5	0	98.8	45 - 120				
Benz(a)anthracene	4.879	0.10	5	0	97.6	40 - 120				
Benzo(a)pyrene	4.857	0.10	5	0	97.1	45 - 120				
Bis(2-chloroethoxy)methane	4.461	0.20	5	0	89.2	45 - 120				
Bis(2-ethylhexyl)phthalate	5.993	0.20	5	0	120	40 - 139				
Chrysene	4.777	0.10	5	0	95.5	43 - 120				
Dibenzofuran	4.611	0.10	5	0	92.2	50 - 120				
Di-n-butyl phthalate	5.627	0.20	5	0	113	45 - 123				
Fluoranthene	4.764	0.10	5	0	95.3	45 - 125				
Fluorene	4.707	0.10	5	0	94.1	49 - 120				
Naphthalene	4.784	0.10	5	0	95.7	45 - 120				
Nitrobenzene	4.389	0.20	5	0	87.8	44 - 120				
N-Nitrosodiphenylamine	5.269	0.20	5	0	105	40 - 125				
Pentachlorophenol	3.426	0.20	5	0	68.5	19 - 121				
Phenanthrene	4.766	0.10	5	0	95.3	45 - 121				
Phenol	4.401	0.20	5	0	88.0	20 - 124				
Pyrene	4.891	0.10	5	0	97.8	40 - 130				
Surr: 2,4,6-Tribromophenol	*3.879*	*0.20*	*5*	*0*	*77.6*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.775*	*0.20*	*5*	*0*	*95.5*	*40 - 125*				
Surr: 2-Fluorophenol	*4.464*	*0.20*	*5*	*0*	*89.3*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.729*	*0.20*	*5*	*0*	*94.6*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.364*	*0.20*	*5*	*0*	*87.3*	*41 - 120*				
Surr: Phenol-d6	*4.354*	*0.20*	*5*	*0*	*87.1*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011249

QC BATCH REPORT

Batch ID: 150187 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MS Sample ID: **HS20011317-01MS** Units: **ug/L** Analysis Date: **03-Feb-2020 11:44**
Client ID: Run ID: **SV-6_355515** SeqNo: **5458503** PrepDate: **31-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.376	0.20	5	0	87.5	39 - 127				
2,4-Dimethylphenol	2.967	0.20	5	0	59.3	35 - 120				
2,4-Dinitrotoluene	5.103	0.20	5	0	102	50 - 122				
2,6-Dinitrotoluene	4.756	0.20	5	0	95.1	50 - 120				
2-Chloronaphthalene	3.688	0.20	5	0	73.8	50 - 120				
2-Methylnaphthalene	3.335	0.10	5	0	66.7	50 - 120				
4,6-Dinitro-2-methylphenol	6.191	0.20	5	0	124	25 - 121				S
4-Nitrophenol	5.628	1.0	5	0	113	30 - 130				
Acenaphthene	3.612	0.10	5	0	72.2	45 - 120				
Acenaphthylene	3.752	0.10	5	0	75.0	47 - 120				
Anthracene	4.894	0.10	5	0	97.9	45 - 120				
Benz(a)anthracene	5.344	0.10	5	0	107	40 - 120				
Benzo(a)pyrene	5.125	0.10	5	0	102	45 - 120				
Bis(2-chloroethoxy)methane	3.215	0.20	5	0	64.3	45 - 120				
Bis(2-ethylhexyl)phthalate	6.461	0.20	5	0	129	40 - 139				
Chrysene	4.879	0.10	5	0	97.6	43 - 120				
Dibenzofuran	3.829	0.10	5	0	76.6	50 - 120				
Di-n-butyl phthalate	5.862	0.20	5	0	117	45 - 123				
Fluoranthene	4.836	0.10	5	0	96.7	45 - 125				
Fluorene	4.126	0.10	5	0	82.5	49 - 120				
Naphthalene	3.422	0.10	5	0	68.4	45 - 120				
Nitrobenzene	3.178	0.20	5	0	63.6	44 - 120				
N-Nitrosodiphenylamine	5.08	0.20	5	0	102	40 - 125				
Pentachlorophenol	4.285	0.20	5	0	85.7	19 - 121				
Phenanthrene	4.616	0.10	5	0	92.3	45 - 121				
Phenol	3.402	0.20	5	0	68.0	20 - 124				
Pyrene	5.192	0.10	5	0	104	40 - 130				
Surr: 2,4,6-Tribromophenol	*3.916*	*0.20*	*5*	*0*	*78.3*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.634*	*0.20*	*5*	*0*	*72.7*	*40 - 125*				
Surr: 2-Fluorophenol	*3.269*	*0.20*	*5*	*0*	*65.4*	*20 - 120*				
Surr: 4-Terphenyl-d14	*5.243*	*0.20*	*5*	*0*	*105*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.151*	*0.20*	*5*	*0*	*63.0*	*41 - 120*				
Surr: Phenol-d6	*3.227*	*0.20*	*5*	*0*	*64.5*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011249

QC BATCH REPORT

Batch ID: 150187 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MSD Sample ID: **HS20011317-01MSD** Units: **ug/L** Analysis Date: **03-Feb-2020 12:03**
Client ID: Run ID: **SV-6_355515** SeqNo: **5458504** PrepDate: **31-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.949	0.20	5	0	99.0	39 - 127	4.376	12.3	20	
2,4-Dimethylphenol	3.31	0.20	5	0	66.2	35 - 120	2.967	10.9	20	
2,4-Dinitrotoluene	5.611	0.20	5	0	112	50 - 122	5.103	9.48	20	
2,6-Dinitrotoluene	5.203	0.20	5	0	104	50 - 120	4.756	8.98	20	
2-Chloronaphthalene	4.007	0.20	5	0	80.1	50 - 120	3.688	8.28	20	
2-Methylnaphthalene	3.668	0.10	5	0	73.4	50 - 120	3.335	9.52	20	
4,6-Dinitro-2-methylphenol	6.078	0.20	5	0	122	25 - 121	6.191	1.83	30	S
4-Nitrophenol	5.579	1.0	5	0	112	30 - 130	5.628	0.874	20	
Acenaphthene	4.043	0.10	5	0	80.9	45 - 120	3.612	11.3	20	
Acenaphthylene	4.189	0.10	5	0	83.8	47 - 120	3.752	11	20	
Anthracene	5.189	0.10	5	0	104	45 - 120	4.894	5.85	20	
Benz(a)anthracene	5.317	0.10	5	0	106	40 - 120	5.344	0.514	20	
Benzo(a)pyrene	5.152	0.10	5	0	103	45 - 120	5.125	0.537	20	
Bis(2-chloroethoxy)methane	3.514	0.20	5	0	70.3	45 - 120	3.215	8.88	20	
Bis(2-ethylhexyl)phthalate	6.589	0.20	5	0	132	40 - 139	6.461	1.97	20	
Chrysene	4.918	0.10	5	0	98.4	43 - 120	4.879	0.794	20	
Dibenzofuran	4.316	0.10	5	0	86.3	50 - 120	3.829	12	20	
Di-n-butyl phthalate	6.118	0.20	5	0	122	45 - 123	5.862	4.28	20	
Fluoranthene	5.049	0.10	5	0	101	45 - 125	4.836	4.3	20	
Fluorene	4.612	0.10	5	0	92.2	49 - 120	4.126	11.1	20	
Naphthalene	3.753	0.10	5	0	75.1	45 - 120	3.422	9.23	20	
Nitrobenzene	3.535	0.20	5	0	70.7	44 - 120	3.178	10.6	20	
N-Nitrosodiphenylamine	5.664	0.20	5	0	113	40 - 125	5.08	10.9	20	
Pentachlorophenol	4.308	0.20	5	0	86.2	19 - 121	4.285	0.544	20	
Phenanthrene	5.046	0.10	5	0	101	45 - 121	4.616	8.9	20	
Phenol	3.764	0.20	5	0	75.3	20 - 124	3.402	10.1	20	
Pyrene	5.302	0.10	5	0	106	40 - 130	5.192	2.08	20	
Surr: 2,4,6-Tribromophenol	*4.079*	*0.20*	*5*	*0*	*81.6*	*34 - 129*	*3.916*	*4.06*	*20*	
Surr: 2-Fluorobiphenyl	*3.951*	*0.20*	*5*	*0*	*79.0*	*40 - 125*	*3.634*	*8.37*	*20*	
Surr: 2-Fluorophenol	*3.335*	*0.20*	*5*	*0*	*66.7*	*20 - 120*	*3.269*	*1.99*	*20*	
Surr: 4-Terphenyl-d14	*5.006*	*0.20*	*5*	*0*	*100*	*40 - 135*	*5.243*	*4.61*	*20*	
Surr: Nitrobenzene-d5	*3.487*	*0.20*	*5*	*0*	*69.7*	*41 - 120*	*3.151*	*10.1*	*20*	
Surr: Phenol-d6	*3.341*	*0.20*	*5*	*0*	*66.8*	*20 - 120*	*3.227*	*3.47*	*20*	

The following samples were analyzed in this batch: HS20011249-02 HS20011249-03 HS20011249-04 HS20011249-05

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011249

QC BATCH REPORT

Batch ID: R355340 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200129** Units: **ug/L** Analysis Date: **29-Jan-2020 13:32**
Client ID: Run ID: **VOA2_355340** SeqNo: **5452958** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*48.98*	*1.0*	*50*	*0*	*98.0*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*47.81*	*1.0*	*50*	*0*	*95.6*	*82 - 115*				
Surr: Dibromofluoromethane	*50.34*	*1.0*	*50*	*0*	*101*	*73 - 126*				
Surr: Toluene-d8	*50.52*	*1.0*	*50*	*0*	*101*	*81 - 120*				

LCS Sample ID: **VLCSW-200129** Units: **ug/L** Analysis Date: **29-Jan-2020 12:45**
Client ID: Run ID: **VOA2_355340** SeqNo: **5452957** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	19.14	1.0	20	0	95.7	70 - 124				
Benzene	18.94	1.0	20	0	94.7	74 - 120				
Chlorobenzene	19.34	1.0	20	0	96.7	76 - 113				
Ethylbenzene	19.56	1.0	20	0	97.8	77 - 117				
Methylene chloride	19.55	2.0	20	0	97.8	70 - 127				
Toluene	21.49	1.0	20	0	107	77 - 118				
Vinyl chloride	25.95	1.0	20	0	130	70 - 130				
Xylenes, Total	59.72	1.0	60	0	99.5	75 - 122				
Surr: 1,2-Dichloroethane-d4	*50.88*	*1.0*	*50*	*0*	*102*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*50.15*	*1.0*	*50*	*0*	*100*	*82 - 115*				
Surr: Dibromofluoromethane	*49.47*	*1.0*	*50*	*0*	*98.9*	*73 - 126*				
Surr: Toluene-d8	*49.73*	*1.0*	*50*	*0*	*99.5*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011249

QC BATCH REPORT

Batch ID: R355340 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS20011265-01MS** Units: **ug/L** Analysis Date: **29-Jan-2020 15:29**
Client ID: Run ID: **VOA2_355340** SeqNo: **5452963** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	15.88	1.0	20	0	79.4	70 - 127				
Benzene	16.38	1.0	20	0	81.9	70 - 127				
Chlorobenzene	16.56	1.0	20	0	82.8	70 - 114				
Ethylbenzene	16.93	1.0	20	0	84.7	70 - 124				
Methylene chloride	16.47	2.0	20	0	82.4	70 - 128				
Toluene	18.24	1.0	20	0	91.2	70 - 123				
Vinyl chloride	16.8	1.0	20	0	84.0	70 - 130				
Xylenes, Total	51.65	1.0	60	0	86.1	70 - 130				
Surr: 1,2-Dichloroethane-d4	*50.12*	*1.0*	*50*	*0*	*100*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.26*	*1.0*	*50*	*0*	*98.5*	*81 - 113*				
Surr: Dibromofluoromethane	*49.3*	*1.0*	*50*	*0*	*98.6*	*77 - 123*				
Surr: Toluene-d8	*49.51*	*1.0*	*50*	*0*	*99.0*	*82 - 127*				

MSD Sample ID: **HS20011265-01MSD** Units: **ug/L** Analysis Date: **29-Jan-2020 15:52**
Client ID: Run ID: **VOA2_355340** SeqNo: **5452964** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.17	1.0	20	0	80.9	70 - 127	15.88	1.84	20	
Benzene	16.4	1.0	20	0	82.0	70 - 127	16.38	0.119	20	
Chlorobenzene	16.88	1.0	20	0	84.4	70 - 114	16.56	1.96	20	
Ethylbenzene	17.43	1.0	20	0	87.2	70 - 124	16.93	2.9	20	
Methylene chloride	16.38	2.0	20	0	81.9	70 - 128	16.47	0.562	20	
Toluene	18.87	1.0	20	0	94.4	70 - 123	18.24	3.44	20	
Vinyl chloride	16.92	1.0	20	0	84.6	70 - 130	16.8	0.697	20	
Xylenes, Total	52.68	1.0	60	0	87.8	70 - 130	51.65	1.98	20	
Surr: 1,2-Dichloroethane-d4	*50.31*	*1.0*	*50*	*0*	*101*	*70 - 126*	*50.12*	*0.362*	*20*	
Surr: 4-Bromofluorobenzene	*49.67*	*1.0*	*50*	*0*	*99.3*	*81 - 113*	*49.26*	*0.814*	*20*	
Surr: Dibromofluoromethane	*49.1*	*1.0*	*50*	*0*	*98.2*	*77 - 123*	*49.3*	*0.406*	*20*	
Surr: Toluene-d8	*50.69*	*1.0*	*50*	*0*	*101*	*82 - 127*	*49.51*	*2.35*	*20*	

The following samples were analyzed in this batch: HS20011249-01 HS20011249-05

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011249

QC BATCH REPORT

Batch ID: R355399 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200130** Units: **ug/L** Analysis Date: **30-Jan-2020 12:03**
Client ID: Run ID: **VOA2_355399** SeqNo: **5454133** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Vinyl chloride	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*48.05*	*1.0*	*50*	*0*	*96.1*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*47.69*	*1.0*	*50*	*0*	*95.4*	*82 - 115*				
Surr: Dibromofluoromethane	*49.74*	*1.0*	*50*	*0*	*99.5*	*73 - 126*				
Surr: Toluene-d8	*51.31*	*1.0*	*50*	*0*	*103*	*81 - 120*				

LCS Sample ID: **VLCSW-200130** Units: **ug/L** Analysis Date: **30-Jan-2020 10:53**
Client ID: Run ID: **VOA2_355399** SeqNo: **5454132** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	18.56	1.0	20	0	92.8	70 - 124				
Benzene	18.33	1.0	20	0	91.7	74 - 120				
Chlorobenzene	18.39	1.0	20	0	91.9	76 - 113				
Ethylbenzene	18.57	1.0	20	0	92.8	77 - 117				
Methylene chloride	19.02	2.0	20	0	95.1	70 - 127				
Toluene	20.59	1.0	20	0	103	77 - 118				
Vinyl chloride	26.92	1.0	20	0	135	70 - 130				S
Xylenes, Total	57.19	1.0	60	0	95.3	75 - 122				
Surr: 1,2-Dichloroethane-d4	*51.23*	*1.0*	*50*	*0*	*102*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*50.05*	*1.0*	*50*	*0*	*100*	*82 - 115*				
Surr: Dibromofluoromethane	*48.85*	*1.0*	*50*	*0*	*97.7*	*73 - 126*				
Surr: Toluene-d8	*49.8*	*1.0*	*50*	*0*	*99.6*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011249

QC BATCH REPORT

Batch ID: R355399 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS20011350-01MS** Units: **ug/L** Analysis Date: **30-Jan-2020 19:20**
Client ID: Run ID: **VOA2_355399** SeqNo: **5456624** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	17.07	1.0	20	0	85.4	70 - 127				
Benzene	18.93	1.0	20	0	94.6	70 - 127				
Chlorobenzene	17.61	1.0	20	0	88.0	70 - 114				
Ethylbenzene	18.17	1.0	20	0	90.9	70 - 124				
Methylene chloride	17.9	2.0	20	0	89.5	70 - 128				
Toluene	20.39	1.0	20	0	102	70 - 123				
Vinyl chloride	17.48	1.0	20	0	87.4	70 - 130				
Xylenes, Total	54.48	1.0	60	0	90.8	70 - 130				
Surr: 1,2-Dichloroethane-d4	*51.06*	*1.0*	*50*	*0*	*102*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.88*	*1.0*	*50*	*0*	*99.8*	*81 - 113*				
Surr: Dibromofluoromethane	*49.67*	*1.0*	*50*	*0*	*99.3*	*77 - 123*				
Surr: Toluene-d8	*50.26*	*1.0*	*50*	*0*	*101*	*82 - 127*				

MSD Sample ID: **HS20011350-01MSD** Units: **ug/L** Analysis Date: **30-Jan-2020 19:43**
Client ID: Run ID: **VOA2_355399** SeqNo: **5456625** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.78	1.0	20	0	83.9	70 - 127	17.07	1.7	20	
Benzene	17.77	1.0	20	0	88.9	70 - 127	18.93	6.29	20	
Chlorobenzene	17.08	1.0	20	0	85.4	70 - 114	17.61	3.01	20	
Ethylbenzene	17.53	1.0	20	0	87.6	70 - 124	18.17	3.61	20	
Methylene chloride	17.33	2.0	20	0	86.6	70 - 128	17.9	3.26	20	
Toluene	19.29	1.0	20	0	96.5	70 - 123	20.39	5.51	20	
Vinyl chloride	16.52	1.0	20	0	82.6	70 - 130	17.48	5.61	20	
Xylenes, Total	52.79	1.0	60	0	88.0	70 - 130	54.48	3.16	20	
Surr: 1,2-Dichloroethane-d4	*50.87*	*1.0*	*50*	*0*	*102*	*70 - 126*	*51.06*	*0.375*	*20*	
Surr: 4-Bromofluorobenzene	*48.96*	*1.0*	*50*	*0*	*97.9*	*81 - 113*	*49.88*	*1.86*	*20*	
Surr: Dibromofluoromethane	*49.49*	*1.0*	*50*	*0*	*99.0*	*77 - 123*	*49.67*	*0.362*	*20*	
Surr: Toluene-d8	*50.5*	*1.0*	*50*	*0*	*101*	*82 - 127*	*50.26*	*0.473*	*20*	

The following samples were analyzed in this batch: HS20011249-02 HS20011249-03 HS20011249-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20011249**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20011249

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS20011249-01	WQ-1620-TB09-20200127	Login	1/27/2020 8:50:44 PM	NDR	VOA186
HS20011249-02	WG-1620-MW62B-20200127	Login	1/27/2020 8:50:44 PM	NDR	MET040
HS20011249-02	WG-1620-MW62B-20200127	Login	1/27/2020 8:50:44 PM	NDR	EXT053
HS20011249-02	WG-1620-MW62B-20200127	Login	1/27/2020 8:50:44 PM	NDR	VOA186

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20011249

Date/Time Received: **27-Jan-2020 17:15**
Received by: **TW**

Checklist completed by: *Nilesh D. Ranchod* eSignature — 27-Jan-2020 Date

Reviewed by: *Dane J. Wacasey* eSignature — 29-Jan-2020 Date

Matrices: **Water**

Carrier name: **ALS Courier**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:206379
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	0.6°C UC/C	IR25
Cooler(s)/Kit(s):	45495	
Date/Time sample(s) sent to storage:	01/27/2020 9:20PM	

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

Page _____ of _____

COC ID: 206379

HS20011249

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-07-Rev0 SR 92688
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address	

A: 8260_LL_W (5632528 Volatile Organics Site Specific)
B: 8260_LL_W (5632528 VOC Site Specific + V.C.)
C: 8270_LOW_W (5632532 SemiVolatiles Site specific)
D: ICP_TW (5636002 5652646 Metals - As)
E: Vinyl Chloride
F:
G:
H:
I:
J:

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	WQ-1620-TB09-20200127	1-27-20	15:00	Water	1	2		X									
2	WG-1620 MW 62B 20200127	1-27-20	9:25	H2O	1	6	X	X	X	X							
3	WG-1620 MW 64A 20200127	1-27-20	11:15	H2O	1	6	X	X	X	X							
4	WG-1620 MW 49B 20200127	1-27-20	13:30	H2O	1	6	X	X	X	X	X						
5	WG-1620 FB 13 20200127	1-27-20	12:00	H2O	1	6	X	X	X	X							
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Tim McSpadden - MSpadden

Shipment Method:

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other _____

Results Due Date:

Relinquished by: [signature] Date: 1-27-20 Time: 4:20 Received by:

Relinquished by: [signature] Date: 1/27/20 Time: 17:15 Received by (Laboratory):

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.
454195	0.6

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[X] TRRP Checklist
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
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February 18, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20020456**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 4 sample(s) on Feb 11, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20020456**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20020456**	

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/18/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020456				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150549,150594,R356238				
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?		X			1
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/18/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020456				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150549,150594,R356238				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?	X				
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 02/18/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20020456
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 150549,150594,R356238

ER#[5]	Description
1	Batch 150549, Semivolatile Organics Method SW8270, LCS/LCSD were analyzed and reported in lieu of an MS/MSD for this batch.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20020456

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20020456-01	WQ-1620-TB11-20200211	Water	CG-121719-91	11-Feb-2020 12:00	11-Feb-2020 14:40	☐
HS20020456-02	WG-1620-MW22AR-20200210	Water		10-Feb-2020 10:00	11-Feb-2020 14:40	☐
HS20020456-03	WG-1620-MW22BR-20200210	Water		10-Feb-2020 11:00	11-Feb-2020 14:40	☐
HS20020456-04	WG-1620-FB14-20200210	Water		10-Feb-2020 11:30	11-Feb-2020 14:40	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WQ-1620-TB11-20200211
Collection Date: 11-Feb-2020 12:00

ANALYTICAL REPORT
WorkOrder:HS20020456
Lab ID:HS20020456-01
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	13-Feb-2020 12:57
Benzene		U	0.00020	0.0010	mg/L	1	13-Feb-2020 12:57
Chlorobenzene		U	0.00030	0.0010	mg/L	1	13-Feb-2020 12:57
Ethylbenzene		U	0.00030	0.0010	mg/L	1	13-Feb-2020 12:57
Methylene chloride		U	0.0010	0.0020	mg/L	1	13-Feb-2020 12:57
Toluene		U	0.00020	0.0010	mg/L	1	13-Feb-2020 12:57
Xylenes, Total		U	0.00030	0.0010	mg/L	1	13-Feb-2020 12:57
Surr: 1,2-Dichloroethane-d4	*99.1*			*70-126*	*%REC*	*1*	*13-Feb-2020 12:57*
Surr: 4-Bromofluorobenzene	*101*			*81-113*	*%REC*	*1*	*13-Feb-2020 12:57*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*13-Feb-2020 12:57*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*13-Feb-2020 12:57*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20020456
Sample ID: WG-1620-MW22AR-20200210
Lab ID:HS20020456-02
Collection Date: 10-Feb-2020 10:00
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	13-Feb-2020 17:37
Benzene		U	0.00020	0.0010	mg/L	1	13-Feb-2020 17:37
Chlorobenzene		U	0.00030	0.0010	mg/L	1	13-Feb-2020 17:37
Ethylbenzene		U	0.00030	0.0010	mg/L	1	13-Feb-2020 17:37
Methylene chloride		U	0.0010	0.0020	mg/L	1	13-Feb-2020 17:37
Toluene		U	0.00020	0.0010	mg/L	1	13-Feb-2020 17:37
Xylenes, Total		U	0.00030	0.0010	mg/L	1	13-Feb-2020 17:37
Surr: 1,2-Dichloroethane-d4	*98.7*			*70-126*	*%REC*	*1*	*13-Feb-2020 17:37*
Surr: 4-Bromofluorobenzene	*99.5*			*81-113*	*%REC*	*1*	*13-Feb-2020 17:37*
Surr: Dibromofluoromethane	*98.7*			*77-123*	*%REC*	*1*	*13-Feb-2020 17:37*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*13-Feb-2020 17:37*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW22AR-20200210
Collection Date: 10-Feb-2020 10:00

ANALYTICAL REPORT
WorkOrder:HS20020456
Lab ID:HS20020456-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 12-Feb-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	12-Feb-2020 16:19
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	12-Feb-2020 16:19
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	12-Feb-2020 16:19
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	12-Feb-2020 16:19
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	12-Feb-2020 16:19
2-Methylnaphthalene	**0.00012**		**0.000019**	**0.00010**	**mg/L**	1	12-Feb-2020 16:19
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	12-Feb-2020 16:19
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	12-Feb-2020 16:19
Acenaphthene	**0.00015**		**0.000027**	**0.00010**	**mg/L**	1	12-Feb-2020 16:19
Acenaphthylene	U		0.000015	0.00010	mg/L	1	12-Feb-2020 16:19
Anthracene	**0.00020**		**0.000014**	**0.00010**	**mg/L**	1	12-Feb-2020 16:19
Benz(a)anthracene	**0.00029**		**0.000050**	**0.00010**	**mg/L**	1	12-Feb-2020 16:19
Benzo(a)pyrene	**0.00010**		**0.000020**	**0.00010**	**mg/L**	1	12-Feb-2020 16:19
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	12-Feb-2020 16:19
Bis(2-ethylhexyl)phthalate	**0.00011**	J	**0.000037**	**0.00020**	**mg/L**	1	12-Feb-2020 16:19
Chrysene	**0.00032**		**0.000021**	**0.00010**	**mg/L**	1	12-Feb-2020 16:19
Dibenzofuran	**0.00015**		**0.000020**	**0.00010**	**mg/L**	1	12-Feb-2020 16:19
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	12-Feb-2020 16:19
Fluoranthene	**0.0015**		**0.000010**	**0.00010**	**mg/L**	1	12-Feb-2020 16:19
Fluorene	**0.00019**		**0.000030**	**0.00010**	**mg/L**	1	12-Feb-2020 16:19
Naphthalene	**0.00044**		**0.000020**	**0.00010**	**mg/L**	1	12-Feb-2020 16:19
Nitrobenzene	U		0.000024	0.00020	mg/L	1	12-Feb-2020 16:19
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	12-Feb-2020 16:19
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	12-Feb-2020 16:19
Phenanthrene	**0.0015**		**0.000021**	**0.00010**	**mg/L**	1	12-Feb-2020 16:19
Phenol	**0.000041**	J	**0.000035**	**0.00020**	**mg/L**	1	12-Feb-2020 16:19
Pyrene	**0.0010**		**0.000019**	**0.00010**	**mg/L**	1	12-Feb-2020 16:19
Surr: 2,4,6-Tribromophenol	*75.2*			*34-129*	*%REC*	*1*	*12-Feb-2020 16:19*
Surr: 2-Fluorobiphenyl	*62.6*			*40-125*	*%REC*	*1*	*12-Feb-2020 16:19*
Surr: 2-Fluorophenol	*46.1*			*20-120*	*%REC*	*1*	*12-Feb-2020 16:19*
Surr: 4-Terphenyl-d14	*92.4*			*40-135*	*%REC*	*1*	*12-Feb-2020 16:19*
Surr: Nitrobenzene-d5	*51.8*			*41-120*	*%REC*	*1*	*12-Feb-2020 16:19*
Surr: Phenol-d6	*51.8*			*20-120*	*%REC*	*1*	*12-Feb-2020 16:19*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 13-Feb-2020		Analyst: JHD
Arsenic	**0.00352**		**0.000400**	**0.00200**	**mg/L**	1	14-Feb-2020 14:31

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20020456
Sample ID: WG-1620-MW22BR-20200210
Lab ID:HS20020456-03
Collection Date: 10-Feb-2020 11:00
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	13-Feb-2020 17:59
Benzene		U	0.00020	0.0010	mg/L	1	13-Feb-2020 17:59
Chlorobenzene		U	0.00030	0.0010	mg/L	1	13-Feb-2020 17:59
Ethylbenzene		U	0.00030	0.0010	mg/L	1	13-Feb-2020 17:59
Methylene chloride		U	0.0010	0.0020	mg/L	1	13-Feb-2020 17:59
Toluene		U	0.00020	0.0010	mg/L	1	13-Feb-2020 17:59
Xylenes, Total		U	0.00030	0.0010	mg/L	1	13-Feb-2020 17:59
Surr: 1,2-Dichloroethane-d4	*96.8*			*70-126*	*%REC*	*1*	*13-Feb-2020 17:59*
Surr: 4-Bromofluorobenzene	*101*			*81-113*	*%REC*	*1*	*13-Feb-2020 17:59*
Surr: Dibromofluoromethane	*99.7*			*77-123*	*%REC*	*1*	*13-Feb-2020 17:59*
Surr: Toluene-d8	*99.1*			*82-127*	*%REC*	*1*	*13-Feb-2020 17:59*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW22BR-20200210
Collection Date: 10-Feb-2020 11:00

ANALYTICAL REPORT
WorkOrder:HS20020456
Lab ID:HS20020456-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 12-Feb-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	12-Feb-2020 14:25
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	12-Feb-2020 14:25
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	12-Feb-2020 14:25
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	12-Feb-2020 14:25
2-Chloronaphthalene	**0.00011**	J	**0.000021**	**0.00020**	**mg/L**	1	12-Feb-2020 14:25
2-Methylnaphthalene	**0.000043**	J	**0.000019**	**0.00010**	**mg/L**	1	12-Feb-2020 14:25
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	12-Feb-2020 14:25
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	12-Feb-2020 14:25
Acenaphthene	**0.018**		**0.00014**	**0.00050**	**mg/L**	5	12-Feb-2020 16:38
Acenaphthylene	**0.00018**		**0.000015**	**0.00010**	**mg/L**	1	12-Feb-2020 14:25
Anthracene	**0.00042**		**0.000014**	**0.00010**	**mg/L**	1	12-Feb-2020 14:25
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	12-Feb-2020 14:25
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	12-Feb-2020 14:25
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	12-Feb-2020 14:25
Bis(2-ethylhexyl)phthalate	**0.000075**	J	**0.000037**	**0.00020**	**mg/L**	1	12-Feb-2020 14:25
Chrysene	U		0.000021	0.00010	mg/L	1	12-Feb-2020 14:25
Dibenzofuran	**0.00029**		**0.000020**	**0.00010**	**mg/L**	1	12-Feb-2020 14:25
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	12-Feb-2020 14:25
Fluoranthene	**0.0017**		**0.000010**	**0.00010**	**mg/L**	1	12-Feb-2020 14:25
Fluorene	**0.0026**		**0.000030**	**0.00010**	**mg/L**	1	12-Feb-2020 14:25
Naphthalene	**0.00013**		**0.000020**	**0.00010**	**mg/L**	1	12-Feb-2020 14:25
Nitrobenzene	U		0.000024	0.00020	mg/L	1	12-Feb-2020 14:25
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	12-Feb-2020 14:25
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	12-Feb-2020 14:25
Phenanthrene	**0.00013**		**0.000021**	**0.00010**	**mg/L**	1	12-Feb-2020 14:25
Phenol	U		0.000035	0.00020	mg/L	1	12-Feb-2020 14:25
Pyrene	**0.00082**		**0.000019**	**0.00010**	**mg/L**	1	12-Feb-2020 14:25
Surr: 2,4,6-Tribromophenol	*79.8*			*34-129*	*%REC*	*1*	*12-Feb-2020 14:25*
Surr: 2,4,6-Tribromophenol	*72.7*			*34-129*	*%REC*	*5*	*12-Feb-2020 16:38*
Surr: 2-Fluorobiphenyl	*68.4*			*40-125*	*%REC*	*1*	*12-Feb-2020 14:25*
Surr: 2-Fluorobiphenyl	*71.5*			*40-125*	*%REC*	*5*	*12-Feb-2020 16:38*
Surr: 2-Fluorophenol	*60.6*			*20-120*	*%REC*	*1*	*12-Feb-2020 14:25*
Surr: 2-Fluorophenol	*59.5*			*20-120*	*%REC*	*5*	*12-Feb-2020 16:38*
Surr: 4-Terphenyl-d14	*104*			*40-135*	*%REC*	*1*	*12-Feb-2020 14:25*
Surr: 4-Terphenyl-d14	*102*			*40-135*	*%REC*	*5*	*12-Feb-2020 16:38*
Surr: Nitrobenzene-d5	*59.6*			*41-120*	*%REC*	*1*	*12-Feb-2020 14:25*
Surr: Nitrobenzene-d5	*58.8*			*41-120*	*%REC*	*5*	*12-Feb-2020 16:38*
Surr: Phenol-d6	*59.4*			*20-120*	*%REC*	*1*	*12-Feb-2020 14:25*
Surr: Phenol-d6	*56.5*			*20-120*	*%REC*	*5*	*12-Feb-2020 16:38*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20020456
Sample ID: WG-1620-MW22BR-20200210
Lab ID:HS20020456-03
Collection Date: 10-Feb-2020 11:00
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 13-Feb-2020		Analyst: JHD
Arsenic	**0.0160**		**0.000400**	**0.00200**	**mg/L**	1	14-Feb-2020 14:34

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20020456
Sample ID: WG-1620-FB14-20200210
Lab ID:HS20020456-04
Collection Date: 10-Feb-2020 11:30
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	13-Feb-2020 13:20
Benzene		U	0.00020	0.0010	mg/L	1	13-Feb-2020 13:20
Chlorobenzene		U	0.00030	0.0010	mg/L	1	13-Feb-2020 13:20
Ethylbenzene		U	0.00030	0.0010	mg/L	1	13-Feb-2020 13:20
Methylene chloride		U	0.0010	0.0020	mg/L	1	13-Feb-2020 13:20
Toluene		U	0.00020	0.0010	mg/L	1	13-Feb-2020 13:20
Xylenes, Total		U	0.00030	0.0010	mg/L	1	13-Feb-2020 13:20
Surr: 1,2-Dichloroethane-d4	*96.9*			*70-126*	*%REC*	*1*	*13-Feb-2020 13:20*
Surr: 4-Bromofluorobenzene	*99.6*			*81-113*	*%REC*	*1*	*13-Feb-2020 13:20*
Surr: Dibromofluoromethane	*99.5*			*77-123*	*%REC*	*1*	*13-Feb-2020 13:20*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*13-Feb-2020 13:20*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB14-20200210
Collection Date: 10-Feb-2020 11:30

ANALYTICAL REPORT
WorkOrder:HS20020456
Lab ID:HS20020456-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 12-Feb-2020		Analyst: LG
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	12-Feb-2020 14:44
2,4-Dimethylphenol	**0.00095**		**0.000040**	**0.00020**	**mg/L**	1	12-Feb-2020 14:44
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	12-Feb-2020 14:44
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	12-Feb-2020 14:44
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	12-Feb-2020 14:44
2-Methylnaphthalene	**0.00039**		**0.000019**	**0.00010**	**mg/L**	1	12-Feb-2020 14:44
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	12-Feb-2020 14:44
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	12-Feb-2020 14:44
Acenaphthene	**0.00020**		**0.000027**	**0.00010**	**mg/L**	1	12-Feb-2020 14:44
Acenaphthylene	U		0.000015	0.00010	mg/L	1	12-Feb-2020 14:44
Anthracene	U		0.000014	0.00010	mg/L	1	12-Feb-2020 14:44
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	12-Feb-2020 14:44
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	12-Feb-2020 14:44
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	12-Feb-2020 14:44
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	12-Feb-2020 14:44
Chrysene	U		0.000021	0.00010	mg/L	1	12-Feb-2020 14:44
Dibenzofuran	**0.00019**		**0.000020**	**0.00010**	**mg/L**	1	12-Feb-2020 14:44
Di-n-butyl phthalate	**0.000025**	J	**0.000020**	**0.00020**	**mg/L**	1	12-Feb-2020 14:44
Fluoranthene	U		0.000010	0.00010	mg/L	1	12-Feb-2020 14:44
Fluorene	**0.000081**	J	**0.000030**	**0.00010**	**mg/L**	1	12-Feb-2020 14:44
Naphthalene	**0.0034**		**0.000020**	**0.00010**	**mg/L**	1	12-Feb-2020 14:44
Nitrobenzene	U		0.000024	0.00020	mg/L	1	12-Feb-2020 14:44
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	12-Feb-2020 14:44
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	12-Feb-2020 14:44
Phenanthrene	**0.000029**	J	**0.000021**	**0.00010**	**mg/L**	1	12-Feb-2020 14:44
Phenol	**0.00053**		**0.000035**	**0.00020**	**mg/L**	1	12-Feb-2020 14:44
Pyrene	U		0.000019	0.00010	mg/L	1	12-Feb-2020 14:44
Surr: 2,4,6-Tribromophenol	*69.2*			*34-129*	*%REC*	*1*	*12-Feb-2020 14:44*
Surr: 2-Fluorobiphenyl	*96.0*			*40-125*	*%REC*	*1*	*12-Feb-2020 14:44*
Surr: 2-Fluorophenol	*81.2*			*20-120*	*%REC*	*1*	*12-Feb-2020 14:44*
Surr: 4-Terphenyl-d14	*92.6*			*40-135*	*%REC*	*1*	*12-Feb-2020 14:44*
Surr: Nitrobenzene-d5	*85.1*			*41-120*	*%REC*	*1*	*12-Feb-2020 14:44*
Surr: Phenol-d6	*79.4*			*20-120*	*%REC*	*1*	*12-Feb-2020 14:44*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 13-Feb-2020		Analyst: JHD
Arsenic	U		0.000400	0.00200	mg/L	1	14-Feb-2020 15:15

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020456

Batch ID: 150549 **Start Date:** 12 Feb 2020 08:10 **End Date:** 12 Feb 2020 13:30
Method: SV AQ SEP FUN EXTRACT-LOWLEV - 3510C **Prep Code:** 3510_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20020456-02	1	1000 (mL)	1 (mL)	0.001
HS20020456-03	1	1000 (mL)	1 (mL)	0.001
HS20020456-04	1	1000 (mL)	1 (mL)	0.001

Batch ID: 150594 **Start Date:** 13 Feb 2020 09:00 **End Date:** 13 Feb 2020 13:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20020456-02		10 (mL)	10 (mL)	1
HS20020456-03		10 (mL)	10 (mL)	1
HS20020456-04		10 (mL)	10 (mL)	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020456

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 150549 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Water	
HS20020456-02	WG-1620-MW22AR-20200210	10 Feb 2020 10:00		12 Feb 2020 08:10	12 Feb 2020 16:19	1
HS20020456-03	WG-1620-MW22BR-20200210	10 Feb 2020 11:00		12 Feb 2020 08:10	12 Feb 2020 16:38	5
HS20020456-03	WG-1620-MW22BR-20200210	10 Feb 2020 11:00		12 Feb 2020 08:10	12 Feb 2020 14:25	1
HS20020456-04	WG-1620-FB14-20200210	10 Feb 2020 11:30		12 Feb 2020 08:10	12 Feb 2020 14:44	1
Batch ID: 150594 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS20020456-02	WG-1620-MW22AR-20200210	10 Feb 2020 10:00		13 Feb 2020 13:00	14 Feb 2020 14:31	1
HS20020456-03	WG-1620-MW22BR-20200210	10 Feb 2020 11:00		13 Feb 2020 13:00	14 Feb 2020 14:34	1
HS20020456-04	WG-1620-FB14-20200210	10 Feb 2020 11:30		13 Feb 2020 13:00	14 Feb 2020 15:15	1
Batch ID: R356238 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20020456-01	WQ-1620-TB11-20200211	11 Feb 2020 12:00			13 Feb 2020 12:57	1
HS20020456-02	WG-1620-MW22AR-20200210	10 Feb 2020 10:00			13 Feb 2020 17:37	1
HS20020456-03	WG-1620-MW22BR-20200210	10 Feb 2020 11:00			13 Feb 2020 17:59	1
HS20020456-04	WG-1620-FB14-20200210	10 Feb 2020 11:30			13 Feb 2020 13:20	1

WorkOrder: HS20020456
InstrumentID: ICPMS05
Test Code: ICP_TW
Test Number: SW6020
Test Name: ICP-MS Metals by SW6020A

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Arsenic	7440-38-2	0.000500	0.000499	0.000400	0.00200

WorkOrder: HS20020456
InstrumentID: SV-6
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Diphenylhydrazine	122-66-7	0.00010	0.000098	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.000051	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.000094	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.000083	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.000093	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.000050	0.000060	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000031	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00010	0.000037	0.000047	0.0010
A	Acenaphthene	83-32-9	0.000050	0.000059	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000050	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.000047	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.000050	0.000059	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.000050	0.000050	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.000081	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.00012	0.000037	0.00020
A	Chrysene	218-01-9	0.000050	0.000060	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.000050	0.000050	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.00011	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000049	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.000053	0.000030	0.00010
A	Naphthalene	91-20-3	0.000050	0.000049	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.00012	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.00011	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.0000094	0.000079	0.00020
A	Phenanthrene	85-01-8	0.000050	0.000049	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.000096	0.000035	0.00020
A	Pyrene	129-00-0	0.000050	0.000047	0.000019	0.00010
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0.00020
S	2-Fluorobiphenyl	321-60-8	0	0	0	0.00020
S	2-Fluorophenol	367-12-4	0	0	0	0.00020
S	4-Terphenyl-d14	1718-51-0	0	0	0	0.00020
S	Nitrobenzene-d5	4165-60-0	0	0	0	0.00020
S	Phenol-d6	13127-88-3	0	0	0	0.00020

WorkOrder: HS20020456
InstrumentID: VOA2
Test Code: 8260_LL_W
Test Number: SW8260
Test Name: Low Level Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.00050	0.00062	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00059	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00071	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00063	0.00030	0.0010
A	Methylene chloride	75-09-2	0.0010	0.00075	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00069	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00059	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020456

QC BATCH REPORT

Batch ID: 150594 (0) **Instrument: ICPMS05** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-150594** Units: **mg/L** Analysis Date: **14-Feb-2020 13:14**
Client ID: Run ID: **ICPMS05_356303** SeqNo: **5474006** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								

LCS Sample ID: **LCS-150594** Units: **mg/L** Analysis Date: **14-Feb-2020 13:17**
Client ID: Run ID: **ICPMS05_356303** SeqNo: **5474007** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04604	0.00200	0.05	0	92.1	80 - 120				

MS Sample ID: **HS20020453-01MS** Units: **mg/L** Analysis Date: **14-Feb-2020 13:23**
Client ID: Run ID: **ICPMS05_356303** SeqNo: **5474010** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0889	0.00200	0.05	0.04209	93.6	80 - 120				

MSD Sample ID: **HS20020453-01MSD** Units: **mg/L** Analysis Date: **14-Feb-2020 13:26**
Client ID: Run ID: **ICPMS05_356303** SeqNo: **5474011** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.09146	0.00200	0.05	0.04209	98.7	80 - 120	0.0889	2.83	20	

PDS Sample ID: **HS20020453-01PDS** Units: **mg/L** Analysis Date: **14-Feb-2020 13:28**
Client ID: Run ID: **ICPMS05_356303** SeqNo: **5474012** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1563	0.00200	0.1	0.04209	114	75 - 125				

SD Sample ID: **HS20020453-01SD** Units: **mg/L** Analysis Date: **14-Feb-2020 13:21**
Client ID: Run ID: **ICPMS05_356303** SeqNo: **5474009** PrepDate: **13-Feb-2020** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.04136	0.0100					0.04209	1.73	10	

The following samples were analyzed in this batch: HS20020456-02 HS20020456-03 HS20020456-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020456

QC BATCH REPORT

Batch ID: 150549 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-150549** Units: **ug/L** Analysis Date: **12-Feb-2020 09:58**
Client ID: Run ID: **SV-6_356146** SeqNo: **5470142** PrepDate: **12-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	U	0.20								
2,4-Dimethylphenol	U	0.20								
2,4-Dinitrotoluene	U	0.20								
2,6-Dinitrotoluene	U	0.20								
2-Chloronaphthalene	U	0.20								
2-Methylnaphthalene	U	0.10								
4,6-Dinitro-2-methylphenol	U	0.20								
4-Nitrophenol	U	1.0								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Benz(a)anthracene	U	0.10								
Benzo(a)pyrene	U	0.10								
Bis(2-chloroethoxy)methane	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Chrysene	U	0.10								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Nitrobenzene	U	0.20								
N-Nitrosodiphenylamine	U	0.20								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*3.329*	*0.20*	*5*	*0*	*66.6*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.669*	*0.20*	*5*	*0*	*93.4*	*40 - 125*				
Surr: 2-Fluorophenol	*4.4*	*0.20*	*5*	*0*	*88.0*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.725*	*0.20*	*5*	*0*	*94.5*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.118*	*0.20*	*5*	*0*	*82.4*	*41 - 120*				
Surr: Phenol-d6	*3.995*	*0.20*	*5*	*0*	*79.9*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020456

QC BATCH REPORT

Batch ID: 150549 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCS Sample ID: **LCS-150549** Units: **ug/L** Analysis Date: **12-Feb-2020 10:17**
Client ID: Run ID: **SV-6_356146** SeqNo: **5470143** PrepDate: **12-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.832	0.20	5	0	96.6	39 - 127				
2,4-Dimethylphenol	4.124	0.20	5	0	82.5	35 - 120				
2,4-Dinitrotoluene	5.313	0.20	5	0	106	50 - 122				
2,6-Dinitrotoluene	5.337	0.20	5	0	107	50 - 120				
2-Chloronaphthalene	4.964	0.20	5	0	99.3	50 - 120				
2-Methylnaphthalene	4.367	0.10	5	0	87.3	50 - 120				
4,6-Dinitro-2-methylphenol	5.848	0.20	5	0	117	25 - 121				
4-Nitrophenol	4.061	1.0	5	0	81.2	30 - 130				
Acenaphthene	4.707	0.10	5	0	94.1	45 - 120				
Acenaphthylene	4.744	0.10	5	0	94.9	47 - 120				
Anthracene	5.024	0.10	5	0	100	45 - 120				
Benz(a)anthracene	4.981	0.10	5	0	99.6	40 - 120				
Benzo(a)pyrene	4.733	0.10	5	0	94.7	45 - 120				
Bis(2-chloroethoxy)methane	4.378	0.20	5	0	87.6	45 - 120				
Bis(2-ethylhexyl)phthalate	6.092	0.20	5	0	122	40 - 139				
Chrysene	4.751	0.10	5	0	95.0	43 - 120				
Dibenzofuran	4.607	0.10	5	0	92.1	50 - 120				
Di-n-butyl phthalate	5.595	0.20	5	0	112	45 - 123				
Fluoranthene	4.741	0.10	5	0	94.8	45 - 125				
Fluorene	4.695	0.10	5	0	93.9	49 - 120				
Naphthalene	4.404	0.10	5	0	88.1	45 - 120				
Nitrobenzene	4.15	0.20	5	0	83.0	44 - 120				
N-Nitrosodiphenylamine	5.326	0.20	5	0	107	40 - 125				
Pentachlorophenol	3.971	0.20	5	0	79.4	19 - 121				
Phenanthrene	4.698	0.10	5	0	94.0	45 - 121				
Phenol	4.283	0.20	5	0	85.7	20 - 124				
Pyrene	5.051	0.10	5	0	101	40 - 130				
Surr: 2,4,6-Tribromophenol	*3.83*	*0.20*	*5*	*0*	*76.6*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.712*	*0.20*	*5*	*0*	*94.2*	*40 - 125*				
Surr: 2-Fluorophenol	*4.272*	*0.20*	*5*	*0*	*85.4*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.806*	*0.20*	*5*	*0*	*96.1*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.018*	*0.20*	*5*	*0*	*80.4*	*41 - 120*				
Surr: Phenol-d6	*4.152*	*0.20*	*5*	*0*	*83.0*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020456

QC BATCH REPORT

Batch ID: 150549 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCSD Sample ID: **LCSD-150549** Units: **ug/L** Analysis Date: **12-Feb-2020 10:36**
Client ID: Run ID: **SV-6_356146** SeqNo: **5470144** PrepDate: **12-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.646	0.20	5	0	92.9	39 - 127	4.832	3.91	20	
2,4-Dimethylphenol	4.085	0.20	5	0	81.7	35 - 120	4.124	0.951	20	
2,4-Dinitrotoluene	4.973	0.20	5	0	99.5	50 - 122	5.313	6.61	20	
2,6-Dinitrotoluene	4.989	0.20	5	0	99.8	50 - 120	5.337	6.73	20	
2-Chloronaphthalene	4.655	0.20	5	0	93.1	50 - 120	4.964	6.43	20	
2-Methylnaphthalene	4.232	0.10	5	0	84.6	50 - 120	4.367	3.13	20	
4,6-Dinitro-2-methylphenol	5.8	0.20	5	0	116	25 - 121	5.848	0.825	30	
4-Nitrophenol	3.845	1.0	5	0	76.9	30 - 130	4.061	5.46	20	
Acenaphthene	4.442	0.10	5	0	88.8	45 - 120	4.707	5.8	20	
Acenaphthylene	4.414	0.10	5	0	88.3	47 - 120	4.744	7.22	20	
Anthracene	4.909	0.10	5	0	98.2	45 - 120	5.024	2.31	20	
Benz(a)anthracene	4.706	0.10	5	0	94.1	40 - 120	4.981	5.69	20	
Benzo(a)pyrene	4.536	0.10	5	0	90.7	45 - 120	4.733	4.26	20	
Bis(2-chloroethoxy)methane	4.276	0.20	5	0	85.5	45 - 120	4.378	2.36	20	
Bis(2-ethylhexyl)phthalate	5.715	0.20	5	0	114	40 - 139	6.092	6.39	20	
Chrysene	4.467	0.10	5	0	89.3	43 - 120	4.751	6.16	20	
Dibenzofuran	4.373	0.10	5	0	87.5	50 - 120	4.607	5.22	20	
Di-n-butyl phthalate	5.419	0.20	5	0	108	45 - 123	5.595	3.2	20	
Fluoranthene	4.584	0.10	5	0	91.7	45 - 125	4.741	3.36	20	
Fluorene	4.429	0.10	5	0	88.6	49 - 120	4.695	5.83	20	
Naphthalene	4.286	0.10	5	0	85.7	45 - 120	4.404	2.72	20	
Nitrobenzene	4.078	0.20	5	0	81.6	44 - 120	4.15	1.75	20	
N-Nitrosodiphenylamine	5.247	0.20	5	0	105	40 - 125	5.326	1.5	20	
Pentachlorophenol	4.014	0.20	5	0	80.3	19 - 121	3.971	1.09	20	
Phenanthrene	4.567	0.10	5	0	91.3	45 - 121	4.698	2.82	20	
Phenol	3.965	0.20	5	0	79.3	20 - 124	4.283	7.71	20	
Pyrene	4.755	0.10	5	0	95.1	40 - 130	5.051	6.03	20	
Surr: 2,4,6-Tribromophenol	*3.716*	*0.20*	*5*	*0*	*74.3*	*34 - 129*	*3.83*	*3.02*	*20*	
Surr: 2-Fluorobiphenyl	*4.416*	*0.20*	*5*	*0*	*88.3*	*40 - 125*	*4.712*	*6.49*	*20*	
Surr: 2-Fluorophenol	*3.948*	*0.20*	*5*	*0*	*79.0*	*20 - 120*	*4.272*	*7.88*	*20*	
Surr: 4-Terphenyl-d14	*4.493*	*0.20*	*5*	*0*	*89.9*	*40 - 135*	*4.806*	*6.74*	*20*	
Surr: Nitrobenzene-d5	*3.853*	*0.20*	*5*	*0*	*77.1*	*41 - 120*	*4.018*	*4.21*	*20*	
Surr: Phenol-d6	*3.79*	*0.20*	*5*	*0*	*75.8*	*20 - 120*	*4.152*	*9.1*	*20*	

The following samples were analyzed in this batch: HS20020456-02 HS20020456-03 HS20020456-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020456

QC BATCH REPORT

Batch ID: R356238 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200213** Units: **ug/L** Analysis Date: **13-Feb-2020 12:34**
Client ID: Run ID: **VOA2_356238** SeqNo: **5472049** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*49.97*	*1.0*	*50*	*0*	*99.9*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*49.94*	*1.0*	*50*	*0*	*99.9*	*82 - 115*				
Surr: Dibromofluoromethane	*50.41*	*1.0*	*50*	*0*	*101*	*73 - 126*				
Surr: Toluene-d8	*50.56*	*1.0*	*50*	*0*	*101*	*81 - 120*				

LCS Sample ID: **VLCSW-200213** Units: **ug/L** Analysis Date: **13-Feb-2020 11:48**
Client ID: Run ID: **VOA2_356238** SeqNo: **5472048** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	18.97	1.0	20	0	94.8	70 - 124				
Benzene	18.57	1.0	20	0	92.8	74 - 120				
Chlorobenzene	18.83	1.0	20	0	94.2	76 - 113				
Ethylbenzene	18.94	1.0	20	0	94.7	77 - 117				
Methylene chloride	19.11	2.0	20	0	95.5	70 - 127				
Toluene	20.9	1.0	20	0	104	77 - 118				
Xylenes, Total	57.59	1.0	60	0	96.0	75 - 122				
Surr: 1,2-Dichloroethane-d4	*52.12*	*1.0*	*50*	*0*	*104*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*51.31*	*1.0*	*50*	*0*	*103*	*82 - 115*				
Surr: Dibromofluoromethane	*49.48*	*1.0*	*50*	*0*	*99.0*	*73 - 126*				
Surr: Toluene-d8	*50.03*	*1.0*	*50*	*0*	*100*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020456

QC BATCH REPORT

Batch ID: R356238 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS20020304-21MS** Units: **ug/L** Analysis Date: **13-Feb-2020 14:56**
Client ID: Run ID: **VOA2_356238** SeqNo: **5472137** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	18.92	1.0	20	0.7205	91.0	70 - 127				
Benzene	18.21	1.0	20	0	91.0	70 - 127				
Chlorobenzene	17.96	1.0	20	0	89.8	70 - 114				
Ethylbenzene	18.68	1.0	20	0	93.4	70 - 124				
Methylene chloride	18.3	2.0	20	0	91.5	70 - 128				
Toluene	20.23	1.0	20	0	101	70 - 123				
Xylenes, Total	56.88	1.0	60	0	94.8	70 - 130				
Surr: 1,2-Dichloroethane-d4	*50.96*	*1.0*	*50*	*0*	*102*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*51.8*	*1.0*	*50*	*0*	*104*	*81 - 113*				
Surr: Dibromofluoromethane	*49.16*	*1.0*	*50*	*0*	*98.3*	*77 - 123*				
Surr: Toluene-d8	*49.49*	*1.0*	*50*	*0*	*99.0*	*82 - 127*				

MSD Sample ID: **HS20020304-21MSD** Units: **ug/L** Analysis Date: **13-Feb-2020 15:19**
Client ID: Run ID: **VOA2_356238** SeqNo: **5472138** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	18.04	1.0	20	0.7205	86.6	70 - 127	18.92	4.78	20	
Benzene	17.41	1.0	20	0	87.0	70 - 127	18.21	4.5	20	
Chlorobenzene	17.6	1.0	20	0	88.0	70 - 114	17.96	2.02	20	
Ethylbenzene	18.38	1.0	20	0	91.9	70 - 124	18.68	1.63	20	
Methylene chloride	17.76	2.0	20	0	88.8	70 - 128	18.3	2.98	20	
Toluene	19.85	1.0	20	0	99.3	70 - 123	20.23	1.88	20	
Xylenes, Total	55.31	1.0	60	0	92.2	70 - 130	56.88	2.81	20	
Surr: 1,2-Dichloroethane-d4	*50.93*	*1.0*	*50*	*0*	*102*	*70 - 126*	*50.96*	*0.0592*	*20*	
Surr: 4-Bromofluorobenzene	*50.77*	*1.0*	*50*	*0*	*102*	*81 - 113*	*51.8*	*2.01*	*20*	
Surr: Dibromofluoromethane	*49.13*	*1.0*	*50*	*0*	*98.3*	*77 - 123*	*49.16*	*0.0527*	*20*	
Surr: Toluene-d8	*50.25*	*1.0*	*50*	*0*	*100*	*82 - 127*	*49.49*	*1.51*	*20*	

The following samples were analyzed in this batch: HS20020456-01 HS20020456-02 HS20020456-03 HS20020456-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20020456**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20020456

Date/Time Received: **11-Feb-2020 14:40**
Received by: **PMG**

Checklist completed by: *Paresh M. Giga* eSignature — 11-Feb-2020 Date

Reviewed by: *Dane J. Wacasey* eSignature — 12-Feb-2020 Date

Matrices: **Water**

Carrier name: **Client**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:206375
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	0.2°C U/C	IR25
Cooler(s)/Kit(s):	45623	
Date/Time sample(s) sent to storage:	2/11/202018:30	

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600
Holland, MI +1 616 399 6070

Chain of Custody Form

Page 1 of 1

COC ID: 206375

HS20020456

Golder Associates Inc.
Houston TX-Wood Preserving Works

IV

Customer Information		Project Information		ALS Project Manager:
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	
Work Order		Project Number	1620-07-Rev0 SR 92688	
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P	
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	
Phone	(512) 671-3434	Phone		
Fax	(512) 671-3446	Fax		
e-Mail Address	eric.matzner@pbwllc.com	e-Mail Address		

A 8260_LL_W (5632528 Volatile Organics Site Specific)
B 8260_LL_W (5632528 VOC Site Specific + V.C.)
C 8270_LOW_W (5632532 SemiVolatiles Site specific)
D ICP_TW (5636002 5652646 Metals - As)
E
F
G
H
I
J

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	WQ-1620-TB01-20200211	2-11-2020	12:00	Water	1	2		X									
2	WQ1620MW22AR20200210	2-10-2020	10:00	water	1	6	X		X	X							
3	WQ-1620MW22BR20200210	2-10-2020	11:00	water	1	6	X		X	X							
4	WQ-1620 FB14 20200210	2-10-2020	11:30	water	1	6	X		X	X							
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Tim Spade, Eric Matzner

Shipment Method:

Required Turnaround Time: (Check Box) ☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 -hour ☐ Other

Results Due Date:

Relinquished by: Tim Spade — Date: 2-11-2020 — Time: 12:25 — Received by: Blake Sikora

Relinquished by: Blake Sikora — Date: 2-11-20 — Time: 1440 — Received by (Laboratory): 2/11/20 1440

Logged by (Laboratory): — Date: — Time: — Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.
43623	0.2 c 4.2 c c/f 0.0 c

QC Package: (Check One Box Below)

☐ Level II Std QC
☐ Level III Std QC/Raw Data
☐ Level IV SVM843/CLP
☐ Other
☒ TRRP Checklist
☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

ote:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

Copyright 2011 by ALS Environmental.

Memorandum

March 10, 2020

To:	Eric Matzner	Ref. No.:	11183954-1620
From:	Chris G. Knight/eew/559-NF	Tel:	512-506-8803
cc:	Jesse Orth, Jon Lang; Julie Lidstone		

Subject: **Data Usability Summary**
Semiannual Groundwater Monitoring Event
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
January 2020

1. Scope of Data Usability Study

This document details a Data Usability Summary (DUS) of analytical results for groundwater samples collected in support of the Semiannual Groundwater Monitoring Event at the Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works site during January 2020. Samples were submitted to ALS Environmental (ALS), located in Houston, Texas and are reported in data package HS20010618. The intended use of the data is to support the Semiannual Groundwater Monitoring Event at the site by providing current concentration of chemicals of concern.

Data were reviewed and validated by Chris G. Knight of GHD, in accordance with Title 30 of the Texas Administrative Code Section 350.54 (30 TAC 350.54) as described in the Texas Commission on Environmental Quality (TCEQ) Regulatory Guidance document entitled "Review and Reporting of COC Concentration Data under TRRP", (RG-366/TRRP-13), revised May 2010, herein referred to as "TRRP-13 Guidance". Evaluation of the data was based on information obtained from the chain of custody forms, the finished report forms, method blank data, recovery data from surrogate spikes/laboratory control samples (LCS)/matrix spikes (MS), duplicate data, field quality assurance/quality control (QA/QC) samples, the laboratory review checklists (LRC), and the laboratory exception report (ER).

A sample collection and analysis summary is presented in Table 1. This summary provides a cross-reference of field sample identification numbers and location identification. Each sample is assigned a unique field identification number.

The validated sample results are presented in Table 2. A summary of the analytical methodology is presented in Table 3.

2. Laboratory Qualifications

The Laboratory's quality assurance program is consistent with the quality standards outlined in the National Environmental Laboratory Accreditation Program (NELAP). This laboratory was accredited under Texas Certification number # TX104704231 at the time the analysis was performed and the certificate is included in Attachment A.

3. Project Objectives

3.1 Sampling/Analytical QA/QC Objectives

The QA/QC program was designed to identify contamination resulting from the sampling, sample transport and analytical process through the analysis of field blank samples, a field duplicate sample set, and method blanks. The QA/QC program was designed to evaluate the quality of the resulting data with respect to bias and precision through analysis of LCS and MS.

4. Data Review/Validation Results

4.1 Sample Holding Time and Preservation

Samples were shipped with a chain of custody and the paper work was filled out properly. All samples were properly preserved, delivered on ice, and stored by the laboratory at the required temperature (0-6°C).

The sample chain of custody documents and the analytical report were used to determine sample holding times. All samples were prepared and analyzed within the required holding times.

4.2 Sample Containers

Sample containers used were certified pre-cleaned glass containers provided by the laboratory. These containers meet or exceed analyte specifications established in the United States Environmental Protection Agency (USEPA) *Specifications and Guidance for Contaminant-free Sample Containers*.

4.3 Calibrations

According to the LRC, initial calibration and continuing calibration data met the criteria for the selected method.

4.4 Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures. As these were not discrete samples handled in the field, these blanks are not listed on the sample identification cross-reference list found in the data package.

For this study, laboratory method blanks were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch and results are reported in the laboratory data package.

The method blank results were non-detect or below the method quantitation limit (MQL), indicating that laboratory contamination was not a factor for this investigation.

4.5 Internal Standard and Surrogate Spike Recoveries

Recoveries of internal standards are addressed in the LRC of the data package. All internal standard recoveries associated with the compounds of interest were acceptable per the LRC.

In accordance with the methods employed, all samples, blanks, and QC samples analyzed for semi-volatile organic compounds (SVOCs) are spiked with surrogate compounds prior to sample analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project. Each individual surrogate compound is expected to meet the laboratory control limits. According to the TRRP-13 Guidelines, one outlying surrogate is acceptable for methods with multiple surrogate spike compounds as long as the recovery is at least ten percent. Sample analyzed at elevated sample dilutions (five times or greater) were not assessed.

Surrogate recoveries were assessed against laboratory control limits and/or the guidance in TRRP-13. All surrogate recoveries met the above criteria.

4.6 Laboratory Control Sample Analysis

LCS are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project.

For this study, LCS were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch.

The LCS contained all compounds specified in the method. All LCS recoveries were within the laboratory control limits, demonstrating acceptable analytical accuracy.

4.7 Matrix Spike Analysis

To evaluate the effects of sample matrices on the preparation process, measurement procedures, and accuracy of a particular analysis, samples are spiked with known concentrations of the analytes of interest and analyzed as MS/matrix spike duplicate (MSD) samples. The RPD between the MS and MSD is used to assess analytical precision.

An MS/MSD analysis was performed as specified in Table 1. The recovery ranges established by the laboratory is adopted as the acceptance criteria for the project.

The MS/MSD samples were spiked with all compounds specified in the method. All percent recoveries and the RPD value were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision.

4.8 Field QA/QC Samples

The field QA/QC consisted of two field blank samples and one field duplicate sample set.

Field Blank Sample Analysis

To assess ambient conditions at the site, two field blank samples were submitted for analysis, as identified in Table 1. All results were non-detect for the compounds of interest.

Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, one field duplicate sample set was collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples must be less than thirty percent for water samples. The RPDs are only used when sample concentrations are above the estimated regions of detection.

Field duplicate summary data are presented in Table 2. All field duplicate results were within acceptable agreement, demonstrating acceptable sampling and analytical precision.

4.9 Field Procedures

Golder Associates, Inc. collected groundwater samples in accordance with their Standard Operating Procedures (SOP) for sample collection.

4.10 Analyte Reporting

The laboratory reported detected results for each analyte down to the sample detection limit (SDL), which is defined as the method detection limit (MDL) with sample-specific adjustments for dilutions, aliquot size, volumes, etc. Positive analyte detections less than the MQL but greater than the SDL were qualified as estimated (J) in Table 2.

The detectability check standard (DCS) results supported the laboratory MDLs.

5. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are usable for the purpose of supporting the Semiannual Groundwater Monitoring Event at the site by providing current concentration of chemicals of concern without qualification.

Table 1

Sample Collection and Analysis Summary
Semiannual Groundwater Monitoring Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January 2020

					Analysis/Parameters	
Sample Identification	**Location**	**Matrix**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**SVOCs**	**Comments**
WG-1620-P12-20200113	P-12	Water	01/13/2020	10:30	X	MS/MSD
WG-1620-MW08-20200113	MW-08	Water	01/13/2020	11:30	X	
WG-1620-FB01-20200113	-	Water	01/13/2020	11:30	X	Field Blank
WG-1620-MW07-20200113	MW-07	Water	01/13/2020	13:15	X	
WG-1620-P10-20200113	P-10	Water	01/13/2020	14:20	X	
WG-1620-MW11B-20200114	MW-11B	Water	01/14/2020	09:25	X	
WG-1620-MW11A-20200114	MW-11A	Water	01/14/2020	10:35	X	
WG-1620-MW10B-20200114	MW-10B	Water	01/14/2020	11:35	X	
WG-1620-MW10A-20200114	MW-10A	Water	01/14/2020	12:25	X	
WG-1620-MW02-20200114	MW-02	Water	01/14/2020	13:30	X	
WG-1620-MW01A-20200114	MW-01A	Water	01/14/2020	14:35	X	
WG-1620-FD01-20200114	MW-01A	Water	01/14/2020	14:35	X	Field duplicate of MW-01A
WG-1620-FB02-20200114	-	Water	01/14/2020	15:00	X	Field Blank

Notes:

SVOCs - Semi-volatile Organic Compounds
MS/MSD - Matrix Spike/ Matrix Spike Duplicate
"-" - Not Applicable

Table 2

Analytical Results Summary
Semiannual Groundwater Monitoring Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January 2020

Location ID:		MW-01A	MW-01A	MW-02	MW-07
Sample Name:		WG-1620-MW01A-20200114	WG-1620-FD01-20200114	WG-1620-MW02-20200114	WG-1620-MW07-20200113
Sample Date:		01/14/2020	01/14/2020	01/14/2020	01/13/2020
			Duplicate		
Parameters	**Unit**				
Semi-volatile Organic Compounds					
2-Methylnaphthalene	mg/L	0.00019	<0.000019	<0.000019	0.000066 J
Acenaphthene	mg/L	0.024	0.018	0.0030	<0.000027
Acenaphthylene	mg/L	0.00084	0.00066	<0.000015	<0.000015
Anthracene	mg/L	<0.000014	<0.000014	0.00011	<0.000014
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000037	0.000074 J	<0.000037	<0.000037
Di-n-butylphthalate (DBP)	mg/L	--	--	--	--
Dibenzofuran	mg/L	0.0036	0.0021	0.00039	0.000057 J
Fluoranthene	mg/L	0.0011	0.0012	0.00024	0.00010
Fluorene	mg/L	0.0064	0.0038	0.0017	<0.000030
Naphthalene	mg/L	0.00052	<0.000020	<0.000020	0.00017
Phenanthrene	mg/L	<0.000021	<0.000021	0.00011	0.00014
Phenol	mg/L	--	--	--	--
Pyrene	mg/L	0.00052	0.00059	0.00011	<0.000019

Table 2

Analytical Results Summary
Semiannual Groundwater Monitoring Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January 2020

Location ID:		MW-08	MW-10A	MW-10B	MW-11A
Sample Name:		WG-1620-MW08-20200113	WG-1620-MW10A-20200114	WG-1620-MW10B-20200114	WG-1620-MW11A-20200114
Sample Date:		01/13/2020	01/14/2020	01/14/2020	01/14/2020
Parameters	**Unit**				
Semi-volatile Organic Compounds					
2-Methylnaphthalene	mg/L	<0.000019	<0.000019	--	<0.000019
Acenaphthene	mg/L	<0.000027	0.00011	0.069	<0.000027
Acenaphthylene	mg/L	<0.000015	<0.000015	0.00066	<0.000015
Anthracene	mg/L	<0.000014	<0.000014	0.0028	<0.000014
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	0.00021	<0.000037	0.00020	<0.000037
Di-n-butylphthalate (DBP)	mg/L	--	--	<0.000020	--
Dibenzofuran	mg/L	<0.000020	<0.000020	0.022	<0.000020
Fluoranthene	mg/L	<0.000010	<0.000010	0.0029	<0.000010
Fluorene	mg/L	<0.000030	<0.000030	0.036	<0.000030
Naphthalene	mg/L	<0.000020	<0.000020	0.0021	<0.000020
Phenanthrene	mg/L	0.000046 J	<0.000021	--	<0.000021
Phenol	mg/L	--	--	<0.000035	--
Pyrene	mg/L	<0.000019	<0.000019	0.0013	<0.000019

Table 2

Analytical Results Summary
Semiannual Groundwater Monitoring Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January 2020

Location ID:		**MW-11B**	**P-10**	**P-12**
Sample Name:		**WG-1620-MW11B-20200114**	**WG-1620-P10-20200113**	**WG-1620-P12-20200113**
Sample Date:		**01/14/2020**	**01/13/2020**	**01/13/2020**
Parameters	**Unit**			
Semi-volatile Organic Compounds				
2-Methylnaphthalene	mg/L	--	--	--
Acenaphthene	mg/L	0.033	<0.000027	<0.000027
Acenaphthylene	mg/L	0.0016	<0.000015	<0.000015
Anthracene	mg/L	<0.000014	<0.000014	0.00010
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	0.000095 J	<0.000037	<0.000037
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	<0.000020
Dibenzofuran	mg/L	<0.000020	<0.000020	<0.000020
Fluoranthene	mg/L	0.0024	<0.000010	<0.000010
Fluorene	mg/L	0.00035	<0.000030	<0.000030
Naphthalene	mg/L	<0.000020	0.00017	0.00016
Phenanthrene	mg/L	--	--	--
Phenol	mg/L	<0.000035	<0.000035	<0.000035
Pyrene	mg/L	0.0023	<0.000019	0.00063

Notes:

< - Not detected at the associated reporting limit
J - Estimated concentration
"--" - Not applicable

Table 3

Analytical Methods
Semiannual Groundwater Monitoring Event
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
January 2020

			Holding Time	
Parameter	**Method**	**Matrix**	**Collection to Extraction (Days)**	**Extraction to Analysis (Days)**
SVOCs	SW-846 8270D	Water	7	40

Notes:

SVOCs - Semi-volatile Organic Compounds

Method References:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions

Attachment A
Laboratory NELAP Certificate

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-19-23

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

Expiration Date: 4/30/2020

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2019

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: ***Drinking Water***

Method EPA 1613

Analyte	AB	Analyte ID	Method ID
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10120408

Method EPA 200.8

Analyte	AB	Analyte ID	Method ID
Copper	TX	1055	10014605
Lead	TX	1075	10014605

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Matrix: ***Non-Potable Water***

Method EPA 1010

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10116606

Method EPA 120.1

Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	10006403

Method EPA 1311

Analyte	AB	Analyte ID	Method ID
TCLP	TX	849	10118806

Method EPA 1312

Analyte	AB	Analyte ID	Method ID
SPLP	TX	850	10119003

Method EPA 160.4

Analyte	AB	Analyte ID	Method ID
Residue-volatile	TX	1970	10010409

Method EPA 1613

Analyte	AB	Analyte ID	Method ID
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10120408
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10120408
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10120408
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10120408
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10120408
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10120408
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10120408
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10120408
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10120408
1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10120408
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10120408
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10120408
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10120408
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10120408

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Matrix: ***Non-Potable Water***

2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10120408
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10120408
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10120408
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10120408
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10120408
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10120408
Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10120408
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10120408
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10120408
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10120408
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10120408

Method EPA 1664

Analyte	**AB**	**Analyte ID**	**Method ID**
n-Hexane Extractable Material (HEM) (O&G)	TX	1803	10127807

Method EPA 180.1

Analyte	**AB**	**Analyte ID**	**Method ID**
Turbidity	TX	2055	10011606

Method EPA 200.8

Analyte	**AB**	**Analyte ID**	**Method ID**
Aluminum	TX	1000	10014605
Antimony	TX	1005	10014605
Arsenic	TX	1010	10014605
Barium	TX	1015	10014605
Beryllium	TX	1020	10014605
Boron	TX	1025	10014605
Cadmium	TX	1030	10014605
Calcium	TX	1035	10014605
Chromium	TX	1040	10014605
Cobalt	TX	1050	10014605
Copper	TX	1055	10014605
Iron	TX	1070	10014605

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Matrix: ***Non-Potable Water***

Lead	TX	1075	10014605
Magnesium	TX	1085	10014605
Manganese	TX	1090	10014605
Molybdenum	TX	1100	10014605
Nickel	TX	1105	10014605
Potassium	TX	1125	10014605
Selenium	TX	1140	10014605
Silver	TX	1150	10014605
Sodium	TX	1155	10014605
Strontium	TX	1160	10014605
Thallium	TX	1165	10014605
Tin	TX	1175	10014605
Titanium	TX	1180	10014605
Uranium	TX	3035	10014605
Vanadium	TX	1185	10014605
Zinc	TX	1190	10014605

Method EPA 245.1

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10036609

Method EPA 300.0

Analyte	**AB**	**Analyte ID**	**Method ID**
Bromide	TX	1540	10053200
Chloride	TX	1575	10053200
Fluoride	TX	1730	10053200
Nitrate as N	TX	1810	10053200
Nitrate-nitrite	TX	1820	10053200
Nitrite as N	TX	1840	10053200
Orthophosphate as P	TX	1870	10053200
Sulfate	TX	2000	10053200

Method EPA 325.1

Analyte	**AB**	**Analyte ID**	**Method ID**

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Matrix: ***Non-Potable Water***

Chloride	TX	1575	10056801

Method EPA 335.1

Analyte	AB	Analyte ID	Method ID
Amenable cyanide	TX	1510	10060001

Method EPA 335.2

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	10278203

Method EPA 335.4

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	10061402

Method EPA 350.3

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	10064401

Method EPA 365.3

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	10070801
Phosphorus	TX	1910	10070801

Method EPA 375.4

Analyte	AB	Analyte ID	Method ID
Sulfate	TX	2000	10073800

Method EPA 376.1

Analyte	AB	Analyte ID	Method ID
Sulfide	TX	2005	10074201

Method EPA 410.4

Analyte	AB	Analyte ID	Method ID
Chemical oxygen demand (COD)	TX	1565	10077404

Method EPA 415.1

Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	10078407

Method EPA 420.1

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10079400

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Matrix: ***Non-Potable Water***

Method EPA 420.4

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10080203

Method EPA 6020

Analyte	AB	Analyte ID	Method ID
Aluminum	TX	1000	10156419
Antimony	TX	1005	10156419
Arsenic	TX	1010	10156419
Barium	TX	1015	10156419
Beryllium	TX	1020	10156419
Boron	TX	1025	10156419
Cadmium	TX	1030	10156419
Calcium	TX	1035	10156419
Chromium	TX	1040	10156419
Cobalt	TX	1050	10156419
Copper	TX	1055	10156419
Iron	TX	1070	10156419
Lead	TX	1075	10156419
Lithium	TX	1080	10156419
Magnesium	TX	1085	10156419
Manganese	TX	1090	10156419
Molybdenum	TX	1100	10156419
Nickel	TX	1105	10156419
Potassium	TX	1125	10156419
Selenium	TX	1140	10156419
Silver	TX	1150	10156419
Sodium	TX	1155	10156419
Strontium	TX	1160	10156419
Thallium	TX	1165	10156419
Tin	TX	1175	10156419
Titanium	TX	1180	10156419

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Matrix: ***Non-Potable Water***

Vanadium	TX	1185	10156419
Zinc	TX	1190	10156419

Method EPA 608

Analyte	AB	Analyte ID	Method ID
4,4'-DDD	TX	7355	10103603
4,4'-DDE	TX	7360	10103603
4,4'-DDT	TX	7365	10103603
Aldrin	TX	7025	10103603
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10103603
alpha-Chlordane	TX	7240	10103603
Aroclor-1016 (PCB-1016)	TX	8880	10103603
Aroclor-1221 (PCB-1221)	TX	8885	10103603
Aroclor-1232 (PCB-1232)	TX	8890	10103603
Aroclor-1242 (PCB-1242)	TX	8895	10103603
Aroclor-1248 (PCB-1248)	TX	8900	10103603
Aroclor-1254 (PCB-1254)	TX	8905	10103603
Aroclor-1260 (PCB-1260)	TX	8910	10103603
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10103603
Chlordane (tech.)	TX	7250	10103603
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10103603
Dieldrin	TX	7470	10103603
Endosulfan I	TX	7510	10103603
Endosulfan II	TX	7515	10103603
Endosulfan sulfate	TX	7520	10103603
Endrin	TX	7540	10103603
Endrin aldehyde	TX	7530	10103603
Endrin ketone	TX	7535	10103603
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10103603
gamma-Chlordane	TX	7245	10103603
Heptachlor	TX	7685	10103603

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

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ALS Laboratory Group, Environmental Services Division (Houston, Texas)

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10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2019

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Matrix: ***Non-Potable Water***

Heptachlor epoxide	TX	7690	10103603
Methoxychlor	TX	7810	10103603
Toxaphene (Chlorinated camphene)	TX	8250	10103603

Method EPA 624

Analyte	AB	Analyte ID	Method ID
1,1,1-Trichloroethane	TX	5160	10107207
1,1,2,2-Tetrachloroethane	TX	5110	10107207
1,1,2-Trichloroethane	TX	5165	10107207
1,1-Dichloroethane	TX	4630	10107207
1,1-Dichloroethylene	TX	4640	10107207
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10107207
1,2-Dichlorobenzene	TX	4610	10107207
1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10107207
1,2-Dichloropropane	TX	4655	10107207
1,3-Dichlorobenzene	TX	4615	10107207
1,4-Dichlorobenzene	TX	4620	10107207
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10107207
2-Chloroethyl vinyl ether	TX	4500	10107207
Acetone (2-Propanone)	TX	4315	10107207
Acrolein (Propenal)	TX	4325	10107207
Acrylonitrile	TX	4340	10107207
Benzene	TX	4375	10107207
Bromodichloromethane	TX	4395	10107207
Bromoform	TX	4400	10107207
Carbon tetrachloride	TX	4455	10107207
Chlorobenzene	TX	4475	10107207
Chlorodibromomethane	TX	4575	10107207
Chloroethane (Ethyl chloride)	TX	4485	10107207
Chloroform	TX	4505	10107207
cis-1,2-Dichloroethylene	TX	4645	10107207

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Matrix: ***Non-Potable Water***

cis-1,3-Dichloropropene	TX	4680	10107207
Ethylbenzene	TX	4765	10107207
m+p-xylene	TX	5240	10107207
Methyl bromide (Bromomethane)	TX	4950	10107207
Methyl chloride (Chloromethane)	TX	4960	10107207
Methyl tert-butyl ether (MTBE)	TX	5000	10107207
Methylene chloride (Dichloromethane)	TX	4975	10107207
Naphthalene	TX	5005	10107207
o-Xylene	TX	5250	10107207
Tetrachloroethylene (Perchloroethylene)	TX	5115	10107207
Toluene	TX	5140	10107207
trans-1,2-Dichloroethylene	TX	4700	10107207
trans-1,3-Dichloropropylene	TX	4685	10107207
Trichloroethene (Trichloroethylene)	TX	5170	10107207
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10107207
Vinyl chloride	TX	5235	10107207
Xylene (total)	TX	5260	10107207

Method EPA 625

Analyte	**AB**	**Analyte ID**	**Method ID**
1,2,4,5-Tetrachlorobenzene	TX	6715	10107401
1,2,4-Trichlorobenzene	TX	5155	10107401
1,2-Dichlorobenzene	TX	4610	10107401
1,2-Diphenylhydrazine	TX	6220	10107401
1,3-Dichlorobenzene	TX	4615	10107401
1,4-Dichlorobenzene	TX	4620	10107401
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10107401
2,4,5-Trichlorophenol	TX	6835	10107401
2,4,6-Trichlorophenol	TX	6840	10107401
2,4-Dichlorophenol	TX	6000	10107401
2,4-Dimethylphenol	TX	6130	10107401

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Matrix: ***Non-Potable Water***

2,4-Dinitrophenol	TX	6175	10107401
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10107401
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10107401
2-Chloronaphthalene	TX	5795	10107401
2-Chlorophenol	TX	5800	10107401
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10107401
2-Methylphenol (o-Cresol)	TX	6400	10107401
2-Nitrophenol	TX	6490	10107401
3,3'-Dichlorobenzidine	TX	5945	10107401
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10107401
4-Chloro-3-methylphenol	TX	5700	10107401
4-Chlorophenyl phenylether	TX	5825	10107401
4-Methylphenol (p-Cresol)	TX	6410	10107401
4-Nitrophenol	TX	6500	10107401
Acenaphthene	TX	5500	10107401
Acenaphthylene	TX	5505	10107401
Anthracene	TX	5555	10107401
Benzidine	TX	5595	10107401
Benzo(a)anthracene	TX	5575	10107401
Benzo(a)pyrene	TX	5580	10107401
Benzo(b)fluoranthene	TX	5585	10107401
Benzo(g,h,i)perylene	TX	5590	10107401
Benzo(k)fluoranthene	TX	5600	10107401
bis(2-Chloroethoxy)methane	TX	5760	10107401
bis(2-Chloroethyl) ether	TX	5765	10107401
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10107401
Butyl benzyl phthalate	TX	5670	10107401
Chrysene	TX	5855	10107401
Dibenz(a,h) anthracene	TX	5895	10107401
Diethyl phthalate	TX	6070	10107401

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Matrix: ***Non-Potable Water***

Dimethyl phthalate	TX	6135	10107401
Di-n-butyl phthalate	TX	5925	10107401
Di-n-octyl phthalate	TX	6200	10107401
Fluoranthene	TX	6265	10107401
Fluorene	TX	6270	10107401
Hexachlorobenzene	TX	6275	10107401
Hexachlorobutadiene	TX	4835	10107401
Hexachlorocyclopentadiene	TX	6285	10107401
Hexachloroethane	TX	4840	10107401
Indeno(1,2,3-cd) pyrene	TX	6315	10107401
Isophorone	TX	6320	10107401
Naphthalene	TX	5005	10107401
Nitrobenzene	TX	5015	10107401
n-Nitrosodiethylamine	TX	6525	10107401
n-Nitrosodimethylamine	TX	6530	10107401
n-Nitrosodi-n-butylamine	TX	5025	10107401
n-Nitrosodi-n-propylamine	TX	6545	10107401
n-Nitrosodiphenylamine	TX	6535	10107401
Pentachlorobenzene	TX	6590	10107401
Pentachlorophenol	TX	6605	10107401
Phenanthrene	TX	6615	10107401
Phenol	TX	6625	10107401
Pyrene	TX	6665	10107401
Pyridine	TX	5095	10107401

Method EPA 7196

Analyte	**AB**	**Analyte ID**	**Method ID**
Chromium (VI)	TX	1045	10162206

Method EPA 7470

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10165603

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Matrix: ***Non-Potable Water***

Method EPA 8011

Analyte	AB	Analyte ID	Method ID
1,2,3-Trichloropropane	TX	5180	10173009
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10173009
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10173009

Method EPA 8015

Analyte	AB	Analyte ID	Method ID
Diesel range organics (DRO)	TX	9369	10173203
Ethanol	TX	4750	10173203
Ethylene glycol	TX	4785	10173203
Gasoline range organics (GRO)	TX	9408	10173203
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10173203
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10173203
Methanol	TX	4930	10173203
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10173203
n-Propanol (1-Propanol)	TX	5055	10173203
Propylene Glycol	TX	6657	10173203
tert-Butyl alcohol	TX	4420	10173203

Method EPA 8021

Analyte	AB	Analyte ID	Method ID
Benzene	TX	4375	10174400
Ethylbenzene	TX	4765	10174400
m+p-xylene	TX	5240	10174400
Methyl tert-butyl ether (MTBE)	TX	5000	10174400
o-Xylene	TX	5250	10174400
Toluene	TX	5140	10174400
Xylene (total)	TX	5260	10174400

Method EPA 8081

Analyte	AB	Analyte ID	Method ID
4,4'-DDD	TX	7355	10178402
4,4'-DDE	TX	7360	10178402

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Matrix: ***Non-Potable Water***

4,4'-DDT	TX	7365	10178402
Aldrin	TX	7025	10178402
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10178402
alpha-Chlordane	TX	7240	10178402
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10178402
Chlordane (tech.)	TX	7250	10178402
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10178402
Dieldrin	TX	7470	10178402
Endosulfan I	TX	7510	10178402
Endosulfan II	TX	7515	10178402
Endosulfan sulfate	TX	7520	10178402
Endrin	TX	7540	10178402
Endrin aldehyde	TX	7530	10178402
Endrin ketone	TX	7535	10178402
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10178402
gamma-Chlordane	TX	7245	10178402
Heptachlor	TX	7685	10178402
Heptachlor epoxide	TX	7690	10178402
Hexachlorobenzene	TX	6275	10178402
Methoxychlor	TX	7810	10178402
Mirex	TX	7870	10178402
Toxaphene (Chlorinated camphene)	TX	8250	10178402

Method EPA 8082

Analyte	**AB**	**Analyte ID**	**Method ID**
Aroclor-1016 (PCB-1016)	TX	8880	10179201
Aroclor-1221 (PCB-1221)	TX	8885	10179201
Aroclor-1232 (PCB-1232)	TX	8890	10179201
Aroclor-1242 (PCB-1242)	TX	8895	10179201
Aroclor-1248 (PCB-1248)	TX	8900	10179201
Aroclor-1254 (PCB-1254)	TX	8905	10179201

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Matrix: ***Non-Potable Water***

Aroclor-1260 (PCB-1260)	TX	8910	10179201
PCBs (total)	TX	8870	10179201

Method EPA 8151

Analyte	AB	Analyte ID	Method ID
2,4,5-T	TX	8655	10183003
2,4-D	TX	8545	10183003
2,4-DB	TX	8560	10183003
Dalapon	TX	8555	10183003
Dicamba	TX	8595	10183003
Dichloroprop (Dichlorprop, Weedone)	TX	8605	10183003
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10183003
MCPA	TX	7775	10183003
MCPP	TX	7780	10183003
Silvex (2,4,5-TP)	TX	8650	10183003

Method EPA 8260

Analyte	AB	Analyte ID	Method ID
1,1,1,2-Tetrachloroethane	TX	5105	10184404
1,1,1-Trichloroethane	TX	5160	10184404
1,1,2,2-Tetrachloroethane	TX	5110	10184404
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	TX	5195	10184404
1,1,2-Trichloroethane	TX	5165	10184404
1,1-Dichloroethane	TX	4630	10184404
1,1-Dichloroethylene	TX	4640	10184404
1,1-Dichloropropene	TX	4670	10184404
1,2,3-Trichlorobenzene	TX	5150	10184404
1,2,3-Trichloropropane	TX	5180	10184404
1,2,4-Trichlorobenzene	TX	5155	10184404
1,2,4-Trimethylbenzene	TX	5210	10184404
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10184404
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10184404
1,2-Dichlorobenzene	TX	4610	10184404

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Matrix: ***Non-Potable Water***

1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10184404
1,2-Dichloropropane	TX	4655	10184404
1,3,5-Trimethylbenzene	TX	5215	10184404
1,3-Dichlorobenzene	TX	4615	10184404
1,3-Dichloropropane	TX	4660	10184404
1,4-Dichlorobenzene	TX	4620	10184404
1,4-Dioxane (1,4-Diethyleneoxide)	TX	4735	10184404
1-Chlorohexane	TX	4510	10184404
1-Propanol	TX	5060	10184404
2,2-Dichloropropane	TX	4665	10184404
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10184404
2-Chloroethyl vinyl ether	TX	4500	10184404
2-Chlorotoluene	TX	4535	10184404
2-Hexanone (MBK)	TX	4860	10184404
2-Pentanone	TX	5045	10184404
4-Chlorotoluene	TX	4540	10184404
4-Isopropyltoluene (p-Cymene)	TX	4915	10184404
4-Methyl-2-pentanone (MIBK)	TX	4995	10184404
Acetone (2-Propanone)	TX	4315	10184404
Acetonitrile	TX	4320	10184404
Acrolein (Propenal)	TX	4325	10184404
Acrylonitrile	TX	4340	10184404
Allyl alcohol	TX	4350	10184404
Allyl chloride (3-Chloropropene)	TX	4355	10184404
Benzene	TX	4375	10184404
Benzyl chloride	TX	5635	10184404
Bromobenzene	TX	4385	10184404
Bromochloromethane	TX	4390	10184404
Bromodichloromethane	TX	4395	10184404
Bromoform	TX	4400	10184404

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Matrix: ***Non-Potable Water***

Carbon disulfide	TX	4450	10184404
Carbon tetrachloride	TX	4455	10184404
Chlorobenzene	TX	4475	10184404
Chlorodibromomethane	TX	4575	10184404
Chloroethane (Ethyl chloride)	TX	4485	10184404
Chloroform	TX	4505	10184404
Chloroprene (2-Chloro-1,3-butadiene)	TX	4525	10184404
cis-1,2-Dichloroethylene	TX	4645	10184404
cis-1,3-Dichloropropene	TX	4680	10184404
Dibromofluoromethane	TX	4590	10184404
Dibromomethane (Methylene bromide)	TX	4595	10184404
Dichlorodifluoromethane (Freon-12)	TX	4625	10184404
Diethyl ether	TX	4725	10184404
Di-isopropylether (DIPE)	TX	9375	10184404
Epichlorohydrin (1-Chloro-2,3-epoxypropane)	TX	4745	10184404
Ethanol	TX	4750	10184404
Ethyl acetate	TX	4755	10184404
Ethyl methacrylate	TX	4810	10184404
Ethylbenzene	TX	4765	10184404
Ethylene oxide	TX	4795	10184404
Ethyl-t-butylether (ETBE) (2-Ethoxy-2-methylpropane)	TX	4770	10184404
Hexachlorobutadiene	TX	4835	10184404
Iodomethane (Methyl iodide)	TX	4870	10184404
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10184404
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10184404
Isopropylbenzene (Cumene)	TX	4900	10184404
m+p-xylene	TX	5240	10184404
Methacrylonitrile	TX	4925	10184404
Methyl acetate	TX	4940	10184404
Methyl acrylate	TX	4945	10184404

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Matrix: ***Non-Potable Water***

Methyl bromide (Bromomethane)	TX	4950	10184404
Methyl chloride (Chloromethane)	TX	4960	10184404
Methyl methacrylate	TX	4990	10184404
Methyl tert-butyl ether (MTBE)	TX	5000	10184404
Methylcyclohexane	TX	4965	10184404
Methylene chloride (Dichloromethane)	TX	4975	10184404
Naphthalene	TX	5005	10184404
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10184404
n-Butylbenzene	TX	4435	10184404
n-Propylbenzene	TX	5090	10184404
o-Xylene	TX	5250	10184404
Pentachloroethane	TX	5035	10184404
Propionitrile (Ethyl cyanide)	TX	5080	10184404
Pyridine	TX	5095	10184404
sec-Butylbenzene	TX	4440	10184404
Styrene	TX	5100	10184404
T-amylmethylether (TAME)	TX	4370	10184404
tert-Butyl alcohol	TX	4420	10184404
tert-Butylbenzene	TX	4445	10184404
Tetrachloroethylene (Perchloroethylene)	TX	5115	10184404
Toluene	TX	5140	10184404
trans-1,2-Dichloroethylene	TX	4700	10184404
trans-1,3-Dichloropropylene	TX	4685	10184404
trans-1,4-Dichloro-2-butene	TX	4605	10184404
Trichloroethene (Trichloroethylene)	TX	5170	10184404
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10184404
Vinyl acetate	TX	5225	10184404
Vinyl chloride	TX	5235	10184404
Xylene (total)	TX	5260	10184404

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Matrix: ***Non-Potable Water***

Method EPA 8270

Analyte	AB	Analyte ID	Method ID
1,2,4,5-Tetrachlorobenzene	TX	6715	10185203
1,2,4-Trichlorobenzene	TX	5155	10185203
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10185203
1,2-Dichlorobenzene	TX	4610	10185203
1,2-Dinitrobenzene	TX	6155	10185203
1,2-Diphenylhydrazine	TX	6220	10185203
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10185203
1,3-Dichlorobenzene	TX	4615	10185203
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10185203
1,4-Dichlorobenzene	TX	4620	10185203
1,4-Dinitrobenzene	TX	6165	10185203
1,4-Naphthoquinone	TX	6420	10185203
1,4-Phenylenediamine	TX	6630	10185203
1-Chloronaphthalene	TX	5790	10185203
1-Naphthylamine	TX	6425	10185203
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10185203
2,3,4,6-Tetrachlorophenol	TX	6735	10185203
2,4,5-Trichlorophenol	TX	6835	10185203
2,4,5-Trimethylaniline	TX	6880	10185203
2,4,6-Trichlorophenol	TX	6840	10185203
2,4-Diaminotoluene	TX	5880	10185203
2,4-Dichlorophenol	TX	6000	10185203
2,4-Dimethylphenol	TX	6130	10185203
2,4-Dinitrophenol	TX	6175	10185203
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10185203
2,6-Dichlorophenol	TX	6005	10185203
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10185203
2-Acetylaminofluorene	TX	5515	10185203

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-19-23

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

Expiration Date: 4/30/2020

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2019

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Matrix: ***Non-Potable Water***

2-Chloronaphthalene	TX	5795	10185203
2-Chlorophenol	TX	5800	10185203
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10185203
2-Methylaniline (o-Toluidine)	TX	5145	10185203
2-Methylnaphthalene	TX	6385	10185203
2-Methylphenol (o-Cresol)	TX	6400	10185203
2-Naphthylamine	TX	6430	10185203
2-Nitroaniline	TX	6460	10185203
2-Nitrophenol	TX	6490	10185203
2-Picoline (2-Methylpyridine)	TX	5050	10185203
3,3'-Dichlorobenzidine	TX	5945	10185203
3,3'-Dimethylbenzidine	TX	6120	10185203
3-Methylcholanthrene	TX	6355	10185203
3-Methylphenol (m-Cresol)	TX	6405	10185203
3-Nitroaniline	TX	6465	10185203
4-Aminobiphenyl	TX	5540	10185203
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10185203
4-Chloro-3-methylphenol	TX	5700	10185203
4-Chloroaniline	TX	5745	10185203
4-Chlorophenyl phenylether	TX	5825	10185203
4-Dimethyl aminoazobenzene	TX	6105	10185203
4-Methylphenol (p-Cresol)	TX	6410	10185203
4-Nitroaniline	TX	6470	10185203
4-Nitrobiphenyl	TX	6480	10185203
4-Nitrophenol	TX	6500	10185203
4-Nitroquinoline-1-oxide	TX	6510	10185203
5-Chloro-2-methylaniline	TX	5695	10185203
5-Nitro-o-toluidine	TX	6570	10185203
7,12-Dimethylbenz(a) anthracene	TX	6115	10185203
a-a-Dimethylphenethylamine	TX	6125	10185203

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Matrix: ***Non-Potable Water***

Acenaphthene	TX	5500	10185203
Acenaphthylene	TX	5505	10185203
Acetophenone	TX	5510	10185203
Aniline	TX	5545	10185203
Anthracene	TX	5555	10185203
Aramite	TX	5560	10185203
Atrazine	TX	7065	10185203
Azinphos-methyl (Guthion)	TX	7075	10185203
Azobenzene	TX	5562	10185203
Benzenethiol (Thiophenol)	TX	6750	10185203
Benzidine	TX	5595	10185203
Benzo(a)anthracene	TX	5575	10185203
Benzo(a)pyrene	TX	5580	10185203
Benzo(b)fluoranthene	TX	5585	10185203
Benzo(e)pyrene	TX	5605	10185203
Benzo(g,h,i)perylene	TX	5590	10185203
Benzo(k)fluoranthene	TX	5600	10185203
Benzoic acid	TX	5610	10185203
Benzyl alcohol	TX	5630	10185203
Biphenyl	TX	5640	10185203
bis(2-Chloroethoxy)methane	TX	5760	10185203
bis(2-Chloroethyl) ether	TX	5765	10185203
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10185203
Butyl benzyl phthalate	TX	5670	10185203
Caprolactam	TX	7180	10185203
Captan	TX	7190	10185203
Carbaryl (Sevin)	TX	7195	10185203
Carbazole	TX	5680	10185203
Carbophenothion	TX	7220	10185203
Chlorobenzilate	TX	7260	10185203

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Matrix: ***Non-Potable Water***

Chrysene	TX	5855	10185203
Coumaphos	TX	7315	10185203
Demeton	TX	7390	10185203
Demeton	TX	7390	10185203
Demeton-o	TX	7395	10185203
Demeton-s	TX	7385	10185203
Diallate	TX	7405	10185203
Dibenz(a,h) anthracene	TX	5895	10185203
Dibenz(a,j) acridine	TX	5900	10185203
Dibenzofuran	TX	5905	10185203
Dichlorovos (DDVP, Dichlorvos)	TX	8610	10185203
Diethyl phthalate	TX	6070	10185203
Dimethoate	TX	7475	10185203
Dimethoate	TX	7475	10185203
Dimethyl phthalate	TX	6135	10185203
Di-n-butyl phthalate	TX	5925	10185203
Di-n-octyl phthalate	TX	6200	10185203
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10185203
Dioxathion	TX	7495	10185203
Diphenylamine	TX	6205	10185203
Disulfoton	TX	8625	10185203
Ethion	TX	7565	10185203
Ethyl methanesulfonate	TX	6260	10185203
Famphur	TX	7580	10185203
Fluoranthene	TX	6265	10185203
Fluorene	TX	6270	10185203
Hexachlorobenzene	TX	6275	10185203
Hexachlorobutadiene	TX	4835	10185203
Hexachlorocyclopentadiene	TX	6285	10185203
Hexachloroethane	TX	4840	10185203

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Matrix: ***Non-Potable Water***

Hexachlorophene	TX	6290	10185203
Hexachloropropene	TX	6295	10185203
Indeno(1,2,3-cd) pyrene	TX	6315	10185203
Isodrin	TX	7725	10185203
Isophorone	TX	6320	10185203
Isosafrole	TX	6325	10185203
Kepone	TX	7740	10185203
Maleic anhydride	TX	6335	10185203
Methapyrilene	TX	6345	10185203
Methyl methanesulfonate	TX	6375	10185203
Methyl parathion (Parathion, methyl)	TX	7825	10185203
Mevinphos	TX	7850	10185203
Naled	TX	7905	10185203
Naphthalene	TX	5005	10185203
Nitrobenzene	TX	5015	10185203
n-Nitrosodiethylamine	TX	6525	10185203
n-Nitrosodimethylamine	TX	6530	10185203
n-Nitrosodi-n-butylamine	TX	5025	10185203
n-Nitrosodi-n-propylamine	TX	6545	10185203
n-Nitrosodiphenylamine	TX	6535	10185203
n-Nitrosomethylethylamine	TX	6550	10185203
n-Nitrosomorpholine	TX	6555	10185203
n-Nitrosopiperidine	TX	6560	10185203
n-Nitrosopyrrolidine	TX	6565	10185203
o,o,o-Triethyl phosphorothioate	TX	8290	10185203
o-Anisidine	TX	5550	10185203
Parathion, ethyl	TX	7955	10185203
p-Cresidine	TX	5860	10185203
Pentachlorobenzene	TX	6590	10185203
Pentachloronitrobenzene (PCNB)	TX	6600	10185203

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Pentachlorophenol	TX	6605	10185203
Phenacetin	TX	6610	10185203
Phenanthrene	TX	6615	10185203
Phenol	TX	6625	10185203
Phorate	TX	7985	10185203
Phosmet (Imidan)	TX	8000	10185203
Phthalic anhydride	TX	6640	10185203
Pronamide (Kerb)	TX	6650	10185203
Pyrene	TX	6665	10185203
Pyridine	TX	5095	10185203
Quinoline	TX	6670	10185203
Resorcinol	TX	6680	10185203
Safrole	TX	6685	10185203
Sulfotepp	TX	8155	10185203
Terbufos	TX	8185	10185203
Tetrachlorvinphos (Stirophos, Gardona)	TX	8197	10185203
Thionazin (Zinophos)	TX	8235	10185203
Toluene diisocyanate	TX	6775	10185203
Trifluralin (Treflan)	TX	8295	10185203

Method EPA 8290

Analyte	**AB**	**Analyte ID**	**Method ID**
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10187209
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10187209
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10187209
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10187209
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10187209
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10187209
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10187209
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10187209
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10187209

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Matrix: ***Non-Potable Water***

1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10187209
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10187209
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10187209
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10187209
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10187209
2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10187209
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10187209
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10187209
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10187209
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10187209
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10187209
Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10187209
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10187209
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10187209
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10187209
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10187209

Method EPA 8316

Analyte	**AB**	**Analyte ID**	**Method ID**
Acrylamide	TX	4330	10188202

Method EPA 8330

Analyte	**AB**	**Analyte ID**	**Method ID**
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10189807
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10189807
2,4,6-Trinitrotoluene (2,4,6-TNT)	TX	9651	10189807
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10189807
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10189807
2-Amino-4,6-dinitrotoluene (2-am-dnt)	TX	9303	10189807
2-Nitrotoluene	TX	9507	10189807
3-Nitrotoluene	TX	9510	10189807
4-Amino-2,6-dinitrotoluene (4-am-dnt)	TX	9306	10189807
4-Nitrotoluene	TX	9513	10189807

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Matrix: ***Non-Potable Water***

Methyl-2,4,6-trinitrophenylnitramine (tetryl)	TX	6415	10189807
Nitrobenzene	TX	5015	10189807
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	TX	9522	10189807
RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine)	TX	9432	10189807

Method EPA 9014

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	10193803
Total cyanide	TX	1645	10193803

Method EPA 9038

Analyte	**AB**	**Analyte ID**	**Method ID**
Sulfate	TX	2000	10196608

Method EPA 9040

Analyte	**AB**	**Analyte ID**	**Method ID**
pH	TX	1900	10196802

Method EPA 9050

Analyte	**AB**	**Analyte ID**	**Method ID**
Conductivity	TX	1610	10198604

Method EPA 9056

Analyte	**AB**	**Analyte ID**	**Method ID**
Bromide	TX	1540	10199209
Chloride	TX	1575	10199209
Fluoride	TX	1730	10199209
Nitrate as N	TX	1810	10199209
Nitrate-nitrite	TX	1820	10199209
Nitrite as N	TX	1840	10199209
Orthophosphate as P	TX	1870	10199209
Sulfate	TX	2000	10199209

Method EPA 9060

Analyte	**AB**	**Analyte ID**	**Method ID**
Total Organic Carbon (TOC)	TX	2040	10200201

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Matrix: ***Non-Potable Water***

Method EPA 9065

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200405

Method EPA 9066

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200609

Method EPA 9250

Analyte	AB	Analyte ID	Method ID
Chloride	TX	1575	10207202

Method EPA RSK 175

Analyte	AB	Analyte ID	Method ID
2-methylpropane (Isobutane)	TX	4942	10212905
Ethane	TX	4747	10212905
Ethene	TX	4752	10212905
Methane	TX	4926	10212905
n-Butane	TX	5007	10212905
n-Propane	TX	5029	10212905

Method HACH 8000

Analyte	AB	Analyte ID	Method ID
Chemical oxygen demand (COD)	TX	1565	60003001

Method SM 2120 B

Analyte	AB	Analyte ID	Method ID
Color	TX	1605	20223807

Method SM 2310 B (4a)

Analyte	AB	Analyte ID	Method ID
Acidity, as CaCO3	TX	1500	20002806

Method SM 2320 B

Analyte	AB	Analyte ID	Method ID
Alkalinity as CaCO3	TX	1505	20045005

Method SM 2340 B

Analyte	AB	Analyte ID	Method ID

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Matrix: ***Non-Potable Water***

Total hardness as CaCO3	TX	1755	20046008

Method SM 2510 B

Analyte	**AB**	**Analyte ID**	**Method ID**
Conductivity	TX	1610	20048004

Method SM 2540 B

Analyte	**AB**	**Analyte ID**	**Method ID**
Residue-total (total solids)	TX	1950	20004608

Method SM 2540 C

Analyte	**AB**	**Analyte ID**	**Method ID**
Residue-filterable (TDS)	TX	1955	20049803

Method SM 2540 D

Analyte	**AB**	**Analyte ID**	**Method ID**
Residue-nonfilterable (TSS)	TX	1960	20004802

Method SM 3500-Cr B

Analyte	**AB**	**Analyte ID**	**Method ID**
Chromium (VI)	TX	1045	20065809

Method SM 4500-Cl F

Analyte	**AB**	**Analyte ID**	**Method ID**
Total residual chlorine	TX	1940	20080482

Method SM 4500-Cl^- E

Analyte	**AB**	**Analyte ID**	**Method ID**
Chloride	TX	1575	20019209

Method SM 4500-CN^- C

Analyte	**AB**	**Analyte ID**	**Method ID**
Total cyanide	TX	1645	20020808

Method SM 4500-CN^- E

Analyte	**AB**	**Analyte ID**	**Method ID**
Total cyanide	TX	1645	20021209

Method SM 4500-CN^- G

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	20021607

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Matrix: ***Non-Potable Water***

Method SM 4500-H+ B

Analyte	AB	Analyte ID	Method ID
pH	TX	1900	20104603

Method SM 4500-NH3 D

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	20108809
Kjeldahl Nitrogen (Total Kjeldahl Nitrogen-TKN)	TX	1790	20108809

Method SM 4500-NH3 F

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	20023001

Method SM 4500-O G

Analyte	AB	Analyte ID	Method ID
Oxygen, dissolved	TX	1880	20025405

Method SM 4500-P E

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	20025803
Phosphorus	TX	1910	20025803

Method SM 4500-$S2^{-}$ F

Analyte	AB	Analyte ID	Method ID
Sulfide	TX	2005	20126209

Method SM 4500-SiO2 D

Analyte	AB	Analyte ID	Method ID
Silica as SiO2	TX	1990	20127202

Method SM 4500-$SO3^{-}$ B

Analyte	AB	Analyte ID	Method ID
Sulfite	TX	2015	20026806

Method SM 5210 B

Analyte	AB	Analyte ID	Method ID
Biochemical oxygen demand (BOD)	TX	1530	20027401
Carbonaceous BOD, CBOD	TX	1555	20027401

Method SM 5310 B

Analyte	AB	Analyte ID	Method ID

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Matrix: ***Non-Potable Water***

Total Organic Carbon (TOC)	TX	2040	20137206

Method SM 5310 C

Analyte	**AB**	**Analyte ID**	**Method ID**
Total Organic Carbon (TOC)	TX	2040	20138209

Method SM 5540 C

Analyte	**AB**	**Analyte ID**	**Method ID**
Surfactants - MBAS	TX	2025	20144405

Method TCEQ 1005

Analyte	**AB**	**Analyte ID**	**Method ID**
Total Petroleum Hydrocarbons (TPH)	TX	2050	90019208

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Matrix: ***Solid & Chemical Materials***

Method ASTM D2216

Analyte	AB	Analyte ID	Method ID
Moisture	TX	10337	ASTM D2216-05

Method EPA 1010

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10116606

Method EPA 1030

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10117201

Method EPA 1311

Analyte	AB	Analyte ID	Method ID
TCLP	TX	849	10118806

Method EPA 1312

Analyte	AB	Analyte ID	Method ID
SPLP	TX	850	10119003

Method EPA 1668

Analyte	AB	Analyte ID	Method ID
Decachlorobiphenyls	TX	10332	10262007
Dichlorobiphenyls	TX	464	10262007
Heptachlorobiphenyls	TX	486	10262007
Hexachlorobiphenyls	TX	487	10262007
Monochlorobiphenyls	TX	501	10262007
Nonachlorobiphenyls	TX	507	10262007
Octachlorobiphenyls	TX	508	10262007
Pentachlorobiphenyls	TX	515	10262007
Tetrachlorobiphenyls	TX	528	10262007
Trichlorobiphenyls	TX	541	10262007

Method EPA 200.8

Analyte	AB	Analyte ID	Method ID
Uranium	TX	3035	10014605

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Matrix: ***Solid & Chemical Materials***

Method EPA 300.0

Analyte	AB	Analyte ID	Method ID
Bromide	TX	1540	10053200
Chloride	TX	1575	10053200
Fluoride	TX	1730	10053200
Nitrate as N	TX	1810	10053200
Nitrate-nitrite	TX	1820	10053200
Nitrite as N	TX	1840	10053200
Orthophosphate as P	TX	1870	10053200
Sulfate	TX	2000	10053200

Method EPA 310.1

Analyte	AB	Analyte ID	Method ID
Alkalinity as CaCO3	TX	1505	10054805

Method EPA 350.3

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	10064401

Method EPA 365.3

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	10070801
Phosphorus	TX	1910	10070801

Method EPA 6020

Analyte	AB	Analyte ID	Method ID
Aluminum	TX	1000	10156204
Antimony	TX	1005	10156204
Arsenic	TX	1010	10156204
Barium	TX	1015	10156204
Beryllium	TX	1020	10156204
Boron	TX	1025	10156204
Cadmium	TX	1030	10156204
Calcium	TX	1035	10156204
Chromium	TX	1040	10156204

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Houston, TX 77099-4338

Issue Date: 5/1/2019

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Matrix: ***Solid & Chemical Materials***

Cobalt	TX	1050	10156204
Copper	TX	1055	10156204
Iron	TX	1070	10156204
Lead	TX	1075	10156204
Lithium	TX	1080	10156204
Magnesium	TX	1085	10156204
Manganese	TX	1090	10156204
Molybdenum	TX	1100	10156204
Nickel	TX	1105	10156204
Potassium	TX	1125	10156204
Selenium	TX	1140	10156204
Silver	TX	1150	10156204
Sodium	TX	1155	10156204
Strontium	TX	1160	10156204
Thallium	TX	1165	10156204
Tin	TX	1175	10156204
Titanium	TX	1180	10156204
Vanadium	TX	1185	10156204
Zinc	TX	1190	10156204

Method EPA 7196

Analyte	**AB**	**Analyte ID**	**Method ID**
Chromium (VI)	TX	1045	10162206

Method EPA 7470

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10165603

Method EPA 7471

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10166004

Method EPA 8015

Analyte	**AB**	**Analyte ID**	**Method ID**
Diesel range organics (DRO)	TX	9369	10173203

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Matrix: ***Solid & Chemical Materials***

Ethanol	TX	4750	10173203
Ethylene glycol	TX	4785	10173203
Gasoline range organics (GRO)	TX	9408	10173203
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10173203
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10173203
Methanol	TX	4930	10173203
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10173203
n-Propanol (1-Propanol)	TX	5055	10173203
Propylene Glycol	TX	6657	10173203
tert-Butyl alcohol	TX	4420	10173203

Method EPA 8021

Analyte	**AB**	**Analyte ID**	**Method ID**
Benzene	TX	4375	10174400
Ethylbenzene	TX	4765	10174400
m+p-xylene	TX	5240	10174400
Methyl tert-butyl ether (MTBE)	TX	5000	10174400
o-Xylene	TX	5250	10174400
Toluene	TX	5140	10174400
Xylene (total)	TX	5260	10174400

Method EPA 8081

Analyte	**AB**	**Analyte ID**	**Method ID**
4,4'-DDD	TX	7355	10178402
4,4'-DDE	TX	7360	10178402
4,4'-DDT	TX	7365	10178402
Aldrin	TX	7025	10178402
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10178402
alpha-Chlordane	TX	7240	10178402
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10178402
Chlordane (tech.)	TX	7250	10178402
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10178402
Dieldrin	TX	7470	10178402

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Matrix: ***Solid & Chemical Materials***

Endosulfan I	TX	7510	10178402
Endosulfan II	TX	7515	10178402
Endosulfan sulfate	TX	7520	10178402
Endrin	TX	7540	10178402
Endrin aldehyde	TX	7530	10178402
Endrin ketone	TX	7535	10178402
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10178402
gamma-Chlordane	TX	7245	10178402
Heptachlor	TX	7685	10178402
Heptachlor epoxide	TX	7690	10178402
Methoxychlor	TX	7810	10178402
Mirex	TX	7870	10178402
Toxaphene (Chlorinated camphene)	TX	8250	10178402

Method EPA 8082

Analyte	**AB**	**Analyte ID**	**Method ID**
Aroclor-1016 (PCB-1016)	TX	8880	10179201
Aroclor-1221 (PCB-1221)	TX	8885	10179201
Aroclor-1232 (PCB-1232)	TX	8890	10179201
Aroclor-1242 (PCB-1242)	TX	8895	10179201
Aroclor-1248 (PCB-1248)	TX	8900	10179201
Aroclor-1254 (PCB-1254)	TX	8905	10179201
Aroclor-1260 (PCB-1260)	TX	8910	10179201
PCBs (total)	TX	8870	10179201

Method EPA 8260

Analyte	**AB**	**Analyte ID**	**Method ID**
1,1,1,2-Tetrachloroethane	TX	5105	10184404
1,1,1-Trichloroethane	TX	5160	10184404
1,1,2,2-Tetrachloroethane	TX	5110	10184404
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	TX	5195	10184404
1,1,2-Trichloroethane	TX	5165	10184404
1,1-Dichloroethane	TX	4630	10184404

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Matrix: ***Solid & Chemical Materials***

1,1-Dichloroethylene	TX	4640	10184404
1,1-Dichloropropene	TX	4670	10184404
1,2,3-Trichlorobenzene	TX	5150	10184404
1,2,3-Trichloropropane	TX	5180	10184404
1,2,4-Trichlorobenzene	TX	5155	10184404
1,2,4-Trimethylbenzene	TX	5210	10184404
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10184404
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10184404
1,2-Dichlorobenzene	TX	4610	10184404
1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10184404
1,2-Dichloropropane	TX	4655	10184404
1,3,5-Trimethylbenzene	TX	5215	10184404
1,3-Dichlorobenzene	TX	4615	10184404
1,3-Dichloropropane	TX	4660	10184404
1,4-Dichlorobenzene	TX	4620	10184404
1,4-Dioxane (1,4-Diethyleneoxide)	TX	4735	10184404
1-Chlorohexane	TX	4510	10184404
1-Propanol	TX	5060	10184404
2,2-Dichloropropane	TX	4665	10184404
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10184404
2-Chloroethyl vinyl ether	TX	4500	10184404
2-Chlorotoluene	TX	4535	10184404
2-Hexanone (MBK)	TX	4860	10184404
4-Chlorotoluene	TX	4540	10184404
4-Isopropyltoluene (p-Cymene)	TX	4915	10184404
4-Methyl-2-pentanone (MIBK)	TX	4995	10184404
Acetone (2-Propanone)	TX	4315	10184404
Acetonitrile	TX	4320	10184404
Acrolein (Propenal)	TX	4325	10184404
Acrylonitrile	TX	4340	10184404

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Matrix: ***Solid & Chemical Materials***

Allyl chloride (3-Chloropropene)	TX	4355	10184404
Benzene	TX	4375	10184404
Benzyl chloride	TX	5635	10184404
Bromobenzene	TX	4385	10184404
Bromochloromethane	TX	4390	10184404
Bromodichloromethane	TX	4395	10184404
Bromoform	TX	4400	10184404
Carbon disulfide	TX	4450	10184404
Carbon tetrachloride	TX	4455	10184404
Chlorobenzene	TX	4475	10184404
Chlorodibromomethane	TX	4575	10184404
Chloroethane (Ethyl chloride)	TX	4485	10184404
Chloroform	TX	4505	10184404
Chloroprene (2-Chloro-1,3-butadiene)	TX	4525	10184404
cis-1,2-Dichloroethylene	TX	4645	10184404
cis-1,3-Dichloropropene	TX	4680	10184404
Dibromofluoromethane	TX	4590	10184404
Dibromomethane (Methylene bromide)	TX	4595	10184404
Dichlorodifluoromethane (Freon-12)	TX	4625	10184404
Diethyl ether	TX	4725	10184404
Epichlorohydrin (1-Chloro-2,3-epoxypropane)	TX	4745	10184404
Ethanol	TX	4750	10184404
Ethyl acetate	TX	4755	10184404
Ethyl methacrylate	TX	4810	10184404
Ethylbenzene	TX	4765	10184404
Ethylene oxide	TX	4795	10184404
Hexachlorobutadiene	TX	4835	10184404
Iodomethane (Methyl iodide)	TX	4870	10184404
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10184404
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10184404

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Matrix: ***Solid & Chemical Materials***

Isopropylbenzene (Cumene)	TX	4900	10184404
m+p-xylene	TX	5240	10184404
Methacrylonitrile	TX	4925	10184404
Methyl acetate	TX	4940	10184404
Methyl acrylate	TX	4945	10184404
Methyl bromide (Bromomethane)	TX	4950	10184404
Methyl chloride (Chloromethane)	TX	4960	10184404
Methyl methacrylate	TX	4990	10184404
Methyl tert-butyl ether (MTBE)	TX	5000	10184404
Methylcyclohexane	TX	4965	10184404
Methylene chloride (Dichloromethane)	TX	4975	10184404
Naphthalene	TX	5005	10184404
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10184404
n-Butylbenzene	TX	4435	10184404
n-Propylbenzene	TX	5090	10184404
o-Xylene	TX	5250	10184404
Pentachloroethane	TX	5035	10184404
Propionitrile (Ethyl cyanide)	TX	5080	10184404
Pyridine	TX	5095	10184404
sec-Butylbenzene	TX	4440	10184404
Styrene	TX	5100	10184404
tert-Butyl alcohol	TX	4420	10184404
tert-Butylbenzene	TX	4445	10184404
Tetrachloroethylene (Perchloroethylene)	TX	5115	10184404
Toluene	TX	5140	10184404
trans-1,2-Dichloroethylene	TX	4700	10184404
trans-1,3-Dichloropropylene	TX	4685	10184404
trans-1,4-Dichloro-2-butene	TX	4605	10184404
Trichloroethene (Trichloroethylene)	TX	5170	10184404
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10184404

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Matrix: ***Solid & Chemical Materials***

Vinyl acetate	TX	5225	10184404
Vinyl chloride	TX	5235	10184404
Xylene (total)	TX	5260	10184404

Method EPA 8270

Analyte	AB	Analyte ID	Method ID
1,2,4,5-Tetrachlorobenzene	TX	6715	10185203
1,2,4-Trichlorobenzene	TX	5155	10185203
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10185203
1,2-Dichlorobenzene	TX	4610	10185203
1,2-Dinitrobenzene	TX	6155	10185203
1,2-Diphenylhydrazine	TX	6220	10185203
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10185203
1,3-Dichlorobenzene	TX	4615	10185203
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10185203
1,4-Dichlorobenzene	TX	4620	10185203
1,4-Dinitrobenzene	TX	6165	10185203
1,4-Naphthoquinone	TX	6420	10185203
1,4-Phenylenediamine	TX	6630	10185203
1-Chloronaphthalene	TX	5790	10185203
1-Naphthylamine	TX	6425	10185203
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10185203
2,3,4,6-Tetrachlorophenol	TX	6735	10185203
2,4,5-Trichlorophenol	TX	6835	10185203
2,4,5-Trimethylaniline	TX	6880	10185203
2,4,6-Trichlorophenol	TX	6840	10185203
2,4-Diaminotoluene	TX	5880	10185203
2,4-Dichlorophenol	TX	6000	10185203
2,4-Dimethylphenol	TX	6130	10185203
2,4-Dinitrophenol	TX	6175	10185203
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10185203

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Matrix: ***Solid & Chemical Materials***

2,6-Dichlorophenol	TX	6005	10185203
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10185203
2-Acetylaminofluorene	TX	5515	10185203
2-Chloronaphthalene	TX	5795	10185203
2-Chlorophenol	TX	5800	10185203
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10185203
2-Methylaniline (o-Toluidine)	TX	5145	10185203
2-Methylnaphthalene	TX	6385	10185203
2-Methylphenol (o-Cresol)	TX	6400	10185203
2-Naphthylamine	TX	6430	10185203
2-Nitroaniline	TX	6460	10185203
2-Nitrophenol	TX	6490	10185203
2-Picoline (2-Methylpyridine)	TX	5050	10185203
3,3'-Dichlorobenzidine	TX	5945	10185203
3,3'-Dimethylbenzidine	TX	6120	10185203
3-Methylcholanthrene	TX	6355	10185203
3-Methylphenol (m-Cresol)	TX	6405	10185203
3-Nitroaniline	TX	6465	10185203
4-Aminobiphenyl	TX	5540	10185203
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10185203
4-Chloro-3-methylphenol	TX	5700	10185203
4-Chloroaniline	TX	5745	10185203
4-Chlorophenyl phenylether	TX	5825	10185203
4-Methylphenol (p-Cresol)	TX	6410	10185203
4-Nitroaniline	TX	6470	10185203
4-Nitrophenol	TX	6500	10185203
4-Nitroquinoline-1-oxide	TX	6510	10185203
5-Nitro-o-toluidine	TX	6570	10185203
7,12-Dimethylbenz(a) anthracene	TX	6115	10185203
a-a-Dimethylphenethylamine	TX	6125	10185203

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Matrix: ***Solid & Chemical Materials***

Acenaphthene	TX	5500	10185203
Acenaphthylene	TX	5505	10185203
Acetophenone	TX	5510	10185203
Aniline	TX	5545	10185203
Anthracene	TX	5555	10185203
Aramite	TX	5560	10185203
Atrazine	TX	7065	10185203
Azinphos-methyl (Guthion)	TX	7075	10185203
Azobenzene	TX	5562	10185203
Benzenethiol (Thiophenol)	TX	6750	10185203
Benzidine	TX	5595	10185203
Benzo(a)anthracene	TX	5575	10185203
Benzo(a)pyrene	TX	5580	10185203
Benzo(b)fluoranthene	TX	5585	10185203
Benzo(e)pyrene	TX	5605	10185203
Benzo(g,h,i)perylene	TX	5590	10185203
Benzo(k)fluoranthene	TX	5600	10185203
Benzoic acid	TX	5610	10185203
Benzyl alcohol	TX	5630	10185203
Biphenyl	TX	5640	10185203
bis(2-Chloroethoxy)methane	TX	5760	10185203
bis(2-Chloroethyl) ether	TX	5765	10185203
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10185203
Butyl benzyl phthalate	TX	5670	10185203
Caprolactam	TX	7180	10185203
Carbaryl (Sevin)	TX	7195	10185203
Carbazole	TX	5680	10185203
Carbophenothion	TX	7220	10185203
Chlorobenzilate	TX	7260	10185203
Chrysene	TX	5855	10185203

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Demeton	TX	7390	10185203
Demeton-o	TX	7395	10185203
Demeton-s	TX	7385	10185203
Diallate	TX	7405	10185203
Dibenz(a,h) anthracene	TX	5895	10185203
Dibenz(a,j) acridine	TX	5900	10185203
Dibenzo(a,e) pyrene	TX	5890	10185203
Dibenzofuran	TX	5905	10185203
Dichlorovos (DDVP, Dichlorvos)	TX	8610	10185203
Diethyl phthalate	TX	6070	10185203
Dimethoate	TX	7475	10185203
Dimethyl phthalate	TX	6135	10185203
Di-n-butyl phthalate	TX	5925	10185203
Di-n-octyl phthalate	TX	6200	10185203
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10185203
Diphenylamine	TX	6205	10185203
Disulfoton	TX	8625	10185203
Ethyl methanesulfonate	TX	6260	10185203
Fluoranthene	TX	6265	10185203
Fluorene	TX	6270	10185203
Hexachlorobenzene	TX	6275	10185203
Hexachlorobutadiene	TX	4835	10185203
Hexachlorocyclopentadiene	TX	6285	10185203
Hexachloroethane	TX	4840	10185203
Hexachlorophene	TX	6290	10185203
Hexachloropropene	TX	6295	10185203
Indeno(1,2,3-cd) pyrene	TX	6315	10185203
Isodrin	TX	7725	10185203
Isophorone	TX	6320	10185203
Isosafrole	TX	6325	10185203

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Matrix: ***Solid & Chemical Materials***

Kepone	TX	7740	10185203
Malathion	TX	7770	10185203
Methapyrilene	TX	6345	10185203
Methyl methanesulfonate	TX	6375	10185203
Methyl parathion (Parathion, methyl)	TX	7825	10185203
Mevinphos	TX	7850	10185203
Naphthalene	TX	5005	10185203
Nitrobenzene	TX	5015	10185203
n-Nitrosodiethylamine	TX	6525	10185203
n-Nitrosodimethylamine	TX	6530	10185203
n-Nitrosodi-n-butylamine	TX	5025	10185203
n-Nitrosodi-n-propylamine	TX	6545	10185203
n-Nitrosodiphenylamine	TX	6535	10185203
n-Nitrosomethylethylamine	TX	6550	10185203
n-Nitrosomorpholine	TX	6555	10185203
n-Nitrosopiperidine	TX	6560	10185203
n-Nitrosopyrrolidine	TX	6565	10185203
o,o,o-Triethyl phosphorothioate	TX	8290	10185203
o-Anisidine	TX	5550	10185203
Parathion, ethyl	TX	7955	10185203
p-Cresidine	TX	5860	10185203
Pentachlorobenzene	TX	6590	10185203
Pentachloronitrobenzene (PCNB)	TX	6600	10185203
Pentachlorophenol	TX	6605	10185203
Phenacetin	TX	6610	10185203
Phenanthrene	TX	6615	10185203
Phenol	TX	6625	10185203
Phorate	TX	7985	10185203
Pronamide (Kerb)	TX	6650	10185203
Pyrene	TX	6665	10185203

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Matrix: ***Solid & Chemical Materials***

Pyridine	TX	5095	10185203
Quinoline	TX	6670	10185203
Safrole	TX	6685	10185203
Sulfotepp	TX	8155	10185203
Terbufos	TX	8185	10185203
Tetrachlorvinphos (Stirophos, Gardona)	TX	8197	10185203
Thionazin (Zinophos)	TX	8235	10185203
Toluene diisocyanate	TX	6775	10185203

Method EPA 8290

Analyte	AB	Analyte ID	Method ID
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10187209
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10187209
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10187209
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10187209
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10187209
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10187209
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10187209
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10187209
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10187209
1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10187209
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10187209
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10187209
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10187209
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10187209
2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10187209
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10187209
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10187209
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10187209
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10187209
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10187209

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-19-23

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

Expiration Date: 4/30/2020

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2019

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: ***Solid & Chemical Materials***

Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10187209
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10187209
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10187209
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10187209
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10187209

Method EPA 8316

Analyte	**AB**	**Analyte ID**	**Method ID**
Acrylamide	TX	4330	10188202

Method EPA 8330

Analyte	**AB**	**Analyte ID**	**Method ID**
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10189807
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10189807
2,4,6-Trinitrotoluene (2,4,6-TNT)	TX	9651	10189807
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10189807
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10189807
2-Amino-4,6-dinitrotoluene (2-am-dnt)	TX	9303	10189807
2-Nitrotoluene	TX	9507	10189807
3-Nitrotoluene	TX	9510	10189807
4-Amino-2,6-dinitrotoluene (4-am-dnt)	TX	9306	10189807
4-Nitrotoluene	TX	9513	10189807
Methyl-2,4,6-trinitrophenylnitramine (tetryl)	TX	6415	10189807
Nitrobenzene	TX	5015	10189807
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	TX	9522	10189807
RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine)	TX	9432	10189807

Method EPA 9014

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	10193803
Total cyanide	TX	1645	10193803

Method EPA 9038

Analyte	**AB**	**Analyte ID**	**Method ID**
Sulfate	TX	2000	10196608

Texas Commission on Environmental Quality

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Matrix: ***Solid & Chemical Materials***

Method EPA 9040

Analyte	AB	Analyte ID	Method ID
Corrosivity	TX	1615	10197203
pH	TX	1900	10196802

Method EPA 9045

Analyte	AB	Analyte ID	Method ID
Corrosivity	TX	1615	10197805
pH	TX	1900	10197805

Method EPA 9050

Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	10198604

Method EPA 9056

Analyte	AB	Analyte ID	Method ID
Bromide	TX	1540	10199209
Chloride	TX	1575	10199209
Fluoride	TX	1730	10199209
Nitrate as N	TX	1810	10199209
Nitrate-nitrite	TX	1820	10199209
Nitrite as N	TX	1840	10199209
Orthophosphate as P	TX	1870	10199209
Sulfate	TX	2000	10199209

Method EPA 9060

Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	10200201

Method EPA 9065

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200405

Method EPA 9071

Analyte	AB	Analyte ID	Method ID
n-Hexane Extractable Material (HEM) (O&G)	TX	1803	10201204

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

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Issue Date: 5/1/2019

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Matrix: ***Solid & Chemical Materials***

Method	Analyte	AB	Analyte ID	Method ID
EPA 9095	Paint Filter Liquids Test	TX	10312	10204009
EPA 9250	Chloride	TX	1575	10207202
SM 2320 B	Alkalinity as CaCO3	TX	1505	20045005
SM 2510 B	Conductivity	TX	1610	20048004
SM 2540 G	Residue-total (total solids)	TX	1950	20005203
SSA/ASA Part 3:34	Carbon, organic (Walkley-Black)	TX	10340	SSA/ASA Pt 3:34
TCEQ 1005	Total Petroleum Hydrocarbons (TPH)	TX	2050	90019208

10450 Stancliff Rd. Suite 210
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T: +1 281 530 5656
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January 23, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20010618**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 13 sample(s) on Jan 15, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20010618**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS20010618**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 01/23/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20010618				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 149789				
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?		X			1
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		Were MS/MSD RPDs within laboratory QC limits?		X			2
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 01/23/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20010618				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 149789				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports		
Laboratory Name: ALS Laboratory Group		LRC Date: 01/23/2020
Project Name: Houston TX-Wood Preserving Works		Laboratory Job Number: HS20010618
Reviewer Name: Dane Wacasey		Prep Batch Number(s): 149789
ER#[5]	**Description**	
1	Semivolatile Organics Method SW3510/8270, sample WG-1620-FD01-20200114, surrogate 4-Terphenyl-d14 recovered above the control limit due to possible matrix interference.	
1,2	Batch 149789, Semivolatile Organics Method 8270, sample WG-1620-P12-20200113, MS/MSD RPD recovered above the RPD limits for surrogates 2,4,6-Tribromophenol and 2-Fluorobiphenyl. The individual recoveries met acceptance criteria.	

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20010618

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20010618-01	WG-1620-P12-20200113	Groundwater		13-Jan-2020 10:30	15-Jan-2020 11:50	☐
HS20010618-02	WG-1620-FB01-20200113	Water		13-Jan-2020 11:30	15-Jan-2020 11:50	☐
HS20010618-03	WG-1620-MW08-20200113	Groundwater		13-Jan-2020 11:30	15-Jan-2020 11:50	☐
HS20010618-04	WG-1620-MW07-20200113	Groundwater		13-Jan-2020 13:15	15-Jan-2020 11:50	☐
HS20010618-05	WG-1620-P10-20200113	Groundwater		13-Jan-2020 14:20	15-Jan-2020 11:50	☐
HS20010618-06	WG-1620-MW11B-20200114	Groundwater		14-Jan-2020 09:25	15-Jan-2020 11:50	☐
HS20010618-07	WG-1620-MW11A-20200114	Groundwater		14-Jan-2020 10:35	15-Jan-2020 11:50	☐
HS20010618-08	WG-1620-MW10B-20200114	Groundwater		14-Jan-2020 11:35	15-Jan-2020 11:50	☐
HS20010618-09	WG-1620-MW10A-20200114	Groundwater		14-Jan-2020 12:25	15-Jan-2020 11:50	☐
HS20010618-10	WG-1620-MW02-20200114	Groundwater		14-Jan-2020 13:30	15-Jan-2020 11:50	☐
HS20010618-11	WG-1620-MW01A-20200114	Groundwater		14-Jan-2020 14:35	15-Jan-2020 11:50	☐
HS20010618-12	WG-1620-FD01-20200114	Groundwater		14-Jan-2020 14:35	15-Jan-2020 11:50	☐
HS20010618-13	WG-1620-FB02-20200114	Water		14-Jan-2020 15:00	15-Jan-2020 11:50	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-P12-20200113
Collection Date: 13-Jan-2020 10:30

ANALYTICAL REPORT
WorkOrder:HS20010618
Lab ID:HS20010618-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Jan-2020		Analyst: LG
Acenaphthene	U		0.000027	0.00010	mg/L	1	20-Jan-2020 18:20
Acenaphthylene	U		0.000015	0.00010	mg/L	1	20-Jan-2020 18:20
Anthracene	**0.00010**		**0.000014**	**0.00010**	**mg/L**	1	20-Jan-2020 18:20
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	20-Jan-2020 18:20
Dibenzofuran	U		0.000020	0.00010	mg/L	1	20-Jan-2020 18:20
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	20-Jan-2020 18:20
Fluoranthene	U		0.000010	0.00010	mg/L	1	20-Jan-2020 18:20
Fluorene	U		0.000030	0.00010	mg/L	1	20-Jan-2020 18:20
Naphthalene	**0.00016**		**0.000020**	**0.00010**	**mg/L**	1	20-Jan-2020 18:20
Phenol	U		0.000035	0.00020	mg/L	1	20-Jan-2020 18:20
Pyrene	**0.00063**		**0.000019**	**0.00010**	**mg/L**	1	20-Jan-2020 18:20
Surr: 2,4,6-Tribromophenol	*67.8*			*34-129*	*%REC*	*1*	*20-Jan-2020 18:20*
Surr: 2-Fluorobiphenyl	*84.8*			*40-125*	*%REC*	*1*	*20-Jan-2020 18:20*
Surr: 2-Fluorophenol	*68.2*			*20-120*	*%REC*	*1*	*20-Jan-2020 18:20*
Surr: 4-Terphenyl-d14	*92.9*			*40-135*	*%REC*	*1*	*20-Jan-2020 18:20*
Surr: Nitrobenzene-d5	*59.2*			*41-120*	*%REC*	*1*	*20-Jan-2020 18:20*
Surr: Phenol-d6	*66.1*			*20-120*	*%REC*	*1*	*20-Jan-2020 18:20*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB01-20200113
Collection Date: 13-Jan-2020 11:30

ANALYTICAL REPORT
WorkOrder:HS20010618
Lab ID:HS20010618-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Jan-2020		Analyst: LG
2-Methylnaphthalene		U	0.000019	0.00010	mg/L	1	21-Jan-2020 16:43
Acenaphthene		U	0.000027	0.00010	mg/L	1	21-Jan-2020 16:43
Acenaphthylene		U	0.000015	0.00010	mg/L	1	21-Jan-2020 16:43
Anthracene		U	0.000014	0.00010	mg/L	1	21-Jan-2020 16:43
Bis(2-ethylhexyl)phthalate		U	0.000037	0.00020	mg/L	1	21-Jan-2020 16:43
Dibenzofuran		U	0.000020	0.00010	mg/L	1	21-Jan-2020 16:43
Di-n-butyl phthalate		U	0.000020	0.00020	mg/L	1	21-Jan-2020 16:43
Fluoranthene		U	0.000010	0.00010	mg/L	1	21-Jan-2020 16:43
Fluorene		U	0.000030	0.00010	mg/L	1	21-Jan-2020 16:43
Naphthalene		U	0.000020	0.00010	mg/L	1	21-Jan-2020 16:43
Phenanthrene		U	0.000021	0.00010	mg/L	1	21-Jan-2020 16:43
Phenol		U	0.000035	0.00020	mg/L	1	21-Jan-2020 16:43
Pyrene		U	0.000019	0.00010	mg/L	1	21-Jan-2020 16:43
Surr: 2,4,6-Tribromophenol	*73.7*			*34-129*	*%REC*	*1*	*21-Jan-2020 16:43*
Surr: 2-Fluorobiphenyl	*91.9*			*40-125*	*%REC*	*1*	*21-Jan-2020 16:43*
Surr: 2-Fluorophenol	*70.8*			*20-120*	*%REC*	*1*	*21-Jan-2020 16:43*
Surr: 4-Terphenyl-d14	*97.3*			*40-135*	*%REC*	*1*	*21-Jan-2020 16:43*
Surr: Nitrobenzene-d5	*80.7*			*41-120*	*%REC*	*1*	*21-Jan-2020 16:43*
Surr: Phenol-d6	*78.3*			*20-120*	*%REC*	*1*	*21-Jan-2020 16:43*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW08-20200113
Collection Date: 13-Jan-2020 11:30

ANALYTICAL REPORT
WorkOrder:HS20010618
Lab ID:HS20010618-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Jan-2020		Analyst: LG
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	21-Jan-2020 17:02
Acenaphthene	U		0.000027	0.00010	mg/L	1	21-Jan-2020 17:02
Acenaphthylene	U		0.000015	0.00010	mg/L	1	21-Jan-2020 17:02
Anthracene	U		0.000014	0.00010	mg/L	1	21-Jan-2020 17:02
Bis(2-ethylhexyl)phthalate	**0.00021**		**0.000037**	**0.00020**	**mg/L**	1	21-Jan-2020 17:02
Dibenzofuran	U		0.000020	0.00010	mg/L	1	21-Jan-2020 17:02
Fluoranthene	U		0.000010	0.00010	mg/L	1	21-Jan-2020 17:02
Fluorene	U		0.000030	0.00010	mg/L	1	21-Jan-2020 17:02
Naphthalene	U		0.000020	0.00010	mg/L	1	21-Jan-2020 17:02
Phenanthrene	**0.000046**	J	**0.000021**	**0.00010**	**mg/L**	1	21-Jan-2020 17:02
Pyrene	U		0.000019	0.00010	mg/L	1	21-Jan-2020 17:02
Surr: 2,4,6-Tribromophenol	*63.9*			*34-129*	*%REC*	*1*	*21-Jan-2020 17:02*
Surr: 2-Fluorobiphenyl	*70.0*			*40-125*	*%REC*	*1*	*21-Jan-2020 17:02*
Surr: 2-Fluorophenol	*55.9*			*20-120*	*%REC*	*1*	*21-Jan-2020 17:02*
Surr: 4-Terphenyl-d14	*96.0*			*40-135*	*%REC*	*1*	*21-Jan-2020 17:02*
Surr: Nitrobenzene-d5	*62.1*			*41-120*	*%REC*	*1*	*21-Jan-2020 17:02*
Surr: Phenol-d6	*60.3*			*20-120*	*%REC*	*1*	*21-Jan-2020 17:02*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW07-20200113
Collection Date: 13-Jan-2020 13:15

ANALYTICAL REPORT
WorkOrder:HS20010618
Lab ID:HS20010618-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Jan-2020		Analyst: LG
2-Methylnaphthalene	**0.000066**	J	**0.000019**	**0.00010**	**mg/L**	1	21-Jan-2020 17:21
Acenaphthene	U		0.000027	0.00010	mg/L	1	21-Jan-2020 17:21
Acenaphthylene	U		0.000015	0.00010	mg/L	1	21-Jan-2020 17:21
Anthracene	U		0.000014	0.00010	mg/L	1	21-Jan-2020 17:21
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	21-Jan-2020 17:21
Dibenzofuran	**0.000057**	J	**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 17:21
Fluoranthene	**0.00010**		**0.000010**	**0.00010**	**mg/L**	1	21-Jan-2020 17:21
Fluorene	U		0.000030	0.00010	mg/L	1	21-Jan-2020 17:21
Naphthalene	**0.00017**		**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 17:21
Phenanthrene	**0.00014**		**0.000021**	**0.00010**	**mg/L**	1	21-Jan-2020 17:21
Pyrene	U		0.000019	0.00010	mg/L	1	21-Jan-2020 17:21
Surr: 2,4,6-Tribromophenol	*74.6*			*34-129*	*%REC*	*1*	*21-Jan-2020 17:21*
Surr: 2-Fluorobiphenyl	*80.0*			*40-125*	*%REC*	*1*	*21-Jan-2020 17:21*
Surr: 2-Fluorophenol	*59.7*			*20-120*	*%REC*	*1*	*21-Jan-2020 17:21*
Surr: 4-Terphenyl-d14	*85.6*			*40-135*	*%REC*	*1*	*21-Jan-2020 17:21*
Surr: Nitrobenzene-d5	*66.6*			*41-120*	*%REC*	*1*	*21-Jan-2020 17:21*
Surr: Phenol-d6	*71.0*			*20-120*	*%REC*	*1*	*21-Jan-2020 17:21*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-P10-20200113
Collection Date: 13-Jan-2020 14:20

ANALYTICAL REPORT
WorkOrder:HS20010618
Lab ID:HS20010618-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Jan-2020		Analyst: LG
Acenaphthene	U		0.000027	0.00010	mg/L	1	21-Jan-2020 17:40
Acenaphthylene	U		0.000015	0.00010	mg/L	1	21-Jan-2020 17:40
Anthracene	U		0.000014	0.00010	mg/L	1	21-Jan-2020 17:40
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	21-Jan-2020 17:40
Dibenzofuran	U		0.000020	0.00010	mg/L	1	21-Jan-2020 17:40
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	21-Jan-2020 17:40
Fluoranthene	U		0.000010	0.00010	mg/L	1	21-Jan-2020 17:40
Fluorene	U		0.000030	0.00010	mg/L	1	21-Jan-2020 17:40
Naphthalene	**0.00017**		**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 17:40
Phenol	U		0.000035	0.00020	mg/L	1	21-Jan-2020 17:40
Pyrene	U		0.000019	0.00010	mg/L	1	21-Jan-2020 17:40
Surr: 2,4,6-Tribromophenol	*79.3*			*34-129*	*%REC*	*1*	*21-Jan-2020 17:40*
Surr: 2-Fluorobiphenyl	*93.5*			*40-125*	*%REC*	*1*	*21-Jan-2020 17:40*
Surr: 2-Fluorophenol	*78.0*			*20-120*	*%REC*	*1*	*21-Jan-2020 17:40*
Surr: 4-Terphenyl-d14	*99.0*			*40-135*	*%REC*	*1*	*21-Jan-2020 17:40*
Surr: Nitrobenzene-d5	*82.6*			*41-120*	*%REC*	*1*	*21-Jan-2020 17:40*
Surr: Phenol-d6	*78.2*			*20-120*	*%REC*	*1*	*21-Jan-2020 17:40*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW11B-20200114
Collection Date: 14-Jan-2020 09:25

ANALYTICAL REPORT
WorkOrder:HS20010618
Lab ID:HS20010618-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Jan-2020		Analyst: LG
Acenaphthene	**0.033**		**0.00014**	**0.00050**	**mg/L**	5	22-Jan-2020 12:03
Acenaphthylene	**0.0016**		**0.000015**	**0.00010**	**mg/L**	1	21-Jan-2020 18:00
Anthracene	U		0.000014	0.00010	mg/L	1	21-Jan-2020 18:00
Bis(2-ethylhexyl)phthalate	**0.000095**	J	**0.000037**	**0.00020**	**mg/L**	1	21-Jan-2020 18:00
Dibenzofuran	U		0.000020	0.00010	mg/L	1	21-Jan-2020 18:00
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	21-Jan-2020 18:00
Fluoranthene	**0.0024**		**0.000010**	**0.00010**	**mg/L**	1	21-Jan-2020 18:00
Fluorene	**0.00035**		**0.000030**	**0.00010**	**mg/L**	1	21-Jan-2020 18:00
Naphthalene	U		0.000020	0.00010	mg/L	1	21-Jan-2020 18:00
Phenol	U		0.000035	0.00020	mg/L	1	21-Jan-2020 18:00
Pyrene	**0.0023**		**0.000019**	**0.00010**	**mg/L**	1	21-Jan-2020 18:00
Surr: 2,4,6-Tribromophenol	*81.4*			*34-129*	*%REC*	*1*	*21-Jan-2020 18:00*
Surr: 2,4,6-Tribromophenol	*101*			*34-129*	*%REC*	*5*	*22-Jan-2020 12:03*
Surr: 2-Fluorobiphenyl	*90.1*			*40-125*	*%REC*	*5*	*22-Jan-2020 12:03*
Surr: 2-Fluorobiphenyl	*72.9*			*40-125*	*%REC*	*1*	*21-Jan-2020 18:00*
Surr: 2-Fluorophenol	*74.1*			*20-120*	*%REC*	*5*	*22-Jan-2020 12:03*
Surr: 2-Fluorophenol	*56.2*			*20-120*	*%REC*	*1*	*21-Jan-2020 18:00*
Surr: 4-Terphenyl-d14	*92.8*			*40-135*	*%REC*	*1*	*21-Jan-2020 18:00*
Surr: 4-Terphenyl-d14	*123*			*40-135*	*%REC*	*5*	*22-Jan-2020 12:03*
Surr: Nitrobenzene-d5	*80.4*			*41-120*	*%REC*	*5*	*22-Jan-2020 12:03*
Surr: Nitrobenzene-d5	*61.3*			*41-120*	*%REC*	*1*	*21-Jan-2020 18:00*
Surr: Phenol-d6	*60.8*			*20-120*	*%REC*	*1*	*21-Jan-2020 18:00*
Surr: Phenol-d6	*77.3*			*20-120*	*%REC*	*5*	*22-Jan-2020 12:03*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW11A-20200114
Collection Date: 14-Jan-2020 10:35

ANALYTICAL REPORT
WorkOrder:HS20010618
Lab ID:HS20010618-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Jan-2020		Analyst: LG
2-Methylnaphthalene		U	0.000019	0.00010	mg/L	1	21-Jan-2020 18:19
Acenaphthene		U	0.000027	0.00010	mg/L	1	21-Jan-2020 18:19
Acenaphthylene		U	0.000015	0.00010	mg/L	1	21-Jan-2020 18:19
Anthracene		U	0.000014	0.00010	mg/L	1	21-Jan-2020 18:19
Bis(2-ethylhexyl)phthalate		U	0.000037	0.00020	mg/L	1	21-Jan-2020 18:19
Dibenzofuran		U	0.000020	0.00010	mg/L	1	21-Jan-2020 18:19
Fluoranthene		U	0.000010	0.00010	mg/L	1	21-Jan-2020 18:19
Fluorene		U	0.000030	0.00010	mg/L	1	21-Jan-2020 18:19
Naphthalene		U	0.000020	0.00010	mg/L	1	21-Jan-2020 18:19
Phenanthrene		U	0.000021	0.00010	mg/L	1	21-Jan-2020 18:19
Pyrene		U	0.000019	0.00010	mg/L	1	21-Jan-2020 18:19
Surr: 2,4,6-Tribromophenol	*78.8*			*34-129*	*%REC*	*1*	*21-Jan-2020 18:19*
Surr: 2-Fluorobiphenyl	*80.3*			*40-125*	*%REC*	*1*	*21-Jan-2020 18:19*
Surr: 2-Fluorophenol	*56.8*			*20-120*	*%REC*	*1*	*21-Jan-2020 18:19*
Surr: 4-Terphenyl-d14	*92.1*			*40-135*	*%REC*	*1*	*21-Jan-2020 18:19*
Surr: Nitrobenzene-d5	*63.9*			*41-120*	*%REC*	*1*	*21-Jan-2020 18:19*
Surr: Phenol-d6	*65.0*			*20-120*	*%REC*	*1*	*21-Jan-2020 18:19*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW10B-20200114
Collection Date: 14-Jan-2020 11:35

ANALYTICAL REPORT
WorkOrder:HS20010618
Lab ID:HS20010618-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Jan-2020		Analyst: LG
Acenaphthene	**0.069**		**0.00027**	**0.0010**	**mg/L**	10	22-Jan-2020 12:22
Acenaphthylene	**0.00066**		**0.000015**	**0.00010**	**mg/L**	1	21-Jan-2020 18:38
Anthracene	**0.0028**		**0.000014**	**0.00010**	**mg/L**	1	21-Jan-2020 18:38
Bis(2-ethylhexyl)phthalate	**0.00020**		**0.000037**	**0.00020**	**mg/L**	1	21-Jan-2020 18:38
Dibenzofuran	**0.022**		**0.00020**	**0.0010**	**mg/L**	10	22-Jan-2020 12:22
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	21-Jan-2020 18:38
Fluoranthene	**0.0029**		**0.000010**	**0.00010**	**mg/L**	1	21-Jan-2020 18:38
Fluorene	**0.036**		**0.00030**	**0.0010**	**mg/L**	10	22-Jan-2020 12:22
Naphthalene	**0.0021**		**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 18:38
Phenol	U		0.000035	0.00020	mg/L	1	21-Jan-2020 18:38
Pyrene	**0.0013**		**0.000019**	**0.00010**	**mg/L**	1	21-Jan-2020 18:38
Surr: 2,4,6-Tribromophenol	*70.8*			*34-129*	*%REC*	*10*	*22-Jan-2020 12:22*
Surr: 2,4,6-Tribromophenol	*80.7*			*34-129*	*%REC*	*1*	*21-Jan-2020 18:38*
Surr: 2-Fluorobiphenyl	*77.4*			*40-125*	*%REC*	*1*	*21-Jan-2020 18:38*
Surr: 2-Fluorobiphenyl	*85.2*			*40-125*	*%REC*	*10*	*22-Jan-2020 12:22*
Surr: 2-Fluorophenol	*60.1*			*20-120*	*%REC*	*10*	*22-Jan-2020 12:22*
Surr: 2-Fluorophenol	*62.8*			*20-120*	*%REC*	*1*	*21-Jan-2020 18:38*
Surr: 4-Terphenyl-d14	*103*			*40-135*	*%REC*	*10*	*22-Jan-2020 12:22*
Surr: 4-Terphenyl-d14	*89.0*			*40-135*	*%REC*	*1*	*21-Jan-2020 18:38*
Surr: Nitrobenzene-d5	*75.6*			*41-120*	*%REC*	*10*	*22-Jan-2020 12:22*
Surr: Nitrobenzene-d5	*68.2*			*41-120*	*%REC*	*1*	*21-Jan-2020 18:38*
Surr: Phenol-d6	*69.2*			*20-120*	*%REC*	*1*	*21-Jan-2020 18:38*
Surr: Phenol-d6	*74.4*			*20-120*	*%REC*	*10*	*22-Jan-2020 12:22*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW10A-20200114
Collection Date: 14-Jan-2020 12:25

ANALYTICAL REPORT
WorkOrder:HS20010618
Lab ID:HS20010618-09
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Jan-2020		Analyst: LG
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	21-Jan-2020 18:57
Acenaphthene	**0.00011**		**0.000027**	**0.00010**	**mg/L**	1	21-Jan-2020 18:57
Acenaphthylene	U		0.000015	0.00010	mg/L	1	21-Jan-2020 18:57
Anthracene	U		0.000014	0.00010	mg/L	1	21-Jan-2020 18:57
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	21-Jan-2020 18:57
Dibenzofuran	U		0.000020	0.00010	mg/L	1	21-Jan-2020 18:57
Fluoranthene	U		0.000010	0.00010	mg/L	1	21-Jan-2020 18:57
Fluorene	U		0.000030	0.00010	mg/L	1	21-Jan-2020 18:57
Naphthalene	U		0.000020	0.00010	mg/L	1	21-Jan-2020 18:57
Phenanthrene	U		0.000021	0.00010	mg/L	1	21-Jan-2020 18:57
Pyrene	U		0.000019	0.00010	mg/L	1	21-Jan-2020 18:57
Surr: 2,4,6-Tribromophenol	*60.3*			*34-129*	*%REC*	*1*	*21-Jan-2020 18:57*
Surr: 2-Fluorobiphenyl	*77.4*			*40-125*	*%REC*	*1*	*21-Jan-2020 18:57*
Surr: 2-Fluorophenol	*64.6*			*20-120*	*%REC*	*1*	*21-Jan-2020 18:57*
Surr: 4-Terphenyl-d14	*110*			*40-135*	*%REC*	*1*	*21-Jan-2020 18:57*
Surr: Nitrobenzene-d5	*68.5*			*41-120*	*%REC*	*1*	*21-Jan-2020 18:57*
Surr: Phenol-d6	*64.7*			*20-120*	*%REC*	*1*	*21-Jan-2020 18:57*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW02-20200114
Collection Date: 14-Jan-2020 13:30

ANALYTICAL REPORT
WorkOrder:HS20010618
Lab ID:HS20010618-10
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Jan-2020		Analyst: LG
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	21-Jan-2020 19:16
Acenaphthene	**0.0030**		**0.000027**	**0.00010**	**mg/L**	1	21-Jan-2020 19:16
Acenaphthylene	U		0.000015	0.00010	mg/L	1	21-Jan-2020 19:16
Anthracene	**0.00011**		**0.000014**	**0.00010**	**mg/L**	1	21-Jan-2020 19:16
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	21-Jan-2020 19:16
Dibenzofuran	**0.00039**		**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 19:16
Fluoranthene	**0.00024**		**0.000010**	**0.00010**	**mg/L**	1	21-Jan-2020 19:16
Fluorene	**0.0017**		**0.000030**	**0.00010**	**mg/L**	1	21-Jan-2020 19:16
Naphthalene	U		0.000020	0.00010	mg/L	1	21-Jan-2020 19:16
Phenanthrene	**0.00011**		**0.000021**	**0.00010**	**mg/L**	1	21-Jan-2020 19:16
Pyrene	**0.00011**		**0.000019**	**0.00010**	**mg/L**	1	21-Jan-2020 19:16
Surr: 2,4,6-Tribromophenol	*64.5*			*34-129*	*%REC*	*1*	*21-Jan-2020 19:16*
Surr: 2-Fluorobiphenyl	*83.6*			*40-125*	*%REC*	*1*	*21-Jan-2020 19:16*
Surr: 2-Fluorophenol	*62.6*			*20-120*	*%REC*	*1*	*21-Jan-2020 19:16*
Surr: 4-Terphenyl-d14	*99.3*			*40-135*	*%REC*	*1*	*21-Jan-2020 19:16*
Surr: Nitrobenzene-d5	*70.1*			*41-120*	*%REC*	*1*	*21-Jan-2020 19:16*
Surr: Phenol-d6	*66.9*			*20-120*	*%REC*	*1*	*21-Jan-2020 19:16*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW01A-20200114
Collection Date: 14-Jan-2020 14:35

ANALYTICAL REPORT
WorkOrder:HS20010618
Lab ID:HS20010618-11
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Jan-2020		Analyst: LG
2-Methylnaphthalene	**0.00019**		**0.000019**	**0.00010**	**mg/L**	1	21-Jan-2020 19:35
Acenaphthene	**0.024**		**0.00014**	**0.00050**	**mg/L**	5	22-Jan-2020 12:41
Acenaphthylene	**0.00084**		**0.000015**	**0.00010**	**mg/L**	1	21-Jan-2020 19:35
Anthracene	U		0.000014	0.00010	mg/L	1	21-Jan-2020 19:35
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	21-Jan-2020 19:35
Dibenzofuran	**0.0036**		**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 19:35
Fluoranthene	**0.0011**		**0.000010**	**0.00010**	**mg/L**	1	21-Jan-2020 19:35
Fluorene	**0.0064**		**0.000030**	**0.00010**	**mg/L**	1	21-Jan-2020 19:35
Naphthalene	**0.00052**		**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 19:35
Phenanthrene	U		0.000021	0.00010	mg/L	1	21-Jan-2020 19:35
Pyrene	**0.00052**		**0.000019**	**0.00010**	**mg/L**	1	21-Jan-2020 19:35
Surr: 2,4,6-Tribromophenol	*81.3*			*34-129*	*%REC*	*1*	*21-Jan-2020 19:35*
Surr: 2,4,6-Tribromophenol	*82.2*			*34-129*	*%REC*	*5*	*22-Jan-2020 12:41*
Surr: 2-Fluorobiphenyl	*95.4*			*40-125*	*%REC*	*5*	*22-Jan-2020 12:41*
Surr: 2-Fluorobiphenyl	*90.6*			*40-125*	*%REC*	*1*	*21-Jan-2020 19:35*
Surr: 2-Fluorophenol	*68.6*			*20-120*	*%REC*	*1*	*21-Jan-2020 19:35*
Surr: 2-Fluorophenol	*77.7*			*20-120*	*%REC*	*5*	*22-Jan-2020 12:41*
Surr: 4-Terphenyl-d14	*103*			*40-135*	*%REC*	*5*	*22-Jan-2020 12:41*
Surr: 4-Terphenyl-d14	*94.4*			*40-135*	*%REC*	*1*	*21-Jan-2020 19:35*
Surr: Nitrobenzene-d5	*88.0*			*41-120*	*%REC*	*5*	*22-Jan-2020 12:41*
Surr: Nitrobenzene-d5	*80.0*			*41-120*	*%REC*	*1*	*21-Jan-2020 19:35*
Surr: Phenol-d6	*75.8*			*20-120*	*%REC*	*1*	*21-Jan-2020 19:35*
Surr: Phenol-d6	*77.6*			*20-120*	*%REC*	*5*	*22-Jan-2020 12:41*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FD01-20200114
Collection Date: 14-Jan-2020 14:35

ANALYTICAL REPORT
WorkOrder:HS20010618
Lab ID:HS20010618-12
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Jan-2020		Analyst: LG
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	21-Jan-2020 19:54
Acenaphthene	**0.018**		**0.00011**	**0.00040**	**mg/L**	4	22-Jan-2020 13:00
Acenaphthylene	**0.00066**		**0.000015**	**0.00010**	**mg/L**	1	21-Jan-2020 19:54
Anthracene	U		0.000014	0.00010	mg/L	1	21-Jan-2020 19:54
Bis(2-ethylhexyl)phthalate	**0.000074**	J	**0.000037**	**0.00020**	**mg/L**	1	21-Jan-2020 19:54
Dibenzofuran	**0.0021**		**0.000020**	**0.00010**	**mg/L**	1	21-Jan-2020 19:54
Fluoranthene	**0.0012**		**0.000010**	**0.00010**	**mg/L**	1	21-Jan-2020 19:54
Fluorene	**0.0038**		**0.000030**	**0.00010**	**mg/L**	1	21-Jan-2020 19:54
Naphthalene	U		0.000020	0.00010	mg/L	1	21-Jan-2020 19:54
Phenanthrene	U		0.000021	0.00010	mg/L	1	21-Jan-2020 19:54
Pyrene	**0.00059**		**0.000019**	**0.00010**	**mg/L**	1	21-Jan-2020 19:54
Surr: 2,4,6-Tribromophenol	*107*			*34-129*	*%REC*	*1*	*21-Jan-2020 19:54*
Surr: 2,4,6-Tribromophenol	*117*			*34-129*	*%REC*	*4*	*22-Jan-2020 13:00*
Surr: 2-Fluorobiphenyl	*98.7*			*40-125*	*%REC*	*4*	*22-Jan-2020 13:00*
Surr: 2-Fluorobiphenyl	*88.3*			*40-125*	*%REC*	*1*	*21-Jan-2020 19:54*
Surr: 2-Fluorophenol	*59.0*			*20-120*	*%REC*	*1*	*21-Jan-2020 19:54*
Surr: 2-Fluorophenol	*66.0*			*20-120*	*%REC*	*4*	*22-Jan-2020 13:00*
Surr: 4-Terphenyl-d14	*142*	*S*		*40-135*	*%REC*	*4*	*22-Jan-2020 13:00*
Surr: 4-Terphenyl-d14	*129*			*40-135*	*%REC*	*1*	*21-Jan-2020 19:54*
Surr: Nitrobenzene-d5	*63.6*			*41-120*	*%REC*	*1*	*21-Jan-2020 19:54*
Surr: Nitrobenzene-d5	*71.5*			*41-120*	*%REC*	*4*	*22-Jan-2020 13:00*
Surr: Phenol-d6	*80.1*			*20-120*	*%REC*	*4*	*22-Jan-2020 13:00*
Surr: Phenol-d6	*67.3*			*20-120*	*%REC*	*1*	*21-Jan-2020 19:54*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FB02-20200114
Collection Date: 14-Jan-2020 15:00

ANALYTICAL REPORT
WorkOrder:HS20010618
Lab ID:HS20010618-13
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 19-Jan-2020		Analyst: LG
2-Methylnaphthalene		U	0.000019	0.00010	mg/L	1	21-Jan-2020 20:13
Acenaphthene		U	0.000027	0.00010	mg/L	1	21-Jan-2020 20:13
Acenaphthylene		U	0.000015	0.00010	mg/L	1	21-Jan-2020 20:13
Anthracene		U	0.000014	0.00010	mg/L	1	21-Jan-2020 20:13
Bis(2-ethylhexyl)phthalate		U	0.000037	0.00020	mg/L	1	21-Jan-2020 20:13
Dibenzofuran		U	0.000020	0.00010	mg/L	1	21-Jan-2020 20:13
Di-n-butyl phthalate		U	0.000020	0.00020	mg/L	1	21-Jan-2020 20:13
Fluoranthene		U	0.000010	0.00010	mg/L	1	21-Jan-2020 20:13
Fluorene		U	0.000030	0.00010	mg/L	1	21-Jan-2020 20:13
Naphthalene		U	0.000020	0.00010	mg/L	1	21-Jan-2020 20:13
Phenanthrene		U	0.000021	0.00010	mg/L	1	21-Jan-2020 20:13
Phenol		U	0.000035	0.00020	mg/L	1	21-Jan-2020 20:13
Pyrene		U	0.000019	0.00010	mg/L	1	21-Jan-2020 20:13
Surr: 2,4,6-Tribromophenol	*61.9*			*34-129*	*%REC*	*1*	*21-Jan-2020 20:13*
Surr: 2-Fluorobiphenyl	*109*			*40-125*	*%REC*	*1*	*21-Jan-2020 20:13*
Surr: 2-Fluorophenol	*79.0*			*20-120*	*%REC*	*1*	*21-Jan-2020 20:13*
Surr: 4-Terphenyl-d14	*100*			*40-135*	*%REC*	*1*	*21-Jan-2020 20:13*
Surr: Nitrobenzene-d5	*91.2*			*41-120*	*%REC*	*1*	*21-Jan-2020 20:13*
Surr: Phenol-d6	*88.1*			*20-120*	*%REC*	*1*	*21-Jan-2020 20:13*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010618

Batch ID: 149789 **Start Date:** 19 Jan 2020 07:30 **End Date:** 19 Jan 2020 16:00
Method: SV AQ SEP FUN EXTRACT-LOWLEV - 3510C **Prep Code:** 3510_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20010618-01	1	1000 (mL)	1 (mL)	0.001
HS20010618-02	1	1000 (mL)	1 (mL)	0.001
HS20010618-03	1	1000 (mL)	1 (mL)	0.001
HS20010618-04	1	1000 (mL)	1 (mL)	0.001
HS20010618-05	1	1000 (mL)	1 (mL)	0.001
HS20010618-06	1	1000 (mL)	1 (mL)	0.001
HS20010618-07	1	1000 (mL)	1 (mL)	0.001
HS20010618-08	1	1000 (mL)	1 (mL)	0.001
HS20010618-09	1	1000 (mL)	1 (mL)	0.001
HS20010618-10	1	1000 (mL)	1 (mL)	0.001
HS20010618-11	1	1000 (mL)	1 (mL)	0.001
HS20010618-12	1	1000 (mL)	1 (mL)	0.001
HS20010618-13	1	1000 (mL)	1 (mL)	0.001

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010618

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 149789 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Water	
HS20010618-02	WG-1620-FB01-20200113	13 Jan 2020 11:30		19 Jan 2020 15:02	21 Jan 2020 16:43	1
HS20010618-13	WG-1620-FB02-20200114	14 Jan 2020 15:00		19 Jan 2020 15:02	21 Jan 2020 20:13	1
Batch ID: 149789 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Groundwater	
HS20010618-01	WG-1620-P12-20200113	13 Jan 2020 10:30		19 Jan 2020 15:02	20 Jan 2020 18:20	1
HS20010618-03	WG-1620-MW08-20200113	13 Jan 2020 11:30		19 Jan 2020 15:02	21 Jan 2020 17:02	1
HS20010618-04	WG-1620-MW07-20200113	13 Jan 2020 13:15		19 Jan 2020 15:02	21 Jan 2020 17:21	1
HS20010618-05	WG-1620-P10-20200113	13 Jan 2020 14:20		19 Jan 2020 15:02	21 Jan 2020 17:40	1
HS20010618-06	WG-1620-MW11B-20200114	14 Jan 2020 09:25		19 Jan 2020 15:02	22 Jan 2020 12:03	5
HS20010618-06	WG-1620-MW11B-20200114	14 Jan 2020 09:25		19 Jan 2020 15:02	21 Jan 2020 18:00	1
HS20010618-07	WG-1620-MW11A-20200114	14 Jan 2020 10:35		19 Jan 2020 15:02	21 Jan 2020 18:19	1
HS20010618-08	WG-1620-MW10B-20200114	14 Jan 2020 11:35		19 Jan 2020 15:02	22 Jan 2020 12:22	10
HS20010618-08	WG-1620-MW10B-20200114	14 Jan 2020 11:35		19 Jan 2020 15:02	21 Jan 2020 18:38	1
HS20010618-09	WG-1620-MW10A-20200114	14 Jan 2020 12:25		19 Jan 2020 15:02	21 Jan 2020 18:57	1
HS20010618-10	WG-1620-MW02-20200114	14 Jan 2020 13:30		19 Jan 2020 15:02	21 Jan 2020 19:16	1
HS20010618-11	WG-1620-MW01A-20200114	14 Jan 2020 14:35		19 Jan 2020 15:02	22 Jan 2020 12:41	5
HS20010618-11	WG-1620-MW01A-20200114	14 Jan 2020 14:35		19 Jan 2020 15:02	21 Jan 2020 19:35	1
HS20010618-12	WG-1620-FD01-20200114	14 Jan 2020 14:35		19 Jan 2020 15:02	22 Jan 2020 13:00	4
HS20010618-12	WG-1620-FD01-20200114	14 Jan 2020 14:35		19 Jan 2020 15:02	21 Jan 2020 19:54	1

WorkOrder: HS20010618
InstrumentID: SV-6
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	2-Methylnaphthalene	91-57-6	0.000050	0.000060	0.000019	0.00010
A	Acenaphthene	83-32-9	0.000050	0.000059	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000050	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.000047	0.000014	0.00010
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.00012	0.000037	0.00020
A	Dibenzofuran	132-64-9	0.000050	0.000050	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.00011	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000049	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.000053	0.000030	0.00010
A	Naphthalene	91-20-3	0.000050	0.000049	0.000020	0.00010
A	Phenanthrene	85-01-8	0.000050	0.000049	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.000096	0.000035	0.00020
A	Pyrene	129-00-0	0.000050	0.000047	0.000019	0.00010
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0.00020
S	2-Fluorobiphenyl	321-60-8	0	0	0	0.00020
S	2-Fluorophenol	367-12-4	0	0	0	0.00020
S	4-Terphenyl-d14	1718-51-0	0	0	0	0.00020
S	Nitrobenzene-d5	4165-60-0	0	0	0	0.00020
S	Phenol-d6	13127-88-3	0	0	0	0.00020

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010618

QC BATCH REPORT

Batch ID: 149789 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-149789** Units: **ug/L** Analysis Date: **20-Jan-2020 14:13**
Client ID: Run ID: **SV-6_354667** SeqNo: **5441804** PrepDate: **19-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	U	0.10								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Bis(2-ethylhexyl)phthalate	U	0.20								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*3.413*	*0.20*	*5*	*0*	*68.3*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.677*	*0.20*	*5*	*0*	*93.5*	*40 - 125*				
Surr: 2-Fluorophenol	*3.815*	*0.20*	*5*	*0*	*76.3*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.529*	*0.20*	*5*	*0*	*90.6*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.693*	*0.20*	*5*	*0*	*73.9*	*41 - 120*				
Surr: Phenol-d6	*3.844*	*0.20*	*5*	*0*	*76.9*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010618

QC BATCH REPORT

Batch ID: 149789 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCS Sample ID: **LCS-149789** Units: **ug/L** Analysis Date: **20-Jan-2020 14:32**
Client ID: Run ID: **SV-6_354667** SeqNo: **5441805** PrepDate: **19-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	4.12	0.10	5	0	82.4	50 - 120				
Acenaphthene	4.616	0.10	5	0	92.3	45 - 120				
Acenaphthylene	4.438	0.10	5	0	88.8	47 - 120				
Anthracene	4.793	0.10	5	0	95.9	45 - 120				
Bis(2-ethylhexyl)phthalate	5.208	0.20	5	0	104	40 - 139				
Dibenzofuran	4.382	0.10	5	0	87.6	50 - 120				
Di-n-butyl phthalate	5.327	0.20	5	0	107	45 - 123				
Fluoranthene	4.608	0.10	5	0	92.2	45 - 125				
Fluorene	4.509	0.10	5	0	90.2	49 - 120				
Naphthalene	4.352	0.10	5	0	87.0	45 - 120				
Phenanthrene	4.579	0.10	5	0	91.6	45 - 121				
Phenol	4.045	0.20	5	0	80.9	20 - 124				
Pyrene	4.543	0.10	5	0	90.9	40 - 130				
Surr: 2,4,6-Tribromophenol	*3.728*	*0.20*	*5*	*0*	*74.6*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.553*	*0.20*	*5*	*0*	*91.1*	*40 - 125*				
Surr: 2-Fluorophenol	*3.92*	*0.20*	*5*	*0*	*78.4*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.553*	*0.20*	*5*	*0*	*91.1*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.663*	*0.20*	*5*	*0*	*73.3*	*41 - 120*				
Surr: Phenol-d6	*3.85*	*0.20*	*5*	*0*	*77.0*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010618

QC BATCH REPORT

Batch ID: 149789 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MS Sample ID: **HS20010618-01MS** Units: **ug/L** Analysis Date: **20-Jan-2020 18:40**
Client ID: **WG-1620-P12-20200113** Run ID: **SV-6_354667** SeqNo: **5441807** PrepDate: **19-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Methylnaphthalene	4.077	0.10	5	0	81.5	50 - 120				
Acenaphthene	4.554	0.10	5	0	91.1	45 - 120				
Acenaphthylene	4.432	0.10	5	0	88.6	47 - 120				
Anthracene	5.422	0.10	5	0.1005	106	45 - 120				
Bis(2-ethylhexyl)phthalate	5.953	0.20	5	0	119	40 - 139				
Dibenzofuran	4.513	0.10	5	0	90.3	50 - 120				
Di-n-butyl phthalate	5.9	0.20	5	0	118	45 - 123				
Fluoranthene	5.303	0.10	5	0	106	45 - 125				
Fluorene	4.678	0.10	5	0	93.6	49 - 120				
Naphthalene	4.398	0.10	5	0.1605	84.8	45 - 120				
Phenanthrene	5.217	0.10	5	0.0662	103	45 - 121				
Phenol	3.858	0.20	5	0	77.2	20 - 124				
Pyrene	5.985	0.10	5	0.6322	107	40 - 130				
Surr: 2,4,6-Tribromophenol	*4.348*	*0.20*	*5*	*0*	*87.0*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.593*	*0.20*	*5*	*0*	*91.9*	*40 - 125*				
Surr: 2-Fluorophenol	*3.499*	*0.20*	*5*	*0*	*70.0*	*20 - 120*				
Surr: 4-Terphenyl-d14	*5.237*	*0.20*	*5*	*0*	*105*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.192*	*0.20*	*5*	*0*	*63.8*	*41 - 120*				
Surr: Phenol-d6	*3.6*	*0.20*	*5*	*0*	*72.0*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20010618

QC BATCH REPORT

Batch ID: 149789 (0) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MSD Sample ID: **HS20010618-01MSD** Units: **ug/L** Analysis Date: **20-Jan-2020 18:59**
Client ID: **WG-1620-P12-20200113** Run ID: **SV-6_354667** SeqNo: **5441808** PrepDate: **19-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
2-Methylnaphthalene	3.617	0.10	5	0	72.3	50 - 120	4.077	12	20	
Acenaphthene	3.858	0.10	5	0	77.2	45 - 120	4.554	16.6	20	
Acenaphthylene	3.761	0.10	5	0	75.2	47 - 120	4.432	16.4	20	
Anthracene	4.577	0.10	5	0.1005	89.5	45 - 120	5.422	16.9	20	
Bis(2-ethylhexyl)phthalate	5.317	0.20	5	0	106	40 - 139	5.953	11.3	20	
Dibenzofuran	3.783	0.10	5	0	75.7	50 - 120	4.513	17.6	20	
Di-n-butyl phthalate	5.105	0.20	5	0	102	45 - 123	5.9	14.5	20	
Fluoranthene	4.616	0.10	5	0	92.3	45 - 125	5.303	13.8	20	
Fluorene	4	0.10	5	0	80.0	49 - 120	4.678	15.6	20	
Naphthalene	3.832	0.10	5	0.1605	73.4	45 - 120	4.398	13.8	20	
Phenanthrene	4.366	0.10	5	0.0662	86.0	45 - 121	5.217	17.8	20	
Phenol	3.371	0.20	5	0	67.4	20 - 124	3.858	13.5	20	
Pyrene	5.245	0.10	5	0.6322	92.2	40 - 130	5.985	13.2	20	
Surr: 2,4,6-Tribromophenol	*3.502*	*0.20*	*5*	*0*	*70.0*	*34 - 129*	*4.348*	*21.5*	*20*	R
Surr: 2-Fluorobiphenyl	*3.715*	*0.20*	*5*	*0*	*74.3*	*40 - 125*	*4.593*	*21.1*	*20*	R
Surr: 2-Fluorophenol	*2.97*	*0.20*	*5*	*0*	*59.4*	*20 - 120*	*3.499*	*16.3*	*20*	
Surr: 4-Terphenyl-d14	*4.522*	*0.20*	*5*	*0*	*90.4*	*40 - 135*	*5.237*	*14.7*	*20*	
Surr: Nitrobenzene-d5	*2.709*	*0.20*	*5*	*0*	*54.2*	*41 - 120*	*3.192*	*16.4*	*20*	
Surr: Phenol-d6	*3.121*	*0.20*	*5*	*0*	*62.4*	*20 - 120*	*3.6*	*14.3*	*20*	

The following samples were analyzed in this batch:

HS20010618-01	HS20010618-02	HS20010618-03	HS20010618-04
HS20010618-05	HS20010618-06	HS20010618-07	HS20010618-08
HS20010618-09	HS20010618-10	HS20010618-11	HS20010618-12
HS20010618-13			

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20010618**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20010618

Date/Time Received: **15-Jan-2020 11:50**
Received by: **AC**

Checklist completed by: *Paris Frazier* 15-Jan-2020
eSignature | Date

Reviewed by: *Dane J. Wacasey* 15-Jan-2020
eSignature | Date

Matrices: **WATER**

Carrier name: **Client**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	2 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:215992/215990
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.3C/2.3C,2.1C/2.1C. 1.2C/1.2C UC/C	IR25	
Cooler(s)/Kit(s):	44307/45460/BLUE		
Date/Time sample(s) sent to storage:	01.15.2020 17:00		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600
Holland, MI +1 616 399 6070

Chain of Custody Fc

Page 1 of 2

COC ID: 215992

HS20010618

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-08-Rev0 SR 92688 SWMU1
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	eric_matzner@golder.com	e-Mail Address	

A: 8270_LOW_W (5632532 ATZ SemiVolatiles)
B: 8270_LOW_W (5632532 BTZ SemiVolatiles)
C: 8270_LOW_W (5632532 ATZ & BTZ SemiVolatiles)
D
E
F
G
H
I
J

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	WG-1620-P12-20200113	1-13-20	1030	Groundwa	8	2		X									
2	WG-1620-P12MS-20200113		1030	W		2		X									
3	WG-1620-P12MSD-20200113		1030	W		2		X									
4	WG-1620-FB01-20200113		1130	W		2		X									
5	WG-1620-MW08-20200113		1130	W		2	X										
6	WG-1620-MW07-20200113		1315	W		2	X										
7	WG-1620-P10-20200113		1420	W		2		X									
8	WG-1620-MW11B-20200114	1-14-20	0925	W		2		X									
9	WG-1620-MW11A-20200114		1035	W		2	X										
10	WG-1620-MW10B-20200114		1135	W		2		X									

Sampler(s) Please Print & Sign: JOHN BRAYTON

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: [signature]
Date: 1-15-20 Time: 1150
Received by:

Relinquished by:
Date: 1-15-2020 11:50
Time:
Received by (Laboratory): AC

Logged by (Laboratory):
Date:
Time:
Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.
	J/K
44507	2.3
45460	2.1
BLUE	1.2
IR#25	ofline

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[X] TRRP Checklist
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Holland, MI +1 616 399 6070

Chain of Custody Form

Page 2 of 2

COC ID: 215990

HS20010618

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-08-Rev0 SR 92688 SWMU1
Company Name	Golder Associates	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	eric_matzner@golder.com	e-Mail Address	

A 8270_LOW_W (5632532 ATZ SemiVolatiles)
B 8270_LOW_W (5632532 BTZ SemiVolatiles)
C 8270_LOW_W (5632532 ATZ & BTZ SemiVolatiles)
D
E
F
G
H
I
J

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	WG-1620-MW10A-20200114	1-14-20	1225	Groundwa	8	2	X										
2	WG-1620-MW02-20200114		1330	W		2	X										
3	WG-1620-MW01A-20200114		1435	W		2	X										
4	WG-1620-FD01-20200114		1435	W		2	X										
5	WG-1620-FB02-20200114		1500	W		2	X										
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: JOHN BRAYTON

Shipment Method: HAND DELIVERED

Required Turnaround Time: (Check Box) ☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other

Results Due Date:

Relinquished by: | Date: 1-15-20 | Time: 1150 | Received by:

Relinquished by: | Date: 1-15-2020 | Time: 11:50 | Received by (Laboratory): AC

Logged by (Laboratory): | Date: | Time: | Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)

☐ Level II Std QC
☐ Level III Std QC/Raw Data
☐ Level IV SW846/CLP
☐ Other
☒ TRRP Checklist
☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Memorandum

April 6, 2020

To:	Eric Matzner	Ref. No.:	11183954-1620
From:	Chris G. Knight/eew/585-NF	Tel:	512-506-8803
cc:	Jesse Orth, Jon Lang; Julie Lidstone		

Subject: **Data Usability Summary**
HWPW - Groundwater Monitoring (New Wells)
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
March 2020

1. Scope of Data Usability Study

This document details a Data Usability Summary (DUS) of analytical results for groundwater samples collected in support of the HWPW - Groundwater Monitoring (New Wells) at the Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works site during March 2020. Samples were submitted to ALS Environmental (ALS), located in Houston, Texas and are reported in data packages HS20030619, HS20030819, and HS20030961. The intended use of the data is to support the HWPW - Groundwater Monitoring (New Wells) at the site by providing current concentration of chemicals of concern.

Data were reviewed and validated by Chris G. Knight of GHD, in accordance with Title 30 of the Texas Administrative Code Section 350.54 (30 TAC 350.54) as described in the Texas Commission on Environmental Quality (TCEQ) Regulatory Guidance document entitled "Review and Reporting of COC Concentration Data under TRRP", (RG-366/TRRP-13), revised May 2010, herein referred to as "TRRP-13 Guidance". Evaluation of the data was based on information obtained from the chain of custody forms, the finished report forms, method blank data, recovery data from surrogate spikes/laboratory control samples (LCS)/matrix spikes (MS), duplicate data, field quality assurance/quality control (QA/QC) samples, the laboratory review checklists (LRC), and the laboratory exception reports (ER).

A sample collection and analysis summary is presented in Table 1. This summary provides a cross-reference of field sample identification numbers and location identification. Each sample is assigned a unique field identification number.

The validated sample results are presented in Table 2. A summary of the analytical methodology is presented in Table 3.

2. Laboratory Qualifications

The Laboratory's quality assurance program is consistent with the quality standards outlined in the National Environmental Laboratory Accreditation Program (NELAP). This laboratory was accredited under Texas Certification number # TX104704231 at the time the analysis was performed and the certificate is included in Attachment A.

3. Project Objectives

3.1 Sampling/Analytical QA/QC Objectives

The QA/QC program was designed to identify contamination resulting from the sampling, sample transport and analytical process through the analysis of trip blank samples, field duplicate sample sets, and method blanks. The QA/QC program was designed to evaluate the quality of the resulting data with respect to bias and precision through analysis of LCS, MS, and duplicate analyses.

4. Data Review/Validation Results

4.1 Sample Holding Time and Preservation

Samples were shipped with a chain of custody and the paper work was filled out properly. All samples were properly preserved, delivered on ice, and stored by the laboratory at the required temperature (0-6°C).

The sample chain of custody documents and the analytical reports were used to determine sample holding times. All samples were prepared and analyzed within the required holding times.

4.2 Sample Containers

Sample containers used were certified pre-cleaned glass and plastic containers provided by the laboratory. These containers meet or exceed analyte specifications established in the United States Environmental Protection Agency (USEPA) *Specifications and Guidance for Contaminant-free Sample Containers*.

4.3 Calibrations

According to the LRC, initial calibration and continuing calibration data met the criteria for the selected method.

4.4 Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures. As these were not discrete samples handled in the field, these blanks are not listed on the sample identification cross-reference list found in the data packages.

For this study, laboratory method blanks were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch and results are reported in the laboratory data packages.

The method blank results were non-detect or below the method quantitation limit (MQL), indicating that laboratory contamination was not a factor for this investigation.

4.5 Internal Standard and Surrogate Spike Recoveries

Recoveries of internal standards are addressed in the LRC of the data packages. All internal standard recoveries associated with the compounds of interest were acceptable per the LRC.

In accordance with the methods employed, all samples, blanks, and QC samples analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and total petroleum hydrocarbons (TPH) are spiked with surrogate compounds prior to sample analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project. Each individual surrogate compound is expected to meet the laboratory control limits. According to the TRRP-13 Guidelines, one outlying surrogate is acceptable for methods with multiple surrogate spike compounds as long as the recovery is at least ten percent. Samples analyzed at elevated sample dilutions (five times or greater) were not assessed.

Surrogate recoveries were assessed against laboratory control limits and/or the guidance in TRRP-13. All surrogate recoveries met the above criteria.

4.6 Laboratory Control Sample Analysis

LCS or LCS/laboratory control sample duplicate (LCSD) are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects. The relative percent difference (RPD) of the LCS/LCSD recoveries is used to evaluate analytical precision. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project.

For this study, LCS or LCS/LCSD were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch.

The LCS or LCS/LCSD contained all analytes specified in the methods. All LCS recoveries and/or RPDs were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision (where applicable) with the following exception:

i) One LCS/LCSD was reported with an elevated RPD for TPH (C6-C12). The associated sample result was non-detect and would not be affected by the indicated variability. No further action was required.

4.7 Matrix Spike Analysis

To evaluate the effects of sample matrices on the preparation process, measurement procedures, and accuracy of a particular analysis, samples are spiked with known concentrations of the analytes of interest

and analyzed as MS/matrix spike duplicate (MSD) samples. The RPD between the MS and MSD is used to assess analytical precision.

MS/MSD analyses were performed as specified in Table 1. The recovery ranges established by the laboratory is adopted as the acceptance criteria for the project.

The MS/MSD samples were spiked with all analytes specified in the methods. All percent recoveries and the RPD value were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision.

The laboratory also performed additional MS/MSD analyses on non-site samples. These cannot be used to assess accuracy and precision for the site samples.

4.8 Duplicate Sample Analyses

Analytical precision is evaluated based on the analysis of laboratory duplicate samples. For this study, duplicate samples were prepared and analyzed by the laboratory for arsenic analysis. The RPD established by the laboratory are adopted as the acceptance criteria for the project.

The laboratory performed duplicate analyses on non-site samples. These cannot be used to assess precision for the site samples.

4.9 Field QA/QC Samples

The field QA/QC consisted of three trip blank sample and two field duplicate sample sets.

Trip Blank Sample Analysis

To evaluate contamination from sample collection, transportation, storage, and analytical activities, one trip blank sample was submitted to the laboratory for VOCs analysis. All results were non-detect for the compounds of interest.

Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, two field duplicate sample sets were collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples must be less than thirty percent for water samples. The RPDs are only used when sample concentrations are above the estimated regions of detection.

Field duplicate summary data are presented in Table 2. All field duplicate results were within acceptable agreement, demonstrating acceptable sampling and analytical precision with the following exceptions (see Table 4):

i) WG-1620-MW70C-20200312 and WG-1620-FD01-20200312 did show some variability in SVOCs results and were qualified as estimated.

4.10 Field Procedures

Golder Associates, Inc. collected groundwater samples in accordance with their Standard Operating Procedures (SOP) for sample collection.

4.11 Analyte Reporting

The laboratory reported detected results for each analyte down to the sample detection limit (SDL), which is defined as the method detection limit (MDL) with sample-specific adjustments for dilutions, aliquot size, volumes, etc. Positive analyte detections less than the MQL but greater than the SDL were qualified as estimated (J) in Table 2 unless qualified otherwise in this memorandum.

The detectability check standard (DCS) results supported the laboratory MDLs.

5. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are usable for the purpose of supporting the HWPW - Groundwater Monitoring (New Wells) at the site by providing current concentration of chemicals of concern with the specific qualifications noted herein.

Table 1

Sample Collection and Analysis Summary
HWPW - Groundwater Monitoring (New Wells)
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
March 2020

					Analysis/Parameters				
Sample Identification	**Location**	**Matrix**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**VOCs**	**SVOCs**	**TPH**	**Arsenic**	**Comments**
WG-1620-MW54B-20200311	MW-54B	Water	03/11/2020	14:20	X	X		X	
WQ-1620-MW99C-20200311	MW-99C	Water	03/11/2020	15:35	X	X		X	MS/MSD-P
WG-1620-MW91A-20200312	MW-91A	Water	03/12/2020	09:20	X	X		X	
WG-1620-MW70C-20200312	MW-70C	Water	03/12/2020	10:35	X	X		X	
WG-1620-FD01-20200312	MW-70C	Water	03/12/2020	10:35	X	X		X	Field duplicate of MW70C
WG-1620-MW76B-20200312	MW-76B	Water	03/12/2020	10:35	X	X	X	X	
WG-1620-MW97A-20200312	MW-97A	Water	03/12/2020	11:47	X	X	X	X	MS/MSD-P
WG-1620-MW84A-20200312	MW-84A	Water	03/12/2020	12:15	X	X		X	MS/MSD-P
WG-1620-MW98A-20200312	MW-98A	Water	03/12/2020	12:54	X	X	X	X	
WG-1620-MW92B-20200312	MW-92B	Water	03/12/2020	13:20	X	X		X	
WG-1620-MW98B-20200312	MW-98B	Water	03/12/2020	13:53	X	X	X	X	
WG-1620-MW93B-20200312	MW-93B	Water	03/12/2020	14:35	X	X		X	
WG-1620-MW50B-20200312	MW-50B	Water	03/12/2020	15:20	X	X	X	X	
WG-1620-MW94A-20200312	MW-94A	Water	03/12/2020	15:45	X	X		X	
WQ-1620-TB01-20200312	-	Water	03/12/2020	-	X				Trip Blank
WQ-1620-TB02-20200312	-	Water	03/12/2020	-	X				Trip Blank
WG-1620-MW95A-20200317	MW-95A	Water	03/17/2020	09:10	X	X		X	
WG-1620-MW96B-20200317	MW-96B	Water	03/17/2020	10:25	X	X		X	

Table 1

Sample Collection and Analysis Summary
HWPW - Groundwater Monitoring (New Wells)
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
March 2020

					Analysis/Parameters				
Sample Identification	**Location**	**Matrix**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**VOCs**	**SVOCs**	**TPH**	**Arsenic**	**Comments**
WG-1620-FD02-20200317	MW-96B	Water	03/17/2020	10:25	X	X		X	Field duplicate of MW96B
WG-1620-MW61B-20200317	MW61B	Water	03/17/2020	11:45	X	X		X	
WG-1620-MW88A-20200317	MW-88A	Water	03/17/2020	12:55	X	X		X	MS/MSD-P
WG-1620-MW88B-20200317	MW-88B	Water	03/17/2020	13:50	X	X		X	
WG-1620-MW60B-20200317	MW60B	Water	03/17/2020	15:15	X	X		X	
WQ-1620-TB01-20200317	-	Water	03/17/2020	-	X				Trip Blank
WG-1620-MW60AR-20200320	MW-60AR	Water	03/20/2020	08:55	X	X		X	
WG-1620-MW47A-20200320	MW-47A	Water	03/20/2020	10:30	X	X		X	
WQ-1620-TB01-20200320	-	Water	03/20/2020	-	X				Trip Blank

Notes:

VOCs - Volatile Organic Compounds
SVOCs - Semi-volatile Organic Compounds
TPH - Total Petroleum Hydrocarbons
MS/MSD-P - Matrix Spike/ Matrix Spike Duplicate (partial parameters)
"-" - Not Applicable

Table 2

Analytical Results Summary
HWPW - Groundwater Monitoring (New Wells)
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
March 2020

	Location ID:	MW-47A	MW-50B	MW-54B	MW-60AR
	Sample Name:	WG-1620-MW47A-20200320	WG-1620-MW50B-20200312	WG-1620-MW54B-20200311	WG-1620-MW60AR-20200320
	Sample Date:	03/20/2020	03/12/2020	03/11/2020	03/20/2020
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	0.00043 J	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	0.0068	0.0011	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	0.0033	<0.00020	<0.00020
Xylenes (total)	mg/L	<0.00030	0.0056	0.0018	<0.00030
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000022	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000042	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000060	<0.000059	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000044	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000022	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.000019	0.016	0.00011	<0.000019
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000021	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000049	<0.000047	<0.000047
Acenaphthene	mg/L	<0.000027	0.020	0.0093	<0.000027
Acenaphthylene	mg/L	<0.000015	0.00028	0.000087 J	<0.000015
Anthracene	mg/L	<0.000014	0.0016	0.00017	<0.000014
Benzo(a)anthracene	mg/L	<0.000050	<0.000052	<0.000051	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.000021	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000031	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	0.00011 J	<0.000039	0.000089 J	0.000063 J
Chrysene	mg/L	<0.000021	<0.000022	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	0.000076 J	0.000038 J	0.000033 J	<0.000020
Dibenzofuran	mg/L	<0.000020	0.015	0.000076 J	<0.000020

Table 2

Analytical Results Summary
HWPW - Groundwater Monitoring (New Wells)
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
March 2020

Location ID:		MW-47A	MW-50B	MW-54B	MW-60AR
Sample Name:		WG-1620-MW47A-20200320	WG-1620-MW50B-20200312	WG-1620-MW54B-20200311	WG-1620-MW60AR-20200320
Sample Date:		03/20/2020	03/12/2020	03/11/2020	03/20/2020
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
Fluoranthene	mg/L	<0.000010	0.0011	0.000022 J	<0.000010
Fluorene	mg/L	<0.000030	0.011	0.00015	<0.000030
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000026	<0.000025	<0.000025
Naphthalene	mg/L	<0.000020	0.31	0.0021	<0.000020
Nitrobenzene	mg/L	<0.000024	<0.000025	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000082	<0.000080	<0.000079
Phenanthrene	mg/L	<0.000021	0.016	0.0028	<0.000021
Phenol	mg/L	<0.000035	<0.000036	<0.000035	<0.000035
Pyrene	mg/L	<0.000019	0.00059	<0.000019	<0.000019
Total Petroleum Hydrocarbons					
Total Petroleum Hydrocarbons	mg/L	--	2.10	--	--
Total Petroleum Hydrocarbons (>C12-C28)	mg/L	--	1.1	--	--
Total Petroleum Hydrocarbons (>C28-C35)	mg/L	--	<0.19	--	--
Total Petroleum Hydrocarbons (C6-C12)	mg/L	--	1.0	--	--
Metals					
Arsenic	mg/L	0.000566 J	0.00372	0.00117 J	0.00189 J

Table 2

Analytical Results Summary
HWPW - Groundwater Monitoring (New Wells)
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
March 2020

	Location ID:	MW-70C	MW-70C	MW-76B	MW-84A
	Sample Name:	WG-1620-MW70C-20200312	WG-1620-FD01-20200312	WG-1620-MW76B-20200312	WG-1620-MW84A-20200312
	Sample Date:	03/12/2020	03/12/2020 Duplicate	03/12/2020	03/12/2020
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	0.010	0.0089	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	0.057	0.052	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	0.034	0.032	<0.00020	<0.00020
Xylenes (total)	mg/L	0.064	0.061	<0.00030	<0.00030
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000022	<0.000022	<0.000022	<0.000021
2,4-Dimethylphenol	mg/L	0.00041	<0.000041	<0.000042	<0.000041
2,4-Dinitrotoluene	mg/L	<0.000060	<0.000060	<0.000060	<0.000059
2,6-Dinitrotoluene	mg/L	<0.000044	<0.000043	<0.000044	<0.000043
2-Chloronaphthalene	mg/L	<0.000022	<0.000022	<0.000022	<0.000021
2-Methylnaphthalene	mg/L	0.067 J	0.098 J	<0.000020	<0.000019
4,6-Dinitro-2-methylphenol	mg/L	<0.000021	<0.000021	<0.000021	<0.000020
4-Nitrophenol	mg/L	<0.000049	<0.000048	<0.000049	<0.000048
Acenaphthene	mg/L	0.059 J	0.087 J	<0.000028	<0.000028
Acenaphthylene	mg/L	<0.000016	0.00074	<0.000016	<0.000015
Anthracene	mg/L	0.0049 J	0.0082 J	<0.000015	<0.000014
Benzo(a)anthracene	mg/L	<0.000052	0.000079 J	<0.000052	<0.000051
Benzo(a)pyrene	mg/L	<0.000021	<0.000021	<0.000021	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000031	<0.000031	<0.000031	<0.000031
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000039	0.000052 J	<0.000039	<0.000038
Chrysene	mg/L	<0.000022	0.000061 J	<0.000022	<0.000021
Di-n-butylphthalate (DBP)	mg/L	0.000061 J	0.00010 J	0.000025 J	<0.000020
Dibenzofuran	mg/L	0.055 J	0.078 J	<0.000021	<0.000020

Analytical Results Summary
HWPW - Groundwater Monitoring (New Wells)
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
March 2020

Location ID:		MW-70C	MW-70C	MW-76B	MW-84A
Sample Name:		WG-1620-MW70C-20200312	WG-1620-FD01-20200312	WG-1620-MW76B-20200312	WG-1620-MW84A-20200312
Sample Date:		03/12/2020	03/12/2020 Duplicate	03/12/2020	03/12/2020
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
Fluoranthene	mg/L	0.0030 J	0.0053 J	<0.000010	<0.000010
Fluorene	mg/L	0.028 J	0.038 J	<0.000031	<0.000031
N-Nitrosodiphenylamine	mg/L	<0.000026	<0.000026	<0.000026	<0.000026
Naphthalene	mg/L	1.6 J	2.5 J	0.000096 J	0.000023 J
Nitrobenzene	mg/L	<0.000025	<0.000025	<0.000025	<0.000024
Pentachlorophenol	mg/L	<0.000082	<0.000081	<0.000082	<0.000081
Phenanthrene	mg/L	0.040	0.054	<0.000022	<0.000021
Phenol	mg/L	<0.000036	<0.000036	<0.000036	<0.000036
Pyrene	mg/L	0.0017 J	0.0029 J	<0.000020	<0.000019
Total Petroleum Hydrocarbons					
Total Petroleum Hydrocarbons	mg/L	--	--	<0.19	--
Total Petroleum Hydrocarbons (>C12-C28)	mg/L	--	--	<0.19	--
Total Petroleum Hydrocarbons (>C28-C35)	mg/L	--	--	<0.19	--
Total Petroleum Hydrocarbons (C6-C12)	mg/L	--	--	<0.19	--
Metals					
Arsenic	mg/L	0.00598	0.00470	0.00115 J	0.00464

Table 2

Analytical Results Summary
HWPW - Groundwater Monitoring (New Wells)
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
March 2020

Location ID:		MW-88A	MW-88B	MW-91A	MW-92B
Sample Name:		WG-1620-MW88A-20200317	WG-1620-MW88B-20200317	WG-1620-MW91A-20200312	WG-1620-MW92B-20200312
Sample Date:		03/17/2020	03/17/2020	03/12/2020	03/12/2020
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	<0.00020	0.00049 J
Xylenes (total)	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000022	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	<0.000042	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000061	<0.000059
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000044	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000022	<0.000021
2-Methylnaphthalene	mg/L	<0.000019	<0.000019	<0.000020	<0.000019
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000021	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000049	<0.000047
Acenaphthene	mg/L	0.0015	<0.000027	<0.000028	<0.000027
Acenaphthylene	mg/L	<0.000015	<0.000015	<0.000016	<0.000015
Anthracene	mg/L	<0.000014	<0.000014	<0.000015	<0.000014
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000053	<0.000051
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.000021	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000032	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	0.00010 J	<0.000037	<0.000039	<0.000037
Chrysene	mg/L	<0.000021	<0.000021	<0.000022	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	0.000031 J	<0.000020
Dibenzofuran	mg/L	<0.000020	<0.000020	<0.000021	<0.000020

Table 2

Analytical Results Summary
HWPW - Groundwater Monitoring (New Wells)
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
March 2020

Location ID:		MW-88A	MW-88B	MW-91A	MW-92B
Sample Name:		WG-1620-MW88A-20200317	WG-1620-MW88B-20200317	WG-1620-MW91A-20200312	WG-1620-MW92B-20200312
Sample Date:		03/17/2020	03/17/2020	03/12/2020	03/12/2020
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
Fluoranthene	mg/L	0.00025	<0.000010	<0.000011	<0.000010
Fluorene	mg/L	0.00026	<0.000030	<0.000032	<0.000030
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000026	<0.000025
Naphthalene	mg/L	<0.000020	<0.000020	0.000083 J	<0.000020
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000025	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000083	<0.000080
Phenanthrene	mg/L	<0.000021	<0.000021	<0.000022	<0.000021
Phenol	mg/L	<0.000035	<0.000035	<0.000037	<0.000035
Pyrene	mg/L	0.00053	<0.000019	<0.000020	<0.000019
Total Petroleum Hydrocarbons					
Total Petroleum Hydrocarbons	mg/L	--	--	--	--
Total Petroleum Hydrocarbons (>C12-C28)	mg/L	--	--	--	--
Total Petroleum Hydrocarbons (>C28-C35)	mg/L	--	--	--	--
Total Petroleum Hydrocarbons (C6-C12)	mg/L	--	--	--	--
Metals					
Arsenic	mg/L	0.00355	0.00166 J	0.00989	0.00201

Table 2

Analytical Results Summary
HWPW - Groundwater Monitoring (New Wells)
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
March 2020

Location ID:		MW-93B	MW-94A	MW-95A	MW-96B
Sample Name:		WG-1620-MW93B-20200312	WG-1620-MW94A-20200312	WG-1620-MW95A-20200317	WG-1620-MW96B-20200317
Sample Date:		03/12/2020	03/12/2020	03/17/2020	03/17/2020
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	0.00092 J	<0.00020	<0.00020	<0.00020
Xylenes (total)	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000022	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000041	<0.000041	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000059	<0.000060	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000043	<0.000043	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000022	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.000019	<0.000020	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000021	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000048	<0.000048	<0.000047	<0.000047
Acenaphthene	mg/L	0.000039 J	<0.000028	<0.000027	<0.000027
Acenaphthylene	mg/L	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	mg/L	<0.000014	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	mg/L	<0.000051	<0.000052	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.000021	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000031	<0.000031	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000038	0.000056 J	<0.000037	0.00035
Chrysene	mg/L	<0.000021	<0.000022	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000021	<0.000020	<0.000020
Dibenzofuran	mg/L	0.000071 J	<0.000021	<0.000020	<0.000020

Table 2

Analytical Results Summary
HWPW - Groundwater Monitoring (New Wells)
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
March 2020

Location ID:		MW-93B	MW-94A	MW-95A	MW-96B
Sample Name:		WG-1620-MW93B-20200312	WG-1620-MW94A-20200312	WG-1620-MW95A-20200317	WG-1620-MW96B-20200317
Sample Date:		03/12/2020	03/12/2020	03/17/2020	03/17/2020
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
Fluoranthene	mg/L	<0.000010	<0.000010	<0.000010	<0.000010
Fluorene	mg/L	0.000058 J	<0.000031	<0.000030	<0.000030
N-Nitrosodiphenylamine	mg/L	<0.000026	<0.000026	<0.000025	<0.000025
Naphthalene	mg/L	<0.000020	<0.000021	<0.000020	<0.000020
Nitrobenzene	mg/L	<0.000024	<0.000025	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000081	<0.000081	<0.000079	<0.000079
Phenanthrene	mg/L	0.00016	<0.000022	<0.000021	<0.000021
Phenol	mg/L	<0.000036	<0.000036	<0.000035	<0.000035
Pyrene	mg/L	<0.000019	<0.000020	<0.000019	<0.000019
Total Petroleum Hydrocarbons					
Total Petroleum Hydrocarbons	mg/L	--	--	--	--
Total Petroleum Hydrocarbons (>C12-C28)	mg/L	--	--	--	--
Total Petroleum Hydrocarbons (>C28-C35)	mg/L	--	--	--	--
Total Petroleum Hydrocarbons (C6-C12)	mg/L	--	--	--	--
Metals					
Arsenic	mg/L	0.00455	0.00540	0.000977 J	0.00312

Table 2

Analytical Results Summary
HWPW - Groundwater Monitoring (New Wells)
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
March 2020

Location ID:		MW-96B	MW-97A	MW-98A	MW-98B
Sample Name:		WG-1620-FD02-20200317	WG-1620-MW97A-20200312	WG-1620-MW98A-20200312	WG-1620-MW98B-20200312
Sample Date:		03/17/2020	03/12/2020	03/12/2020	03/12/2020
		Duplicate			
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	0.00065 J	0.0020
Xylenes (total)	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	0.000078 J	<0.000041
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000059	<0.000059	<0.000059
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000043	<0.000043
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.000019	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000048	<0.000048
Acenaphthene	mg/L	<0.000027	<0.000027	0.000040 J	<0.000028
Acenaphthylene	mg/L	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	mg/L	<0.000014	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	mg/L	<0.000050	<0.000051	<0.000051	<0.000051
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000031	<0.000031
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	0.00013 J	<0.000037	<0.000038	<0.000038
Chrysene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
Dibenzofuran	mg/L	<0.000020	<0.000020	<0.000020	<0.000020

Analytical Results Summary
HWPW - Groundwater Monitoring (New Wells)
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
March 2020

Location ID:		MW-96B	MW-97A	MW-98A	MW-98B
Sample Name:		WG-1620-FD02-20200317	WG-1620-MW97A-20200312	WG-1620-MW98A-20200312	WG-1620-MW98B-20200312
Sample Date:		03/17/2020	03/12/2020	03/12/2020	03/12/2020
		Duplicate			
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
Fluoranthene	mg/L	<0.000010	<0.000010	0.000018 J	<0.000010
Fluorene	mg/L	<0.000030	<0.000030	<0.000031	<0.000031
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000026	<0.000026
Naphthalene	mg/L	<0.000020	<0.000020	0.000042 J	0.000036 J
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000080	<0.000081	<0.000081
Phenanthrene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
Phenol	mg/L	<0.000035	<0.000035	<0.000036	<0.000036
Pyrene	mg/L	<0.000019	<0.000019	<0.000019	<0.000019
Total Petroleum Hydrocarbons					
Total Petroleum Hydrocarbons	mg/L	--	<0.19	1.00	0.380 J
Total Petroleum Hydrocarbons (>C12-C28)	mg/L	--	<0.19	1.0	0.38 J
Total Petroleum Hydrocarbons (>C28-C35)	mg/L	--	<0.19	<0.19	<0.19
Total Petroleum Hydrocarbons (C6-C12)	mg/L	--	<0.19	<0.19	<0.19
Metals					
Arsenic	mg/L	0.00311	0.00121 J	0.00963	0.00165 J

Table 2

Analytical Results Summary
HWPW - Groundwater Monitoring (New Wells)
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
March 2020

	Location ID:	MW-99C	MW60B	MW61B
	Sample Name:	WQ-1620-MW99C-20200311	WG-1620-MW60B-20200317	WG-1620-MW61B-20200317
	Sample Date:	03/11/2020	03/17/2020	03/17/2020
Parameters	**Unit**			
Volatile Organic Compounds				
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010
Toluene	mg/L	0.00078 J	<0.00020	<0.00020
Xylenes (total)	mg/L	<0.00030	<0.00030	<0.00030
Semi-volatile Organic Compounds				
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000041	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000059	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000043	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	0.000086 J	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000048	<0.000047	<0.000047
Acenaphthene	mg/L	<0.000028	<0.000027	<0.000027
Acenaphthylene	mg/L	<0.000015	<0.000015	<0.000015
Anthracene	mg/L	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	mg/L	<0.000051	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000031	<0.000030	<0.000030
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	0.000070 J	0.00092	0.00015 J
Chrysene	mg/L	<0.000021	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	0.000047 J	<0.000020
Dibenzofuran	mg/L	<0.000020	<0.000020	<0.000020

Table 2

Analytical Results Summary
HWPW - Groundwater Monitoring (New Wells)
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
March 2020

Location ID:		**MW-99C**	**MW60B**	**MW61B**
Sample Name:		**WQ-1620-MW99C-20200311**	**WG-1620-MW60B-20200317**	**WG-1620-MW61B-20200317**
Sample Date:		**03/11/2020**	**03/17/2020**	**03/17/2020**
Parameters	**Unit**			
Semi-volatile Organic Compounds (Continued)				
Fluoranthene	mg/L	<0.000010	0.000015 J	<0.000010
Fluorene	mg/L	<0.000031	<0.000030	<0.000030
N-Nitrosodiphenylamine	mg/L	<0.000026	<0.000025	<0.000025
Naphthalene	mg/L	0.00018	<0.000020	<0.000020
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000081	<0.000079	<0.000079
Phenanthrene	mg/L	0.000053 J	<0.000021	<0.000021
Phenol	mg/L	<0.000036	<0.000035	<0.000035
Pyrene	mg/L	<0.000019	<0.000019	<0.000019
Total Petroleum Hydrocarbons				
Total Petroleum Hydrocarbons	mg/L	--	--	--
Total Petroleum Hydrocarbons (>C12-C28)	mg/L	--	--	--
Total Petroleum Hydrocarbons (>C28-C35)	mg/L	--	--	--
Total Petroleum Hydrocarbons (C6-C12)	mg/L	--	--	--
Metals				
Arsenic	mg/L	0.000866 J	0.00234	0.00461

Notes:

< - Not detected at the associated reporting limit
J - Estimated concentration
"--" - Not analyzed

Table 3

Analytical Methods
HWPW - Groundwater Monitoring (New Wells)
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
March 2020

			Holding Time	
Parameter	**Method**	**Matrix**	**Collection to Extraction (Days)**	**Extraction to Analysis (Days)**
VOCs	SW-846 8260C	Water	-	14
SVOCs	SW-846 8270D	Water	7	40
TPH	TX1005	Water	14	40
Arsenic	SW-846 6020A	Water	-	180

Notes:

VOCs - Volatile Organic Compounds
SVOCs - Semi-volatile Organic Compounds
TPH - Total Petroleum Hydrocarbons
"-" - Not Applicable

Method References:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions

Table 4

Qualified Sample Data Due to Variability in Field Duplicate Results
HWPW - Groundwater Monitoring (New Wells)
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
March 2020

Parameter	Analyte	RPD	Sample ID	Qualified Result	Field Duplicate Sample ID	Qualified Result	Units
SVOCs	2-Methylnaphthalene	37.6	WG-1620-MW70C-20200312	0.067 J	WG-1620-FD01-20200312	0.098 J	mg/L
	Acenaphthene	38.4		0.059 J		0.087 J	mg/L
	Anthracene	50.4		0.0049 J		0.0082 J	mg/L
	Dibenzofuran	34.6		0.055 J		0.078 J	mg/L
	Di-n-butylphthalate (DBP)	48.4		0.000061 J		0.00010 J	mg/L
	Fluoranthene	55.4		0.0030 J		0.0053 J	mg/L
	Fluorene	30.3		0.028 J		0.038 J	mg/L
	Naphthalene	43.9		1.6 J		2.5 J	mg/L
	Pyrene	52.2		0.0017 J		0.0029 J	mg/L

Notes:

RPD - Relative Percent Difference
SVOCs - Semi-volatile Organic Compounds
J - Estimated concentration

Attachment A
Laboratory NELAP Certificate

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Issue Date: 5/1/2019

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Matrix: ***Drinking Water***

Method EPA 1613

Analyte	AB	Analyte ID	Method ID
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10120408

Method EPA 200.8

Analyte	AB	Analyte ID	Method ID
Copper	TX	1055	10014605
Lead	TX	1075	10014605

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Matrix: ***Non-Potable Water***

Method EPA 1010

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10116606

Method EPA 120.1

Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	10006403

Method EPA 1311

Analyte	AB	Analyte ID	Method ID
TCLP	TX	849	10118806

Method EPA 1312

Analyte	AB	Analyte ID	Method ID
SPLP	TX	850	10119003

Method EPA 160.4

Analyte	AB	Analyte ID	Method ID
Residue-volatile	TX	1970	10010409

Method EPA 1613

Analyte	AB	Analyte ID	Method ID
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10120408
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10120408
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10120408
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10120408
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10120408
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10120408
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10120408
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10120408
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10120408
1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10120408
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10120408
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10120408
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10120408
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10120408

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Matrix: ***Non-Potable Water***

2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10120408
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10120408
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10120408
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10120408
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10120408
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10120408
Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10120408
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10120408
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10120408
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10120408
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10120408

Method EPA 1664

Analyte	**AB**	**Analyte ID**	**Method ID**
n-Hexane Extractable Material (HEM) (O&G)	TX	1803	10127807

Method EPA 180.1

Analyte	**AB**	**Analyte ID**	**Method ID**
Turbidity	TX	2055	10011606

Method EPA 200.8

Analyte	**AB**	**Analyte ID**	**Method ID**
Aluminum	TX	1000	10014605
Antimony	TX	1005	10014605
Arsenic	TX	1010	10014605
Barium	TX	1015	10014605
Beryllium	TX	1020	10014605
Boron	TX	1025	10014605
Cadmium	TX	1030	10014605
Calcium	TX	1035	10014605
Chromium	TX	1040	10014605
Cobalt	TX	1050	10014605
Copper	TX	1055	10014605
Iron	TX	1070	10014605

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Matrix: ***Non-Potable Water***

Lead	TX	1075	10014605
Magnesium	TX	1085	10014605
Manganese	TX	1090	10014605
Molybdenum	TX	1100	10014605
Nickel	TX	1105	10014605
Potassium	TX	1125	10014605
Selenium	TX	1140	10014605
Silver	TX	1150	10014605
Sodium	TX	1155	10014605
Strontium	TX	1160	10014605
Thallium	TX	1165	10014605
Tin	TX	1175	10014605
Titanium	TX	1180	10014605
Uranium	TX	3035	10014605
Vanadium	TX	1185	10014605
Zinc	TX	1190	10014605

Method EPA 245.1

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10036609

Method EPA 300.0

Analyte	**AB**	**Analyte ID**	**Method ID**
Bromide	TX	1540	10053200
Chloride	TX	1575	10053200
Fluoride	TX	1730	10053200
Nitrate as N	TX	1810	10053200
Nitrate-nitrite	TX	1820	10053200
Nitrite as N	TX	1840	10053200
Orthophosphate as P	TX	1870	10053200
Sulfate	TX	2000	10053200

Method EPA 325.1

Analyte	**AB**	**Analyte ID**	**Method ID**

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Matrix: ***Non-Potable Water***

Chloride	TX	1575	10056801

Method EPA 335.1

Analyte	AB	Analyte ID	Method ID
Amenable cyanide	TX	1510	10060001

Method EPA 335.2

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	10278203

Method EPA 335.4

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	10061402

Method EPA 350.3

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	10064401

Method EPA 365.3

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	10070801
Phosphorus	TX	1910	10070801

Method EPA 375.4

Analyte	AB	Analyte ID	Method ID
Sulfate	TX	2000	10073800

Method EPA 376.1

Analyte	AB	Analyte ID	Method ID
Sulfide	TX	2005	10074201

Method EPA 410.4

Analyte	AB	Analyte ID	Method ID
Chemical oxygen demand (COD)	TX	1565	10077404

Method EPA 415.1

Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	10078407

Method EPA 420.1

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10079400

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Matrix: ***Non-Potable Water***

Method EPA 420.4

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10080203

Method EPA 6020

Analyte	AB	Analyte ID	Method ID
Aluminum	TX	1000	10156419
Antimony	TX	1005	10156419
Arsenic	TX	1010	10156419
Barium	TX	1015	10156419
Beryllium	TX	1020	10156419
Boron	TX	1025	10156419
Cadmium	TX	1030	10156419
Calcium	TX	1035	10156419
Chromium	TX	1040	10156419
Cobalt	TX	1050	10156419
Copper	TX	1055	10156419
Iron	TX	1070	10156419
Lead	TX	1075	10156419
Lithium	TX	1080	10156419
Magnesium	TX	1085	10156419
Manganese	TX	1090	10156419
Molybdenum	TX	1100	10156419
Nickel	TX	1105	10156419
Potassium	TX	1125	10156419
Selenium	TX	1140	10156419
Silver	TX	1150	10156419
Sodium	TX	1155	10156419
Strontium	TX	1160	10156419
Thallium	TX	1165	10156419
Tin	TX	1175	10156419
Titanium	TX	1180	10156419

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Matrix: ***Non-Potable Water***

Vanadium	TX	1185	10156419
Zinc	TX	1190	10156419

Method EPA 608

Analyte	AB	Analyte ID	Method ID
4,4'-DDD	TX	7355	10103603
4,4'-DDE	TX	7360	10103603
4,4'-DDT	TX	7365	10103603
Aldrin	TX	7025	10103603
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10103603
alpha-Chlordane	TX	7240	10103603
Aroclor-1016 (PCB-1016)	TX	8880	10103603
Aroclor-1221 (PCB-1221)	TX	8885	10103603
Aroclor-1232 (PCB-1232)	TX	8890	10103603
Aroclor-1242 (PCB-1242)	TX	8895	10103603
Aroclor-1248 (PCB-1248)	TX	8900	10103603
Aroclor-1254 (PCB-1254)	TX	8905	10103603
Aroclor-1260 (PCB-1260)	TX	8910	10103603
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10103603
Chlordane (tech.)	TX	7250	10103603
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10103603
Dieldrin	TX	7470	10103603
Endosulfan I	TX	7510	10103603
Endosulfan II	TX	7515	10103603
Endosulfan sulfate	TX	7520	10103603
Endrin	TX	7540	10103603
Endrin aldehyde	TX	7530	10103603
Endrin ketone	TX	7535	10103603
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10103603
gamma-Chlordane	TX	7245	10103603
Heptachlor	TX	7685	10103603

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Matrix: ***Non-Potable Water***

Heptachlor epoxide	TX	7690	10103603
Methoxychlor	TX	7810	10103603
Toxaphene (Chlorinated camphene)	TX	8250	10103603

Method EPA 624

Analyte	AB	Analyte ID	Method ID
1,1,1-Trichloroethane	TX	5160	10107207
1,1,2,2-Tetrachloroethane	TX	5110	10107207
1,1,2-Trichloroethane	TX	5165	10107207
1,1-Dichloroethane	TX	4630	10107207
1,1-Dichloroethylene	TX	4640	10107207
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10107207
1,2-Dichlorobenzene	TX	4610	10107207
1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10107207
1,2-Dichloropropane	TX	4655	10107207
1,3-Dichlorobenzene	TX	4615	10107207
1,4-Dichlorobenzene	TX	4620	10107207
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10107207
2-Chloroethyl vinyl ether	TX	4500	10107207
Acetone (2-Propanone)	TX	4315	10107207
Acrolein (Propenal)	TX	4325	10107207
Acrylonitrile	TX	4340	10107207
Benzene	TX	4375	10107207
Bromodichloromethane	TX	4395	10107207
Bromoform	TX	4400	10107207
Carbon tetrachloride	TX	4455	10107207
Chlorobenzene	TX	4475	10107207
Chlorodibromomethane	TX	4575	10107207
Chloroethane (Ethyl chloride)	TX	4485	10107207
Chloroform	TX	4505	10107207
cis-1,2-Dichloroethylene	TX	4645	10107207

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Matrix: ***Non-Potable Water***

cis-1,3-Dichloropropene	TX	4680	10107207
Ethylbenzene	TX	4765	10107207
m+p-xylene	TX	5240	10107207
Methyl bromide (Bromomethane)	TX	4950	10107207
Methyl chloride (Chloromethane)	TX	4960	10107207
Methyl tert-butyl ether (MTBE)	TX	5000	10107207
Methylene chloride (Dichloromethane)	TX	4975	10107207
Naphthalene	TX	5005	10107207
o-Xylene	TX	5250	10107207
Tetrachloroethylene (Perchloroethylene)	TX	5115	10107207
Toluene	TX	5140	10107207
trans-1,2-Dichloroethylene	TX	4700	10107207
trans-1,3-Dichloropropylene	TX	4685	10107207
Trichloroethene (Trichloroethylene)	TX	5170	10107207
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10107207
Vinyl chloride	TX	5235	10107207
Xylene (total)	TX	5260	10107207

Method EPA 625

Analyte	**AB**	**Analyte ID**	**Method ID**
1,2,4,5-Tetrachlorobenzene	TX	6715	10107401
1,2,4-Trichlorobenzene	TX	5155	10107401
1,2-Dichlorobenzene	TX	4610	10107401
1,2-Diphenylhydrazine	TX	6220	10107401
1,3-Dichlorobenzene	TX	4615	10107401
1,4-Dichlorobenzene	TX	4620	10107401
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10107401
2,4,5-Trichlorophenol	TX	6835	10107401
2,4,6-Trichlorophenol	TX	6840	10107401
2,4-Dichlorophenol	TX	6000	10107401
2,4-Dimethylphenol	TX	6130	10107401

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-19-23

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

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10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2019

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Matrix: ***Non-Potable Water***

2,4-Dinitrophenol	TX	6175	10107401
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10107401
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10107401
2-Chloronaphthalene	TX	5795	10107401
2-Chlorophenol	TX	5800	10107401
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10107401
2-Methylphenol (o-Cresol)	TX	6400	10107401
2-Nitrophenol	TX	6490	10107401
3,3'-Dichlorobenzidine	TX	5945	10107401
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10107401
4-Chloro-3-methylphenol	TX	5700	10107401
4-Chlorophenyl phenylether	TX	5825	10107401
4-Methylphenol (p-Cresol)	TX	6410	10107401
4-Nitrophenol	TX	6500	10107401
Acenaphthene	TX	5500	10107401
Acenaphthylene	TX	5505	10107401
Anthracene	TX	5555	10107401
Benzidine	TX	5595	10107401
Benzo(a)anthracene	TX	5575	10107401
Benzo(a)pyrene	TX	5580	10107401
Benzo(b)fluoranthene	TX	5585	10107401
Benzo(g,h,i)perylene	TX	5590	10107401
Benzo(k)fluoranthene	TX	5600	10107401
bis(2-Chloroethoxy)methane	TX	5760	10107401
bis(2-Chloroethyl) ether	TX	5765	10107401
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10107401
Butyl benzyl phthalate	TX	5670	10107401
Chrysene	TX	5855	10107401
Dibenz(a,h) anthracene	TX	5895	10107401
Diethyl phthalate	TX	6070	10107401

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Matrix: ***Non-Potable Water***

Dimethyl phthalate	TX	6135	10107401
Di-n-butyl phthalate	TX	5925	10107401
Di-n-octyl phthalate	TX	6200	10107401
Fluoranthene	TX	6265	10107401
Fluorene	TX	6270	10107401
Hexachlorobenzene	TX	6275	10107401
Hexachlorobutadiene	TX	4835	10107401
Hexachlorocyclopentadiene	TX	6285	10107401
Hexachloroethane	TX	4840	10107401
Indeno(1,2,3-cd) pyrene	TX	6315	10107401
Isophorone	TX	6320	10107401
Naphthalene	TX	5005	10107401
Nitrobenzene	TX	5015	10107401
n-Nitrosodiethylamine	TX	6525	10107401
n-Nitrosodimethylamine	TX	6530	10107401
n-Nitrosodi-n-butylamine	TX	5025	10107401
n-Nitrosodi-n-propylamine	TX	6545	10107401
n-Nitrosodiphenylamine	TX	6535	10107401
Pentachlorobenzene	TX	6590	10107401
Pentachlorophenol	TX	6605	10107401
Phenanthrene	TX	6615	10107401
Phenol	TX	6625	10107401
Pyrene	TX	6665	10107401
Pyridine	TX	5095	10107401

Method EPA 7196

Analyte	**AB**	**Analyte ID**	**Method ID**
Chromium (VI)	TX	1045	10162206

Method EPA 7470

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10165603

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Matrix: ***Non-Potable Water***

Method EPA 8011

Analyte	AB	Analyte ID	Method ID
1,2,3-Trichloropropane	TX	5180	10173009
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10173009
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10173009

Method EPA 8015

Analyte	AB	Analyte ID	Method ID
Diesel range organics (DRO)	TX	9369	10173203
Ethanol	TX	4750	10173203
Ethylene glycol	TX	4785	10173203
Gasoline range organics (GRO)	TX	9408	10173203
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10173203
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10173203
Methanol	TX	4930	10173203
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10173203
n-Propanol (1-Propanol)	TX	5055	10173203
Propylene Glycol	TX	6657	10173203
tert-Butyl alcohol	TX	4420	10173203

Method EPA 8021

Analyte	AB	Analyte ID	Method ID
Benzene	TX	4375	10174400
Ethylbenzene	TX	4765	10174400
m+p-xylene	TX	5240	10174400
Methyl tert-butyl ether (MTBE)	TX	5000	10174400
o-Xylene	TX	5250	10174400
Toluene	TX	5140	10174400
Xylene (total)	TX	5260	10174400

Method EPA 8081

Analyte	AB	Analyte ID	Method ID
4,4'-DDD	TX	7355	10178402
4,4'-DDE	TX	7360	10178402

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Matrix: ***Non-Potable Water***

4,4'-DDT	TX	7365	10178402
Aldrin	TX	7025	10178402
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10178402
alpha-Chlordane	TX	7240	10178402
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10178402
Chlordane (tech.)	TX	7250	10178402
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10178402
Dieldrin	TX	7470	10178402
Endosulfan I	TX	7510	10178402
Endosulfan II	TX	7515	10178402
Endosulfan sulfate	TX	7520	10178402
Endrin	TX	7540	10178402
Endrin aldehyde	TX	7530	10178402
Endrin ketone	TX	7535	10178402
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10178402
gamma-Chlordane	TX	7245	10178402
Heptachlor	TX	7685	10178402
Heptachlor epoxide	TX	7690	10178402
Hexachlorobenzene	TX	6275	10178402
Methoxychlor	TX	7810	10178402
Mirex	TX	7870	10178402
Toxaphene (Chlorinated camphene)	TX	8250	10178402

Method EPA 8082

Analyte	**AB**	**Analyte ID**	**Method ID**
Aroclor-1016 (PCB-1016)	TX	8880	10179201
Aroclor-1221 (PCB-1221)	TX	8885	10179201
Aroclor-1232 (PCB-1232)	TX	8890	10179201
Aroclor-1242 (PCB-1242)	TX	8895	10179201
Aroclor-1248 (PCB-1248)	TX	8900	10179201
Aroclor-1254 (PCB-1254)	TX	8905	10179201

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Matrix: ***Non-Potable Water***

Aroclor-1260 (PCB-1260)	TX	8910	10179201
PCBs (total)	TX	8870	10179201

Method EPA 8151

Analyte	AB	Analyte ID	Method ID
2,4,5-T	TX	8655	10183003
2,4-D	TX	8545	10183003
2,4-DB	TX	8560	10183003
Dalapon	TX	8555	10183003
Dicamba	TX	8595	10183003
Dichloroprop (Dichlorprop, Weedone)	TX	8605	10183003
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10183003
MCPA	TX	7775	10183003
MCPP	TX	7780	10183003
Silvex (2,4,5-TP)	TX	8650	10183003

Method EPA 8260

Analyte	AB	Analyte ID	Method ID
1,1,1,2-Tetrachloroethane	TX	5105	10184404
1,1,1-Trichloroethane	TX	5160	10184404
1,1,2,2-Tetrachloroethane	TX	5110	10184404
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	TX	5195	10184404
1,1,2-Trichloroethane	TX	5165	10184404
1,1-Dichloroethane	TX	4630	10184404
1,1-Dichloroethylene	TX	4640	10184404
1,1-Dichloropropene	TX	4670	10184404
1,2,3-Trichlorobenzene	TX	5150	10184404
1,2,3-Trichloropropane	TX	5180	10184404
1,2,4-Trichlorobenzene	TX	5155	10184404
1,2,4-Trimethylbenzene	TX	5210	10184404
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10184404
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10184404
1,2-Dichlorobenzene	TX	4610	10184404

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Matrix: ***Non-Potable Water***

1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10184404
1,2-Dichloropropane	TX	4655	10184404
1,3,5-Trimethylbenzene	TX	5215	10184404
1,3-Dichlorobenzene	TX	4615	10184404
1,3-Dichloropropane	TX	4660	10184404
1,4-Dichlorobenzene	TX	4620	10184404
1,4-Dioxane (1,4-Diethyleneoxide)	TX	4735	10184404
1-Chlorohexane	TX	4510	10184404
1-Propanol	TX	5060	10184404
2,2-Dichloropropane	TX	4665	10184404
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10184404
2-Chloroethyl vinyl ether	TX	4500	10184404
2-Chlorotoluene	TX	4535	10184404
2-Hexanone (MBK)	TX	4860	10184404
2-Pentanone	TX	5045	10184404
4-Chlorotoluene	TX	4540	10184404
4-Isopropyltoluene (p-Cymene)	TX	4915	10184404
4-Methyl-2-pentanone (MIBK)	TX	4995	10184404
Acetone (2-Propanone)	TX	4315	10184404
Acetonitrile	TX	4320	10184404
Acrolein (Propenal)	TX	4325	10184404
Acrylonitrile	TX	4340	10184404
Allyl alcohol	TX	4350	10184404
Allyl chloride (3-Chloropropene)	TX	4355	10184404
Benzene	TX	4375	10184404
Benzyl chloride	TX	5635	10184404
Bromobenzene	TX	4385	10184404
Bromochloromethane	TX	4390	10184404
Bromodichloromethane	TX	4395	10184404
Bromoform	TX	4400	10184404

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Matrix: ***Non-Potable Water***

Carbon disulfide	TX	4450	10184404
Carbon tetrachloride	TX	4455	10184404
Chlorobenzene	TX	4475	10184404
Chlorodibromomethane	TX	4575	10184404
Chloroethane (Ethyl chloride)	TX	4485	10184404
Chloroform	TX	4505	10184404
Chloroprene (2-Chloro-1,3-butadiene)	TX	4525	10184404
cis-1,2-Dichloroethylene	TX	4645	10184404
cis-1,3-Dichloropropene	TX	4680	10184404
Dibromofluoromethane	TX	4590	10184404
Dibromomethane (Methylene bromide)	TX	4595	10184404
Dichlorodifluoromethane (Freon-12)	TX	4625	10184404
Diethyl ether	TX	4725	10184404
Di-isopropylether (DIPE)	TX	9375	10184404
Epichlorohydrin (1-Chloro-2,3-epoxypropane)	TX	4745	10184404
Ethanol	TX	4750	10184404
Ethyl acetate	TX	4755	10184404
Ethyl methacrylate	TX	4810	10184404
Ethylbenzene	TX	4765	10184404
Ethylene oxide	TX	4795	10184404
Ethyl-t-butylether (ETBE) (2-Ethoxy-2-methylpropane)	TX	4770	10184404
Hexachlorobutadiene	TX	4835	10184404
Iodomethane (Methyl iodide)	TX	4870	10184404
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10184404
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10184404
Isopropylbenzene (Cumene)	TX	4900	10184404
m+p-xylene	TX	5240	10184404
Methacrylonitrile	TX	4925	10184404
Methyl acetate	TX	4940	10184404
Methyl acrylate	TX	4945	10184404

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Matrix: ***Non-Potable Water***

Methyl bromide (Bromomethane)	TX	4950	10184404
Methyl chloride (Chloromethane)	TX	4960	10184404
Methyl methacrylate	TX	4990	10184404
Methyl tert-butyl ether (MTBE)	TX	5000	10184404
Methylcyclohexane	TX	4965	10184404
Methylene chloride (Dichloromethane)	TX	4975	10184404
Naphthalene	TX	5005	10184404
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10184404
n-Butylbenzene	TX	4435	10184404
n-Propylbenzene	TX	5090	10184404
o-Xylene	TX	5250	10184404
Pentachloroethane	TX	5035	10184404
Propionitrile (Ethyl cyanide)	TX	5080	10184404
Pyridine	TX	5095	10184404
sec-Butylbenzene	TX	4440	10184404
Styrene	TX	5100	10184404
T-amylmethylether (TAME)	TX	4370	10184404
tert-Butyl alcohol	TX	4420	10184404
tert-Butylbenzene	TX	4445	10184404
Tetrachloroethylene (Perchloroethylene)	TX	5115	10184404
Toluene	TX	5140	10184404
trans-1,2-Dichloroethylene	TX	4700	10184404
trans-1,3-Dichloropropylene	TX	4685	10184404
trans-1,4-Dichloro-2-butene	TX	4605	10184404
Trichloroethene (Trichloroethylene)	TX	5170	10184404
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10184404
Vinyl acetate	TX	5225	10184404
Vinyl chloride	TX	5235	10184404
Xylene (total)	TX	5260	10184404

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Matrix: ***Non-Potable Water***

Method EPA 8270

Analyte	AB	Analyte ID	Method ID
1,2,4,5-Tetrachlorobenzene	TX	6715	10185203
1,2,4-Trichlorobenzene	TX	5155	10185203
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10185203
1,2-Dichlorobenzene	TX	4610	10185203
1,2-Dinitrobenzene	TX	6155	10185203
1,2-Diphenylhydrazine	TX	6220	10185203
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10185203
1,3-Dichlorobenzene	TX	4615	10185203
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10185203
1,4-Dichlorobenzene	TX	4620	10185203
1,4-Dinitrobenzene	TX	6165	10185203
1,4-Naphthoquinone	TX	6420	10185203
1,4-Phenylenediamine	TX	6630	10185203
1-Chloronaphthalene	TX	5790	10185203
1-Naphthylamine	TX	6425	10185203
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10185203
2,3,4,6-Tetrachlorophenol	TX	6735	10185203
2,4,5-Trichlorophenol	TX	6835	10185203
2,4,5-Trimethylaniline	TX	6880	10185203
2,4,6-Trichlorophenol	TX	6840	10185203
2,4-Diaminotoluene	TX	5880	10185203
2,4-Dichlorophenol	TX	6000	10185203
2,4-Dimethylphenol	TX	6130	10185203
2,4-Dinitrophenol	TX	6175	10185203
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10185203
2,6-Dichlorophenol	TX	6005	10185203
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10185203
2-Acetylaminofluorene	TX	5515	10185203

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Matrix: ***Non-Potable Water***

2-Chloronaphthalene	TX	5795	10185203
2-Chlorophenol	TX	5800	10185203
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10185203
2-Methylaniline (o-Toluidine)	TX	5145	10185203
2-Methylnaphthalene	TX	6385	10185203
2-Methylphenol (o-Cresol)	TX	6400	10185203
2-Naphthylamine	TX	6430	10185203
2-Nitroaniline	TX	6460	10185203
2-Nitrophenol	TX	6490	10185203
2-Picoline (2-Methylpyridine)	TX	5050	10185203
3,3'-Dichlorobenzidine	TX	5945	10185203
3,3'-Dimethylbenzidine	TX	6120	10185203
3-Methylcholanthrene	TX	6355	10185203
3-Methylphenol (m-Cresol)	TX	6405	10185203
3-Nitroaniline	TX	6465	10185203
4-Aminobiphenyl	TX	5540	10185203
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10185203
4-Chloro-3-methylphenol	TX	5700	10185203
4-Chloroaniline	TX	5745	10185203
4-Chlorophenyl phenylether	TX	5825	10185203
4-Dimethyl aminoazobenzene	TX	6105	10185203
4-Methylphenol (p-Cresol)	TX	6410	10185203
4-Nitroaniline	TX	6470	10185203
4-Nitrobiphenyl	TX	6480	10185203
4-Nitrophenol	TX	6500	10185203
4-Nitroquinoline-1-oxide	TX	6510	10185203
5-Chloro-2-methylaniline	TX	5695	10185203
5-Nitro-o-toluidine	TX	6570	10185203
7,12-Dimethylbenz(a) anthracene	TX	6115	10185203
a-a-Dimethylphenethylamine	TX	6125	10185203

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Matrix: ***Non-Potable Water***

Acenaphthene	TX	5500	10185203
Acenaphthylene	TX	5505	10185203
Acetophenone	TX	5510	10185203
Aniline	TX	5545	10185203
Anthracene	TX	5555	10185203
Aramite	TX	5560	10185203
Atrazine	TX	7065	10185203
Azinphos-methyl (Guthion)	TX	7075	10185203
Azobenzene	TX	5562	10185203
Benzenethiol (Thiophenol)	TX	6750	10185203
Benzidine	TX	5595	10185203
Benzo(a)anthracene	TX	5575	10185203
Benzo(a)pyrene	TX	5580	10185203
Benzo(b)fluoranthene	TX	5585	10185203
Benzo(e)pyrene	TX	5605	10185203
Benzo(g,h,i)perylene	TX	5590	10185203
Benzo(k)fluoranthene	TX	5600	10185203
Benzoic acid	TX	5610	10185203
Benzyl alcohol	TX	5630	10185203
Biphenyl	TX	5640	10185203
bis(2-Chloroethoxy)methane	TX	5760	10185203
bis(2-Chloroethyl) ether	TX	5765	10185203
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10185203
Butyl benzyl phthalate	TX	5670	10185203
Caprolactam	TX	7180	10185203
Captan	TX	7190	10185203
Carbaryl (Sevin)	TX	7195	10185203
Carbazole	TX	5680	10185203
Carbophenothion	TX	7220	10185203
Chlorobenzilate	TX	7260	10185203

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Matrix: ***Non-Potable Water***

Chrysene	TX	5855	10185203
Coumaphos	TX	7315	10185203
Demeton	TX	7390	10185203
Demeton	TX	7390	10185203
Demeton-o	TX	7395	10185203
Demeton-s	TX	7385	10185203
Diallate	TX	7405	10185203
Dibenz(a,h) anthracene	TX	5895	10185203
Dibenz(a,j) acridine	TX	5900	10185203
Dibenzofuran	TX	5905	10185203
Dichlorovos (DDVP, Dichlorvos)	TX	8610	10185203
Diethyl phthalate	TX	6070	10185203
Dimethoate	TX	7475	10185203
Dimethoate	TX	7475	10185203
Dimethyl phthalate	TX	6135	10185203
Di-n-butyl phthalate	TX	5925	10185203
Di-n-octyl phthalate	TX	6200	10185203
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10185203
Dioxathion	TX	7495	10185203
Diphenylamine	TX	6205	10185203
Disulfoton	TX	8625	10185203
Ethion	TX	7565	10185203
Ethyl methanesulfonate	TX	6260	10185203
Famphur	TX	7580	10185203
Fluoranthene	TX	6265	10185203
Fluorene	TX	6270	10185203
Hexachlorobenzene	TX	6275	10185203
Hexachlorobutadiene	TX	4835	10185203
Hexachlorocyclopentadiene	TX	6285	10185203
Hexachloroethane	TX	4840	10185203

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Matrix: ***Non-Potable Water***

Hexachlorophene	TX	6290	10185203
Hexachloropropene	TX	6295	10185203
Indeno(1,2,3-cd) pyrene	TX	6315	10185203
Isodrin	TX	7725	10185203
Isophorone	TX	6320	10185203
Isosafrole	TX	6325	10185203
Kepone	TX	7740	10185203
Maleic anhydride	TX	6335	10185203
Methapyrilene	TX	6345	10185203
Methyl methanesulfonate	TX	6375	10185203
Methyl parathion (Parathion, methyl)	TX	7825	10185203
Mevinphos	TX	7850	10185203
Naled	TX	7905	10185203
Naphthalene	TX	5005	10185203
Nitrobenzene	TX	5015	10185203
n-Nitrosodiethylamine	TX	6525	10185203
n-Nitrosodimethylamine	TX	6530	10185203
n-Nitrosodi-n-butylamine	TX	5025	10185203
n-Nitrosodi-n-propylamine	TX	6545	10185203
n-Nitrosodiphenylamine	TX	6535	10185203
n-Nitrosomethylethylamine	TX	6550	10185203
n-Nitrosomorpholine	TX	6555	10185203
n-Nitrosopiperidine	TX	6560	10185203
n-Nitrosopyrrolidine	TX	6565	10185203
o,o,o-Triethyl phosphorothioate	TX	8290	10185203
o-Anisidine	TX	5550	10185203
Parathion, ethyl	TX	7955	10185203
p-Cresidine	TX	5860	10185203
Pentachlorobenzene	TX	6590	10185203
Pentachloronitrobenzene (PCNB)	TX	6600	10185203

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Pentachlorophenol	TX	6605	10185203
Phenacetin	TX	6610	10185203
Phenanthrene	TX	6615	10185203
Phenol	TX	6625	10185203
Phorate	TX	7985	10185203
Phosmet (Imidan)	TX	8000	10185203
Phthalic anhydride	TX	6640	10185203
Pronamide (Kerb)	TX	6650	10185203
Pyrene	TX	6665	10185203
Pyridine	TX	5095	10185203
Quinoline	TX	6670	10185203
Resorcinol	TX	6680	10185203
Safrole	TX	6685	10185203
Sulfotepp	TX	8155	10185203
Terbufos	TX	8185	10185203
Tetrachlorvinphos (Stirophos, Gardona)	TX	8197	10185203
Thionazin (Zinophos)	TX	8235	10185203
Toluene diisocyanate	TX	6775	10185203
Trifluralin (Treflan)	TX	8295	10185203

Method EPA 8290

Analyte	**AB**	**Analyte ID**	**Method ID**
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10187209
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10187209
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10187209
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10187209
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10187209
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10187209
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10187209
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10187209
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10187209

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Matrix: ***Non-Potable Water***

1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10187209
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10187209
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10187209
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10187209
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10187209
2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10187209
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10187209
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10187209
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10187209
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10187209
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10187209
Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10187209
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10187209
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10187209
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10187209
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10187209

Method EPA 8316

Analyte	**AB**	**Analyte ID**	**Method ID**
Acrylamide	TX	4330	10188202

Method EPA 8330

Analyte	**AB**	**Analyte ID**	**Method ID**
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10189807
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10189807
2,4,6-Trinitrotoluene (2,4,6-TNT)	TX	9651	10189807
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10189807
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10189807
2-Amino-4,6-dinitrotoluene (2-am-dnt)	TX	9303	10189807
2-Nitrotoluene	TX	9507	10189807
3-Nitrotoluene	TX	9510	10189807
4-Amino-2,6-dinitrotoluene (4-am-dnt)	TX	9306	10189807
4-Nitrotoluene	TX	9513	10189807

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Matrix: ***Non-Potable Water***

Methyl-2,4,6-trinitrophenylnitramine (tetryl)	TX	6415	10189807
Nitrobenzene	TX	5015	10189807
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	TX	9522	10189807
RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine)	TX	9432	10189807

Method EPA 9014

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	10193803
Total cyanide	TX	1645	10193803

Method EPA 9038

Analyte	**AB**	**Analyte ID**	**Method ID**
Sulfate	TX	2000	10196608

Method EPA 9040

Analyte	**AB**	**Analyte ID**	**Method ID**
pH	TX	1900	10196802

Method EPA 9050

Analyte	**AB**	**Analyte ID**	**Method ID**
Conductivity	TX	1610	10198604

Method EPA 9056

Analyte	**AB**	**Analyte ID**	**Method ID**
Bromide	TX	1540	10199209
Chloride	TX	1575	10199209
Fluoride	TX	1730	10199209
Nitrate as N	TX	1810	10199209
Nitrate-nitrite	TX	1820	10199209
Nitrite as N	TX	1840	10199209
Orthophosphate as P	TX	1870	10199209
Sulfate	TX	2000	10199209

Method EPA 9060

Analyte	**AB**	**Analyte ID**	**Method ID**
Total Organic Carbon (TOC)	TX	2040	10200201

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Matrix: ***Non-Potable Water***

Method EPA 9065

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200405

Method EPA 9066

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200609

Method EPA 9250

Analyte	AB	Analyte ID	Method ID
Chloride	TX	1575	10207202

Method EPA RSK 175

Analyte	AB	Analyte ID	Method ID
2-methylpropane (Isobutane)	TX	4942	10212905
Ethane	TX	4747	10212905
Ethene	TX	4752	10212905
Methane	TX	4926	10212905
n-Butane	TX	5007	10212905
n-Propane	TX	5029	10212905

Method HACH 8000

Analyte	AB	Analyte ID	Method ID
Chemical oxygen demand (COD)	TX	1565	60003001

Method SM 2120 B

Analyte	AB	Analyte ID	Method ID
Color	TX	1605	20223807

Method SM 2310 B (4a)

Analyte	AB	Analyte ID	Method ID
Acidity, as CaCO3	TX	1500	20002806

Method SM 2320 B

Analyte	AB	Analyte ID	Method ID
Alkalinity as CaCO3	TX	1505	20045005

Method SM 2340 B

Analyte	AB	Analyte ID	Method ID

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Matrix: ***Non-Potable Water***

Total hardness as CaCO3	TX	1755	20046008

Method SM 2510 B

Analyte	**AB**	**Analyte ID**	**Method ID**
Conductivity	TX	1610	20048004

Method SM 2540 B

Analyte	**AB**	**Analyte ID**	**Method ID**
Residue-total (total solids)	TX	1950	20004608

Method SM 2540 C

Analyte	**AB**	**Analyte ID**	**Method ID**
Residue-filterable (TDS)	TX	1955	20049803

Method SM 2540 D

Analyte	**AB**	**Analyte ID**	**Method ID**
Residue-nonfilterable (TSS)	TX	1960	20004802

Method SM 3500-Cr B

Analyte	**AB**	**Analyte ID**	**Method ID**
Chromium (VI)	TX	1045	20065809

Method SM 4500-Cl F

Analyte	**AB**	**Analyte ID**	**Method ID**
Total residual chlorine	TX	1940	20080482

Method SM 4500-Cl^- E

Analyte	**AB**	**Analyte ID**	**Method ID**
Chloride	TX	1575	20019209

Method SM 4500-CN^- C

Analyte	**AB**	**Analyte ID**	**Method ID**
Total cyanide	TX	1645	20020808

Method SM 4500-CN^- E

Analyte	**AB**	**Analyte ID**	**Method ID**
Total cyanide	TX	1645	20021209

Method SM 4500-CN^- G

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	20021607

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Matrix: ***Non-Potable Water***

Method SM 4500-H+ B

Analyte	AB	Analyte ID	Method ID
pH	TX	1900	20104603

Method SM 4500-NH3 D

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	20108809
Kjeldahl Nitrogen (Total Kjeldahl Nitrogen-TKN)	TX	1790	20108809

Method SM 4500-NH3 F

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	20023001

Method SM 4500-O G

Analyte	AB	Analyte ID	Method ID
Oxygen, dissolved	TX	1880	20025405

Method SM 4500-P E

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	20025803
Phosphorus	TX	1910	20025803

Method SM 4500-$S2^{-}$ F

Analyte	AB	Analyte ID	Method ID
Sulfide	TX	2005	20126209

Method SM 4500-SiO2 D

Analyte	AB	Analyte ID	Method ID
Silica as SiO2	TX	1990	20127202

Method SM 4500-$SO3^{-}$ B

Analyte	AB	Analyte ID	Method ID
Sulfite	TX	2015	20026806

Method SM 5210 B

Analyte	AB	Analyte ID	Method ID
Biochemical oxygen demand (BOD)	TX	1530	20027401
Carbonaceous BOD, CBOD	TX	1555	20027401

Method SM 5310 B

Analyte	AB	Analyte ID	Method ID

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Matrix: ***Non-Potable Water***

Total Organic Carbon (TOC)	TX	2040	20137206

Method SM 5310 C

Analyte	**AB**	**Analyte ID**	**Method ID**
Total Organic Carbon (TOC)	TX	2040	20138209

Method SM 5540 C

Analyte	**AB**	**Analyte ID**	**Method ID**
Surfactants - MBAS	TX	2025	20144405

Method TCEQ 1005

Analyte	**AB**	**Analyte ID**	**Method ID**
Total Petroleum Hydrocarbons (TPH)	TX	2050	90019208

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Matrix: ***Solid & Chemical Materials***

Method ASTM D2216

Analyte	AB	Analyte ID	Method ID
Moisture	TX	10337	ASTM D2216-05

Method EPA 1010

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10116606

Method EPA 1030

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10117201

Method EPA 1311

Analyte	AB	Analyte ID	Method ID
TCLP	TX	849	10118806

Method EPA 1312

Analyte	AB	Analyte ID	Method ID
SPLP	TX	850	10119003

Method EPA 1668

Analyte	AB	Analyte ID	Method ID
Decachlorobiphenyls	TX	10332	10262007
Dichlorobiphenyls	TX	464	10262007
Heptachlorobiphenyls	TX	486	10262007
Hexachlorobiphenyls	TX	487	10262007
Monochlorobiphenyls	TX	501	10262007
Nonachlorobiphenyls	TX	507	10262007
Octachlorobiphenyls	TX	508	10262007
Pentachlorobiphenyls	TX	515	10262007
Tetrachlorobiphenyls	TX	528	10262007
Trichlorobiphenyls	TX	541	10262007

Method EPA 200.8

Analyte	AB	Analyte ID	Method ID
Uranium	TX	3035	10014605

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Matrix: ***Solid & Chemical Materials***

Method EPA 300.0

Analyte	AB	Analyte ID	Method ID
Bromide	TX	1540	10053200
Chloride	TX	1575	10053200
Fluoride	TX	1730	10053200
Nitrate as N	TX	1810	10053200
Nitrate-nitrite	TX	1820	10053200
Nitrite as N	TX	1840	10053200
Orthophosphate as P	TX	1870	10053200
Sulfate	TX	2000	10053200

Method EPA 310.1

Analyte	AB	Analyte ID	Method ID
Alkalinity as CaCO3	TX	1505	10054805

Method EPA 350.3

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	10064401

Method EPA 365.3

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	10070801
Phosphorus	TX	1910	10070801

Method EPA 6020

Analyte	AB	Analyte ID	Method ID
Aluminum	TX	1000	10156204
Antimony	TX	1005	10156204
Arsenic	TX	1010	10156204
Barium	TX	1015	10156204
Beryllium	TX	1020	10156204
Boron	TX	1025	10156204
Cadmium	TX	1030	10156204
Calcium	TX	1035	10156204
Chromium	TX	1040	10156204

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Matrix: ***Solid & Chemical Materials***

Cobalt	TX	1050	10156204
Copper	TX	1055	10156204
Iron	TX	1070	10156204
Lead	TX	1075	10156204
Lithium	TX	1080	10156204
Magnesium	TX	1085	10156204
Manganese	TX	1090	10156204
Molybdenum	TX	1100	10156204
Nickel	TX	1105	10156204
Potassium	TX	1125	10156204
Selenium	TX	1140	10156204
Silver	TX	1150	10156204
Sodium	TX	1155	10156204
Strontium	TX	1160	10156204
Thallium	TX	1165	10156204
Tin	TX	1175	10156204
Titanium	TX	1180	10156204
Vanadium	TX	1185	10156204
Zinc	TX	1190	10156204

Method EPA 7196

Analyte	**AB**	**Analyte ID**	**Method ID**
Chromium (VI)	TX	1045	10162206

Method EPA 7470

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10165603

Method EPA 7471

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10166004

Method EPA 8015

Analyte	**AB**	**Analyte ID**	**Method ID**
Diesel range organics (DRO)	TX	9369	10173203

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Matrix: ***Solid & Chemical Materials***

Ethanol	TX	4750	10173203
Ethylene glycol	TX	4785	10173203
Gasoline range organics (GRO)	TX	9408	10173203
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10173203
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10173203
Methanol	TX	4930	10173203
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10173203
n-Propanol (1-Propanol)	TX	5055	10173203
Propylene Glycol	TX	6657	10173203
tert-Butyl alcohol	TX	4420	10173203

Method EPA 8021

Analyte	**AB**	**Analyte ID**	**Method ID**
Benzene	TX	4375	10174400
Ethylbenzene	TX	4765	10174400
m+p-xylene	TX	5240	10174400
Methyl tert-butyl ether (MTBE)	TX	5000	10174400
o-Xylene	TX	5250	10174400
Toluene	TX	5140	10174400
Xylene (total)	TX	5260	10174400

Method EPA 8081

Analyte	**AB**	**Analyte ID**	**Method ID**
4,4'-DDD	TX	7355	10178402
4,4'-DDE	TX	7360	10178402
4,4'-DDT	TX	7365	10178402
Aldrin	TX	7025	10178402
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10178402
alpha-Chlordane	TX	7240	10178402
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10178402
Chlordane (tech.)	TX	7250	10178402
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10178402
Dieldrin	TX	7470	10178402

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Issue Date: 5/1/2019

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Matrix: ***Solid & Chemical Materials***

Endosulfan I	TX	7510	10178402
Endosulfan II	TX	7515	10178402
Endosulfan sulfate	TX	7520	10178402
Endrin	TX	7540	10178402
Endrin aldehyde	TX	7530	10178402
Endrin ketone	TX	7535	10178402
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10178402
gamma-Chlordane	TX	7245	10178402
Heptachlor	TX	7685	10178402
Heptachlor epoxide	TX	7690	10178402
Methoxychlor	TX	7810	10178402
Mirex	TX	7870	10178402
Toxaphene (Chlorinated camphene)	TX	8250	10178402

Method EPA 8082

Analyte	**AB**	**Analyte ID**	**Method ID**
Aroclor-1016 (PCB-1016)	TX	8880	10179201
Aroclor-1221 (PCB-1221)	TX	8885	10179201
Aroclor-1232 (PCB-1232)	TX	8890	10179201
Aroclor-1242 (PCB-1242)	TX	8895	10179201
Aroclor-1248 (PCB-1248)	TX	8900	10179201
Aroclor-1254 (PCB-1254)	TX	8905	10179201
Aroclor-1260 (PCB-1260)	TX	8910	10179201
PCBs (total)	TX	8870	10179201

Method EPA 8260

Analyte	**AB**	**Analyte ID**	**Method ID**
1,1,1,2-Tetrachloroethane	TX	5105	10184404
1,1,1-Trichloroethane	TX	5160	10184404
1,1,2,2-Tetrachloroethane	TX	5110	10184404
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	TX	5195	10184404
1,1,2-Trichloroethane	TX	5165	10184404
1,1-Dichloroethane	TX	4630	10184404

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Matrix: ***Solid & Chemical Materials***

1,1-Dichloroethylene	TX	4640	10184404
1,1-Dichloropropene	TX	4670	10184404
1,2,3-Trichlorobenzene	TX	5150	10184404
1,2,3-Trichloropropane	TX	5180	10184404
1,2,4-Trichlorobenzene	TX	5155	10184404
1,2,4-Trimethylbenzene	TX	5210	10184404
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10184404
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10184404
1,2-Dichlorobenzene	TX	4610	10184404
1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10184404
1,2-Dichloropropane	TX	4655	10184404
1,3,5-Trimethylbenzene	TX	5215	10184404
1,3-Dichlorobenzene	TX	4615	10184404
1,3-Dichloropropane	TX	4660	10184404
1,4-Dichlorobenzene	TX	4620	10184404
1,4-Dioxane (1,4-Diethyleneoxide)	TX	4735	10184404
1-Chlorohexane	TX	4510	10184404
1-Propanol	TX	5060	10184404
2,2-Dichloropropane	TX	4665	10184404
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10184404
2-Chloroethyl vinyl ether	TX	4500	10184404
2-Chlorotoluene	TX	4535	10184404
2-Hexanone (MBK)	TX	4860	10184404
4-Chlorotoluene	TX	4540	10184404
4-Isopropyltoluene (p-Cymene)	TX	4915	10184404
4-Methyl-2-pentanone (MIBK)	TX	4995	10184404
Acetone (2-Propanone)	TX	4315	10184404
Acetonitrile	TX	4320	10184404
Acrolein (Propenal)	TX	4325	10184404
Acrylonitrile	TX	4340	10184404

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Matrix: ***Solid & Chemical Materials***

Allyl chloride (3-Chloropropene)	TX	4355	10184404
Benzene	TX	4375	10184404
Benzyl chloride	TX	5635	10184404
Bromobenzene	TX	4385	10184404
Bromochloromethane	TX	4390	10184404
Bromodichloromethane	TX	4395	10184404
Bromoform	TX	4400	10184404
Carbon disulfide	TX	4450	10184404
Carbon tetrachloride	TX	4455	10184404
Chlorobenzene	TX	4475	10184404
Chlorodibromomethane	TX	4575	10184404
Chloroethane (Ethyl chloride)	TX	4485	10184404
Chloroform	TX	4505	10184404
Chloroprene (2-Chloro-1,3-butadiene)	TX	4525	10184404
cis-1,2-Dichloroethylene	TX	4645	10184404
cis-1,3-Dichloropropene	TX	4680	10184404
Dibromofluoromethane	TX	4590	10184404
Dibromomethane (Methylene bromide)	TX	4595	10184404
Dichlorodifluoromethane (Freon-12)	TX	4625	10184404
Diethyl ether	TX	4725	10184404
Epichlorohydrin (1-Chloro-2,3-epoxypropane)	TX	4745	10184404
Ethanol	TX	4750	10184404
Ethyl acetate	TX	4755	10184404
Ethyl methacrylate	TX	4810	10184404
Ethylbenzene	TX	4765	10184404
Ethylene oxide	TX	4795	10184404
Hexachlorobutadiene	TX	4835	10184404
Iodomethane (Methyl iodide)	TX	4870	10184404
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10184404
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10184404

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Matrix: ***Solid & Chemical Materials***

Isopropylbenzene (Cumene)	TX	4900	10184404
m+p-xylene	TX	5240	10184404
Methacrylonitrile	TX	4925	10184404
Methyl acetate	TX	4940	10184404
Methyl acrylate	TX	4945	10184404
Methyl bromide (Bromomethane)	TX	4950	10184404
Methyl chloride (Chloromethane)	TX	4960	10184404
Methyl methacrylate	TX	4990	10184404
Methyl tert-butyl ether (MTBE)	TX	5000	10184404
Methylcyclohexane	TX	4965	10184404
Methylene chloride (Dichloromethane)	TX	4975	10184404
Naphthalene	TX	5005	10184404
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10184404
n-Butylbenzene	TX	4435	10184404
n-Propylbenzene	TX	5090	10184404
o-Xylene	TX	5250	10184404
Pentachloroethane	TX	5035	10184404
Propionitrile (Ethyl cyanide)	TX	5080	10184404
Pyridine	TX	5095	10184404
sec-Butylbenzene	TX	4440	10184404
Styrene	TX	5100	10184404
tert-Butyl alcohol	TX	4420	10184404
tert-Butylbenzene	TX	4445	10184404
Tetrachloroethylene (Perchloroethylene)	TX	5115	10184404
Toluene	TX	5140	10184404
trans-1,2-Dichloroethylene	TX	4700	10184404
trans-1,3-Dichloropropylene	TX	4685	10184404
trans-1,4-Dichloro-2-butene	TX	4605	10184404
Trichloroethene (Trichloroethylene)	TX	5170	10184404
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10184404

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Matrix: ***Solid & Chemical Materials***

Vinyl acetate	TX	5225	10184404
Vinyl chloride	TX	5235	10184404
Xylene (total)	TX	5260	10184404

Method EPA 8270

Analyte	AB	Analyte ID	Method ID
1,2,4,5-Tetrachlorobenzene	TX	6715	10185203
1,2,4-Trichlorobenzene	TX	5155	10185203
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10185203
1,2-Dichlorobenzene	TX	4610	10185203
1,2-Dinitrobenzene	TX	6155	10185203
1,2-Diphenylhydrazine	TX	6220	10185203
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10185203
1,3-Dichlorobenzene	TX	4615	10185203
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10185203
1,4-Dichlorobenzene	TX	4620	10185203
1,4-Dinitrobenzene	TX	6165	10185203
1,4-Naphthoquinone	TX	6420	10185203
1,4-Phenylenediamine	TX	6630	10185203
1-Chloronaphthalene	TX	5790	10185203
1-Naphthylamine	TX	6425	10185203
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10185203
2,3,4,6-Tetrachlorophenol	TX	6735	10185203
2,4,5-Trichlorophenol	TX	6835	10185203
2,4,5-Trimethylaniline	TX	6880	10185203
2,4,6-Trichlorophenol	TX	6840	10185203
2,4-Diaminotoluene	TX	5880	10185203
2,4-Dichlorophenol	TX	6000	10185203
2,4-Dimethylphenol	TX	6130	10185203
2,4-Dinitrophenol	TX	6175	10185203
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10185203

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Matrix: ***Solid & Chemical Materials***

2,6-Dichlorophenol	TX	6005	10185203
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10185203
2-Acetylaminofluorene	TX	5515	10185203
2-Chloronaphthalene	TX	5795	10185203
2-Chlorophenol	TX	5800	10185203
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10185203
2-Methylaniline (o-Toluidine)	TX	5145	10185203
2-Methylnaphthalene	TX	6385	10185203
2-Methylphenol (o-Cresol)	TX	6400	10185203
2-Naphthylamine	TX	6430	10185203
2-Nitroaniline	TX	6460	10185203
2-Nitrophenol	TX	6490	10185203
2-Picoline (2-Methylpyridine)	TX	5050	10185203
3,3'-Dichlorobenzidine	TX	5945	10185203
3,3'-Dimethylbenzidine	TX	6120	10185203
3-Methylcholanthrene	TX	6355	10185203
3-Methylphenol (m-Cresol)	TX	6405	10185203
3-Nitroaniline	TX	6465	10185203
4-Aminobiphenyl	TX	5540	10185203
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10185203
4-Chloro-3-methylphenol	TX	5700	10185203
4-Chloroaniline	TX	5745	10185203
4-Chlorophenyl phenylether	TX	5825	10185203
4-Methylphenol (p-Cresol)	TX	6410	10185203
4-Nitroaniline	TX	6470	10185203
4-Nitrophenol	TX	6500	10185203
4-Nitroquinoline-1-oxide	TX	6510	10185203
5-Nitro-o-toluidine	TX	6570	10185203
7,12-Dimethylbenz(a) anthracene	TX	6115	10185203
a-a-Dimethylphenethylamine	TX	6125	10185203

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Matrix: ***Solid & Chemical Materials***

Acenaphthene	TX	5500	10185203
Acenaphthylene	TX	5505	10185203
Acetophenone	TX	5510	10185203
Aniline	TX	5545	10185203
Anthracene	TX	5555	10185203
Aramite	TX	5560	10185203
Atrazine	TX	7065	10185203
Azinphos-methyl (Guthion)	TX	7075	10185203
Azobenzene	TX	5562	10185203
Benzenethiol (Thiophenol)	TX	6750	10185203
Benzidine	TX	5595	10185203
Benzo(a)anthracene	TX	5575	10185203
Benzo(a)pyrene	TX	5580	10185203
Benzo(b)fluoranthene	TX	5585	10185203
Benzo(e)pyrene	TX	5605	10185203
Benzo(g,h,i)perylene	TX	5590	10185203
Benzo(k)fluoranthene	TX	5600	10185203
Benzoic acid	TX	5610	10185203
Benzyl alcohol	TX	5630	10185203
Biphenyl	TX	5640	10185203
bis(2-Chloroethoxy)methane	TX	5760	10185203
bis(2-Chloroethyl) ether	TX	5765	10185203
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10185203
Butyl benzyl phthalate	TX	5670	10185203
Caprolactam	TX	7180	10185203
Carbaryl (Sevin)	TX	7195	10185203
Carbazole	TX	5680	10185203
Carbophenothion	TX	7220	10185203
Chlorobenzilate	TX	7260	10185203
Chrysene	TX	5855	10185203

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Matrix: ***Solid & Chemical Materials***

Demeton	TX	7390	10185203
Demeton-o	TX	7395	10185203
Demeton-s	TX	7385	10185203
Diallate	TX	7405	10185203
Dibenz(a,h) anthracene	TX	5895	10185203
Dibenz(a,j) acridine	TX	5900	10185203
Dibenzo(a,e) pyrene	TX	5890	10185203
Dibenzofuran	TX	5905	10185203
Dichlorovos (DDVP, Dichlorvos)	TX	8610	10185203
Diethyl phthalate	TX	6070	10185203
Dimethoate	TX	7475	10185203
Dimethyl phthalate	TX	6135	10185203
Di-n-butyl phthalate	TX	5925	10185203
Di-n-octyl phthalate	TX	6200	10185203
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10185203
Diphenylamine	TX	6205	10185203
Disulfoton	TX	8625	10185203
Ethyl methanesulfonate	TX	6260	10185203
Fluoranthene	TX	6265	10185203
Fluorene	TX	6270	10185203
Hexachlorobenzene	TX	6275	10185203
Hexachlorobutadiene	TX	4835	10185203
Hexachlorocyclopentadiene	TX	6285	10185203
Hexachloroethane	TX	4840	10185203
Hexachlorophene	TX	6290	10185203
Hexachloropropene	TX	6295	10185203
Indeno(1,2,3-cd) pyrene	TX	6315	10185203
Isodrin	TX	7725	10185203
Isophorone	TX	6320	10185203
Isosafrole	TX	6325	10185203

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Matrix: ***Solid & Chemical Materials***

Kepone	TX	7740	10185203
Malathion	TX	7770	10185203
Methapyrilene	TX	6345	10185203
Methyl methanesulfonate	TX	6375	10185203
Methyl parathion (Parathion, methyl)	TX	7825	10185203
Mevinphos	TX	7850	10185203
Naphthalene	TX	5005	10185203
Nitrobenzene	TX	5015	10185203
n-Nitrosodiethylamine	TX	6525	10185203
n-Nitrosodimethylamine	TX	6530	10185203
n-Nitrosodi-n-butylamine	TX	5025	10185203
n-Nitrosodi-n-propylamine	TX	6545	10185203
n-Nitrosodiphenylamine	TX	6535	10185203
n-Nitrosomethylethylamine	TX	6550	10185203
n-Nitrosomorpholine	TX	6555	10185203
n-Nitrosopiperidine	TX	6560	10185203
n-Nitrosopyrrolidine	TX	6565	10185203
o,o,o-Triethyl phosphorothioate	TX	8290	10185203
o-Anisidine	TX	5550	10185203
Parathion, ethyl	TX	7955	10185203
p-Cresidine	TX	5860	10185203
Pentachlorobenzene	TX	6590	10185203
Pentachloronitrobenzene (PCNB)	TX	6600	10185203
Pentachlorophenol	TX	6605	10185203
Phenacetin	TX	6610	10185203
Phenanthrene	TX	6615	10185203
Phenol	TX	6625	10185203
Phorate	TX	7985	10185203
Pronamide (Kerb)	TX	6650	10185203
Pyrene	TX	6665	10185203

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Matrix: ***Solid & Chemical Materials***

Pyridine	TX	5095	10185203
Quinoline	TX	6670	10185203
Safrole	TX	6685	10185203
Sulfotepp	TX	8155	10185203
Terbufos	TX	8185	10185203
Tetrachlorvinphos (Stirophos, Gardona)	TX	8197	10185203
Thionazin (Zinophos)	TX	8235	10185203
Toluene diisocyanate	TX	6775	10185203

Method EPA 8290

Analyte	AB	Analyte ID	Method ID
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10187209
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10187209
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10187209
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10187209
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10187209
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10187209
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10187209
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10187209
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10187209
1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10187209
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10187209
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10187209
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10187209
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10187209
2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10187209
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10187209
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10187209
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10187209
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10187209
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10187209

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Matrix: ***Solid & Chemical Materials***

Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10187209
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10187209
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10187209
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10187209
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10187209

Method EPA 8316

Analyte	**AB**	**Analyte ID**	**Method ID**
Acrylamide	TX	4330	10188202

Method EPA 8330

Analyte	**AB**	**Analyte ID**	**Method ID**
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10189807
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10189807
2,4,6-Trinitrotoluene (2,4,6-TNT)	TX	9651	10189807
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10189807
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10189807
2-Amino-4,6-dinitrotoluene (2-am-dnt)	TX	9303	10189807
2-Nitrotoluene	TX	9507	10189807
3-Nitrotoluene	TX	9510	10189807
4-Amino-2,6-dinitrotoluene (4-am-dnt)	TX	9306	10189807
4-Nitrotoluene	TX	9513	10189807
Methyl-2,4,6-trinitrophenylnitramine (tetryl)	TX	6415	10189807
Nitrobenzene	TX	5015	10189807
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	TX	9522	10189807
RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine)	TX	9432	10189807

Method EPA 9014

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	10193803
Total cyanide	TX	1645	10193803

Method EPA 9038

Analyte	**AB**	**Analyte ID**	**Method ID**
Sulfate	TX	2000	10196608

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-19-23

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

Expiration Date: 4/30/2020

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2019

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: ***Solid & Chemical Materials***

Method EPA 9040

Analyte	AB	Analyte ID	Method ID
Corrosivity	TX	1615	10197203
pH	TX	1900	10196802

Method EPA 9045

Analyte	AB	Analyte ID	Method ID
Corrosivity	TX	1615	10197805
pH	TX	1900	10197805

Method EPA 9050

Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	10198604

Method EPA 9056

Analyte	AB	Analyte ID	Method ID
Bromide	TX	1540	10199209
Chloride	TX	1575	10199209
Fluoride	TX	1730	10199209
Nitrate as N	TX	1810	10199209
Nitrate-nitrite	TX	1820	10199209
Nitrite as N	TX	1840	10199209
Orthophosphate as P	TX	1870	10199209
Sulfate	TX	2000	10199209

Method EPA 9060

Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	10200201

Method EPA 9065

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200405

Method EPA 9071

Analyte	AB	Analyte ID	Method ID
n-Hexane Extractable Material (HEM) (O&G)	TX	1803	10201204

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

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Matrix: ***Solid & Chemical Materials***

Method	Analyte	AB	Analyte ID	Method ID
EPA 9095	Paint Filter Liquids Test	TX	10312	10204009
EPA 9250	Chloride	TX	1575	10207202
SM 2320 B	Alkalinity as CaCO3	TX	1505	20045005
SM 2510 B	Conductivity	TX	1610	20048004
SM 2540 G	Residue-total (total solids)	TX	1950	20005203
SSA/ASA Part 3:34	Carbon, organic (Walkley-Black)	TX	10340	SSA/ASA Pt 3:34
TCEQ 1005	Total Petroleum Hydrocarbons (TPH)	TX	2050	90019208

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March 23, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20030619**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 16 sample(s) on Mar 13, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20030619**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS20030619**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data								
Laboratory Name: ALS Laboratory Group			LRC Date: 03/23/2020					
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20030619					
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 151716, 151763, 151785, 151787, 151813, R358243, R358244					
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]	
R1	OI	**Chain-of-custody (C-O-C)**						
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X					
		Were all departures from standard conditions described in an exception report?	X					
R2	OI	**Sample and quality control (QC) identification**						
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X					
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X					
R3	OI	**Test reports**						
		Were all samples prepared and analyzed within holding times?	X					
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X					
		Were calculations checked by a peer or supervisor?	X					
		Were all analyte identifications checked by a peer or supervisor?	X					
		Were sample detection limits reported for all analytes not detected?	X					
		Were all results for soil and sediment samples reported on a dry weight basis?			X			
		Were % moisture (or solids) reported for all soil and sediment samples?			X			
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X			
		If required for the project, TICs reported?			X			
R4	O	**Surrogate recovery data**						
		Were surrogates added prior to extraction?	X					
		Were surrogate percent recoveries in all samples within the laboratory QC limits?		X			1	
R5	OI	**Test reports/summary forms for blank samples**						
		Were appropriate type(s) of blanks analyzed?	X					
		Were blanks analyzed at the appropriate frequency?	X					
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X					
		Were blank concentrations < MQL?	X					
R6	OI	**Laboratory control samples (LCS):**						
		Were all COCs included in the LCS?	X					
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X					
		Were LCSs analyzed at the required frequency?	X					
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X					
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X					
		Was the LCSD RPD within QC limits?		X			2	
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**						
		Were the project/method specified analytes included in the MS and MSD?	X					
		Were MS/MSD analyzed at the appropriate frequency?		X			3	
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X					
		Were MS/MSD RPDs within laboratory QC limits?	X					
R8	OI	**Analytical duplicate data**						
		Were appropriate analytical duplicates analyzed for each matrix?	X					
		Were analytical duplicates analyzed at the appropriate frequency?	X					
		Were RPDs or relative standard deviations within the laboratory QC limits?	X					
R9	OI	**Method quantitation limits (MQLs):**						
		Are the MQLs for each method analyte included in the laboratory data package?	X					
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X					
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X					
R10	OI	**Other problems/anomalies**						
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X					
		Were all necessary corrective actions performed for the reported data?	X					
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X					
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X					

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 03/23/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20030619				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 151716, 151763, 151785, 151787, 151813, R358243, R358244				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?	X				
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 03/23/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20030619
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 151716, 151763, 151785, 151787, 151813, R358243, R358244

ER#[5]	Description
1	Semivolatile Organics Method SW8270, samples WG-1620-MW70C-20200312, WG-1620-FD01-20200312, the surrogates could not be determined due to dilution below the calibration range in the 1000x run. Semivolatile Organics Method SW8270, sample WG-1620-MW50B-20200312, the surrogates could not be determined due to dilution below the calibration range in the 100x run.
2	Batch 151785, Texas TPH by TX 1005, LCS/LCSD RPD was above the RPD limit for nC6 to nC12. The individual recoveries met acceptance criteria.
3	Batch 151716, Semivolatile Organics Method SW8270, LCS/LCSD were analyzed and reported in lieu of an MS/MSD for this batch.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20030619

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20030619-01	WQ-1620-TB01-20200312	Water		12-Mar-2020 16:30	13-Mar-2020 14:00	☐
HS20030619-02	WQ-1620-MW99C-20200311	Groundwater		11-Mar-2020 15:35	13-Mar-2020 14:00	☐
HS20030619-03	WG-1620-MW54B-20200311	Groundwater		11-Mar-2020 14:20	13-Mar-2020 14:00	☐
HS20030619-04	WG-1620-MW94A-20200312	Groundwater		12-Mar-2020 15:45	13-Mar-2020 14:00	☐
HS20030619-05	WG-1620-MW93B-20200312	Groundwater		12-Mar-2020 14:35	13-Mar-2020 14:00	☐
HS20030619-06	WG-1620-MW92B-20200312	Groundwater		12-Mar-2020 13:20	13-Mar-2020 14:00	☐
HS20030619-07	WG-1620-MW84A-20200312	Groundwater		12-Mar-2020 12:15	13-Mar-2020 14:00	☐
HS20030619-08	WG-1620-MW70C-20200312	Groundwater		12-Mar-2020 10:35	13-Mar-2020 14:00	☐
HS20030619-09	WG-1620-MW91A-20200312	Groundwater		12-Mar-2020 09:20	13-Mar-2020 14:00	☐
HS20030619-10	WG-1620-FD01-20200312	Groundwater		12-Mar-2020 00:00	13-Mar-2020 14:00	☐
HS20030619-11	WQ-1620-TB02-20200312	Water		12-Mar-2020 12:36	13-Mar-2020 14:00	☐
HS20030619-12	WG-1620-MW76B-20200312	Groundwater		12-Mar-2020 10:35	13-Mar-2020 14:00	☐
HS20030619-13	WG-1620-MW97A-20200312	Groundwater		12-Mar-2020 11:47	13-Mar-2020 14:00	☐
HS20030619-14	WG-1620-MW98A-20200312	Groundwater		12-Mar-2020 12:54	13-Mar-2020 14:00	☐
HS20030619-15	WG-1620-MW98B-20200312	Groundwater		12-Mar-2020 13:53	13-Mar-2020 14:00	☐
HS20030619-16	WG-1620-MW50B-20200312	Groundwater		12-Mar-2020 15:20	13-Mar-2020 14:00	☐

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20030619
Sample ID: WQ-1620-TB01-20200312
Lab ID:HS20030619-01
Collection Date: 12-Mar-2020 16:30
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	< 0.00020		0.00020	0.0010	mg/L	1	15-Mar-2020 06:28
Benzene	< 0.00020		0.00020	0.0010	mg/L	1	15-Mar-2020 06:28
Chlorobenzene	< 0.00030		0.00030	0.0010	mg/L	1	15-Mar-2020 06:28
Ethylbenzene	< 0.00030		0.00030	0.0010	mg/L	1	15-Mar-2020 06:28
Methylene chloride	< 0.0010		0.0010	0.0020	mg/L	1	15-Mar-2020 06:28
Toluene	< 0.00020		0.00020	0.0010	mg/L	1	15-Mar-2020 06:28
Xylenes, Total	< 0.00030		0.00030	0.0010	mg/L	1	15-Mar-2020 06:28
Surr: 1,2-Dichloroethane-d4	*104*			*70-126*	*%REC*	*1*	*15-Mar-2020 06:28*
Surr: 4-Bromofluorobenzene	*97.0*			*81-113*	*%REC*	*1*	*15-Mar-2020 06:28*
Surr: Dibromofluoromethane	*100*			*77-123*	*%REC*	*1*	*15-Mar-2020 06:28*
Surr: Toluene-d8	*100.0*			*82-127*	*%REC*	*1*	*15-Mar-2020 06:28*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WQ-1620-MW99C-20200311
Collection Date: 11-Mar-2020 15:35

ANALYTICAL REPORT
WorkOrder:HS20030619
Lab ID:HS20030619-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	< 0.00020		0.00020	0.0010	mg/L	1	14-Mar-2020 18:05
Benzene	< 0.00020		0.00020	0.0010	mg/L	1	14-Mar-2020 18:05
Chlorobenzene	< 0.00030		0.00030	0.0010	mg/L	1	14-Mar-2020 18:05
Ethylbenzene	< 0.00030		0.00030	0.0010	mg/L	1	14-Mar-2020 18:05
Methylene chloride	< 0.0010		0.0010	0.0020	mg/L	1	14-Mar-2020 18:05
Toluene	**0.00078**	J	**0.00020**	**0.0010**	**mg/L**	1	14-Mar-2020 18:05
Xylenes, Total	< 0.00030		0.00030	0.0010	mg/L	1	14-Mar-2020 18:05
Surr: 1,2-Dichloroethane-d4	*104*			*70-126*	*%REC*	*1*	*14-Mar-2020 18:05*
Surr: 4-Bromofluorobenzene	*95.9*			*81-113*	*%REC*	*1*	*14-Mar-2020 18:05*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*14-Mar-2020 18:05*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*14-Mar-2020 18:05*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WQ-1620-MW99C-20200311
Collection Date: 11-Mar-2020 15:35

ANALYTICAL REPORT
WorkOrder:HS20030619
Lab ID:HS20030619-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 16-Mar-2020		Analyst: GEY
1,2-Diphenylhydrazine	< 0.000021		0.000021	0.00020	mg/L	1	16-Mar-2020 17:59
2,4-Dimethylphenol	< 0.000041		0.000041	0.00020	mg/L	1	16-Mar-2020 17:59
2,4-Dinitrotoluene	< 0.000059		0.000059	0.00020	mg/L	1	16-Mar-2020 17:59
2,6-Dinitrotoluene	< 0.000043		0.000043	0.00020	mg/L	1	16-Mar-2020 17:59
2-Chloronaphthalene	< 0.000021		0.000021	0.00020	mg/L	1	16-Mar-2020 17:59
2-Methylnaphthalene	**0.000086**	J	**0.000019**	**0.00010**	**mg/L**	1	16-Mar-2020 17:59
4,6-Dinitro-2-methylphenol	< 0.000020		0.000020	0.00020	mg/L	1	16-Mar-2020 17:59
4-Nitrophenol	< 0.000048		0.000048	0.0010	mg/L	1	16-Mar-2020 17:59
Acenaphthene	< 0.000028		0.000028	0.00010	mg/L	1	16-Mar-2020 17:59
Acenaphthylene	< 0.000015		0.000015	0.00010	mg/L	1	16-Mar-2020 17:59
Anthracene	< 0.000014		0.000014	0.00010	mg/L	1	16-Mar-2020 17:59
Benz(a)anthracene	< 0.000051		0.000051	0.00010	mg/L	1	16-Mar-2020 17:59
Benzo(a)pyrene	< 0.000020		0.000020	0.00010	mg/L	1	16-Mar-2020 17:59
Bis(2-chloroethoxy)methane	< 0.000031		0.000031	0.00020	mg/L	1	16-Mar-2020 17:59
Bis(2-ethylhexyl)phthalate	**0.000070**	J	**0.000038**	**0.00020**	**mg/L**	1	16-Mar-2020 17:59
Chrysene	< 0.000021		0.000021	0.00010	mg/L	1	16-Mar-2020 17:59
Dibenzofuran	< 0.000020		0.000020	0.00010	mg/L	1	16-Mar-2020 17:59
Di-n-butyl phthalate	< 0.000020		0.000020	0.00020	mg/L	1	16-Mar-2020 17:59
Fluoranthene	< 0.000010		0.000010	0.00010	mg/L	1	16-Mar-2020 17:59
Fluorene	< 0.000031		0.000031	0.00010	mg/L	1	16-Mar-2020 17:59
Naphthalene	**0.00018**		**0.000020**	**0.00010**	**mg/L**	1	16-Mar-2020 17:59
Nitrobenzene	< 0.000024		0.000024	0.00020	mg/L	1	16-Mar-2020 17:59
N-Nitrosodiphenylamine	< 0.000026		0.000026	0.00020	mg/L	1	16-Mar-2020 17:59
Pentachlorophenol	< 0.000081		0.000081	0.00020	mg/L	1	16-Mar-2020 17:59
Phenanthrene	**0.000053**	J	**0.000021**	**0.00010**	**mg/L**	1	16-Mar-2020 17:59
Phenol	< 0.000036		0.000036	0.00020	mg/L	1	16-Mar-2020 17:59
Pyrene	< 0.000019		0.000019	0.00010	mg/L	1	16-Mar-2020 17:59
Surr: 2,4,6-Tribromophenol	*77.1*			*34-129*	*%REC*	*1*	*16-Mar-2020 17:59*
Surr: 2-Fluorobiphenyl	*57.1*			*40-125*	*%REC*	*1*	*16-Mar-2020 17:59*
Surr: 2-Fluorophenol	*57.1*			*20-120*	*%REC*	*1*	*16-Mar-2020 17:59*
Surr: 4-Terphenyl-d14	*65.4*			*40-135*	*%REC*	*1*	*16-Mar-2020 17:59*
Surr: Nitrobenzene-d5	*47.5*			*41-120*	*%REC*	*1*	*16-Mar-2020 17:59*
Surr: Phenol-d6	*51.3*			*20-120*	*%REC*	*1*	*16-Mar-2020 17:59*
ICP-MS METALS BY SW6020A	**Method:SW6020**				Prep:SW3010A / 17-Mar-2020		Analyst: JC
Arsenic	**0.000866**	J	**0.000400**	**0.00200**	**mg/L**	1	18-Mar-2020 18:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW54B-20200311
Collection Date: 11-Mar-2020 14:20

ANALYTICAL REPORT
WorkOrder:HS20030619
Lab ID:HS20030619-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	< 0.00020		0.00020	0.0010	mg/L	1	14-Mar-2020 18:30
Benzene	**0.00043**	J	**0.00020**	**0.0010**	**mg/L**	1	14-Mar-2020 18:30
Chlorobenzene	< 0.00030		0.00030	0.0010	mg/L	1	14-Mar-2020 18:30
Ethylbenzene	**0.0011**		**0.00030**	**0.0010**	**mg/L**	1	14-Mar-2020 18:30
Methylene chloride	< 0.0010		0.0010	0.0020	mg/L	1	14-Mar-2020 18:30
Toluene	< 0.00020		0.00020	0.0010	mg/L	1	14-Mar-2020 18:30
Xylenes, Total	**0.0018**		**0.00030**	**0.0010**	**mg/L**	1	14-Mar-2020 18:30
Surr: 1,2-Dichloroethane-d4	*106*			*70-126*	*%REC*	*1*	*14-Mar-2020 18:30*
Surr: 4-Bromofluorobenzene	*96.0*			*81-113*	*%REC*	*1*	*14-Mar-2020 18:30*
Surr: Dibromofluoromethane	*98.1*			*77-123*	*%REC*	*1*	*14-Mar-2020 18:30*
Surr: Toluene-d8	*99.6*			*82-127*	*%REC*	*1*	*14-Mar-2020 18:30*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW54B-20200311
Collection Date: 11-Mar-2020 14:20

ANALYTICAL REPORT
WorkOrder:HS20030619
Lab ID:HS20030619-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 16-Mar-2020		Analyst: GEY
1,2-Diphenylhydrazine	< 0.000021		0.000021	0.00020	mg/L	1	16-Mar-2020 18:18
2,4-Dimethylphenol	< 0.000040		0.000040	0.00020	mg/L	1	16-Mar-2020 18:18
2,4-Dinitrotoluene	< 0.000059		0.000059	0.00020	mg/L	1	16-Mar-2020 18:18
2,6-Dinitrotoluene	< 0.000042		0.000042	0.00020	mg/L	1	16-Mar-2020 18:18
2-Chloronaphthalene	< 0.000021		0.000021	0.00020	mg/L	1	16-Mar-2020 18:18
2-Methylnaphthalene	**0.00011**		**0.000019**	**0.00010**	**mg/L**	1	16-Mar-2020 18:18
4,6-Dinitro-2-methylphenol	< 0.000020		0.000020	0.00020	mg/L	1	16-Mar-2020 18:18
4-Nitrophenol	< 0.000047		0.000047	0.0010	mg/L	1	16-Mar-2020 18:18
Acenaphthene	**0.0093**		**0.000027**	**0.00010**	**mg/L**	1	16-Mar-2020 18:18
Acenaphthylene	**0.000087**	J	**0.000015**	**0.00010**	**mg/L**	1	16-Mar-2020 18:18
Anthracene	**0.00017**		**0.000014**	**0.00010**	**mg/L**	1	16-Mar-2020 18:18
Benz(a)anthracene	< 0.000051		0.000051	0.00010	mg/L	1	16-Mar-2020 18:18
Benzo(a)pyrene	< 0.000020		0.000020	0.00010	mg/L	1	16-Mar-2020 18:18
Bis(2-chloroethoxy)methane	< 0.000030		0.000030	0.00020	mg/L	1	16-Mar-2020 18:18
Bis(2-ethylhexyl)phthalate	**0.000089**	J	**0.000037**	**0.00020**	**mg/L**	1	16-Mar-2020 18:18
Chrysene	< 0.000021		0.000021	0.00010	mg/L	1	16-Mar-2020 18:18
Dibenzofuran	**0.000076**	J	**0.000020**	**0.00010**	**mg/L**	1	16-Mar-2020 18:18
Di-n-butyl phthalate	**0.000033**	J	**0.000020**	**0.00020**	**mg/L**	1	16-Mar-2020 18:18
Fluoranthene	**0.000022**	J	**0.000010**	**0.00010**	**mg/L**	1	16-Mar-2020 18:18
Fluorene	**0.00015**		**0.000030**	**0.00010**	**mg/L**	1	16-Mar-2020 18:18
Naphthalene	**0.0021**		**0.000020**	**0.00010**	**mg/L**	1	16-Mar-2020 18:18
Nitrobenzene	< 0.000024		0.000024	0.00020	mg/L	1	16-Mar-2020 18:18
N-Nitrosodiphenylamine	< 0.000025		0.000025	0.00020	mg/L	1	16-Mar-2020 18:18
Pentachlorophenol	< 0.000080		0.000080	0.00020	mg/L	1	16-Mar-2020 18:18
Phenanthrene	**0.0028**		**0.000021**	**0.00010**	**mg/L**	1	16-Mar-2020 18:18
Phenol	< 0.000035		0.000035	0.00020	mg/L	1	16-Mar-2020 18:18
Pyrene	< 0.000019		0.000019	0.00010	mg/L	1	16-Mar-2020 18:18
Surr: 2,4,6-Tribromophenol	*86.7*			*34-129*	*%REC*	*1*	*16-Mar-2020 18:18*
Surr: 2-Fluorobiphenyl	*52.5*			*40-125*	*%REC*	*1*	*16-Mar-2020 18:18*
Surr: 2-Fluorophenol	*54.7*			*20-120*	*%REC*	*1*	*16-Mar-2020 18:18*
Surr: 4-Terphenyl-d14	*88.2*			*40-135*	*%REC*	*1*	*16-Mar-2020 18:18*
Surr: Nitrobenzene-d5	*49.7*			*41-120*	*%REC*	*1*	*16-Mar-2020 18:18*
Surr: Phenol-d6	*54.3*			*20-120*	*%REC*	*1*	*16-Mar-2020 18:18*
ICP-MS METALS BY SW6020A	**Method:SW6020**				Prep:SW3010A / 17-Mar-2020		Analyst: JC
Arsenic	**0.00117**	J	**0.000400**	**0.00200**	**mg/L**	1	18-Mar-2020 18:23

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW94A-20200312
Collection Date: 12-Mar-2020 15:45

ANALYTICAL REPORT
WorkOrder:HS20030619
Lab ID:HS20030619-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	< 0.00020		0.00020	0.0010	mg/L	1	14-Mar-2020 18:54
Benzene	< 0.00020		0.00020	0.0010	mg/L	1	14-Mar-2020 18:54
Chlorobenzene	< 0.00030		0.00030	0.0010	mg/L	1	14-Mar-2020 18:54
Ethylbenzene	< 0.00030		0.00030	0.0010	mg/L	1	14-Mar-2020 18:54
Methylene chloride	< 0.0010		0.0010	0.0020	mg/L	1	14-Mar-2020 18:54
Toluene	< 0.00020		0.00020	0.0010	mg/L	1	14-Mar-2020 18:54
Xylenes, Total	< 0.00030		0.00030	0.0010	mg/L	1	14-Mar-2020 18:54
Surr: 1,2-Dichloroethane-d4	*105*			*70-126*	*%REC*	*1*	*14-Mar-2020 18:54*
Surr: 4-Bromofluorobenzene	*97.2*			*81-113*	*%REC*	*1*	*14-Mar-2020 18:54*
Surr: Dibromofluoromethane	*100*			*77-123*	*%REC*	*1*	*14-Mar-2020 18:54*
Surr: Toluene-d8	*95.7*			*82-127*	*%REC*	*1*	*14-Mar-2020 18:54*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW94A-20200312
Collection Date: 12-Mar-2020 15:45

ANALYTICAL REPORT
WorkOrder:HS20030619
Lab ID:HS20030619-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Mar-2020		Analyst: GEY
1,2-Diphenylhydrazine	< 0.000022		0.000022	0.00021	mg/L	1	16-Mar-2020 18:37
2,4-Dimethylphenol	< 0.000041		0.000041	0.00021	mg/L	1	16-Mar-2020 18:37
2,4-Dinitrotoluene	< 0.000060		0.000060	0.00021	mg/L	1	16-Mar-2020 18:37
2,6-Dinitrotoluene	< 0.000043		0.000043	0.00021	mg/L	1	16-Mar-2020 18:37
2-Chloronaphthalene	< 0.000022		0.000022	0.00021	mg/L	1	16-Mar-2020 18:37
2-Methylnaphthalene	< 0.000020		0.000020	0.00010	mg/L	1	16-Mar-2020 18:37
4,6-Dinitro-2-methylphenol	< 0.000021		0.000021	0.00021	mg/L	1	16-Mar-2020 18:37
4-Nitrophenol	< 0.000048		0.000048	0.0010	mg/L	1	16-Mar-2020 18:37
Acenaphthene	< 0.000028		0.000028	0.00010	mg/L	1	16-Mar-2020 18:37
Acenaphthylene	< 0.000015		0.000015	0.00010	mg/L	1	16-Mar-2020 18:37
Anthracene	< 0.000014		0.000014	0.00010	mg/L	1	16-Mar-2020 18:37
Benz(a)anthracene	< 0.000052		0.000052	0.00010	mg/L	1	16-Mar-2020 18:37
Benzo(a)pyrene	< 0.000021		0.000021	0.00010	mg/L	1	16-Mar-2020 18:37
Bis(2-chloroethoxy)methane	< 0.000031		0.000031	0.00021	mg/L	1	16-Mar-2020 18:37
Bis(2-ethylhexyl)phthalate	**0.000056**	J	**0.000038**	**0.00021**	**mg/L**	1	16-Mar-2020 18:37
Chrysene	< 0.000022		0.000022	0.00010	mg/L	1	16-Mar-2020 18:37
Dibenzofuran	< 0.000021		0.000021	0.00010	mg/L	1	16-Mar-2020 18:37
Di-n-butyl phthalate	< 0.000021		0.000021	0.00021	mg/L	1	16-Mar-2020 18:37
Fluoranthene	< 0.000010		0.000010	0.00010	mg/L	1	16-Mar-2020 18:37
Fluorene	< 0.000031		0.000031	0.00010	mg/L	1	16-Mar-2020 18:37
Naphthalene	< 0.000021		0.000021	0.00010	mg/L	1	16-Mar-2020 18:37
Nitrobenzene	< 0.000025		0.000025	0.00021	mg/L	1	16-Mar-2020 18:37
N-Nitrosodiphenylamine	< 0.000026		0.000026	0.00021	mg/L	1	16-Mar-2020 18:37
Pentachlorophenol	< 0.000081		0.000081	0.00021	mg/L	1	16-Mar-2020 18:37
Phenanthrene	< 0.000022		0.000022	0.00010	mg/L	1	16-Mar-2020 18:37
Phenol	< 0.000036		0.000036	0.00021	mg/L	1	16-Mar-2020 18:37
Pyrene	< 0.000020		0.000020	0.00010	mg/L	1	16-Mar-2020 18:37
Surr: 2,4,6-Tribromophenol	*94.2*			*34-129*	*%REC*	*1*	*16-Mar-2020 18:37*
Surr: 2-Fluorobiphenyl	*62.9*			*40-125*	*%REC*	*1*	*16-Mar-2020 18:37*
Surr: 2-Fluorophenol	*65.9*			*20-120*	*%REC*	*1*	*16-Mar-2020 18:37*
Surr: 4-Terphenyl-d14	*92.0*			*40-135*	*%REC*	*1*	*16-Mar-2020 18:37*
Surr: Nitrobenzene-d5	*63.1*			*41-120*	*%REC*	*1*	*16-Mar-2020 18:37*
Surr: Phenol-d6	*76.1*			*20-120*	*%REC*	*1*	*16-Mar-2020 18:37*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Mar-2020		Analyst: JC
Arsenic	**0.00540**		**0.000400**	**0.00200**	**mg/L**	1	18-Mar-2020 18:25

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW93B-20200312
Collection Date: 12-Mar-2020 14:35

ANALYTICAL REPORT
WorkOrder:HS20030619
Lab ID:HS20030619-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	< 0.00020		0.00020	0.0010	mg/L	1	14-Mar-2020 19:19
Benzene	< 0.00020		0.00020	0.0010	mg/L	1	14-Mar-2020 19:19
Chlorobenzene	< 0.00030		0.00030	0.0010	mg/L	1	14-Mar-2020 19:19
Ethylbenzene	< 0.00030		0.00030	0.0010	mg/L	1	14-Mar-2020 19:19
Methylene chloride	< 0.0010		0.0010	0.0020	mg/L	1	14-Mar-2020 19:19
Toluene	**0.00092**	J	**0.00020**	**0.0010**	**mg/L**	1	14-Mar-2020 19:19
Xylenes, Total	< 0.00030		0.00030	0.0010	mg/L	1	14-Mar-2020 19:19
Surr: 1,2-Dichloroethane-d4	*104*			*70-126*	*%REC*	*1*	*14-Mar-2020 19:19*
Surr: 4-Bromofluorobenzene	*95.8*			*81-113*	*%REC*	*1*	*14-Mar-2020 19:19*
Surr: Dibromofluoromethane	*99.5*			*77-123*	*%REC*	*1*	*14-Mar-2020 19:19*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*14-Mar-2020 19:19*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW93B-20200312
Collection Date: 12-Mar-2020 14:35

ANALYTICAL REPORT
WorkOrder:HS20030619
Lab ID:HS20030619-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 16-Mar-2020		Analyst: GEY
1,2-Diphenylhydrazine	< 0.000021		0.000021	0.00020	mg/L	1	16-Mar-2020 18:56
2,4-Dimethylphenol	< 0.000041		0.000041	0.00020	mg/L	1	16-Mar-2020 18:56
2,4-Dinitrotoluene	< 0.000059		0.000059	0.00020	mg/L	1	16-Mar-2020 18:56
2,6-Dinitrotoluene	< 0.000043		0.000043	0.00020	mg/L	1	16-Mar-2020 18:56
2-Chloronaphthalene	< 0.000021		0.000021	0.00020	mg/L	1	16-Mar-2020 18:56
2-Methylnaphthalene	< 0.000019		0.000019	0.00010	mg/L	1	16-Mar-2020 18:56
4,6-Dinitro-2-methylphenol	< 0.000020		0.000020	0.00020	mg/L	1	16-Mar-2020 18:56
4-Nitrophenol	< 0.000048		0.000048	0.0010	mg/L	1	16-Mar-2020 18:56
Acenaphthene	**0.000039**	J	**0.000028**	**0.00010**	**mg/L**	1	16-Mar-2020 18:56
Acenaphthylene	< 0.000015		0.000015	0.00010	mg/L	1	16-Mar-2020 18:56
Anthracene	< 0.000014		0.000014	0.00010	mg/L	1	16-Mar-2020 18:56
Benz(a)anthracene	< 0.000051		0.000051	0.00010	mg/L	1	16-Mar-2020 18:56
Benzo(a)pyrene	< 0.000020		0.000020	0.00010	mg/L	1	16-Mar-2020 18:56
Bis(2-chloroethoxy)methane	< 0.000031		0.000031	0.00020	mg/L	1	16-Mar-2020 18:56
Bis(2-ethylhexyl)phthalate	< 0.000038		0.000038	0.00020	mg/L	1	16-Mar-2020 18:56
Chrysene	< 0.000021		0.000021	0.00010	mg/L	1	16-Mar-2020 18:56
Dibenzofuran	**0.000071**	J	**0.000020**	**0.00010**	**mg/L**	1	16-Mar-2020 18:56
Di-n-butyl phthalate	< 0.000020		0.000020	0.00020	mg/L	1	16-Mar-2020 18:56
Fluoranthene	< 0.000010		0.000010	0.00010	mg/L	1	16-Mar-2020 18:56
Fluorene	**0.000058**	J	**0.000031**	**0.00010**	**mg/L**	1	16-Mar-2020 18:56
Naphthalene	< 0.000020		0.000020	0.00010	mg/L	1	16-Mar-2020 18:56
Nitrobenzene	< 0.000024		0.000024	0.00020	mg/L	1	16-Mar-2020 18:56
N-Nitrosodiphenylamine	< 0.000026		0.000026	0.00020	mg/L	1	16-Mar-2020 18:56
Pentachlorophenol	< 0.000081		0.000081	0.00020	mg/L	1	16-Mar-2020 18:56
Phenanthrene	**0.00016**		**0.000021**	**0.00010**	**mg/L**	1	16-Mar-2020 18:56
Phenol	< 0.000036		0.000036	0.00020	mg/L	1	16-Mar-2020 18:56
Pyrene	< 0.000019		0.000019	0.00010	mg/L	1	16-Mar-2020 18:56
Surr: 2,4,6-Tribromophenol	*83.6*			*34-129*	*%REC*	*1*	*16-Mar-2020 18:56*
Surr: 2-Fluorobiphenyl	*73.6*			*40-125*	*%REC*	*1*	*16-Mar-2020 18:56*
Surr: 2-Fluorophenol	*29.5*			*20-120*	*%REC*	*1*	*16-Mar-2020 18:56*
Surr: 4-Terphenyl-d14	*65.6*			*40-135*	*%REC*	*1*	*16-Mar-2020 18:56*
Surr: Nitrobenzene-d5	*61.4*			*41-120*	*%REC*	*1*	*16-Mar-2020 18:56*
Surr: Phenol-d6	*69.7*			*20-120*	*%REC*	*1*	*16-Mar-2020 18:56*
ICP-MS METALS BY SW6020A	**Method:SW6020**				Prep:SW3010A / 17-Mar-2020		Analyst: JC
Arsenic	**0.00455**		**0.000400**	**0.00200**	**mg/L**	1	18-Mar-2020 18:34

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW92B-20200312
Collection Date: 12-Mar-2020 13:20

ANALYTICAL REPORT
WorkOrder:HS20030619
Lab ID:HS20030619-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	< 0.00020		0.00020	0.0010	mg/L	1	14-Mar-2020 19:44
Benzene	< 0.00020		0.00020	0.0010	mg/L	1	14-Mar-2020 19:44
Chlorobenzene	< 0.00030		0.00030	0.0010	mg/L	1	14-Mar-2020 19:44
Ethylbenzene	< 0.00030		0.00030	0.0010	mg/L	1	14-Mar-2020 19:44
Methylene chloride	< 0.0010		0.0010	0.0020	mg/L	1	14-Mar-2020 19:44
Toluene	**0.00049**	J	**0.00020**	**0.0010**	**mg/L**	1	14-Mar-2020 19:44
Xylenes, Total	< 0.00030		0.00030	0.0010	mg/L	1	14-Mar-2020 19:44
Surr: 1,2-Dichloroethane-d4	*105*			*70-126*	*%REC*	*1*	*14-Mar-2020 19:44*
Surr: 4-Bromofluorobenzene	*96.1*			*81-113*	*%REC*	*1*	*14-Mar-2020 19:44*
Surr: Dibromofluoromethane	*98.9*			*77-123*	*%REC*	*1*	*14-Mar-2020 19:44*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*1*	*14-Mar-2020 19:44*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW92B-20200312
Collection Date: 12-Mar-2020 13:20

ANALYTICAL REPORT
WorkOrder:HS20030619
Lab ID:HS20030619-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Mar-2020		Analyst: GEY
1,2-Diphenylhydrazine	< 0.000021		0.000021	0.00020	mg/L	1	16-Mar-2020 19:15
2,4-Dimethylphenol	< 0.000040		0.000040	0.00020	mg/L	1	16-Mar-2020 19:15
2,4-Dinitrotoluene	< 0.000059		0.000059	0.00020	mg/L	1	16-Mar-2020 19:15
2,6-Dinitrotoluene	< 0.000042		0.000042	0.00020	mg/L	1	16-Mar-2020 19:15
2-Chloronaphthalene	< 0.000021		0.000021	0.00020	mg/L	1	16-Mar-2020 19:15
2-Methylnaphthalene	< 0.000019		0.000019	0.00010	mg/L	1	16-Mar-2020 19:15
4,6-Dinitro-2-methylphenol	< 0.000020		0.000020	0.00020	mg/L	1	16-Mar-2020 19:15
4-Nitrophenol	< 0.000047		0.000047	0.0010	mg/L	1	16-Mar-2020 19:15
Acenaphthene	< 0.000027		0.000027	0.00010	mg/L	1	16-Mar-2020 19:15
Acenaphthylene	< 0.000015		0.000015	0.00010	mg/L	1	16-Mar-2020 19:15
Anthracene	< 0.000014		0.000014	0.00010	mg/L	1	16-Mar-2020 19:15
Benz(a)anthracene	< 0.000051		0.000051	0.00010	mg/L	1	16-Mar-2020 19:15
Benzo(a)pyrene	< 0.000020		0.000020	0.00010	mg/L	1	16-Mar-2020 19:15
Bis(2-chloroethoxy)methane	< 0.000030		0.000030	0.00020	mg/L	1	16-Mar-2020 19:15
Bis(2-ethylhexyl)phthalate	< 0.000037		0.000037	0.00020	mg/L	1	16-Mar-2020 19:15
Chrysene	< 0.000021		0.000021	0.00010	mg/L	1	16-Mar-2020 19:15
Dibenzofuran	< 0.000020		0.000020	0.00010	mg/L	1	16-Mar-2020 19:15
Di-n-butyl phthalate	< 0.000020		0.000020	0.00020	mg/L	1	16-Mar-2020 19:15
Fluoranthene	< 0.000010		0.000010	0.00010	mg/L	1	16-Mar-2020 19:15
Fluorene	< 0.000030		0.000030	0.00010	mg/L	1	16-Mar-2020 19:15
Naphthalene	< 0.000020		0.000020	0.00010	mg/L	1	16-Mar-2020 19:15
Nitrobenzene	< 0.000024		0.000024	0.00020	mg/L	1	16-Mar-2020 19:15
N-Nitrosodiphenylamine	< 0.000025		0.000025	0.00020	mg/L	1	16-Mar-2020 19:15
Pentachlorophenol	< 0.000080		0.000080	0.00020	mg/L	1	16-Mar-2020 19:15
Phenanthrene	< 0.000021		0.000021	0.00010	mg/L	1	16-Mar-2020 19:15
Phenol	< 0.000035		0.000035	0.00020	mg/L	1	16-Mar-2020 19:15
Pyrene	< 0.000019		0.000019	0.00010	mg/L	1	16-Mar-2020 19:15
Surr: 2,4,6-Tribromophenol	*90.6*			*34-129*	*%REC*	*1*	*16-Mar-2020 19:15*
Surr: 2-Fluorobiphenyl	*62.5*			*40-125*	*%REC*	*1*	*16-Mar-2020 19:15*
Surr: 2-Fluorophenol	*60.4*			*20-120*	*%REC*	*1*	*16-Mar-2020 19:15*
Surr: 4-Terphenyl-d14	*88.7*			*40-135*	*%REC*	*1*	*16-Mar-2020 19:15*
Surr: Nitrobenzene-d5	*57.7*			*41-120*	*%REC*	*1*	*16-Mar-2020 19:15*
Surr: Phenol-d6	*70.9*			*20-120*	*%REC*	*1*	*16-Mar-2020 19:15*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 17-Mar-2020		Analyst: JC
Arsenic	**0.00201**		**0.000400**	**0.00200**	**mg/L**	1	18-Mar-2020 18:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20030619
Sample ID: WG-1620-MW84A-20200312
Lab ID:HS20030619-07
Collection Date: 12-Mar-2020 12:15
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	< 0.00020		0.00020	0.0010	mg/L	1	15-Mar-2020 00:13
Benzene	< 0.00020		0.00020	0.0010	mg/L	1	15-Mar-2020 00:13
Chlorobenzene	< 0.00030		0.00030	0.0010	mg/L	1	15-Mar-2020 00:13
Ethylbenzene	< 0.00030		0.00030	0.0010	mg/L	1	15-Mar-2020 00:13
Methylene chloride	< 0.0010		0.0010	0.0020	mg/L	1	15-Mar-2020 00:13
Toluene	< 0.00020		0.00020	0.0010	mg/L	1	15-Mar-2020 00:13
Xylenes, Total	< 0.00030		0.00030	0.0010	mg/L	1	15-Mar-2020 00:13
Surr: 1,2-Dichloroethane-d4	*104*			*70-126*	*%REC*	*1*	*15-Mar-2020 00:13*
Surr: 4-Bromofluorobenzene	*96.1*			*81-113*	*%REC*	*1*	*15-Mar-2020 00:13*
Surr: Dibromofluoromethane	*100.0*			*77-123*	*%REC*	*1*	*15-Mar-2020 00:13*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*15-Mar-2020 00:13*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW84A-20200312
Collection Date: 12-Mar-2020 12:15

ANALYTICAL REPORT
WorkOrder:HS20030619
Lab ID:HS20030619-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Mar-2020		Analyst: GEY
1,2-Diphenylhydrazine	< 0.000021		0.000021	0.00020	mg/L	1	17-Mar-2020 17:59
2,4-Dimethylphenol	< 0.000041		0.000041	0.00020	mg/L	1	17-Mar-2020 17:59
2,4-Dinitrotoluene	< 0.000059		0.000059	0.00020	mg/L	1	17-Mar-2020 17:59
2,6-Dinitrotoluene	< 0.000043		0.000043	0.00020	mg/L	1	17-Mar-2020 17:59
2-Chloronaphthalene	< 0.000021		0.000021	0.00020	mg/L	1	17-Mar-2020 17:59
2-Methylnaphthalene	< 0.000019		0.000019	0.00010	mg/L	1	17-Mar-2020 17:59
4,6-Dinitro-2-methylphenol	< 0.000020		0.000020	0.00020	mg/L	1	17-Mar-2020 17:59
4-Nitrophenol	< 0.000048		0.000048	0.0010	mg/L	1	17-Mar-2020 17:59
Acenaphthene	< 0.000028		0.000028	0.00010	mg/L	1	17-Mar-2020 17:59
Acenaphthylene	< 0.000015		0.000015	0.00010	mg/L	1	17-Mar-2020 17:59
Anthracene	< 0.000014		0.000014	0.00010	mg/L	1	17-Mar-2020 17:59
Benz(a)anthracene	< 0.000051		0.000051	0.00010	mg/L	1	17-Mar-2020 17:59
Benzo(a)pyrene	< 0.000020		0.000020	0.00010	mg/L	1	17-Mar-2020 17:59
Bis(2-chloroethoxy)methane	< 0.000031		0.000031	0.00020	mg/L	1	17-Mar-2020 17:59
Bis(2-ethylhexyl)phthalate	< 0.000038		0.000038	0.00020	mg/L	1	17-Mar-2020 17:59
Chrysene	< 0.000021		0.000021	0.00010	mg/L	1	17-Mar-2020 17:59
Dibenzofuran	< 0.000020		0.000020	0.00010	mg/L	1	17-Mar-2020 17:59
Di-n-butyl phthalate	< 0.000020		0.000020	0.00020	mg/L	1	17-Mar-2020 17:59
Fluoranthene	< 0.000010		0.000010	0.00010	mg/L	1	17-Mar-2020 17:59
Fluorene	< 0.000031		0.000031	0.00010	mg/L	1	17-Mar-2020 17:59
Naphthalene	**0.000023**	J	**0.000020**	**0.00010**	**mg/L**	1	17-Mar-2020 17:59
Nitrobenzene	< 0.000024		0.000024	0.00020	mg/L	1	17-Mar-2020 17:59
N-Nitrosodiphenylamine	< 0.000026		0.000026	0.00020	mg/L	1	17-Mar-2020 17:59
Pentachlorophenol	< 0.000081		0.000081	0.00020	mg/L	1	17-Mar-2020 17:59
Phenanthrene	< 0.000021		0.000021	0.00010	mg/L	1	17-Mar-2020 17:59
Phenol	< 0.000036		0.000036	0.00020	mg/L	1	17-Mar-2020 17:59
Pyrene	< 0.000019		0.000019	0.00010	mg/L	1	17-Mar-2020 17:59
Surr: 2,4,6-Tribromophenol	*88.2*			*34-129*	*%REC*	*1*	*17-Mar-2020 17:59*
Surr: 2-Fluorobiphenyl	*70.1*			*40-125*	*%REC*	*1*	*17-Mar-2020 17:59*
Surr: 2-Fluorophenol	*66.6*			*20-120*	*%REC*	*1*	*17-Mar-2020 17:59*
Surr: 4-Terphenyl-d14	*91.2*			*40-135*	*%REC*	*1*	*17-Mar-2020 17:59*
Surr: Nitrobenzene-d5	*62.3*			*41-120*	*%REC*	*1*	*17-Mar-2020 17:59*
Surr: Phenol-d6	*69.0*			*20-120*	*%REC*	*1*	*17-Mar-2020 17:59*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 18-Mar-2020		Analyst: JHD
Arsenic	**0.00464**		**0.000400**	**0.00200**	**mg/L**	1	20-Mar-2020 16:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW70C-20200312
Collection Date: 12-Mar-2020 10:35

ANALYTICAL REPORT
WorkOrder:HS20030619
Lab ID:HS20030619-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	< 0.00020		0.00020	0.0010	mg/L	1	15-Mar-2020 01:50
Benzene	**0.010**		**0.00020**	**0.0010**	**mg/L**	1	15-Mar-2020 01:50
Chlorobenzene	< 0.00030		0.00030	0.0010	mg/L	1	15-Mar-2020 01:50
Ethylbenzene	**0.057**		**0.00030**	**0.0010**	**mg/L**	1	15-Mar-2020 01:50
Methylene chloride	< 0.0010		0.0010	0.0020	mg/L	1	15-Mar-2020 01:50
Toluene	**0.034**		**0.00020**	**0.0010**	**mg/L**	1	15-Mar-2020 01:50
Xylenes, Total	**0.064**		**0.00030**	**0.0010**	**mg/L**	1	15-Mar-2020 01:50
Surr: 1,2-Dichloroethane-d4	*102*			*70-126*	*%REC*	*1*	*15-Mar-2020 01:50*
Surr: 4-Bromofluorobenzene	*101*			*81-113*	*%REC*	*1*	*15-Mar-2020 01:50*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*15-Mar-2020 01:50*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*1*	*15-Mar-2020 01:50*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW70C-20200312
Collection Date: 12-Mar-2020 10:35

ANALYTICAL REPORT
WorkOrder:HS20030619
Lab ID:HS20030619-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 16-Mar-2020		Analyst: GEY
1,2-Diphenylhydrazine	< 0.000022		0.000022	0.00021	mg/L	1	17-Mar-2020 18:18
2,4-Dimethylphenol	**0.00041**		**0.000042**	**0.00021**	**mg/L**	1	17-Mar-2020 18:18
2,4-Dinitrotoluene	< 0.000060		0.000060	0.00021	mg/L	1	17-Mar-2020 18:18
2,6-Dinitrotoluene	< 0.000044		0.000044	0.00021	mg/L	1	17-Mar-2020 18:18
2-Chloronaphthalene	< 0.000022		0.000022	0.00021	mg/L	1	17-Mar-2020 18:18
2-Methylnaphthalene	**0.067**		**0.00020**	**0.0010**	**mg/L**	10	18-Mar-2020 12:22
4,6-Dinitro-2-methylphenol	< 0.000021		0.000021	0.00021	mg/L	1	17-Mar-2020 18:18
4-Nitrophenol	< 0.000049		0.000049	0.0010	mg/L	1	17-Mar-2020 18:18
Acenaphthene	**0.059**		**0.00028**	**0.0010**	**mg/L**	10	18-Mar-2020 12:22
Acenaphthylene	< 0.000016		0.000016	0.00010	mg/L	1	17-Mar-2020 18:18
Anthracene	**0.0049**		**0.000015**	**0.00010**	**mg/L**	1	17-Mar-2020 18:18
Benz(a)anthracene	< 0.000052		0.000052	0.00010	mg/L	1	17-Mar-2020 18:18
Benzo(a)pyrene	< 0.000021		0.000021	0.00010	mg/L	1	17-Mar-2020 18:18
Bis(2-chloroethoxy)methane	< 0.000031		0.000031	0.00021	mg/L	1	17-Mar-2020 18:18
Bis(2-ethylhexyl)phthalate	< 0.000039		0.000039	0.00021	mg/L	1	17-Mar-2020 18:18
Chrysene	< 0.000022		0.000022	0.00010	mg/L	1	17-Mar-2020 18:18
Dibenzofuran	**0.055**		**0.00021**	**0.0010**	**mg/L**	10	18-Mar-2020 12:22
Di-n-butyl phthalate	**0.000061**	J	**0.000021**	**0.00021**	**mg/L**	1	17-Mar-2020 18:18
Fluoranthene	**0.0030**		**0.000010**	**0.00010**	**mg/L**	1	17-Mar-2020 18:18
Fluorene	**0.028**		**0.00031**	**0.0010**	**mg/L**	10	18-Mar-2020 12:22
Naphthalene	**1.6**		**0.021**	**0.10**	**mg/L**	1000	18-Mar-2020 18:26
Nitrobenzene	< 0.000025		0.000025	0.00021	mg/L	1	17-Mar-2020 18:18
N-Nitrosodiphenylamine	< 0.000026		0.000026	0.00021	mg/L	1	17-Mar-2020 18:18
Pentachlorophenol	< 0.000082		0.000082	0.00021	mg/L	1	17-Mar-2020 18:18
Phenanthrene	**0.040**		**0.00022**	**0.0010**	**mg/L**	10	18-Mar-2020 12:22
Phenol	< 0.000036		0.000036	0.00021	mg/L	1	17-Mar-2020 18:18
Pyrene	**0.0017**		**0.000020**	**0.00010**	**mg/L**	1	17-Mar-2020 18:18
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*1000*	*18-Mar-2020 18:26*
Surr: 2,4,6-Tribromophenol	*86.3*			*34-129*	*%REC*	*10*	*18-Mar-2020 12:22*
Surr: 2,4,6-Tribromophenol	*85.5*			*34-129*	*%REC*	*1*	*17-Mar-2020 18:18*
Surr: 2-Fluorobiphenyl	*48.0*			*40-125*	*%REC*	*1*	*17-Mar-2020 18:18*
Surr: 2-Fluorobiphenyl	*54.8*			*40-125*	*%REC*	*10*	*18-Mar-2020 12:22*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*1000*	*18-Mar-2020 18:26*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*1000*	*18-Mar-2020 18:26*
Surr: 2-Fluorophenol	*52.4*			*20-120*	*%REC*	*10*	*18-Mar-2020 12:22*
Surr: 2-Fluorophenol	*62.1*			*20-120*	*%REC*	*1*	*17-Mar-2020 18:18*
Surr: 4-Terphenyl-d14	*85.5*			*40-135*	*%REC*	*1*	*17-Mar-2020 18:18*
Surr: 4-Terphenyl-d14	*87.7*			*40-135*	*%REC*	*10*	*18-Mar-2020 12:22*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*1000*	*18-Mar-2020 18:26*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW70C-20200312
Collection Date: 12-Mar-2020 10:35

ANALYTICAL REPORT
WorkOrder:HS20030619
Lab ID:HS20030619-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Mar-2020		Analyst: GEY
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*1000*	*18-Mar-2020 18:26*
Surr: Nitrobenzene-d5	*56.1*			*41-120*	*%REC*	*1*	*17-Mar-2020 18:18*
Surr: Nitrobenzene-d5	*49.1*			*41-120*	*%REC*	*10*	*18-Mar-2020 12:22*
Surr: Phenol-d6	*57.0*			*20-120*	*%REC*	*10*	*18-Mar-2020 12:22*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*1000*	*18-Mar-2020 18:26*
Surr: Phenol-d6	*51.4*			*20-120*	*%REC*	*1*	*17-Mar-2020 18:18*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 18-Mar-2020		Analyst: JHD
Arsenic	**0.00598**		**0.000400**	**0.00200**	**mg/L**	1	20-Mar-2020 16:53

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20030619
Sample ID: WG-1620-MW91A-20200312
Lab ID:HS20030619-09
Collection Date: 12-Mar-2020 09:20
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	< 0.00020		0.00020	0.0010	mg/L	1	15-Mar-2020 03:14
Benzene	< 0.00020		0.00020	0.0010	mg/L	1	15-Mar-2020 03:14
Chlorobenzene	< 0.00030		0.00030	0.0010	mg/L	1	15-Mar-2020 03:14
Ethylbenzene	< 0.00030		0.00030	0.0010	mg/L	1	15-Mar-2020 03:14
Methylene chloride	< 0.0010		0.0010	0.0020	mg/L	1	15-Mar-2020 03:14
Toluene	< 0.00020		0.00020	0.0010	mg/L	1	15-Mar-2020 03:14
Xylenes, Total	< 0.00030		0.00030	0.0010	mg/L	1	15-Mar-2020 03:14
Surr: 1,2-Dichloroethane-d4	*102*			*70-126*	*%REC*	*1*	*15-Mar-2020 03:14*
Surr: 4-Bromofluorobenzene	*98.6*			*81-113*	*%REC*	*1*	*15-Mar-2020 03:14*
Surr: Dibromofluoromethane	*97.9*			*77-123*	*%REC*	*1*	*15-Mar-2020 03:14*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*15-Mar-2020 03:14*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW91A-20200312
Collection Date: 12-Mar-2020 09:20

ANALYTICAL REPORT
WorkOrder:HS20030619
Lab ID:HS20030619-09
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Mar-2020		Analyst: GEY
1,2-Diphenylhydrazine	< 0.000022		0.000022	0.00021	mg/L	1	17-Mar-2020 18:37
2,4-Dimethylphenol	< 0.000042		0.000042	0.00021	mg/L	1	17-Mar-2020 18:37
2,4-Dinitrotoluene	< 0.000061		0.000061	0.00021	mg/L	1	17-Mar-2020 18:37
2,6-Dinitrotoluene	< 0.000044		0.000044	0.00021	mg/L	1	17-Mar-2020 18:37
2-Chloronaphthalene	< 0.000022		0.000022	0.00021	mg/L	1	17-Mar-2020 18:37
2-Methylnaphthalene	< 0.000020		0.000020	0.00011	mg/L	1	17-Mar-2020 18:37
4,6-Dinitro-2-methylphenol	< 0.000021		0.000021	0.00021	mg/L	1	17-Mar-2020 18:37
4-Nitrophenol	< 0.000049		0.000049	0.0011	mg/L	1	17-Mar-2020 18:37
Acenaphthene	< 0.000028		0.000028	0.00011	mg/L	1	17-Mar-2020 18:37
Acenaphthylene	< 0.000016		0.000016	0.00011	mg/L	1	17-Mar-2020 18:37
Anthracene	< 0.000015		0.000015	0.00011	mg/L	1	17-Mar-2020 18:37
Benz(a)anthracene	< 0.000053		0.000053	0.00011	mg/L	1	17-Mar-2020 18:37
Benzo(a)pyrene	< 0.000021		0.000021	0.00011	mg/L	1	17-Mar-2020 18:37
Bis(2-chloroethoxy)methane	< 0.000032		0.000032	0.00021	mg/L	1	17-Mar-2020 18:37
Bis(2-ethylhexyl)phthalate	< 0.000039		0.000039	0.00021	mg/L	1	17-Mar-2020 18:37
Chrysene	< 0.000022		0.000022	0.00011	mg/L	1	17-Mar-2020 18:37
Dibenzofuran	< 0.000021		0.000021	0.00011	mg/L	1	17-Mar-2020 18:37
Di-n-butyl phthalate	**0.000031**	J	**0.000021**	**0.00021**	**mg/L**	1	17-Mar-2020 18:37
Fluoranthene	< 0.000011		0.000011	0.00011	mg/L	1	17-Mar-2020 18:37
Fluorene	< 0.000032		0.000032	0.00011	mg/L	1	17-Mar-2020 18:37
Naphthalene	**0.000083**	J	**0.000021**	**0.00011**	**mg/L**	1	17-Mar-2020 18:37
Nitrobenzene	< 0.000025		0.000025	0.00021	mg/L	1	17-Mar-2020 18:37
N-Nitrosodiphenylamine	< 0.000026		0.000026	0.00021	mg/L	1	17-Mar-2020 18:37
Pentachlorophenol	< 0.000083		0.000083	0.00021	mg/L	1	17-Mar-2020 18:37
Phenanthrene	< 0.000022		0.000022	0.00011	mg/L	1	17-Mar-2020 18:37
Phenol	< 0.000037		0.000037	0.00021	mg/L	1	17-Mar-2020 18:37
Pyrene	< 0.000020		0.000020	0.00011	mg/L	1	17-Mar-2020 18:37
Surr: 2,4,6-Tribromophenol	*99.1*			*34-129*	*%REC*	*1*	*17-Mar-2020 18:37*
Surr: 2-Fluorobiphenyl	*69.9*			*40-125*	*%REC*	*1*	*17-Mar-2020 18:37*
Surr: 2-Fluorophenol	*67.9*			*20-120*	*%REC*	*1*	*17-Mar-2020 18:37*
Surr: 4-Terphenyl-d14	*100.0*			*40-135*	*%REC*	*1*	*17-Mar-2020 18:37*
Surr: Nitrobenzene-d5	*62.1*			*41-120*	*%REC*	*1*	*17-Mar-2020 18:37*
Surr: Phenol-d6	*68.6*			*20-120*	*%REC*	*1*	*17-Mar-2020 18:37*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 18-Mar-2020		Analyst: JHD
Arsenic	**0.00989**		**0.000400**	**0.00200**	**mg/L**	1	20-Mar-2020 18:32

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FD01-20200312
Collection Date: 12-Mar-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20030619
Lab ID:HS20030619-10
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	< 0.00020		0.00020	0.0010	mg/L	1	15-Mar-2020 03:39
Benzene	**0.0089**		**0.00020**	**0.0010**	**mg/L**	1	15-Mar-2020 03:39
Chlorobenzene	< 0.00030		0.00030	0.0010	mg/L	1	15-Mar-2020 03:39
Ethylbenzene	**0.052**		**0.00030**	**0.0010**	**mg/L**	1	15-Mar-2020 03:39
Methylene chloride	< 0.0010		0.0010	0.0020	mg/L	1	15-Mar-2020 03:39
Toluene	**0.032**		**0.00020**	**0.0010**	**mg/L**	1	15-Mar-2020 03:39
Xylenes, Total	**0.061**		**0.00030**	**0.0010**	**mg/L**	1	15-Mar-2020 03:39
Surr: 1,2-Dichloroethane-d4	*103*			*70-126*	*%REC*	*1*	*15-Mar-2020 03:39*
Surr: 4-Bromofluorobenzene	*102*			*81-113*	*%REC*	*1*	*15-Mar-2020 03:39*
Surr: Dibromofluoromethane	*98.7*			*77-123*	*%REC*	*1*	*15-Mar-2020 03:39*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*15-Mar-2020 03:39*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FD01-20200312
Collection Date: 12-Mar-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20030619
Lab ID:HS20030619-10
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 16-Mar-2020		Analyst: GEY
1,2-Diphenylhydrazine	< 0.000022		0.000022	0.00021	mg/L	1	17-Mar-2020 18:56
2,4-Dimethylphenol	< 0.000041		0.000041	0.00021	mg/L	1	17-Mar-2020 18:56
2,4-Dinitrotoluene	< 0.000060		0.000060	0.00021	mg/L	1	17-Mar-2020 18:56
2,6-Dinitrotoluene	< 0.000043		0.000043	0.00021	mg/L	1	17-Mar-2020 18:56
2-Chloronaphthalene	< 0.000022		0.000022	0.00021	mg/L	1	17-Mar-2020 18:56
2-Methylnaphthalene	**0.098**		**0.00020**	**0.0010**	**mg/L**	10	18-Mar-2020 13:00
4,6-Dinitro-2-methylphenol	< 0.000021		0.000021	0.00021	mg/L	1	17-Mar-2020 18:56
4-Nitrophenol	< 0.000048		0.000048	0.0010	mg/L	1	17-Mar-2020 18:56
Acenaphthene	**0.087**		**0.00028**	**0.0010**	**mg/L**	10	18-Mar-2020 13:00
Acenaphthylene	**0.00074**		**0.000015**	**0.00010**	**mg/L**	1	17-Mar-2020 18:56
Anthracene	**0.0082**		**0.000014**	**0.00010**	**mg/L**	1	17-Mar-2020 18:56
Benz(a)anthracene	**0.000079**	J	**0.000052**	**0.00010**	**mg/L**	1	17-Mar-2020 18:56
Benzo(a)pyrene	< 0.000021		0.000021	0.00010	mg/L	1	17-Mar-2020 18:56
Bis(2-chloroethoxy)methane	< 0.000031		0.000031	0.00021	mg/L	1	17-Mar-2020 18:56
Bis(2-ethylhexyl)phthalate	**0.000052**	J	**0.000038**	**0.00021**	**mg/L**	1	17-Mar-2020 18:56
Chrysene	**0.000061**	J	**0.000022**	**0.00010**	**mg/L**	1	17-Mar-2020 18:56
Dibenzofuran	**0.078**		**0.00021**	**0.0010**	**mg/L**	10	18-Mar-2020 13:00
Di-n-butyl phthalate	**0.00010**	J	**0.000021**	**0.00021**	**mg/L**	1	17-Mar-2020 18:56
Fluoranthene	**0.0053**		**0.000010**	**0.00010**	**mg/L**	1	17-Mar-2020 18:56
Fluorene	**0.038**		**0.00031**	**0.0010**	**mg/L**	10	18-Mar-2020 13:00
Naphthalene	**2.5**		**0.021**	**0.10**	**mg/L**	1000	18-Mar-2020 18:45
Nitrobenzene	< 0.000025		0.000025	0.00021	mg/L	1	17-Mar-2020 18:56
N-Nitrosodiphenylamine	< 0.000026		0.000026	0.00021	mg/L	1	17-Mar-2020 18:56
Pentachlorophenol	< 0.000081		0.000081	0.00021	mg/L	1	17-Mar-2020 18:56
Phenanthrene	**0.054**		**0.00022**	**0.0010**	**mg/L**	10	18-Mar-2020 13:00
Phenol	< 0.000036		0.000036	0.00021	mg/L	1	17-Mar-2020 18:56
Pyrene	**0.0029**		**0.000020**	**0.00010**	**mg/L**	1	17-Mar-2020 18:56
Surr: 2,4,6-Tribromophenol	*79.3*			*34-129*	*%REC*	*10*	*18-Mar-2020 13:00*
Surr: 2,4,6-Tribromophenol	*89.9*			*34-129*	*%REC*	*1*	*17-Mar-2020 18:56*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*1000*	*18-Mar-2020 18:45*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*1000*	*18-Mar-2020 18:45*
Surr: 2-Fluorobiphenyl	*57.7*			*40-125*	*%REC*	*1*	*17-Mar-2020 18:56*
Surr: 2-Fluorobiphenyl	*54.1*			*40-125*	*%REC*	*10*	*18-Mar-2020 13:00*
Surr: 2-Fluorophenol	*62.7*			*20-120*	*%REC*	*10*	*18-Mar-2020 13:00*
Surr: 2-Fluorophenol	*68.7*			*20-120*	*%REC*	*1*	*17-Mar-2020 18:56*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*1000*	*18-Mar-2020 18:45*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*1000*	*18-Mar-2020 18:45*
Surr: 4-Terphenyl-d14	*89.9*			*40-135*	*%REC*	*1*	*17-Mar-2020 18:56*
Surr: 4-Terphenyl-d14	*79.6*			*40-135*	*%REC*	*10*	*18-Mar-2020 13:00*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FD01-20200312
Collection Date: 12-Mar-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20030619
Lab ID:HS20030619-10
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Mar-2020		Analyst: GEY
Surr: Nitrobenzene-d5	*55.8*			*41-120*	*%REC*	*10*	*18-Mar-2020 13:00*
Surr: Nitrobenzene-d5	*44.9*			*41-120*	*%REC*	*1*	*17-Mar-2020 18:56*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*1000*	*18-Mar-2020 18:45*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*1000*	*18-Mar-2020 18:45*
Surr: Phenol-d6	*62.1*			*20-120*	*%REC*	*1*	*17-Mar-2020 18:56*
Surr: Phenol-d6	*57.1*			*20-120*	*%REC*	*10*	*18-Mar-2020 13:00*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 18-Mar-2020		Analyst: JHD
Arsenic	**0.00470**		**0.000400**	**0.00200**	**mg/L**	1	20-Mar-2020 18:35

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WQ-1620-TB02-20200312
Collection Date: 12-Mar-2020 12:36

ANALYTICAL REPORT
WorkOrder:HS20030619
Lab ID:HS20030619-11
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	< 0.00020		0.00020	0.0010	mg/L	1	14-Mar-2020 23:48
Benzene	< 0.00020		0.00020	0.0010	mg/L	1	14-Mar-2020 23:48
Chlorobenzene	< 0.00030		0.00030	0.0010	mg/L	1	14-Mar-2020 23:48
Ethylbenzene	< 0.00030		0.00030	0.0010	mg/L	1	14-Mar-2020 23:48
Methylene chloride	< 0.0010		0.0010	0.0020	mg/L	1	14-Mar-2020 23:48
Toluene	< 0.00020		0.00020	0.0010	mg/L	1	14-Mar-2020 23:48
Xylenes, Total	< 0.00030		0.00030	0.0010	mg/L	1	14-Mar-2020 23:48
Surr: 1,2-Dichloroethane-d4	*103*			*70-126*	*%REC*	*1*	*14-Mar-2020 23:48*
Surr: 4-Bromofluorobenzene	*95.8*			*81-113*	*%REC*	*1*	*14-Mar-2020 23:48*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*14-Mar-2020 23:48*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*14-Mar-2020 23:48*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW76B-20200312
Collection Date: 12-Mar-2020 10:35

ANALYTICAL REPORT
WorkOrder:HS20030619
Lab ID:HS20030619-12
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	< 0.00020		0.00020	0.0010	mg/L	1	15-Mar-2020 04:03
Benzene	< 0.00020		0.00020	0.0010	mg/L	1	15-Mar-2020 04:03
Chlorobenzene	< 0.00030		0.00030	0.0010	mg/L	1	15-Mar-2020 04:03
Ethylbenzene	< 0.00030		0.00030	0.0010	mg/L	1	15-Mar-2020 04:03
Methylene chloride	< 0.0010		0.0010	0.0020	mg/L	1	15-Mar-2020 04:03
Toluene	< 0.00020		0.00020	0.0010	mg/L	1	15-Mar-2020 04:03
Xylenes, Total	< 0.00030		0.00030	0.0010	mg/L	1	15-Mar-2020 04:03
Surr: 1,2-Dichloroethane-d4	*102*			*70-126*	*%REC*	*1*	*15-Mar-2020 04:03*
Surr: 4-Bromofluorobenzene	*100*			*81-113*	*%REC*	*1*	*15-Mar-2020 04:03*
Surr: Dibromofluoromethane	*98.1*			*77-123*	*%REC*	*1*	*15-Mar-2020 04:03*
Surr: Toluene-d8	*98.9*			*82-127*	*%REC*	*1*	*15-Mar-2020 04:03*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW76B-20200312
Collection Date: 12-Mar-2020 10:35

ANALYTICAL REPORT
WorkOrder:HS20030619
Lab ID:HS20030619-12
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 16-Mar-2020		Analyst: GEY
1,2-Diphenylhydrazine	< 0.000022		0.000022	0.00021	mg/L	1	17-Mar-2020 19:16
2,4-Dimethylphenol	< 0.000042		0.000042	0.00021	mg/L	1	17-Mar-2020 19:16
2,4-Dinitrotoluene	< 0.000060		0.000060	0.00021	mg/L	1	17-Mar-2020 19:16
2,6-Dinitrotoluene	< 0.000044		0.000044	0.00021	mg/L	1	17-Mar-2020 19:16
2-Chloronaphthalene	< 0.000022		0.000022	0.00021	mg/L	1	17-Mar-2020 19:16
2-Methylnaphthalene	< 0.000020		0.000020	0.00010	mg/L	1	17-Mar-2020 19:16
4,6-Dinitro-2-methylphenol	< 0.000021		0.000021	0.00021	mg/L	1	17-Mar-2020 19:16
4-Nitrophenol	< 0.000049		0.000049	0.0010	mg/L	1	17-Mar-2020 19:16
Acenaphthene	< 0.000028		0.000028	0.00010	mg/L	1	17-Mar-2020 19:16
Acenaphthylene	< 0.000016		0.000016	0.00010	mg/L	1	17-Mar-2020 19:16
Anthracene	< 0.000015		0.000015	0.00010	mg/L	1	17-Mar-2020 19:16
Benz(a)anthracene	< 0.000052		0.000052	0.00010	mg/L	1	17-Mar-2020 19:16
Benzo(a)pyrene	< 0.000021		0.000021	0.00010	mg/L	1	17-Mar-2020 19:16
Bis(2-chloroethoxy)methane	< 0.000031		0.000031	0.00021	mg/L	1	17-Mar-2020 19:16
Bis(2-ethylhexyl)phthalate	< 0.000039		0.000039	0.00021	mg/L	1	17-Mar-2020 19:16
Chrysene	< 0.000022		0.000022	0.00010	mg/L	1	17-Mar-2020 19:16
Dibenzofuran	< 0.000021		0.000021	0.00010	mg/L	1	17-Mar-2020 19:16
Di-n-butyl phthalate	**0.000025**	J	**0.000021**	**0.00021**	**mg/L**	1	17-Mar-2020 19:16
Fluoranthene	< 0.000010		0.000010	0.00010	mg/L	1	17-Mar-2020 19:16
Fluorene	< 0.000031		0.000031	0.00010	mg/L	1	17-Mar-2020 19:16
Naphthalene	**0.000096**	J	**0.000021**	**0.00010**	**mg/L**	1	17-Mar-2020 19:16
Nitrobenzene	< 0.000025		0.000025	0.00021	mg/L	1	17-Mar-2020 19:16
N-Nitrosodiphenylamine	< 0.000026		0.000026	0.00021	mg/L	1	17-Mar-2020 19:16
Pentachlorophenol	< 0.000082		0.000082	0.00021	mg/L	1	17-Mar-2020 19:16
Phenanthrene	< 0.000022		0.000022	0.00010	mg/L	1	17-Mar-2020 19:16
Phenol	< 0.000036		0.000036	0.00021	mg/L	1	17-Mar-2020 19:16
Pyrene	< 0.000020		0.000020	0.00010	mg/L	1	17-Mar-2020 19:16
Surr: 2,4,6-Tribromophenol	*81.4*			*34-129*	*%REC*	*1*	*17-Mar-2020 19:16*
Surr: 2-Fluorobiphenyl	*63.8*			*40-125*	*%REC*	*1*	*17-Mar-2020 19:16*
Surr: 2-Fluorophenol	*60.0*			*20-120*	*%REC*	*1*	*17-Mar-2020 19:16*
Surr: 4-Terphenyl-d14	*91.0*			*40-135*	*%REC*	*1*	*17-Mar-2020 19:16*
Surr: Nitrobenzene-d5	*55.6*			*41-120*	*%REC*	*1*	*17-Mar-2020 19:16*
Surr: Phenol-d6	*63.4*			*20-120*	*%REC*	*1*	*17-Mar-2020 19:16*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW76B-20200312
Collection Date: 12-Mar-2020 10:35

ANALYTICAL REPORT
WorkOrder:HS20030619
Lab ID:HS20030619-12
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL TEXAS TPH BY TX1005		**Method:TX1005**			Prep:TX1005PR / 17-Mar-2020		Analyst: MBG
nC6 to nC12	< 0.19		0.19	0.48	mg/L	1	18-Mar-2020 09:42
>nC12 to nC28	< 0.19		0.19	0.48	mg/L	1	18-Mar-2020 09:42
>nC28 to nC35	< 0.19		0.19	0.48	mg/L	1	18-Mar-2020 09:42
Total Petroleum Hydrocarbon	< 0.19		0.19	0.48	mg/L	1	18-Mar-2020 09:42
Surr: 2-Fluorobiphenyl	*82.2*			*70-130*	*%REC*	*1*	*18-Mar-2020 09:42*
Surr: Trifluoromethyl benzene	*96.2*			*70-130*	*%REC*	*1*	*18-Mar-2020 09:42*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 18-Mar-2020		Analyst: JHD
Arsenic	**0.00115**	J	**0.000400**	**0.00200**	**mg/L**	1	20-Mar-2020 18:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW97A-20200312
Collection Date: 12-Mar-2020 11:47

ANALYTICAL REPORT
WorkOrder:HS20030619
Lab ID:HS20030619-13
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	< 0.00020		0.00020	0.0010	mg/L	1	15-Mar-2020 04:27
Benzene	< 0.00020		0.00020	0.0010	mg/L	1	15-Mar-2020 04:27
Chlorobenzene	< 0.00030		0.00030	0.0010	mg/L	1	15-Mar-2020 04:27
Ethylbenzene	< 0.00030		0.00030	0.0010	mg/L	1	15-Mar-2020 04:27
Methylene chloride	< 0.0010		0.0010	0.0020	mg/L	1	15-Mar-2020 04:27
Toluene	< 0.00020		0.00020	0.0010	mg/L	1	15-Mar-2020 04:27
Xylenes, Total	< 0.00030		0.00030	0.0010	mg/L	1	15-Mar-2020 04:27
Surr: 1,2-Dichloroethane-d4	*101*			*70-126*	*%REC*	*1*	*15-Mar-2020 04:27*
Surr: 4-Bromofluorobenzene	*94.3*			*81-113*	*%REC*	*1*	*15-Mar-2020 04:27*
Surr: Dibromofluoromethane	*98.7*			*77-123*	*%REC*	*1*	*15-Mar-2020 04:27*
Surr: Toluene-d8	*99.4*			*82-127*	*%REC*	*1*	*15-Mar-2020 04:27*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW97A-20200312
Collection Date: 12-Mar-2020 11:47

ANALYTICAL REPORT
WorkOrder:HS20030619
Lab ID:HS20030619-13
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 16-Mar-2020		Analyst: GEY
1,2-Diphenylhydrazine	< 0.000021		0.000021	0.00020	mg/L	1	17-Mar-2020 19:35
2,4-Dimethylphenol	< 0.000040		0.000040	0.00020	mg/L	1	17-Mar-2020 19:35
2,4-Dinitrotoluene	< 0.000059		0.000059	0.00020	mg/L	1	17-Mar-2020 19:35
2,6-Dinitrotoluene	< 0.000042		0.000042	0.00020	mg/L	1	17-Mar-2020 19:35
2-Chloronaphthalene	< 0.000021		0.000021	0.00020	mg/L	1	17-Mar-2020 19:35
2-Methylnaphthalene	< 0.000019		0.000019	0.00010	mg/L	1	17-Mar-2020 19:35
4,6-Dinitro-2-methylphenol	< 0.000020		0.000020	0.00020	mg/L	1	17-Mar-2020 19:35
4-Nitrophenol	< 0.000047		0.000047	0.0010	mg/L	1	17-Mar-2020 19:35
Acenaphthene	< 0.000027		0.000027	0.00010	mg/L	1	17-Mar-2020 19:35
Acenaphthylene	< 0.000015		0.000015	0.00010	mg/L	1	17-Mar-2020 19:35
Anthracene	< 0.000014		0.000014	0.00010	mg/L	1	17-Mar-2020 19:35
Benz(a)anthracene	< 0.000051		0.000051	0.00010	mg/L	1	17-Mar-2020 19:35
Benzo(a)pyrene	< 0.000020		0.000020	0.00010	mg/L	1	17-Mar-2020 19:35
Bis(2-chloroethoxy)methane	< 0.000030		0.000030	0.00020	mg/L	1	17-Mar-2020 19:35
Bis(2-ethylhexyl)phthalate	< 0.000037		0.000037	0.00020	mg/L	1	17-Mar-2020 19:35
Chrysene	< 0.000021		0.000021	0.00010	mg/L	1	17-Mar-2020 19:35
Dibenzofuran	< 0.000020		0.000020	0.00010	mg/L	1	17-Mar-2020 19:35
Di-n-butyl phthalate	< 0.000020		0.000020	0.00020	mg/L	1	17-Mar-2020 19:35
Fluoranthene	< 0.000010		0.000010	0.00010	mg/L	1	17-Mar-2020 19:35
Fluorene	< 0.000030		0.000030	0.00010	mg/L	1	17-Mar-2020 19:35
Naphthalene	< 0.000020		0.000020	0.00010	mg/L	1	17-Mar-2020 19:35
Nitrobenzene	< 0.000024		0.000024	0.00020	mg/L	1	17-Mar-2020 19:35
N-Nitrosodiphenylamine	< 0.000025		0.000025	0.00020	mg/L	1	17-Mar-2020 19:35
Pentachlorophenol	< 0.000080		0.000080	0.00020	mg/L	1	17-Mar-2020 19:35
Phenanthrene	< 0.000021		0.000021	0.00010	mg/L	1	17-Mar-2020 19:35
Phenol	< 0.000035		0.000035	0.00020	mg/L	1	17-Mar-2020 19:35
Pyrene	< 0.000019		0.000019	0.00010	mg/L	1	17-Mar-2020 19:35
Surr: 2,4,6-Tribromophenol	*87.0*			*34-129*	*%REC*	*1*	*17-Mar-2020 19:35*
Surr: 2-Fluorobiphenyl	*64.0*			*40-125*	*%REC*	*1*	*17-Mar-2020 19:35*
Surr: 2-Fluorophenol	*60.8*			*20-120*	*%REC*	*1*	*17-Mar-2020 19:35*
Surr: 4-Terphenyl-d14	*86.3*			*40-135*	*%REC*	*1*	*17-Mar-2020 19:35*
Surr: Nitrobenzene-d5	*54.5*			*41-120*	*%REC*	*1*	*17-Mar-2020 19:35*
Surr: Phenol-d6	*59.3*			*20-120*	*%REC*	*1*	*17-Mar-2020 19:35*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW97A-20200312
Collection Date: 12-Mar-2020 11:47

ANALYTICAL REPORT
WorkOrder:HS20030619
Lab ID:HS20030619-13
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 17-Mar-2020		Analyst: PVL
nC6 to nC12	< 0.19		0.19	0.48	mg/L	1	18-Mar-2020 18:40
>nC12 to nC28	< 0.19		0.19	0.48	mg/L	1	18-Mar-2020 18:40
>nC28 to nC35	< 0.19		0.19	0.48	mg/L	1	18-Mar-2020 18:40
Total Petroleum Hydrocarbon	< 0.19		0.19	0.48	mg/L	1	18-Mar-2020 18:40
Surr: 2-Fluorobiphenyl	*80.6*			*70-130*	*%REC*	*1*	*18-Mar-2020 18:40*
Surr: Trifluoromethyl benzene	*92.4*			*70-130*	*%REC*	*1*	*18-Mar-2020 18:40*
ICP-MS METALS BY SW6020A	**Method:SW6020**				Prep:SW3010A / 18-Mar-2020		Analyst: JHD
Arsenic	**0.00121**	J	**0.000400**	**0.00200**	**mg/L**	1	20-Mar-2020 18:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW98A-20200312
Collection Date: 12-Mar-2020 12:54

ANALYTICAL REPORT
WorkOrder:HS20030619
Lab ID:HS20030619-14
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	< 0.00020		0.00020	0.0010	mg/L	1	15-Mar-2020 04:51
Benzene	< 0.00020		0.00020	0.0010	mg/L	1	15-Mar-2020 04:51
Chlorobenzene	< 0.00030		0.00030	0.0010	mg/L	1	15-Mar-2020 04:51
Ethylbenzene	< 0.00030		0.00030	0.0010	mg/L	1	15-Mar-2020 04:51
Methylene chloride	< 0.0010		0.0010	0.0020	mg/L	1	15-Mar-2020 04:51
Toluene	**0.00065**	J	**0.00020**	**0.0010**	**mg/L**	1	15-Mar-2020 04:51
Xylenes, Total	< 0.00030		0.00030	0.0010	mg/L	1	15-Mar-2020 04:51
Surr: 1,2-Dichloroethane-d4	*100.0*			*70-126*	*%REC*	*1*	*15-Mar-2020 04:51*
Surr: 4-Bromofluorobenzene	*95.1*			*81-113*	*%REC*	*1*	*15-Mar-2020 04:51*
Surr: Dibromofluoromethane	*98.3*			*77-123*	*%REC*	*1*	*15-Mar-2020 04:51*
Surr: Toluene-d8	*98.9*			*82-127*	*%REC*	*1*	*15-Mar-2020 04:51*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW98A-20200312
Collection Date: 12-Mar-2020 12:54

ANALYTICAL REPORT
WorkOrder:HS20030619
Lab ID:HS20030619-14
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 16-Mar-2020		Analyst: GEY
1,2-Diphenylhydrazine	< 0.000021		0.000021	0.00020	mg/L	1	17-Mar-2020 19:54
2,4-Dimethylphenol	**0.000078**	J	**0.000041**	**0.00020**	**mg/L**	1	17-Mar-2020 19:54
2,4-Dinitrotoluene	< 0.000059		0.000059	0.00020	mg/L	1	17-Mar-2020 19:54
2,6-Dinitrotoluene	< 0.000043		0.000043	0.00020	mg/L	1	17-Mar-2020 19:54
2-Chloronaphthalene	< 0.000021		0.000021	0.00020	mg/L	1	17-Mar-2020 19:54
2-Methylnaphthalene	< 0.000019		0.000019	0.00010	mg/L	1	17-Mar-2020 19:54
4,6-Dinitro-2-methylphenol	< 0.000020		0.000020	0.00020	mg/L	1	17-Mar-2020 19:54
4-Nitrophenol	< 0.000048		0.000048	0.0010	mg/L	1	17-Mar-2020 19:54
Acenaphthene	**0.000040**	J	**0.000028**	**0.00010**	**mg/L**	1	17-Mar-2020 19:54
Acenaphthylene	< 0.000015		0.000015	0.00010	mg/L	1	17-Mar-2020 19:54
Anthracene	< 0.000014		0.000014	0.00010	mg/L	1	17-Mar-2020 19:54
Benz(a)anthracene	< 0.000051		0.000051	0.00010	mg/L	1	17-Mar-2020 19:54
Benzo(a)pyrene	< 0.000020		0.000020	0.00010	mg/L	1	17-Mar-2020 19:54
Bis(2-chloroethoxy)methane	< 0.000031		0.000031	0.00020	mg/L	1	17-Mar-2020 19:54
Bis(2-ethylhexyl)phthalate	< 0.000038		0.000038	0.00020	mg/L	1	17-Mar-2020 19:54
Chrysene	< 0.000021		0.000021	0.00010	mg/L	1	17-Mar-2020 19:54
Dibenzofuran	< 0.000020		0.000020	0.00010	mg/L	1	17-Mar-2020 19:54
Di-n-butyl phthalate	< 0.000020		0.000020	0.00020	mg/L	1	17-Mar-2020 19:54
Fluoranthene	**0.000018**	J	**0.000010**	**0.00010**	**mg/L**	1	17-Mar-2020 19:54
Fluorene	< 0.000031		0.000031	0.00010	mg/L	1	17-Mar-2020 19:54
Naphthalene	**0.000042**	J	**0.000020**	**0.00010**	**mg/L**	1	17-Mar-2020 19:54
Nitrobenzene	< 0.000024		0.000024	0.00020	mg/L	1	17-Mar-2020 19:54
N-Nitrosodiphenylamine	< 0.000026		0.000026	0.00020	mg/L	1	17-Mar-2020 19:54
Pentachlorophenol	< 0.000081		0.000081	0.00020	mg/L	1	17-Mar-2020 19:54
Phenanthrene	< 0.000021		0.000021	0.00010	mg/L	1	17-Mar-2020 19:54
Phenol	< 0.000036		0.000036	0.00020	mg/L	1	17-Mar-2020 19:54
Pyrene	< 0.000019		0.000019	0.00010	mg/L	1	17-Mar-2020 19:54
Surr: 2,4,6-Tribromophenol	*98.8*			*34-129*	*%REC*	*1*	*17-Mar-2020 19:54*
Surr: 2-Fluorobiphenyl	*51.5*			*40-125*	*%REC*	*1*	*17-Mar-2020 19:54*
Surr: 2-Fluorophenol	*54.6*			*20-120*	*%REC*	*1*	*17-Mar-2020 19:54*
Surr: 4-Terphenyl-d14	*99.4*			*40-135*	*%REC*	*1*	*17-Mar-2020 19:54*
Surr: Nitrobenzene-d5	*52.1*			*41-120*	*%REC*	*1*	*17-Mar-2020 19:54*
Surr: Phenol-d6	*56.8*			*20-120*	*%REC*	*1*	*17-Mar-2020 19:54*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW98A-20200312
Collection Date: 12-Mar-2020 12:54

ANALYTICAL REPORT
WorkOrder:HS20030619
Lab ID:HS20030619-14
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL TEXAS TPH BY TX1005		**Method:TX1005**			Prep:TX1005PR / 17-Mar-2020		Analyst: PVL
nC6 to nC12	< 0.19		0.19	0.48	mg/L	1	18-Mar-2020 20:10
>nC12 to nC28	**1.0**		**0.19**	**0.48**	**mg/L**	1	18-Mar-2020 20:10
>nC28 to nC35	< 0.19		0.19	0.48	mg/L	1	18-Mar-2020 20:10
Total Petroleum Hydrocarbon	**1.00**		**0.19**	**0.48**	**mg/L**	1	18-Mar-2020 20:10
Surr: 2-Fluorobiphenyl	*93.3*			*70-130*	*%REC*	*1*	*18-Mar-2020 20:10*
Surr: Trifluoromethyl benzene	*92.4*			*70-130*	*%REC*	*1*	*18-Mar-2020 20:10*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 18-Mar-2020		Analyst: JHD
Arsenic	**0.00963**		**0.000400**	**0.00200**	**mg/L**	1	20-Mar-2020 18:50

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20030619
Sample ID: WG-1620-MW98B-20200312
Lab ID:HS20030619-15
Collection Date: 12-Mar-2020 13:53
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	< 0.00020		0.00020	0.0010	mg/L	1	15-Mar-2020 05:15
Benzene	< 0.00020		0.00020	0.0010	mg/L	1	15-Mar-2020 05:15
Chlorobenzene	< 0.00030		0.00030	0.0010	mg/L	1	15-Mar-2020 05:15
Ethylbenzene	< 0.00030		0.00030	0.0010	mg/L	1	15-Mar-2020 05:15
Methylene chloride	< 0.0010		0.0010	0.0020	mg/L	1	15-Mar-2020 05:15
Toluene	**0.0020**		**0.00020**	**0.0010**	**mg/L**	1	15-Mar-2020 05:15
Xylenes, Total	< 0.00030		0.00030	0.0010	mg/L	1	15-Mar-2020 05:15
Surr: 1,2-Dichloroethane-d4	*101*			*70-126*	*%REC*	*1*	*15-Mar-2020 05:15*
Surr: 4-Bromofluorobenzene	*97.2*			*81-113*	*%REC*	*1*	*15-Mar-2020 05:15*
Surr: Dibromofluoromethane	*98.3*			*77-123*	*%REC*	*1*	*15-Mar-2020 05:15*
Surr: Toluene-d8	*99.2*			*82-127*	*%REC*	*1*	*15-Mar-2020 05:15*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW98B-20200312
Collection Date: 12-Mar-2020 13:53

ANALYTICAL REPORT
WorkOrder:HS20030619
Lab ID:HS20030619-15
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 16-Mar-2020		Analyst: GEY
1,2-Diphenylhydrazine	< 0.000021		0.000021	0.00020	mg/L	1	17-Mar-2020 20:13
2,4-Dimethylphenol	< 0.000041		0.000041	0.00020	mg/L	1	17-Mar-2020 20:13
2,4-Dinitrotoluene	< 0.000059		0.000059	0.00020	mg/L	1	17-Mar-2020 20:13
2,6-Dinitrotoluene	< 0.000043		0.000043	0.00020	mg/L	1	17-Mar-2020 20:13
2-Chloronaphthalene	< 0.000021		0.000021	0.00020	mg/L	1	17-Mar-2020 20:13
2-Methylnaphthalene	< 0.000019		0.000019	0.00010	mg/L	1	17-Mar-2020 20:13
4,6-Dinitro-2-methylphenol	< 0.000020		0.000020	0.00020	mg/L	1	17-Mar-2020 20:13
4-Nitrophenol	< 0.000048		0.000048	0.0010	mg/L	1	17-Mar-2020 20:13
Acenaphthene	< 0.000028		0.000028	0.00010	mg/L	1	17-Mar-2020 20:13
Acenaphthylene	< 0.000015		0.000015	0.00010	mg/L	1	17-Mar-2020 20:13
Anthracene	< 0.000014		0.000014	0.00010	mg/L	1	17-Mar-2020 20:13
Benz(a)anthracene	< 0.000051		0.000051	0.00010	mg/L	1	17-Mar-2020 20:13
Benzo(a)pyrene	< 0.000020		0.000020	0.00010	mg/L	1	17-Mar-2020 20:13
Bis(2-chloroethoxy)methane	< 0.000031		0.000031	0.00020	mg/L	1	17-Mar-2020 20:13
Bis(2-ethylhexyl)phthalate	< 0.000038		0.000038	0.00020	mg/L	1	17-Mar-2020 20:13
Chrysene	< 0.000021		0.000021	0.00010	mg/L	1	17-Mar-2020 20:13
Dibenzofuran	< 0.000020		0.000020	0.00010	mg/L	1	17-Mar-2020 20:13
Di-n-butyl phthalate	< 0.000020		0.000020	0.00020	mg/L	1	17-Mar-2020 20:13
Fluoranthene	< 0.000010		0.000010	0.00010	mg/L	1	17-Mar-2020 20:13
Fluorene	< 0.000031		0.000031	0.00010	mg/L	1	17-Mar-2020 20:13
Naphthalene	**0.000036**	J	**0.000020**	**0.00010**	**mg/L**	1	17-Mar-2020 20:13
Nitrobenzene	< 0.000024		0.000024	0.00020	mg/L	1	17-Mar-2020 20:13
N-Nitrosodiphenylamine	< 0.000026		0.000026	0.00020	mg/L	1	17-Mar-2020 20:13
Pentachlorophenol	< 0.000081		0.000081	0.00020	mg/L	1	17-Mar-2020 20:13
Phenanthrene	< 0.000021		0.000021	0.00010	mg/L	1	17-Mar-2020 20:13
Phenol	< 0.000036		0.000036	0.00020	mg/L	1	17-Mar-2020 20:13
Pyrene	< 0.000019		0.000019	0.00010	mg/L	1	17-Mar-2020 20:13
Surr: 2,4,6-Tribromophenol	*67.8*			*34-129*	*%REC*	*1*	*17-Mar-2020 20:13*
Surr: 2-Fluorobiphenyl	*50.4*			*40-125*	*%REC*	*1*	*17-Mar-2020 20:13*
Surr: 2-Fluorophenol	*50.4*			*20-120*	*%REC*	*1*	*17-Mar-2020 20:13*
Surr: 4-Terphenyl-d14	*87.1*			*40-135*	*%REC*	*1*	*17-Mar-2020 20:13*
Surr: Nitrobenzene-d5	*46.7*			*41-120*	*%REC*	*1*	*17-Mar-2020 20:13*
Surr: Phenol-d6	*52.5*			*20-120*	*%REC*	*1*	*17-Mar-2020 20:13*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW98B-20200312
Collection Date: 12-Mar-2020 13:53

ANALYTICAL REPORT
WorkOrder:HS20030619
Lab ID:HS20030619-15
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 17-Mar-2020		Analyst: PVL
nC6 to nC12	< 0.19		0.19	0.48	mg/L	1	18-Mar-2020 20:39
>nC12 to nC28	**0.38**	J	**0.19**	**0.48**	**mg/L**	1	18-Mar-2020 20:39
>nC28 to nC35	< 0.19		0.19	0.48	mg/L	1	18-Mar-2020 20:39
Total Petroleum Hydrocarbon	**0.380**	J	**0.19**	**0.48**	**mg/L**	1	18-Mar-2020 20:39
Surr: 2-Fluorobiphenyl	*86.1*			*70-130*	*%REC*	*1*	*18-Mar-2020 20:39*
Surr: Trifluoromethyl benzene	*95.2*			*70-130*	*%REC*	*1*	*18-Mar-2020 20:39*
ICP-MS METALS BY SW6020A	**Method:SW6020**				Prep:SW3010A / 18-Mar-2020		Analyst: JHD
Arsenic	**0.00165**	J	**0.000400**	**0.00200**	**mg/L**	1	20-Mar-2020 18:52

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20030619
Sample ID: WG-1620-MW50B-20200312
Lab ID:HS20030619-16
Collection Date: 12-Mar-2020 15:20
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	< 0.00020		0.00020	0.0010	mg/L	1	15-Mar-2020 05:39
Benzene	< 0.00020		0.00020	0.0010	mg/L	1	15-Mar-2020 05:39
Chlorobenzene	< 0.00030		0.00030	0.0010	mg/L	1	15-Mar-2020 05:39
Ethylbenzene	**0.0068**		**0.00030**	**0.0010**	**mg/L**	1	15-Mar-2020 05:39
Methylene chloride	< 0.0010		0.0010	0.0020	mg/L	1	15-Mar-2020 05:39
Toluene	**0.0033**		**0.00020**	**0.0010**	**mg/L**	1	15-Mar-2020 05:39
Xylenes, Total	**0.0056**		**0.00030**	**0.0010**	**mg/L**	1	15-Mar-2020 05:39
Surr: 1,2-Dichloroethane-d4	*102*			*70-126*	*%REC*	*1*	*15-Mar-2020 05:39*
Surr: 4-Bromofluorobenzene	*96.9*			*81-113*	*%REC*	*1*	*15-Mar-2020 05:39*
Surr: Dibromofluoromethane	*100*			*77-123*	*%REC*	*1*	*15-Mar-2020 05:39*
Surr: Toluene-d8	*98.9*			*82-127*	*%REC*	*1*	*15-Mar-2020 05:39*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW50B-20200312
Collection Date: 12-Mar-2020 15:20

ANALYTICAL REPORT
WorkOrder:HS20030619
Lab ID:HS20030619-16
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 16-Mar-2020		Analyst: GEY
1,2-Diphenylhydrazine	< 0.000022		0.000022	0.00021	mg/L	1	18-Mar-2020 17:09
2,4-Dimethylphenol	< 0.000042		0.000042	0.00021	mg/L	1	18-Mar-2020 17:09
2,4-Dinitrotoluene	< 0.000060		0.000060	0.00021	mg/L	1	18-Mar-2020 17:09
2,6-Dinitrotoluene	< 0.000044		0.000044	0.00021	mg/L	1	18-Mar-2020 17:09
2-Chloronaphthalene	< 0.000022		0.000022	0.00021	mg/L	1	18-Mar-2020 17:09
2-Methylnaphthalene	**0.016**		**0.00020**	**0.0010**	**mg/L**	10	18-Mar-2020 17:29
4,6-Dinitro-2-methylphenol	< 0.000021		0.000021	0.00021	mg/L	1	18-Mar-2020 17:09
4-Nitrophenol	< 0.000049		0.000049	0.0010	mg/L	1	18-Mar-2020 17:09
Acenaphthene	**0.020**		**0.00028**	**0.0010**	**mg/L**	10	18-Mar-2020 17:29
Acenaphthylene	**0.00028**		**0.000016**	**0.00010**	**mg/L**	1	18-Mar-2020 17:09
Anthracene	**0.0016**		**0.000015**	**0.00010**	**mg/L**	1	18-Mar-2020 17:09
Benz(a)anthracene	< 0.000052		0.000052	0.00010	mg/L	1	18-Mar-2020 17:09
Benzo(a)pyrene	< 0.000021		0.000021	0.00010	mg/L	1	18-Mar-2020 17:09
Bis(2-chloroethoxy)methane	< 0.000031		0.000031	0.00021	mg/L	1	18-Mar-2020 17:09
Bis(2-ethylhexyl)phthalate	< 0.000039		0.000039	0.00021	mg/L	1	18-Mar-2020 17:09
Chrysene	< 0.000022		0.000022	0.00010	mg/L	1	18-Mar-2020 17:09
Dibenzofuran	**0.015**		**0.00021**	**0.0010**	**mg/L**	10	18-Mar-2020 17:29
Di-n-butyl phthalate	**0.000038**	J	**0.000021**	**0.00021**	**mg/L**	1	18-Mar-2020 17:09
Fluoranthene	**0.0011**		**0.000010**	**0.00010**	**mg/L**	1	18-Mar-2020 17:09
Fluorene	**0.011**		**0.00031**	**0.0010**	**mg/L**	10	18-Mar-2020 17:29
Naphthalene	**0.31**		**0.0021**	**0.010**	**mg/L**	100	18-Mar-2020 17:48
Nitrobenzene	< 0.000025		0.000025	0.00021	mg/L	1	18-Mar-2020 17:09
N-Nitrosodiphenylamine	< 0.000026		0.000026	0.00021	mg/L	1	18-Mar-2020 17:09
Pentachlorophenol	< 0.000082		0.000082	0.00021	mg/L	1	18-Mar-2020 17:09
Phenanthrene	**0.016**		**0.00022**	**0.0010**	**mg/L**	10	18-Mar-2020 17:29
Phenol	< 0.000036		0.000036	0.00021	mg/L	1	18-Mar-2020 17:09
Pyrene	**0.00059**		**0.000020**	**0.00010**	**mg/L**	1	18-Mar-2020 17:09
Surr: 2,4,6-Tribromophenol	*84.4*			*34-129*	*%REC*	*1*	*18-Mar-2020 17:09*
Surr: 2,4,6-Tribromophenol	*71.2*			*34-129*	*%REC*	*10*	*18-Mar-2020 17:29*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*100*	*18-Mar-2020 17:48*
Surr: 2-Fluorobiphenyl	*44.0*			*40-125*	*%REC*	*1*	*18-Mar-2020 17:09*
Surr: 2-Fluorobiphenyl	*47.0*			*40-125*	*%REC*	*10*	*18-Mar-2020 17:29*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*100*	*18-Mar-2020 17:48*
Surr: 2-Fluorophenol	*47.4*			*20-120*	*%REC*	*1*	*18-Mar-2020 17:09*
Surr: 2-Fluorophenol	*49.0*			*20-120*	*%REC*	*10*	*18-Mar-2020 17:29*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*100*	*18-Mar-2020 17:48*
Surr: 4-Terphenyl-d14	*80.2*			*40-135*	*%REC*	*1*	*18-Mar-2020 17:09*
Surr: 4-Terphenyl-d14	*73.5*			*40-135*	*%REC*	*10*	*18-Mar-2020 17:29*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*100*	*18-Mar-2020 17:48*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW50B-20200312
Collection Date: 12-Mar-2020 15:20

ANALYTICAL REPORT
WorkOrder:HS20030619
Lab ID:HS20030619-16
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 16-Mar-2020		Analyst: GEY
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*100*	*18-Mar-2020 17:48*
Surr: Nitrobenzene-d5	*45.0*			*41-120*	*%REC*	*1*	*18-Mar-2020 17:09*
Surr: Nitrobenzene-d5	*43.1*			*41-120*	*%REC*	*10*	*18-Mar-2020 17:29*
Surr: Phenol-d6	*48.9*			*20-120*	*%REC*	*1*	*18-Mar-2020 17:09*
Surr: Phenol-d6	*52.5*			*20-120*	*%REC*	*10*	*18-Mar-2020 17:29*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*100*	*18-Mar-2020 17:48*
LOW-LEVEL TEXAS TPH BY TX1005		**Method:TX1005**			Prep:TX1005PR / 17-Mar-2020		Analyst: PVL
nC6 to nC12	**1.0**		**0.19**	**0.48**	**mg/L**	1	18-Mar-2020 21:09
>nC12 to nC28	**1.1**		**0.19**	**0.48**	**mg/L**	1	18-Mar-2020 21:09
>nC28 to nC35	< 0.19		0.19	0.48	mg/L	1	18-Mar-2020 21:09
Total Petroleum Hydrocarbon	**2.10**		**0.19**	**0.48**	**mg/L**	1	18-Mar-2020 21:09
Surr: 2-Fluorobiphenyl	*101*			*70-130*	*%REC*	*1*	*18-Mar-2020 21:09*
Surr: Trifluoromethyl benzene	*95.2*			*70-130*	*%REC*	*1*	*18-Mar-2020 21:09*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 18-Mar-2020		Analyst: JHD
Arsenic	**0.00372**		**0.000400**	**0.00200**	**mg/L**	1	20-Mar-2020 18:55

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20030619

Batch ID: 151716 **Start Date:** 16 Mar 2020 07:00 **End Date:** 16 Mar 2020 12:30
Method: SV AQ SEP FUN EXTRACT-LOWLEV - 3510C **Prep Code:** 3510_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20030619-02	1	980 (mL)	1 (mL)	0.00102
HS20030619-03	1	990 (mL)	1 (mL)	0.00101
HS20030619-04	1	970 (mL)	1 (mL)	0.001031
HS20030619-05	1	980 (mL)	1 (mL)	0.00102
HS20030619-06	1	990 (mL)	1 (mL)	0.00101
HS20030619-07	1	980 (mL)	1 (mL)	0.00102
HS20030619-08	1	960 (mL)	1 (mL)	0.001042
HS20030619-09	1	950 (mL)	1 (mL)	0.001053
HS20030619-10	1	970 (mL)	1 (mL)	0.001031
HS20030619-12	1	960 (mL)	1 (mL)	0.001042
HS20030619-13	1	990 (mL)	1 (mL)	0.00101
HS20030619-14	1	980 (mL)	1 (mL)	0.00102
HS20030619-15	1	980 (mL)	1 (mL)	0.00102
HS20030619-16	1	960 (mL)	1 (mL)	0.001042

Batch ID: 151763 **Start Date:** 17 Mar 2020 10:00 **End Date:** 17 Mar 2020 14:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20030619-02		10 (mL)	10 (mL)	1
HS20030619-03		10 (mL)	10 (mL)	1
HS20030619-04		10 (mL)	10 (mL)	1
HS20030619-05		10 (mL)	10 (mL)	1
HS20030619-06		10 (mL)	10 (mL)	1

Batch ID: 151785 **Start Date:** 17 Mar 2020 11:00 **End Date:** 17 Mar 2020 14:30
Method: TX 1005 PREP **Prep Code:** TX 1005_W PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20030619-12	1	31.11 (g)	3 (mL)	0.09643

Batch ID: 151787 **Start Date:** 17 Mar 2020 12:00 **End Date:** 17 Mar 2020 15:30
Method: TX 1005 PREP **Prep Code:** TX 1005_W PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20030619-13	1	31.15 (g)	3 (mL)	0.09631
HS20030619-14	1	31.19 (g)	3 (mL)	0.09618
HS20030619-15	1	31.11 (g)	3 (mL)	0.09643
HS20030619-16	1	31.04 (g)	3 (mL)	0.09665

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20030619

Batch ID: 151813 **Start Date:** 18 Mar 2020 10:30 **End Date:** 18 Mar 2020 14:30
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20030619-07		10 (mL)	10 (mL)	1
HS20030619-08		10 (mL)	10 (mL)	1
HS20030619-09		10 (mL)	10 (mL)	1
HS20030619-10		10 (mL)	10 (mL)	1
HS20030619-12		10 (mL)	10 (mL)	1
HS20030619-13		10 (mL)	10 (mL)	1
HS20030619-14		10 (mL)	10 (mL)	1
HS20030619-15		10 (mL)	10 (mL)	1
HS20030619-16		10 (mL)	10 (mL)	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20030619

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 151716 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Groundwater	
HS20030619-02	WQ-1620-MW99C-20200311	11 Mar 2020 15:35		16 Mar 2020 11:48	16 Mar 2020 17:59	1
HS20030619-03	WG-1620-MW54B-20200311	11 Mar 2020 14:20		16 Mar 2020 11:48	16 Mar 2020 18:18	1
HS20030619-04	WG-1620-MW94A-20200312	12 Mar 2020 15:45		16 Mar 2020 11:48	16 Mar 2020 18:37	1
HS20030619-05	WG-1620-MW93B-20200312	12 Mar 2020 14:35		16 Mar 2020 11:48	16 Mar 2020 18:56	1
HS20030619-06	WG-1620-MW92B-20200312	12 Mar 2020 13:20		16 Mar 2020 11:48	16 Mar 2020 19:15	1
HS20030619-07	WG-1620-MW84A-20200312	12 Mar 2020 12:15		16 Mar 2020 11:48	17 Mar 2020 17:59	1
HS20030619-08	WG-1620-MW70C-20200312	12 Mar 2020 10:35		16 Mar 2020 11:48	18 Mar 2020 18:26	1000
HS20030619-08	WG-1620-MW70C-20200312	12 Mar 2020 10:35		16 Mar 2020 11:48	18 Mar 2020 12:22	10
HS20030619-08	WG-1620-MW70C-20200312	12 Mar 2020 10:35		16 Mar 2020 11:48	17 Mar 2020 18:18	1
HS20030619-09	WG-1620-MW91A-20200312	12 Mar 2020 09:20		16 Mar 2020 11:48	17 Mar 2020 18:37	1
HS20030619-10	WG-1620-FD01-20200312	12 Mar 2020 00:00		16 Mar 2020 11:48	18 Mar 2020 18:45	1000
HS20030619-10	WG-1620-FD01-20200312	12 Mar 2020 00:00		16 Mar 2020 11:48	18 Mar 2020 13:00	10
HS20030619-10	WG-1620-FD01-20200312	12 Mar 2020 00:00		16 Mar 2020 11:48	17 Mar 2020 18:56	1
HS20030619-12	WG-1620-MW76B-20200312	12 Mar 2020 10:35		16 Mar 2020 11:48	17 Mar 2020 19:16	1
HS20030619-13	WG-1620-MW97A-20200312	12 Mar 2020 11:47		16 Mar 2020 11:48	17 Mar 2020 19:35	1
HS20030619-14	WG-1620-MW98A-20200312	12 Mar 2020 12:54		16 Mar 2020 07:00	17 Mar 2020 19:54	1
HS20030619-15	WG-1620-MW98B-20200312	12 Mar 2020 13:53		16 Mar 2020 11:48	17 Mar 2020 20:13	1
HS20030619-16	WG-1620-MW50B-20200312	12 Mar 2020 15:20		16 Mar 2020 11:48	18 Mar 2020 17:48	100
HS20030619-16	WG-1620-MW50B-20200312	12 Mar 2020 15:20		16 Mar 2020 11:48	18 Mar 2020 17:29	10
HS20030619-16	WG-1620-MW50B-20200312	12 Mar 2020 15:20		16 Mar 2020 11:48	18 Mar 2020 17:09	1
Batch ID: 151763 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Groundwater	
HS20030619-02	WQ-1620-MW99C-20200311	11 Mar 2020 15:35		17 Mar 2020 14:00	18 Mar 2020 18:20	1
HS20030619-03	WG-1620-MW54B-20200311	11 Mar 2020 14:20		17 Mar 2020 14:00	18 Mar 2020 18:23	1
HS20030619-04	WG-1620-MW94A-20200312	12 Mar 2020 15:45		17 Mar 2020 14:00	18 Mar 2020 18:25	1
HS20030619-05	WG-1620-MW93B-20200312	12 Mar 2020 14:35		17 Mar 2020 14:00	18 Mar 2020 18:34	1
HS20030619-06	WG-1620-MW92B-20200312	12 Mar 2020 13:20		17 Mar 2020 14:00	18 Mar 2020 18:37	1
Batch ID: 151785 (0)	**Test Name :** LOW-LEVEL TEXAS TPH BY TX1005				**Matrix:** Groundwater	
HS20030619-12	WG-1620-MW76B-20200312	12 Mar 2020 10:35		17 Mar 2020 11:00	18 Mar 2020 09:42	1
Batch ID: 151787 (0)	**Test Name :** LOW-LEVEL TEXAS TPH BY TX1005				**Matrix:** Groundwater	
HS20030619-13	WG-1620-MW97A-20200312	12 Mar 2020 11:47		17 Mar 2020 12:00	18 Mar 2020 18:40	1
HS20030619-14	WG-1620-MW98A-20200312	12 Mar 2020 12:54		17 Mar 2020 12:00	18 Mar 2020 20:10	1
HS20030619-15	WG-1620-MW98B-20200312	12 Mar 2020 13:53		17 Mar 2020 12:00	18 Mar 2020 20:39	1
HS20030619-16	WG-1620-MW50B-20200312	12 Mar 2020 15:20		17 Mar 2020 12:00	18 Mar 2020 21:09	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20030619

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 151813 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Groundwater	
HS20030619-07	WG-1620-MW84A-20200312	12 Mar 2020 12:15		18 Mar 2020 14:30	20 Mar 2020 16:51	1
HS20030619-08	WG-1620-MW70C-20200312	12 Mar 2020 10:35		18 Mar 2020 14:30	20 Mar 2020 16:53	1
HS20030619-09	WG-1620-MW91A-20200312	12 Mar 2020 09:20		18 Mar 2020 14:30	20 Mar 2020 18:32	1
HS20030619-10	WG-1620-FD01-20200312	12 Mar 2020 00:00		18 Mar 2020 14:30	20 Mar 2020 18:35	1
HS20030619-12	WG-1620-MW76B-20200312	12 Mar 2020 10:35		18 Mar 2020 14:30	20 Mar 2020 18:37	1
HS20030619-13	WG-1620-MW97A-20200312	12 Mar 2020 11:47		18 Mar 2020 14:30	20 Mar 2020 18:39	1
HS20030619-14	WG-1620-MW98A-20200312	12 Mar 2020 12:54		18 Mar 2020 14:30	20 Mar 2020 18:50	1
HS20030619-15	WG-1620-MW98B-20200312	12 Mar 2020 13:53		18 Mar 2020 14:30	20 Mar 2020 18:52	1
HS20030619-16	WG-1620-MW50B-20200312	12 Mar 2020 15:20		18 Mar 2020 14:30	20 Mar 2020 18:55	1
Batch ID: R358243 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Groundwater	
HS20030619-02	WQ-1620-MW99C-20200311	11 Mar 2020 15:35			14 Mar 2020 18:05	1
HS20030619-03	WG-1620-MW54B-20200311	11 Mar 2020 14:20			14 Mar 2020 18:30	1
HS20030619-04	WG-1620-MW94A-20200312	12 Mar 2020 15:45			14 Mar 2020 18:54	1
HS20030619-05	WG-1620-MW93B-20200312	12 Mar 2020 14:35			14 Mar 2020 19:19	1
HS20030619-06	WG-1620-MW92B-20200312	12 Mar 2020 13:20			14 Mar 2020 19:44	1
Batch ID: R358244 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Groundwater	
HS20030619-07	WG-1620-MW84A-20200312	12 Mar 2020 12:15			15 Mar 2020 00:13	1
HS20030619-08	WG-1620-MW70C-20200312	12 Mar 2020 10:35			15 Mar 2020 01:50	1
HS20030619-09	WG-1620-MW91A-20200312	12 Mar 2020 09:20			15 Mar 2020 03:14	1
HS20030619-10	WG-1620-FD01-20200312	12 Mar 2020 00:00			15 Mar 2020 03:39	1
HS20030619-12	WG-1620-MW76B-20200312	12 Mar 2020 10:35			15 Mar 2020 04:03	1
HS20030619-13	WG-1620-MW97A-20200312	12 Mar 2020 11:47			15 Mar 2020 04:27	1
HS20030619-14	WG-1620-MW98A-20200312	12 Mar 2020 12:54			15 Mar 2020 04:51	1
HS20030619-15	WG-1620-MW98B-20200312	12 Mar 2020 13:53			15 Mar 2020 05:15	1
HS20030619-16	WG-1620-MW50B-20200312	12 Mar 2020 15:20			15 Mar 2020 05:39	1
Batch ID: R358244 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20030619-01	WQ-1620-TB01-20200312	12 Mar 2020 16:30			15 Mar 2020 06:28	1
HS20030619-11	WQ-1620-TB02-20200312	12 Mar 2020 12:36			14 Mar 2020 23:48	1

WorkOrder: HS20030619
InstrumentID: FID-12
Test Code: TX1005_W_Low
Test Number: TX1005
Test Name: Low-level Texas TPH by TX1005

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	nC6 to nC12	TPH-1005-1	0.25	0.28	0.20	0.50
A	>nC12 to nC28	TPH-1005-2	0.25	0.29	0.20	0.50
A	>nC28 to nC35	TPH-1005-4	0.25	0.28	0.20	0.50
A	Total Petroleum Hydrocarbon	TPH	0.25	0.28	0.20	0.50
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	Trifluoromethyl benzene	98-08-8	0	0	0	0

WorkOrder: HS20030619
InstrumentID: ICPMS05
Test Code: ICP_TW
Test Number: SW6020
Test Name: ICP-MS Metals by SW6020A

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Arsenic	7440-38-2	0.000500	0.000499	0.000400	0.00200

WorkOrder: HS20030619
InstrumentID: SV-7
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Diphenylhydrazine	122-66-7	0.00010	0.00013	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.000081	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.00010	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.00010	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.00012	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.000050	0.000052	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000060	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00010	0.000069	0.000047	0.0010
A	Acenaphthene	83-32-9	0.000050	0.000050	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000046	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.000046	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.000050	0.000057	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.000050	0.000047	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.00012	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.00014	0.000037	0.00020
A	Chrysene	218-01-9	0.000050	0.000049	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.000050	0.000050	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.00012	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000053	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.000050	0.000030	0.00010
A	Naphthalene	91-20-3	0.000050	0.000048	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.00014	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.00012	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.000057	0.000079	0.00020
A	Phenanthrene	85-01-8	0.000050	0.000047	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.00012	0.000035	0.00020
A	Pyrene	129-00-0	0.000050	0.000051	0.000019	0.00010
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0.00020
S	2-Fluorobiphenyl	321-60-8	0	0	0	0.00020
S	2-Fluorophenol	367-12-4	0	0	0	0.00020
S	4-Terphenyl-d14	1718-51-0	0	0	0	0.00020
S	Nitrobenzene-d5	4165-60-0	0	0	0	0.00020
S	Phenol-d6	13127-88-3	0	0	0	0.00020

WorkOrder: HS20030619
InstrumentID: VOA4
Test Code: 8260_LL_W
Test Number: SW8260
Test Name: Low Level Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.00050	0.00061	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00057	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00058	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00048	0.00030	0.0010
A	Methylene chloride	75-09-2	0.0010	0.00070	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00050	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00070	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20030619

QC BATCH REPORT

Batch ID: 151785 (0) **Instrument: FID-12** **Method: LOW-LEVEL TEXAS TPH BY TX1005**

MBLK Sample ID: **MBLK-151785** Units: **mg/L** Analysis Date: **18-Mar-2020 08:26**
Client ID: Run ID: **FID-12_358444** SeqNo: **5519192** PrepDate: **17-Mar-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	< 0.20	0.50								
>nC12 to nC28	< 0.20	0.50								
>nC28 to nC35	< 0.20	0.50								
Total Petroleum Hydrocarbon	< 0.20	0.50								
Surr: 2-Fluorobiphenyl	*2.33*	*0*	*2.5*	*0*	*93.2*	*70 - 130*				
Surr: Trifluoromethyl benzene	*2.515*	*0*	*2.5*	*0*	*101*	*70 - 130*				

LCS Sample ID: **LCS-151785** Units: **mg/L** Analysis Date: **18-Mar-2020 09:42**
Client ID: Run ID: **FID-12_358444** SeqNo: **5519193** PrepDate: **17-Mar-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	25.3	0.50	25	0	101	75 - 125				
>nC12 to nC28	26.67	0.50	25	0	107	75 - 125				
Surr: 2-Fluorobiphenyl	*2.381*	*0*	*2.5*	*0*	*95.3*	*70 - 130*				
Surr: Trifluoromethyl benzene	*2.604*	*0*	*2.5*	*0*	*104*	*70 - 130*				

LCSD Sample ID: **LCSD-151785** Units: **mg/L** Analysis Date: **18-Mar-2020 10:11**
Client ID: Run ID: **FID-12_358444** SeqNo: **5519194** PrepDate: **17-Mar-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	20.14	0.50	25	0	80.6	75 - 125	25.3	22.7	20	R
>nC12 to nC28	22.75	0.50	25	0	91.0	75 - 125	26.67	15.9	20	
Surr: 2-Fluorobiphenyl	*2.285*	*0*	*2.5*	*0*	*91.4*	*70 - 130*	*2.381*	*4.13*	*20*	
Surr: Trifluoromethyl benzene	*2.419*	*0*	*2.5*	*0*	*96.8*	*70 - 130*	*2.604*	*7.37*	*20*	

MS Sample ID: **HS20030619-02MS** Units: **mg/L** Analysis Date: **18-Mar-2020 11:10**
Client ID: **WQ-1620-MW99C-20200311** Run ID: **FID-12_358444** SeqNo: **5519196** PrepDate: **17-Mar-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	24.63	0.48	24.19	0	102	75 - 125				
>nC12 to nC28	27.56	0.48	24.19	0	114	75 - 125				
Surr: 2-Fluorobiphenyl	*2.389*	*0*	*2.419*	*0*	*98.8*	*70 - 130*				
Surr: Trifluoromethyl benzene	*2.553*	*0*	*2.419*	*0*	*106*	*70 - 130*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20030619

QC BATCH REPORT

Batch ID: 151785 (0) **Instrument: FID-12** **Method: LOW-LEVEL TEXAS TPH BY TX1005**

MSD Sample ID: **HS20030619-02MSD** Units: **mg/L** Analysis Date: **18-Mar-2020 11:39**
Client ID: **WQ-1620-MW99C-20200311** Run ID: **FID-12_358444** SeqNo: **5519197** PrepDate: **17-Mar-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	22.43	0.48	24.15	0	92.9	75 - 125	24.63	9.36	20	
>nC12 to nC28	26.75	0.48	24.15	0	111	75 - 125	27.56	2.99	20	
Surr: 2-Fluorobiphenyl	*2.43*	*0*	*2.415*	*0*	*101*	*70 - 130*	*2.389*	*1.67*	*20*	
Surr: Trifluoromethyl benzene	*2.55*	*0*	*2.415*	*0*	*106*	*70 - 130*	*2.553*	*0.118*	*20*	

The following samples were analyzed in this batch: HS20030619-02, HS20030619-03, HS20030619-04, HS20030619-05, HS20030619-06, HS20030619-07, HS20030619-08, HS20030619-09, HS20030619-10, HS20030619-12

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20030619

QC BATCH REPORT

Batch ID: 151787 (0) **Instrument: FID-12** **Method: LOW-LEVEL TEXAS TPH BY TX1005**

MBLK Sample ID: **MBLK-151787** Units: **mg/L** Analysis Date: **18-Mar-2020 17:10**
Client ID: Run ID: **FID-12_358504** SeqNo: **5520592** PrepDate: **17-Mar-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	< 0.20	0.50								
>nC12 to nC28	< 0.20	0.50								
>nC28 to nC35	< 0.20	0.50								
Total Petroleum Hydrocarbon	< 0.20	0.50								
Surr: 2-Fluorobiphenyl	*1.936*	*0*	*2.5*	*0*	*77.5*	*70 - 130*				
Surr: Trifluoromethyl benzene	*2.31*	*0*	*2.5*	*0*	*92.4*	*70 - 130*				

LCS Sample ID: **LCS-151787** Units: **mg/L** Analysis Date: **18-Mar-2020 17:40**
Client ID: Run ID: **FID-12_358504** SeqNo: **5520593** PrepDate: **17-Mar-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	20.43	0.50	25	0	81.7	75 - 125				
>nC12 to nC28	24.35	0.50	25	0	97.4	75 - 125				
Surr: 2-Fluorobiphenyl	*2.281*	*0*	*2.5*	*0*	*91.2*	*70 - 130*				
Surr: Trifluoromethyl benzene	*2.412*	*0*	*2.5*	*0*	*96.5*	*70 - 130*				

LCSD Sample ID: **LCSD-151787** Units: **mg/L** Analysis Date: **18-Mar-2020 18:10**
Client ID: Run ID: **FID-12_358504** SeqNo: **5520594** PrepDate: **17-Mar-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	19.96	0.50	25	0	79.9	75 - 125	20.43	2.3	20	
>nC12 to nC28	23.88	0.50	25	0	95.5	75 - 125	24.35	1.96	20	
Surr: 2-Fluorobiphenyl	*2.28*	*0*	*2.5*	*0*	*91.2*	*70 - 130*	*2.281*	*0.0255*	*20*	
Surr: Trifluoromethyl benzene	*2.401*	*0*	*2.5*	*0*	*96.0*	*70 - 130*	*2.412*	*0.47*	*20*	

MS Sample ID: **HS20030619-13MS** Units: **mg/L** Analysis Date: **18-Mar-2020 19:10**
Client ID: **WG-1620-MW97A-20200312** Run ID: **FID-12_358504** SeqNo: **5520615** PrepDate: **17-Mar-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	19.86	0.49	24.4	0	81.4	75 - 125				
>nC12 to nC28	22.87	0.49	24.4	0	93.7	75 - 125				
Surr: 2-Fluorobiphenyl	*2.002*	*0*	*2.44*	*0*	*82.1*	*70 - 130*				
Surr: Trifluoromethyl benzene	*2.177*	*0*	*2.44*	*0*	*89.2*	*70 - 130*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20030619

QC BATCH REPORT

Batch ID: 151787 (0) **Instrument: FID-12** **Method: LOW-LEVEL TEXAS TPH BY TX1005**

MSD Sample ID: **HS20030619-13MSD** Units: **mg/L** Analysis Date: **18-Mar-2020 19:40**
Client ID: **WG-1620-MW97A-20200312** Run ID: **FID-12_358504** SeqNo: **5520616** PrepDate: **17-Mar-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	21.86	0.49	24.54	0	89.1	75 - 125	19.86	9.62	20	
>nC12 to nC28	26.03	0.49	24.54	0	106	75 - 125	22.87	12.9	20	
Surr: 2-Fluorobiphenyl	*2.344*	*0*	*2.454*	*0*	*95.5*	*70 - 130*	*2.002*	*15.7*	*20*	
Surr: Trifluoromethyl benzene	*2.479*	*0*	*2.454*	*0*	*101*	*70 - 130*	*2.177*	*13*	*20*	

The following samples were analyzed in this batch: HS20030619-13 HS20030619-14 HS20030619-15 HS20030619-16

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20030619

QC BATCH REPORT

Batch ID: 151763 (0) **Instrument: ICPMS05** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-151763** Units: **mg/L** Analysis Date: **18-Mar-2020 17:32**
Client ID: Run ID: **ICPMS05_358398** SeqNo: **5519290** PrepDate: **17-Mar-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	< 0.000400	0.00200								

LCS Sample ID: **LCS-151763** Units: **mg/L** Analysis Date: **18-Mar-2020 17:34**
Client ID: Run ID: **ICPMS05_358398** SeqNo: **5519291** PrepDate: **17-Mar-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04791	0.00200	0.05	0	95.8	80 - 120				

MS Sample ID: **HS20030614-05MS** Units: **mg/L** Analysis Date: **18-Mar-2020 18:13**
Client ID: Run ID: **ICPMS05_358398** SeqNo: **5519307** PrepDate: **17-Mar-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04448	0.00200	0.05	0.000142	88.7	80 - 120				

MSD Sample ID: **HS20030614-05MSD** Units: **mg/L** Analysis Date: **18-Mar-2020 18:16**
Client ID: Run ID: **ICPMS05_358398** SeqNo: **5519308** PrepDate: **17-Mar-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04389	0.00200	0.05	0.000142	87.5	80 - 120	0.04448	1.33	20	

PDS Sample ID: **HS20030614-05PDS** Units: **mg/L** Analysis Date: **18-Mar-2020 18:18**
Client ID: Run ID: **ICPMS05_358398** SeqNo: **5519309** PrepDate: **17-Mar-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1094	0.00200	0.1	0.000142	109	75 - 125				

SD Sample ID: **HS20030614-05SD** Units: **mg/L** Analysis Date: **18-Mar-2020 18:11**
Client ID: Run ID: **ICPMS05_358398** SeqNo: **5519306** PrepDate: **17-Mar-2020** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	< 0.00200	0.0100					0.000142	0	10	

The following samples were analyzed in this batch: HS20030619-02 HS20030619-03 HS20030619-04 HS20030619-05 HS20030619-06

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20030619

QC BATCH REPORT

Batch ID: 151813 (0) **Instrument: ICPMS05** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-151813** Units: **mg/L** Analysis Date: **20-Mar-2020 16:14**
Client ID: Run ID: **ICPMS05_358593** SeqNo: **5523720** PrepDate: **18-Mar-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	< 0.000400	0.00200								

LCS Sample ID: **LCS-151813** Units: **mg/L** Analysis Date: **20-Mar-2020 16:16**
Client ID: Run ID: **ICPMS05_358593** SeqNo: **5523721** PrepDate: **18-Mar-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04715	0.00200	0.05	0	94.3	80 - 120				

MS Sample ID: **HS20030654-04MS** Units: **mg/L** Analysis Date: **20-Mar-2020 17:49**
Client ID: Run ID: **ICPMS05_358593** SeqNo: **5523737** PrepDate: **18-Mar-2020** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04826	0.0100	0.05	0.000622	95.3	80 - 120				

MSD Sample ID: **HS20030654-04MSD** Units: **mg/L** Analysis Date: **20-Mar-2020 17:51**
Client ID: Run ID: **ICPMS05_358593** SeqNo: **5523738** PrepDate: **18-Mar-2020** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04948	0.0100	0.05	0.000622	97.7	80 - 120	0.04826	2.49	20	

PDS Sample ID: **HS20030654-04PDS** Units: **mg/L** Analysis Date: **20-Mar-2020 17:53**
Client ID: Run ID: **ICPMS05_358593** SeqNo: **5523739** PrepDate: **18-Mar-2020** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.6009	0.0100	0.5	0	120	75 - 125				

SD Sample ID: **HS20030654-04SD** Units: **mg/L** Analysis Date: **20-Mar-2020 17:46**
Client ID: Run ID: **ICPMS05_358593** SeqNo: **5523736** PrepDate: **18-Mar-2020** DF: **25**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	< 0.0100	0.0500					0.000622	0	10	

The following samples were analyzed in this batch: HS20030619-07, HS20030619-08, HS20030619-09, HS20030619-10, HS20030619-12, HS20030619-13, HS20030619-14, HS20030619-15, HS20030619-16

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20030619

QC BATCH REPORT

Batch ID: 151716 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-151716** Units: **ug/L** Analysis Date: **16-Mar-2020 13:32**
Client ID: Run ID: **SV-7_358216** SeqNo: **5515267** PrepDate: **16-Mar-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	< 0.021	0.20								
2,4-Dimethylphenol	< 0.040	0.20								
2,4-Dinitrotoluene	< 0.058	0.20								
2,6-Dinitrotoluene	< 0.042	0.20								
2-Chloronaphthalene	< 0.021	0.20								
2-Methylnaphthalene	< 0.019	0.10								
4,6-Dinitro-2-methylphenol	< 0.020	0.20								
4-Nitrophenol	< 0.047	1.0								
Acenaphthene	< 0.027	0.10								
Acenaphthylene	< 0.015	0.10								
Anthracene	< 0.014	0.10								
Benz(a)anthracene	< 0.050	0.10								
Benzo(a)pyrene	< 0.020	0.10								
Bis(2-chloroethoxy)methane	< 0.030	0.20								
Bis(2-ethylhexyl)phthalate	< 0.037	0.20								
Chrysene	< 0.021	0.10								
Dibenzofuran	< 0.020	0.10								
Di-n-butyl phthalate	< 0.020	0.20								
Fluoranthene	< 0.010	0.10								
Fluorene	< 0.030	0.10								
Naphthalene	< 0.020	0.10								
Nitrobenzene	< 0.024	0.20								
N-Nitrosodiphenylamine	< 0.025	0.20								
Pentachlorophenol	< 0.079	0.20								
Phenanthrene	< 0.021	0.10								
Phenol	< 0.035	0.20								
Pyrene	< 0.019	0.10								
Surr: 2,4,6-Tribromophenol	*4.07*	*0.20*	*5*	*0*	*81.4*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.367*	*0.20*	*5*	*0*	*67.3*	*40 - 125*				
Surr: 2-Fluorophenol	*3.058*	*0.20*	*5*	*0*	*61.2*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.326*	*0.20*	*5*	*0*	*86.5*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.169*	*0.20*	*5*	*0*	*63.4*	*41 - 120*				
Surr: Phenol-d6	*3.349*	*0.20*	*5*	*0*	*67.0*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20030619

QC BATCH REPORT

Batch ID: 151716 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCS Sample ID: **LCS-151716** Units: **ug/L** Analysis Date: **16-Mar-2020 12:16**
Client ID: Run ID: **SV-7_358216** SeqNo: **5515265** PrepDate: **16-Mar-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.21	0.20	5	0	84.2	39 - 127				
2,4-Dimethylphenol	4.506	0.20	5	0	90.1	35 - 120				
2,4-Dinitrotoluene	5.519	0.20	5	0	110	50 - 122				
2,6-Dinitrotoluene	5.528	0.20	5	0	111	50 - 120				
2-Chloronaphthalene	5.308	0.20	5	0	106	50 - 120				
2-Methylnaphthalene	5.216	0.10	5	0	104	50 - 120				
4,6-Dinitro-2-methylphenol	4.232	0.20	5	0	84.6	25 - 121				
4-Nitrophenol	4.723	1.0	5	0	94.5	30 - 130				
Acenaphthene	4.719	0.10	5	0	94.4	45 - 120				
Acenaphthylene	4.688	0.10	5	0	93.8	47 - 120				
Anthracene	4.816	0.10	5	0	96.3	45 - 120				
Benz(a)anthracene	5.312	0.10	5	0	106	40 - 120				
Benzo(a)pyrene	5.285	0.10	5	0	106	45 - 120				
Bis(2-chloroethoxy)methane	5.043	0.20	5	0	101	45 - 120				
Bis(2-ethylhexyl)phthalate	6.344	0.20	5	0	127	40 - 139				
Chrysene	4.782	0.10	5	0	95.6	43 - 120				
Dibenzofuran	4.968	0.10	5	0	99.4	50 - 120				
Di-n-butyl phthalate	5.755	0.20	5	0	115	45 - 123				
Fluoranthene	5.205	0.10	5	0	104	45 - 125				
Fluorene	5.174	0.10	5	0	103	49 - 120				
Naphthalene	4.795	0.10	5	0	95.9	45 - 120				
Nitrobenzene	4.375	0.20	5	0	87.5	44 - 120				
N-Nitrosodiphenylamine	4.465	0.20	5	0	89.3	40 - 125				
Pentachlorophenol	4.311	0.20	5	0	86.2	19 - 121				
Phenanthrene	4.815	0.10	5	0	96.3	45 - 121				
Phenol	5.116	0.20	5	0	102	20 - 124				
Pyrene	5.307	0.10	5	0	106	40 - 130				
Surr: 2,4,6-Tribromophenol	*5.449*	*0.20*	*5*	*0*	*109*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.867*	*0.20*	*5*	*0*	*77.3*	*40 - 125*				
Surr: 2-Fluorophenol	*3.617*	*0.20*	*5*	*0*	*72.3*	*20 - 120*				
Surr: 4-Terphenyl-d14	*5.306*	*0.20*	*5*	*0*	*106*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.465*	*0.20*	*5*	*0*	*69.3*	*41 - 120*				
Surr: Phenol-d6	*4.106*	*0.20*	*5*	*0*	*82.1*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20030619

QC BATCH REPORT

Batch ID: 151716 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCSD Sample ID: **LCSD-151716** Units: **ug/L** Analysis Date: **16-Mar-2020 12:35**
Client ID: Run ID: **SV-7_358216** SeqNo: **5515266** PrepDate: **16-Mar-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	4.205	0.20	5	0	84.1	39 - 127	4.21	0.114	20	
2,4-Dimethylphenol	4.426	0.20	5	0	88.5	35 - 120	4.506	1.8	20	
2,4-Dinitrotoluene	5.542	0.20	5	0	111	50 - 122	5.519	0.403	20	
2,6-Dinitrotoluene	5.689	0.20	5	0	114	50 - 120	5.528	2.87	20	
2-Chloronaphthalene	5.269	0.20	5	0	105	50 - 120	5.308	0.732	20	
2-Methylnaphthalene	5.229	0.10	5	0	105	50 - 120	5.216	0.249	20	
4,6-Dinitro-2-methylphenol	4.262	0.20	5	0	85.2	25 - 121	4.232	0.702	30	
4-Nitrophenol	4.721	1.0	5	0	94.4	30 - 130	4.723	0.0308	20	
Acenaphthene	4.724	0.10	5	0	94.5	45 - 120	4.719	0.102	20	
Acenaphthylene	4.75	0.10	5	0	95.0	47 - 120	4.688	1.31	20	
Anthracene	4.858	0.10	5	0	97.2	45 - 120	4.816	0.869	20	
Benz(a)anthracene	5.279	0.10	5	0	106	40 - 120	5.312	0.633	20	
Benzo(a)pyrene	5.402	0.10	5	0	108	45 - 120	5.285	2.19	20	
Bis(2-chloroethoxy)methane	4.997	0.20	5	0	99.9	45 - 120	5.043	0.922	20	
Bis(2-ethylhexyl)phthalate	6.297	0.20	5	0	126	40 - 139	6.344	0.747	20	
Chrysene	4.735	0.10	5	0	94.7	43 - 120	4.782	0.99	20	
Dibenzofuran	5.019	0.10	5	0	100	50 - 120	4.968	1.01	20	
Di-n-butyl phthalate	5.883	0.20	5	0	118	45 - 123	5.755	2.19	20	
Fluoranthene	5.237	0.10	5	0	105	45 - 125	5.205	0.616	20	
Fluorene	5.177	0.10	5	0	104	49 - 120	5.174	0.0563	20	
Naphthalene	4.761	0.10	5	0	95.2	45 - 120	4.795	0.718	20	
Nitrobenzene	4.464	0.20	5	0	89.3	44 - 120	4.375	2.02	20	
N-Nitrosodiphenylamine	4.485	0.20	5	0	89.7	40 - 125	4.465	0.452	20	
Pentachlorophenol	4.428	0.20	5	0	88.6	19 - 121	4.311	2.66	20	
Phenanthrene	4.88	0.10	5	0	97.6	45 - 121	4.815	1.35	20	
Phenol	5.144	0.20	5	0	103	20 - 124	5.116	0.544	20	
Pyrene	5.254	0.10	5	0	105	40 - 130	5.307	1.01	20	
Surr: 2,4,6-Tribromophenol	*5.379*	*0.20*	*5*	*0*	*108*	*34 - 129*	*5.449*	*1.3*	*20*	
Surr: 2-Fluorobiphenyl	*3.919*	*0.20*	*5*	*0*	*78.4*	*40 - 125*	*3.867*	*1.34*	*20*	
Surr: 2-Fluorophenol	*3.698*	*0.20*	*5*	*0*	*74.0*	*20 - 120*	*3.617*	*2.24*	*20*	
Surr: 4-Terphenyl-d14	*5.131*	*0.20*	*5*	*0*	*103*	*40 - 135*	*5.306*	*3.35*	*20*	
Surr: Nitrobenzene-d5	*3.449*	*0.20*	*5*	*0*	*69.0*	*41 - 120*	*3.465*	*0.452*	*20*	
Surr: Phenol-d6	*4.168*	*0.20*	*5*	*0*	*83.4*	*20 - 120*	*4.106*	*1.5*	*20*	

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	HS20030619

QC BATCH REPORT

Batch ID: 151716 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

The following samples were analyzed in this batch:

HS20030619-02	HS20030619-03	HS20030619-04	HS20030619-05
HS20030619-06	HS20030619-07	HS20030619-08	HS20030619-09
HS20030619-10	HS20030619-12	HS20030619-13	HS20030619-14
HS20030619-15	HS20030619-16		

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20030619

QC BATCH REPORT

Batch ID: R358243 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200314** Units: **ug/L** Analysis Date: **14-Mar-2020 11:00**
Client ID: Run ID: **VOA4_358243** SeqNo: **5514256** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	< 0.20	1.0								
Benzene	< 0.20	1.0								
Chlorobenzene	< 0.30	1.0								
Ethylbenzene	< 0.30	1.0								
Methylene chloride	< 1.0	2.0								
Toluene	< 0.20	1.0								
Xylenes, Total	< 0.30	1.0								
Surr: 1,2-Dichloroethane-d4	*52.52*	*1.0*	*50*	*0*	*105*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*47.01*	*1.0*	*50*	*0*	*94.0*	*82 - 115*				
Surr: Dibromofluoromethane	*50.2*	*1.0*	*50*	*0*	*100*	*73 - 126*				
Surr: Toluene-d8	*48.89*	*1.0*	*50*	*0*	*97.8*	*81 - 120*				

LCS Sample ID: **VLCSW-200314** Units: **ug/L** Analysis Date: **14-Mar-2020 10:11**
Client ID: Run ID: **VOA4_358243** SeqNo: **5514255** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	19.35	1.0	20	0	96.7	70 - 124				
Benzene	19.67	1.0	20	0	98.4	74 - 120				
Chlorobenzene	19.67	1.0	20	0	98.4	76 - 113				
Ethylbenzene	20.16	1.0	20	0	101	77 - 117				
Methylene chloride	19.96	2.0	20	0	99.8	70 - 127				
Toluene	19.96	1.0	20	0	99.8	77 - 118				
Xylenes, Total	61.63	1.0	60	0	103	75 - 122				
Surr: 1,2-Dichloroethane-d4	*49.34*	*1.0*	*50*	*0*	*98.7*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*49.66*	*1.0*	*50*	*0*	*99.3*	*82 - 115*				
Surr: Dibromofluoromethane	*50.66*	*1.0*	*50*	*0*	*101*	*73 - 126*				
Surr: Toluene-d8	*50.8*	*1.0*	*50*	*0*	*102*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20030619

QC BATCH REPORT

Batch ID: R358243 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS20030599-05MS** Units: **ug/L** Analysis Date: **14-Mar-2020 14:20**
Client ID: Run ID: **VOA4_358243** SeqNo: **5514264** PrepDate: DF: **100**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	2420	100	2000	632.1	89.4	70 - 127				
Benzene	2933	100	2000	969.3	98.2	70 - 127				
Chlorobenzene	1887	100	2000	0	94.4	70 - 114				
Ethylbenzene	1921	100	2000	0	96.0	70 - 124				
Methylene chloride	1828	200	2000	0	91.4	70 - 128				
Toluene	1960	100	2000	34.94	96.2	70 - 123				
Xylenes, Total	5878	100	6000	0	98.0	70 - 130				
Surr: 1,2-Dichloroethane-d4	*4941*	*100*	*5000*	*0*	*98.8*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*4950*	*100*	*5000*	*0*	*99.0*	*81 - 113*				
Surr: Dibromofluoromethane	*4933*	*100*	*5000*	*0*	*98.7*	*77 - 123*				
Surr: Toluene-d8	*4956*	*100*	*5000*	*0*	*99.1*	*82 - 127*				

MSD Sample ID: **HS20030599-05MSD** Units: **ug/L** Analysis Date: **14-Mar-2020 14:45**
Client ID: Run ID: **VOA4_358243** SeqNo: **5514265** PrepDate: DF: **100**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	2451	100	2000	632.1	91.0	70 - 127	2420	1.29	20	
Benzene	2824	100	2000	969.3	92.7	70 - 127	2933	3.78	20	
Chlorobenzene	1923	100	2000	0	96.1	70 - 114	1887	1.85	20	
Ethylbenzene	1956	100	2000	0	97.8	70 - 124	1921	1.85	20	
Methylene chloride	1790	200	2000	0	89.5	70 - 128	1828	2.13	20	
Toluene	1948	100	2000	34.94	95.6	70 - 123	1960	0.622	20	
Xylenes, Total	6166	100	6000	0	103	70 - 130	5878	4.78	20	
Surr: 1,2-Dichloroethane-d4	*4858*	*100*	*5000*	*0*	*97.2*	*70 - 126*	*4941*	*1.68*	*20*	
Surr: 4-Bromofluorobenzene	*5133*	*100*	*5000*	*0*	*103*	*81 - 113*	*4950*	*3.62*	*20*	
Surr: Dibromofluoromethane	*4820*	*100*	*5000*	*0*	*96.4*	*77 - 123*	*4933*	*2.31*	*20*	
Surr: Toluene-d8	*4990*	*100*	*5000*	*0*	*99.8*	*82 - 127*	*4956*	*0.691*	*20*	

The following samples were analyzed in this batch: HS20030619-02 HS20030619-03 HS20030619-04 HS20030619-05 HS20030619-06

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20030619

QC BATCH REPORT

Batch ID: R358244 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200314** Units: **ug/L** Analysis Date: **14-Mar-2020 23:24**
Client ID: Run ID: **VOA4_358244** SeqNo: **5514283** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	< 0.20	1.0								
Benzene	< 0.20	1.0								
Chlorobenzene	< 0.30	1.0								
Ethylbenzene	< 0.30	1.0								
Methylene chloride	< 1.0	2.0								
Toluene	< 0.20	1.0								
Xylenes, Total	< 0.30	1.0								
Surr: 1,2-Dichloroethane-d4	*51.27*	*1.0*	*50*	*0*	*103*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*47.31*	*1.0*	*50*	*0*	*94.6*	*82 - 115*				
Surr: Dibromofluoromethane	*50.17*	*1.0*	*50*	*0*	*100*	*73 - 126*				
Surr: Toluene-d8	*51.08*	*1.0*	*50*	*0*	*102*	*81 - 120*				

LCS Sample ID: **VLCSW-200314** Units: **ug/L** Analysis Date: **14-Mar-2020 22:35**
Client ID: Run ID: **VOA4_358244** SeqNo: **5514282** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	18.47	1.0	20	0	92.4	70 - 124				
Benzene	19.05	1.0	20	0	95.3	74 - 120				
Chlorobenzene	19.21	1.0	20	0	96.1	76 - 113				
Ethylbenzene	19.21	1.0	20	0	96.1	77 - 117				
Methylene chloride	19.03	2.0	20	0	95.1	70 - 127				
Toluene	19.36	1.0	20	0	96.8	77 - 118				
Xylenes, Total	58.72	1.0	60	0	97.9	75 - 122				
Surr: 1,2-Dichloroethane-d4	*49.71*	*1.0*	*50*	*0*	*99.4*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*48.66*	*1.0*	*50*	*0*	*97.3*	*82 - 115*				
Surr: Dibromofluoromethane	*50.17*	*1.0*	*50*	*0*	*100*	*73 - 126*				
Surr: Toluene-d8	*50.4*	*1.0*	*50*	*0*	*101*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20030619

QC BATCH REPORT

Batch ID: R358244 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS20030619-07MS** Units: **ug/L** Analysis Date: **15-Mar-2020 00:37**
Client ID: **WG-1620-MW84A-20200312** Run ID: **VOA4_358244** SeqNo: **5514286** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	18.46	1.0	20	0	92.3	70 - 127				
Benzene	19.3	1.0	20	0	96.5	70 - 127				
Chlorobenzene	19.36	1.0	20	0	96.8	70 - 114				
Ethylbenzene	19.95	1.0	20	0	99.7	70 - 124				
Methylene chloride	18.37	2.0	20	0	91.8	70 - 128				
Toluene	19.89	1.0	20	0	99.4	70 - 123				
Xylenes, Total	60.5	1.0	60	0	101	70 - 130				
Surr: 1,2-Dichloroethane-d4	*48.72*	*1.0*	*50*	*0*	*97.4*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*48.9*	*1.0*	*50*	*0*	*97.8*	*81 - 113*				
Surr: Dibromofluoromethane	*48.95*	*1.0*	*50*	*0*	*97.9*	*77 - 123*				
Surr: Toluene-d8	*50.54*	*1.0*	*50*	*0*	*101*	*82 - 127*				

MSD Sample ID: **HS20030619-07MSD** Units: **ug/L** Analysis Date: **15-Mar-2020 01:01**
Client ID: **WG-1620-MW84A-20200312** Run ID: **VOA4_358244** SeqNo: **5514287** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	18.37	1.0	20	0	91.9	70 - 127	18.46	0.492	20	
Benzene	19.26	1.0	20	0	96.3	70 - 127	19.3	0.213	20	
Chlorobenzene	18.78	1.0	20	0	93.9	70 - 114	19.36	3.05	20	
Ethylbenzene	19.35	1.0	20	0	96.8	70 - 124	19.95	3.02	20	
Methylene chloride	17.61	2.0	20	0	88.1	70 - 128	18.37	4.2	20	
Toluene	18.89	1.0	20	0	94.4	70 - 123	19.89	5.16	20	
Xylenes, Total	60.07	1.0	60	0	100	70 - 130	60.5	0.704	20	
Surr: 1,2-Dichloroethane-d4	*48.82*	*1.0*	*50*	*0*	*97.6*	*70 - 126*	*48.72*	*0.19*	*20*	
Surr: 4-Bromofluorobenzene	*50.43*	*1.0*	*50*	*0*	*101*	*81 - 113*	*48.9*	*3.09*	*20*	
Surr: Dibromofluoromethane	*48.21*	*1.0*	*50*	*0*	*96.4*	*77 - 123*	*48.95*	*1.51*	*20*	
Surr: Toluene-d8	*49.43*	*1.0*	*50*	*0*	*98.9*	*82 - 127*	*50.54*	*2.23*	*20*	

The following samples were analyzed in this batch:

HS20030619-01	HS20030619-07	HS20030619-08	HS20030619-09
HS20030619-10	HS20030619-11	HS20030619-12	HS20030619-13
HS20030619-14	HS20030619-15	HS20030619-16	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20030619**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20030619

Date/Time Received: **13-Mar-2020 14:00**
Received by: **PS**

Checklist completed by: *Asad Chaudhry* eSignature — 13-Mar-2020 Date

Reviewed by: *Dane J. Wacasey* eSignature — 17-Mar-2020 Date

Matrices: **GW, Water**

Carrier name: **ALS Courier**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	2 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:221279, 221277
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.2°C, 2.9°C, 1.7°C, 1.4°C UC/C	IR 25	
Cooler(s)/Kit(s):	45544, 45564, 45666, 433355		
Date/Time sample(s) sent to storage:	03/13/2020 17:20		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600
Holland, MI +1 616 399 6070

Chain of Custody For

Page ____ of ____

COC ID: 221279

HS20030619

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information			
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A	8260_LL_W (5632528 VOC Site Specific)
Work Order		Project Number	1620-14-Rev0 SR 92688	B	TX1005_W_Low (5643233 TPH TX1005)
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P	C	8270_LOW_W (5636632 SemiVolatiles Site specific)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	ICP_TW (5636002 Metals - As)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	WG-1620-TB (CG021720-194 20200312	3-12-20	16:30	Water	1,8	2	X										
2	WG-1620-MW99C 20200311	3-11-20	15:35	Groundwater	1,2,8	9	X	X	X	X							
3	WG-1620 MW 54B 20200311	3-11-20	14:20	GW	1,2,8	9	X	X	X	X							
4	WG-1620 MW 94A 20200312	3-12-20	15:45	GW	1,2,8	9	X	X	X	X							
5	WG-1620 MW 93B 20200312	3-12-20	14:35	GW	1,2,8	9	X	X	X	X							
6	WG-1620 MW 92B 20200312	3-12-20	13:20	GW	1,2,8	9	X	X	X	X							
7	WG-1620 MW 84A 20200312	3-12-20	12:15	GW	1,2,8	9	X	X	X	X							
8	WG-1620 MW 70C 20200312	3-12-20	10:35	GW	1,2,8	9	X	X	X	X							
9	WG-1620 MW 91A 20200312	3-12-20	9:20	GW	1,2,8	9	X	X	X	X							
10	WG-1620 FD01 20200312	3-12-20	-	GW	1,2,8	9	X	X	X	X							

Sampler(s) Please Print & Sign: Tim McGodden

Shipment Method:

Required Turnaround Time: (Check Box) [ ] 1 Day [ ] 2 Days [ ] 3 Days [X] STD 10 Work Days [ ] 5 Work Days [ ] 20 Days

Results Due Date:

Relinquished by: Tim McGodden — Date: 3-13-20 — Time: 13:15 — Received by:

Relinquished by: Mark Johnson — Date: 3-13-20 — Time: 14:00 — Received by (Laboratory):

Logged by (Laboratory): — Date: — Time: — Checked by (Laboratory):

Notes: UPRR HWPW 1620-14

Cooler ID	Cooler Temp.
45544	1.2
45564	2.9
45660	1.7
45555	1.4

QC Package: (Check One Box Below)
[ ] Level II (Standard QC)
[ ] Level III (Std QC+Raw Data)
[ ] Level IV (Std QC+Raw Data+Forms)
[X] TRRP Level IV
[ ] EDD

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

IR #25

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

Page ____ of ____

COC ID: 221277

HS20030619

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-14-Rev0 SR 92088
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address	

A	8260_LL_W (5632526 VOC Site Specific)
B	TX1005_W_Low (5643233 TPH TX1005)
C	8270_LOW_W (5632532 SemiVolatiles Site specific)
D	ICP_TW (5635002 Metals - As)
E	
F	
G	
H	
I	
J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	WG-1620-TB-GI-621720-[illegible]	3-12-20	12:36	Water	1,8	2	X										
2	WG-1620-MW76B-20200312	3-12-20	10:35	Groundwater	1,2,8	29	X	X	X	X							
3	" - MW97A - "	3-12-20	11:47														
4	" - MW98A - "	3-12-20	12:54														
5	" - MW98B - "	3-12-20	13:53														
6	" - MW50B - "	3-12-20	15:20														
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Sarah Balke

Shipment Method:

Required Turnaround Time: (Check Box) [X] STD NOW Days [ ] Other ____ [ ] 2 Work Days [ ] 3 Work Days

Results Due Date:

Relinquished by: [signature] Date: 3-15-20 Time: 13:15 Received by: [signature]

Relinquished by: [signature] Date: 3-13-20 Time: 1400 Received by (Laboratory): [signature]

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR HWPW 1620-14

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)

[ ] Level II (Std QC) [X] Tier I (Raw Data)
[ ] Level III (Std QC+Forms) [ ] Tier II (Raw Data + EDD)
[ ] Level IV (SW846 CLP)
[ ] Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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March 27, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20030961**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 3 sample(s) on Mar 20, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20030961**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS20030961**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 03/27/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20030961				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 152024,152161,R358905				
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?		X			1
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 03/27/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20030961				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 152024,152161,R358905				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?	X				
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 03/27/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20030961
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 152024,152161,R358905

ER#[5]	Description
1	Batch 152024, Semivolatile Organics Method SW8270, LCS/LCSD were analyzed and reported in lieu of an MS/MSD for this batch.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20030961

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20030961-01	WQ-1620-TB01-20200320	Water	CG-021720-183	20-Mar-2020 11:00	20-Mar-2020 11:50	☐
HS20030961-02	WG-1620-MW47A-20200320	Groundwater		20-Mar-2020 10:30	20-Mar-2020 11:50	☐
HS20030961-03	WG-1620-MW60AR-20200320	Groundwater		20-Mar-2020 08:55	20-Mar-2020 11:50	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WQ-1620-TB01-20200320
Collection Date: 20-Mar-2020 11:00

ANALYTICAL REPORT
WorkOrder:HS20030961
Lab ID:HS20030961-01
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	< 0.00020		0.00020	0.0010	mg/L	1	24-Mar-2020 22:58
Benzene	< 0.00020		0.00020	0.0010	mg/L	1	24-Mar-2020 22:58
Chlorobenzene	< 0.00030		0.00030	0.0010	mg/L	1	24-Mar-2020 22:58
Ethylbenzene	< 0.00030		0.00030	0.0010	mg/L	1	24-Mar-2020 22:58
Methylene chloride	< 0.0010		0.0010	0.0020	mg/L	1	24-Mar-2020 22:58
Toluene	< 0.00020		0.00020	0.0010	mg/L	1	24-Mar-2020 22:58
Xylenes, Total	< 0.00030		0.00030	0.0010	mg/L	1	24-Mar-2020 22:58
Surr: 1,2-Dichloroethane-d4	*104*			*70-126*	*%REC*	*1*	*24-Mar-2020 22:58*
Surr: 4-Bromofluorobenzene	*95.8*			*81-113*	*%REC*	*1*	*24-Mar-2020 22:58*
Surr: Dibromofluoromethane	*98.9*			*77-123*	*%REC*	*1*	*24-Mar-2020 22:58*
Surr: Toluene-d8	*104*			*82-127*	*%REC*	*1*	*24-Mar-2020 22:58*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW47A-20200320
Collection Date: 20-Mar-2020 10:30

ANALYTICAL REPORT
WorkOrder:HS20030961
Lab ID:HS20030961-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	< 0.00020		0.00020	0.0010	mg/L	1	25-Mar-2020 05:30
Benzene	< 0.00020		0.00020	0.0010	mg/L	1	25-Mar-2020 05:30
Chlorobenzene	< 0.00030		0.00030	0.0010	mg/L	1	25-Mar-2020 05:30
Ethylbenzene	< 0.00030		0.00030	0.0010	mg/L	1	25-Mar-2020 05:30
Methylene chloride	< 0.0010		0.0010	0.0020	mg/L	1	25-Mar-2020 05:30
Toluene	< 0.00020		0.00020	0.0010	mg/L	1	25-Mar-2020 05:30
Xylenes, Total	< 0.00030		0.00030	0.0010	mg/L	1	25-Mar-2020 05:30
Surr: 1,2-Dichloroethane-d4	*103*			*70-126*	*%REC*	*1*	*25-Mar-2020 05:30*
Surr: 4-Bromofluorobenzene	*93.3*			*81-113*	*%REC*	*1*	*25-Mar-2020 05:30*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*25-Mar-2020 05:30*
Surr: Toluene-d8	*105*			*82-127*	*%REC*	*1*	*25-Mar-2020 05:30*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW47A-20200320
Collection Date: 20-Mar-2020 10:30

ANALYTICAL REPORT
WorkOrder:HS20030961
Lab ID:HS20030961-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 23-Mar-2020		Analyst: GEY
1,2-Diphenylhydrazine	< 0.000021		0.000021	0.00020	mg/L	1	24-Mar-2020 10:50
2,4-Dimethylphenol	< 0.000040		0.000040	0.00020	mg/L	1	24-Mar-2020 10:50
2,4-Dinitrotoluene	< 0.000058		0.000058	0.00020	mg/L	1	24-Mar-2020 10:50
2,6-Dinitrotoluene	< 0.000042		0.000042	0.00020	mg/L	1	24-Mar-2020 10:50
2-Chloronaphthalene	< 0.000021		0.000021	0.00020	mg/L	1	24-Mar-2020 10:50
2-Methylnaphthalene	< 0.000019		0.000019	0.00010	mg/L	1	24-Mar-2020 10:50
4,6-Dinitro-2-methylphenol	< 0.000020		0.000020	0.00020	mg/L	1	24-Mar-2020 10:50
4-Nitrophenol	< 0.000047		0.000047	0.0010	mg/L	1	24-Mar-2020 10:50
Acenaphthene	< 0.000027		0.000027	0.00010	mg/L	1	24-Mar-2020 10:50
Acenaphthylene	< 0.000015		0.000015	0.00010	mg/L	1	24-Mar-2020 10:50
Anthracene	< 0.000014		0.000014	0.00010	mg/L	1	24-Mar-2020 10:50
Benz(a)anthracene	< 0.000050		0.000050	0.00010	mg/L	1	24-Mar-2020 10:50
Benzo(a)pyrene	< 0.000020		0.000020	0.00010	mg/L	1	24-Mar-2020 10:50
Bis(2-chloroethoxy)methane	< 0.000030		0.000030	0.00020	mg/L	1	24-Mar-2020 10:50
Bis(2-ethylhexyl)phthalate	**0.00011**	J	**0.000037**	**0.00020**	**mg/L**	1	24-Mar-2020 10:50
Chrysene	< 0.000021		0.000021	0.00010	mg/L	1	24-Mar-2020 10:50
Dibenzofuran	< 0.000020		0.000020	0.00010	mg/L	1	24-Mar-2020 10:50
Di-n-butyl phthalate	**0.000076**	J	**0.000020**	**0.00020**	**mg/L**	1	24-Mar-2020 10:50
Fluoranthene	< 0.000010		0.000010	0.00010	mg/L	1	24-Mar-2020 10:50
Fluorene	< 0.000030		0.000030	0.00010	mg/L	1	24-Mar-2020 10:50
Naphthalene	< 0.000020		0.000020	0.00010	mg/L	1	24-Mar-2020 10:50
Nitrobenzene	< 0.000024		0.000024	0.00020	mg/L	1	24-Mar-2020 10:50
N-Nitrosodiphenylamine	< 0.000025		0.000025	0.00020	mg/L	1	24-Mar-2020 10:50
Pentachlorophenol	< 0.000079		0.000079	0.00020	mg/L	1	24-Mar-2020 10:50
Phenanthrene	< 0.000021		0.000021	0.00010	mg/L	1	24-Mar-2020 10:50
Phenol	< 0.000035		0.000035	0.00020	mg/L	1	24-Mar-2020 10:50
Pyrene	< 0.000019		0.000019	0.00010	mg/L	1	24-Mar-2020 10:50
Surr: 2,4,6-Tribromophenol	*96.9*			*34-129*	*%REC*	*1*	*24-Mar-2020 10:50*
Surr: 2-Fluorobiphenyl	*71.7*			*40-125*	*%REC*	*1*	*24-Mar-2020 10:50*
Surr: 2-Fluorophenol	*58.4*			*20-120*	*%REC*	*1*	*24-Mar-2020 10:50*
Surr: 4-Terphenyl-d14	*89.6*			*40-135*	*%REC*	*1*	*24-Mar-2020 10:50*
Surr: Nitrobenzene-d5	*56.7*			*41-120*	*%REC*	*1*	*24-Mar-2020 10:50*
Surr: Phenol-d6	*61.7*			*20-120*	*%REC*	*1*	*24-Mar-2020 10:50*
ICP-MS METALS BY SW6020A	**Method:SW6020**				Prep:SW3010A / 26-Mar-2020		Analyst: JHD
Arsenic	**0.000566**	J	**0.000400**	**0.00200**	**mg/L**	1	26-Mar-2020 19:34

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW60AR-20200320
Collection Date: 20-Mar-2020 08:55

ANALYTICAL REPORT
WorkOrder:HS20030961
Lab ID:HS20030961-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	< 0.00020		0.00020	0.0010	mg/L	1	25-Mar-2020 05:54
Benzene	< 0.00020		0.00020	0.0010	mg/L	1	25-Mar-2020 05:54
Chlorobenzene	< 0.00030		0.00030	0.0010	mg/L	1	25-Mar-2020 05:54
Ethylbenzene	< 0.00030		0.00030	0.0010	mg/L	1	25-Mar-2020 05:54
Methylene chloride	< 0.0010		0.0010	0.0020	mg/L	1	25-Mar-2020 05:54
Toluene	< 0.00020		0.00020	0.0010	mg/L	1	25-Mar-2020 05:54
Xylenes, Total	< 0.00030		0.00030	0.0010	mg/L	1	25-Mar-2020 05:54
Surr: 1,2-Dichloroethane-d4	*104*			*70-126*	*%REC*	*1*	*25-Mar-2020 05:54*
Surr: 4-Bromofluorobenzene	*95.3*			*81-113*	*%REC*	*1*	*25-Mar-2020 05:54*
Surr: Dibromofluoromethane	*96.9*			*77-123*	*%REC*	*1*	*25-Mar-2020 05:54*
Surr: Toluene-d8	*103*			*82-127*	*%REC*	*1*	*25-Mar-2020 05:54*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW60AR-20200320
Collection Date: 20-Mar-2020 08:55

ANALYTICAL REPORT
WorkOrder:HS20030961
Lab ID:HS20030961-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 23-Mar-2020		Analyst: GEY
1,2-Diphenylhydrazine	< 0.000021		0.000021	0.00020	mg/L	1	24-Mar-2020 11:28
2,4-Dimethylphenol	< 0.000040		0.000040	0.00020	mg/L	1	24-Mar-2020 11:28
2,4-Dinitrotoluene	< 0.000058		0.000058	0.00020	mg/L	1	24-Mar-2020 11:28
2,6-Dinitrotoluene	< 0.000042		0.000042	0.00020	mg/L	1	24-Mar-2020 11:28
2-Chloronaphthalene	< 0.000021		0.000021	0.00020	mg/L	1	24-Mar-2020 11:28
2-Methylnaphthalene	< 0.000019		0.000019	0.00010	mg/L	1	24-Mar-2020 11:28
4,6-Dinitro-2-methylphenol	< 0.000020		0.000020	0.00020	mg/L	1	24-Mar-2020 11:28
4-Nitrophenol	< 0.000047		0.000047	0.0010	mg/L	1	24-Mar-2020 11:28
Acenaphthene	< 0.000027		0.000027	0.00010	mg/L	1	24-Mar-2020 11:28
Acenaphthylene	< 0.000015		0.000015	0.00010	mg/L	1	24-Mar-2020 11:28
Anthracene	< 0.000014		0.000014	0.00010	mg/L	1	24-Mar-2020 11:28
Benz(a)anthracene	< 0.000050		0.000050	0.00010	mg/L	1	24-Mar-2020 11:28
Benzo(a)pyrene	< 0.000020		0.000020	0.00010	mg/L	1	24-Mar-2020 11:28
Bis(2-chloroethoxy)methane	< 0.000030		0.000030	0.00020	mg/L	1	24-Mar-2020 11:28
Bis(2-ethylhexyl)phthalate	**0.000063**	J	**0.000037**	**0.00020**	**mg/L**	1	24-Mar-2020 11:28
Chrysene	< 0.000021		0.000021	0.00010	mg/L	1	24-Mar-2020 11:28
Dibenzofuran	< 0.000020		0.000020	0.00010	mg/L	1	24-Mar-2020 11:28
Di-n-butyl phthalate	< 0.000020		0.000020	0.00020	mg/L	1	24-Mar-2020 11:28
Fluoranthene	< 0.000010		0.000010	0.00010	mg/L	1	24-Mar-2020 11:28
Fluorene	< 0.000030		0.000030	0.00010	mg/L	1	24-Mar-2020 11:28
Naphthalene	< 0.000020		0.000020	0.00010	mg/L	1	24-Mar-2020 11:28
Nitrobenzene	< 0.000024		0.000024	0.00020	mg/L	1	24-Mar-2020 11:28
N-Nitrosodiphenylamine	< 0.000025		0.000025	0.00020	mg/L	1	24-Mar-2020 11:28
Pentachlorophenol	< 0.000079		0.000079	0.00020	mg/L	1	24-Mar-2020 11:28
Phenanthrene	< 0.000021		0.000021	0.00010	mg/L	1	24-Mar-2020 11:28
Phenol	< 0.000035		0.000035	0.00020	mg/L	1	24-Mar-2020 11:28
Pyrene	< 0.000019		0.000019	0.00010	mg/L	1	24-Mar-2020 11:28
Surr: 2,4,6-Tribromophenol	*89.1*			*34-129*	*%REC*	*1*	*24-Mar-2020 11:28*
Surr: 2-Fluorobiphenyl	*60.2*			*40-125*	*%REC*	*1*	*24-Mar-2020 11:28*
Surr: 2-Fluorophenol	*48.9*			*20-120*	*%REC*	*1*	*24-Mar-2020 11:28*
Surr: 4-Terphenyl-d14	*77.0*			*40-135*	*%REC*	*1*	*24-Mar-2020 11:28*
Surr: Nitrobenzene-d5	*48.7*			*41-120*	*%REC*	*1*	*24-Mar-2020 11:28*
Surr: Phenol-d6	*47.3*			*20-120*	*%REC*	*1*	*24-Mar-2020 11:28*
ICP-MS METALS BY SW6020A	**Method:SW6020**				Prep:SW3010A / 26-Mar-2020		Analyst: JHD
Arsenic	**0.00189**	J	**0.000400**	**0.00200**	**mg/L**	1	26-Mar-2020 19:36

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20030961

Batch ID: 152024 **Start Date:** 23 Mar 2020 14:30 **End Date:** 23 Mar 2020 17:30
Method: SV AQ SEP FUN EXTRACT-LOWLEV - 3510C **Prep Code:** 3510_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20030961-02		1000 (mL)	1 (mL)	0.001
HS20030961-03		1000 (mL)	1 (mL)	0.001

Batch ID: 152161 **Start Date:** 26 Mar 2020 08:47 **End Date:** 26 Mar 2020 13:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20030961-02		10 (mL)	10 (mL)	1
HS20030961-03		10 (mL)	10 (mL)	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20030961

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 152024 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Groundwater	
HS20030961-02	WG-1620-MW47A-20200320	20 Mar 2020 10:30		23 Mar 2020 15:37	24 Mar 2020 10:50	1
HS20030961-03	WG-1620-MW60AR-20200320	20 Mar 2020 08:55		23 Mar 2020 15:37	24 Mar 2020 11:28	1
Batch ID: 152161 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Groundwater	
HS20030961-02	WG-1620-MW47A-20200320	20 Mar 2020 10:30		26 Mar 2020 13:00	26 Mar 2020 19:34	1
HS20030961-03	WG-1620-MW60AR-20200320	20 Mar 2020 08:55		26 Mar 2020 13:00	26 Mar 2020 19:36	1
Batch ID: R358905 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Groundwater	
HS20030961-02	WG-1620-MW47A-20200320	20 Mar 2020 10:30			25 Mar 2020 05:30	1
HS20030961-03	WG-1620-MW60AR-20200320	20 Mar 2020 08:55			25 Mar 2020 05:54	1
Batch ID: R358905 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20030961-01	WQ-1620-TB01-20200320	20 Mar 2020 11:00			24 Mar 2020 22:58	1

WorkOrder: HS20030961
InstrumentID: ICPMS05
Test Code: ICP_TW
Test Number: SW6020
Test Name: ICP-MS Metals by SW6020A

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Arsenic	7440-38-2	0.000500	0.000499	0.000400	0.00200

WorkOrder: HS20030961
InstrumentID: SV-7
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Diphenylhydrazine	122-66-7	0.00010	0.00013	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.000081	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.00010	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.00010	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.00012	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.000050	0.000052	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000060	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00010	0.000069	0.000047	0.0010
A	Acenaphthene	83-32-9	0.000050	0.000050	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000046	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.000046	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.000050	0.000057	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.000050	0.000047	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.00012	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.00014	0.000037	0.00020
A	Chrysene	218-01-9	0.000050	0.000049	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.000050	0.000050	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.00012	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000053	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.000050	0.000030	0.00010
A	Naphthalene	91-20-3	0.000050	0.000048	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.00014	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.00012	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.000057	0.000079	0.00020
A	Phenanthrene	85-01-8	0.000050	0.000047	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.00012	0.000035	0.00020
A	Pyrene	129-00-0	0.000050	0.000051	0.000019	0.00010
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0.00020
S	2-Fluorobiphenyl	321-60-8	0	0	0	0.00020
S	2-Fluorophenol	367-12-4	0	0	0	0.00020
S	4-Terphenyl-d14	1718-51-0	0	0	0	0.00020
S	Nitrobenzene-d5	4165-60-0	0	0	0	0.00020
S	Phenol-d6	13127-88-3	0	0	0	0.00020

WorkOrder: HS20030961
InstrumentID: VOA4
Test Code: 8260_LL_W
Test Number: SW8260
Test Name: Low Level Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.00050	0.00061	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00057	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00058	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00048	0.00030	0.0010
A	Methylene chloride	75-09-2	0.0010	0.00070	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00050	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00070	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20030961

QC BATCH REPORT

Batch ID: 152161 (0) **Instrument: ICPMS05** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-152161** Units: **mg/L** Analysis Date: **26-Mar-2020 19:13**
Client ID: Run ID: **ICPMS05_358931** SeqNo: **5532745** PrepDate: **26-Mar-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	< 0.000400	0.00200								

LCS Sample ID: **LCS-152161** Units: **mg/L** Analysis Date: **26-Mar-2020 19:15**
Client ID: Run ID: **ICPMS05_358931** SeqNo: **5532746** PrepDate: **26-Mar-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04894	0.00200	0.05	0	97.9	80 - 120				

MS Sample ID: **HS20030965-04MS** Units: **mg/L** Analysis Date: **26-Mar-2020 19:22**
Client ID: Run ID: **ICPMS05_358931** SeqNo: **5532749** PrepDate: **26-Mar-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05528	0.00200	0.05	0.004711	101	80 - 120				

MSD Sample ID: **HS20030965-04MSD** Units: **mg/L** Analysis Date: **26-Mar-2020 19:25**
Client ID: Run ID: **ICPMS05_358931** SeqNo: **5532750** PrepDate: **26-Mar-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05392	0.00200	0.05	0.004711	98.4	80 - 120	0.05528	2.48	20	

PDS Sample ID: **HS20030965-04PDS** Units: **mg/L** Analysis Date: **26-Mar-2020 19:27**
Client ID: Run ID: **ICPMS05_358931** SeqNo: **5532751** PrepDate: **26-Mar-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.106	0.00200	0.1	0.004711	101	75 - 125				

SD Sample ID: **HS20030965-04SD** Units: **mg/L** Analysis Date: **26-Mar-2020 19:20**
Client ID: Run ID: **ICPMS05_358931** SeqNo: **5532748** PrepDate: **26-Mar-2020** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.004019	0.0100					0.004711	0	10	J

The following samples were analyzed in this batch: HS20030961-02 HS20030961-03

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20030961

QC BATCH REPORT

Batch ID: 152024 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-152024** Units: **ug/L** Analysis Date: **24-Mar-2020 09:53**
Client ID: Run ID: **SV-7_358753** SeqNo: **5526601** PrepDate: **23-Mar-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	< 0.021	0.20								
2,4-Dimethylphenol	< 0.040	0.20								
2,4-Dinitrotoluene	< 0.058	0.20								
2,6-Dinitrotoluene	< 0.042	0.20								
2-Chloronaphthalene	< 0.021	0.20								
2-Methylnaphthalene	< 0.019	0.10								
4,6-Dinitro-2-methylphenol	< 0.020	0.20								
4-Nitrophenol	< 0.047	1.0								
Acenaphthene	< 0.027	0.10								
Acenaphthylene	< 0.015	0.10								
Anthracene	< 0.014	0.10								
Benz(a)anthracene	< 0.050	0.10								
Benzo(a)pyrene	< 0.020	0.10								
Bis(2-chloroethoxy)methane	< 0.030	0.20								
Bis(2-ethylhexyl)phthalate	< 0.037	0.20								
Chrysene	< 0.021	0.10								
Dibenzofuran	< 0.020	0.10								
Di-n-butyl phthalate	< 0.020	0.20								
Fluoranthene	< 0.010	0.10								
Fluorene	< 0.030	0.10								
Naphthalene	< 0.020	0.10								
Nitrobenzene	< 0.024	0.20								
N-Nitrosodiphenylamine	< 0.025	0.20								
Pentachlorophenol	< 0.079	0.20								
Phenanthrene	< 0.021	0.10								
Phenol	< 0.035	0.20								
Pyrene	< 0.019	0.10								
Surr: 2,4,6-Tribromophenol	*3.818*	*0.20*	*5*	*0*	*76.4*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.671*	*0.20*	*5*	*0*	*73.4*	*40 - 125*				
Surr: 2-Fluorophenol	*3.241*	*0.20*	*5*	*0*	*64.8*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.592*	*0.20*	*5*	*0*	*91.8*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.079*	*0.20*	*5*	*0*	*61.6*	*41 - 120*				
Surr: Phenol-d6	*3.448*	*0.20*	*5*	*0*	*69.0*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20030961

QC BATCH REPORT

Batch ID: 152024 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCS Sample ID: **LCS-152024** Units: **ug/L** Analysis Date: **24-Mar-2020 10:12**
Client ID: Run ID: **SV-7_358753** SeqNo: **5526602** PrepDate: **23-Mar-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	3.044	0.20	5	0	60.9	39 - 127				
2,4-Dimethylphenol	3.518	0.20	5	0	70.4	35 - 120				
2,4-Dinitrotoluene	4.266	0.20	5	0	85.3	50 - 122				
2,6-Dinitrotoluene	4.362	0.20	5	0	87.2	50 - 120				
2-Chloronaphthalene	4.343	0.20	5	0	86.9	50 - 120				
2-Methylnaphthalene	3.829	0.10	5	0	76.6	50 - 120				
4,6-Dinitro-2-methylphenol	3.498	0.20	5	0	70.0	25 - 121				
4-Nitrophenol	2.946	1.0	5	0	58.9	30 - 130				
Acenaphthene	3.623	0.10	5	0	72.5	45 - 120				
Acenaphthylene	3.667	0.10	5	0	73.3	47 - 120				
Anthracene	3.781	0.10	5	0	75.6	45 - 120				
Benz(a)anthracene	3.921	0.10	5	0	78.4	40 - 120				
Benzo(a)pyrene	3.898	0.10	5	0	78.0	45 - 120				
Bis(2-chloroethoxy)methane	3.614	0.20	5	0	72.3	45 - 120				
Bis(2-ethylhexyl)phthalate	3.616	0.20	5	0	72.3	40 - 139				
Chrysene	3.587	0.10	5	0	71.7	43 - 120				
Dibenzofuran	3.894	0.10	5	0	77.9	50 - 120				
Di-n-butyl phthalate	3.806	0.20	5	0	76.1	45 - 123				
Fluoranthene	3.938	0.10	5	0	78.8	45 - 125				
Fluorene	3.911	0.10	5	0	78.2	49 - 120				
Naphthalene	3.624	0.10	5	0	72.5	45 - 120				
Nitrobenzene	3.199	0.20	5	0	64.0	44 - 120				
N-Nitrosodiphenylamine	3.714	0.20	5	0	74.3	40 - 125				
Pentachlorophenol	1.418	0.20	5	0	28.4	19 - 121				
Phenanthrene	3.672	0.10	5	0	73.4	45 - 121				
Phenol	3.565	0.20	5	0	71.3	20 - 124				
Pyrene	4.122	0.10	5	0	82.4	40 - 130				
Surr: 2,4,6-Tribromophenol	*4.236*	*0.20*	*5*	*0*	*84.7*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.409*	*0.20*	*5*	*0*	*68.2*	*40 - 125*				
Surr: 2-Fluorophenol	*2.949*	*0.20*	*5*	*0*	*59.0*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.003*	*0.20*	*5*	*0*	*80.1*	*40 - 135*				
Surr: Nitrobenzene-d5	*2.711*	*0.20*	*5*	*0*	*54.2*	*41 - 120*				
Surr: Phenol-d6	*3.075*	*0.20*	*5*	*0*	*61.5*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20030961

QC BATCH REPORT

Batch ID: 152024 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCSD Sample ID: **LCSD-152024** Units: **ug/L** Analysis Date: **24-Mar-2020 11:09**
Client ID: Run ID: **SV-7_358753** SeqNo: **5526759** PrepDate: **23-Mar-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	3.078	0.20	5	0	61.6	39 - 127	3.044	1.11	20	
2,4-Dimethylphenol	3.536	0.20	5	0	70.7	35 - 120	3.518	0.508	20	
2,4-Dinitrotoluene	4.103	0.20	5	0	82.1	50 - 122	4.266	3.91	20	
2,6-Dinitrotoluene	4.141	0.20	5	0	82.8	50 - 120	4.362	5.2	20	
2-Chloronaphthalene	4.317	0.20	5	0	86.3	50 - 120	4.343	0.588	20	
2-Methylnaphthalene	3.833	0.10	5	0	76.7	50 - 120	3.829	0.114	20	
4,6-Dinitro-2-methylphenol	3.767	0.20	5	0	75.3	25 - 121	3.498	7.42	30	
4-Nitrophenol	3.196	1.0	5	0	63.9	30 - 130	2.946	8.14	20	
Acenaphthene	3.518	0.10	5	0	70.4	45 - 120	3.623	2.94	20	
Acenaphthylene	3.588	0.10	5	0	71.8	47 - 120	3.667	2.18	20	
Anthracene	3.775	0.10	5	0	75.5	45 - 120	3.781	0.165	20	
Benz(a)anthracene	3.835	0.10	5	0	76.7	40 - 120	3.921	2.22	20	
Benzo(a)pyrene	3.734	0.10	5	0	74.7	45 - 120	3.898	4.3	20	
Bis(2-chloroethoxy)methane	3.687	0.20	5	0	73.7	45 - 120	3.614	2.01	20	
Bis(2-ethylhexyl)phthalate	3.596	0.20	5	0	71.9	40 - 139	3.616	0.554	20	
Chrysene	3.449	0.10	5	0	69.0	43 - 120	3.587	3.93	20	
Dibenzofuran	3.833	0.10	5	0	76.7	50 - 120	3.894	1.59	20	
Di-n-butyl phthalate	3.871	0.20	5	0	77.4	45 - 123	3.806	1.69	20	
Fluoranthene	4.045	0.10	5	0	80.9	45 - 125	3.938	2.67	20	
Fluorene	3.875	0.10	5	0	77.5	49 - 120	3.911	0.945	20	
Naphthalene	3.65	0.10	5	0	73.0	45 - 120	3.624	0.72	20	
Nitrobenzene	3.414	0.20	5	0	68.3	44 - 120	3.199	6.51	20	
N-Nitrosodiphenylamine	3.737	0.20	5	0	74.7	40 - 125	3.714	0.598	20	
Pentachlorophenol	1.54	0.20	5	0	30.8	19 - 121	1.418	8.25	20	
Phenanthrene	3.71	0.10	5	0	74.2	45 - 121	3.672	1.03	20	
Phenol	3.505	0.20	5	0	70.1	20 - 124	3.565	1.71	20	
Pyrene	3.879	0.10	5	0	77.6	40 - 130	4.122	6.05	20	
Surr: 2,4,6-Tribromophenol	*4.294*	*0.20*	*5*	*0*	*85.9*	*34 - 129*	*4.236*	*1.37*	*20*	
Surr: 2-Fluorobiphenyl	*3.184*	*0.20*	*5*	*0*	*63.7*	*40 - 125*	*3.409*	*6.83*	*20*	
Surr: 2-Fluorophenol	*2.98*	*0.20*	*5*	*0*	*59.6*	*20 - 120*	*2.949*	*1.05*	*20*	
Surr: 4-Terphenyl-d14	*3.844*	*0.20*	*5*	*0*	*76.9*	*40 - 135*	*4.003*	*4.06*	*20*	
Surr: Nitrobenzene-d5	*2.828*	*0.20*	*5*	*0*	*56.6*	*41 - 120*	*2.711*	*4.25*	*20*	
Surr: Phenol-d6	*3.023*	*0.20*	*5*	*0*	*60.5*	*20 - 120*	*3.075*	*1.71*	*20*	

The following samples were analyzed in this batch: HS20030961-02 HS20030961-03

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20030961

QC BATCH REPORT

Batch ID: R358905 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200324** Units: **ug/L** Analysis Date: **24-Mar-2020 20:29**
Client ID: Run ID: **VOA4_358905** SeqNo: **5530354** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	< 0.20	1.0								
Benzene	< 0.20	1.0								
Chlorobenzene	< 0.30	1.0								
Ethylbenzene	< 0.30	1.0								
Methylene chloride	< 1.0	2.0								
Toluene	< 0.20	1.0								
Xylenes, Total	< 0.30	1.0								
Surr: 1,2-Dichloroethane-d4	*51.63*	*1.0*	*50*	*0*	*103*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*46.77*	*1.0*	*50*	*0*	*93.5*	*82 - 115*				
Surr: Dibromofluoromethane	*49.16*	*1.0*	*50*	*0*	*98.3*	*73 - 126*				
Surr: Toluene-d8	*51.52*	*1.0*	*50*	*0*	*103*	*81 - 120*				

LCS Sample ID: **VLCSW-200324** Units: **ug/L** Analysis Date: **24-Mar-2020 19:39**
Client ID: Run ID: **VOA4_358905** SeqNo: **5530353** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	18.16	1.0	20	0	90.8	70 - 124				
Benzene	18.54	1.0	20	0	92.7	74 - 120				
Chlorobenzene	19.29	1.0	20	0	96.5	76 - 113				
Ethylbenzene	19.8	1.0	20	0	99.0	77 - 117				
Methylene chloride	18.31	2.0	20	0	91.6	70 - 127				
Toluene	19.66	1.0	20	0	98.3	77 - 118				
Xylenes, Total	61.08	1.0	60	0	102	75 - 122				
Surr: 1,2-Dichloroethane-d4	*49.14*	*1.0*	*50*	*0*	*98.3*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*48.67*	*1.0*	*50*	*0*	*97.3*	*82 - 115*				
Surr: Dibromofluoromethane	*48.16*	*1.0*	*50*	*0*	*96.3*	*73 - 126*				
Surr: Toluene-d8	*51.1*	*1.0*	*50*	*0*	*102*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20030961

QC BATCH REPORT

Batch ID: R358905 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS20030969-04MS** Units: **ug/L** Analysis Date: **24-Mar-2020 23:47**
Client ID: Run ID: **VOA4_358905** SeqNo: **5530362** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	17.67	1.0	20	0	88.3	70 - 127				
Benzene	18.29	1.0	20	0	91.5	70 - 127				
Chlorobenzene	18.92	1.0	20	0	94.6	70 - 114				
Ethylbenzene	19.84	1.0	20	0	99.2	70 - 124				
Methylene chloride	16.71	2.0	20	0	83.6	70 - 128				
Toluene	19.19	1.0	20	0	95.9	70 - 123				
Xylenes, Total	60.72	1.0	60	0	101	70 - 130				
Surr: 1,2-Dichloroethane-d4	*48.88*	*1.0*	*50*	*0*	*97.8*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.61*	*1.0*	*50*	*0*	*99.2*	*81 - 113*				
Surr: Dibromofluoromethane	*47.63*	*1.0*	*50*	*0*	*95.3*	*77 - 123*				
Surr: Toluene-d8	*50.49*	*1.0*	*50*	*0*	*101*	*82 - 127*				

MSD Sample ID: **HS20030969-04MSD** Units: **ug/L** Analysis Date: **25-Mar-2020 00:11**
Client ID: Run ID: **VOA4_358905** SeqNo: **5530363** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	17.47	1.0	20	0	87.3	70 - 127	17.67	1.16	20	
Benzene	17.79	1.0	20	0	88.9	70 - 127	18.29	2.8	20	
Chlorobenzene	18.79	1.0	20	0	93.9	70 - 114	18.92	0.69	20	
Ethylbenzene	19.53	1.0	20	0	97.7	70 - 124	19.84	1.55	20	
Methylene chloride	16.28	2.0	20	0	81.4	70 - 128	16.71	2.63	20	
Toluene	19.09	1.0	20	0	95.4	70 - 123	19.19	0.533	20	
Xylenes, Total	59.99	1.0	60	0	100.0	70 - 130	60.72	1.22	20	
Surr: 1,2-Dichloroethane-d4	*49.88*	*1.0*	*50*	*0*	*99.8*	*70 - 126*	*48.88*	*2.01*	*20*	
Surr: 4-Bromofluorobenzene	*49.71*	*1.0*	*50*	*0*	*99.4*	*81 - 113*	*49.61*	*0.185*	*20*	
Surr: Dibromofluoromethane	*46.83*	*1.0*	*50*	*0*	*93.7*	*77 - 123*	*47.63*	*1.69*	*20*	
Surr: Toluene-d8	*50.32*	*1.0*	*50*	*0*	*101*	*82 - 127*	*50.49*	*0.333*	*20*	

The following samples were analyzed in this batch: HS20030961-01 HS20030961-02 HS20030961-03

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20030961**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20030961

Date/Time Received: **20-Mar-2020 11:50**
Received by: **PS**

Checklist completed by: *Jared R. Makan* eSignature — 20-Mar-2020 Date

Reviewed by: *Dane J. Wacasey* eSignature — 23-Mar-2020 Date

Matrices: **Water**

Carrier name: **ALS Courier**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:221276
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	1.0°C/1.0°C UC/C	IR11
Cooler(s)/Kit(s):	43906	
Date/Time sample(s) sent to storage:	03/20/2020 19:00	

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600
Holland, MI +1 616 399 6070
Houston, TX +1 281 530 5656
Spring City, PA +1 610 948 4903
South Charleston, WV +1 304 356 3168
Middletown, PA +1 717 944 5541
Salt Lake City, UT +1 801 266 7700
York, PA +1 717 505 5280

Chain of Custody Form

Page ____ of ____

COC ID: 221276

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A	8260_LL_W (5632528 VOC Site Specific)
Work Order		Project Number	1620-14-Rev0 SR 92282	B	~~TX1005_W_Low (5643233 TPH TX1005)~~ NO TPH
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P	C	8270_LOW_W (5632530 SemiVolatiles Site specific)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	ICP_TW (5630002 Metals - As)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address		J	

HS20030961

Golder Associates Inc.

Houston TX-Wood Preserving Works

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	WG-1620-TB CC-0217201B3	3-20-20	11:00	Water	1,8	2	X										
2	WG-1620-MW47A20200320	3-20-20	10:30	Groundwater	1,2,8	19	X	~~X~~	X	X							
3	WG-1620 MW60AR 20200320	3-20-20	8:55	GW	1,2,8	9	X		X	X							
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: T. McSpadden T. McSpadden

Shipment Method:

Required Turnaround Time: (Check Box) ☐ Other ☒ 5-8 Business Days ☐ 2-4 Days ☐ 1 Day

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
T. McSpadden	3-20-20	1125	
Relinquished by:	Date:	Time:	Received by (Laboratory):
	3-20-20	1150	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: UPRR HWPW 1620-14

Cooler ID	Cooler Temp.
	uc
43906	1.0
	1.1
	0.0

QC Package: (Check One Box Below)

☐ Level II (Std QC)
☐ Level III Std QC+Raw Data
☐ Level IV (Full Data Pkg)
☐ Other
☒ TRRP Checklist
☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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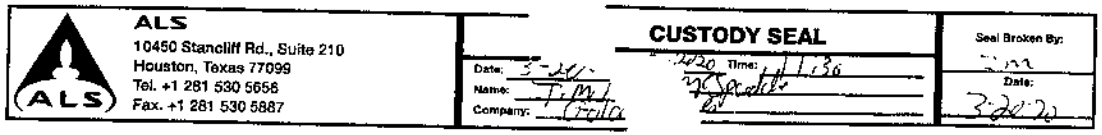
ALS
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Date:
Name:
Company:
CUSTODY SEAL
Time:
Seal Broken By:
Date:

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March 31, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20030819**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 8 sample(s) on Mar 18, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: DANE.WACASEY
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20030819**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS20030819**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 03/30/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20030819				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 151876,152162,R358799				
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?		X			1
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 03/30/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20030819				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 151876,152162,R358799				
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?	X				
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 03/30/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20030819
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 151876,152162,R358799

ER#[5]	Description
	Batch 151876, Semivolatile Organics Method SW8270, LCS/LCSD were analyzed and reported in lieu of an MS/MSD for this batch.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20030819

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20030819-01	WQ-1620-TB01-20200317	Water	CG 021720 -179	17-Mar-2020 15:59	18-Mar-2020 16:35	☐
HS20030819-02	WG-1620-MW88A-20200317	Groundwater		17-Mar-2020 12:55	18-Mar-2020 16:35	☐
HS20030819-03	WG-1620-MW61B-20200317	Groundwater		17-Mar-2020 11:45	18-Mar-2020 16:35	☐
HS20030819-04	WG-1620-MW96B-20200317	Groundwater		17-Mar-2020 10:25	18-Mar-2020 16:35	☐
HS20030819-05	WG-1620-MW95A-20200317	Groundwater		17-Mar-2020 09:10	18-Mar-2020 16:35	☐
HS20030819-06	WG-1620-MW60B-20200317	Groundwater		17-Mar-2020 15:15	18-Mar-2020 16:35	☐
HS20030819-07	WG-1620-MW88B-20200317	Groundwater		17-Mar-2020 13:50	18-Mar-2020 16:35	☐
HS20030819-08	WG-1620-FD02-20200317	Groundwater		17-Mar-2020 00:00	18-Mar-2020 16:35	☐

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20030819
Sample ID: WQ-1620-TB01-20200317
Lab ID:HS20030819-01
Collection Date: 17-Mar-2020 15:59
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	< 0.00020		0.00020	0.0010	mg/L	1	23-Mar-2020 19:53
Benzene	< 0.00020		0.00020	0.0010	mg/L	1	23-Mar-2020 19:53
Chlorobenzene	< 0.00030		0.00030	0.0010	mg/L	1	23-Mar-2020 19:53
Ethylbenzene	< 0.00030		0.00030	0.0010	mg/L	1	23-Mar-2020 19:53
Methylene chloride	< 0.0010		0.0010	0.0020	mg/L	1	23-Mar-2020 19:53
Toluene	< 0.00020		0.00020	0.0010	mg/L	1	23-Mar-2020 19:53
Xylenes, Total	< 0.00030		0.00030	0.0010	mg/L	1	23-Mar-2020 19:53
Surr: 1,2-Dichloroethane-d4	*100*			*70-126*	*%REC*	*1*	*23-Mar-2020 19:53*
Surr: 4-Bromofluorobenzene	*95.3*			*81-113*	*%REC*	*1*	*23-Mar-2020 19:53*
Surr: Dibromofluoromethane	*97.6*			*77-123*	*%REC*	*1*	*23-Mar-2020 19:53*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*1*	*23-Mar-2020 19:53*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW88A-20200317
Collection Date: 17-Mar-2020 12:55

ANALYTICAL REPORT
WorkOrder:HS20030819
Lab ID:HS20030819-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	< 0.00020		0.00020	0.0010	mg/L	1	23-Mar-2020 20:39
Benzene	< 0.00020		0.00020	0.0010	mg/L	1	23-Mar-2020 20:39
Chlorobenzene	< 0.00030		0.00030	0.0010	mg/L	1	23-Mar-2020 20:39
Ethylbenzene	< 0.00030		0.00030	0.0010	mg/L	1	23-Mar-2020 20:39
Methylene chloride	< 0.0010		0.0010	0.0020	mg/L	1	23-Mar-2020 20:39
Toluene	< 0.00020		0.00020	0.0010	mg/L	1	23-Mar-2020 20:39
Xylenes, Total	< 0.00030		0.00030	0.0010	mg/L	1	23-Mar-2020 20:39
Surr: 1,2-Dichloroethane-d4	*100*			*70-126*	*%REC*	*1*	*23-Mar-2020 20:39*
Surr: 4-Bromofluorobenzene	*96.6*			*81-113*	*%REC*	*1*	*23-Mar-2020 20:39*
Surr: Dibromofluoromethane	*98.8*			*77-123*	*%REC*	*1*	*23-Mar-2020 20:39*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*23-Mar-2020 20:39*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW88A-20200317
Collection Date: 17-Mar-2020 12:55

ANALYTICAL REPORT
WorkOrder:HS20030819
Lab ID:HS20030819-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Mar-2020		Analyst: GEY
1,2-Diphenylhydrazine	< 0.000021		0.000021	0.00020	mg/L	1	19-Mar-2020 18:27
2,4-Dimethylphenol	< 0.000040		0.000040	0.00020	mg/L	1	19-Mar-2020 18:27
2,4-Dinitrotoluene	< 0.000058		0.000058	0.00020	mg/L	1	19-Mar-2020 18:27
2,6-Dinitrotoluene	< 0.000042		0.000042	0.00020	mg/L	1	19-Mar-2020 18:27
2-Chloronaphthalene	< 0.000021		0.000021	0.00020	mg/L	1	19-Mar-2020 18:27
2-Methylnaphthalene	< 0.000019		0.000019	0.00010	mg/L	1	19-Mar-2020 18:27
4,6-Dinitro-2-methylphenol	< 0.000020		0.000020	0.00020	mg/L	1	19-Mar-2020 18:27
4-Nitrophenol	< 0.000047		0.000047	0.0010	mg/L	1	19-Mar-2020 18:27
Acenaphthene	**0.0015**		**0.000027**	**0.00010**	**mg/L**	1	19-Mar-2020 18:27
Acenaphthylene	< 0.000015		0.000015	0.00010	mg/L	1	19-Mar-2020 18:27
Anthracene	< 0.000014		0.000014	0.00010	mg/L	1	19-Mar-2020 18:27
Benz(a)anthracene	< 0.000050		0.000050	0.00010	mg/L	1	19-Mar-2020 18:27
Benzo(a)pyrene	< 0.000020		0.000020	0.00010	mg/L	1	19-Mar-2020 18:27
Bis(2-chloroethoxy)methane	< 0.000030		0.000030	0.00020	mg/L	1	19-Mar-2020 18:27
Bis(2-ethylhexyl)phthalate	**0.00010**	J	**0.000037**	**0.00020**	**mg/L**	1	19-Mar-2020 18:27
Chrysene	< 0.000021		0.000021	0.00010	mg/L	1	19-Mar-2020 18:27
Dibenzofuran	< 0.000020		0.000020	0.00010	mg/L	1	19-Mar-2020 18:27
Di-n-butyl phthalate	< 0.000020		0.000020	0.00020	mg/L	1	19-Mar-2020 18:27
Fluoranthene	**0.00025**		**0.000010**	**0.00010**	**mg/L**	1	19-Mar-2020 18:27
Fluorene	**0.00026**		**0.000030**	**0.00010**	**mg/L**	1	19-Mar-2020 18:27
Naphthalene	< 0.000020		0.000020	0.00010	mg/L	1	19-Mar-2020 18:27
Nitrobenzene	< 0.000024		0.000024	0.00020	mg/L	1	19-Mar-2020 18:27
N-Nitrosodiphenylamine	< 0.000025		0.000025	0.00020	mg/L	1	19-Mar-2020 18:27
Pentachlorophenol	< 0.000079		0.000079	0.00020	mg/L	1	19-Mar-2020 18:27
Phenanthrene	< 0.000021		0.000021	0.00010	mg/L	1	19-Mar-2020 18:27
Phenol	< 0.000035		0.000035	0.00020	mg/L	1	19-Mar-2020 18:27
Pyrene	**0.00053**		**0.000019**	**0.00010**	**mg/L**	1	19-Mar-2020 18:27
Surr: 2,4,6-Tribromophenol	*97.6*			*34-129*	*%REC*	*1*	*19-Mar-2020 18:27*
Surr: 2-Fluorobiphenyl	*68.6*			*40-125*	*%REC*	*1*	*19-Mar-2020 18:27*
Surr: 2-Fluorophenol	*64.7*			*20-120*	*%REC*	*1*	*19-Mar-2020 18:27*
Surr: 4-Terphenyl-d14	*104*			*40-135*	*%REC*	*1*	*19-Mar-2020 18:27*
Surr: Nitrobenzene-d5	*51.5*			*41-120*	*%REC*	*1*	*19-Mar-2020 18:27*
Surr: Phenol-d6	*58.4*			*20-120*	*%REC*	*1*	*19-Mar-2020 18:27*
ICP-MS METALS BY SW6020A	**Method:SW6020**				Prep:SW3010A / 26-Mar-2020		Analyst: JHD
Arsenic	**0.00355**		**0.000400**	**0.00200**	**mg/L**	1	27-Mar-2020 13:41

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW61B-20200317
Collection Date: 17-Mar-2020 11:45

ANALYTICAL REPORT
WorkOrder:HS20030819
Lab ID:HS20030819-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	< 0.00020		0.00020	0.0010	mg/L	1	23-Mar-2020 22:11
Benzene	< 0.00020		0.00020	0.0010	mg/L	1	23-Mar-2020 22:11
Chlorobenzene	< 0.00030		0.00030	0.0010	mg/L	1	23-Mar-2020 22:11
Ethylbenzene	< 0.00030		0.00030	0.0010	mg/L	1	23-Mar-2020 22:11
Methylene chloride	< 0.0010		0.0010	0.0020	mg/L	1	23-Mar-2020 22:11
Toluene	< 0.00020		0.00020	0.0010	mg/L	1	23-Mar-2020 22:11
Xylenes, Total	< 0.00030		0.00030	0.0010	mg/L	1	23-Mar-2020 22:11
Surr: 1,2-Dichloroethane-d4	*99.1*			*70-126*	*%REC*	*1*	*23-Mar-2020 22:11*
Surr: 4-Bromofluorobenzene	*96.5*			*81-113*	*%REC*	*1*	*23-Mar-2020 22:11*
Surr: Dibromofluoromethane	*98.8*			*77-123*	*%REC*	*1*	*23-Mar-2020 22:11*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*23-Mar-2020 22:11*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW61B-20200317
Collection Date: 17-Mar-2020 11:45

ANALYTICAL REPORT
WorkOrder:HS20030819
Lab ID:HS20030819-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Mar-2020		Analyst: GEY
1,2-Diphenylhydrazine	< 0.000021		0.000021	0.00020	mg/L	1	19-Mar-2020 18:46
2,4-Dimethylphenol	< 0.000040		0.000040	0.00020	mg/L	1	19-Mar-2020 18:46
2,4-Dinitrotoluene	< 0.000058		0.000058	0.00020	mg/L	1	19-Mar-2020 18:46
2,6-Dinitrotoluene	< 0.000042		0.000042	0.00020	mg/L	1	19-Mar-2020 18:46
2-Chloronaphthalene	< 0.000021		0.000021	0.00020	mg/L	1	19-Mar-2020 18:46
2-Methylnaphthalene	< 0.000019		0.000019	0.00010	mg/L	1	19-Mar-2020 18:46
4,6-Dinitro-2-methylphenol	< 0.000020		0.000020	0.00020	mg/L	1	19-Mar-2020 18:46
4-Nitrophenol	< 0.000047		0.000047	0.0010	mg/L	1	19-Mar-2020 18:46
Acenaphthene	< 0.000027		0.000027	0.00010	mg/L	1	19-Mar-2020 18:46
Acenaphthylene	< 0.000015		0.000015	0.00010	mg/L	1	19-Mar-2020 18:46
Anthracene	< 0.000014		0.000014	0.00010	mg/L	1	19-Mar-2020 18:46
Benz(a)anthracene	< 0.000050		0.000050	0.00010	mg/L	1	19-Mar-2020 18:46
Benzo(a)pyrene	< 0.000020		0.000020	0.00010	mg/L	1	19-Mar-2020 18:46
Bis(2-chloroethoxy)methane	< 0.000030		0.000030	0.00020	mg/L	1	19-Mar-2020 18:46
Bis(2-ethylhexyl)phthalate	**0.00015**	J	**0.000037**	**0.00020**	**mg/L**	1	19-Mar-2020 18:46
Chrysene	< 0.000021		0.000021	0.00010	mg/L	1	19-Mar-2020 18:46
Dibenzofuran	< 0.000020		0.000020	0.00010	mg/L	1	19-Mar-2020 18:46
Di-n-butyl phthalate	< 0.000020		0.000020	0.00020	mg/L	1	19-Mar-2020 18:46
Fluoranthene	< 0.000010		0.000010	0.00010	mg/L	1	19-Mar-2020 18:46
Fluorene	< 0.000030		0.000030	0.00010	mg/L	1	19-Mar-2020 18:46
Naphthalene	< 0.000020		0.000020	0.00010	mg/L	1	19-Mar-2020 18:46
Nitrobenzene	< 0.000024		0.000024	0.00020	mg/L	1	19-Mar-2020 18:46
N-Nitrosodiphenylamine	< 0.000025		0.000025	0.00020	mg/L	1	19-Mar-2020 18:46
Pentachlorophenol	< 0.000079		0.000079	0.00020	mg/L	1	19-Mar-2020 18:46
Phenanthrene	< 0.000021		0.000021	0.00010	mg/L	1	19-Mar-2020 18:46
Phenol	< 0.000035		0.000035	0.00020	mg/L	1	19-Mar-2020 18:46
Pyrene	< 0.000019		0.000019	0.00010	mg/L	1	19-Mar-2020 18:46
Surr: 2,4,6-Tribromophenol	*64.0*			*34-129*	*%REC*	*1*	*19-Mar-2020 18:46*
Surr: 2-Fluorobiphenyl	*62.5*			*40-125*	*%REC*	*1*	*19-Mar-2020 18:46*
Surr: 2-Fluorophenol	*50.3*			*20-120*	*%REC*	*1*	*19-Mar-2020 18:46*
Surr: 4-Terphenyl-d14	*79.6*			*40-135*	*%REC*	*1*	*19-Mar-2020 18:46*
Surr: Nitrobenzene-d5	*46.3*			*41-120*	*%REC*	*1*	*19-Mar-2020 18:46*
Surr: Phenol-d6	*44.5*			*20-120*	*%REC*	*1*	*19-Mar-2020 18:46*
ICP-MS METALS BY SW6020A	**Method:SW6020**				Prep:SW3010A / 26-Mar-2020		Analyst: JHD
Arsenic	**0.00461**		**0.000400**	**0.00200**	**mg/L**	1	27-Mar-2020 14:44

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW96B-20200317
Collection Date: 17-Mar-2020 10:25

ANALYTICAL REPORT
WorkOrder:HS20030819
Lab ID:HS20030819-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	< 0.00020		0.00020	0.0010	mg/L	1	23-Mar-2020 22:34
Benzene	< 0.00020		0.00020	0.0010	mg/L	1	23-Mar-2020 22:34
Chlorobenzene	< 0.00030		0.00030	0.0010	mg/L	1	23-Mar-2020 22:34
Ethylbenzene	< 0.00030		0.00030	0.0010	mg/L	1	23-Mar-2020 22:34
Methylene chloride	< 0.0010		0.0010	0.0020	mg/L	1	23-Mar-2020 22:34
Toluene	< 0.00020		0.00020	0.0010	mg/L	1	23-Mar-2020 22:34
Xylenes, Total	< 0.00030		0.00030	0.0010	mg/L	1	23-Mar-2020 22:34
Surr: 1,2-Dichloroethane-d4	*101*			*70-126*	*%REC*	*1*	*23-Mar-2020 22:34*
Surr: 4-Bromofluorobenzene	*96.2*			*81-113*	*%REC*	*1*	*23-Mar-2020 22:34*
Surr: Dibromofluoromethane	*100*			*77-123*	*%REC*	*1*	*23-Mar-2020 22:34*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*23-Mar-2020 22:34*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW96B-20200317
Collection Date: 17-Mar-2020 10:25

ANALYTICAL REPORT
WorkOrder:HS20030819
Lab ID:HS20030819-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 19-Mar-2020		Analyst: GEY
1,2-Diphenylhydrazine	< 0.000021		0.000021	0.00020	mg/L	1	19-Mar-2020 19:05
2,4-Dimethylphenol	< 0.000040		0.000040	0.00020	mg/L	1	19-Mar-2020 19:05
2,4-Dinitrotoluene	< 0.000058		0.000058	0.00020	mg/L	1	19-Mar-2020 19:05
2,6-Dinitrotoluene	< 0.000042		0.000042	0.00020	mg/L	1	19-Mar-2020 19:05
2-Chloronaphthalene	< 0.000021		0.000021	0.00020	mg/L	1	19-Mar-2020 19:05
2-Methylnaphthalene	< 0.000019		0.000019	0.00010	mg/L	1	19-Mar-2020 19:05
4,6-Dinitro-2-methylphenol	< 0.000020		0.000020	0.00020	mg/L	1	19-Mar-2020 19:05
4-Nitrophenol	< 0.000047		0.000047	0.0010	mg/L	1	19-Mar-2020 19:05
Acenaphthene	< 0.000027		0.000027	0.00010	mg/L	1	19-Mar-2020 19:05
Acenaphthylene	< 0.000015		0.000015	0.00010	mg/L	1	19-Mar-2020 19:05
Anthracene	< 0.000014		0.000014	0.00010	mg/L	1	19-Mar-2020 19:05
Benz(a)anthracene	< 0.000050		0.000050	0.00010	mg/L	1	19-Mar-2020 19:05
Benzo(a)pyrene	< 0.000020		0.000020	0.00010	mg/L	1	19-Mar-2020 19:05
Bis(2-chloroethoxy)methane	< 0.000030		0.000030	0.00020	mg/L	1	19-Mar-2020 19:05
Bis(2-ethylhexyl)phthalate	**0.00035**		**0.000037**	**0.00020**	**mg/L**	1	19-Mar-2020 19:05
Chrysene	< 0.000021		0.000021	0.00010	mg/L	1	19-Mar-2020 19:05
Dibenzofuran	< 0.000020		0.000020	0.00010	mg/L	1	19-Mar-2020 19:05
Di-n-butyl phthalate	< 0.000020		0.000020	0.00020	mg/L	1	19-Mar-2020 19:05
Fluoranthene	< 0.000010		0.000010	0.00010	mg/L	1	19-Mar-2020 19:05
Fluorene	< 0.000030		0.000030	0.00010	mg/L	1	19-Mar-2020 19:05
Naphthalene	< 0.000020		0.000020	0.00010	mg/L	1	19-Mar-2020 19:05
Nitrobenzene	< 0.000024		0.000024	0.00020	mg/L	1	19-Mar-2020 19:05
N-Nitrosodiphenylamine	< 0.000025		0.000025	0.00020	mg/L	1	19-Mar-2020 19:05
Pentachlorophenol	< 0.000079		0.000079	0.00020	mg/L	1	19-Mar-2020 19:05
Phenanthrene	< 0.000021		0.000021	0.00010	mg/L	1	19-Mar-2020 19:05
Phenol	< 0.000035		0.000035	0.00020	mg/L	1	19-Mar-2020 19:05
Pyrene	< 0.000019		0.000019	0.00010	mg/L	1	19-Mar-2020 19:05
Surr: 2,4,6-Tribromophenol	*47.2*			*34-129*	*%REC*	*1*	*19-Mar-2020 19:05*
Surr: 2-Fluorobiphenyl	*62.3*			*40-125*	*%REC*	*1*	*19-Mar-2020 19:05*
Surr: 2-Fluorophenol	*48.8*			*20-120*	*%REC*	*1*	*19-Mar-2020 19:05*
Surr: 4-Terphenyl-d14	*86.2*			*40-135*	*%REC*	*1*	*19-Mar-2020 19:05*
Surr: Nitrobenzene-d5	*45.0*			*41-120*	*%REC*	*1*	*19-Mar-2020 19:05*
Surr: Phenol-d6	*41.8*			*20-120*	*%REC*	*1*	*19-Mar-2020 19:05*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 26-Mar-2020		Analyst: JHD
Arsenic	**0.00312**		**0.000400**	**0.00200**	**mg/L**	1	27-Mar-2020 14:46

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20030819
Sample ID: WG-1620-MW95A-20200317
Lab ID:HS20030819-05
Collection Date: 17-Mar-2020 09:10
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	< 0.00020		0.00020	0.0010	mg/L	1	23-Mar-2020 22:57
Benzene	< 0.00020		0.00020	0.0010	mg/L	1	23-Mar-2020 22:57
Chlorobenzene	< 0.00030		0.00030	0.0010	mg/L	1	23-Mar-2020 22:57
Ethylbenzene	< 0.00030		0.00030	0.0010	mg/L	1	23-Mar-2020 22:57
Methylene chloride	< 0.0010		0.0010	0.0020	mg/L	1	23-Mar-2020 22:57
Toluene	< 0.00020		0.00020	0.0010	mg/L	1	23-Mar-2020 22:57
Xylenes, Total	< 0.00030		0.00030	0.0010	mg/L	1	23-Mar-2020 22:57
Surr: 1,2-Dichloroethane-d4	*100*			*70-126*	*%REC*	*1*	*23-Mar-2020 22:57*
Surr: 4-Bromofluorobenzene	*95.9*			*81-113*	*%REC*	*1*	*23-Mar-2020 22:57*
Surr: Dibromofluoromethane	*98.6*			*77-123*	*%REC*	*1*	*23-Mar-2020 22:57*
Surr: Toluene-d8	*103*			*82-127*	*%REC*	*1*	*23-Mar-2020 22:57*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW95A-20200317
Collection Date: 17-Mar-2020 09:10

ANALYTICAL REPORT
WorkOrder:HS20030819
Lab ID:HS20030819-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Mar-2020		Analyst: GEY
1,2-Diphenylhydrazine	< 0.000021		0.000021	0.00020	mg/L	1	19-Mar-2020 19:24
2,4-Dimethylphenol	< 0.000040		0.000040	0.00020	mg/L	1	19-Mar-2020 19:24
2,4-Dinitrotoluene	< 0.000058		0.000058	0.00020	mg/L	1	19-Mar-2020 19:24
2,6-Dinitrotoluene	< 0.000042		0.000042	0.00020	mg/L	1	19-Mar-2020 19:24
2-Chloronaphthalene	< 0.000021		0.000021	0.00020	mg/L	1	19-Mar-2020 19:24
2-Methylnaphthalene	< 0.000019		0.000019	0.00010	mg/L	1	19-Mar-2020 19:24
4,6-Dinitro-2-methylphenol	< 0.000020		0.000020	0.00020	mg/L	1	19-Mar-2020 19:24
4-Nitrophenol	< 0.000047		0.000047	0.0010	mg/L	1	19-Mar-2020 19:24
Acenaphthene	< 0.000027		0.000027	0.00010	mg/L	1	19-Mar-2020 19:24
Acenaphthylene	< 0.000015		0.000015	0.00010	mg/L	1	19-Mar-2020 19:24
Anthracene	< 0.000014		0.000014	0.00010	mg/L	1	19-Mar-2020 19:24
Benz(a)anthracene	< 0.000050		0.000050	0.00010	mg/L	1	19-Mar-2020 19:24
Benzo(a)pyrene	< 0.000020		0.000020	0.00010	mg/L	1	19-Mar-2020 19:24
Bis(2-chloroethoxy)methane	< 0.000030		0.000030	0.00020	mg/L	1	19-Mar-2020 19:24
Bis(2-ethylhexyl)phthalate	< 0.000037		0.000037	0.00020	mg/L	1	19-Mar-2020 19:24
Chrysene	< 0.000021		0.000021	0.00010	mg/L	1	19-Mar-2020 19:24
Dibenzofuran	< 0.000020		0.000020	0.00010	mg/L	1	19-Mar-2020 19:24
Di-n-butyl phthalate	< 0.000020		0.000020	0.00020	mg/L	1	19-Mar-2020 19:24
Fluoranthene	< 0.000010		0.000010	0.00010	mg/L	1	19-Mar-2020 19:24
Fluorene	< 0.000030		0.000030	0.00010	mg/L	1	19-Mar-2020 19:24
Naphthalene	< 0.000020		0.000020	0.00010	mg/L	1	19-Mar-2020 19:24
Nitrobenzene	< 0.000024		0.000024	0.00020	mg/L	1	19-Mar-2020 19:24
N-Nitrosodiphenylamine	< 0.000025		0.000025	0.00020	mg/L	1	19-Mar-2020 19:24
Pentachlorophenol	< 0.000079		0.000079	0.00020	mg/L	1	19-Mar-2020 19:24
Phenanthrene	< 0.000021		0.000021	0.00010	mg/L	1	19-Mar-2020 19:24
Phenol	< 0.000035		0.000035	0.00020	mg/L	1	19-Mar-2020 19:24
Pyrene	< 0.000019		0.000019	0.00010	mg/L	1	19-Mar-2020 19:24
Surr: 2,4,6-Tribromophenol	*60.4*			*34-129*	*%REC*	*1*	*19-Mar-2020 19:24*
Surr: 2-Fluorobiphenyl	*61.4*			*40-125*	*%REC*	*1*	*19-Mar-2020 19:24*
Surr: 2-Fluorophenol	*57.8*			*20-120*	*%REC*	*1*	*19-Mar-2020 19:24*
Surr: 4-Terphenyl-d14	*82.2*			*40-135*	*%REC*	*1*	*19-Mar-2020 19:24*
Surr: Nitrobenzene-d5	*48.9*			*41-120*	*%REC*	*1*	*19-Mar-2020 19:24*
Surr: Phenol-d6	*45.1*			*20-120*	*%REC*	*1*	*19-Mar-2020 19:24*
ICP-MS METALS BY SW6020A	**Method:SW6020**				Prep:SW3010A / 26-Mar-2020		Analyst: JHD
Arsenic	**0.000977**	J	**0.000400**	**0.00200**	**mg/L**	1	27-Mar-2020 14:48

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20030819
Sample ID: WG-1620-MW60B-20200317
Lab ID:HS20030819-06
Collection Date: 17-Mar-2020 15:15
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	< 0.00020		0.00020	0.0010	mg/L	1	23-Mar-2020 23:20
Benzene	< 0.00020		0.00020	0.0010	mg/L	1	23-Mar-2020 23:20
Chlorobenzene	< 0.00030		0.00030	0.0010	mg/L	1	23-Mar-2020 23:20
Ethylbenzene	< 0.00030		0.00030	0.0010	mg/L	1	23-Mar-2020 23:20
Methylene chloride	< 0.0010		0.0010	0.0020	mg/L	1	23-Mar-2020 23:20
Toluene	< 0.00020		0.00020	0.0010	mg/L	1	23-Mar-2020 23:20
Xylenes, Total	< 0.00030		0.00030	0.0010	mg/L	1	23-Mar-2020 23:20
Surr: 1,2-Dichloroethane-d4	*101*			*70-126*	*%REC*	*1*	*23-Mar-2020 23:20*
Surr: 4-Bromofluorobenzene	*96.0*			*81-113*	*%REC*	*1*	*23-Mar-2020 23:20*
Surr: Dibromofluoromethane	*100*			*77-123*	*%REC*	*1*	*23-Mar-2020 23:20*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*23-Mar-2020 23:20*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW60B-20200317
Collection Date: 17-Mar-2020 15:15

ANALYTICAL REPORT
WorkOrder:HS20030819
Lab ID:HS20030819-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Mar-2020		Analyst: GEY
1,2-Diphenylhydrazine	< 0.000021		0.000021	0.00020	mg/L	1	19-Mar-2020 19:43
2,4-Dimethylphenol	< 0.000040		0.000040	0.00020	mg/L	1	19-Mar-2020 19:43
2,4-Dinitrotoluene	< 0.000058		0.000058	0.00020	mg/L	1	19-Mar-2020 19:43
2,6-Dinitrotoluene	< 0.000042		0.000042	0.00020	mg/L	1	19-Mar-2020 19:43
2-Chloronaphthalene	< 0.000021		0.000021	0.00020	mg/L	1	19-Mar-2020 19:43
2-Methylnaphthalene	< 0.000019		0.000019	0.00010	mg/L	1	19-Mar-2020 19:43
4,6-Dinitro-2-methylphenol	< 0.000020		0.000020	0.00020	mg/L	1	19-Mar-2020 19:43
4-Nitrophenol	< 0.000047		0.000047	0.0010	mg/L	1	19-Mar-2020 19:43
Acenaphthene	< 0.000027		0.000027	0.00010	mg/L	1	19-Mar-2020 19:43
Acenaphthylene	< 0.000015		0.000015	0.00010	mg/L	1	19-Mar-2020 19:43
Anthracene	< 0.000014		0.000014	0.00010	mg/L	1	19-Mar-2020 19:43
Benz(a)anthracene	< 0.000050		0.000050	0.00010	mg/L	1	19-Mar-2020 19:43
Benzo(a)pyrene	< 0.000020		0.000020	0.00010	mg/L	1	19-Mar-2020 19:43
Bis(2-chloroethoxy)methane	< 0.000030		0.000030	0.00020	mg/L	1	19-Mar-2020 19:43
Bis(2-ethylhexyl)phthalate	**0.00092**		**0.000037**	**0.00020**	**mg/L**	1	19-Mar-2020 19:43
Chrysene	< 0.000021		0.000021	0.00010	mg/L	1	19-Mar-2020 19:43
Dibenzofuran	< 0.000020		0.000020	0.00010	mg/L	1	19-Mar-2020 19:43
Di-n-butyl phthalate	**0.000047**	J	**0.000020**	**0.00020**	**mg/L**	1	19-Mar-2020 19:43
Fluoranthene	**0.000015**	J	**0.000010**	**0.00010**	**mg/L**	1	19-Mar-2020 19:43
Fluorene	< 0.000030		0.000030	0.00010	mg/L	1	19-Mar-2020 19:43
Naphthalene	< 0.000020		0.000020	0.00010	mg/L	1	19-Mar-2020 19:43
Nitrobenzene	< 0.000024		0.000024	0.00020	mg/L	1	19-Mar-2020 19:43
N-Nitrosodiphenylamine	< 0.000025		0.000025	0.00020	mg/L	1	19-Mar-2020 19:43
Pentachlorophenol	< 0.000079		0.000079	0.00020	mg/L	1	19-Mar-2020 19:43
Phenanthrene	< 0.000021		0.000021	0.00010	mg/L	1	19-Mar-2020 19:43
Phenol	< 0.000035		0.000035	0.00020	mg/L	1	19-Mar-2020 19:43
Pyrene	< 0.000019		0.000019	0.00010	mg/L	1	19-Mar-2020 19:43
Surr: 2,4,6-Tribromophenol	*74.8*			*34-129*	*%REC*	*1*	*19-Mar-2020 19:43*
Surr: 2-Fluorobiphenyl	*50.1*			*40-125*	*%REC*	*1*	*19-Mar-2020 19:43*
Surr: 2-Fluorophenol	*47.8*			*20-120*	*%REC*	*1*	*19-Mar-2020 19:43*
Surr: 4-Terphenyl-d14	*82.6*			*40-135*	*%REC*	*1*	*19-Mar-2020 19:43*
Surr: Nitrobenzene-d5	*41.6*			*41-120*	*%REC*	*1*	*19-Mar-2020 19:43*
Surr: Phenol-d6	*43.0*			*20-120*	*%REC*	*1*	*19-Mar-2020 19:43*
ICP-MS METALS BY SW6020A	**Method:SW6020**				Prep:SW3010A / 26-Mar-2020		Analyst: JHD
Arsenic	**0.00234**		**0.000400**	**0.00200**	**mg/L**	1	27-Mar-2020 14:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW88B-20200317
Collection Date: 17-Mar-2020 13:50

ANALYTICAL REPORT
WorkOrder:HS20030819
Lab ID:HS20030819-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	< 0.00020		0.00020	0.0010	mg/L	1	23-Mar-2020 23:43
Benzene	< 0.00020		0.00020	0.0010	mg/L	1	23-Mar-2020 23:43
Chlorobenzene	< 0.00030		0.00030	0.0010	mg/L	1	23-Mar-2020 23:43
Ethylbenzene	< 0.00030		0.00030	0.0010	mg/L	1	23-Mar-2020 23:43
Methylene chloride	< 0.0010		0.0010	0.0020	mg/L	1	23-Mar-2020 23:43
Toluene	< 0.00020		0.00020	0.0010	mg/L	1	23-Mar-2020 23:43
Xylenes, Total	< 0.00030		0.00030	0.0010	mg/L	1	23-Mar-2020 23:43
Surr: 1,2-Dichloroethane-d4	*102*			*70-126*	*%REC*	*1*	*23-Mar-2020 23:43*
Surr: 4-Bromofluorobenzene	*97.0*			*81-113*	*%REC*	*1*	*23-Mar-2020 23:43*
Surr: Dibromofluoromethane	*100*			*77-123*	*%REC*	*1*	*23-Mar-2020 23:43*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*23-Mar-2020 23:43*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW88B-20200317
Collection Date: 17-Mar-2020 13:50

ANALYTICAL REPORT
WorkOrder:HS20030819
Lab ID:HS20030819-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Mar-2020		Analyst: GEY
1,2-Diphenylhydrazine	< 0.000021		0.000021	0.00020	mg/L	1	19-Mar-2020 20:02
2,4-Dimethylphenol	< 0.000040		0.000040	0.00020	mg/L	1	19-Mar-2020 20:02
2,4-Dinitrotoluene	< 0.000058		0.000058	0.00020	mg/L	1	19-Mar-2020 20:02
2,6-Dinitrotoluene	< 0.000042		0.000042	0.00020	mg/L	1	19-Mar-2020 20:02
2-Chloronaphthalene	< 0.000021		0.000021	0.00020	mg/L	1	19-Mar-2020 20:02
2-Methylnaphthalene	< 0.000019		0.000019	0.00010	mg/L	1	19-Mar-2020 20:02
4,6-Dinitro-2-methylphenol	< 0.000020		0.000020	0.00020	mg/L	1	19-Mar-2020 20:02
4-Nitrophenol	< 0.000047		0.000047	0.0010	mg/L	1	19-Mar-2020 20:02
Acenaphthene	< 0.000027		0.000027	0.00010	mg/L	1	19-Mar-2020 20:02
Acenaphthylene	< 0.000015		0.000015	0.00010	mg/L	1	19-Mar-2020 20:02
Anthracene	< 0.000014		0.000014	0.00010	mg/L	1	19-Mar-2020 20:02
Benz(a)anthracene	< 0.000050		0.000050	0.00010	mg/L	1	19-Mar-2020 20:02
Benzo(a)pyrene	< 0.000020		0.000020	0.00010	mg/L	1	19-Mar-2020 20:02
Bis(2-chloroethoxy)methane	< 0.000030		0.000030	0.00020	mg/L	1	19-Mar-2020 20:02
Bis(2-ethylhexyl)phthalate	< 0.000037		0.000037	0.00020	mg/L	1	19-Mar-2020 20:02
Chrysene	< 0.000021		0.000021	0.00010	mg/L	1	19-Mar-2020 20:02
Dibenzofuran	< 0.000020		0.000020	0.00010	mg/L	1	19-Mar-2020 20:02
Di-n-butyl phthalate	< 0.000020		0.000020	0.00020	mg/L	1	19-Mar-2020 20:02
Fluoranthene	< 0.000010		0.000010	0.00010	mg/L	1	19-Mar-2020 20:02
Fluorene	< 0.000030		0.000030	0.00010	mg/L	1	19-Mar-2020 20:02
Naphthalene	< 0.000020		0.000020	0.00010	mg/L	1	19-Mar-2020 20:02
Nitrobenzene	< 0.000024		0.000024	0.00020	mg/L	1	19-Mar-2020 20:02
N-Nitrosodiphenylamine	< 0.000025		0.000025	0.00020	mg/L	1	19-Mar-2020 20:02
Pentachlorophenol	< 0.000079		0.000079	0.00020	mg/L	1	19-Mar-2020 20:02
Phenanthrene	< 0.000021		0.000021	0.00010	mg/L	1	19-Mar-2020 20:02
Phenol	< 0.000035		0.000035	0.00020	mg/L	1	19-Mar-2020 20:02
Pyrene	< 0.000019		0.000019	0.00010	mg/L	1	19-Mar-2020 20:02
Surr: 2,4,6-Tribromophenol	*59.9*			*34-129*	*%REC*	*1*	*19-Mar-2020 20:02*
Surr: 2-Fluorobiphenyl	*63.9*			*40-125*	*%REC*	*1*	*19-Mar-2020 20:02*
Surr: 2-Fluorophenol	*55.5*			*20-120*	*%REC*	*1*	*19-Mar-2020 20:02*
Surr: 4-Terphenyl-d14	*93.3*			*40-135*	*%REC*	*1*	*19-Mar-2020 20:02*
Surr: Nitrobenzene-d5	*52.0*			*41-120*	*%REC*	*1*	*19-Mar-2020 20:02*
Surr: Phenol-d6	*46.3*			*20-120*	*%REC*	*1*	*19-Mar-2020 20:02*
ICP-MS METALS BY SW6020A	**Method:SW6020**				Prep:SW3010A / 26-Mar-2020		Analyst: JHD
Arsenic	**0.00166**	J	**0.000400**	**0.00200**	**mg/L**	1	27-Mar-2020 14:53

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FD02-20200317
Collection Date: 17-Mar-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20030819
Lab ID:HS20030819-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	< 0.00020		0.00020	0.0010	mg/L	1	23-Mar-2020 20:16
Benzene	< 0.00020		0.00020	0.0010	mg/L	1	23-Mar-2020 20:16
Chlorobenzene	< 0.00030		0.00030	0.0010	mg/L	1	23-Mar-2020 20:16
Ethylbenzene	< 0.00030		0.00030	0.0010	mg/L	1	23-Mar-2020 20:16
Methylene chloride	< 0.0010		0.0010	0.0020	mg/L	1	23-Mar-2020 20:16
Toluene	< 0.00020		0.00020	0.0010	mg/L	1	23-Mar-2020 20:16
Xylenes, Total	< 0.00030		0.00030	0.0010	mg/L	1	23-Mar-2020 20:16
Surr: 1,2-Dichloroethane-d4	*101*			*70-126*	*%REC*	*1*	*23-Mar-2020 20:16*
Surr: 4-Bromofluorobenzene	*97.1*			*81-113*	*%REC*	*1*	*23-Mar-2020 20:16*
Surr: Dibromofluoromethane	*98.3*			*77-123*	*%REC*	*1*	*23-Mar-2020 20:16*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*1*	*23-Mar-2020 20:16*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FD02-20200317
Collection Date: 17-Mar-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20030819
Lab ID:HS20030819-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 19-Mar-2020		Analyst: GEY
1,2-Diphenylhydrazine	< 0.000021		0.000021	0.00020	mg/L	1	19-Mar-2020 20:22
2,4-Dimethylphenol	< 0.000040		0.000040	0.00020	mg/L	1	19-Mar-2020 20:22
2,4-Dinitrotoluene	< 0.000058		0.000058	0.00020	mg/L	1	19-Mar-2020 20:22
2,6-Dinitrotoluene	< 0.000042		0.000042	0.00020	mg/L	1	19-Mar-2020 20:22
2-Chloronaphthalene	< 0.000021		0.000021	0.00020	mg/L	1	19-Mar-2020 20:22
2-Methylnaphthalene	< 0.000019		0.000019	0.00010	mg/L	1	19-Mar-2020 20:22
4,6-Dinitro-2-methylphenol	< 0.000020		0.000020	0.00020	mg/L	1	19-Mar-2020 20:22
4-Nitrophenol	< 0.000047		0.000047	0.0010	mg/L	1	19-Mar-2020 20:22
Acenaphthene	< 0.000027		0.000027	0.00010	mg/L	1	19-Mar-2020 20:22
Acenaphthylene	< 0.000015		0.000015	0.00010	mg/L	1	19-Mar-2020 20:22
Anthracene	< 0.000014		0.000014	0.00010	mg/L	1	19-Mar-2020 20:22
Benz(a)anthracene	< 0.000050		0.000050	0.00010	mg/L	1	19-Mar-2020 20:22
Benzo(a)pyrene	< 0.000020		0.000020	0.00010	mg/L	1	19-Mar-2020 20:22
Bis(2-chloroethoxy)methane	< 0.000030		0.000030	0.00020	mg/L	1	19-Mar-2020 20:22
Bis(2-ethylhexyl)phthalate	**0.00013**	J	**0.000037**	**0.00020**	**mg/L**	1	19-Mar-2020 20:22
Chrysene	< 0.000021		0.000021	0.00010	mg/L	1	19-Mar-2020 20:22
Dibenzofuran	< 0.000020		0.000020	0.00010	mg/L	1	19-Mar-2020 20:22
Di-n-butyl phthalate	< 0.000020		0.000020	0.00020	mg/L	1	19-Mar-2020 20:22
Fluoranthene	< 0.000010		0.000010	0.00010	mg/L	1	19-Mar-2020 20:22
Fluorene	< 0.000030		0.000030	0.00010	mg/L	1	19-Mar-2020 20:22
Naphthalene	< 0.000020		0.000020	0.00010	mg/L	1	19-Mar-2020 20:22
Nitrobenzene	< 0.000024		0.000024	0.00020	mg/L	1	19-Mar-2020 20:22
N-Nitrosodiphenylamine	< 0.000025		0.000025	0.00020	mg/L	1	19-Mar-2020 20:22
Pentachlorophenol	< 0.000079		0.000079	0.00020	mg/L	1	19-Mar-2020 20:22
Phenanthrene	< 0.000021		0.000021	0.00010	mg/L	1	19-Mar-2020 20:22
Phenol	< 0.000035		0.000035	0.00020	mg/L	1	19-Mar-2020 20:22
Pyrene	< 0.000019		0.000019	0.00010	mg/L	1	19-Mar-2020 20:22
Surr: 2,4,6-Tribromophenol	*57.8*			*34-129*	*%REC*	*1*	*19-Mar-2020 20:22*
Surr: 2-Fluorobiphenyl	*59.0*			*40-125*	*%REC*	*1*	*19-Mar-2020 20:22*
Surr: 2-Fluorophenol	*48.5*			*20-120*	*%REC*	*1*	*19-Mar-2020 20:22*
Surr: 4-Terphenyl-d14	*89.9*			*40-135*	*%REC*	*1*	*19-Mar-2020 20:22*
Surr: Nitrobenzene-d5	*47.3*			*41-120*	*%REC*	*1*	*19-Mar-2020 20:22*
Surr: Phenol-d6	*44.4*			*20-120*	*%REC*	*1*	*19-Mar-2020 20:22*
ICP-MS METALS BY SW6020A	**Method:SW6020**				Prep:SW3010A / 26-Mar-2020		Analyst: JHD
Arsenic	**0.00311**		**0.000400**	**0.00200**	**mg/L**	1	27-Mar-2020 14:55

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20030819

Batch ID: 151876 **Start Date:** 19 Mar 2020 07:00 **End Date:** 19 Mar 2020 12:30
Method: SV AQ SEP FUN EXTRACT-LOWLEV - 3510C **Prep Code:** 3510_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20030819-02	1	1000 (mL)	1 (mL)	0.001
HS20030819-03	1	1000 (mL)	1 (mL)	0.001
HS20030819-04	1	1000 (mL)	1 (mL)	0.001
HS20030819-05	1	1000 (mL)	1 (mL)	0.001
HS20030819-06	1	1000 (mL)	1 (mL)	0.001
HS20030819-07	1	1000 (mL)	1 (mL)	0.001
HS20030819-08	1	1000 (mL)	1 (mL)	0.001

Batch ID: 152162 **Start Date:** 26 Mar 2020 08:57 **End Date:** 26 Mar 2020 13:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20030819-02		10 (mL)	10 (mL)	1
HS20030819-03		10 (mL)	10 (mL)	1
HS20030819-04		10 (mL)	10 (mL)	1
HS20030819-05		10 (mL)	10 (mL)	1
HS20030819-06		10 (mL)	10 (mL)	1
HS20030819-07		10 (mL)	10 (mL)	1
HS20030819-08		10 (mL)	10 (mL)	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20030819

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 151876 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Groundwater	
HS20030819-02	WG-1620-MW88A-20200317	17 Mar 2020 12:55		19 Mar 2020 10:38	19 Mar 2020 18:27	1
HS20030819-03	WG-1620-MW61B-20200317	17 Mar 2020 11:45		19 Mar 2020 10:38	19 Mar 2020 18:46	1
HS20030819-04	WG-1620-MW96B-20200317	17 Mar 2020 10:25		19 Mar 2020 10:38	19 Mar 2020 19:05	1
HS20030819-05	WG-1620-MW95A-20200317	17 Mar 2020 09:10		19 Mar 2020 10:38	19 Mar 2020 19:24	1
HS20030819-06	WG-1620-MW60B-20200317	17 Mar 2020 15:15		19 Mar 2020 10:38	19 Mar 2020 19:43	1
HS20030819-07	WG-1620-MW88B-20200317	17 Mar 2020 13:50		19 Mar 2020 10:38	19 Mar 2020 20:02	1
HS20030819-08	WG-1620-FD02-20200317	17 Mar 2020 00:00		19 Mar 2020 10:38	19 Mar 2020 20:22	1
Batch ID: 152162 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Groundwater	
HS20030819-02	WG-1620-MW88A-20200317	17 Mar 2020 12:55		26 Mar 2020 13:00	27 Mar 2020 13:41	1
HS20030819-03	WG-1620-MW61B-20200317	17 Mar 2020 11:45		26 Mar 2020 13:00	27 Mar 2020 14:44	1
HS20030819-04	WG-1620-MW96B-20200317	17 Mar 2020 10:25		26 Mar 2020 13:00	27 Mar 2020 14:46	1
HS20030819-05	WG-1620-MW95A-20200317	17 Mar 2020 09:10		26 Mar 2020 13:00	27 Mar 2020 14:48	1
HS20030819-06	WG-1620-MW60B-20200317	17 Mar 2020 15:15		26 Mar 2020 13:00	27 Mar 2020 14:51	1
HS20030819-07	WG-1620-MW88B-20200317	17 Mar 2020 13:50		26 Mar 2020 13:00	27 Mar 2020 14:53	1
HS20030819-08	WG-1620-FD02-20200317	17 Mar 2020 00:00		26 Mar 2020 13:00	27 Mar 2020 14:55	1
Batch ID: R358799 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Groundwater	
HS20030819-02	WG-1620-MW88A-20200317	17 Mar 2020 12:55			23 Mar 2020 20:39	1
HS20030819-03	WG-1620-MW61B-20200317	17 Mar 2020 11:45			23 Mar 2020 22:11	1
HS20030819-04	WG-1620-MW96B-20200317	17 Mar 2020 10:25			23 Mar 2020 22:34	1
HS20030819-05	WG-1620-MW95A-20200317	17 Mar 2020 09:10			23 Mar 2020 22:57	1
HS20030819-06	WG-1620-MW60B-20200317	17 Mar 2020 15:15			23 Mar 2020 23:20	1
HS20030819-07	WG-1620-MW88B-20200317	17 Mar 2020 13:50			23 Mar 2020 23:43	1
HS20030819-08	WG-1620-FD02-20200317	17 Mar 2020 00:00			23 Mar 2020 20:16	1
Batch ID: R358799 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20030819-01	WQ-1620-TB01-20200317	17 Mar 2020 15:59			23 Mar 2020 19:53	1

WorkOrder: HS20030819
InstrumentID: ICPMS05
Test Code: ICP_TW
Test Number: SW6020
Test Name: ICP-MS Metals by SW6020A

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Arsenic	7440-38-2	0.000500	0.000499	0.000400	0.00200

WorkOrder: HS20030819
InstrumentID: SV-7
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Diphenylhydrazine	122-66-7	0.00010	0.00013	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.000081	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.00010	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.00010	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.00012	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.000050	0.000052	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000060	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00010	0.000069	0.000047	0.0010
A	Acenaphthene	83-32-9	0.000050	0.000050	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000046	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.000046	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.000050	0.000057	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.000050	0.000047	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.00012	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.00014	0.000037	0.00020
A	Chrysene	218-01-9	0.000050	0.000049	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.000050	0.000050	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.00012	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000053	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.000050	0.000030	0.00010
A	Naphthalene	91-20-3	0.000050	0.000048	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.00014	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.00012	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.000057	0.000079	0.00020
A	Phenanthrene	85-01-8	0.000050	0.000047	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.00012	0.000035	0.00020
A	Pyrene	129-00-0	0.000050	0.000051	0.000019	0.00010
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0.00020
S	2-Fluorobiphenyl	321-60-8	0	0	0	0.00020
S	2-Fluorophenol	367-12-4	0	0	0	0.00020
S	4-Terphenyl-d14	1718-51-0	0	0	0	0.00020
S	Nitrobenzene-d5	4165-60-0	0	0	0	0.00020
S	Phenol-d6	13127-88-3	0	0	0	0.00020

WorkOrder: HS20030819
InstrumentID: VOA2
Test Code: 8260_LL_W
Test Number: SW8260
Test Name: Low Level Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.00050	0.00062	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00059	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.00050	0.00071	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.00050	0.00063	0.00030	0.0010
A	Methylene chloride	75-09-2	0.0010	0.00075	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00069	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.00050	0.00059	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20030819

QC BATCH REPORT

Batch ID: 152162 (0) **Instrument: ICPMS05** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-152162** Units: **mg/L** Analysis Date: **27-Mar-2020 13:36**
Client ID: Run ID: **ICPMS05_359030** SeqNo: **5534467** PrepDate: **26-Mar-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	< 0.000400	0.00200								

LCS Sample ID: **LCS-152162** Units: **mg/L** Analysis Date: **27-Mar-2020 13:39**
Client ID: Run ID: **ICPMS05_359030** SeqNo: **5534468** PrepDate: **26-Mar-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05069	0.00200	0.05	0	101	80 - 120				

MS Sample ID: **HS20031033-01MS** Units: **mg/L** Analysis Date: **30-Mar-2020 11:14**
Client ID: Run ID: **ICPMS05_359110** SeqNo: **5536564** PrepDate: **26-Mar-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1729	0.00200	0.05	0.1254	95.0	80 - 120				

MSD Sample ID: **HS20031033-01MSD** Units: **mg/L** Analysis Date: **30-Mar-2020 11:17**
Client ID: Run ID: **ICPMS05_359110** SeqNo: **5536565** PrepDate: **26-Mar-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1842	0.00200	0.05	0.1254	118	80 - 120	0.1729	6.31	20	

PDS Sample ID: **HS20031033-01PDS** Units: **mg/L** Analysis Date: **30-Mar-2020 11:19**
Client ID: Run ID: **ICPMS05_359110** SeqNo: **5536566** PrepDate: **26-Mar-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.2352	0.00200	0.1	0.1254	110	75 - 125				

SD Sample ID: **HS20031033-01SD** Units: **mg/L** Analysis Date: **30-Mar-2020 11:12**
Client ID: Run ID: **ICPMS05_359110** SeqNo: **5536563** PrepDate: **26-Mar-2020** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.1248	0.0100					0.1254	0.469	10	

The following samples were analyzed in this batch: HS20030819-02 HS20030819-03 HS20030819-04 HS20030819-05 HS20030819-06 HS20030819-07 HS20030819-08

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20030819

QC BATCH REPORT

Batch ID: 151876 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-151876** Units: **ug/L** Analysis Date: **19-Mar-2020 13:39**
Client ID: Run ID: **SV-7_358509** SeqNo: **5520890** PrepDate: **19-Mar-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	< 0.021	0.20								
2,4-Dimethylphenol	< 0.040	0.20								
2,4-Dinitrotoluene	< 0.058	0.20								
2,6-Dinitrotoluene	< 0.042	0.20								
2-Chloronaphthalene	< 0.021	0.20								
2-Methylnaphthalene	< 0.019	0.10								
4,6-Dinitro-2-methylphenol	< 0.020	0.20								
4-Nitrophenol	< 0.047	1.0								
Acenaphthene	< 0.027	0.10								
Acenaphthylene	< 0.015	0.10								
Anthracene	< 0.014	0.10								
Benz(a)anthracene	< 0.050	0.10								
Benzo(a)pyrene	< 0.020	0.10								
Bis(2-chloroethoxy)methane	< 0.030	0.20								
Bis(2-ethylhexyl)phthalate	< 0.037	0.20								
Chrysene	< 0.021	0.10								
Dibenzofuran	< 0.020	0.10								
Di-n-butyl phthalate	< 0.020	0.20								
Fluoranthene	< 0.010	0.10								
Fluorene	< 0.030	0.10								
Naphthalene	< 0.020	0.10								
Nitrobenzene	< 0.024	0.20								
N-Nitrosodiphenylamine	< 0.025	0.20								
Pentachlorophenol	< 0.079	0.20								
Phenanthrene	< 0.021	0.10								
Phenol	< 0.035	0.20								
Pyrene	< 0.019	0.10								
Surr: 2,4,6-Tribromophenol	*2.949*	*0.20*	*5*	*0*	*59.0*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*2.962*	*0.20*	*5*	*0*	*59.2*	*40 - 125*				
Surr: 2-Fluorophenol	*2.88*	*0.20*	*5*	*0*	*57.6*	*20 - 120*				
Surr: 4-Terphenyl-d14	*3.57*	*0.20*	*5*	*0*	*71.4*	*40 - 135*				
Surr: Nitrobenzene-d5	*2.498*	*0.20*	*5*	*0*	*50.0*	*41 - 120*				
Surr: Phenol-d6	*2.798*	*0.20*	*5*	*0*	*56.0*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20030819

QC BATCH REPORT

Batch ID: 151876 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCS Sample ID: **LCS-151876** Units: **ug/L** Analysis Date: **19-Mar-2020 15:15**
Client ID: Run ID: **SV-7_358509** SeqNo: **5520894** PrepDate: **19-Mar-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	3.006	0.20	5	0	60.1	39 - 127				
2,4-Dimethylphenol	3.069	0.20	5	0	61.4	35 - 120				
2,4-Dinitrotoluene	3.767	0.20	5	0	75.3	50 - 122				
2,6-Dinitrotoluene	3.698	0.20	5	0	74.0	50 - 120				
2-Chloronaphthalene	4.153	0.20	5	0	83.1	50 - 120				
2-Methylnaphthalene	3.43	0.10	5	0	68.6	50 - 120				
4,6-Dinitro-2-methylphenol	3.658	0.20	5	0	73.2	25 - 121				
4-Nitrophenol	2.531	1.0	5	0	50.6	30 - 130				
Acenaphthene	3.225	0.10	5	0	64.5	45 - 120				
Acenaphthylene	3.269	0.10	5	0	65.4	47 - 120				
Anthracene	3.472	0.10	5	0	69.4	45 - 120				
Benz(a)anthracene	3.507	0.10	5	0	70.1	40 - 120				
Benzo(a)pyrene	3.777	0.10	5	0	75.5	45 - 120				
Bis(2-chloroethoxy)methane	3.186	0.20	5	0	63.7	45 - 120				
Bis(2-ethylhexyl)phthalate	3.478	0.20	5	0	69.6	40 - 139				
Chrysene	3.344	0.10	5	0	66.9	43 - 120				
Dibenzofuran	3.454	0.10	5	0	69.1	50 - 120				
Di-n-butyl phthalate	3.575	0.20	5	0	71.5	45 - 123				
Fluoranthene	3.531	0.10	5	0	70.6	45 - 125				
Fluorene	3.427	0.10	5	0	68.5	49 - 120				
Naphthalene	3.329	0.10	5	0	66.6	45 - 120				
Nitrobenzene	2.977	0.20	5	0	59.5	44 - 120				
N-Nitrosodiphenylamine	3.366	0.20	5	0	67.3	40 - 125				
Pentachlorophenol	1.871	0.20	5	0	37.4	19 - 121				
Phenanthrene	3.392	0.10	5	0	67.8	45 - 121				
Phenol	3.406	0.20	5	0	68.1	20 - 124				
Pyrene	3.501	0.10	5	0	70.0	40 - 130				
Surr: 2,4,6-Tribromophenol	*3.613*	*0.20*	*5*	*0*	*72.3*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*2.764*	*0.20*	*5*	*0*	*55.3*	*40 - 125*				
Surr: 2-Fluorophenol	*2.851*	*0.20*	*5*	*0*	*57.0*	*20 - 120*				
Surr: 4-Terphenyl-d14	*3.276*	*0.20*	*5*	*0*	*65.5*	*40 - 135*				
Surr: Nitrobenzene-d5	*2.453*	*0.20*	*5*	*0*	*49.1*	*41 - 120*				
Surr: Phenol-d6	*2.853*	*0.20*	*5*	*0*	*57.1*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20030819

QC BATCH REPORT

Batch ID: 151876 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCSD Sample ID: **LCSD-151876** Units: **ug/L** Analysis Date: **19-Mar-2020 14:18**
Client ID: Run ID: **SV-7_358509** SeqNo: **5520891** PrepDate: **19-Mar-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	2.865	0.20	5	0	57.3	39 - 127	3.006	4.83	20	
2,4-Dimethylphenol	3.104	0.20	5	0	62.1	35 - 120	3.069	1.1	20	
2,4-Dinitrotoluene	3.649	0.20	5	0	73.0	50 - 122	3.767	3.18	20	
2,6-Dinitrotoluene	3.677	0.20	5	0	73.5	50 - 120	3.698	0.567	20	
2-Chloronaphthalene	3.78	0.20	5	0	75.6	50 - 120	4.153	9.39	20	
2-Methylnaphthalene	3.4	0.10	5	0	68.0	50 - 120	3.43	0.881	20	
4,6-Dinitro-2-methylphenol	3.494	0.20	5	0	69.9	25 - 121	3.658	4.58	30	
4-Nitrophenol	2.988	1.0	5	0	59.8	30 - 130	2.531	16.5	20	
Acenaphthene	3.232	0.10	5	0	64.6	45 - 120	3.225	0.23	20	
Acenaphthylene	3.295	0.10	5	0	65.9	47 - 120	3.269	0.783	20	
Anthracene	3.376	0.10	5	0	67.5	45 - 120	3.472	2.8	20	
Benz(a)anthracene	3.682	0.10	5	0	73.6	40 - 120	3.507	4.86	20	
Benzo(a)pyrene	3.802	0.10	5	0	76.0	45 - 120	3.777	0.658	20	
Bis(2-chloroethoxy)methane	3.188	0.20	5	0	63.8	45 - 120	3.186	0.0664	20	
Bis(2-ethylhexyl)phthalate	3.54	0.20	5	0	70.8	40 - 139	3.478	1.76	20	
Chrysene	3.571	0.10	5	0	71.4	43 - 120	3.344	6.57	20	
Dibenzofuran	3.429	0.10	5	0	68.6	50 - 120	3.454	0.747	20	
Di-n-butyl phthalate	3.482	0.20	5	0	69.6	45 - 123	3.575	2.64	20	
Fluoranthene	3.413	0.10	5	0	68.3	45 - 125	3.531	3.4	20	
Fluorene	3.408	0.10	5	0	68.2	49 - 120	3.427	0.573	20	
Naphthalene	3.336	0.10	5	0	66.7	45 - 120	3.329	0.225	20	
Nitrobenzene	2.957	0.20	5	0	59.1	44 - 120	2.977	0.66	20	
N-Nitrosodiphenylamine	3.264	0.20	5	0	65.3	40 - 125	3.366	3.1	20	
Pentachlorophenol	1.812	0.20	5	0	36.2	19 - 121	1.871	3.23	20	
Phenanthrene	3.322	0.10	5	0	66.4	45 - 121	3.392	2.07	20	
Phenol	3.274	0.20	5	0	65.5	20 - 124	3.406	3.96	20	
Pyrene	3.554	0.10	5	0	71.1	40 - 130	3.501	1.51	20	
Surr: 2,4,6-Tribromophenol	*3.602*	*0.20*	*5*	*0*	*72.0*	*34 - 129*	*3.613*	*0.299*	*20*	
Surr: 2-Fluorobiphenyl	*2.776*	*0.20*	*5*	*0*	*55.5*	*40 - 125*	*2.764*	*0.445*	*20*	
Surr: 2-Fluorophenol	*2.733*	*0.20*	*5*	*0*	*54.7*	*20 - 120*	*2.851*	*4.25*	*20*	
Surr: 4-Terphenyl-d14	*3.381*	*0.20*	*5*	*0*	*67.6*	*40 - 135*	*3.276*	*3.15*	*20*	
Surr: Nitrobenzene-d5	*2.448*	*0.20*	*5*	*0*	*49.0*	*41 - 120*	*2.453*	*0.189*	*20*	
Surr: Phenol-d6	*2.753*	*0.20*	*5*	*0*	*55.1*	*20 - 120*	*2.853*	*3.58*	*20*	

The following samples were analyzed in this batch: HS20030819-02 HS20030819-03 HS20030819-04 HS20030819-05 HS20030819-06 HS20030819-07 HS20030819-08

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20030819

QC BATCH REPORT

Batch ID: R358799 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200323** Units: **ug/L** Analysis Date: **23-Mar-2020 19:22**
Client ID: Run ID: **VOA2_358799** SeqNo: **5527631** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	< 0.20	1.0								
Benzene	< 0.20	1.0								
Chlorobenzene	< 0.30	1.0								
Ethylbenzene	< 0.30	1.0								
Methylene chloride	< 1.0	2.0								
Toluene	< 0.20	1.0								
Xylenes, Total	< 0.30	1.0								
Surr: 1,2-Dichloroethane-d4	*51.61*	*1.0*	*50*	*0*	*103*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*47.84*	*1.0*	*50*	*0*	*95.7*	*82 - 115*				
Surr: Dibromofluoromethane	*49.76*	*1.0*	*50*	*0*	*99.5*	*73 - 126*				
Surr: Toluene-d8	*51.01*	*1.0*	*50*	*0*	*102*	*81 - 120*				

LCS Sample ID: **VLCSW-203023** Units: **ug/L** Analysis Date: **23-Mar-2020 18:36**
Client ID: Run ID: **VOA2_358799** SeqNo: **5527630** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	19.11	1.0	20	0	95.6	70 - 124				
Benzene	18.46	1.0	20	0	92.3	74 - 120				
Chlorobenzene	17.94	1.0	20	0	89.7	76 - 113				
Ethylbenzene	18.37	1.0	20	0	91.9	77 - 117				
Methylene chloride	17.55	2.0	20	0	87.7	70 - 127				
Toluene	18.17	1.0	20	0	90.9	77 - 118				
Xylenes, Total	55.92	1.0	60	0	93.2	75 - 122				
Surr: 1,2-Dichloroethane-d4	*53.36*	*1.0*	*50*	*0*	*107*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*48.6*	*1.0*	*50*	*0*	*97.2*	*82 - 115*				
Surr: Dibromofluoromethane	*48.48*	*1.0*	*50*	*0*	*97.0*	*73 - 126*				
Surr: Toluene-d8	*49.98*	*1.0*	*50*	*0*	*100.0*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20030819

QC BATCH REPORT

Batch ID: R358799 (0) **Instrument: VOA2** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS20030819-02MS** Units: **ug/L** Analysis Date: **23-Mar-2020 21:02**
Client ID: **WG-1620-MW88A-20200317** Run ID: **VOA2_358799** SeqNo: **5527635** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	17.84	1.0	20	0	89.2	70 - 127				
Benzene	18.14	1.0	20	0	90.7	70 - 127				
Chlorobenzene	17.35	1.0	20	0	86.8	70 - 114				
Ethylbenzene	18.32	1.0	20	0	91.6	70 - 124				
Methylene chloride	16.47	2.0	20	0	82.3	70 - 128				
Toluene	17.75	1.0	20	0	88.8	70 - 123				
Xylenes, Total	54.81	1.0	60	0	91.4	70 - 130				
Surr: 1,2-Dichloroethane-d4	*52.67*	*1.0*	*50*	*0*	*105*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*48.7*	*1.0*	*50*	*0*	*97.4*	*81 - 113*				
Surr: Dibromofluoromethane	*48.94*	*1.0*	*50*	*0*	*97.9*	*77 - 123*				
Surr: Toluene-d8	*49.9*	*1.0*	*50*	*0*	*99.8*	*82 - 127*				

MSD Sample ID: **HS20030819-02MSD** Units: **ug/L** Analysis Date: **23-Mar-2020 21:25**
Client ID: **WG-1620-MW88A-20200317** Run ID: **VOA2_358799** SeqNo: **5527636** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	17.75	1.0	20	0	88.8	70 - 127	17.84	0.511	20	
Benzene	17.84	1.0	20	0	89.2	70 - 127	18.14	1.62	20	
Chlorobenzene	17.38	1.0	20	0	86.9	70 - 114	17.35	0.187	20	
Ethylbenzene	18.24	1.0	20	0	91.2	70 - 124	18.32	0.447	20	
Methylene chloride	16.37	2.0	20	0	81.9	70 - 128	16.47	0.587	20	
Toluene	17.8	1.0	20	0	89.0	70 - 123	17.75	0.297	20	
Xylenes, Total	54.38	1.0	60	0	90.6	70 - 130	54.81	0.78	20	
Surr: 1,2-Dichloroethane-d4	*52.39*	*1.0*	*50*	*0*	*105*	*70 - 126*	*52.67*	*0.533*	*20*	
Surr: 4-Bromofluorobenzene	*48.55*	*1.0*	*50*	*0*	*97.1*	*81 - 113*	*48.7*	*0.314*	*20*	
Surr: Dibromofluoromethane	*48.89*	*1.0*	*50*	*0*	*97.8*	*77 - 123*	*48.94*	*0.106*	*20*	
Surr: Toluene-d8	*50.09*	*1.0*	*50*	*0*	*100*	*82 - 127*	*49.9*	*0.39*	*20*	

The following samples were analyzed in this batch:

HS20030819-01	HS20030819-02	HS20030819-03	HS20030819-04
HS20030819-05	HS20030819-06	HS20030819-07	HS20030819-08

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20030819**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20030819

Date/Time Received: **18-Mar-2020 16:35**
Received by: **DDG**

Checklist completed by: *Jared R. Makan* eSignature — 18-Mar-2020 Date

Reviewed by: *Dane J. Wacasey* eSignature — 19-Mar-2020 Date

Matrices: **Water**

Carrier name: **ALS Courier**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:221274
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☐	No ☑	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	1.3°C, 1.0°C UC/C	IR11
Cooler(s)/Kit(s):	45498, 43911	
Date/Time sample(s) sent to storage:	03/18/2020 20:45	

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes: Limited sample volume for MW 60B - approximately 750ml of sample in each SVOC amber bottle.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600
Holland, MI +1 616 399 6070

Chain of Custody Form

Page ____ of ____

COC ID: 221274

HS20030819

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information			
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A	8260_LL_W (5632528 VOC Site Specific)
Work Order		Project Number	1620-14-Rev0 SR 92688	B	TX1005_W_Low (5643233 TPH TX1005)
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P	C	8270_LOW_W (5632532 SemiVolatiles Site specific)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	ICP_TW (5630902 Metals - As)
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 68179-0750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-2446	Fax		I	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	WG-1620-TB CG021720 179	3-17-2020	15:59	Water	1,3	2	X										
2	WG-1620-MW88A20200317	3-17-2020	12:55	Groundwater	1,2,8	9	X	X	X	X							
3	WG 1620 MW 61B 20200317	3-17-2020	11:45	GW	1,2,8	9	X	X	X	X							
4	WG 1620 MW 96B 20200317	3-17-2020	10:25	GW	1,2,8	9	X	X	X	X							
5	WG 1620 MW 95A 20200317	3-17-2020	9:10	GW	1,2,8	9	X	X	X	X							
6	WG 1620 MW 60B 20200317	3-17-2020	15:15	GW	1,2,8	9	X	X	X	X							
7	WG 1620 MW 88B 20200317	3-17-2020	13:50	GW	1,2,8	9	X	X	X	X							
8	WG 1620 FB 02 20200317	3-17-2020	—	GW	1,2,8	9	X	X	X	X							
9																	
10																	

Sampler(s) Please Print & Sign: T. McSpadden

Shipment Method:

Required Turnaround Time: (Check Box) [X] STD 10 W.D. [ ] 5 W.D. [ ] 2 W.D. [ ] 1 W.D. [ ] Other

Results Due Date:

Relinquished by: T. McSpadden Date: 3-18-20 Time: 16:00 Received by:

Relinquished by: Date: 3-18-20 Time: 1635 Received by (Laboratory):

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR HWPW 1620-14

Cooler ID	Cooler Temp.
454498	1.3
43911	1.0

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[X] EDD (Format)
[ ] EDP (Format)
[ ] Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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ATTACHMENT C

Groundwater Sampling Records

GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19119232 Project Name: UPRR-HWPW-SMUV Date: 7-2-19

Sampling Location (well ID, etc.): MW10A

Sample Number: WG-1620-MW10A-20190702

Sampled by: JTB

Measuring Point (MP) of Well: (TOC) - Steel or (PVC)

Screened Interval (ft. BGL): -

Filter Pack Interval (ft. BGL): -

Starting Water Level (ft. BMP): 4.69

Casing Stickup (ft.):

WL (ft. BMP): 4.69 (ft. BGL):

TD (ft. BMP): (ft. BGL):

Ft. water: Casing Dia. (In ID):

1X Casing Vol (gal.): 3X (gal):

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: (Peristaltic Pump) / SS Pump / Bailer Sampling: (Peristaltic Pump) / SS Pump / Bailer

Disposal of Discharged Water: 55-gallon drum

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: SOLINST Other: -

Multi Meter: HORIBA

Field Calibration: AUTO CAL

Filter / Filter Size: -

SAMPLING MEASUREMENTS

Begin Purge: 0851

Time	DTW (ft BTOC)	Cum. Vol. (gal. or (L))	Purge Rate (gal. or (L/m))	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
0901	4.89		.2	21.6	0.53	1030	6.81	-61	7.4	neutral
0906	4.91		↓	21.9	0.39	1070	6.86	-55	7.1	↓
0911	4.92		↓	21.9	0.38	1060	6.86	-56	6.7	↓

WL (ft. BMP) at End of Purge: Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected					Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time		Volume	Composition (G, P)	No.			
0925		1L	G	2	N	-	SVOCS

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 19119232 Project Name: UPRR - HWPW - SMMU Date: 7-2-19

Sampling Location (well ID, etc.): MW 11B

Sample Number: WG-1620-MW11B-20190702

Sampled by: YTB

Measuring Point (MP) of Well: TOC - Steel or PVC

Screened Interval (ft. BGL): —

Filter Pack Interval (ft. BGL): —

Starting Water Level (ft. BMP): 5.21

Casing Stickup (ft.): _____

WL (ft. BMP): 5.21 (ft. BGL): _____

TD (ft. BMP): _____ (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): _____

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: Peristaltic Pump / SS Pump / Bailer Sampling: Peristaltic Pump / SS Pump / Bailer

Disposal of Discharged Water: 55-gallon drum

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: SOLINST Other: —

Multi Meter: HORIBA

Field Calibration: AUTO CAL

Filter / Filter Size: —

SAMPLING MEASUREMENTS

Begin Purge: 0801

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L/m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
0812	5.39	—	.2	22.4	0.79	1120	6.92	-42	16	muddied
0817	5.41		↓	22.1	0.62	1150	6.97	-37	12	↓
0822	5.41		↓	22.1	0.61	1160	6.96	-39	12	↓

WL (ft. BMP) at End of Purge: Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected					Filtration	Preservation	Remarks
Time		Volume	Composition (G, P)	No.	(Y / N)	(type)	(quality control sample, other)
0835		1L	G	2	N	—	SVOCs

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19119232 Project Name: VPRR - HWPW - SMVU Date: 7-2-19

Sampling Location (well ID, etc.): MW 11A

Sample Number: WG-1620-MW11A-20190702

Sampled by: JTB

Measuring Point (MP) of Well: (TOC) - Steel or (PVC)

Screened Interval (ft. BGL): —

Filter Pack Interval (ft. BGL): —

Starting Water Level (ft. BMP): 5.06

Casing Stickup (ft.): _____

WL (ft. BMP): 5.06 (ft. BGL): _____

TD (ft. BMP): _____ (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): _____

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: (Peristaltic Pump) / SS Pump / Bailer Sampling: (Peristaltic Pump) / SS Pump / Bailer

Disposal of ~~Discharged~~ Water: SS-gallon drum

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: SOLINST Other: —

Multi Meter: HORIBA

Field Calibration: AUTO CAL

Filter / Filter Size: —

SAMPLING MEASUREMENTS

Begin Purge: 0712

Time	DTW (ft BTOC)	Cum. Vol. (gal. or (L))	Purge Rate (gal. or (L/m))	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
0723	5.31	—	.1	22.6	0.96	1060	6.86	-41	5.7	neutral
0728	5.31		↓	22.7	0.81	1040	6.81	-36	3.2	↓
0731	5.30		↓	22.7	0.82	1030	6.82	-37	4.6	↓

WL (ft. BMP) at End of Purge: Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Time	Bottles Collected	Volume	Composition (G, P)	No.	Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
0745		1L	G	2	N	—	SVOCS

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19119232 Project Name: UPRR-HWPU-SMDU Date: 7-1-19

Sampling Location (well ID, etc.): MW07

Sample Number: WG-1620-MW07-20190701

Sampled by: JJB

Measuring Point (MP) of Well: (TOC) - Steel or (PVC)

Screened Interval (ft. BGL): —

Filter Pack Interval (ft. BGL): —

Starting Water Level (ft. BMP): 3.93

Casing Stickup (ft.): _____

WL (ft. BMP): 3.93 (ft. BGL): _____

TD (ft. BMP): _____ (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): _____

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: (Peristaltic Pump) / SS Pump / Bailer Sampling: (Peristaltic Pump) / SS Pump / Bailer

Disposal of ~~Discharged~~ Water: 55-gallon drum

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: SOLINST Other: —

Multi Meter: HORIBA

Field Calibration: AUTO CAL

Filter / Filter Size: —

SAMPLING MEASUREMENTS

Begin Purge:

1623 Time	DTW (ft BTOC)	Cum. Vol (gal. or (L))	Purge Rate (gal. or (L/m))	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
1632	4.26	—	.2	22.7	0.34	1340	6.86	-41	16	neutral
1638	4.29		↓	22.3	0.26	1310	6.92	-35	11	↓
1643	4.22		↓	22.4	0.26	1310	6.91	-36	12	↓

WL (ft. BMP) at End of Purge: Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected					Filtration	Preservation	Remarks
Time		Volume	Composition (G, P)	No.	(Y / N)	(type)	(quality control sample, other)
1655		1L	G	2	N	—	SVOCS

Comments:

WG-1620-FD02-20190701

1655 - Sample Time

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19119232 Project Name: UPRR-HWPW-SMVV Date: 7-1-19

Sampling Location (well ID, etc.): P10 Starting Water Level (ft. BMP): 3.12

Sample Number: WG-1620-P10-20190701 Casing Stickup (ft.): -

Sampled by: MB WL (ft. BMP): 3.12 (ft. BGL):

Measuring Point (MP) of Well: (TOC) - Steel or (PVC) TD (ft. BMP): (ft. BGL):

Screened Interval (ft. BGL): - Ft. water: Casing Dia. (In ID):

Filter Pack Interval (ft. BGL): - 1X Casing Vol (gal.): 3X (gal):

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: (Peristaltic Pump) / SS Pump / Bailer Sampling: (Peristaltic Pump) / SS Pump / Bailer

Disposal of Discharged Water: 55 gallon drum

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: SOLINST Other: -

Multi Meter: HORIBA

Field Calibration: AUTO CAL

Filter / Filter Size: -

SAMPLING MEASUREMENTS

Begin Purge:

Time (1526)	DTW (ft BTOC)	Cum. Vol. (gal. or (L))	Purge Rate (gal. or (L /m))	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
1537	3.29	-	.2	21.9	0.72	1330	6.78	-57	6.2	neutral
1542	3.31		↓	21.7	0.54	1360	6.71	-51	7.9	↓
1546	3.31		↓	21.6	0.56	1360	6.72	-52	7.2	↓

WL (ft. BMP) at End of Purge: Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected					Filtration	Preservation	Remarks
Time		Volume	Composition (G, P)	No.	(Y / N)	(type)	(quality control sample, other)
1600		1L	G	2	N	-	SVOCS

Comments:

JB

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19119232 Project Name: UPRR-HWPW-SMVV Date: 7-1-19

Sampling Location (well ID, etc.): MW08 Starting Water Level (ft. BMP): 3.98

Sample Number: WG-1620-MW08-20190701 Casing Stickup (ft.): -

Sampled by: JTB WL (ft. BMP): 3.98 (ft. BGL):

Measuring Point (MP) of Well: (TOC) - Steel or (PVC) TD (ft. BMP): (ft. BGL):

Screened Interval (ft. BGL): - Ft. water: Casing Dia. (In ID):

Filter Pack Interval (ft. BGL): - 1X Casing Vol (gal.): 3X (gal):

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: (Peristaltic Pump) / SS Pump / Bailer Sampling: (Peristaltic Pump) / SS Pump / Bailer

Disposal of Discharged Water: 55-gallon drum

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: SOLINST Other: -

Multi Meter: HORIBA

Field Calibration: AUTO CAL

Filter / Filter Size: -

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or (L))	Purge Rate (gal. or (L)/m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
1439										
1449	4.17	-	.2	21.7	0.47	1130	6.67	-23	7.2	muted
1453	4.21		"	21.3	0.31	1130	6.61	-20	5.1	"
1458	4.22		"	21.4	0.32	1120	6.62	-21	5.6	"

WL (ft. BMP) at End of Purge: Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected					Filtration	Preservation	Remarks
Time		Volume	Composition (G, P)	No.	(Y / N)	(type)	(quality control sample, other)
1510		1L	G	2	N	-	SVOCS

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19119232 Project Name: UPRR - HWPW - SMUU Date: 7-1-19

Sampling Location (well ID, etc.): ~~BG~~ P12

Sample Number: WG-1620-P12-20190701

Sampled by: JTB

Measuring Point (MP) of Well: (TOC) - Steel or (PVC)

Screened Interval (ft. BGL): —

Filter Pack Interval (ft. BGL): —

Starting Water Level (ft. BMP): 3.06

Casing Stickup (ft.): —

WL (ft. BMP): 3.06 (ft. BGL):

TD (ft. BMP): (ft. BGL):

Ft. water: Casing Dia. (In ID):

1X Casing Vol (gal.): 3X (gal):

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: (Peristaltic Pump) / SS Pump / Bailer Sampling: (Peristaltic Pump) / SS Pump / Bailer

Disposal of Discharged Water: SS-gallon drum

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: SOLINST Other: —

Multi Meter: HORIBA

Field Calibration: AUTO CAL

Filter / Filter Size: —

SAMPLING MEASUREMENTS

Begin Purge:

Time (1341)	DTW (ft BTOC)	Cum. Vol (gal. or (L))	Purge Rate (gal. or (L/m))	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
1351	3.21	—	.2	22.7	0.71	960	6.79	-53	6.2	neutral
1357	3.22		↓	22.3	0.51	970	6.70	-57	5.1	↓
1405	3.21		↓	22.1	0.52	970	6.71	-56	5.7	↓

WL (ft. BMP) at End of Purge: Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected					Filtration	Preservation	Remarks
Time		Volume	Composition (G, P)	No.	(Y / N)	(type)	(quality control sample, other)
1415		1L	G	2	N	—	SVOCS

Comments: MS/MSD

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19119232 Project Name: UPRR - HWPW - SMVV Date: 7-2-19

Sampling Location (well ID, etc.): MW01A

Sample Number: WG1620-MW01A-20190702

Sampled by: JTB

Measuring Point (MP) of Well: (TOC) - Steel or (PVC)

Screened Interval (ft. BGL): —

Filter Pack Interval (ft. BGL): —

Starting Water Level (ft. BMP): 2.85

Casing Stickup (ft.):

WL (ft. BMP): 2.85 (ft. BGL):

TD (ft. BMP): (ft. BGL):

Ft. water: Casing Dia. (In ID):

1X Casing Vol (gal.): 3X (gal.):

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: (Peristaltic Pump) / SS Pump / Bailer Sampling: (Peristaltic Pump) / SS Pump / Bailer

Disposal of Discharged Water: 55-gallon drum

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: SOLINST Other: —

Multi Meter: HORIBA

Field Calibration: AUTO CAL

Filter / Filter Size: —

SAMPLING MEASUREMENTS

Begin Purge: 1132

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L/m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
1143	3.07		.2	21.9	0.59	1150	6.89	-26	7.1	neutral
1148	3.08		↓	21.9	0.39	1140	6.81	-25	5.2	↓
1153	3.08		↓	21.7	0.42	1140	6.82	-27	6.1	↓

WL (ft. BMP) at End of Purge: Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected					Filtration	Preservation	Remarks
Time		Volume	Composition (G, P)	No.	(Y / N)	(type)	(quality control sample, other)
1210		1L	G	2	N	—	SVOCs

Comments:

WG1620-FD01-20190702

1210 - Sample Time

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19119232 Project Name: VPRR - HWPW - SMUV Date: 7-2-19

Sampling Location (well ID, etc.): MW02 Starting Water Level (ft. BMP): 3.09

Sample Number: WG-1620-MW02-20190702 Casing Stickup (ft.): —

Sampled by: JTB WL (ft. BMP): 3.09 (ft. BGL): —

Measuring Point (MP) of Well: (TOC) - Steel or (PVC) TD (ft. BMP): — (ft. BGL): —

Screened Interval (ft. BGL): — Ft. water: — Casing Dia. (In ID): —

Filter Pack Interval (ft. BGL): — 1X Casing Vol (gal.): — 3X (gal): —

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: (Peristaltic Pump) / SS Pump / Bailer Sampling: (Peristaltic Pump) / SS Pump / Bailer

Disposal of Discharged Water: 55-gallon drum

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: SOLINST Other: —

Multi Meter: HORIBA

Field Calibration: AUTO CAL

Filter / Filter Size: —

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or (L))	Purge Rate (gal. or (L /m))	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
1043										
1052	3.26	—	.2	22.4	0.79	1060	6.71	-41	5.6	neutral
1058	3.27		↓	22.5	0.64	1060	6.74	-36	5.1	↓
1103	3.29		↓	22.4	0.65	1070	6.73	-37	4.7	↓

WL (ft. BMP) at End of Purge: Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected					Filtration	Preservation	Remarks
Time		Volume	Composition (G, P)	No.	(Y / N)	(type)	(quality control sample, other)
1115		1L	G	2	N	—	SVOCs

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19119232 Project Name: UPPR - HWY - SMW Date: 7-2-19

Sampling Location (well ID, etc.): MW10B

Sample Number: WG-1120-MW10B-20190702

Sampled by: JTB

Measuring Point (MP) of Well: (TOC) - Steel or (PVC)

Screened Interval (ft. BGL): —

Filter Pack Interval (ft. BGL): —

Starting Water Level (ft. BMP): 4.82

Casing Stickup (ft.):

WL (ft. BMP): 4.82 (ft. BGL):

TD (ft. BMP): (ft. BGL):

Ft. water: Casing Dia. (In ID):

1X Casing Vol (gal.): 3X (gal):

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: (Peristaltic Pump) / SS Pump / Bailer Sampling: (Peristaltic Pump) / SS Pump / Bailer

Disposal of Discharged Water: 55-gallon drum

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: SOLINST Other: —

Multi Meter: HORIBA

Field Calibration: AUTO CAL

Filter / Filter Size: —

SAMPLING MEASUREMENTS

Begin Purge:

Time (0946)	DTW (ft BTOC)	Cum. Vol. (gal. or (L))	Purge Rate (gal. or (L)/m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
0957	5.08	—	.2	22.7	0.61	1030	6.89	-81	11	neutral
1003	5.09		↓	22.2	0.42	1010	6.83	-77	8.1	↓
1008	5.08		↓	22.1	0.43	1010	6.84	-79	9.2	↓

WL (ft. BMP) at End of Purge: Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected					Filtration	Preservation	Remarks
Time		Volume	Composition (G, P)	No.	(Y / N)	(type)	(quality control sample, other)
1020		1L	G	2	N	—	SVOCS

Comments:

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Groundwater Sample Collection

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	4.21 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-9-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	4.21 ft. BGL
MW ID	MW50A	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW50A-20190709	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1009	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1019	.2	/	4.42	21.9	7.21	1140	0.82	-62	5.1
1024	↓	/	4.43	21.8	7.17	1170	0.64	-54	6.7
1029	↓	/	4.42	21.8	7.16	1160	0.67	-56	6.2
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1040	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1040	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	7.91 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-19-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	7.91 ft. BGL
MW ID	MW81B	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW81B-20190709	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
0916	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
0926	.2	/	8.12	22.6	7.31	1040	0.91	-79	5.2
0931	↓	/	8.13	22.3	7.25	1060	0.72	-76	4.1
0936	↓	/	8.12	22.4	7.26	1060	0.71	-77	4.2
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
0945	60mL	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
0945	40mL / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	20.39 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	07-19-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	20.39 ft. BGL
MW ID	MW51C	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-162D-MW51C-20190709	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time (0822)	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
0832	.2	/	20.56	21.9	7.13	1430	0.67	-76	4.7
0837	↓	/	20.58	21.6	7.10	1420	0.51	-76	7.9
0842	↓	/	20.58	21.7	7.11	1410	0.52	-77	7.2

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
0855	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
0855	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

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Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	6.29 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	— ft.
Date	7-9-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	6.29 ft. BGL
MW ID	MW51A	**Location**	Other	**Total MW Depth**	— ft. BGL
Sample ID	WG-1620-MW51A-20190709	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	— gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	— ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
0652	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
0702	.2	/	6.41	21.2	7.21	1760	1.31	-91	9.2
0707	↓	/	6.42	21.2	7.25	1710	1.11	-85	8.6
0712	↓	/	6.41	21.1	7.26	1720	1.07	-86	8.9
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
0725	60ML	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
0725	40ML / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAYTON (name) (signature)

Groundwater Sample Collection

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	9.23	ft. BMP
Site Location	UPRR - HWPW		☐ Decon between locations	**Casing Stickup**	-	ft.
Date	7-10-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	9.23	ft. BGL
MW ID	MW15B	**Location**	Other _____	**Total MW Depth**	-	ft. BGL
Sample ID	WG-1620-MW15B-20190710	**Water Quality**		**MW Diameter**	2.0	inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	-	gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	-	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1729	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1739	.2	/	9.42	22.4	6.74	960	0.76	-46	8.2
1744	↓	/	9.44	22.2	6.80	910	0.71	-40	6.5
1749	↓	/	9.43	22.3	6.81	920	0.72	-41	6.8

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1800	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1800	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

WG-1620-FB01-20190710

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1815 - SAMPLE TIME

Groundwater Sample Collection

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	22.38	ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	–	ft.
Date	7-10-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	22.38	ft. BGL
MW ID	MW15C	**Location**	Other _____	**Total MW Depth**	–	ft. BGL
Sample ID	WG-162D- -2019	**Water Quality**		**MW Diameter**	2.0	inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	–	gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	–	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1632									
1642	.2	/	22.61	22.6	6.91	820	1.06	-71	6.2
1647	↓	/	22.63	22.3	6.93	870	0.80	-61	4.7
1652	↓	/	22.64	22.4	6.93	860	0.81	-62	5.2

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1705	60ML	P	1	☐ filtered ☒ ~~unfiltered~~	HNO_3	METALS
1705	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

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Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	9.03 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-10-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	9.03 ft. BGL
MW ID	MW15A	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW15A-20190710	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1536									
1546	.2	/	9.42	22.7	6.91	1190	0.52	-71	10
1551	↓	/	9.44	22.3	6.81	1150	0.49	-62	8.2
1556	↓	/	9.45	22.4	6.82	1160	0.51	-67	9.3

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1610	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1610	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

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Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	9.04 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-10-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	9.04 ft. BGL
MW ID	MW20A	**Location**	Other	**Total MW Depth**	– ft. BGL
Sample ID	WG-162D-MW20A-20190710	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1439	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1449	.2	/	9.41	22.4	6.61	1690	0.67	-101	3.7
1454	↓	/	9.42	22.5	6.62	1660	0.54	-101	3.2
1459	↓	/	9.42	22.1	6.62	1670	0.53	-92	3.4

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1510	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1510	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAYTON (name) _____ (signature)

Groundwater Sample Collection

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	22.14 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-10-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	22.14 ft. BGL
MW ID	MW17C	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW17C-20190710	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1251	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1301	.2	/	22.39	21.3	6.71	1170	0.79	-29	4.1
1306	|	/	22.46	22.9	6.74	1160	0.74	-32	3.1
1311	↓	/	22.47	22.8	6.77	1160	0.71	-33	2.9
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
	60ML	P	1	☐ filtered ☒ unfiltered	HNO3	METALS
	40ML | 1L	G | G	5	☐ filtered ☒ unfiltered	HCL | NONE	VOCS | SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

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Groundwater Sample Collection

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Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	22.14 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-10-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	22.14 ft. BGL
MW ID	MW17	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW17-20190710	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1341									
1351	.2	/	22.41	22.6	6.90	1320	0.91	-61	9.1
1356	↓	/	22.43	22.5	6.93	1340	0.71	-52	8.4
1401	↓	/	22.43	22.5	6.93	1340	0.72	-51	8.6

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1415	60ML	P	1	☐ filtered ☑ unfiltered	HNO_3	METALS
1415	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

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Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	24.58 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-10-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	24.58 ft. BGL
MW ID	MW19C	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW19C-20190710	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1154	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1204	.2	/	24.81	21.6	6.70	1260	0.79	-102	7.2
1209	|	/	24.82	21.8	6.71	1240	0.72	-101	6.2
1214	↓	/	24.81	21.9	6.71	1230	0.74	-102	6.7

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1225	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1225	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	15.28 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-10-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	15.28 ft. BGL
MW ID	MW72B	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW72B-2019	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1103	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1113	.2	/	15.51	25.6	6.79	1730	0.86	-103	12
1118	↓	/	15.56	25.2	6.80	1710	0.86	-103	11
1123	↓	/	15.57	25.1	6.81	1710	0.79	-101	11

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1135	60ML	P	1	☒ filtered ☒ unfiltered	HNO_3	METALS
1135	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	13.71 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-10-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	13.71 ft. BGL
MW ID	MW57B	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW57B-20190710	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1009	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1019	.2	/	14.03	21.6	6.69	1270	1.42	-31	14
1024	"	/	14.05	21.7	6.65	1270	1.02	-25	11
1029	↓	/	14.05	21.7	6.67	1260	1.01	-26	11

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1040	60ML	P	1	☒ filtered ☐ unfiltered	HNO_3	METALS
1040	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAYTON (name) _____ (signature)

Groundwater Sample Collection

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	13.11	ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	–	ft.
Date	7-10-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	13.11	ft. BGL
MW ID	MW57A	**Location**	Other _____	**Total MW Depth**	–	ft. BGL
Sample ID	WG-162D-MW57A-20190710	**Water Quality**		**MW Diameter**	2.0	inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	–	gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	–	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
0924	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
0934	.2	/	13.41	23.1	6.71	1470	0.79	-91	9.1
0939	↓	/	13.42	23.2	6.56	1430	0.59	-91	7.1
0944	↓	/	13.42	23.2	6.51	1430	0.57	-90	8.2

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
0955	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
0955	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

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Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	12.29 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-10-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	12.29 ft. BGL
MW ID	MW52A	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620- -2019	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
0821									
0831	.2	/	12.61	22.9	6.64	1460	1.41	-77	3.7
0836	"	/	12.63	22.9	6.71	1420	1.11	-72	3.2
0841	↓	/	12.63	22.8	6.81	1440	1.09	-71	4.6

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
0855	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
0855	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

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Groundwater Sample Collection

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	23.08 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-10-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	23.08 ft. BGL
MW ID	MW18C-	**Location**	Other	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW18C-20190710	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
0734	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
0744	.2	/	23.39	22.7	6.71	1340	0.79	-101	7.3
0749	↓	/	23.41	22.4	6.64	1320	0.65	-93	6.7
0754	↓	/	23.41	22.4	6.67	1310	0.67	-93	7.4
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
0805	60ML	P	1	☐ filtered ☑ unfiltered	HNO_3	METALS
0805	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAYTON (name) _____ (signature)

Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	17.51 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-10-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	17.51 ft. BGL
MW ID	MW18A	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW18A-20190710	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
0642	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
0652	.2	/	17.89	22.4	6.79	1570	0.90	-41	5.2
0657	|		17.92	22.1	6.73	1550	0.71	-35	6.1
0702	↓		17.92	22.1	6.74	1540	0.71	-36	6.2

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
0720	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	5.09 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-11-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	5.09 ft. BGL
MW ID	MW64A	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-162D-MW64A-20190711	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1521	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1531	.2	/	5.26	21.6	6.91	1540	0.61	-62	5.6
1536	|	/	5.29	21.7	6.93	1570	0.51	-50	4.1
1541	↓	/	5.29	21.7	6.93	1560	0.52	-51	4.2

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1550	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1550	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	6.56	ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	–	ft.
Date	7-11-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	6.56	ft. BGL
MW ID	MW05	**Location**	Other _____	**Total MW Depth**	–	ft. BGL
Sample ID	WG-1620-MW05-20190711	**Water Quality**		**MW Diameter**	2.0	inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	–	gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	–	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1417									
1427	.2	/	6.79	22.6	6.91	580	0.69	-39	5.6
1432	↓	/	6.78	22.4	6.95	590	0.42	-33	2.7
1437	↓	/	6.78	22.3	6.96	590	0.41	-34	3.4

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1450	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1450	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

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Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	5.31 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-11-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	5.31 ft. BGL
MW ID	P11	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-P11-20190711	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1323	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1333	.2	/	5.49	22.7	6.97	1160	0.71	-134	7.9
1338	↓	/	5.51	22.5	6.96	1140	0.76	-131	6.7
1343	↓	/	5.51	22.6	6.96	1140	0.77	-132	6.2

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1355	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1355	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	7.42 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-11-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	7.42 ft. BGL
MW ID	MW42B	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW42B-2019	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1228									
1238	.2	/	7.61	23.2	6.79	1610	0.89	-21	8.2
1243	↓	/	7.62	23.1	6.76	1550	0.78	-16	9.1
1248	↓	/	7.60	23.1	6.77	1540	0.79	-17	9.2
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1300	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1300	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	7.28 ft. BMP
Site Location	UPRR - HWPW		☐ Decon between locations	**Casing Stickup**	- ft.
Date	7-11-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	7.28 ft. BGL
MW ID	MW40B	**Location**	Other _____	**Total MW Depth**	- ft. BGL
Sample ID	WG-1620-MW40B-20190711	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	- gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	- ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1126	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1136	.2	/	7.42	22.5	6.96	1650	0.81	-79	8.6
1141	↓	/	7.44	22.3	6.98	1630	0.70	-77	7.1
1146	↓	/	7.44	22.4	6.98	1640	0.71	-77	7.1

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1200	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1200	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAYTON (name) _____ (signature)

Groundwater Sample Collection

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	8.02	ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	-	ft.
Date	7-11-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	8.02	ft. BGL
MW ID	MW12A	**Location**	Other _____	**Total MW Depth**	-	ft. BGL
Sample ID	WG-1620-MW12A-2019	**Water Quality**		**MW Diameter**	2.0	inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	-	gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	-	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1021	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1031	.2	/	8.22	22.6	6.79	490	1.06	-31	8.1
1036	↓	/	8.21	22.6	6.77	460	0.82	-26	6.1
1041	↓	/	8.21	22.7	6.76	470	0.81	-27	6.2

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1055	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1055	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	23.73 ft. BMP
Site Location	UPRR - HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-11-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	23.73 ft. BGL
MW ID	MW12C	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW12C-20190711	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
0929	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
0939	.2	/	23.91	21.3	6.91	810	0.91	-39	7.4
0944	↓	/	23.92	21.1	6.86	820	0.70	-60	8.2
0949	↓	/	23.91	21.2	6.87	830	0.71	-61	8.7

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1000	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1000	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	7.47 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-11-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	7.47 ft. BGL
MW ID	MW39B	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620 MW39B-20190711	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
0843	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
0852	.2	/	7.68	22.4	6.91	1270	0.51	-91	5.2
0858	↓	/	7.69	22.4	6.85	1280	0.54	-86	4.1
0903	↓	/	7.68	22.3	6.86	1280	0.56	-87	4.7

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
0915	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
0915	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

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Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	10.63 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	— ft.
Date	7-11-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	10.63 ft. BGL
MW ID	MW13	**Location**	Other _____	**Total MW Depth**	— ft. BGL
Sample ID	WG-1620-MW13-20190711	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	— gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	— ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
0742	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
0752	.2	/	10.81	21.4	6.93	750	0.59	-52	13
0757	↓	/	10.84	21.9	6.94	730	0.54	-50	11
0802	↓	/	10.83	21.9	6.94	740	0.56	-51	11
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
0815	60ML	P	1	☒ filtered ☐ unfiltered	HNO_3	METALS
0815	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAYTON (name) _____ (signature)

Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	9.57 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	- ft.
Date	7-11-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	9.57 ft. BGL
MW ID	MW14	**Location**	Other _____	**Total MW Depth**	- ft. BGL
Sample ID	WG-1620-MW14-20190710	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	- gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	- ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
0647									
0657	.2	/	9.73	22.4	6.71	1090	1.31	-76	16
0702	↓	/	9.74	22.4	6.64	1070	1.01	-70	11
0707	↓	/	9.73	22.5	6.65	1060	1.02	-71	12

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
0720	60ML	P	1	☒ filtered ☐ unfiltered	HNO_3	METALS
0720	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	8.22	ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	–	ft.
Date	7-12-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	8.22	ft. BGL
MW ID	TW4-1B	**Location**	Other _____	**Total MW Depth**	–	ft. BGL
Sample ID	WG-1620-TW4-1B-20190712	**Water Quality**		**MW Diameter**	2.0	inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	–	gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	–	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1009	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1019	.2	/	8.43	22.6	6.67	1410	1.13	-106	8.6
1024	↓	/	8.44	22.3	6.56	1430	0.91	-109	7.7
1029	↓	/	8.44	22.3	6.57	1440	0.92	-109	7.9

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1040	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1040	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	6.02 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-12-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	6.02 ft. BGL
MW ID	MW04	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW04-20190712	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
0856	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
0906	.2	/	6.31	22.3	6.87	720	0.71	-77	6.2
0911	↓	/	6.32	22.4	6.84	730	0.52	-73	5.1
0916	↓	/	6.31	22.2	6.81	740	0.51	-74	5.2

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
0925	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
0925	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	5.57 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-12-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	5.57 ft. BGL
MW ID	MW03	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW03-20190712	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
0802	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
0812	.2	/	5.81	21.7	7.12	560	0.74	-34	7.7
0817	↓	/	5.86	21.8	7.06	570	0.62	-31	7.2
0822	↓	/	5.87	21.8	7.07	570	0.62	-31	6.6

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
0835	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
0835	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	6.21 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-12-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	6.21 ft. BGL
MW ID	MW09	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-162D-MW09-20190712	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
0704	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
0714	.2	/	6.46	22.9	6.77	660	1.39	-21	5.2
0719	↓	/	6.48	23.0	6.75	630	1.02	-19	4.2
0724	↓	/	6.49	23.1	6.74	640	1.03	-19	4.7

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
0735	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
0735	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAYTON (name) _____ (signature)

Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	3.96 ft. BMP
Site Location	UPRR - HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-16-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	3.96 ft. BGL
MW ID	MW63B	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW63B-20190716	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1723									
1733	.2	/	4.29	22.4	6.81	1640	1.31	-46	9.3
1738	↓	/	4.31	22.6	6.79	1630	1.01	-43	7.4
1743	↓	/	4.31	22.6	6.79	1630	1.02	-44	7.7

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1755	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1755	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

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Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	6.58 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-16-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	6.52 ft. BGL
MW ID	MW28A	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW28A-20190716	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1629									
1639	.2	/	6.81	21.9	6.67	1340	0.91	-106	7.4
1644	↓	/	6.82	21.9	6.61	1320	0.76	-101	5.1
1649	↓	/	6.82	21.8	6.62	1310	0.77	-102	5.2

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1700	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1700	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

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Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	15.03 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	- ft.
Date	7-16-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	15.03 ft. BGL
MW ID	MW28C	**Location**	Other _____	**Total MW Depth**	- ft. BGL
Sample ID	WG-1620-MW28C-2019	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	- gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	- ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1543									
1553	.2	/	15.29	22.3	6.92	1460	0.79	-101	3.2
1558	↓	/	15.32	22.1	6.88	1420	0.60	-96	4.9
1603	↓	/	15.32	22.1	6.89	1430	0.62	-93	5.7

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1615	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1615	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

MS/MSD

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Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	8.32 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-16-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	8.32 ft. BGL
MW ID	MW36A	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW36A-20190716	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1448									
1458	.2	/	8.72	22.6	6.71	1410	0.79	-17	5.9
1503	↓	/	8.74	22.4	6.72	1340	0.61	-13	4.1
1508	↓	/	8.74	22.4	6.74	1360	0.62	-14	4.6

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1520	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1520	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

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Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	1.86 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-16-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	1.86 ft. BGL
MW ID	MW36B	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW36B-20190716	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1338									
1348	.2	/	2.37	21.7	6.71	1160	0.67	-46	27
1353	↓	/	2.39	21.8	6.61	1190	0.53	-42	20
1358	↓	/	2.40	21.8	6.63	1190	0.56	-41	21
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1420	60mL	P	1	☒ filtered ☐ unfiltered	HNO_3	METALS
1420	40mL / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

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Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	6.77 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-16-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	6.77 ft. BGL
MW ID	MW25A	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW25A-20190716	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1237	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1247	.2	/	7.03	22.3	6.94	1520	0.57	-36	17
1252	↓	/	7.06	22.1	6.92	1470	0.48	-29	12
1257	↓	/	7.07	22.1	6.91	1460	0.49	-31	12
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1310	60ML	P	1	☒ filtered ☐ unfiltered	HNO_3	METALS
1310	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

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Groundwater Sample Collection

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Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	15.84 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-16-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	15.84 ft. BGL
MW ID	MW25C	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-162D-MW25C-20190716	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1139									
1144	.2	/	16.09	23.6	6.81	1160	0.71	-47	6.2
1154	↓	/	16.11	23.7	6.76	1190	0.56	-42	5.1
1159	↓	/	16.12	23.7	6.77	1190	0.58	-43	5.7
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1215	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1215	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

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Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	15.27 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-16-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	15.27 ft. BGL
MW ID	MW54C	**Location**	Other	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW54C-2019	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1043	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1053	.2	/	15.61	21.6	6.79	1610	1.21	-81	4.6
1058	↓	/	15.62	21.6	6.72	1540	0.86	-77	2.7
1103	↓	/	15.62	21.9	6.71	1510	0.89	-71	2.6
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1115	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1115	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

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Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	15.86 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-16-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	15.86 ft. BGL
MW ID	MW33C	**Location**	Other	**Total MW Depth**	– ft. BGL
Sample ID	WG-162D-MW33C-20190716	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
0946									
0956	.2	/	16.11	22.6	6.91	1560	0.89	-22	9.2
1001	↓	/	16.16	22.3	6.84	1530	0.76	-21	7.2
1006	↓	/	16.18	22.4	6.86	1540	0.71	-21	7.6
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1015	60mL	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1015	40mL / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

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Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	4.34 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-16-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	4.34 ft. BGL
MW ID	MW62B	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-162D-MW62B-20190716	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
0757									
0807	.2	/	4.71	21.6	6.71	1120	1.13	-26	7.4
0812	↓	/	4.73	21.3	6.73	1170	0.92	-30	6.0
0817	↓	/	4.74	21.4	6.74	1160	0.91	-31	6.1
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
0825	60mL	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
0825	40mL / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	23.11	ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	–	ft.
Date	7-16-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	23.11	ft. BGL
MW ID	MW21C	**Location**	Other _____	**Total MW Depth**	–	ft. BGL
Sample ID	WG-1620-MW21C-20190716	**Water Quality**		**MW Diameter**	2.0	inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	–	gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	–	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
0656									
0706	.2	/	23.34	21.6	7.07	810	0.92	-51	8.6
0711	↓	/	23.39	21.7	7.01	820	0.71	-44	7.0
0716	↓	/	23.39	21.7	7.02	820	0.72	-46	7.1

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
0735	60ML	P	1	☐ filtered ☑ unfiltered	HNO_3	METALS
0735	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

WG-1620-FD01-20190716

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0735-SAMPLE TIME

Groundwater Sample Collection

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	5.09	ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	–	ft.
Date	7-17-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	5.09	ft. BGL
MW ID	MW33A	**Location**	Other _____	**Total MW Depth**	–	ft. BGL
Sample ID	WG-1620-MW33A-20190717	**Water Quality**		**MW Diameter**	2.0	inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	–	gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	–	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1712	.2	/	5.33	21.3	7.12	730	1.26	-31	4.2
1722	↓	/	5.32	21.0	7.08	710	1.01	-25	3.3
1727	↓	/	5.32	21.1	7.09	710	1.02	-26	3.6
1732									
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1750	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1750	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

WG-1620-FD02-20190717

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1750-SAMPLE TIME

Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	0.62 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-17-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	0.62 ft. BGL
MW ID	MW71B	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW71B-20190717	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1606	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1616	.2	/	1.11	22.7	6.91	570	0.46	-76	11
1621	↓	/	1.10	22.5	6.94	520	0.33	-71	7.9
1626	↓	/	1.10	22.5	6.93	510	0.34	-71	8.2

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1640	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1640	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	15.83 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-17-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	15.83 ft. BGL
MW ID	MW87C	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW87C-20190717	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1509	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1519	.2	/	16.12	22.4	7.46	1670	0.92	-92	10
1524	↓	/	16.13	22.6	7.61	1630	0.74	-76	8.2
1529	↓	/	16.13	22.3	7.61	1640	0.71	-71	9.2

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1540	60mL	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1540	40mL / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

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Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	8.67	ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	–	ft.
Date	7-17-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	8.67	ft. BGL
MW ID	MW44A	**Location**	Other _____	**Total MW Depth**	–	ft. BGL
Sample ID	WG-162D-MW44A-20190717	**Water Quality**		**MW Diameter**	2.0	inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	–	gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	–	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1329	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1339	.2	/	8.96	22.7	6.62	910	0.99	-27	8.1
1344	↓	/	8.94	22.9	6.79	930	0.84	-21	6.2
1349	↓	/	8.94	22.4	6.56	920	0.86	-22	7.2
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1400	60ML	P	1	☐ filtered ☑ unfiltered	HNO_3	METALS
1400	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAYTON (name) _____ (signature)

Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	9.06 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-17-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	9.06 ft. BGL
MW ID	MW59B	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW59B-20190717	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1236	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1246	.2	/	9.39	22.3	6.81	1210	0.71	-34	7.4
1251	↓	/	9.41	22.4	6.77	1250	0.22	-29	6.1
1256	↓	/	9.42	22.1	6.79	1240	0.16	-31	6.2

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1310	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1310	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAYTON (name) _____ (signature)

Groundwater Sample Collection

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	8.92 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	— ft.
Date	7-17-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	8.92 ft. BGL
MW ID	MW59A	**Location**	Other _____	**Total MW Depth**	— ft. BGL
Sample ID	WG-1620- -2019	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	— gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	— ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1147									
1157	.2	/	9.23	23.2	6.96	1460	-72	0.51	8.1
1202	↓	/	9.24	23.1	6.92	1470	-68	0.42	7.1
1207	↓	/	9.23	23.1	6.93	1470	-69	0.42	7.2

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1220	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1220	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAYTON (name) _____ (signature)

Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	16.23 ft. BMP
Site Location	UPRR - HWPW		☐ Decon between locations	**Casing Stickup**	- ft.
Date	7-17-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	16.23 ft. BGL
MW ID	MW48C	**Location**	Other _____	**Total MW Depth**	- ft. BGL
Sample ID	WG-1620-MW48C-20190717	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	- gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	- ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1048	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1058	.2	/	16.47	21.4	6.79	1090	0.77	-31	16
1103	1	/	16.51	21.7	6.77	1130	0.72	-25	10
1108	↓	/	16.52	21.9	6.72	1160	0.74	-26	10

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1120	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1120	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	16.43 ft. BMP
Site Location	UPRR - HWPW		☐ Decon between locations	**Casing Stickup**	- ft.
Date	7-17-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	16.43 ft. BGL
MW ID	MW47C	**Location**	Other	**Total MW Depth**	- ft. BGL
Sample ID	WG-1620-MW47C-20190717	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	- gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	- ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
0956	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1006	.2	/	16.78	22.5	6.74	960	1.31	-7	9.2
1011	"	/	16.80	22.4	6.72	910	1.16	-6	7.4
1016	↓	/	16.81	22.4	6.71	920	1.13	-6	8.1
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1025	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1025	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	9.71 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-17-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	9.71 ft. BGL
MW ID	MW69A	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW69A-20190717	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
0901	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
0911	.2	/	9.97	22.6	6.94	1730	1.13	-37	8.6
0916	"	/	10.01	22.5	6.88	1640	0.95	-44	7.7
0921	↓	/	10.02	22.4	6.89	1620	0.96	-47	7.1

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
0935	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
0935	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

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Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	5.52 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	- ft.
Date	7-17-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	5.52 ft. BGL
MW ID	MW60A	**Location**	Other _____	**Total MW Depth**	- ft. BGL
Sample ID	WG-1620-MW60A-20190717	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	- gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	- ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
0802	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
0812	.2	/	5.81	22.3	6.98	1260	0.92	-77	9.1
0817	|	/	5.83	22.4	6.97	1230	0.70	-76	8.4
0822	↓	/	5.84	22.4	6.96	1240	0.71	-76	8.2

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
0835	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
0835	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

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Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	6.96 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	- ft.
Date	7-17-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	6.96 ft. BGL
MW ID	MW61A	**Location**	Other _____	**Total MW Depth**	- ft. BGL
Sample ID	WG-1620-MW61A-20190717	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	- gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	_____ ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
0711	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
0721	.2	/	7.16	21.7	6.71	1320	0.74	-106	8.1
0726	↓	/	7.17	21.6	6.73	1350	0.56	-101	7.7
0731	↓	/	7.17	21.7	6.74	1360	0.57	-102	7.6

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
0750	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
0750	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

MS/MSD

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Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	6.31 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-17-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	6.31 ft. BGL
MW ID	MW26A	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW26A-20190717	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1816									
1826	.2	/	6.49	21.4	6.71	1740	1.39	-107	17
1831	↓	/	6.51	21.8	6.57	1710	1.03	-106	13
1836	↓	/	6.51	21.7	6.56	1720	1.04	-106	14

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1845	60ML	P	1	☒ filtered ☐ unfiltered	HNO_3	METALS
1845	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

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Groundwater Sample Collection

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	15.61	ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	–	ft.
Date	7-18-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	15.61	ft. BGL
MW ID	MW27C	**Location**	Other _____	**Total MW Depth**	–	ft. BGL
Sample ID	WG-1620-MW27C-20190718	**Water Quality**		**MW Diameter**	2.0	inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	–	gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	–	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1731									
1741	.2	/	15.92	22.2	6.51	1230	0.74	-44	6.8
1746	↓	/	15.94	22.3	6.41	1270	0.70	-42	5.1
1751	↓	/	15.95	22.3	6.42	1260	0.71	-43	5.2

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1805	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1805	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

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Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	7.21 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-18-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	7.21 ft. BGL
MW ID	MW27A	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW27A-20190718	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1641	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1651	.2	/	7.47	21.7	7.06	1420	0.74	-21	4.1
1656	↓	/	7.49	21.6	7.09	1430	0.67	-22	9.6
1701	↓	/	7.49	21.6	7.08	1430	0.66	-22	9.7
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1715	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1715	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	3.26 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	- ft.
Date	7-18-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	3.26 ft. BGL
MW ID	MW38B	**Location**	Other _____	**Total MW Depth**	- ft. BGL
Sample ID	WG-1620-MW38B-2019	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	- gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	- ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1539	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1549	.2	/	3.47	22.7	6.74	1340	0.79	-101	9.2
1554	"	/	3.51	22.5	6.75	1320	0.51	-92	8.7
1559	"	/	3.52	22.6	6.76	1330	0.52	-93	8.6

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1610	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1610	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	7.74	ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	-	ft.
Date	7-18-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	7.74	ft. BGL
MW ID	MW89B	**Location**	Other _____	**Total MW Depth**	-	ft. BGL
Sample ID	WG-1620-MW89B-20190718	**Water Quality**		**MW Diameter**	2.0	inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	-	gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	-	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1444									
1454	.2	/	7.93	22.7	6.81	1420	1.09	-84	8.6
1459	↓	/	7.96	22.6	6.77	1430	1.01	-80	7.1
1504	↓	/	7.97	22.6	6.76	1430	1.02	-81	7.3

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1515	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1515	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAYTON (name) _____ (signature)

Groundwater Sample Collection

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	4.13 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	- ft.
Date	7-18-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	4.13 ft. BGL
MW ID	MW90B	**Location**	Other _____	**Total MW Depth**	- ft. BGL
Sample ID	WG-1620-MW90B-20190719	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	- gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	- ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1357	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1407	.2	/	4.31	23.2	6.93	1470	1.41	-41	7.4
1412	↓	/	4.32	23.1	6.92	1420	0.99	-42	6.5
1417	↓	/	4.31	23.2	6.94	1410	0.96	-42	6.7
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1425	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1425	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	5.62 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	- ft.
Date	7-18-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	5.62 ft. BGL
MW ID	MW35B	**Location**	Other _____	**Total MW Depth**	- ft. BGL
Sample ID	WG-1620-MW35B-20190718	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	- gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	- ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1256	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1306	.2	/	5.86	21.4	6.74	1940	0.81	-39	7.9
1311	↓	/	5.89	21.3	6.72	1920	0.71	-41	6.1
1316	↓	/	5.88	21.1	6.71	1910	0.72	-42	6.2

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1330	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1330	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	7.92 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-18-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	7.92 ft. BGL
MW ID	MW35A	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW35A-20190718	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1208	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1218	.2	/	8.16	21.4	6.64	1710	0.69	-41	6.7
1223	↓	/	8.17	21.6	6.60	1640	0.52	-33	5.4
1228	↓	/	8.16	21.7	6.61	1630	0.59	-34	5.9

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1240	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1240	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAYTON (name) _____ (signature)

Groundwater Sample Collection

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	17.17 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-18-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	17.17 ft. BGL
MW ID	MW83C	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-162D-MW83C-20190718	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1059	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1109	.2	/	17.39	23.4	7.16	1260	0.91	-28	4.9
1114	1	/	17.41	23.2	7.12	1230	0.73	-25	7.1
1119	↓	/	17.42	23.1	7.13	1240	0.74	-26	7.2

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1130	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1130	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

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Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	6.11 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	- ft.
Date	7-18-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	6.11 ft. BGL
MW ID	MW83B	**Location**	Other _____	**Total MW Depth**	- ft. BGL
Sample ID	WG-1620-MW83B-20190718	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	- gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	- ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1008	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1018	.2	/	6.34	22.1	6.74	1740	0.71	-61	14
1023	"	/	6.36	22.1	6.72	1770	0.61	-61	12
1028	↓	/	6.36	22.2	6.71	1760	0.62	-62	13

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1040	60ML	P	1	☒ filtered ☐ unfiltered	HNO_3	METALS
1040	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

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Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	16.39 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-18-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	16.39 ft. BGL
MW ID	MW68C	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW68C-20190718	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
0913	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
0923	.2	/	16.67	21.7	7.19	1560	1.16	-23	4.1
0928	"	/	16.66	21.6	7.19	1520	0.92	-20	3.2
0933	"	/	16.67	21.6	7.21	1530	0.91	-21	3.4

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
0945	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
0945	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

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Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	5.78 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-18-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	5.78 ft. BGL
MW ID	MW68B	**Location**	Other	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW68B-20190718	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
0816									
0826	.2	/	5.96	22.6	6.71	940	0.86	-23	4.7
0831	|	/	5.98	22.4	6.63	940	0.70	-22	4.9
0836	↓	/	5.98	22.4	6.64	930	0.71	-22	6.1
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
0855	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
0855	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

WG-1620-FD03-20190718

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0855-SAMPLE TIME

Groundwater Sample Collection

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	5.01	ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	-	ft.
Date	7-18-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	5.01	ft. BGL
MW ID	MW68A	**Location**	Other _____	**Total MW Depth**	-	ft. BGL
Sample ID	WG-1620-MW68A-20190718	**Water Quality**		**MW Diameter**	2.0	inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	-	gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	-	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
0721									
0731	.2	/	5.32	21.4	6.94	1040	0.79	-22	6.4
0736	↓	/	5.36	21.6	6.91	1010	0.61	-19	5.16
0741	↓	/	5.37	21.7	6.92	1020	0.62	-21	5.7

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
0755	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
0755	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

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Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	9.68 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-30-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	9.68 ft. BGL
MW ID	MW19A	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW19A-20190730	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1838									
1848	.2	/	9.89	23.4	6.94	860	1.06	-32	16
1853	"	/	9.91	23.1	6.91	850	0.84	-32	13
1858	↓	/	9.91	23.1	6.91	810	0.87	-31	14

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1910	60ML	P	1	☒ filtered ☐ unfiltered	HNO_3	METALS
1910	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

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Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	8.59 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	— ft.
Date	7-30-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	8.59 ft. BGL
MW ID	MW74B	**Location**	Other ____	**Total MW Depth**	— ft. BGL
Sample ID	WG-1620-MW74B-20190730	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	— gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	— ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1747									
1757	.2	/	8.91	24.2	6.91	1370	0.67	-72	16
1802	↓	/	8.89	24.1	6.93	1330	0.52	-62	11
1807	↓	/	8.89	24.1	6.97	1340	0.53	-61	12

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1820	60ML	P	1	☒ filtered ☐ unfiltered	HNO_3	METALS
1820	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

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Groundwater Sample Collection

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	20.18	ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	–	ft.
Date	7-30-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	20.18	ft. BGL
MW ID	MW16C	**Location**	Other _____	**Total MW Depth**	–	ft. BGL
Sample ID	WG-162D-MW16C-20190730	**Water Quality**		**MW Diameter**	2.0	inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	–	gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	–	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1658	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1708	.2	/	20.39	22.7	7.16	1920	0.59	-81	4.2
1713	↓	/	20.41	22.6	7.21	1920	0.42	-76	5.1
1718	↓	/	20.40	22.6	7.22	1930	0.41	-77	5.6

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1730	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1730	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

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Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	19.73 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-30-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	19.73 ft. BGL
MW ID	MW86C	**Location**	Other	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW86C-20190730	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1601	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1611	.2	/	19.96	22.7	7.29	1060	0.81	-47	6.9
1616	↓	/	19.98	22.6	7.22	1020	0.85	-42	7.1
1621	↓	/	19.98	22.6	7.21	1030	0.86	-42	5.6

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1640	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1640	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

WG-1620-FD04-20190730

Field Team Leader JOHN BRAXTON (name) (signature)

1640 - SAMPLE TIME

Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	21.78 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-30-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	21.78 ft. BGL
MW ID	MW85C	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW85C-20190730	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1507									
1517	.2	/	21.93	22.5	7.49	1340	1.09	-29	5.1
1522	↓	/	21.94	22.4	7.62	1360	1.04	-25	5.7
1527	↓	/	21.94	22.4	7.61	1370	1.06	-26	5.6

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
~~1540~~ 1535	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
~~1540~~ 1535	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAYTON (name) _____ (signature)

Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	6.11 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-30-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	6.11 ft. BGL
MW ID	MW77A	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW77A-20190730	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1122	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1132	.2	/	6.33	22.3	6.91	1230	0.74	-51	6.7
1137	↓	/	6.32	22.2	6.94	1270	0.61	-44	5.2
1142	↓	/	6.32	22.1	6.96	1260	0.62	-46	5.1

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1155	60ML	P	1	☐ filtered ☑ unfiltered	HNO_3	METALS
1155	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAYTON (name) _____ (signature)

Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	11.02	ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	–	ft.
Date	7-30-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	11.02	ft. BGL
MW ID	MW80B	**Location**	Other _____	**Total MW Depth**	–	ft. BGL
Sample ID	WG-1620-MW80B-20190730	**Water Quality**		**MW Diameter**	2.0	inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	–	gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	–	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1037	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1047	.2	/	11.34	22.6	7.11	1060	0.42	-47	4.1
1052	↓	/	11.37	22.8	7.08	1020	0.41	-41	3.7
1057	↓	/	11.36	22.9	7.06	1030	0.41	-42	3.4

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1110	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1110	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	4.03 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-30-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	4.03 ft. BGL
MW ID	MW82B	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW82B-20190730	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
0940	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
0950	.2	/	4.27	22.5	6.94	1940	0.91	-21	19
0955	↓	/	4.29	22.5	6.92	1960	0.75	-15	15
1000	↓	/	4.30	22.4	6.91	1970	0.77	-16	16
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1010	60mL	P	1	☒ filtered ☐ unfiltered	HNO_3	METALS
1010	40mL / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

MS/MSD

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Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	7.09	ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	—	ft.
Date	7-30-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	7.09	ft. BGL
MW ID	MW84B	**Location**	Other _____	**Total MW Depth**	—	ft. BGL
Sample ID	WG-1620-MW84B-20190730	**Water Quality**		**MW Diameter**	2.0	inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	—	gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	—	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
0843	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
0853	.2	/	7.31	22.7	7.11	560	0.56	-107	8.6
0858	↓	/	7.32	22.6	7.07	520	0.40	-103	5.1
0903	↓	/	7.31	22.6	7.06	530	0.41	-104	6.2
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
0915	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
0915	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	5.92 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	- ft.
Date	7-30-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	5.92 ft. BGL
MW ID	MW33BR	**Location**	Other _____	**Total MW Depth**	- ft. BGL
Sample ID	WG-1620-MW33BR-20190730	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	- gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	- ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
0746									
0756	.2	/	6.21	22.7	6.91	1570	0.61	-27	8.2
0801	↓	/	6.22	22.8	6.95	1590	0.63	-21	7.4
0806	↓	/	6.21	22.8	6.86	1590	0.62	-22	7.7

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
0820	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
0820	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	6.41 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-30-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	6.41 ft. BGL
MW ID	MW32AR	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW32AR-20190730	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
0651									
0701	.2	/	6.74	21.5	6.77	1910	0.63	-71	4.2
0706	↓	/	6.75	21.6	6.75	1830	0.55	-66	5.1
0711	↓	/	6.74	21.6	6.74	1820	0.56	-67	5.2
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
0725	60mL	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
0725	40mL / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	11.21 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-31-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	11.21 ft. BGL
MW ID	MW49A	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW49A-20190731	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1716									
1726	.2	/	11.47	22.7	6.91	1260	1.13	-36	21
1731	↓	/	11.51	22.5	6.83	1220	0.90	-41	16
1736	↓	/	11.51	22.4	6.84	1230	0.91	-41	17

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1745	60ML	P	1	☒ filtered ☐ unfiltered	HNO_3	METALS
1745	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

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Groundwater Sample Collection

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Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	9.09 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-31-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	9.09 ft. BGL
MW ID	MW67B	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW67B-20190731	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1607									
1617	.2	/	9.28	22.5	7.21	430	0.91	-79	8.2
1622	↓	/	9.27	22.4	7.18	410	0.73	-76	6.1
1629	↓	/	9.28	22.4	7.17	390	0.74	-77	6.2

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1645	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1645	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

MS/MSD

Field Team Leader JOHN BRAXTON
name

signature

Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	24.13 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-31-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	24.13 ft. BGL
MW ID	MW88C	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW88C-20190731	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1516									
1526	.2	/	24.39	22.6	7.39	1270	0.59	-91	5.7
1531	"	/	24.41	22.6	7.41	1270	0.46	-86	4.7
1536	"	/	24.42	22.9	7.34	1260	0.47	-86	5.1

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1545	60ML	P	1	☐ filtered ☒ unfiltered	HNO3	METALS
1545	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	4.41	ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	-	ft.
Date	7-31-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	4.41	ft. BGL
MW ID	MW22BR	**Location**	Other _____	**Total MW Depth**	-	ft. BGL
Sample ID	WG-1620-MW22BR-20190731	**Water Quality**		**MW Diameter**	2.0	inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	-	gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	-	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1321	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1331	.2	/	4.71	21.6	6.91	1260	0.91	-61	10
1336	↓	/	4.72	21.6	6.93	1230	0.74	-55	8.6
1341	↓	/	4.71	21.7	6.82	1240	0.71	-56	9.2

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1350	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1350	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAYTON (name) _____ (signature)

Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	3.96 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	- ft.
Date	7-31-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	3.96 ft. BGL
MW ID	MW22AR	**Location**	Other _____	**Total MW Depth**	- ft. BGL
Sample ID	WG-1620-MW22AR2019	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	- gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	- ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1232									
1242	.2	/	4.23	22.4	6.59	1260	0.57	-43	16
1247	"	/	4.24	22.2	6.53	1270	0.44	-41	12
1252	↓	/	4.22	22.1	6.52	1280	0.47	-41	13
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1305	60mL	P	1	☒ filtered ☐ unfiltered	HNO_3	METALS
1305	40mL / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	81.31	ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	–	ft.
Date	7-31-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	81.31	ft. BGL
MW ID	MW59D	**Location**	Other _____	**Total MW Depth**	–	ft. BGL
Sample ID	WG-1620-MW59D-20190731	**Water Quality**		**MW Diameter**	2.0	inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	–	gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	–	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1112									
1122	.2	/	81.37	21.7	6.96	1120	0.93	-77	5.9
1127	↓	/	81.56	21.6	6.94	1140	0.70	-67	4.3
1132	↓	/	81.56	21.7	6.94	1150	0.71	-69	5.7
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1150	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
1150	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

WG-1620-FD05-20190731

Field Team Leader JOHN BRAYTON (name) _____ (signature)

1150 SAMPLE TIME

Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	82.99 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	- ft.
Date	7-31-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	82.99 ft. BGL
MW ID	MW66D	**Location**	Other _____	**Total MW Depth**	- ft. BGL
Sample ID	WG-162D-MW66D-20190731	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	- gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	- ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1013									
1023	.2	/	83.18	22.6	7.11	11130	0.94	-86	6.7
1028	↓	/	83.19	22.7	7.11	1110	0.84	-80	6.1
1033	↓	/	83.18	22.7	7.09	1110	0.86	-81	5.7

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
	60ML	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	82.71 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-31-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	82.71 ft. BGL
MW ID	MW65D	**Location**	Other	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW65D-2019	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
0909									
0919	.2	/	82.96	21.6	6.92	1290	0.89	-86	9.2
0924	↓	/	82.97	21.7	6.94	1250	0.74	-91	8.6
0929	↓	/	82.96	21.6	6.98	1260	0.77	-90	8.2

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
0945	60mL	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
	40mL / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

MS/MSD

Field Team Leader JOHN BRAXTON (name) (signature)

Groundwater Sample Collection

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	4.13 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	- ft.
Date	7-31-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	4.13 ft. BGL
MW ID	MW38A	**Location**	Other _____	**Total MW Depth**	- ft. BGL
Sample ID	WG-162D-MW38A-20190731	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	- gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	- ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
0802	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
0812	.2	/	4.32	22.6	6.47	1060	0.92	-74	27
0817	↓	/	4.33	22.5	6.48	1020	0.72	-66	24
0822	↓	/	4.33	22.4	6.42	1030	0.73	-62	22

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
0835	60mL	P	1	☒ filtered ☐ unfiltered	HNO_3	METALS
0835	40mL / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	82.91 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	7-31-19	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	82.91 ft. BGL
MW ID	MW 36D-	**Location**	Other _____	**Total MW Depth**	– ft. BGL
Sample ID	WG-1620-MW36D-20190730	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	– gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
0709	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
0719	.2	/	83.16	21.7	6.79	1340	1.06	-51	6.2
0724	↓	/	83.19	21.5	6.71	1310	0.92	-47	6.7
0729	↓	/	83.19	21.6	6.72	1310	0.93	-49	6.7

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
0740	60mL	P	1	☐ filtered ☒ unfiltered	HNO_3	METALS
0740	40mL / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

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GROUNDWATER SAMPLING RECORD

PAGE ___ of ___

Project Number: 19119232 Project Name: UPRR HWPW Date: 1-14-2020

Sampling Location (well ID, etc.): MW-01A

Sample Number: WG1620MW01A20200114

Sampled by: Tim McSpadden

Measuring Point (MP) of Well: TOC – Steel or (PVC)

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 2.71

Casing Stickup (ft.):

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 19.90 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): 4"

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): (Low Flow) - Dedicated Tubing/Equipment

Cleaning Equipment: (DI/Alconox Rinse)

Purge: (Peristaltic Pump) / SS Pump / Bailer / Bladder Sampling: (Peristaltic Pump) / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H2O drum 1-7-2020

INSTRUMENTS (indicate make, model, I.d.)

Water Level: P2111 Heron Other: Geo Pump P1102

Multi Meter: Horiba C1103

Field Calibration: ph-4.01 NTU-0 Cond 4.46

Filter / Filter Size:

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
13:55	2.71	.2	.2	24.17	4.54	.844	6.17	-78	26.7	Clear/Mo
14:05	2.80	.3	.2	24.01	2.16	.969	6.06	-67	28.4	
14:10	2.89	.4	.2	23.71	0.50	1.02	6.09	-52	11.2	
14:15	2.91	.5	.2	24.50	2.29	1.03	6.14	-26	9.9	
14:20	3.02	.6	.2	24.58	1.01	1.04	6.14	-25	9.6	
14:25	3.09	.7	.2	24.74	1.53	1.05	6.13	-21	9.6	
14:30	3.17	.8	.2	24.90	1.94	1.06	6.15	-16	8.6	
14:35	3.20	.9	.2	25.14	1.91	1.06	6.15	-16	8.4	

WL (ft. BMP) at End of Purge: 3.20 Sample Intake Depth (ft. BMP): 16.

SAMPLE INVENTORY

Time	Bottles Collected	Volume	Composition (G P)	No.	Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
14:35				2		Iced	

Comments:

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WG1620FD01 20200114
WG1620FB02 20200114

GOLDER
2201 Double Creek Dr., Suite 4004
Round Rock, Texas 78664
Phone: (512) 671-3434 Fax: (512) 671-3446

GROUNDWATER SAMPLING RECORD

PAGE ___ of ___

Project Number: 19119237 Project Name: UPRR HWPW Date: 1-14-2020

Sampling Location (well ID, etc.): MW-02

Sample Number: WG1620MW022020011 4

Sampled by: Tim McSpadden

Measuring Point (MP) of Well: TOC - Steel or (PVC)

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 2.64

Casing Stickup (ft.): 2'

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 20.20 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): 2"

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): (Low Flow) - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: (Peristaltic Pump) / SS Pump / Bailer / Bladder Sampling: (Peristaltic Pump) / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H2O drum 1-7-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: P-2111 Heron Other: Geo Purge P 1102

Multi Meter: Horiba C1103

Field Calibration: PK-41-01 NTU 0 Cond 4.49

Filter / Filter Size:

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
12:55	2.64	.2	.2	23.20	3.94	.605	6.57	-81	33.5	Clear/no
13:05	3.39	.3	.2	23.29	1.82	.605	6.44	-83	30.2	
13:10	3.47	.4	.2	22.91	0.93	.596	6.10	-85	28.7	
13:15	3.51	.5	.2	22.70	0.91	.592	6.16	-84	27.8	
13:20	3.55	.6	.2	22.32	0.59	.578	5.98	-79	40.4	
13:25	3.59	.7	.2	22.28	0.61	.578	5.99	-79	42.6	
13:30	3.62	.8	.2	22.24	0.60	.578	5.96	-77	40.0	

WL (ft. BMP) at End of Purge: 3.62 Sample Intake Depth (ft. BMP): 17.0

SAMPLE INVENTORY

Time	Bottles Collected	Volume	Composition (G/P)	No.	Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
13:30				2		Neat	

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE ____ of ____

Project Number: 19119232	Project Name: UP RR HWPW	Date: 1-21-2020	
Sample Number: WG-1620MW032020012I		Starting Water Level (ft. BMP): 3.05	
Sampling Location (well ID, etc.): MW03		Casing Stickup (ft.): 2'	
Sampled by: T, M MCS paddeu		Starting Water Level (ft. BGL):	
Measuring Point (MP) of Well: TOC		Total Depth (ft. BMP): 18.90 Soft bottom	
Screened Interval (ft. BGL):		Casing Diameter (In ID): 2"	
Filter Pack Interval (ft. BGL):		Casing Volume (gal.):	

QUALITY ASSURANCE

METHODS (describe): Low flow

Cleaning Equipment:

Purging: Sampling:

Disposal of Discharged Water:

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	P211 Heron	Thermometer:	" "
pH Meter:	Horiba U-10	Field Calibration:	pH 4.0
Conductivity Meter:	" "	Field Calibration:	
Filter / Filter Size:	10 Microns	Other:	

SAMPLING MEASUREMENTS

Time	Water Depth (ft BMP)	Cum. Vol. (gal. or L)	Purge Rate (L /m)	Temp. (°C)	pH (S.U.)	Spec. Cond. (mS/cm)	D.O. (mg/L)	Redox (mV)	Turbidity (NTU)	Color
--	--	--	--	± 3%	± 0.1	± 3%	± 10% if >0.5	± 10	± 10%	--
14:20	3.05	.2	.2	18.08	6.82	.779	3.20	34	76.8	clear
14:30	3.41	.3	.2	18.10	6.72	.779	1.08	41	70.4	
14:35	3.34	.4	.2	18.09	6.63	.783	.25	53	44.9	
14:40	3.28	.5	.2	17.91	6.60	.776	.15	57	53.3	
14:45	3.30	.6	.2	17.93	6.60	.773	0	60	33.0	
14:50	3.28	.7	.2	17.71	6.56	.774	0	63	39.9	
14:55	3.29	.8	.2	17.67	6.55	.774	0	64	41.2	
15:00	3.31	.9	.2	17.58	6.55	.776	0	65	47.8	

Water Level (ft. BMP) at End of Purge: 3.30

Sample Intake Depth (ft. BMP): 15.0

SAMPLE INVENTORY

Bottles Collected				Filtration		
Time	Volume	Composition (G, P)	No.	(Y) N)	Preservation	Remarks (quality control sample, other)
1500			6	(Y)		

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE ____ of ____

Project Number: 19119232	Project Name: UPRR HWPW	Date: 1-21-2020	
Sample Number: WG1620 MW03 20200121	Starting Water Level (ft. BMP): 4.61		
Sampling Location (well ID, etc.): MW 04	Casing Stickup (ft.): 1'		
Sampled by: T,M McSpadden	Starting Water Level (ft. BGL):		
Measuring Point (MP) of Well:	Total Depth (ft. BMP): 21.38 Soft bottom		
Screened Interval (ft. BGL):	Casing Diameter (In ID):		
Filter Pack Interval (ft. BGL):	Casing Volume (gal.):		

QUALITY ASSURANCE

METHODS (describe): Low flow

Cleaning Equipment:

Purging: Sampling:

Disposal of Discharged Water:

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	P211 Horiba	Thermometer:	" "
pH Meter:	Horiba C1103	Field Calibration:	PH 4.0
Conductivity Meter:	" "	Field Calibration:	
Filter / Filter Size:		Other:	

SAMPLING MEASUREMENTS

Time	Water Depth (ft BMP)	Cum. Vol. (gal. or L)	Purge Rate (L /m)	Temp. (°C)	pH (S.U.)	Spec. Cond. (mS/cm)	D.O. (mg/L)	Redox (mV)	Turbidity (NTU)	Color
--	--	--	--	± 3%	± 0.1	± 3%	± 10% if >0.5	± 10	± 10%	--
15:20	4.61	.2	.2	17.98	6.74	.626	3.19	67	51.8	
15:30	4.96	.3	.2	18.09	6.66	-628	2.22	71	52.5	
15:35	5.00	.4	.2	18.17	6.62	-628	1.01	76	55.0	
15:40	5.08	.5	.2	18.16	6.59	-626	1.66	80	45.3	
15:45	5.10	.6	.2	18.13	6.52	-626	1.40	84	42.1	
15:50	5.10	.7	.2	18.60	6.50	-621	1.23	96	56.5	
15:55	5.12	.8	.2	18.72	6.45	-621	1.23	97	37.0	
16:00	5.12	.9	.2							

Water Level (ft. BMP) at End of Purge: 5.12

Sample Intake Depth (ft. BMP): 18.0

SAMPLE INVENTORY

Bottles Collected				Filtration		
Time	Volume	Composition (G, P)	No.	(Y / N)	Preservation	Remarks (quality control sample, other)
16:00			6			

Comments:

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Groundwater Sample Collection

Page 1 of 1

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Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	4.69 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	— ft.
Date	1-13-20	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	4.69 ft. BGL
MW ID	MW05	**Location**	Other _____	**Total MW Depth**	27.30 ft. BGL
Sample ID	WG-1620-MW05-2019	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	1 gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	_____ ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1422	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1432	.2	/	4.92	21.7	6.94	690	0.86	-52	6.7
1437	↓	/	4.91	21.6	6.93	660	0.59	-44	4.1
1442	↓	/	4.92	21.6	6.92	670	0.57	-46	4.2

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1455	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1455	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAYTON (name) _____ (signature)

GROUNDWATER SAMPLING RECORD

PAGE ___ of ___

Project Number: 19119232 Project Name: UPRR HWPW Date: 1-13-2020

Sampling Location (well ID, etc.): MW 07

Sample Number: ARWG-1620-MW07-20200113

Sampled by: Tim McSpadden

Measuring Point (MP) of Well: TOC - Steel or (PVC)

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 4.29

Casing Stickup (ft.): 3'

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 24.90 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): 4"

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): (Low Flow - Dedicated Tubing/Equipment)

Cleaning Equipment: (DI/Alconox Rinse)

Purge: (Peristaltic Pump) / SS Pump / Bailer / Bladder Sampling: (Peristaltic Pump) / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H2O drum 1-7-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: P2111 Heron Other: Geo Pump P1102

Multi Meter: Horiba C1103

Field Calibration: pH-3.99 NTU-0 cond 449

Filter / Filter Size:

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
12:30	4.29	.2	.2	17.71	9.11	252	6.56	149	250	Clear/No
12:40	4.41	.3	.2	17.79	5.91	.821	7.30	110	51.2	
12:45	4.43	.4	.2	19.02	4.97	.814	7.16	116	59.5	
12:50	4.44	.5	.2	19.30	4.86	.813	7.15	117	45.4	
12:55	4.46	.6	.2	19.34	4.84	.813	7.13	118	33.1	
13:00	4.46	.7	.2	19.31	4.85	.813	7.11	119	29.4	
13:05	4.51	.8	.2	19.65	4.51	.811	7.06	121	15.9	
13:10	4:52	.9	.2	19.61	4.60	.812	7.05	120	15.4	

WL (ft. BMP) at End of Purge: 4.52 Sample Intake Depth (ft. BMP): 21.

SAMPLE INVENTORY

Time	Bottles Collected	Volume	Composition (G, P)	No.	Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
13:15				2		Neat	

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of ___

Project Number: 19119232 Project Name: UPRR HWPW Date: 1-13-2020

Sampling Location (well ID, etc.): MW 08 Starting Water Level (ft. BMP): 4.45

Sample Number: WG1620 MW 08 20200113 Casing Stickup (ft.): 2.5'

Sampled by: T.M McSpadden WL (ft. BMP): _____ (ft. BGL): _____

Measuring Point (MP) of Well: TOC - Steel or PVC TD (ft. BMP): 25.10 (ft. BGL): _____

Screened Interval (ft. BGL): Ft. water: _____ Casing Dia. (In ID): 4"

Filter Pack Interval (ft. BGL): 1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: Peristaltic Pump / SS Pump / Bailer / Bladder Sampling: Peristaltic Pump / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H2O drum 1-7-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: P2111 Heron Other: Geo Pump P1102

Multi Meter: Horiba C1103

Field Calibration: PH-399 NTU-0 cond 449

Filter / Filter Size:

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
11:00	4.45	.2	.2	20.32	4.74	.612	7.22	100	33.7	Clear/No
11:10	4.61	.3	.2	20.16	4.63	.610	7.20	102	26.4	
11:05	4.63	.4	.2	19.98	4.54	.609	7.16	104	14.9	
11:10	4.65	.5	.2	19.83	4.40	.607	7.18	105	12.1	
11:15	4.65	.6	.2	19.90	3.90	.603	7.14	109	6.1	
11:20	4.64	.7	.2	19.69	3.86	.604	7.13	110	4.9	
11:25	4.65	.8	.2	19.66	3.78	.604	7.12	111	2.1	
11:30	4.65	.9	.2	19.59	3.62	.605	7.10	112	0.1	

WL (ft. BMP) at End of Purge: 4.65 Sample Intake Depth (ft. BMP): 22.

SAMPLE INVENTORY

Time	Bottles Collected	Volume	Composition (G/P)	No.	Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
11:30				2		Neat	

Comments:

Field blank collected @ MW-08

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Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	4.11 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	- ft.
Date	1-14-20	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	4.11 ft. BGL
MW ID	MW09	**Location**	Other	**Total MW Depth**	25.40 ft. BGL
Sample ID	WG-1620-MW09-2019	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	1 gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
0826	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
0836	.2	/	4.31	23.6	6.71	660	1.29	-26	4.7
0841	↓	/	4.33	23.2	6.64	620	1.06	-22	3.1
0846	↓	/	4.33	23.4	6.67	630	1.16	-23	3.2

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
0900	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
0900	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCs / SVOCs

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

GROUNDWATER SAMPLING RECORD

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Project Number: 191923.2 Project Name: UPRR Houston Date: 1-14-2020

Sampling Location (well ID, etc.): MW 10A

Sample Number: WG 1620 MW 10A 20200114

Sampled by: Tim MCS padden

Measuring Point (MP) of Well: TOC - Steel or (PVC)

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 4.67

Casing Stickup (ft.): 3'

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 25.55 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): 4"

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): ~~Low Flow~~ - ~~Dedicated~~ Tubing/Equipment

Cleaning Equipment: ~~DI~~/Alconox Rinse

Purge: ~~Peristaltic Pump~~ / SS Pump / Bailer / Bladder Sampling: ~~Peristaltic Pump~~ / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H2O drum 1-7-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: P 2111 Heron Other: Geo Pump P1102

Multi Meter: Horiba U-1103

Field Calibration: pH-4.01 NTU-0 Cond 4.49

Filter / Filter Size:

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
11:45	4.67	.2	.2	22.74	2.35	.947	6.24	-21	0.0	
11:55	4.96	.3	.2	22.76	2.18	.944	6.26	71	0.0	
12:00	5.19	.4	.2	22.75	2.21	.942	6.27	18	0.0	
12:05	5.24	.5	.2	22.67	2.04	.940	6.28	40	0.0	
12:10	5.29	.6	.2	22.83	1.98	.945	6.29	52	0.0	
12:15	5.31	.7	.2	22.89	1.95	.945	6.29	54	0.0	
12:20	5.33	.8	.2	22.92	1.96	.944	6.30	55	0.0	
12:25	5.34	.9	.2	22.94	1.92	.944	6.30	57	0.0	

WL (ft. BMP) at End of Purge: 5.34 Sample Intake Depth (ft. BMP): 22.

SAMPLE INVENTORY

Time	Bottles Collected	Volume	Composition (G / P)	No.	Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
12:25				2		Heat	

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE ___ of ___

Project Number: 19119232 Project Name: UPRR HWPW Date: 1-14-2020

Sampling Location (well ID, etc.): MW-10B

Sample Number: WG1620MW10B20200114

Sampled by: Tim McSpadden

Measuring Point (MP) of Well: TOC - Steel or (PVC)

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 4.90

Casing Stickup (ft.): 3.

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 46.52 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): 4"

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): (Low Flow) - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: (Peristaltic Pump) / SS Pump / Bailer / Bladder Sampling: (Peristaltic Pump) / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge water drum 1-7-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: P 2111 Heron Other: Geo Pump P1102

Multi Meter: Horiba C1103

Field Calibration: Ph-4.01 ORP-0 Cond 449

Filter / Filter Size:

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
11:00	4.90	.2	.2	22.07	1.94	.990	6.28	-90	17.5	clear/no
11:10	5.15	.3	.2	22.26	0.19	1.06	6.05	-92	0.0	
11:15	5.17	.4	.2	23.30	0.21	1.08	5.90	-94	0.0	
11:20	5.19	.5	.2	23.26	0.05	1.07	5.90	-94	0.0	
11:25	5.19	.6	.2	23.05	0.00	1.06	5.91	-95	0.0	
11:30	5.21	.7	.2	22.78	0.00	1.06	5.92	-97	0.0	
11:35	5.23	.8	.2	22.74	0.00	1.07	5.90	-96	0.0	

WL (ft. BMP) at End of Purge: 5.23 Sample Intake Depth (ft. BMP): 43.

SAMPLE INVENTORY

Time	Bottles Collected	Volume	Composition (G, P)	No.	Filtration (Y / (N))	Preservation (type)	Remarks (quality control sample, other)
11:35				2		Neat	

Comments:

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Ce

GROUNDWATER SAMPLING RECORD

PAGE ___ of ___

Project Number: 19119232 Project Name: UPRR HwPw Date: 1-14-2020

Sampling Location (well ID, etc.): MW 11A

Sample Number: WG 1620 MW 11A 20200114

Sampled by: Tim McSpadden

Measuring Point (MP) of Well: TOC - Steel or (PVC)

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 5.11

Casing Stickup (ft.): 3'

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 24.05 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): 4"

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): (Low Flow) - Dedicated Tubing/Equipment

Cleaning Equipment: DI/(Alconox Rinse)

Purge: (Peristaltic Pump) / SS Pump / Bailer / Bladder Sampling: (Peristaltic Pump) / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H2O drum · 1-7-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: P-2111 Heron Other: Geo pump P1102

Multi Meter: Horiba C1103

Field Calibration: pH-4.01 NTU-0 COND 4.49

Filter / Filter Size:

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
9:55	5.11	.2	.2	21.27	0.40	1.03	6.09	-81	0.0	
10:05	5.22	.3	.2	21.22	0.91	0.921	6.14	-19	0.0	
10:10	5.51	.4	.2	21.30	2.56	.896	6.19	56	11.7	
10:15	5.55	.5	.2	21.27	2.62	.893	6.20	63	10.9	
10:20	5.58	.6	.2	21.37	2.47	.884	6.22	89	7.3	
10:25	5.58	.7	.2	21.41	2.38	.881	6.22	93	3.9	
10:30	5.59	.8	.2	21.44	2.42	.881	6.22	93	4.5	
10:35	5.59	.9	.2	21.49	2.29	.880	6.22	95	7.4	

WL (ft. BMP) at End of Purge: 5.59 Sample Intake Depth (ft. BMP): 21

SAMPLE INVENTORY

Time	Bottles Collected	Volume	Composition (G/P)	No.	Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
10:35				2		Neat	

Comments:

GOLDER
2201 Double Creek Dr., Suite 4004
Round Rock, Texas 78664
Phone: (512) 671-3434 Fax: (512) 671-3446

GROUNDWATER SAMPLING RECORD

PAGE ___ of ___

Project Number: 19119232 Project Name: UPRR HWPW Date: 1-14-2020

Sampling Location (well ID, etc.): MW-113 Starting Water Level (ft. BMP): 5.30

Sample Number: WG1620MW113 20200114 Casing Stickup (ft.): 3'

Sampled by: Tim McSpedden WL (ft. BMP): ____ (ft. BGL): ____

Measuring Point (MP) of Well: TOC - Steel or PVC TD (ft. BMP): 46.80 (ft. BGL): ____

Screened Interval (ft. BGL): Ft. water: ____ Casing Dia. (In ID): 4"

Filter Pack Interval (ft. BGL): 1X Casing Vol (gal.): ____ 3X (gal): ____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: Peristaltic Pump / SS Pump / Bailer / Bladder Sampling: Peristaltic Pump / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H2O drum 1-7-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: P2111 Heron Other: Geo Pump P1112

Multi Meter: Horiba C1103

Field Calibration: PH-4.01 NTU-0 COND-449

Filter / Filter Size: -

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
8:45	5.30	.2	.2	20.92	2.08	1.04	5.20	-71	0.0	Clear/No
8:55	5.62	.5	.2	21.09	0.57	1.03	5.37	-94	0.0	
9:00	5.73	.4	.2	21.12	0.41	1.03	5.47	-102	0.0	
9:05	5.81	.5	.2	21.01	0.00	1.02	5.78	-101	0.0	
9:10	5.86	.6	.2	21.06	0.00	1.02	5.88	-101	0.0	
9:15	5.91	.7	.2	21.09	0.00	1.02	5.90	-101	0.0	
9:20	5.97	.8	.2	21.12	0.00	1.02	5.92	-101	0.0	

WL (ft. BMP) at End of Purge: 5.97 Sample Intake Depth (ft. BMP): 41.

SAMPLE INVENTORY

Time	Bottles Collected	Volume	Composition (G/P)	No.	Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
9:25				2		Neat	

Comments:

GOLDER
2201 Double Creek Dr., Suite 4004
Round Rock, Texas 78664
Phone: (512) 671-3434 Fax: (512) 671-3446

Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	Equipment Decon	☒ Dedicated equipment	Depth to Water	6.04 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	Casing Stickup	– ft.
Date	1-13-20	Reference Point	☒ Top of casing	☐ Depth to Water	6.04 ft. BGL
MW ID	MW12A	Location	Other	Total MW Depth	30.35 ft. BGL
Sample ID	WG-1620-MW12A-2019	Water Quality		MW Diameter	2.0 inches
Pump	☐ Waterra ☐ Submersible	Meter Model	HORIBA	MW Volume	1 gallons
	☒ Peristaltic ☐ Bladder	Unit Number	U-50	Pump Intake Depth	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1612									
1622	.2	/	6.29	23.6	6.79	670	1.21	-37	7.4
1627	↓	/	6.31	23.5	6.72	610	1.03	-33	5.9
1632	↓	/	6.32	23.4	6.71	590	1.04	-34	6.1

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1645	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1645	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

GROUNDWATER SAMPLING RECORD

PAGE ____ of ____

Project Number: 19119232	Project Name: UPRR HwPw	Date: 1-23-2020	
Sample Number: UG-1620-MW-12B-20200123		Starting Water Level (ft. BMP): 5.66	
Sampling Location (well ID, etc.): MW 12B		Casing Stickup (ft.): 4'	
Sampled by: Tim McSpadden		Starting Water Level (ft. BGL):	
Measuring Point (MP) of Well:		Total Depth (ft. BMP): 46.01	
Screened Interval (ft. BGL):		Casing Diameter (In ID): 2"	
Filter Pack Interval (ft. BGL):		Casing Volume (gal.):	

QUALITY ASSURANCE

METHODS (describe): Low Flow

Cleaning Equipment:

Purging: Sampling:

Disposal of Discharged Water:

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	P211 Heron Hi Water	Thermometer:	" "
pH Meter:	Horiba U10	Field Calibration:	pH 4.0 pH 4.0
Conductivity Meter:	" "	Field Calibration:	
Filter / Filter Size:	10 Micron	Other:	Geo pump P1102

SAMPLING MEASUREMENTS

Time	Water Depth (ft BMP)	Cum. Vol. (gal. or L)	Purge Rate (L /m)	Temp. (°C)	pH (S.U.)	Spec. Cond. (mS/cm)	D.O. (mg/L)	Redox (mV)	Turbidity (NTU)	Color
--	--	--	--	± 3%	± 0.1	± 3%	± 10% if >0.5	± 10	± 10%	--
13:20	5.66	.2	.2	19.65	7.04	1.09	0.91	-89	67.7	Clear
13:30	6.71	.3	.2	19.32	7.03	1.10	0.25	-89	0.20	
13:35	6.75	.4	.2	19.24	7.00	1.10	0.13	-89	57.7	
13:40	6.84	.5	.2	19.20	7.02	1.09	0	-89	49.7	
13:45	6.88	.6	.2	19.13	7.01	1.08	0	-89	52.6	
13:50	6.93	.7	.2	19.10	7.01	1.08	0	-89	52.9	
13:55	6.99	.8	.2	19.02	7.00	1.08	0	-89	52.1	
14:00	6.99	.9	.2	18.99	7.01	1.08	0	-88	51.4	

Water Level (ft. BMP) at End of Purge: 6.99 Sample Intake Depth (ft. BMP): 20.

SAMPLE INVENTORY

Bottles Collected				Filtration		
Time	Volume	Composition (G, P)	No.	(Y / N)	Preservation	Remarks (quality control sample, other)
14:00			6	10 micron		

Comments:

Golder Associates Inc.
11231 Richmond Avenue, Suite D104
Houston, TX 77082
(832) 916-3690

Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	Equipment Decon	☒ Dedicated equipment	Depth to Water	24.61 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	Casing Stickup	– ft.
Date	1-13-20	Reference Point	☒ Top of casing	☐ Depth to Water	24.61 ft. BGL
MW ID	MW-12C	Location	Other	Total MW Depth	75.60 ft. BGL
Sample ID	WG-1620-MW12C-2019	Water Quality		MW Diameter	2.0 inches
Pump	☐ Waterra ☐ Submersible	Meter Model	HORIBA	MW Volume	1 gallons
	☒ Peristaltic ☐ Bladder	Unit Number	U-50	Pump Intake Depth	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1519									
1529	.2	/	24.87	21.3	6.92	840	1.01	-86	6.7
1534	↓	/	24.91	21.1	6.83	860	0.83	-77	8.1
1539	↓	/	24.90	21.1	6.84	860	0.81	-79	9.2

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1555	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1555	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCs / SVOCs

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	9.42 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	1-14-20	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	9.42 ft. BGL
MW ID	MW13	**Location**	Other _____	**Total MW Depth**	26.10 ft. BGL
Sample ID	WG-1620-MW13-2019	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	1 gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	_____ ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
0739	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
0749	.2	/	9.67	21.2	6.92	710	0.96	-62	12
0754	↓	/	9.71	21.2	6.94	720	0.71	-56	18
0759	↓	/	9.72	21.3	6.97	720	0.72	-57	17

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
0810	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
0810	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	8.39	ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	–	ft.
Date	1-14-20	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	8.39	ft. BGL
MW ID	MW14	**Location**	Other _____	**Total MW Depth**	44.80	ft. BGL
Sample ID	WG-162D-MW14-20190114	**Water Quality**		**MW Diameter**	2.0	inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	1	gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**		ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1546									
1556	.2	/	8.67	22.4	6.67	1040	1.17	-67	21
1601	↓	/	8.71	22.3	6.61	1050	1.11	-61	15
1606	↓	/	8.72	22.3	6.59	1030	1.09	-62	16
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1615	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1615	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCs / SVOCs

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAYTON (name) _____ (signature)

Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	8.57	ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	-	ft.
Date	1-14-20	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	8.57	ft. BGL
MW ID	MW1SA	**Location**	Other _____	**Total MW Depth**	29.90	ft. BGL
Sample ID	WG-1620-MW1SA-20190114	**Water Quality**		**MW Diameter**	2.0	inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	1	gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**		ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1313	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1322	.2	/	8.79	21.6	6.86	1160	0.91	-76	13
1326	↓	/	8.81	21.4	6.77	1130	0.77	-71	10
1333	↓	/	8.81	21.7	6.79	1120	0.74	-73	11
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1345	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1345	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCs / SVOCs

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	Equipment Decon	☒ Dedicated equipment	Depth to Water	8.39 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	Casing Stickup	– ft.
Date	1-14-20	Reference Point	☒ Top of casing	☐ Depth to Water	8.39 ft. BGL
MW ID	MW15B	Location	Other	Total MW Depth	40.70 ft. BGL
Sample ID	WG-1620-MW15B-20190114	Water Quality		MW Diameter	2.0 inches
Pump	☐ Waterra ☐ Submersible	Meter Model	HORIBA	MW Volume	– gallons
	☒ Peristaltic ☐ Bladder	Unit Number	U-50	Pump Intake Depth	– ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1358									
1408	.2	/	8.61	22.6	6.91	930	0.71	-51	6.7
1413	↓	/	8.62	22.4	6.82	940	0.53	-55	7.4
1418	↓	/	8.61	22.1	6.88	910	0.56	-56	7.2

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1430	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1430	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) (signature)

Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	23.12 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	1-14-20	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	23.12 ft. BGL
MW ID	MW15C	**Location**	Other _____	**Total MW Depth**	75.25 ft. BGL
Sample ID	WG-1620-MW15G20190114	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	7 gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	7 ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1443	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1453	.2	/	23.31	21.6	6.79	860	1.12	-74	8.6
1458	↓	/	23.32	21.1	6.81	810	0.93	-62	6.8
1503	↓	/	23.32	21.3	6.82	820	0.92	-61	7.1

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1520	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1520	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAYTON (name) _____ (signature)

Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	8.23	ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	–	ft.
Date	1-14-20	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	8.23	ft. BGL
MW ID	MW17	**Location**	Other _____	**Total MW Depth**	36.95	ft. BGL
Sample ID	WG-1620-MW17-2019	**Water Quality**		**MW Diameter**	2.0	inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	–	gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	–	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1637									
1647	.2	/	8.42	21.6	7.11	1440	0.52	-61	16
1652	↓	/	8.46	21.7	7.06	1420	0.45	-52	11
1657	↓	/	8.47	21.9	7.04	1410	0.46	-51	12

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1710	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1710	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCs / SVOCs

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAYTON (name) _____ (signature)

Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	23.21	ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	–	ft.
Date	1-15-20	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	23.21	ft. BGL
MW ID	MW7C	**Location**	Other _____	**Total MW Depth**	72.15	ft. BGL
Sample ID	WG-1620-MW7C-20190115	**Water Quality**		**MW Diameter**	2.0	inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	/	gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**		ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
0739	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
0749	.2	/	23.39	22.6	6.92	1270	1.12	-46	11
0754	↓	/	23.41	22.2	6.96	1260	0.84	-36	8.2
0759	↓	/	23.41	23.1	6.97	1260	0.83	-39	9.2

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
0815	60ML	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
0815	40ML / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

GROUNDWATER SAMPLING RECORD

PAGE 1 of ___

Project Number: 19119232 Project Name: HWPW Date: 1-8-2020

Sampling Location (well ID, etc.): MW-18A

Sample Number: WC-1620-MW18A20200108

Sampled by: Tim McSpadden

Measuring Point (MP) of Well: (TOC) - Steel or (PVC)

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 17.71

Casing Stickup (ft.): 18"

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 35.65 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): 2"

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow / Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: Peristaltic Pump / ~~SS Pump~~ / Bailer / Bladder Sampling: Peristaltic Pump / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H2O drum 1-7-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: D2111 Heron Other: Geo pump P 1102

Multi Meter: Horiba C1103

Field Calibration: Ph-4.04 NTU-0 Cond.450

Filter / Filter Size: 10 micron

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/l)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
10:30	17.71	.2	.2	24.03	11.41	1.88	6.78	-1.55	0.0	
10:40	19.23	.3	.2	24.12	0.52	1.80	6.80	-154	0.0	
10:45	19.29	.4	.2	24.00	0.04	1.65	6.81	-146	973	
10:50	19.32	.5	.2	23.96	0.00	1.56	6.77	-145	1000	
10:55	19.36	.6	.2	23.94	0.00	1.38	6.78	-137	10000	
11:00	19.40	.7	.2	23.96	0.00	1.02	6.83	-126	990	
11:05	19.42	.8	.2	24.12	0.00	.952	6.82	-125	978	
11:10	19.43	.9	.2	24.15	0.00	.933	6.83	-125	986	

WL (ft. BMP) at End of Purge: 19.43 Sample Intake Depth (ft. BMP): 32.

SAMPLE INVENTORY

Time	Bottles Collected	Volume	Composition (G, P)	No.	Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
11:10		2.5		9			

Comments:

GOLDER
2201 Double Creek Dr., Suite 4004
Round Rock, Texas 78664
Phone: (512) 671-3434 Fax: (512) 671-3446

GROUNDWATER SAMPLING RECORD

PAGE 1 of ___

Project Number: HWPW19119232 Project Name: HWPW Date: 1-8-2020

Sampling Location (well ID, etc.): MW-18C

Sample Number: WG-1620-MW18C 20200108

Sampled by: T.M McSpadden

Measuring Point (MP) of Well: TOC - Steel or PVC

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 23.54

Casing Stickup (ft.): 1.4'

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 61.80 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): 2"

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: Peristaltic Pump / SS Pump / Bailer / Bladder Sampling: Peristaltic Pump / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H2O drum 1-7-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: D 2111 Heron Other: Geo Pump P1102

Multi Meter: Horiba C 1103

Field Calibration: Ph: 4.04 NTU-0 COND - 450

Filter / Filter Size: W Mc Geo

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
9:30	23.54	.2	.2	19.99	1.98	3.26	11.83	-196	253	clear/no
9:40	25.01	.3	.2	19.78	0.25	3.26	11.88	-203	226	
9:45	25.04	.4	.2	20.33	0.39	3.26	11.90	-214	186	
9:50	25.09	.5	.2	20.38	0.40	3.27	11.91	-219	181	
9:55	25.13	.6	.2	20.75	0.16	3.28	11.90	-220	167	
10:00	25.14	.7	.2	21.21	0.12	3.30	11.90	-224	143	
10:05	25.16	.8	.2	21.53	0.01	3.30	11.89	-230	116	
10:10	25.17	.9	.2	21.58	0.00	3.30	11.89	-230	108	

WL (ft. BMP) at End of Purge: 25.17 Sample Intake Depth (ft. BMP): 60.

SAMPLE INVENTORY

Time	Bottles Collected	Volume	Composition (G) P)	No.	Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
10:10		2.0		9			

Comments:

GOLDER
2201 Double Creek Dr., Suite 4004
Round Rock, Texas 78664
Phone: (512) 671-3434 Fax: (512) 671-3446

Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	25.71	ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	1.0	ft.
Date	1-9-20	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	24.71	ft. BGL
MW ID	MW-19C	**Location**	Other _____	**Total MW Depth**	75.15	ft. BGL
Sample ID	WG-1620-MW19C-20200109	**Water Quality**		**MW Diameter**	2.0	inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	-	gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	-	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1016	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1021	.2	/	26.06	21.9	6.67	1500	2.42	-111	17
1026	↓	/	26.12	21.8	6.71	1530	2.06	-107	13
1031	↓	/	26.13	21.8	6.72	1540	2.07	-108	14
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1045	60ML	P	1	☒ filtered ☐ unfiltered	HNO_3	METALS
1045	40ML / 1L	G / G	5	☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	Equipment Decon	☒ Dedicated equipment	Depth to Water	9.06 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	Casing Stickup	- ft.
Date	1-14-20	Reference Point	☒ Top of casing	☐ Depth to Water	9.06 ft. BGL
MW ID	MW20A	Location	Other	Total MW Depth	22.80 ft. BGL
Sample ID	WG-1620-MW20A-20191114	Water Quality		MW Diameter	2.0 inches
Pump	☐ Waterra ☐ Submersible	Meter Model	HORIBA	MW Volume	1 gallons
	☒ Peristaltic ☐ Bladder	Unit Number	U-50	Pump Intake Depth	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1219									
1228	.2	/	9.26	21.6	6.74	1440	0.96	-91	5.1
1234	↓	/	9.31	21.2	6.76	1410	0.73	-86	3.8
1239	↓	/	9.32	21.3	6.74	1420	0.74	-86	4.2

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1255	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1255	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) (signature)

Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	23.46 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	— ft.
Date		**Reference Point**	☒ Top of casing	☐ **Depth to Water**	23.46 ft. BGL
MW ID	MW21C	**Location**	Other	**Total MW Depth**	74.60 ft. BGL
Sample ID	WG-1620-MW21C-20190114	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	1 gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
0922	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
0932	.2	/	23.61	21.3	7.11	910	0.96	-36	10
0937	↓	/	23.64	21.2	7.10	850	0.76	-31	7.4
0942	↓	/	23.64	21.3	7.06	860	0.79	-31	8.6
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1000	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1000	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCs / SVOCs

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

WG-1620-FD02-20190114

Field Team Leader JOHN BRAYTON
name

signature

GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 9119232	Project Name: UPRR Harper	Date: 2-10-2020	
Sample Number: WG1620 MW22AR 20200210		Starting Water Level (ft. BMP): 1.55	
Sampling Location (well ID, etc.): MW-22AR		Casing Stickup (ft.): 0	
Sampled by: Tim McSpadden		Starting Water Level (ft. BGL):	
Measuring Point (MP) of Well:		Total Depth (ft. BMP): 19.80	
Screened Interval (ft. BGL):		Casing Diameter (In ID): 2"	
Filter Pack Interval (ft. BGL):		Casing Volume (gal.):	

QUALITY ASSURANCE

METHODS (describe): Low Flow

Cleaning Equipment:

Purging: Sampling:

Disposal of Discharged Water:

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	H. Oil Heron 01 7720	Thermometer:	C1113
pH Meter:	Horiba C1113	Field Calibration:	
Conductivity Meter:	C1113	Field Calibration:	
Filter / Filter Size:	10 micron	Other:	Geo Pump P1119

SAMPLING MEASUREMENTS

Time	Water Depth (ft BMP)	Cum. Vol. (gal. or L)	Purge Rate (L /m)	Temp. (°C)	pH (S.U.)	Spec. Cond. (mS/cm)	D.O. (mg/L)	Redox (mV)	Turbidity (NTU)	Color
--	--	--	--	± 3%	± 0.1	± 3%	± 10% if >0.5	± 10	± 10%	--
9:00	1.55	.2	.2	22.33	6.50	1.20	16.40	-33	0.0	LT Brown
9:10	2.36	.3	.2	22.49	6.56	1.24	1.38	-72	910	
9:15	3.01	.4	.2	22.53	6.57	1.23	0.11	-71	852	
9:20	3.34	.5	.2	22.56	6.60	1.09	0.00	-60	818	
9:25	3.47	.6	.2	22.67	6.61	1.04	0.00	-52	648	
9:30	3.53	.7	.2	22.72	6.62	1.03	0.00	-50	611	
9:35	3.67	.8	.2	22.80	6.63	1.01	0.00	-44	502	
9:40	3.72	.9	.2	22.84	6.63	0.993	0.00	-40	219	

Water Level (ft. BMP) at End of Purge: 3.74

Sample Intake Depth (ft. BMP): 17.

SAMPLE INVENTORY

Bottles Collected				Filtration		
Time	Volume	Composition (G) P)	No.	(Y) / N)	Preservation	Remarks (quality control sample, other)
10:00			6			

Comments:

WG1620 MW22AR 20200210 10:00
WG1620 FB14 20200210
Trip Blank 10

Golder Associates Inc.
11231 Richmond Avenue, Suite D104
Houston, TX 77082
(832) 916-3690

GROUNDWATER SAMPLING RECORD

PAGE ____ of ____

Project Number: 19119232	Project Name:	Date: 2-10-2020	
Sample Number: WG-1620 MW-22BR 20200210		Starting Water Level (ft. BMP): 1.44	
Sampling Location (well ID, etc.): MW-22BR		Casing Stickup (ft.): 0	
Sampled by: Tim McSpadden		Starting Water Level (ft. BGL): 1.44	
Measuring Point (MP) of Well:		Total Depth (ft. BMP): 37.80	
Screened Interval (ft. BGL):		Casing Diameter (In ID): 2"	
Filter Pack Interval (ft. BGL):		Casing Volume (gal.):	

QUALITY ASSURANCE

METHODS (describe): Low Flow

Cleaning Equipment:

Purging: Sampling:

Disposal of Discharged Water:

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	H. Oil Heron 017720	Thermometer:	C-1113
pH Meter:	Horiba C1113	Field Calibration:	
Conductivity Meter:	C-1113	Field Calibration:	
Filter / Filter Size:	10 micron	Other:	Grundfos Pump P1119

SAMPLING MEASUREMENTS

Time	Water Depth (ft BMP)	Cum. Vol. (gal. or L)	Purge Rate (L /m)	Temp. (°C)	pH (S.U.)	Spec. Cond. (mS/cm)	D.O. (mg/L)	Redox (mV)	Turbidity (NTU)	Color
--	--	--	--	± 3%	± 0.1	± 3%	± 10% if >0.5	± 10	± 10%	--
10:20	1.44	.2	.2	23.08	6.48	1.24	3.01	-50	135	
10:30	1.72	.3	.2	23.12	6.44	1.25	1.23	-61	124	
10:35	1.68	.4	.2	23.01	6.33	1.34	0.00	-53	21.0	
10:40	1.66	.5	.2	23.00	6.32	1.35	0.00	-52	20.2	
10:45	1.62	.6	.2	23.02	6.32	1.35	0.00	-50	13.3	
10:50	1.66	.7	.2	23.04	6.33	1.36	0.00	-53	11.0	
10:55	1.67	.8	.2	23.01	6.33	1.35	0.00	-57	10.9	
11:00	1.65	.9	.2	23.03	6.33	1.35	0.00	-58	13.2	

Water Level (ft. BMP) at End of Purge: 1.65

Sample Intake Depth (ft. BMP): 34.0

SAMPLE INVENTORY

Bottles Collected				Filtration (Y) N)	Preservation	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
11:00		G	6			

Comments:

Golder Associates Inc.
11231 Richmond Avenue, Suite D104
Houston, TX 77082
(832) 916-3690

GROUNDWATER SAMPLING RECORD

PAGE 1 of ___

Project Number: 91192.32 Project Name: UPRR HWPW Date: 1-9-2020

Sampling Location (well ID, etc.): MW-23C

Sample Number: WG-1620 MW23C 20200109

Sampled by: JIM MCSpadden

Measuring Point (MP) of Well: TOC - Steel or PVC

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 26.59

Casing Stickup (ft.):

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 76.80 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): _____

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: Peristaltic Pump / SS Pump / Bailer / Bladder Sampling: Peristaltic Pump / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H2O drum 1-7-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: D2111 Heron Other: Geo pump P1102

Multi Meter: Horiba C1103

Field Calibration: D-4.05 NTU-0 cond 445

Filter / Filter Size: 10-micron Alte

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
859	26.59	.2	.2	23.11	0.82	.475	9.92	-41	64.7	Clear/no
9:10	26.71	.3	.2	23.08	0.72	.473	9.95	-39	69.8	
9:15	26.72	.4	.2	23.08	.45	.472	9.95	-39	58.8	
9:20	26.74	.5	.2	23.16	0	.469	10.02	-42	50.3	
9:25	26.75	.6	.2	23.22	0	.469	10.02	-42	47.2	
9:30	26.75	.7	.2	23.24	0	.469	10.03	-44	47.1	
9:35	26.77	.8	.2	23.29	0	.469	10.04	-47	47.4	

WL (ft. BMP) at End of Purge: 26.77 Sample Intake Depth (ft. BMP): 70.

SAMPLE INVENTORY

Time	Bottles Collected: Volume	Composition (G/P)	No.	Filtration (Y/ N)	Preservation (type)	Remarks (quality control sample, other)
9:40	2.0		6			

Comments:

No tubing in well

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Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	8.01 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	1-15-20	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	8.01 ft. BGL
MW ID	MW25A	**Location**	Other	**Total MW Depth**	28.80 ft. BGL
Sample ID	WG-1620-MW25A-20190115	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	1 gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1049	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1059	.2	/	8.26	22.2	6.91	1440	0.79	-42	26
1104	↓	/	8.31	22.3	6.96	1420	0.64	-36	20
1109	↓	/	8.32	22.4	6.84	1410	0.67	-37	21
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1120	60mL	P		☐ filtered ☐ unfiltered	HNO_3	METALS
1120	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	16.72	ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	–	ft.
Date	1-15-20	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	16.72	ft. BGL
MW ID	MW25C	**Location**	Other _____	**Total MW Depth**	74.05	ft. BGL
Sample ID	WG-1620-MW25C-20190115	**Water Quality**		**MW Diameter**	2.0	inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	1	gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**		ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1519	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1529	.2	/	16.93	23.4	6.77	1110	0.91	-42	6.7
1534	↓	/	16.96	23.1	6.73	1120	0.71	-47	4.8
1539	↓	/	16.97	23.1	6.72	1130	0.71	-46	5.2
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1550	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1550	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

GROUNDWATER SAMPLING RECORD

PAGE ___ of ___

Project Number: 19119232 Project Name: UPRR HW PW Date: 1-16-2020

Sampling Location (well ID, etc.): MW 26A

Sample Number: WG 1620 MW 26A 20200116

Sampled by: Tim McSpadden

Measuring Point (MP) of Well: TOC - Steel or (PVC)

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 3.91

Casing Stickup (ft.): 0

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 19.90 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): 2"

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: Peristaltic Pump / SS Pump / Bailer / Bladder Sampling: Peristaltic Pump / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H2O drum 1-7-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: P2111 Heron Other: Geo pump P1102

Multi Meter: Horiba C1103

Field Calibration: Ph. 4.0

Filter / Filter Size: 10 Micron

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
15:15	3.91	.2	.2	22.38	4.76	1.47	6.42	-87	0	Brown/no
15:25	4.05	.3	.2	22.43	1.20	1.63	6.40	-87	0	particles
15:30	4.04	.4	.2	22.15	0	2.38	6.08	-71	706	fishing
15:35	4.00	.5	.2	22.04	0	2.40	6.06	-71	1000	up out
15:40	4.02	.6	.2	22.32	0	1.25	6.25	-72	226	of well
15:45	4.04	.7	.2	22.29	0	1.23	6.25	-72	345	to check
15:50	4.09	.8	.2	22.27	0	1.23	6.25	-72	308	the depth
15:55	4.12	.9	.2	22.22	0	1.23	6.24	-71	263	

WL (ft. BMP) at End of Purge: 4.12 Sample Intake Depth (ft. BMP): 16.0

SAMPLE INVENTORY

Bottles Collected Time		Volume	Composition (G, P)	No.	Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
16:00				6			

Comments:

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Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	Equipment Decon	☒ Dedicated equipment	Depth to Water	7.22	ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	Casing Stickup	-	ft.
Date	1-15-20	Reference Point	☒ Top of casing	☐ Depth to Water	7.22	ft. BGL
MW ID	MW27A	Location	Other	Total MW Depth	29.85	ft. BGL
Sample ID	WG-1620-MW27A-20190115	Water Quality		MW Diameter	2.0	inches
Pump	☐ Waterra ☐ Submersible	Meter Model	HORIBA	MW Volume	/	gallons
	☒ Peristaltic ☐ Bladder	Unit Number	U-50	Pump Intake Depth		ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1607	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1617	.2	/	7.43	21.6	6.77	1060	1.14	-36	5.2
1622	↓	/	7.44	21.7	6.75	1080	0.92	-31	4.4
1627	↓	/	7.43	21.9	6.74	1090	0.93	-32	4.7

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1640	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1640	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAYTON (name) (signature)

Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	16.93	ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	-	ft.
Date	1-15-20	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	16.93	ft. BGL
MW ID	MW27C	**Location**	Other	**Total MW Depth**	73.60	ft. BGL
Sample ID	WG-162D-MW27C-20190115	**Water Quality**		**MW Diameter**	2.0	inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	1	gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**		ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1649									
1659	.2	/	17.26	22.7	6.96	1140	1.09	-51	6.7
1704	↓	/	17.29	22.4	6.92	1120	0.79	-46	5.3
1709	↓	/	17.29	22.4	6.91	1120	0.74	-47	5.1

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1720	60ML	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1720	40ML / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

GROUNDWATER SAMPLING RECORD

PAGE ___ of ___

Project Number: 19119232 Project Name: UPRR HWPW Date: 1-16-2020

Sampling Location (well ID, etc.): MW-28A

Sample Number: WG 1620 MW28A20200116

Sampled by: TM McSpadden

Measuring Point (MP) of Well: TOC - Steel or (PVC)

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 5.01

Casing Stickup (ft.): 0

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 25.60 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): 2"

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: Peristaltic Pump / SS Pump / Bailer / Bladder Sampling: Peristaltic Pump / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H2O drum 1-7-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: P2111 Heron Other: Geo Pump P1102

Multi Meter: Horiba C1103

Field Calibration: pH-4.0

Filter / Filter Size:

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
8:30	5.01	.2	.2	22.97	3.01	1.47	5.29	-23	160	clear/no
8:40	5.09	.3	.2	22.37	3.89	1.47	5.61	-46	99.1	
8:45	5.12	.4	.2	22.41	5.22	1.45	5.77	-46	50.1	
8:50	5.17	.5	.2	22.58	5.47	1.45	5.83	-44	34.8	
8:55	5.22	.6	.2	23.25	5.14	1.43	5.97	-40	13.2	
9:00	5.26	.7	.2	23.43	5.63	1.41	6.14	-38	1.5	
9:05	5.30	.8	.2	23.38	5.57	1.41	6.17	-38	2.9	
9:10	5.32	.9	.2	23.43	5.77	1.41	6.18	-38	3.5	

WL (ft. BMP) at End of Purge: 5.32

Sample Intake Depth (ft. BMP): 23.

SAMPLE INVENTORY

Time	Bottles Collected	Volume	Composition (G/P)	No.	Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
9:10				6			

Comments:

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MS MSD

GROUNDWATER SAMPLING RECORD

PAGE ___ of ___

Project Number: 19119232 Project Name: UPRR HWPW Date: 1-16-2020

Sampling Location (well ID, etc.): Jim McSpadden

Sample Number: mw-28C

Sampled by: WG-1620 MW28C20200116

Measuring Point (MP) of Well: TOC - Steel or PVC

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 15.45

Casing Stickup (ft.):

WL (ft. BMP): (ft. BGL):

TD (ft. BMP): 87.30 (ft. BGL):

Ft. water: Casing Dia. (In ID): 2"

1X Casing Vol (gal.): 3X (gal):

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: Peristaltic Pump / SS Pump / Bailer / Bladder Sampling: Peristaltic Pump / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H2O drum 1-7-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: P2111 Heron Other: Geo Pump P1102

Multi Meter: Horiba C1103

Field Calibration: pH-4.0

Filter / Filter Size: 0

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
9:35	15.45	.2	.2	23.92	1.32	0.186	7.58	-159	15.3	Clear/NO
9:45	16.61	.3	.2	23.02	0.92	0.180	7.73	-176	14.9	
9:50	17.12	.4	.2	23.87	0.21	0.168	8.04	-191	10.7	
9:55	17.22	.5	.2	23.96	0.0	0.163	8.23	-200	6.2	
10:00	17.53	.6	.2	23.76	0.0	0.164	8.38	-206	0.5	
10:05	17.73	.7	.2	23.72	0.0	0.164	8.46	-206	0	
10:10	17.91	.8	.2	23.71	0.0	0.163	8.50	-208	0	

WL (ft. BMP) at End of Purge: Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Time	Bottles Collected	Volume	Composition (G, P)	No.	Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
10:15				6			

Comments:

WG-1620 MW28CMS 20200116

WG-1620 MW28CMSD 20200116

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GROUNDWATER SAMPLING RECORD

PAGE ___ of ___

Project Number: 19119232 Project Name: UPRR IHW Pan Date: 1-20-2020

Sampling Location (well ID, etc.): MW-32MR

Sample Number: WG1620gmw32MR20200120

Sampled by: Tim McSpadden

Measuring Point (MP) of Well: TOC - Steel or (PVC)

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 3.86

Casing Stickup (ft.): 0

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 18.11 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): 2"

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): (Low Flow) Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: Peristaltic Pump / SS Pump / Bailer / Bladder Sampling: Peristaltic Pump / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H20 drum 1-2-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: P2111 Heron Other: Geo pump P1102

Multi Meter: Horiba C1103

Field Calibration: PH-4.0

Filter / Filter Size: 10 micron

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
8:30	3.86	.2	.2	17.52	11.89	.946	6.88	3	240	Clear/mod
8:40	4.10	.3	.2	18.14	3.14	.944	6.85	-4	2.55	
8:45	4.06	.4	.2	18.65	.85	.962	6.74	-47	4.96	
8:50	4.04	.5	.2	18.35	.19	.977	6.63	-60	6.06	
8:55	4.04	.6	.2	18.24	.10	.982	6.62	-61	6.00	
9:00	4.04	.7	.2	18.29	0	.984	6.52	-73	4.53	
9:05	4.05	.8	.2	18.49	0	1.02	6.51	-77	3.46	
9:10	4:03	.9	.2							

WL (ft. BMP) at End of Purge: Sample Intake Depth (ft. BMP): 15

SAMPLE INVENTORY 4.03

Time	Bottles Collected	Volume	Composition (G) P)	No.	Filtration (Y) N)	Preservation (type)	Remarks (quality control sample, other)
9:10				6			

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE ___ of ___

Project Number: 19119232 Project Name: UPRR Harper Date: 1-20-2020

Sampling Location (well ID, etc.): MW-32B

Sample Number: WQ1620 MW32B 20200120

Sampled by: Tim McSpadden

Measuring Point (MP) of Well: TOC - (Steel) or PVC

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 4.50

Casing Stickup (ft.): 0

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 36.45 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): 2"

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe) (Low Flow) - Dedicated Tubing/Equipment

Cleaning Equipment: DI/~~Alconox Rinse~~

Purge: (Peristaltic Pump) / SS Pump / Bailer / Bladder Sampling: (Peristaltic Pump) / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H2O drum 1-7-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: P2111 Heron

Multi Meter: Horiba U1103

Field Calibration: PH. 4.0

Filter / Filter Size: 10 micron

Other: Geo Pump P1102

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
9:35	4.50	.2	.2	16.84	4.00	.697	6.79	-23	121	clear/no
9:45	6.55	.3	.2	16.69	1.49	.701	6.78	-30	115	
9:50	6.79	.4	.2	16.94	.08	.706	6.72	-34	105	
9:55	7.01	.5	.2	16.89	0	.708	6.77	-34	101	
10:00	7.11	.6	.2	17.15	0	.689	6.77	-39	101	
10:05	7.14	.7	.2	16.99	0	.690	6.77	-39	102	
10:10	7.17	.8	.2	16.92	0	.691	6.76	-38	102	
10:15	7.20	.9	.2	15.88	0	.684	6.76	-38	93.6	

WL (ft. BMP) at End of Purge: 7.20

Sample Intake Depth (ft. BMP): 31

SAMPLE INVENTORY

Time	Bottles Collected	Volume	Composition (G/P)	No.	Filtration (Y/ N)	Preservation (type)	Remarks (quality control sample, other)
10:15				6			

Comments:

GOLDER

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Duplicate

GROUNDWATER SAMPLING RECORD

PAGE ___ of ___

Project Number: 19119232 Project Name: UPRR HWPW Date: 1-20-2020

Sampling Location (well ID, etc.): MW-33A

Sample Number: WG-1620 MW33A20200120

Sampled by: Tim McSpadden

Measuring Point (MP) of Well: TOC - (Steel) or PVC

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 4.41

Casing Stickup (ft.): 0

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 25.20 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): 2"

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: Peristaltic Pump / SS Pump / Bailer / Bladder Sampling: Peristaltic Pump / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge Hot drum 1-7-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: P2111 Heron Other: Geo Pump P1102

Multi Meter: Horiba C1103

Field Calibration: Ph. 4-0-

Filter / Filter Size: 10 micron

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
12:00	4.41	.2	.2	20.87	1.90	1.36	6.65	-21	140	clear/no
12:10	4.58	.3	.2	21.27	.35	1.36	6.68	-31	140	
12:15	4.62	.4	.2	21.65	0	1.37	6.64	-44	79.2	
12:20	4.61	.5	.2	22.11	0	1.39	6.50	-54	80.4	
12:25	4.64	.6	.2	22.21	0	1.37	6.49	-56	56.2	
12:30	4.62	.7	.2	22.56	0	1.38	6.47	-59	46.9	
12:35	4.58	.8	.2	22.57	0	1.38	6.47	-61	48.7	
12:40	4.56	.9	.2	22.92	0	1.39	6.47	-61	44.8	

WL (ft. BMP) at End of Purge: 4.56

Sample Intake Depth (ft. BMP): 22.

SAMPLE INVENTORY

Time	Bottles Collected	Volume	Composition (G/P)	No.	Filtration (Y/N)	Preservation (type)	Remarks (quality control sample, other)
12:45				12			

Comments:

Duplicate
WG-1620 FD05 20200120

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Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	Equipment Decon	☒ Dedicated equipment	Depth to Water	5.06 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	Casing Stickup	- ft.
Date	1-15-20	Reference Point	☒ Top of casing	☐ Depth to Water	5.06 ft. BGL
MW ID	MW33BR	Location	Other	Total MW Depth	38.05 ft. BGL
Sample ID	WG-1620-MW33BR-20190115	Water Quality		MW Diameter	2.0 inches
Pump	☐ Waterra ☐ Submersible	Meter Model	HORIBA	MW Volume	1 gallons
	☒ Peristaltic ☐ Bladder	Unit Number	U-50	Pump Intake Depth	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1424									
1434	.2	/	5.22	21.4	6.91	1560	0.74	-31	6.7
1439	↓	/	5.26	21.4	6.92	1520	0.56	-26	4.7
1444	↓	/	5.27	21.6	6.92	1530	0.59	-27	5.1

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1500	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1500	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCs / SVOCs

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

GROUNDWATER SAMPLING RECORD

PAGE ___ of ___

Project Number: 19119232 Project Name: UPRR HWPW Date: 1-10-2020

Sampling Location (well ID, etc.): MW 35A

Sample Number: WG 1620 MW35A 20200110

Sampled by: Tim McSpadden

Measuring Point (MP) of Well: TOC - Steel or (PVC)

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 4.42

Casing Stickup (ft.): 0

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 28.25 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): 2"

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: Peristaltic Pump / SS Pump / Bailer / Bladder Sampling: Peristaltic Pump / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H2O drum 1-7-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: P2111 Heron Other: Geo Pump P1102

Multi Meter: Horiba C1103

Field Calibration: Ph-7.99. ntu-0 cond 4.49

Filter / Filter Size: 10 micron

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
10:40	4.42	.2	.2	23.54	1.99	2.17	6.41	-33	47.1	
10:50	4.91	.3	.2	23.63	.84	2.32	6.25	-39	34.9	
10:55	4.89	.4	.2	23.65	.22	2.33	6.23	-42	35.6	
11:00	4.98	.5	.2	23.58	0	2.34	6.20	-48	27.2	
11:05	4.90	.6	.2	23.52	0	2.34	6.19	-51	24.4	
11:10	4.92	.7	.2	23.52	0	2.33	6.19	-54	22.9	
11:15	4.92	.8	.2	23.52	0	2.29	6.20	-55	22.5	

WL (ft. BMP) at End of Purge: 4.92 Sample Intake Depth (ft. BMP): 25

SAMPLE INVENTORY

Bottles Collected					Filtration	Preservation	Remarks
Time		Volume	Composition (G,P)	No.	(Y) N)	(type)	(quality control sample, other)
11:20				6			

Comments:

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Round Rock, Texas 78664
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GROUNDWATER SAMPLING RECORD

PAGE ___ of ___

Project Number: 19119232 Project Name: UPRR HWPW Date: 1-10-2020

Sampling Location (well ID, etc.): MW-35B Starting Water Level (ft. BMP): 4.65

Sample Number: WG-1620-MW35B-20200110 Casing Stickup (ft.): 0

Sampled by: Tim McSpadden WL (ft. BMP): ___ (ft. BGL): ___

Measuring Point (MP) of Well: TOC - Steel or PVC TD (ft. BMP): 42.95 (ft. BGL): ___

Screened Interval (ft. BGL): Ft. water: ___ Casing Dia. (In ID): 2"

Filter Pack Interval (ft. BGL): 1X Casing Vol (gal.): ___ 3X (gal): ___

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: Peristaltic Pump / SS Pump / Bailer / Bladder Sampling: Peristaltic Pump / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H2O drum 1-7-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: P-2111 Heron Other: Geo Pump P1102

Multi Meter: Horiba U1103

Field Calibration: PH-3.99 NTU-0 COND 4MC

Filter / Filter Size: 10 micron

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
12:00	4.65	.2	.2	23.17	.92	4.64	6.57	-88	0.0	Brown/yes
12:10	5.31	.3	.2	23.17	0	1.71	6.50	-64	0.0	clear/no
12:15	5.49	.4	.2	23.05	0	1.16	6.55	-79	24.7	clear/no
12:20	5.58	.5	.2	23.25	0	1.33	6.38	-84	16.2	
12:25	5.59	.6	.2	23.29	0	1.36	6.38	-85	15.3	
12:30	5.60	.7	.2	23.37	0	1.40	6.38	-85	11.9	
12:35	5.61	.8	.2	23.41	0	1.40	6.38	-85	11.2	

WL (ft. BMP) at End of Purge: 5.61 Sample Intake Depth (ft. BMP): 33

SAMPLE INVENTORY

Time	Bottles Collected	Volume	Composition (G/P)	No.	Filtration (Y/ N)	Preservation (type)	Remarks (quality control sample, other)
12:45				6			

Comments:

Duplicate
WG-1620-FD01-20200110

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Round Rock, Texas 78664
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Stop work 12:30.

GROUNDWATER SAMPLING RECORD

PAGE 1 of ___

Project Number: 19119232 Project Name: UPRR HWPU Date: 1-9-2020

Sampling Location (well ID, etc.): MW 36A

Sample Number: WG-1620 MW 36A 20200109

Sampled by: Tim McSpaddean

Measuring Point (MP) of Well: TOC - Steel or (PVC)

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 8.83

Casing Stickup (ft.): 0

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 27.35 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): 2"

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: Peristaltic Pump / SS Pump / Bailer / Bladder Sampling: Peristaltic Pump / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H2O drum 1-7-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: P2111 Heron Other: Geo pump P1102

Multi Meter: Horiba C1103

Field Calibration: pH 4.01 NTU 0 Cond 445

Filter / Filter Size: 10 micron

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
15:15	8.83	.2	.2	23.60	11.0	.963	7.03	12	0	Clear/no
15:25	9.11	.3	.2	23.61	4.85	.965	7.01	11	0	
15:30	10.82	.4	.2	23.82	1.41	.8221	6.97	42	183	
15:35	11.08	.5	.2	23.84	2.20	.799	6.97	45	139	
15:40	11.22	.6	.2	23.89	2.36	.791	6.97	49	103	
15:45	11.37	.7	.2	23.88	2.28	.790	6.97	50	90.3	
15:50	11.39	.8	.2	23.84	2.23	.791	6.97	50	88.2	
15:55	11.42	.9	.2	23.86	2.18	.790	6.97	51	84.1	

WL (ft. BMP) at End of Purge: 11.42 Sample Intake Depth (ft. BMP): 24.

SAMPLE INVENTORY

Time	Bottles Collected	Volume	Composition (G/P)	No.	Filtration (Y/ N)	Preservation (type)	Remarks (quality control sample, other)
16:00		2.5		6			

Comments:

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Round Rock, Texas 78664
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GROUNDWATER SAMPLING RECORD

PAGE 1 of ___

Project Number: 191192.32 Project Name: URR HW PW Date: 1-9-2020

Sampling Location (well ID, etc.): MW-36B

Sample Number: WG-1620 MW36B 20200109

Sampled by: T. McSpadden

Measuring Point (MP) of Well: TOC - Steel or (PVC)

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): .39

Casing Stickup (ft.): 0

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 42.85 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): 2"

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: Peristaltic Pump / SS Pump / Bailer / Bladder Sampling: Peristaltic Pump / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H2O drum 1-7-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: P2111 Heron Other: Geo Pump P-1102

Multi Meter: Horiba C1103

Field Calibration: Ph 4.00 NTU-0 Cond 445

Filter / Filter Size: 10 Micron Filter

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
14:00	0.39	.2	.2	22.61	2.82	.153	7.91	41	13.4	
1410	1.51	.3	.2	22.50	2.14	.152	7.84	47	8.2	
1415	2.21	.4	.2	22.40	2.02	.161	7.76	53	8.1	
1420	2.65	.5	.2	22.55	1.64	.149	7.51	64	8.1	
1425	2.77	.6	.2	22.56	1.56	.149	7.45	67	7.6	
1430	2.86	.7	.2	22.79	1.49	.149	7.34	8371	8.3	
1435	3.27	.8	.2	22.93	1.46	.149	7.32	73	8.9	

WL (ft. BMP) at End of Purge: 3.27 Sample Intake Depth (ft. BMP): 38

SAMPLE INVENTORY

Bottles Collected					Filtration (Y) N)	Preservation (type)	Remarks (quality control sample, other)
Time		Volume	Composition (G/P)	No.			
14:40		2.0		6			

Comments:

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Round Rock, Texas 78664
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Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	Equipment Decon	☒ Dedicated equipment	Depth to Water	82.06 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	Casing Stickup	- ft.
Date	1-16-20	Reference Point	☒ Top of casing	☐ Depth to Water	82.06 ft. BGL
MW ID	MW36D	Location	Other	Total MW Depth	110.10 ft. BGL
Sample ID	WG-1620-MW36D-20190116	Water Quality		MW Diameter	2.0 inches
Pump	☐ Waterra ☐ Submersible	Meter Model	HORIBA	MW Volume	1 gallons
	☒ Peristaltic ☐ Bladder	Unit Number	U-50	Pump Intake Depth	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1652	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1702	.2	/	82.29	21.9	6.71	1360	1.39	-73	6.7
1707	↓	/	82.31	21.4	6.72	1320	1.09	-70	7.2
1712	↓	/	82.32	21.3	6.74	1330	1.12	-71	7.1
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1725	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1725	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) (signature)

GROUNDWATER SAMPLING RECORD

PAGE _____ of _____

Project Number: 19119232	Project Name: UPRR HWPW	Date: 1-21-2020	
Sample Number: MW 38A		Starting Water Level (ft. BMP): 1.51	
Sampling Location (well ID, etc.): WG1620MW38A20200121		Casing Stickup (ft.): 0	
Sampled by: TIM MCSpadden		Starting Water Level (ft. BGL):	
Measuring Point (MP) of Well: TOC		Total Depth (ft. BMP): 37.60	
Screened Interval (ft. BGL):		Casing Diameter (In ID): 2"	
Filter Pack Interval (ft. BGL):		Casing Volume (gal.):	

QUALITY ASSURANCE

METHODS (describe): Low Flow

Cleaning Equipment:

Purging: Sampling:

Disposal of Discharged Water:

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: P211 Heron Thermometer: " "

pH Meter: Horiba U-10 Field Calibration: Ph. 4.0

Conductivity Meter: " " Field Calibration:

Filter / Filter Size: Other:

SAMPLING MEASUREMENTS

Time	Water Depth (ft BMP)	Cum. Vol. (gal. or L)	Purge Rate (L /m)	Temp. (°C)	pH (S.U.)	Spec. Cond. (mS/cm)	D.O. (mg/L)	Redox (mV)	Turbidity (NTU)	Color
--	--	--	--	± 3%	± 0.1	± 3%	± 10% if >0.5	± 10	± 10%	--
10:30	1.51	.2	.2	19.08	7.34	.507	5.05	8	42.2	Clear/no
10:40	1.65	.3	.2	19.42	7.34	.499	2.87	18	42.0	
10:45	1.69	.4	.2	18.27	7.18	.606	.88	32	8.4	
10:50	1.68	.5	.2	18.17	7.02	.769	.31	26	8.9	
10:55	1.66	.6	.2	18.52	6.89	.865	.11	14	8.2	
11:00	1.67	.7	.2	18.27	6.88	.803	.02	14	8.1	
11:05	1.69	.8	.2	18.21	6.90	.805	0	12	7.9	
11:10										

Water Level (ft. BMP) at End of Purge: Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration		
Time	Volume	Composition (G/P)	No.	(Y/N)	Preservation	Remarks (quality control sample, other)
11:10			6			

Comments:

Golder Associates Inc.
11231 Richmond Avenue, Suite D104
Houston, TX 77082
(832) 916-3690

GROUNDWATER SAMPLING RECORD

PAGE ____ of ____

Project Number: 19119252	Project Name: UPRR HWPW	Date: 1-21-2026	
Sample Number: MW 3813		Starting Water Level (ft. BMP): 3.79	
Sampling Location (well ID, etc.): WG-1620/MW38B20210121		Casing Stickup (ft.): 3'	
Sampled by: TIM MCSpadden		Starting Water Level (ft. BGL):	
Measuring Point (MP) of Well: TOC		Total Depth (ft. BMP): 35.70 Soft bottom	
Screened Interval (ft. BGL):		Casing Diameter (In ID): 2"	
Filter Pack Interval (ft. BGL):		Casing Volume (gal.):	

QUALITY ASSURANCE

METHODS (describe): Low Flow

Cleaning Equipment:

Purging: Sampling:

Disposal of Discharged Water:

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	P211 Heron	Thermometer:	" "
pH Meter:	Horiba U1103	Field Calibration:	PH. 4.0
Conductivity Meter:	" "	Field Calibration:	
Filter / Filter Size:	10 micron	Other:	

SAMPLING MEASUREMENTS

Time	Water Depth (ft BMP)	Cum. Vol. (gal. or L)	Purge Rate (L /m)	Temp. (°C)	pH (S.U.)	Spec. Cond. (mS/cm)	D.O. (mg/L)	Redox (mV)	Turbidity (NTU)	Color
--	--	--	--	± 3%	± 0.1	± 3%	± 10% if >0.5	± 10	± 10%	--
12:00	3.79	.2	.2	18.75	7.04	1.33	3.20	-60	254	
12:10	4.08	.3	.2	19.28	6.59	1.32	.69	-53	264	
12:15	3.98	.4	.2	19.18	6.33	1.29	0	-44	193	
12:20	3.99	.5	.2	18.69	6.28	1.29	0	-45	149	
12:25	3.99	.6	.2	18.86	6.26	1.31	0.39	-45	145	
12:30	3.97	.7	.2	18.79	6.24	1.30	~~120~~ 0	-45	116	
12:35	3.98	.8	.2	18.68	6.23	1.30	.34	-46	88.9	
12:40	3.97	.9	.2	18.59	6.22	1.30	.45	-46	73.8	

Water Level (ft. BMP) at End of Purge: 3.97 Sample Intake Depth (ft. BMP): 31

SAMPLE INVENTORY

Bottles Collected				Filtration		Remarks
Time	Volume	Composition (G/P)	No.	(Y/N)	Preservation	(quality control sample, other)
13:45			6			

Comments:

Golder Associates Inc.
11231 Richmond Avenue, Suite D104
Houston, TX 77082
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Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	6.02 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	- ft.
Date	1-13-20	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	6.02 ft. BGL
MW ID	MW39B	**Location**	Other _____	**Total MW Depth**	41.25 ft. BGL
Sample ID	WG-162D-MW39B-2019	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	1 gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	_____ ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1703									
1713	.2	/	6.31	21.8	6.81	1260	0.79	-91	8.2
1718	↓	/	6.34	21.7	6.82	1230	0.64	-80	7.7
1723	↓	/	6.35	21.7	6.82	1240	0.67	-81	7.8
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1735	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1735	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	6.17 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	1-13-20	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	6.17 ft. BGL
MW ID	MW40B	**Location**	Other	**Total MW Depth**	42.55 ft. BGL
Sample ID	WG-1620-MW40B-2019	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	1 gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1131	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1141	.2	1	6.29	22.9	6.91	1620	0.74	-72	4.7
1146	↓	1	6.36	22.4	6.85	1620	0.61	-70	5.8
1151	↓	1	6.35	22.7	6.86	1610	0.63	-71	5.7
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1210	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1210	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAYTON (name) (signature)

GROUNDWATER SAMPLING RECORD

PAGE ____ of ____

Project Number: 19119232	Project Name: UPRR HWPW	Date: 1-23-2020	
Sample Number: WC 1620 MW 41B 20200123		Starting Water Level (ft. BMP): 4.20	
Sampling Location (well ID, etc.): MW 41B		Casing Stickup (ft.): 4'	
Sampled by: Tim McSpadden		Starting Water Level (ft. BGL):	
Measuring Point (MP) of Well:		Total Depth (ft. BMP): 42.63	
Screened Interval (ft. BGL):		Casing Diameter (In ID): 6 2" PVC	
Filter Pack Interval (ft. BGL):		Casing Volume (gal.):	

QUALITY ASSURANCE

METHODS (describe): Low Flow

Cleaning Equipment:

Purging: Sampling:

Disposal of Discharged Water:

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	P211 Heron Hi Water	Thermometer:	" "
pH Meter:	Horiba C1103	Field Calibration:	PH 4.0 PH 7.0
Conductivity Meter:	" "	Field Calibration:	
Filter / Filter Size:		Other:	Geo Pump 1402

SAMPLING MEASUREMENTS

Time	Water Depth (ft BMP)	Cum. Vol. (gal. or L)	Purge Rate (L /m)	Temp. (°C)	pH (S.U.)	Spec. Cond. (mS/cm)	D.O. (mg/L)	Redox (mV)	Turbidity (NTU)	Color
--	--	--	--	± 3%	± 0.1	± 3%	± 10% if >0.5	± 10	± 10%	--
12:00	4.20	.2	.2	18.29	6.96	1.28	2.16	-130	13.4	Clear
12:10	4.40	.3	.2	18.23	6.96	1.28	1.16	-136	10.2	
12:15	4.44	.4	.2	18.19	6.87	1.28	.75	-135	6.4	
12:20	4.46	.5	.2	18.23	6.85	1.28	.41	-132	4.6	
12:25	4.48	.6	.2	18.25	6.80	1.28	0.11	-124	8.2	
12:30	4.52	.7	.2	18.27	6.80	1.28	0	-124	9.4	
12:35	4.55	.8	.2	18.29	6.80	1.28	0	-124	8.2	

Water Level (ft. BMP) at End of Purge: 4.55

Sample Intake Depth (ft. BMP): 35.6

SAMPLE INVENTORY

Bottles Collected				Filtration		
Time	Volume	Composition (G/P)	No.	(Y / N)	Preservation	Remarks (quality control sample, other)
12:40			6			

Comments:

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Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	Equipment Decon	☒ Dedicated equipment	Depth to Water	6.97 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	Casing Stickup	– ft.
Date	1-13-20	Reference Point	☒ Top of casing	☐ Depth to Water	6.97 ft. BGL
MW ID	MW42B	Location	Other	Total MW Depth	43.80 ft. BGL
Sample ID	WG-1620-MW42B-2019	Water Quality		MW Diameter	2.0 inches
Pump	☐ Waterra ☐ Submersible	Meter Model	HORIBA	MW Volume	1 gallons
	☒ Peristaltic ☐ Bladder	Unit Number	U-50	Pump Intake Depth	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1232	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1242	.2	/	7.19	21.9	6.77	1450	0.96	-41	7.3
1247	↓	/	7.22	21.6	6.75	1470	0.81	-36	6.2
1252	↓	/	7.21	21.7	6.74	1470	0.84	-39	6.9

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1310	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1310	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

GROUNDWATER SAMPLING RECORD

PAGE ___ of ___

Project Number: 19119232 Project Name: HWPW UPRR Date: 1-9-2020

Sampling Location (well ID, etc.): MW 44A

Sample Number: WG 1620 MW44A 20200109

Sampled by: TIM MCSpadden

Measuring Point (MP) of Well: TOC - Steel or (PVC)

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 10.14

Casing Stickup (ft.): 0

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 28.05 (ft. BGL): *

Ft. water: _____ Casing Dia. (In ID): 2"

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): (Low Flow) - Dedicated Tubing/Equipment

Cleaning Equipment: DI/(Alconox Rinse)

Purge: (Peristaltic Pump) / SS Pump / Bailer / Bladder Sampling: (Peristaltic Pump) / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H2O drum

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: D211 Heron Other: Geo Pump P-1102

Multi Meter: Horiba C1103

Field Calibration: pH-4.08 NTU-0 Cond-445

Filter / Filter Size: 10 micron Poly

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
13:00	10.18	.2	.2	23.38	0.88	.814	7.21	-95	22.2	
13:10	10.34	.3	.2	23.35	0.63	.813	7.19	-95	18.7	
13:15	10.38	.4	.2	23.25	0.16	.806	7.09	-93	15.5	
13:20	10.39	.5	.2	23.25	0.41	.795	7.02	-91	14.4	
13:25	10.41	.6	.2	23.26	0.41	.795	7.03	-91	14.0	

WL (ft. BMP) at End of Purge: 10.41 Sample Intake Depth (ft. BMP): 25

SAMPLE INVENTORY

Bottles Collected					Filtration	Preservation	Remarks
Time		Volume	Composition (G, P)	No.	(Y / N)	(type)	(quality control sample, other)
13:30		2.0	G	6	N		

Comments:

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Phone: (512) 671-3434 Fax: (512) 671-3446

Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	16.81 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	- ft.
Date	1-15-20	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	16.81 ft. BGL
MW ID	MW44C	**Location**	Other _____	**Total MW Depth**	47.80 ft. BGL
Sample ID	WG-1620-MW44C-20190115	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	1 gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	_____ ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1241									
1251	.2	/	17.06	21.6	6.91	1140	0.91	-41	6.2
1256	↓	/	17.11	21.4	6.82	1120	0.71	-33	5.7
1301	↓	/	17.12	21.7	6.84	1110	0.72	-34	5.2
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1315	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1315	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCs / SVOCs

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAYTON (name) _____ (signature)

GROUNDWATER SAMPLING RECORD

PAGE ___ of ___

Project Number: 19119232 Project Name: UPRR HW PW Date: 1-20-2020

Sampling Location (well ID, etc.): MW 45 C

Sample Number: WG1620MW45C20200120

Sampled by: T.M McSpadden

Measuring Point (MP) of Well: TOC - Steel or PVC

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 16.01

Casing Stickup (ft.):

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 70.60 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): 2"

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: Peristaltic Pump / SS Pump / Bailer / Bladder Sampling: Peristaltic Pump / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H2O drum 1-7-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: P2111 Heron

Multi Meter: Horiba C1103

Field Calibration: PH. 4.0

Filter / Filter Size: 10 micron

Other: Geo Pump P1102

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
15:50	16.01	.2	.2	21.85	15.19	.245	8.09	-9	52.2	clear/nw
16:00	16.71	.3	.2	21.70	.52	.245	8.02	-3	49.7	
16:05	16.79	.4	.2	21.66	.35	.253	7.80	1	47.2	
16:10	16.66	.5	.2	21.60	.22	.257	7.53	2	49.1	
16:15	16.61	.6	.2	21.36	.05	.246	7.64	6	33.4	
16:20	16.63	.7	.2	20.38	0.0	.234	7.54	11	16.7	
16:25	16.66	.8	.2	20.23	0.5	.233	7.50	2	15.1	
16:30	16.74	.9	.2	20.95	0.0	.227	7.57	-10	39.4	

WL (ft. BMP) at End of Purge: 16.74

Sample Intake Depth (ft. BMP): 60.0

SAMPLE INVENTORY

Bottles Collected					Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time		Volume	Composition (G, P)	No.			
16:30				6			

Comments:

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Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	Equipment Decon	☒ Dedicated equipment	Depth to Water	16.34 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	Casing Stickup	– ft.
Date	1-15-20	Reference Point	☒ Top of casing	☐ Depth to Water	16.34 ft. BGL
MW ID	MW46C	Location	Other	Total MW Depth	72.80 ft. BGL
Sample ID	WG-1620-MW46C-20190115	Water Quality		MW Diameter	2.0 inches
Pump	☐ Waterra ☐ Submersible	Meter Model	HORIBA	MW Volume	1 gallons
	☒ Peristaltic ☐ Bladder	Unit Number	U-50	Pump Intake Depth	1 ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
0952									
1002	.2	/	16.56	23.4	6.74	1160	1.09	-31	26
1007	↓	/	16.57	23.5	6.72	1170	1.06	-25	18
1012	↓	/	16.57	23.4	6.71	1170	1.07	-26	19
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1025	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1025	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	17.28 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	ft.
Date	1-16-20	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	ft. BGL
MW ID	MW 47C	**Location**	Other	**Total MW Depth**	68.85 ft. BGL
Sample ID	WG-1620-MW47C-20200116	**Water Quality**		**MW Diameter**	inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1033	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1043	.2	/	17.46	22.7	6.91	1260	1.39	-27	23
1048	↓	/	17.47	22.4	6.96	1240	1.07	-36	12
1053	↓	/	17.47	22.5	6.94	1240	1.08	-36	13

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1105	60ML	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1105	40ML / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	17.09 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	ft.
Date	1-16-20	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	ft. BGL
MW ID	MW48C	**Location**	Other	**Total MW Depth**	72.50 ft. BGL
Sample ID	WG-1620-MW48C-20200116	**Water Quality**		**MW Diameter**	inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
0947	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
0957	.2	/	17.29	22.8	7.11	980	2.34	-96	16
1002	↓	/	17.31	22.9	7.13	960	1.96	-91	17
1007	↓	/	17.31	22.8	7.11	960	1.95	-92	17
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1020	60ML	P	1	☒ filtered ☐ unfiltered	HNO_3	METALS
1020	40ML / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) (signature)

49A

GROUNDWATER SAMPLING RECORD

PAGE 1 of ___

Project Number: 19119232 Project Name: VPRR HWPW Date: 1-7-2020

Sampling Location (well ID, etc.): MW-49A

Sample Number: WG-1620-MW49A-20200107

Sampled by: Tim McSpadden

Measuring Point (MP) of Well: TOC - Steel or PVC

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 11.12

Casing Stickup (ft.): 0

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 30.18 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): 2"

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow / Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: Peristaltic Pump / SS Pump / Bailer / Bladder Sampling: Peristaltic Pump / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H2O drum.

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: D211 Heron Other: Portable sampler P1102

Multi Meter: Horiba U1103

Field Calibration: PH-3.99 ORP-0 cond 4.52

Filter / Filter Size: 10 micron

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
12:30	11.12	.2	.2	21.40	9.64	1.00	6.33	-37	2.86	Clear/no
12:40	11.41	.3	.2	22.79	6.20	1.00	6.57	-86	224	
12:45	11:44	.4	.2	22.90	6.60	1.01	6.60	-94	188	
12:50	11:48	.5	.2	22.99	5.37	1.01	6.63	-98	165	
12:55	11.52	.6	.2	23.18	4.89	1.00	6.63	-102	142	
13:00	11:54	.7	.2	23.73	0.29	.979	6.65	-100	124	
13:05	11:56	.8	.2	23.91	0.21	.963	6.65	-101	91.4	
13:10	11:59	.9	.2	24.69	0.13	.845	6.67	-99	31.2	

WL (ft. BMP) at End of Purge: 11.59 Sample Intake Depth (ft. BMP): 27.

SAMPLE INVENTORY

Bottles Collected Time		Volume	Composition (G/P)	No.	Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
13:10		1.5		9			

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 2 of ___

Project Number: 19119232 Project Name: UPRR HWPW Date: 1-7-2020

Sampling Location (well ID, etc.): MW-49B

Sample Number: WG-1620-MW49B-20200107

Sampled by: Tim McSpadden

Measuring Point (MP) of Well: (TOC) - Steel or (PVC)

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 11.57 20.09

Casing Stickup (ft.): 0

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 33.05 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): 2"

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): (Low Flow) - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: (Peristaltic Pump) / SS Pump / Bailer / Bladder Sampling: (Peristaltic Pump) / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H2O drum

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: D211 Heron Other: Portable Sampler P-1102

Multi Meter: Horiba C1103

Field Calibration: PH-3.99 NTU-0 cond 4,52

Filter / Filter Size: 10 micron

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
13:45	11.51	.2	.2	25.64	4.20	.708	6.91	-76	81.2	
13:55	11.76	.3	.2	25.54	4.10	.703	6.91	-76	85.4	
14:00	11.83	.4	.2	24.89	3.62	.714	6.88	-70	69.2	
14:05	11.93	.5	.2	24.90	3.41	.715	6.87	-69	63.2	
14:10	11.85	.6	.2	24.86	3.51	.714	6.86	-68	60.2	
14:15	11.86	.7	.2	24.88	3.06	.716	6.81	-65	74.2	
14:20	11.86	.8	.2	24.90	3.00	.716	6.80	-64	72.7	
14:25	11.86	.9	.2	24.87	2.73	.716	6.76	-61	58.9	

WL (ft. BMP) at End of Purge: 11.86 Sample Intake Depth (ft. BMP): 15.0

SAMPLE INVENTORY

Bottles Collected					Filtration	Preservation	Remarks
Time		Volume	Composition (S P)	No.	(Y / N)	(type)	(quality control sample, other)
14:30		1.5		9			

Comments:

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Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	7.09 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	- ft.
Date	1-9-20	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	7.09 ft. BGL
MW ID	MW50A	**Location**	Other	**Total MW Depth**	24.80 ft. BGL
Sample ID	WG-1620-MW50A-2019	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1643									
1658	.2	/	7.31	21.6	7.11	1140	0.92	-61	7.2
1703	↓	/	7.32	21.5	7.12	1130	0.81	-52	8.6
1708	↓	/	7.32	21.4	7.06	1120	0.74	-51	8.7

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1715	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1715	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	8.47 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	— ft.
Date	1-9-20	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	8.47 ft. BGL
MW ID	MW51A	**Location**	Other	**Total MW Depth**	24.90 ft. BGL
Sample ID	WG-162D-MW51A-2019	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	— gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	— ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1116	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1126	.2	/	8.72	20.4	7.12	1630	1.14	-71	9.2
1131	↓	/	8.75	20.6	7.13	1640	0.96	-72	7.1
1136	↓	/	8.76	20.7	7.17	1670	0.93	-72	6.7
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1150	60ML	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1150	40ML / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	20.34	ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	-	ft.
Date	1-9-20	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	20.34	ft. BGL
MW ID	MW51C	**Location**	Other	**Total MW Depth**	72.80	ft. BGL
Sample ID	WG-1620-MW51C-2019	**Water Quality**		**MW Diameter**	2.0	inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**		gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**		ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1207	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1217	.2	/	20.62	21.3	7.11	1460	0.81	-67	6.1
1223	↓	/	20.61	21.1	7.05	1420	0.51	-60	7.9
1227	↓	/	20.61	21.2	7.06	1430	0.47	-61	7.7
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1240	60ML	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1240	40ML / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAYTON (name) _____ (signature)

GROUNDWATER SAMPLING RECORD

PAGE ___ of ___

Project Number: 19119232 Project Name: UPRR HWPW Date: 1-9-2020

Sampling Location (well ID, etc.): MW-53C Starting Water Level (ft. BMP): 16.72

Sample Number: WG-1620-MW53C-20200109 Casing Stickup (ft.): 0

Sampled by: Tim McSpadden WL (ft. BMP): _____ (ft. BGL): _____

Measuring Point (MP) of Well: TOC - (Steel) or PVC TD (ft. BMP): 71.05 (ft. BGL): _____

Screened Interval (ft. BGL): Ft. water: _____ Casing Dia. (In ID): _____

Filter Pack Interval (ft. BGL): 1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): (Low Flow) - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: (Peristaltic Pump) / SS Pump / Bailer / Bladder Sampling: (Peristaltic Pump) / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H2O drum 1-7-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: D2111 Heron Other: Geo Pump P1102

Multi Meter: Horiba C1103

Field Calibration: D-4.08 NTU-0 ORP 445

Filter / Filter Size: 10 micron Abs

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
10:35	16.72	.2	.2	23.69	1.72	.224	9.01	-123	111	
10:45	16.99	.3	.2	23.57	0.72	.221	8.84	-129	40.1	
10:50	17.01	.4	.2	23.69	0.17	.208	8.64	-123	24.6	
10:55	17.01	.5	.2	23.75	0	.210	8.24	-104	14.9	
11:00	17.04	.6	.2	23.81	0	.213	8.16	-84	15.5	
11:05	17.06	.7	.2	23.80	0	.220	8.04	-70	17.0	
11:10	17.08	.8	.2	23.82	0	.237	7.92	-57	17.3	
11:15	17.08	.9	.2	23.87	0	.276	7.79	-48	19.9	

WL (ft. BMP) at End of Purge: 17:08 Sample Intake Depth (ft. BMP): 6.5

SAMPLE INVENTORY

Time	Bottles Collected	Volume	Composition (G, P)	No.	Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
11:15		1.5		6			

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE ___ of ___

Project Number: 191192.32 Project Name: UPRR HWPW Date: 1-9-2020

Sampling Location (well ID, etc.): MW54C

Sample Number: WG 1620 MW54C 20200109

Sampled by: Tim McSpadden

Measuring Point (MP) of Well: TOC - (Steel) or PVC

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 15.59

Casing Stickup (ft.): 0

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 72.05 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): 2"

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: (Peristaltic Pump) / SS Pump / Bailer / Bladder Sampling: (Peristaltic Pump) / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H2O drum 1-7-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: D2111 Heron Other: Geo Pump P1102

Multi Meter: Horiba C1103

Field Calibration: pH 4.06 NTU-0 Cond 445

Filter / Filter Size: 10 micro Bltz

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
11:55	15.59	.2	.2	24.62	1.28	1.21	7.23	.95	42.3	Clear/tn
12:05	16.72	.3	.2	24.57	.91	1.21	7.17	.94	41.4	
12:10	16.76	.4	.2	23.43	.13	1.51	6.85	.88	300	X
12:15	16.78	.5	.2	23.27	.00	1.52	6.88	-84	155	
12:20	16.81	.6	.2	23.28	.00	1.52	6.86	-82	135	
12:25	16.83	.7	.2	23.53	.00	1.52	6.86	-83	126	
12:30	16.83	.7	.2	23.34	.00	1.52	6.88	-83	125	

WL (ft. BMP) at End of Purge: 16.83

Sample Intake Depth (ft. BMP): 69.

SAMPLE INVENTORY

Time	Bottles Collected	Volume	Composition (G, P)	No.	Filtration (Y) N)	Preservation (type)	Remarks (quality control sample, other)
1235		1.5		6			

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of ___

Project Number: 19119232 Project Name: HW PW Date: 1-8-2020

Sampling Location (well ID, etc.): MW-57A

Sample Number: ~~MW-57~~ WG-1620MW57A20200108

Sampled by: Tim McSpadden

Measuring Point (MP) of Well: TOC - Steel or PVC

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 14.46

Casing Stickup (ft.): 3'

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 25.90 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): 2"

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: Peristaltic Pump / SS Pump / Bailer / Bladder Sampling: Peristaltic Pump / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H2O drum 1-7-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: D 2111 Heron Other: Geo Pump P1101

Multi Meter: Horiba C1103

Field Calibration: D.4.04 NTU 0.0 COND 450

Filter / Filter Size: 10 micron

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
14:15	14.46	.2	.2	22.44	0.12	.700	6.77	-87	123	
14:25	14.53	.3	.2	22.41	0.01	.777	6.81	-69	68.3	
14:30	14.57	.4	.2	22.48	0.0	.770	6.82	-90	70.4	
14:35	14.66	.5	.2	22.84	0.0	.782	6.82	-96	71.4	
14:40	14.68	.6	.2	22.91	0.0	.783	6.82	-96	72.9	
14:45	14.71	.7	.2	23.11	0.0	.788	6.82	-103	53.1	
14:50	14.73	.8	.2	23.16	0.0	.788	6.81	-103	49.3	

WL (ft. BMP) at End of Purge: Sample Intake Depth (ft. BMP): 22

SAMPLE INVENTORY

Bottles Collected					Filtration	Preservation	Remarks
Time		Volume	Composition (G, P)	No.	(Y / N)	(type)	(quality control sample, other)
14:55		2.0		6			

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of ___

Project Number: 19119232 Project Name: HWPW Date: 1-8-2020

Sampling Location (well ID, etc.): MW-57B

Sample Number: WG 1620 MW 57B 20200108

Sampled by: Tim McSpadden

Measuring Point (MP) of Well: TOC - Steel or (PVC)

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 13.74

Casing Stickup (ft.): 3'

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 42.85 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): _____

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): (Low Flow) - Dedicated Tubing/Equipment

Cleaning Equipment: (DI/Alconox Rinse)

Purge: (Peristaltic Pump) / ~~SS~~ Pump / Bailer / Bladder Sampling: (Peristaltic Pump) / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H2O drum 1-7-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: D 2111 Heron Other: Geo pump P 1102

Multi Meter: Horiba C1103

Field Calibration: D-4.04 ORP 0.0 cond 450

Filter / Filter Size: 10 micron

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
12:45	13.74	.2	.2	23.31	1.86	.996	7.32	-60	0.0	
12:55	14.70	.3	.2	23.15	1.35	.999	7.32	-65	0.0	
13:00	14.74	.4	.2	23.12	.80	1.00	7.28	-69	628	
13:05	14.74	.5	.2	23.09	.72	1.00	7.28	-68	541	
13:10	14.76	.6	.2	23.00	.61	1.01	7.27	-66	467	
13:20	14.88	.7	.2	23.08	.51	1.01	7.27	-60	272	
13:25	14.95	.8	.2	23.01	.45	1.01	7.26	-58	240	
1330	14.96	.9	.2	23.03	.00	1.00	7.25	-51	92.4	

WL (ft. BMP) at End of Purge: 14.96 Sample Intake Depth (ft. BMP): 35

SAMPLE INVENTORY

Time	Bottles Collected	Volume	Composition (G, P)	No.	Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
13:30		2.5		9			

Comments:

GOLDER
2201 Double Creek Dr., Suite 4004
Round Rock, Texas 78664
Phone: (512) 671-3434 Fax: (512) 671-3446

GROUNDWATER SAMPLING RECORD

PAGE 1 of ___

Project Number: 19119232 Project Name: HWPW Date: 1-8-2020

Sampling Location (well ID, etc.): MW-58A

Sample Number: WG 1620 MW58A 20200108

Sampled by: Tim McSpadden

Measuring Point (MP) of Well: TOC - Steel or (PVC)

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 17.71

Casing Stickup (ft.): 0

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 28.60 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): 2"

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: (Peristaltic Pump) / SS Pump / Bailer / Bladder Sampling: (Peristaltic Pump) / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge to drum 1-7-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: D2111 Heron Other: Geo pump P1102

Multi Meter: Horiba C1103

Field Calibration: pH-4.04 NTU-0 COND 450

Filter / Filter Size: 10 micron

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
11:30	17.71	.2	.2	25.16	5.06	.648	6.86	-98	47.5	
11:40	15.12	.3	.2	24.96	5.51	.650	6.84	-99	43.8	
11:45	15.15	.3	.2	24.98	5.13	.637	6.82	-97	32.6	
11:50	15.17	.4	.2	24.87	5.74	.637	6.80	-95	30.1	
11:55	15.19	.5	.2	24.67	5.75	.635	6.81	-97	30.3	
12:00	15.22	.6	.2	24.69	5.71	.633	6.80	-96	35.9	
12:05	15.21	.7	.2	24.67	5.61	.622	6.80	-94	36.9	
12:10	15.23	.8	.2	24.69	5.57	.632	6.80	-95	42.9	

WL (ft. BMP) at End of Purge: 15.23 Sample Intake Depth (ft. BMP): 25.

SAMPLE INVENTORY

Time	Bottles Collected	Volume	Composition (G, P)	No.	Filtration (Y) N)	Preservation (type)	Remarks (quality control sample, other)
12:15		2.5		9			

Comments:

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2201 Double Creek Dr., Suite 4004
Round Rock, Texas 78664
Phone: (512) 671-3434 Fax: (512) 671-3446

Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	9.21	ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	-	ft.
Date		**Reference Point**	☒ Top of casing	☐ **Depth to Water**	9.21	ft. BGL
MW ID	MW59A	**Location**	Other	**Total MW Depth**	21.10	ft. BGL
Sample ID	WG-1620-MW59A-20190116	**Water Quality**		**MW Diameter**	2.0	inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**		gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**		ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
0729	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
0739	.2	/	9.47	22.7	6.96	1460	0.67	-71	7.4
0744	↓	/	9.51	22.3	6.92	1420	0.50	-61	7.8
0749	↓	/	9.52	22.4	6.91	1410	0.51	-62	7.4

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
0805	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
0805	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAYTON (name) _____ (signature)

Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	9.17	ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	-	ft.
Date	1-16-20	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	9.17	ft. BGL
MW ID	MW59B	**Location**	Other _____	**Total MW Depth**	32.90	ft. BGL
Sample ID	WG-1620-MW59B-20190116	**Water Quality**		**MW Diameter**	2.0	inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	1	gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**		ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
0827	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
0837	.2	/	9.34	22.3	6.79	1280	0.36	-29	6.2
0842	↓	/	9.37	22.1	6.71	1250	0.28	-25	5.1
0847	↓	/	9.36	22.1	6.72	1260	0.29	-26	5.3
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
0900	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
0900	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	Equipment Decon	☒ Dedicated equipment	Depth to Water	83.06 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	Casing Stickup	- ft.
Date	1-16-20	Reference Point	☒ Top of casing	☐ Depth to Water	83.06 ft. BGL
MW ID	MW59D	Location	Other	Total MW Depth	117.80 ft. BGL
Sample ID	WG-1620-MW59D-20190116	Water Quality		MW Diameter	2.0 inches
Pump	☐ Waterra ☐ Submersible	Meter Model	HORIBA	MW Volume	1 gallons
	☒ Peristaltic ☐ Bladder	Unit Number	U-50	Pump Intake Depth	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1316	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1326	.2	/	83.19	21.6	7.06	1140	0.78	-91	4.7
1331	↓	/	83.21	21.3	7.03	1120	0.61	-86	26
1336	↓	/	83.22	21.2	7.03	1110	0.62	-86	3.2
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1350	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1350	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

~~MS/MSD~~

Field Team Leader JOHN BRAXTON
name

signature

WG-1620-FD03-20190116
1350-Dampletime

Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	4.87 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	ft.
Date	1-16-20	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	ft. BGL
MW ID	MW 61A	**Location**	Other	**Total MW Depth**	21.95 ft. BGL
Sample ID	WG-1620-MW61A-20200116	**Water Quality**		**MW Diameter**	inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1117									
1127	.2	/	5.39	22.9	6.72	1170	1.42	-37	6.7
1132	↓	/	5.41	22.6	6.69	1130	0.74	-36	7.2
1137	↓	/	5.42	22.7	6.68	1120	0.73	-36	7.7
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1200	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1200	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

MS/MSD

Field Team Leader JOHN BRAXTON (name) (signature)

GROUNDWATER SAMPLING RECORD

PAGE ____ of ____

Project Number: 19119232	Project Name: UPRR HWPW	Date: 1-27-2020	
Sample Number: WG-1620 MW 623 20200127		Starting Water Level (ft. BMP): 3.05	
Sampling Location (well ID, etc.): MW 623		Casing Stickup (ft.): 3'	
Sampled by: TJM MCSpadden		Starting Water Level (ft. BGL):	
Measuring Point (MP) of Well:		Total Depth (ft. BMP): 35.55	
Screened Interval (ft. BGL):		Casing Diameter (In ID): 2"	
Filter Pack Interval (ft. BGL):		Casing Volume (gal.):	

QUALITY ASSURANCE

METHODS (describe): _____

Cleaning Equipment: _____

Purging: _____ Sampling: _____

Disposal of Discharged Water: _____

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	01-7720 Golder	Thermometer:	" "
pH Meter:	Horiba C1106	Field Calibration:	Ph-4.0 Ph 4.0
Conductivity Meter:	" "	Field Calibration:	
Filter / Filter Size:	10 micron filter	Other:	Geo Pump P 1108

SAMPLING MEASUREMENTS

Time	Water Depth (ft BMP)	Cum. Vol. (gal. or L)	Purge Rate (L /m)	Temp. (°C)	pH (S.U.)	Spec. Cond. (mS/cm)	D.O. (mg/L)	Redox (mV)	Turbidity (NTU)	Color
--	--	--	--	± 3%	± 0.1	± 3%	± 10% if >0.5	± 10	± 10%	--
8:45	3.05	.2	.2	19.52	6.45	1.33	7.51	-2	89.1	
8:55	3.41	.3	.2	19.71	6.56	1.34	2.06	-72	79.8	
9:00	3.39	.4	.2	19.100	6.57	1.34	1.21	-100	77.0	
9:05	3.40	.5	.2	19.79	6.52	1.34	0.17	-130	39.7	
9:10	3.37	.6	.2	17.72	6.48	1.34	0.10	-129	34.4	
9:15	3.35	.7	.2	17.65	6.50	1.34	0.14	-131	32.1	
9:20	3.37	.8	.2	17.67	6.49	1.34	0.08	-130	32.2	

Water Level (ft. BMP) at End of Purge: 3.37

Sample Intake Depth (ft. BMP): ~~35~~ 32.

SAMPLE INVENTORY

Bottles Collected				Filtration		
Time	Volume	Composition (G/P)	No.	(Y/N)	Preservation	Remarks (quality control sample, other)
9:25			6			

Comments:

Golder Associates Inc.
11231 Richmond Avenue, Suite D104
Houston, TX 77082
(832) 916-3690

GROUNDWATER SAMPLING RECORD

PAGE ___ of ___

Project Number: 19119232 Project Name: UPRR HWPW Date: 1-16-2020

Sampling Location (well ID, etc.): MW 63B

Sample Number: WG-1620 MW 63B 20200116

Sampled by: Tim McSpadden

Measuring Point (MP) of Well: TOC - Steel or PVC

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 4.90

Casing Stickup (ft.): 0

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 36.27 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID) 2"

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: Peristaltic Pump / SS Pump / Bailer / Bladder Sampling: Peristaltic Pump / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H2O drum 1-7-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: P2111 Heron Other: Geo Pump P1102

Multi Meter: Horiba C1103

Field Calibration: Ph - 4.0

Filter / Filter Size: /

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
14:15	4.90	.2	.2	24.48	3.12	1.79	6.69	-110	2.0	
14:25	5.81	.3	.2	24.60	0.90	1.80	6.61	-112	4.9	
14:30	6.57	.4	.2	24.42	1.63	1.82	6.48	-110	0.4	
14:35	6.91	.5	.2	24.26	3.11	1.81	6.45	-101	0	
14:40	7.15	.6	.2	24.45	2.88	1.80	6.46	-103	0	
14:45	7.29	.7	.2	24.46	2.84	1.78	6.46	-104	0	

WL (ft. BMP) at End of Purge: 7.29 Sample Intake Depth (ft. BMP): 32.

SAMPLE INVENTORY

Bottles Collected					Filtration	Preservation	Remarks
Time		Volume	Composition (G P)	No.	(Y / N)	(type)	(quality control sample, other)
14:45				6			

Comments:

GOLDER
2201 Double Creek Dr., Suite 4004
Round Rock, Texas 78664
Phone: (512) 671-3434 Fax: (512) 671-3446

GROUNDWATER SAMPLING RECORD

PAGE ____ of ____

Project Number: 19119232	Project Name: UPPR HWPW	Date: 1-27-20	
Sample Number: WG1620 MW 64A 20200127		Starting Water Level (ft. BMP): 4.91	
Sampling Location (well ID, etc.): MW 64A		Casing Stickup (ft.): 3'	
Sampled by: Tim McSpadden		Starting Water Level (ft. BGL):	
Measuring Point (MP) of Well:		Total Depth (ft. BMP): 22.20	
Screened Interval (ft. BGL):		Casing Diameter (In ID): 2"	
Filter Pack Interval (ft. BGL):		Casing Volume (gal.):	

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment:

Purging: Sampling:

Disposal of Discharged Water:

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	01-7720	Thermometer:	" "
pH Meter:	Horiba C1106	Field Calibration:	
Conductivity Meter:	" "	Field Calibration:	
Filter / Filter Size:	10 Micron	Other:	Geo Pump PH08

SAMPLING MEASUREMENTS

Time	Water Depth (ft BMP)	Cum. Vol. (gal. or L)	Purge Rate (L /m)	Temp. (°C)	pH (S.U.)	Spec. Cond. (mS/cm)	D.O. (mg/L)	Redox (mV)	Turbidity (NTU)	Color
--	--	--	--	± 3%	± 0.1	± 3%	± 10% if >0.5	± 10	± 10%	--
10:35	4.91	.2	.2	17.04	6.49	482	13.16	118	0	
10:45	8.67	.3	.2	18.91	6.71	1.65	3.09	120	0	
10:50	8.72	.4	.2	18.84	6.70	1.66	2.81	122	964	
10:55	8.75	.5	.2	18.76	6.70	1.66	2.76	124	711	
11:00	8.77	.6	.2	18.72	6.69	1.66	2.93	124	734	
11:05	8.79	.7	.2	18.58	6.70	1.65	2.51	125	575	
11:10	8.82	.8	.2	18.46	6.70	1.65	2.01	125	531	

Water Level (ft. BMP) at End of Purge: 8.82

Sample Intake Depth (ft. BMP): 17

SAMPLE INVENTORY

Bottles Collected				Filtration		
Time	Volume	Composition (G, P)	No.	(Y) N)	Preservation	Remarks (quality control sample, other)
11:15			6			

Comments:

Golder Associates Inc.
11231 Richmond Avenue, Suite D104
Houston, TX 77082
(832) 916-3690

Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	83.29	ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	-	ft.
Date	1-16-20	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	83.29	ft. BGL
MW ID	MW65D	**Location**	Other _____	**Total MW Depth**	109.75	ft. BGL
Sample ID	WG-1620-MW65D-20190116	**Water Quality**		**MW Diameter**	2.0	inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**		gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	1	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1538	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1548	.2	/	83.46	21.6	6.91	1240	1.13	-91	9.1
1553	↓	/	83.47	21.4	6.92	1260	0.94	-85	5.6
1558	↓	/	83.47	21.4	6.94	1270	0.91	-82	6.2
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1620	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1620	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

MS/MSD

Field Team Leader JOHN BRAYTON
name

signature

Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	81.26	ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	-	ft.
Date	1-16-20	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	81.26	ft. BGL
MW ID	MW-66D	**Location**	Other _____	**Total MW Depth**	103.05	ft. BGL
Sample ID	WG-1620-MW66P-20190116	**Water Quality**		**MW Diameter**	2.0	inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**		gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**		ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1426	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1431	.2	/	81.43	21.6	7.07	1160	1.21	-71	6.7
1441	↓	/	81.44	21.8	7.01	1160	0.92	-65	9.1
1446	↓	/	81.44	21.9	7.02	1170	0.93	-67	8.2
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1500	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1500	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAYTON (name) _____ (signature)

Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	8.82 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	— ft.
Date	1-15-20	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	8.82 ft. BGL
MW ID	MW67B	**Location**	Other _____	**Total MW Depth**	39.50 ft. BGL
Sample ID	WG-1620-MW67B-20190115	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	1 gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	_____ ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
0843	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
0853	.2	/	9.06	21.6	7.16	510	0.71	-96	7.6
0858	↓	/	9.08	21.9	7.12	460	0.54	-91	6.8
0903	↓	/	9.08	22.2	7.11	470	0.56	-92	7.4

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
0930	60ML	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
0930	40ML / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

MS/MSD

Field Team Leader JOHN BRAXTON (name) _____ (signature)

GROUNDWATER SAMPLING RECORD

PAGE ____ of ____

Project Number:	Project Name:
Date: 1-23-2020	
Sample Number: WG1620 MW 68B 20200123	Starting Water Level (ft. BMP): 1.20
Sampling Location (well ID, etc.): MW 68B	Casing Stickup (ft.): -0
Sampled by: Tim McSpadden	Starting Water Level (ft. BGL): 1.20
Measuring Point (MP) of Well:	Total Depth (ft. BMP): 37.40
Screened Interval (ft. BGL):	Casing Diameter (In ID): 2"
Filter Pack Interval (ft. BGL):	Casing Volume (gal.):

QUALITY ASSURANCE

METHODS (describe): Low Flow

Cleaning Equipment:

Purging: Sampling:

Disposal of Discharged Water:

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	P211 Heron Iti mate	Thermometer:	" "
pH Meter:	Horiba U11 03	Field Calibration:	PH 4.0 PH 4.0
Conductivity Meter:	" "	Field Calibration:	
Filter / Filter Size:		Other:	Geo Pump P1102

SAMPLING MEASUREMENTS

Time	Water Depth (ft BMP)	Cum. Vol. (gal. or L)	Purge Rate (L /m)	Temp. (°C)	pH (S.U.)	Spec. Cond. (mS/cm)	D.O. (mg/L)	Redox (mV)	Turbidity (NTU)	Color
--	--	--	--	± 3%	± 0.1	± 3%	± 10% if >0.5	± 10	± 10%	--
14:45	1.20	.2	.2	21.41	6.85	1.89	9.02	-55	59.1	
14:55	2.18	.3	.2	21.47	6.84	1.89	8.20	-52	57.6	
15:00	2.20	.4	.2	21.44	6.85	1.89	5.01	-55	55.0	
15:05	2.23	.5	.2	21.43	6.85	1.89	2.42	-56	52.1	
15:10	2.28	.6	.2	21.45	6.85	1.89	0	-56	53.9	
15:15	2.33	.7	.2	21.44	6.85	1.89	0	-56	54.7	
15:20	2.41	.8	.2	21.39	6.84	1.89	0	-55	53.7	
15:25	2.44	.9	.2	21.41	6.85	1.89	0	-56	53.1	

Water Level (ft. BMP) at End of Purge: 2.44

Sample Intake Depth (ft. BMP): 24.0

SAMPLE INVENTORY

Bottles Collected				Filtration		
Time	Volume	Composition (G/P)	No.	(Y/N)	Preservation	Remarks (quality control sample, other)
~~14:45~~		G	6			
15:25		G	6	Y		

Comments:

Power Supply error Horiba
Printed circuit board failure
Change batteries to fix the error

Golder Associates Inc.
11231 Richmond Avenue, Suite D104
Houston, TX 77082
(832) 916-3690

GROUNDWATER SAMPLING RECORD

PAGE ___ of ___

Project Number: 19119232 Project Name: UPRR HWPW Date: 1-20-2020

Sampling Location (well ID, etc.): MW-7013

Sample Number: WG1620 MW7013 20200120

Sampled by: Tim McSpadden

Measuring Point (MP) of Well: TOC - (Steel) or PVC

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 6.55

Casing Stickup (ft.): 0

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 35.30 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): 2

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): (Low Flow) Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: Peristaltic Pump / SS Pump / Bailer / Bladder Sampling: Peristaltic Pump / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H2O drum 1-7-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: P2111 Heron Other: Grd pump P1102

Multi Meter: Horiba C1103

Field Calibration: Ph. 4.0

Filter / Filter Size: 10 micron

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
10:50	6.55	.2	.2	20.10	1.34	2.69	6.52	9	81.4	clear/nd
11:00	7.31	.3	.2	20.64	0.78	2.61	6.53	1	92.6	
11:05	7.49	.4	.2	20.44	.03	2.61	6.56	3	84.9	
11:10	7.64	.5	.2	20.49	0	2.61	6.57	-5	79.9	
11:15	7.79	.6	.2	20.86	0	2.61	6.58	-12	43.1	
11:20	7.86	.7	.2	20.93	0	2.62	6.58	-14	35.9	
11:25	7.92	.8	.2	20.90	0	2.61	6.58	-14	34.7	
11:30	8.00	.9	.2	20.87	0	2.61	6.59	-13	32.6	

WL (ft. BMP) at End of Purge: 8.0 Sample Intake Depth (ft. BMP): 31.0

SAMPLE INVENTORY

Time	Bottles Collected	Volume	Composition (G P)	No.	Filtration (Y N)	Preservation (type)	Remarks (quality control sample, other)
11:30				6			

Comments:

GOLDER
2201 Double Creek Dr., Suite 4004
Round Rock, Texas 78664
Phone: (512) 671-3434 Fax: (512) 671-3446

Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	1.12	ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	–	ft.
Date	1-15-20	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	1.12	ft. BGL
MW ID	MW11B	**Location**	Other _____	**Total MW Depth**	36.80	ft. BGL
Sample ID	WG-1620-MW11B-20190115	**Water Quality**		**MW Diameter**	2.0	inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	1	gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**		ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1328	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1338	.2	/	1.29	22.7	6.96	610	0.55	-72	7.2
1343	↓	/	1.34	22.3	6.92	570	0.41	-66	7.4
1348	↓	/	1.35	22.4	6.91	580	0.42	-61	7.4

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1400	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1400	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCs / SVOCs

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAYTON (name) _____ (signature)

GROUNDWATER SAMPLING RECORD

PAGE 1 of ___

Project Number: 19119232 Project Name: UPRR HWPW Date: 1-9-2020

Sampling Location (well ID, etc.): MW-72B

Sample Number: UG 1620 MW72B 20200109

Sampled by: Tim McSpadden

Measuring Point (MP) of Well: TOC - (Steel) or PVC

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 14.78

Casing Stickup (ft.):

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 40.31 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): 2"

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): (Low Flow - Dedicated Tubing/Equipment)

Cleaning Equipment: (DI/Alconox Rinse)

Purge: (Peristaltic Pump) / SS Pump / Bailer / Bladder Sampling: (Peristaltic Pump) / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H2O drum 1-7-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: P2111 Heron Other: Geo pump 1102

Multi Meter: Horiba C1103

Field Calibration: pH 4.8 NTU-0 Cond 44k

Filter / Filter Size: 10 micron

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
8:00	14.78	.2	.2	22.43	.46	1.75	6.36	-39	96.6	clear/no
8:10	15.58	.3	.2	22.41	.31	1.74	6.46	-40	99.9	
8:15	15.77	.4	.2	22.46	.11	1.71	6.72	-33	70.8	
8:20	15.84	.5	.2	22.52	.06	1.70	6.76	-32	65.8	
8:25	15.99	.6	.2	22.68	0.0	1.66	6.88	-30	33.4	
8:30	16.21	.7	.2	22.70	0	1.64	6.90	-30	32.8	
8:35	16.29	.8	.2	22.79	0	1.59	6.94	-31	32.5	

WL (ft. BMP) at End of Purge: 16.29 Sample Intake Depth (ft. BMP): 35

SAMPLE INVENTORY

Bottles Collected					Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time		Volume	Composition (G) P)	No.			
8:35		2.0		6			

Comments:

No tubing in well

GOLDER
2201 Double Creek Dr., Suite 4004
Round Rock, Texas 78664
Phone: (512) 671-3434 Fax: (512) 671-3446

Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	Equipment Decon	☒ Dedicated equipment	Depth to Water	8.29	ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	Casing Stickup	–	ft.
Date	1-17-20	Reference Point	☒ Top of casing	☐ Depth to Water	8.29	ft. BGL
MW ID	MW74B	Location	Other	Total MW Depth	35.10	ft. BGL
Sample ID	WG-1620-MW74B-20190117	Water Quality		MW Diameter	2.0	inches
Pump	☐ Waterra ☐ Submersible	Meter Model	HORIBA	MW Volume	1	gallons
	☒ Peristaltic ☐ Bladder	Unit Number	U-50	Pump Intake Depth		ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
0946									
0956	.2	/	8.47	23.1	6.89	1380	0.79	-71	16
1001	↓	/	8.49	23.1	6.85	1360	0.65	-72	12
1006	↓	/	8.49	23.2	6.84	1350	0.67	-72	13
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1020	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1020	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAYTON (name) (signature)

Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	Equipment Decon	☒ Dedicated equipment	Depth to Water	8.52 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	Casing Stickup	- ft.
Date	1-17-20	Reference Point	☒ Top of casing	☐ Depth to Water	8.52 ft. BGL
MW ID	MW75B	Location	Other	Total MW Depth	37.25 ft. BGL
Sample ID	WG-1620-MW75B-20190117	Water Quality		MW Diameter	2.0 inches
Pump	☐ Waterra ☐ Submersible	Meter Model	HORIBA	MW Volume	1 gallons
	☒ Peristaltic ☐ Bladder	Unit Number	U-50	Pump Intake Depth	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
0742	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
0752	.2	/	8.79	21.7	6.79	1170	0.74	-42	5.2
0757	↓	/	8.81	21.3	6.76	1140	0.63	-41	4.4
0802	↓	/	8.80	21.2	6.76	1130	0.67	-41	4.7

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
0815	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
0815	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCs / SVOCs

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	Equipment Decon	☒ Dedicated equipment	Depth to Water	20.68 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	Casing Stickup	– ft.
Date	1-9-20	Reference Point	☒ Top of casing	☐ Depth to Water	20.68 ft. BGL
MW ID	MW76C	Location	Other	Total MW Depth	70.40 ft. BGL
Sample ID	WG-1620-MW76C-2019	Water Quality		MW Diameter	2.0 inches
Pump	☐ Waterra ☐ Submersible	Meter Model	HORIBA	MW Volume	1 gallons
	☒ Peristaltic ☐ Bladder	Unit Number	U-50	Pump Intake Depth	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1444									
1454	.2	/	20.91	22.6	7.06	1940	0.74	-77	5.6
1459	↓	/	20.94	22.3	7.12	1920	0.51	-70	7.1
1504	↓	/	20.93	22.4	7.13	1910	0.52	-71	7.2
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1520	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1520	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAYTON (name) (signature)

Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	6.81 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	1-9-20	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	6.81 ft. BGL
MW ID	MW 77A	**Location**	Other	**Total MW Depth**	22.80 ft. BGL
Sample ID	WG-1620-MW77A-2019	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	1 gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1352	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1402	.2	/	6.97	21.4	6.92	1270	0.79	-42	9.2
1407	↓	/	7.01	21.3	6.91	1240	0.66	-39	7.4
1412	↓	/	7.02	21.6	6.91	1250	0.69	-39	8.2

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1425	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1425	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCs / SVOCs

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	7.96	ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	–	ft.
Date	11-7-20	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	7.96	ft. BGL
MW ID	MW78A	**Location**	Other _____	**Total MW Depth**	24.85	ft. BGL
Sample ID	WG-1620-MW78A-20191117	**Water Quality**		**MW Diameter**	2.0	inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	1	gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**		ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1053	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1103	.2	/	8.21	21.3	6.79	1240	1.46	-71	6.7
1108	↓	/	8.24	21.4	6.72	1260	1.31	-65	5.1
1113	↓	/	8.25	21.6	6.71	1230	1.26	-67	5.2
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1125	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1125	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	9.81	ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	-	ft.
Date	1-17-20	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	9.81	ft. BGL
MW ID	MW79A	**Location**	Other ____	**Total MW Depth**	26.45	ft. BGL
Sample ID	WG-1620-MW79A-20190117	**Water Quality**		**MW Diameter**	2.0	inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	1	gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**		ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
0849	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
0859	.2	/	10.06	21.6	6.91	720	0.61	-31	16
0904	↓	/	10.08	21.5	6.84	760	0.46	-25	17
0909	↓	/	10.09	21.5	6.86	770	0.47	-26	17
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
0920	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
0920	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

GROUNDWATER SAMPLING RECORD

PAGE 3 of ___

Project Number: 19119232 Project Name: UPRR HWPW Date: 1-7-2020

Sampling Location (well ID, etc.): MW-80B

Sample Number: WG-1620-MW 80B 20200107

Sampled by: Tim McSpadden

Measuring Point (MP) of Well: (TOC) - Steel or PVC

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 10.87

Casing Stickup (ft.): 0

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 37.74 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): 2"

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): (Low Flow) - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: (Peristaltic Pump) / SS Pump / Bailer / Bladder Sampling: (Peristaltic Pump) / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H2O drum

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: D2111 Horiba Other:

Multi Meter: Horiba C1103

Field Calibration: pH-3.99 NTU-0 Cond. 4.52

Filter / Filter Size:

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
15:15	10.87	.2	.2	24.86	11.31	.949	7.18	-7	20.8	
15:25	11.11	.3	.2	25.00	3.75	.946	7.17	-5	19.6	
15:30	11.14	.4	.2	25.17	3.37	.945	7.17	-6	18.1	
15:35	11.21	.5	.2	25.23	3.21	.946	7.18	-5	12.5	
15:40	11.24	.6	.2	25.25	3.11	.945	7.18	-5	10.1	
15:45	11.31	.7	.2	25.38	2.97	.943	7.19	-3	9.3	
15:50	11.33	.8	.2	25.42	2.94	.942	7.19	-4	4.8	
15:55	11.33	.9	.2	25.42	2.01	.942	7.19	-3	9.8	
16:00	11.35	.10	.2	25.40	2.91	.912	7.19	-5	4.5	

WL (ft. BMP) at End of Purge: 11.35 Sample Intake Depth (ft. BMP): 34.0

SAMPLE INVENTORY

Bottles Collected					Filtration	Preservation	Remarks
Time		Volume	Composition (G, P)	No.	(Y / N)	(type)	(quality control sample, other)
16:00		2.0		9			

Comments:

GOLDER
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Round Rock, Texas 78664
Phone: (512) 671-3434 Fax: (512) 671-3446

Groundwater Sample Collection

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	7.12 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	1-9-20	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	7.12 ft. BGL
MW ID	MW81B	**Location**	Other _____	**Total MW Depth**	33.80 ft. BGL
Sample ID	WG-1620-MW81B-2019	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	1 gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	_____ ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1548									
1558	.2	/	7.22	21.9	7.21	1060	0.91	-62	8.1
1603	↓	/	7.27	21.6	7.15	1080	0.77	-60	6.7
1608	↓	/	7.28	21.6	7.16	1090	0.79	-61	7.1

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1620	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1620	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

MS / MSD

GROUNDWATER SAMPLING RECORD

PAGE ___ of ___

Project Number: 191 9232 Project Name: UPRR HW PW Date: 1-21-2020

Sampling Location (well ID, etc.): MW 82B

Sample Number: WG 1620 MW82B 20200121

Sampled by: T.M MCS pardee

Measuring Point (MP) of Well: TOC - Steel or (PVC)

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 2.65

Casing Stickup (ft.):

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 34.90 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): 2"

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): (Low Flow) - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: Peristaltic Pump / SS Pump / Bailer / Bladder Sampling: (Peristaltic Pump) / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H20 drum 1-7-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: P211 Hervo Other: Geo Pump P1102

Multi Meter: Horiba C1103

Field Calibration: PH. 4.0

Filter / Filter Size:

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
8130	2.65	.2	.2	18.87	0.73	2.38	5.60	-61	65.3	
8140	2.94	.3	.2	18.24	0.60	2.35	5.88	-67	84.0	
8145	2.88	.4	.2	18.94	0.44	2.33	6.10	-76	93.8	
8150	2.81	.5	.2	18.40	0	2.34	6.23	-64	73.0	
8155	2.80	.6	.2	18.79	0	2.27	6.34	-58	6.3	
9:00	2.82	.7	.2	18.87	0	2.26	6.35	-58	5.2	
9:05	2.83	.8	.2	18.93	0	2.25	6.36	-60	5.1	
9:10	2.81	.9	.2	19.03	0	2.22	6.37	-61	3.9	

WL (ft. BMP) at End of Purge: 2.81

Sample Intake Depth (ft. BMP): 30.

SAMPLE INVENTORY

Time	Bottles Collected	Volume	Composition (G/P)	No.	Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
9:10				18			

Comments:

WG-1620 MW82BMS 20200121

WG-1620 MW82BMSD 20200121

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GROUNDWATER SAMPLING RECORD

PAGE ___ of ___

Project Number: 19119232 Project Name: UPRR HWPW Date: 1-10-2020

Sampling Location (well ID, etc.): MW 833

Sample Number: WG-1620 MW833 20200110

Sampled by: T.M McSpadden

Measuring Point (MP) of Well: TOC - Steel or (PVC)

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 5.33

Casing Stickup (ft.): 0

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 35.50 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): 2"

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: (Peristaltic Pump) / SS Pump / Bailer / Bladder Sampling: (Peristaltic Pump) / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H2O drum 1-7-2020

INSTRUMENTS (indicate make, model, I.d.)

Water Level: P2111 Heron Other: Geo Pump P1102

Multi Meter: Horiba C1103

Field Calibration: Ph - 3.99 NTU - 0 cond - 4.49

Filter / Filter Size: 45 micron

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
9:25	5.33	.2	.2	24.08	10.01	1.27	7.54	-129	13.4	Clear/no
9:35	5.63	.3	.2	24.16	2.79	1.30	7.37	-126	10.0	
9:40	5.65	.4	.2	24.00	2.41	1.62	6.79	-115	6.8	
9:45	5.63	.5	.2	24.00	.57	1.68	6.49	-102	6.2	
9:50	5.63	.6	.2	24.02	.0	1.69	6.53	-104	4.8	
9:55	5.61	.7	.2	24.02	0	1.70	6.51	-104	2.9	

WL (ft. BMP) at End of Purge: 5.61

Sample Intake Depth (ft. BMP): 32

SAMPLE INVENTORY

Time	Bottles Collected	Volume	Composition (G/P)	No.	Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
10:00		~~1L~~ 1/2		6			

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of ___

Project Number: 191192.32 Project Name: UPRR HWPW Date: 1-10-2020

Sampling Location (well ID, etc.): MW 83C

Sample Number: WG 1620 MW83C 2020 0110

Sampled by: Tim McSpadden

Measuring Point (MP) of Well: (TOC) Steel or (PVC)

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 17.21

Casing Stickup (ft.): 0

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 62.90 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): 2"

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): ~~Low Flow~~ - Dedicated Tubing/Equipment

Cleaning Equipment: ~~DI/Alconox Rinse~~

Purge: Peristaltic Pump / SS Pump / Bailer / Bladder Sampling: Peristaltic Pump / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge 1620 drum 1-7-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: P2111 Heron Other: Geo Pump P1102

Multi Meter: Horiba C1103

Field Calibration: PH-3.99 NTU-0 cond-4.49

Filter / Filter Size: 10 micron

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
8:15	17.71	.2	.2	23.86	2.10	1.23	6.26	-100	67.9	Clear/no
8:25	17.99	.3	.2	23.75	.94	1.22	6.88	-133	66.9	
8:30	18.0	.4	.2	23.80	.52	1.21	7.13	-147	59.2	
8:35	17.99	.5	.2	23.98	.06	1.17	7.95	-178	30.2	
8:40	17.97	.6	.2	24.07	0	1.17	8.28	-188	25.8	
8:45	17.99	.7	.2	24.10	0	1.16	8.47	-201	23.2	
8:50	17.99	.8	.2	24.12	0	1.16	8.52	-209	23.7	
8:55	17.97	.9	.2	24.09	0	1.16	8.60	-209	20.9	

WL (ft. BMP) at End of Purge: 17.97 Sample Intake Depth (ft. BMP): 63

SAMPLE INVENTORY

Bottles Collected					Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time		Volume	Composition (G P)	No.			
9:00				6			

Comments:

Tubing 3' in well, used tools to fish out tubing.

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GROUNDWATER SAMPLING RECORD

PAGE ___ of ___

Project Number: 19119232 Project Name: UPRR HWPW Date: 1-16-2020

Sampling Location (well ID, etc.): MW 84B

Sample Number: WG1620 MW84B 20200116

Sampled by: Tim McSpadden

Measuring Point (MP) of Well: TOC - Steel or (PVC)

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 4.33

Casing Stickup (ft.): 0

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 40.40 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): 2"

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: Peristaltic Pump / SS Pump / Bailer / Bladder Sampling: Peristaltic Pump / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H2O drum 1-7-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: P2111 Heron Other: Geo Pump P1102

Multi Meter: Horiba C1103

Field Calibration: Ph. 4.0

Filter / Filter Size:

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
13:15	4.33	.2	.2	23.77	1.05	1.64	6.92	-15	9.0	Clear/no
13:25	4.67	.3	.2	23.37	.28	1.69	6.52	37	0	
13:30	4.68	.4	.2	23.27	.02	1.71	6.46	66	0	
13:35	4.70	.5	.2	23.26	.17	1.71	6.44	75	0	
13:40	4.73	.6	.2	23.24	.26	1.71	6.41	53	0	
13:45	4.73	.7	.2	23.22	.21	1.71	6.40	-9	0	

WL (ft. BMP) at End of Purge: 4.73 Sample Intake Depth (ft. BMP): 36

SAMPLE INVENTORY

Time	Bottles Collected	Volume	Composition (G, P)	No.	Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
13:45				6			

Comments:

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Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	22.27 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	- ft.
Date	1-9-20	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	22.27 ft. BGL
MW ID	MW-85C	**Location**	Other	**Total MW Depth**	70.10 ft. BGL
Sample ID	WG-1620-MW85C-2019	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	/ gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1303	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1313	.2	/	22.47	22.6	7.52	1360	0.96	-21	6.7
1318	↓	/	22.51	22.4	7.46	1360	0.73	-16	5.2
1323	↓	/	22.52	22.1	7.47	1390	0.76	-17	4.3
Purging was completed based on:	☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)								

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1335	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1335	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) (signature)

Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	21.09 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	1-17-20	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	21.09 ft. BGL
MW ID	MW86C	**Location**	Other	**Total MW Depth**	70.25 ft. BGL
Sample ID	WG-1620-MW86C-20190117	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	1 gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
0642	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
0652	.2	/	21.32	21.6	7.12	1060	0.92	-36	4.7
0657	↓	/	21.37	21.2	7.11	1070	0.71	-31	6.6
0702	↓	/	21.36	21.3	7.09	1070	0.74	-32	6.2

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
0725	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
0725	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

WG-1620-FD04-20190117

Field Team Leader JOHN BRAXTON (name) _____ (signature)

GROUNDWATER SAMPLING RECORD

PAGE ___ of ___

Project Number: 19119232 Project Name: UP RR HWPW Date: 1-20-2020

Sampling Location (well ID, etc.): MW-87C

Sample Number: WG1620MW87C20200120

Sampled by: J.M McSpadden

Measuring Point (MP) of Well: TOC - Steel or (PVC)

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 15.79

Casing Stickup (ft.): 0

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 65.0 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): 2"

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: Peristaltic Pump / SS Pump / Bailer / Bladder Sampling: Peristaltic Pump / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H2O drum 1-7-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: P2111 Heron

Multi Meter: Horiba C1103

Field Calibration: PH. 4.0

Filter / Filter Size: 10 micron

Other: Geo Pump P1102

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
13:20	5.79	.2	.2	23.49	1.52	1.05	9.13	-165	84.2	clear/no
13:30	6.22	.3	.2	23.65	0.21	1.03	9.41	-174	87.7	
13:35	6.12	.4	.2	23.67	.05	.985	10.00	-189	57.3	
13:40	5.96	.5	.2	23.51	0.0	.968	10.24	-190	49.9	
13:45	5.81	.6	.2	23.23	0.0	.976	10.59	-204	39.4	
13:50	5.84	.7	.2	23.01	0.0	.975	10.69	-209	37.5	
13:55	5.88	.8	.2	22.64	0	.974	10.93	-208	36.9	
14:00										

WL (ft. BMP) at End of Purge: 15.88

Sample Intake Depth (ft. BMP): 60

SAMPLE INVENTORY

Bottles Collected					Filtration (Y) N)	Preservation (type)	Remarks (quality control sample, other)
Time		Volume	Composition (G) P)	No.			
1400				6			

Comments:

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Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	24.64	ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	—	ft.
Date	1-14-20	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	24.64	ft. BGL
MW ID	MW88C	**Location**	Other ____	**Total MW Depth**	—	ft. BGL
Sample ID	WG-1620-MW88C-20190114	**Water Quality**		**MW Diameter**	2.0	inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	/	gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	/	ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1117									
1127	.2	/	24.72	23.4	7.21	1210	0.67	-77	5.3
1132	↓	/	24.71	23.1	7.16	1240	0.42	-71	4.1
1137	↓	/	24.72	23.2	7.17	1230	0.43	-72	4.2

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1150	60ML	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1150	40ML / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAYTON (name) _____ (signature)

GROUNDWATER SAMPLING RECORD

PAGE ___ of ___

Project Number: 19119232 Project Name: UPRR HWPW Date: 1-16-2020

Sampling Location (well ID, etc.): MW 89B

Sample Number: WG-1620 MW89B 20200116

Sampled by: Tim McSpadden

Measuring Point (MP) of Well: TOC - Steel or (PVC)

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 6.19

Casing Stickup (ft.): 0

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 40.80 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID) 2"

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): (Low Flow) - Dedicated Tubing/Equipment

Cleaning Equipment: ~~DI/Alconox Rinse~~

Purge: ~~Peristaltic Pump~~ / SS Pump / Bailer / Bladder Sampling: (Peristaltic Pump) / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H2O drum 1-7-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: P2111 Heron Other: Geo Pump P1102

Multi Meter: Horiba C1103

Field Calibration: Ph. 4.0

Filter / Filter Size: 10 micron

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
12:10	6.19	.2	.2	23.35	0.98	.258	7.81	-138	27.5	clear/no
12:20	6.30	.3	.2	23.26	0.29	.260	7.69	-146	23.6	
12:25	6.47	.4	.2	22.98	0	.281	7.57	-155	21.3	
12:30	6.55	.5	.2	22.90	0	.283	7.55	-157	21.1	
12:35	6.71	.6	.2	22.95	0	.287	7.45	-171	23.4	
12:40	6.82	.7	.2	22.98	0	.289	7.36	-182	23.9	

WL (ft. BMP) at End of Purge: 6.82 Sample Intake Depth (ft. BMP): 36.

SAMPLE INVENTORY

Bottles Collected Time		Volume	Composition (G/P)	No.	Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
12:45				6			

Comments:

WG 1620 FB08 20200116 12:00

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GROUNDWATER SAMPLING RECORD

PAGE ___ of ___

Project Number: 19119232 Project Name: UPRR HwPw Date: 1-20-2020

Sampling Location (well ID, etc.): MW 90B

Sample Number: WG-1620 MW90B 20200120

Sampled by: TJM MCSpadden

Measuring Point (MP) of Well: TOC - Steel or (PVC)

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 0.84

Casing Stickup (ft.): 0

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 36.40 (ft. BGL): 2

Ft. water: _____ Casing Dia. (In ID): _____

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: Peristaltic Pump / SS Pump / Bailer / Bladder Sampling: Peristaltic Pump / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge HW drum 1-7-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: P2111 Heron Other: Geo Pump P1102

Multi Meter: Horiba C1103

Field Calibration: Ph. 4.0

Filter / Filter Size: 10 micron

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
14:40	0.89	.2	.2	21.76	2.52	.854	9.10	-16	32.2	Clear/no
14:50	1.31	.3	.2	22.05	2.76	.861	8.03	-27	14.3	
14:55	1.47	.4	.2	22.00	1.48	.857	8.86	-37	14.0	
15:00	2.52	.5	.2	21.73	1.10	.858	8.32	-40	19.4	
15:05	2.68	.6	.2	21.59	1.33	.840	8.28	-42	19.4	
15:10	2.84	.7	.2	21.50	1.26	.844	8.05	-42	19.2	
15:15	2.96	.8	.2	21.71	1.12	.836	7.02	-44	14.1	

WL (ft. BMP) at End of Purge: 2.96 Sample Intake Depth (ft. BMP): 31.

SAMPLE INVENTORY

Time	Bottles Collected	Volume	Composition (G/P)	No.	Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
15:20				6			

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE ___ of ___

Project Number: 1911232 Project Name: UPRR HWPW Date: 1-13-2020

Sampling Location (well ID, etc.): P-10

Sample Number: WG1620 MWP10 20200113

Sampled by: Tim Mespadden

Measuring Point (MP) of Well: TOC - Steel or (PVC)

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 3.18

Casing Stickup (ft.):

WL (ft. BMP): (ft. BGL):

TD (ft. BMP): 42.90 (ft. BGL):

Ft. water: Casing Dia. (In ID): 2"

1X Casing Vol (gal.): 3X (gal):

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: (Peristaltic Pump) / SS Pump / Bailer / Bladder Sampling: (Peristaltic Pump) / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge 1620 drum 1-7-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: P2111 Heron Other:

Multi Meter: Horiba U-1103

Field Calibration: pH-7.99 ORP+0 cond 448

Filter / Filter Size: -

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
13:35	3.18	.2	.2	19.79	2.81	.981	6.95	114	13.8	Clear/no
13:45	4.61	.3	.2	19.61	2.41	1.01	6.97	113	8.9	
13:50	4.64	.4	.2	19.70	1.81	1.07	7.08	110	6.5	
13:55	4.64	.5	.2	19.70	1.57	1.08	7.14	108	6.1	
14:00	4.65	.6	.2	19.63	1.52	1.08	7.17	107	4.9	
14:05	4.66	.7	.2	19.65	1.38	1.09	7.21	106	3.3	
14:10	4.68	.8	.2	19.61	1.36	1.09	7.21	106	1.4	
14:15	4.70	.9	.2	19.60	1.38	1.09	7.21	106	2.4	

WL (ft. BMP) at End of Purge: Sample Intake Depth (ft. BMP): 37

SAMPLE INVENTORY

Bottles Collected					Filtration	Preservation	Remarks
Time		Volume	Composition (G, P)	No.	(Y / N)	(type)	(quality control sample, other)
14:20				2		Neat	

Comments:

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Groundwater Sample Collection

Page 1 of 1

GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	4.26 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	1-14-20	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	4.26 ft. BGL
MW ID	P11	**Location**	Other _____	**Total MW Depth**	42.75 ft. BGL
Sample ID	WG-1620-P11-20190114	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	1 gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	_____ ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate (L/min)	Cumulative Purge Volume (L)	Depth to Water (ft)	Temp (°C) ☐ NM	pH ☐ NM	Conductivity (µS/m or mS/cm) ☐ not measured	Dissolved Oxygen (mg/L) ☐ not measured	Redox Potential (mV) ☐ not measured	Turbidity (NTU) ☐ NM
1023									
1033	.2	/	4.42	21.7	6.91	1060	1.34	-99	7.9
1038	↓	/	4.43	21.6	6.91	1020	0.93	-96	7.1
1043	↓	/	4.43	21.6	6.92	1030	0.92	-96	7.4

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration (10µm / 45µm)	Preserved (type)	Notes and Observations (quality control sample, other)
Time	Volume	Composition (G / P)	No.			
1055	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1055	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

GROUNDWATER SAMPLING RECORD

1 | PAGE ___ of ___

Project Number: 191/9232 Project Name: UPRR HWPW Date: 1-13-2020

Sampling Location (well ID, etc.): P-12

Sample Number: WG-1620 MW P12 20200113

Sampled by: Tim McSpadden

Measuring Point (MP) of Well: TOC - Steel or PVC

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 3.96

Casing Stickup (ft.): 1.4'

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 42.75 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): 2"

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: Peristaltic Pump / SS Pump / Bailer / Bladder Sampling: Peristaltic Pump / SS Pump / Bailer / Bladder

Disposal of Discharged Water: Purge H2O drum 1-7-2020

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: P2111 Hersa Other: Geo pump P1102

Multi Meter: Hanna C1103

Field Calibration: Ph-3.99 ORP-0 cond 4.49

Filter / Filter Size: 10"

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
~~9:15~~ 9:45	3.96	.2	.2	20.01	7.01	1.34	7.39	99	73.3	Clear/no
~~9:18~~ 9:55	4.89	.3	.2	20.09	1.82	1.33	7.30	100	76.0	
~~9:30~~ 10:00	4.91	.4	.2	20.11	1.44	1.31	7.19	103	72.8	
~~9:35~~ 10:05	4.95	.5	.2	20.14	1.30	1.30	7.14	104	70.8	
~~9:40~~ 10:10	4.98	.6	.2	20.17	1.20	1.30	7.09	106	66.5	
~~9:45~~ 10:15	4.99	.7	.2	20.26	1.00	1.28	6.99	111	59.9	
~~9:50~~ 10:20	4.99	.8	.2	20.33	0.67	1.28	6.90	112	54.5	
~~9:55~~ 10:25	5.02	.9	.2	20.33	0.49	1.28	6.89	112	53.4	

WL (ft. BMP) at End of Purge: 5.02 Sample Intake Depth (ft. BMP): 37

SAMPLE INVENTORY

Time	Bottles Collected	Volume	Composition (G/P)	No.	Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
10:30				2	-	Neat	

Comments:

Collected MS MSD and ~~Field Blank~~ @ P-12

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Groundwater Sample Collection

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GOLDER

Project/Phase	19119232	**Equipment Decon**	☒ Dedicated equipment	**Depth to Water**	5.53 ft. BMP
Site Location	UPRR-HWPW		☐ Decon between locations	**Casing Stickup**	– ft.
Date	1-13-20	**Reference Point**	☒ Top of casing	☐ **Depth to Water**	5.52 ft. BGL
MW ID	~~MW~~ TW41B	**Location**	Other _____	**Total MW Depth**	42.25 ft. BGL
Sample ID	WG-1620-TW41B-2019	**Water Quality**		**MW Diameter**	2.0 inches
Pump	☐ Waterra ☐ Submersible	**Meter Model**	HORIBA	**MW Volume**	/ gallons
	☒ Peristaltic ☐ Bladder	**Unit Number**	U-50	**Pump Intake Depth**	/ ft. BGL

Standard volume capacity of monitoring wells: Schedule 40 PVC (1-inch OD, 0.04 gallons/foot; 2-inch OD, 0.16 gallons/foot; 4-inch OD, 0.65 gallons/foot)

Time	Purge Rate	Cumulative Purge Volume	Depth to Water	Temp (°C)	pH	Conductivity (µS/m or mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)
1326	(L/min)	(L)	(ft)	☐ NM	☐ NM	☐ not measured	☐ not measured	☐ not measured	☐ NM
1336	.2	/	5.74	22.7	6.91	1460	0.79	-36	21
1341	↓	/	5.76	22.3	6.84	1490	0.61	-27	14
1346	↓	/	5.77	22.4	6.86	1490	0.62	-29	16

Purging was completed based on: ☒ stabilization of water quality parameters ☐ removal of three well volumes ☐ removal of at least one half well volume (low yield well)

Bottles Collected				Filtration	Preserved	Notes and Observations
Time	Volume	Composition (G / P)	No.	(10µm / 45µm)	(type)	(quality control sample, other)
1400	60mL	P	1	☐ filtered ☐ unfiltered	HNO_3	METALS
1400	40mL / 1L	G / G		☐ filtered ☒ unfiltered	HCL / NONE	VOCS / SVOCS

Notes: record time at which purging is started. For low flow sampling, recommended stabilization criteria: temp ± 0.5°C; pH ± 0.1 units; conductivity ± 3%; DO ± 1 mg/L; ORP ± 10 mV; for at least three successive measurements that are made every 3-5 minutes with <1 foot of stable draw down.

Unless otherwise noted, groundwater sample collection was completed in accordance with the applicable requirements of Golder's Quality Assurance Program and Standard Operating Procedure ☐ 9 Conventional Groundwater Sample Collection ☒ 10 Low Flow Groundwater Sample Collection.

Field Team Leader JOHN BRAXTON (name) _____ (signature)

GROUNDWATER SAMPLING RECORD

PAGE ___ of ___

Project Number: 19119232 Project Name: HWPW Date: 3-17-2020

Sampling Location (well ID, etc.): MW 60B

Sample Number: WG-1620 MW60B 20200317

Sampled by:

Measuring Point (MP) of Well: TOC - Steel or PVC

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 24.91

Casing Stickup (ft.): 0

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 39.50 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): _____

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): ~~Low Flow~~ - ~~Dedicated~~ Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: Peristaltic Pump / SS Pump / Bailer / Bladder Sampling: Peristaltic Pump / SS Pump / Bailer / Bladder

Disposal of Discharged Water:

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: Heron D2106 Other: Geo purp 1122

Multi Meter: Horiba C1122

Field Calibration: PH buffer 4.0, FieldCal @ 4.0

Filter / Filter Size: 10 micron

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
14:30	24.91	.2	.2	~~26.85~~	5.36	1.35	6.73	-82	306	Clear
14:40	26.11	.3	.2	27.24	1.00	1.36	6.71	-87	0.0	LT Brown
14:45	26.40	.4	.2	26.69	0.31	1.40	6.58	-105	0.0	LT Brown
14:50	27.58	.5	.2	26.20	0.19	1.41	6.55	-111	0.0	LT Brown/Clearing
14:55	27.71	.6	.2	26.08	0.11	1.42	6.54	-113	0.0	clear
15:00	27.84	.7	.2	25.96	0.14	1.42	6.53	-116	0.0	clear
15:05	27.91	.8	.2	25.78	0.10	1.42	6.51	-117	751	clear
15:10	28.04	.9	.2	~~25.93~~ 25.93	0.01	1.41	6.50	-117	691	clear

WL (ft. BMP) at End of Purge: 28.04 Sample Intake Depth (ft. BMP): 320

SAMPLE INVENTORY

Time	Bottles Collected	Volume	Composition (G/P)	No.	Filtration (Y/N)	Preservation (type)	Remarks (quality control sample, other)
15:15			Pump	9	10 Micron		

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE ___ of ___

Project Number: 19192232 Project Name: HWPW Date: 3-17-2020

Sampling Location (well ID, etc.): MW-88B

Sample Number: WG1620MW88B20200317

Sampled by: T+M MCSpadden

Measuring Point (MP) of Well: TOC - Steel or PVC

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 7.82

Casing Stickup (ft.): 3'

WL (ft. BMP): _____ (ft. BGL): _____

TD (ft. BMP): 43.0 (ft. BGL): _____

Ft. water: _____ Casing Dia. (In ID): _____

1X Casing Vol (gal.): _____ 3X (gal): _____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: Peristaltic Pump / SS Pump / Bailer / Bladder Sampling: Peristaltic Pump / SS Pump / Bailer / Bladder

Disposal of Discharged Water:

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: Heron D2106 Other: Geo Pump P1122

Multi Meter: Horiba C1122

Field Calibration: Ph buffer 4.0 Field cal @ 4.0

Filter / Filter Size:

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
13:10	7.82	.2	.2	25.11	4.38	1.15	6.65	37	18.8	Clear
13:20	8.44	.3	.2	25.27	2.33	1.16	6.67	36	1.4	
13:25	8.41	.4	.2	25.35	2.14	1.16	6.52	37	0.0	
13:30	8.50	.5	.2	25.25	2.08	1.16	6.46	50	0.0	
13:35	8.51	.6	.2	25.04	1.80	1.16	6.40	16	0.0	
13:40	8.47	.7	.2	25.09	1.61	1.16	6.38	9	0.1	
13:45	8.41	.8	.2	25.23	1.51	1.16	6.35	-10	0.9	
13:50	8.44	.9	.2	25.11	1.21	1.17	6.35	-17	0.8	

WL (ft. BMP) at End of Purge:

Sample Intake Depth (ft. BMP): 40.0

SAMPLE INVENTORY

Bottles Collected					Filtration	Preservation	Remarks
Time		Volume	Composition (G, P)	No.	(Y / N)	(type)	(quality control sample, other)
1350			Pump	9			

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE ___ of ___

Project Number: 19119232 Project Name: HarPW Date: 3-17-2020

Sampling Location (well ID, etc.): MW 88A

Sample Number: LWG-1020 MW88A 20200317

Sampled by: Tim McSpadden

Measuring Point (MP) of Well: TOC / Steel or PVC

Screened Interval (ft. BGL):

Filter Pack Interval (ft. BGL):

Starting Water Level (ft. BMP): 8.00

Casing Stickup (ft.): 3'

WL (ft. BMP): ____ (ft. BGL): ____

TD (ft. BMP): 25.50 (ft. BGL): ____

Ft. water: 2.8 Casing Dia. (In ID): 2"

1X Casing Vol (gal.): ____ 3X (gal): ____

QUALITY ASSURANCE

Gallons/Foot: 2": 0.16 4": 0.65 5.25": 1.12 6": 1.47 6.25": 1.59

METHODS (describe): Low Flow - Dedicated Tubing/Equipment

Cleaning Equipment: DI/Alconox Rinse

Purge: Peristaltic Pump / SS Pump / Bailer / Bladder Sampling: Peristaltic Pump / SS Pump / Bailer / Bladder

Disposal of Discharged Water:

INSTRUMENTS (Indicate make, model, I.d.)

Water Level: Heron D 2106 Other: Geo pump P1122

Multi Meter: Horiba C1122

Field Calibration: Ph buffer 9.0 = Ph 4.0

Filter / Filter Size: 10 micron

SAMPLING MEASUREMENTS

Begin Purge:

Time	DTW (ft BTOC)	Cum. Vol. (gal. or L)	Purge Rate (gal. or L /m)	Temp. (oC)	DO (mg/L)	Spec. Cond. (µs/cm)	pH	ORP (mV)	Turbidity (NTU)	Color & Sediment
1220	8.00	.2	.2	24.93	0.72	0.954	6.47	-43	980	clear
1230	8.64	.3	.2	25.09	0.55	0.957	6.41	-48	926	
1235	8.64	.4	.2	25.19	0.31	0.957	6.37	-49	910	
1240	8.57	.5	.2	25.64	0.40	0.948	6.27	-51	832	
1245	8.51	.6	.2	25.33	0.33	0.957	6.23	-50	773	
1250	8.47	.7	.2	26.01	0.29	0.938	6.29	-57	684	
1255	8.41	.8	.2	26.13	0.27	0.935	6.30	-58	637	

WL (ft. BMP) at End of Purge: 8.41 Sample Intake Depth (ft. BMP): 23.

SAMPLE INVENTORY

Bottles Collected					Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time		Volume	Composition (G/P)	No.			
1255			Pump	9	10 Micron		

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 19189232	Project Name: HWPW	Date: 3-17-20	
Sample Number: WG1620MW96B20200317		Starting Water Level (ft. BMP): 4.28	
Sampling Location (well ID, etc.): MW96B		Casing Stickup (ft.): 0	
Sampled by: T. McFadden		Starting Water Level (ft. BGL): 4.28	
Measuring Point (MP) of Well: TOC		Total Depth (ft. BMP): 35.50	
Screened Interval (ft. BGL):		Casing Diameter (In ID): 2"	
Filter Pack Interval (ft. BGL):		Casing Volume (gal.): 4.9	

QUALITY ASSURANCE

METHODS (describe):- Low Flow

Cleaning Equipment:

Purging: Sampling:

Disposal of Discharged Water:

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	Heron D 2106	Thermometer:	Horiba C1123
pH Meter:	Horiba C1122	Field Calibration:	
Conductivity Meter:	Horiba C1122	Field Calibration:	Ph buffer 4.0 Field Cal Ph 4.0
Filter / Filter Size:		Other:	Geo pump P1122

SAMPLING MEASUREMENTS

Time	Water Depth (ft BMP)	Cum. Vol. (gal. or L)	Purge Rate (L /m)	Temp. (°C)	pH (S.U.)	Spec. Cond. (mS/cm)	D.O. (mg/L)	Redox (mV)	Turbidity (NTU)	Color
--	--	--	--	± 3%	± 0.1	± 3%	± 10% if >0.5	± 10	± 10%	--
9:45	4.28	.2	.2	22.35	6.96	0.782	3.44	129	11.7	Clear
9:55	5.01	.3	.2	22.41	7.19	0.782	2.30	125	6.5	
10:00	4.98	.4	.2	22.38	7.49	0.779	1.71	123	0.9	
10:05	5.09	.5	.2	22.36	7.61	0.777	1.51	122	0.1	
10:10	5.14	.6	.2	22.39	7.63	0.775	1.47	121	0.4	
10:15	5.17	.7	.2	22.43	7.70	0.774	1.33	120	0.3	
10:20	5.14	.8	.2	22.46	7.71	0.774	1.30	120	0.6	
10:25	5.17	.9	.2	22.48	7.73	0.774	1.24	118	0.3	

Water Level (ft. BMP) at End of Purge: 5.14

Sample Intake Depth (ft. BMP): 30.

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation	Remarks (quality control sample, other)
Time	Volume	Composition (G/P)	No.			
10:25		Pump	9	NO		

Comments:

Duplicate Sample
WG1620FD02.20200317

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GROUNDWATER SAMPLING RECORD

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Project Number: 19119232	Project Name: HWPW		Date: 3-17-2020
Sample Number: WG-1620 MW 95A 20200317		Starting Water Level (ft. BMP):	3.88
Sampling Location (well ID, etc.): MW-95A		Casing Stickup (ft.):	0
Sampled by: Tim McSpedden		Starting Water Level (ft. BGL):	3.88
Measuring Point (MP) of Well: TOC		Total Depth (ft. BMP):	24.90
Screened Interval (ft. BGL):		Casing Diameter (In ID):	2"
Filter Pack Interval (ft. BGL):		Casing Volume (gal.):	3.3

QUALITY ASSURANCE

METHODS (describe): Low Flow

Cleaning Equipment:

Purging: Sampling:

Disposal of Discharged Water:

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	Heron D2106	Thermometer:	Horiba C1122
pH Meter:	Horiba C1122	Field Calibration:	
Conductivity Meter:	Horiba C1122	Field Calibration:	Ph buffer 4.0 - Field Cal Ph-4.0
Filter / Filter Size:		Other:	Geopump P1122

SAMPLING MEASUREMENTS

Time	Water Depth (ft BMP)	Cum. Vol. (gal. or L)	Purge Rate (L /m)	Temp. (°C)	pH (S.U.)	Spec. Cond. (mS/cm)	D.O. (mg/L)	Redox (mV)	Turbidity (NTU)	Color
--	--	--	--	± 3%	± 0.1	± 3%	± 10% if >0.5	± 10	± 10%	--
8:30	3.88	.2	.2	22.56	5.71	0.832	2.49	235	20.7	Clear
8:40	4.83	.3	.2	22.44	6.05	0.819	2.37	217	16.7	
8:45	4.90	.4	.2	22.31	6.19	0.806	2.22	209	14.8	
8:50	5.94 SM	.5	.2	22.10	6.23	0.802	2.18	205	12.6	
8:55	5.48	.6	.2	22.25	6.30	0.799	2.07	199	11.4	
9:00	5.37	.7	.2	22.22	6.31	0.799	2.03	194	9.2	
9:05	5.41	.8	.2	22.36	6.36	0.797	1.91	188	9.7	
9:10	5.42	.9	.2	22.42	6.37	0.797	1.90	186	9.1	

Water Level (ft. BMP) at End of Purge: 5.42

Sample Intake Depth (ft. BMP): 22.

SAMPLE INVENTORY

Bottles Collected				Filtration (Y (N))	Preservation	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
9:10		Pump	9			

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE ____ of ____

Project Number: 19119232	Project Name: HWPW	Date: 3-17-2020	
Sample Number: WG-1620 MW 613 20200317	Starting Water Level (ft. BMP): 8.31		
Sampling Location (well ID, etc.): MW 613	Casing Stickup (ft.): 0		
Sampled by: Tim McSpadden	Starting Water Level (ft. BGL): 8.31		
Measuring Point (MP) of Well: TOC	Total Depth (ft. BMP): 33.25		
Screened Interval (ft. BGL):	Casing Diameter (In ID): 2"		
Filter Pack Interval (ft. BGL):	Casing Volume (gal.): 3.9		

QUALITY ASSURANCE

METHODS (describe): Low flow

Cleaning Equipment:

Purging: Sampling:

Disposal of Discharged Water:

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	Heron D2106	Thermometer:	Horiba C1122
pH Meter:	Horiba C1122	Field Calibration:	
Conductivity Meter:	Horiba C1122	Field Calibration:	pH buffer 4.0 Field Cal. = 4.0
Filter / Filter Size:		Other:	Geo pump P1122

SAMPLING MEASUREMENTS

Time	Water Depth (ft BMP)	Cum. Vol. (gal. or L)	Purge Rate (L /m)	Temp. (°C)	pH (S.U.)	Spec. Cond. (mS/cm)	D.O. (mg/L)	Redox (mV)	Turbidity (NTU)	Color
--	--	--	--	± 3%	± 0.1	± 3%	± 10% if >0.5	± 10	± 10%	--
11:10	8.31	.2	.2	23.76	7.01	1.18	3.80	129	0.0	Clear
11:20	7.99	.3	.2	23.58	6.72	1.21	3.41	140	0.0	
11:25	8.71	.4	.2	23.41	6.58	1.22	3.18	147	0.0	
11:30	8.59	.5	.2	23.53	6.52	1.22	3.06	149	0.0	
11:35	8.41	.6	.2	23.66	6.50	1.22	3.00	150	0.0	
11:40	8.37	.7	.2	23.63	6.46	1.22	2.91	152	0.0	
11:45	8.31	.8	.2	23.59	6.44	1.22	2.89	153	0.0	

Water Level (ft. BMP) at End of Purge: 8.31

Sample Intake Depth (ft. BMP): 30.

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / (N))	Preservation	Remarks (quality control sample, other)
Time	Volume	Composition (G, (P))	No.			
11:45		Pump	9	NV		

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE ____ of ____

Project Number: 19119232	Project Name: UP CSA	Date: 3-11-2020	
Sample Number: WG-1620 MW 54B 20200311		Starting Water Level (ft. BMP): 13.42	
Sampling Location (well ID, etc.): MW 54B		Casing Stickup (ft.): 0	
Sampled by: Tim M S parker		Starting Water Level (ft. BGL): 13.42	
Measuring Point (MP) of Well:		Total Depth (ft. BMP): 40.08	
Screened Interval (ft. BGL):		Casing Diameter (In ID): 2"	
Filter Pack Interval (ft. BGL):		Casing Volume (gal.): 4.2	

QUALITY ASSURANCE

METHODS (describe): Low Flow

Cleaning Equipment:

Purging: Sampling:

Disposal of Discharged Water:

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	Heron H-01L D2106	Thermometer:	Horiba C1122
pH Meter:	Horiba C1122	Field Calibration:	
Conductivity Meter:	Horiba C1122	Field Calibration:	Buffer 4.0 = Field Cal @ 4.0
Filter / Filter Size:	0 micron	Other:	Geo pump P1122

SAMPLING MEASUREMENTS

Time	Water Depth (ft BMP)	Cum. Vol. (gal. or L)	Purge Rate (L /m)	Temp. (°C)	pH (S.U.)	Spec. Cond. (mS/cm)	D.O. (mg/L)	Redox (mV)	Turbidity (NTU)	Color
--	--	--	--	± 3%	± 0.1	± 3%	± 10% if >0.5	± 10	± 10%	--
13:55	13.42	.2	.2	2598	7.45	1.57	4.15	130	33.4	clear
14:05	15.05	.3	.2	25.87	7.19	1.56	3.71	113	24.9	clear
14:10	15.01	.4	.2	25.79	7.14	1.56	3.54	107	22.2	
14:15	14.97	.5	.2	2583	7.11	1.57	3.65	102	21.2	
14:20	14.93	.6	.2	25.84	7.09	1.57	3.63	99	21.8	

Water Level (ft. BMP) at End of Purge: 14.93

Sample Intake Depth (ft. BMP): 37.0

SAMPLE INVENTORY

Bottles Collected				Filtration		Remarks
Time	Volume	Composition (G/P)	No.	(Y/N)	Preservation	(quality control sample, other)
14:20		Plump (P)	9	(N)		

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE ____ of ____

Project Number: 19119232	Project Name: UP CSA	Date: 3-16-2020	
Sample Number: WG1620MW99C20200316	Starting Water Level (ft. BMP): 14.99		
Sampling Location (well ID, etc.): MW99C	Casing Stickup (ft.): 0		
Sampled by: Tim McSpadden	Starting Water Level (ft. BGL): 14.99		
Measuring Point (MP) of Well: TOC	Total Depth (ft. BMP): 68.25		
Screened Interval (ft. BGL):	Casing Diameter (In ID): 2"		
Filter Pack Interval (ft. BGL):	Casing Volume (gal.): 8.5		

QUALITY ASSURANCE

METHODS (describe): Low Flow

Cleaning Equipment:

Purging: Sampling:

Disposal of Discharged Water:

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	Heron H-Oil D2100	Thermometer:	Horiba C1122
pH Meter:	Horiba C1122	Field Calibration:	
Conductivity Meter:	Horiba C1122	Field Calibration:	Buffer 4.0 = Field Cal @ 4.0
Filter / Filter Size:		Other:	Geo pump P1127

SAMPLING MEASUREMENTS

Time	Water Depth (ft BMP)	Cum. Vol. (gal. or L)	Purge Rate (L /m)	Temp. (°C)	pH (S.U.)	Spec. Cond. (mS/cm)	D.O. (mg/L)	Redox (mV)	Turbidity (NTU)	Color
--	--	--	--	± 3%	± 0.1	± 3%	± 10% if >0.5	± 10	± 10%	--
15:00	14.99	.3	.2	28.20	11.48	1.62	1.13	-88	8.8	clear
15:10	15.25	.3	.2	28.51	11.74	1.62	0.57	-151	5.4	
15:15	15.19	.4	.2	28.87	11.78	1.63	0.40	-160	3.6	
15:20	15.10	.5	.2	28.27	11.80	1.63	0.31	-166	0.1	
15:25	15.02	.6	.2	28.23	11.80	1.63	0.30	-167	0.0	
15:30	14.99	.7	.2	28.26	11.81	1.63	0.28	-169	0.0	
15:35	14.92	.8	.2	28.08	11.78	1.63	0.22	-175	0.0	

Water Level (ft. BMP) at End of Purge: 14.99 Sample Intake Depth (ft. BMP): 210.0

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
15:35		Pump	9			

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 19119232	Project Name: UP CSA HWPW		Date: 3-12-2020
Sample Number: WG1620MW91A20200312		Starting Water Level (ft. BMP): 5.21	
Sampling Location (well ID, etc.): MW 91A		Casing Stickup (ft.): -0	
Sampled by: Tim McSpadden		Starting Water Level (ft. BGL): 5.21	
Measuring Point (MP) of Well: TOC		Total Depth (ft. BMP): 24.10	
Screened Interval (ft. BGL):		Casing Diameter (In ID): 2"	
Filter Pack Interval (ft. BGL):		Casing Volume (gal.):	

QUALITY ASSURANCE

METHODS (describe): Low Flow

Cleaning Equipment:

Purging: Sampling:

Disposal of Discharged Water:

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	Heron H-01L D2106	Thermometer:	Horiba C1122
pH Meter:	Horiba C1122	Field Calibration:	
Conductivity Meter:	Horiba C1122	Field Calibration:	pH buffer 4.0 - Field Cal = 4.0
Filter / Filter Size:	10 Micron	Other:	Geo pump PL122

SAMPLING MEASUREMENTS

Time	Water Depth (ft BMP)	Cum. Vol. (gal. or L)	Purge Rate (L /m)	Temp. (°C)	pH (S.U.)	Spec. Cond. (mS/cm)	D.O. (mg/L)	Redox (mV)	Turbidity (NTU)	Color
--	--	--	--	± 3%	± 0.1	± 3%	± 10% if >0.5	± 10	± 10%	--
8:45	5.21	.2	.2	22.73	7.82	0.733	2.18	-53	332	clear
8:55	5.31	.3	.2	22.60	7.52	0.742	0.71	-69	391	
9:00	5.34	.4	.2	22.50	7.14	0.747	0.24	-81	272	
9:05	5.36	.5	.2	22.57	6.68	0.801	0.08	-84	208	
9:10	5.33	.6	.2	22.65	6.55	0.838	0.00	-91	131	
9:15	5.34	.7	.2	22.64	6.54	0.835	0.00	-92	108	
9:20	5.31	.8	.2	22.67	6.52	0.845	0.00	-92	102	

Water Level (ft. BMP) at End of Purge: 5.31

Sample Intake Depth (ft. BMP): 22.0

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation	Remarks (quality control sample, other)
Time	Volume	Composition (G/P)	No.			
9:20		Pump	9	10 Micron		

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 1919232	Project Name: UP HWPW	Date: 3-12-2020	
Sample Number: WG1620MW70C20200312		Starting Water Level (ft. BMP): 16.04	
Sampling Location (well ID, etc.): MW 70C		Casing Stickup (ft.): 0	
Sampled by: TJM MCS pacden		Starting Water Level (ft. BGL): 16.04	
Measuring Point (MP) of Well: TOC		Total Depth (ft. BMP): 67.02	
Screened Interval (ft. BGL):		Casing Diameter (In ID): 2"	
Filter Pack Interval (ft. BGL):		Casing Volume (gal.): 8.1	

QUALITY ASSURANCE

METHODS (describe): Low Flow

Cleaning Equipment:

Purging: Sampling:

Disposal of Discharged Water:

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	Heron H-Oil D2106	Thermometer:	Horiba C1122
pH Meter:	Horiba C1122	Field Calibration:	
Conductivity Meter:	Horiba C1122	Field Calibration:	PH buffer 4.0 - Field Cal = 4.0
Filter / Filter Size:	10 micron	Other:	Geo pump P1122

SAMPLING MEASUREMENTS

Time	Water Depth (ft BMP)	Cum. Vol. (gal. or L)	Purge Rate (L /m)	Temp. (°C)	pH (S.U.)	Spec. Cond. (mS/cm)	D.O. (mg/L)	Redox (mV)	Turbidity (NTU)	Color
--	--	--	--	± 3%	± 0.1	± 3%	± 10% if >0.5	± 10	± 10%	--
9:55	16.04	.2	.2	24.37	7.01	1.00	0.99	-7	70.3	Clear
10:05	16.25	.3	.2	24.58	7.04	0.997	0.61	-13	70.5	
10:10	16.19	.4	.2	24.63	7.13	0.999	0.35	-41	58.9	
10:15	16.18	.5	.2	24.72	7.10	1.01	0.22	-46	59.7	
10:20	16.20	.6	.2	24.87	7.06	1.11	0.00	-80	56.2	
10:25	16.18	.7	.2	24.76	6.99	1.18	0.02	-91	53.2	
10:30	16.19	.8	.2	24.83	6.98	1.20	0.01	-93	51.4	

Water Level (ft. BMP) at End of Purge: 16.19

Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration		
Time	Volume	Composition (G/P)	No.	(Y/N)	Preservation	Remarks (quality control sample, other)
10:35		Pump	18	10 Micron		

Comments: Duplicate
WG1620 FD 01 20200312

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GROUNDWATER SAMPLING RECORD

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Project Number: 19619232	Project Name: UP HWPW	Date: 3-12-2020	
Sample Number: GW-1620 MW84A 20200312		Starting Water Level (ft. BMP): 4.19	
Sampling Location (well ID, etc.): MW 84A		Casing Stickup (ft.): 0	
Sampled by: T.M mcspadden		Starting Water Level (ft. BGL): 4.19	
Measuring Point (MP) of Well: TOC		Total Depth (ft. BMP): 23.80	
Screened Interval (ft. BGL):		Casing Diameter (In ID): 2"	
Filter Pack Interval (ft. BGL):		Casing Volume (gal.): 3.1	

QUALITY ASSURANCE

METHODS (describe): Low Flow

Cleaning Equipment:

Purging: Sampling:

Disposal of Discharged Water:

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	Heron H-01L D2106	Thermometer:	Horiba-C1122
pH Meter:	Horiba C1122	Field Calibration:	
Conductivity Meter:	Horiba C1122	Field Calibration:	Ph buffer 4.0-Field Cal = 4.0
Filter / Filter Size:	1.0 micron	Other:	Geopump P1122

SAMPLING MEASUREMENTS

Time	Water Depth (ft BMP)	Cum. Vol. (gal. or L)	Purge Rate (L /m)	Temp. (°C)	pH (S.U.)	Spec. Cond. (mS/cm)	D.O. (mg/L)	Redox (mV)	Turbidity (NTU)	Color
--	--	--	--	± 3%	± 0.1	± 3%	± 10% if >0.5	± 10	± 10%	--
11:25	4.19	~~26.09~~	.2	26.04	6.96	0.970	1.52	53	78.8	clear
11:35	4.41	.3	.2	26.50	6.57	0.985	0.51	34	65.7	
11:40	4.29	.4	.2	26.59	6.54	0.984	0.45	33	71.4	
11:45	4.24	.5	.2	26.74	6.52	0.984	0.31	34	53.5	
11:50	4.22	.6	.2	26.85	6.57	0.984	0.26	36	55.6	
11:55	4.21	.7	.2	27.04	6.57	0.980	0.25	34	53.4	
12:00	4.22	.8	.2	27.19	6.50	0.981	0.24	31	44.8	
12:05	4.20	.9	.2	27.35	6.50	0.978	0.24	30	50.8	

Water Level (ft. BMP) at End of Purge: 4.20

Sample Intake Depth (ft. BMP): 21.

SAMPLE INVENTORY

Bottles Collected				Filtration		
Time	Volume	Composition (G/P)	No.	(Y / N)	Preservation	Remarks (quality control sample, other)
12:15		Pump	9	Y Micron		

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 19119232	Project Name: HWPW	Date: 3-12-2020	
Sample Number: WG-1620 MW 923 20200312		Starting Water Level (ft. BMP): 4.19	
Sampling Location (well ID, etc.): MW 923		Casing Stickup (ft.): 0	
Sampled by: Tim McSpadden		Starting Water Level (ft. BGL): 4.19	
Measuring Point (MP) of Well: TOC		Total Depth (ft. BMP): 34.60	
Screened Interval (ft. BGL):		Casing Diameter (In ID): 2	
Filter Pack Interval (ft. BGL):		Casing Volume (gal.): 4.8	

QUALITY ASSURANCE

METHODS (describe): Low Flow

Cleaning Equipment:

Purging: Sampling:

Disposal of Discharged Water:

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	Heron H.Oil D2106	Thermometer:	Horiba C1122
pH Meter:	Horiba C1122	Field Calibration:	
Conductivity Meter:	Horiba C1122	Field Calibration:	PH buffer 4.0 Field Cal. PH 4.0
Filter / Filter Size:	~~50 microns~~	Other:	Geo pump P1122

SAMPLING MEASUREMENTS

Time	Water Depth (ft BMP)	Cum. Vol. (gal. or L)	Purge Rate (L /m)	Temp. (°C)	pH (S.U.)	Spec. Cond. (mS/cm)	D.O. (mg/L)	Redox (mV)	Turbidity (NTU)	Color
--	--	--	--	± 3%	± 0.1	± 3%	± 10% if >0.5	± 10	± 10%	--
1245	4.19	.2	.2	30.89	6.56	1.77	0.53	17	3.7	clear
1255	4.90	.3	.2	29.99	6.36	1.83	0.26	-4	4.0	
1300	4.72	.4	.2	29.92	6.34	1.82	0.21	-6	4.8	
1305	4.64	.5	.2	29.91	6.32	1.83	0.19	-10	5.7	
1310	4.51	.6	.2	29.90	6.32	1.83	0.17	-12	7.4	
1315	4.49	.7	.2	29.93	6.32	1.83	0.15	-14	9.2	

Water Level (ft. BMP) at End of Purge: 4.49 Sample Intake Depth (ft. BMP): 32.0

SAMPLE INVENTORY

Bottles Collected				Filtration		Remarks
Time	Volume	Composition (G/P)	No.	(Y / N)	Preservation	(quality control sample, other)
1320		Pump	9	NO		

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 19119232	Project Name: HWPW	Date: 3-12-2020	
Sample Number: WG1620MW93B20200312	Starting Water Level (ft. BMP): 4.06		
Sampling Location (well ID, etc.): MW 93B	Casing Stickup (ft.): 0		
Sampled by: Tim McSpadden	Starting Water Level (ft. BGL): 4.06		
Measuring Point (MP) of Well: TOC	Total Depth (ft. BMP): 34.01		
Screened Interval (ft. BGL):	Casing Diameter (In ID): 2"		
Filter Pack Interval (ft. BGL):	Casing Volume (gal.): 4.7		

QUALITY ASSURANCE

METHODS (describe): Low Flow

Cleaning Equipment:

Purging: Sampling:

Disposal of Discharged Water:

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	Heron H-Oil D 2106	Thermometer:	Horiba C1122
pH Meter:	Horiba C1122	Field Calibration:	
Conductivity Meter:	Horiba C1122	Field Calibration:	PH buffer 4.0 Field Cal = 4.0
Filter / Filter Size:	10 Micron	Other:	Geo pump & 1122

SAMPLING MEASUREMENTS

Time	Water Depth (ft BMP)	Cum. Vol. (gal. or L)	Purge Rate (L /m)	Temp. (°C)	pH (S.U.)	Spec. Cond. (mS/cm)	D.O. (mg/L)	Redox (mV)	Turbidity (NTU)	Color
--	--	--	--	± 3%	± 0.1	± 3%	± 10% if >0.5	± 10	± 10%	--
13:55	4.06	.2	.2	30.37	6.69	1.24	1.09	11	10.8	Clear
1405	4.49	.3	.2	30.39	6.54	1.28	0.50	-26	12.4	
1410	4.36	.4	.2	29.56	6.45	1.34	0.25	-50	12.8	
1415	4.29	.5	.2	28.83	6.40	1.37	0.15	-59	16.0	
1420	4.28	.6	.2	28.08	6.34	1.37	0.05	-66	21.0	
1425	4.28	.7	.2	27.79	6.30	1.36	0.01	-70	25.1	
1430	4.31	.8	.2	27.01	6.31	1.36	0.00	-72	22.4	
1435	4.28	.9	.2	27.67	6.23	1.34	0.00	-72	28.6	

Water Level (ft. BMP) at End of Purge:

Sample Intake Depth (ft. BMP): 32.0

SAMPLE INVENTORY

Bottles Collected				Filtration		
Time	Volume	Composition (G/P)	No.	(Y/N)	Preservation	Remarks (quality control sample, other)
1435		Pump	9	10 Micron		

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 19119232	Project Name: HWPH	Date: 3-12-2020	
Sample Number: WG1620MW94A20200312		Starting Water Level (ft. BMP): 3.99	
Sampling Location (well ID, etc.): MW 94A		Casing Stickup (ft.): 0	
Sampled by: Tim McSpadden		Starting Water Level (ft. BGL): 3.99	
Measuring Point (MP) of Well: TOC		Total Depth (ft. BMP): 21.60	
Screened Interval (ft. BGL):		Casing Diameter (In ID): 2"	
Filter Pack Interval (ft. BGL):		Casing Volume (gal.):	

QUALITY ASSURANCE

METHODS (describe): Low flow

Cleaning Equipment:

Purging: Sampling:

Disposal of Discharged Water:

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	Heron H-Oil D2106	Thermometer:	Horiba C1122
pH Meter:	Horiba C1122	Field Calibration:	
Conductivity Meter:	Horiba C1122	Field Calibration:	PH buffer 4.0, Field Cal = 4.0
Filter / Filter Size:	10 micron	Other:	Geo pump P1122

SAMPLING MEASUREMENTS

Time	Water Depth (ft BMP)	Cum. Vol. (gal. or L)	Purge Rate (L /m)	Temp. (°C)	pH (S.U.)	Spec. Cond. (mS/cm)	D.O. (mg/L)	Redox (mV)	Turbidity (NTU)	Color
--	--	--	--	± 3%	± 0.1	± 3%	± 10% if >0.5	± 10	± 10%	--
15:05	3.99	.2	.2	30.83	6.78	0.598	0.62	-72	138	Clear
15:15	4.21	.3	.2	30.37	6.82	0.605	0.44	-78	154	
15:20	4.01	.4	.2	29.71	6.77	0.612	0.33	-84	163	
15:25	4.00	.5	.2	29.16	6.74	0.617	0.26	-88	215	
15:30	4.00	.6	.2	27.99	6.65	0.626	0.09	-95	197	
1535	4.01	.7	.2	27.87	6.63	0.627	0.07	-94	161	
1540	4.01	.8	.2	27.41	6.59	0.630	0.00	-95	151	
1545	4.00	.9	.2	26.70	6.34	0.633	0.00	-85	92.8	

Water Level (ft. BMP) at End of Purge: Sample Intake Depth (ft. BMP):

SAMPLE INVENTORY

Bottles Collected				Filtration		
Time	Volume	Composition (G, P)	No.	(Y) N	Preservation	Remarks (quality control sample, other)
1545		Pump	9	10 micron		

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 19119232 **Project Name:** HWPW	**Date:** 3.12.20
Sample Number: 76B WG-1620-MW76B-20200312	**Starting Water Level (ft. BMP):** ~~4.80~~ 5.40
Sampling Location (well ID, etc.): MW-76B	**Casing Stickup (ft.):** -
Sampled by: SDB	**Starting Water Level (ft. BGL):** -
Measuring Point (MP) of Well: TOC/PVC	**Total Depth (ft. BMP):** 35.50
Screened Interval (ft. BGL): 31-36	**Casing Diameter (in ID):** 2
Filter Pack Interval (ft. BGL): 29-36	**Casing Volume (gal.):** 4.91 = ~~18.58~~ L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: (Peristaltic) or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: 55 gal Drum CSA

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
10:10	-	0.2	-	-	-	-	-	-	-	~~5.40~~	Pump is on
10:20	2	〃	24.67	6.87	1520	Neutral	30.7	204	2.17	6.20	
10:25	3	〃	24.88	6.86	1530	〃	15.8	194	1.89	6.55	
10:30	4	〃	25.24	6.86	1530	〃	15.6	179	1.75	6.90	

Water Level (ft. BMP) at End of Purge: 6.90 **Sample Intake Depth (ft. BMP):** 32.50

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
10:35	1 L	G	2	N	Neat	SVOCs - Site specific
10:35	120 mL	P	1	Y	HNO_3	Metals - As
10:35	40 mL	G	6	N	HCL	VOC site specific / TPH

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 19119232 Project Name: HWPW Date: 3.12.20

Sample Number: WG-1620-MW97A-20200312 Starting Water Level (ft. BMP): 5.20

Sampling Location (well ID, etc.): MW-97A Casing Stickup (ft.): -

Sampled by: SNS Starting Water Level (ft. BGL): -

Measuring Point (MP) of Well: TOC/PVC Total Depth (ft. BMP): 19.85

Screened Interval (ft. BGL): 10.5 - 20.5 Casing Diameter (in ID): 2

Filter Pack Interval (ft. BGL): 8.5 - 21 Casing Volume (gal.): 2.39 = 9.05L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: 55 gal Drum CSA

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Conductivity Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Thermometer: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Turbidimeter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

ORP Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

DO Meter: Horiba U-52 **Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution

Other: **Filter / Filter Size:** 10 micron

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
11:19	-		-	-	-	-	-	-	-	5.20	Pump is on
11:29	2	0.2	26.31	6.58	1910	Neutral	109	45	0.00	5.75	
11:34	3	↓	26.52	6.58	1890	↓	89.7	38	0.00	5.82	
11:39	4	↓	26.68	6.57	1890	↓	77.6	34	0.00	5.91	
11:42	4.5	↓	26.68	6.59	1880	↓	64.9	33	0.00	5.92	
11:45	5	↓	26.70	6.59	1870	↓	59.2	33	0.00	5.93	

Water Level (ft. BMP) at End of Purge: 5.93 Sample Intake Depth (ft. BMP): 16.85

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
11:47	1 L	G	2	N	Neat	SVOCs
11:47	120 mL	P	1	Y	HNO_3	Metals - As
11:47	40 mL	G	6	N	HCL	VOCs / TPH

Comments:

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GROUNDWATER SAMPLING RECORD

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Project Number: 19119232 Project Name: HWPW	Date: 3.12.20
Sample Number: WG-1620-MW98A-20200312	Starting Water Level (ft. BMP): 7.19
Sampling Location (well ID, etc.): MW-98A	Casing Stickup (ft.): -
Sampled by: SAS	Starting Water Level (ft. BGL): -
Measuring Point (MP) of Well: TOC/PVC	Total Depth (ft. BMP): 20.40
Screened Interval (ft. BGL): 10.5 - 20.5	Casing Diameter (in ID): 2
Filter Pack Interval (ft. BGL): 8.5 - 21	Casing Volume (gal.): 2.16 = 8.18 L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: Peristaltic or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: 55 gal drum CSA

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
12:26	-	0.2	-	-	-	-	-	-	-	7.19	Pump is on
12:36	2	↓	30.18	6.89	1810	Neutral	78.7	-88	0.00	7.91	
12:41	3	↓	30.01	6.89	1820	↓	63.3	-92	0.00	7.95	
12:46	4	↓	29.76	6.87	1850	↓	48.7	-94	0.00	7.97	
12:49	4.5	↓	29.66	6.86	1860	↓	45.0	-95	0.00	7.98	

Water Level (ft. BMP) at End of Purge: 7.98 **Sample Intake Depth (ft. BMP):** 17.40

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
12:54	1 L	G	2	N	Neat	SVOCs
12:54	120 mL	P	1	Y	HNO_3	Metals - As
12:54	40 mL	G	6	N	HCL	VOCs / TPH

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19119232	**Project Name:** HWPW	**Date:** 3.12.20	
Sample Number: MG-1620-MW98B-20200312		**Starting Water Level (ft. BMP):** 8.30	
Sampling Location (well ID, etc.): MW-98B		**Casing Stickup (ft.):** -	
Sampled by: SV		**Starting Water Level (ft. BGL):** 8.3 -	
Measuring Point (MP) of Well: TOC/PVC		**Total Depth (ft. BMP):** 39.80	
Screened Interval (ft. BGL): 35-40		**Casing Diameter (in ID):** 2	
Filter Pack Interval (ft. BGL): 31-40		**Casing Volume (gal.):** 5.14 = 19.46L	

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: (Peristaltic) or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: 55 gal Drum CSA

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck	
pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
13:25	-	0.2	-	-	-	-	-	-	-	8.30	Pump is on
13:35	2	〃	29.26	7.11	991	Neutral	30.7	74	0.42	11.30	
13:40	3	〃	29.78	7.12	981	〃	25.7	73	0.37	12.25	
13:45	4	↓	29.03	7.17	993	〃	4.2	74	0.37	13.81	
13:48	4.5	↓	29.17	7.12	991	〃	6.2	75	0.44	14.89	
13:51	5	↓	29.32	7.12	987	↓	6.8	75	0.47	15.23	

Water Level (ft. BMP) at End of Purge: 15.23 **Sample Intake Depth (ft. BMP):** 36.80

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
13:50	1 L	G	2	N	Neat	SVOCs
13:50	120 mL	P	1	N	HNO_3	Metals-As
13:50	40 mL	G	6	N	HCl	VOCs / TPH

13:53

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE 1 of 1

Project Number: 19119232 **Project Name:** HWPW **Date:** 3.12.20

Sample Number: WG-1620-MW503-20200312 **Starting Water Level (ft. BMP):** 8.37

Sampling Location (well ID, etc.): 503 **Casing Stickup (ft.):** -

Sampled by: SB **Starting Water Level (ft. BGL):** -

Measuring Point (MP) of Well: TOC/PVC **Total Depth (ft. BMP):** 35.5 - Silty bottom

Screened Interval (ft. BGL): 34.5 - 39.5 **Casing Diameter (in ID):** 2

Filter Pack Interval (ft. BGL): 31 - 40 **Casing Volume (gal.):** 4.92 = 18.62 L

QUALITY ASSURANCE

METHODS (describe):

Cleaning Equipment: Dedicated Equipment

Purging: (Peristaltic) or bladder pump with dedicated tubing **Sampling:** Same

Disposal of Discharged Water: 55 gal Drum CSA

INSTRUMENTS (Indicate make, model, I.D.)

Water Level: Keck

pH Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Conductivity Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Thermometer: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Turbidimeter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
ORP Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
DO Meter: Horiba U-52	**Field Calibration:** Auto Calibration - 100-4 Horiba Calibration Solution
Other:	**Filter / Filter Size:** 10 micron

SAMPLING MEASUREMENTS

Time	Cum. Vol. (L)	Purge Rate (L/m)	Temp. (oC)	pH	Spec. Cond. (µS/cm)	Color	Turbidity & Sediment (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft BMP)	Remarks
14:49	-	0.2	-	-	-	-	-	-	-	8.37	Pump is on
14:59	2	|	30.75	6.98	1620	Cloudy	360	26	2.72	11.65	
15:04	3	|	30.53	6.96	1620	Neutral	83.8	32	2.84	12.93	
15:09	4	↓	30.43	6.97	1620	|	60.3	22	2.82	14.10	
15:12	4.5	↓	30.53	6.97	1620	|	87.2	19	2.76	14.57	
15:15	5	↓	30.11	6.97	1630	|	50.1	13	2.65	15.10	
15:18	5.5	↓	30.27	6.97	1630	↓	54.7	9	2.50	15.50	

Water Level (ft. BMP) at End of Purge: 15.50 **Sample Intake Depth (ft. BMP):** 35.5

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation (type)	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
15:20	1 L	G	2	N	Neat	SVOCs
15:20	120mL	P	1	Y	HNO_3	Metals-As
15:20	40mL	G	6	N	HCL	VOCs/TPH

Comments: Very Silty Bottom

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GROUNDWATER SAMPLING RECORD

PAGE ____ of ____

Project Number: 19119737	Project Name: HWDW	Date: 3-20-2020	
Sample Number: LWG 1620 MW 60AR20200320		Starting Water Level (ft. BMP): 8.03	
Sampling Location (well ID, etc.): MW 60 AR		Casing Stickup (ft.): 0	
Sampled by: Tim McSpadden TOC		Starting Water Level (ft. BGL): 8.03	
Measuring Point (MP) of Well: —		Total Depth (ft. BMP): 29.60	
Screened Interval (ft. BGL):		Casing Diameter (In ID): 2"	
Filter Pack Interval (ft. BGL):		Casing Volume (gal.): 3.4	

QUALITY ASSURANCE

METHODS (describe): Low Flow

Cleaning Equipment:

Purging: Sampling:

Disposal of Discharged Water:

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	Heron D2106	Thermometer:	Horiba C1122
pH Meter:	Horiba C1122	Field Calibration:	
Conductivity Meter:	Horiba C1122	Field Calibration:	Ph buffer 4.0 - Field Cal = 4.0
Filter / Filter Size:	10 Micro	Other:	Geo Pump P1122

SAMPLING MEASUREMENTS

Time	Water Depth (ft BMP)	Cum. Vol. (gal. or L)	Purge Rate (L /m)	Temp. (°C)	pH (S.U.)	Spec. Cond. (mS/cm)	D.O. (mg/L)	Redox (mV)	Turbidity (NTU)	Color
--	--	--	--	± 3%	± 0.1	± 3%	± 10% if >0.5	± 10	± 10%	--
8:00	8.03	.3	.2	23.96	5.90	1.08	1.48	190	249	
8:10	9.57	.3	.2	23.67	6.09	1.05	1.18	164	139	
8:15	8.33	.4	.2	23.52	6.17	1.04	0.92	145	142	
~~8:20~~										
~~8:25~~	Rain delay	20 minute								
~~8:30~~										
8:35	8.51	.5	.2	23.63	6.82	0.999	1.02	103	147	
8:40	8.23	.6	.2	23.38	6.73	1.01	1.00	78	103	
8:45	8.24	.7	.2	23.26	6.72	1.01	1.14	70	74.8	
8:50	8.22	.8	.2	23.15	6.70	1.01	1.02	65	68.9	
8:55	8.23	.9	.2	23.01	6.68	1.01	0.80	56	67.1	

Water Level (ft. BMP) at End of Purge: 8.23

Sample Intake Depth (ft. BMP): 26.

SAMPLE INVENTORY

Bottles Collected				Filtration (Y) N	Preservation	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
~~8:55~~		Pump	9	10 micro		

Comments:

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GROUNDWATER SAMPLING RECORD

PAGE ____ of ____

Project Number: 19119232	Project Name: AWPW	Date: 3-20-2020	
Sample Number: WG1620 MW47A 20200320		Starting Water Level (ft. BMP): 9.26	
Sampling Location (well ID, etc.): MW 47A		Casing Stickup (ft.): 0	
Sampled by: TIM McSpadden		Starting Water Level (ft. BGL): 9.26	
Measuring Point (MP) of Well: TOC		Total Depth (ft. BMP): 25.03	
Screened Interval (ft. BGL):		Casing Diameter (In ID): 2'	
Filter Pack Interval (ft. BGL):		Casing Volume (gal.): 2.5	

QUALITY ASSURANCE

METHODS (describe): Low Flow

Cleaning Equipment:

Purging: Sampling:

Disposal of Discharged Water:

INSTRUMENTS (Indicate make, model, I.d.)

Water Level:	Heron D2106	Thermometer:	Horiba C122
pH Meter:	Horiba C122	Field Calibration:	
Conductivity Meter:	Horiba C122	Field Calibration:	Ph buffer 4.0 Field cal: 4.0
Filter / Filter Size:		Other:	Geo pump P122

SAMPLING MEASUREMENTS

Time	Water Depth (ft BMP)	Cum. Vol. (gal. or L)	Purge Rate (L /m)	Temp. (°C)	pH (S.U.)	Spec. Cond. (mS/cm)	D.O. (mg/L)	Redox (mV)	Turbidity (NTU)	Color
--	--	--	--	± 3%	± 0.1	± 3%	± 10% if >0.5	± 10	± 10%	--
9:50	9.26	.2	.2	21.69	6.99	0.851	9.62	109	169	
10:00	9.37	.3	.2	22.03	7.18	0.856	2.21	119	81.4	
10:05	9.29	.4	.2	22.14	6.89	0.826	0.80	112	69.7	
10:10	9.27	.5	.2	22.17	6.84	0.863	0.42	109	58.4	
10:15	9.28	.6	.2	22.19	6.80	0.863	0.33	105	59.6	
10:20	9.26	.7	.2	22.29	6.78	0.859	0.38	101	86.4	
10:25	9.31	.8	.2	22.38	6.79	0.859	0.30	99	117	
10:30	9.32	.9	.2	22.34	6.78	0.858	0.24	100	97.3	

Water Level (ft. BMP) at End of Purge:

Sample Intake Depth (ft. BMP): 22.

SAMPLE INVENTORY

Bottles Collected				Filtration (Y / N)	Preservation	Remarks (quality control sample, other)
Time	Volume	Composition (G, P)	No.			
10:30		Pump	9			

Comments:

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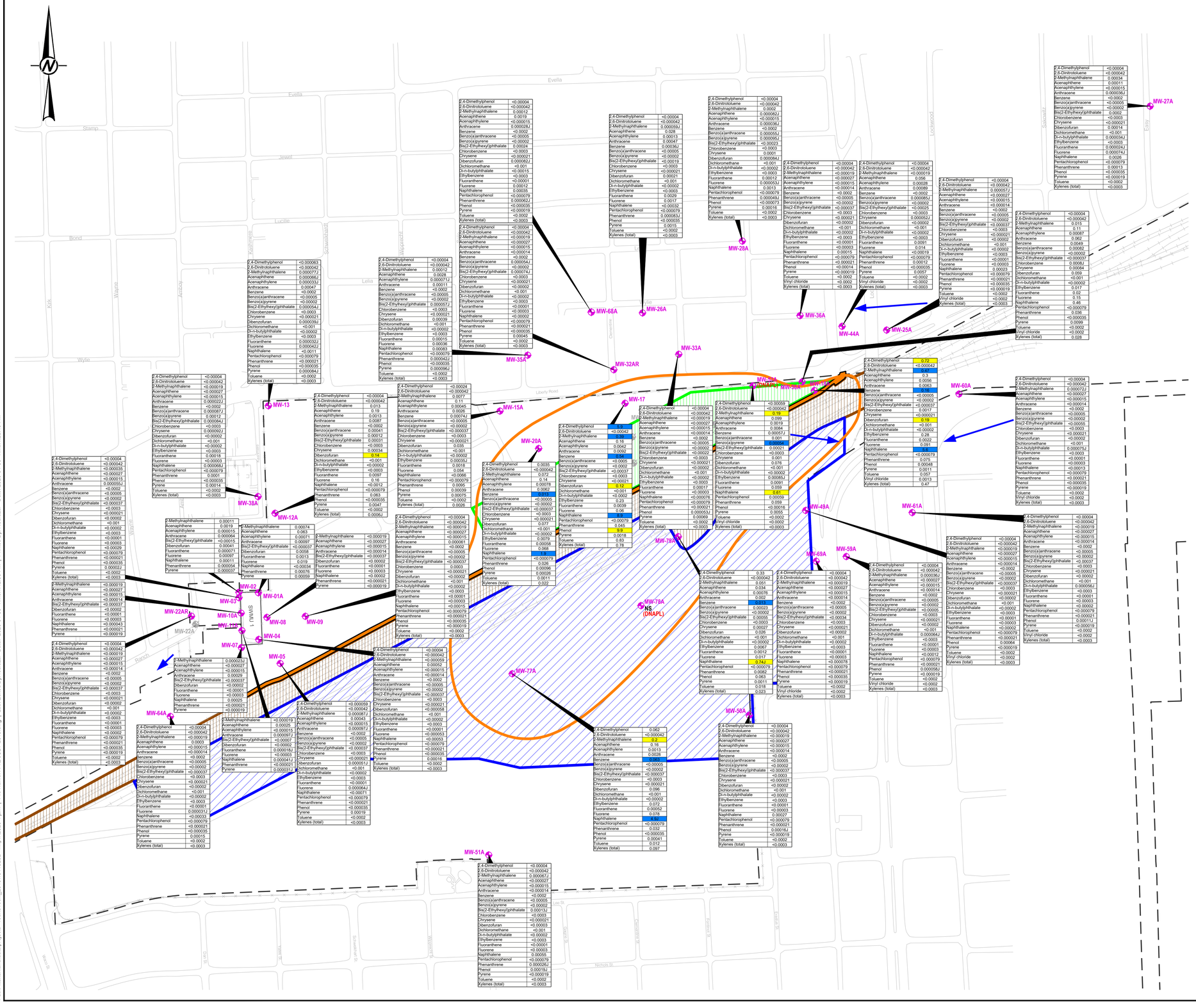
ATTACHMENT D

July 2019 Sampling Event COC Concentration Maps



LEGEND

- UPRR PROPERTY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION
- INFERRED GROUNDWATER FLOW DIRECTION
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA
- GW PCLE ZONE

NOTE(S)

1. ALL CONCENTRATIONS ARE IN mg/L.
2. J - ESTIMATED VALUE BETWEEN SQL AND MDL.
3. < - NOT DETECTED (RL/SQL REPORTED).
4. NA - NOT ANALYZED.
5. NS - NOT SAMPLED.
6. BLUE HIGHLIGHTED CONCENTRATIONS EXCEED COMMERCIAL INDUSTRIAL PCLs (FOR ON-SITE WELLS ONLY).
7. YELLOW HIGHLIGHTED CONCENTRATIONS EXCEED RESIDENTIAL ASSESSMENT LEVEL (RALs).
8. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JULY 2019).

SWNU AREA

NO.	DESCRIPTION
SWMU 1	CLOSED SURFACE IMPOUNDMENT

PROTECTIVE CONCENTRATION LEVELS (PCLs)

PARAMETER	RAL (mg/L)	C/I PCL (mg/L)
2,4-Dimethylphenol	1.5	1.5
2,6-Dinitrotoluene	0.0013	0.003
2-Methylnaphthalene	0.098	0.29
Acenaphthene	1.5	4.4
Acenaphthylene	1.5	4.4
Anthracene	7.3	22
Benzene	0.005	0.005
Benzo(a)anthracene	0.0092	0.02
Benzo(a)pyrene	0.0002	0.0002
Bis(2-Ethylhexyl)phthalate	0.006	0.006
Chlorobenzene	0.1	0.1
Chrysene	0.91	2
Dibenzofuran	0.098	0.29
Dichloromethane	0.005	0.005
Di-n-butylphthalate	2.6	2.6
Ethylbenzene	0.7	0.7
Fluoranthene	0.98	2.9
Fluorene	0.98	2.9
Naphthalene	0.49	1.5
Pentachlorophenol	0.001	0.001
Phenanthrene	0.73	2.2
Phenol	7.3	22
Pyrene	0.73	2.2
Toluene	1	1
Xylenes (total)	10	10

0 200 400
1" = 200' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - A-TZ JULY 2019

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

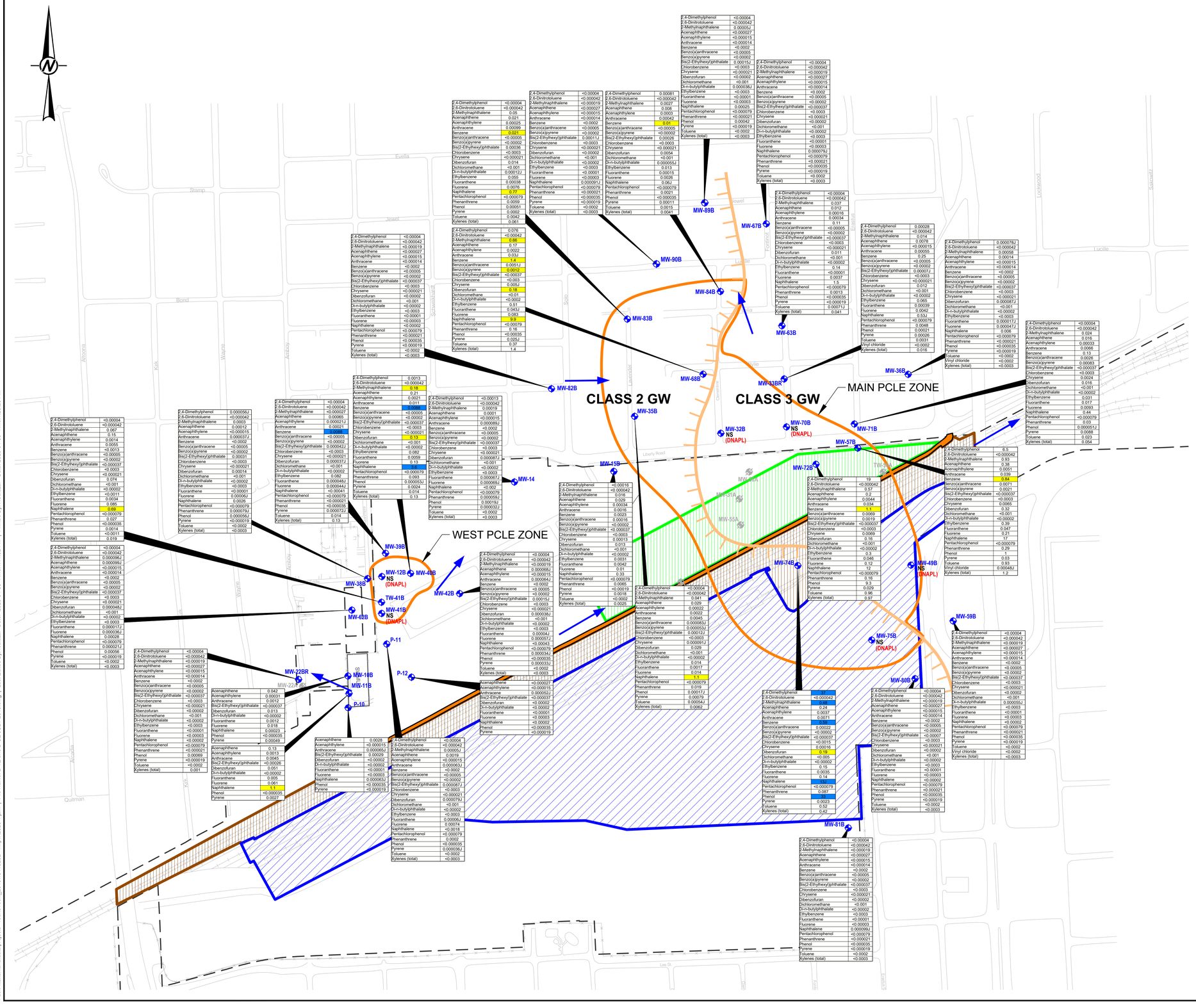
YYYY-MM-DD	2020-04-30
DESIGNED	AJD
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5B-1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D

0 1 in

Path: \\taxarkana\data\projects - round rock_2019\19119232 - hwow\2020-1 lan\ | File Name: A-TZ JULY 2019.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time: 1:26:40 PM | Printed By: RSalazar Date: 2020-04-30 Time: 12:36 PM


CLASS 2 GW
CLASS 3 GW
MAIN PCLE ZONE
WEST PCLE ZONE
MW-82B
MW-35B
MW-68B
MW-83B
MW-84B
MW-90B
MW-89B
MW-67B
MW-63B
MW-33BR
MW-36B
MW-32B
NS
(DNAPL)
MW-70B
NS
(DNAPL)
MW-71B
MW-57B
MW-72B
MW-45B
MW-14
MW-39B
MW-12B
NS
(DNAPL)
MW-40B
MW-38B
MW-42B
TW-41B
MW-41B
NS
(DNAPL)
MW-62B
P-11
P-12
P-10
MW-22BR
MW-10B
MW-11B
MW-74B
MW-49B
NS
(DNAPL)
MW-75B
NS
(DNAPL)
MW-80B
MW-81B
MW-59B
Evella
Jewel
Stamp
Bond
Alcorn
Kirk
Wayne
Kelby
Schweinhart
Solo
Lauderdale
Ferdinand
Lucille
Lockwood
Sakowitz
Quitman
Liberty Road
Lee St.
Jensen
Jacinto
Bagby
Travis
Smith
Main
Crawford
Caroline
Louisiana
Milam
Fannin
Texas Ave.
Dallas
Commerce
Franklin
Rusk
Capitol
Preston
Prairie
Walker
Lamar
Pierce
McKinney
Gray
Hadley
Wood
Clay
Polk
Leeland
Hamilton
Hutchins
Dowling
Crockett
Congress
Austin
Brazos
Lavaca
Live Oak
Caldwell
Bastrop
Fayette
Colorado
Wharton
Jackson
Matagorda
Brazoria
Galveston
Harris
Chambers
Liberty
Jefferson
Orange
Hardin
Tyler
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Rusk
Cherokee
Nacogdoches
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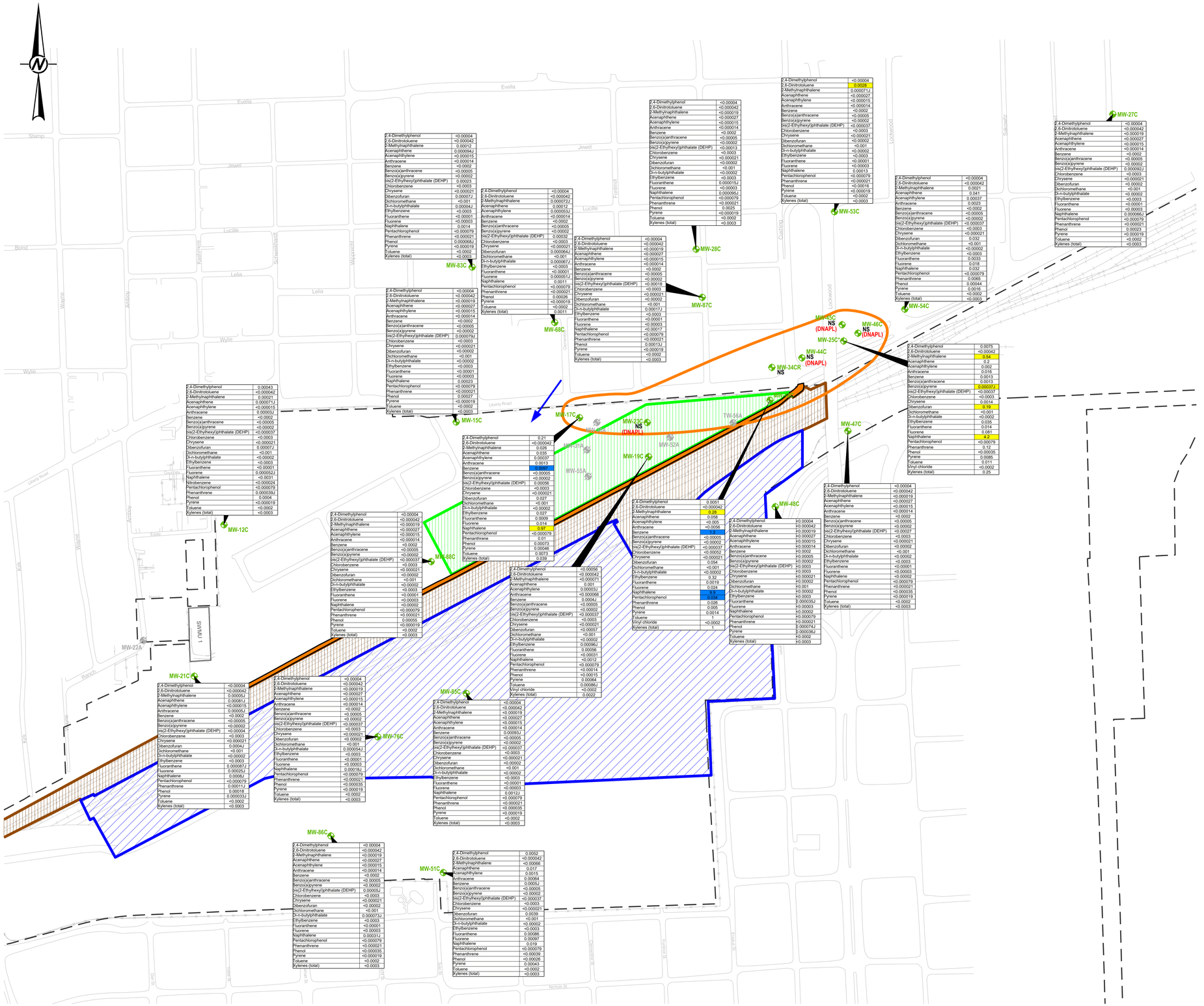
San Jacinto
Polk
Tyler
Jasper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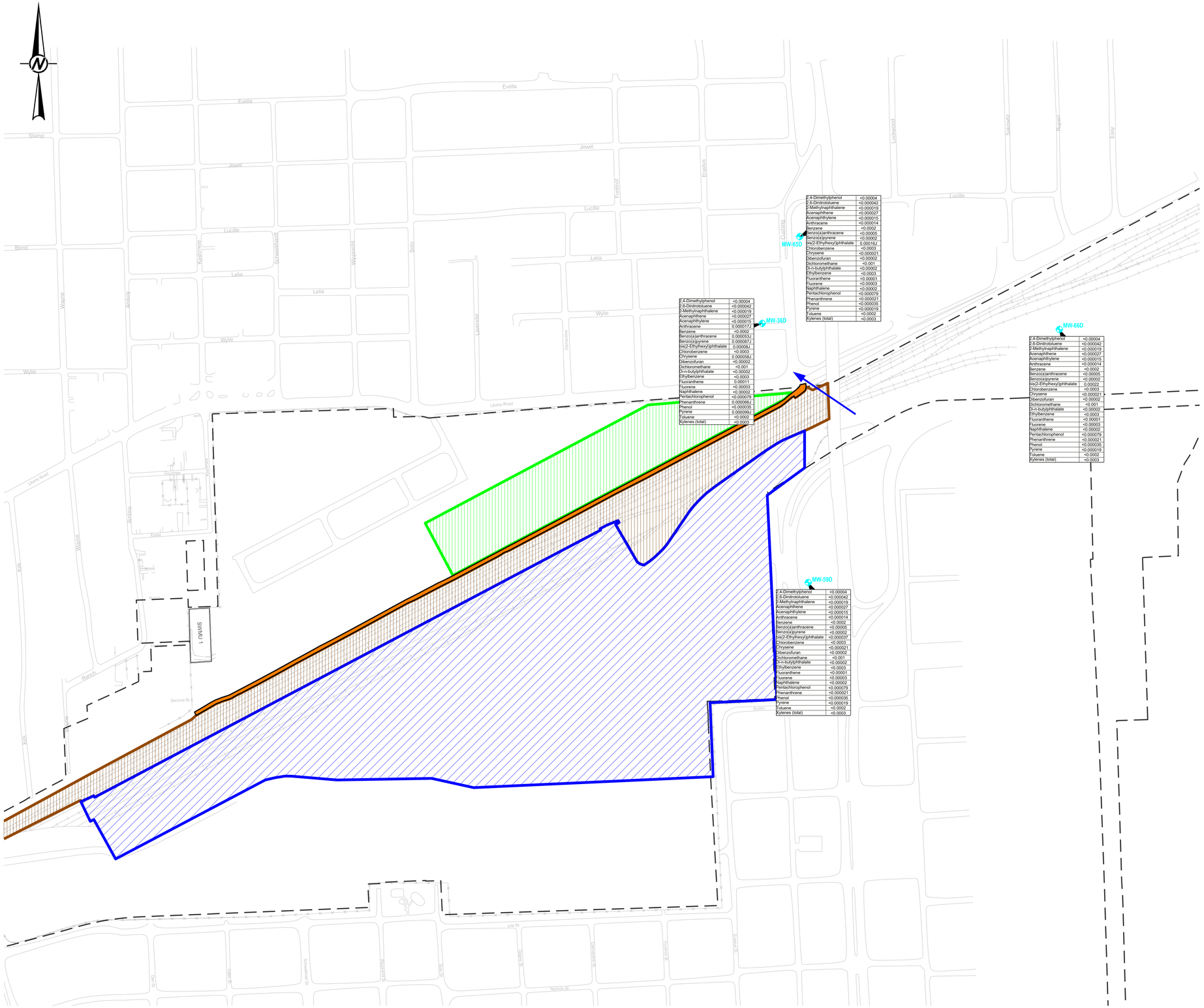
MW-12C
MW-21C
MW-22A
MW-83C
MW-68C
MW-76C
MW-85C
MW-86C
MW-51C
MW-98C
MW-17C
MW-31R
MW-55A
MW-23C
NS
(DNAPL)
MW-19C
MW-52A
TW-56A
MW-28C
MW-87C
MW-53C
MW-27C
MW-54C
MW-46C
NS
(DNAPL)
MW-25C
NS
(DNAPL)
MW-44C
NS
(DNAPL)
MW-34CR
NS
MW-47C
MW-48C
SWMU 1
Evella
Jewel
Lucille
Lelia
Wylie
Liberty Road
Bond
Stamp
Kirk
Wayne
Abbey
Kelley
Kathryne
Schwabacher
Wyandot
Fonthill
Cadiang
Lockwood
Sakowitz
Suden
Nichols St
S Wayside
S Fairfax
S Flores
S Main
S Milby
S Hutchins
S Jensen
Rusk
Polk
Dowling
Caroline
Crawford
Smith
Louisiana
Travis
Main
Fannin
Texas
Milam
Rusk
Capitol
Prairie
Lamar
Pierce
Preston
Congress
Franklin
McKinney
Walker
Commerce
Elgin
Frankfort
Hadley
Wood
Gray
Dallas
Richmond
Clay
Calhoun
Victoria
Bell
Jackson
Austin
Waugh
Crockett
Live Oak
Caldwell
Bastrop
Lee
Fayette
Colorado
Wharton
Matagorda
Brazoria
Galveston
Harris
Chambers
Jefferson
Orange
Hardin
Liberty
Montgomery
Walker
San Jacinto
Polk
Tyler
Newton
Sabine
San Augustine
Shelby
Panola
Harrison
Marion
Cass
Bowie
Red River
Lamar
Delta
Hopkins
Franklin
Titus
Morris
Camp
Upshur
Gregg
Rusk
Cherokee
Anderson
Houston
Trinity
Angelina
Nacogdoches
Smith
Henderson
Van Zandt
Wood
Rains
Hunt
Kaufman
Navarro
Ellis
Limestone
Freestone
Leon
Madison
Grimes
Walker
Montgomery
Waller
Harris
Fort Bend
Brazoria
Galveston
Chambers
Jefferson
Orange
Hardin
Liberty



2,4-Dimethylphenol	<0.00004
2,6-Dinitrotoluene	<0.000042
2-Methylnaphthalene	<0.000019
Acenaphthene	<0.000027
Acenaphthylene	<0.000015
Anthracene	<0.000014
Benzene	<0.0002
Benzo(a)anthracene	<0.00005
Benzo(a)pyrene	<0.00002
bis(2-Ethylhexyl)phthalate	0.00058J
Chlorobenzene	<0.0003
Chrysene	0.000058J
Dibenzofuran	<0.00002
Dichloromethane	<0.001
Di-n-butylphthalate	<0.00002
Ethylbenzene	<0.0003
Fluoranthene	0.00011
Fluorene	<0.00003
Naphthalene	<0.00002
Pentachlorophenol	<0.000079
Phenanthrene	0.000085J
Phenol	<0.000035
Pyrene	0.000095J
Toluene	<0.0002
Xylenes (total)	<0.0003

2,4-Dimethylphenol	<0.00004
2,6-Dinitrotoluene	<0.000042
2-Methylnaphthalene	<0.000019
Acenaphthene	<0.000027
Acenaphthylene	<0.000015
Anthracene	<0.000014
Benzene	<0.0002
Benzo(a)anthracene	<0.00005
Benzo(a)pyrene	<0.00002
bis(2-Ethylhexyl)phthalate	0.00016J
Chlorobenzene	<0.0003
Chrysene	<0.000021
Dibenzofuran	<0.00002
Dichloromethane	<0.001
Di-n-butylphthalate	<0.00002
Ethylbenzene	<0.0003
Fluoranthene	<0.00001
Fluorene	<0.00003
Naphthalene	<0.00002
Pentachlorophenol	<0.000079
Phenanthrene	<0.000021
Phenol	<0.000035
Pyrene	<0.000019
Toluene	<0.0002
Xylenes (total)	<0.0003

2,4-Dimethylphenol	<0.00004
2,6-Dinitrotoluene	<0.000042
2-Methylnaphthalene	<0.000019
Acenaphthene	<0.000027
Acenaphthylene	<0.000015
Anthracene	<0.000014
Benzene	<0.0002
Benzo(a)anthracene	<0.00005
Benzo(a)pyrene	<0.00002
bis(2-Ethylhexyl)phthalate	0.00022
Chlorobenzene	<0.0003
Chrysene	<0.000021
Dibenzofuran	<0.00002
Dichloromethane	<0.001
Di-n-butylphthalate	<0.00002
Ethylbenzene	<0.0003
Fluoranthene	<0.00001
Fluorene	<0.00003
Naphthalene	<0.00002
Pentachlorophenol	<0.000079
Phenanthrene	<0.000021
Phenol	<0.000035
Pyrene	<0.000019
Toluene	<0.0002
Xylenes (total)	<0.0003

2,4-Dimethylphenol	<0.00004
2,6-Dinitrotoluene	<0.000042
2-Methylnaphthalene	<0.000019
Acenaphthene	<0.000027
Acenaphthylene	<0.000015
Anthracene	<0.000014
Benzene	<0.0002
Benzo(a)anthracene	<0.00005
Benzo(a)pyrene	<0.00002
bis(2-Ethylhexyl)phthalate	0.000037J
Chlorobenzene	<0.0003
Chrysene	<0.000021
Dibenzofuran	<0.00002
Dichloromethane	<0.001
Di-n-butylphthalate	<0.00002
Ethylbenzene	<0.0003
Fluoranthene	<0.00001
Fluorene	<0.00003
Naphthalene	<0.00002
Pentachlorophenol	<0.000079
Phenanthrene	<0.000021
Phenol	<0.000035
Pyrene	<0.000019
Toluene	<0.0002
Xylenes (total)	<0.0003

LEGEND

- UPRR PROPERTY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- D-TZ MONITORING WELL LOCATION
- INFERRED GROUNDWATER FLOW DIRECTION
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA

NOTE(S)

1. ALL CONCENTRATIONS ARE IN mg/L.
2. J - ESTIMATED VALUE BETWEEN SQL AND MDL.
3. < - NOT DETECTED (RL/SQL REPORTED).
4. NA - NOT ANALYZED.
5. NS - NOT SAMPLED.
6. BLUE HIGHLIGHTED CONCENTRATIONS EXCEED COMMERCIAL INDUSTRIAL PCLs (FOR ON-SITE WELLS ONLY).
7. YELLOW HIGHLIGHTED CONCENTRATIONS EXCEED RESIDENTIAL ASSESSMENT LEVEL (RALs).
8. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JULY 2019).

SWNU AREA

NO.	DESCRIPTION
SWMU 1	CLOSED SURFACE IMPOUNDMENT

PROTECTIVE CONCENTRATION LEVELS (PCLs)

PARAMETER	RAL (mg/L)	C/I PCL (mg/L)
2,4-Dimethylphenol	0.49	1.5
2,6-Dinitrotoluene	0.0013	0.003
2-Methylnaphthalene	0.098	0.29
Acenaphthene	1.5	4.4
Acenaphthylene	1.5	4.4
Anthracene	7.3	22
Benzene	0.005	0.005
Benzo(a)anthracene	0.0091	0.02
Benzo(a)pyrene	0.0002	0.0002
Bis(2-Ethylhexyl)phthalate	0.006	0.006
Chlorobenzene	0.1	0.1
Chrysene	0.91	2
Dibenzofuran	0.098	0.29
Dichloromethane	0.005	0.005
Di-n-butylphthalate	2.4	7.3
Ethylbenzene	0.7	0.7
Fluoranthene	0.98	2.9
Fluorene	0.98	2.9
Naphthalene	0.49	1.5
Pentachlorophenol	0.001	0.001
Phenanthrene	0.73	2.2
Phenol	7.3	22
Pyrene	0.73	2.2
Toluene	1	1
Xylenes (total)	10	10

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
4/30/20

0 200 400
1" = 200' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

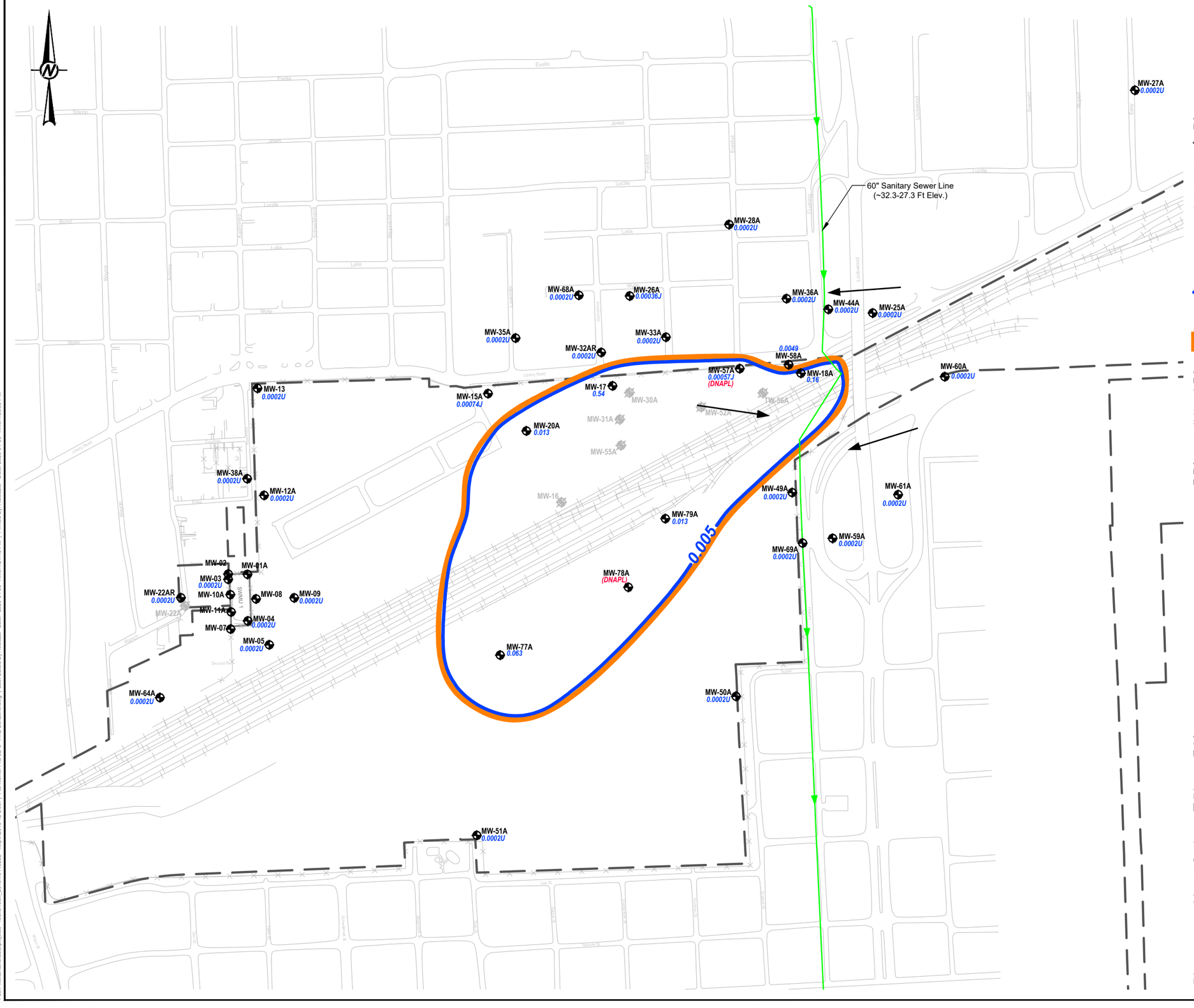
TITLE
GROUNDWATER COC CONCENTRATION MAP - D-TZ JULY 2019

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	AJD
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5B-4

0 1 in
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARLING LOT, SIDEWALK
- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- 0.108 — BENZENE CONCENTRATION (mg/L)
- 0.005 — BENZENE CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION
- GW PCLE ZONE

NOTE(S)

1. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JULY 2019).
2. NS - NOT SAMPLED
3. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.005 mg/L).

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1. DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
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4/30/20

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

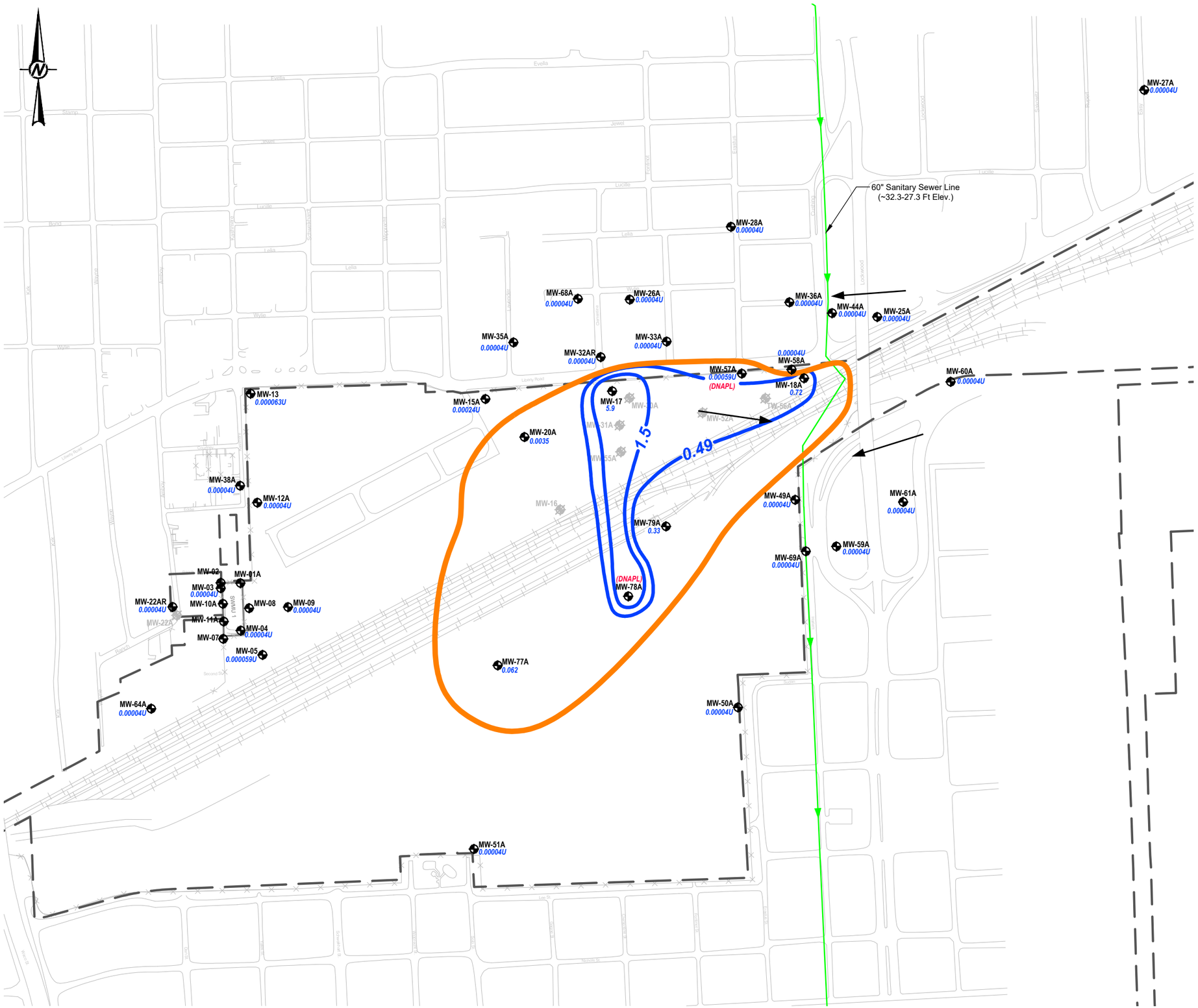
TITLE
GROUNDWATER COC CONCENTRATION MAP - A-TZ BENZENE - JULY 2019

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5B-5

Path: \\texarkana\data\projects - round rock\ 20191919119232 - hwpw\2019-12 Dec\ | File Name: FIG 5B-5 - A1Z-Benzene.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time:1:21:13 PM | Printed By: RSalazar Date: 2020-04-30 Time:1:39:03 PM
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARLING LOT, SIDEWALK
- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- 8.01 — 2,4-DIMETHYLPHENOL CONCENTRATION (mg/L)
- 0.49 — 2,4-DIMETHYLPHENOL CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION
- GW PCLE ZONE

NOTE(S)

1. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JULY 2019).
2. NS - NOT SAMPLED
3. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.49 mg/L AND 1.5 mg/L, RESPECTIVELY).

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1. DATED JUNE 2004.

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0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - A-TZ
2,4-DIMETHYLPHENOL - JULY 2019

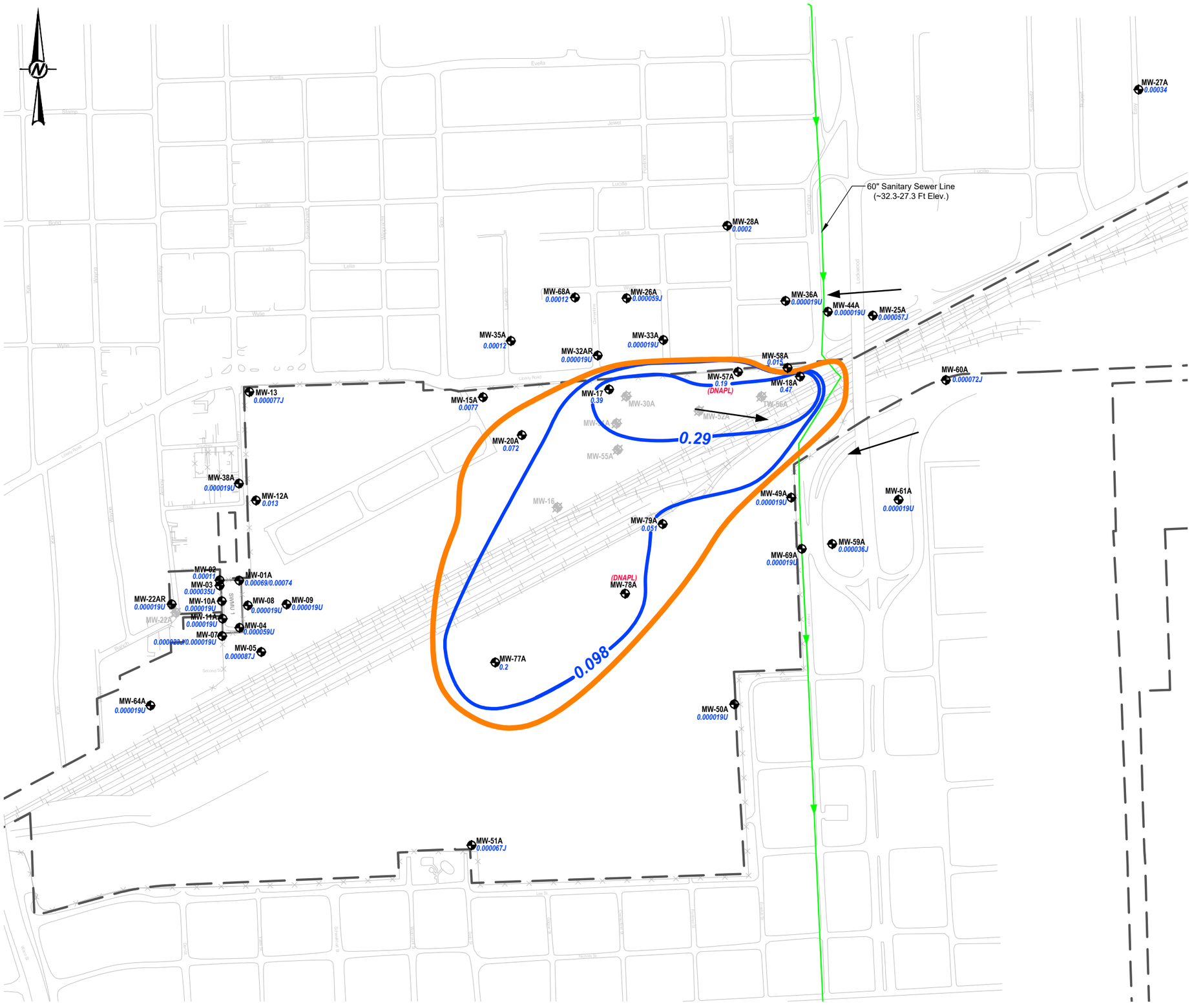
CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5B-6

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\projects - round rock_2019\19119232 - hwpw\2019-12 Dec\ | File Name: FIG 5B-6 - ATZ-24-Dimethylphenol.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time:1:23:49 PM | Printed By: RSalazar Date: 2020-04-30 Time:1:39:47 PM



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARLING LOT, SIDEWALK
- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- 0.293 — 2-METHYLNAPHTHALENE CONCENTRATION (mg/L)
- 0.098 — 2-METHYLNAPHTHALENE CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION
- GW PCLE ZONE

NOTE(S)

1. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JULY 2019).
2. NS - NOT SAMPLED
3. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.098 mg/L AND 0.29 mg/L, RESPECTIVELY).

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1. DATED JUNE 2004.

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0 200 400
1" = 400' FEET

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PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - A-TZ
2-METHYLNAPHTHALENE - JULY 2019

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 REV. 0 FIGURE 5B-7

Path: \\texarkana\data\projects - round rock_2019\19119232 - hwpw\2019-12 Dec\ | File Name: FIG 5B-7 - ATZ-2-Methylnaphthalene.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time:1:25:49 PM | Printed By: RSalazar Date: 2020-04-30 Time:1:40:25 PM
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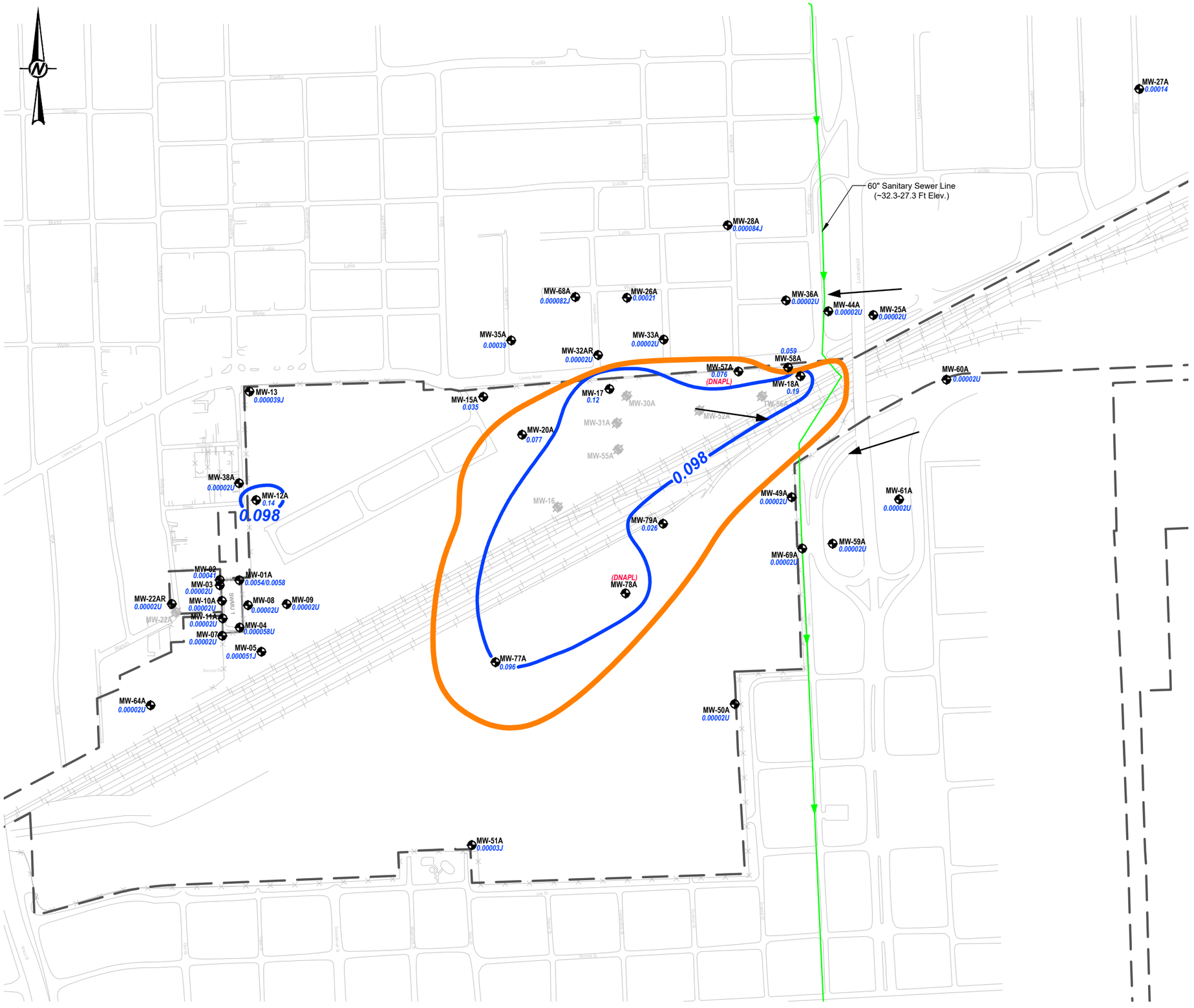

LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARLING LOT, SIDEWALK
- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- 5.27 DIBENZOFURAN CONCENTRATION (mg/L)
- 0.098 DIBENZOFURAN CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION
- GW PCLE ZONE

NOTE(S)

1. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JULY 2019).
2. NS - NOT SAMPLED
3. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.098 mg/L AND 0.29 mg/L, RESPECTIVELY).

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1. DATED JUNE 2004.

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0 200 400
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PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - A-TZ DIBENZOFURAN - JULY 2019

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5B-8

Path: \\texarkana\data\projects - round rock_2019\19119232 - hwpw\2019-12 Dec\ | File Name: FIG 6B-8 - ATZ-Dibenzofuran.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time:1:27:39 PM | Printed By: RSalazar Date: 2020-04-30 Time:1:41:00 PM
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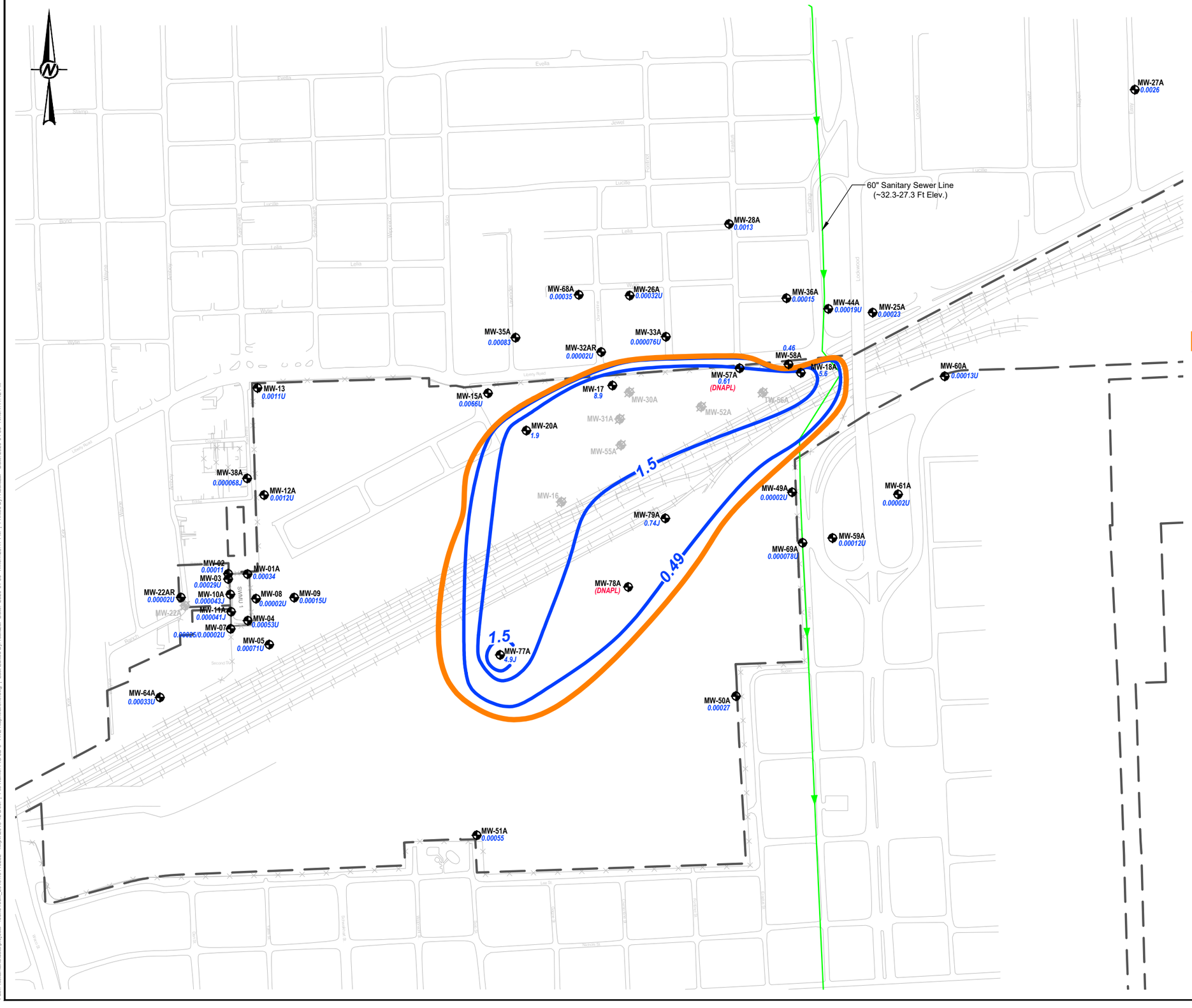

LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARLING LOT, SIDEWALK
- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- 5.27 NAPHTHALENE CONCENTRATION (mg/L)
- 0.49 NAPHTHALENE CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION
- GW PCLE ZONE

NOTE(S)

1. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JULY 2019).
2. NS - NOT SAMPLED
3. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.49 mg/L AND 1.5 mg/L, RESPECTIVELY).

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1. DATED JUNE 2004.

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0 200 400
1" = 400' FEET

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PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - A-TZ NAPHTHALENE - JULY 2019

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 REV. 0 FIGURE 5B-9

Path: \\texarkana\data\projects - round rock_2019\19119232 - hwpw\2019-12 Dwg | File Name: FIG 5B-9 - ATZ-Naphthalene.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time:1:29:17 PM | Printed By: RSalazar Date: 2020-04-30 Time:1:41:42 PM
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B
1 in
0

CLASS 2 GW

CLASS 3 GW

MAIN PCLE ZONE

WEST PCLE ZONE

MW-89B 0.0002U
MW-67B 0.0002U
MW-90B 0.0002U
MW-84B 0.01
MW-83B 0.021
MW-63B 0.11
MW-68B 1.4
MW-33BR 0.25
MW-36B 0.0002U
MW-82B 0.0002U
MW-35B 0.0045
MW-70B (DNAPL)
MW-32B (DNAPL)
0.13
MW-71B
MW-72B 1.1
MW-57B 0.84
MW-15B 0.0023
MW-14 0.0002U
MW-55B
MW-73B
MW-74B 0.59
MW-49B (DNAPL)
0.0002U
MW-39B 0.005
MW-12B (DNAPL)
MW-40B 0.0088
MW-38B 0.0002U
MW-42B 0.0002U
MW-62B 0.0002U
TW-41B 0.0013U
MW-41B (DNAPL)
P-11 0.0002U
MW-75B (DNAPL)
MW-59B 0.0002U
MW-22BR 0.0002U
MW-22B
MW-10B
MW-11B
P-10
P-12
MW-80B 0.0002U
MW-81B 0.0002U
0.005
0.5

LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- B-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- B-CZ (CLASS 3 GW) / B-TZ (CLASS 2 GW): B-TZ/B-CZ BOUNDARY
- 0.346: BENZENE CONCENTRATION (mg/L)
- 0.005: BENZENE CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION
- GW PCLE ZONE

NOTE(S)

1. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JULY 2019).
2. NS - NOT SAMPLED
3. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL:
   CLASS 2 GW PCL: 0.005 mg/L
   CLASS 3 GW PCL: 0.5 mg/L

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
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LIC. # 795
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PROFESSIONAL GEOSCIENTIST
4/30/20

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - B-CZ/B-TZ BENZENE - JULY 2019

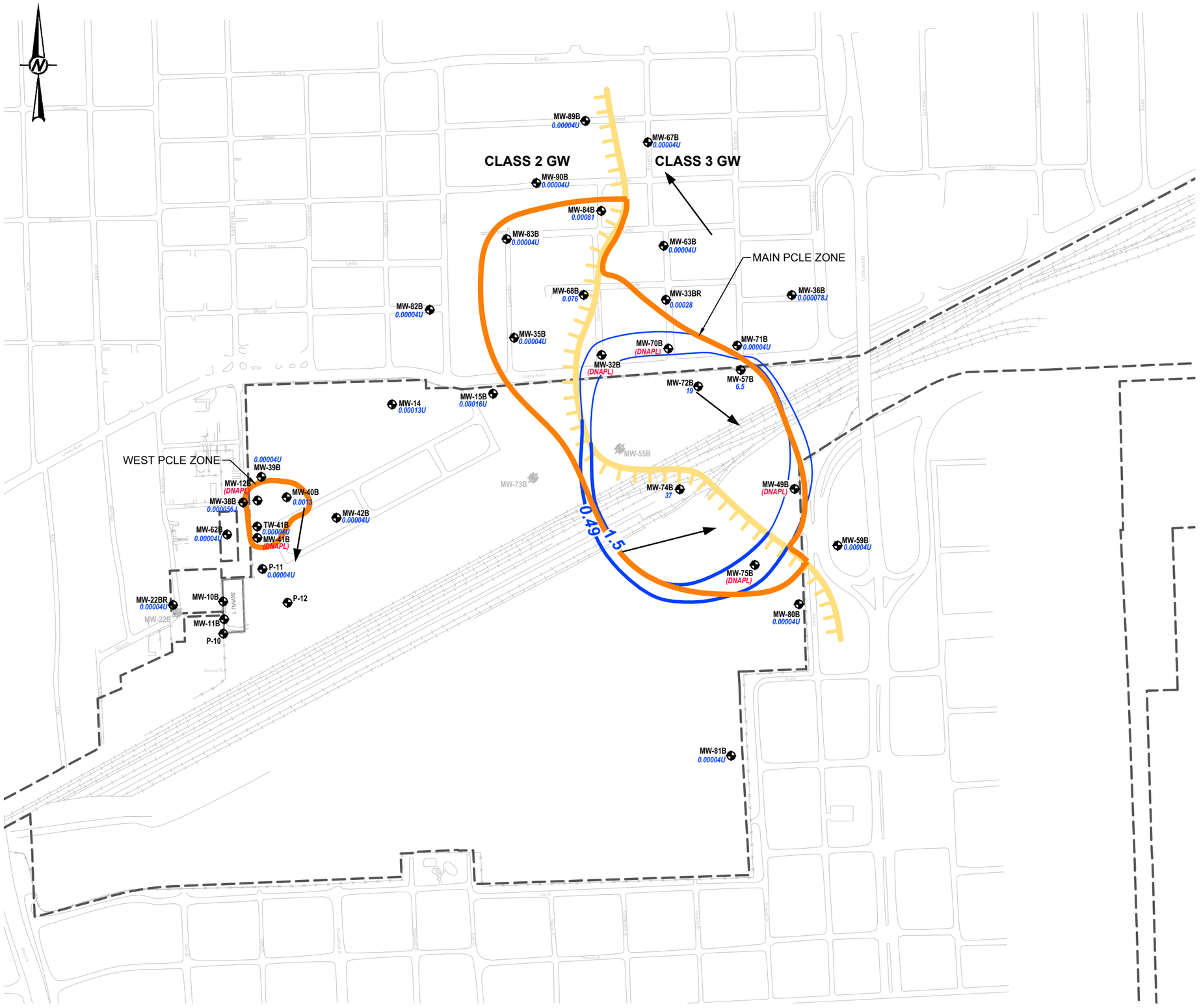
CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5B-10

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\projects - round rock\ 20191911923 2 - hwvw\2019-12 Decl. | File Name: FIG 5B-10 - B-TZ_Benzene.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time: 1:30:39 PM | Printed By: RSalazar Date: 2020-04-30 Time: 1:42:13 PM



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- B-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- B-CZ (CLASS 3 GW) / B-TZ (CLASS 2 GW): B-TZ/B-CZ BOUNDARY
- 13.6: 2,4-DIMETHYLPHENOL CONCENTRATION (mg/L)
- 0.49: 2,4-DIMETHYLPHENOL CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION
- GW PCLE ZONE

NOTE(S)

1. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JULY 2019).
2. NS - NOT SAMPLED
3. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL:
   CLASS 2 GW PCL: 0.49 mg/L (RES.) & 1.5 mg/L (C/I)
   CLASS 3 GW PCL: 49 mg/L (RES.) & 150 mg/L (C/I)

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

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LIC. # 795
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PROFESSIONAL GEOSCIENTIST
4/30/20

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - B-CZ/B-TZ 2,4-DIMETHYLPHENOL - JULY 2019

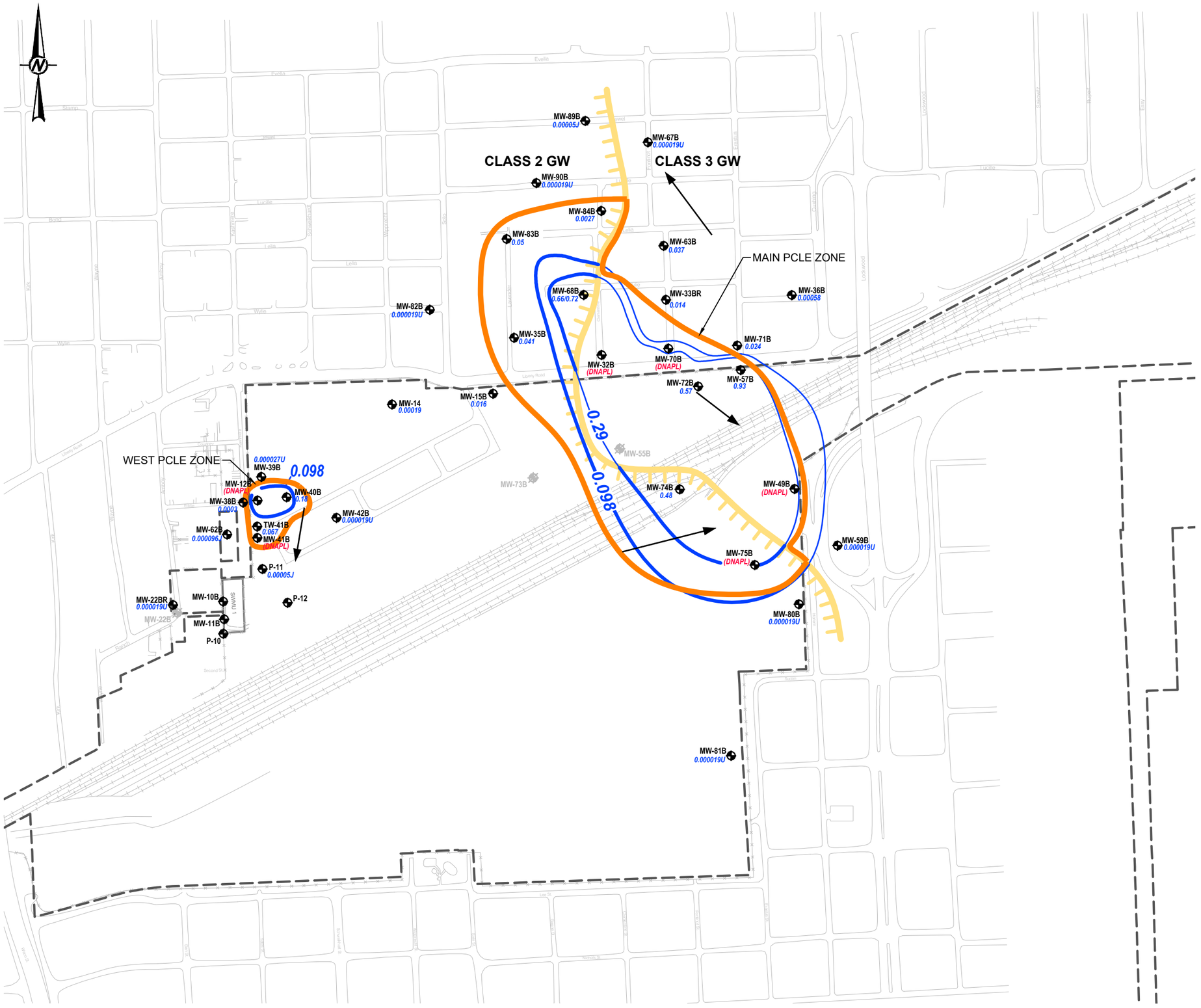
CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 REV. 0 FIGURE 5B-11

Path: \\texarkana\data\projects - round rock\ 2019\19119232 - hwpw\2019-12 Decl. | File Name: FIG-5B-11 - BTZ_24-Dimethylphenol.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time:1:31:58 PM | Printed By: RSalazar Date: 2020-04-30 Time:1:42:47 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- B-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- B-CZ (CLASS 3 GW) / B-TZ (CLASS 2 GW): B-TZ/B-CZ BOUNDARY
- 0.276: 2-METHYLNAPHTHALENE CONCENTRATION (mg/L)
- 0.098: 2-METHYLNAPHTHALENE CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION
- GW PCLE ZONE

NOTE(S)

1. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JULY 2019).
2. NS - NOT SAMPLED
3. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL:
   CLASS 2 GW PCL: 0.098 mg/L (RES.) & 0.29 mg/L (C/I)
   CLASS 3 GW PCL: 9.8 mg/L (RES.) & 29 mg/L (C/I)

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

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GEOLOGY
LIC. # 795
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PROFESSIONAL GEOSCIENTIST
4/30/20

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - B-CZ/B-TZ 2-METHYLNAPHTHALENE - JULY 2019

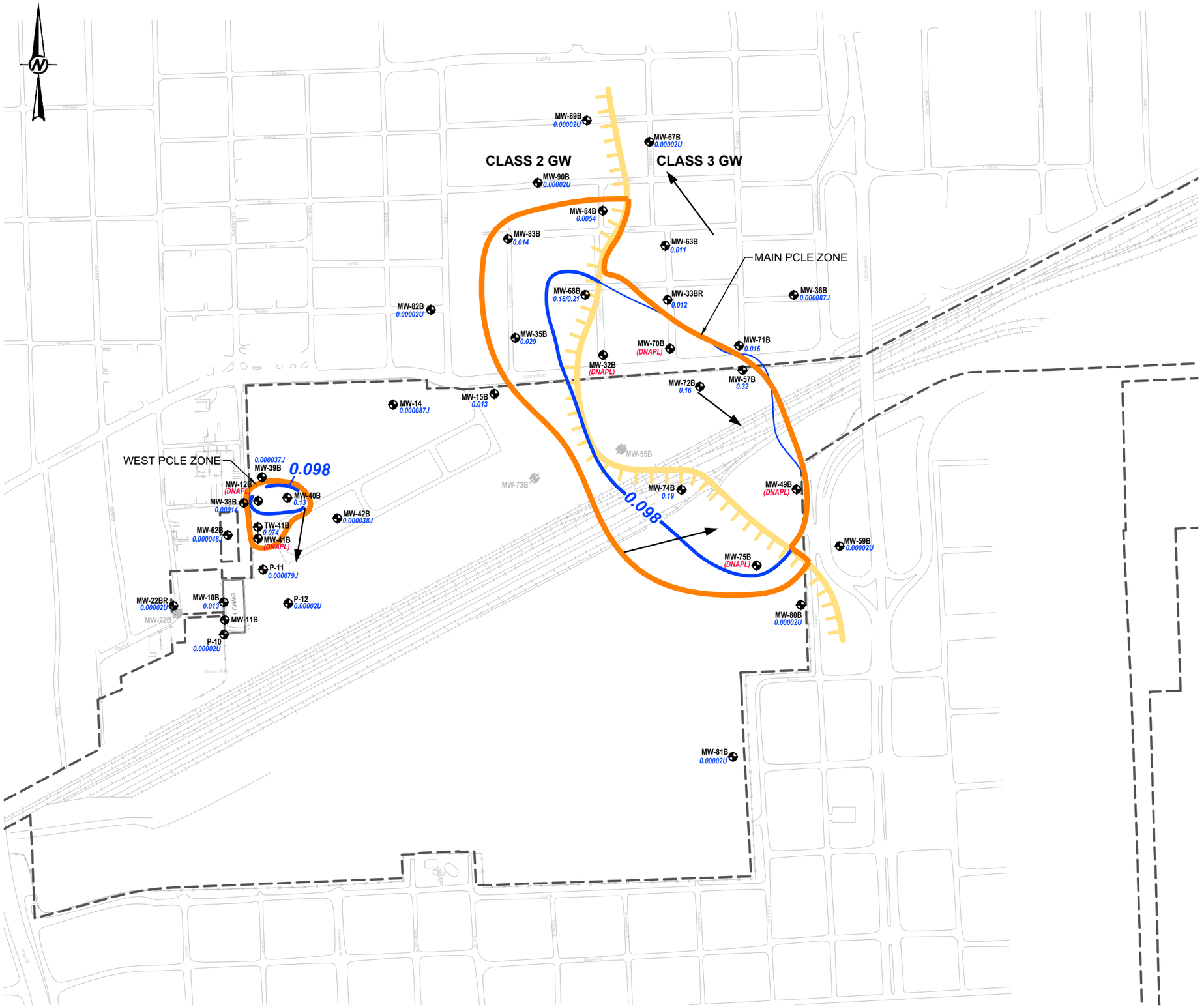
CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5B-12

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\projects - round rock\ 20191911\9232 - hwvw\2019-12 Decl. | File Name: FIG 5B-12 - BTZ_2-Methylnaphthalene.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time:1:43:17 PM | Printed By: RSalazar Date: 2020-04-30 Time:1:43:19 PM



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- B-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- B-CZ (CLASS 3 GW) / B-TZ (CLASS 2 GW): B-TZ/B-CZ BOUNDARY
- 8.01: DIBENZOFURAN CONCENTRATION (mg/L)
- 0.098: DIBENZOFURAN CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION
- GW PCLE ZONE

NOTE(S)

1. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JULY 2019).
2. NS - NOT SAMPLED
3. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL:
   CLASS 2 GW PCL: 0.098 mg/L (RES.) & 0.29 mg/L (C/I)
   CLASS 3 GW PCL: 9.8 mg/L (RES.) & 29 mg/L (C/I)

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
4/30/20

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - B-CZ/B-TZ DIBENZOFURAN - JULY 2019

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5B-13

Path: \\texarkana\data\projects - round rock_2019\19119232 - hwpw\2019-12 Dec\ | File Name: FIG 5B-13 - BTZ_Dibenzofuran.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time:1:34:45 PM | Printed By: RSalazar Date: 2020-04-30 Time:1:43:50 PM
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

CLASS 2 GW

CLASS 3 GW

MAIN PCLE ZONE

WEST PCLE ZONE

MW-89B 0.00025
MW-67B 0.000079J
MW-90B 0.000091J
MW-84B 0.06J
MW-83B 0.77
MW-63B 1.5
MW-68B 9.9/9.6
MW-36B 0.006
MW-82B 0.00002U
MW-33BR 0.53J
MW-35B 1.1
MW-70B (DNAPL)
MW-71B 0.44
MW-32B (DNAPL)
MW-57B 17
MW-72B 12
MW-15B 0.33
MW-14 0.002U
MW-55B
MW-73B
MW-74B 13J
MW-49B (DNAPL)
MW-59B 0.00015U
MW-75B (DNAPL)
MW-80B 0.00002U
MW-81B 0.000099J
0.00041U
MW-39B
MW-12B (DNAPL)
MW-38B 0.0026
MW-40B 3.8
MW-42B 0.00043U
TW-41B 0.69
MW-62B 0.00028
MW-41B (DNAPL)
P-11 0.0018U
MW-22BR 0.00002U
MW-22B
MW-10B 0.00023
MW-11B 0.7/1.1
P-12 0.00002U
P-10 0.000063J
1.5
0.49
0.49

LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- B-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- B-CZ (CLASS 3 GW) / B-TZ (CLASS 2 GW): B-TZ/B-CZ BOUNDARY
- 5.57: NAPHTHALENE CONCENTRATION (mg/L)
- 0.49: NAPHTHALENE CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION
- GW PCLE ZONE

NOTE(S)

1. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JULY 2019).
2. NS - NOT SAMPLED
3. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL:
   CLASS 2 GW PCL: 0.49 mg/L (RES.) & 1.5 mg/L (C/I)
   CLASS 3 GW PCL: 49 mg/L (RES.) & 150 mg/L (C/I)

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
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4/30/20

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - B-CZ/B-TZ NAPHTHALENE - JULY 2019

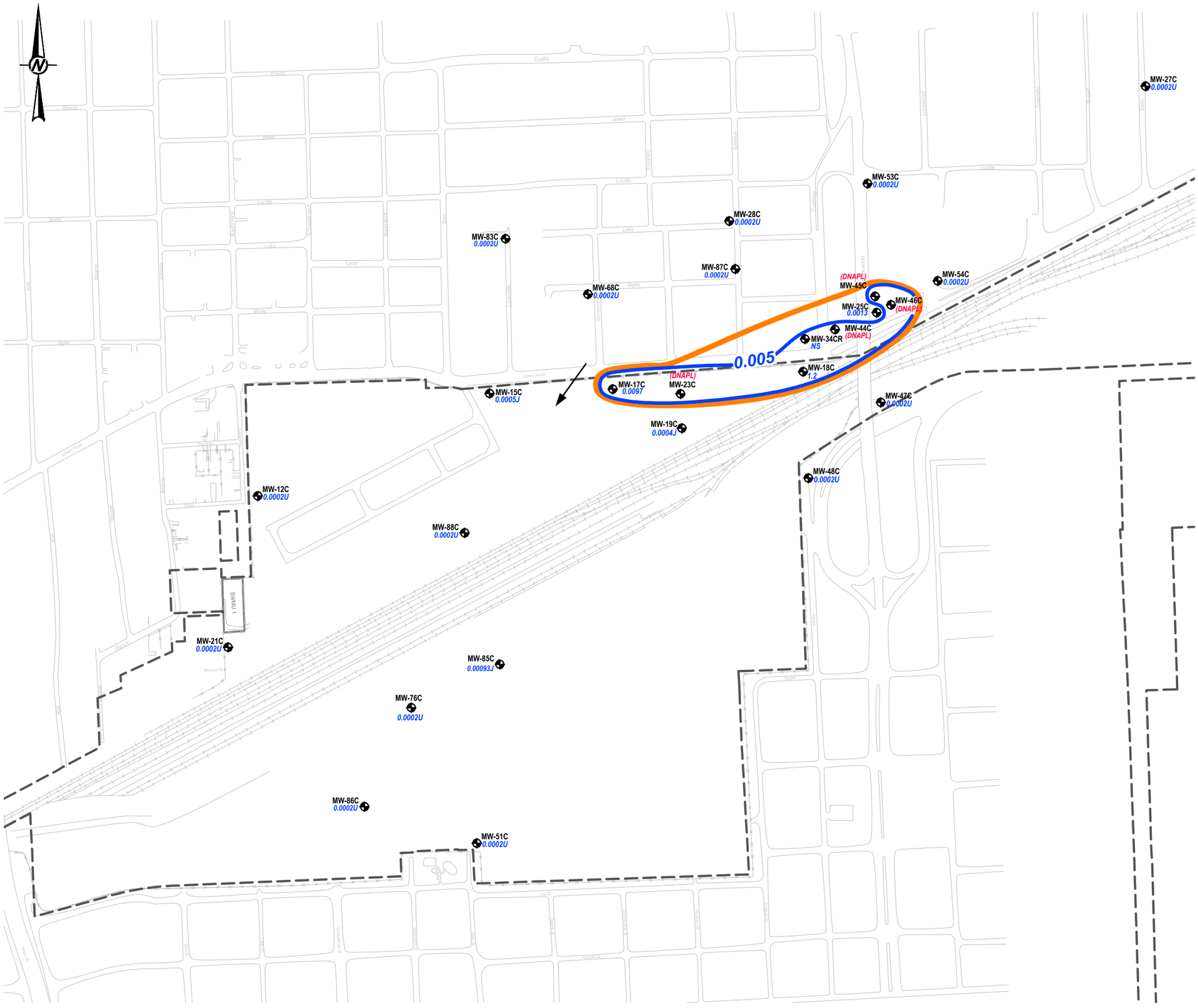
CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232
REV. 0
FIGURE 5B-14

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\projects - round rock\ 20\19\19119232 - hwpw\2019-12 Decl. | File Name: FIG 5B-14 - BTZ_Naphthalene.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time:1:36:10 PM | Printed By: RSalazar Date: 2020-04-30 Time:1:44:23 PM



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- C-TZ MONITORING WELL LOCATION
- 8.01 — BENZENE CONCENTRATION (mg/L)
- 0.005 — BENZENE CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION
- GW PCLE ZONE

NOTE(S)

1. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JULY 2019).
2. NS - NOT SAMPLED
3. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.005 mg/L).

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

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4/30/20

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - C-TZ BENZENE - JULY 2019

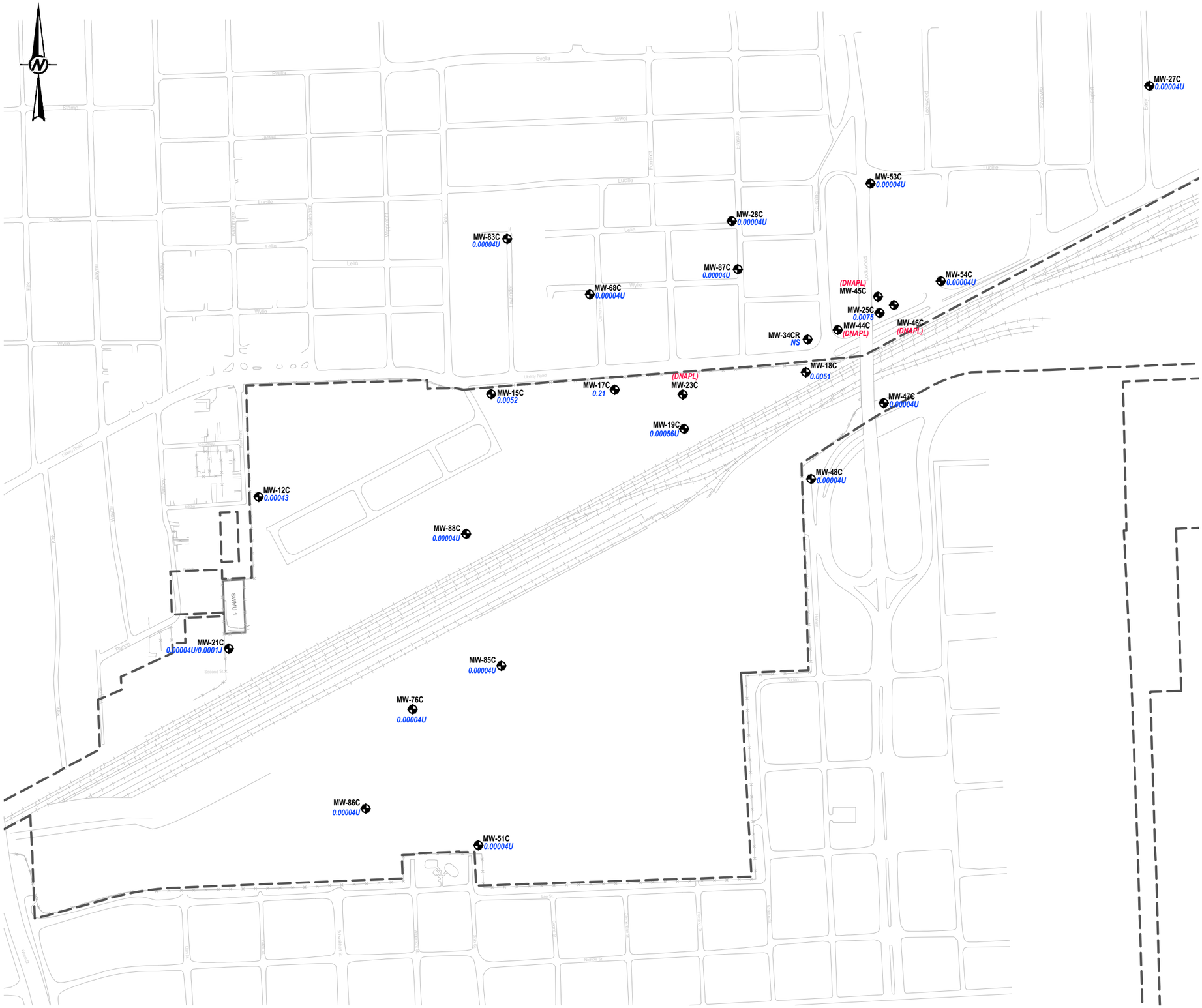
CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 REV. 0 FIGURE 5B-15

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\projects - round rock_20191919119232 - hwpw\2019-12 Dec\ | File Name: FIG 5B-15 - CTZ_Benzene.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time:1:39:01 PM | Printed By: RSalazar Date: 2020-04-30 Time:1:46:26 PM



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- C-TZ MONITORING WELL LOCATION
- 0.0325 — 2,4-DIMETHYLPHENOL CONCENTRATION (mg/L)
- 0.49 — 2,4-DIMETHYLPHENOL CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION

NOTE(S)

1. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JULY 2019).
2. NS - NOT SAMPLED
3. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.49 mg/L AND 1.5 mg/L, RESPECTIVELY).

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

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PROFESSIONAL GEOSCIENTIST
4/30/20

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - C-TZ
2,4-DIMETHYLPHENOL - JULY 2019

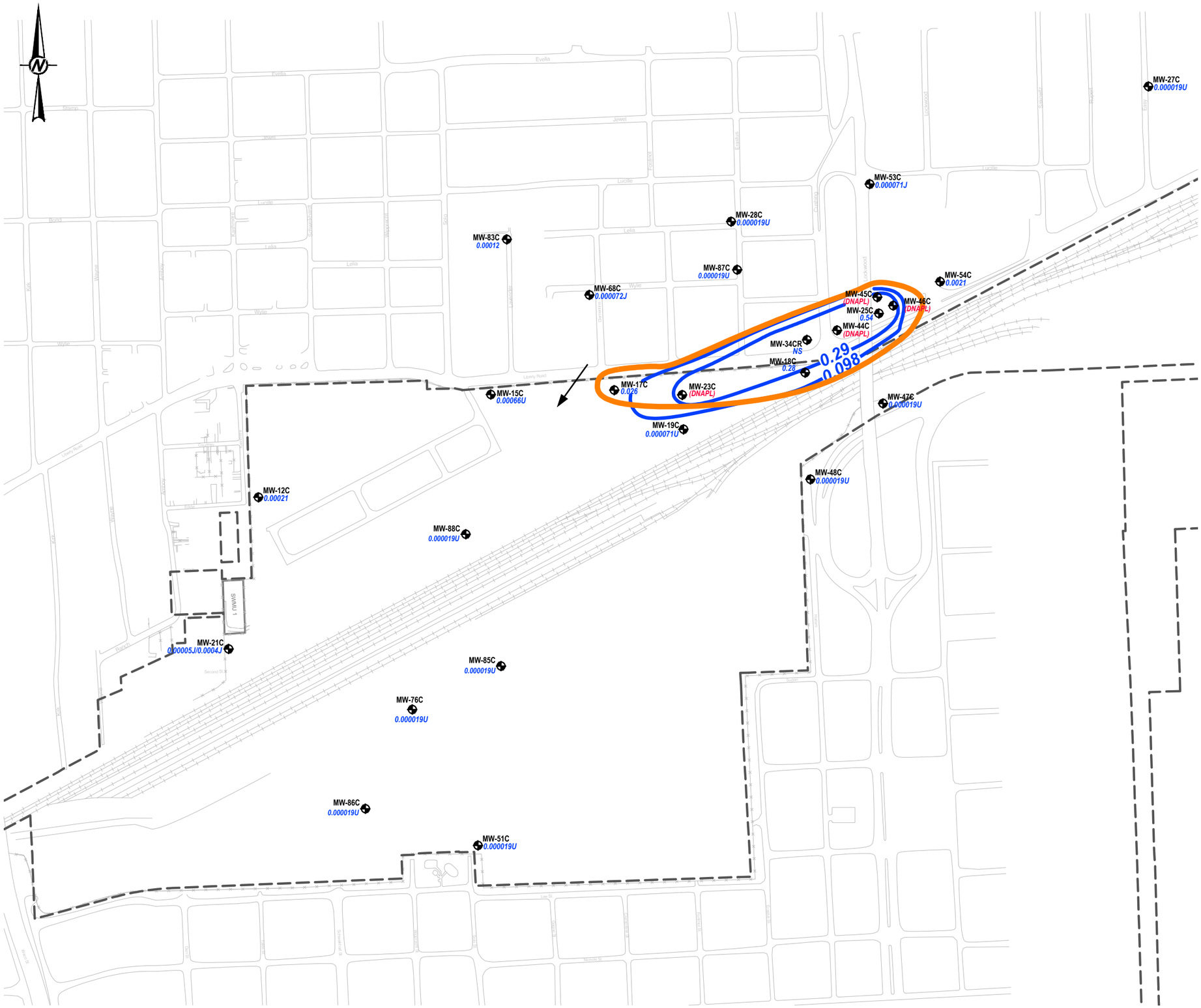
CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 REV. 0 FIGURE 5B-16

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\projects - round rock\ 20191911922 - hwpw\2019-12 Dwg\ | File Name: FIG 5B-16 - CTZ_24-Dimethylphenol.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time:1:39:27 PM | Printed By: RSalazar Date: 2020-04-30 Time:1:47:06 PM



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- C-TZ MONITORING WELL LOCATION
- 0.778 — 2-METHYLNAPHTHALENE CONCENTRATION (mg/L)
- 0.098 — 2-METHYLNAPHTHALENE CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION
- GW PCLE ZONE

NOTE(S)

1. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JULY 2019).
2. NS - NOT SAMPLED
3. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.098 mg/L AND 0.29 mg/L, RESPECTIVELY).

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
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LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
4/30/20

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - C-TZ
2-METHYLNAPHTHALENE - JULY 2019

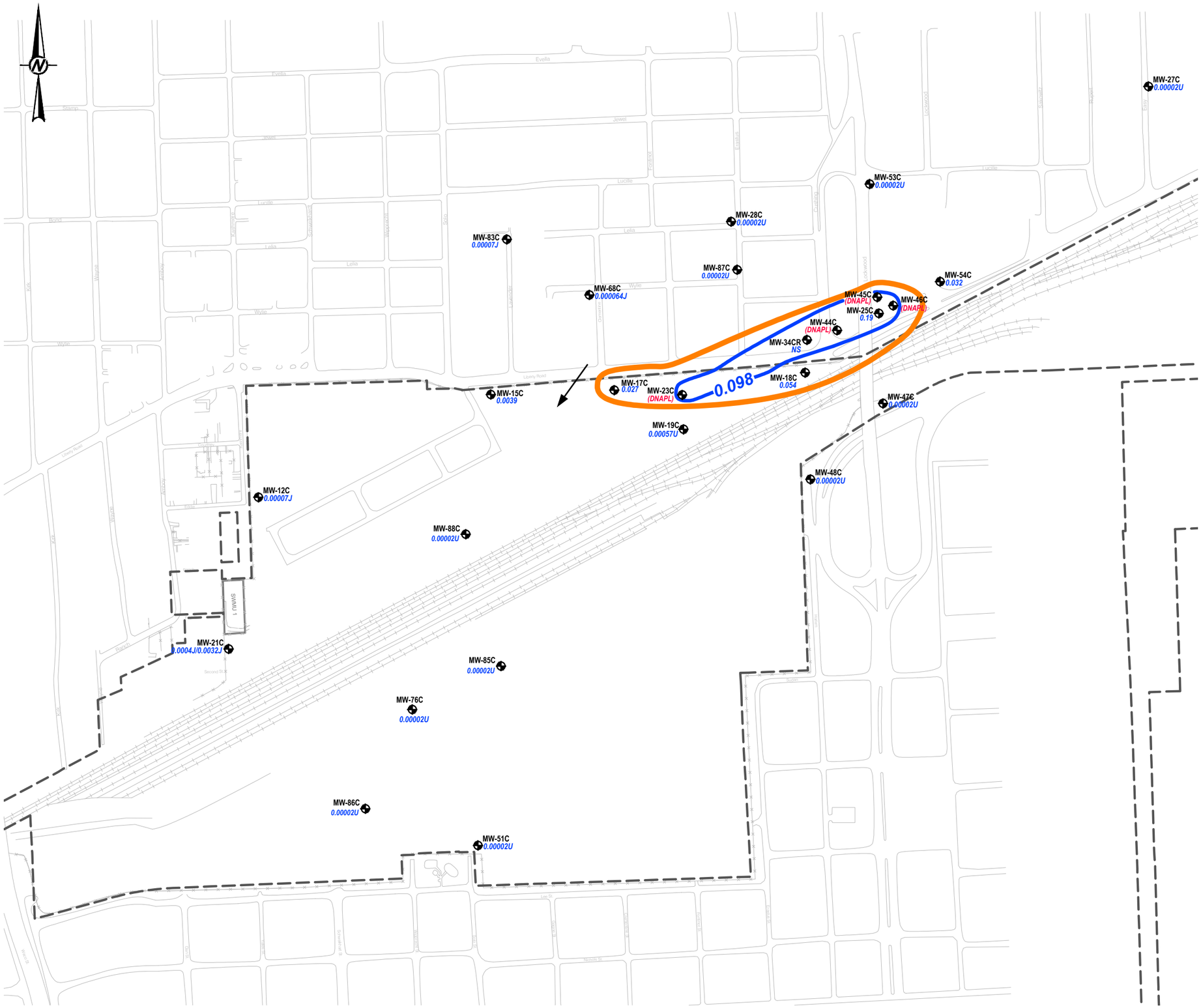
CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5B-17

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\projects - round rock\ 20191911922 - hwwv\2019-12 Dwg\ | File Name: FIG 5B-17 - CTZ_2-Methylnaphthalene.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time:1:41:57 PM | Printed By: RSalazar Date: 2020-04-30 Time:1:47:32 PM



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- C-TZ MONITORING WELL LOCATION
- 0.207 — DIBENZOFURAN CONCENTRATION (mg/L)
- 0.098 — DIBENZOFURAN CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION
- GW PCLE ZONE

NOTE(S)

1. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JULY 2019).
2. NS - NOT SAMPLED
3. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.098 mg/L AND 0.29 mg/L, RESPECTIVELY).

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
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4/30/20

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - C-TZ DIBENZOFURAN - JULY 2019

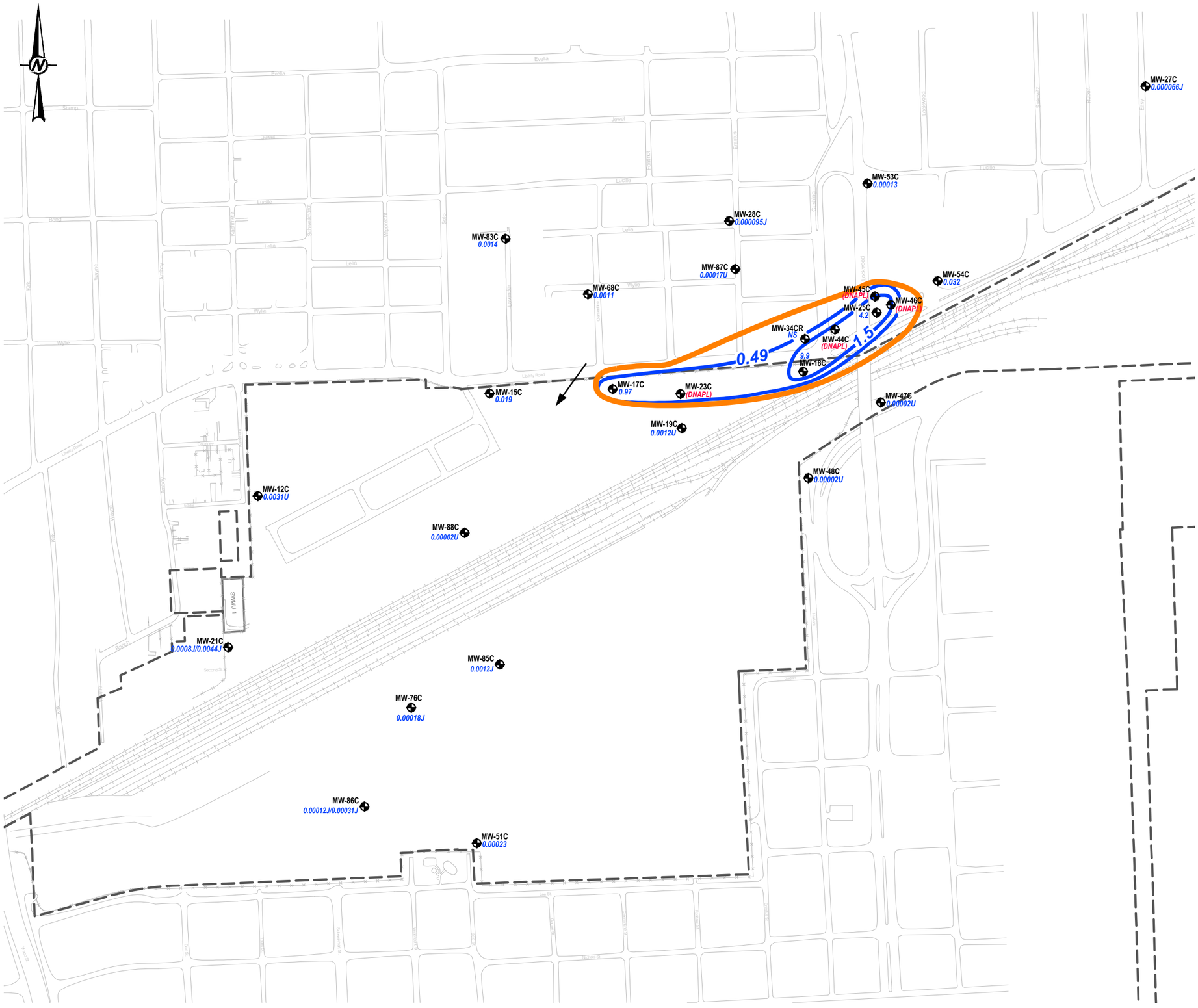
CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5B-18

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\projects - round rock_2019\19119232 - hwpw\2019-12 Dec\ | File Name: FIG-5B-18 - CTZ_Dibenzofuran.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time:1:42:21 PM | Printed By: RSalazar Date: 2020-04-30 Time:1:48:06 PM



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- C-TZ MONITORING WELL LOCATION
- 14.7 — NAPHTHALENE CONCENTRATION (mg/L)
- 0.49 — NAPHTHALENE CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION
- GW PCLE ZONE

NOTE(S)

1. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JULY 2019).
2. NS - NOT SAMPLED
3. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.49 mg/L AND 1.5 mg/L, RESPECTIVELY).

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - C-TZ NAPHTHALENE - JULY 2019

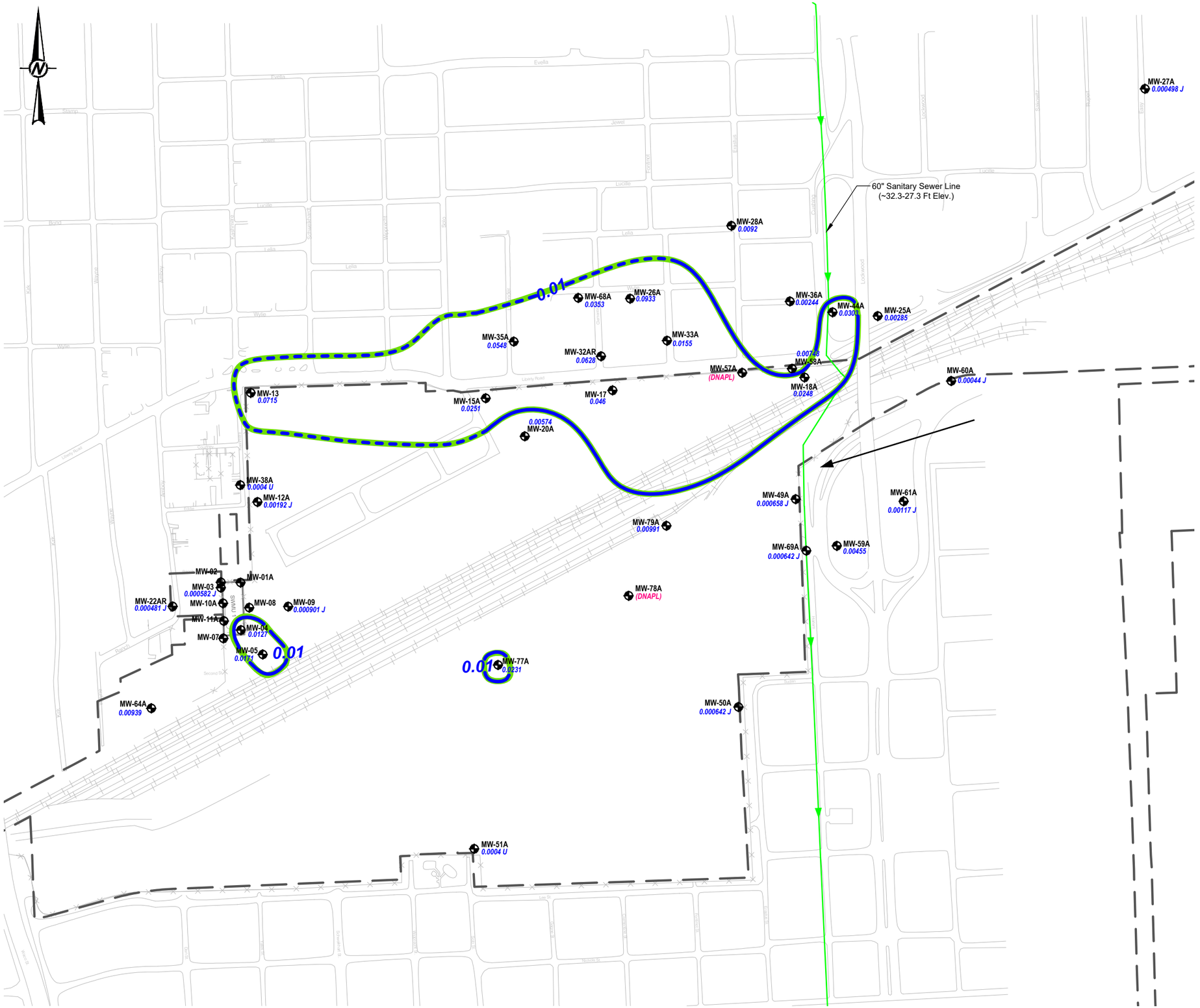
CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5B-19

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\projects - round rock_2019\19119232 - hwpw\2019-12 Dec\ | File Name: FIG 5B-19 - CTZ_Naphthalene.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time:1:43:57 PM | Printed By: RSalazar Date: 2020-04-30 Time:1:48:36 PM



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARLING LOT, SIDEWALK
- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION
- 0.108 ARSENIC CONCENTRATION (mg/L)
- 0.01 ARSENIC CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION
- ARSENIC PCLE ZONE

NOTE(S)

1. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JULY 2019).
2. NS - NOT SAMPLED
3. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.01 mg/L).

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1. DATED JUNE 2004.

STATE OF TEXAS
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PROFESSIONAL GEOSCIENTIST
4/30/20

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - A-TZ
ARSENIC - JULY 2019

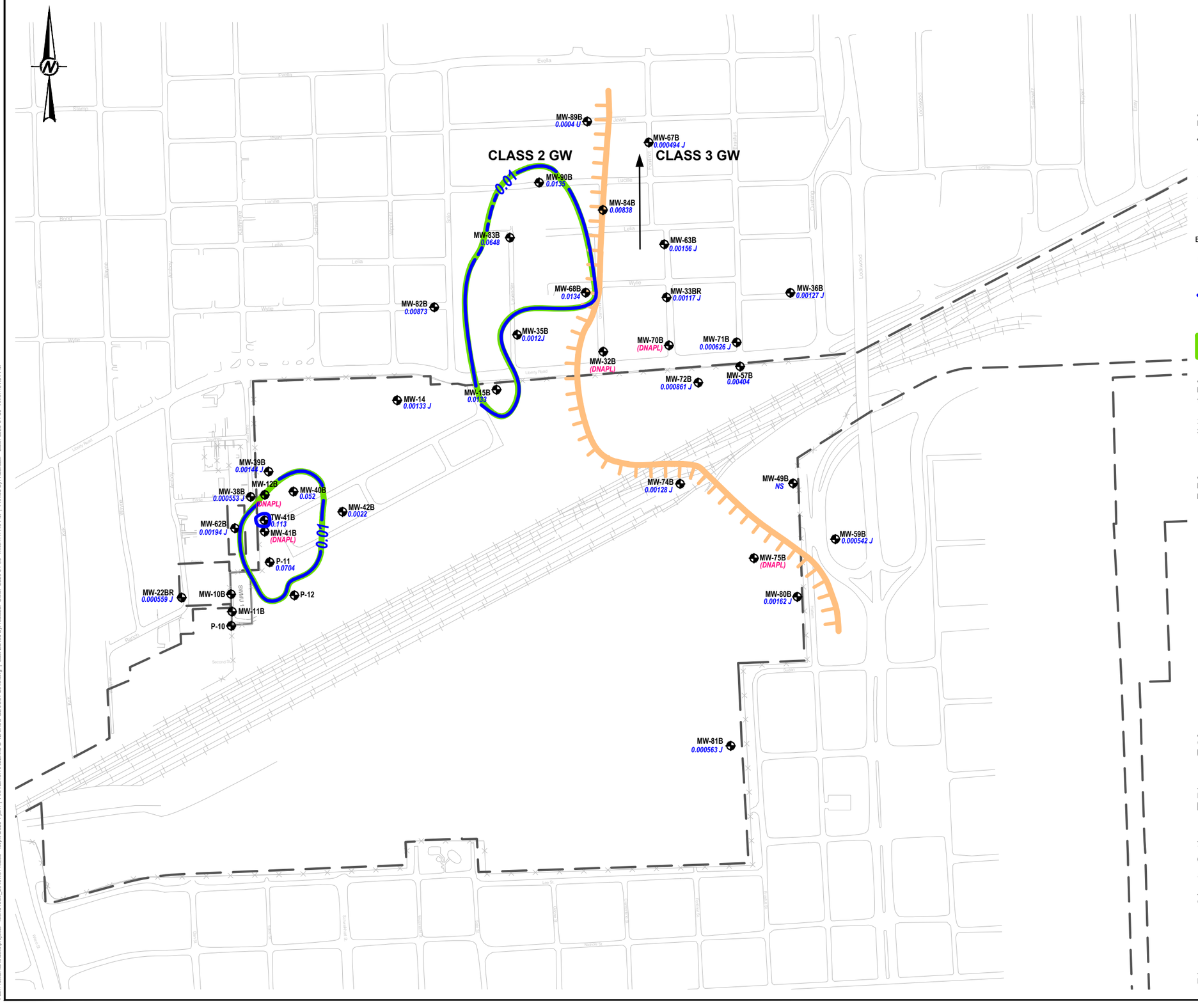
CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	AJD
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 REV. 0 FIGURE 5B-20

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\projects - round rock_2019\19119232 - hwpw\2020-1 jan\ | File Name: ARSENIC-A-TZ-JULY 2019.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time:1:46:14 PM | Printed By: RSalazar Date: 2020-04-30 Time:1:51:21 PM



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- B-TZ MONITORING WELL LOCATION
- B-CZ (CLASS 3 GW) / B-TZ (CLASS 2 GW) — B-TZ/B-CZ BOUNDARY
- 0.346 — ARSENIC CONCENTRATION (mg/L)
- 0.01 — ARSENIC CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION
- ARSENIC PCLE ZONE

NOTE(S)

1. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JULY 2019).
2. NS - NOT SAMPLED
3. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL:
   CLASS 2 GW PCL: 0.01 mg/L
   CLASS 3 GW PCL: 1 mg/L

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

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4/30/20

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - B-CZ/B-TZ ARSENIC - JULY 2019

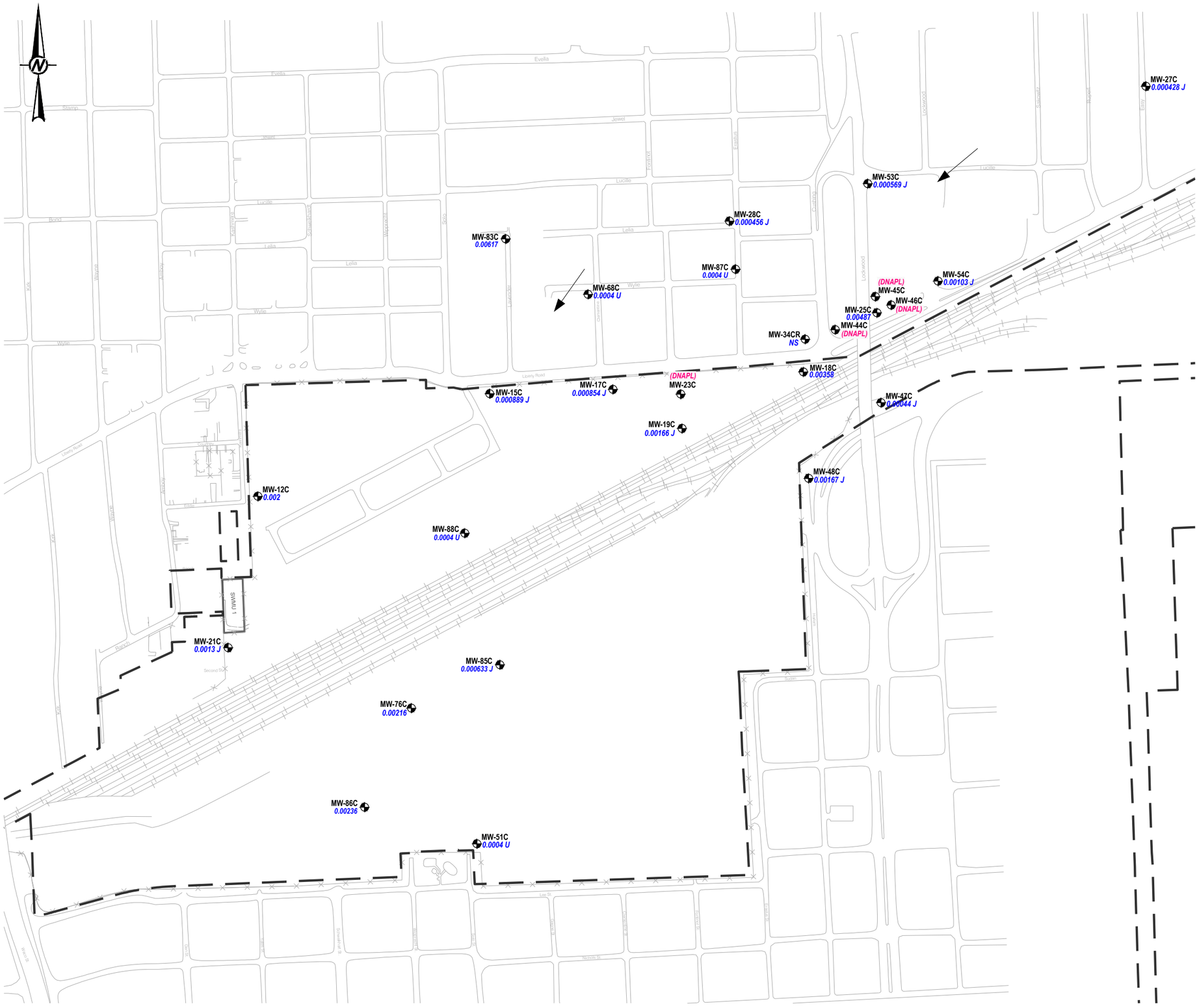
CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	AJD
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5B-21

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\projects - round rock\ 19119119222 - hwpw\2020-1 jan\ | File Name: ARSENIC B-TZ and B-CZ JULY 2019.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time:1:47:43 PM | Printed By: RSalazar Date: 2020-04-30 Time:1:51:51 PM



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- C-TZ MONITORING WELL LOCATION
- 8.01 — ARSENIC CONCENTRATION (mg/L)
- 0.01 — ARSENIC CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION

NOTE(S)

1. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JULY 2019).
2. NS - NOT SAMPLED
3. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.01 mg/L).

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
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PROFESSIONAL GEOSCIENTIST
4/30/20

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - C-TZ
ARSENIC - JULY 2019

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	AJD
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

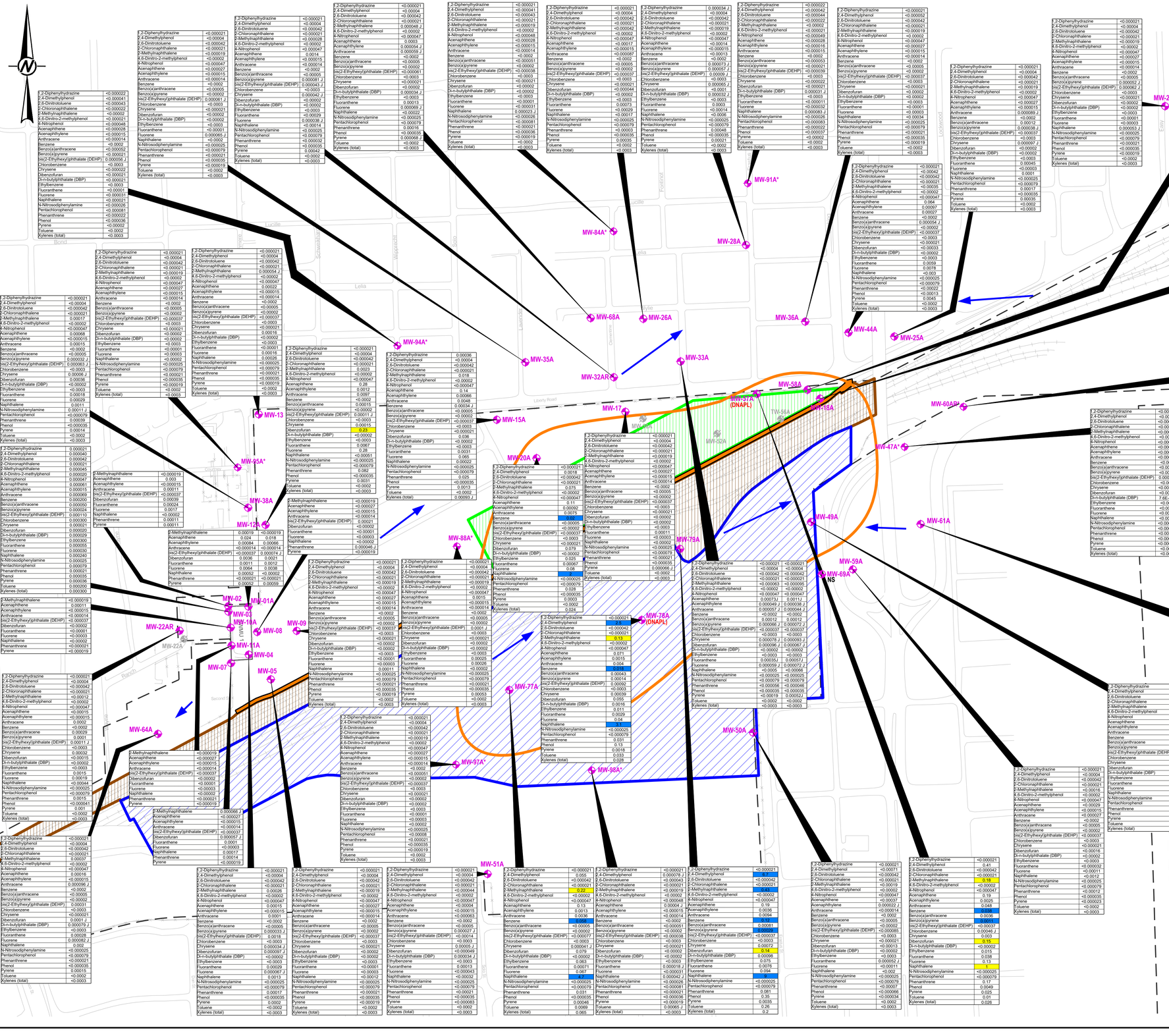
PROJECT NO. 19119232 | REV. 0 | FIGURE 5B-22

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\projects - round rock\ 20191919119232 - houw\2020-1 jan\ | File Name: ARSENIC C-TZ JULY 2019.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time:1:48:44 PM | Printed By: RSalazar Date: 2020-04-30 Time:1:52:45 PM

ATTACHMENT E

January-March 2020 Sampling Event COC Concentration Maps



LEGEND

- UPRR PROPERTY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION
- INFERRED GROUNDWATER FLOW DIRECTION
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA
- GW PCLE ZONE

NOTE(S)

1. ALL CONCENTRATIONS ARE IN mg/L.
2. J - ESTIMATED VALUE BETWEEN SQL AND MDL.
3. < - NOT DETECTED (RL/SQL REPORTED).
4. NA - NOT ANALYZED.
5. NS - NOT SAMPLED.
6. BLUE HIGHLIGHTED CONCENTRATIONS EXCEED COMMERCIAL INDUSTRIAL PCLs (FOR ON-SITE WELLS ONLY).
7. YELLOW HIGHLIGHTED CONCENTRATIONS EXCEED RESIDENTIAL ASSESSMENT LEVEL (RALs).
8. DNAPL = DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2020).
9. * - SAMPLE COLLECTED IN MARCH 2020.

SWNU AREA

NO.	DESCRIPTION
SWMU 1	CLOSED SURFACE IMPOUNDMENT

PROTECTIVE CONCENTRATION LEVELS (PCLs)

PARAMETER	CAS NUMBER	RAL (mg/L)	C/I PCL (mg/L)
1,2-Diphenylhydrazine	122-66-7	0.0011	0.0026
2,4-Dimethylphenol	105-67-9	0.49	1.5
2,6-Dinitrotoluene	606-20-2	0.0013	0.003
2-Chloronaphthalene	91-58-7	2	5.8
2-Methylnaphthalene	91-57-6	0.098	0.29
4,6-Dinitro-2-methylphenol	534-52-1	0.0024	0.0073
4-Nitrophenol	100-02-7	0.049	0.15
Acenaphthene	83-32-9	1.5	4.4
Acenaphthylene	208-96-8	1.5	4.4
Anthracene	120-12-7	7.5	22
Benzene	71-43-2	0.005	0.005
Benzo(a)anthracene	56-55-3	0.0091	0.02
Benzo(a)pyrene	50-32-8	0.0002	0.0002
bis(2-Ethylhexyl)phthalate (DEHP)	117-81-7	0.006	0.006
Chlorobenzene	108-90-7	0.11	0.1
Chrysene	218-01-9	0.91	2
Dibenzofuran	132-64-9	0.098	0.29
Di-n-butylphthalate (DBP)	84-74-2	2.4	7.3
Ethylbenzene	100-41-4	0.7	0.7
Fluoranthene	206-44-0	0.98	2.9
Fluorene	86-73-7	0.98	2.9
Naphthalene	91-20-3	0.49	1.5
N-Nitrosodiphenylamine	86-30-6	0.19	0.40
Pentachlorophenol	87-86-5	0.001	0.001
Phenanthrene	85-01-8	0.73	2.2
Phenol	108-95-2	7.3	22
Pyrene	129-00-0	0.73	2.2
Toluene	108-88-3	1	1
Xylenes (total)	1330-20-7	10	10

STATE OF TEXAS
ERIC T. GLITZNER
GEOLOGICAL
LIC. # 796
4/15/20

0 200 400
1" = 200' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - A-TZ JANUARY-MARCH 2020

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232
REV. 0
FIGURE 5B-1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D

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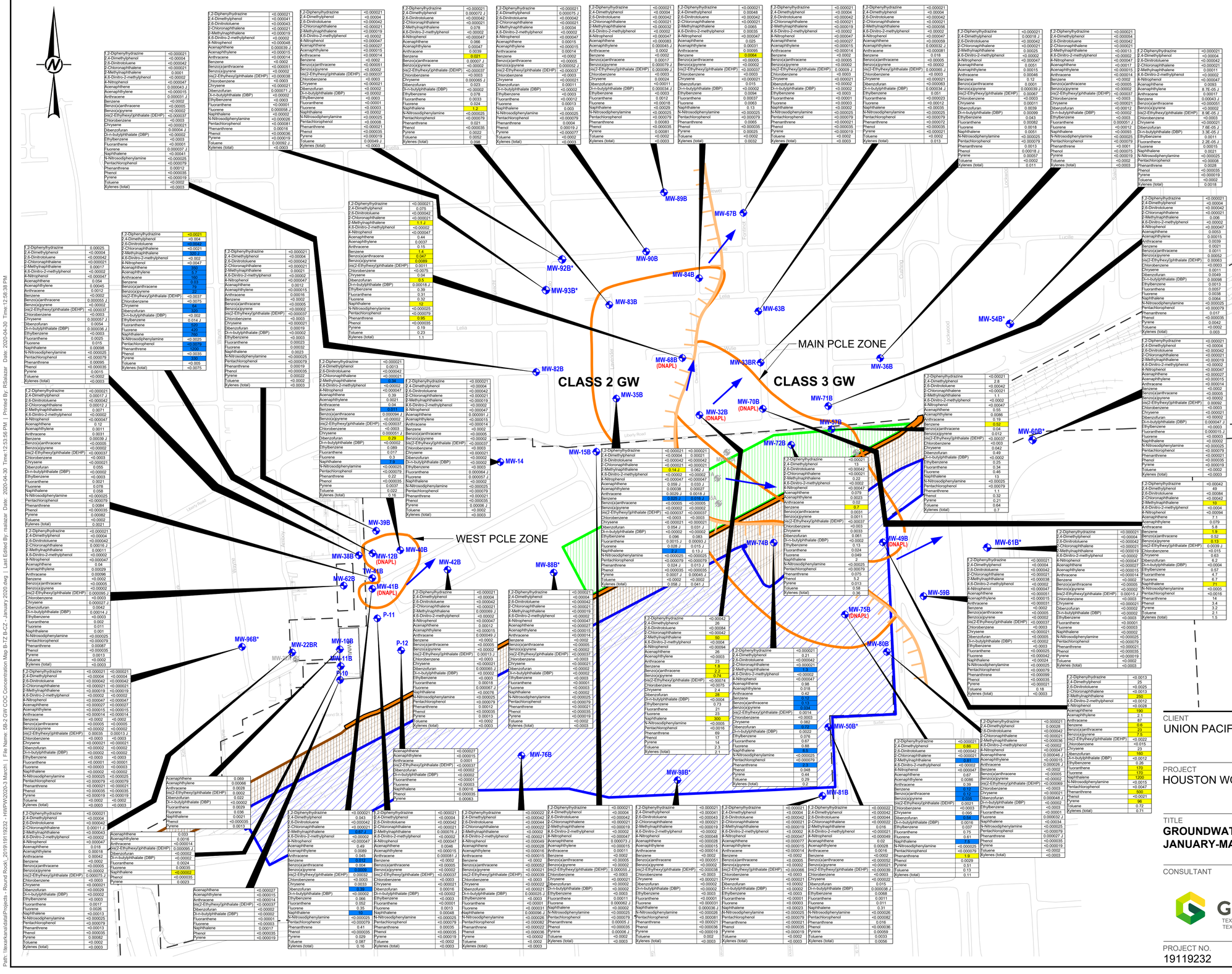
Path: \\texarkana\data\Projects - Round Rock_2019\19119232 - HWPWY\2020-3 March\ | File Name: 5B-1 GW COC Concentration Map A-TZ - January 2020.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time: 12:49:43 PM | Printed By: RSalazar Date: 2020-04-30 Time: 12:51:34 PM



LEGEND

- UPRR PROPERTY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- B-CZ (CLASS 3 GW) / B-TZ (CLASS 2 GW) — B-TZ/B-CZ BOUNDARY
- B-TZ AND B-CZ MONITORING WELL LOCATION
- INFERRED GROUNDWATER FLOW DIRECTION
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA
- GW PCLE ZONE

NOTE(S)

1. ALL CONCENTRATIONS ARE IN mg/L.
2. J - ESTIMATED VALUE BETWEEN SQL AND MDL.
3. < - NOT DETECTED (RL/SQL REPORTED).
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5. NS - NOT SAMPLED.
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7. YELLOW HIGHLIGHTED CONCENTRATIONS EXCEED RESIDENTIAL ASSESSMENT LEVEL (RALs).
8. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2020).
9. * - SAMPLE COLLECTED IN MARCH 2020.

SWNU AREA

NO.	DESCRIPTION
SWMU 1	CLOSED SURFACE IMPOUNDMENT

PROTECTIVE CONCENTRATION LEVELS (PCLs)

PARAMETER	CAS NUMBER	RAL (mg/L)	C/I PCL (mg/L)	GW_{CLASS1} (mg/L)
1,2-Diphenylhydrazine	122-66-7	0.0011	0.0026	0.11
2,4-Dimethylphenol	105-67-9	0.49	1.5	49
2,6-Dinitrotoluene	606-20-2	0.0013	0.003	0.13
2-Chloronaphthalene	91-58-7	2	5.8	200
2-Methylnaphthalene	91-57-6	0.098	0.29	9.8
4,6-Dinitro-2-methylphenol	534-52-1	0.0024	0.0073	0.24
4-Nitrophenol	100-02-7	0.049	0.15	4.9
Acenaphthene	83-32-9	1.5	4.4	150
Acenaphthylene	208-96-8	1.5	4.4	150
Anthracene	120-12-7	7.3	22	730
Benzene	71-43-2	0.005	0.005	0.5
Benzo(a)anthracene	56-55-3	0.0091	0.02	0.91
Benzo(a)pyrene	50-32-8	0.0002	0.0002	0.02
bis(2-Ethylhexyl)phthalate (DEHP)	117-81-7	0.006	0.006	0.6
Chlorobenzene	108-90-7	0.1	0.1	10
Chrysene	218-01-9	0.91	2	91
Dibenzofuran	132-64-9	0.098	0.29	9.8
Di-n-butylphthalate (DBP)	84-74-2	2.4	7.3	240
Ethylbenzene	100-41-4	0.7	0.7	70
Fluoranthene	206-44-0	0.98	2.9	98
Fluorene	86-73-7	0.98	2.9	98
Naphthalene	91-20-3	0.49	1.5	49
N-Nitrosodiphenylamine	86-30-6	0.19	0.42	19
Pentachlorophenol	87-86-5	0.001	0.001	0.1
Phenanthrene	85-01-8	0.73	2.2	73
Phenol	108-95-2	7.3	22	730
Pyrene	129-00-0	0.73	2.2	73
Toluene	108-88-3	1	1	100
Xylenes (total)	1330-20-7	10	10	1000

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 7995
LICENSED PROFESSIONAL GEOLOGIST
4/30/20

0 200 400
1" = 200' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - B-TZ/B-CZ JANUARY-MARCH 2020

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	
PREPARED	RS
REVIEWED	MH
APPROVED	ECM
PROJECT NO.	19119232
REV.	0
FIGURE	5B-2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D

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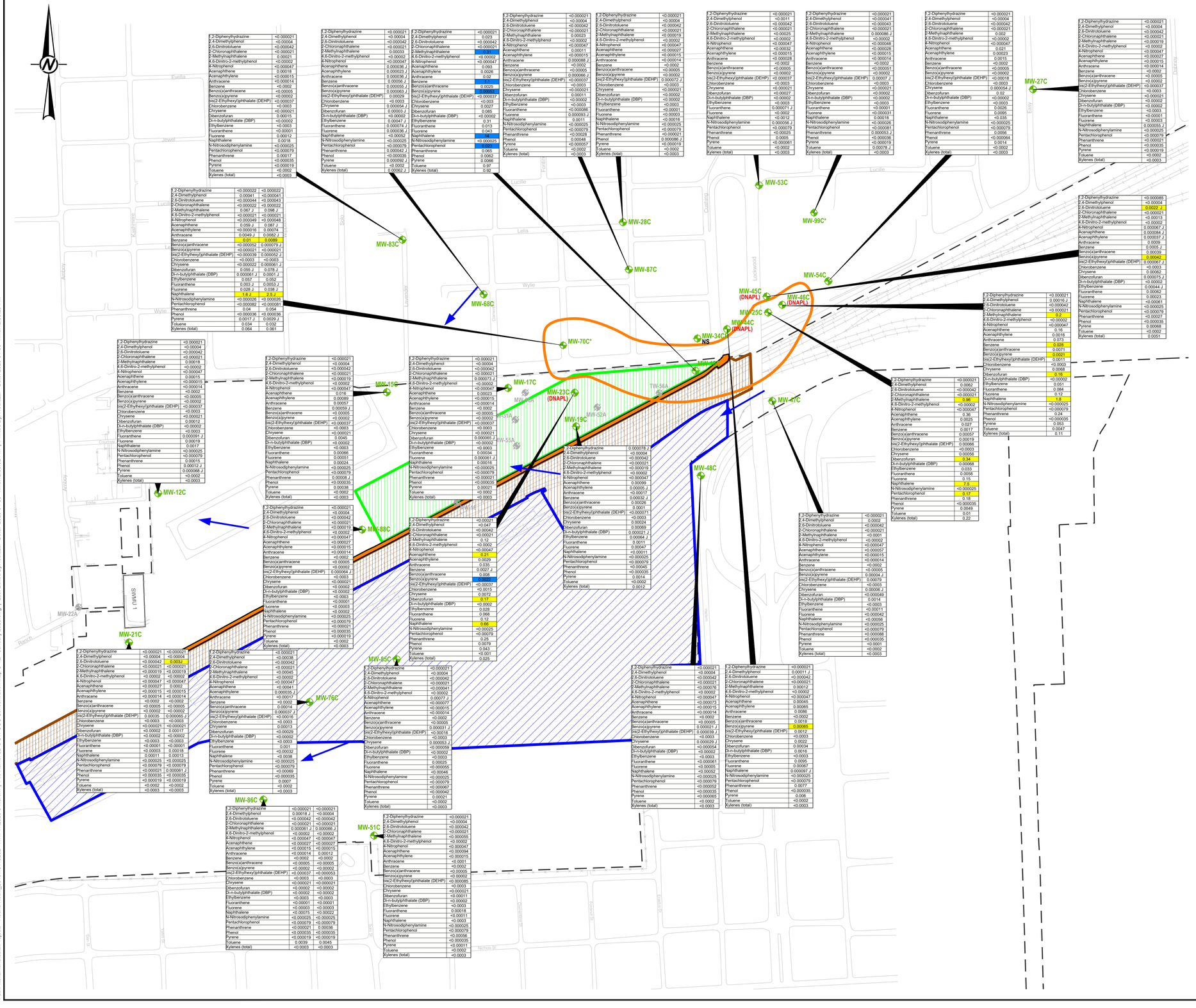


2-Diphenylhydrazine	<0.000021
2,4-Dimethylphenol	<0.00004
2,6-Dinitrotoluene	<0.000042
2-Chloronaphthalene	<0.000021
2-Methylnaphthalene	0.00021
4,6-Dinitro-2-methylphenol	<0.00002
4-Nitrophenol	<0.000047
Acenaphthene	0.00018
Acenaphthylene	<0.000015
Anthracene	<0.000014
Benzene	<0.0002
Benzo(a)anthracene	<0.00005
Benzo(a)pyrene	<0.00002
bis(2-Ethylhexyl)phthalate (DEHP)	<0.000037
Chlorobenzene	<0.0003
Chrysene	<0.000021
Dibenzofuran	0.00015
Di-n-butylphthalate (DBP)	<0.00002
Ethylbenzene	<0.0003
Fluoranthene	0.00014
Fluorene	0.00012
Naphthalene	0.0018
N-Nitrosodiphenylamine	<0.000025
Pentachlorophenol	<0.000079
Phenanthrene	0.00017
Phenol	<0.000035
Pyrene	<0.000019
Toluene	<0.0002
Xylenes (total)	<0.0003

2-Diphenylhydrazine	<0.000021
2,4-Dimethylphenol	<0.00004
2,6-Dinitrotoluene	<0.000042
2-Chloronaphthalene	<0.000021
2-Methylnaphthalene	0.00033
4,6-Dinitro-2-methylphenol	<0.00002
4-Nitrophenol	<0.000047
Acenaphthene	0.00036 J
Acenaphthylene	0.000023 J
Anthracene	0.000036 J
Benzene	0.00056 J
Benzo(a)anthracene	0.000055 J
Benzo(a)pyrene	0.000063 J
bis(2-Ethylhexyl)phthalate (DEHP)	0.00029
Chlorobenzene	<0.0003
Chrysene	0.000054 J
Dibenzofuran	0.00031 J
Di-n-butylphthalate (DBP)	<0.00002
Ethylbenzene	0.00047 J
Fluoranthene	0.00074 J
Fluorene	0.00036 J
Naphthalene	0.00052
N-Nitrosodiphenylamine	<0.000025
Pentachlorophenol	<0.000079
Phenanthrene	0.00042 J
Phenol	<0.000035
Pyrene	0.000092 J
Toluene	<0.0002 J
Xylenes (total)	0.00062 J

2-Diphenylhydrazine	<0.000021
2,4-Dimethylphenol	0.023
2,6-Dinitrotoluene	<0.000042
2-Chloronaphthalene	<0.000021
2-Methylnaphthalene	0.0011
4,6-Dinitro-2-methylphenol	<0.00002
4-Nitrophenol	<0.000047
Acenaphthene	0.093
Acenaphthylene	0.0026
Anthracene	0.02
Benzene	0.0003
Benzo(a)anthracene	0.0025
Benzo(a)pyrene	0.0021 J
bis(2-Ethylhexyl)phthalate (DEHP)	<0.000037
Chlorobenzene	<0.0003
Chrysene	0.027
Dibenzofuran	0.085
Di-n-butylphthalate (DBP)	<0.00002
Ethylbenzene	0.31
Fluoranthene	0.013
Fluorene	0.043
Naphthalene	1.4
N-Nitrosodiphenylamine	<0.000025
Pentachlorophenol	0.021
Phenanthrene	0.065
Phenol	0.0062
Pyrene	0.0066
Toluene	0.97
Xylenes (total)	0.92

2-Diphenylhydrazine	<0.000021
2,4-Dimethylphenol	<0.00004
2,6-Dinitrotoluene	<0.000042
2-Chloronaphthalene	<0.000021
2-Methylnaphthalene	0.00023 J
4,6-Dinitro-2-methylphenol	<0.00002
4-Nitrophenol	<0.000047
Acenaphthene	0.00014
Acenaphthylene	0.00015
Anthracene	0.00028 J
Benzene	<0.0002
Benzo(a)anthracene	<0.00005
Benzo(a)pyrene	<0.00002
bis(2-Ethylhexyl)phthalate (DEHP)	<0.000037
Chlorobenzene	<0.0003
Chrysene	<0.000021
Dibenzofuran	0.00011
Di-n-butylphthalate (DBP)	<0.00002
Ethylbenzene	<0.0003
Fluoranthene	<0.000086
Fluorene	0.000093 J
Naphthalene	0.0011
N-Nitrosodiphenylamine	<0.000025
Pentachlorophenol	<0.00079
Phenanthrene	<0.00028
Phenol	0.00048
Pyrene	<0.0000057
Toluene	<0.0002
Xylenes (total)	<0.0003

2-Diphenylhydrazine	<0.000021
2,4-Dimethylphenol	<0.00004
2,6-Dinitrotoluene	<0.000042
2-Chloronaphthalene	<0.000021
2-Methylnaphthalene	<0.000025
4,6-Dinitro-2-methylphenol	<0.00002
4-Nitrophenol	<0.000047
Acenaphthene	0.00032
Acenaphthylene	<0.000015
Anthracene	<0.000014
Benzene	<0.0002
Benzo(a)anthracene	<0.00005
Benzo(a)pyrene	<0.00002
bis(2-Ethylhexyl)phthalate (DEHP)	0.000072 J
Chlorobenzene	<0.0003
Chrysene	<0.000021
Dibenzofuran	0.00007 J
Di-n-butylphthalate (DBP)	<0.00002
Ethylbenzene	<0.0003
Fluoranthene	<0.00003
Fluorene	<0.00003
Naphthalene	<0.00016
N-Nitrosodiphenylamine	<0.000025
Pentachlorophenol	<0.00079
Phenanthrene	<0.00021
Phenol	<0.000035
Pyrene	<0.000019
Toluene	<0.0002
Xylenes (total)	<0.0003

2-Diphenylhydrazine	<0.000021
2,4-Dimethylphenol	<0.0011
2,6-Dinitrotoluene	<0.000042
2-Chloronaphthalene	<0.000021
2-Methylnaphthalene	<0.00025
4,6-Dinitro-2-methylphenol	<0.00002
4-Nitrophenol	<0.000047
Acenaphthene	<0.000028
Acenaphthylene	<0.000015
Anthracene	<0.000028
Benzene	<0.0002
Benzo(a)anthracene	<0.00005
Benzo(a)pyrene	<0.00002
bis(2-Ethylhexyl)phthalate (DEHP)	0.000072 J
Chlorobenzene	<0.0003
Chrysene	<0.000021
Dibenzofuran	<0.00002
Di-n-butylphthalate (DBP)	<0.00002
Ethylbenzene	<0.0003
Fluoranthene	0.000071 J
Fluorene	<0.0002
Naphthalene	0.00018
N-Nitrosodiphenylamine	<0.000026
Pentachlorophenol	<0.00079
Phenanthrene	<0.00025
Phenol	0.0005
Pyrene	<0.0000061
Toluene	<0.0002
Xylenes (total)	<0.0003

2-Diphenylhydrazine	<0.000021
2,4-Dimethylphenol	<0.00004
2,6-Dinitrotoluene	<0.000042
2-Chloronaphthalene	<0.000021
2-Methylnaphthalene	0.002
4,6-Dinitro-2-methylphenol	<0.00002
4-Nitrophenol	<0.000047
Acenaphthene	0.021
Acenaphthylene	0.00023
Anthracene	0.0015
Benzene	<0.0002
Benzo(a)anthracene	<0.00005
Benzo(a)pyrene	<0.00002
bis(2-Ethylhexyl)phthalate (DEHP)	0.00007 J
Chlorobenzene	<0.0003
Chrysene	0.000054 J
Dibenzofuran	0.02
Di-n-butylphthalate (DBP)	<0.00002
Ethylbenzene	<0.0003
Fluoranthene	0.0026
Fluorene	0.0095
Naphthalene	<0.035
N-Nitrosodiphenylamine	<0.000025
Pentachlorophenol	<0.00079
Phenanthrene	0.0056
Phenol	<0.000064
Pyrene	0.0014
Toluene	<0.0002
Xylenes (total)	<0.0003

2-Diphenylhydrazine	<0.000021
2,4-Dimethylphenol	<0.00004
2,6-Dinitrotoluene	<0.000042
2-Chloronaphthalene	<0.000021
2-Methylnaphthalene	<0.00019
4,6-Dinitro-2-methylphenol	<0.00002
4-Nitrophenol	<0.000047
Acenaphthene	0.00026
Acenaphthylene	<0.000015
Anthracene	<0.000014
Benzene	<0.0002
Benzo(a)anthracene	<0.00005
Benzo(a)pyrene	<0.00002
bis(2-Ethylhexyl)phthalate (DEHP)	0.00027 J
Chlorobenzene	<0.0003
Chrysene	<0.000021
Dibenzofuran	<0.000049
Di-n-butylphthalate (DBP)	0.00014
Ethylbenzene	<0.0003
Fluoranthene	<0.000042
Fluorene	<0.000056
Naphthalene	<0.00016
N-Nitrosodiphenylamine	<0.000025
Pentachlorophenol	<0.000079
Phenanthrene	<0.00021
Phenol	<0.000035
Pyrene	<0.000019
Toluene	<0.0002
Xylenes (total)	<0.0003

2-Diphenylhydrazine	<0.000021
2,4-Dimethylphenol	<0.00004
2,6-Dinitrotoluene	<0.000042
2-Chloronaphthalene	<0.000021
2-Methylnaphthalene	<0.00019
4,6-Dinitro-2-methylphenol	<0.00002
4-Nitrophenol	<0.000047
Acenaphthene	0.00099
Acenaphthylene	0.00005 J
Anthracene	<0.00017
Benzene	<0.0002
Benzo(a)anthracene	0.00026
Benzo(a)pyrene	0.0001
bis(2-Ethylhexyl)phthalate (DEHP)	<0.000071
Chlorobenzene	<0.0003
Chrysene	0.00024
Dibenzofuran	0.00069
Di-n-butylphthalate (DBP)	0.000021 J
Ethylbenzene	0.0004 J
Fluoranthene	0.0011
Fluorene	0.00047
Naphthalene	<0.00011
N-Nitrosodiphenylamine	<0.000025
Pentachlorophenol	<0.00079
Phenanthrene	<0.00048
Phenol	<0.000035
Pyrene	0.0014
Toluene	<0.0002
Xylenes (total)	0.0012

2-Diphenylhydrazine	<0.000021
2,4-Dimethylphenol	0.0002
2,6-Dinitrotoluene	<0.000042
2-Chloronaphthalene	<0.000021
2-Methylnaphthalene	<0.00019
4,6-Dinitro-2-methylphenol	<0.00002
4-Nitrophenol	<0.000047
Acenaphthene	0.00067
Acenaphthylene	<0.000015
Anthracene	<0.000014
Benzene	<0.0002
Benzo(a)anthracene	<0.00005
Benzo(a)pyrene	0.00004 J
bis(2-Ethylhexyl)phthalate (DEHP)	0.00079
Chlorobenzene	<0.0003
Chrysene	0.000066 J
Dibenzofuran	<0.000049
Di-n-butylphthalate (DBP)	0.00014
Ethylbenzene	<0.0003
Fluoranthene	0.00042
Fluorene	<0.000056
Naphthalene	0.00088
N-Nitrosodiphenylamine	<0.000025
Pentachlorophenol	<0.00079
Phenanthrene	0.00053 J
Phenol	<0.000035
Pyrene	0.00078 J
Toluene	<0.0002
Xylenes (total)	<0.0003

2-Diphenylhydrazine	<0.000021
2,4-Dimethylphenol	0.0011 J
2,6-Dinitrotoluene	<0.000042
2-Chloronaphthalene	<0.000021
2-Methylnaphthalene	0.00012
4,6-Dinitro-2-methylphenol	<0.00002
4-Nitrophenol	<0.000047
Acenaphthene	0.00073 J
Acenaphthylene	<0.000015
Anthracene	<0.000014
Benzene	<0.0002
Benzo(a)anthracene	<0.00005
Benzo(a)pyrene	0.000031 J
bis(2-Ethylhexyl)phthalate (DEHP)	<0.00016
Chlorobenzene	<0.0003
Chrysene	0.000053 J
Dibenzofuran	<0.000059
Di-n-butylphthalate (DBP)	<0.00002
Ethylbenzene	<0.0003
Fluoranthene	0.00025
Fluorene	<0.000055
Naphthalene	<0.00046
N-Nitrosodiphenylamine	<0.000025
Pentachlorophenol	<0.00079
Phenanthrene	<0.00067
Phenol	<0.000042
Pyrene	0.00021
Toluene	<0.0002
Xylenes (total)	<0.0003

2-Diphenylhydrazine	<0.000021
2,4-Dimethylphenol	<0.00004
2,6-Dinitrotoluene	<0.000042
2-Chloronaphthalene	<0.000021
2-Methylnaphthalene	<0.000055
4,6-Dinitro-2-methylphenol	<0.00002
4-Nitrophenol	<0.000047
Acenaphthene	<0.000094
Acenaphthylene	<0.000015
Anthracene	<0.0001
Benzene	<0.0002
Benzo(a)anthracene	<0.00005
Benzo(a)pyrene	<0.00002
bis(2-Ethylhexyl)phthalate (DEHP)	<0.000085
Chlorobenzene	<0.0003
Chrysene	<0.000021
Dibenzofuran	<0.00011
Di-n-butylphthalate (DBP)	<0.00002
Ethylbenzene	<0.0003
Fluoranthene	0.00018
Fluorene	<0.00011
Naphthalene	<0.0003
N-Nitrosodiphenylamine	<0.000025
Pentachlorophenol	<0.00079
Phenanthrene	<0.00056
Phenol	<0.000035
Pyrene	<0.00011
Toluene	<0.0002
Xylenes (total)	<0.0003

2-Diphenylhydrazine	<0.000021
2,4-Dimethylphenol	0.0018 J
2,6-Dinitrotoluene	<0.000042
2-Chloronaphthalene	<0.000021
2-Methylnaphthalene	0.000061 J
4,6-Dinitro-2-methylphenol	<0.00002
4-Nitrophenol	<0.000047
Acenaphthene	<0.000027
Acenaphthylene	<0.000015
Anthracene	0.00012
Benzene	<0.0002
Benzo(a)anthracene	<0.00005
Benzo(a)pyrene	<0.00002
bis(2-Ethylhexyl)phthalate (DEHP)	<0.000053
Chlorobenzene	<0.0003
Chrysene	<0.000021
Dibenzofuran	<0.00002
Di-n-butylphthalate (DBP)	<0.00002
Ethylbenzene	<0.0003
Fluoranthene	<0.00001
Fluorene	<0.00003
Naphthalene	<0.00022
N-Nitrosodiphenylamine	<0.000025
Pentachlorophenol	<0.00079
Phenanthrene	0.00036
Phenol	<0.000035
Pyrene	<0.000019
Toluene	0.0039
Xylenes (total)	<0.0003

2-Diphenylhydrazine	<0.000021
2,4-Dimethylphenol	<0.00004
2,6-Dinitrotoluene	<0.000042
2-Chloronaphthalene	<0.000021
2-Methylnaphthalene	<0.000037
4,6-Dinitro-2-methylphenol	<0.00002
4-Nitrophenol	<0.000047
Acenaphthene	0.00038 J
Acenaphthylene	0.00013 J
Anthracene	0.00018 J
Benzene	<0.0002
Benzo(a)anthracene	<0.00005
Benzo(a)pyrene	<0.00002
bis(2-Ethylhexyl)phthalate (DEHP)	<0.000037
Chlorobenzene	<0.0003
Chrysene	<0.000021
Dibenzofuran	<0.00002
Di-n-butylphthalate (DBP)	<0.00002
Ethylbenzene	<0.0003
Fluoranthene	<0.00001
Fluorene	<0.00003
Naphthalene	<0.00002
N-Nitrosodiphenylamine	<0.000025
Pentachlorophenol	<0.00079
Phenanthrene	<0.000021
Phenol	<0.000035
Pyrene	<0.000019
Toluene	<0.0002
Xylenes (total)	<0.0003

2-Diphenylhydrazine	<0.000021
2,4-Dimethylphenol	<0.00004
2,6-Dinitrotoluene	<0.000042
2-Chloronaphthalene	<0.000021
2-Methylnaphthalene	<0.000019
4,6-Dinitro-2-methylphenol	<0.00002
4-Nitrophenol	<0.000047
Acenaphthene	0.00057
Acenaphthylene	<0.000015
Anthracene	<0.000014
Benzene	<0.0002
Benzo(a)anthracene	<0.00005
Benzo(a)pyrene	<0.00002
bis(2-Ethylhexyl)phthalate (DEHP)	<0.000037
Chlorobenzene	<0.0003
Chrysene	<0.000021
Dibenzofuran	0.0045
Di-n-butylphthalate (DBP)	<0.00002
Ethylbenzene	<0.0003
Fluoranthene	0.00096
Fluorene	0.00051
Naphthalene	0.00024
N-Nitrosodiphenylamine	<0.000025
Pentachlorophenol	<0.00079
Phenanthrene	0.00008 J
Phenol	<0.000035
Pyrene	0.00038
Toluene	<0.0002
Xylenes (total)	<0.0003

2-Diphenylhydrazine	<0.000021
2,4-Dimethylphenol	<0.00004
2,6-Dinitrotoluene	<0.000042
2-Chloronaphthalene	<0.000021
2-Methylnaphthalene	<0.000019
4,6-Dinitro-2-methylphenol	<0.00002
4-Nitrophenol	<0.000047
Acenaphthene	0.016
Acenaphthylene	0.00089
Anthracene	0.00057
Benzene	0.00059 J
Benzo(a)anthracene	<0.00005
Benzo(a)pyrene	<0.00002
bis(2-Ethylhexyl)phthalate (DEHP)	<0.000037
Chlorobenzene	<0.0003
Chrysene	<0.000021
Dibenzofuran	0.00012
Di-n-butylphthalate (DBP)	<0.00002
Ethylbenzene	<0.0003
Fluoranthene	0.000091 J
Fluorene	0.00019
Naphthalene	0.0017
N-Nitrosodiphenylamine	<0.000025
Pentachlorophenol	<0.00079
Phenanthrene	<0.000021
Phenol	0.00012 J
Pyrene	0.000068 J
Toluene	<0.0002
Xylenes (total)	<0.0003

2-Diphenylhydrazine	<0.000021
2,4-Dimethylphenol	<0.00004
2,6-Dinitrotoluene	<0.000042
2-Chloronaphthalene	<0.000021
2-Methylnaphthalene	<0.000019
4,6-Dinitro-2-methylphenol	<0.00002
4-Nitrophenol	<0.000047
Acenaphthene	0.00029
Acenaphthylene	0.035
Anthracene	0.0027 J
Benzene	0.008
Benzo(a)anthracene	0.0022
bis(2-Ethylhexyl)phthalate (DEHP)	<0.000037
Chlorobenzene	<0.0015
Chrysene	0.0072
Dibenzofuran	0.17
Di-n-butylphthalate (DBP)	<0.0002
Ethylbenzene	0.028
Fluoranthene	0.068
Fluorene	0.12
Naphthalene	0.66
N-Nitrosodiphenylamine	<0.00025
Pentachlorophenol	<0.00079
Phenanthrene	0.25
Phenol	0.0079 J
Pyrene	0.043
Toluene	<0.001
Xylenes (total)	0.025

2-Diphenylhydrazine	<0.000021
2,4-Dimethylphenol	<0.00004
2,6-Dinitrotoluene	<0.000042
2-Chloronaphthalene	<0.000021
2-Methylnaphthalene	<0.000019
4,6-Dinitro-2-methylphenol	<0.00002
4-Nitrophenol	<0.000047
Acenaphthene	0.000077 J
Acenaphthylene	<0.000015
Anthracene	<0.000014
Benzene	<0.0002
Benzo(a)anthracene	<0.00005
Benzo(a)pyrene	0.000031 J
bis(2-Ethylhexyl)phthalate (DEHP)	<0.00016
Chlorobenzene	<0.0003
Chrysene	0.000053 J
Dibenzofuran	<0.000059
Di-n-butylphthalate (DBP)	<0.00002
Ethylbenzene	<0.0003
Fluoranthene	0.00025
Fluorene	<0.000055
Naphthalene	<0.00046
N-Nitrosodiphenylamine	<0.000025
Pentachlorophenol	<0.00079
Phenanthrene	<0.00067
Phenol	<0.000042
Pyrene	0.00021
Toluene	<0.0002
Xylenes (total)	<0.0003

2-Diphenylhydrazine	<0.000021
2,4-Dimethylphenol	<0.00004
2,6-Dinitrotoluene	<0.000042
2-Chloronaphthalene	<0.000021
2-Methylnaphthalene	<0.000055
4,6-Dinitro-2-methylphenol	<0.00002
4-Nitrophenol	<0.000047
Acenaphthene	<0.000094
Acenaphthylene	<0.000015
Anthracene	<0.0001
Benzene	<0.0002
Benzo(a)anthracene	<0.00005
Benzo(a)pyrene	<0.00002
bis(2-Ethylhexyl)phthalate (DEHP)	<0.000085
Chlorobenzene	<0.0003
Chrysene	<0.000021
Dibenzofuran	<0.00011
Di-n-butylphthalate (DBP)	<0.00002
Ethylbenzene	<0.0003
Fluoranthene	0.00018
Fluorene	<0.00011
Naphthalene	<0.0003
N-Nitrosodiphenylamine	<0.000025
Pentachlorophenol	<0.00079
Phenanthrene	<0.00056
Phenol	<0.000035
Pyrene	<0.00011
Toluene	<0.0002
Xylenes (total)	<0.0003

2-Diphenylhydrazine	<0.000021
2,4-Dimethylphenol	0.0011 J
2,6-Dinitrotoluene	<0.000042
2-Chloronaphthalene	<0.000021
2-Methylnaphthalene	0.00012
4,6-Dinitro-2-methylphenol	<0.00002
4-Nitrophenol	<0.000047
Acenaphthene	0.00045
Acenaphthylene	0.00065
Anthracene	0.0086
Benzene	<0.0002
Benzo(a)anthracene	0.0018
Benzo(a)pyrene	0.00065
bis(2-Ethylhexyl)phthalate (DEHP)	0.0012
Chlorobenzene	<0.0003
Chrysene	0.0022
Dibenzofuran	0.00034
Di-n-butylphthalate (DBP)	0.0016
Ethylbenzene	<0.0003
Fluoranthene	0.0095
Fluorene	0.00067
Naphthalene	0.000097 J
N-Nitrosodiphenylamine	<0.000025
Pentachlorophenol	<0.00079
Phenanthrene	0.0077
Phenol	<0.000035
Pyrene	0.006
Toluene	<0.0002
Xylenes (total)	<0.0003

2-Diphenylhydrazine	<0.000021
2,4-Dimethylphenol	0.00011 J
2,6-Dinitrotoluene	<0.000042
2-Chloronaphthalene	<0.000021
2-Methylnaphthalene	0.00012
4,6-Dinitro-2-methylphenol	<0.00002
4-Nitrophenol	<0.000047
Acenaphthene	0.00062
Acenaphthylene	0.00018
Anthracene	0.00075 J
Benzene	<0.0002
Benzo(a)anthracene	0.00039
Benzo(a)pyrene	0.00042
bis(2-Ethylhexyl)phthalate (DEHP)	0.000037 J
Chlorobenzene	<0.0003
Chrysene	0.00062
Dibenzofuran	0.000075 J
Di-n-butylphthalate (DBP)	<0.00002
Ethylbenzene	0.00044 J
Fluoranthene	0.00062
Fluorene	0.00023
Naphthalene	<0.00061
N-Nitrosodiphenylamine	<0.000025
Pentachlorophenol	<0.00079
Phenanthrene	<0.00027
Phenol	<0.000035
Pyrene	0.00068
Toluene	<0.0002
Xylenes (total)	0.0051

2-Diphenylhydrazine	<0.000021
2,4-Dimethylphenol	0.0082
2,6-Dinitrotoluene	<0.000042
2-Chloronaphthalene	<0.000021
2-Methylnaphthalene	0.96
4,6-Dinitro-2-methylphenol	<0.00002
4-Nitrophenol	<0.000047
Acenaphthene	0.39
Acenaphthylene	0.0025
Anthracene	0.027
Benzene	0.0017
Benzo(a)anthracene	0.00057
Benzo(a)pyrene	0.00019
bis(2-Ethylhexyl)phthalate (DEHP)	0.00066
Chlorobenzene	<0.0003
Chrysene	0.00056
Dibenzofuran	0.34
Di-n-butylphthalate (DBP)	0.00068
Ethylbenzene	0.033
Fluoranthene	0.0058
Fluorene	0.15
Naphthalene	7.5
N-Nitrosodiphenylamine	<0.000025
Pentachlorophenol	0.17
Phenanthrene	0.18
Phenol	<0.000035
Pyrene	0.049
Toluene	0.01
Xylenes (total)	0.22

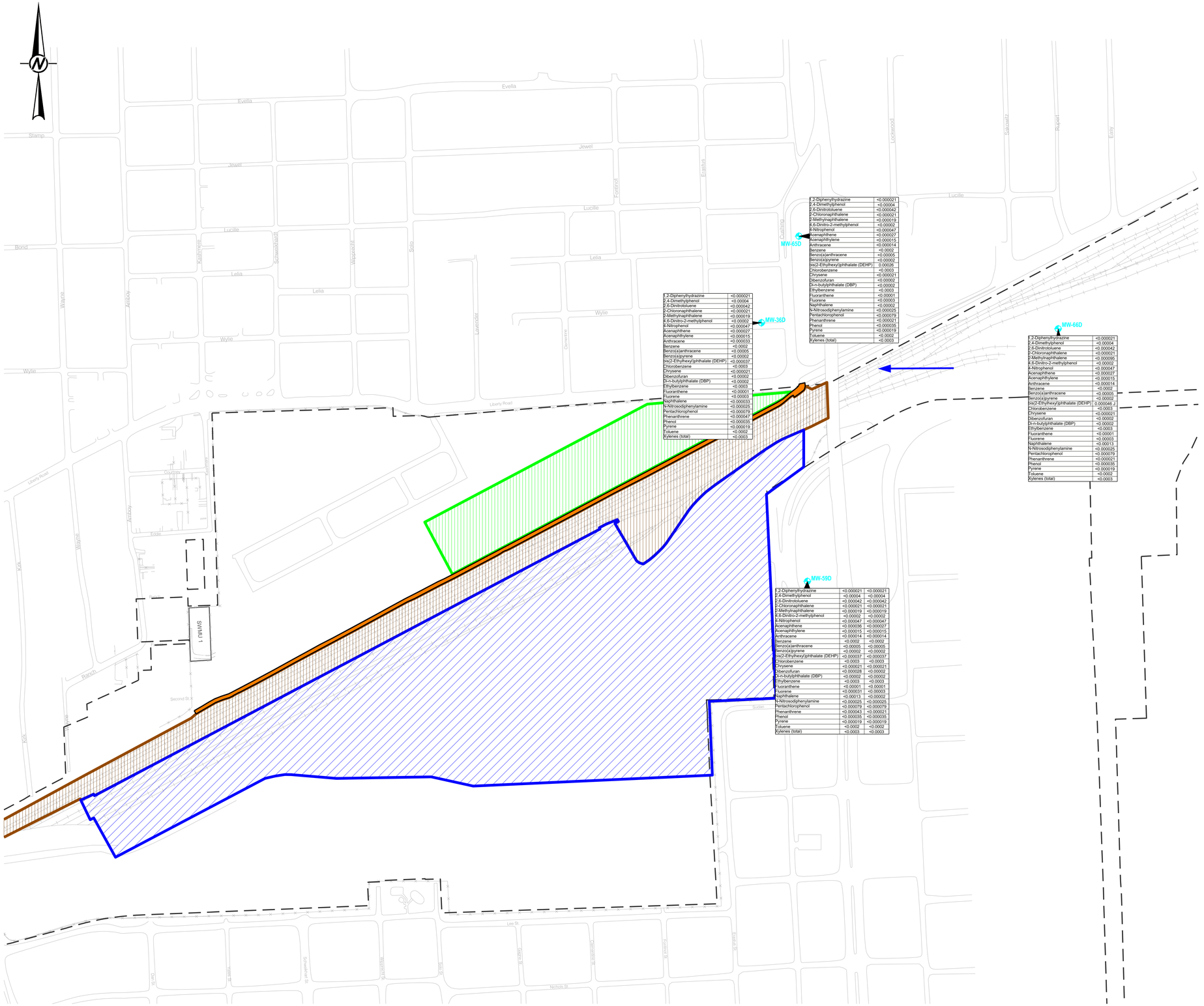
2-Diphenylhydrazine	<0.000021
2,4-Dimethylphenol	0.0002
2,6-Dinitrotoluene	<0.000042
2-Chloronaphthalene	<0.000021
2-Methylnaphthalene	<0.0001
4,6-Dinitro-2-methylphenol	<0.00002
4-Nitrophenol	<0.000047
Acenaphthene	0.00067
Acenaphthylene	<0.000015
Anthracene	<0.000014
Benzene	<0.0002
Benzo(a)anthracene	0.00004 J
Benzo(a)pyrene	<0.00002
bis(2-Ethylhexyl)phthalate (DEHP)	0.00079
Chlorobenzene	<0.0003
Chrysene	0.000066 J
Dibenzofuran	<0.000049
Di-n-butylphthalate (DBP)	0.00014
Ethylbenzene	<0.0003
Fluoranthene	0.00042
Fluorene	<0.000056
Naphthalene	0.00088
N-Nitrosodiphenylamine	<0.000025
Pentachlorophenol	<0.00079
Phenanthrene	<0.00048
Phenol	<0.000035
Pyrene	0.00078 J
Toluene	<0.0002
Xylenes (total)	<0.0003

2-Diphenylhydrazine	<0.000021
2,4-Dimethylphenol	0.0011 J
2,6-Dinitrotoluene	<0.000042
2-Chloronaphthalene	<0.000021
2-Methylnaphthalene	<0.000076
4,6-Dinitro-2-methylphenol	<0.00002
4-Nitrophenol	<0.000047
Acenaphthene	<0.000073
Acenaphthylene	<0.000015
Anthracene	<0.000014
Benzene	<0.0002
Benzo(a)anthracene	<0.00005
Benzo(a)pyrene	0.000031 J
bis(2-Ethylhexyl)phthalate (DEHP)	0.000039 J
Chlorobenzene	<0.0003
Chrysene	0.000029 J
Dibenzofuran	<0.000054
Di-n-butylphthalate (DBP)	<0.00002
Ethylbenzene	<0.0003
Fluoranthene	<0.000061
Fluorene	<0.00005
Naphthalene	<0.00052
N-Nitrosodiphenylamine	<0.000025
Pentachlorophenol	<0.00079
Phenanthrene	<0.000052
Phenol	<0.000035
Pyrene	<0.000065
Toluene	<0.0002
Xylenes (total)	<0.0003

2-Diphenylhydrazine	<0.000021
2,4-Dimethylphenol	0.00011 J
2,6-Dinitrotoluene	<0.000042
2-Chloronaphthalene	<0.000021
2-Methylnaphthalene	0.00012
4,6-Dinitro-2-methylphenol	<0.00002
4-Nitrophenol	<0.000047
Acenaphthene	0.00045
Acenaphthylene	0.00065
Anthracene	0.0086
Benzene	<0.0002
Benzo(a)anthracene	0.0018
Benzo(a)pyrene	0.00065
bis(2-Ethylhexyl)phthalate (DEHP)	0.0012
Chlorobenzene	<0.0003
Chrysene	0.0022
Dibenzofuran	0.00034
Di-n-butylphthalate (DBP)	0.0016
Ethylbenzene	<0.0003
Fluoranthene	0.0095
Fluorene	0.00067
Naphthalene	0.000097 J
N-Nitrosodiphenylamine	<0.000025
Pentachlorophenol	<0.00079
Phenanthrene	0.0077
Phenol	<0.000035
Pyrene	0.006
Toluene	<0.0002
Xylenes (total)	<0.0003

2-Diphenylhydrazine	<0.000021
2,4-Dimethylphenol	0.0002
2,6-Dinitrotoluene	<0.000042
2-Chloronaphthalene	<0.000021
2-Methylnaphthalene	<0.0001
4,6-Dinitro-2-methylphenol	<0.00002
4-Nitrophenol	<0.000047
Acenaphthene	0.00067
Acenaphthylene	<0.000015
Anthracene	<0.000014
Benzene	<0.0002
Benzo(a)anthracene	0.00004 J
Benzo(a)pyrene	<0.00002
bis(2-Ethylhexyl)phthalate (DEHP)	0.00079
Chlorobenzene	<0.0003
Chrysene	0.000066 J
Dibenzofuran	<0.000049
Di-n-butylphthalate (DBP)	0.00014
Ethylbenzene	<0.0003
Fluoranthene	0.00042
Fluorene	<0.000056
Naphthalene	0.00088
N-Nitrosodiphenylamine	<0.000025
Pentachlorophenol	<0.00079
Phenanthrene	<0.00048
Phenol	<0.000035
Pyrene	0.00078 J
Toluene	<0.0002
Xylenes (total)	<0.0003

2-Diphenylhydrazine	<0.000021
2,4-Dimethylphenol	0.0002
2,6-Dinitrotoluene	<0.000042
2-Chloronaphthalene	<0.000021
2-Methylnaphthalene	<0.0001
4,6-Dinitro-2-methylphenol	<0.00002
4-Nitrophenol	<0.000047
Acenaphthene	0.00067
Acenaphthylene	<0.000015
Anthracene	<0.000014
Benzene	<0.0002
Benzo(a)anthracene	0.00004 J
Benzo(a)pyrene	<0.00002



1,2-Diphenylhydrazine	<0.000021
2,4-Dimethylphenol	<0.00004
2,6-Dinitrotoluene	<0.000042
2-Chloronaphthalene	<0.000021
2-Methylnaphthalene	<0.000019
4,6-Dinitro-2-methylphenol	<0.00002
4-Nitrophenol	<0.000047
Acenaphthene	<0.000027
Acenaphthylene	<0.000015
Anthracene	<0.000014
Benzene	<0.0002
Benzo(a)anthracene	<0.00005
Benzo(a)pyrene	<0.00002
bis(2-Ethylhexyl)phthalate (DEHP)	0.00026
Chlorobenzene	<0.0003
Chrysene	<0.000021
Dibenzofuran	<0.00002
Di-n-butylphthalate (DBP)	<0.00002
Ethylbenzene	<0.0003
Fluoranthene	<0.00001
Fluorene	<0.00003
Naphthalene	<0.00013
N-Nitrosodiphenylamine	<0.000025
Pentachlorophenol	<0.000079
Phenanthrene	<0.000021
Phenol	<0.000035
Pyrene	<0.000019
Toluene	<0.0002
Xylenes (total)	<0.0003

1,2-Diphenylhydrazine	<0.000021
2,4-Dimethylphenol	<0.00004
2,6-Dinitrotoluene	<0.000042
2-Chloronaphthalene	<0.000021
2-Methylnaphthalene	<0.000019
4,6-Dinitro-2-methylphenol	<0.00002
4-Nitrophenol	<0.000047
Acenaphthene	<0.000027
Acenaphthylene	<0.000015
Anthracene	<0.000014
Benzene	<0.0002
Benzo(a)anthracene	<0.00005
Benzo(a)pyrene	<0.00002
bis(2-Ethylhexyl)phthalate (DEHP)	0.00046 J
Chlorobenzene	<0.0003
Chrysene	<0.000021
Dibenzofuran	<0.00002
Di-n-butylphthalate (DBP)	<0.00002
Ethylbenzene	<0.0003
Fluoranthene	<0.00001
Fluorene	<0.00003
Naphthalene	<0.00013
N-Nitrosodiphenylamine	<0.000025
Pentachlorophenol	<0.000079
Phenanthrene	<0.000021
Phenol	<0.000035
Pyrene	<0.000019
Toluene	<0.0002
Xylenes (total)	<0.0003

1,2-Diphenylhydrazine	<0.000021
2,4-Dimethylphenol	<0.00004
2,6-Dinitrotoluene	<0.000042
2-Chloronaphthalene	<0.000021
2-Methylnaphthalene	<0.000019
4,6-Dinitro-2-methylphenol	<0.00002
4-Nitrophenol	<0.000047
Acenaphthene	<0.000027
Acenaphthylene	<0.000015
Anthracene	<0.000014
Benzene	<0.0002
Benzo(a)anthracene	<0.00005
Benzo(a)pyrene	<0.00002
bis(2-Ethylhexyl)phthalate (DEHP)	<0.000037
Chlorobenzene	<0.0003
Chrysene	<0.000021
Dibenzofuran	<0.000028
Di-n-butylphthalate (DBP)	<0.00002
Ethylbenzene	<0.0003
Fluoranthene	<0.00001
Fluorene	<0.000031
Naphthalene	<0.00013
N-Nitrosodiphenylamine	<0.000025
Pentachlorophenol	<0.000079
Phenanthrene	<0.000043
Phenol	<0.000035
Pyrene	<0.000019
Toluene	<0.0002
Xylenes (total)	<0.0003

1,2-Diphenylhydrazine	<0.000021
2,4-Dimethylphenol	<0.00004
2,6-Dinitrotoluene	<0.000042
2-Chloronaphthalene	<0.000021
2-Methylnaphthalene	<0.000019
4,6-Dinitro-2-methylphenol	<0.00002
4-Nitrophenol	<0.000047
Acenaphthene	<0.000027
Acenaphthylene	<0.000015
Anthracene	<0.000014
Benzene	<0.0002
Benzo(a)anthracene	<0.00005
Benzo(a)pyrene	<0.00002
bis(2-Ethylhexyl)phthalate (DEHP)	0.000046 J
Chlorobenzene	<0.0003
Chrysene	<0.000021
Dibenzofuran	<0.00002
Di-n-butylphthalate (DBP)	<0.00002
Ethylbenzene	<0.0003
Fluoranthene	<0.00001
Fluorene	<0.00003
Naphthalene	<0.00013
N-Nitrosodiphenylamine	<0.000025
Pentachlorophenol	<0.000079
Phenanthrene	<0.000021
Phenol	<0.000035
Pyrene	<0.000019
Toluene	<0.0002
Xylenes (total)	<0.0003

1,2-Diphenylhydrazine	<0.000021
2,4-Dimethylphenol	<0.00004
2,6-Dinitrotoluene	<0.000042
2-Chloronaphthalene	<0.000021
2-Methylnaphthalene	<0.000019
4,6-Dinitro-2-methylphenol	<0.00002
4-Nitrophenol	<0.000047
Acenaphthene	<0.000027
Acenaphthylene	<0.000015
Anthracene	<0.000014
Benzene	<0.0002
Benzo(a)anthracene	<0.00005
Benzo(a)pyrene	<0.00002
bis(2-Ethylhexyl)phthalate (DEHP)	<0.000037
Chlorobenzene	<0.0003
Chrysene	<0.000021
Dibenzofuran	<0.00002
Di-n-butylphthalate (DBP)	<0.00002
Ethylbenzene	<0.0003
Fluoranthene	<0.00001
Fluorene	<0.00003
Naphthalene	<0.00013
N-Nitrosodiphenylamine	<0.000025
Pentachlorophenol	<0.000079
Phenanthrene	<0.000021
Phenol	<0.000035
Pyrene	<0.000019
Toluene	<0.0002
Xylenes (total)	<0.0003

LEGEND

- UPRR PROPERTY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- D-TZ MONITORING WELL LOCATION
- INFERRED GROUNDWATER FLOW DIRECTION
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA

NOTE(S)

1. ALL CONCENTRATIONS ARE IN mg/L.
2. J - ESTIMATED VALUE BETWEEN SQL AND MDL.
3. < - NOT DETECTED (RL/SQL REPORTED).
4. NA - NOT ANALYZED.
5. NS - NOT SAMPLED.
6. BLUE HIGHLIGHTED CONCENTRATIONS EXCEED COMMERCIAL INDUSTRIAL PCLs (FOR ON-SITE WELLS ONLY).
7. YELLOW HIGHLIGHTED CONCENTRATIONS EXCEED RESIDENTIAL ASSESSMENT LEVEL (RALs).
8. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2020).
9. * - SAMPLE COLLECTED IN MARCH 2020.

SWNU AREA

NO.	DESCRIPTION
SWMU 1	CLOSED SURFACE IMPOUNDMENT

PROTECTIVE CONCENTRATION LEVELS (PCLs)

PARAMETER	CAS NUMBER	RAL (mg/L)	GI PCL (mg/L)
1,2-Diphenylhydrazine	122-66-7	0.0011	0.0026
2,4-Dimethylphenol	105-67-9	0.49	1.5
2,6-Dinitrotoluene	606-20-2	0.0013	0.003
2-Chloronaphthalene	91-58-7	2	5.8
2-Methylnaphthalene	91-57-6	0.098	0.29
4,6-Dinitro-2-methylphenol	534-52-1	0.0024	0.0073
4-Nitrophenol	100-02-7	0.049	0.15
Acenaphthene	83-32-9	1.5	4.4
Acenaphthylene	208-96-8	1.5	4.4
Anthracene	120-12-7	7.3	22
Benzene	71-43-2	0.005	0.005
Benzo(a)anthracene	56-55-3	0.0091	0.02
Benzo(a)pyrene	50-32-8	0.002	0.0002
bis(2-Ethylhexyl)phthalate (DEHP)	117-81-7	0.006	0.006
Chlorobenzene	108-90-7	0.1	0.1
Chrysene	218-01-9	0.91	2
Dibenzofuran	132-64-9	0.098	0.29
Di-n-butylphthalate (DBP)	84-74-2	2.4	7.3
Ethylbenzene	100-41-4	0.7	0.7
Fluoranthene	206-44-0	0.98	2.9
Fluorene	86-73-7	0.98	2.9
Naphthalene	91-20-3	0.49	1.5
N-Nitrosodiphenylamine	86-30-6	0.19	0.42
Pentachlorophenol	87-86-5	0.001	0.001
Phenanthrene	85-01-8	0.73	2.2
Phenol	108-95-2	7.3	22
Pyrene	129-00-0	0.73	2.2
Toluene	108-88-3	1	1
Xylenes (total)	1330-20-7	10	10

STATE OF TEXAS
ERIC C. MATZNER
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LIC. # 795
LICENSED
PROFESSIONAL GEOLOGIST
4/15/20

0 200 400
1" = 200' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - D-TZ
JANUARY-MARCH 2020

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 REV. 0 FIGURE 5B-4

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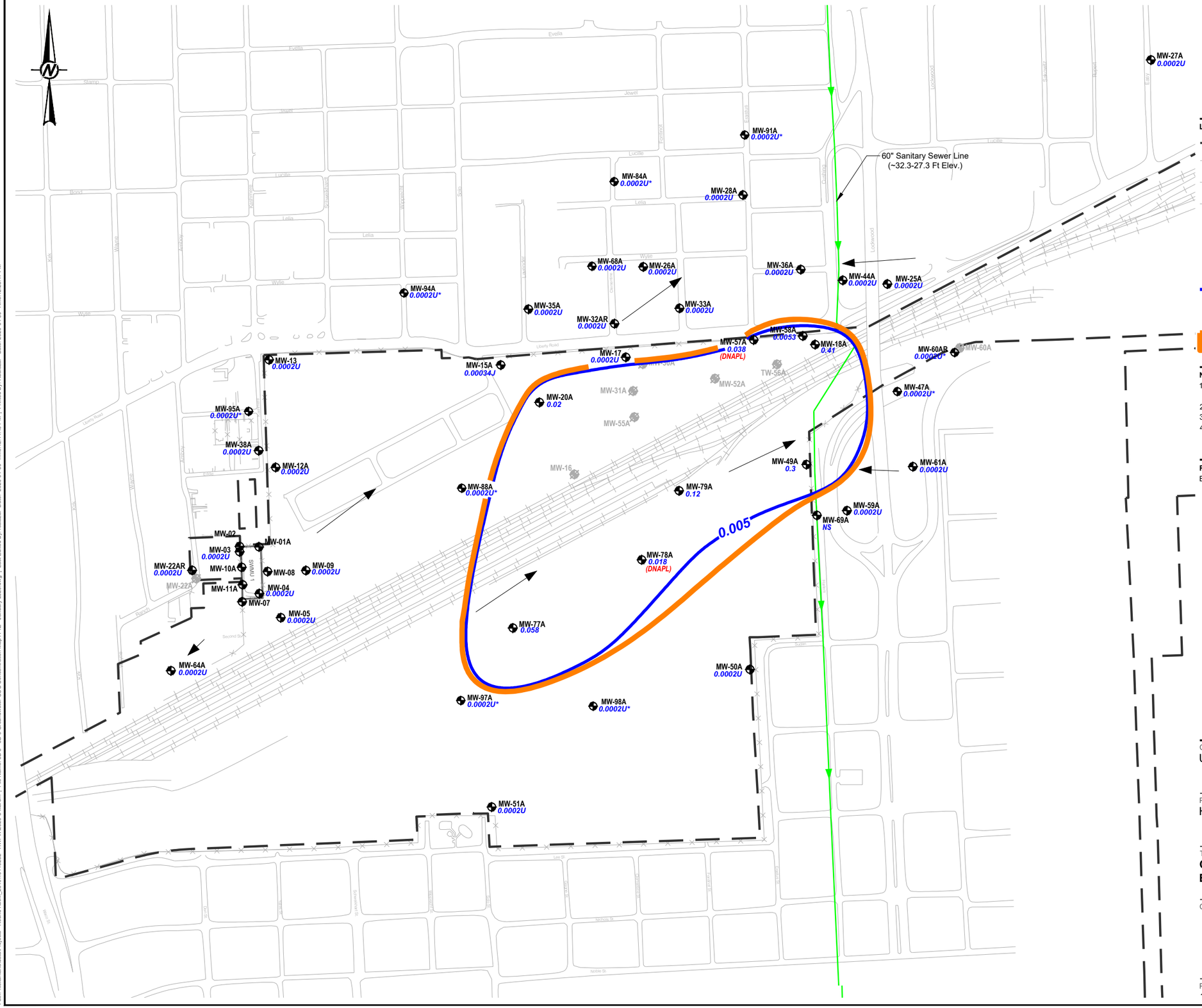

LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- 0.038 — BENZENE CONCENTRATION (mg/L)
- 0.005 — BENZENE CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION
- GW PCLE ZONE

NOTE(S)

1. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2020).
2. NS - NOT SAMPLED
3. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.005 mg/L)
4. * - SAMPLE COLLECTED IN MARCH 2020.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
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0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - A-TZ
BENZENE - JANUARY-MARCH 2020

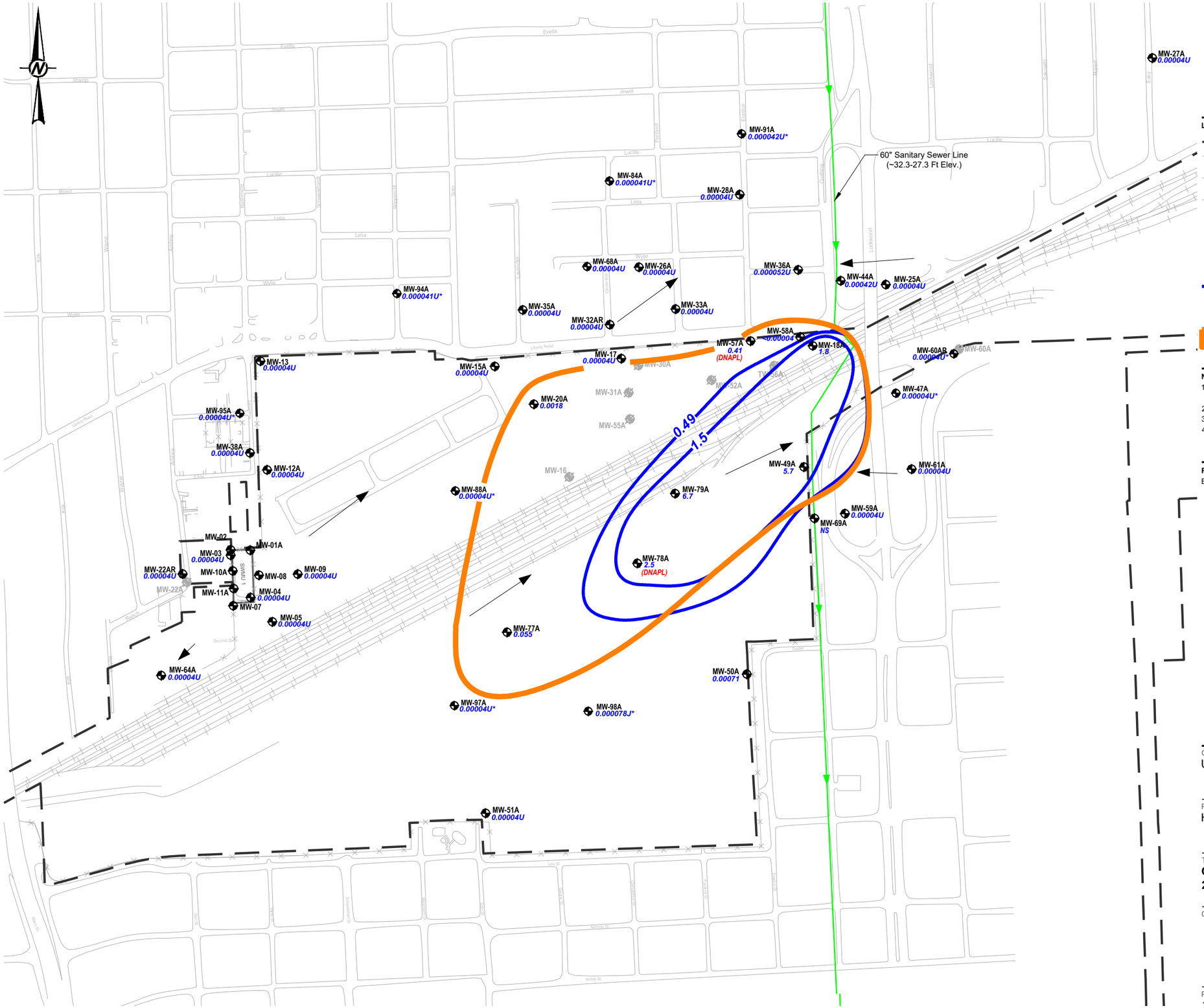
CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5B-5

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\Projects - Round Rock_2019\19119232 - HWPW\2020-3 March\ | File Name: 5B-5 - 5B-9 Groundwater COC Concentration Map A-TZ - January 2020.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time:12:14:40 PM | Printed By: RSalazar Date: 2020-04-30 Time:12:25:47 PM



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- 0.41 — 2,4 DIMETHYLPHENOL CONCENTRATION (mg/L)
- 0.49 — 2,4 DIMETHYLPHENOL CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION
- GW PCLE ZONE

NOTE(S)

1. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2020).
2. NS - NOT SAMPLED
3. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.49 mg/L AND 1.5 mg/L)
4. * - SAMPLE COLLECTED IN MARCH 2020.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

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LICENSED
PROFESSIONAL GEOSCIENTIST
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0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - A-TZ
2,4-DIMETHYLPHENOL - JANUARY-MARCH 2020

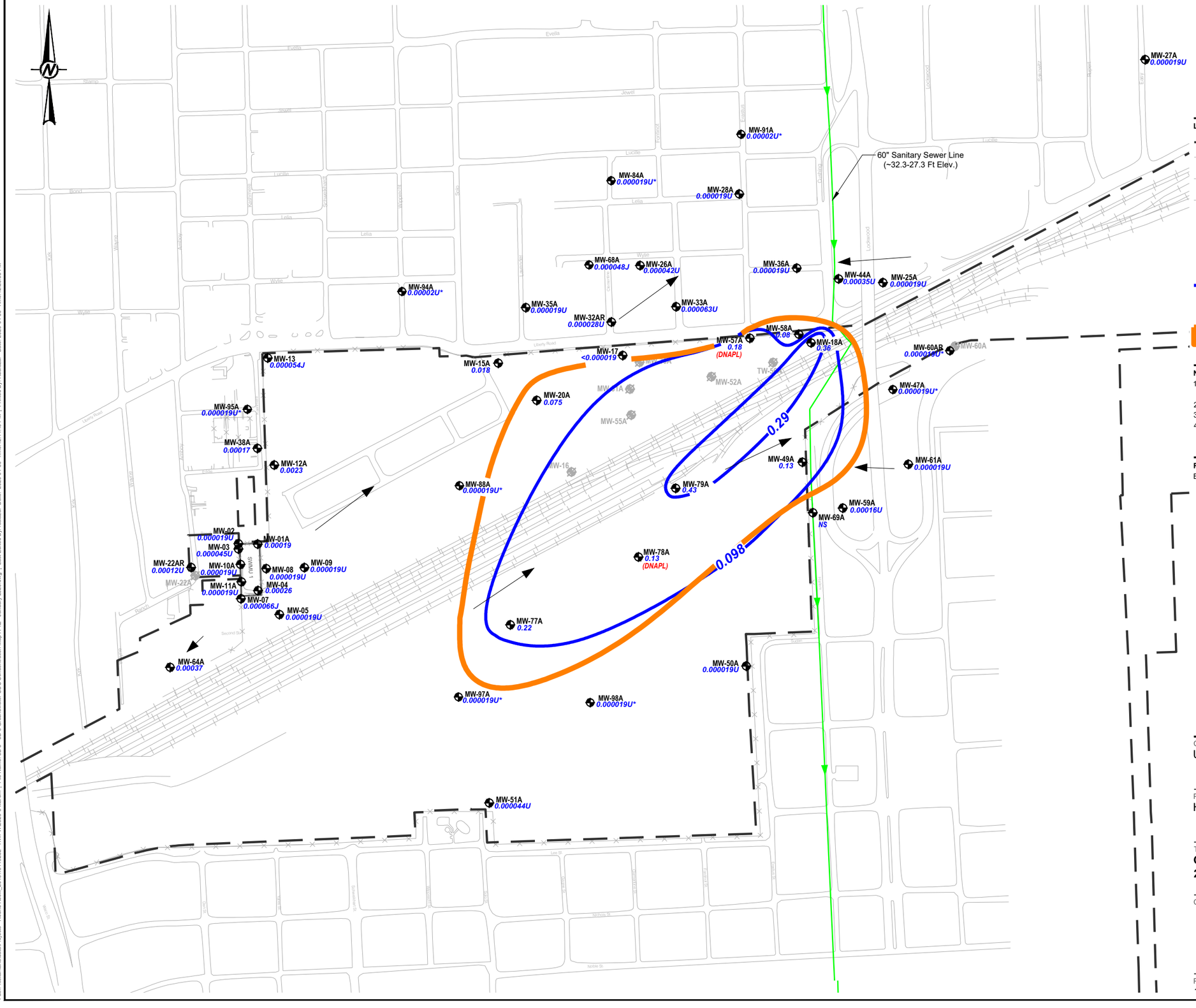
CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 REV. 0 FIGURE 5B-6

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\Projects - Round Rock_2019\19119232 - HWPW\2020-3 March\ | File Name: 5B-5 - 5B-9 Groundwater COC Concentration Map A-TZ - January 2020.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time:12:14:40 PM | Printed By: RSalazar Date: 2020-04-30 Time:12:25:58 PM



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- 0.18 — 2-METHYLNAPHTHALENE CONCENTRATION (mg/L)
- 0.098 — 2-METHYLNAPHTHALENE CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION
- GW PCLE ZONE

NOTE(S)

1. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2020).
2. NS - NOT SAMPLED
3. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.098 mg/L AND 0.29 mg/L)
4. * - SAMPLE COLLECTED IN MARCH 2020.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

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0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - A-TZ
2-METHYLNAPHTHALENE - JANUARY-MARCH 2020

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
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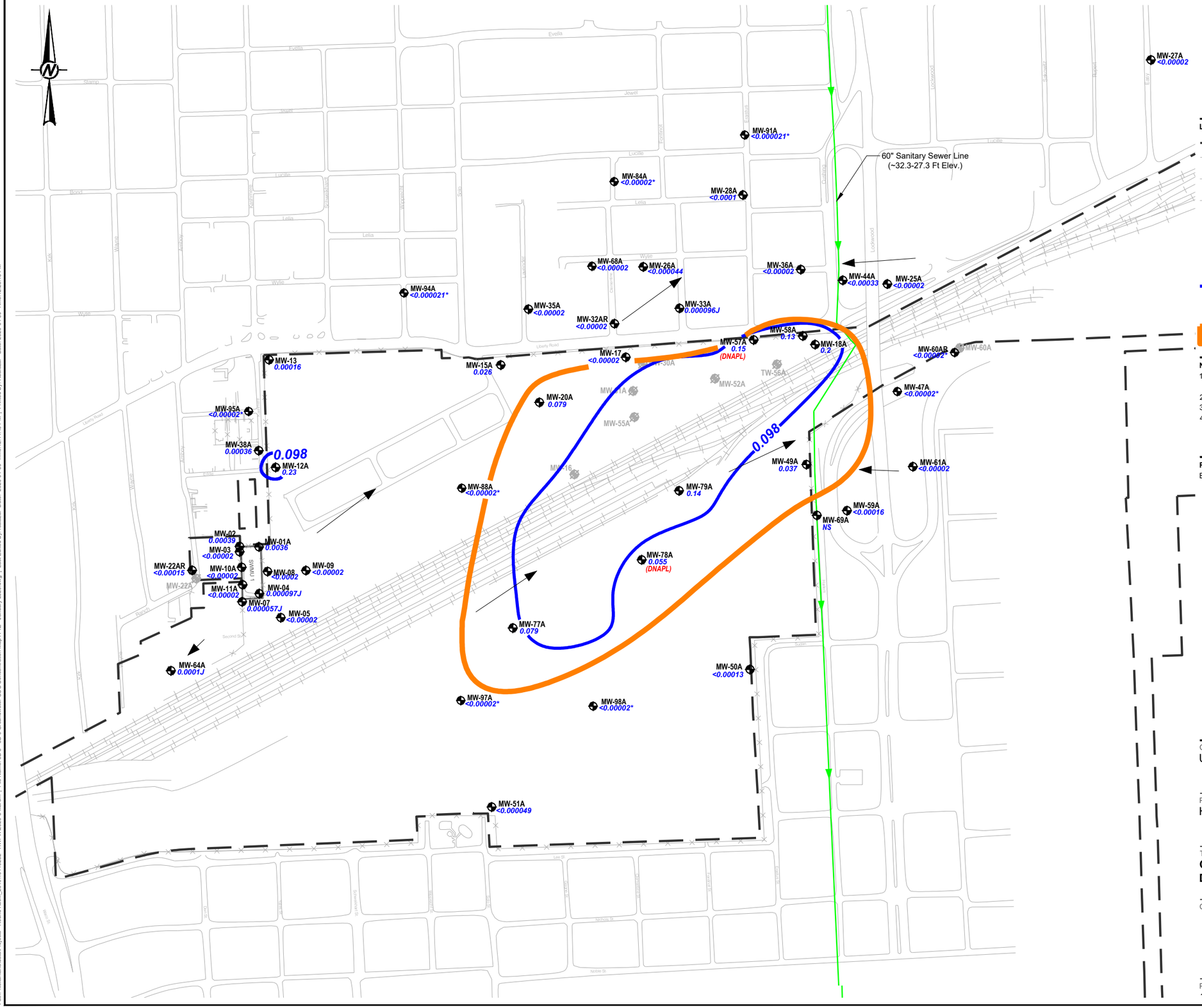
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5B-7

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\Projects - Round Rock_2019\19119232 - HWPW\2020-3 March\ | File Name: 5B-5 - 5B-9 Groundwater COC Concentration Map A-TZ - January 2020.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time:12:14:40 PM | Printed By: RSalazar Date: 2020-04-30 Time:12:26:08 PM



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- 0.15 — DIBENZOFURAN CONCENTRATION (mg/L)
- 0.098 — DIBENZOFURAN CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION
- GW PCLE ZONE

NOTE(S)

1. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2020).
2. NS - NOT SAMPLED
3. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.098 mg/L AND 0.29 mg/L)
4. * - SAMPLE COLLECTED IN MARCH 2020.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

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1" = 400' FEET

CLIENT
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PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - A-TZ
DIBENZOFURAN - JANUARY-MARCH 2020

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5B-8

Path: \\texarkana\data\Projects - Round Rock_2019\19119232 - HWPW\2020-3 March\ | File Name: 5B-5 - 5B-9 Groundwater COC Concentration Map A-TZ - January 2020.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time:12:14:40 PM | Printed By: RSalazar Date: 2020-04-30 Time:12:26:18 PM
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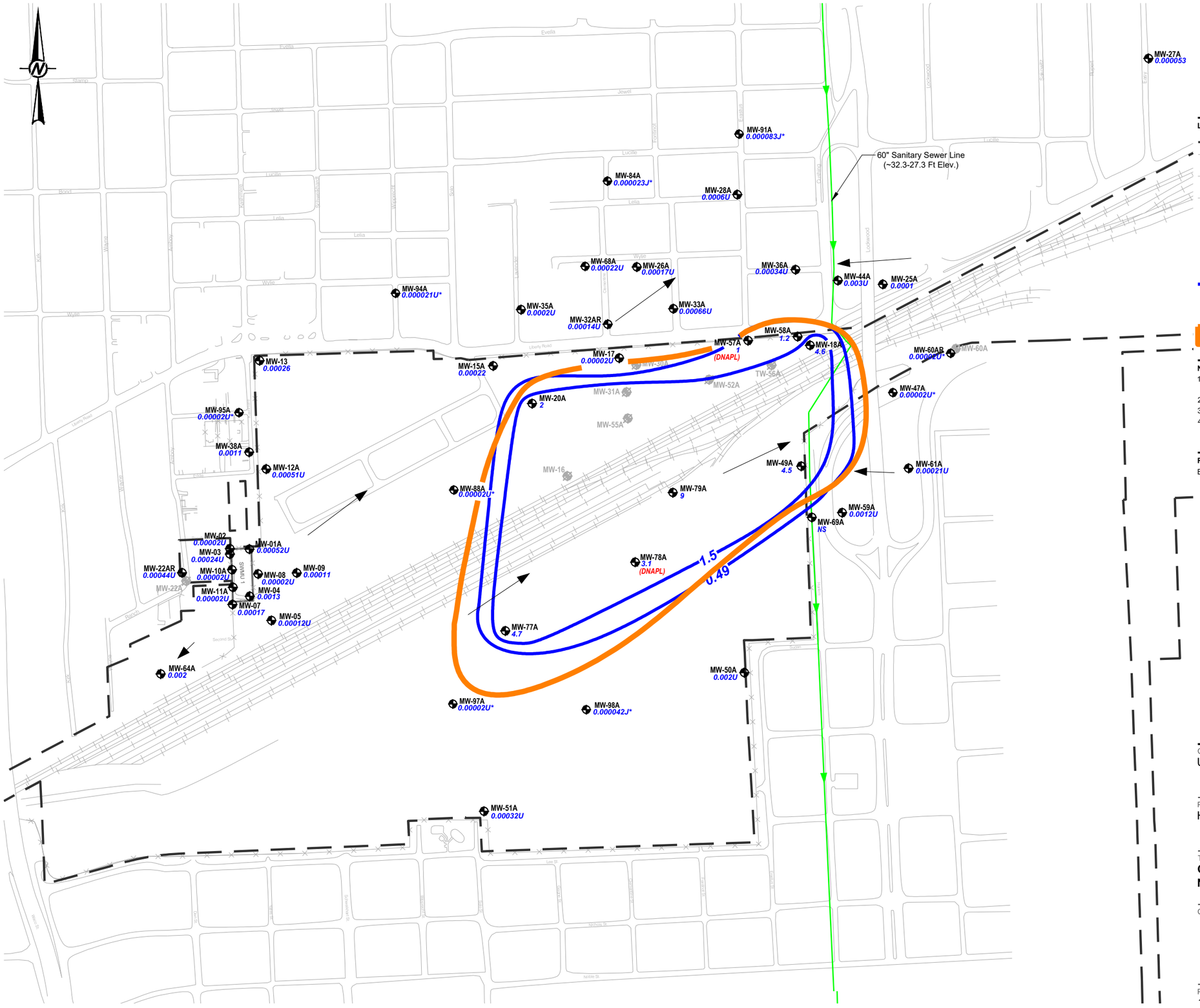

LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- <0.003 NAPHTHALENE CONCENTRATION (mg/L)
- 0.49 NAPHTHALENE CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION
- GW PCLE ZONE

NOTE(S)

1. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2020).
2. NS - NOT SAMPLED
3. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.49 mg/L AND 1.5 mg/L)
4. * - SAMPLE COLLECTED IN MARCH 2020.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

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0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - A-TZ NAPHTHALENE - JANUARY-MARCH 2020

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 REV. 0 FIGURE 5B-9

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

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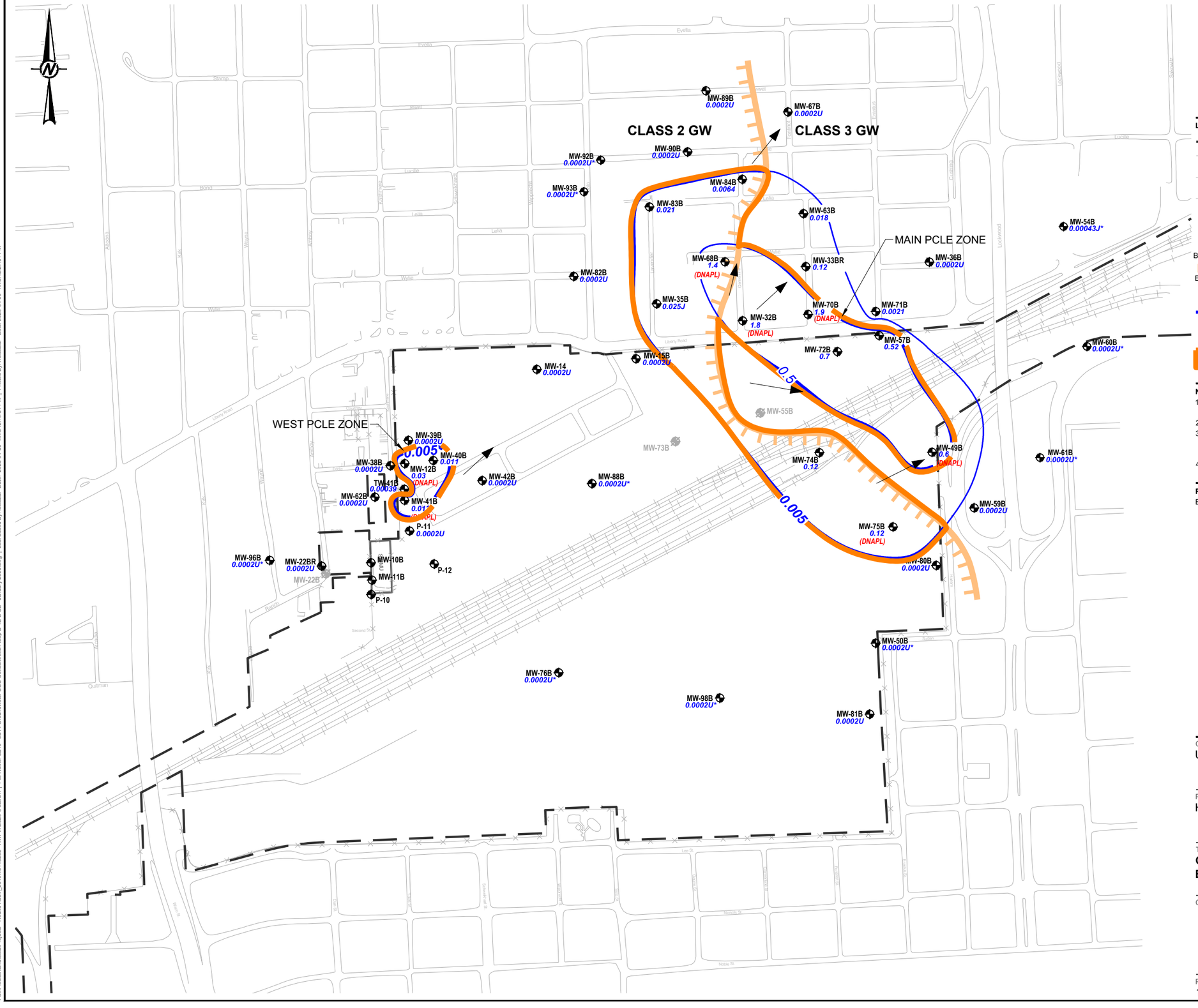

LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- B-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- B-CZ (CLASS 3 GW) / B-TZ/B-CZ BOUNDARY / B-TZ (CLASS 2 GW)
- <0.002 BENZENE CONCENTRATION (mg/L)
- 0.005 BENZENE CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION
- GW PCLE ZONE

NOTE(S)

1. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2020).
2. NS - NOT SAMPLED
3. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL:
   CLASS 2 GW PCL: 0.005 mg/L
   CLASS 3 GW PCL: 0.5 mg/L
4. * - SAMPLE COLLECTED IN MARCH 2020.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

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0 200 400
1" = 400' FEET

CLIENT
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PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - B-CZ/B-TZ BENZENE - JANUARY-MARCH 2020

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5B-10

Path: \\texarkana\data\Projects - Round Rock_2019\19119232 - HWPW\2020-3 March\ | File Name: 5B10 - 5B14 Groundwater COC Concentration Map B-TZ B-CZ - January 2020.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time:12:19:34 PM | Printed By: RSalazar Date: 2020-04-30 Time:12:27:01 PM
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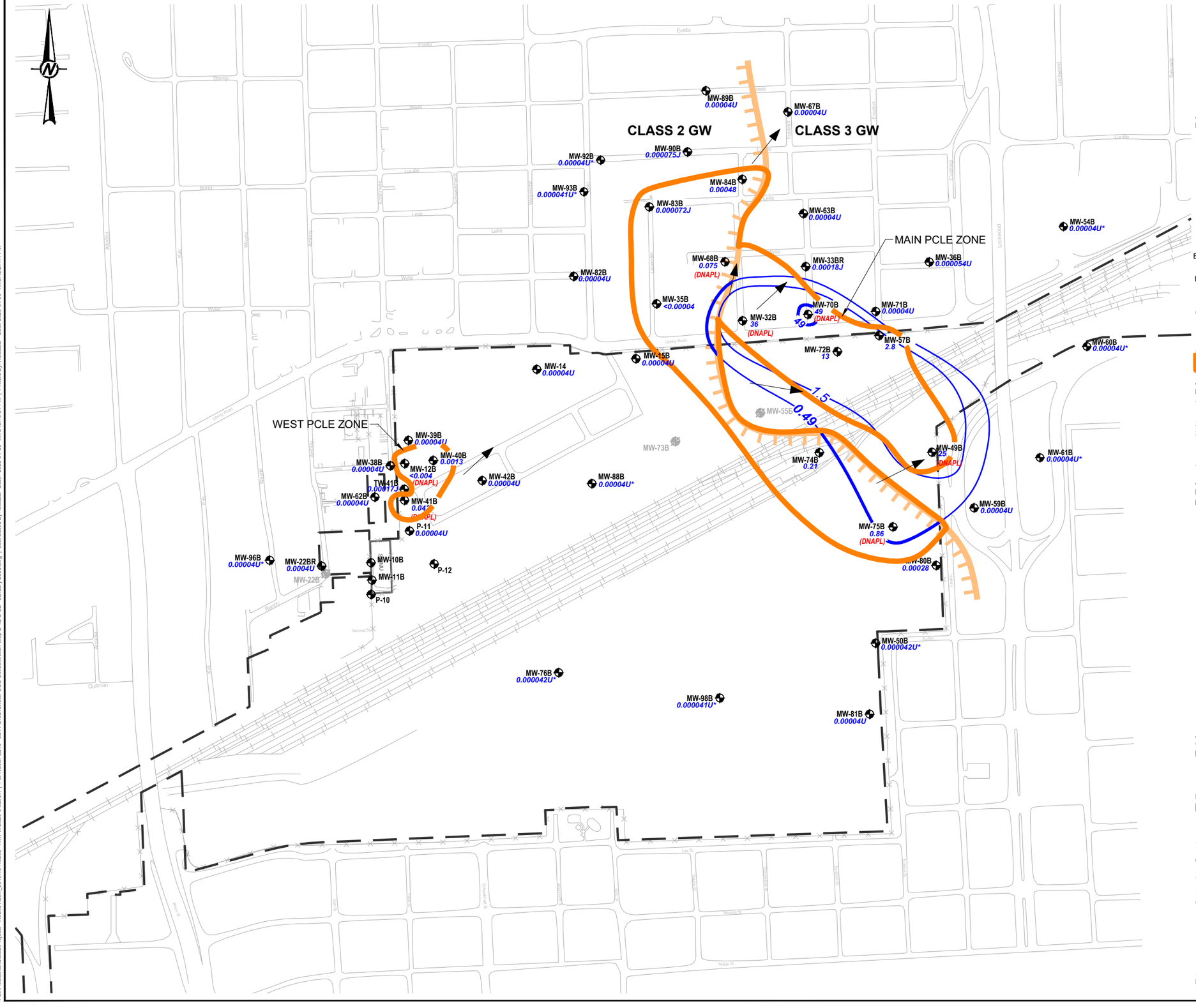

LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- B-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- B-CZ (CLASS 3 GW) / B-TZ (CLASS 2 GW) — B-TZ/B-CZ BOUNDARY
- 0.21 — 2,4-DIMETHYLPHENOL CONCENTRATION (mg/L)
- 0.49 — 2,4-DIMETHYLPHENOL CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION
- GW PCLE ZONE

NOTE(S)

1. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2020).
2. NS - NOT SAMPLED
3. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL:
   CLASS 2 GW PCL: 0.49 mg/L (Res.) & 1.5 mg/L (C/I)
   CLASS 3 BW PCL: 49 mg/L (Res.) & 150 mg/L (C/I)
4. * - SAMPLE COLLECTED IN MARCH 2020.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

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0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - B-CZ/B-TZ
2,4-DIMETHYLPHENOL - JANUARY-MARCH 2020

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
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PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5B-11

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

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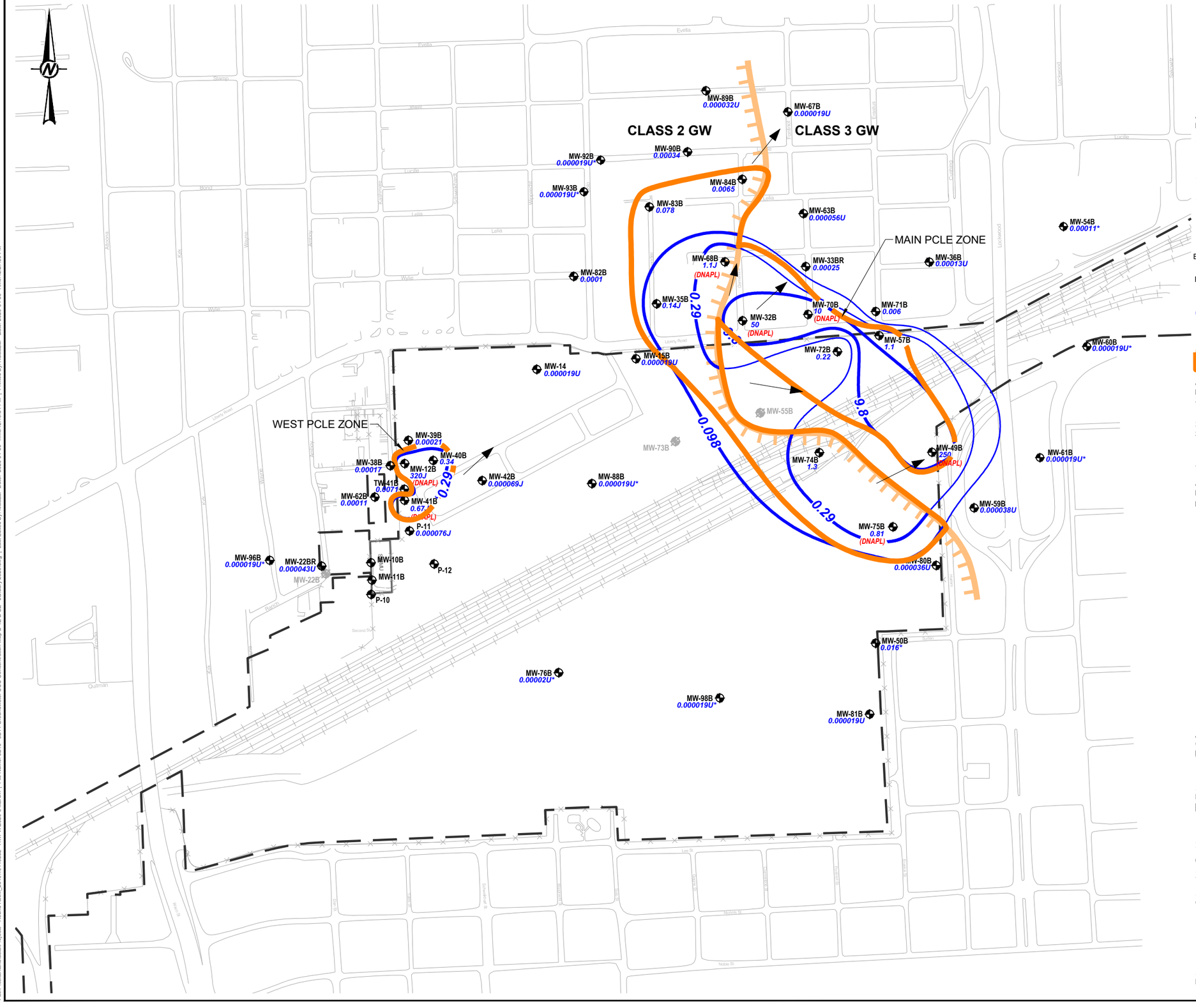

LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- B-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- B-CZ (CLASS 3 GW) / B-TZ (CLASS 2 GW) — B-TZ/B-CZ BOUNDARY
- 0.006 — 2-METHYLNAPHTHALENE CONCENTRATION (mg/L)
- 0.098 — 2-METHYLNAPHTHALENE CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION
- GW PCLE ZONE

NOTE(S)

1. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2020).
2. NS - NOT SAMPLED
3. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL:
   CLASS 2 GW PCL: 0.098 mg/L (Res.) & 0.29 mg/L (C/I)
   CLASS 3 GW PCL: 9.8 mG/L (Res.) & 29 mg/L (C/I)
4. * - SAMPLE COLLECTED IN MARCH 2020.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

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LIC. # 795
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PROFESSIONAL GEOSCIENTIST
4/30/20

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - B-CZ/B-TZ
2-METHYLNAPHTHALENE - JANUARY-MARCH 2020

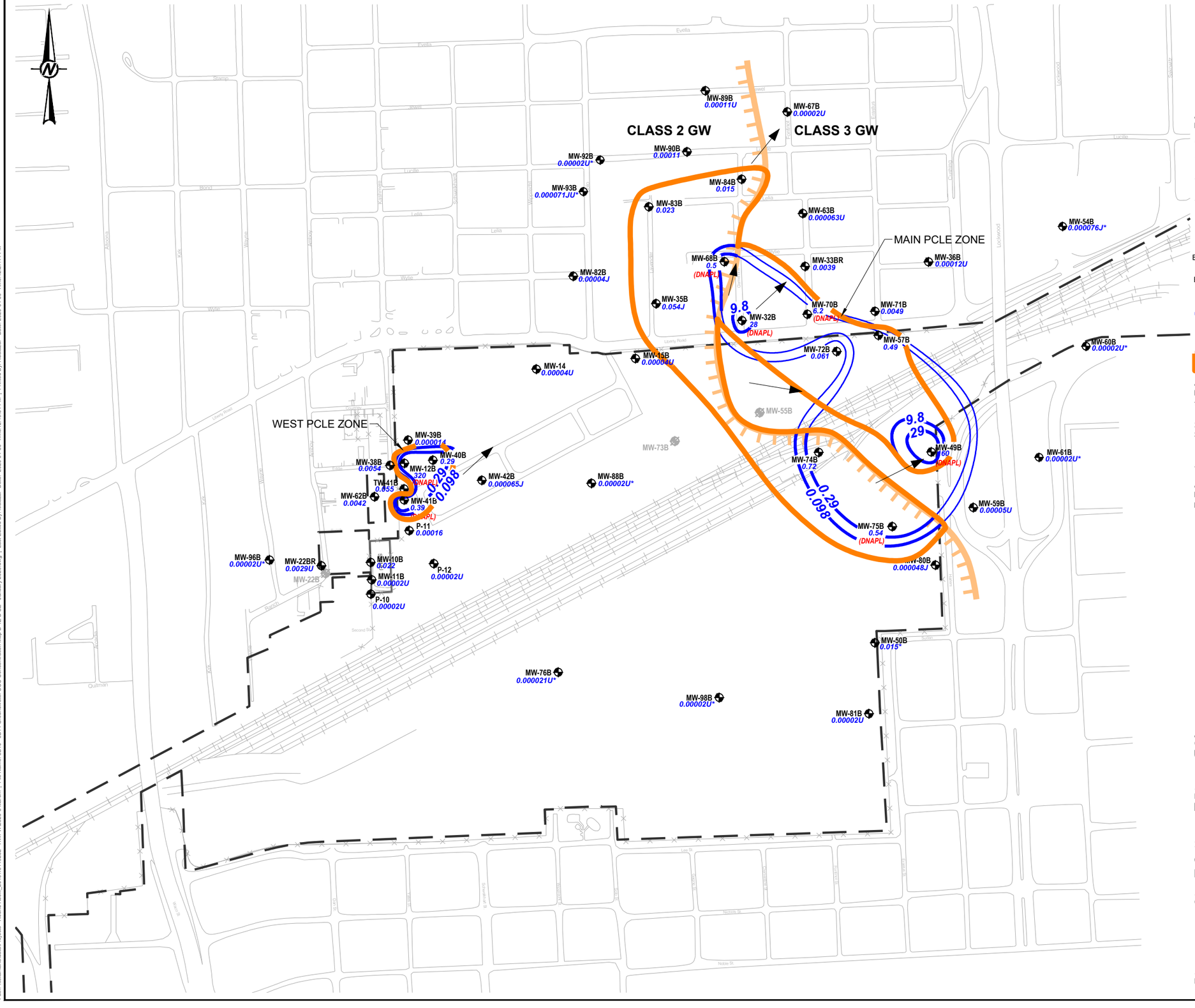
CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5B-12

Path: \\texarkana\data\Projects - Round Rock_2019\19119232 - HWPW\2020-3 March\ | File Name: 5B10 - 5B14 Groundwater COC Concentration Map B-TZ B-CZ - January 2020.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time:12:19:34 PM | Printed By: RSalazar Date: 2020-04-30 Time:12:27:30 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- B-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- B-CZ (CLASS 3 GW) / B-TZ (CLASS 2 GW) — B-TZ/B-CZ BOUNDARY
- 0.0049 — DIBENZOFURAN CONCENTRATION (mg/L)
- 0.098 — DIBENZOFURAN CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION
- GW PCLE ZONE

NOTE(S)

1. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2020).
2. NS - NOT SAMPLED
3. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL:
   CLASS 2 GW PCL: 0.098 mg/L (Res.) & 0.29 mg/L (C/I)
   CLASS 3 GW PCL: 9.8 mg/L (Res.) & 29 mg/L (C/I)
4. * - SAMPLE COLLECTED IN MARCH 2020.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
4/30/20

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - B-CZ/B-TZ DIBENZOFURAN - JANUARY-MARCH 2020

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5B-13

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

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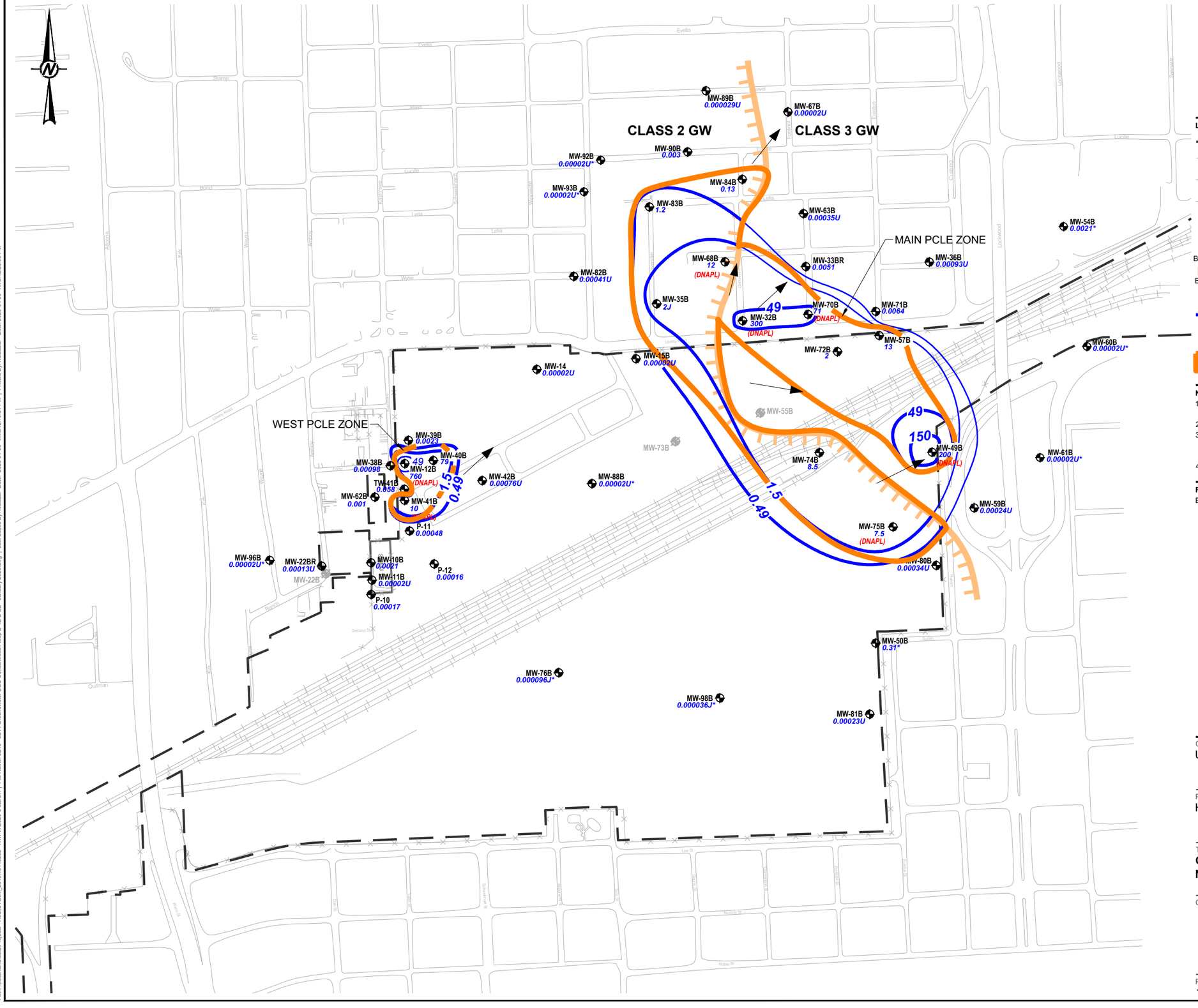

LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- B-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- B-CZ (CLASS 3 GW) / B-TZ (CLASS 2 GW): B-TZ/B-CZ BOUNDARY
- 0.0021: NAPHTHALENE CONCENTRATION (mg/L)
- 0.49: NAPHTHALENE CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION
- GW PCLE ZONE

NOTE(S)

1. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2020).
2. NS - NOT SAMPLED
3. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL:
   CLASS 2 GW PCL: 0.49 mg/L (Res.) & 1.5 mg/L (C/I)
   CLASS 3 GW PCL: 49 mg/L (Res.) & 150 mg/L (C/I)
4. * - SAMPLE COLLECTED IN MARCH 2020.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
4/30/20

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - B-CZ/B-TZ NAPHTHALENE - JANUARY-MARCH 2020

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5B-14

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

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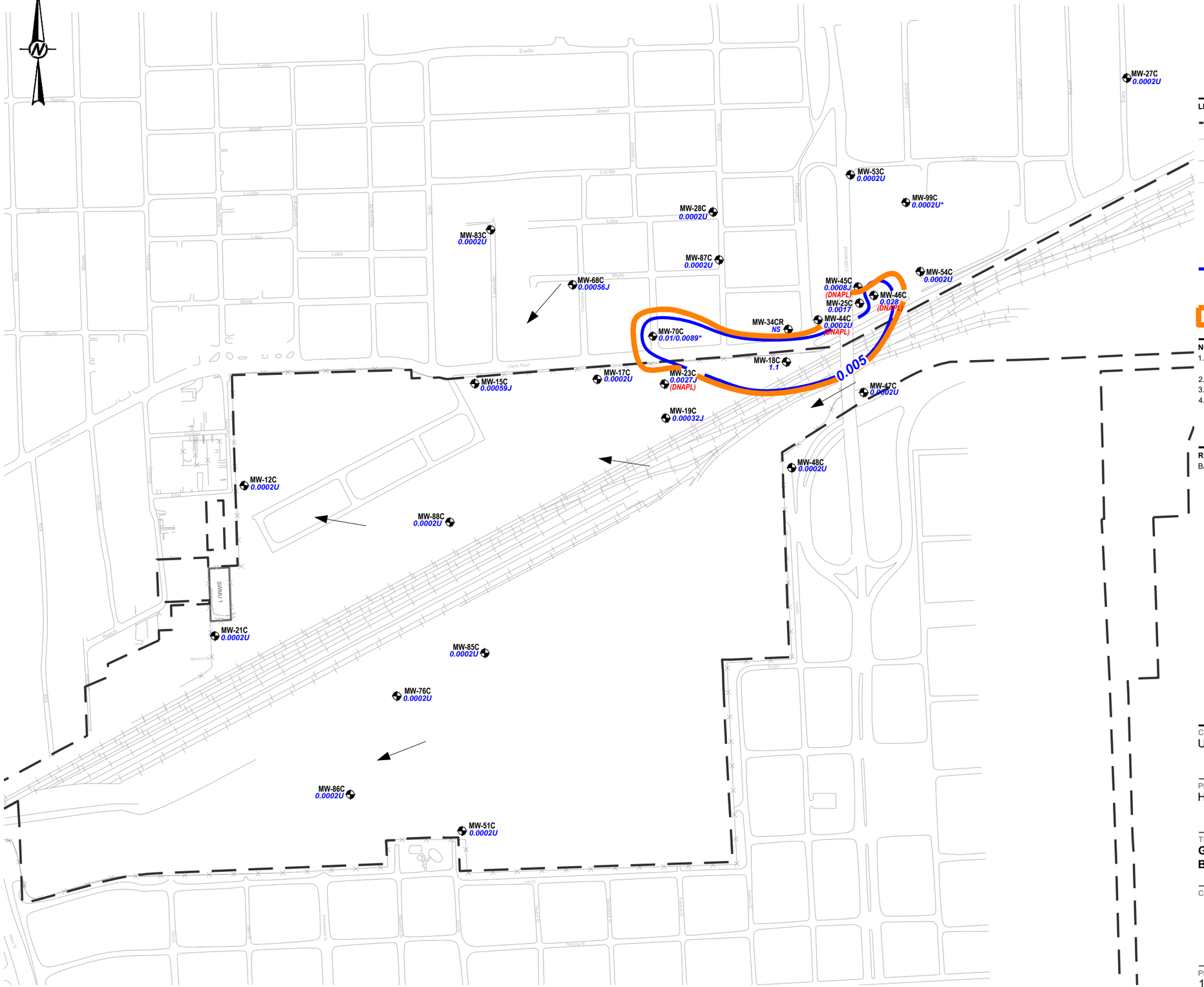

LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- C-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- <0.0002 — BENZENE CONCENTRATION (mg/L)
- 0.005 — BENZENE CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION
- GW PCLE ZONE

NOTE(S)

1. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2020).
2. NS - NOT SAMPLED
3. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.005 mg/L)
4. * - SAMPLE COLLECTED IN MARCH 2020.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
4/30/20

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - C-TZ
BENZENE - JANUARY-MARCH 2020

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5B-15

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

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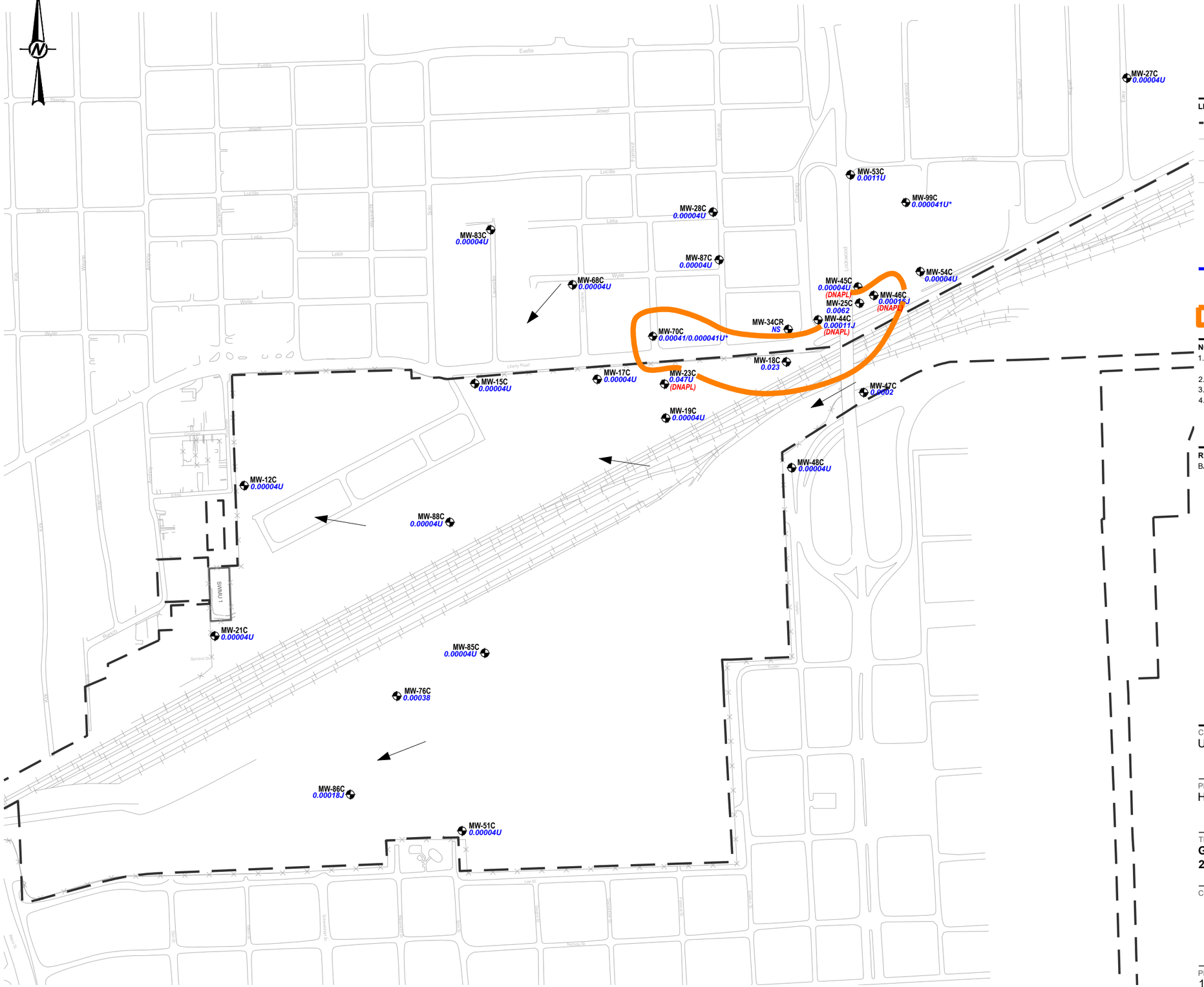

LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- C-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- <0.002 — 2,4-DIMETHYLPHENOL CONCENTRATION (mg/L)
- 0.49 — 2,4-DIMETHYLPHENOL CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION
- GW PCLE ZONE

NOTE(S)

1. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2020).
2. NS - NOT SAMPLED
3. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.49 mg/L AND 1.5 mg/L)
4. * - SAMPLE COLLECTED IN MARCH 2020.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
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GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
4/30/20

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - C-TZ
2,4-DIMETHYLPHENOL - JANUARY-MARCH 2020

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 REV. 0 FIGURE 5B-16

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

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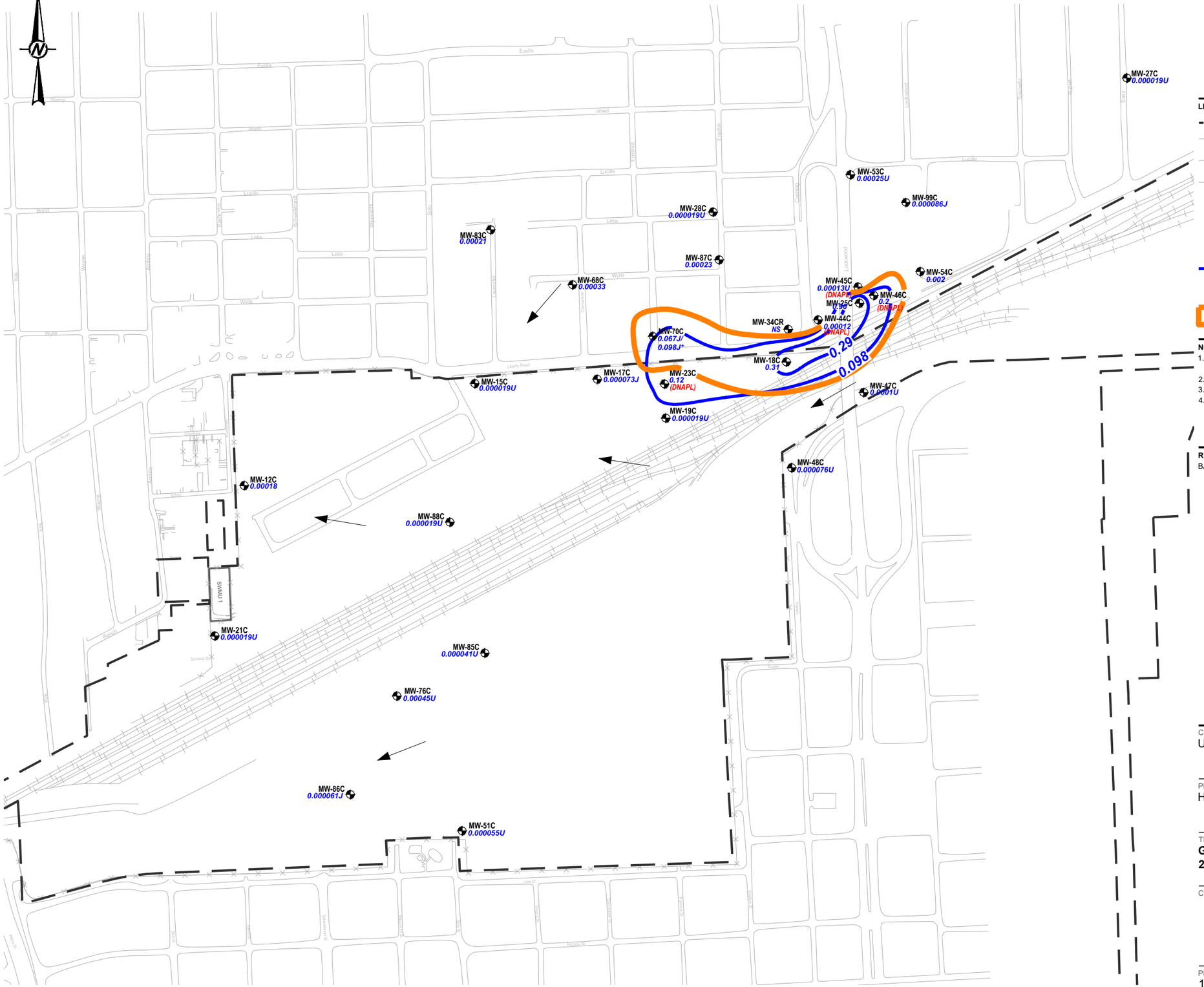

LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- C-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- <0.002 — 2-METHYLNAPHTHALENE CONCENTRATION (mg/L)
- 0.098 — 2-METHYLNAPHTHALENE CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION
- GW PCLE ZONE

NOTE(S)

1. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2020).
2. NS - NOT SAMPLED
3. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.098 mg/L AND 0.29 mg/L)
4. * - SAMPLE COLLECTED IN MARCH 2020.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
4/30/20

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - C-TZ
2-METHYLNAPHTHALENE - JANUARY-MARCH 2020

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 REV. 0 FIGURE 5B-17

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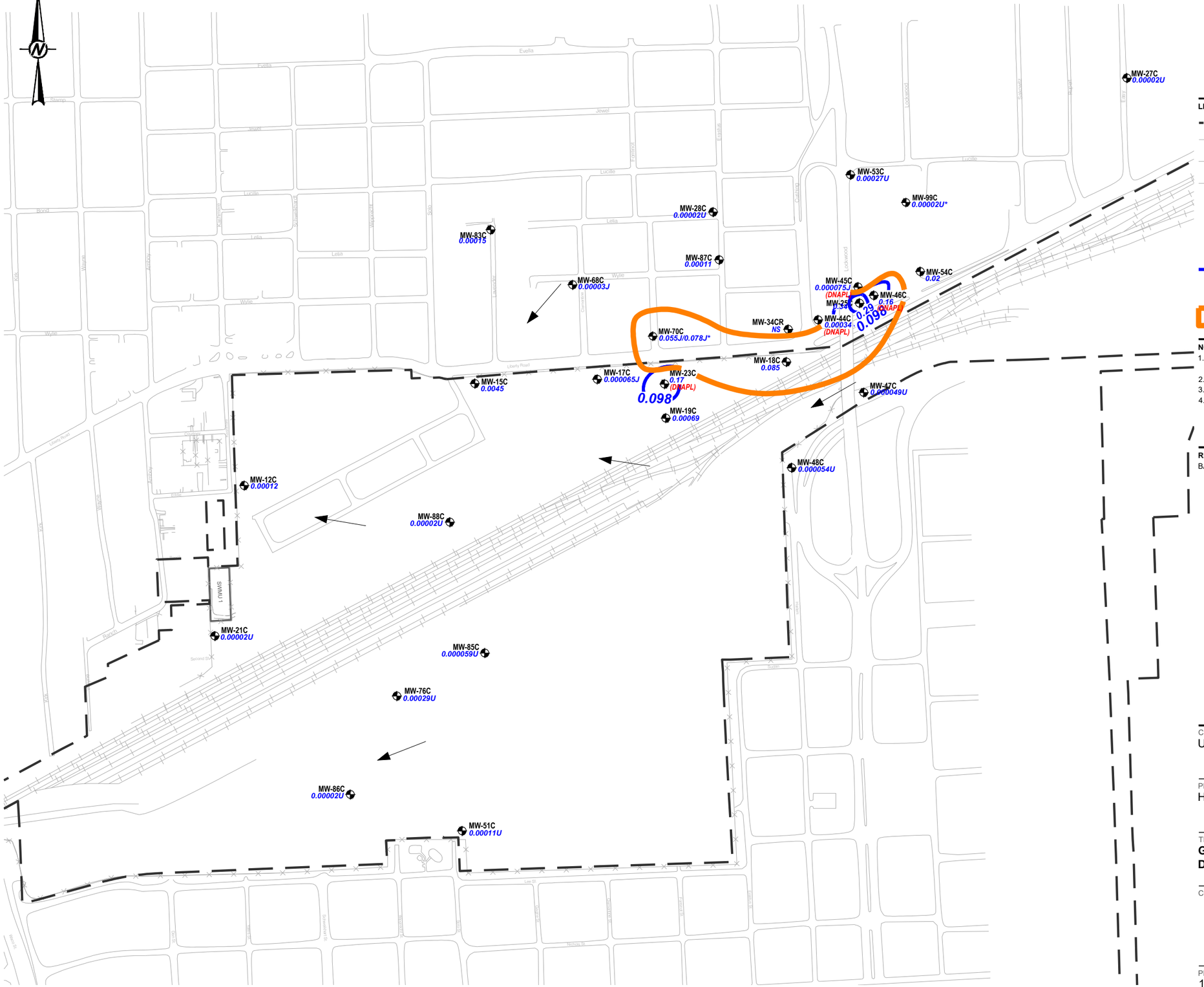
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- C-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- <0.002 DIBENZOFURAN CONCENTRATION (mg/L)
- 0.098 DIBENZOFURAN CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION
- GW PCLE ZONE

NOTE(S)

1. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2020).
2. NS - NOT SAMPLED
3. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.098 mg/L AND 0.29 mg/L)
4. * - SAMPLE COLLECTED IN MARCH 2020.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
4/30/20

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - C-TZ DIBENZOFURAN - JANUARY-MARCH 2020

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 REV. 0 FIGURE 5B-18

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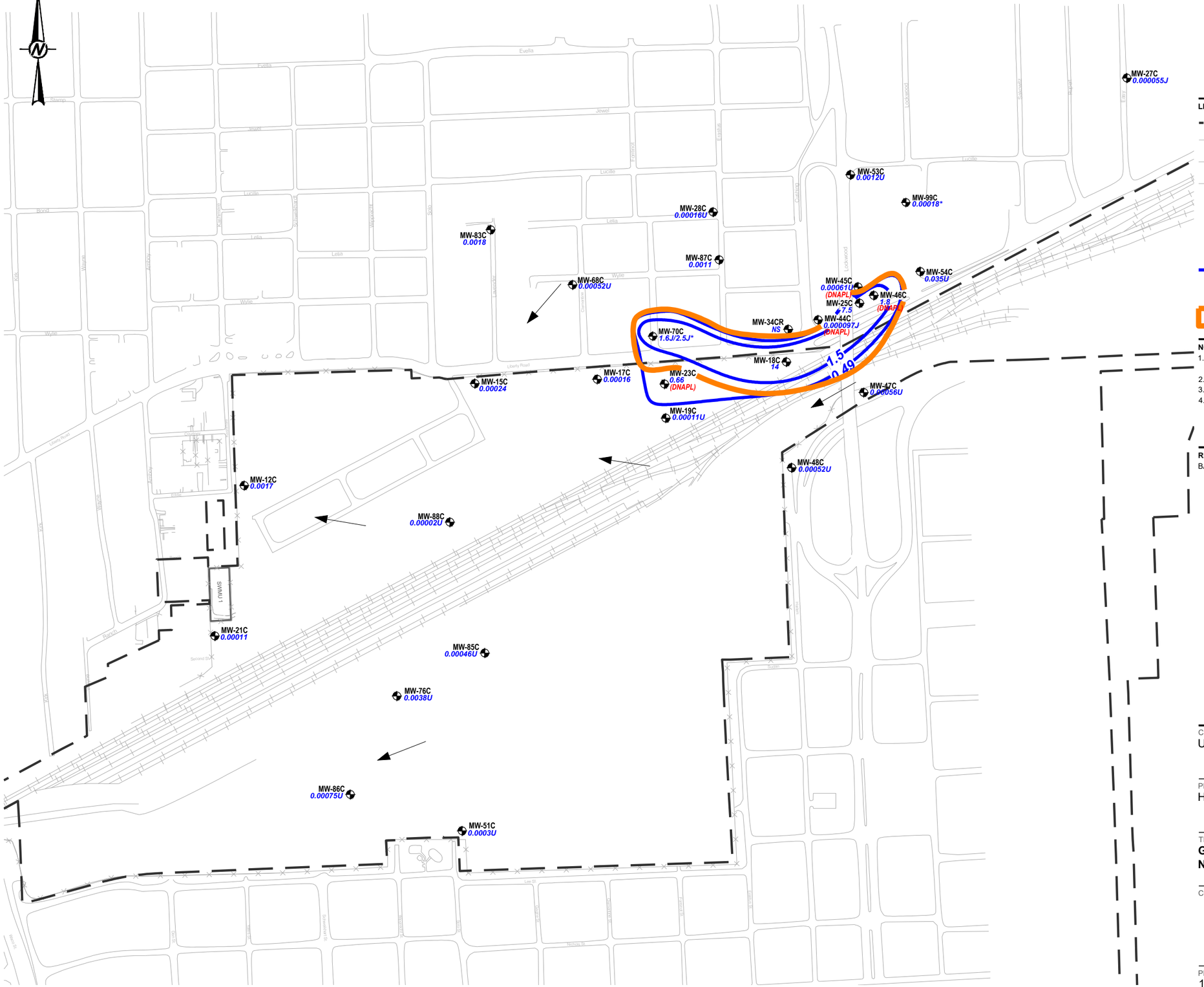
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- C-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- <0.002 — NAPHTHALENE CONCENTRATION (mg/L)
- 0.49 — NAPHTHALENE CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION
- GW PCLE ZONE

NOTE(S)

1. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2020).
2. NS - NOT SAMPLED
3. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.49 mg/L AND 1.5 mg/L)
4. * - SAMPLE COLLECTED IN MARCH 2020.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
4/30/20

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - C-TZ
NAPHTHALENE - JANUARY-MARCH 2020

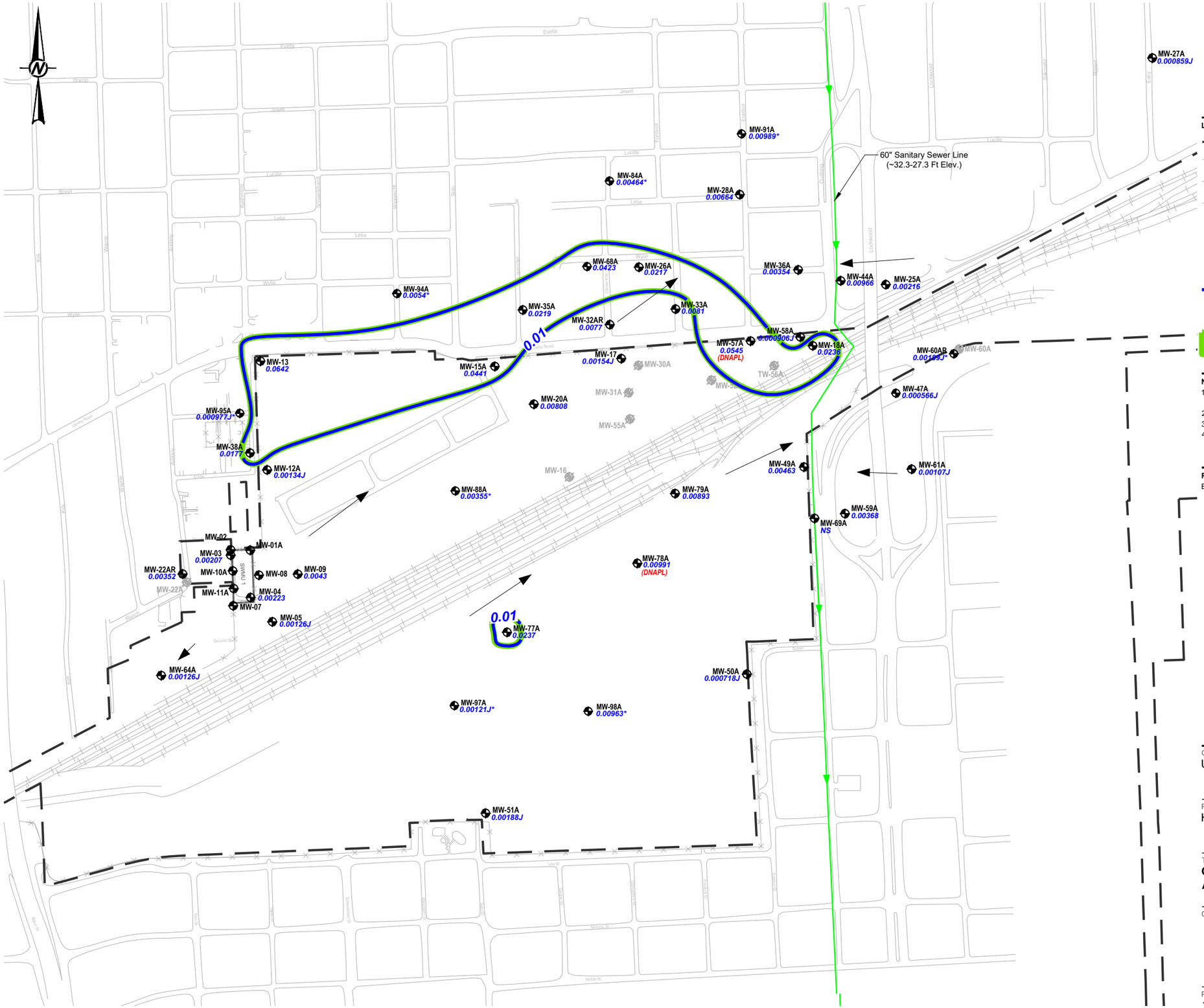
CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5B-19

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\laxarkana\data\Projects - Round Rock_2019\19119232 - HWPW\2020-3 March\ | File Name: 5B15 - 5B19 Groundwater COC Concentration Map C-TZ - January 2020.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time:12:23:14 PM | Printed By: RSalazar Date: 2020-04-30 Time:12:29:41 PM



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- 0.0077 — ARSENIC CONCENTRATION IN (mg/L)
- 0.01 — ARSENIC CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION
- ARSENIC PCLE ZONE

NOTE(S)

1. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2020).
2. NS - NOT SAMPLED
3. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.01 mg/L)
4. * - SAMPLE COLLECTED IN MARCH 2020.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
4/30/20

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - A-TZ
ARSENIC - JANUARY-MARCH 2020

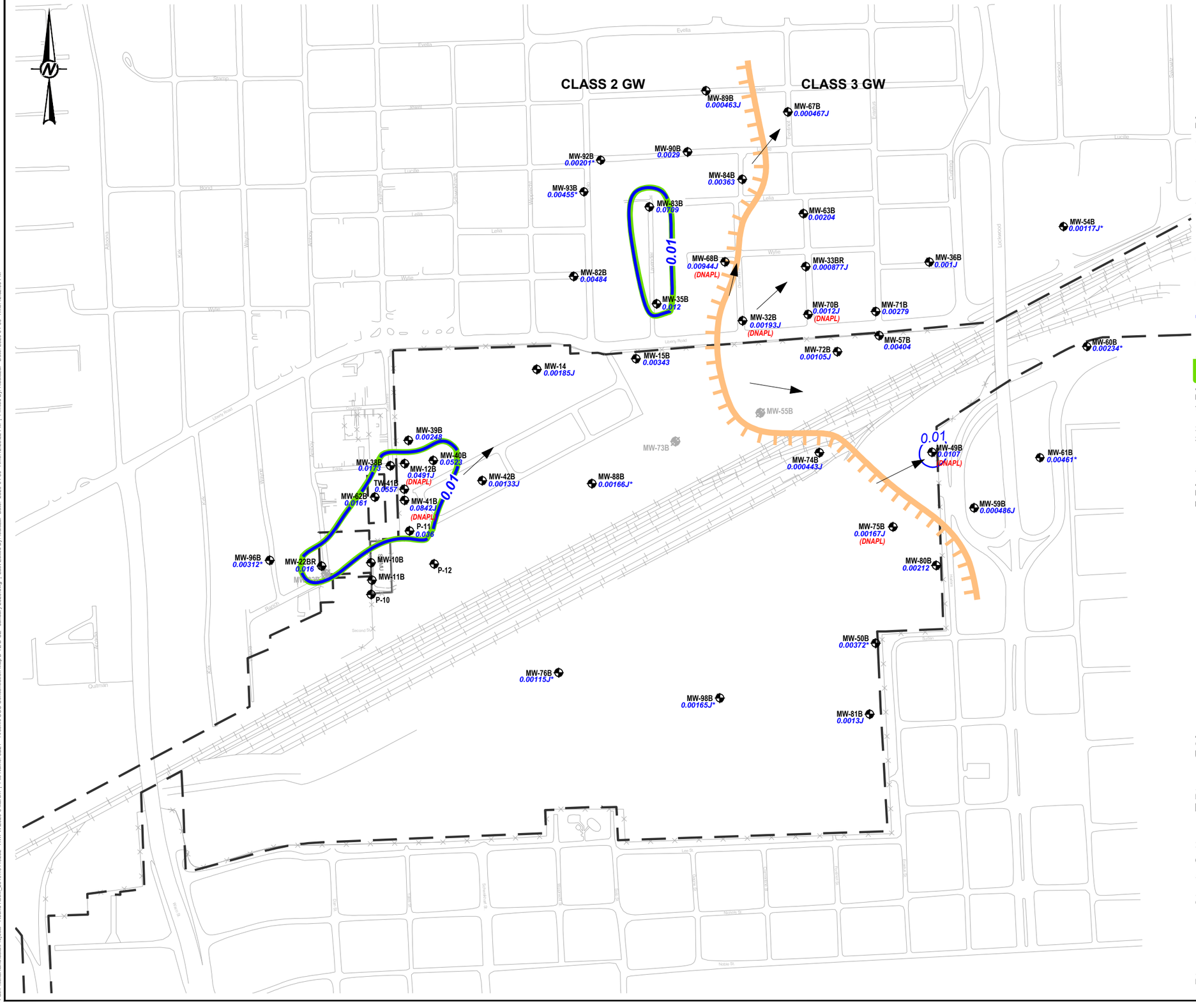
CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 REV. 0 FIGURE 5B-20

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\Projects - Round Rock_2019\19119232 - HWPW\2020-3 March\ | File Name: 5B20 - Arsenic COC Concentration Map A-TZ - January 2020.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time:12:27:02 PM | Printed By: RSalazar Date: 2020-04-30 Time:12:31:33 PM



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- B-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- B-CZ (CLASS 3 GW)
- B-TZ/B-CZ BOUNDARY
- B-TZ (CLASS 2 GW)
- 0.001J — ARSENIC CONCENTRATION (mg/L)
- 0.01 — ARSENIC CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION
- ARSENIC PCLE ZONE

NOTE(S)

1. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2020).
2. NS - NOT SAMPLED
3. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL:
   CLASS 2 GW PCL: 0.01 mg/L
   CLASS 3 GW PCL: 1 mg/L
4. * - SAMPLE COLLECTED IN MARCH 2020.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
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GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
4/30/20

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - B-CZ/B-TZ ARSENIC - JANUARY-MARCH 2020

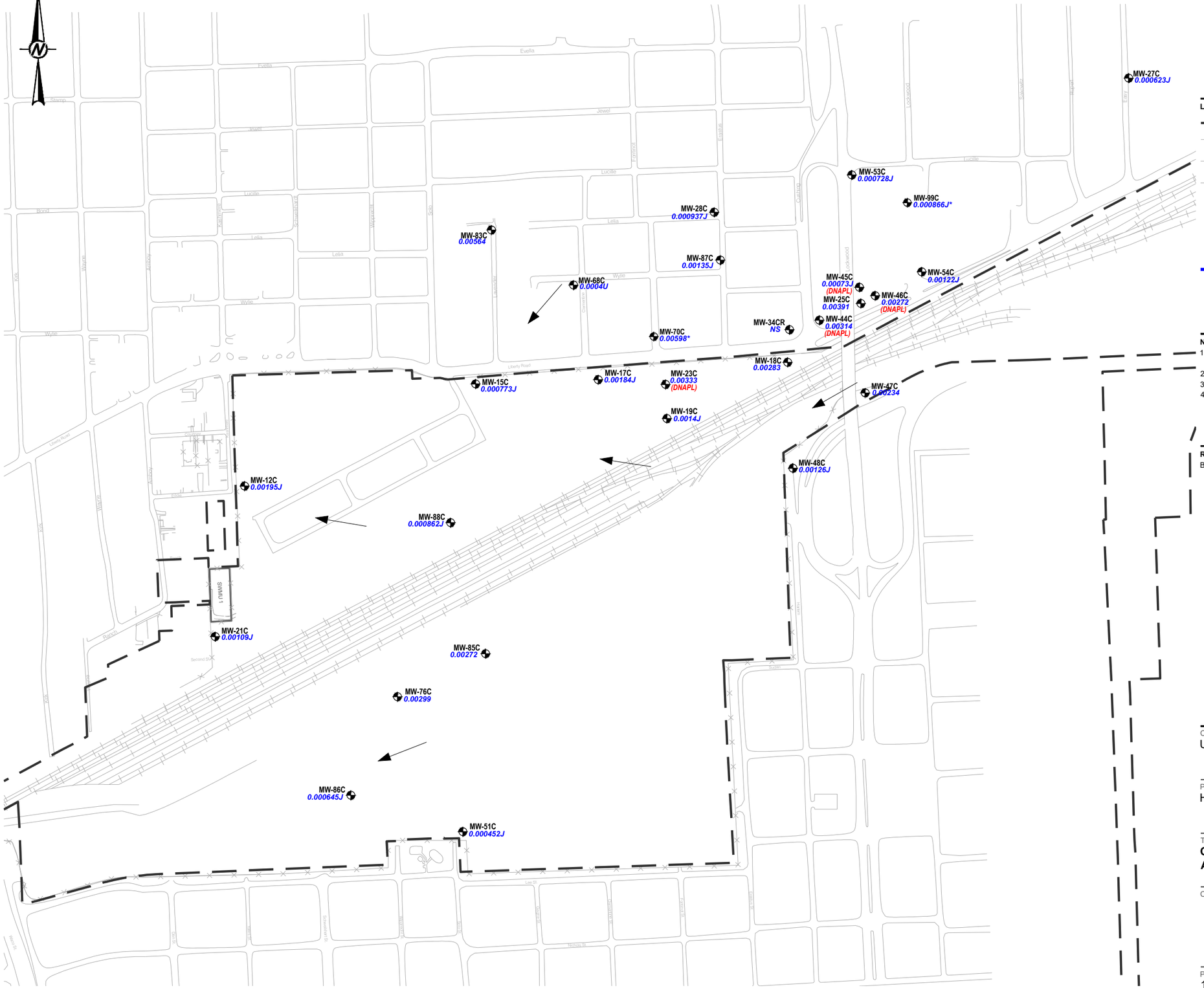
CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5B-21

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\Projects - Round Rock_2019\19119232 - HWPW\2020-3 March\ | File Name: 5B21 - Arsenic COC Concentration Map B-TZ B-CZ - January 2020.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time:12:32:05 PM | Printed By: RSalazar Date: 2020-04-30 Time:12:28:22 PM



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- C-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- 0.00272 — ARSENIC CONCENTRATION (mg/L)
- 0.01 — ARSENIC CONCENTRATION CONTOUR (mg/L)
- INFERRED GROUNDWATER FLOW DIRECTION

NOTE(S)

1. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2020).
2. NS - NOT SAMPLED
3. CONTOURS ARE BOLDED AT THE RAL AND C/I PCL (0.01 mg/L)
4. * - SAMPLE COLLECTED IN MARCH 2020.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
4/30/20

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER COC CONCENTRATION MAP - C-TZ
ARSENIC - JANUARY-MARCH 2020

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-04-30
DESIGNED	
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

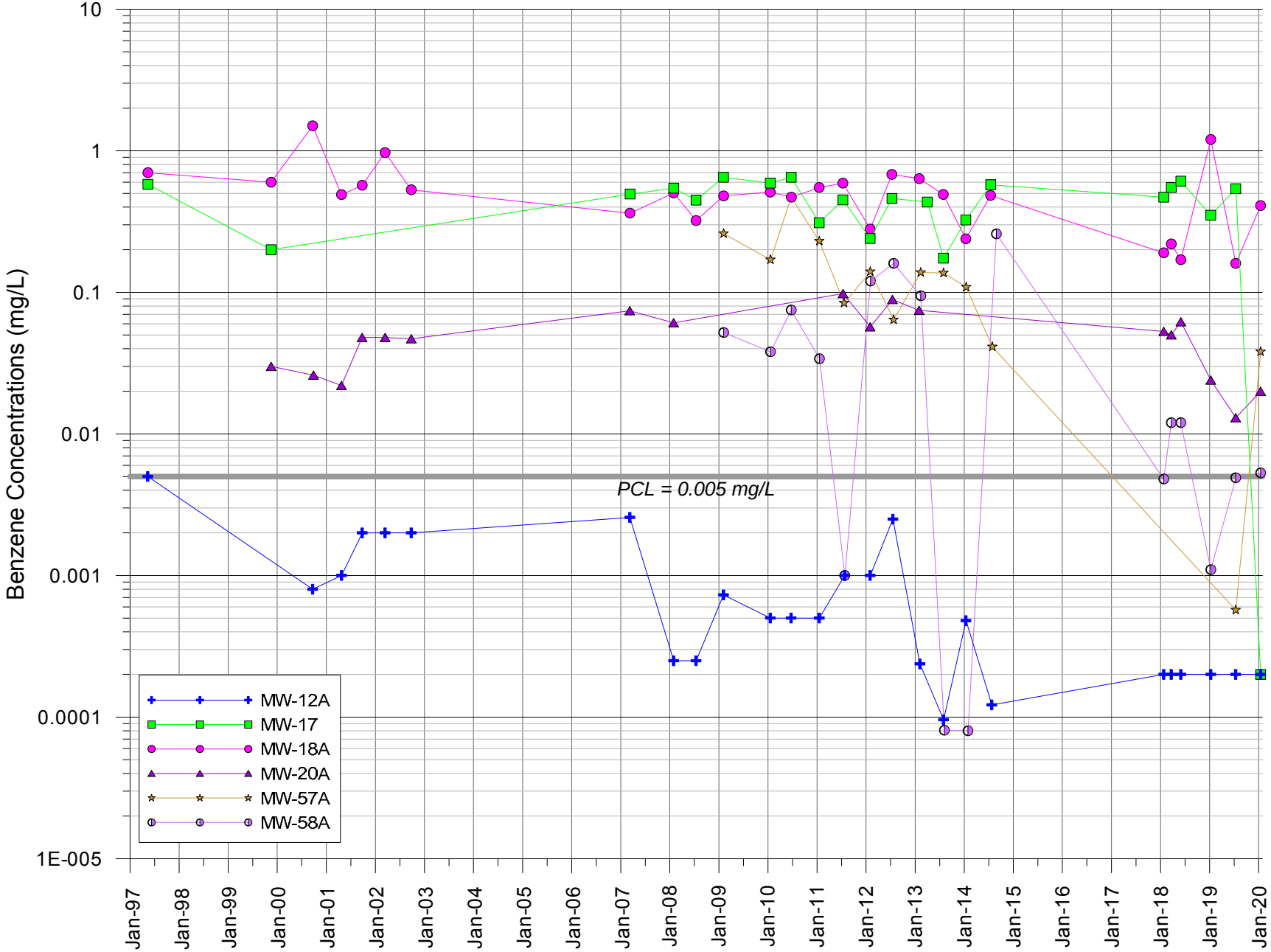
PROJECT NO. 19119232 | REV. 0 | FIGURE 5B-22

Path: \\laxarkana\data\Projects - Round Rock_2019\19119232 - HWPW\2020-3 March\ | File Name: 5B22 - Arsenic COC Concentration Map C-TZ - January 2020.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time:12:28:46 PM | Printed By: RSalazar Date: 2020-04-30 Time:12:32:33 PM
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B
1 in
0

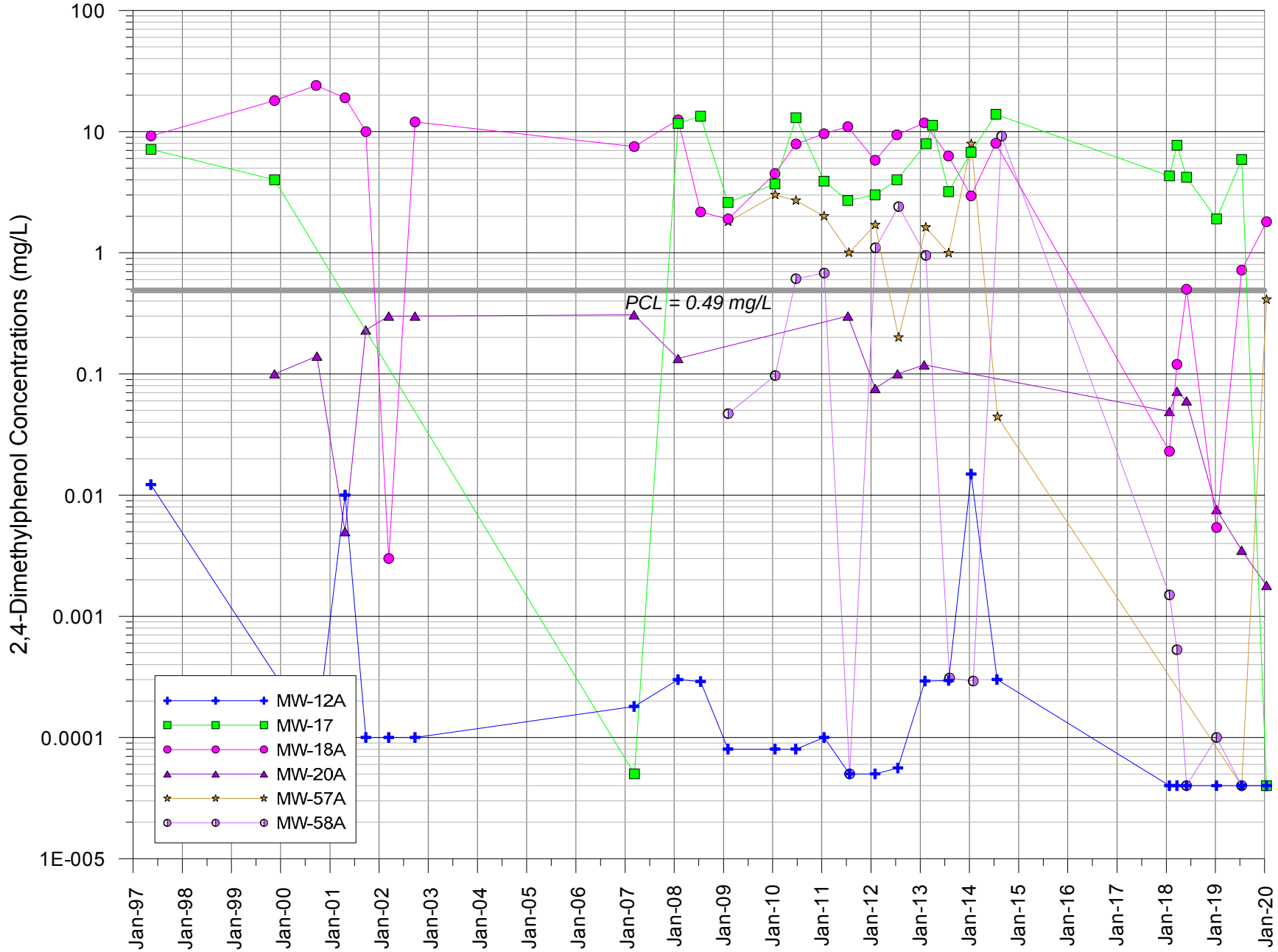
ATTACHMENT F

COC Concentration Graphs

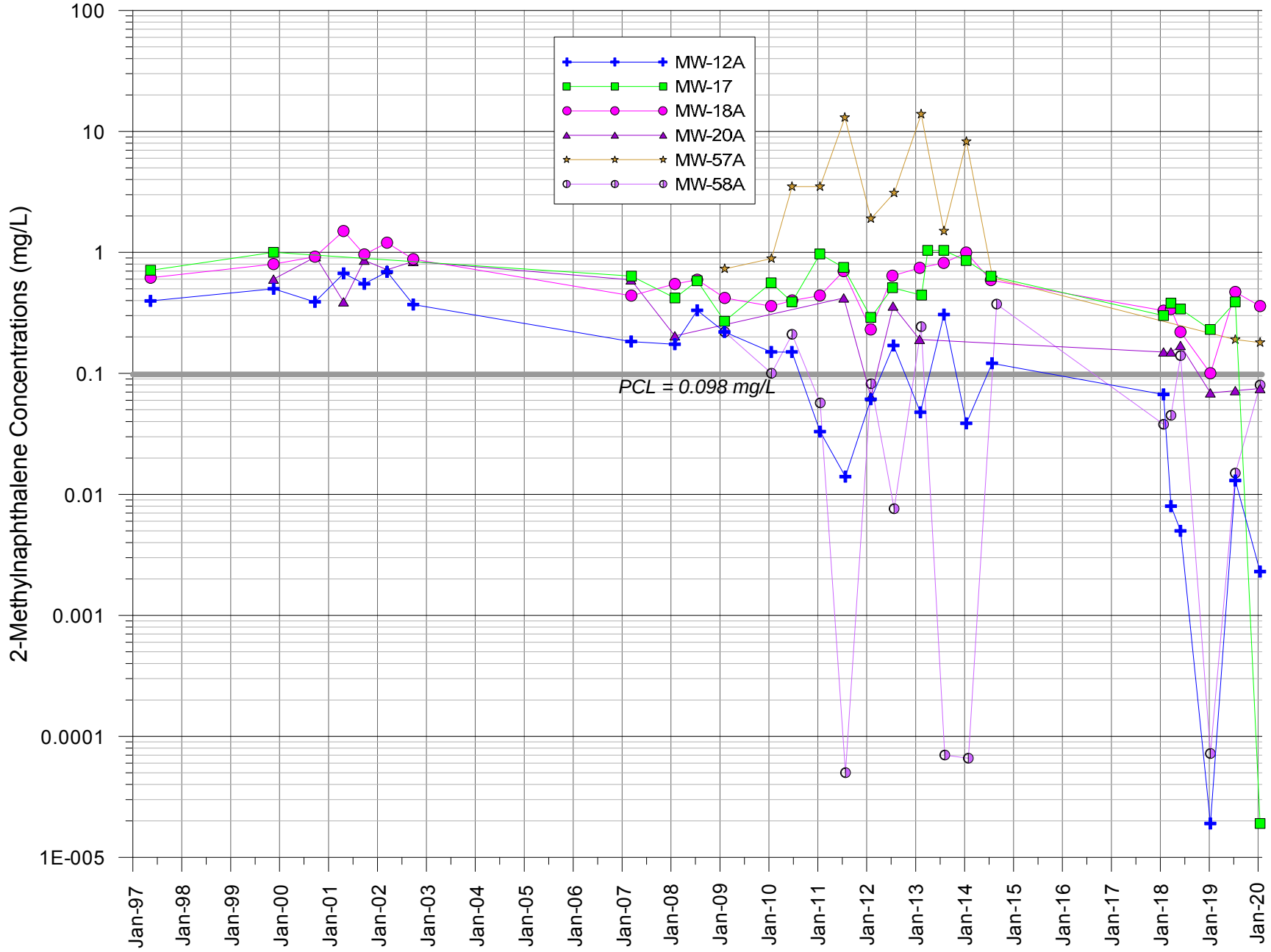
ATTACHMENT 1B-1
Benzene Concentrations at Source Area Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



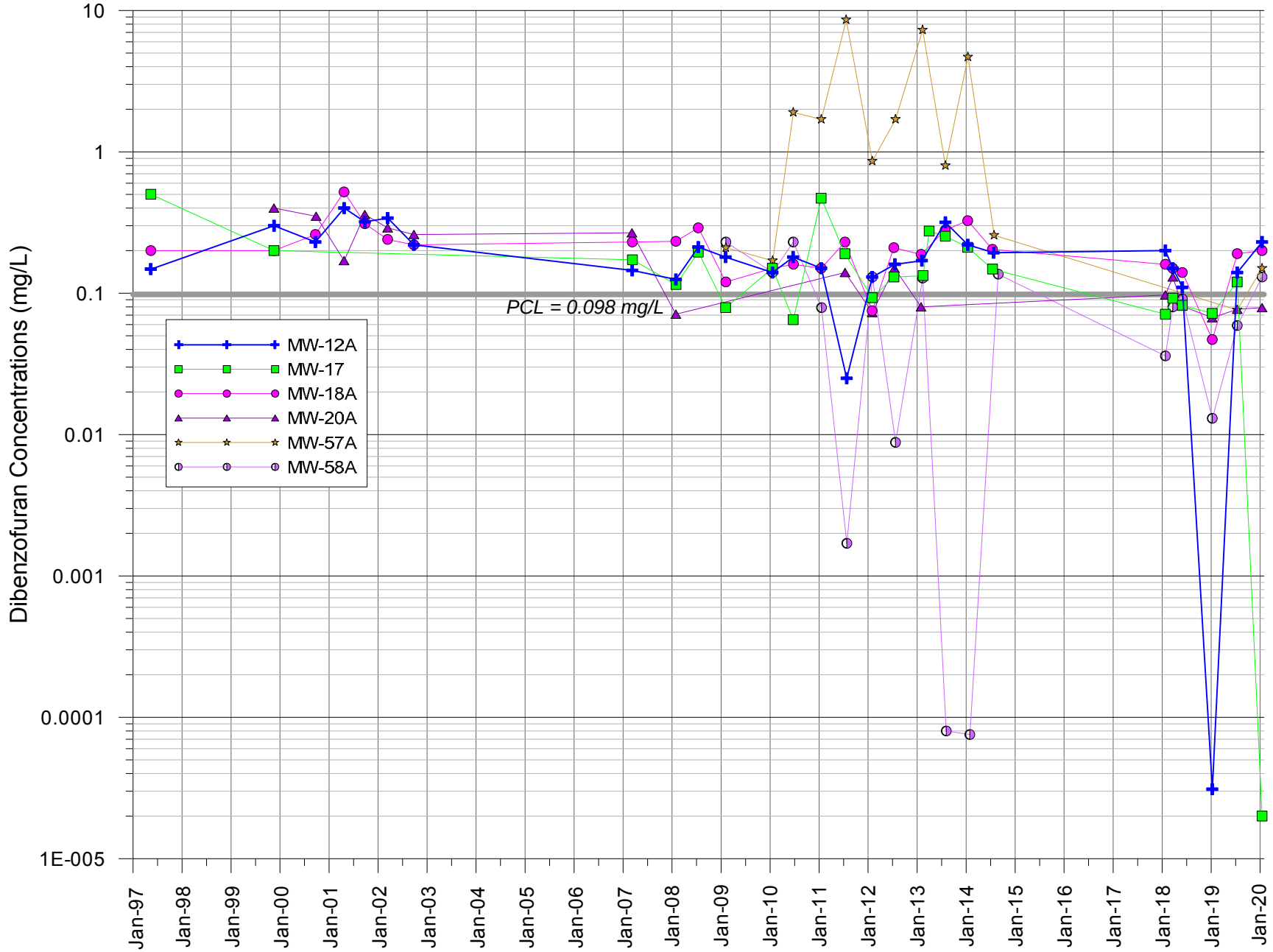
ATTACHMENT 1B-2
2,4-Dimethylphenol Concentrations at Source Area Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



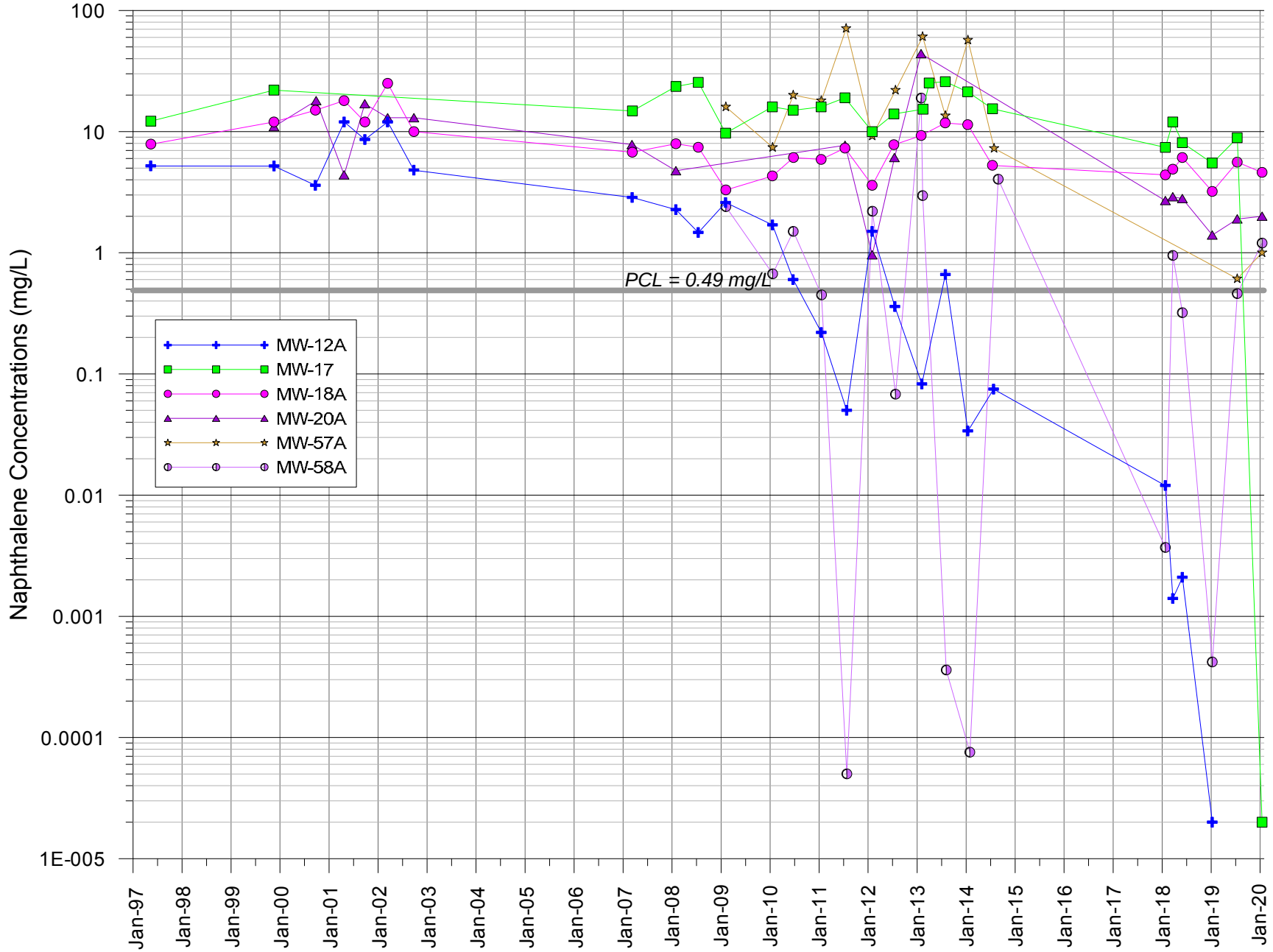
ATTACHMENT 1B-3
2-Methylnaphthalene Concentrations at Source Area Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



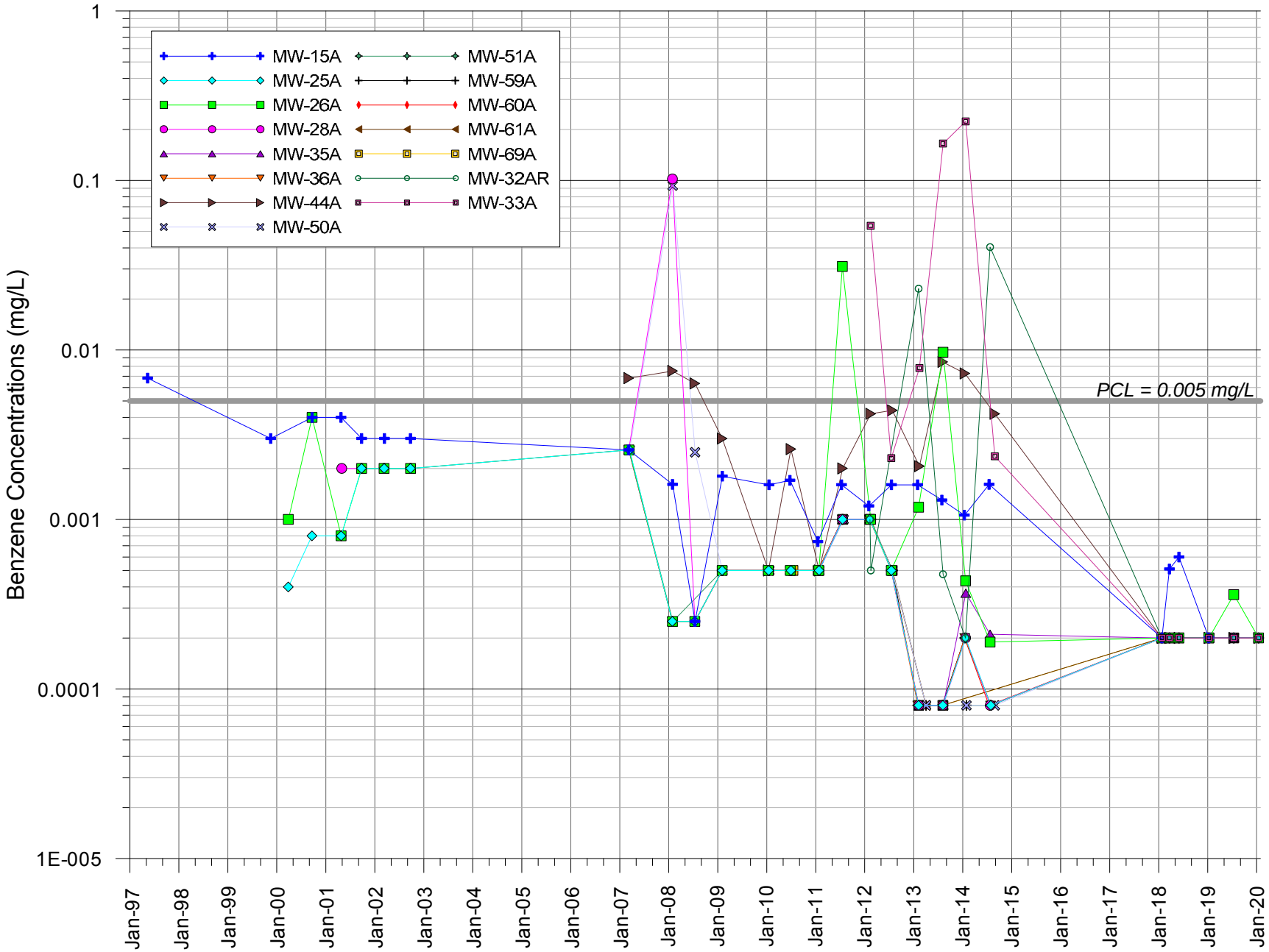
ATTACHMENT 1B-4
Dibenzofuran Concentrations at Source Area Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



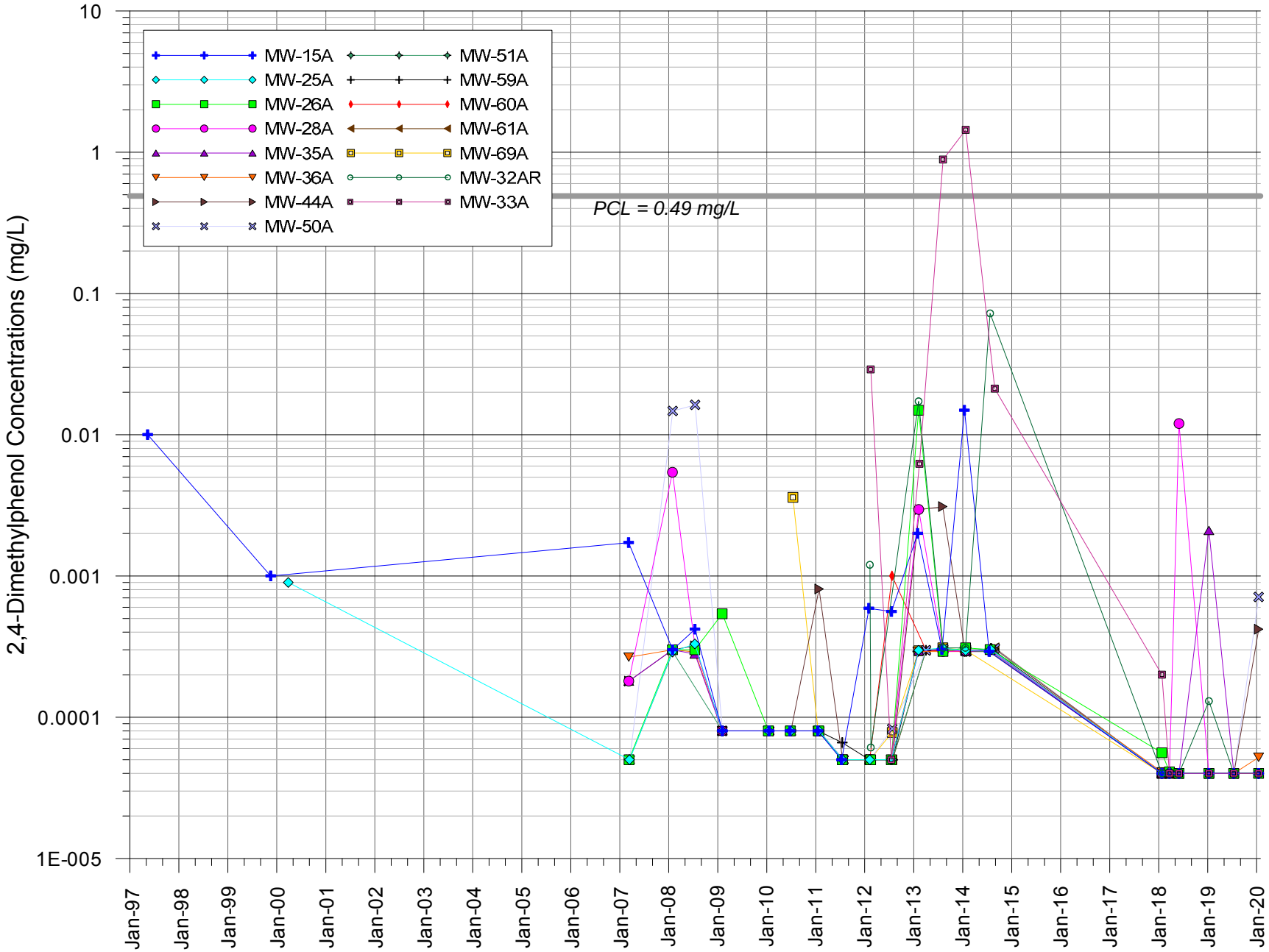
ATTACHMENT 1B-5
Naphthalene Concentrations at Source Area Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



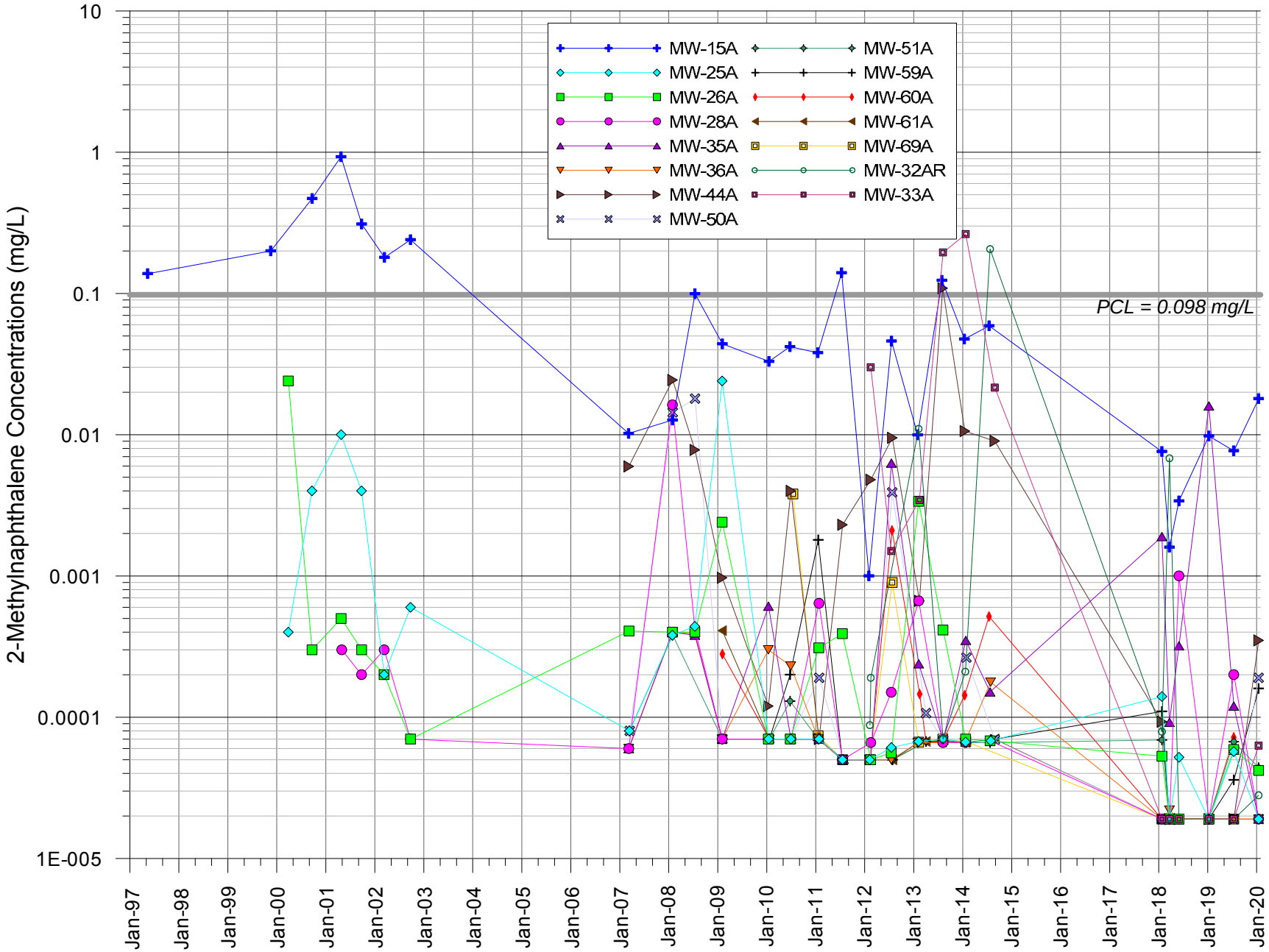
ATTACHMENT 1B-6
Benzene Concentrations at Perimeter Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



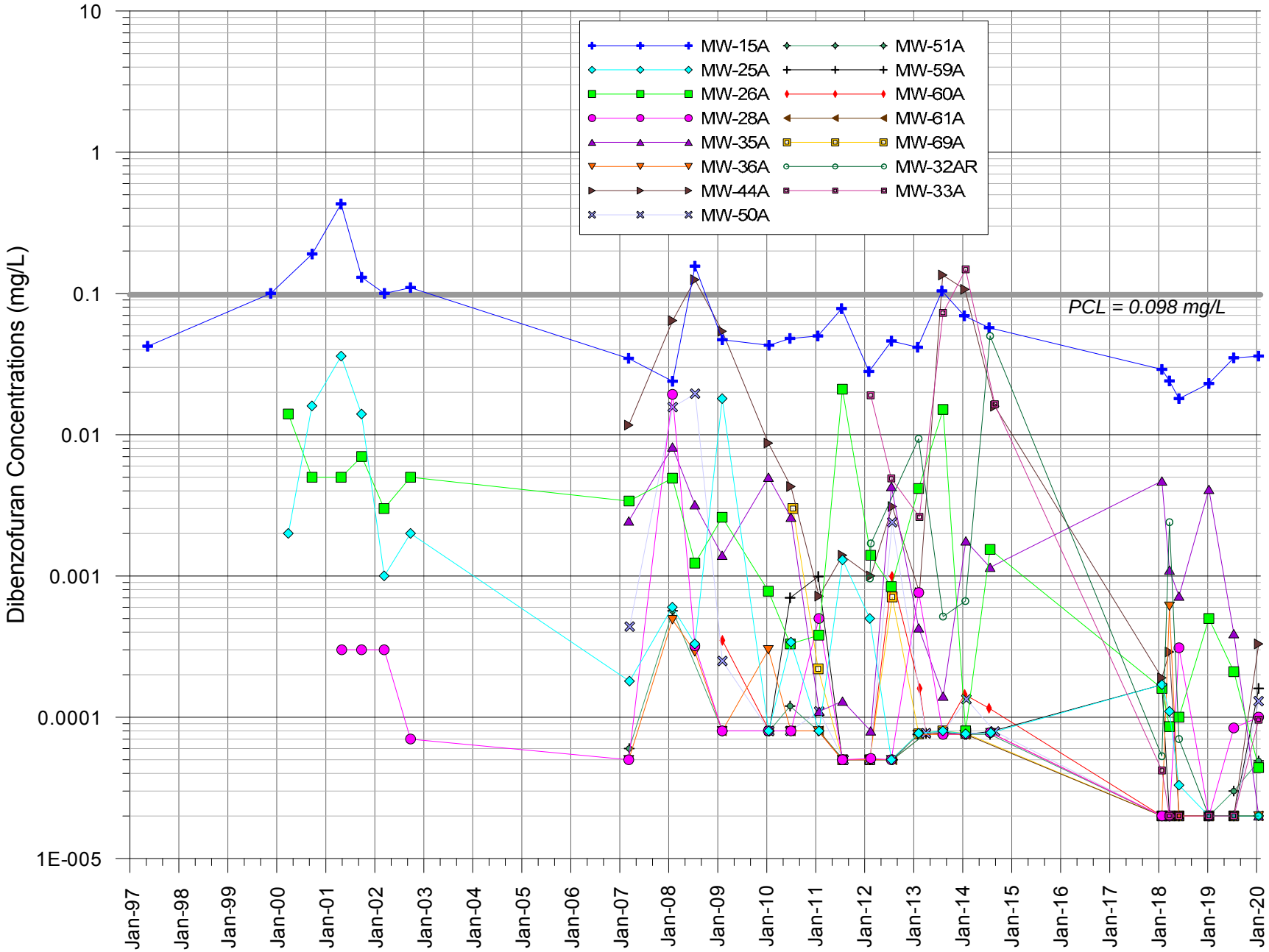
ATTACHMENT 1B-7
2,4-Dimethylphenol Concentrations at Perimeter Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



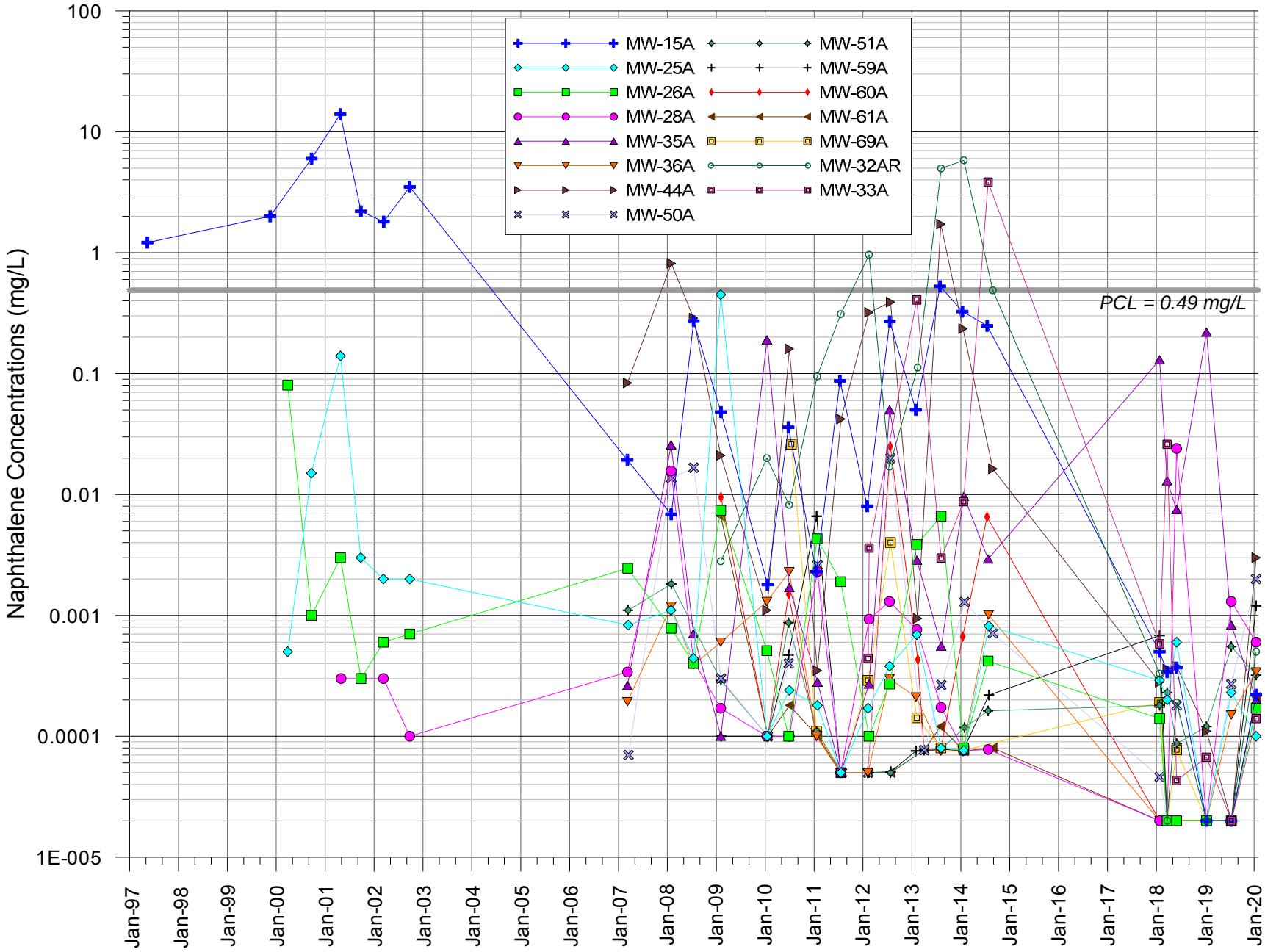
ATTACHMENT 1B-8
2-Methylnapthalene Concentrations at Perimeter Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



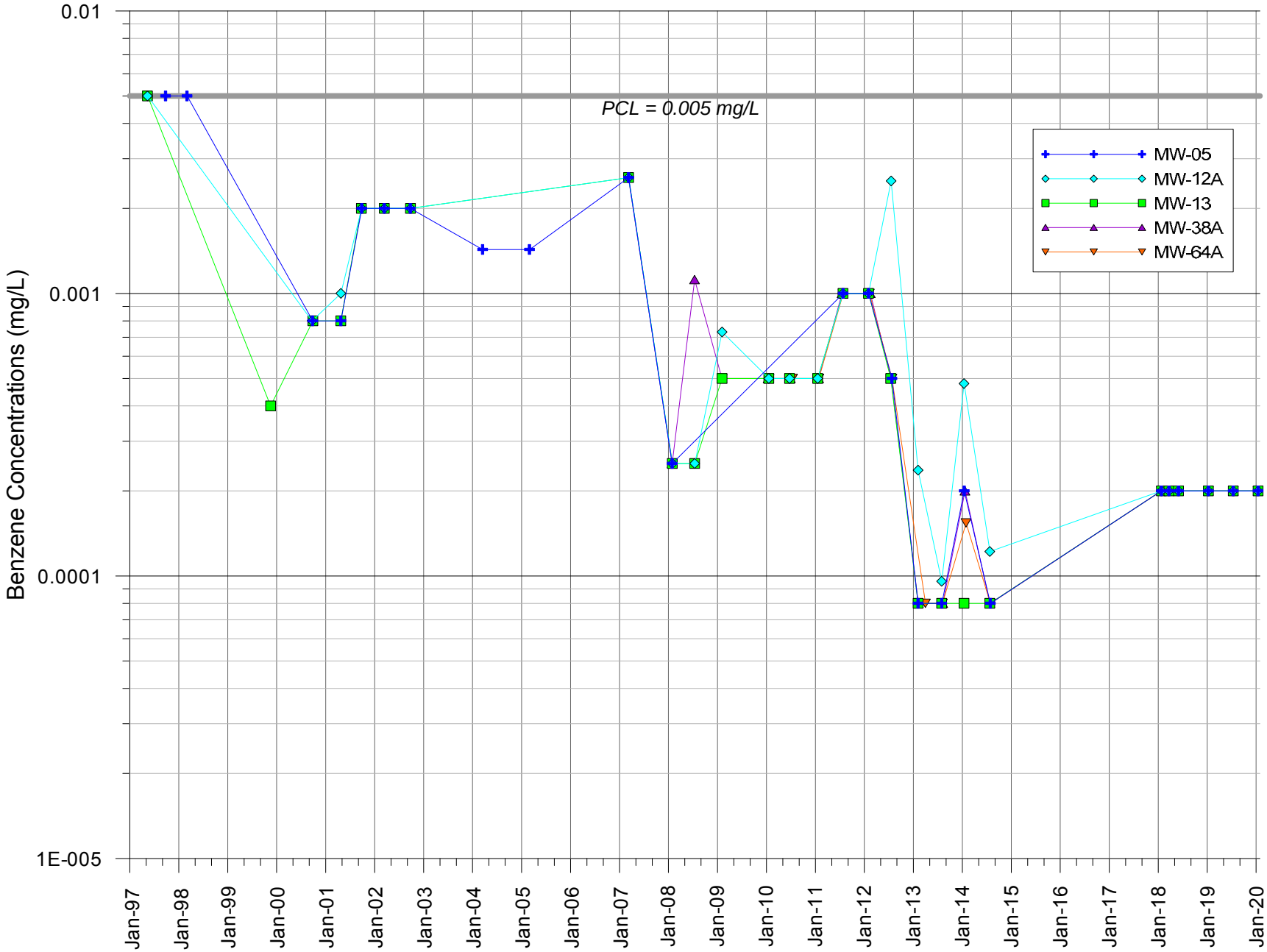
ATTACHMENT 1B-9
Dibenzofuran Concentrations at Perimeter Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



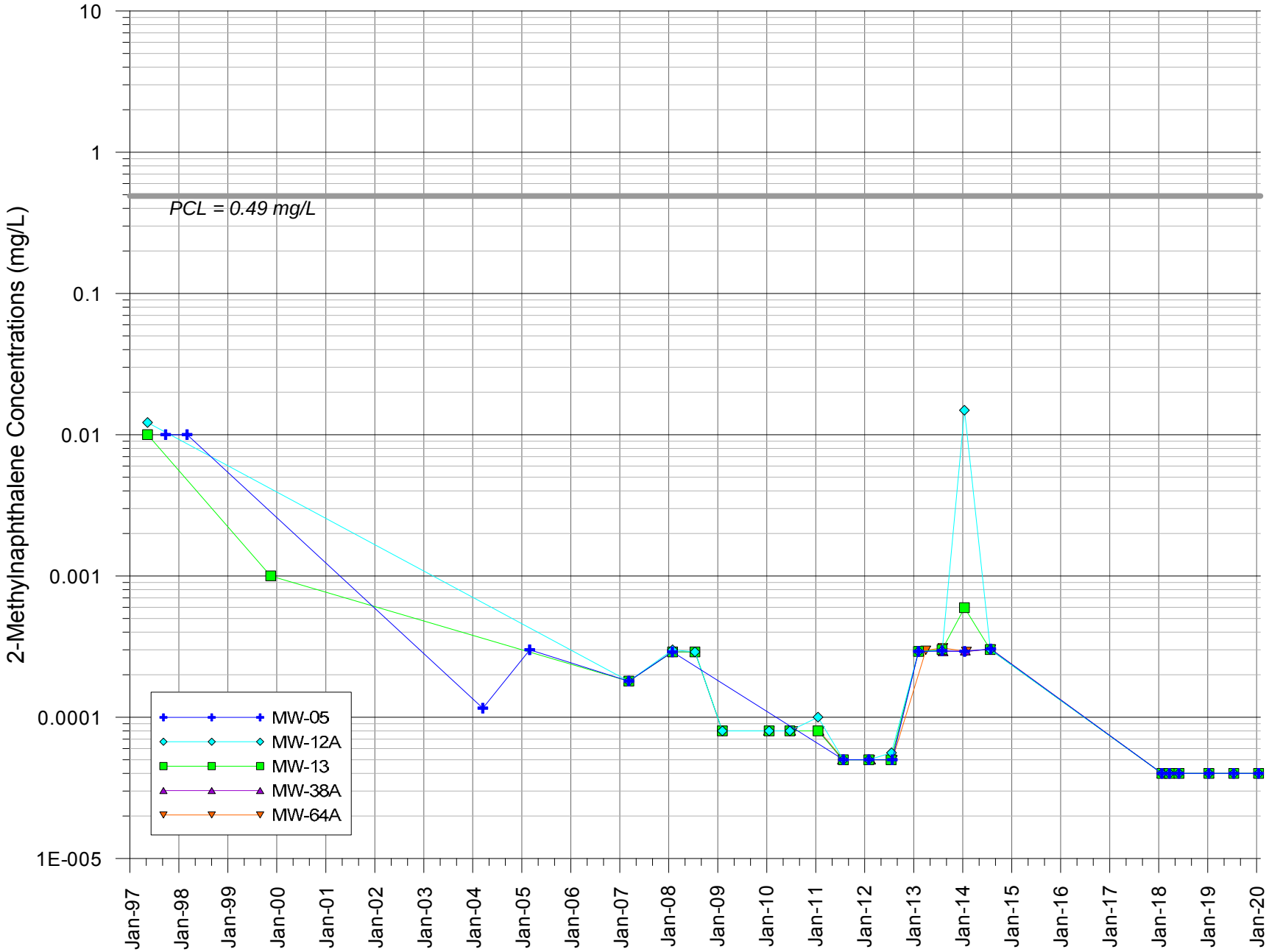
ATTACHMENT 1B-10
Naphthalene Concentrations at Perimeter Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



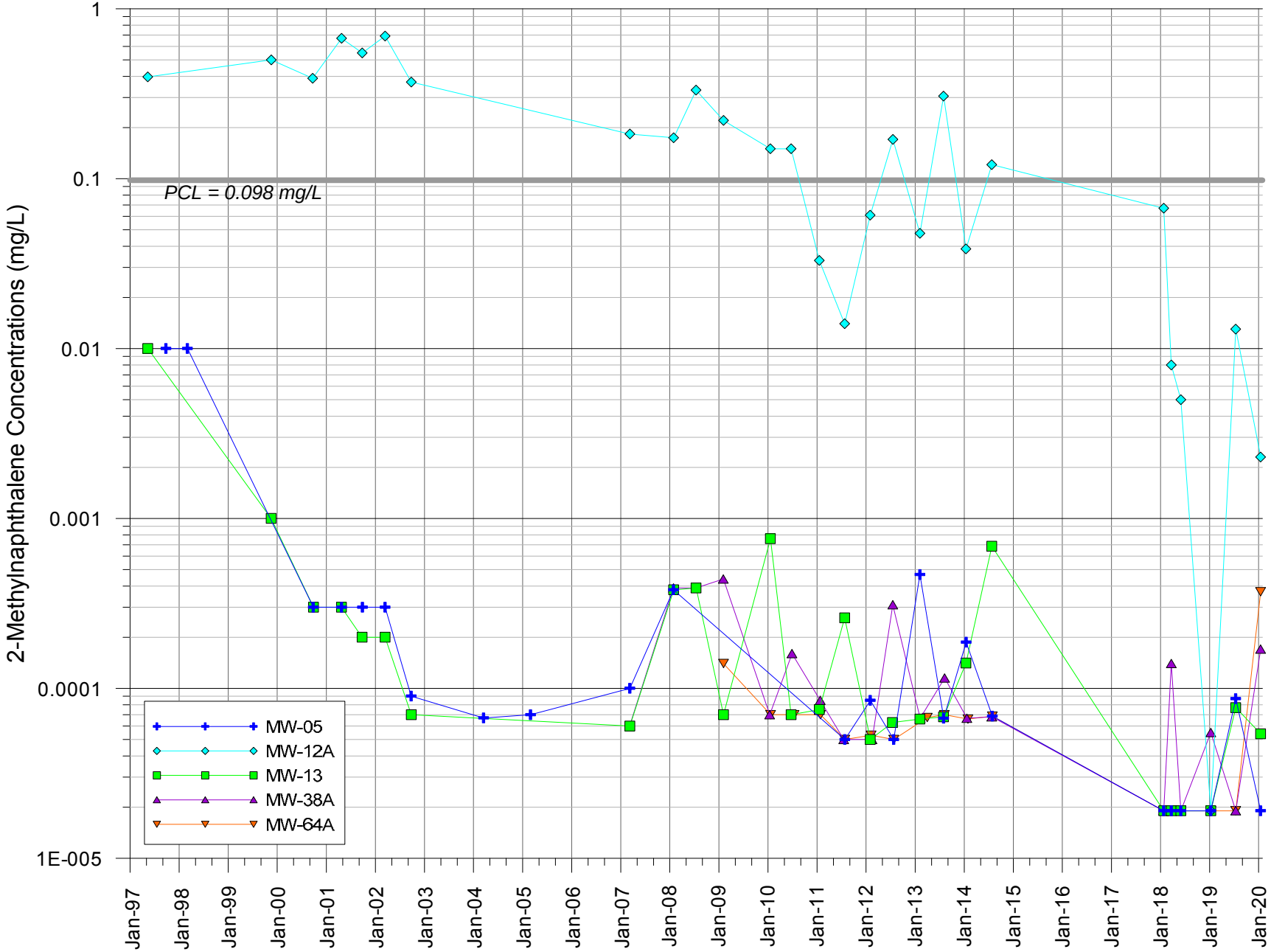
ATTACHMENT 1B-11
Benzene Concentrations at West End Area Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



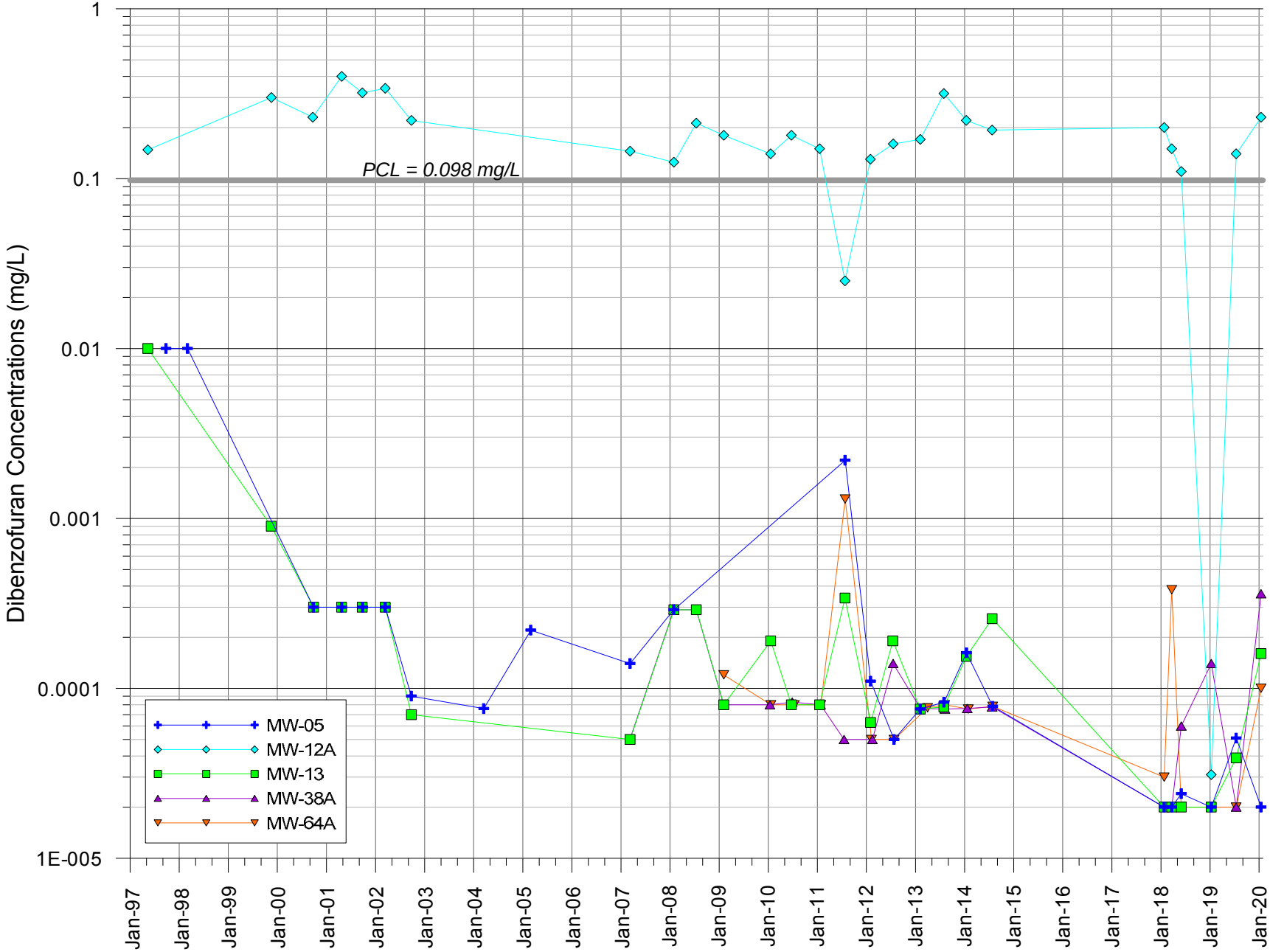
ATTACHMENT 1B-12
2,4-Dimethylphenol Concentrations at West End Area Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



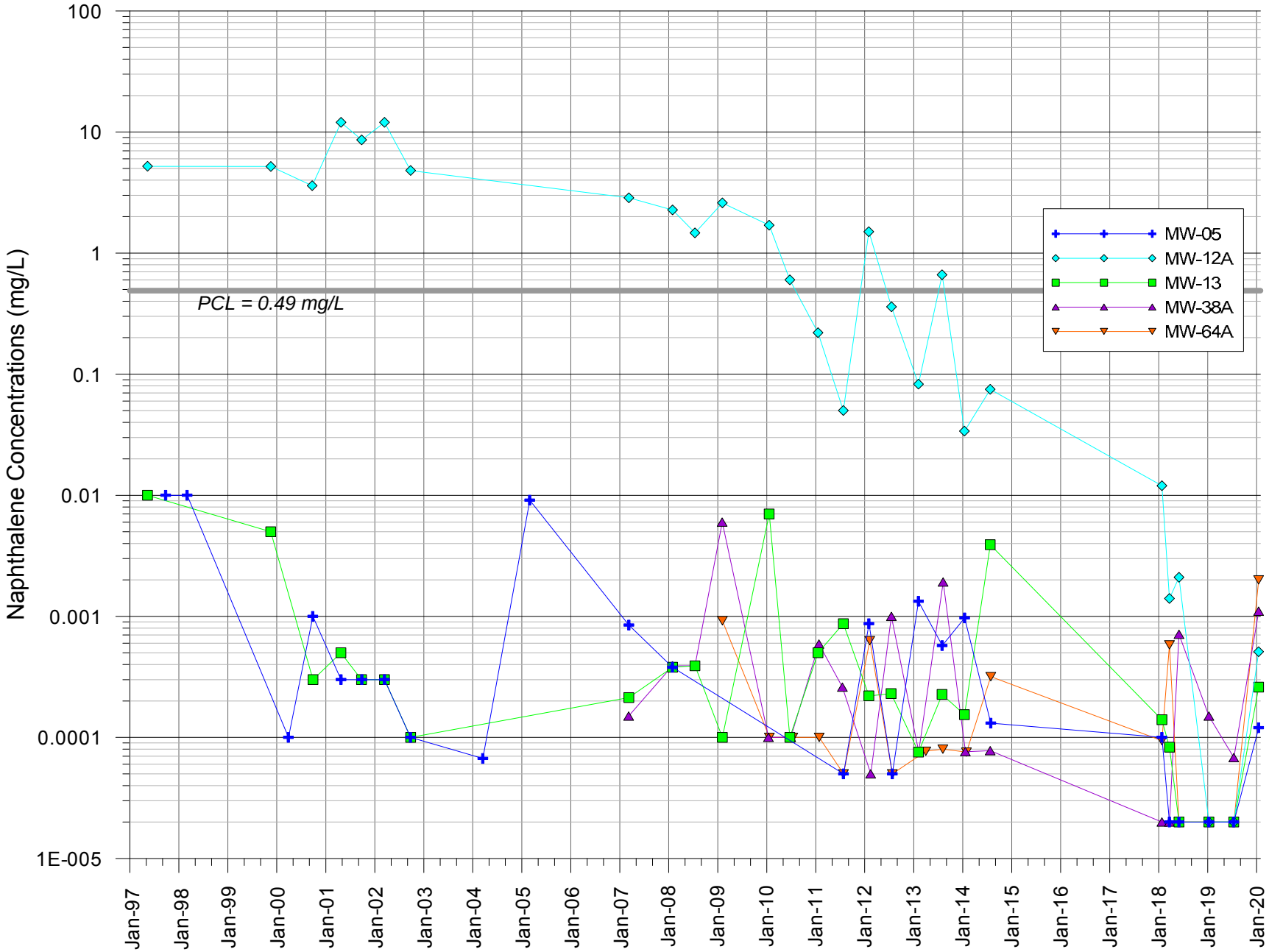
ATTACHMENT 1B-13
2-Methylnaphthalene Concentrations at West End Area Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



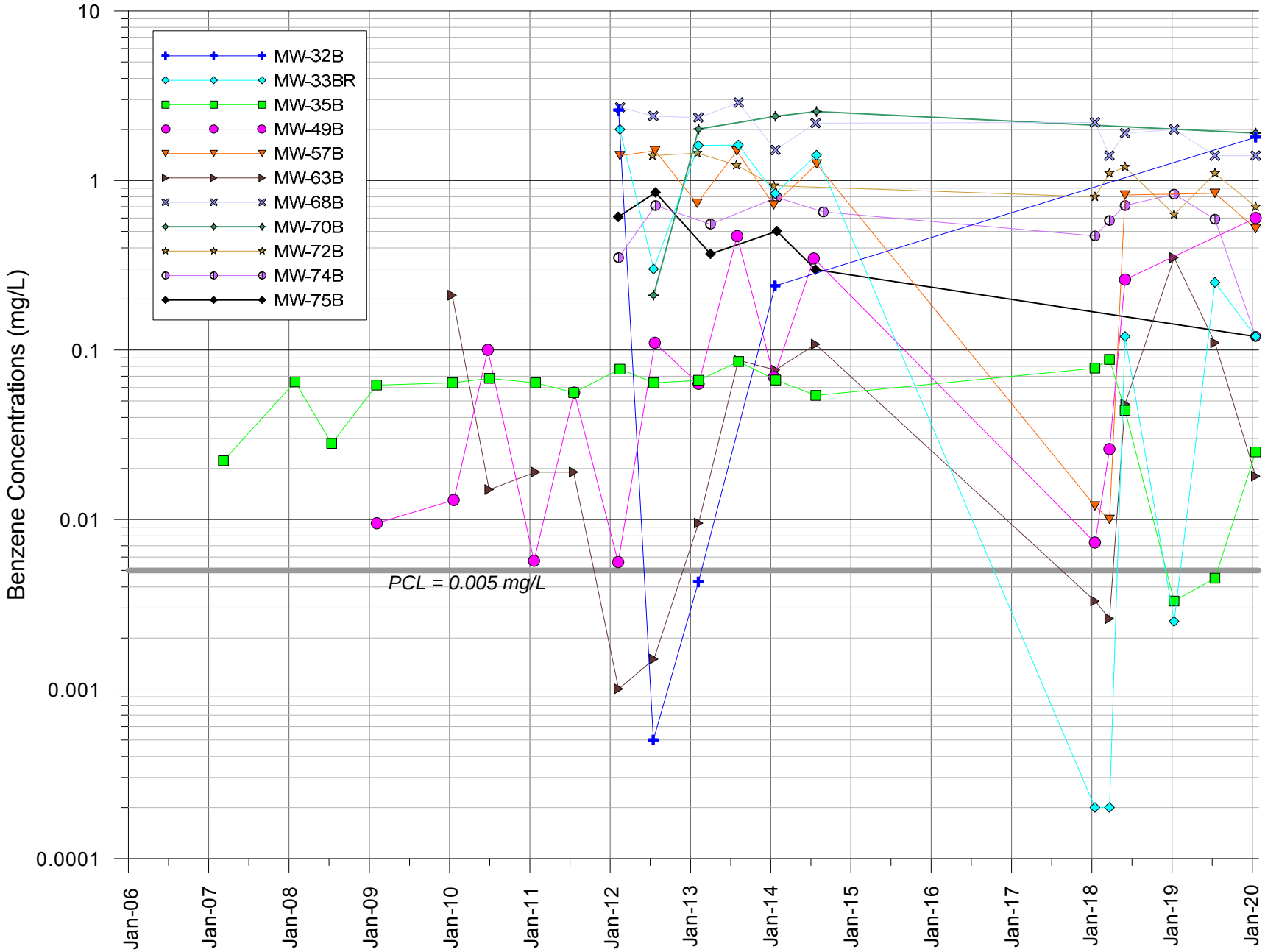
ATTACHMENT 1B-14
Dibenzofuran Concentrations at West End Area Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



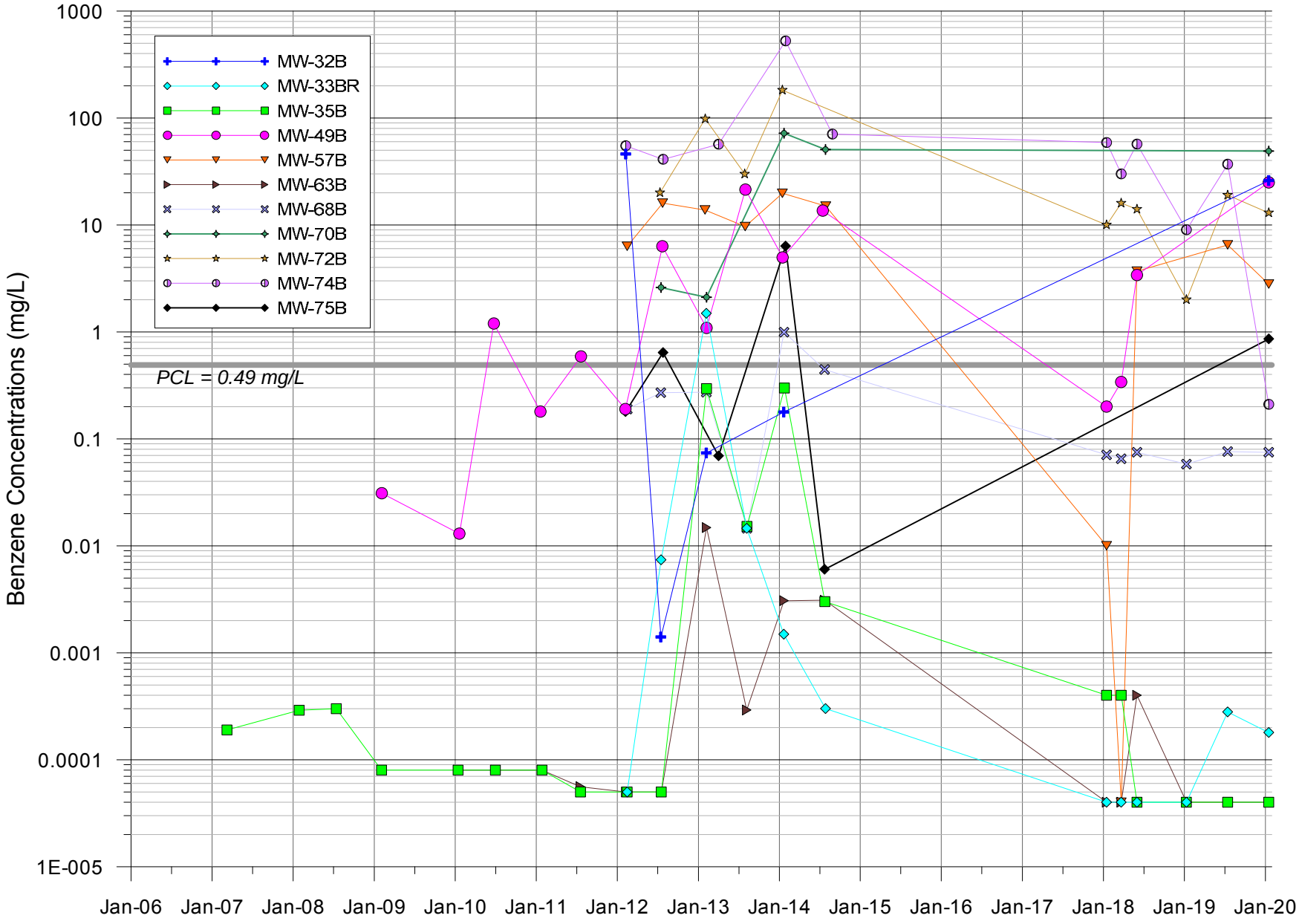
ATTACHMENT 1B-15
Naphthalene Concentrations at West End Area Wells - A-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



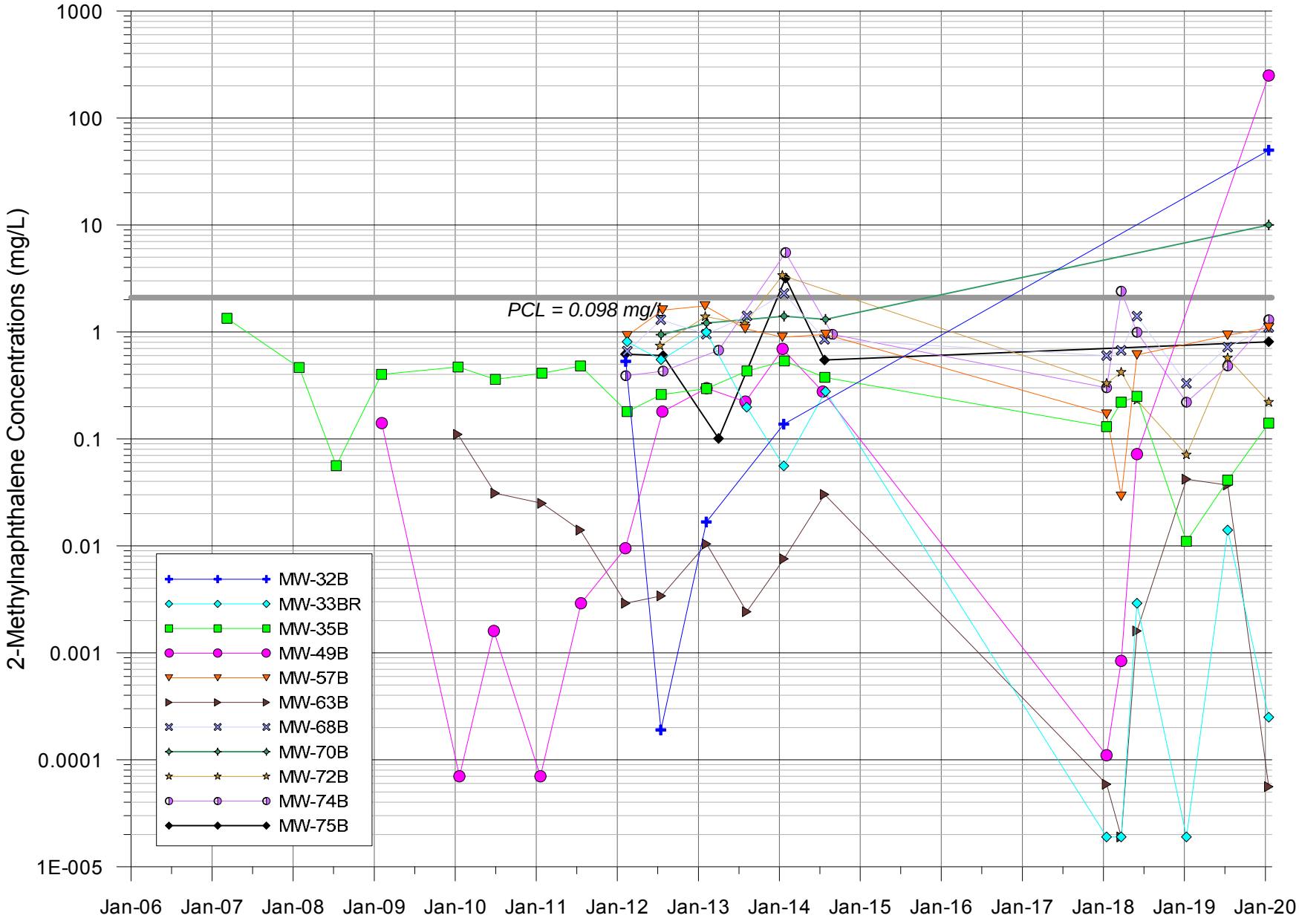
ATTACHMENT 1B-16
Benzene Concentrations at Source Area Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



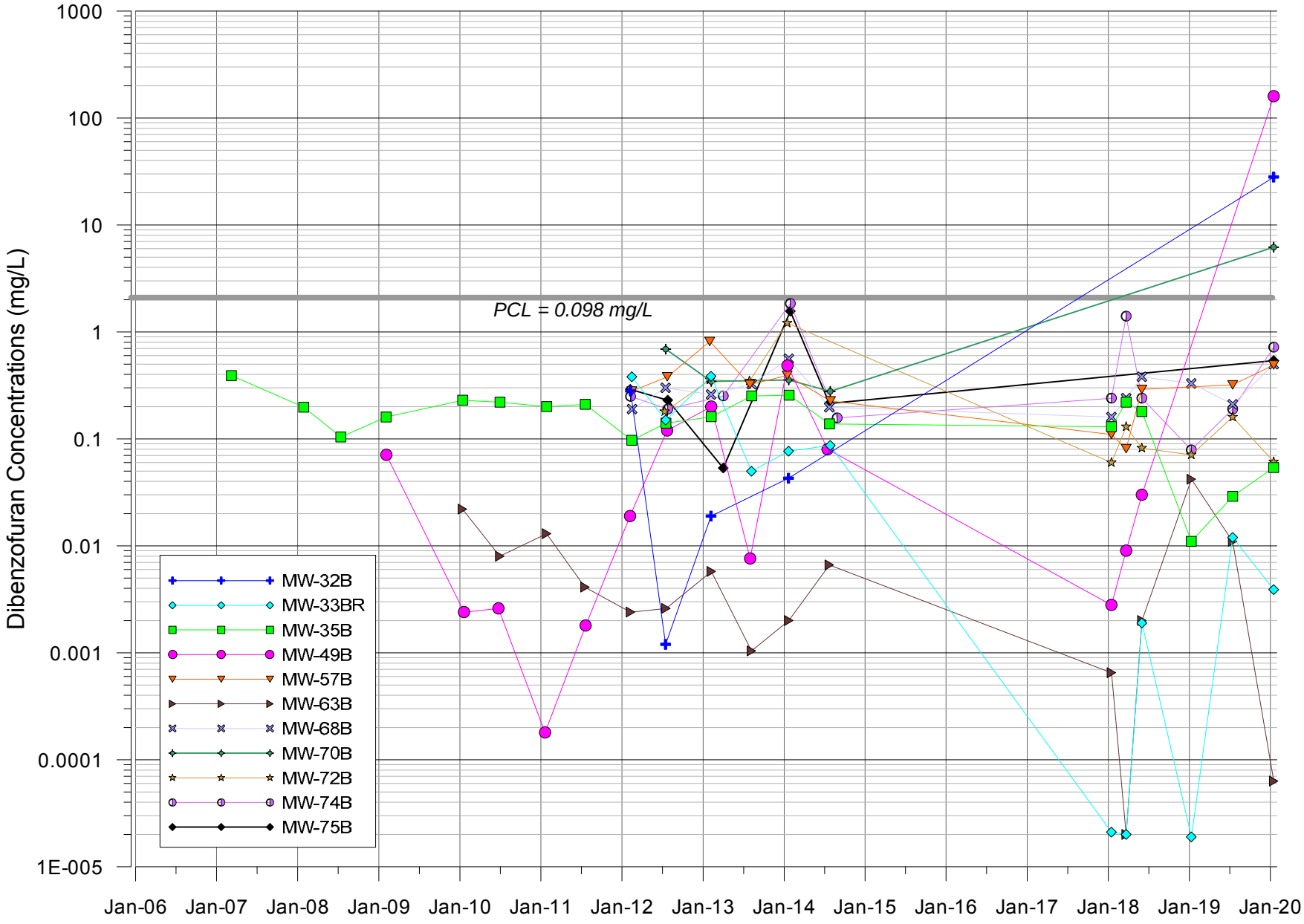
ATTACHMENT 1B-17
2,4-Dimethylphenol Concentrations at Source Area Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



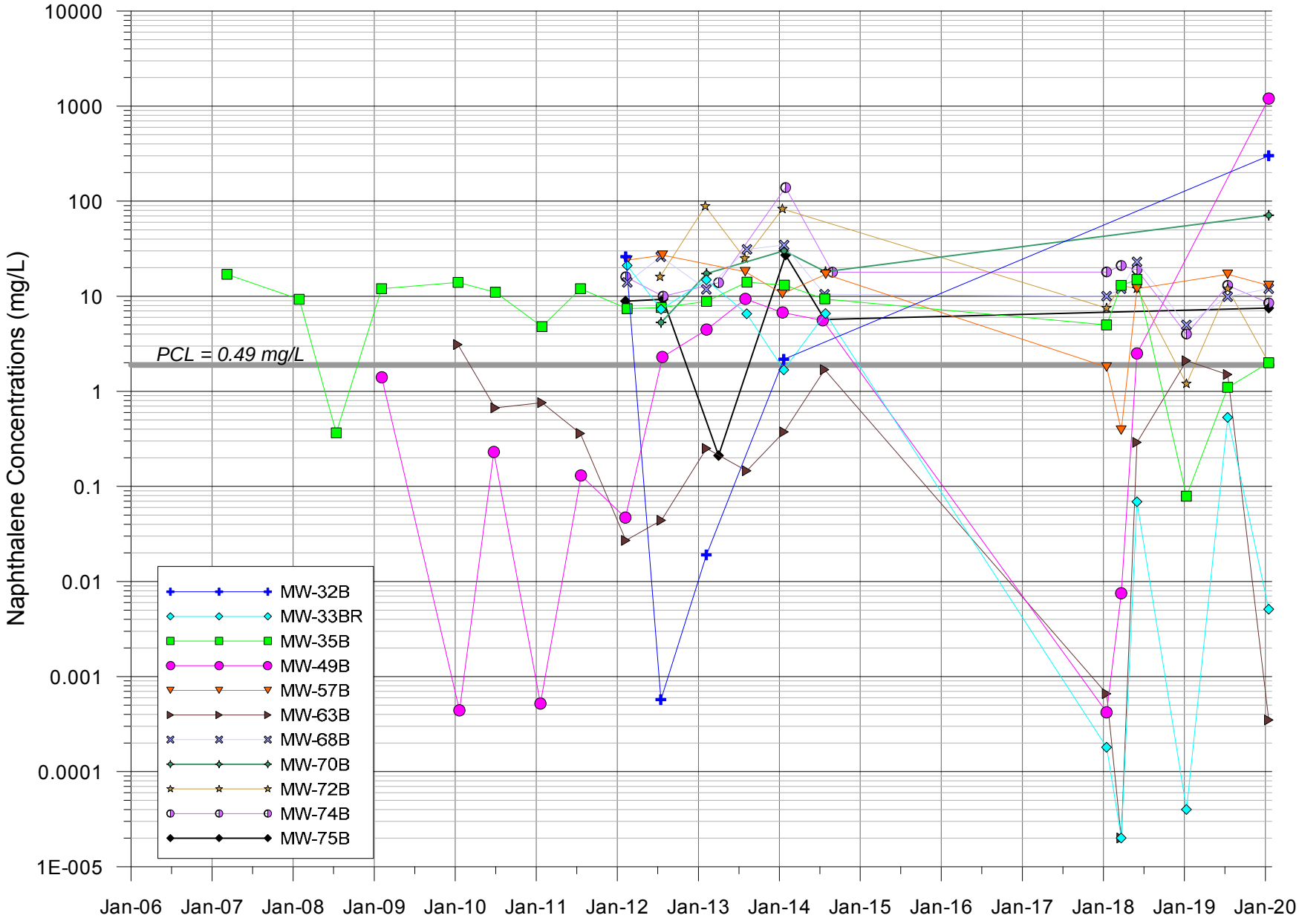
ATTACHMENT 1B-18
2-Methylnaphthalene Concentrations at Source Area Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



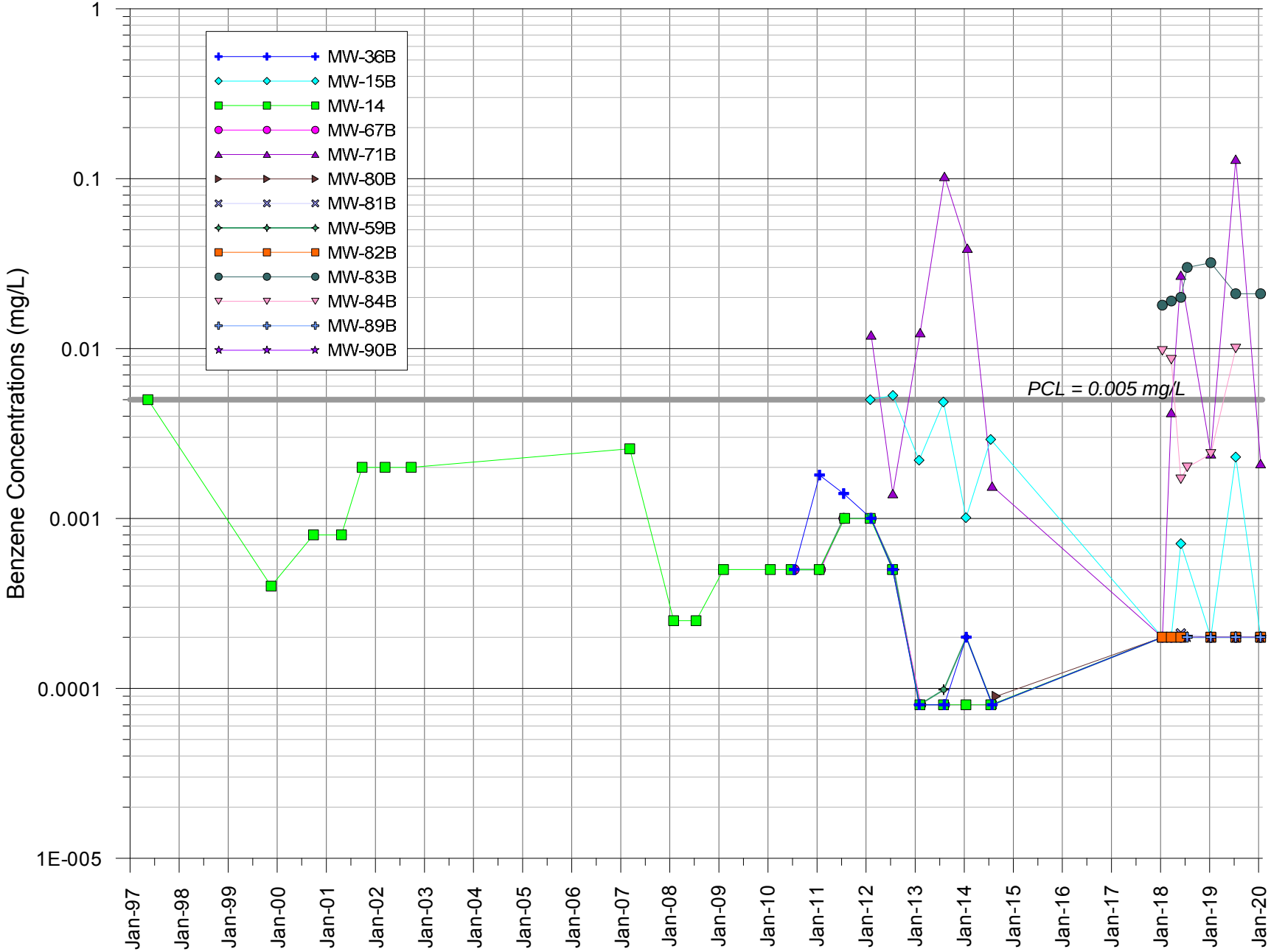
ATTACHMENT 1B-19
Dibenzofuran Concentrations at Source Area Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



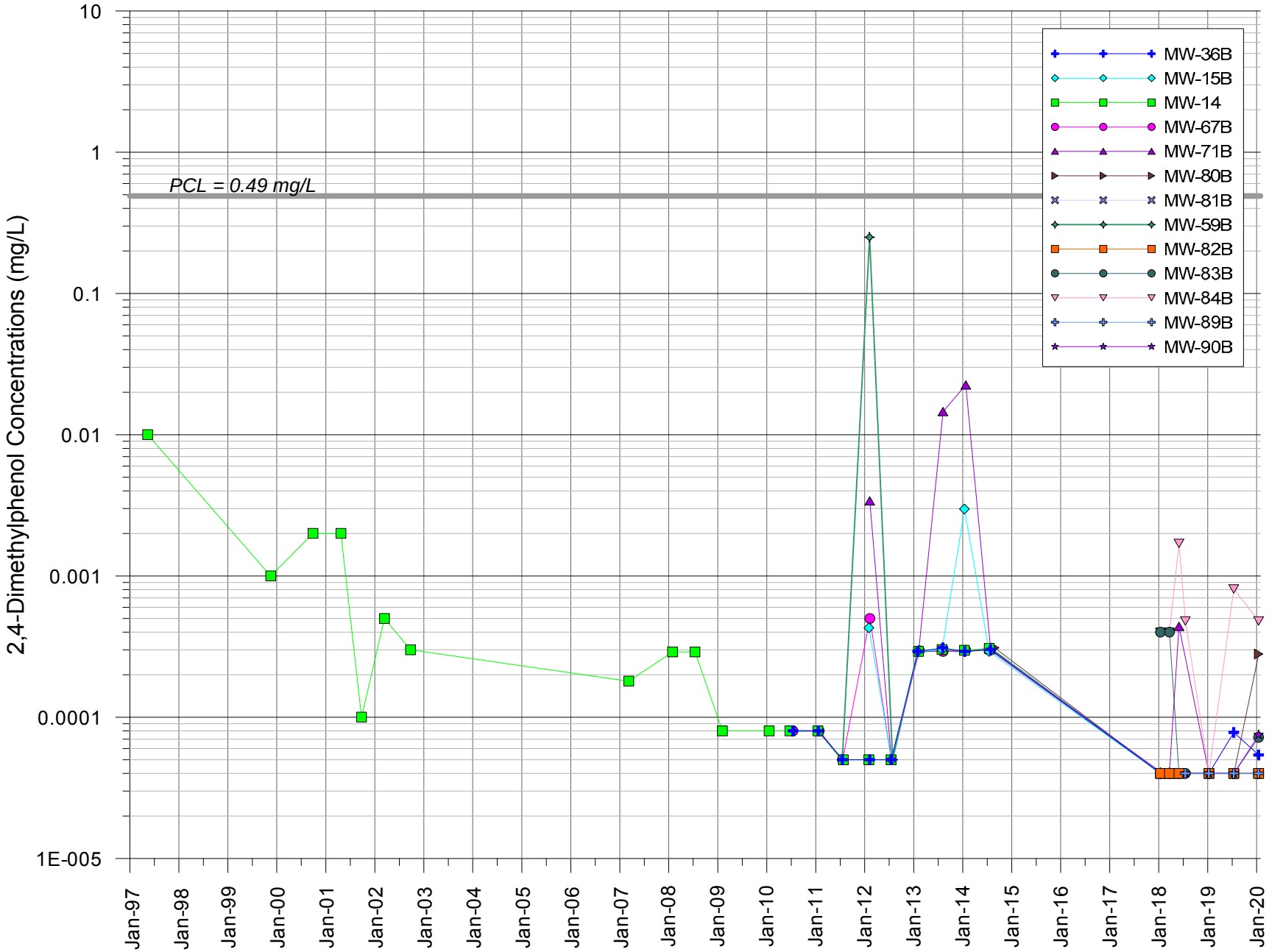
ATTACHMENT 1B-20
Naphthalene Concentrations at Source Area Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



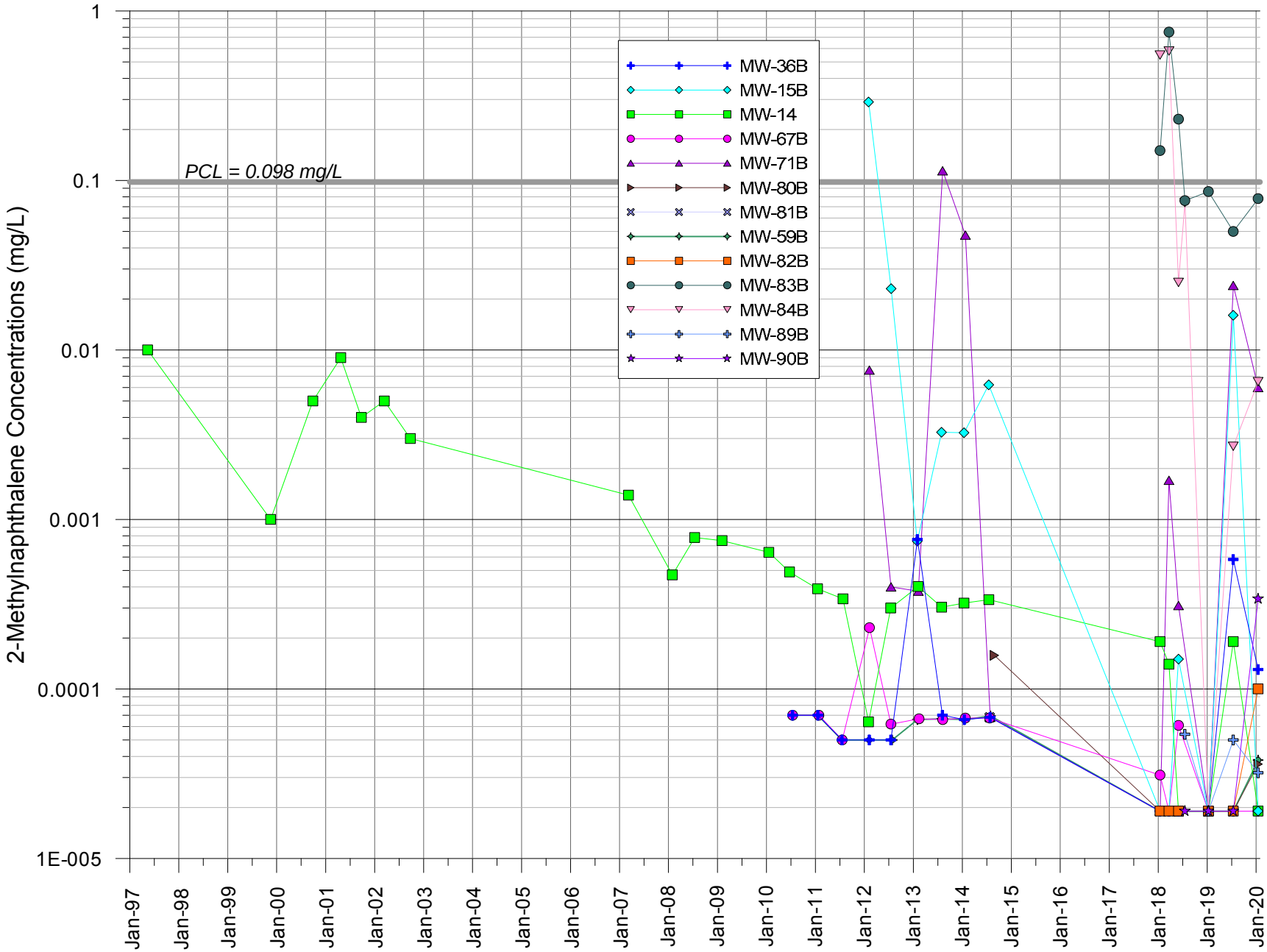
ATTACHMENT 1B-21
Benzene Concentrations at Perimeter Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



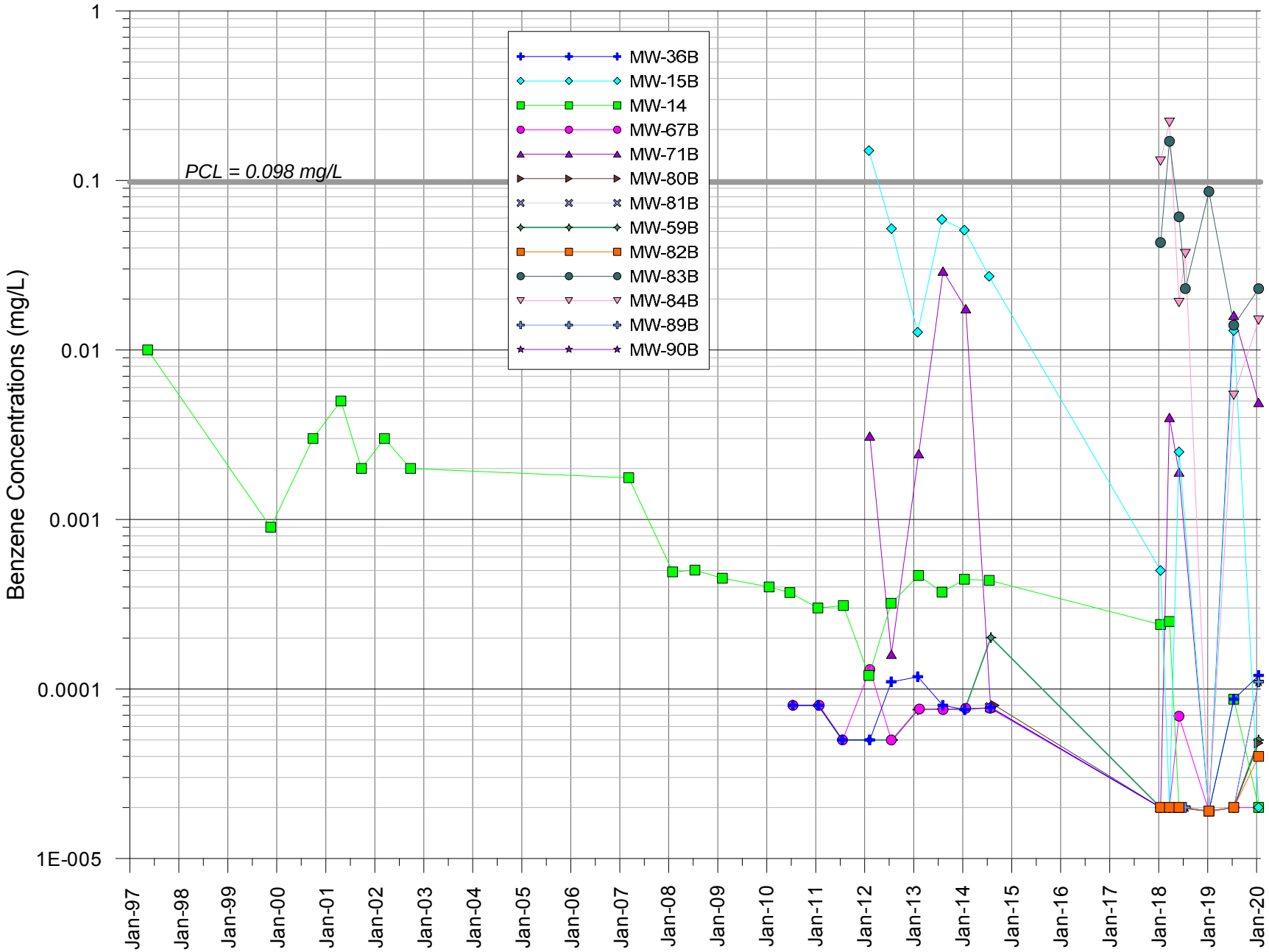
ATTACHMENT 1B-22
2,4-Dimethylphenol Concentrations at Perimeter Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



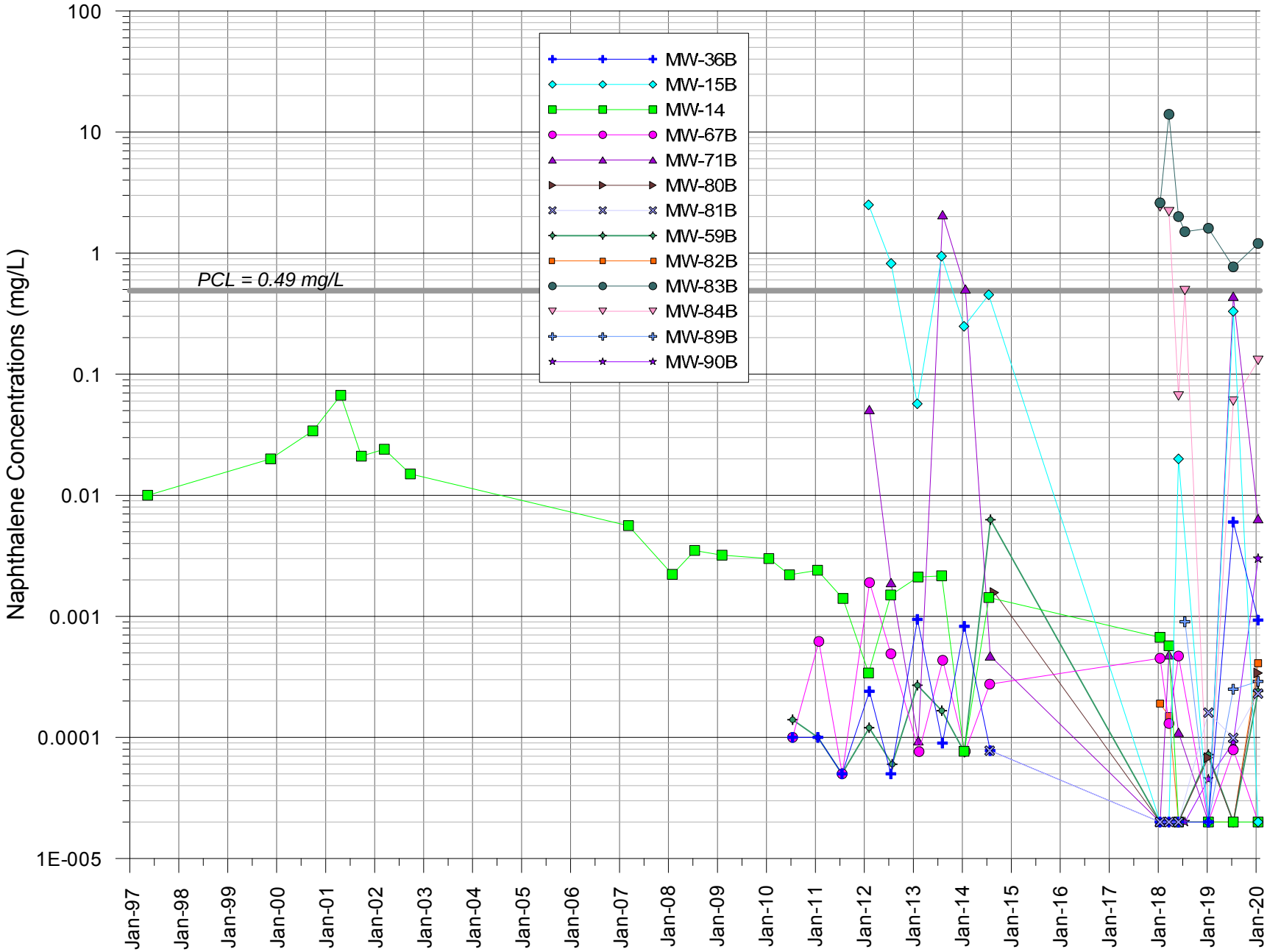
ATTACHMENT 1B-23
2-Methylnaphthalene Concentrations at Perimeter Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



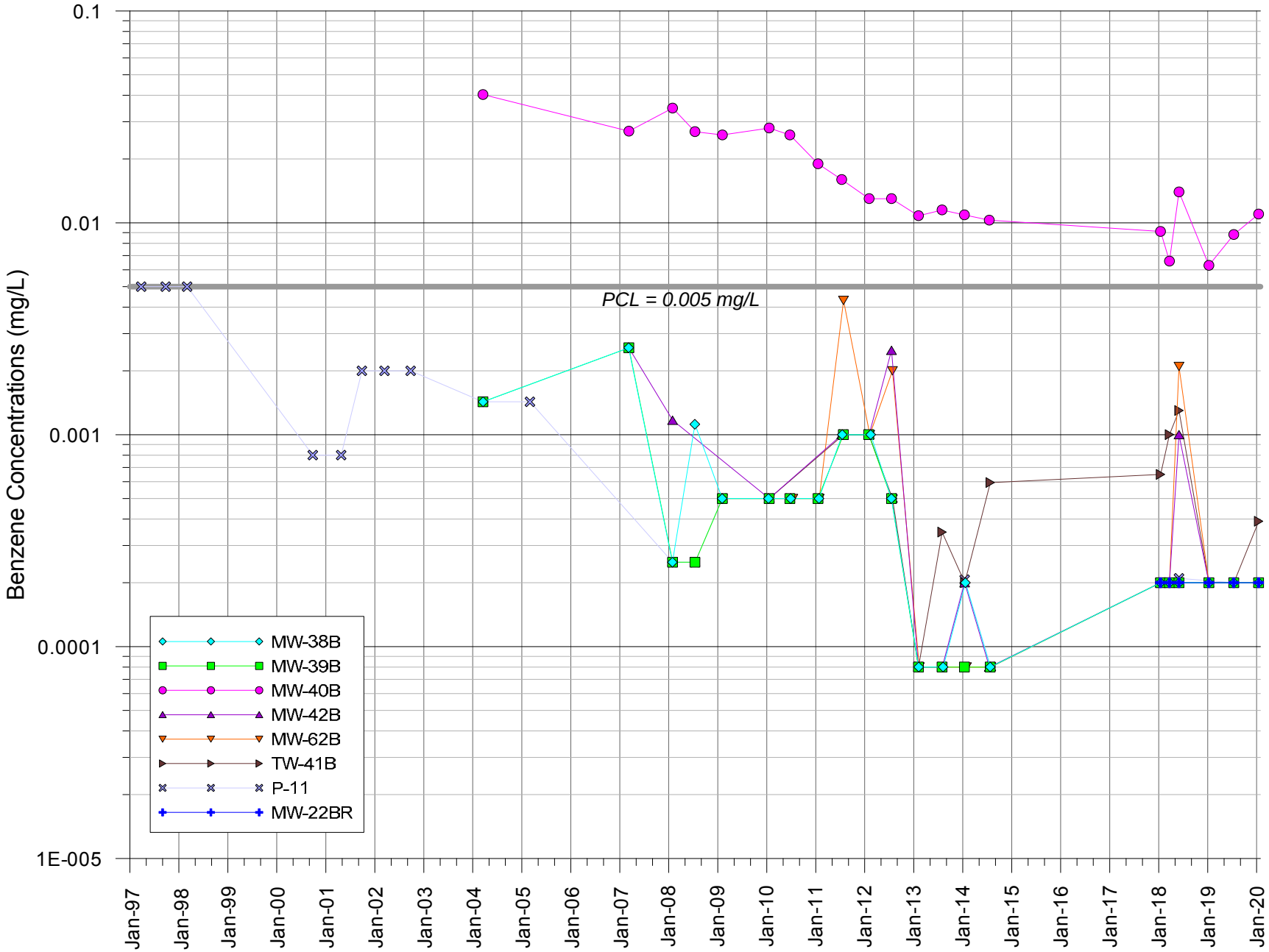
ATTACHMENT 1B-24
Dibenzofuran Concentrations at Perimeter Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



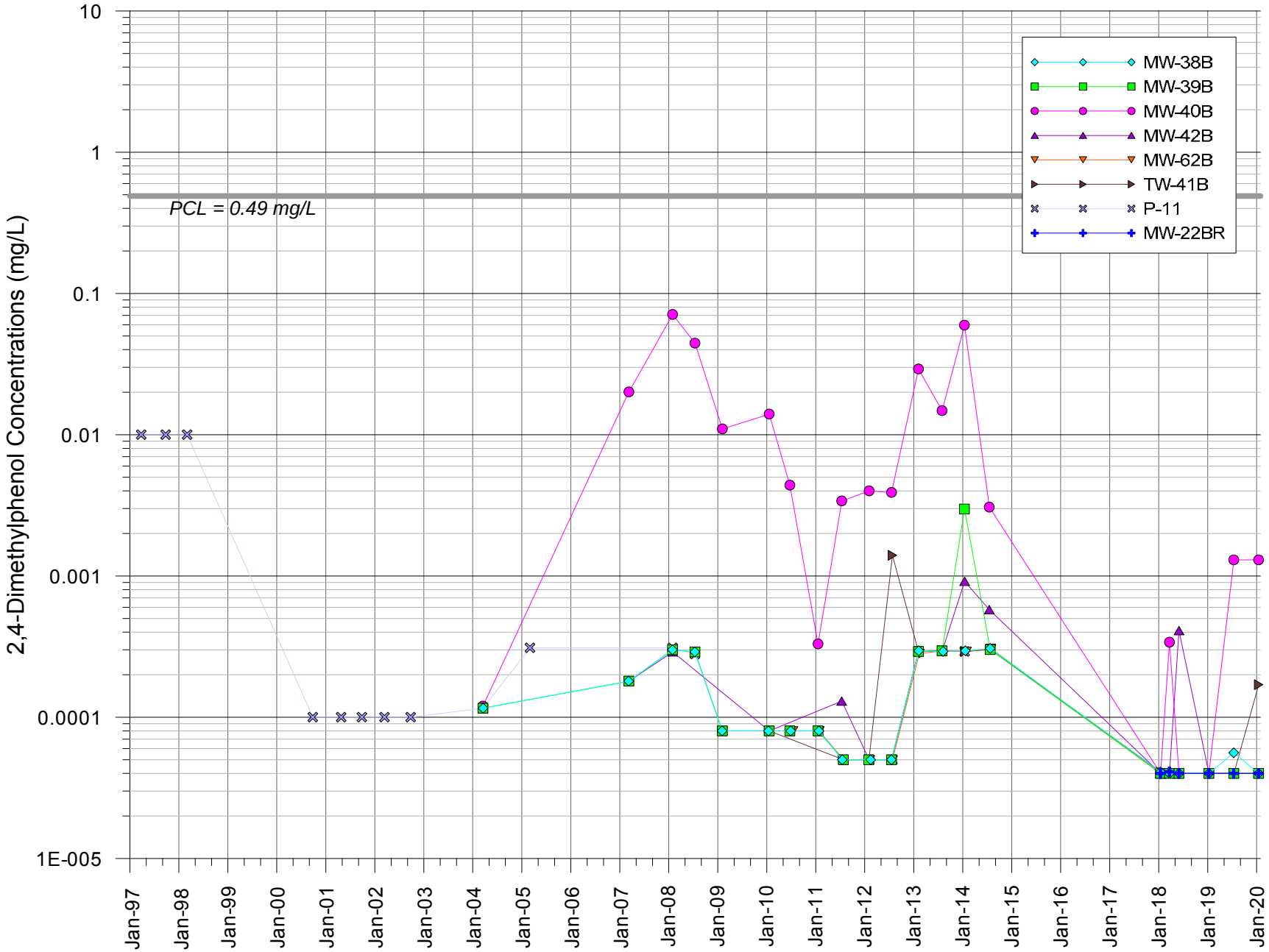
ATTACHMENT 1B-25
Naphthalene Concentrations at Perimeter Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



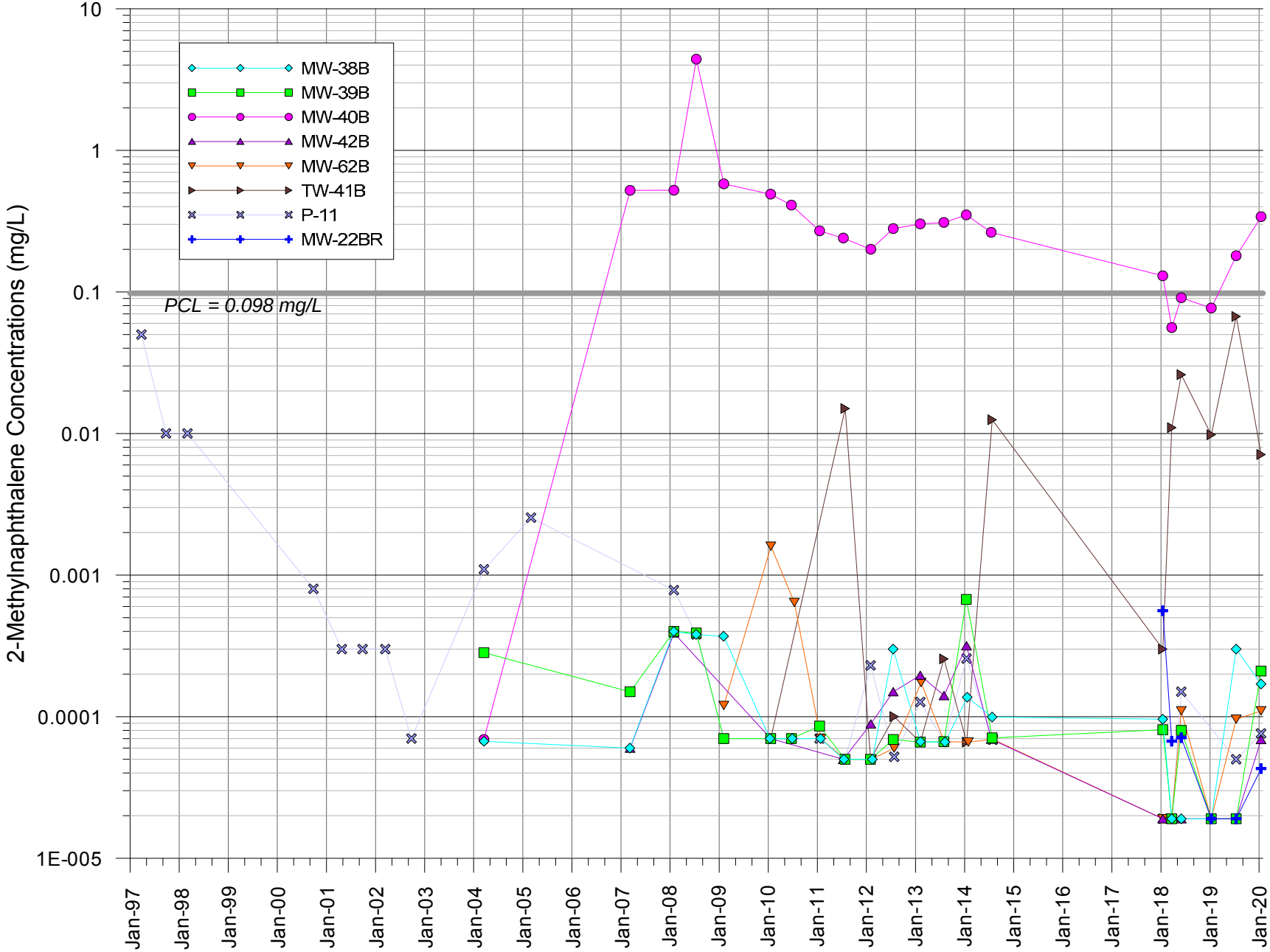
ATTACHMENT 1B-26
Benzene Concentrations at West End Area Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



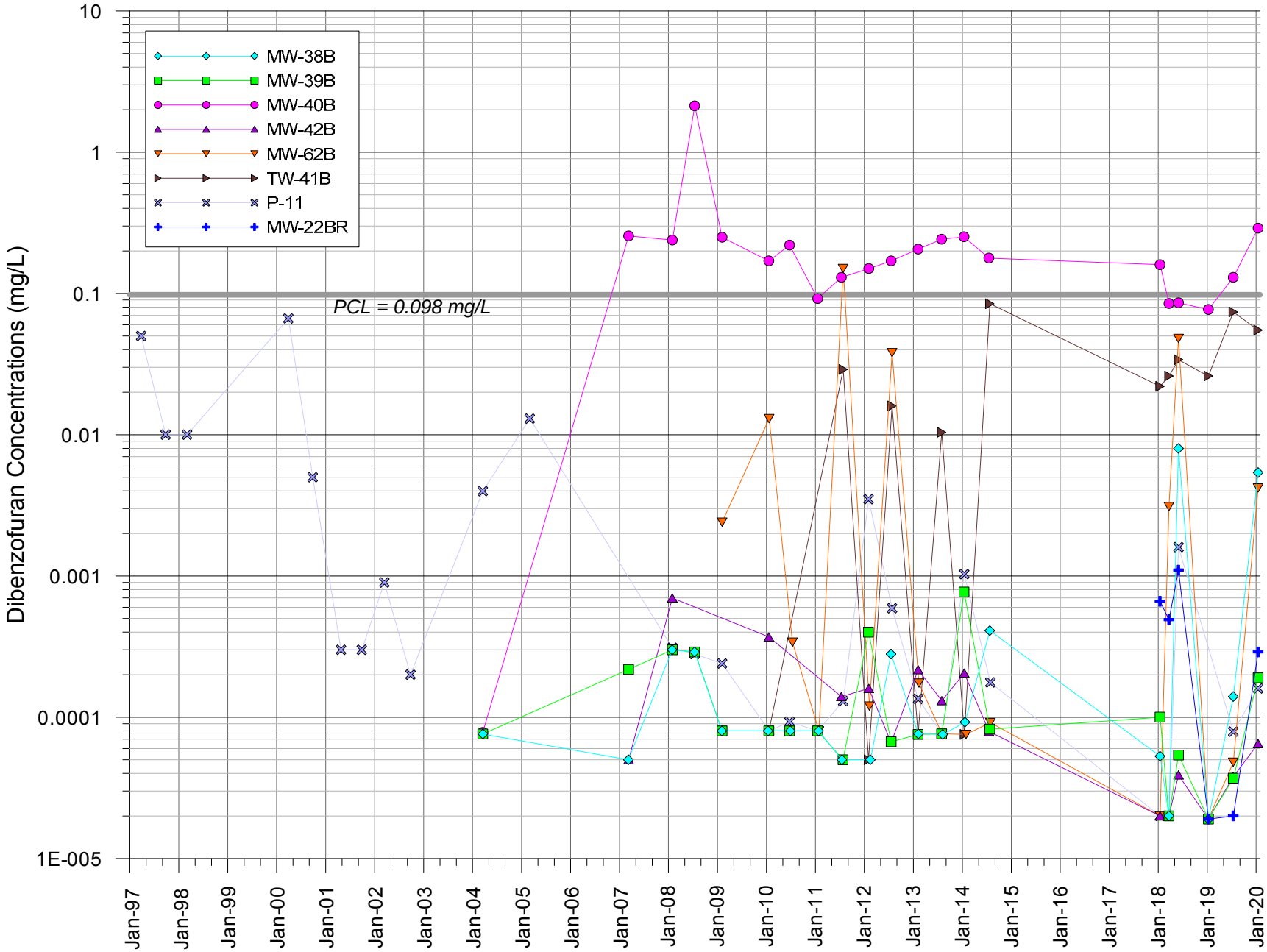
ATTACHMENT 1B-27
2,4-Dimethylphenol Concentrations at West End Area Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



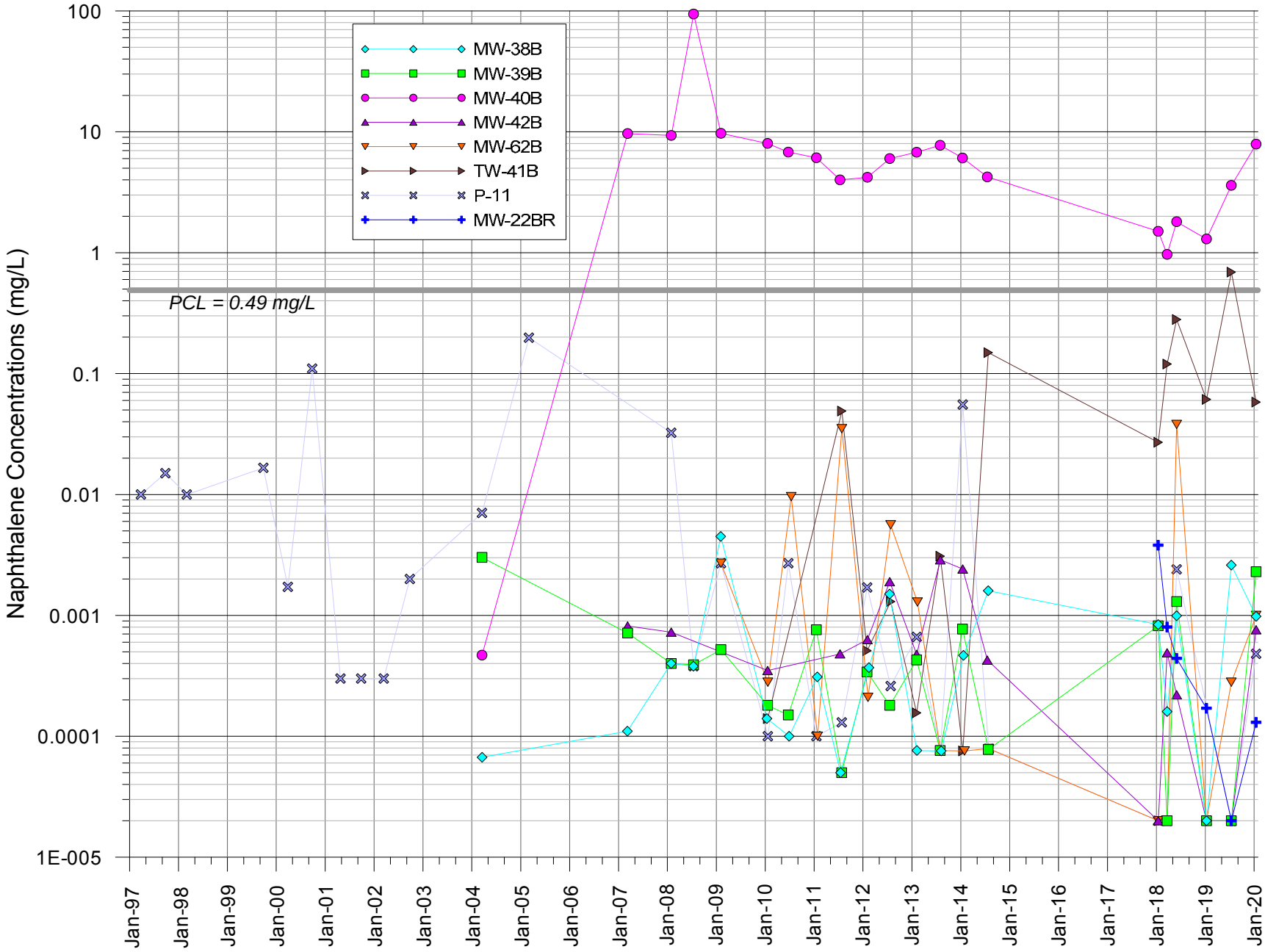
ATTACHMENT 1B-28
2-Methylnaphthalene Concentrations at West End Area Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



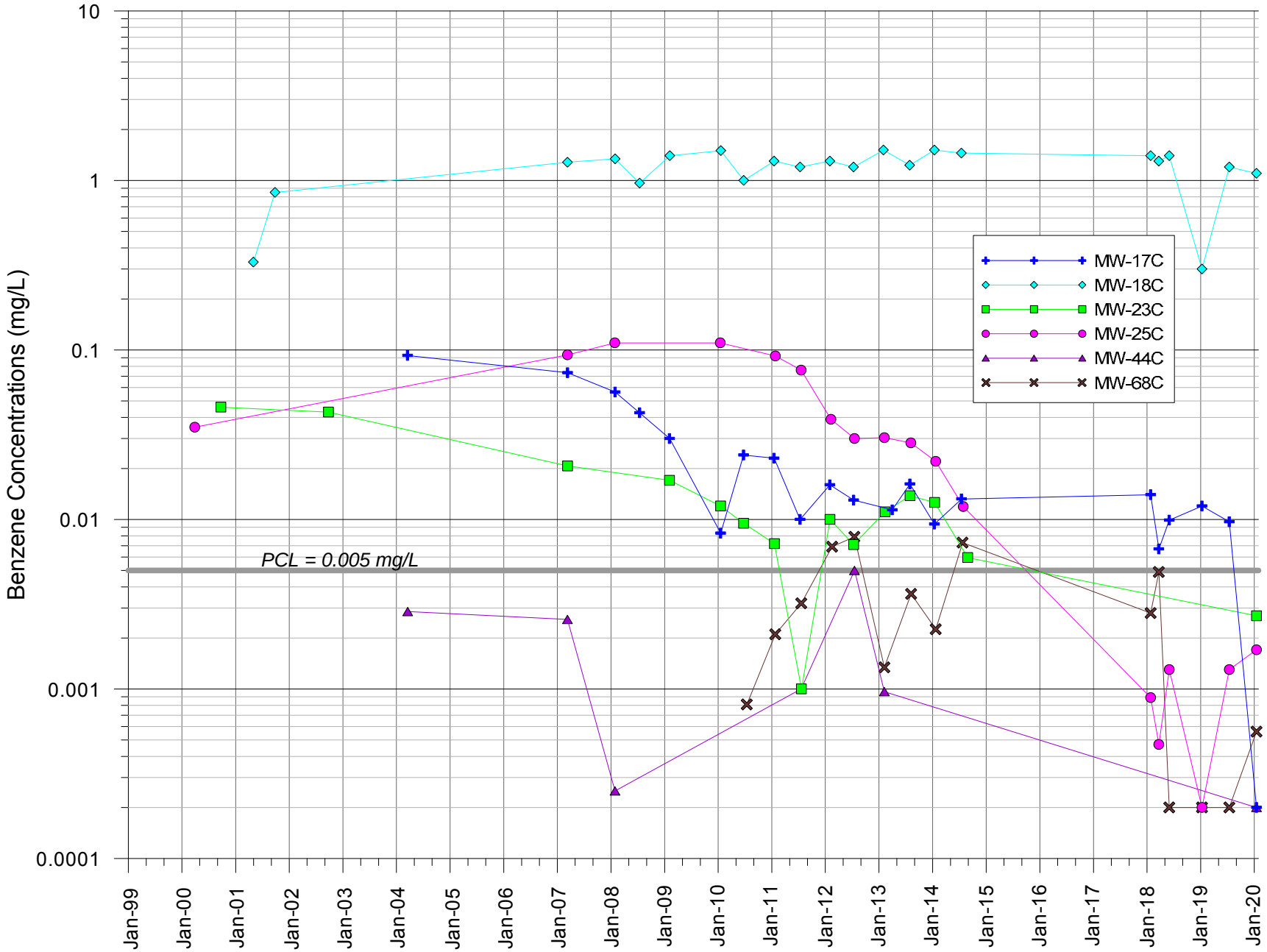
ATTACHMENT 1B-29
Dibenzofuran Concentrations at West End Area Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



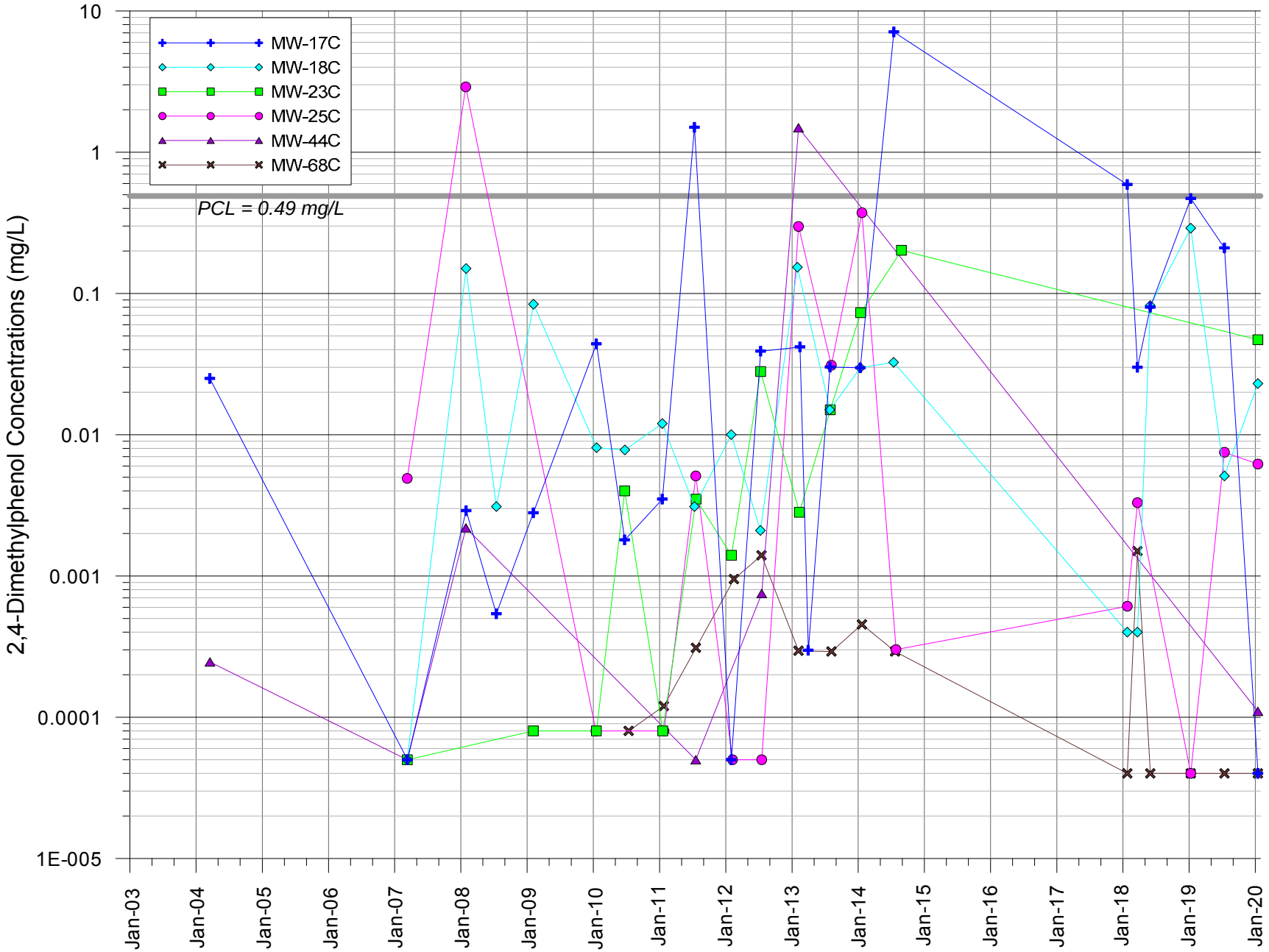
ATTACHMENT 1B-30
Naphthalene Concentrations at West End Area Wells - B-CZ/B-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



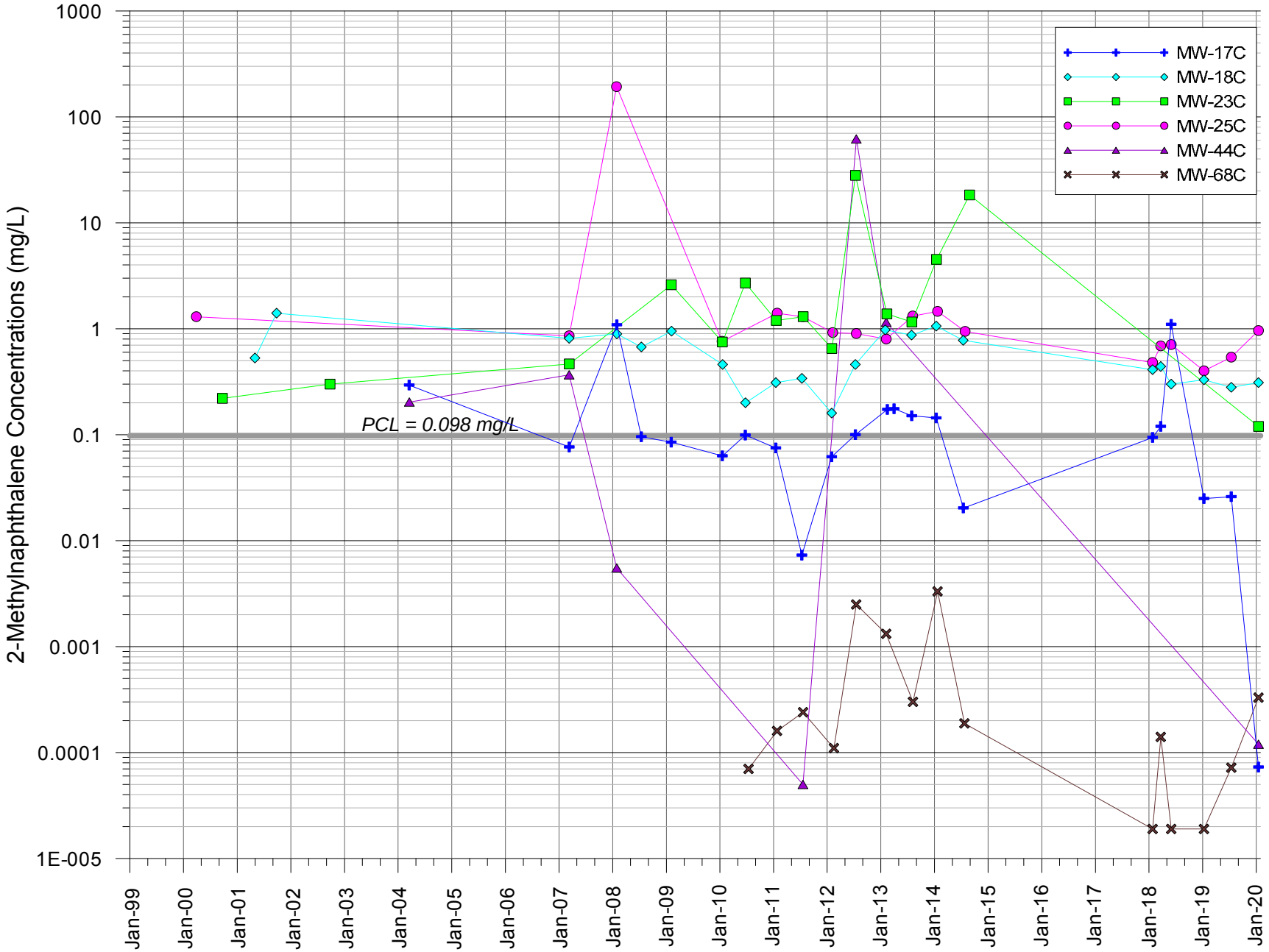
ATTACHMENT 1B-31
Benzene Concentrations at Source Area Wells - C-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



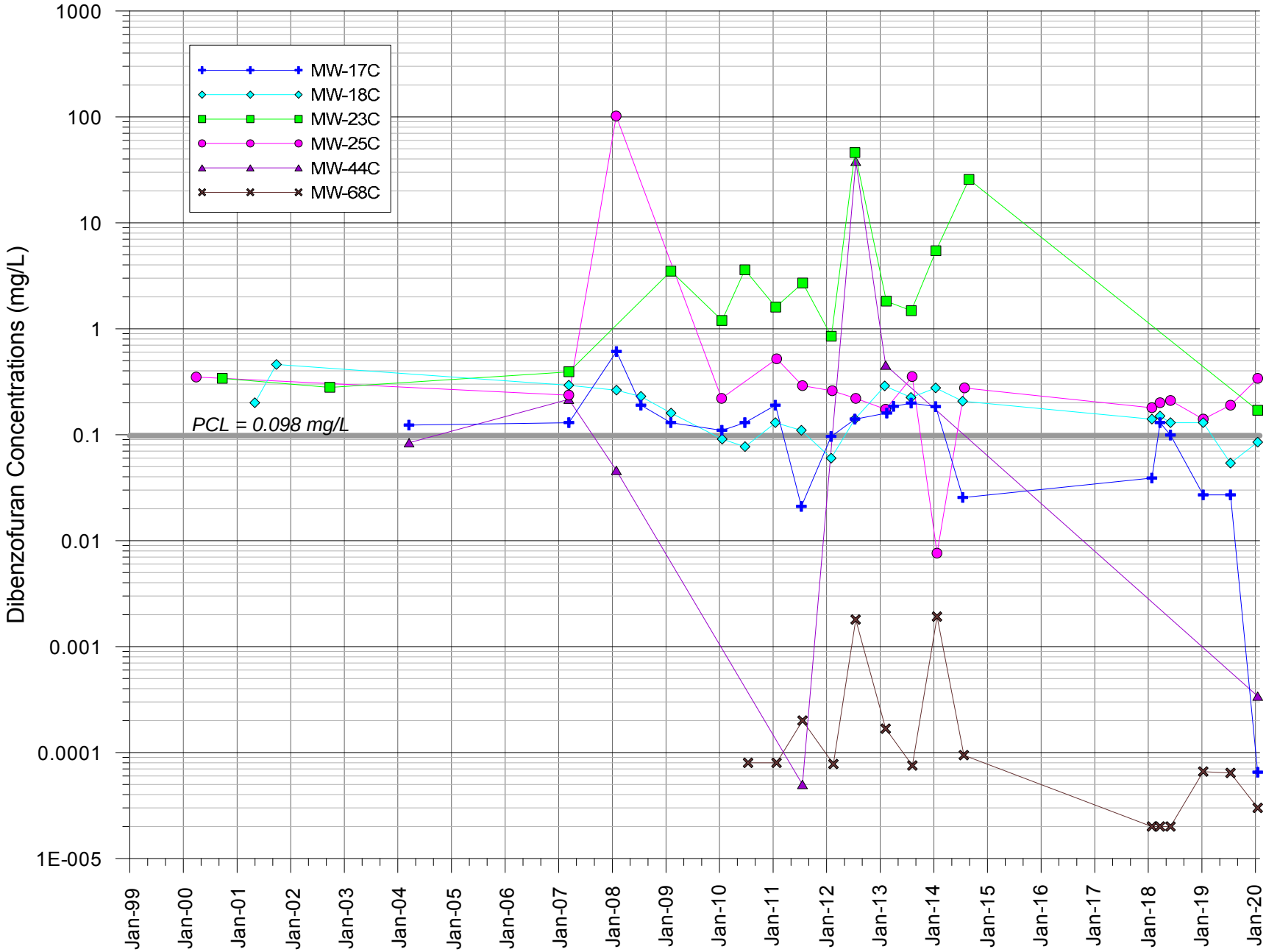
ATTACHMENT 1B-32
2,4-Dimethylphenol Concentrations at Source Area Wells - C-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



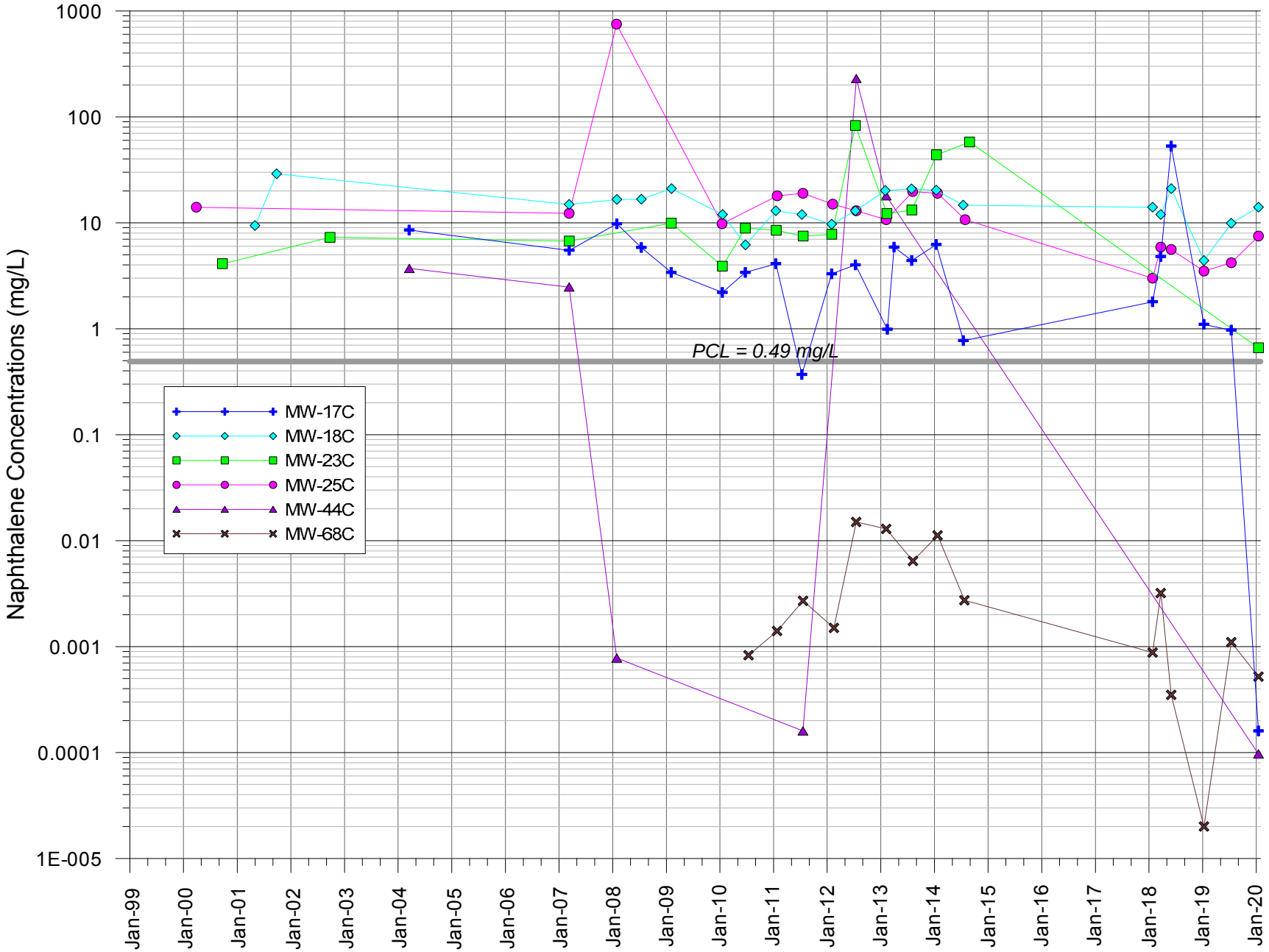
ATTACHMENT 1B-33
2-Methylnaphthalene Concentrations at Source Area Wells - C-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



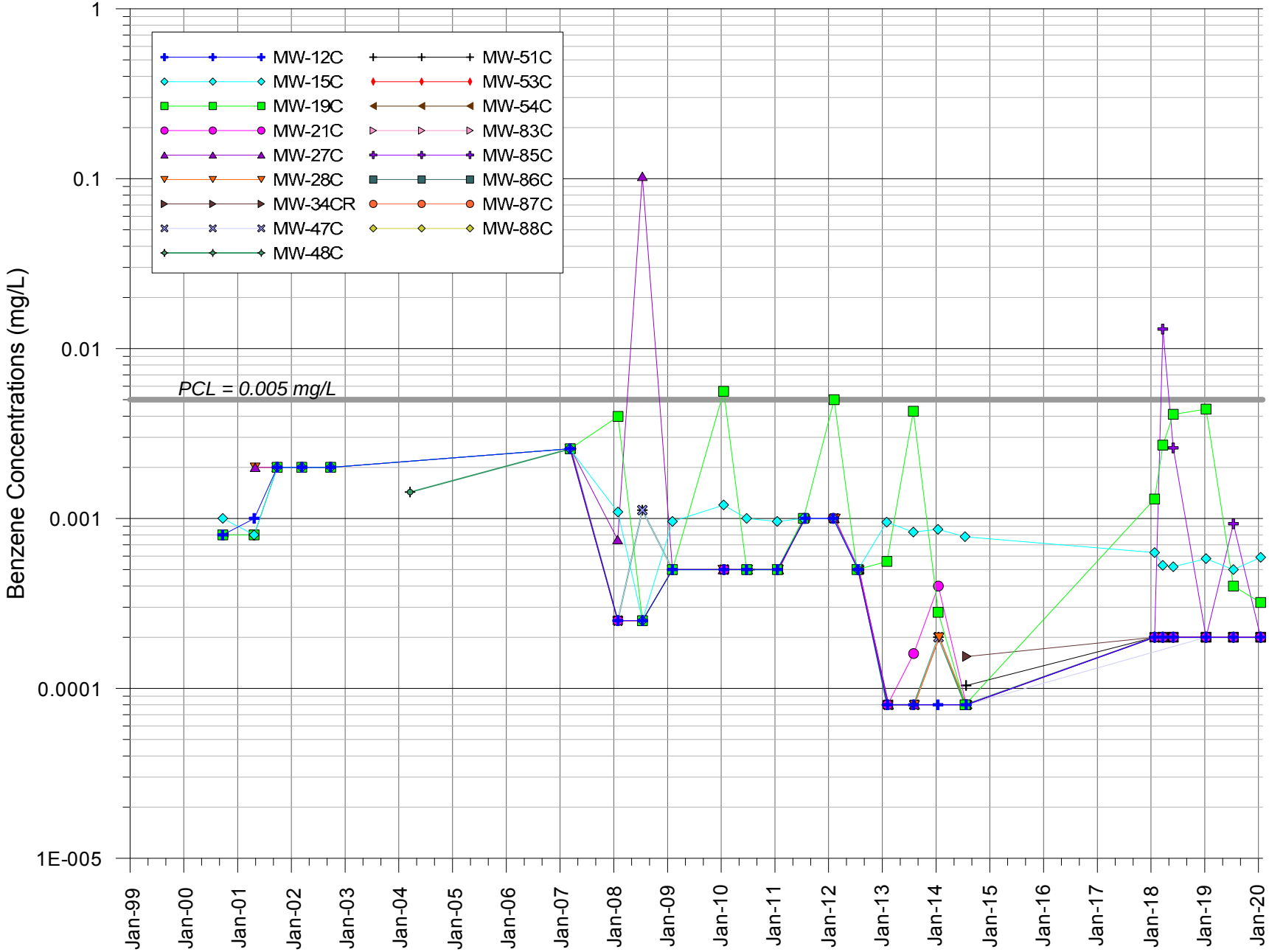
ATTACHMENT 1B-34
Dibenzofuran Concentrations at Source Area Wells - C-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



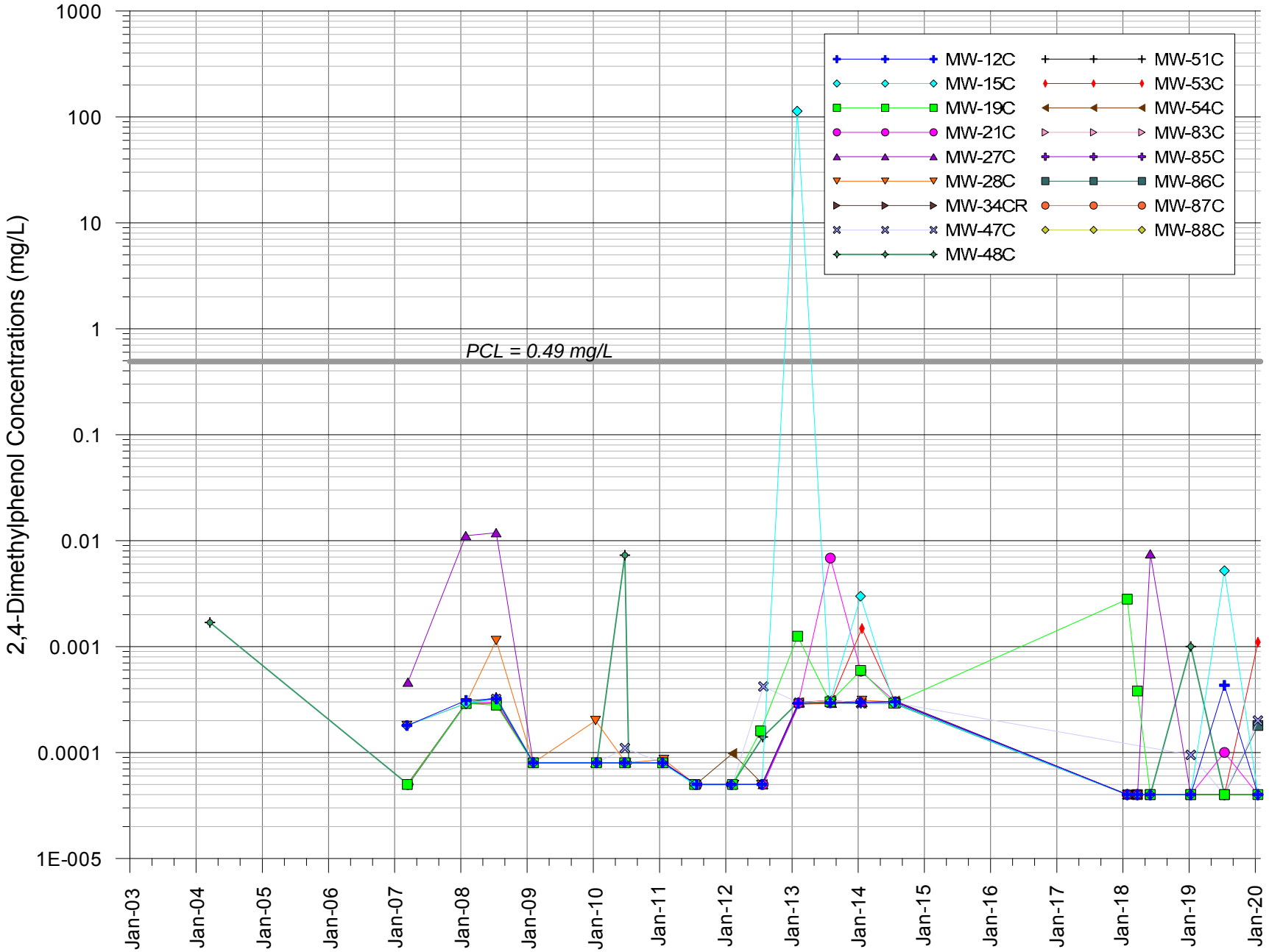
ATTACHMENT 1B-35
Naphthalene Concentrations at Source Area Wells - C-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



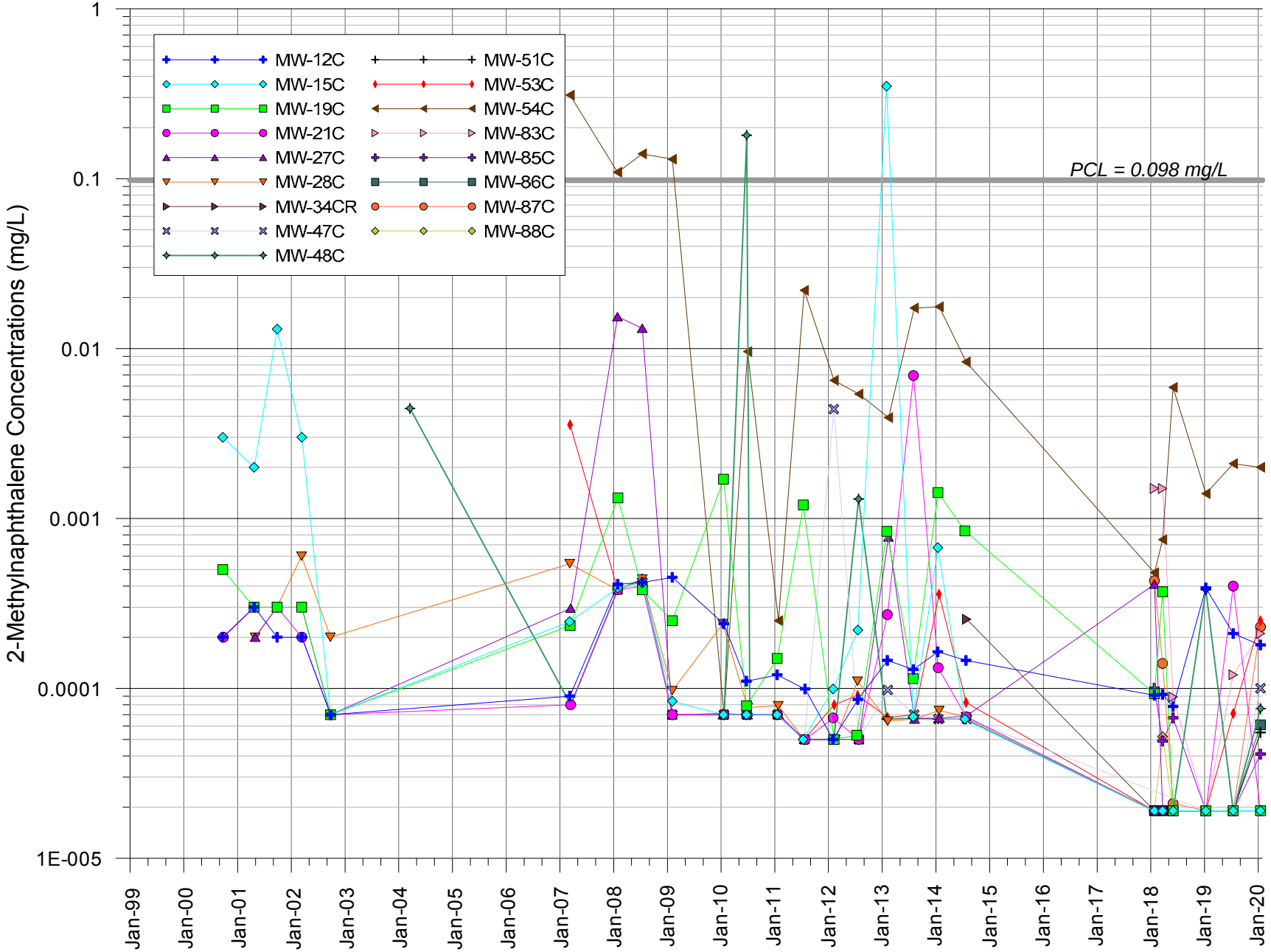
ATTACHMENT 1B-36
Benzene Concentrations at Perimeter Wells - C-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



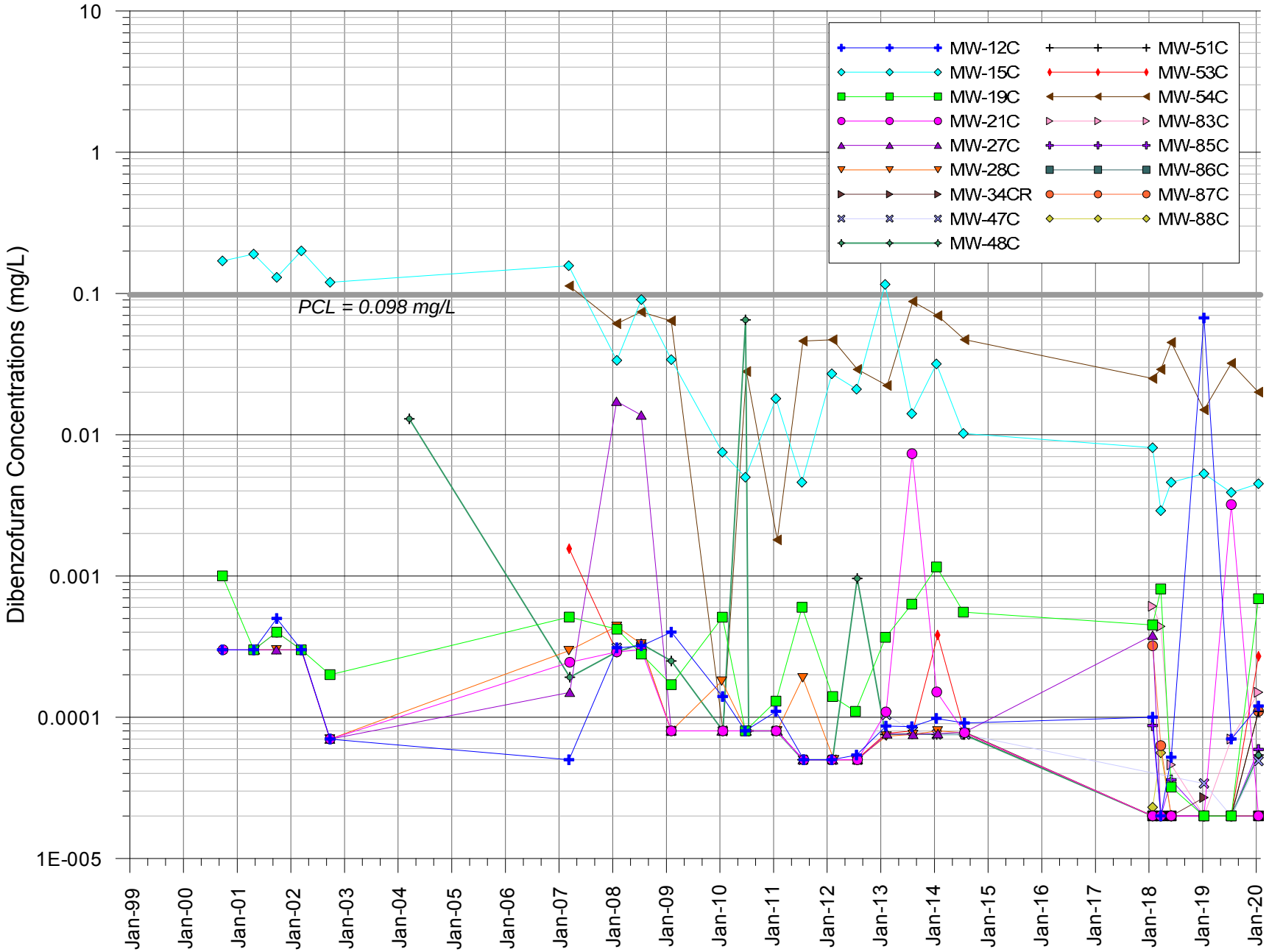
ATTACHMENT 1B-37
2,4-Dimethylphenol Concentrations at Perimeter Wells - C-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



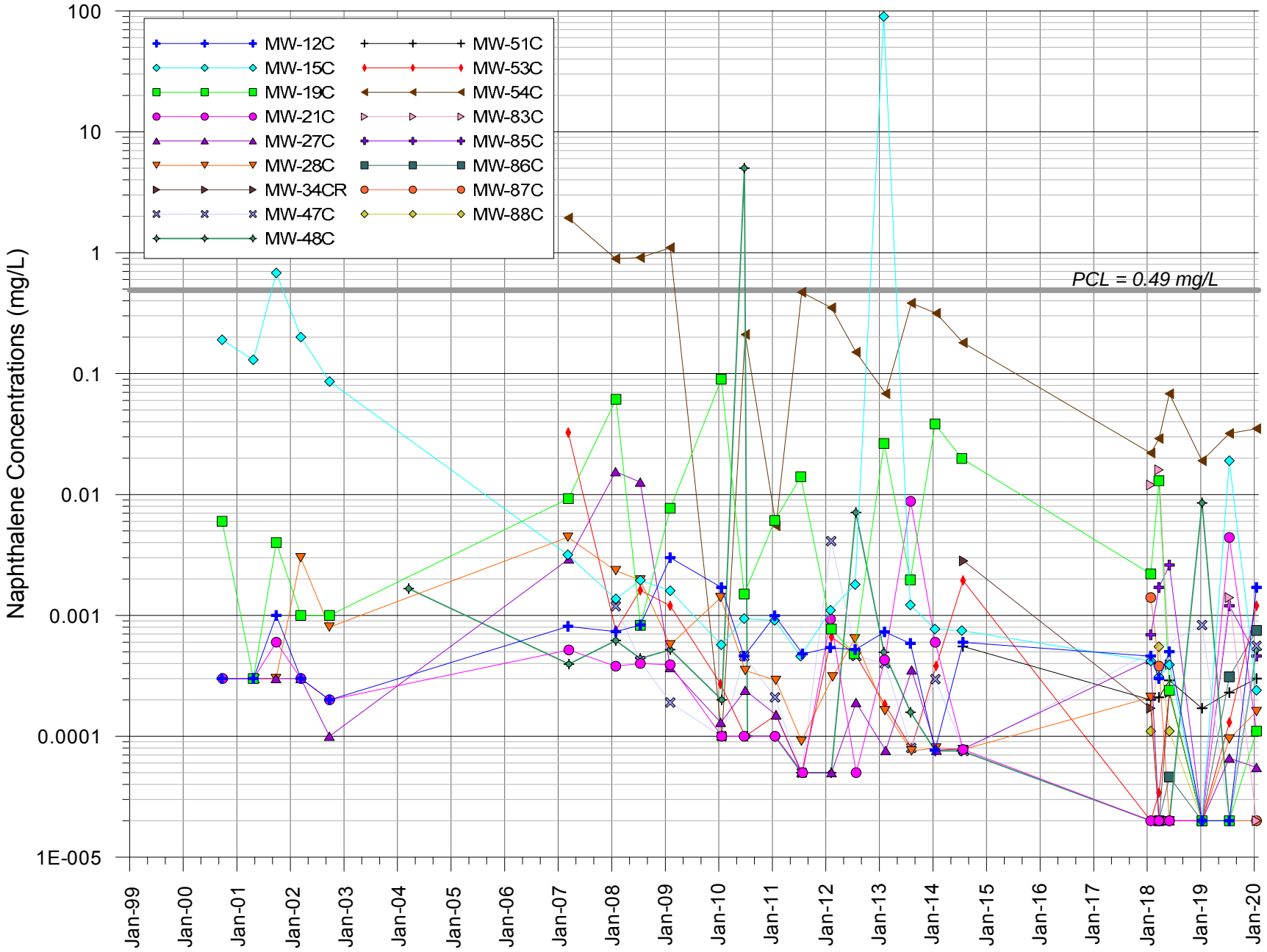
ATTACHMENT 1B-38
2-Methylnaphthalene Concentrations at Perimeter Wells - C-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



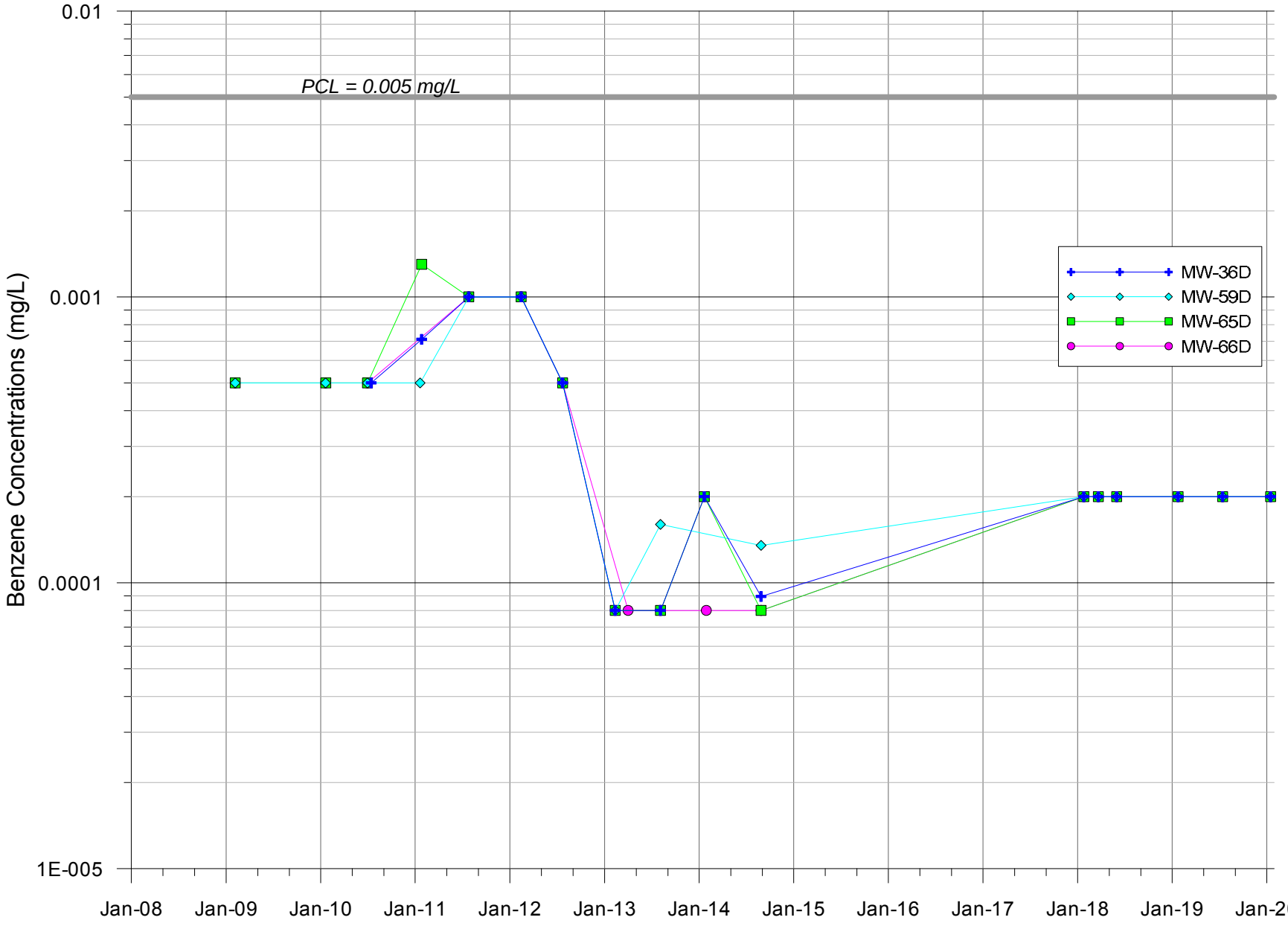
ATTACHMENT 1B-39
Dibenzofuran Concentrations at Perimeter Wells - C-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



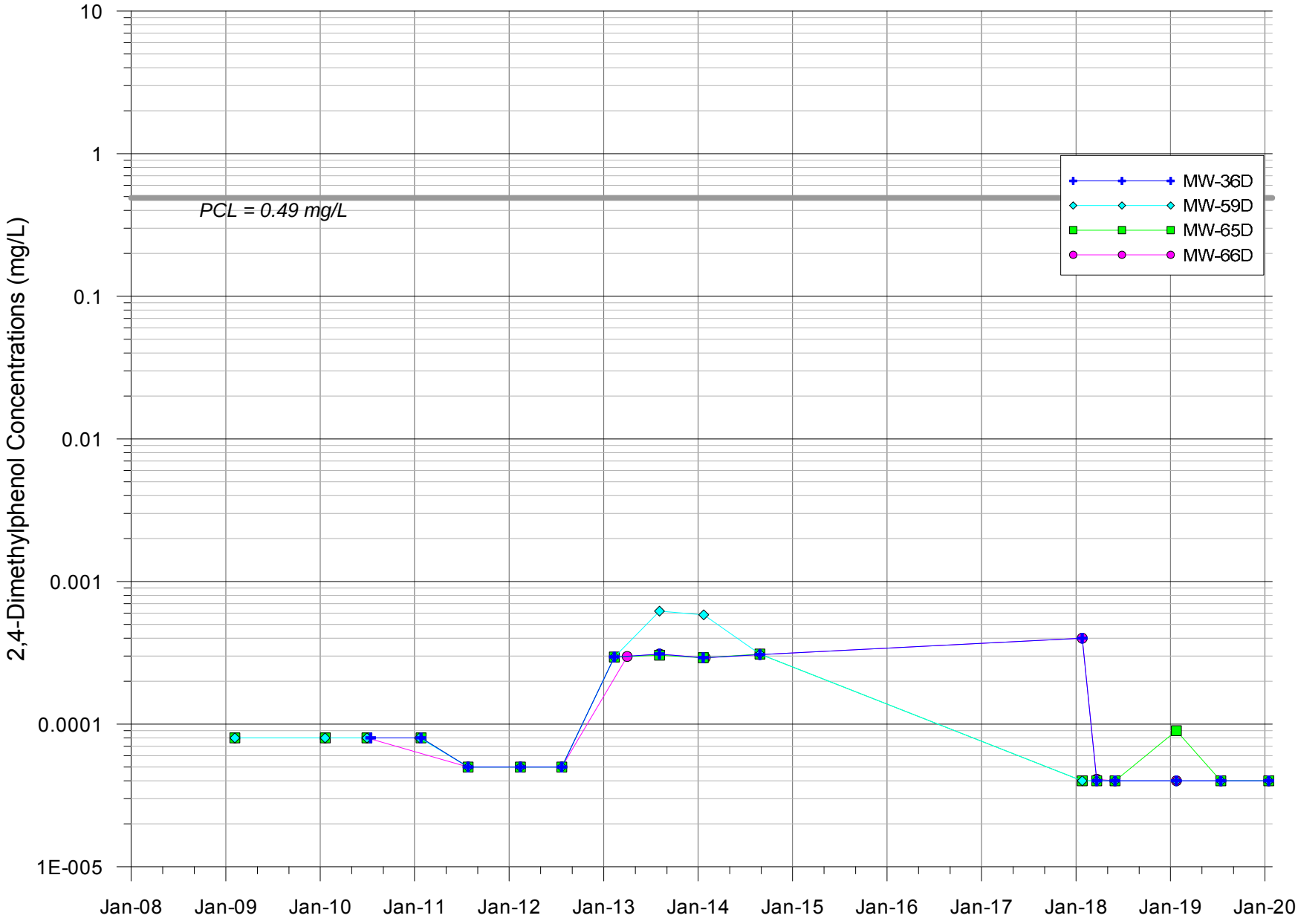
ATTACHMENT 1B-40
Naphthalene Concentrations at Perimeter Wells - C-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



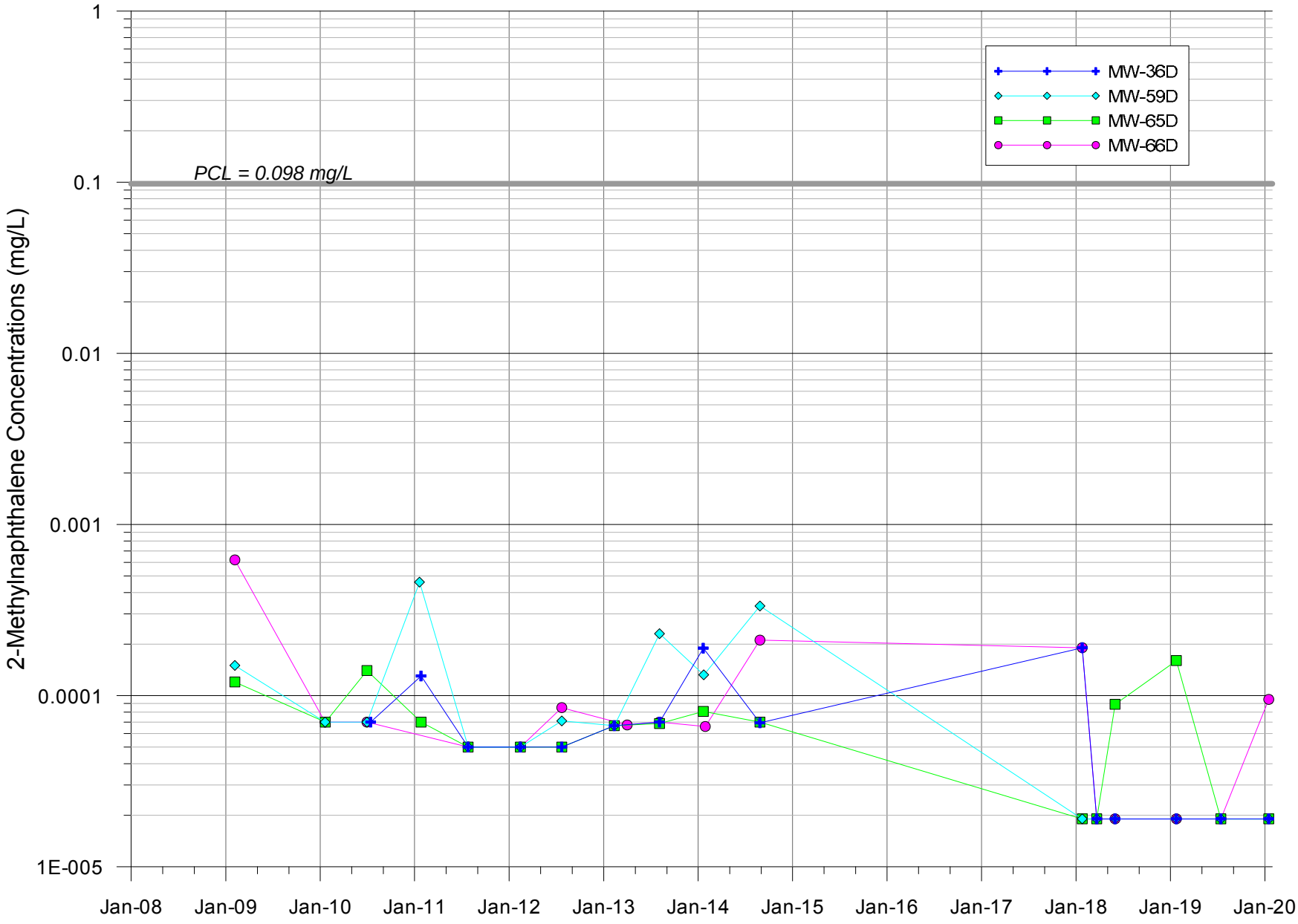
ATTACHMENT 1B-41
Benzene Concentrations at Source Area Wells - D-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



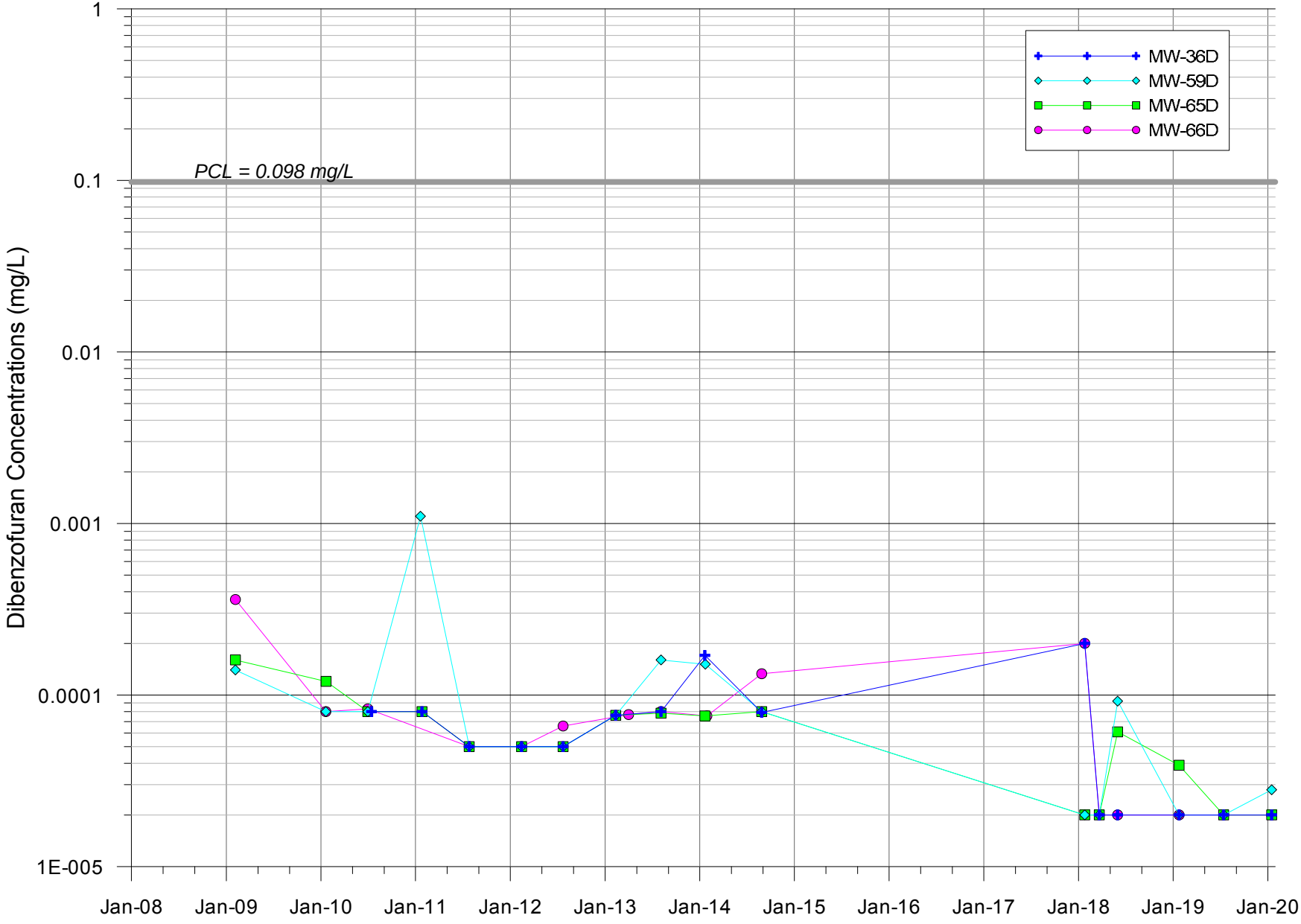
ATTACHMENT 1B-42
2,4-Dimethylphenol Concentrations at Source Area Wells - D-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



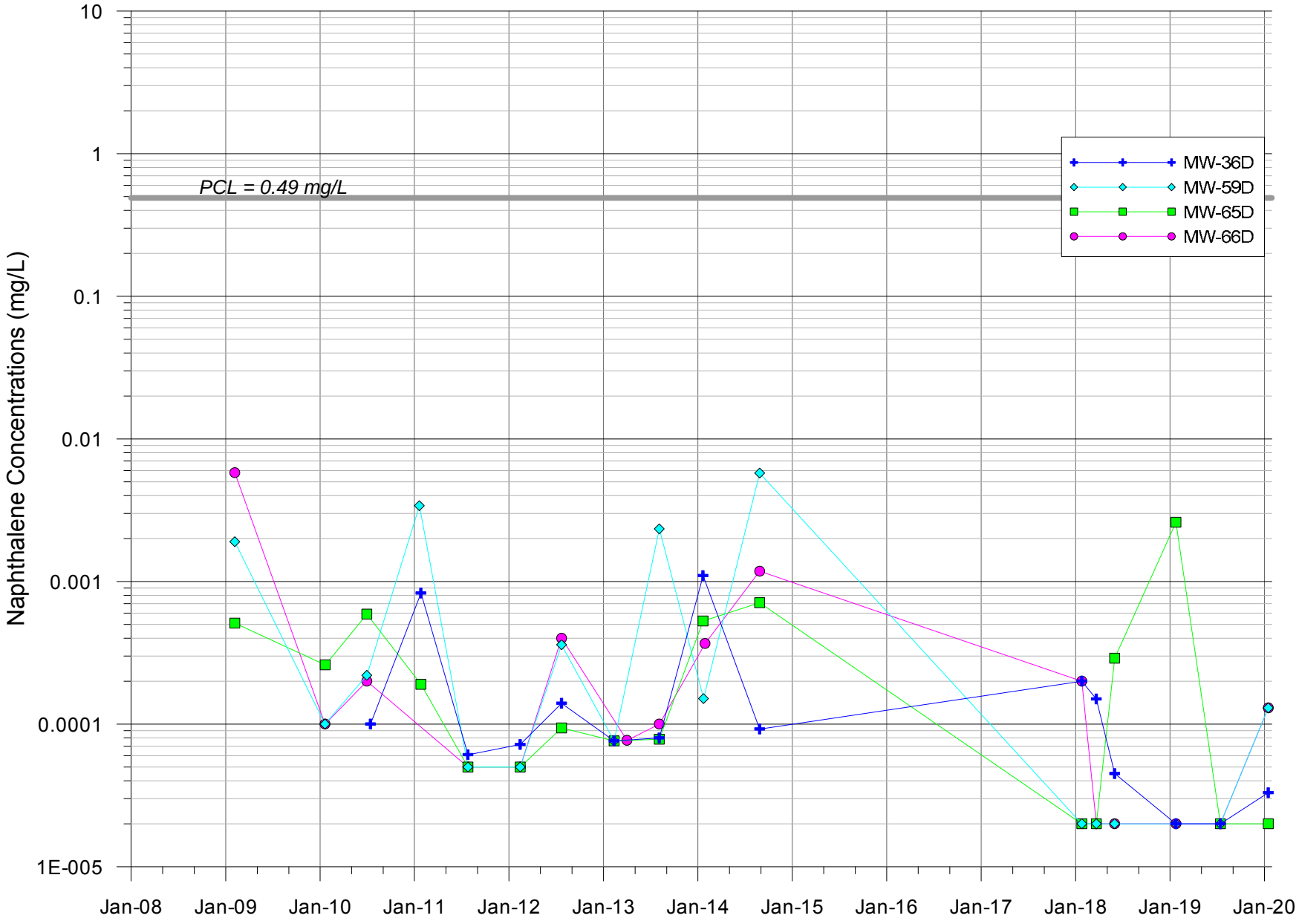
ATTACHMENT 1B-43
2-Methylnaphthatlene Concentrations at Source Area Wells - D-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



ATTACHMENT 1B-44
Dibenzofuran Concentrations at Source Area Wells - D-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



ATTACHMENT 1B-45
Naphthalene Concentrations at Source Area Wells - D-TZ
UPRR Houston Wood Preserving Works, Houston, Texas



ATTACHMENT G

Mann-Kendall Trend Test Results

MAROS Mann-Kendall Statistics Summary

Project: HWPW **User Name:** MHH

Location: Houston **State:** Texas

Time Period: 1/22/2009 **to** 1/7/2020
Consolidation Period: No Time Consolidation
Consolidation Type: Median
Duplicate Consolidation: Average
ND Values: Detection Limit
J Flag Values : Actual Value

Well	Source/ Tail	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	All Samples "ND" ?	Concentration Trend
2,4-DIMETHYLPHENOL								
MW-03	T	6	0	0.00	0	42.3%	Yes	ND
MW-04	T	6	0	0.55	-5	76.5%	Yes	ND
MW-05	T	13	0	0.98	-18	84.7%	Yes	ND
MW-09	T	10	0	1.17	-21	96.4%	Yes	ND
MW-12A	T	17	2	3.69	-41	95.0%	No	D
MW-12C	T	17	1	0.97	-19	76.8%	No	S
MW-13	T	17	1	1.17	-38	93.6%	No	PD
MW-14	T	17	1	1.11	-31	89.0%	No	NT
MW-15A	T	17	3	3.13	-30	88.2%	No	NT
MW-15B	T	12	0	2.11	-29	97.4%	Yes	ND
MW-15C	T	17	2	4.12	-31	89.0%	No	NT
MW-17	S	18	17	0.69	9	61.7%	No	NT
MW-17C	S	18	13	2.96	25	81.6%	No	NT
MW-18A	S	17	17	0.86	-46	96.8%	No	D
MW-18C	S	17	11	1.69	9	62.7%	No	NT
MW-19C	S	17	3	1.63	26	84.6%	No	NT
MW-20A	S	10	10	1.11	-35	100.0%	No	D
MW-21C	T	17	2	2.73	-40	94.6%	No	PD
MW-22AR	T	6	0	0.01	-3	64.0%	Yes	ND
MW-22BR	T	6	0	0.01	-3	64.0%	Yes	ND
MW-23C	S	12	4	1.86	43	99.9%	No	I
MW-25A	T	17	1	2.56	-31	89.0%	No	NT
MW-25C	S	15	6	2.42	6	59.6%	No	NT
MW-26A	T	17	2	3.59	-64	99.6%	No	D
MW-27A	T	5	0	0.00	0	40.8%	Yes	ND
MW-27C	T	17	0	0.96	-46	96.8%	Yes	ND

MAROS Mann-Kendall Statistics Summary

Project: HWPW **User Name:** MHH

Location: Houston **State:** Texas

2,4-DIMETHYLPHENOL

Well	Source/ Tail	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	All Samples "ND" ?	Concentration Trend
MW-28A	T	17	1	3.01	-29	87.4%	No	NT
MW-28C	T	17	2	0.91	-45	96.5%	No	D
MW-32AR	T	12	5	2.74	-29	97.4%	No	D
MW-32B	S	5	4	1.45	2	59.2%	No	NT
MW-33A	T	17	7	2.83	-29	87.4%	No	NT
MW-33BR	T	10	2	3.12	-23	97.7%	No	D
MW-34CR	T	5	0	1.27	-4	75.8%	Yes	ND
MW-35A	T	17	1	2.12	-27	85.6%	No	NT
MW-35B	T	17	1	2.72	-15	71.5%	No	NT
MW-36A	T	17	0	0.94	-40	94.6%	Yes	ND
MW-36B	T	15	1	0.94	-20	82.3%	No	S
MW-36D	T	15	0	0.95	-27	89.9%	Yes	ND
MW-38A	T	17	0	0.96	-47	97.1%	Yes	ND
MW-38B	T	17	1	0.95	-42	95.4%	No	D
MW-39B	T	17	0	2.62	-46	96.8%	Yes	ND
MW-40B	T	17	10	1.71	-48	97.4%	No	D
MW-42B	T	14	3	1.23	-20	84.8%	No	NT
MW-44A	T	17	1	1.95	-34	91.2%	No	PD
MW-44C	S	4	1	2.00	2	62.5%	No	NT
MW-47C	T	14	6	0.74	6	60.6%	No	NT
MW-48C	T	17	3	2.30	-29	87.4%	No	NT
MW-49A	T	17	14	1.37	-46	96.8%	No	D
MW-49B	S	15	15	1.56	49	99.2%	No	I
MW-50A	T	17	1	1.16	-11	65.7%	No	NT
MW-51A	T	17	0	0.96	-53	98.5%	Yes	ND
MW-51C	T	7	0	1.25	-6	76.4%	Yes	ND
MW-53C	T	17	0	1.68	-23	81.5%	Yes	ND
MW-54C	T	17	1	0.93	-42	95.4%	No	D
MW-57A	S	13	12	1.15	-40	99.3%	No	D
MW-57B	S	11	10	0.80	-19	91.8%	No	PD
MW-58A	T	17	11	2.52	-49	97.7%	No	D
MW-59A	T	17	1	0.95	-52	98.3%	No	D
MW-59B	T	15	2	3.85	-41	97.7%	No	D

MAROS Mann-Kendall Statistics Summary

Project: HWPW **User Name:** MHH

Location: Houston **State:** Texas

2,4-DIMETHYLPHENOL

Well	Source/ Tail	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	All Samples "ND" ?	Concentration Trend
MW-59D	T	17	0	0.97	-49	97.7%	Yes	ND
MW-60A	T	17	1	1.35	-40	94.6%	No	PD
MW-61A	T	17	0	0.96	-50	97.9%	Yes	ND
MW-62B	T	17	0	0.95	-46	96.8%	Yes	ND
MW-63B	T	16	2	2.08	-12	68.7%	No	NT
MW-64A	T	17	0	0.97	-50	97.9%	Yes	ND
MW-65D	T	17	0	0.93	-33	90.5%	Yes	ND
MW-66D	T	17	0	0.90	-32	89.8%	Yes	ND
MW-67B	T	15	1	1.02	-41	97.7%	No	D
MW-68A	T	3	0	0.00	0	0.0%	Yes	ND
MW-68B	S	12	11	0.88	-14	81.0%	No	S
MW-68C	T	15	7	1.25	-32	93.7%	No	PD
MW-69A	T	14	2	2.49	-40	98.5%	No	D
MW-70B	S	5	4	0.89	2	59.2%	No	NT
MW-71B	T	12	3	2.10	-32	98.4%	No	D
MW-72B	S	10	10	1.40	-19	94.6%	No	PD
MW-74B	S	11	11	1.72	-21	94.0%	No	PD
MW-75B	S	6	5	1.83	1	50.0%	No	NT
MW-76C	T	8	2	1.63	1	50.0%	No	NT
MW-77A	S	7	5	1.01	3	61.4%	No	NT
MW-79A	S	7	7	0.79	-4	66.7%	No	S
MW-80B	T	7	1	1.11	-1	50.0%	No	NT
MW-81B	T	7	0	1.28	-6	76.4%	Yes	ND
MW-82B	T	6	0	0.00	0	42.3%	Yes	ND
MW-83B	T	7	1	1.17	-6	76.4%	No	NT
MW-83C	T	6	0	0.00	0	42.3%	Yes	ND
MW-84B	T	7	4	0.87	0	43.7%	No	S
MW-85C	T	6	0	0.01	1	50.0%	Yes	ND
MW-86C	T	6	1	0.55	5	76.5%	No	NT
MW-87C	T	6	0	0.00	0	42.3%	Yes	ND
MW-88C	T	6	0	0.00	0	42.3%	Yes	ND
MW-89B	T	4	0	0.00	0	37.5%	Yes	ND
MW-90B	T	4	1	0.36	3	72.9%	No	NT

MAROS Mann-Kendall Statistics Summary

Project: HWPW **User Name:** MHH

Location: Houston **State:** Texas

2,4-DIMETHYLPHENOL

Well	Source/ Tail	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	All Samples "ND" ?	Concentration Trend
P-11	T	17	1	0.96	-47	97.1%	No	D
TW-41B	T	14	2	1.60	-29	93.7%	No	PD
2-METHYLNAPHTHALENE								
MW-01A	T	23	19	1.69	-92	99.3%	No	D
MW-02	T	23	12	1.39	-105	99.7%	No	D
MW-03	T	6	1	0.43	9	93.2%	No	PI
MW-04	T	6	2	1.23	4	70.3%	No	NT
MW-05	T	13	4	1.38	-23	90.8%	No	PD
MW-07	T	23	3	1.28	-159	100.0%	No	D
MW-08	T	23	0	1.29	-178	100.0%	Yes	ND
MW-09	T	10	1	0.81	-21	96.4%	No	D
MW-10A	T	23	2	1.43	-147	100.0%	No	D
MW-11A	T	23	0	1.29	-182	100.0%	Yes	ND
MW-11B	T	1	1	0.00	0	0.0%	No	N/A
MW-12A	T	17	16	1.08	-69	99.8%	No	D
MW-12C	T	17	14	0.66	1	50.0%	No	NT
MW-13	T	17	7	1.52	-41	95.0%	No	D
MW-14	T	17	13	0.71	-94	100.0%	No	D
MW-15A	T	17	17	1.09	-30	88.2%	No	NT
MW-15B	T	12	7	2.89	-30	97.8%	No	D
MW-15C	T	17	4	4.10	-41	95.0%	No	D
MW-17	S	18	17	0.59	-37	91.2%	No	PD
MW-17C	S	18	18	1.78	-1	50.0%	No	NT
MW-18A	S	17	17	0.49	-18	75.5%	No	S
MW-18C	S	17	17	0.58	-24	82.6%	No	S
MW-19C	S	17	11	1.28	-47	97.1%	No	D
MW-20A	S	10	10	0.72	-18	93.4%	No	PD
MW-21C	T	17	5	2.99	-29	87.4%	No	NT
MW-22AR	T	6	0	1.15	5	76.5%	Yes	ND
MW-22BR	T	6	3	1.63	-8	89.8%	No	NT
MW-23C	S	12	12	1.67	2	52.7%	No	NT
MW-25A	T	17	5	3.97	-38	93.6%	No	PD
MW-25C	S	15	14	0.47	-31	93.0%	No	PD

MAROS Mann-Kendall Statistics Summary

Project: HWPW **User Name:** MHH

Location: Houston **State:** Texas

2-METHYLNAPHTHALENE

Well	Source/ Tail	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	All Samples "ND" ?	Concentration Trend
MW-26A	T	17	7	2.12	-54	98.6%	No	D
MW-27A	T	5	1	1.73	2	59.2%	No	NT
MW-27C	T	17	1	1.72	-59	99.2%	No	D
MW-28A	T	17	4	1.48	-25	83.6%	No	NT
MW-28C	T	17	6	0.85	-80	100.0%	No	D
MW-32AR	T	12	7	3.16	-23	93.3%	No	PD
MW-32B	S	5	4	2.20	4	75.8%	No	NT
MW-33A	T	17	11	2.27	-22	80.4%	No	NT
MW-33BR	T	10	7	2.02	-20	95.5%	No	D
MW-34CR	T	5	1	1.31	-1	50.0%	No	NT
MW-35A	T	17	10	2.58	14	70.1%	No	NT
MW-35B	T	17	17	0.55	-62	99.5%	No	D
MW-36A	T	17	3	1.05	-79	100.0%	No	D
MW-36B	T	15	1	1.49	-15	75.2%	No	NT
MW-36D	T	15	2	0.84	-36	95.9%	No	D
MW-38A	T	17	7	1.00	-37	93.0%	No	PD
MW-38B	T	17	5	0.93	-16	72.9%	No	S
MW-39B	T	17	4	1.46	-5	56.4%	No	NT
MW-40B	T	17	17	0.53	-60	99.3%	No	D
MW-42B	T	14	6	0.97	-31	95.0%	No	D
MW-44A	T	17	9	2.92	-32	89.8%	No	NT
MW-44C	S	4	3	1.95	0	37.5%	No	NT
MW-47C	T	14	3	3.11	-24	89.4%	No	NT
MW-48C	T	17	3	4.01	-41	95.0%	No	D
MW-49A	T	17	13	1.06	-64	99.6%	No	D
MW-49B	S	15	13	3.84	38	96.7%	No	I
MW-50A	T	17	4	3.04	-42	95.4%	No	D
MW-51A	T	17	3	0.45	-60	99.3%	No	D
MW-51C	T	7	0	0.66	-1	50.0%	Yes	ND
MW-53C	T	17	4	1.01	-13	68.7%	No	NT
MW-54C	T	17	16	2.23	-28	86.5%	No	NT
MW-57A	S	13	13	1.20	-17	83.2%	No	NT
MW-57B	S	11	11	0.57	-13	82.1%	No	S

MAROS Mann-Kendall Statistics Summary

Project: HWPW **User Name:** MHH

Location: Houston **State:** Texas

2-METHYLNAPHTHALENE

Well	Source/ Tail	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	All Samples "ND" ?	Concentration Trend
MW-58A	T	17	14	1.14	-20	78.0%	No	NT
MW-59A	T	17	4	2.43	-29	87.4%	No	NT
MW-59B	T	15	1	0.47	-48	99.1%	No	D
MW-59D	T	17	6	1.19	-66	99.7%	No	D
MW-60A	T	17	6	2.13	-38	93.6%	No	PD
MW-61A	T	17	1	1.34	-85	100.0%	No	D
MW-62B	T	17	6	1.98	-31	89.0%	No	NT
MW-63B	T	16	14	1.42	-40	96.1%	No	D
MW-64A	T	17	3	1.13	-58	99.1%	No	D
MW-65D	T	17	5	0.61	-34	91.2%	No	PD
MW-66D	T	17	3	1.36	-38	93.6%	No	PD
MW-67B	T	15	3	0.84	-59	99.9%	No	D
MW-68A	T	3	3	0.00	0	0.0%	No	N/A
MW-68B	S	12	12	0.37	-10	72.7%	No	S
MW-68C	T	15	10	1.70	-12	70.4%	No	NT
MW-69A	T	14	3	2.70	-54	99.9%	No	D
MW-70B	S	5	5	1.32	8	95.8%	No	I
MW-71B	T	12	8	2.00	-11	74.9%	No	NT
MW-72B	S	10	10	1.15	-23	97.7%	No	D
MW-74B	S	11	11	1.25	7	67.6%	No	NT
MW-75B	S	6	6	1.13	1	50.0%	No	NT
MW-76C	T	8	6	0.89	0	45.2%	No	S
MW-77A	S	7	6	0.68	4	66.7%	No	NT
MW-79A	S	7	7	0.68	-7	80.9%	No	S
MW-80B	T	7	1	1.26	-1	50.0%	No	NT
MW-81B	T	7	0	0.71	-6	76.4%	Yes	ND
MW-82B	T	6	1	1.02	5	76.5%	No	NT
MW-83B	T	7	7	1.23	-11	93.2%	No	PD
MW-83C	T	6	5	1.26	-4	70.3%	No	NT
MW-84B	T	7	6	1.42	-11	93.2%	No	PD
MW-85C	T	6	3	0.63	-8	89.8%	No	S
MW-86C	T	6	1	0.69	5	76.5%	No	NT
MW-87C	T	6	3	1.15	-4	70.3%	No	NT

MAROS Mann-Kendall Statistics Summary

Project: HWPW **User Name:** MHH

Location: Houston **State:** Texas

Well	Source/ Tail	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	All Samples "ND" ?	Concentration Trend
2-METHYLNAPHTHALENE								
MW-88C	T	6	1	0.55	-3	64.0%	No	S
MW-89B	T	4	2	0.42	-2	62.5%	No	S
MW-90B	T	4	1	1.62	3	72.9%	No	NT
P-10	T	1	1	0.00	0	0.0%	No	N/A
P-11	T	17	6	0.79	-22	80.4%	No	S
P-12	T	2	0	0.00	0	0.0%	Yes	ND
TW-41B	T	14	9	1.69	41	98.7%	No	I
BENZENE								
MW-03	T	6	0	0.00	0	42.3%	Yes	ND
MW-04	T	6	0	0.00	0	42.3%	Yes	ND
MW-05	T	13	0	1.01	-13	76.4%	Yes	ND
MW-09	T	10	0	0.91	-17	92.2%	Yes	ND
MW-12A	T	17	5	1.12	-59	99.2%	No	D
MW-12C	T	17	0	0.83	-44	96.2%	Yes	ND
MW-13	T	17	0	0.83	-44	96.2%	Yes	ND
MW-14	T	17	0	0.83	-44	96.2%	Yes	ND
MW-15A	T	17	15	0.53	-78	100.0%	No	D
MW-15B	T	12	7	0.96	-36	99.3%	No	D
MW-15C	T	17	14	0.29	-89	100.0%	No	D
MW-17	S	17	16	0.42	-23	81.5%	No	S
MW-17C	S	17	16	0.53	-60	99.3%	No	D
MW-18A	S	17	17	0.56	-40	94.6%	No	PD
MW-18C	S	17	17	0.23	-26	84.6%	No	S
MW-19C	S	17	12	1.05	-11	65.7%	No	NT
MW-20A	S	10	10	0.53	-33	99.9%	No	D
MW-21C	T	17	0	0.80	-49	97.7%	Yes	ND
MW-22AR	T	6	0	0.00	0	42.3%	Yes	ND
MW-22BR	T	6	0	0.00	0	42.3%	Yes	ND
MW-23C	S	12	10	0.39	-19	88.9%	No	S
MW-25A	T	17	1	0.76	-51	98.1%	No	D
MW-25C	S	15	13	1.20	-81	100.0%	No	D
MW-26A	T	20	9	2.30	-78	99.4%	No	D
MW-27A	T	5	0	0.00	0	40.8%	Yes	ND

MAROS Mann-Kendall Statistics Summary

Project: HWPW **User Name:** MHH

Location: Houston **State:** Texas

BENZENE

Well	Source/ Tail	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	All Samples "ND" ?	Concentration Trend
MW-27C	T	17	0	0.80	-49	97.7%	Yes	ND
MW-28A	T	17	0	0.80	-49	97.7%	Yes	ND
MW-28C	T	17	0	0.80	-49	97.7%	Yes	ND
MW-32AR	T	12	3	2.29	-31	98.1%	No	D
MW-32B	S	5	4	1.29	2	59.2%	No	NT
MW-33A	T	17	11	2.31	-37	93.0%	No	PD
MW-33BR	T	10	8	1.18	-17	92.2%	No	PD
MW-34CR	T	5	1	0.11	4	75.8%	No	NT
MW-35A	T	17	2	0.74	-65	99.7%	No	D
MW-35B	T	17	17	0.45	-25	83.6%	No	S
MW-36A	T	17	0	0.80	-49	97.7%	Yes	ND
MW-36B	T	15	2	1.15	-35	95.4%	No	D
MW-36D	T	15	2	0.88	-28	90.8%	No	PD
MW-38A	T	17	0	0.80	-49	97.7%	Yes	ND
MW-38B	T	17	0	0.80	-49	97.7%	Yes	ND
MW-39B	T	17	0	0.83	-44	96.2%	Yes	ND
MW-40B	T	17	17	0.48	-94	100.0%	No	D
MW-42B	T	14	0	1.26	-12	72.3%	Yes	ND
MW-44A	T	17	9	1.09	-41	95.0%	No	D
MW-44C	S	4	1	1.21	-4	83.3%	No	NT
MW-47C	T	14	0	0.78	-37	97.6%	Yes	ND
MW-48C	T	17	0	0.80	-49	97.7%	Yes	ND
MW-49A	T	17	15	0.97	-70	99.8%	No	D
MW-49B	S	15	15	1.32	39	97.1%	No	I
MW-50A	T	17	0	0.83	-44	96.2%	Yes	ND
MW-51A	T	17	0	0.83	-44	96.2%	Yes	ND
MW-51C	T	7	1	0.19	6	76.4%	No	NT
MW-53C	T	17	0	0.80	-49	97.7%	Yes	ND
MW-54C	T	17	0	0.80	-49	97.7%	Yes	ND
MW-57A	S	13	13	0.85	-56	100.0%	No	D
MW-57B	S	11	11	0.63	-23	95.7%	No	D
MW-58A	T	17	15	1.39	-35	91.8%	No	PD
MW-59A	T	17	0	0.80	-49	97.7%	Yes	ND

MAROS Mann-Kendall Statistics Summary

Project: HWPW **User Name:** MHH

Location: Houston **State:** Texas

BENZENE

Well	Source/ Tail	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	All Samples "ND" ?	Concentration Trend
MW-59B	T	15	1	0.88	-31	93.0%	No	PD
MW-59D	T	17	1	0.79	-47	97.1%	No	D
MW-60A	T	16	0	0.79	-45	97.7%	Yes	ND
MW-61A	T	17	0	0.80	-49	97.7%	Yes	ND
MW-62B	T	17	3	1.48	-24	82.6%	No	NT
MW-63B	T	16	15	1.40	18	77.5%	No	NT
MW-64A	T	17	1	0.81	-43	95.8%	No	D
MW-65D	T	17	1	0.90	-50	97.9%	No	D
MW-66D	T	16	0	0.87	-35	93.6%	Yes	ND
MW-67B	T	15	0	0.89	-31	93.0%	Yes	ND
MW-68A	T	3	0	0.00	0	0.0%	Yes	ND
MW-68B	S	12	12	0.25	-42	99.8%	No	D
MW-68C	T	16	13	0.92	-33	92.4%	No	PD
MW-69A	T	14	0	0.88	-29	93.7%	Yes	ND
MW-70B	S	5	5	0.52	4	75.8%	No	NT
MW-71B	T	12	11	1.55	2	52.7%	No	NT
MW-72B	S	10	10	0.27	-24	98.2%	No	D
MW-74B	S	11	11	0.36	2	53.0%	No	NT
MW-75B	S	6	6	0.56	-11	97.2%	No	D
MW-76C	T	7	2	0.10	5	71.9%	No	NT
MW-77A	S	7	5	0.69	6	76.4%	No	NT
MW-79A	S	7	7	1.04	-3	61.4%	No	NT
MW-80B	T	7	1	0.23	6	76.4%	No	NT
MW-81B	T	7	1	0.25	5	71.9%	No	NT
MW-82B	T	6	0	0.00	0	42.3%	Yes	ND
MW-83B	T	7	7	0.24	12	94.9%	No	PI
MW-83C	T	6	0	0.00	0	42.3%	Yes	ND
MW-84B	T	7	7	0.64	1	50.0%	No	NT
MW-85C	T	6	3	1.77	-4	70.3%	No	NT
MW-86C	T	6	0	0.00	0	42.3%	Yes	ND
MW-87C	T	6	0	0.00	0	42.3%	Yes	ND
MW-88C	T	6	0	0.00	0	42.3%	Yes	ND
MW-89B	T	4	0	0.00	0	37.5%	Yes	ND

MAROS Mann-Kendall Statistics Summary

Project: HWPW **User Name:** MHH

Location: Houston **State:** Texas

BENZENE

Well	Source/ Tail	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	All Samples "ND" ?	Concentration Trend
MW-90B	T	4	0	0.00	0	37.5%	Yes	ND
P-11	T	17	2	0.79	-54	98.6%	No	D
TW-41B	T	14	6	0.67	25	90.4%	No	PI
DIBENZOFURAN								
MW-01A	T	23	20	1.10	4	53.2%	No	NT
MW-02	T	23	16	1.67	-26	74.4%	No	NT
MW-03	T	6	0	0.00	0	42.3%	Yes	ND
MW-04	T	6	2	0.69	4	70.3%	No	NT
MW-05	T	13	6	2.66	-40	99.3%	No	D
MW-07	T	23	2	1.19	-175	100.0%	No	D
MW-08	T	23	1	1.17	-169	100.0%	No	D
MW-09	T	10	1	0.85	-21	96.4%	No	D
MW-10A	T	23	3	2.43	-153	100.0%	No	D
MW-10B	T	25	24	1.40	-4	52.8%	No	NT
MW-11A	T	23	3	1.04	-168	100.0%	No	D
MW-11B	T	23	17	1.04	-91	99.2%	No	D
MW-12A	T	17	17	0.46	1	50.0%	No	NT
MW-12C	T	17	11	4.02	-3	53.2%	No	NT
MW-13	T	17	6	0.84	-41	95.0%	No	D
MW-14	T	17	13	0.59	-65	99.7%	No	D
MW-15A	T	17	17	0.48	-42	95.4%	No	D
MW-15B	T	12	10	1.43	-41	99.8%	No	D
MW-15C	T	17	17	1.44	-53	98.5%	No	D
MW-17	S	18	17	0.73	-37	91.2%	No	PD
MW-17C	S	18	18	0.63	-41	93.4%	No	PD
MW-18A	S	17	17	0.38	5	56.4%	No	NT
MW-18C	S	17	17	0.48	-12	67.2%	No	S
MW-19C	S	17	11	0.77	22	80.4%	No	NT
MW-20A	S	10	10	0.32	-15	89.2%	No	S
MW-21C	T	17	5	2.41	-14	70.1%	No	NT
MW-22AR	T	6	1	1.22	7	86.4%	No	NT
MW-22BR	T	6	4	0.79	-8	89.8%	No	S
MW-23C	S	12	12	1.77	0	47.3%	No	NT

MAROS Mann-Kendall Statistics Summary

Project: HWPW **User Name:** MHH

Location: Houston **State:** Texas

DIBENZOFURAN

Well	Source/ Tail	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	All Samples "ND" ?	Concentration Trend
MW-25A	T	17	7	3.72	-66	99.7%	No	D
MW-25C	S	15	14	0.58	-29	91.6%	No	PD
MW-26A	T	17	14	2.03	-48	97.4%	No	D
MW-27A	T	5	1	1.22	2	59.2%	No	NT
MW-27C	T	17	1	1.12	-61	99.4%	No	D
MW-28A	T	17	3	1.33	5	56.4%	No	NT
MW-28C	T	17	2	0.77	-81	100.0%	No	D
MW-32AR	T	12	8	2.60	-33	98.7%	No	D
MW-32B	S	5	4	2.20	4	75.8%	No	NT
MW-33A	T	17	15	2.10	-29	87.4%	No	NT
MW-33BR	T	10	7	1.92	-15	89.2%	No	NT
MW-34CR	T	5	1	0.77	-1	50.0%	No	S
MW-35A	T	17	16	1.08	-16	72.9%	No	NT
MW-35B	T	17	17	0.48	-46	96.8%	No	D
MW-36A	T	17	2	1.46	-61	99.4%	No	D
MW-36B	T	15	2	1.07	-11	68.7%	No	NT
MW-36D	T	15	1	0.80	-37	96.3%	No	D
MW-38A	T	18	5	0.89	-20	76.2%	No	S
MW-38B	T	17	5	2.54	12	67.2%	No	NT
MW-39B	T	17	5	1.40	-19	76.8%	No	NT
MW-40B	T	17	17	0.39	-21	79.2%	No	S
MW-42B	T	14	8	0.90	-48	99.6%	No	D
MW-44A	T	17	12	2.08	-63	99.6%	No	D
MW-44C	S	4	3	1.97	0	37.5%	No	NT
MW-47C	T	14	3	0.35	-45	99.3%	No	D
MW-48C	T	17	3	3.88	-75	99.9%	No	D
MW-49A	T	17	14	1.01	-65	99.7%	No	D
MW-49B	S	15	14	3.85	37	96.3%	No	I
MW-50A	T	17	4	2.66	-50	97.9%	No	D
MW-51A	T	17	2	0.51	-75	99.9%	No	D
MW-51C	T	7	0	0.90	1	50.0%	Yes	ND
MW-53C	T	17	0	1.12	-47	97.1%	Yes	ND
MW-54C	T	17	16	0.65	-5	56.4%	No	S

MAROS Mann-Kendall Statistics Summary

Project: HWPW **User Name:** MHH

Location: Houston **State:** Texas

DIBENZOFURAN

Well	Source/ Tail	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	All Samples "ND" ?	Concentration Trend
MW-57A	S	13	13	1.31	-16	81.6%	No	NT
MW-57B	S	11	11	0.59	-5	61.9%	No	S
MW-58A	T	17	15	0.85	-30	88.2%	No	S
MW-59A	T	17	3	1.62	-34	91.2%	No	PD
MW-59B	T	15	0	0.50	-45	98.6%	Yes	ND
MW-59D	T	17	3	2.06	-57	99.0%	No	D
MW-60A	T	17	5	1.70	-62	99.5%	No	D
MW-61A	T	17	0	0.51	-82	100.0%	Yes	ND
MW-62B	T	18	13	2.29	-40	92.9%	No	PD
MW-63B	T	16	14	1.06	-41	96.5%	No	D
MW-64A	T	17	5	1.97	-51	98.1%	No	D
MW-65D	T	17	4	0.59	-80	100.0%	No	D
MW-66D	T	17	4	1.01	-53	98.5%	No	D
MW-67B	T	15	2	0.57	-54	99.7%	No	D
MW-68A	T	3	1	0.00	0	0.0%	No	N/A
MW-68B	S	12	12	0.41	0	47.3%	No	S
MW-68C	T	15	8	2.00	-43	98.2%	No	D
MW-69A	T	14	3	2.50	-54	99.9%	No	D
MW-70B	S	5	5	1.65	0	40.8%	No	NT
MW-71B	T	12	8	1.41	-3	55.4%	No	NT
MW-72B	S	10	10	1.36	-19	94.6%	No	PD
MW-74B	S	11	10	1.15	-5	61.9%	No	NT
MW-75B	S	6	6	1.15	1	50.0%	No	NT
MW-76C	T	8	6	0.91	-13	92.9%	No	PD
MW-77A	S	7	6	0.64	3	61.4%	No	NT
MW-79A	S	7	7	0.85	-10	90.7%	No	PD
MW-80B	T	7	1	0.72	-1	50.0%	No	S
MW-81B	T	7	0	0.77	-6	76.4%	Yes	ND
MW-82B	T	6	1	0.35	5	76.5%	No	NT
MW-83B	T	7	7	1.09	-12	94.9%	No	PD
MW-83C	T	6	5	1.10	-5	76.5%	No	NT
MW-84B	T	7	6	1.29	-11	93.2%	No	PD
MW-85C	T	6	2	0.68	-2	57.0%	No	S

MAROS Mann-Kendall Statistics Summary

Project: HWPW **User Name:** MHH

Location: Houston **State:** Texas

DIBENZOFURAN

Well	Source/ Tail	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	All Samples "ND" ?	Concentration Trend
MW-86C	T	6	0	0.00	0	42.3%	Yes	ND
MW-87C	T	6	3	1.27	-4	70.3%	No	NT
MW-88C	T	6	2	0.55	-7	86.4%	No	S
MW-89B	T	4	0	1.06	3	72.9%	Yes	ND
MW-90B	T	4	1	1.06	3	72.9%	No	NT
P-10	T	23	6	1.59	-107	99.8%	No	D
P-11	T	17	11	1.88	-16	72.9%	No	NT
P-12	T	23	0	1.20	-184	100.0%	Yes	ND
TW-41B	T	14	10	1.01	43	99.0%	No	I

NAPHTHALENE

MW-01A	T	23	13	3.84	-113	99.9%	No	D
MW-02	T	23	14	1.92	-131	100.0%	No	D
MW-03	T	6	0	1.25	7	86.4%	Yes	ND
MW-04	T	6	3	0.93	-1	50.0%	No	S
MW-05	T	13	5	1.18	-18	84.7%	No	NT
MW-07	T	23	4	1.10	-151	100.0%	No	D
MW-08	T	23	0	1.19	-186	100.0%	Yes	ND
MW-09	T	10	3	2.55	5	63.6%	No	NT
MW-10A	T	23	4	3.26	-149	100.0%	No	D
MW-10B	T	24	24	1.98	-64	94.1%	No	PD
MW-11A	T	23	3	1.09	-170	100.0%	No	D
MW-11B	T	24	13	2.66	-29	75.4%	No	NT
MW-12A	T	17	13	1.63	-104	100.0%	No	D
MW-12C	T	17	10	0.89	-14	70.1%	No	S
MW-13	T	17	6	1.89	-6	58.0%	No	NT
MW-14	T	17	10	0.67	-85	100.0%	No	D
MW-15A	T	17	12	1.62	-38	93.6%	No	PD
MW-15B	T	12	8	1.62	-34	99.0%	No	D
MW-15C	T	17	8	4.12	-36	92.4%	No	PD
MW-17	S	18	17	0.50	-52	97.4%	No	D
MW-17C	S	18	18	2.10	-10	63.2%	No	NT
MW-18A	S	17	17	0.42	0	48.4%	No	S
MW-18C	S	17	17	0.37	-2	51.6%	No	S

MAROS Mann-Kendall Statistics Summary

Project: HWPW **User Name:** MHH

Location: Houston **State:** Texas

NAPHTHALENE

Well	Source/ Tail	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	All Samples "ND" ?	Concentration Trend
MW-19C	S	17	10	1.70	-46	96.8%	No	D
MW-20A	S	10	10	1.80	-15	89.2%	No	NT
MW-21C	T	17	8	1.96	-7	59.6%	No	NT
MW-22AR	T	6	1	1.24	-2	57.0%	No	NT
MW-22BR	T	6	4	1.62	-13	99.2%	No	D
MW-23C	S	12	12	1.21	16	84.5%	No	NT
MW-25A	T	17	8	3.82	9	62.7%	No	NT
MW-25C	S	15	15	0.62	-43	98.2%	No	D
MW-26A	T	17	7	1.48	-45	96.5%	No	D
MW-27A	T	5	2	2.12	5	82.1%	No	NT
MW-27C	T	17	7	1.23	-38	93.6%	No	PD
MW-28A	T	17	5	2.80	11	65.7%	No	NT
MW-28C	T	17	7	1.17	-65	99.7%	No	D
MW-32AR	T	12	8	3.09	-22	92.4%	No	PD
MW-32B	S	5	3	2.00	4	75.8%	No	NT
MW-33A	T	17	12	2.19	-28	86.5%	No	NT
MW-33BR	T	10	8	1.63	-21	96.4%	No	D
MW-34CR	T	5	1	1.48	0	40.8%	No	NT
MW-35A	T	17	14	1.92	26	84.6%	No	NT
MW-35B	T	17	17	0.56	-30	88.2%	No	S
MW-36A	T	17	5	1.56	-37	93.0%	No	PD
MW-36B	T	15	3	2.41	-11	68.7%	No	NT
MW-36D	T	15	6	1.58	-30	92.3%	No	PD
MW-38A	T	17	7	2.00	-18	75.5%	No	NT
MW-38B	T	17	9	1.35	18	75.5%	No	NT
MW-39B	T	17	7	1.17	20	78.0%	No	NT
MW-40B	T	17	17	0.52	-58	99.1%	No	D
MW-42B	T	14	7	1.04	-4	56.4%	No	NT
MW-44A	T	17	12	2.44	-40	94.6%	No	PD
MW-44C	S	4	3	1.81	-2	62.5%	No	NT
MW-47C	T	14	7	1.87	-1	50.0%	No	NT
MW-48C	T	17	5	4.09	-42	95.4%	No	D
MW-49A	T	17	13	1.06	-47	97.1%	No	D

MAROS Mann-Kendall Statistics Summary

Project: HWPW **User Name:** MHH

Location: Houston **State:** Texas

NAPHTHALENE

Well	Source/ Tail	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	All Samples "ND" ?	Concentration Trend
MW-49B	S	15	14	3.77	33	94.3%	No	PI
MW-50A	T	17	8	2.87	-14	70.1%	No	NT
MW-51A	T	17	6	1.06	39	94.1%	No	PI
MW-51C	T	7	4	0.46	1	50.0%	No	NT
MW-53C	T	17	5	1.26	-6	58.0%	No	NT
MW-54C	T	17	15	1.36	-38	93.6%	No	PD
MW-57A	S	13	13	1.01	-18	84.7%	No	NT
MW-57B	S	11	11	0.57	-28	98.4%	No	D
MW-58A	T	17	15	1.20	-12	67.2%	No	NT
MW-59A	T	17	5	2.62	-5	56.4%	No	NT
MW-59B	T	15	4	0.69	-4	55.8%	No	S
MW-59D	T	17	5	1.62	-42	95.4%	No	D
MW-60A	T	17	6	2.14	-48	97.4%	No	D
MW-61A	T	17	1	3.21	-50	97.9%	No	D
MW-62B	T	17	8	2.15	-39	94.1%	No	PD
MW-63B	T	16	13	1.29	-24	84.7%	No	NT
MW-64A	T	17	3	1.54	-7	59.6%	No	NT
MW-65D	T	17	6	1.73	-29	87.4%	No	NT
MW-66D	T	17	4	2.68	-43	95.8%	No	D
MW-67B	T	15	8	1.23	-30	92.3%	No	PD
MW-68A	T	3	2	0.00	0	0.0%	No	N/A
MW-68B	S	12	12	0.51	-22	92.4%	No	PD
MW-68C	T	15	12	1.20	-27	89.9%	No	NT
MW-69A	T	14	2	3.03	-35	96.9%	No	D
MW-70B	S	5	5	0.90	8	95.8%	No	I
MW-71B	T	12	8	2.34	-11	74.9%	No	NT
MW-72B	S	10	10	1.24	-26	98.9%	No	D
MW-74B	S	11	11	1.49	-7	67.6%	No	NT
MW-75B	S	6	6	0.93	-1	50.0%	No	S
MW-76C	T	8	6	1.00	2	54.8%	No	NT
MW-77A	S	7	6	0.79	-3	61.4%	No	S
MW-79A	S	7	7	0.67	1	50.0%	No	NT
MW-80B	T	7	2	1.95	1	50.0%	No	NT

MAROS Mann-Kendall Statistics Summary

Project: HWPW **User Name:** MHH

Location: Houston **State:** Texas

NAPHTHALENE

Well	Source/ Tail	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	All Samples "ND" ?	Concentration Trend
MW-81B	T	7	2	0.91	10	90.7%	No	PI
MW-82B	T	6	1	1.14	-2	57.0%	No	NT
MW-83B	T	7	7	1.40	-15	98.5%	No	D
MW-83C	T	6	5	1.29	-3	64.0%	No	NT
MW-84B	T	7	6	1.33	-11	93.2%	No	PD
MW-85C	T	6	4	0.84	-3	64.0%	No	S
MW-86C	T	6	3	1.28	12	98.2%	No	I
MW-87C	T	6	3	1.15	-2	57.0%	No	NT
MW-88C	T	6	3	1.40	-11	97.2%	No	D
MW-89B	T	4	2	1.03	0	37.5%	No	NT
MW-90B	T	4	3	1.87	6	95.8%	No	I
P-10	T	23	6	3.35	-108	99.8%	No	D
P-11	T	17	8	3.29	-25	83.6%	No	NT
P-12	T	23	1	1.15	-169	100.0%	No	D
TW-41B	T	14	11	1.82	49	99.7%	No	I

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A)-Due to insufficient Data (< 4 sampling events); Source/Tail (S/T)

The Number of Samples and Number of Detects shown above are post-consolidation values.

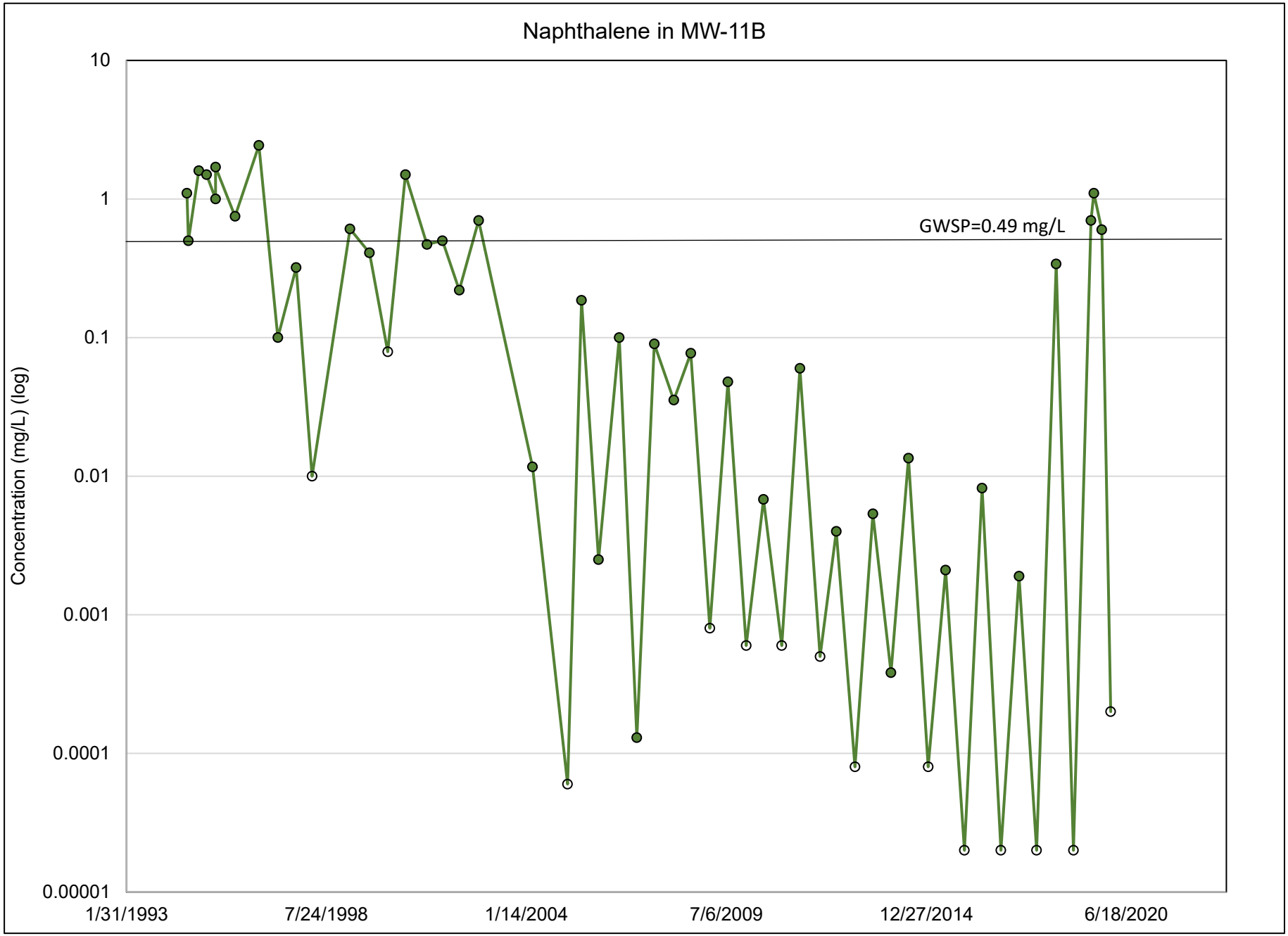
ATTACHMENT H

Naphthalene Concentrations in MW-11B

Table 1
Historical Naphthalene Concentrations at MW-11B
Houston Wood Preserving Works

Monitoring Well ID	Collection Date	Naphthalene (mg/L)	Qualifier
GWPS		**0.49**	
MW-11B	9/28/1994	**1.1**	
MW-11B	10/13/1994	**0.5**	
MW-11B	1/25/1995	**1.6**	
MW-11B	4/13/1995	**1.5**	
MW-11B	7/12/1995	**1**	
MW-11B	7/12/1995	**1.7**	
MW-11B	1/23/1996	**0.75**	
MW-11B	9/17/1996	**2.44**	
MW-11B	3/26/1997	0.1	U
MW-11B	9/25/1997	0.32	
MW-11B	3/3/1998	0.01	U
MW-11B	3/17/1999	**0.608**	
MW-11B	9/28/1999	0.409	D
MW-11B	3/29/2000	0.079	
MW-11B	9/22/2000	**1.5**	
MW-11B	4/25/2001	0.47	
MW-11B	9/27/2001	**0.5**	
MW-11B	3/14/2002	0.22	
MW-11B	9/24/2002	**0.7**	
MW-11B	3/16/2004	0.01168	
MW-11B	3/1/2005	0.00006	U
MW-11B	7/19/2005	0.186	
MW-11B	1/5/2006	0.0025	
MW-11B	7/31/2006	0.1	
MW-11B	1/23/2007	0.00013	
MW-11B	7/17/2007	0.0901	
MW-11B	1/28/2008	0.0354	
MW-11B	7/16/2008	0.0772	
MW-11B	1/22/2009	0.0008	U
MW-11B	7/22/2009	0.048	
MW-11B	1/21/2010	0.0006	U
MW-11B	7/13/2010	0.0068	
MW-11B	1/11/2011	0.0006	U
MW-11B	7/12/2011	0.06	
MW-11B	1/30/2012	0.0005	U
MW-11B	7/10/2012	0.004	J
MW-11B	1/13/2013	0.00008	U
MW-11B	7/11/2013	0.00535	
MW-11B	1/8/2014	0.000382	J
MW-11B	7/2/2014	0.0135	
MW-11B	1/15/2015	0.00008	U
MW-11B	7/8/2015	0.0021	
MW-11B	1/12/2016	0.00002	U
MW-11B	7/7/2016	0.0082	
MW-11B	1/11/2017	0.00002	U
MW-11B	7/12/2017	0.0019	
MW-11B	1/3/2018	0.00002	U
MW-11B	7/18/2018	0.34	
MW-11B	1/7/2019	0.00002	U
MW-11B	7/1/2019	**0.7**	
MW-11B	7/30/2019	**1.1**	
MW-11B	10/17/2019	**0.6**	
MW-11B	1/14/2020	**0.0002**	U

Notes:
1. Highlighted and bolded values exceed TCEQ Tier 1 Residential PCLs (November 2019)/ Groundwater Protection Standard (GWSP)
U - concentration below the method detection limit
J - estimate; concentration above the method detection limit & below the method quantitation limit

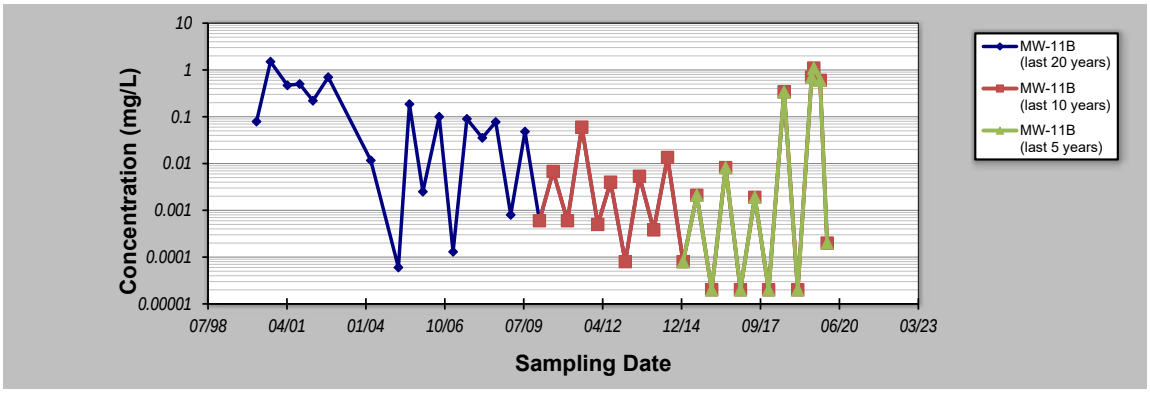


Note: Data points with no fill indicate that concentrations were below the method detection limit (MDL). The MDL is used as the result.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **26-Mar-20**
Facility Name: **Houston Wood Preserving Works**
Conducted By: **MHH**
Job ID: **19119232**
Constituent: **Naphthalene**
Concentration Units: **mg/L**

Sampling Point ID:	MW-11B	MW-11B	MW-11B				
Sampling Event	Sampling Date	NAPHTHALENE CONCENTRATION (mg/L)						
1	29-Mar-00	0.079						
2	22-Sep-00	1.5						
3	25-Apr-01	0.47						
4	27-Sep-01	0.5						
5	14-Mar-02	0.22						
6	24-Sep-02	0.7						
7	16-Mar-04	0.01168						
8	1-Mar-05	0.00006						
9	19-Jul-05	0.186						
10	5-Jan-06	0.0025						
11	31-Jul-06	0.1						
12	23-Jan-07	0.00013						
13	17-Jul-07	0.0901						
14	28-Jan-08	0.0354						
15	16-Jul-08	0.0772						
16	22-Jan-09	0.0008						
17	22-Jul-09	0.048						
18	21-Jan-10	0.0006	0.0006					
19	13-Jul-10	0.0068	0.0068					
20	11-Jan-11	0.0006	0.0006					
21	12-Jul-11	0.06	0.06					
22	30-Jan-12	0.0005	0.0005					
23	10-Jul-12	0.004	0.004					
24	13-Jan-13	0.00008	0.00008					
25	11-Jul-13	0.00535	0.00535					
26	8-Jan-14	0.000382	0.000382					
27	2-Jul-14	0.0135	0.0135					
28	15-Jan-15	0.00008	0.00008	0.00008				
29	8-Jul-15	0.0021	0.0021	0.0021				
30	12-Jan-16	0.00002	0.00002	0.00002				
31	7-Jul-16	0.0082	0.0082	0.0082				
32	11-Jan-17	0.00002	0.00002	0.00002				
33	12-Jul-17	0.0019	0.0019	0.0019				
34	3-Jan-18	0.00002	0.00002	0.00002				
35	18-Jul-18	0.34	0.34	0.34				
36	7-Jan-19	0.00002	0.00002	0.00002				
37	1-Jul-19	0.7	0.7	0.7				
38	30-Jul-19	1.1	1.1	1.1				
39	17-Oct-19	0.6	0.6	0.6				
40	14-Jan-20	0.0002	0.0002	0.0002				
Coefficient of Variation:		1.94	2.33	1.72				
Mann-Kendall Statistic (S):		-228	9	22				
Confidence Factor:		99.6%	58.3%	89.8%				
Concentration Trend:		Decreasing	No Trend	No Trend				



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

DISCLAIMER: The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.

ATTACHMENT I

TRRP Notifications

Table I-1
TRRP NOTIFICATIONS - PROPERTY OWNERS
HOUSTON, TX - WOOD PRESERVING WORKS

MAP ID	PARCEL ADDRESS	PARCEL OWNER
1	4705 Liberty Rd	Hall, Joannetta
2	4713 Liberty Rd	Howell, Evan
3	2902 Wipprecht St # 18	2902 Wipprecht LLC % T Goffney
4	2909 Lavender St	2013 Cottage LLC
5	2922 Solo St	Chaves, Armando R et Al
6	2925 Lavender St	Ellis, Johnnie Estate Of
7	2930 Solo St	Howell, Evan S
8	2934 Solo St	Green, Billlie Joe
9	2938 Solo St	Ramos, Jose Rodolfo
10	2937 Lavender St	Limbrick, Mikell
11	2941 Lavender St	Brooks, Antonia Est Of % Patricia J Arthur
12	4910 Lucille St	Whitehead, Shirley A
13	5002 Lucille St	Toledano, Aristeo
14	5004 Lucille St	Fuentes, Maria I & Saul
15	2943 Lavender St	Apogee Real Estate Partners LLC
16	5006 Lucille St	Barrientos, Eine
17	5008 Lucille St	Norton Memorial Temple Cogic
18	2942 Lavender St	Hernandez, Roberto G
19	2938 Lavender St	Hutchins, Essie Lee
20	2934 Lavender St	Osborn, Zearlene
21	2926 Lavender St	Clark Investment Co
22	2924 Lavender St	Long, Lucille Estate Of
23	2922 Lavender St	Greater Mt Nebo Baptist Church
24	2910 Lavender St	Carrington, Ray
25	2906 Lavender St	Beal, Barbara
26	2904 Lavender St	Greater Mount Nebo Missionary Baptist
27	5005 Liberty	Greater Mount Nebo Baptist Church
28	0 Wylie St	Greater Mt Nebo Baptist Church
29	5006 Wylie St	Greater Mount Nebo Baptist Church
30	5010 Wylie St	Smith, Alberta
31	5005 Wylie St	Banda, Monico Duque & Martha Z
32	5007 Wylie St	Banda-Zuniga, Nancy G; Macia-Aranda, Guillermo
33	5011 Wylie St	Carr, Carrie Mae Estate Of
34	2901 Clementine St	Ross, Mary Bass
35	5002 Lelia St	Holmes Emitt & Laura Estate % Mildred Wilder
36	0 Lelia St	Heptullabhai, Mustafa
37	5014 Lelia St	Rivera, Guadalupe Jr; Rivera Flor Esthela
38	2921 1/2 Clementine	Rivera, Guadalupe
39	2921 Clementine St	Pineda, Rogelio R & Olivia
40	0 Lelia St	Lelia Street Trust
41	5009 Lelia St	Current Owner
42	0 Lelia	Beach Property LLC
43	5015 Lelia St	Castillo, Manuel M
44	5012 Lucille	Norton'S Temple Church Of God In Christ Inc
45	5014 Lucille St	Blue Gavel Inc
46	5016 Lucille St	Current Owner
47	0 Lucille	Wahsh, Belal
48	5005 Lucille St	Correa, Neftali; Correa, Eliseo Sr
49	5005 Lucille St	Bryant, Michael A; White, Karen Y; White, David A
50	5007 Lucille St	White, Karen Y

Table I-1
TRRP NOTIFICATIONS - PROPERTY OWNERS
HOUSTON, TX - WOOD PRESERVING WORKS

MAP ID	PARCEL ADDRESS	PARCEL OWNER
51	5009 Lucille St	White, David A
52	0 Lucille St	Vital, Percy L
53	0 Lelia	Schrinsky, Samuel J
54	705 Lucille	Pssw Construction Inc
55	0 Leila St	Greater True Vine Missionary Baptist Church
56	2918 Clementine St	City Of Houston
57	5116 Lelia St	Empire Holdings Real Estate Group LLC; CJO Investments LLC
58	5112 Lelia St	Potts, Avie
59	5118 Lelia St	Greater True Vine Baptist Church
60	5107 Wylie St	Potts, Maryland Estate
61	5107 Wylie St	Tolbert, Reginald & Leticia
62	5111 Wylie St	Perez, Aquilina Estate Of
63	2913 Fontinot St	Huerta, Noe; Rivera, Marely
64	5119 Wylie St	Gilliam, Martha
65	2820 Clementine St	Benson, Tillie Potts Estate Of
66	2813 Fontinot St	Coto, Jose A & Reina I; Coto, Christian A & Robin H
67	5101 Liberty Rd	Longoria, Wallace R & Janie
68	5105 Liberty Rd	Gonzalez, Alejandro
69	5109 Liberty Rd	Martinez, Joe H
70	5113 Liberty Rd	Medina, Claudia Elizabeth Delaportil; Leal, Jorge Daniel Rivera
71	5117 Liberty Rd	Rivera, Jorge D
72	5201 Liberty Rd	Full Gospel Christian Assn
73	5201 Liberty Rd	Full Gospel Christian Assn
74	2809 Erastus St # 1	Charity Baptist Church % Rev F W Mcilveen
75	5201 Wylie St	Charity Baptist Church
76	2809 Erastus St	Charity Baptist Church % Rev F W Mcilveen
77	5201 Wylie St	Barahona, Melvin
78	5202 Lelia St	Greater True Vine Mbc
79	5301 Liberty Rd	Jefferson, Sean
80	5311 Liberty Rd	Crawford Properties & States
81	2806 Erastus St	Roberts, Margaret et al
82	5304 Wylie St	Juarez, Irene Perez
83	5304 1/2 Wylie St	Delgado, Susie I Estate Of
84	5308 Wylie St	Brown, Audrey M
85	0 Liberty Rd	Crawford Properties & Estates
86	5311 Liberty Rd	Cls Enterprise Llc
87	3300 E Lockwood Dr	Damian, Robert
88	3300 E Lockwood	Damian, Robert
89	4518 Courtney St	Rosignon, Anthony Tyrone
90	2803 Kashmere St	Whitehead, Shirley A
91	4508 Eddie St	Henderson, Hester
92	0 Ranch St	Prince, James A
93	2604 Amboy St	Daniels, Joeed
94	0 Quitman St	Proler, L Michael
95	4425 Quitman St	Allende-Molina, Juan; Rodriguez-Campos, Micaela
96	0 1St St	Centerpoint Energy Intrastate Pipeline Inc

MAP ID	PARCEL ADDRESS	PARCEL OWNER
1	4705 Liberty Rd	Hall, Joannetta
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37	5014 Lelia St	Rivera, Guadalupe Jr; Rivera Flor Esthela
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48	5005 Lucille St	Correa, Neftali; Correa, Eliseo Sr
49	5005 Lucille St	Bryant, Michael A; White, Karen Y; White, David A
50	5007 Lucille St	White, Karen Y
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52	0 Lucille St	Vital, Percy L
53	0 Lelia	Schrinsky, Samuel J
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78	5202 Lelia St	Greater True Vine Mbc
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85	0 Liberty Rd	Crawford Properties & Estates
86	5311 Liberty Rd	Cls Enterprise Llc
87	3300 E Lockwood Dr	Damian, Robert
88	3300 E Lockwood	Damian, Robert

REFERENCE(S)
AERIAL PHOTO FROM GOOGLE EARTH, IMAGERY DATED 2/23/19, AND PROPERTY INFORMATION FROM HARRIS COUNTY APPRAISAL DISTRICT (HCAD), 2018.

CLIENT
UNION PACIFIC RAILROAD CO.

CONSULTANT
GOLDER

YYYY-MM-DD	2020-04-30
DESIGNED	AJD
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

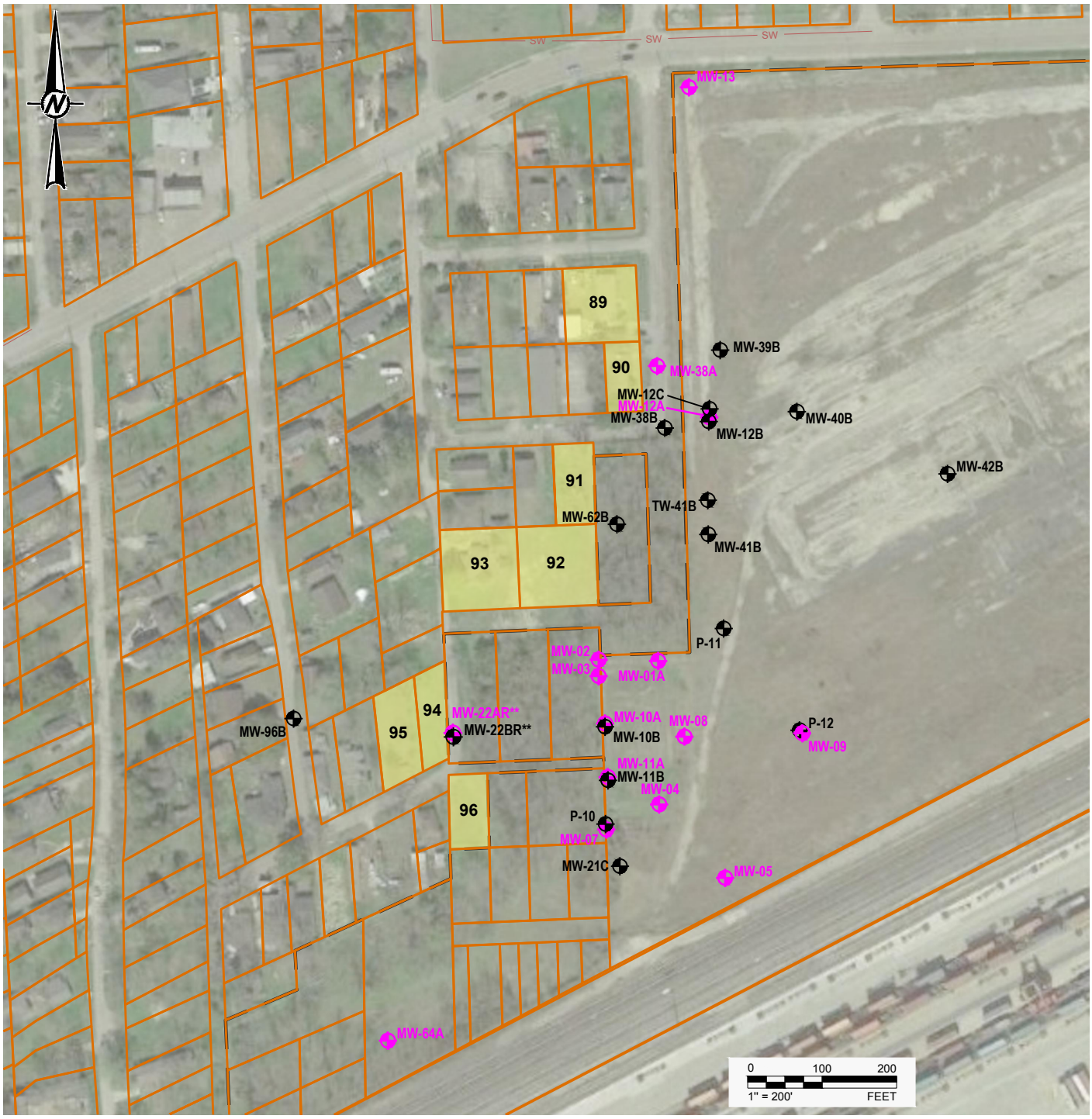
PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
OFF-SITE NOTIFICATION PROPERTIES

PROJECT NO. 19119232 | REV. 0 | FIGURE 1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\Projects - Round Rock_2019\19119232 - HWPW\2019-7 July\ | File Name: FIG 1 - Off-Site Notification Properties.dwg | Last Edited By: rsalazar Date: 2020-04-30 Time:3:22:57 PM | Printed By: RSalazar Date: 2020-04-30 Time:3:37:21 PM



MAP ID	PARCEL ADDRESS	PARCEL OWNER
89	4518 Courtney St	Rosignon, Anthony Tyrone
90	2803 Kashmere St	Whitehead, Shirley A
91	4508 Eddie St	Henderson, Hester
92	0 Ranch St	Prince, James A
93	2604 Amboy St	Daniels, Joeed
94	0 Quitman St	Proler, L Michael
95	4425 Quitman St	Allende-Molina, Juan; Rodriguez-Campos, Micaela
96	0 1St St	Centerpoint Energy Intrastate Pipeline Inc

REFERENCE(S)

AERIAL PHOTO FROM GOOGLE EARTH, IMAGERY DATED 2/23/19, AND PROPERTY INFORMATION FROM HARRIS COUNTY APPRAISAL DISTRICT (HCAD), 2018.

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
OFF-SITE NOTIFICATION PROPERTIES

CONSULTANT
GOLDER

YYYY-MM-DD	2020-04-30
DESIGNED	AJD
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 1

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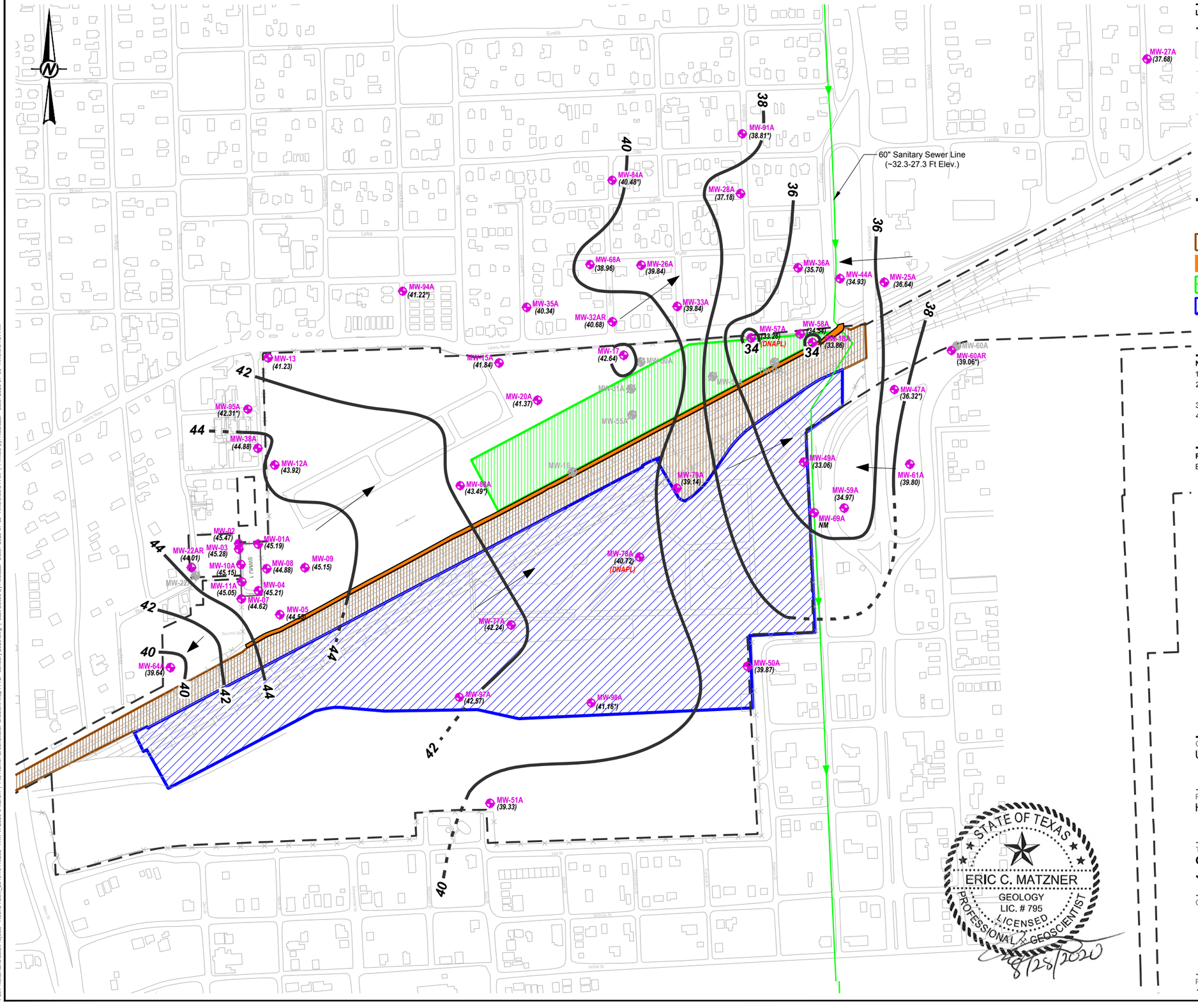
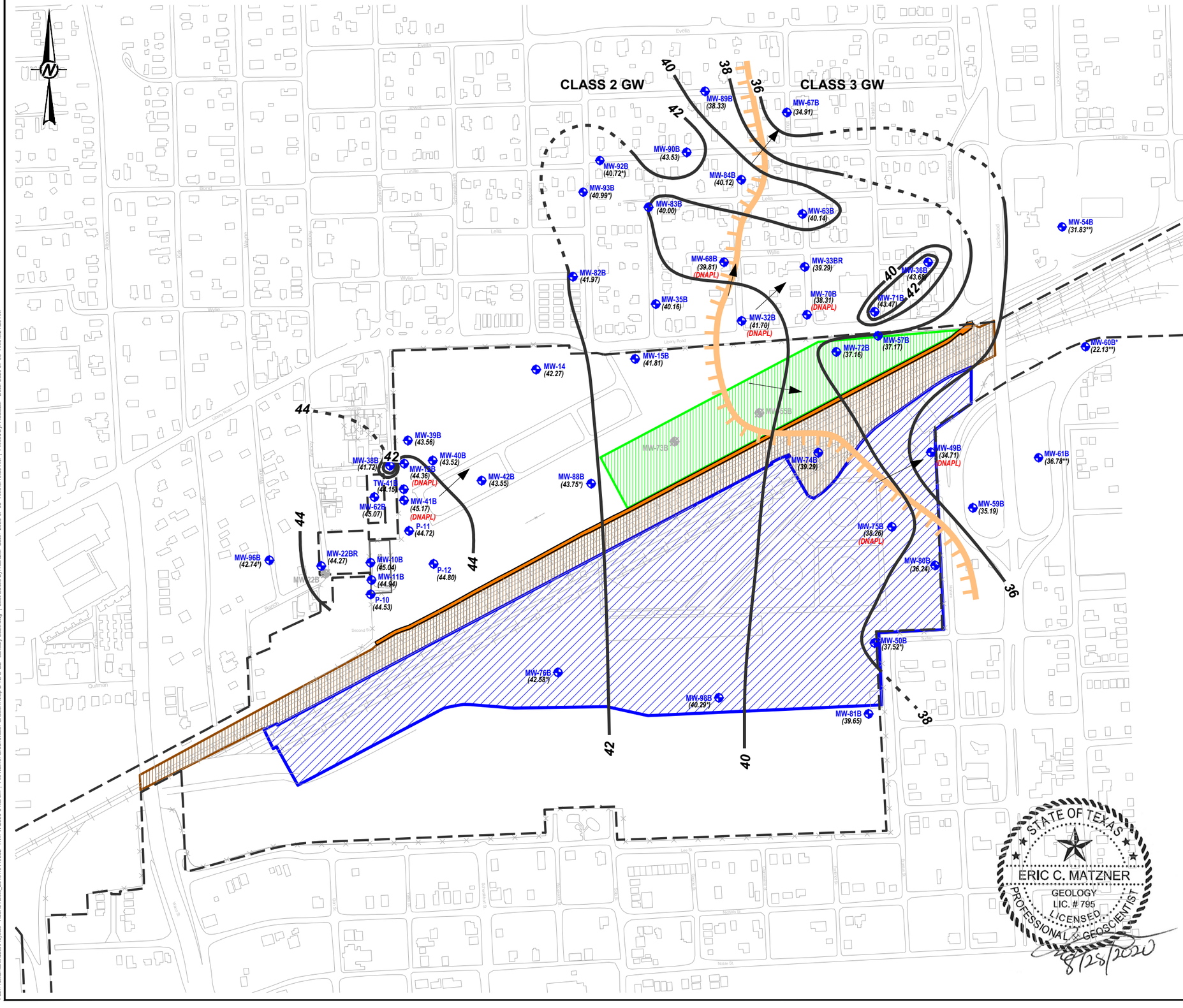
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A
0 1 in

Appendix 3C

Addendum 1 – Revised Groundwater Gradient Maps
(due to resurvey of wells installed in 2020)


MW-27A (37.68)
MW-91A (38.81*)
MW-84A (40.48*)
MW-28A (37.18)
60" Sanitary Sewer Line (~32.3-27.3 Ft Elev.)
MW-68A (38.96)
MW-26A (39.84)
MW-36A (35.70)
MW-44A (34.93)
MW-25A (36.64)
MW-94A (41.22*)
MW-35A (40.34)
MW-32AR (40.68)
MW-33A (39.84)
MW-57A (33.25) (DNAPL)
MW-58A (34.35)
MW-10A (33.86)
MW-60A
MW-60AR (39.06*)
MW-13 (41.23)
MW-15A (41.84)
MW-17 (42.64)
MW-47A (36.32*)
MW-20A (41.37)
MW-95A (42.31*)
MW-38A (44.88)
MW-12A (43.92)
MW-49A (33.06)
MW-61A (39.80)
MW-59A (34.97)
MW-69A NM
MW-99A (43.49*)
MW-79A (39.14)
MW-76A (40.72) (DNAPL)
MW-02 (45.47)
MW-01A (45.19)
MW-22AR (44.01)
MW-03 (45.28)
MW-08 (44.88)
MW-09 (45.15)
MW-10A (45.15)
MW-11A (45.05)
MW-04 (45.21)
MW-07 (44.62)
MW-05 (44.58)
MW-77A (42.24)
MW-64A (39.64)
MW-50A (39.87)
MW-97A (42.57)
MW-98A (41.76*)
MW-51A (39.33)
SWMU 1
MW-22
Evella
Jewel
Lelia
Wylie
Lacey Road
Second St
Notice St
Lee St
Lucile
Lockwood
Dallving
Edwards
Sterrett
Sloane
Kirk
Waco
Mercer
Lacy
Gregory St
Main St
Hardy St
Crockett St
Bagby St
Travis St
Fannin St
Louisiana St
Smith St
Milam St
Caroline St
Jackson St
Austin St
Sam Houston Pkwy E
Lockwood Dr
Lucile St
Wayside Dr
Easy St
Navigation Blvd
Harrisburg Blvd
Lacy Rd
Second St
Notice St
Lee St



LEGEND

- UPRR PROPERTY BOUNDARY
- HISTORIC STRUCTURE AND FEATURE
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- B-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- B-CZ (CLASS 3 GW) / B-TZ (CLASS 2 GW) — B-TZ/B-CZ BOUNDARY
- (39.98) — GROUNDWATER ELEVATION (FT, HVD) (NM = NOT MEASURED)
- 36 — GROUNDWATER ELEVATION CONTOUR (FT, HVD) C.I. = 2 FT
- INFERRED GROUNDWATER FLOW DIRECTION
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA

NOTE(S)

1. VERTICAL DATUM BASED ON CITY OF HOUSTON VERTICAL DATUM (HVD).
2. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2020).
3. ** - NOT USED TO GENERATE CONTOURS.
4. * - WATER ELEVATION MEASURED IN MARCH 2020.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

0 200 400
1" = 400' FEET

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
8/28/2020

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER GRADIENT MAP - B-TZ/B-CZ
JANUARY-MARCH 2020

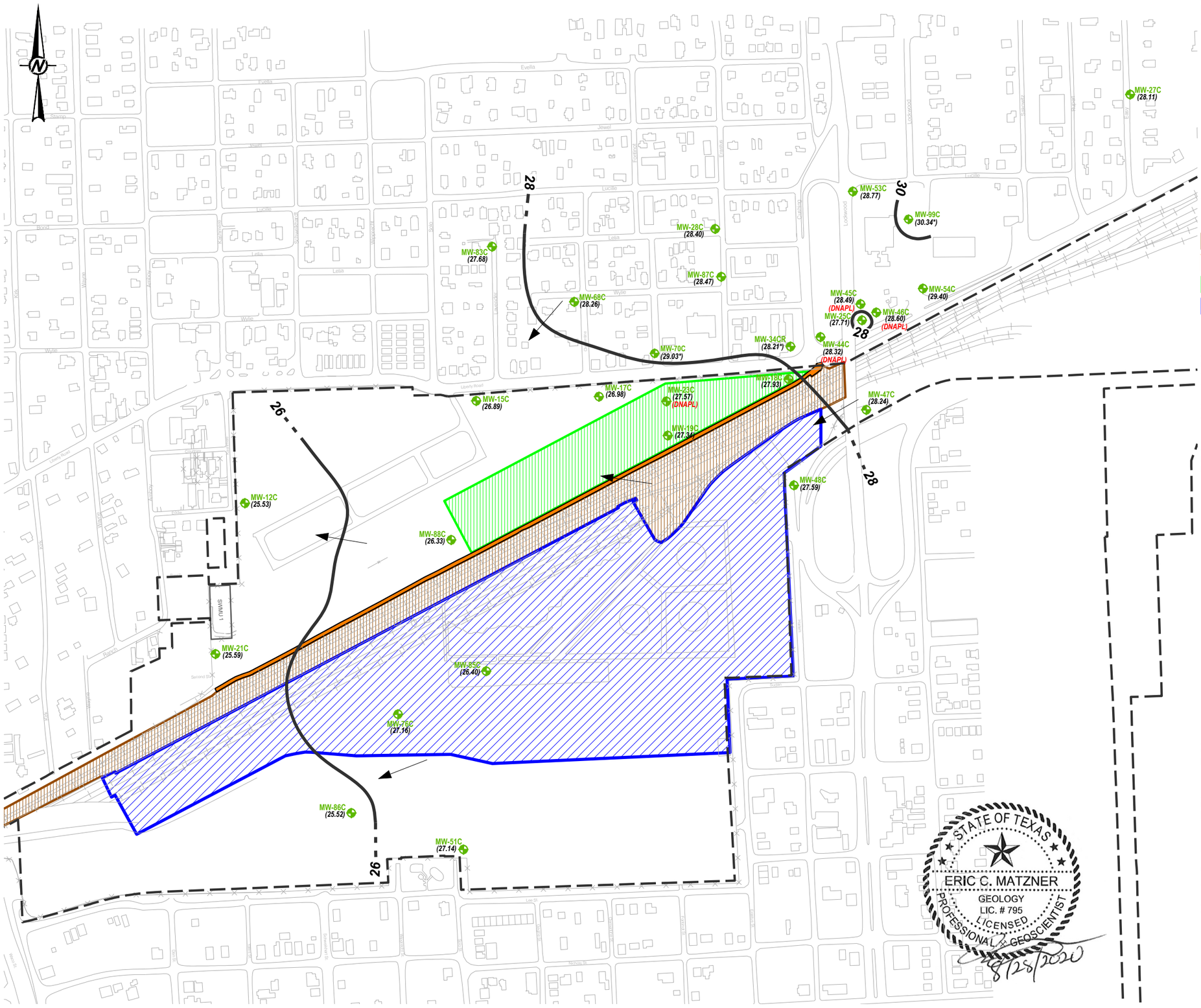
CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-07-08
DESIGNED	
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 REV. 0 FIGURE 5A-2b

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texas\rkn\data\Projects - Round Rock_2019\19119232 - HWPW\2020-3 March\ | File Name: Groundwater Gradient Map B-TZ-B-CZ - January 2020.dwg | Last Edited By: rsalazar Date: 2020-07-08 Time:9:18:30 AM | Printed By:RSalazar Date: 2020-07-08 Time:9:24:20 AM



LEGEND

- UPRR PROPERTY BOUNDARY
- HISTORIC STRUCTURE AND FEATURE
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- C-TZ MONITORING WELL LOCATION
- PLUGGED AND ABANDONED MONITORING WELL
- (29.40) GROUNDWATER ELEVATION (FT, HVD) (NM = NOT MEASURED)
- 28 GROUNDWATER ELEVATION CONTOUR (FT, HVD) C.I. = 2 FT
- INFERRED GROUNDWATER FLOW DIRECTION
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP
- CONCRETE CAP AREA

NOTE(S)

1. VERTICAL DATUM BASED ON CITY OF HOUSTON VERTICAL DATUM (HVD).
2. DNAPL - DENSE NON-AQUEOUS PHASE LIQUIDS DETECTED IN MONITORING WELL (JANUARY 2020).
3. ** - NOT USED TO DEVELOP POTENTIOMETRIC SURFACE.
4. * - WATER ELEVATION MEASURED IN MARCH 2020.

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

0 200 400
1" = 400' FEET

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
8/25/2020

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
GROUNDWATER GRADIENT MAP - C-TZ
JANUARY-MARCH 2020

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-07-08
DESIGNED	
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5A-3b

Path: \\swarkana\data\Projects - Round Rock_2019\19119232 - HWPW\2020-3 March\ | File Name: Groundwater Gradient Map C-TZ - January 2020.dwg | Last Edited By: rsalazar Date: 2020-07-08 Time:9:18:37 AM | Printed By: RSalazar Date: 2020-07-08 Time:9:24:35 AM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Appendix 3C

Addendum 2 – Data Usability Summary and Laboratory Report - May/June 2020 Groundwater Sampling of New Wells

Appendix 3C

Addendum 2 – Data Usability Summary and Laboratory Report - May/June 2020 Groundwater Sampling of New Wells

Memorandum

June 22, 2020

To:	Eric Matzner	Ref. No.:	11183954-1620
From:	Chris G. Knight/eew/651-NF	Tel:	512-506-8803
cc:	Jesse Orth, Jon Lang; Julie Lidstone		

Subject: **Data Usability Summary**
HWPW - Groundwater Monitoring (New Wells)
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
May-June 2020

1. Scope of Data Usability Study

This document details a Data Usability Summary (DUS) of analytical results for groundwater samples collected in support of the HWPW - Groundwater Monitoring (New Wells) at the Union Pacific Railroad (UPRR)/Houston TX-Wood Preserving Works site during May-June 2020. Samples were submitted to ALS Environmental (ALS), located in Houston, Texas and are reported in data packages HS20050915, HS20050997, and HS20060031. The intended use of the data is to support the HWPW - Groundwater Monitoring (New Wells) at the site by providing current concentration of chemicals of concern.

Data were reviewed and validated by Chris G. Knight of GHD, in accordance with Title 30 of the Texas Administrative Code Section 350.54 (30 TAC 350.54) as described in the Texas Commission on Environmental Quality (TCEQ) Regulatory Guidance document entitled "Review and Reporting of COC Concentration Data under TRRP", (RG-366/TRRP-13), revised May 2010, herein referred to as "TRRP-13 Guidance". Evaluation of the data was based on information obtained from the chain of custody forms, the finished report forms, method blank data, recovery data from surrogate spikes/laboratory control samples (LCS)/matrix spikes (MS), duplicate data, field quality assurance/quality control (QA/QC) samples, the laboratory review checklists (LRC), and the laboratory exception reports (ER).

A sample collection and analysis summary is presented in Table 1. This summary provides a cross-reference of field sample identification numbers and location identification. Each sample is assigned a unique field identification number.

The validated sample results are presented in Table 2. A summary of the analytical methodology is presented in Table 3.

2. Laboratory Qualifications

The Laboratory's quality assurance program is consistent with the quality standards outlined in the National Environmental Laboratory Accreditation Program (NELAP). This laboratory was accredited under Texas Certification number # TX104704231 at the time the analysis was performed and the certificate is included in Attachment A.

3. Project Objectives

3.1 Sampling/Analytical QA/QC Objectives

The QA/QC program was designed to identify contamination resulting from the sampling, sample transport and analytical process through the analysis of trip blank samples, field duplicate sample sets, and method blanks. The QA/QC program was designed to evaluate the quality of the resulting data with respect to bias and precision through analysis of LCS, MS, and duplicate analyses.

4. Data Review/Validation Results

4.1 Sample Holding Time and Preservation

Samples were shipped with a chain of custody and the paper work was filled out properly. All samples were properly preserved, delivered on ice, and stored by the laboratory at the required temperature (0-6°C).

The sample chain of custody documents and the analytical reports were used to determine sample holding times. All samples were prepared and analyzed within the required holding times.

4.2 Sample Containers

Sample containers used were certified pre-cleaned glass and plastic containers provided by the laboratory. These containers meet or exceed analyte specifications established in the United States Environmental Protection Agency (USEPA) *Specifications and Guidance for Contaminant-free Sample Containers*.

4.3 Calibrations

According to the LRC, initial calibration and continuing calibration data met the criteria for the selected method.

4.4 Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures. As these were not discrete samples handled in the field, these blanks are not listed on the sample identification cross-reference list found in the data packages.

For this study, laboratory method blanks were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch and results are reported in the laboratory data packages.

The method blank results were non-detect or below the method quantitation limit (MQL), indicating that laboratory contamination was not a factor for this investigation.

4.5 Internal Standard and Surrogate Spike Recoveries

Recoveries of internal standards are addressed in the LRC of the data packages. All internal standard recoveries associated with the compounds of interest were acceptable per the LRC.

In accordance with the methods employed, all samples, blanks, and QC samples analyzed for volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) are spiked with surrogate compounds prior to sample analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project. Each individual surrogate compound is expected to meet the laboratory control limits. According to the TRRP-13 Guidelines, one outlying surrogate is acceptable for methods with multiple surrogate spike compounds as long as the recovery is at least ten percent. Samples analyzed at elevated sample dilutions (five times or greater) were not assessed.

Surrogate recoveries were assessed against laboratory control limits and/or the guidance in TRRP-13. All surrogate recoveries met the above criteria.

4.6 Laboratory Control Sample Analysis

LCS or LCS/laboratory control sample duplicate (LCSD) are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects. The relative percent difference (RPD) of the LCS/LCSD recoveries is used to evaluate analytical precision. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project.

For this study, LCS or LCS/LCSD were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch.

The LCS or LCS/LCSD contained all analytes specified in the methods. All LCS recoveries and/or RPDs were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision (where applicable) with the following exception (see Table 4):

i) Two LCS/LCSD were reported with elevated RPDs for the following compounds: 4-nitrophenol, 4,6-dinitro-2-methylphenol, chrysene, and/or fluoranthene. Associated non-detect sample results would not be affected by the indicated variability. No further action was required. Associated detected sample results were qualified as estimated.

4.7 Matrix Spike Analysis

To evaluate the effects of sample matrices on the preparation process, measurement procedures, and accuracy of a particular analysis, samples are spiked with known concentrations of the analytes of interest

and analyzed as MS/matrix spike duplicate (MSD) samples. The RPD between the MS and MSD is used to assess analytical precision.

MS/MSD analyses were performed as specified in Table 1. The recovery ranges established by the laboratory is adopted as the acceptance criteria for the project.

The MS/MSD samples were spiked with all analytes specified in the methods. All percent recoveries and the RPD value were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision.

The laboratory also performed additional MS/MSD analyses on non-site samples. These cannot be used to assess accuracy and precision for the site samples.

4.8 Duplicate Sample Analyses

Analytical precision is evaluated based on the analysis of laboratory duplicate samples. For this study, duplicate samples were prepared and analyzed by the laboratory for arsenic analysis. The RPD established by the laboratory are adopted as the acceptance criteria for the project.

All duplicate analyses performed were acceptable, demonstrating acceptable analytical precision.

4.9 Field QA/QC Samples

The field QA/QC consisted of four trip blank samples and two field duplicate sample sets.

Trip Blank Sample Analysis

To evaluate contamination from sample collection, transportation, storage, and analytical activities, four trip blank samples were submitted to the laboratory for VOCs analysis. All results were non-detect for the compounds of interest.

Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, two field duplicate sample sets were collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples must be less than thirty percent for water samples. The RPDs are only used when sample concentrations are above the estimated regions of detection.

Field duplicate summary data are presented in Table 2. All field duplicate results were within acceptable agreement, demonstrating acceptable sampling and analytical precision.

4.10 Field Procedures

Golder Associates, Inc. collected groundwater samples in accordance with their Standard Operating Procedures (SOP) for sample collection.

4.11 Analyte Reporting

The laboratory reported detected results for each analyte down to the sample detection limit (SDL), which is defined as the method detection limit (MDL) with sample-specific adjustments for dilutions, aliquot size, volumes, etc. Positive analyte detections less than the MQL but greater than the SDL were qualified as estimated (J) in Table 2 unless qualified otherwise in this memorandum.

The detectability check standard (DCS) results supported the laboratory MDLs.

5. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are usable for the purpose of supporting the HWPW - Groundwater Monitoring (New Wells) at the site by providing current concentration of chemicals of concern with the specific qualifications noted herein.

Table 1

Sample Collection and Analysis Summary
HWPW - Groundwater Monitoring (New Wells)
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
May-June 2020

					Analysis/Parameters			
Sample Identification	**Location**	**Matrix**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**VOCs**	**SVOCs**	**Arsenic**	**Comments**
WG-1620-MW70C-20200521	MW-70C	Water	05/21/2020	11:15	X	X	X	MS/MSD-P; DUP
WG-1620-FD01-20200521	MW-70C	Water	05/21/2020	11:15	X	X	X	Field duplicate of MW-70C
WG-1620-MW91A-20200521	MW-91A	Water	05/21/2020	13:10	X	X	X	
WG-1620-MW84A-20200521	MW-84A	Water	05/21/2020	14:20	X	X	X	
WG-1620-MW92B-20200521	MW-92B	Water	05/21/2020	15:35	X			
WQ-1620-TB01-20200521	-	Water	05/21/2020	-	X			Trip Blank
WG-1620-MW93B-20200522	MW-93B	Water	05/22/2020	10:15	X			
WG-1620-MW94A-20200522	MW-94A	Water	05/22/2020	11:20	X	X	X	
WG-1620-MW95A-20200522	MW-95A	Water	05/22/2020	12:20	X	X	X	
WG-1620-MW96B-20200522	MW-96B	Water	05/22/2020	13:25	X	X	X	
WG-1620-MW54B-20200522	MW-54B	Water	05/22/2020	14:25	X	X	X	
WG-1620-MW99C-20200522	MW-99C	Water	05/22/2020	15:30	X	X	X	
WQ-1620-TB02-20200522	-	Water	05/22/2020	-	X	X	X	Trip Blank
WG-1620-MW76B-20200526	MW-76B	Water	05/26/2020	08:40	X	X	X	
WG-1620-MW97A-20200526	MW-97A	Water	05/26/2020	10:15	X	X	X	
WG-1620-MW98A-20200526	MW-98A	Water	05/26/2020	11:30	X	X	X	
WG-1620-MW98B-20200526	MW-98B	Water	05/26/2020	12:30	X	X	X	
WG-1620-MW50B-20200526	MW-50B	Water	05/26/2020	13:30	X	X	X	
WG-1620-FD02-20200526	MW-50B	Water	05/26/2020	13:30	X	X	X	Field duplicate of MW-50B

Table 1

Sample Collection and Analysis Summary
HWPW - Groundwater Monitoring (New Wells)
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
May-June 2020

					Analysis/Parameters			
Sample Identification	**Location**	**Matrix**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**VOCs**	**SVOCs**	**Arsenic**	**Comments**
WG-1620-MW88A-20200526	MW-88A	Water	05/26/2020	14:45	X	X	X	
WG-1620-MW88B-20200526	MW-88B	Water	05/26/2020	16:00	X	X	X	MS/MSD-P; DUP
WQ-1620-TB03-20200526	-	Water	05/26/2020	-	X	X	X	Trip Blank
WG-1620-MW60B-20200601	MW-60B	Water	06/01/2020	08:10	X	X	X	MS/MSD-P; DUP
WG-1620-MW60AR-20200601	MW-60AR	Water	06/01/2020	09:20	X	X	X	
WG-1620-MW47A-20200601	MW-47A	Water	06/01/2020	10:30	X	X	X	
WG-1620-MW61B-20200601	MW-61B	Water	06/01/2020	11:45	X	X	X	
WQ-1620-TB05-20200601	-	Water	06/01/2020	-	X			Trip Blank

Notes:

VOCs - Volatile Organic Compounds
SVOCs - Semi-volatile Organic Compounds
TPH - Total Petroleum Hydrocarbons
MS/MSD-P - Matrix Spike/ Matrix Spike Duplicate (partial parameters)
DUP - Laboratory Duplicate
"-" - Not Applicable

Table 2

Analytical Results Summary
HWPW - Groundwater Monitoring (New Wells)
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
May-June 2020

Location ID:		MW-47A	MW-50B	MW-50B	MW-54B
Sample Name:		WG-1620-MW47A-20200601	WG-1620-MW50B-20200526	WG-1620-FD02-20200526	WG-1620-MW54B-20200522
Sample Date:		06/01/2020	05/26/2020	05/26/2020	05/22/2020
				Duplicate	
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	0.0010	0.0011	<0.00020
Xylenes (total)	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.000019	0.000036 J	0.000035 J	<0.000019
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	<0.000027	0.0012	0.0012	<0.000027
Acenaphthylene	mg/L	<0.000015	0.00039	0.000029 J	<0.000015
Anthracene	mg/L	<0.000014	0.00038	0.00024	<0.000014
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030

Table 2

Analytical Results Summary
HWPW - Groundwater Monitoring (New Wells)
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
May-June 2020

Location ID:		**MW-47A**	**MW-50B**	**MW-50B**	**MW-54B**
Sample Name:		**WG-1620-MW47A-20200601**	**WG-1620-MW50B-20200526**	**WG-1620-FD02-20200526**	**WG-1620-MW54B-20200522**
Sample Date:		**06/01/2020**	**05/26/2020**	**05/26/2020**	**05/22/2020**
				Duplicate	
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	0.000086 J	<0.000037	<0.000037	<0.000037
Chrysene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	<0.000020	0.00016 J	0.00026	0.00020 J
Dibenzofuran	mg/L	<0.000020	0.00078	0.00082	<0.000020
Fluoranthene	mg/L	<0.000010	0.00033 J	0.00032 J	<0.000010
Fluorene	mg/L	<0.000030	0.00042	0.00040	<0.000030
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	<0.000020	0.000037 J	0.000062 J	0.00011
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	<0.000021	0.00096	0.00073	<0.000021
Phenol	mg/L	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	mg/L	<0.000019	0.00024	0.00021	<0.000019
Metals					
Arsenic	mg/L	0.000699 J	0.00656	0.00657	0.00147 J

Table 2

Analytical Results Summary
HWPW - Groundwater Monitoring (New Wells)
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
May-June 2020

Location ID:		MW-60AR	MW-60B	MW-61B	MW-70C
Sample Name:		WG-1620-MW60AR-20200601	WG-1620-MW60B-20200601	WG-1620-MW61B-20200601	WG-1620-MW70C-20200521
Sample Date:		06/01/2020	06/01/2020	06/01/2020	05/21/2020
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	<0.00020	0.019
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	<0.00030	0.11
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	<0.00020	0.056
Xylenes (total)	mg/L	<0.00030	<0.00030	<0.00030	0.13
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.000019	<0.000019	<0.000019	0.050
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	<0.000027	<0.000027	<0.000027	0.068
Acenaphthylene	mg/L	<0.000015	<0.000015	<0.000015	0.00066
Anthracene	mg/L	0.000095 J	<0.000014	0.000014 J	0.0035
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030

Table 2

Analytical Results Summary
HWPW - Groundwater Monitoring (New Wells)
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
May-June 2020

Location ID:		MW-60AR	MW-60B	MW-61B	MW-70C
Sample Name:		WG-1620-MW60AR-20200601	WG-1620-MW60B-20200601	WG-1620-MW61B-20200601	WG-1620-MW70C-20200521
Sample Date:		06/01/2020	06/01/2020	06/01/2020	05/21/2020
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	0.000077 J	0.000089 J	0.000062 J	<0.000037
Chrysene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	0.00020	0.000099 J	0.00012 J	0.00016 J
Dibenzofuran	mg/L	<0.000020	<0.000020	<0.000020	0.053
Fluoranthene	mg/L	<0.000010	<0.000010	<0.000010	0.0027
Fluorene	mg/L	<0.000030	<0.000030	<0.000030	0.034
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	<0.000020	<0.000020	<0.000020	1.1
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	<0.000021	<0.000021	<0.000021	0.030
Phenol	mg/L	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	mg/L	<0.000019	<0.000019	<0.000019	0.0011
Metals					
Arsenic	mg/L	0.00369	0.00222	0.0104	0.00663

Table 2

Analytical Results Summary
HWPW - Groundwater Monitoring (New Wells)
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
May-June 2020

Location ID:		**MW-70C**	**MW-76B**	**MW-84A**	**MW-88A**
Sample Name:		**WG-1620-FD01-20200521**	**WG-1620-MW76B-20200526**	**WG-1620-MW84A-20200521**	**WG-1620-MW88A-20200526**
Sample Date:		**05/21/2020**	**05/26/2020**	**05/21/2020**	**05/26/2020**
		Duplicate			
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	0.018	<0.00020	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	0.12	<0.00030	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	0.060	<0.00020	<0.00020	<0.00020
Xylenes (total)	mg/L	0.14	<0.00030	<0.00030	<0.00030
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	0.047	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	0.053	<0.000027	<0.000027	0.0011
Acenaphthylene	mg/L	0.00048	<0.000015	<0.000015	<0.000015
Anthracene	mg/L	0.0029	<0.000014	<0.000014	0.00015
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030

Table 2

Analytical Results Summary
HWPW - Groundwater Monitoring (New Wells)
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
May-June 2020

Location ID:		**MW-70C**	**MW-76B**	**MW-84A**	**MW-88A**
Sample Name:		**WG-1620-FD01-20200521**	**WG-1620-MW76B-20200526**	**WG-1620-MW84A-20200521**	**WG-1620-MW88A-20200526**
Sample Date:		**05/21/2020**	**05/26/2020**	**05/21/2020**	**05/26/2020**
		Duplicate			
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000037	0.000039 J	<0.000037	0.000064 J
Chrysene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	0.00010 J	<0.000020	<0.000020	0.000080 J
Dibenzofuran	mg/L	0.046	<0.000020	<0.000020	<0.000020
Fluoranthene	mg/L	0.0020	<0.000010	<0.000010	0.00022 J
Fluorene	mg/L	0.027	<0.000030	<0.000030	0.000075 J
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	1.2	<0.000020	<0.000020	<0.000020
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	0.026	<0.000021	<0.000021	0.000027 J
Phenol	mg/L	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	mg/L	0.00082	<0.000019	<0.000019	0.00060
Metals					
Arsenic	mg/L	0.00606	0.00404	0.0112	0.00405

Table 2

Analytical Results Summary
HWPW - Groundwater Monitoring (New Wells)
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
May-June 2020

Location ID:		MW-88B	MW-91A	MW-92B	MW-93B
Sample Name:		WG-1620-MW88B-20200526	WG-1620-MW91A-20200521	WG-1620-MW92B-20200521	WG-1620-MW93B-20200522
Sample Date:		05/26/2020	05/21/2020	05/21/2020	05/22/2020
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	<0.00020	0.00036 J
Xylenes (total)	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.000019	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	<0.000027	<0.000027	<0.000027	<0.000027
Acenaphthylene	mg/L	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	mg/L	<0.000014	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030

Table 2

Analytical Results Summary
HWPW - Groundwater Monitoring (New Wells)
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
May-June 2020

Location ID:		MW-88B	MW-91A	MW-92B	MW-93B
Sample Name:		WG-1620-MW88B-20200526	WG-1620-MW91A-20200521	WG-1620-MW92B-20200521	WG-1620-MW93B-20200522
Sample Date:		05/26/2020	05/21/2020	05/21/2020	05/22/2020
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	0.000052 J	<0.000037	<0.000037	0.000053 J
Chrysene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	0.00015 J	0.00019 J	<0.000020	0.000068 J
Dibenzofuran	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
Fluoranthene	mg/L	<0.000010	<0.000010	<0.000010	<0.000010
Fluorene	mg/L	<0.000030	<0.000030	<0.000030	<0.000030
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	<0.000020	0.00037	<0.000020	<0.000020
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
Phenol	mg/L	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	mg/L	<0.000019	<0.000019	<0.000019	<0.000019
Metals					
Arsenic	mg/L	0.00246	0.0169	0.00380	0.0133

Table 2

Analytical Results Summary
HWPW - Groundwater Monitoring (New Wells)
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
May-June 2020

Location ID:		MW-94A	MW-95A	MW-96B	MW-97A
Sample Name:		WG-1620-MW94A-20200522	WG-1620-MW95A-20200522	WG-1620-MW96B-20200522	WG-1620-MW97A-20200526
Sample Date:		05/22/2020	05/22/2020	05/22/2020	05/26/2020
Parameters	**Unit**				
Volatile Organic Compounds					
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
Xylenes (total)	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Semi-volatile Organic Compounds					
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.000019	<0.000019	<0.000019	<0.000019
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	<0.000027	<0.000027	<0.000027	<0.000027
Acenaphthylene	mg/L	<0.000015	<0.000015	<0.000015	<0.000015
Anthracene	mg/L	<0.000014	<0.000014	<0.000014	<0.000014
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030	<0.000030

Table 2

Analytical Results Summary
HWPW - Groundwater Monitoring (New Wells)
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
May-June 2020

Location ID:		MW-94A	MW-95A	MW-96B	MW-97A
Sample Name:		WG-1620-MW94A-20200522	WG-1620-MW95A-20200522	WG-1620-MW96B-20200522	WG-1620-MW97A-20200526
Sample Date:		05/22/2020	05/22/2020	05/22/2020	05/26/2020
Parameters	**Unit**				
Semi-volatile Organic Compounds (Continued)					
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	<0.000037	<0.000037	<0.000037	<0.000037
Chrysene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	0.000072 J	<0.000020	0.000077 J	0.000084 J
Dibenzofuran	mg/L	<0.000020	<0.000020	<0.000020	<0.000020
Fluoranthene	mg/L	<0.000010	<0.000010	<0.000010	<0.000010
Fluorene	mg/L	<0.000030	<0.000030	<0.000030	<0.000030
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	<0.000020	<0.000020	0.000083 J	<0.000020
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	<0.000021	<0.000021	<0.000021	<0.000021
Phenol	mg/L	<0.000035	<0.000035	<0.000035	<0.000035
Pyrene	mg/L	<0.000019	<0.000019	<0.000019	<0.000019
Metals					
Arsenic	mg/L	0.00600	0.00254	0.00179 J	0.00438

Table 2

Analytical Results Summary
HWPW - Groundwater Monitoring (New Wells)
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
May-June 2020

Location ID:	MW-98A	MW-98B	MW-99C
Sample Name:	WG-1620-MW98A-20200526	WG-1620-MW98B-20200526	WG-1620-MW99C-20200522
Sample Date:	05/26/2020	05/26/2020	05/22/2020
Parameters	**Unit**		
Volatile Organic Compounds			
1,2-Dichloroethane	mg/L	<0.00020	<0.00020	<0.00020
Benzene	mg/L	<0.00020	<0.00020	<0.00020
Chlorobenzene	mg/L	<0.00030	<0.00030	<0.00030
Ethylbenzene	mg/L	<0.00030	<0.00030	<0.00030
Methylene chloride	mg/L	<0.0010	<0.0010	<0.0010
Toluene	mg/L	<0.00020	0.00054 J	0.00051 J
Xylenes (total)	mg/L	<0.00030	<0.00030	<0.00030
Semi-volatile Organic Compounds				
1,2-Diphenylhydrazine	mg/L	<0.000021	<0.000021	<0.000021
2,4-Dimethylphenol	mg/L	<0.000040	<0.000040	<0.000040
2,4-Dinitrotoluene	mg/L	<0.000058	<0.000058	<0.000058
2,6-Dinitrotoluene	mg/L	<0.000042	<0.000042	<0.000042
2-Chloronaphthalene	mg/L	<0.000021	<0.000021	<0.000021
2-Methylnaphthalene	mg/L	<0.000019	<0.000019	0.000036 J
4,6-Dinitro-2-methylphenol	mg/L	<0.000020	<0.000020	<0.000020
4-Nitrophenol	mg/L	<0.000047	<0.000047	<0.000047
Acenaphthene	mg/L	<0.000027	<0.000027	<0.000027
Acenaphthylene	mg/L	<0.000015	<0.000015	<0.000015
Anthracene	mg/L	0.000055 J	<0.000014	<0.000014
Benzo(a)anthracene	mg/L	<0.000050	<0.000050	<0.000050
Benzo(a)pyrene	mg/L	<0.000020	<0.000020	<0.000020
bis(2-Chloroethoxy)methane	mg/L	<0.000030	<0.000030	<0.000030

Table 2

Analytical Results Summary
HWPW - Groundwater Monitoring (New Wells)
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
May-June 2020

Location ID:		**MW-98A**	**MW-98B**	**MW-99C**
Sample Name:		**WG-1620-MW98A-20200526**	**WG-1620-MW98B-20200526**	**WG-1620-MW99C-20200522**
Sample Date:		**05/26/2020**	**05/26/2020**	**05/22/2020**
Parameters	**Unit**			
Semi-volatile Organic Compounds (Continued)				
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	0.000068 J	<0.000037	<0.000037
Chrysene	mg/L	<0.000021	<0.000021	<0.000021
Di-n-butylphthalate (DBP)	mg/L	0.000027 J	0.00011 J	0.00019 J
Dibenzofuran	mg/L	<0.000020	<0.000020	<0.000020
Fluoranthene	mg/L	0.000023 J	<0.000010	<0.000010
Fluorene	mg/L	<0.000030	<0.000030	<0.000030
N-Nitrosodiphenylamine	mg/L	<0.000025	<0.000025	<0.000025
Naphthalene	mg/L	<0.000020	<0.000020	0.00040
Nitrobenzene	mg/L	<0.000024	<0.000024	<0.000024
Pentachlorophenol	mg/L	<0.000079	<0.000079	<0.000079
Phenanthrene	mg/L	0.000048 J	<0.000021	<0.000021
Phenol	mg/L	<0.000035	<0.000035	<0.000035
Pyrene	mg/L	<0.000019	<0.000019	<0.000019
Metals				
Arsenic	mg/L	0.0119	0.00214	0.000455 J

Notes:

< - Not detected at the associated reporting limit

J - Estimated concentration

Table 3

Analytical Methods
HWPW - Groundwater Monitoring (New Wells)
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
May-June 2020

Parameter	Method	Matrix	Holding Time	
			Collection to Extraction (Days)	Extraction to Analysis (Days)
VOCs	SW-846 8260C	Water	-	14
SVOCs	SW-846 8270D	Water	7	40
Arsenic	SW-846 6020A	Water	-	180

Notes:

VOCs - Volatile Organic Compounds
SVOCs - Semi-volatile Organic Compounds
"-" - Not Applicable

Method References:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions

Table 4

Qualified Sample Results Due to Outlying LCS/LCSD Results
HWPW - Groundwater Monitoring (New Wells)
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
May-June 2020

Parameter	Analyte	LCS Date (mm/dd/yyyy)	LCS % Recovery	LCSD % Recovery	RPD (percent)	Control Limits % Recovery	Control Limits RPD	Associated Sample ID	Qualified Result	Units
SVOCs	Fluoranthene	5/28/2020	108	125	29.1	45-125	20	WG-1620-MW50B-20200526	0.00033 J	mg/L
								WG-1620-FD02-20200526	0.00032 J	mg/L
								WG-1620-MW88A-20200526	0.00022 J	mg/L
								WG-1620-MW98A-20200526	0.000023 J	mg/L

Notes:

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
RPD - Relative Percent Difference
SVOCs - Semi-volatile Organic Compounds
J - Estimated concentration

Attachment A
Laboratory NELAP Certificate

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-20-26

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

Expiration Date: 4/30/2021

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2020

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: ***Drinking Water***

Method EPA 1613

Analyte	AB	Analyte ID	Method ID
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10120408

Method EPA 200.8

Analyte	AB	Analyte ID	Method ID
Copper	TX	1055	10014605
Lead	TX	1075	10014605

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-20-26

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

Expiration Date: 4/30/2021

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2020

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: ***Non-Potable Water***

Method EPA 1010

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10116606

Method EPA 120.1

Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	10006403

Method EPA 1311

Analyte	AB	Analyte ID	Method ID
TCLP	TX	849	10118806

Method EPA 1312

Analyte	AB	Analyte ID	Method ID
SPLP	TX	850	10119003

Method EPA 160.4

Analyte	AB	Analyte ID	Method ID
Residue-volatile	TX	1970	10010409

Method EPA 1613

Analyte	AB	Analyte ID	Method ID
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10120408
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10120408
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10120408
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10120408
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10120408
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10120408
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10120408
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10120408
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10120408
1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10120408
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10120408
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10120408
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10120408
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10120408

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10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2020

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Matrix: ***Non-Potable Water***

2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10120408
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10120408
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10120408
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10120408
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10120408
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10120408
Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10120408
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10120408
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10120408
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10120408
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10120408

Method EPA 1664

Analyte	**AB**	**Analyte ID**	**Method ID**
n-Hexane Extractable Material (HEM) (O&G)	TX	1803	10127807

Method EPA 180.1

Analyte	**AB**	**Analyte ID**	**Method ID**
Turbidity	TX	2055	10011606

Method EPA 200.8

Analyte	**AB**	**Analyte ID**	**Method ID**
Aluminum	TX	1000	10014605
Antimony	TX	1005	10014605
Arsenic	TX	1010	10014605
Barium	TX	1015	10014605
Beryllium	TX	1020	10014605
Boron	TX	1025	10014605
Cadmium	TX	1030	10014605
Calcium	TX	1035	10014605
Chromium	TX	1040	10014605
Cobalt	TX	1050	10014605
Copper	TX	1055	10014605
Iron	TX	1070	10014605

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Matrix: ***Non-Potable Water***

Lead	TX	1075	10014605
Magnesium	TX	1085	10014605
Manganese	TX	1090	10014605
Molybdenum	TX	1100	10014605
Nickel	TX	1105	10014605
Potassium	TX	1125	10014605
Selenium	TX	1140	10014605
Silver	TX	1150	10014605
Sodium	TX	1155	10014605
Strontium	TX	1160	10014605
Thallium	TX	1165	10014605
Tin	TX	1175	10014605
Titanium	TX	1180	10014605
Uranium	TX	3035	10014605
Vanadium	TX	1185	10014605
Zinc	TX	1190	10014605

Method EPA 245.1

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10036609

Method EPA 300.0

Analyte	**AB**	**Analyte ID**	**Method ID**
Bromide	TX	1540	10053200
Chloride	TX	1575	10053200
Fluoride	TX	1730	10053200
Nitrate as N	TX	1810	10053200
Nitrate-nitrite	TX	1820	10053200
Nitrite as N	TX	1840	10053200
Orthophosphate as P	TX	1870	10053200
Sulfate	TX	2000	10053200

Method EPA 325.1

Analyte	**AB**	**Analyte ID**	**Method ID**

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Matrix: ***Non-Potable Water***

Chloride	TX	1575	10056801

Method EPA 335.1

Analyte	AB	Analyte ID	Method ID
Amenable cyanide	TX	1510	10060001

Method EPA 335.2

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	10278203

Method EPA 335.4

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	10061402

Method EPA 350.3

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	10064401

Method EPA 365.3

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	10070801
Phosphorus	TX	1910	10070801

Method EPA 375.4

Analyte	AB	Analyte ID	Method ID
Sulfate	TX	2000	10073800

Method EPA 376.1

Analyte	AB	Analyte ID	Method ID
Sulfide	TX	2005	10074201

Method EPA 410.4

Analyte	AB	Analyte ID	Method ID
Chemical oxygen demand (COD)	TX	1565	10077404

Method EPA 415.1

Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	10078407

Method EPA 420.1

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10079400

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Matrix: ***Non-Potable Water***

Method EPA 420.4

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10080203

Method EPA 6020

Analyte	AB	Analyte ID	Method ID
Aluminum	TX	1000	10156419
Antimony	TX	1005	10156419
Arsenic	TX	1010	10156419
Barium	TX	1015	10156419
Beryllium	TX	1020	10156419
Boron	TX	1025	10156419
Cadmium	TX	1030	10156419
Calcium	TX	1035	10156419
Chromium	TX	1040	10156419
Cobalt	TX	1050	10156419
Copper	TX	1055	10156419
Iron	TX	1070	10156419
Lead	TX	1075	10156419
Lithium	TX	1080	10156419
Magnesium	TX	1085	10156419
Manganese	TX	1090	10156419
Molybdenum	TX	1100	10156419
Nickel	TX	1105	10156419
Potassium	TX	1125	10156419
Selenium	TX	1140	10156419
Silver	TX	1150	10156419
Sodium	TX	1155	10156419
Strontium	TX	1160	10156419
Thallium	TX	1165	10156419
Tin	TX	1175	10156419
Titanium	TX	1180	10156419

Matrix: ***Non-Potable Water***

Vanadium	TX	1185	10156419
Zinc	TX	1190	10156419

Method EPA 608

Analyte	AB	Analyte ID	Method ID
4,4'-DDD	TX	7355	10103603
4,4'-DDE	TX	7360	10103603
4,4'-DDT	TX	7365	10103603
Aldrin	TX	7025	10103603
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10103603
alpha-Chlordane	TX	7240	10103603
Aroclor-1016 (PCB-1016)	TX	8880	10103603
Aroclor-1221 (PCB-1221)	TX	8885	10103603
Aroclor-1232 (PCB-1232)	TX	8890	10103603
Aroclor-1242 (PCB-1242)	TX	8895	10103603
Aroclor-1248 (PCB-1248)	TX	8900	10103603
Aroclor-1254 (PCB-1254)	TX	8905	10103603
Aroclor-1260 (PCB-1260)	TX	8910	10103603
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10103603
Chlordane (tech.)	TX	7250	10103603
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10103603
Dieldrin	TX	7470	10103603
Endosulfan I	TX	7510	10103603
Endosulfan II	TX	7515	10103603
Endosulfan sulfate	TX	7520	10103603
Endrin	TX	7540	10103603
Endrin aldehyde	TX	7530	10103603
Endrin ketone	TX	7535	10103603
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10103603
gamma-Chlordane	TX	7245	10103603
Heptachlor	TX	7685	10103603

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Matrix: ***Non-Potable Water***

Heptachlor epoxide	TX	7690	10103603
Methoxychlor	TX	7810	10103603
Toxaphene (Chlorinated camphene)	TX	8250	10103603

Method EPA 624

Analyte	AB	Analyte ID	Method ID
1,1,1-Trichloroethane	TX	5160	10107207
1,1,2,2-Tetrachloroethane	TX	5110	10107207
1,1,2-Trichloroethane	TX	5165	10107207
1,1-Dichloroethane	TX	4630	10107207
1,1-Dichloroethylene	TX	4640	10107207
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10107207
1,2-Dichlorobenzene	TX	4610	10107207
1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10107207
1,2-Dichloropropane	TX	4655	10107207
1,3-Dichlorobenzene	TX	4615	10107207
1,4-Dichlorobenzene	TX	4620	10107207
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10107207
2-Chloroethyl vinyl ether	TX	4500	10107207
Acetone (2-Propanone)	TX	4315	10107207
Acrolein (Propenal)	TX	4325	10107207
Acrylonitrile	TX	4340	10107207
Benzene	TX	4375	10107207
Bromodichloromethane	TX	4395	10107207
Bromoform	TX	4400	10107207
Carbon tetrachloride	TX	4455	10107207
Chlorobenzene	TX	4475	10107207
Chlorodibromomethane	TX	4575	10107207
Chloroethane (Ethyl chloride)	TX	4485	10107207
Chloroform	TX	4505	10107207
cis-1,2-Dichloroethylene	TX	4645	10107207

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cis-1,3-Dichloropropene	TX	4680	10107207
Ethylbenzene	TX	4765	10107207
m+p-xylene	TX	5240	10107207
Methyl bromide (Bromomethane)	TX	4950	10107207
Methyl chloride (Chloromethane)	TX	4960	10107207
Methyl tert-butyl ether (MTBE)	TX	5000	10107207
Methylene chloride (Dichloromethane)	TX	4975	10107207
Naphthalene	TX	5005	10107207
o-Xylene	TX	5250	10107207
Tetrachloroethylene (Perchloroethylene)	TX	5115	10107207
Toluene	TX	5140	10107207
trans-1,2-Dichloroethylene	TX	4700	10107207
trans-1,3-Dichloropropylene	TX	4685	10107207
Trichloroethene (Trichloroethylene)	TX	5170	10107207
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10107207
Vinyl chloride	TX	5235	10107207
Xylene (total)	TX	5260	10107207

Method EPA 625

Analyte	**AB**	**Analyte ID**	**Method ID**
1,2,4,5-Tetrachlorobenzene	TX	6715	10107401
1,2,4-Trichlorobenzene	TX	5155	10107401
1,2-Dichlorobenzene	TX	4610	10107401
1,2-Diphenylhydrazine	TX	6220	10107401
1,3-Dichlorobenzene	TX	4615	10107401
1,4-Dichlorobenzene	TX	4620	10107401
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10107401
2,4,5-Trichlorophenol	TX	6835	10107401
2,4,6-Trichlorophenol	TX	6840	10107401
2,4-Dichlorophenol	TX	6000	10107401
2,4-Dimethylphenol	TX	6130	10107401

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Matrix: ***Non-Potable Water***

2,4-Dinitrophenol	TX	6175	10107401
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10107401
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10107401
2-Chloronaphthalene	TX	5795	10107401
2-Chlorophenol	TX	5800	10107401
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10107401
2-Methylphenol (o-Cresol)	TX	6400	10107401
2-Nitrophenol	TX	6490	10107401
3,3'-Dichlorobenzidine	TX	5945	10107401
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10107401
4-Chloro-3-methylphenol	TX	5700	10107401
4-Chlorophenyl phenylether	TX	5825	10107401
4-Methylphenol (p-Cresol)	TX	6410	10107401
4-Nitrophenol	TX	6500	10107401
Acenaphthene	TX	5500	10107401
Acenaphthylene	TX	5505	10107401
Anthracene	TX	5555	10107401
Benzidine	TX	5595	10107401
Benzo(a)anthracene	TX	5575	10107401
Benzo(a)pyrene	TX	5580	10107401
Benzo(b)fluoranthene	TX	5585	10107401
Benzo(g,h,i)perylene	TX	5590	10107401
Benzo(k)fluoranthene	TX	5600	10107401
bis(2-Chloroethoxy)methane	TX	5760	10107401
bis(2-Chloroethyl) ether	TX	5765	10107401
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10107401
Butyl benzyl phthalate	TX	5670	10107401
Chrysene	TX	5855	10107401
Dibenz(a,h) anthracene	TX	5895	10107401
Diethyl phthalate	TX	6070	10107401

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Matrix: ***Non-Potable Water***

Dimethyl phthalate	TX	6135	10107401
Di-n-butyl phthalate	TX	5925	10107401
Di-n-octyl phthalate	TX	6200	10107401
Fluoranthene	TX	6265	10107401
Fluorene	TX	6270	10107401
Hexachlorobenzene	TX	6275	10107401
Hexachlorobutadiene	TX	4835	10107401
Hexachlorocyclopentadiene	TX	6285	10107401
Hexachloroethane	TX	4840	10107401
Indeno(1,2,3-cd) pyrene	TX	6315	10107401
Isophorone	TX	6320	10107401
Naphthalene	TX	5005	10107401
Nitrobenzene	TX	5015	10107401
n-Nitrosodiethylamine	TX	6525	10107401
n-Nitrosodimethylamine	TX	6530	10107401
n-Nitrosodi-n-butylamine	TX	5025	10107401
n-Nitrosodi-n-propylamine	TX	6545	10107401
n-Nitrosodiphenylamine	TX	6535	10107401
Pentachlorobenzene	TX	6590	10107401
Pentachlorophenol	TX	6605	10107401
Phenanthrene	TX	6615	10107401
Phenol	TX	6625	10107401
Pyrene	TX	6665	10107401
Pyridine	TX	5095	10107401

Method EPA 7196

Analyte	**AB**	**Analyte ID**	**Method ID**
Chromium (VI)	TX	1045	10162206

Method EPA 7470

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10165603

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Matrix: ***Non-Potable Water***

Method EPA 8011

Analyte	AB	Analyte ID	Method ID
1,2,3-Trichloropropane	TX	5180	10173009
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10173009
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10173009

Method EPA 8015

Analyte	AB	Analyte ID	Method ID
Diesel range organics (DRO)	TX	9369	10173203
Ethanol	TX	4750	10173203
Ethylene glycol	TX	4785	10173203
Gasoline range organics (GRO)	TX	9408	10173203
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10173203
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10173203
Methanol	TX	4930	10173203
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10173203
n-Propanol (1-Propanol)	TX	5055	10173203
Propylene Glycol	TX	6657	10173203
tert-Butyl alcohol	TX	4420	10173203

Method EPA 8081

Analyte	AB	Analyte ID	Method ID
4,4'-DDD	TX	7355	10178402
4,4'-DDE	TX	7360	10178402
4,4'-DDT	TX	7365	10178402
Aldrin	TX	7025	10178402
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10178402
alpha-Chlordane	TX	7240	10178402
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10178402
Chlordane (tech.)	TX	7250	10178402
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10178402
Dieldrin	TX	7470	10178402
Endosulfan I	TX	7510	10178402

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Matrix: ***Non-Potable Water***

Endosulfan II	TX	7515	10178402
Endosulfan sulfate	TX	7520	10178402
Endrin	TX	7540	10178402
Endrin aldehyde	TX	7530	10178402
Endrin ketone	TX	7535	10178402
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10178402
gamma-Chlordane	TX	7245	10178402
Heptachlor	TX	7685	10178402
Heptachlor epoxide	TX	7690	10178402
Hexachlorobenzene	TX	6275	10178402
Methoxychlor	TX	7810	10178402
Mirex	TX	7870	10178402
Toxaphene (Chlorinated camphene)	TX	8250	10178402

Method EPA 8082

Analyte	**AB**	**Analyte ID**	**Method ID**
Aroclor-1016 (PCB-1016)	TX	8880	10179201
Aroclor-1221 (PCB-1221)	TX	8885	10179201
Aroclor-1232 (PCB-1232)	TX	8890	10179201
Aroclor-1242 (PCB-1242)	TX	8895	10179201
Aroclor-1248 (PCB-1248)	TX	8900	10179201
Aroclor-1254 (PCB-1254)	TX	8905	10179201
Aroclor-1260 (PCB-1260)	TX	8910	10179201
PCBs (total)	TX	8870	10179201

Method EPA 8151

Analyte	**AB**	**Analyte ID**	**Method ID**
2,4,5-T	TX	8655	10183003
2,4-D	TX	8545	10183003
2,4-DB	TX	8560	10183003
Dalapon	TX	8555	10183003
Dicamba	TX	8595	10183003
Dichloroprop (Dichlorprop, Weedone)	TX	8605	10183003

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Matrix: ***Non-Potable Water***

Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10183003
MCPA	TX	7775	10183003
MCPP	TX	7780	10183003
Silvex (2,4,5-TP)	TX	8650	10183003

Method EPA 8260

Analyte	AB	Analyte ID	Method ID
1,1,1,2-Tetrachloroethane	TX	5105	10184404
1,1,1-Trichloroethane	TX	5160	10184404
1,1,2,2-Tetrachloroethane	TX	5110	10184404
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	TX	5195	10184404
1,1,2-Trichloroethane	TX	5165	10184404
1,1-Dichloroethane	TX	4630	10184404
1,1-Dichloroethylene	TX	4640	10184404
1,1-Dichloropropene	TX	4670	10184404
1,2,3-Trichlorobenzene	TX	5150	10184404
1,2,3-Trichloropropane	TX	5180	10184404
1,2,4-Trichlorobenzene	TX	5155	10184404
1,2,4-Trimethylbenzene	TX	5210	10184404
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10184404
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10184404
1,2-Dichlorobenzene	TX	4610	10184404
1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10184404
1,2-Dichloropropane	TX	4655	10184404
1,3,5-Trimethylbenzene	TX	5215	10184404
1,3-Dichlorobenzene	TX	4615	10184404
1,3-Dichloropropane	TX	4660	10184404
1,4-Dichlorobenzene	TX	4620	10184404
1,4-Dioxane (1,4-Diethyleneoxide)	TX	4735	10184404
1-Chlorohexane	TX	4510	10184404
1-Propanol	TX	5060	10184404

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-20-26

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

Expiration Date: 4/30/2021

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2020

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Matrix: ***Non-Potable Water***

2,2-Dichloropropane	TX	4665	10184404
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10184404
2-Chloroethyl vinyl ether	TX	4500	10184404
2-Chlorotoluene	TX	4535	10184404
2-Hexanone (MBK)	TX	4860	10184404
2-Pentanone	TX	5045	10184404
4-Chlorotoluene	TX	4540	10184404
4-Isopropyltoluene (p-Cymene)	TX	4915	10184404
4-Methyl-2-pentanone (MIBK)	TX	4995	10184404
Acetone (2-Propanone)	TX	4315	10184404
Acetonitrile	TX	4320	10184404
Acrolein (Propenal)	TX	4325	10184404
Acrylonitrile	TX	4340	10184404
Allyl alcohol	TX	4350	10184404
Allyl chloride (3-Chloropropene)	TX	4355	10184404
Benzene	TX	4375	10184404
Benzyl chloride	TX	5635	10184404
Bromobenzene	TX	4385	10184404
Bromochloromethane	TX	4390	10184404
Bromodichloromethane	TX	4395	10184404
Bromoform	TX	4400	10184404
Carbon disulfide	TX	4450	10184404
Carbon tetrachloride	TX	4455	10184404
Chlorobenzene	TX	4475	10184404
Chlorodibromomethane	TX	4575	10184404
Chloroethane (Ethyl chloride)	TX	4485	10184404
Chloroform	TX	4505	10184404
Chloroprene (2-Chloro-1,3-butadiene)	TX	4525	10184404
cis-1,2-Dichloroethylene	TX	4645	10184404
cis-1,3-Dichloropropene	TX	4680	10184404

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Matrix: ***Non-Potable Water***

Dibromofluoromethane	TX	4590	10184404
Dibromomethane (Methylene bromide)	TX	4595	10184404
Dichlorodifluoromethane (Freon-12)	TX	4625	10184404
Diethyl ether	TX	4725	10184404
Di-isopropylether (DIPE)	TX	9375	10184404
Epichlorohydrin (1-Chloro-2,3-epoxypropane)	TX	4745	10184404
Ethanol	TX	4750	10184404
Ethyl acetate	TX	4755	10184404
Ethyl methacrylate	TX	4810	10184404
Ethylbenzene	TX	4765	10184404
Ethyl-t-butylether (ETBE) (2-Ethoxy-2-methylpropane)	TX	4770	10184404
Hexachlorobutadiene	TX	4835	10184404
Iodomethane (Methyl iodide)	TX	4870	10184404
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10184404
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10184404
Isopropylbenzene (Cumene)	TX	4900	10184404
m+p-xylene	TX	5240	10184404
Methacrylonitrile	TX	4925	10184404
Methyl acetate	TX	4940	10184404
Methyl acrylate	TX	4945	10184404
Methyl bromide (Bromomethane)	TX	4950	10184404
Methyl chloride (Chloromethane)	TX	4960	10184404
Methyl methacrylate	TX	4990	10184404
Methyl tert-butyl ether (MTBE)	TX	5000	10184404
Methylcyclohexane	TX	4965	10184404
Methylene chloride (Dichloromethane)	TX	4975	10184404
Naphthalene	TX	5005	10184404
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10184404
n-Butylbenzene	TX	4435	10184404
n-Propylbenzene	TX	5090	10184404

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Matrix: ***Non-Potable Water***

o-Xylene	TX	5250	10184404
Propionitrile (Ethyl cyanide)	TX	5080	10184404
Pyridine	TX	5095	10184404
sec-Butylbenzene	TX	4440	10184404
Styrene	TX	5100	10184404
T-amylmethylether (TAME)	TX	4370	10184404
tert-Butyl alcohol	TX	4420	10184404
tert-Butylbenzene	TX	4445	10184404
Tetrachloroethylene (Perchloroethylene)	TX	5115	10184404
Toluene	TX	5140	10184404
trans-1,2-Dichloroethylene	TX	4700	10184404
trans-1,3-Dichloropropylene	TX	4685	10184404
trans-1,4-Dichloro-2-butene	TX	4605	10184404
Trichloroethene (Trichloroethylene)	TX	5170	10184404
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10184404
Vinyl acetate	TX	5225	10184404
Vinyl chloride	TX	5235	10184404
Xylene (total)	TX	5260	10184404

Method EPA 8270

Analyte	**AB**	**Analyte ID**	**Method ID**
1,2,4,5-Tetrachlorobenzene	TX	6715	10185203
1,2,4-Trichlorobenzene	TX	5155	10185203
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10185203
1,2-Dichlorobenzene	TX	4610	10185203
1,2-Dinitrobenzene	TX	6155	10185203
1,2-Diphenylhydrazine	TX	6220	10185203
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10185203
1,3-Dichlorobenzene	TX	4615	10185203
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10185203
1,4-Dichlorobenzene	TX	4620	10185203

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Matrix: ***Non-Potable Water***

1,4-Dinitrobenzene	TX	6165	10185203
1,4-Naphthoquinone	TX	6420	10185203
1,4-Phenylenediamine	TX	6630	10185203
1-Chloronaphthalene	TX	5790	10185203
1-Naphthylamine	TX	6425	10185203
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10185203
2,3,4,6-Tetrachlorophenol	TX	6735	10185203
2,4,5-Trichlorophenol	TX	6835	10185203
2,4,5-Trimethylaniline	TX	6880	10185203
2,4,6-Trichlorophenol	TX	6840	10185203
2,4-Diaminotoluene	TX	5880	10185203
2,4-Dichlorophenol	TX	6000	10185203
2,4-Dimethylphenol	TX	6130	10185203
2,4-Dinitrophenol	TX	6175	10185203
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10185203
2,6-Dichlorophenol	TX	6005	10185203
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10185203
2-Acetylaminofluorene	TX	5515	10185203
2-Chloronaphthalene	TX	5795	10185203
2-Chlorophenol	TX	5800	10185203
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10185203
2-Methylaniline (o-Toluidine)	TX	5145	10185203
2-Methylnaphthalene	TX	6385	10185203
2-Methylphenol (o-Cresol)	TX	6400	10185203
2-Naphthylamine	TX	6430	10185203
2-Nitroaniline	TX	6460	10185203
2-Nitrophenol	TX	6490	10185203
2-Picoline (2-Methylpyridine)	TX	5050	10185203
3,3'-Dichlorobenzidine	TX	5945	10185203
3,3'-Dimethylbenzidine	TX	6120	10185203

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Matrix: ***Non-Potable Water***

3-Methylcholanthrene	TX	6355	10185203
3-Methylphenol (m-Cresol)	TX	6405	10185203
3-Nitroaniline	TX	6465	10185203
4-Aminobiphenyl	TX	5540	10185203
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10185203
4-Chloro-3-methylphenol	TX	5700	10185203
4-Chloroaniline	TX	5745	10185203
4-Chlorophenyl phenylether	TX	5825	10185203
4-Dimethyl aminoazobenzene	TX	6105	10185203
4-Methylphenol (p-Cresol)	TX	6410	10185203
4-Nitroaniline	TX	6470	10185203
4-Nitrobiphenyl	TX	6480	10185203
4-Nitrophenol	TX	6500	10185203
4-Nitroquinoline-1-oxide	TX	6510	10185203
5-Chloro-2-methylaniline	TX	5695	10185203
5-Nitro-o-toluidine	TX	6570	10185203
7,12-Dimethylbenz(a) anthracene	TX	6115	10185203
a-a-Dimethylphenethylamine	TX	6125	10185203
Acenaphthene	TX	5500	10185203
Acenaphthylene	TX	5505	10185203
Acetophenone	TX	5510	10185203
Aniline	TX	5545	10185203
Anthracene	TX	5555	10185203
Aramite	TX	5560	10185203
Atrazine	TX	7065	10185203
Azinphos-methyl (Guthion)	TX	7075	10185203
Azobenzene	TX	5562	10185203
Benzenethiol (Thiophenol)	TX	6750	10185203
Benzidine	TX	5595	10185203
Benzo(a)anthracene	TX	5575	10185203

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Matrix: ***Non-Potable Water***

Benzo(a)pyrene	TX	5580	10185203
Benzo(b)fluoranthene	TX	5585	10185203
Benzo(e)pyrene	TX	5605	10185203
Benzo(g,h,i)perylene	TX	5590	10185203
Benzo(k)fluoranthene	TX	5600	10185203
Benzoic acid	TX	5610	10185203
Benzyl alcohol	TX	5630	10185203
Biphenyl	TX	5640	10185203
bis(2-Chloroethoxy)methane	TX	5760	10185203
bis(2-Chloroethyl) ether	TX	5765	10185203
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10185203
Butyl benzyl phthalate	TX	5670	10185203
Caprolactam	TX	7180	10185203
Captan	TX	7190	10185203
Carbaryl (Sevin)	TX	7195	10185203
Carbazole	TX	5680	10185203
Carbophenothion	TX	7220	10185203
Chlorobenzilate	TX	7260	10185203
Chrysene	TX	5855	10185203
Coumaphos	TX	7315	10185203
Demeton	TX	7390	10185203
Demeton	TX	7390	10185203
Demeton-o	TX	7395	10185203
Demeton-s	TX	7385	10185203
Diallate	TX	7405	10185203
Dibenz(a,h) anthracene	TX	5895	10185203
Dibenz(a,j) acridine	TX	5900	10185203
Dibenzofuran	TX	5905	10185203
Dichlorovos (DDVP, Dichlorvos)	TX	8610	10185203
Diethyl phthalate	TX	6070	10185203

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Matrix: ***Non-Potable Water***

Dimethoate	TX	7475	10185203
Dimethoate	TX	7475	10185203
Dimethyl phthalate	TX	6135	10185203
Di-n-butyl phthalate	TX	5925	10185203
Di-n-octyl phthalate	TX	6200	10185203
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10185203
Dioxathion	TX	7495	10185203
Diphenylamine	TX	6205	10185203
Disulfoton	TX	8625	10185203
Ethion	TX	7565	10185203
Ethyl methanesulfonate	TX	6260	10185203
Famphur	TX	7580	10185203
Fluoranthene	TX	6265	10185203
Fluorene	TX	6270	10185203
Hexachlorobenzene	TX	6275	10185203
Hexachlorobutadiene	TX	4835	10185203
Hexachlorocyclopentadiene	TX	6285	10185203
Hexachloroethane	TX	4840	10185203
Hexachlorophene	TX	6290	10185203
Hexachloropropene	TX	6295	10185203
Indeno(1,2,3-cd) pyrene	TX	6315	10185203
Isodrin	TX	7725	10185203
Isophorone	TX	6320	10185203
Isosafrole	TX	6325	10185203
Kepone	TX	7740	10185203
Maleic anhydride	TX	6335	10185203
Methapyrilene	TX	6345	10185203
Methyl methanesulfonate	TX	6375	10185203
Methyl parathion (Parathion, methyl)	TX	7825	10185203
Mevinphos	TX	7850	10185203

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Matrix: ***Non-Potable Water***

Naled	TX	7905	10185203
Naphthalene	TX	5005	10185203
Nitrobenzene	TX	5015	10185203
n-Nitrosodiethylamine	TX	6525	10185203
n-Nitrosodimethylamine	TX	6530	10185203
n-Nitrosodi-n-butylamine	TX	5025	10185203
n-Nitrosodi-n-propylamine	TX	6545	10185203
n-Nitrosodiphenylamine	TX	6535	10185203
n-Nitrosomethylethylamine	TX	6550	10185203
n-Nitrosomorpholine	TX	6555	10185203
n-Nitrosopiperidine	TX	6560	10185203
n-Nitrosopyrrolidine	TX	6565	10185203
o,o,o-Triethyl phosphorothioate	TX	8290	10185203
o-Anisidine	TX	5550	10185203
Parathion, ethyl	TX	7955	10185203
p-Cresidine	TX	5860	10185203
Pentachlorobenzene	TX	6590	10185203
Pentachloronitrobenzene (PCNB)	TX	6600	10185203
Pentachlorophenol	TX	6605	10185203
Phenacetin	TX	6610	10185203
Phenanthrene	TX	6615	10185203
Phenol	TX	6625	10185203
Phorate	TX	7985	10185203
Phosmet (Imidan)	TX	8000	10185203
Phthalic anhydride	TX	6640	10185203
Pronamide (Kerb)	TX	6650	10185203
Pyrene	TX	6665	10185203
Pyridine	TX	5095	10185203
Quinoline	TX	6670	10185203
Resorcinol	TX	6680	10185203

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Matrix: ***Non-Potable Water***

Safrole	TX	6685	10185203
Sulfotepp	TX	8155	10185203
Terbufos	TX	8185	10185203
Tetrachlorvinphos (Stirophos, Gardona)	TX	8197	10185203
Thionazin (Zinophos)	TX	8235	10185203
Toluene diisocyanate	TX	6775	10185203
Trifluralin (Treflan)	TX	8295	10185203

Method EPA 8290

Analyte	AB	Analyte ID	Method ID
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10187209
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10187209
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10187209
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10187209
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10187209
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10187209
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10187209
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10187209
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10187209
1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10187209
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10187209
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10187209
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10187209
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10187209
2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10187209
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10187209
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10187209
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10187209
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10187209
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10187209
Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10187209

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Matrix: ***Non-Potable Water***

Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10187209
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10187209
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10187209
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10187209

Method EPA 8316

Analyte	**AB**	**Analyte ID**	**Method ID**
Acrylamide	TX	4330	10188202

Method EPA 8330

Analyte	**AB**	**Analyte ID**	**Method ID**
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10189807
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10189807
2,4,6-Trinitrotoluene (2,4,6-TNT)	TX	9651	10189807
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10189807
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10189807
2-Amino-4,6-dinitrotoluene (2-am-dnt)	TX	9303	10189807
2-Nitrotoluene	TX	9507	10189807
3-Nitrotoluene	TX	9510	10189807
4-Amino-2,6-dinitrotoluene (4-am-dnt)	TX	9306	10189807
4-Nitrotoluene	TX	9513	10189807
Methyl-2,4,6-trinitrophenylnitramine (tetryl)	TX	6415	10189807
Nitrobenzene	TX	5015	10189807
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	TX	9522	10189807
RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine)	TX	9432	10189807

Method EPA 9014

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	10193803
Total cyanide	TX	1645	10193803

Method EPA 9038

Analyte	**AB**	**Analyte ID**	**Method ID**
Sulfate	TX	2000	10196608

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Matrix: ***Non-Potable Water***

Method EPA 9040

Analyte	AB	Analyte ID	Method ID
pH	TX	1900	10196802

Method EPA 9050

Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	10198604

Method EPA 9056

Analyte	AB	Analyte ID	Method ID
Bromide	TX	1540	10199209
Chloride	TX	1575	10199209
Fluoride	TX	1730	10199209
Nitrate as N	TX	1810	10199209
Nitrate-nitrite	TX	1820	10199209
Nitrite as N	TX	1840	10199209
Orthophosphate as P	TX	1870	10199209
Sulfate	TX	2000	10199209

Method EPA 9060

Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	10200201

Method EPA 9065

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200405

Method EPA 9066

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200609

Method EPA 9250

Analyte	AB	Analyte ID	Method ID
Chloride	TX	1575	10207202

Method EPA RSK 175

Analyte	AB	Analyte ID	Method ID
2-methylpropane (Isobutane)	TX	4942	10212905

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Matrix: ***Non-Potable Water***

Ethane	TX	4747	10212905
Ethene	TX	4752	10212905
Methane	TX	4926	10212905
n-Butane	TX	5007	10212905
n-Propane	TX	5029	10212905

Method HACH 8000

Analyte	**AB**	**Analyte ID**	**Method ID**
Chemical oxygen demand (COD)	TX	1565	60003001

Method SM 2120 B

Analyte	**AB**	**Analyte ID**	**Method ID**
Color	TX	1605	20223807

Method SM 2310 B (4a)

Analyte	**AB**	**Analyte ID**	**Method ID**
Acidity, as CaCO3	TX	1500	20002806

Method SM 2320 B

Analyte	**AB**	**Analyte ID**	**Method ID**
Alkalinity as CaCO3	TX	1505	20045005

Method SM 2340 B

Analyte	**AB**	**Analyte ID**	**Method ID**
Total hardness as CaCO3	TX	1755	20046008

Method SM 2510 B

Analyte	**AB**	**Analyte ID**	**Method ID**
Conductivity	TX	1610	20048004

Method SM 2540 B

Analyte	**AB**	**Analyte ID**	**Method ID**
Residue-total (total solids)	TX	1950	20004608

Method SM 2540 C

Analyte	**AB**	**Analyte ID**	**Method ID**
Residue-filterable (TDS)	TX	1955	20049803

Method SM 2540 D

Analyte	**AB**	**Analyte ID**	**Method ID**

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Matrix: ***Non-Potable Water***

Residue-nonfilterable (TSS)	TX	1960	20004802

Method SM 3500-Cr B

Analyte	**AB**	**Analyte ID**	**Method ID**
Chromium (VI)	TX	1045	20065809

Method SM 4500-Cl F

Analyte	**AB**	**Analyte ID**	**Method ID**
Total residual chlorine	TX	1940	20080482

Method SM 4500-Cl⁻ E

Analyte	**AB**	**Analyte ID**	**Method ID**
Chloride	TX	1575	20019209

Method SM 4500-CN⁻ C

Analyte	**AB**	**Analyte ID**	**Method ID**
Total cyanide	TX	1645	20020808

Method SM 4500-CN⁻ E

Analyte	**AB**	**Analyte ID**	**Method ID**
Total cyanide	TX	1645	20021209

Method SM 4500-CN⁻ G

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	20021607

Method SM 4500-H+ B

Analyte	**AB**	**Analyte ID**	**Method ID**
pH	TX	1900	20104603

Method SM 4500-NH3 D

Analyte	**AB**	**Analyte ID**	**Method ID**
Ammonia as N	TX	1515	20108809
Kjeldahl Nitrogen (Total Kjeldahl Nitrogen-TKN)	TX	1790	20108809

Method SM 4500-NH3 F

Analyte	**AB**	**Analyte ID**	**Method ID**
Ammonia as N	TX	1515	20023001

Method SM 4500-O G

Analyte	**AB**	**Analyte ID**	**Method ID**
Oxygen, dissolved	TX	1880	20025405

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Matrix: ***Non-Potable Water***

Method SM 4500-P E

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	20025803
Phosphorus	TX	1910	20025803

Method SM 4500-$S2^{-}$ D

Analyte	AB	Analyte ID	Method ID
Sulfide	TX	2005	20125400

Method SM 4500-$S2^{-}$ F

Analyte	AB	Analyte ID	Method ID
Sulfide	TX	2005	20126209

Method SM 4500-SiO2 D

Analyte	AB	Analyte ID	Method ID
Silica as SiO2	TX	1990	20127202

Method SM 4500-$SO3^{-}$ B

Analyte	AB	Analyte ID	Method ID
Sulfite	TX	2015	20026806

Method SM 5210 B

Analyte	AB	Analyte ID	Method ID
Biochemical oxygen demand (BOD)	TX	1530	20027401
Carbonaceous BOD, CBOD	TX	1555	20027401

Method SM 5310 B

Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	20137206

Method SM 5310 C

Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	20138209

Method SM 5540 C

Analyte	AB	Analyte ID	Method ID
Surfactants - MBAS	TX	2025	20144405

Method TCEQ 1005

Analyte	AB	Analyte ID	Method ID
Total Petroleum Hydrocarbons (TPH)	TX	2050	90019208

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Matrix: ***Solid & Chemical Materials***

Method ASTM D2216

Analyte	AB	Analyte ID	Method ID
Moisture	TX	10337	ASTM D2216-05

Method EPA 1010

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10116606

Method EPA 1030

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10117201

Method EPA 1311

Analyte	AB	Analyte ID	Method ID
TCLP	TX	849	10118806

Method EPA 1312

Analyte	AB	Analyte ID	Method ID
SPLP	TX	850	10119003

Method EPA 200.8

Analyte	AB	Analyte ID	Method ID
Uranium	TX	3035	10014605

Method EPA 300.0

Analyte	AB	Analyte ID	Method ID
Bromide	TX	1540	10053200
Chloride	TX	1575	10053200
Fluoride	TX	1730	10053200
Nitrate as N	TX	1810	10053200
Nitrate-nitrite	TX	1820	10053200
Nitrite as N	TX	1840	10053200
Orthophosphate as P	TX	1870	10053200
Sulfate	TX	2000	10053200

Method EPA 310.1

Analyte	AB	Analyte ID	Method ID
Alkalinity as CaCO3	TX	1505	10054805

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Matrix: ***Solid & Chemical Materials***

Method EPA 350.3

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	10064401

Method EPA 365.3

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	10070801
Phosphorus	TX	1910	10070801

Method EPA 6020

Analyte	AB	Analyte ID	Method ID
Aluminum	TX	1000	10156204
Antimony	TX	1005	10156204
Arsenic	TX	1010	10156204
Barium	TX	1015	10156204
Beryllium	TX	1020	10156204
Boron	TX	1025	10156204
Cadmium	TX	1030	10156204
Calcium	TX	1035	10156204
Chromium	TX	1040	10156204
Cobalt	TX	1050	10156204
Copper	TX	1055	10156204
Iron	TX	1070	10156204
Lead	TX	1075	10156204
Lithium	TX	1080	10156204
Magnesium	TX	1085	10156204
Manganese	TX	1090	10156204
Molybdenum	TX	1100	10156204
Nickel	TX	1105	10156204
Potassium	TX	1125	10156204
Selenium	TX	1140	10156204
Silver	TX	1150	10156204
Sodium	TX	1155	10156204

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Matrix: ***Solid & Chemical Materials***

Strontium	TX	1160	10156204
Thallium	TX	1165	10156204
Tin	TX	1175	10156204
Titanium	TX	1180	10156204
Vanadium	TX	1185	10156204
Zinc	TX	1190	10156204

Method EPA 7196

Analyte	**AB**	**Analyte ID**	**Method ID**
Chromium (VI)	TX	1045	10162206

Method EPA 7470

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10165603

Method EPA 7471

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10166004

Method EPA 8015

Analyte	**AB**	**Analyte ID**	**Method ID**
Diesel range organics (DRO)	TX	9369	10173203
Ethanol	TX	4750	10173203
Ethylene glycol	TX	4785	10173203
Gasoline range organics (GRO)	TX	9408	10173203
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10173203
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10173203
Methanol	TX	4930	10173203
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10173203
n-Propanol (1-Propanol)	TX	5055	10173203
Propylene Glycol	TX	6657	10173203
tert-Butyl alcohol	TX	4420	10173203

Method EPA 8081

Analyte	**AB**	**Analyte ID**	**Method ID**
4,4'-DDD	TX	7355	10178402

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Matrix: ***Solid & Chemical Materials***

4,4'-DDE	TX	7360	10178402
4,4'-DDT	TX	7365	10178402
Aldrin	TX	7025	10178402
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10178402
alpha-Chlordane	TX	7240	10178402
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10178402
Chlordane (tech.)	TX	7250	10178402
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10178402
Dieldrin	TX	7470	10178402
Endosulfan I	TX	7510	10178402
Endosulfan II	TX	7515	10178402
Endosulfan sulfate	TX	7520	10178402
Endrin	TX	7540	10178402
Endrin aldehyde	TX	7530	10178402
Endrin ketone	TX	7535	10178402
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10178402
gamma-Chlordane	TX	7245	10178402
Heptachlor	TX	7685	10178402
Heptachlor epoxide	TX	7690	10178402
Methoxychlor	TX	7810	10178402
Mirex	TX	7870	10178402
Toxaphene (Chlorinated camphene)	TX	8250	10178402

Method EPA 8082

Analyte	**AB**	**Analyte ID**	**Method ID**
Aroclor-1016 (PCB-1016)	TX	8880	10179201
Aroclor-1221 (PCB-1221)	TX	8885	10179201
Aroclor-1232 (PCB-1232)	TX	8890	10179201
Aroclor-1242 (PCB-1242)	TX	8895	10179201
Aroclor-1248 (PCB-1248)	TX	8900	10179201
Aroclor-1254 (PCB-1254)	TX	8905	10179201

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Matrix: ***Solid & Chemical Materials***

Aroclor-1260 (PCB-1260)	TX	8910	10179201
PCBs (total)	TX	8870	10179201

Method EPA 8260

Analyte	AB	Analyte ID	Method ID
1,1,1,2-Tetrachloroethane	TX	5105	10184404
1,1,1-Trichloroethane	TX	5160	10184404
1,1,2,2-Tetrachloroethane	TX	5110	10184404
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	TX	5195	10184404
1,1,2-Trichloroethane	TX	5165	10184404
1,1-Dichloroethane	TX	4630	10184404
1,1-Dichloroethylene	TX	4640	10184404
1,1-Dichloropropene	TX	4670	10184404
1,2,3-Trichlorobenzene	TX	5150	10184404
1,2,3-Trichloropropane	TX	5180	10184404
1,2,4-Trichlorobenzene	TX	5155	10184404
1,2,4-Trimethylbenzene	TX	5210	10184404
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10184404
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10184404
1,2-Dichlorobenzene	TX	4610	10184404
1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10184404
1,2-Dichloropropane	TX	4655	10184404
1,3,5-Trimethylbenzene	TX	5215	10184404
1,3-Dichlorobenzene	TX	4615	10184404
1,3-Dichloropropane	TX	4660	10184404
1,4-Dichlorobenzene	TX	4620	10184404
1,4-Dioxane (1,4-Diethyleneoxide)	TX	4735	10184404
1-Chlorohexane	TX	4510	10184404
1-Propanol	TX	5060	10184404
2,2-Dichloropropane	TX	4665	10184404
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10184404

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Matrix: ***Solid & Chemical Materials***

2-Chloroethyl vinyl ether	TX	4500	10184404
2-Chlorotoluene	TX	4535	10184404
2-Hexanone (MBK)	TX	4860	10184404
4-Chlorotoluene	TX	4540	10184404
4-Isopropyltoluene (p-Cymene)	TX	4915	10184404
4-Methyl-2-pentanone (MIBK)	TX	4995	10184404
Acetone (2-Propanone)	TX	4315	10184404
Acetonitrile	TX	4320	10184404
Acrolein (Propenal)	TX	4325	10184404
Acrylonitrile	TX	4340	10184404
Allyl chloride (3-Chloropropene)	TX	4355	10184404
Benzene	TX	4375	10184404
Benzyl chloride	TX	5635	10184404
Bromobenzene	TX	4385	10184404
Bromochloromethane	TX	4390	10184404
Bromodichloromethane	TX	4395	10184404
Bromoform	TX	4400	10184404
Carbon disulfide	TX	4450	10184404
Carbon tetrachloride	TX	4455	10184404
Chlorobenzene	TX	4475	10184404
Chlorodibromomethane	TX	4575	10184404
Chloroethane (Ethyl chloride)	TX	4485	10184404
Chloroform	TX	4505	10184404
Chloroprene (2-Chloro-1,3-butadiene)	TX	4525	10184404
cis-1,2-Dichloroethylene	TX	4645	10184404
cis-1,3-Dichloropropene	TX	4680	10184404
Dibromofluoromethane	TX	4590	10184404
Dibromomethane (Methylene bromide)	TX	4595	10184404
Dichlorodifluoromethane (Freon-12)	TX	4625	10184404
Diethyl ether	TX	4725	10184404

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Matrix: ***Solid & Chemical Materials***

Epichlorohydrin (1-Chloro-2,3-epoxypropane)	TX	4745	10184404
Ethanol	TX	4750	10184404
Ethyl acetate	TX	4755	10184404
Ethyl methacrylate	TX	4810	10184404
Ethylbenzene	TX	4765	10184404
Ethylene oxide	TX	4795	10184404
Hexachlorobutadiene	TX	4835	10184404
Iodomethane (Methyl iodide)	TX	4870	10184404
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10184404
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10184404
Isopropylbenzene (Cumene)	TX	4900	10184404
m+p-xylene	TX	5240	10184404
Methacrylonitrile	TX	4925	10184404
Methyl acetate	TX	4940	10184404
Methyl acrylate	TX	4945	10184404
Methyl bromide (Bromomethane)	TX	4950	10184404
Methyl chloride (Chloromethane)	TX	4960	10184404
Methyl methacrylate	TX	4990	10184404
Methyl tert-butyl ether (MTBE)	TX	5000	10184404
Methylcyclohexane	TX	4965	10184404
Methylene chloride (Dichloromethane)	TX	4975	10184404
Naphthalene	TX	5005	10184404
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10184404
n-Butylbenzene	TX	4435	10184404
n-Propylbenzene	TX	5090	10184404
o-Xylene	TX	5250	10184404
Pentachloroethane	TX	5035	10184404
Propionitrile (Ethyl cyanide)	TX	5080	10184404
Pyridine	TX	5095	10184404
sec-Butylbenzene	TX	4440	10184404

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Matrix: ***Solid & Chemical Materials***

Styrene	TX	5100	10184404
tert-Butyl alcohol	TX	4420	10184404
tert-Butylbenzene	TX	4445	10184404
Tetrachloroethylene (Perchloroethylene)	TX	5115	10184404
Toluene	TX	5140	10184404
trans-1,2-Dichloroethylene	TX	4700	10184404
trans-1,3-Dichloropropylene	TX	4685	10184404
trans-1,4-Dichloro-2-butene	TX	4605	10184404
Trichloroethene (Trichloroethylene)	TX	5170	10184404
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10184404
Vinyl acetate	TX	5225	10184404
Vinyl chloride	TX	5235	10184404
Xylene (total)	TX	5260	10184404

Method EPA 8270

Analyte	**AB**	**Analyte ID**	**Method ID**
1,2,4,5-Tetrachlorobenzene	TX	6715	10185203
1,2,4-Trichlorobenzene	TX	5155	10185203
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10185203
1,2-Dichlorobenzene	TX	4610	10185203
1,2-Dinitrobenzene	TX	6155	10185203
1,2-Diphenylhydrazine	TX	6220	10185203
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10185203
1,3-Dichlorobenzene	TX	4615	10185203
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10185203
1,4-Dichlorobenzene	TX	4620	10185203
1,4-Dinitrobenzene	TX	6165	10185203
1,4-Naphthoquinone	TX	6420	10185203
1,4-Phenylenediamine	TX	6630	10185203
1-Chloronaphthalene	TX	5790	10185203
1-Naphthylamine	TX	6425	10185203

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Matrix: ***Solid & Chemical Materials***

2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10185203
2,3,4,6-Tetrachlorophenol	TX	6735	10185203
2,4,5-Trichlorophenol	TX	6835	10185203
2,4,5-Trimethylaniline	TX	6880	10185203
2,4,6-Trichlorophenol	TX	6840	10185203
2,4-Diaminotoluene	TX	5880	10185203
2,4-Dichlorophenol	TX	6000	10185203
2,4-Dimethylphenol	TX	6130	10185203
2,4-Dinitrophenol	TX	6175	10185203
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10185203
2,6-Dichlorophenol	TX	6005	10185203
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10185203
2-Acetylaminofluorene	TX	5515	10185203
2-Chloronaphthalene	TX	5795	10185203
2-Chlorophenol	TX	5800	10185203
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10185203
2-Methylaniline (o-Toluidine)	TX	5145	10185203
2-Methylnaphthalene	TX	6385	10185203
2-Methylphenol (o-Cresol)	TX	6400	10185203
2-Naphthylamine	TX	6430	10185203
2-Nitroaniline	TX	6460	10185203
2-Nitrophenol	TX	6490	10185203
2-Picoline (2-Methylpyridine)	TX	5050	10185203
3,3'-Dichlorobenzidine	TX	5945	10185203
3,3'-Dimethylbenzidine	TX	6120	10185203
3-Methylcholanthrene	TX	6355	10185203
3-Methylphenol (m-Cresol)	TX	6405	10185203
3-Nitroaniline	TX	6465	10185203
4-Aminobiphenyl	TX	5540	10185203
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10185203

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Matrix: ***Solid & Chemical Materials***

4-Chloro-3-methylphenol	TX	5700	10185203
4-Chloroaniline	TX	5745	10185203
4-Chlorophenyl phenylether	TX	5825	10185203
4-Methylphenol (p-Cresol)	TX	6410	10185203
4-Nitroaniline	TX	6470	10185203
4-Nitrophenol	TX	6500	10185203
4-Nitroquinoline-1-oxide	TX	6510	10185203
5-Nitro-o-toluidine	TX	6570	10185203
7,12-Dimethylbenz(a) anthracene	TX	6115	10185203
a-a-Dimethylphenethylamine	TX	6125	10185203
Acenaphthene	TX	5500	10185203
Acenaphthylene	TX	5505	10185203
Acetophenone	TX	5510	10185203
Aniline	TX	5545	10185203
Anthracene	TX	5555	10185203
Aramite	TX	5560	10185203
Atrazine	TX	7065	10185203
Azinphos-methyl (Guthion)	TX	7075	10185203
Azobenzene	TX	5562	10185203
Benzenethiol (Thiophenol)	TX	6750	10185203
Benzidine	TX	5595	10185203
Benzo(a)anthracene	TX	5575	10185203
Benzo(a)pyrene	TX	5580	10185203
Benzo(b)fluoranthene	TX	5585	10185203
Benzo(e)pyrene	TX	5605	10185203
Benzo(g,h,i)perylene	TX	5590	10185203
Benzo(k)fluoranthene	TX	5600	10185203
Benzoic acid	TX	5610	10185203
Benzyl alcohol	TX	5630	10185203
Biphenyl	TX	5640	10185203

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-20-26

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

Expiration Date: 4/30/2021

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2020

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Matrix: ***Solid & Chemical Materials***

bis(2-Chloroethoxy)methane	TX	5760	10185203
bis(2-Chloroethyl) ether	TX	5765	10185203
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10185203
Butyl benzyl phthalate	TX	5670	10185203
Caprolactam	TX	7180	10185203
Carbaryl (Sevin)	TX	7195	10185203
Carbazole	TX	5680	10185203
Carbophenothion	TX	7220	10185203
Chlorobenzilate	TX	7260	10185203
Chrysene	TX	5855	10185203
Demeton	TX	7390	10185203
Demeton-o	TX	7395	10185203
Demeton-s	TX	7385	10185203
Diallate	TX	7405	10185203
Dibenz(a,h) anthracene	TX	5895	10185203
Dibenz(a,j) acridine	TX	5900	10185203
Dibenzo(a,e) pyrene	TX	5890	10185203
Dibenzofuran	TX	5905	10185203
Dichlorovos (DDVP, Dichlorvos)	TX	8610	10185203
Diethyl phthalate	TX	6070	10185203
Dimethoate	TX	7475	10185203
Dimethyl phthalate	TX	6135	10185203
Di-n-butyl phthalate	TX	5925	10185203
Di-n-octyl phthalate	TX	6200	10185203
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10185203
Diphenylamine	TX	6205	10185203
Disulfoton	TX	8625	10185203
Ethyl methanesulfonate	TX	6260	10185203
Fluoranthene	TX	6265	10185203
Fluorene	TX	6270	10185203

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Matrix: ***Solid & Chemical Materials***

Hexachlorobenzene	TX	6275	10185203
Hexachlorobutadiene	TX	4835	10185203
Hexachlorocyclopentadiene	TX	6285	10185203
Hexachloroethane	TX	4840	10185203
Hexachlorophene	TX	6290	10185203
Hexachloropropene	TX	6295	10185203
Indeno(1,2,3-cd) pyrene	TX	6315	10185203
Isodrin	TX	7725	10185203
Isophorone	TX	6320	10185203
Isosafrole	TX	6325	10185203
Kepone	TX	7740	10185203
Malathion	TX	7770	10185203
Methapyrilene	TX	6345	10185203
Methyl methanesulfonate	TX	6375	10185203
Methyl parathion (Parathion, methyl)	TX	7825	10185203
Mevinphos	TX	7850	10185203
Naphthalene	TX	5005	10185203
Nitrobenzene	TX	5015	10185203
n-Nitrosodiethylamine	TX	6525	10185203
n-Nitrosodimethylamine	TX	6530	10185203
n-Nitrosodi-n-butylamine	TX	5025	10185203
n-Nitrosodi-n-propylamine	TX	6545	10185203
n-Nitrosodiphenylamine	TX	6535	10185203
n-Nitrosomethylethylamine	TX	6550	10185203
n-Nitrosomorpholine	TX	6555	10185203
n-Nitrosopiperidine	TX	6560	10185203
n-Nitrosopyrrolidine	TX	6565	10185203
o,o,o-Triethyl phosphorothioate	TX	8290	10185203
o-Anisidine	TX	5550	10185203
Parathion, ethyl	TX	7955	10185203

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p-Cresidine	TX	5860	10185203
Pentachlorobenzene	TX	6590	10185203
Pentachloronitrobenzene (PCNB)	TX	6600	10185203
Pentachlorophenol	TX	6605	10185203
Phenacetin	TX	6610	10185203
Phenanthrene	TX	6615	10185203
Phenol	TX	6625	10185203
Phorate	TX	7985	10185203
Pronamide (Kerb)	TX	6650	10185203
Pyrene	TX	6665	10185203
Pyridine	TX	5095	10185203
Quinoline	TX	6670	10185203
Safrole	TX	6685	10185203
Sulfotepp	TX	8155	10185203
Terbufos	TX	8185	10185203
Tetrachlorvinphos (Stirophos, Gardona)	TX	8197	10185203
Thionazin (Zinophos)	TX	8235	10185203
Toluene diisocyanate	TX	6775	10185203

Method EPA 8290

Analyte	AB	Analyte ID	Method ID
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10187209
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10187209
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10187209
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10187209
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10187209
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10187209
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10187209
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10187209
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10187209
1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10187209

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1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10187209
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10187209
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10187209
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10187209
2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10187209
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10187209
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10187209
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10187209
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10187209
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10187209
Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10187209
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10187209
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10187209
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10187209
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10187209

Method EPA 8316

Analyte	**AB**	**Analyte ID**	**Method ID**
Acrylamide	TX	4330	10188202

Method EPA 8330

Analyte	**AB**	**Analyte ID**	**Method ID**
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10189807
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10189807
2,4,6-Trinitrotoluene (2,4,6-TNT)	TX	9651	10189807
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10189807
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10189807
2-Amino-4,6-dinitrotoluene (2-am-dnt)	TX	9303	10189807
2-Nitrotoluene	TX	9507	10189807
3-Nitrotoluene	TX	9510	10189807
4-Amino-2,6-dinitrotoluene (4-am-dnt)	TX	9306	10189807
4-Nitrotoluene	TX	9513	10189807
Methyl-2,4,6-trinitrophenylnitramine (tetryl)	TX	6415	10189807

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Matrix: ***Solid & Chemical Materials***

Nitrobenzene	TX	5015	10189807
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	TX	9522	10189807
RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine)	TX	9432	10189807

Method EPA 9014

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	10193803
Total cyanide	TX	1645	10193803

Method EPA 9038

Analyte	**AB**	**Analyte ID**	**Method ID**
Sulfate	TX	2000	10196608

Method EPA 9040

Analyte	**AB**	**Analyte ID**	**Method ID**
Corrosivity	TX	1615	10197203
pH	TX	1900	10196802

Method EPA 9045

Analyte	**AB**	**Analyte ID**	**Method ID**
Corrosivity	TX	1615	10197805
pH	TX	1900	10197805

Method EPA 9050

Analyte	**AB**	**Analyte ID**	**Method ID**
Conductivity	TX	1610	10198604

Method EPA 9056

Analyte	**AB**	**Analyte ID**	**Method ID**
Bromide	TX	1540	10199209
Chloride	TX	1575	10199209
Fluoride	TX	1730	10199209
Nitrate as N	TX	1810	10199209
Nitrate-nitrite	TX	1820	10199209
Nitrite as N	TX	1840	10199209
Orthophosphate as P	TX	1870	10199209
Sulfate	TX	2000	10199209

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Matrix: ***Solid & Chemical Materials***

Method	Analyte	AB	Analyte ID	Method ID
EPA 9060	Total Organic Carbon (TOC)	TX	2040	10200201
EPA 9065	Total phenolics	TX	1905	10200405
EPA 9071	n-Hexane Extractable Material (HEM) (O&G)	TX	1803	10201204
EPA 9095	Paint Filter Liquids Test	TX	10312	10204009
EPA 9250	Chloride	TX	1575	10207202
SM 2320 B	Alkalinity as CaCO3	TX	1505	20045005
SM 2510 B	Conductivity	TX	1610	20048004
SM 2540 G	Residue-total (total solids)	TX	1950	20005203
SSA/ASA Part 3:34	Carbon, organic (Walkley-Black)	TX	10340	SSA/ASA Pt 3:34
TCEQ 1005	Total Petroleum Hydrocarbons (TPH)	TX	2050	90019208

10450 Stancliff Rd. Suite 210
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June 01, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20050915**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 13 sample(s) on May 22, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20050915**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS20050915**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 06/01/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20050915				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 153846,153896,R362189				
#[1]	A[2]	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?		X			1
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?		X			2
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?		X			3
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 06/01/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20050915				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 153846,153896,R362189				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?	X				
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 06/01/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20050915
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 153846,153896,R362189

ER#[5]	Description
1	Semivolatile Organics Method SW8270, samples WG-1620-MW70C-20200521, WG-1620-FD01-20200521 the surrogate recoveries could not be determined due to dilution below the calibration range.
2	Batch 153896, Semivolatile Organics Method SW8270: LCS/LCSD RPD was above the control limits for 4-Nitrophenol. The individual recoveries were in control.
3	Batch 153896, Semivolatile Organics Method SW8270: LCS/LCSD were analyzed and reported in lieu of an MS/MSD for this batch

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20050915

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20050915-01	WG-1620-MW70C-20200521	Water		21-May-2020 11:15	22-May-2020 16:55	☐
HS20050915-02	WG-1620-MW92B-20200521	Water		21-May-2020 15:35	22-May-2020 16:55	☐
HS20050915-03	WG-1620-MW84A-20200521	Water		21-May-2020 14:20	22-May-2020 16:55	☐
HS20050915-04	WG-1620-MW91A-20200521	Water		21-May-2020 13:10	22-May-2020 16:55	☐
HS20050915-05	WG-1620-FD01-20200521	Water		21-May-2020 00:00	22-May-2020 16:55	☐
HS20050915-06	WQ-1620-TB01-20200521	Water	CG 042320 -52	21-May-2020 10:00	22-May-2020 16:55	☐
HS20050915-07	WG-1620-MW99C-20200522	Water		22-May-2020 15:30	22-May-2020 16:55	☐
HS20050915-08	WG-1620-MW54B-20200522	Water		22-May-2020 14:25	22-May-2020 16:55	☐
HS20050915-09	WG-1620-MW96B-20200522	Water		22-May-2020 13:25	22-May-2020 16:55	☐
HS20050915-10	WG-1620-MW95A-20200522	Water		22-May-2020 12:20	22-May-2020 16:55	☐
HS20050915-11	WG-1620-MW94A-20200522	Water		22-May-2020 11:20	22-May-2020 16:55	☐
HS20050915-12	WG-1620-MW93B-20200522	Water		22-May-2020 10:15	22-May-2020 16:55	☐
HS20050915-13	WQ-1620-TB02-20200522	Water	CG 042320 -51	22-May-2020 15:30	22-May-2020 16:55	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW70C-20200521
Collection Date: 21-May-2020 11:15

ANALYTICAL REPORT
WorkOrder:HS20050915
Lab ID:HS20050915-01
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	27-May-2020 02:49
Benzene	**0.019**		**0.00020**	**0.0010**	**mg/L**	1	27-May-2020 02:49
Chlorobenzene	U		0.00030	0.0010	mg/L	1	27-May-2020 02:49
Ethylbenzene	**0.11**		**0.00030**	**0.0010**	**mg/L**	1	27-May-2020 02:49
Methylene chloride	U		0.0010	0.0020	mg/L	1	27-May-2020 02:49
Toluene	**0.056**		**0.00020**	**0.0010**	**mg/L**	1	27-May-2020 02:49
Xylenes, Total	**0.13**		**0.00030**	**0.0010**	**mg/L**	1	27-May-2020 02:49
Surr: 1,2-Dichloroethane-d4	*84.2*			*70-126*	*%REC*	*1*	*27-May-2020 02:49*
Surr: 4-Bromofluorobenzene	*101*			*81-113*	*%REC*	*1*	*27-May-2020 02:49*
Surr: Dibromofluoromethane	*92.1*			*77-123*	*%REC*	*1*	*27-May-2020 02:49*
Surr: Toluene-d8	*96.1*			*82-127*	*%REC*	*1*	*27-May-2020 02:49*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW70C-20200521
Collection Date: 21-May-2020 11:15

ANALYTICAL REPORT
WorkOrder:HS20050915
Lab ID:HS20050915-01
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 27-May-2020		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	29-May-2020 21:17
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	29-May-2020 21:17
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	29-May-2020 21:17
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	29-May-2020 21:17
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	29-May-2020 21:17
2-Methylnaphthalene	**0.050**		**0.00019**	**0.0010**	**mg/L**	10	30-May-2020 13:18
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	29-May-2020 21:17
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	29-May-2020 21:17
Acenaphthene	**0.068**		**0.00027**	**0.0010**	**mg/L**	10	30-May-2020 13:18
Acenaphthylene	**0.00066**		**0.000015**	**0.00010**	**mg/L**	1	29-May-2020 21:17
Anthracene	**0.0035**		**0.000014**	**0.00010**	**mg/L**	1	29-May-2020 21:17
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	29-May-2020 21:17
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	29-May-2020 21:17
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	29-May-2020 21:17
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	29-May-2020 21:17
Chrysene	U		0.000021	0.00010	mg/L	1	29-May-2020 21:17
Dibenzofuran	**0.053**		**0.00020**	**0.0010**	**mg/L**	10	30-May-2020 13:18
Di-n-butyl phthalate	**0.00016**	J	**0.000020**	**0.00020**	**mg/L**	1	29-May-2020 21:17
Fluoranthene	**0.0027**		**0.000010**	**0.00010**	**mg/L**	1	29-May-2020 21:17
Fluorene	**0.034**		**0.00030**	**0.0010**	**mg/L**	10	30-May-2020 13:18
Naphthalene	**1.1**		**0.020**	**0.10**	**mg/L**	1000	30-May-2020 13:37
Nitrobenzene	U		0.000024	0.00020	mg/L	1	29-May-2020 21:17
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	29-May-2020 21:17
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	29-May-2020 21:17
Phenanthrene	**0.030**		**0.00021**	**0.0010**	**mg/L**	10	30-May-2020 13:18
Phenol	U		0.000035	0.00020	mg/L	1	29-May-2020 21:17
Pyrene	**0.0011**		**0.000019**	**0.00010**	**mg/L**	1	29-May-2020 21:17
Surr: 2,4,6-Tribromophenol	*120*			*34-129*	*%REC*	*1*	*29-May-2020 21:17*
Surr: 2,4,6-Tribromophenol	*76.7*			*34-129*	*%REC*	*10*	*30-May-2020 13:18*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*1000*	*30-May-2020 13:37*
Surr: 2-Fluorobiphenyl	*67.9*			*40-125*	*%REC*	*10*	*30-May-2020 13:18*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*1000*	*30-May-2020 13:37*
Surr: 2-Fluorobiphenyl	*59.4*			*40-125*	*%REC*	*1*	*29-May-2020 21:17*
Surr: 2-Fluorophenol	*74.8*			*20-120*	*%REC*	*1*	*29-May-2020 21:17*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*1000*	*30-May-2020 13:37*
Surr: 2-Fluorophenol	*83.6*			*20-120*	*%REC*	*10*	*30-May-2020 13:18*
Surr: 4-Terphenyl-d14	*79.6*			*40-135*	*%REC*	*10*	*30-May-2020 13:18*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*1000*	*30-May-2020 13:37*
Surr: 4-Terphenyl-d14	*79.2*			*40-135*	*%REC*	*1*	*29-May-2020 21:17*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW70C-20200521
Collection Date: 21-May-2020 11:15

ANALYTICAL REPORT
WorkOrder:HS20050915
Lab ID:HS20050915-01
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 27-May-2020		Analyst: GEY
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*1000*	*30-May-2020 13:37*
Surr: Nitrobenzene-d5	*94.9*			*41-120*	*%REC*	*10*	*30-May-2020 13:18*
Surr: Nitrobenzene-d5	*103*			*41-120*	*%REC*	*1*	*29-May-2020 21:17*
Surr: Phenol-d6	*66.5*			*20-120*	*%REC*	*1*	*29-May-2020 21:17*
Surr: Phenol-d6	*74.2*			*20-120*	*%REC*	*10*	*30-May-2020 13:18*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*1000*	*30-May-2020 13:37*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 27-May-2020		Analyst: JHD
Arsenic	**0.00663**		**0.000400**	**0.00200**	**mg/L**	1	27-May-2020 17:33

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW92B-20200521
Collection Date: 21-May-2020 15:35

ANALYTICAL REPORT
WorkOrder:HS20050915
Lab ID:HS20050915-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	27-May-2020 04:26
Benzene		U	0.00020	0.0010	mg/L	1	27-May-2020 04:26
Chlorobenzene		U	0.00030	0.0010	mg/L	1	27-May-2020 04:26
Ethylbenzene		U	0.00030	0.0010	mg/L	1	27-May-2020 04:26
Methylene chloride		U	0.0010	0.0020	mg/L	1	27-May-2020 04:26
Toluene		U	0.00020	0.0010	mg/L	1	27-May-2020 04:26
Xylenes, Total		U	0.00030	0.0010	mg/L	1	27-May-2020 04:26
Surr: 1,2-Dichloroethane-d4	*85.8*			*70-126*	*%REC*	*1*	*27-May-2020 04:26*
Surr: 4-Bromofluorobenzene	*97.1*			*81-113*	*%REC*	*1*	*27-May-2020 04:26*
Surr: Dibromofluoromethane	*90.3*			*77-123*	*%REC*	*1*	*27-May-2020 04:26*
Surr: Toluene-d8	*98.3*			*82-127*	*%REC*	*1*	*27-May-2020 04:26*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW92B-20200521
Collection Date: 21-May-2020 15:35

ANALYTICAL REPORT
WorkOrder:HS20050915
Lab ID:HS20050915-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 27-May-2020		Analyst: GEY
1,2-Diphenylhydrazine		U	0.000021	0.00020	mg/L	1	30-May-2020 11:04
2,4-Dimethylphenol		U	0.000040	0.00020	mg/L	1	30-May-2020 11:04
2,4-Dinitrotoluene		U	0.000058	0.00020	mg/L	1	30-May-2020 11:04
2,6-Dinitrotoluene		U	0.000042	0.00020	mg/L	1	30-May-2020 11:04
2-Chloronaphthalene		U	0.000021	0.00020	mg/L	1	30-May-2020 11:04
2-Methylnaphthalene		U	0.000019	0.00010	mg/L	1	30-May-2020 11:04
4,6-Dinitro-2-methylphenol		U	0.000020	0.00020	mg/L	1	30-May-2020 11:04
4-Nitrophenol		U	0.000047	0.0010	mg/L	1	30-May-2020 11:04
Acenaphthene		U	0.000027	0.00010	mg/L	1	30-May-2020 11:04
Acenaphthylene		U	0.000015	0.00010	mg/L	1	30-May-2020 11:04
Anthracene		U	0.000014	0.00010	mg/L	1	30-May-2020 11:04
Benz(a)anthracene		U	0.000050	0.00010	mg/L	1	30-May-2020 11:04
Benzo(a)pyrene		U	0.000020	0.00010	mg/L	1	30-May-2020 11:04
Bis(2-chloroethoxy)methane		U	0.000030	0.00020	mg/L	1	30-May-2020 11:04
Bis(2-ethylhexyl)phthalate		U	0.000037	0.00020	mg/L	1	30-May-2020 11:04
Chrysene		U	0.000021	0.00010	mg/L	1	30-May-2020 11:04
Dibenzofuran		U	0.000020	0.00010	mg/L	1	30-May-2020 11:04
Di-n-butyl phthalate		U	0.000020	0.00020	mg/L	1	30-May-2020 11:04
Fluoranthene		U	0.000010	0.00010	mg/L	1	30-May-2020 11:04
Fluorene		U	0.000030	0.00010	mg/L	1	30-May-2020 11:04
Naphthalene		U	0.000020	0.00010	mg/L	1	30-May-2020 11:04
Nitrobenzene		U	0.000024	0.00020	mg/L	1	30-May-2020 11:04
N-Nitrosodiphenylamine		U	0.000025	0.00020	mg/L	1	30-May-2020 11:04
Pentachlorophenol		U	0.000079	0.00020	mg/L	1	30-May-2020 11:04
Phenanthrene		U	0.000021	0.00010	mg/L	1	30-May-2020 11:04
Phenol		U	0.000035	0.00020	mg/L	1	30-May-2020 11:04
Pyrene		U	0.000019	0.00010	mg/L	1	30-May-2020 11:04
Surr: 2,4,6-Tribromophenol	*93.2*			*34-129*	*%REC*	*1*	*30-May-2020 11:04*
Surr: 2-Fluorobiphenyl	*72.3*			*40-125*	*%REC*	*1*	*30-May-2020 11:04*
Surr: 2-Fluorophenol	*72.7*			*20-120*	*%REC*	*1*	*30-May-2020 11:04*
Surr: 4-Terphenyl-d14	*85.5*			*40-135*	*%REC*	*1*	*30-May-2020 11:04*
Surr: Nitrobenzene-d5	*65.2*			*41-120*	*%REC*	*1*	*30-May-2020 11:04*
Surr: Phenol-d6	*74.3*			*20-120*	*%REC*	*1*	*30-May-2020 11:04*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 27-May-2020		Analyst: JHD
Arsenic	**0.00380**		**0.000400**	**0.00200**	**mg/L**	1	27-May-2020 17:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW84A-20200521
Collection Date: 21-May-2020 14:20

ANALYTICAL REPORT
WorkOrder:HS20050915
Lab ID:HS20050915-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	27-May-2020 04:50
Benzene		U	0.00020	0.0010	mg/L	1	27-May-2020 04:50
Chlorobenzene		U	0.00030	0.0010	mg/L	1	27-May-2020 04:50
Ethylbenzene		U	0.00030	0.0010	mg/L	1	27-May-2020 04:50
Methylene chloride		U	0.0010	0.0020	mg/L	1	27-May-2020 04:50
Toluene		U	0.00020	0.0010	mg/L	1	27-May-2020 04:50
Xylenes, Total		U	0.00030	0.0010	mg/L	1	27-May-2020 04:50
Surr: 1,2-Dichloroethane-d4	*83.3*			*70-126*	*%REC*	*1*	*27-May-2020 04:50*
Surr: 4-Bromofluorobenzene	*95.6*			*81-113*	*%REC*	*1*	*27-May-2020 04:50*
Surr: Dibromofluoromethane	*88.2*			*77-123*	*%REC*	*1*	*27-May-2020 04:50*
Surr: Toluene-d8	*95.9*			*82-127*	*%REC*	*1*	*27-May-2020 04:50*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW84A-20200521
Collection Date: 21-May-2020 14:20

ANALYTICAL REPORT
WorkOrder:HS20050915
Lab ID:HS20050915-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 27-May-2020		Analyst: GEY
1,2-Diphenylhydrazine		U	0.000021	0.00020	mg/L	1	29-May-2020 21:55
2,4-Dimethylphenol		U	0.000040	0.00020	mg/L	1	29-May-2020 21:55
2,4-Dinitrotoluene		U	0.000058	0.00020	mg/L	1	29-May-2020 21:55
2,6-Dinitrotoluene		U	0.000042	0.00020	mg/L	1	29-May-2020 21:55
2-Chloronaphthalene		U	0.000021	0.00020	mg/L	1	29-May-2020 21:55
2-Methylnaphthalene		U	0.000019	0.00010	mg/L	1	29-May-2020 21:55
4,6-Dinitro-2-methylphenol		U	0.000020	0.00020	mg/L	1	29-May-2020 21:55
4-Nitrophenol		U	0.000047	0.0010	mg/L	1	29-May-2020 21:55
Acenaphthene		U	0.000027	0.00010	mg/L	1	29-May-2020 21:55
Acenaphthylene		U	0.000015	0.00010	mg/L	1	29-May-2020 21:55
Anthracene		U	0.000014	0.00010	mg/L	1	29-May-2020 21:55
Benz(a)anthracene		U	0.000050	0.00010	mg/L	1	29-May-2020 21:55
Benzo(a)pyrene		U	0.000020	0.00010	mg/L	1	29-May-2020 21:55
Bis(2-chloroethoxy)methane		U	0.000030	0.00020	mg/L	1	29-May-2020 21:55
Bis(2-ethylhexyl)phthalate		U	0.000037	0.00020	mg/L	1	29-May-2020 21:55
Chrysene		U	0.000021	0.00010	mg/L	1	29-May-2020 21:55
Dibenzofuran		U	0.000020	0.00010	mg/L	1	29-May-2020 21:55
Di-n-butyl phthalate		U	0.000020	0.00020	mg/L	1	29-May-2020 21:55
Fluoranthene		U	0.000010	0.00010	mg/L	1	29-May-2020 21:55
Fluorene		U	0.000030	0.00010	mg/L	1	29-May-2020 21:55
Naphthalene		U	0.000020	0.00010	mg/L	1	29-May-2020 21:55
Nitrobenzene		U	0.000024	0.00020	mg/L	1	29-May-2020 21:55
N-Nitrosodiphenylamine		U	0.000025	0.00020	mg/L	1	29-May-2020 21:55
Pentachlorophenol		U	0.000079	0.00020	mg/L	1	29-May-2020 21:55
Phenanthrene		U	0.000021	0.00010	mg/L	1	29-May-2020 21:55
Phenol		U	0.000035	0.00020	mg/L	1	29-May-2020 21:55
Pyrene		U	0.000019	0.00010	mg/L	1	29-May-2020 21:55
Surr: 2,4,6-Tribromophenol	*75.1*			*34-129*	*%REC*	*1*	*29-May-2020 21:55*
Surr: 2-Fluorobiphenyl	*82.0*			*40-125*	*%REC*	*1*	*29-May-2020 21:55*
Surr: 2-Fluorophenol	*103*			*20-120*	*%REC*	*1*	*29-May-2020 21:55*
Surr: 4-Terphenyl-d14	*90.3*			*40-135*	*%REC*	*1*	*29-May-2020 21:55*
Surr: Nitrobenzene-d5	*72.3*			*41-120*	*%REC*	*1*	*29-May-2020 21:55*
Surr: Phenol-d6	*82.6*			*20-120*	*%REC*	*1*	*29-May-2020 21:55*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 27-May-2020		Analyst: JHD
Arsenic	**0.0112**		**0.000400**	**0.00200**	**mg/L**	1	27-May-2020 17:48

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW91A-20200521
Collection Date: 21-May-2020 13:10

ANALYTICAL REPORT
WorkOrder:HS20050915
Lab ID:HS20050915-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	27-May-2020 05:14
Benzene		U	0.00020	0.0010	mg/L	1	27-May-2020 05:14
Chlorobenzene		U	0.00030	0.0010	mg/L	1	27-May-2020 05:14
Ethylbenzene		U	0.00030	0.0010	mg/L	1	27-May-2020 05:14
Methylene chloride		U	0.0010	0.0020	mg/L	1	27-May-2020 05:14
Toluene		U	0.00020	0.0010	mg/L	1	27-May-2020 05:14
Xylenes, Total		U	0.00030	0.0010	mg/L	1	27-May-2020 05:14
Surr: 1,2-Dichloroethane-d4	*82.2*			*70-126*	*%REC*	*1*	*27-May-2020 05:14*
Surr: 4-Bromofluorobenzene	*95.3*			*81-113*	*%REC*	*1*	*27-May-2020 05:14*
Surr: Dibromofluoromethane	*89.2*			*77-123*	*%REC*	*1*	*27-May-2020 05:14*
Surr: Toluene-d8	*96.4*			*82-127*	*%REC*	*1*	*27-May-2020 05:14*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW91A-20200521
Collection Date: 21-May-2020 13:10

ANALYTICAL REPORT
WorkOrder:HS20050915
Lab ID:HS20050915-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 27-May-2020		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	29-May-2020 22:14
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	29-May-2020 22:14
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	29-May-2020 22:14
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	29-May-2020 22:14
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	29-May-2020 22:14
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	29-May-2020 22:14
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	29-May-2020 22:14
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	29-May-2020 22:14
Acenaphthene	U		0.000027	0.00010	mg/L	1	29-May-2020 22:14
Acenaphthylene	U		0.000015	0.00010	mg/L	1	29-May-2020 22:14
Anthracene	U		0.000014	0.00010	mg/L	1	29-May-2020 22:14
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	29-May-2020 22:14
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	29-May-2020 22:14
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	29-May-2020 22:14
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	29-May-2020 22:14
Chrysene	U		0.000021	0.00010	mg/L	1	29-May-2020 22:14
Dibenzofuran	U		0.000020	0.00010	mg/L	1	29-May-2020 22:14
Di-n-butyl phthalate	**0.00019**	J	**0.000020**	**0.00020**	**mg/L**	1	29-May-2020 22:14
Fluoranthene	U		0.000010	0.00010	mg/L	1	29-May-2020 22:14
Fluorene	U		0.000030	0.00010	mg/L	1	29-May-2020 22:14
Naphthalene	**0.00037**		**0.000020**	**0.00010**	**mg/L**	1	29-May-2020 22:14
Nitrobenzene	U		0.000024	0.00020	mg/L	1	29-May-2020 22:14
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	29-May-2020 22:14
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	29-May-2020 22:14
Phenanthrene	U		0.000021	0.00010	mg/L	1	29-May-2020 22:14
Phenol	U		0.000035	0.00020	mg/L	1	29-May-2020 22:14
Pyrene	U		0.000019	0.00010	mg/L	1	29-May-2020 22:14
Surr: 2,4,6-Tribromophenol	*58.9*			*34-129*	*%REC*	*1*	*29-May-2020 22:14*
Surr: 2-Fluorobiphenyl	*68.6*			*40-125*	*%REC*	*1*	*29-May-2020 22:14*
Surr: 2-Fluorophenol	*62.0*			*20-120*	*%REC*	*1*	*29-May-2020 22:14*
Surr: 4-Terphenyl-d14	*86.1*			*40-135*	*%REC*	*1*	*29-May-2020 22:14*
Surr: Nitrobenzene-d5	*61.9*			*41-120*	*%REC*	*1*	*29-May-2020 22:14*
Surr: Phenol-d6	*72.2*			*20-120*	*%REC*	*1*	*29-May-2020 22:14*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 27-May-2020		Analyst: JHD
Arsenic	**0.0169**		**0.000400**	**0.00200**	**mg/L**	1	27-May-2020 17:59

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FD01-20200521
Collection Date: 21-May-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20050915
Lab ID:HS20050915-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	27-May-2020 08:04
Benzene	**0.018**		**0.00020**	**0.0010**	**mg/L**	1	27-May-2020 08:04
Chlorobenzene	U		0.00030	0.0010	mg/L	1	27-May-2020 08:04
Ethylbenzene	**0.12**		**0.00030**	**0.0010**	**mg/L**	1	27-May-2020 08:04
Methylene chloride	U		0.0010	0.0020	mg/L	1	27-May-2020 08:04
Toluene	**0.060**		**0.00020**	**0.0010**	**mg/L**	1	27-May-2020 08:04
Xylenes, Total	**0.14**		**0.00030**	**0.0010**	**mg/L**	1	27-May-2020 08:04
Surr: 1,2-Dichloroethane-d4	*84.3*			*70-126*	*%REC*	*1*	*27-May-2020 08:04*
Surr: 4-Bromofluorobenzene	*102*			*81-113*	*%REC*	*1*	*27-May-2020 08:04*
Surr: Dibromofluoromethane	*89.8*			*77-123*	*%REC*	*1*	*27-May-2020 08:04*
Surr: Toluene-d8	*96.8*			*82-127*	*%REC*	*1*	*27-May-2020 08:04*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FD01-20200521
Collection Date: 21-May-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20050915
Lab ID:HS20050915-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D	**Method:SW8270**				Prep:SW3510 / 27-May-2020		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	29-May-2020 22:33
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	29-May-2020 22:33
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	29-May-2020 22:33
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	29-May-2020 22:33
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	29-May-2020 22:33
2-Methylnaphthalene	**0.047**		**0.00019**	**0.0010**	**mg/L**	10	30-May-2020 13:56
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	29-May-2020 22:33
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	29-May-2020 22:33
Acenaphthene	**0.053**		**0.00027**	**0.0010**	**mg/L**	10	30-May-2020 13:56
Acenaphthylene	**0.00048**		**0.000015**	**0.00010**	**mg/L**	1	29-May-2020 22:33
Anthracene	**0.0029**		**0.000014**	**0.00010**	**mg/L**	1	29-May-2020 22:33
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	29-May-2020 22:33
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	29-May-2020 22:33
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	29-May-2020 22:33
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	29-May-2020 22:33
Chrysene	U		0.000021	0.00010	mg/L	1	29-May-2020 22:33
Dibenzofuran	**0.046**		**0.00020**	**0.0010**	**mg/L**	10	30-May-2020 13:56
Di-n-butyl phthalate	**0.00010**	J	**0.000020**	**0.00020**	**mg/L**	1	29-May-2020 22:33
Fluoranthene	**0.0020**		**0.000010**	**0.00010**	**mg/L**	1	29-May-2020 22:33
Fluorene	**0.027**		**0.00030**	**0.0010**	**mg/L**	10	30-May-2020 13:56
Naphthalene	**1.2**		**0.020**	**0.10**	**mg/L**	1000	30-May-2020 14:15
Nitrobenzene	U		0.000024	0.00020	mg/L	1	29-May-2020 22:33
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	29-May-2020 22:33
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	29-May-2020 22:33
Phenanthrene	**0.026**		**0.00021**	**0.0010**	**mg/L**	10	30-May-2020 13:56
Phenol	U		0.000035	0.00020	mg/L	1	29-May-2020 22:33
Pyrene	**0.00082**		**0.000019**	**0.00010**	**mg/L**	1	29-May-2020 22:33
Surr: 2,4,6-Tribromophenol	*115*			*34-129*	*%REC*	*10*	*30-May-2020 13:56*
Surr: 2,4,6-Tribromophenol	*0*	*JS*		*34-129*	*%REC*	*1000*	*30-May-2020 14:15*
Surr: 2,4,6-Tribromophenol	*95.8*			*34-129*	*%REC*	*1*	*29-May-2020 22:33*
Surr: 2-Fluorobiphenyl	*63.4*			*40-125*	*%REC*	*1*	*29-May-2020 22:33*
Surr: 2-Fluorobiphenyl	*63.8*			*40-125*	*%REC*	*10*	*30-May-2020 13:56*
Surr: 2-Fluorobiphenyl	*0*	*JS*		*40-125*	*%REC*	*1000*	*30-May-2020 14:15*
Surr: 2-Fluorophenol	*64.5*			*20-120*	*%REC*	*10*	*30-May-2020 13:56*
Surr: 2-Fluorophenol	*0*	*JS*		*20-120*	*%REC*	*1000*	*30-May-2020 14:15*
Surr: 2-Fluorophenol	*87.0*			*20-120*	*%REC*	*1*	*29-May-2020 22:33*
Surr: 4-Terphenyl-d14	*78.1*			*40-135*	*%REC*	*1*	*29-May-2020 22:33*
Surr: 4-Terphenyl-d14	*81.5*			*40-135*	*%REC*	*10*	*30-May-2020 13:56*
Surr: 4-Terphenyl-d14	*0*	*JS*		*40-135*	*%REC*	*1000*	*30-May-2020 14:15*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FD01-20200521
Collection Date: 21-May-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20050915
Lab ID:HS20050915-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 27-May-2020		Analyst: GEY
Surr: Nitrobenzene-d5	*95.3*			*41-120*	*%REC*	*1*	*29-May-2020 22:33*
Surr: Nitrobenzene-d5	*93.3*			*41-120*	*%REC*	*10*	*30-May-2020 13:56*
Surr: Nitrobenzene-d5	*0*	*JS*		*41-120*	*%REC*	*1000*	*30-May-2020 14:15*
Surr: Phenol-d6	*66.0*			*20-120*	*%REC*	*10*	*30-May-2020 13:56*
Surr: Phenol-d6	*0*	*JS*		*20-120*	*%REC*	*1000*	*30-May-2020 14:15*
Surr: Phenol-d6	*67.3*			*20-120*	*%REC*	*1*	*29-May-2020 22:33*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 27-May-2020		Analyst: JHD
Arsenic	**0.00606**		**0.000400**	**0.00200**	**mg/L**	1	27-May-2020 18:02

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WQ-1620-TB01-20200521
Collection Date: 21-May-2020 10:00

ANALYTICAL REPORT
WorkOrder:HS20050915
Lab ID:HS20050915-06
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	27-May-2020 02:01
Benzene		U	0.00020	0.0010	mg/L	1	27-May-2020 02:01
Chlorobenzene		U	0.00030	0.0010	mg/L	1	27-May-2020 02:01
Ethylbenzene		U	0.00030	0.0010	mg/L	1	27-May-2020 02:01
Methylene chloride		U	0.0010	0.0020	mg/L	1	27-May-2020 02:01
Toluene		U	0.00020	0.0010	mg/L	1	27-May-2020 02:01
Xylenes, Total		U	0.00030	0.0010	mg/L	1	27-May-2020 02:01
Surr: 1,2-Dichloroethane-d4	*87.2*			*70-126*	*%REC*	*1*	*27-May-2020 02:01*
Surr: 4-Bromofluorobenzene	*95.0*			*81-113*	*%REC*	*1*	*27-May-2020 02:01*
Surr: Dibromofluoromethane	*94.3*			*77-123*	*%REC*	*1*	*27-May-2020 02:01*
Surr: Toluene-d8	*96.1*			*82-127*	*%REC*	*1*	*27-May-2020 02:01*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW99C-20200522
Collection Date: 22-May-2020 15:30

ANALYTICAL REPORT
WorkOrder:HS20050915
Lab ID:HS20050915-07
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	27-May-2020 05:38
Benzene	U		0.00020	0.0010	mg/L	1	27-May-2020 05:38
Chlorobenzene	U		0.00030	0.0010	mg/L	1	27-May-2020 05:38
Ethylbenzene	U		0.00030	0.0010	mg/L	1	27-May-2020 05:38
Methylene chloride	U		0.0010	0.0020	mg/L	1	27-May-2020 05:38
Toluene	**0.00051**	J	**0.00020**	**0.0010**	**mg/L**	1	27-May-2020 05:38
Xylenes, Total	U		0.00030	0.0010	mg/L	1	27-May-2020 05:38
Surr: 1,2-Dichloroethane-d4	*83.4*			*70-126*	*%REC*	*1*	*27-May-2020 05:38*
Surr: 4-Bromofluorobenzene	*97.6*			*81-113*	*%REC*	*1*	*27-May-2020 05:38*
Surr: Dibromofluoromethane	*90.0*			*77-123*	*%REC*	*1*	*27-May-2020 05:38*
Surr: Toluene-d8	*97.6*			*82-127*	*%REC*	*1*	*27-May-2020 05:38*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW99C-20200522
Collection Date: 22-May-2020 15:30

ANALYTICAL REPORT
WorkOrder:HS20050915
Lab ID:HS20050915-07
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 27-May-2020		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	30-May-2020 11:23
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	30-May-2020 11:23
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	30-May-2020 11:23
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	30-May-2020 11:23
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	30-May-2020 11:23
2-Methylnaphthalene	**0.000036**	J	**0.000019**	**0.00010**	**mg/L**	1	30-May-2020 11:23
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	30-May-2020 11:23
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	30-May-2020 11:23
Acenaphthene	U		0.000027	0.00010	mg/L	1	30-May-2020 11:23
Acenaphthylene	U		0.000015	0.00010	mg/L	1	30-May-2020 11:23
Anthracene	U		0.000014	0.00010	mg/L	1	30-May-2020 11:23
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	30-May-2020 11:23
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	30-May-2020 11:23
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	30-May-2020 11:23
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	30-May-2020 11:23
Chrysene	U		0.000021	0.00010	mg/L	1	30-May-2020 11:23
Dibenzofuran	U		0.000020	0.00010	mg/L	1	30-May-2020 11:23
Di-n-butyl phthalate	**0.00019**	J	**0.000020**	**0.00020**	**mg/L**	1	30-May-2020 11:23
Fluoranthene	U		0.000010	0.00010	mg/L	1	30-May-2020 11:23
Fluorene	U		0.000030	0.00010	mg/L	1	30-May-2020 11:23
Naphthalene	**0.00040**		**0.000020**	**0.00010**	**mg/L**	1	30-May-2020 11:23
Nitrobenzene	U		0.000024	0.00020	mg/L	1	30-May-2020 11:23
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	30-May-2020 11:23
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	30-May-2020 11:23
Phenanthrene	U		0.000021	0.00010	mg/L	1	30-May-2020 11:23
Phenol	U		0.000035	0.00020	mg/L	1	30-May-2020 11:23
Pyrene	U		0.000019	0.00010	mg/L	1	30-May-2020 11:23
Surr: 2,4,6-Tribromophenol	*90.1*			*34-129*	*%REC*	*1*	*30-May-2020 11:23*
Surr: 2-Fluorobiphenyl	*64.8*			*40-125*	*%REC*	*1*	*30-May-2020 11:23*
Surr: 2-Fluorophenol	*77.1*			*20-120*	*%REC*	*1*	*30-May-2020 11:23*
Surr: 4-Terphenyl-d14	*79.3*			*40-135*	*%REC*	*1*	*30-May-2020 11:23*
Surr: Nitrobenzene-d5	*60.8*			*41-120*	*%REC*	*1*	*30-May-2020 11:23*
Surr: Phenol-d6	*70.6*			*20-120*	*%REC*	*1*	*30-May-2020 11:23*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 27-May-2020		Analyst: JHD
Arsenic	**0.000455**	J	**0.000400**	**0.00200**	**mg/L**	1	27-May-2020 18:04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW54B-20200522
Collection Date: 22-May-2020 14:25

ANALYTICAL REPORT
WorkOrder:HS20050915
Lab ID:HS20050915-08
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	27-May-2020 06:03
Benzene		U	0.00020	0.0010	mg/L	1	27-May-2020 06:03
Chlorobenzene		U	0.00030	0.0010	mg/L	1	27-May-2020 06:03
Ethylbenzene		U	0.00030	0.0010	mg/L	1	27-May-2020 06:03
Methylene chloride		U	0.0010	0.0020	mg/L	1	27-May-2020 06:03
Toluene		U	0.00020	0.0010	mg/L	1	27-May-2020 06:03
Xylenes, Total		U	0.00030	0.0010	mg/L	1	27-May-2020 06:03
Surr: 1,2-Dichloroethane-d4	*83.3*			*70-126*	*%REC*	*1*	*27-May-2020 06:03*
Surr: 4-Bromofluorobenzene	*98.0*			*81-113*	*%REC*	*1*	*27-May-2020 06:03*
Surr: Dibromofluoromethane	*88.6*			*77-123*	*%REC*	*1*	*27-May-2020 06:03*
Surr: Toluene-d8	*97.3*			*82-127*	*%REC*	*1*	*27-May-2020 06:03*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW54B-20200522
Collection Date: 22-May-2020 14:25

ANALYTICAL REPORT
WorkOrder:HS20050915
Lab ID:HS20050915-08
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 27-May-2020		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	30-May-2020 11:42
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	30-May-2020 11:42
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	30-May-2020 11:42
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	30-May-2020 11:42
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	30-May-2020 11:42
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	30-May-2020 11:42
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	30-May-2020 11:42
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	30-May-2020 11:42
Acenaphthene	U		0.000027	0.00010	mg/L	1	30-May-2020 11:42
Acenaphthylene	U		0.000015	0.00010	mg/L	1	30-May-2020 11:42
Anthracene	U		0.000014	0.00010	mg/L	1	30-May-2020 11:42
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	30-May-2020 11:42
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	30-May-2020 11:42
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	30-May-2020 11:42
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	30-May-2020 11:42
Chrysene	U		0.000021	0.00010	mg/L	1	30-May-2020 11:42
Dibenzofuran	U		0.000020	0.00010	mg/L	1	30-May-2020 11:42
Di-n-butyl phthalate	**0.00020**	J	**0.000020**	**0.00020**	**mg/L**	1	30-May-2020 11:42
Fluoranthene	U		0.000010	0.00010	mg/L	1	30-May-2020 11:42
Fluorene	U		0.000030	0.00010	mg/L	1	30-May-2020 11:42
Naphthalene	**0.00011**		**0.000020**	**0.00010**	**mg/L**	1	30-May-2020 11:42
Nitrobenzene	U		0.000024	0.00020	mg/L	1	30-May-2020 11:42
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	30-May-2020 11:42
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	30-May-2020 11:42
Phenanthrene	U		0.000021	0.00010	mg/L	1	30-May-2020 11:42
Phenol	U		0.000035	0.00020	mg/L	1	30-May-2020 11:42
Pyrene	U		0.000019	0.00010	mg/L	1	30-May-2020 11:42
Surr: 2,4,6-Tribromophenol	*96.7*			*34-129*	*%REC*	*1*	*30-May-2020 11:42*
Surr: 2-Fluorobiphenyl	*70.4*			*40-125*	*%REC*	*1*	*30-May-2020 11:42*
Surr: 2-Fluorophenol	*62.0*			*20-120*	*%REC*	*1*	*30-May-2020 11:42*
Surr: 4-Terphenyl-d14	*79.1*			*40-135*	*%REC*	*1*	*30-May-2020 11:42*
Surr: Nitrobenzene-d5	*62.6*			*41-120*	*%REC*	*1*	*30-May-2020 11:42*
Surr: Phenol-d6	*69.9*			*20-120*	*%REC*	*1*	*30-May-2020 11:42*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 27-May-2020		Analyst: JHD
Arsenic	**0.00147**	J	**0.000400**	**0.00200**	**mg/L**	1	27-May-2020 18:06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW96B-20200522
Collection Date: 22-May-2020 13:25

ANALYTICAL REPORT
WorkOrder:HS20050915
Lab ID:HS20050915-09
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	27-May-2020 06:27
Benzene		U	0.00020	0.0010	mg/L	1	27-May-2020 06:27
Chlorobenzene		U	0.00030	0.0010	mg/L	1	27-May-2020 06:27
Ethylbenzene		U	0.00030	0.0010	mg/L	1	27-May-2020 06:27
Methylene chloride		U	0.0010	0.0020	mg/L	1	27-May-2020 06:27
Toluene		U	0.00020	0.0010	mg/L	1	27-May-2020 06:27
Xylenes, Total		U	0.00030	0.0010	mg/L	1	27-May-2020 06:27
Surr: 1,2-Dichloroethane-d4	*83.7*			*70-126*	*%REC*	*1*	*27-May-2020 06:27*
Surr: 4-Bromofluorobenzene	*97.9*			*81-113*	*%REC*	*1*	*27-May-2020 06:27*
Surr: Dibromofluoromethane	*89.6*			*77-123*	*%REC*	*1*	*27-May-2020 06:27*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*1*	*27-May-2020 06:27*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW96B-20200522
Collection Date: 22-May-2020 13:25

ANALYTICAL REPORT
WorkOrder:HS20050915
Lab ID:HS20050915-09
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 27-May-2020		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	30-May-2020 12:01
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	30-May-2020 12:01
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	30-May-2020 12:01
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	30-May-2020 12:01
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	30-May-2020 12:01
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	30-May-2020 12:01
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	30-May-2020 12:01
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	30-May-2020 12:01
Acenaphthene	U		0.000027	0.00010	mg/L	1	30-May-2020 12:01
Acenaphthylene	U		0.000015	0.00010	mg/L	1	30-May-2020 12:01
Anthracene	U		0.000014	0.00010	mg/L	1	30-May-2020 12:01
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	30-May-2020 12:01
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	30-May-2020 12:01
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	30-May-2020 12:01
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	30-May-2020 12:01
Chrysene	U		0.000021	0.00010	mg/L	1	30-May-2020 12:01
Dibenzofuran	U		0.000020	0.00010	mg/L	1	30-May-2020 12:01
Di-n-butyl phthalate	**0.000077**	J	**0.000020**	**0.00020**	**mg/L**	1	30-May-2020 12:01
Fluoranthene	U		0.000010	0.00010	mg/L	1	30-May-2020 12:01
Fluorene	U		0.000030	0.00010	mg/L	1	30-May-2020 12:01
Naphthalene	**0.000083**	J	**0.000020**	**0.00010**	**mg/L**	1	30-May-2020 12:01
Nitrobenzene	U		0.000024	0.00020	mg/L	1	30-May-2020 12:01
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	30-May-2020 12:01
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	30-May-2020 12:01
Phenanthrene	U		0.000021	0.00010	mg/L	1	30-May-2020 12:01
Phenol	U		0.000035	0.00020	mg/L	1	30-May-2020 12:01
Pyrene	U		0.000019	0.00010	mg/L	1	30-May-2020 12:01
Surr: 2,4,6-Tribromophenol	*102*			*34-129*	*%REC*	*1*	*30-May-2020 12:01*
Surr: 2-Fluorobiphenyl	*79.8*			*40-125*	*%REC*	*1*	*30-May-2020 12:01*
Surr: 2-Fluorophenol	*87.6*			*20-120*	*%REC*	*1*	*30-May-2020 12:01*
Surr: 4-Terphenyl-d14	*81.5*			*40-135*	*%REC*	*1*	*30-May-2020 12:01*
Surr: Nitrobenzene-d5	*69.6*			*41-120*	*%REC*	*1*	*30-May-2020 12:01*
Surr: Phenol-d6	*91.3*			*20-120*	*%REC*	*1*	*30-May-2020 12:01*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 27-May-2020		Analyst: JHD
Arsenic	**0.00179**	J	**0.000400**	**0.00200**	**mg/L**	1	27-May-2020 18:09

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW95A-20200522
Collection Date: 22-May-2020 12:20

ANALYTICAL REPORT
WorkOrder:HS20050915
Lab ID:HS20050915-10
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	27-May-2020 06:51
Benzene		U	0.00020	0.0010	mg/L	1	27-May-2020 06:51
Chlorobenzene		U	0.00030	0.0010	mg/L	1	27-May-2020 06:51
Ethylbenzene		U	0.00030	0.0010	mg/L	1	27-May-2020 06:51
Methylene chloride		U	0.0010	0.0020	mg/L	1	27-May-2020 06:51
Toluene		U	0.00020	0.0010	mg/L	1	27-May-2020 06:51
Xylenes, Total		U	0.00030	0.0010	mg/L	1	27-May-2020 06:51
Surr: 1,2-Dichloroethane-d4	*84.8*			*70-126*	*%REC*	*1*	*27-May-2020 06:51*
Surr: 4-Bromofluorobenzene	*94.5*			*81-113*	*%REC*	*1*	*27-May-2020 06:51*
Surr: Dibromofluoromethane	*88.3*			*77-123*	*%REC*	*1*	*27-May-2020 06:51*
Surr: Toluene-d8	*95.7*			*82-127*	*%REC*	*1*	*27-May-2020 06:51*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW95A-20200522
Collection Date: 22-May-2020 12:20

ANALYTICAL REPORT
WorkOrder:HS20050915
Lab ID:HS20050915-10
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 27-May-2020		Analyst: GEY
1,2-Diphenylhydrazine		U	0.000021	0.00020	mg/L	1	30-May-2020 12:21
2,4-Dimethylphenol		U	0.000040	0.00020	mg/L	1	30-May-2020 12:21
2,4-Dinitrotoluene		U	0.000058	0.00020	mg/L	1	30-May-2020 12:21
2,6-Dinitrotoluene		U	0.000042	0.00020	mg/L	1	30-May-2020 12:21
2-Chloronaphthalene		U	0.000021	0.00020	mg/L	1	30-May-2020 12:21
2-Methylnaphthalene		U	0.000019	0.00010	mg/L	1	30-May-2020 12:21
4,6-Dinitro-2-methylphenol		U	0.000020	0.00020	mg/L	1	30-May-2020 12:21
4-Nitrophenol		U	0.000047	0.0010	mg/L	1	30-May-2020 12:21
Acenaphthene		U	0.000027	0.00010	mg/L	1	30-May-2020 12:21
Acenaphthylene		U	0.000015	0.00010	mg/L	1	30-May-2020 12:21
Anthracene		U	0.000014	0.00010	mg/L	1	30-May-2020 12:21
Benz(a)anthracene		U	0.000050	0.00010	mg/L	1	30-May-2020 12:21
Benzo(a)pyrene		U	0.000020	0.00010	mg/L	1	30-May-2020 12:21
Bis(2-chloroethoxy)methane		U	0.000030	0.00020	mg/L	1	30-May-2020 12:21
Bis(2-ethylhexyl)phthalate		U	0.000037	0.00020	mg/L	1	30-May-2020 12:21
Chrysene		U	0.000021	0.00010	mg/L	1	30-May-2020 12:21
Dibenzofuran		U	0.000020	0.00010	mg/L	1	30-May-2020 12:21
Di-n-butyl phthalate		U	0.000020	0.00020	mg/L	1	30-May-2020 12:21
Fluoranthene		U	0.000010	0.00010	mg/L	1	30-May-2020 12:21
Fluorene		U	0.000030	0.00010	mg/L	1	30-May-2020 12:21
Naphthalene		U	0.000020	0.00010	mg/L	1	30-May-2020 12:21
Nitrobenzene		U	0.000024	0.00020	mg/L	1	30-May-2020 12:21
N-Nitrosodiphenylamine		U	0.000025	0.00020	mg/L	1	30-May-2020 12:21
Pentachlorophenol		U	0.000079	0.00020	mg/L	1	30-May-2020 12:21
Phenanthrene		U	0.000021	0.00010	mg/L	1	30-May-2020 12:21
Phenol		U	0.000035	0.00020	mg/L	1	30-May-2020 12:21
Pyrene		U	0.000019	0.00010	mg/L	1	30-May-2020 12:21
Surr: 2,4,6-Tribromophenol	*90.6*			*34-129*	*%REC*	*1*	*30-May-2020 12:21*
Surr: 2-Fluorobiphenyl	*79.0*			*40-125*	*%REC*	*1*	*30-May-2020 12:21*
Surr: 2-Fluorophenol	*78.0*			*20-120*	*%REC*	*1*	*30-May-2020 12:21*
Surr: 4-Terphenyl-d14	*88.0*			*40-135*	*%REC*	*1*	*30-May-2020 12:21*
Surr: Nitrobenzene-d5	*71.9*			*41-120*	*%REC*	*1*	*30-May-2020 12:21*
Surr: Phenol-d6	*82.9*			*20-120*	*%REC*	*1*	*30-May-2020 12:21*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 27-May-2020		Analyst: JHD
Arsenic	**0.00254**		**0.000400**	**0.00200**	**mg/L**	1	27-May-2020 18:11

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW94A-20200522
Collection Date: 22-May-2020 11:20

ANALYTICAL REPORT
WorkOrder:HS20050915
Lab ID:HS20050915-11
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	27-May-2020 07:16
Benzene		U	0.00020	0.0010	mg/L	1	27-May-2020 07:16
Chlorobenzene		U	0.00030	0.0010	mg/L	1	27-May-2020 07:16
Ethylbenzene		U	0.00030	0.0010	mg/L	1	27-May-2020 07:16
Methylene chloride		U	0.0010	0.0020	mg/L	1	27-May-2020 07:16
Toluene		U	0.00020	0.0010	mg/L	1	27-May-2020 07:16
Xylenes, Total		U	0.00030	0.0010	mg/L	1	27-May-2020 07:16
Surr: 1,2-Dichloroethane-d4	*81.4*			*70-126*	*%REC*	*1*	*27-May-2020 07:16*
Surr: 4-Bromofluorobenzene	*97.8*			*81-113*	*%REC*	*1*	*27-May-2020 07:16*
Surr: Dibromofluoromethane	*87.9*			*77-123*	*%REC*	*1*	*27-May-2020 07:16*
Surr: Toluene-d8	*97.9*			*82-127*	*%REC*	*1*	*27-May-2020 07:16*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW94A-20200522
Collection Date: 22-May-2020 11:20

ANALYTICAL REPORT
WorkOrder:HS20050915
Lab ID:HS20050915-11
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 27-May-2020		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	30-May-2020 12:40
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	30-May-2020 12:40
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	30-May-2020 12:40
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	30-May-2020 12:40
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	30-May-2020 12:40
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	30-May-2020 12:40
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	30-May-2020 12:40
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	30-May-2020 12:40
Acenaphthene	U		0.000027	0.00010	mg/L	1	30-May-2020 12:40
Acenaphthylene	U		0.000015	0.00010	mg/L	1	30-May-2020 12:40
Anthracene	U		0.000014	0.00010	mg/L	1	30-May-2020 12:40
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	30-May-2020 12:40
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	30-May-2020 12:40
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	30-May-2020 12:40
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	30-May-2020 12:40
Chrysene	U		0.000021	0.00010	mg/L	1	30-May-2020 12:40
Dibenzofuran	U		0.000020	0.00010	mg/L	1	30-May-2020 12:40
Di-n-butyl phthalate	**0.000072**	J	**0.000020**	**0.00020**	**mg/L**	1	30-May-2020 12:40
Fluoranthene	U		0.000010	0.00010	mg/L	1	30-May-2020 12:40
Fluorene	U		0.000030	0.00010	mg/L	1	30-May-2020 12:40
Naphthalene	U		0.000020	0.00010	mg/L	1	30-May-2020 12:40
Nitrobenzene	U		0.000024	0.00020	mg/L	1	30-May-2020 12:40
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	30-May-2020 12:40
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	30-May-2020 12:40
Phenanthrene	U		0.000021	0.00010	mg/L	1	30-May-2020 12:40
Phenol	U		0.000035	0.00020	mg/L	1	30-May-2020 12:40
Pyrene	U		0.000019	0.00010	mg/L	1	30-May-2020 12:40
Surr: 2,4,6-Tribromophenol	*94.2*			*34-129*	*%REC*	*1*	*30-May-2020 12:40*
Surr: 2-Fluorobiphenyl	*79.4*			*40-125*	*%REC*	*1*	*30-May-2020 12:40*
Surr: 2-Fluorophenol	*87.9*			*20-120*	*%REC*	*1*	*30-May-2020 12:40*
Surr: 4-Terphenyl-d14	*86.3*			*40-135*	*%REC*	*1*	*30-May-2020 12:40*
Surr: Nitrobenzene-d5	*72.0*			*41-120*	*%REC*	*1*	*30-May-2020 12:40*
Surr: Phenol-d6	*83.2*			*20-120*	*%REC*	*1*	*30-May-2020 12:40*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 27-May-2020		Analyst: JHD
Arsenic	**0.00600**		**0.000400**	**0.00200**	**mg/L**	1	27-May-2020 18:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW93B-20200522
Collection Date: 22-May-2020 10:15

ANALYTICAL REPORT
WorkOrder:HS20050915
Lab ID:HS20050915-12
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: AKP
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	27-May-2020 07:39
Benzene	U		0.00020	0.0010	mg/L	1	27-May-2020 07:39
Chlorobenzene	U		0.00030	0.0010	mg/L	1	27-May-2020 07:39
Ethylbenzene	U		0.00030	0.0010	mg/L	1	27-May-2020 07:39
Methylene chloride	U		0.0010	0.0020	mg/L	1	27-May-2020 07:39
Toluene	**0.00036**	J	**0.00020**	**0.0010**	**mg/L**	1	27-May-2020 07:39
Xylenes, Total	U		0.00030	0.0010	mg/L	1	27-May-2020 07:39
Surr: 1,2-Dichloroethane-d4	*83.6*			*70-126*	*%REC*	*1*	*27-May-2020 07:39*
Surr: 4-Bromofluorobenzene	*94.6*			*81-113*	*%REC*	*1*	*27-May-2020 07:39*
Surr: Dibromofluoromethane	*85.7*			*77-123*	*%REC*	*1*	*27-May-2020 07:39*
Surr: Toluene-d8	*98.4*			*82-127*	*%REC*	*1*	*27-May-2020 07:39*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW93B-20200522
Collection Date: 22-May-2020 10:15

ANALYTICAL REPORT
WorkOrder:HS20050915
Lab ID:HS20050915-12
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 27-May-2020		Analyst: GEY
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	30-May-2020 12:59
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	30-May-2020 12:59
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	30-May-2020 12:59
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	30-May-2020 12:59
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	30-May-2020 12:59
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	30-May-2020 12:59
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	30-May-2020 12:59
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	30-May-2020 12:59
Acenaphthene	U		0.000027	0.00010	mg/L	1	30-May-2020 12:59
Acenaphthylene	U		0.000015	0.00010	mg/L	1	30-May-2020 12:59
Anthracene	U		0.000014	0.00010	mg/L	1	30-May-2020 12:59
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	30-May-2020 12:59
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	30-May-2020 12:59
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	30-May-2020 12:59
Bis(2-ethylhexyl)phthalate	**0.000053**	J	**0.000037**	**0.00020**	**mg/L**	1	30-May-2020 12:59
Chrysene	U		0.000021	0.00010	mg/L	1	30-May-2020 12:59
Dibenzofuran	U		0.000020	0.00010	mg/L	1	30-May-2020 12:59
Di-n-butyl phthalate	**0.000068**	J	**0.000020**	**0.00020**	**mg/L**	1	30-May-2020 12:59
Fluoranthene	U		0.000010	0.00010	mg/L	1	30-May-2020 12:59
Fluorene	U		0.000030	0.00010	mg/L	1	30-May-2020 12:59
Naphthalene	U		0.000020	0.00010	mg/L	1	30-May-2020 12:59
Nitrobenzene	U		0.000024	0.00020	mg/L	1	30-May-2020 12:59
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	30-May-2020 12:59
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	30-May-2020 12:59
Phenanthrene	U		0.000021	0.00010	mg/L	1	30-May-2020 12:59
Phenol	U		0.000035	0.00020	mg/L	1	30-May-2020 12:59
Pyrene	U		0.000019	0.00010	mg/L	1	30-May-2020 12:59
Surr: 2,4,6-Tribromophenol	*88.2*			*34-129*	*%REC*	*1*	*30-May-2020 12:59*
Surr: 2-Fluorobiphenyl	*61.9*			*40-125*	*%REC*	*1*	*30-May-2020 12:59*
Surr: 2-Fluorophenol	*67.0*			*20-120*	*%REC*	*1*	*30-May-2020 12:59*
Surr: 4-Terphenyl-d14	*77.2*			*40-135*	*%REC*	*1*	*30-May-2020 12:59*
Surr: Nitrobenzene-d5	*59.3*			*41-120*	*%REC*	*1*	*30-May-2020 12:59*
Surr: Phenol-d6	*65.1*			*20-120*	*%REC*	*1*	*30-May-2020 12:59*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 27-May-2020		Analyst: JHD
Arsenic	**0.0133**		**0.000400**	**0.00200**	**mg/L**	1	27-May-2020 18:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WQ-1620-TB02-20200522
Collection Date: 22-May-2020 15:30

ANALYTICAL REPORT
WorkOrder:HS20050915
Lab ID:HS20050915-13
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	27-May-2020 02:25
Benzene		U	0.00020	0.0010	mg/L	1	27-May-2020 02:25
Chlorobenzene		U	0.00030	0.0010	mg/L	1	27-May-2020 02:25
Ethylbenzene		U	0.00030	0.0010	mg/L	1	27-May-2020 02:25
Methylene chloride		U	0.0010	0.0020	mg/L	1	27-May-2020 02:25
Toluene		U	0.00020	0.0010	mg/L	1	27-May-2020 02:25
Xylenes, Total		U	0.00030	0.0010	mg/L	1	27-May-2020 02:25
Surr: 1,2-Dichloroethane-d4	*85.2*			*70-126*	*%REC*	*1*	*27-May-2020 02:25*
Surr: 4-Bromofluorobenzene	*93.9*			*81-113*	*%REC*	*1*	*27-May-2020 02:25*
Surr: Dibromofluoromethane	*90.3*			*77-123*	*%REC*	*1*	*27-May-2020 02:25*
Surr: Toluene-d8	*96.8*			*82-127*	*%REC*	*1*	*27-May-2020 02:25*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20050915

Batch ID: 153849 **Start Date:** 27 May 2020 08:25 **End Date:** 27 May 2020 12:30
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20050915-01		10 (mL)	10 (mL)	1
HS20050915-02		10 (mL)	10 (mL)	1
HS20050915-03		10 (mL)	10 (mL)	1
HS20050915-04		10 (mL)	10 (mL)	1
HS20050915-05		10 (mL)	10 (mL)	1
HS20050915-07		10 (mL)	10 (mL)	1
HS20050915-08		10 (mL)	10 (mL)	1
HS20050915-09		10 (mL)	10 (mL)	1
HS20050915-10		10 (mL)	10 (mL)	1
HS20050915-11		10 (mL)	10 (mL)	1
HS20050915-12		10 (mL)	10 (mL)	1

Batch ID: 153896 **Start Date:** 27 May 2020 10:00 **End Date:** 27 May 2020 17:30
Method: SV AQ SEP FUN EXTRACT-LOWLEV - 3510C **Prep Code:** 3510_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20050915-01	1	1000 (mL)	1 (mL)	0.001
HS20050915-02	1	1000 (mL)	1 (mL)	0.001
HS20050915-03	1	1000 (mL)	1 (mL)	0.001
HS20050915-04	1	1000 (mL)	1 (mL)	0.001
HS20050915-05	1	1000 (mL)	1 (mL)	0.001
HS20050915-07	1	1000 (mL)	1 (mL)	0.001
HS20050915-08	1	1000 (mL)	1 (mL)	0.001
HS20050915-09	1	1000 (mL)	1 (mL)	0.001
HS20050915-10	1	1000 (mL)	1 (mL)	0.001
HS20050915-11	1	1000 (mL)	1 (mL)	0.001
HS20050915-12	1	1000 (mL)	1 (mL)	0.001

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20050915

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 153849 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS20050915-01	WG-1620-MW70C-20200521	21 May 2020 11:15		27 May 2020 12:30	27 May 2020 17:33	1
HS20050915-02	WG-1620-MW92B-20200521	21 May 2020 15:35		27 May 2020 12:30	27 May 2020 17:45	1
HS20050915-03	WG-1620-MW84A-20200521	21 May 2020 14:20		27 May 2020 12:30	27 May 2020 17:48	1
HS20050915-04	WG-1620-MW91A-20200521	21 May 2020 13:10		27 May 2020 12:30	27 May 2020 17:59	1
HS20050915-05	WG-1620-FD01-20200521	21 May 2020 00:00		27 May 2020 12:30	27 May 2020 18:02	1
HS20050915-07	WG-1620-MW99C-20200522	22 May 2020 15:30		27 May 2020 12:30	27 May 2020 18:04	1
HS20050915-08	WG-1620-MW54B-20200522	22 May 2020 14:25		27 May 2020 12:30	27 May 2020 18:06	1
HS20050915-09	WG-1620-MW96B-20200522	22 May 2020 13:25		27 May 2020 12:30	27 May 2020 18:09	1
HS20050915-10	WG-1620-MW95A-20200522	22 May 2020 12:20		27 May 2020 12:30	27 May 2020 18:11	1
HS20050915-11	WG-1620-MW94A-20200522	22 May 2020 11:20		27 May 2020 12:30	27 May 2020 18:13	1
HS20050915-12	WG-1620-MW93B-20200522	22 May 2020 10:15		27 May 2020 12:30	27 May 2020 18:16	1
Batch ID: 153896 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Water	
HS20050915-01	WG-1620-MW70C-20200521	21 May 2020 11:15		27 May 2020 17:08	30 May 2020 13:37	1000
HS20050915-01	WG-1620-MW70C-20200521	21 May 2020 11:15		27 May 2020 17:08	30 May 2020 13:18	10
HS20050915-01	WG-1620-MW70C-20200521	21 May 2020 11:15		27 May 2020 17:08	29 May 2020 21:17	1
HS20050915-02	WG-1620-MW92B-20200521	21 May 2020 15:35		27 May 2020 17:08	30 May 2020 11:04	1
HS20050915-03	WG-1620-MW84A-20200521	21 May 2020 14:20		27 May 2020 17:08	29 May 2020 21:55	1
HS20050915-04	WG-1620-MW91A-20200521	21 May 2020 13:10		27 May 2020 17:08	29 May 2020 22:14	1
HS20050915-05	WG-1620-FD01-20200521	21 May 2020 00:00		27 May 2020 17:08	30 May 2020 14:15	1000
HS20050915-05	WG-1620-FD01-20200521	21 May 2020 00:00		27 May 2020 17:08	30 May 2020 13:56	10
HS20050915-05	WG-1620-FD01-20200521	21 May 2020 00:00		27 May 2020 17:08	29 May 2020 22:33	1
HS20050915-07	WG-1620-MW99C-20200522	22 May 2020 15:30		27 May 2020 17:08	30 May 2020 11:23	1
HS20050915-08	WG-1620-MW54B-20200522	22 May 2020 14:25		27 May 2020 17:08	30 May 2020 11:42	1
HS20050915-09	WG-1620-MW96B-20200522	22 May 2020 13:25		27 May 2020 17:08	30 May 2020 12:01	1
HS20050915-10	WG-1620-MW95A-20200522	22 May 2020 12:20		27 May 2020 17:08	30 May 2020 12:21	1
HS20050915-11	WG-1620-MW94A-20200522	22 May 2020 11:20		27 May 2020 17:08	30 May 2020 12:40	1
HS20050915-12	WG-1620-MW93B-20200522	22 May 2020 10:15		27 May 2020 17:08	30 May 2020 12:59	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20050915

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R362189 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20050915-01	WG-1620-MW70C-20200521	21 May 2020 11:15			27 May 2020 02:49	1
HS20050915-02	WG-1620-MW92B-20200521	21 May 2020 15:35			27 May 2020 04:26	1
HS20050915-03	WG-1620-MW84A-20200521	21 May 2020 14:20			27 May 2020 04:50	1
HS20050915-04	WG-1620-MW91A-20200521	21 May 2020 13:10			27 May 2020 05:14	1
HS20050915-05	WG-1620-FD01-20200521	21 May 2020 00:00			27 May 2020 08:04	1
HS20050915-06	WQ-1620-TB01-20200521	21 May 2020 10:00			27 May 2020 02:01	1
HS20050915-07	WG-1620-MW99C-20200522	22 May 2020 15:30			27 May 2020 05:38	1
HS20050915-08	WG-1620-MW54B-20200522	22 May 2020 14:25			27 May 2020 06:03	1
HS20050915-09	WG-1620-MW96B-20200522	22 May 2020 13:25			27 May 2020 06:27	1
HS20050915-10	WG-1620-MW95A-20200522	22 May 2020 12:20			27 May 2020 06:51	1
HS20050915-11	WG-1620-MW94A-20200522	22 May 2020 11:20			27 May 2020 07:16	1
HS20050915-12	WG-1620-MW93B-20200522	22 May 2020 10:15			27 May 2020 07:39	1
HS20050915-13	WQ-1620-TB02-20200522	22 May 2020 15:30			27 May 2020 02:25	1

WorkOrder: HS20050915
InstrumentID: ICPMS05
Test Code: ICP_TW
Test Number: SW6020
Test Name: ICP-MS Metals by SW6020A

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Arsenic	7440-38-2	0.000500	0.000512	0.000400	0.00200

WorkOrder: HS20050915
InstrumentID: SV-7
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Diphenylhydrazine	122-66-7	0.00010	0.000070	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.000075	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.000073	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.000079	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.000083	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.000050	0.000043	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000037	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00010	0.000049	0.000047	0.0010
A	Acenaphthene	83-32-9	0.000050	0.000052	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000045	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.000044	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.000050	0.000037	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.000050	0.000029	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.000070	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.000055	0.000037	0.00020
A	Chrysene	218-01-9	0.000050	0.000057	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.000050	0.000043	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.000082	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000038	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.000044	0.000030	0.00010
A	Naphthalene	91-20-3	0.000050	0.000049	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.000079	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.000070	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.0000080	0.000079	0.00020
A	Phenanthrene	85-01-8	0.000050	0.000043	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.000076	0.000035	0.00020
A	Pyrene	129-00-0	0.000050	0.000045	0.000019	0.00010
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0.00020
S	2-Fluorobiphenyl	321-60-8	0	0	0	0.00020
S	2-Fluorophenol	367-12-4	0	0	0	0.00020
S	4-Terphenyl-d14	1718-51-0	0	0	0	0.00020
S	Nitrobenzene-d5	4165-60-0	0	0	0	0.00020
S	Phenol-d6	13127-88-3	0	0	0	0.00020

WorkOrder: HS20050915
InstrumentID: VOA4
Test Code: 8260_LL_W
Test Number: SW8260
Test Name: Low Level Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.00050	0.00068	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00055	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.0010	0.0011	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.0010	0.00096	0.00030	0.0010
A	Methylene chloride	75-09-2	0.0020	0.0014	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00053	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.0010	0.0010	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20050915

QC BATCH REPORT

Batch ID: 153849 (0) **Instrument: ICPMS05** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-153849** Units: **mg/L** Analysis Date: **27-May-2020 17:29**
Client ID: Run ID: **ICPMS05_362185** SeqNo: **5597978** PrepDate: **27-May-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								

LCS Sample ID: **LCS-153849** Units: **mg/L** Analysis Date: **27-May-2020 17:31**
Client ID: Run ID: **ICPMS05_362185** SeqNo: **5597979** PrepDate: **27-May-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0489	0.00200	0.05	0	97.8	80 - 120				

MS Sample ID: **HS20050915-01MS** Units: **mg/L** Analysis Date: **27-May-2020 17:38**
Client ID: **WG-1620-MW70C-20200521** Run ID: **ICPMS05_362185** SeqNo: **5597982** PrepDate: **27-May-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05873	0.00200	0.05	0.00663	104	80 - 120				

MSD Sample ID: **HS20050915-01MSD** Units: **mg/L** Analysis Date: **27-May-2020 17:40**
Client ID: **WG-1620-MW70C-20200521** Run ID: **ICPMS05_362185** SeqNo: **5597983** PrepDate: **27-May-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05352	0.00200	0.05	0.00663	93.8	80 - 120	0.05873	9.28	20	

PDS Sample ID: **HS20050915-01PDS** Units: **mg/L** Analysis Date: **27-May-2020 17:43**
Client ID: **WG-1620-MW70C-20200521** Run ID: **ICPMS05_362185** SeqNo: **5597984** PrepDate: **27-May-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1071	0.00200	0.1	0.00663	100	75 - 125				

SD Sample ID: **HS20050915-01SD** Units: **mg/L** Analysis Date: **27-May-2020 17:36**
Client ID: **WG-1620-MW70C-20200521** Run ID: **ICPMS05_362185** SeqNo: **5597981** PrepDate: **27-May-2020** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.006364	0.0100					0.00663	0	10	J

The following samples were analyzed in this batch:

HS20050915-01	HS20050915-02	HS20050915-03	HS20050915-04
HS20050915-05	HS20050915-07	HS20050915-08	HS20050915-09
HS20050915-10	HS20050915-11	HS20050915-12	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20050915

QC BATCH REPORT

Batch ID: 153896 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-153896** Units: **ug/L** Analysis Date: **29-May-2020 15:29**
Client ID: Run ID: **SV-7_362406** SeqNo: **5602154** PrepDate: **27-May-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	U	0.20								
2,4-Dimethylphenol	U	0.20								
2,4-Dinitrotoluene	U	0.20								
2,6-Dinitrotoluene	U	0.20								
2-Chloronaphthalene	U	0.20								
2-Methylnaphthalene	U	0.10								
4,6-Dinitro-2-methylphenol	U	0.20								
4-Nitrophenol	U	1.0								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Benz(a)anthracene	U	0.10								
Benzo(a)pyrene	U	0.10								
Bis(2-chloroethoxy)methane	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Chrysene	U	0.10								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Nitrobenzene	U	0.20								
N-Nitrosodiphenylamine	U	0.20								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*3.895*	*0.20*	*5*	*0*	*77.9*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.905*	*0.20*	*5*	*0*	*78.1*	*40 - 125*				
Surr: 2-Fluorophenol	*4.942*	*0.20*	*5*	*0*	*98.8*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.246*	*0.20*	*5*	*0*	*84.9*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.567*	*0.20*	*5*	*0*	*71.3*	*41 - 120*				
Surr: Phenol-d6	*4.044*	*0.20*	*5*	*0*	*80.9*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20050915

QC BATCH REPORT

Batch ID: 153896 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCS Sample ID: **LCS-153896** Units: **ug/L** Analysis Date: **29-May-2020 15:48**
Client ID: Run ID: **SV-7_362406** SeqNo: **5602155** PrepDate: **27-May-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	5.722	0.20	5	0	114	39 - 127				
2,4-Dimethylphenol	4.27	0.20	5	0	85.4	35 - 120				
2,4-Dinitrotoluene	4.998	0.20	5	0	100.0	50 - 122				
2,6-Dinitrotoluene	4.698	0.20	5	0	94.0	50 - 120				
2-Chloronaphthalene	4.755	0.20	5	0	95.1	50 - 120				
2-Methylnaphthalene	4.673	0.10	5	0	93.5	50 - 120				
4,6-Dinitro-2-methylphenol	5.633	0.20	5	0	113	25 - 121				
4-Nitrophenol	4.514	1.0	5	0	90.3	30 - 130				
Acenaphthene	4.483	0.10	5	0	89.7	45 - 120				
Acenaphthylene	4.559	0.10	5	0	91.2	47 - 120				
Anthracene	4.56	0.10	5	0	91.2	45 - 120				
Benz(a)anthracene	4.519	0.10	5	0	90.4	40 - 120				
Benzo(a)pyrene	4.86	0.10	5	0	97.2	45 - 120				
Bis(2-chloroethoxy)methane	5.642	0.20	5	0	113	45 - 120				
Bis(2-ethylhexyl)phthalate	3.648	0.20	5	0	73.0	40 - 139				
Chrysene	4.576	0.10	5	0	91.5	43 - 120				
Dibenzofuran	4.889	0.10	5	0	97.8	50 - 120				
Di-n-butyl phthalate	4.732	0.20	5	0	94.6	45 - 123				
Fluoranthene	5.581	0.10	5	0	112	45 - 125				
Fluorene	5.016	0.10	5	0	100	49 - 120				
Naphthalene	4.659	0.10	5	0	93.2	45 - 120				
Nitrobenzene	5.633	0.20	5	0	113	44 - 120				
N-Nitrosodiphenylamine	4.518	0.20	5	0	90.4	40 - 125				
Pentachlorophenol	5.273	0.20	5	0	105	19 - 121				
Phenanthrene	4.605	0.10	5	0	92.1	45 - 121				
Phenol	5.068	0.20	5	0	101	20 - 124				
Pyrene	4.162	0.10	5	0	83.2	40 - 130				
Surr: 2,4,6-Tribromophenol	*4.638*	*0.20*	*5*	*0*	*92.8*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.048*	*0.20*	*5*	*0*	*81.0*	*40 - 125*				
Surr: 2-Fluorophenol	*4.356*	*0.20*	*5*	*0*	*87.1*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.051*	*0.20*	*5*	*0*	*81.0*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.565*	*0.20*	*5*	*0*	*71.3*	*41 - 120*				
Surr: Phenol-d6	*3.972*	*0.20*	*5*	*0*	*79.4*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20050915

QC BATCH REPORT

Batch ID: 153896 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCSD Sample ID: **LCSD-153896** Units: **ug/L** Analysis Date: **29-May-2020 16:45**
Client ID: Run ID: **SV-7_362406** SeqNo: **5602156** PrepDate: **27-May-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	5.849	0.20	5	0	117	39 - 127	5.722	2.21	20	
2,4-Dimethylphenol	4.171	0.20	5	0	83.4	35 - 120	4.27	2.36	20	
2,4-Dinitrotoluene	5.06	0.20	5	0	101	50 - 122	4.998	1.23	20	
2,6-Dinitrotoluene	4.569	0.20	5	0	91.4	50 - 120	4.698	2.77	20	
2-Chloronaphthalene	5.056	0.20	5	0	101	50 - 120	4.755	6.13	20	
2-Methylnaphthalene	4.764	0.10	5	0	95.3	50 - 120	4.673	1.92	20	
4,6-Dinitro-2-methylphenol	5.009	0.20	5	0	100	25 - 121	5.633	11.7	30	
4-Nitrophenol	3.474	1.0	5	0	69.5	30 - 130	4.514	26	20	R
Acenaphthene	4.458	0.10	5	0	89.2	45 - 120	4.483	0.572	20	
Acenaphthylene	4.598	0.10	5	0	92.0	47 - 120	4.559	0.838	20	
Anthracene	4.49	0.10	5	0	89.8	45 - 120	4.56	1.55	20	
Benz(a)anthracene	4.45	0.10	5	0	89.0	40 - 120	4.519	1.54	20	
Benzo(a)pyrene	4.595	0.10	5	0	91.9	45 - 120	4.86	5.59	20	
Bis(2-chloroethoxy)methane	5.822	0.20	5	0	116	45 - 120	5.642	3.15	20	
Bis(2-ethylhexyl)phthalate	3.704	0.20	5	0	74.1	40 - 139	3.648	1.51	20	
Chrysene	4.418	0.10	5	0	88.4	43 - 120	4.576	3.51	20	
Dibenzofuran	4.948	0.10	5	0	99.0	50 - 120	4.889	1.21	20	
Di-n-butyl phthalate	4.728	0.20	5	0	94.6	45 - 123	4.732	0.0828	20	
Fluoranthene	5.372	0.10	5	0	107	45 - 125	5.581	3.8	20	
Fluorene	5.039	0.10	5	0	101	49 - 120	5.016	0.448	20	
Naphthalene	4.787	0.10	5	0	95.7	45 - 120	4.659	2.72	20	
Nitrobenzene	5.198	0.20	5	0	104	44 - 120	5.633	8.04	20	
N-Nitrosodiphenylamine	4.679	0.20	5	0	93.6	40 - 125	4.518	3.49	20	
Pentachlorophenol	4.8	0.20	5	0	96.0	19 - 121	5.273	9.41	20	
Phenanthrene	4.57	0.10	5	0	91.4	45 - 121	4.605	0.754	20	
Phenol	4.692	0.20	5	0	93.8	20 - 124	5.068	7.71	20	
Pyrene	4.115	0.10	5	0	82.3	40 - 130	4.162	1.13	20	
Surr: 2,4,6-Tribromophenol	*4.642*	*0.20*	*5*	*0*	*92.8*	*34 - 129*	*4.638*	*0.0781*	*20*	
Surr: 2-Fluorobiphenyl	*3.95*	*0.20*	*5*	*0*	*79.0*	*40 - 125*	*4.048*	*2.44*	*20*	
Surr: 2-Fluorophenol	*4.596*	*0.20*	*5*	*0*	*91.9*	*20 - 120*	*4.356*	*5.36*	*20*	
Surr: 4-Terphenyl-d14	*4.094*	*0.20*	*5*	*0*	*81.9*	*40 - 135*	*4.051*	*1.04*	*20*	
Surr: Nitrobenzene-d5	*3.643*	*0.20*	*5*	*0*	*72.9*	*41 - 120*	*3.565*	*2.15*	*20*	
Surr: Phenol-d6	*3.872*	*0.20*	*5*	*0*	*77.4*	*20 - 120*	*3.972*	*2.54*	*20*	

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	HS20050915

QC BATCH REPORT

Batch ID: 153896 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

The following samples were analyzed in this batch:

HS20050915-01	HS20050915-02	HS20050915-03	HS20050915-04
HS20050915-05	HS20050915-07	HS20050915-08	HS20050915-09
HS20050915-10	HS20050915-11	HS20050915-12	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20050915

QC BATCH REPORT

Batch ID: R362189 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200526** Units: **ug/L** Analysis Date: **26-May-2020 23:34**
Client ID: Run ID: **VOA4_362189** SeqNo: **5597195** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*43.91*	*1.0*	*50*	*0*	*87.8*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*48.24*	*1.0*	*50*	*0*	*96.5*	*82 - 115*				
Surr: Dibromofluoromethane	*46.51*	*1.0*	*50*	*0*	*93.0*	*73 - 126*				
Surr: Toluene-d8	*47.16*	*1.0*	*50*	*0*	*94.3*	*81 - 120*				

LCS Sample ID: **VLCSW-200526** Units: **ug/L** Analysis Date: **26-May-2020 22:44**
Client ID: Run ID: **VOA4_362189** SeqNo: **5597194** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	15.71	1.0	20	0	78.6	70 - 124				
Benzene	16.7	1.0	20	0	83.5	74 - 120				
Chlorobenzene	18.61	1.0	20	0	93.0	76 - 113				
Ethylbenzene	19.19	1.0	20	0	95.9	77 - 117				
Methylene chloride	15.73	2.0	20	0	78.6	70 - 127				
Toluene	17.83	1.0	20	0	89.2	77 - 118				
Xylenes, Total	59.02	1.0	60	0	98.4	75 - 122				
Surr: 1,2-Dichloroethane-d4	*42.85*	*1.0*	*50*	*0*	*85.7*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*49.75*	*1.0*	*50*	*0*	*99.5*	*82 - 115*				
Surr: Dibromofluoromethane	*46.02*	*1.0*	*50*	*0*	*92.0*	*73 - 126*				
Surr: Toluene-d8	*49.17*	*1.0*	*50*	*0*	*98.3*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20050915

QC BATCH REPORT

Batch ID: R362189 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS20050915-01MS** Units: **ug/L** Analysis Date: **27-May-2020 03:13**
Client ID: **WG-1620-MW70C-20200521** Run ID: **VOA4_362189** SeqNo: **5597204** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.72	1.0	20	0	83.6	70 - 127				
Benzene	37.59	1.0	20	18.66	94.6	70 - 127				
Chlorobenzene	20.59	1.0	20	0	103	70 - 114				
Ethylbenzene	132.6	1.0	20	109.8	114	70 - 124				O
Methylene chloride	17.03	2.0	20	0	85.1	70 - 128				
Toluene	76.56	1.0	20	55.88	103	70 - 123				
Xylenes, Total	194.1	1.0	60	127.5	111	70 - 130				
Surr: 1,2-Dichloroethane-d4	*41.14*	*1.0*	*50*	*0*	*82.3*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.78*	*1.0*	*50*	*0*	*99.6*	*81 - 113*				
Surr: Dibromofluoromethane	*44.99*	*1.0*	*50*	*0*	*90.0*	*77 - 123*				
Surr: Toluene-d8	*48.66*	*1.0*	*50*	*0*	*97.3*	*82 - 127*				

MSD Sample ID: **HS20050915-01MSD** Units: **ug/L** Analysis Date: **27-May-2020 03:38**
Client ID: **WG-1620-MW70C-20200521** Run ID: **VOA4_362189** SeqNo: **5597205** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	16.84	1.0	20	0	84.2	70 - 127	16.72	0.679	20	
Benzene	36.26	1.0	20	18.66	88.0	70 - 127	37.59	3.61	20	
Chlorobenzene	19.99	1.0	20	0	99.9	70 - 114	20.59	2.94	20	
Ethylbenzene	130	1.0	20	109.8	101	70 - 124	132.6	2.01	20	O
Methylene chloride	16.44	2.0	20	0	82.2	70 - 128	17.03	3.55	20	
Toluene	74.64	1.0	20	55.88	93.8	70 - 123	76.56	2.54	20	
Xylenes, Total	189.7	1.0	60	127.5	104	70 - 130	194.1	2.28	20	
Surr: 1,2-Dichloroethane-d4	*41.13*	*1.0*	*50*	*0*	*82.3*	*70 - 126*	*41.14*	*0.0272*	*20*	
Surr: 4-Bromofluorobenzene	*48.9*	*1.0*	*50*	*0*	*97.8*	*81 - 113*	*49.78*	*1.79*	*20*	
Surr: Dibromofluoromethane	*44.27*	*1.0*	*50*	*0*	*88.5*	*77 - 123*	*44.99*	*1.6*	*20*	
Surr: Toluene-d8	*48.12*	*1.0*	*50*	*0*	*96.2*	*82 - 127*	*48.66*	*1.1*	*20*	

The following samples were analyzed in this batch:

HS20050915-01	HS20050915-02	HS20050915-03	HS20050915-04
HS20050915-05	HS20050915-06	HS20050915-07	HS20050915-08
HS20050915-09	HS20050915-10	HS20050915-11	HS20050915-12
HS20050915-13			

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20050915**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	20-030-0	26-Mar-2021
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
Oklahoma	2019-141	31-Aug-2020
Texas	T104704231-20-26	30-Apr-2021

Sample Receipt Checklist

Work Order ID: HS20050915 **Date/Time Received:** **22-May-2020 16:55**

Client Name: PBW **Received by:** **Donald Gilmore**

Completed By:	/S/ Jared R. Makan	22-May-2020 18:48	**Reviewed by:**	/S/ Dane J. Wacasey	26-May-2020 17:53
	eSignature	Date/Time		eSignature	Date/Time

Matrices: **Water** Carrier name: **ALS Courier**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:217223, 217222
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.1°C/1.1°C, 1.0°C/1.0°C UC/C	IR25	
Cooler(s)/Kit(s):	45659, 46045		
Date/Time sample(s) sent to storage:	05/22/2020 18:50		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

Page ____ of ____

COC ID: 217222

HS20050915

Golder Associates Inc.
Houston TX-Wood Preserving Works

v

Customer Information		Project Information		ALS Project Manager:	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A	8260_LL_W (5632528 VOC Site Specific)
Work Order		Project Number	1620-17-Rev0 SR 92688	B	8270_LOW_W (5632532 SemiVolatiles Site specific)
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P	C	ICP_TW (5636002 6020 Metals - As)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	W-TB0 -202005			Water	1,8	2	X										
2	~~WG -202005~~			~~Water~~	~~1,2,8~~	6	~~X~~	~~X~~	~~X~~								
3	WG-1620-MW-70C-20200521	5-21-20	11:15	water	1,2,8	6	X	X	X								
4	WG-1620-MW-92B-20200521	5-21-20	15:35	water	1,2,8	6	X	X	X								
5	WG-1620-MW-84A-20200521	5-21-20	14:20	water	1,2,8	6	X	X	X								
6	WG-1620-MW-91A-20200521	5-21-20	13:10	water	1,2,8	6	X	X	X								
7	WG-1620-FD01-20200521	5-21-20	—	water	1,2,8	6	X	X	X								
8	WG-1620-TB01-20200521	5-21-20	1600	water	1,8	2	X										
9																	
10																	

Sampler(s) Please Print & Sign: T. McSpadden T. McSpadden

Shipment Method:

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other ____

Results Due Date:

Relinquished by: T. McSpadden Date: 5-22-20 Time: 16:10 Received by:

Relinquished by: Date: 5-22-20 Time: 1655 Received by (Laboratory):

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.
RED	
45659	1.1C
IR25	CF 0.0

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other ____
[X] TRRP Checklist
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

Page _____ of _____

COC ID: 217223

HS20050915

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information			
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A	8260_LL_W (5632528 VOC Site Specific)
Work Order		Project Number	1620-17-Rev0 SR 92688	B	8270_LOW_W (5632532 SemiVolatiles Site specific)
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P	C	ICP_TW (5636002 6020 Metals - As)
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E	
				F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~VW-TB0 -202005~~			Water	1,8	2	X										
2	~~MG -202005~~			Water	1,2,8	6	X	X	X								
3	WG-1620-MW99(20200522	5-22-20	15:30	water	1,2,8	6	X	X	X								
4	WG-1620-MW54B20200522	5-22-20	14:25	water	1,2,8	6	X	X	X								
5	WG-1620-MW96B20200522	5-22-20	13:25	water	1,2,8	6	X	X	X								
6	WG-1620-MW95A20200522	5-22-20	12:20	water	1,2,8	6	X	X	X								
7	WG-1620-MW94A 20200522	5-22-20	11:20	water	1,2,8	6	X	X	X								
8	WG-1620-MW93B20200522	5-22-20	10:15	water	1,2,8	6	X	X	X								
9	WG-1620-TB02 20200522	5-22-20	15:30	water	1,8	2	X										
10																	

Sampler(s) Please Print & Sign: T. McGrath T. McGrath

Shipment Method:

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other _____

Results Due Date:

Relinquished by: T. McGrath Date: 5-22-20 Time: 16:10 Received by:

Relinquished by: Date: 5.22.20 Time: 1655 Received by (Laboratory):

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.
RED	
46045	1.0C

QC Package: (Check One Box Below)
[ ] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[X] TRRP Checklist
[ ] TRRP Level IV

IR25 CF+0.0

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

ote: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
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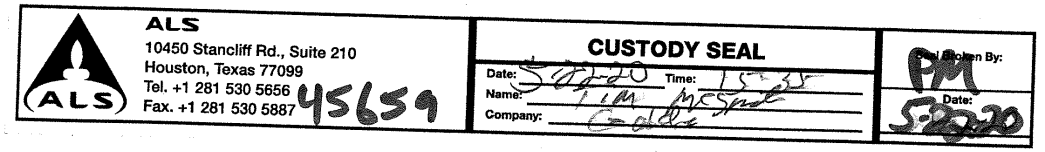
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Tel. +1 281 530 5656
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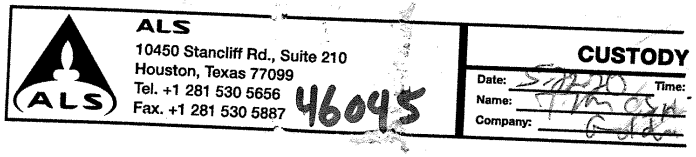
45659
CUSTODY SEAL
Date:
Time:
Name:
Company:
Seal Broken By:
Date: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46045
CUSTODY
Date:
Time:
Name:
Company:

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June 09, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20060031**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 5 sample(s) on Jun 01, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20060031**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20060031**	

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 06/09/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20060031				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 154030,154094,R362573				
#[1]	A[2]	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?		X			1
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 06/09/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20060031				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 154030,154094,R362573				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?	X				
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 06/09/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20060031
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 154030,154094,R362573

ER#[5]	Description
1	Batch 154030, Semivolatile Organics Method SW8270D, LCS/LCSD were analyzed and reported in lieu of an MS/MSD for this batch.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20060031

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20060031-01	WG-1620-MW60B-20200601	Water		01-Jun-2020 08:10	01-Jun-2020 13:59	☐
HS20060031-02	WG-1620-MW60AR-20200601	Water		01-Jun-2020 09:20	01-Jun-2020 13:59	☐
HS20060031-03	WG-1620-MW47A-20200601	Water		01-Jun-2020 10:30	01-Jun-2020 13:59	☐
HS20060031-04	WG-1620-MW61B-20200601	Water		01-Jun-2020 11:45	01-Jun-2020 13:59	☐
HS20060031-05	WQ-1620-TB05-20200601	Water		01-Jun-2020 11:45	01-Jun-2020 13:59	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW60B-20200601
Collection Date: 01-Jun-2020 08:10

ANALYTICAL REPORT
WorkOrder:HS20060031
Lab ID:HS20060031-01
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	02-Jun-2020 20:45
Benzene		U	0.00020	0.0010	mg/L	1	02-Jun-2020 20:45
Chlorobenzene		U	0.00030	0.0010	mg/L	1	02-Jun-2020 20:45
Ethylbenzene		U	0.00030	0.0010	mg/L	1	02-Jun-2020 20:45
Methylene chloride		U	0.0010	0.0020	mg/L	1	02-Jun-2020 20:45
Toluene		U	0.00020	0.0010	mg/L	1	02-Jun-2020 20:45
Xylenes, Total		U	0.00030	0.0010	mg/L	1	02-Jun-2020 20:45
Surr: 1,2-Dichloroethane-d4	*105*			*70-126*	*%REC*	*1*	*02-Jun-2020 20:45*
Surr: 4-Bromofluorobenzene	*100.0*			*81-113*	*%REC*	*1*	*02-Jun-2020 20:45*
Surr: Dibromofluoromethane	*99.2*			*77-123*	*%REC*	*1*	*02-Jun-2020 20:45*
Surr: Toluene-d8	*97.8*			*82-127*	*%REC*	*1*	*02-Jun-2020 20:45*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW60B-20200601
Collection Date: 01-Jun-2020 08:10

ANALYTICAL REPORT
WorkOrder:HS20060031
Lab ID:HS20060031-01
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 02-Jun-2020		Analyst: ACN
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	04-Jun-2020 20:22
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	04-Jun-2020 20:22
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	04-Jun-2020 20:22
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	04-Jun-2020 20:22
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	04-Jun-2020 20:22
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	04-Jun-2020 20:22
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	04-Jun-2020 20:22
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	04-Jun-2020 20:22
Acenaphthene	U		0.000027	0.00010	mg/L	1	04-Jun-2020 20:22
Acenaphthylene	U		0.000015	0.00010	mg/L	1	04-Jun-2020 20:22
Anthracene	U		0.000014	0.00010	mg/L	1	04-Jun-2020 20:22
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	04-Jun-2020 20:22
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	04-Jun-2020 20:22
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	04-Jun-2020 20:22
Bis(2-ethylhexyl)phthalate	**0.000089**	J	**0.000037**	**0.00020**	**mg/L**	1	04-Jun-2020 20:22
Chrysene	U		0.000021	0.00010	mg/L	1	04-Jun-2020 20:22
Dibenzofuran	U		0.000020	0.00010	mg/L	1	04-Jun-2020 20:22
Di-n-butyl phthalate	**0.000099**	J	**0.000020**	**0.00020**	**mg/L**	1	04-Jun-2020 20:22
Fluoranthene	U		0.000010	0.00010	mg/L	1	04-Jun-2020 20:22
Fluorene	U		0.000030	0.00010	mg/L	1	04-Jun-2020 20:22
Naphthalene	U		0.000020	0.00010	mg/L	1	04-Jun-2020 20:22
Nitrobenzene	U		0.000024	0.00020	mg/L	1	04-Jun-2020 20:22
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	04-Jun-2020 20:22
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	04-Jun-2020 20:22
Phenanthrene	U		0.000021	0.00010	mg/L	1	04-Jun-2020 20:22
Phenol	U		0.000035	0.00020	mg/L	1	04-Jun-2020 20:22
Pyrene	U		0.000019	0.00010	mg/L	1	04-Jun-2020 20:22
Surr: 2,4,6-Tribromophenol	*57.2*			*34-129*	*%REC*	*1*	*04-Jun-2020 20:22*
Surr: 2-Fluorobiphenyl	*49.1*			*40-125*	*%REC*	*1*	*04-Jun-2020 20:22*
Surr: 2-Fluorophenol	*43.5*			*20-120*	*%REC*	*1*	*04-Jun-2020 20:22*
Surr: 4-Terphenyl-d14	*80.8*			*40-135*	*%REC*	*1*	*04-Jun-2020 20:22*
Surr: Nitrobenzene-d5	*52.9*			*41-120*	*%REC*	*1*	*04-Jun-2020 20:22*
Surr: Phenol-d6	*50.3*			*20-120*	*%REC*	*1*	*04-Jun-2020 20:22*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 04-Jun-2020		Analyst: JHD
Arsenic	**0.00222**		**0.000400**	**0.00200**	**mg/L**	1	05-Jun-2020 21:47

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW60AR-20200601
Collection Date: 01-Jun-2020 09:20

ANALYTICAL REPORT
WorkOrder:HS20060031
Lab ID:HS20060031-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	02-Jun-2020 21:10
Benzene		U	0.00020	0.0010	mg/L	1	02-Jun-2020 21:10
Chlorobenzene		U	0.00030	0.0010	mg/L	1	02-Jun-2020 21:10
Ethylbenzene		U	0.00030	0.0010	mg/L	1	02-Jun-2020 21:10
Methylene chloride		U	0.0010	0.0020	mg/L	1	02-Jun-2020 21:10
Toluene		U	0.00020	0.0010	mg/L	1	02-Jun-2020 21:10
Xylenes, Total		U	0.00030	0.0010	mg/L	1	02-Jun-2020 21:10
Surr: 1,2-Dichloroethane-d4	*103*			*70-126*	*%REC*	*1*	*02-Jun-2020 21:10*
Surr: 4-Bromofluorobenzene	*101*			*81-113*	*%REC*	*1*	*02-Jun-2020 21:10*
Surr: Dibromofluoromethane	*98.3*			*77-123*	*%REC*	*1*	*02-Jun-2020 21:10*
Surr: Toluene-d8	*98.8*			*82-127*	*%REC*	*1*	*02-Jun-2020 21:10*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW60AR-20200601
Collection Date: 01-Jun-2020 09:20

ANALYTICAL REPORT
WorkOrder:HS20060031
Lab ID:HS20060031-02
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 02-Jun-2020		Analyst: ACN
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	04-Jun-2020 20:42
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	04-Jun-2020 20:42
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	04-Jun-2020 20:42
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	04-Jun-2020 20:42
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	04-Jun-2020 20:42
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	04-Jun-2020 20:42
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	04-Jun-2020 20:42
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	04-Jun-2020 20:42
Acenaphthene	U		0.000027	0.00010	mg/L	1	04-Jun-2020 20:42
Acenaphthylene	U		0.000015	0.00010	mg/L	1	04-Jun-2020 20:42
Anthracene	**0.000095**	J	**0.000014**	**0.00010**	**mg/L**	1	04-Jun-2020 20:42
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	04-Jun-2020 20:42
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	04-Jun-2020 20:42
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	04-Jun-2020 20:42
Bis(2-ethylhexyl)phthalate	**0.000077**	J	**0.000037**	**0.00020**	**mg/L**	1	04-Jun-2020 20:42
Chrysene	U		0.000021	0.00010	mg/L	1	04-Jun-2020 20:42
Dibenzofuran	U		0.000020	0.00010	mg/L	1	04-Jun-2020 20:42
Di-n-butyl phthalate	**0.00020**		**0.000020**	**0.00020**	**mg/L**	1	04-Jun-2020 20:42
Fluoranthene	U		0.000010	0.00010	mg/L	1	04-Jun-2020 20:42
Fluorene	U		0.000030	0.00010	mg/L	1	04-Jun-2020 20:42
Naphthalene	U		0.000020	0.00010	mg/L	1	04-Jun-2020 20:42
Nitrobenzene	U		0.000024	0.00020	mg/L	1	04-Jun-2020 20:42
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	04-Jun-2020 20:42
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	04-Jun-2020 20:42
Phenanthrene	U		0.000021	0.00010	mg/L	1	04-Jun-2020 20:42
Phenol	U		0.000035	0.00020	mg/L	1	04-Jun-2020 20:42
Pyrene	U		0.000019	0.00010	mg/L	1	04-Jun-2020 20:42
Surr: 2,4,6-Tribromophenol	*64.5*			*34-129*	*%REC*	*1*	*04-Jun-2020 20:42*
Surr: 2-Fluorobiphenyl	*52.4*			*40-125*	*%REC*	*1*	*04-Jun-2020 20:42*
Surr: 2-Fluorophenol	*47.1*			*20-120*	*%REC*	*1*	*04-Jun-2020 20:42*
Surr: 4-Terphenyl-d14	*82.1*			*40-135*	*%REC*	*1*	*04-Jun-2020 20:42*
Surr: Nitrobenzene-d5	*57.7*			*41-120*	*%REC*	*1*	*04-Jun-2020 20:42*
Surr: Phenol-d6	*57.6*			*20-120*	*%REC*	*1*	*04-Jun-2020 20:42*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 04-Jun-2020		Analyst: JHD
Arsenic	**0.00369**		**0.000400**	**0.00200**	**mg/L**	1	05-Jun-2020 23:03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW47A-20200601
Collection Date: 01-Jun-2020 10:30

ANALYTICAL REPORT
WorkOrder:HS20060031
Lab ID:HS20060031-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	02-Jun-2020 21:36
Benzene		U	0.00020	0.0010	mg/L	1	02-Jun-2020 21:36
Chlorobenzene		U	0.00030	0.0010	mg/L	1	02-Jun-2020 21:36
Ethylbenzene		U	0.00030	0.0010	mg/L	1	02-Jun-2020 21:36
Methylene chloride		U	0.0010	0.0020	mg/L	1	02-Jun-2020 21:36
Toluene		U	0.00020	0.0010	mg/L	1	02-Jun-2020 21:36
Xylenes, Total		U	0.00030	0.0010	mg/L	1	02-Jun-2020 21:36
Surr: 1,2-Dichloroethane-d4	*101*			*70-126*	*%REC*	*1*	*02-Jun-2020 21:36*
Surr: 4-Bromofluorobenzene	*102*			*81-113*	*%REC*	*1*	*02-Jun-2020 21:36*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*02-Jun-2020 21:36*
Surr: Toluene-d8	*99.1*			*82-127*	*%REC*	*1*	*02-Jun-2020 21:36*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW47A-20200601
Collection Date: 01-Jun-2020 10:30

ANALYTICAL REPORT
WorkOrder:HS20060031
Lab ID:HS20060031-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 02-Jun-2020		Analyst: ACN
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	04-Jun-2020 21:01
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	04-Jun-2020 21:01
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	04-Jun-2020 21:01
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	04-Jun-2020 21:01
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	04-Jun-2020 21:01
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	04-Jun-2020 21:01
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	04-Jun-2020 21:01
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	04-Jun-2020 21:01
Acenaphthene	U		0.000027	0.00010	mg/L	1	04-Jun-2020 21:01
Acenaphthylene	U		0.000015	0.00010	mg/L	1	04-Jun-2020 21:01
Anthracene	U		0.000014	0.00010	mg/L	1	04-Jun-2020 21:01
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	04-Jun-2020 21:01
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	04-Jun-2020 21:01
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	04-Jun-2020 21:01
Bis(2-ethylhexyl)phthalate	**0.000086**	J	**0.000037**	**0.00020**	**mg/L**	1	04-Jun-2020 21:01
Chrysene	U		0.000021	0.00010	mg/L	1	04-Jun-2020 21:01
Dibenzofuran	U		0.000020	0.00010	mg/L	1	04-Jun-2020 21:01
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	04-Jun-2020 21:01
Fluoranthene	U		0.000010	0.00010	mg/L	1	04-Jun-2020 21:01
Fluorene	U		0.000030	0.00010	mg/L	1	04-Jun-2020 21:01
Naphthalene	U		0.000020	0.00010	mg/L	1	04-Jun-2020 21:01
Nitrobenzene	U		0.000024	0.00020	mg/L	1	04-Jun-2020 21:01
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	04-Jun-2020 21:01
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	04-Jun-2020 21:01
Phenanthrene	U		0.000021	0.00010	mg/L	1	04-Jun-2020 21:01
Phenol	U		0.000035	0.00020	mg/L	1	04-Jun-2020 21:01
Pyrene	U		0.000019	0.00010	mg/L	1	04-Jun-2020 21:01
Surr: 2,4,6-Tribromophenol	*66.2*			*34-129*	*%REC*	*1*	*04-Jun-2020 21:01*
Surr: 2-Fluorobiphenyl	*65.0*			*40-125*	*%REC*	*1*	*04-Jun-2020 21:01*
Surr: 2-Fluorophenol	*58.2*			*20-120*	*%REC*	*1*	*04-Jun-2020 21:01*
Surr: 4-Terphenyl-d14	*81.7*			*40-135*	*%REC*	*1*	*04-Jun-2020 21:01*
Surr: Nitrobenzene-d5	*75.1*			*41-120*	*%REC*	*1*	*04-Jun-2020 21:01*
Surr: Phenol-d6	*69.4*			*20-120*	*%REC*	*1*	*04-Jun-2020 21:01*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 04-Jun-2020		Analyst: JHD
Arsenic	**0.000699**	J	**0.000400**	**0.00200**	**mg/L**	1	05-Jun-2020 23:05

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW61B-20200601
Collection Date: 01-Jun-2020 11:45

ANALYTICAL REPORT
WorkOrder:HS20060031
Lab ID:HS20060031-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	02-Jun-2020 22:01
Benzene		U	0.00020	0.0010	mg/L	1	02-Jun-2020 22:01
Chlorobenzene		U	0.00030	0.0010	mg/L	1	02-Jun-2020 22:01
Ethylbenzene		U	0.00030	0.0010	mg/L	1	02-Jun-2020 22:01
Methylene chloride		U	0.0010	0.0020	mg/L	1	02-Jun-2020 22:01
Toluene		U	0.00020	0.0010	mg/L	1	02-Jun-2020 22:01
Xylenes, Total		U	0.00030	0.0010	mg/L	1	02-Jun-2020 22:01
Surr: 1,2-Dichloroethane-d4	*104*			*70-126*	*%REC*	*1*	*02-Jun-2020 22:01*
Surr: 4-Bromofluorobenzene	*103*			*81-113*	*%REC*	*1*	*02-Jun-2020 22:01*
Surr: Dibromofluoromethane	*99.2*			*77-123*	*%REC*	*1*	*02-Jun-2020 22:01*
Surr: Toluene-d8	*101*			*82-127*	*%REC*	*1*	*02-Jun-2020 22:01*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW61B-20200601
Collection Date: 01-Jun-2020 11:45

ANALYTICAL REPORT
WorkOrder:HS20060031
Lab ID:HS20060031-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 02-Jun-2020		Analyst: ACN
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	04-Jun-2020 21:21
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	04-Jun-2020 21:21
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	04-Jun-2020 21:21
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	04-Jun-2020 21:21
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	04-Jun-2020 21:21
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	04-Jun-2020 21:21
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	04-Jun-2020 21:21
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	04-Jun-2020 21:21
Acenaphthene	U		0.000027	0.00010	mg/L	1	04-Jun-2020 21:21
Acenaphthylene	U		0.000015	0.00010	mg/L	1	04-Jun-2020 21:21
Anthracene	**0.000014**	J	**0.000014**	**0.00010**	**mg/L**	1	04-Jun-2020 21:21
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	04-Jun-2020 21:21
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	04-Jun-2020 21:21
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	04-Jun-2020 21:21
Bis(2-ethylhexyl)phthalate	**0.000062**	J	**0.000037**	**0.00020**	**mg/L**	1	04-Jun-2020 21:21
Chrysene	U		0.000021	0.00010	mg/L	1	04-Jun-2020 21:21
Dibenzofuran	U		0.000020	0.00010	mg/L	1	04-Jun-2020 21:21
Di-n-butyl phthalate	**0.00012**	J	**0.000020**	**0.00020**	**mg/L**	1	04-Jun-2020 21:21
Fluoranthene	U		0.000010	0.00010	mg/L	1	04-Jun-2020 21:21
Fluorene	U		0.000030	0.00010	mg/L	1	04-Jun-2020 21:21
Naphthalene	U		0.000020	0.00010	mg/L	1	04-Jun-2020 21:21
Nitrobenzene	U		0.000024	0.00020	mg/L	1	04-Jun-2020 21:21
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	04-Jun-2020 21:21
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	04-Jun-2020 21:21
Phenanthrene	U		0.000021	0.00010	mg/L	1	04-Jun-2020 21:21
Phenol	U		0.000035	0.00020	mg/L	1	04-Jun-2020 21:21
Pyrene	U		0.000019	0.00010	mg/L	1	04-Jun-2020 21:21
Surr: 2,4,6-Tribromophenol	*73.4*			*34-129*	*%REC*	*1*	*04-Jun-2020 21:21*
Surr: 2-Fluorobiphenyl	*63.8*			*40-125*	*%REC*	*1*	*04-Jun-2020 21:21*
Surr: 2-Fluorophenol	*54.6*			*20-120*	*%REC*	*1*	*04-Jun-2020 21:21*
Surr: 4-Terphenyl-d14	*92.0*			*40-135*	*%REC*	*1*	*04-Jun-2020 21:21*
Surr: Nitrobenzene-d5	*70.7*			*41-120*	*%REC*	*1*	*04-Jun-2020 21:21*
Surr: Phenol-d6	*66.1*			*20-120*	*%REC*	*1*	*04-Jun-2020 21:21*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 04-Jun-2020		Analyst: JHD
Arsenic	**0.0104**		**0.000400**	**0.00200**	**mg/L**	1	05-Jun-2020 23:07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WQ-1620-TB05-20200601
Collection Date: 01-Jun-2020 11:45

ANALYTICAL REPORT
WorkOrder:HS20060031
Lab ID:HS20060031-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: AKP
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	02-Jun-2020 18:12
Benzene		U	0.00020	0.0010	mg/L	1	02-Jun-2020 18:12
Chlorobenzene		U	0.00030	0.0010	mg/L	1	02-Jun-2020 18:12
Ethylbenzene		U	0.00030	0.0010	mg/L	1	02-Jun-2020 18:12
Methylene chloride		U	0.0010	0.0020	mg/L	1	02-Jun-2020 18:12
Toluene		U	0.00020	0.0010	mg/L	1	02-Jun-2020 18:12
Xylenes, Total		U	0.00030	0.0010	mg/L	1	02-Jun-2020 18:12
Surr: 1,2-Dichloroethane-d4	*106*			*70-126*	*%REC*	*1*	*02-Jun-2020 18:12*
Surr: 4-Bromofluorobenzene	*101*			*81-113*	*%REC*	*1*	*02-Jun-2020 18:12*
Surr: Dibromofluoromethane	*102*			*77-123*	*%REC*	*1*	*02-Jun-2020 18:12*
Surr: Toluene-d8	*98.8*			*82-127*	*%REC*	*1*	*02-Jun-2020 18:12*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060031

Batch ID: 154030 **Start Date:** 02 Jun 2020 12:05 **End Date:** 02 Jun 2020 15:00
Method: SV AQ SEP FUN EXTRACT-LOWLEV - 3510C **Prep Code:** 3510_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20060031-01	1	1000 (mL)	1 (mL)	0.001
HS20060031-02	1	1000 (mL)	1 (mL)	0.001
HS20060031-03	1	1000 (mL)	1 (mL)	0.001
HS20060031-04	1	1000 (mL)	1 (mL)	0.001

Batch ID: 154094 **Start Date:** 04 Jun 2020 09:28 **End Date:** 04 Jun 2020 13:30
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20060031-01		10 (mL)	10 (mL)	1
HS20060031-02		10 (mL)	10 (mL)	1
HS20060031-03		10 (mL)	10 (mL)	1
HS20060031-04		10 (mL)	10 (mL)	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060031

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 154030 (1)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Water	
HS20060031-01	WG-1620-MW60B-20200601	01 Jun 2020 08:10		02 Jun 2020 12:05	04 Jun 2020 20:22	1
HS20060031-02	WG-1620-MW60AR-20200601	01 Jun 2020 09:20		02 Jun 2020 12:05	04 Jun 2020 20:42	1
HS20060031-03	WG-1620-MW47A-20200601	01 Jun 2020 10:30		02 Jun 2020 12:05	04 Jun 2020 21:01	1
HS20060031-04	WG-1620-MW61B-20200601	01 Jun 2020 11:45		02 Jun 2020 12:05	04 Jun 2020 21:21	1
Batch ID: 154094 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS20060031-01	WG-1620-MW60B-20200601	01 Jun 2020 08:10		04 Jun 2020 13:30	05 Jun 2020 21:47	1
HS20060031-02	WG-1620-MW60AR-20200601	01 Jun 2020 09:20		04 Jun 2020 13:30	05 Jun 2020 23:03	1
HS20060031-03	WG-1620-MW47A-20200601	01 Jun 2020 10:30		04 Jun 2020 13:30	05 Jun 2020 23:05	1
HS20060031-04	WG-1620-MW61B-20200601	01 Jun 2020 11:45		04 Jun 2020 13:30	05 Jun 2020 23:07	1
Batch ID: R362573 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20060031-01	WG-1620-MW60B-20200601	01 Jun 2020 08:10			02 Jun 2020 20:45	1
HS20060031-02	WG-1620-MW60AR-20200601	01 Jun 2020 09:20			02 Jun 2020 21:10	1
HS20060031-03	WG-1620-MW47A-20200601	01 Jun 2020 10:30			02 Jun 2020 21:36	1
HS20060031-04	WG-1620-MW61B-20200601	01 Jun 2020 11:45			02 Jun 2020 22:01	1
HS20060031-05	WQ-1620-TB05-20200601	01 Jun 2020 11:45			02 Jun 2020 18:12	1

WorkOrder: HS20060031
InstrumentID: ICPMS04
Test Code: ICP_TW
Test Number: SW6020
Test Name: ICP-MS Metals by SW6020A

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Arsenic	7440-38-2	0.000500	0.000494	0.000400	0.00200

WorkOrder: HS20060031
InstrumentID: SV-6
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Diphenylhydrazine	122-66-7	0.00010	0.000098	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.000092	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.000090	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.000092	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.000096	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.000050	0.000049	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000031	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00010	0.000076	0.000047	0.0010
A	Acenaphthene	83-32-9	0.000050	0.000057	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000053	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.000056	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.000050	0.000062	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.000050	0.000064	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.000099	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.00011	0.000037	0.00020
A	Chrysene	218-01-9	0.000050	0.000063	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.000050	0.000044	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.00011	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000055	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.000057	0.000030	0.00010
A	Naphthalene	91-20-3	0.000050	0.000090	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.00011	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.00010	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.0000050	0.000079	0.00020
A	Phenanthrene	85-01-8	0.000050	0.000057	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.00010	0.000035	0.00020
A	Pyrene	129-00-0	0.000050	0.000066	0.000019	0.00010
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0.00020
S	2-Fluorobiphenyl	321-60-8	0	0	0	0.00020
S	2-Fluorophenol	367-12-4	0	0	0	0.00020
S	4-Terphenyl-d14	1718-51-0	0	0	0	0.00020
S	Nitrobenzene-d5	4165-60-0	0	0	0	0.00020
S	Phenol-d6	13127-88-3	0	0	0	0.00020

WorkOrder: HS20060031
InstrumentID: VOA4
Test Code: 8260_LL_W
Test Number: SW8260
Test Name: Low Level Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.00050	0.00068	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00055	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.0010	0.0011	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.0010	0.00096	0.00030	0.0010
A	Methylene chloride	75-09-2	0.0020	0.0014	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00053	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.0010	0.0010	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060031

QC BATCH REPORT

Batch ID: 154094 (0) **Instrument: ICPMS04** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-154094** Units: **mg/L** Analysis Date: **05-Jun-2020 21:43**
Client ID: Run ID: **ICPMS04_362714** SeqNo: **5608691** PrepDate: **04-Jun-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								

LCS Sample ID: **LCS-154094** Units: **mg/L** Analysis Date: **05-Jun-2020 21:45**
Client ID: Run ID: **ICPMS04_362714** SeqNo: **5608692** PrepDate: **04-Jun-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04689	0.00200	0.05	0	93.8	80 - 120				

MS Sample ID: **HS20060031-01MS** Units: **mg/L** Analysis Date: **05-Jun-2020 21:51**
Client ID: **WG-1620-MW60B-20200601** Run ID: **ICPMS04_362714** SeqNo: **5608695** PrepDate: **04-Jun-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0501	0.00200	0.05	0.002221	95.8	80 - 120				

MSD Sample ID: **HS20060031-01MSD** Units: **mg/L** Analysis Date: **05-Jun-2020 21:53**
Client ID: **WG-1620-MW60B-20200601** Run ID: **ICPMS04_362714** SeqNo: **5608696** PrepDate: **04-Jun-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0524	0.00200	0.05	0.002221	100	80 - 120	0.0501	4.49	20	

PDS Sample ID: **HS20060031-01PDS** Units: **mg/L** Analysis Date: **05-Jun-2020 21:55**
Client ID: **WG-1620-MW60B-20200601** Run ID: **ICPMS04_362714** SeqNo: **5608697** PrepDate: **04-Jun-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.09835	0.00200	0.1	0.002221	96.1	75 - 125				

SD Sample ID: **HS20060031-01SD** Units: **mg/L** Analysis Date: **05-Jun-2020 21:49**
Client ID: **WG-1620-MW60B-20200601** Run ID: **ICPMS04_362714** SeqNo: **5608694** PrepDate: **04-Jun-2020** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.002444	0.0100					0.002221	0	10	J

The following samples were analyzed in this batch: HS20060031-01 HS20060031-02 HS20060031-03 HS20060031-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060031

QC BATCH REPORT

Batch ID: 154030 (1) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-154030** Units: **ug/L** Analysis Date: **04-Jun-2020 12:35**
Client ID: Run ID: **SV-6_362716** SeqNo: **5610133** PrepDate: **02-Jun-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	U	0.20								
2,4-Dimethylphenol	U	0.20								
2,4-Dinitrotoluene	U	0.20								
2,6-Dinitrotoluene	U	0.20								
2-Chloronaphthalene	U	0.20								
2-Methylnaphthalene	U	0.10								
4,6-Dinitro-2-methylphenol	U	0.20								
4-Nitrophenol	U	1.0								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Benz(a)anthracene	U	0.10								
Benzo(a)pyrene	U	0.10								
Bis(2-chloroethoxy)methane	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Chrysene	U	0.10								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Nitrobenzene	U	0.20								
N-Nitrosodiphenylamine	U	0.20								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*3.274*	*0.20*	*5*	*0*	*65.5*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*3.746*	*0.20*	*5*	*0*	*74.9*	*40 - 125*				
Surr: 2-Fluorophenol	*3.293*	*0.20*	*5*	*0*	*65.9*	*20 - 120*				
Surr: 4-Terphenyl-d14	*3.985*	*0.20*	*5*	*0*	*79.7*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.5*	*0.20*	*5*	*0*	*90.0*	*41 - 120*				
Surr: Phenol-d6	*4.382*	*0.20*	*5*	*0*	*87.6*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060031

QC BATCH REPORT

Batch ID: 154030 (1) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCS Sample ID: **LCS-154030** Units: **ug/L** Analysis Date: **04-Jun-2020 12:54**
Client ID: Run ID: **SV-6_362716** SeqNo: **5610134** PrepDate: **02-Jun-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	3.974	0.20	5	0	79.5	39 - 127				
2,4-Dimethylphenol	3.893	0.20	5	0	77.9	35 - 120				
2,4-Dinitrotoluene	4.492	0.20	5	0	89.8	50 - 122				
2,6-Dinitrotoluene	4.56	0.20	5	0	91.2	50 - 120				
2-Chloronaphthalene	4.395	0.20	5	0	87.9	50 - 120				
2-Methylnaphthalene	4.024	0.10	5	0	80.5	50 - 120				
4,6-Dinitro-2-methylphenol	3.665	0.20	5	0	73.3	25 - 121				
4-Nitrophenol	3.819	1.0	5	0	76.4	30 - 130				
Acenaphthene	3.802	0.10	5	0	76.0	45 - 120				
Acenaphthylene	4.081	0.10	5	0	81.6	47 - 120				
Anthracene	4.078	0.10	5	0	81.6	45 - 120				
Benz(a)anthracene	4.208	0.10	5	0	84.2	40 - 120				
Benzo(a)pyrene	4.26	0.10	5	0	85.2	45 - 120				
Bis(2-chloroethoxy)methane	3.937	0.20	5	0	78.7	45 - 120				
Bis(2-ethylhexyl)phthalate	4.397	0.20	5	0	87.9	40 - 139				
Chrysene	3.918	0.10	5	0	78.4	43 - 120				
Dibenzofuran	4.007	0.10	5	0	80.1	50 - 120				
Di-n-butyl phthalate	4.387	0.20	5	0	87.7	45 - 123				
Fluoranthene	4.163	0.10	5	0	83.3	45 - 125				
Fluorene	4.048	0.10	5	0	81.0	49 - 120				
Naphthalene	3.994	0.10	5	0	79.9	45 - 120				
Nitrobenzene	4.015	0.20	5	0	80.3	44 - 120				
N-Nitrosodiphenylamine	4.14	0.20	5	0	82.8	40 - 125				
Pentachlorophenol	3.142	0.20	5	0	62.8	19 - 121				
Phenanthrene	4.125	0.10	5	0	82.5	45 - 121				
Phenol	3.503	0.20	5	0	70.1	20 - 124				
Pyrene	4.135	0.10	5	0	82.7	40 - 130				
Surr: 2,4,6-Tribromophenol	*4.285*	*0.20*	*5*	*0*	*85.7*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.116*	*0.20*	*5*	*0*	*82.3*	*40 - 125*				
Surr: 2-Fluorophenol	*3.976*	*0.20*	*5*	*0*	*79.5*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.26*	*0.20*	*5*	*0*	*85.2*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.853*	*0.20*	*5*	*0*	*97.1*	*41 - 120*				
Surr: Phenol-d6	*4.673*	*0.20*	*5*	*0*	*93.5*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060031

QC BATCH REPORT

Batch ID: 154030 (1) **Instrument: SV-6** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCSD Sample ID: **LCSD-154030** Units: **ug/L** Analysis Date: **04-Jun-2020 13:14**
Client ID: Run ID: **SV-6_362716** SeqNo: **5610135** PrepDate: **02-Jun-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	3.915	0.20	5	0	78.3	39 - 127	3.974	1.49	20	
2,4-Dimethylphenol	3.929	0.20	5	0	78.6	35 - 120	3.893	0.915	20	
2,4-Dinitrotoluene	4.562	0.20	5	0	91.2	50 - 122	4.492	1.56	20	
2,6-Dinitrotoluene	4.653	0.20	5	0	93.1	50 - 120	4.56	2.02	20	
2-Chloronaphthalene	4.372	0.20	5	0	87.4	50 - 120	4.395	0.526	20	
2-Methylnaphthalene	4.107	0.10	5	0	82.1	50 - 120	4.024	2.03	20	
4,6-Dinitro-2-methylphenol	3.585	0.20	5	0	71.7	25 - 121	3.665	2.21	30	
4-Nitrophenol	3.843	1.0	5	0	76.9	30 - 130	3.819	0.635	20	
Acenaphthene	3.797	0.10	5	0	75.9	45 - 120	3.802	0.143	20	
Acenaphthylene	4.102	0.10	5	0	82.0	47 - 120	4.081	0.532	20	
Anthracene	4.167	0.10	5	0	83.3	45 - 120	4.078	2.15	20	
Benz(a)anthracene	4.279	0.10	5	0	85.6	40 - 120	4.208	1.69	20	
Benzo(a)pyrene	4.393	0.10	5	0	87.9	45 - 120	4.26	3.07	20	
Bis(2-chloroethoxy)methane	3.987	0.20	5	0	79.7	45 - 120	3.937	1.26	20	
Bis(2-ethylhexyl)phthalate	4.394	0.20	5	0	87.9	40 - 139	4.397	0.0657	20	
Chrysene	4.117	0.10	5	0	82.3	43 - 120	3.918	4.94	20	
Dibenzofuran	3.979	0.10	5	0	79.6	50 - 120	4.007	0.705	20	
Di-n-butyl phthalate	4.489	0.20	5	0	89.8	45 - 123	4.387	2.3	20	
Fluoranthene	4.279	0.10	5	0	85.6	45 - 125	4.163	2.73	20	
Fluorene	4.059	0.10	5	0	81.2	49 - 120	4.048	0.289	20	
Naphthalene	4.039	0.10	5	0	80.8	45 - 120	3.994	1.12	20	
Nitrobenzene	4.134	0.20	5	0	82.7	44 - 120	4.015	2.92	20	
N-Nitrosodiphenylamine	4.159	0.20	5	0	83.2	40 - 125	4.14	0.46	20	
Pentachlorophenol	3.198	0.20	5	0	64.0	19 - 121	3.142	1.76	20	
Phenanthrene	4.16	0.10	5	0	83.2	45 - 121	4.125	0.855	20	
Phenol	3.534	0.20	5	0	70.7	20 - 124	3.503	0.871	20	
Pyrene	4.184	0.10	5	0	83.7	40 - 130	4.135	1.16	20	
Surr: 2,4,6-Tribromophenol	*4.197*	*0.20*	*5*	*0*	*83.9*	*34 - 129*	*4.285*	*2.08*	*20*	
Surr: 2-Fluorobiphenyl	*3.99*	*0.20*	*5*	*0*	*79.8*	*40 - 125*	*4.116*	*3.12*	*20*	
Surr: 2-Fluorophenol	*3.898*	*0.20*	*5*	*0*	*78.0*	*20 - 120*	*3.976*	*1.96*	*20*	
Surr: 4-Terphenyl-d14	*4.194*	*0.20*	*5*	*0*	*83.9*	*40 - 135*	*4.26*	*1.55*	*20*	
Surr: Nitrobenzene-d5	*4.742*	*0.20*	*5*	*0*	*94.8*	*41 - 120*	*4.853*	*2.32*	*20*	
Surr: Phenol-d6	*4.559*	*0.20*	*5*	*0*	*91.2*	*20 - 120*	*4.673*	*2.47*	*20*	

The following samples were analyzed in this batch: HS20060031-01 HS20060031-02 HS20060031-03 HS20060031-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060031

QC BATCH REPORT

Batch ID: R362573 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200602** Units: **ug/L** Analysis Date: **02-Jun-2020 13:29**
Client ID: Run ID: **VOA4_362573** SeqNo: **5605110** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*52.26*	*1.0*	*50*	*0*	*105*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*49.64*	*1.0*	*50*	*0*	*99.3*	*82 - 115*				
Surr: Dibromofluoromethane	*50.36*	*1.0*	*50*	*0*	*101*	*73 - 126*				
Surr: Toluene-d8	*50.11*	*1.0*	*50*	*0*	*100*	*81 - 120*				

LCS Sample ID: **VLCSW-200602** Units: **ug/L** Analysis Date: **02-Jun-2020 12:37**
Client ID: Run ID: **VOA4_362573** SeqNo: **5605109** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	19.71	1.0	20	0	98.6	70 - 124				
Benzene	18.21	1.0	20	0	91.0	74 - 120				
Chlorobenzene	18.24	1.0	20	0	91.2	76 - 113				
Ethylbenzene	19.5	1.0	20	0	97.5	77 - 117				
Methylene chloride	18.96	2.0	20	0	94.8	70 - 127				
Toluene	18.68	1.0	20	0	93.4	77 - 118				
Xylenes, Total	58.12	1.0	60	0	96.9	75 - 122				
Surr: 1,2-Dichloroethane-d4	*50.56*	*1.0*	*50*	*0*	*101*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*50.81*	*1.0*	*50*	*0*	*102*	*82 - 115*				
Surr: Dibromofluoromethane	*49.62*	*1.0*	*50*	*0*	*99.2*	*73 - 126*				
Surr: Toluene-d8	*50.73*	*1.0*	*50*	*0*	*101*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20060031

QC BATCH REPORT

Batch ID: R362573 (0) **Instrument: VOA4** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS20051182-03MS** Units: **ug/L** Analysis Date: **02-Jun-2020 16:03**
Client ID: Run ID: **VOA4_362573** SeqNo: **5605116** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Dichloroethane	31.26	1.0	20	11.72	97.7	70 - 127				
Benzene	20.36	1.0	20	2.196	90.8	70 - 127				
Chlorobenzene	18.65	1.0	20	1.672	84.9	70 - 114				
Ethylbenzene	18.98	1.0	20	0	94.9	70 - 124				
Methylene chloride	19.27	2.0	20	0	96.4	70 - 128				
Toluene	18.33	1.0	20	0	91.6	70 - 123				
Xylenes, Total	55.77	1.0	60	0	93.0	70 - 130				
Surr: 1,2-Dichloroethane-d4	*51.96*	*1.0*	*50*	*0*	*104*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*49.15*	*1.0*	*50*	*0*	*98.3*	*81 - 113*				
Surr: Dibromofluoromethane	*49.19*	*1.0*	*50*	*0*	*98.4*	*77 - 123*				
Surr: Toluene-d8	*48.26*	*1.0*	*50*	*0*	*96.5*	*82 - 127*				

MSD Sample ID: **HS20051182-03MSD** Units: **ug/L** Analysis Date: **02-Jun-2020 16:29**
Client ID: Run ID: **VOA4_362573** SeqNo: **5605117** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Dichloroethane	29.84	1.0	20	11.72	90.6	70 - 127	31.26	4.64	20	
Benzene	20.37	1.0	20	2.196	90.9	70 - 127	20.36	0.00952	20	
Chlorobenzene	19.38	1.0	20	1.672	88.6	70 - 114	18.65	3.85	20	
Ethylbenzene	18.93	1.0	20	0	94.7	70 - 124	18.98	0.241	20	
Methylene chloride	18.83	2.0	20	0	94.2	70 - 128	19.27	2.29	20	
Toluene	18.2	1.0	20	0	91.0	70 - 123	18.33	0.692	20	
Xylenes, Total	56.53	1.0	60	0	94.2	70 - 130	55.77	1.36	20	
Surr: 1,2-Dichloroethane-d4	*50.91*	*1.0*	*50*	*0*	*102*	*70 - 126*	*51.96*	*2.05*	*20*	
Surr: 4-Bromofluorobenzene	*50.39*	*1.0*	*50*	*0*	*101*	*81 - 113*	*49.15*	*2.49*	*20*	
Surr: Dibromofluoromethane	*48.95*	*1.0*	*50*	*0*	*97.9*	*77 - 123*	*49.19*	*0.501*	*20*	
Surr: Toluene-d8	*49.91*	*1.0*	*50*	*0*	*99.8*	*82 - 127*	*48.26*	*3.37*	*20*	

The following samples were analyzed in this batch: HS20060031-01 HS20060031-02 HS20060031-03 HS20060031-04 HS20060031-05

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20060031**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	20-030-0	26-Mar-2021
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322020-4	09-May-2021
Kansas	E-10352 2019-2020	31-Jul-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
Oklahoma	2019-141	31-Aug-2020
Texas	T104704231-20-26	30-Apr-2021

Sample Receipt Checklist

Work Order ID: HS20060031 **Date/Time Received:** **01-Jun-2020 13:59**

Client Name: PBW **Received by:** **Paresh M. Giga**

Completed By:	/S/ Nilesh D. Ranchod	01-Jun-2020 16:48	**Reviewed by:**	/S/ Dane J. Wacasey	01-Jun-2020 19:35
	eSignature	Date/Time		eSignature	Date/Time

Matrices: **Water** Carrier name: **Client**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:217224
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	3.8°C UC/C	IR # 11
Cooler(s)/Kit(s):	45018	
Date/Time sample(s) sent to storage:	06/01/2020 18:00	

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

Page _____ of _____

COC ID: 217224

HS20060031

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-17-Rev0 SR 92688
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address	

A	8260_LL_W (5632528 VOC Site Specific)
B	8270_LOW_W (5632532 SemiVolatiles Site specific)
C	ICP_TW (5636002 6020 Metals - As)
D	
E	
F	
G	
H	
I	
J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~WTB0 -262005~~			Water	1,8	2	X										
2	~~WG -202005~~			Water	1,2,8	6	X	X	X								
3	WG-1620-MW60B-20200601	6-1-2020	8:10	water	1,2,8	6	X	X	X								
4	WG-1620-MW60AR-20200601	6-1-2020	9:20	water	1,2,8,	6	X	X	X								
5	WG-1620-MW97A-20200601	6-1-2020	10:30	water	1,2,8,	6	X	X	X								
6	WG-1620-MW-61B-20200601	6-1-2020	11:45	water	1,2,8,	6	X	X	X								
7	WG-1620-TB05-20200601	6-1-2020	11:45	water	1,8	2	X										
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Tim McSpadden T. McSpadden

Shipment Method:

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: T. McSpadden Date: 6-1-2020 Time: 13:59

Received by:

Relinquished by: Date: Time:

Received by (Laboratory): 6/1/2020 13:59

Logged by (Laboratory): Date: Time:

Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.
45018	3.9° C
	4.11
	9.6.2

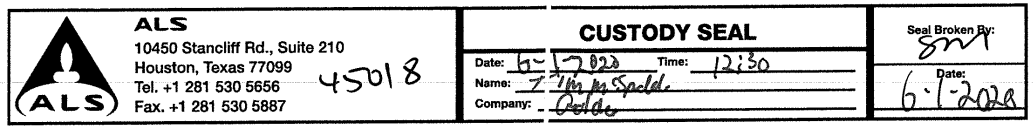
QC Package: (Check One Box Below)

- [ ] Level II Std QC
- [ ] Level III Std QC/Raw Data
- [ ] Level IV SW846/CLP
- [ ] Other
- [X] TRRP Checklist
- [ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

Copyright 2011 by ALS Environmental.



ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

45018

CUSTODY SEAL

Date: 6-1-2020 Time: 12:30
Name: Tim Spaldo
Company: Caldo

Seal Broken By:
Date: 6-1-2020

45018 JUL 01 2020

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

June 01, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20050997**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 10 sample(s) on May 26, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20050997**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS20050997**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 06/01/2020				
Project Name: WQ-1620-TB03-20200526			Laboratory Job Number: HS20050997				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 153854,153911,R362259				
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?			X		
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?		X			1
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?		X			2
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 06/01/2020				
Project Name: WQ-1620-TB03-20200526			Laboratory Job Number: HS20050997				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 153854,153911,R362259				
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?	X				
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 06/01/2020
Project Name: WQ-1620-TB03-20200526	Laboratory Job Number: HS20050997
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 153854,153911,R362259

ER#[5]	Description
1	Batch 153911, Semivolatile Organics Method SW8270, LCS/LCSD RPD was above the control limits for 4,6-Dinitro-2-methylphenol, Chrysene and Fluoranthene. The individual recoveries were in control.
2	Batch 153911, Semivolatile Organics Method SW8270, Semivolatile Organics Method SW8270: LCS/LCSD were analyzed and reported in lieu of an MS/MSD for this batch.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20050997

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20050997-01	WQ-1620-TB03-20200526	Water	CG-042320-54	26-May-2020 14:00	26-May-2020 17:05	☐
HS20050997-02	WQ-1620-TB04-20200526	Water	CG-042320-46	26-May-2020 14:00	26-May-2020 17:05	☑
HS20050997-03	WG-1620-MW88B-20200526	Water		26-May-2020 16:00	26-May-2020 17:05	☐
HS20050997-04	WG-1620-MW88A-20200526	Water		26-May-2020 14:45	26-May-2020 17:05	☐
HS20050997-05	WG-1620-MW50B-20200526	Water		26-May-2020 13:30	26-May-2020 17:05	☐
HS20050997-06	WG-1620-MW98B-20200526	Water		26-May-2020 12:30	26-May-2020 17:05	☐
HS20050997-07	WG-1620-MW98A-20200526	Water		26-May-2020 11:30	26-May-2020 17:05	☐
HS20050997-08	WG-1620-MW97A-20200526	Water		26-May-2020 10:15	26-May-2020 17:05	☐
HS20050997-09	WG-1620-MW76B-20200526	Water		26-May-2020 08:40	26-May-2020 17:05	☐
HS20050997-10	WG-1620-FD02-20200526	Water		26-May-2020 00:00	26-May-2020 17:05	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WQ-1620-TB03-20200526
Collection Date: 26-May-2020 14:00

ANALYTICAL REPORT
WorkOrder:HS20050997
Lab ID:HS20050997-01
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	27-May-2020 17:48
Benzene		U	0.00020	0.0010	mg/L	1	27-May-2020 17:48
Chlorobenzene		U	0.00030	0.0010	mg/L	1	27-May-2020 17:48
Ethylbenzene		U	0.00030	0.0010	mg/L	1	27-May-2020 17:48
Methylene chloride		U	0.0010	0.0020	mg/L	1	27-May-2020 17:48
Toluene		U	0.00020	0.0010	mg/L	1	27-May-2020 17:48
Xylenes, Total		U	0.00030	0.0010	mg/L	1	27-May-2020 17:48
Surr: 1,2-Dichloroethane-d4	*87.8*			*70-126*	*%REC*	*1*	*27-May-2020 17:48*
Surr: 4-Bromofluorobenzene	*95.2*			*81-113*	*%REC*	*1*	*27-May-2020 17:48*
Surr: Dibromofluoromethane	*90.6*			*77-123*	*%REC*	*1*	*27-May-2020 17:48*
Surr: Toluene-d8	*106*			*82-127*	*%REC*	*1*	*27-May-2020 17:48*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW88B-20200526
Collection Date: 26-May-2020 16:00

ANALYTICAL REPORT
WorkOrder:HS20050997
Lab ID:HS20050997-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	27-May-2020 18:36
Benzene		U	0.00020	0.0010	mg/L	1	27-May-2020 18:36
Chlorobenzene		U	0.00030	0.0010	mg/L	1	27-May-2020 18:36
Ethylbenzene		U	0.00030	0.0010	mg/L	1	27-May-2020 18:36
Methylene chloride		U	0.0010	0.0020	mg/L	1	27-May-2020 18:36
Toluene		U	0.00020	0.0010	mg/L	1	27-May-2020 18:36
Xylenes, Total		U	0.00030	0.0010	mg/L	1	27-May-2020 18:36
Surr: 1,2-Dichloroethane-d4	*85.2*			*70-126*	*%REC*	*1*	*27-May-2020 18:36*
Surr: 4-Bromofluorobenzene	*94.8*			*81-113*	*%REC*	*1*	*27-May-2020 18:36*
Surr: Dibromofluoromethane	*89.5*			*77-123*	*%REC*	*1*	*27-May-2020 18:36*
Surr: Toluene-d8	*106*			*82-127*	*%REC*	*1*	*27-May-2020 18:36*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW88B-20200526
Collection Date: 26-May-2020 16:00

ANALYTICAL REPORT
WorkOrder:HS20050997
Lab ID:HS20050997-03
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 28-May-2020		Analyst: ACN
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	28-May-2020 19:35
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	28-May-2020 19:35
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	28-May-2020 19:35
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	28-May-2020 19:35
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	28-May-2020 19:35
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	28-May-2020 19:35
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	28-May-2020 19:35
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	28-May-2020 19:35
Acenaphthene	U		0.000027	0.00010	mg/L	1	28-May-2020 19:35
Acenaphthylene	U		0.000015	0.00010	mg/L	1	28-May-2020 19:35
Anthracene	U		0.000014	0.00010	mg/L	1	28-May-2020 19:35
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	28-May-2020 19:35
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	28-May-2020 19:35
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	28-May-2020 19:35
Bis(2-ethylhexyl)phthalate	**0.000052**	J	**0.000037**	**0.00020**	**mg/L**	1	28-May-2020 19:35
Chrysene	U		0.000021	0.00010	mg/L	1	28-May-2020 19:35
Dibenzofuran	U		0.000020	0.00010	mg/L	1	28-May-2020 19:35
Di-n-butyl phthalate	**0.00015**	J	**0.000020**	**0.00020**	**mg/L**	1	28-May-2020 19:35
Fluoranthene	U		0.000010	0.00010	mg/L	1	28-May-2020 19:35
Fluorene	U		0.000030	0.00010	mg/L	1	28-May-2020 19:35
Naphthalene	U		0.000020	0.00010	mg/L	1	28-May-2020 19:35
Nitrobenzene	U		0.000024	0.00020	mg/L	1	28-May-2020 19:35
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	28-May-2020 19:35
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	28-May-2020 19:35
Phenanthrene	U		0.000021	0.00010	mg/L	1	28-May-2020 19:35
Phenol	U		0.000035	0.00020	mg/L	1	28-May-2020 19:35
Pyrene	U		0.000019	0.00010	mg/L	1	28-May-2020 19:35
Surr: 2,4,6-Tribromophenol	*66.4*			*34-129*	*%REC*	*1*	*28-May-2020 19:35*
Surr: 2-Fluorobiphenyl	*71.1*			*40-125*	*%REC*	*1*	*28-May-2020 19:35*
Surr: 2-Fluorophenol	*52.3*			*20-120*	*%REC*	*1*	*28-May-2020 19:35*
Surr: 4-Terphenyl-d14	*87.0*			*40-135*	*%REC*	*1*	*28-May-2020 19:35*
Surr: Nitrobenzene-d5	*70.3*			*41-120*	*%REC*	*1*	*28-May-2020 19:35*
Surr: Phenol-d6	*59.5*			*20-120*	*%REC*	*1*	*28-May-2020 19:35*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 27-May-2020		Analyst: JHD
Arsenic	**0.00246**		**0.000400**	**0.00200**	**mg/L**	1	28-May-2020 13:18

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW88A-20200526
Collection Date: 26-May-2020 14:45

ANALYTICAL REPORT
WorkOrder:HS20050997
Lab ID:HS20050997-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	27-May-2020 19:00
Benzene		U	0.00020	0.0010	mg/L	1	27-May-2020 19:00
Chlorobenzene		U	0.00030	0.0010	mg/L	1	27-May-2020 19:00
Ethylbenzene		U	0.00030	0.0010	mg/L	1	27-May-2020 19:00
Methylene chloride		U	0.0010	0.0020	mg/L	1	27-May-2020 19:00
Toluene		U	0.00020	0.0010	mg/L	1	27-May-2020 19:00
Xylenes, Total		U	0.00030	0.0010	mg/L	1	27-May-2020 19:00
Surr: 1,2-Dichloroethane-d4	*86.7*			*70-126*	*%REC*	*1*	*27-May-2020 19:00*
Surr: 4-Bromofluorobenzene	*93.9*			*81-113*	*%REC*	*1*	*27-May-2020 19:00*
Surr: Dibromofluoromethane	*89.8*			*77-123*	*%REC*	*1*	*27-May-2020 19:00*
Surr: Toluene-d8	*107*			*82-127*	*%REC*	*1*	*27-May-2020 19:00*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW88A-20200526
Collection Date: 26-May-2020 14:45

ANALYTICAL REPORT
WorkOrder:HS20050997
Lab ID:HS20050997-04
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 28-May-2020		Analyst: ACN
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	28-May-2020 19:54
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	28-May-2020 19:54
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	28-May-2020 19:54
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	28-May-2020 19:54
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	28-May-2020 19:54
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	28-May-2020 19:54
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	28-May-2020 19:54
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	28-May-2020 19:54
Acenaphthene	**0.0011**		**0.000027**	**0.00010**	**mg/L**	1	28-May-2020 19:54
Acenaphthylene	U		0.000015	0.00010	mg/L	1	28-May-2020 19:54
Anthracene	**0.00015**		**0.000014**	**0.00010**	**mg/L**	1	28-May-2020 19:54
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	28-May-2020 19:54
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	28-May-2020 19:54
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	28-May-2020 19:54
Bis(2-ethylhexyl)phthalate	**0.000064**	J	**0.000037**	**0.00020**	**mg/L**	1	28-May-2020 19:54
Chrysene	U		0.000021	0.00010	mg/L	1	28-May-2020 19:54
Dibenzofuran	U		0.000020	0.00010	mg/L	1	28-May-2020 19:54
Di-n-butyl phthalate	**0.000080**	J	**0.000020**	**0.00020**	**mg/L**	1	28-May-2020 19:54
Fluoranthene	**0.00022**		**0.000010**	**0.00010**	**mg/L**	1	28-May-2020 19:54
Fluorene	**0.000075**	J	**0.000030**	**0.00010**	**mg/L**	1	28-May-2020 19:54
Naphthalene	U		0.000020	0.00010	mg/L	1	28-May-2020 19:54
Nitrobenzene	U		0.000024	0.00020	mg/L	1	28-May-2020 19:54
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	28-May-2020 19:54
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	28-May-2020 19:54
Phenanthrene	**0.000027**	J	**0.000021**	**0.00010**	**mg/L**	1	28-May-2020 19:54
Phenol	U		0.000035	0.00020	mg/L	1	28-May-2020 19:54
Pyrene	**0.00060**		**0.000019**	**0.00010**	**mg/L**	1	28-May-2020 19:54
Surr: 2,4,6-Tribromophenol	*54.3*			*34-129*	*%REC*	*1*	*28-May-2020 19:54*
Surr: 2-Fluorobiphenyl	*68.3*			*40-125*	*%REC*	*1*	*28-May-2020 19:54*
Surr: 2-Fluorophenol	*50.1*			*20-120*	*%REC*	*1*	*28-May-2020 19:54*
Surr: 4-Terphenyl-d14	*78.3*			*40-135*	*%REC*	*1*	*28-May-2020 19:54*
Surr: Nitrobenzene-d5	*62.3*			*41-120*	*%REC*	*1*	*28-May-2020 19:54*
Surr: Phenol-d6	*56.2*			*20-120*	*%REC*	*1*	*28-May-2020 19:54*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 27-May-2020		Analyst: JHD
Arsenic	**0.00405**		**0.000400**	**0.00200**	**mg/L**	1	28-May-2020 14:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW50B-20200526
Collection Date: 26-May-2020 13:30

ANALYTICAL REPORT
WorkOrder:HS20050997
Lab ID:HS20050997-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	27-May-2020 19:24
Benzene		U	0.00020	0.0010	mg/L	1	27-May-2020 19:24
Chlorobenzene		U	0.00030	0.0010	mg/L	1	27-May-2020 19:24
Ethylbenzene		U	0.00030	0.0010	mg/L	1	27-May-2020 19:24
Methylene chloride		U	0.0010	0.0020	mg/L	1	27-May-2020 19:24
Toluene	**0.0010**		**0.00020**	**0.0010**	**mg/L**	1	27-May-2020 19:24
Xylenes, Total		U	0.00030	0.0010	mg/L	1	27-May-2020 19:24
Surr: 1,2-Dichloroethane-d4	*85.9*			*70-126*	*%REC*	*1*	*27-May-2020 19:24*
Surr: 4-Bromofluorobenzene	*93.9*			*81-113*	*%REC*	*1*	*27-May-2020 19:24*
Surr: Dibromofluoromethane	*89.0*			*77-123*	*%REC*	*1*	*27-May-2020 19:24*
Surr: Toluene-d8	*109*			*82-127*	*%REC*	*1*	*27-May-2020 19:24*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW50B-20200526
Collection Date: 26-May-2020 13:30

ANALYTICAL REPORT
WorkOrder:HS20050997
Lab ID:HS20050997-05
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 28-May-2020		Analyst: ACN
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	28-May-2020 20:14
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	28-May-2020 20:14
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	28-May-2020 20:14
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	28-May-2020 20:14
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	28-May-2020 20:14
2-Methylnaphthalene	**0.000036**	J	**0.000019**	**0.00010**	**mg/L**	1	28-May-2020 20:14
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	28-May-2020 20:14
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	28-May-2020 20:14
Acenaphthene	**0.0012**		**0.000027**	**0.00010**	**mg/L**	1	28-May-2020 20:14
Acenaphthylene	**0.00039**		**0.000015**	**0.00010**	**mg/L**	1	28-May-2020 20:14
Anthracene	**0.00038**		**0.000014**	**0.00010**	**mg/L**	1	28-May-2020 20:14
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	28-May-2020 20:14
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	28-May-2020 20:14
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	28-May-2020 20:14
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	28-May-2020 20:14
Chrysene	U		0.000021	0.00010	mg/L	1	28-May-2020 20:14
Dibenzofuran	**0.00078**		**0.000020**	**0.00010**	**mg/L**	1	28-May-2020 20:14
Di-n-butyl phthalate	**0.00016**	J	**0.000020**	**0.00020**	**mg/L**	1	28-May-2020 20:14
Fluoranthene	**0.00033**		**0.000010**	**0.00010**	**mg/L**	1	28-May-2020 20:14
Fluorene	**0.00042**		**0.000030**	**0.00010**	**mg/L**	1	28-May-2020 20:14
Naphthalene	**0.000037**	J	**0.000020**	**0.00010**	**mg/L**	1	28-May-2020 20:14
Nitrobenzene	U		0.000024	0.00020	mg/L	1	28-May-2020 20:14
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	28-May-2020 20:14
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	28-May-2020 20:14
Phenanthrene	**0.00096**		**0.000021**	**0.00010**	**mg/L**	1	28-May-2020 20:14
Phenol	U		0.000035	0.00020	mg/L	1	28-May-2020 20:14
Pyrene	**0.00024**		**0.000019**	**0.00010**	**mg/L**	1	28-May-2020 20:14
Surr: 2,4,6-Tribromophenol	*59.8*			*34-129*	*%REC*	*1*	*28-May-2020 20:14*
Surr: 2-Fluorobiphenyl	*64.6*			*40-125*	*%REC*	*1*	*28-May-2020 20:14*
Surr: 2-Fluorophenol	*53.8*			*20-120*	*%REC*	*1*	*28-May-2020 20:14*
Surr: 4-Terphenyl-d14	*93.5*			*40-135*	*%REC*	*1*	*28-May-2020 20:14*
Surr: Nitrobenzene-d5	*68.5*			*41-120*	*%REC*	*1*	*28-May-2020 20:14*
Surr: Phenol-d6	*59.9*			*20-120*	*%REC*	*1*	*28-May-2020 20:14*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 27-May-2020		Analyst: JHD
Arsenic	**0.00656**		**0.000400**	**0.00200**	**mg/L**	1	28-May-2020 14:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW98B-20200526
Collection Date: 26-May-2020 12:30

ANALYTICAL REPORT
WorkOrder:HS20050997
Lab ID:HS20050997-06
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**						Analyst: PC
1,2-Dichloroethane	U		0.00020	0.0010	mg/L	1	27-May-2020 19:49
Benzene	U		0.00020	0.0010	mg/L	1	27-May-2020 19:49
Chlorobenzene	U		0.00030	0.0010	mg/L	1	27-May-2020 19:49
Ethylbenzene	U		0.00030	0.0010	mg/L	1	27-May-2020 19:49
Methylene chloride	U		0.0010	0.0020	mg/L	1	27-May-2020 19:49
Toluene	**0.00054**	J	**0.00020**	**0.0010**	**mg/L**	1	27-May-2020 19:49
Xylenes, Total	U		0.00030	0.0010	mg/L	1	27-May-2020 19:49
Surr: 1,2-Dichloroethane-d4	*86.1*			*70-126*	*%REC*	*1*	*27-May-2020 19:49*
Surr: 4-Bromofluorobenzene	*95.9*			*81-113*	*%REC*	*1*	*27-May-2020 19:49*
Surr: Dibromofluoromethane	*89.1*			*77-123*	*%REC*	*1*	*27-May-2020 19:49*
Surr: Toluene-d8	*102*			*82-127*	*%REC*	*1*	*27-May-2020 19:49*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW98B-20200526
Collection Date: 26-May-2020 12:30

ANALYTICAL REPORT
WorkOrder:HS20050997
Lab ID:HS20050997-06
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 28-May-2020		Analyst: ACN
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	28-May-2020 20:33
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	28-May-2020 20:33
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	28-May-2020 20:33
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	28-May-2020 20:33
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	28-May-2020 20:33
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	28-May-2020 20:33
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	28-May-2020 20:33
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	28-May-2020 20:33
Acenaphthene	U		0.000027	0.00010	mg/L	1	28-May-2020 20:33
Acenaphthylene	U		0.000015	0.00010	mg/L	1	28-May-2020 20:33
Anthracene	U		0.000014	0.00010	mg/L	1	28-May-2020 20:33
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	28-May-2020 20:33
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	28-May-2020 20:33
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	28-May-2020 20:33
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	28-May-2020 20:33
Chrysene	U		0.000021	0.00010	mg/L	1	28-May-2020 20:33
Dibenzofuran	U		0.000020	0.00010	mg/L	1	28-May-2020 20:33
Di-n-butyl phthalate	**0.00011**	J	**0.000020**	**0.00020**	**mg/L**	1	28-May-2020 20:33
Fluoranthene	U		0.000010	0.00010	mg/L	1	28-May-2020 20:33
Fluorene	U		0.000030	0.00010	mg/L	1	28-May-2020 20:33
Naphthalene	U		0.000020	0.00010	mg/L	1	28-May-2020 20:33
Nitrobenzene	U		0.000024	0.00020	mg/L	1	28-May-2020 20:33
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	28-May-2020 20:33
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	28-May-2020 20:33
Phenanthrene	U		0.000021	0.00010	mg/L	1	28-May-2020 20:33
Phenol	U		0.000035	0.00020	mg/L	1	28-May-2020 20:33
Pyrene	U		0.000019	0.00010	mg/L	1	28-May-2020 20:33
Surr: 2,4,6-Tribromophenol	*47.0*			*34-129*	*%REC*	*1*	*28-May-2020 20:33*
Surr: 2-Fluorobiphenyl	*63.2*			*40-125*	*%REC*	*1*	*28-May-2020 20:33*
Surr: 2-Fluorophenol	*48.2*			*20-120*	*%REC*	*1*	*28-May-2020 20:33*
Surr: 4-Terphenyl-d14	*80.7*			*40-135*	*%REC*	*1*	*28-May-2020 20:33*
Surr: Nitrobenzene-d5	*64.1*			*41-120*	*%REC*	*1*	*28-May-2020 20:33*
Surr: Phenol-d6	*51.6*			*20-120*	*%REC*	*1*	*28-May-2020 20:33*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 27-May-2020		Analyst: JHD
Arsenic	**0.00214**		**0.000400**	**0.00200**	**mg/L**	1	28-May-2020 14:32

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW98A-20200526
Collection Date: 26-May-2020 11:30

ANALYTICAL REPORT
WorkOrder:HS20050997
Lab ID:HS20050997-07
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	27-May-2020 20:13
Benzene		U	0.00020	0.0010	mg/L	1	27-May-2020 20:13
Chlorobenzene		U	0.00030	0.0010	mg/L	1	27-May-2020 20:13
Ethylbenzene		U	0.00030	0.0010	mg/L	1	27-May-2020 20:13
Methylene chloride		U	0.0010	0.0020	mg/L	1	27-May-2020 20:13
Toluene		U	0.00020	0.0010	mg/L	1	27-May-2020 20:13
Xylenes, Total		U	0.00030	0.0010	mg/L	1	27-May-2020 20:13
Surr: 1,2-Dichloroethane-d4	*87.2*			*70-126*	*%REC*	*1*	*27-May-2020 20:13*
Surr: 4-Bromofluorobenzene	*93.2*			*81-113*	*%REC*	*1*	*27-May-2020 20:13*
Surr: Dibromofluoromethane	*89.9*			*77-123*	*%REC*	*1*	*27-May-2020 20:13*
Surr: Toluene-d8	*107*			*82-127*	*%REC*	*1*	*27-May-2020 20:13*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW98A-20200526
Collection Date: 26-May-2020 11:30

ANALYTICAL REPORT
WorkOrder:HS20050997
Lab ID:HS20050997-07
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 28-May-2020		Analyst: ACN
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	28-May-2020 20:52
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	28-May-2020 20:52
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	28-May-2020 20:52
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	28-May-2020 20:52
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	28-May-2020 20:52
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	28-May-2020 20:52
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	28-May-2020 20:52
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	28-May-2020 20:52
Acenaphthene	U		0.000027	0.00010	mg/L	1	28-May-2020 20:52
Acenaphthylene	U		0.000015	0.00010	mg/L	1	28-May-2020 20:52
Anthracene	**0.000055**	J	**0.000014**	**0.00010**	**mg/L**	1	28-May-2020 20:52
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	28-May-2020 20:52
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	28-May-2020 20:52
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	28-May-2020 20:52
Bis(2-ethylhexyl)phthalate	**0.000068**	J	**0.000037**	**0.00020**	**mg/L**	1	28-May-2020 20:52
Chrysene	U		0.000021	0.00010	mg/L	1	28-May-2020 20:52
Dibenzofuran	U		0.000020	0.00010	mg/L	1	28-May-2020 20:52
Di-n-butyl phthalate	**0.000027**	J	**0.000020**	**0.00020**	**mg/L**	1	28-May-2020 20:52
Fluoranthene	**0.000023**	J	**0.000010**	**0.00010**	**mg/L**	1	28-May-2020 20:52
Fluorene	U		0.000030	0.00010	mg/L	1	28-May-2020 20:52
Naphthalene	U		0.000020	0.00010	mg/L	1	28-May-2020 20:52
Nitrobenzene	U		0.000024	0.00020	mg/L	1	28-May-2020 20:52
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	28-May-2020 20:52
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	28-May-2020 20:52
Phenanthrene	**0.000048**	J	**0.000021**	**0.00010**	**mg/L**	1	28-May-2020 20:52
Phenol	U		0.000035	0.00020	mg/L	1	28-May-2020 20:52
Pyrene	U		0.000019	0.00010	mg/L	1	28-May-2020 20:52
Surr: 2,4,6-Tribromophenol	*100*			*34-129*	*%REC*	*1*	*28-May-2020 20:52*
Surr: 2-Fluorobiphenyl	*83.7*			*40-125*	*%REC*	*1*	*28-May-2020 20:52*
Surr: 2-Fluorophenol	*51.3*			*20-120*	*%REC*	*1*	*28-May-2020 20:52*
Surr: 4-Terphenyl-d14	*81.8*			*40-135*	*%REC*	*1*	*28-May-2020 20:52*
Surr: Nitrobenzene-d5	*84.0*			*41-120*	*%REC*	*1*	*28-May-2020 20:52*
Surr: Phenol-d6	*75.7*			*20-120*	*%REC*	*1*	*28-May-2020 20:52*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 27-May-2020		Analyst: JHD
Arsenic	**0.0119**		**0.000400**	**0.00200**	**mg/L**	1	28-May-2020 14:34

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW97A-20200526
Collection Date: 26-May-2020 10:15

ANALYTICAL REPORT
WorkOrder:HS20050997
Lab ID:HS20050997-08
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	27-May-2020 20:37
Benzene		U	0.00020	0.0010	mg/L	1	27-May-2020 20:37
Chlorobenzene		U	0.00030	0.0010	mg/L	1	27-May-2020 20:37
Ethylbenzene		U	0.00030	0.0010	mg/L	1	27-May-2020 20:37
Methylene chloride		U	0.0010	0.0020	mg/L	1	27-May-2020 20:37
Toluene		U	0.00020	0.0010	mg/L	1	27-May-2020 20:37
Xylenes, Total		U	0.00030	0.0010	mg/L	1	27-May-2020 20:37
Surr: 1,2-Dichloroethane-d4	*86.0*			*70-126*	*%REC*	*1*	*27-May-2020 20:37*
Surr: 4-Bromofluorobenzene	*94.1*			*81-113*	*%REC*	*1*	*27-May-2020 20:37*
Surr: Dibromofluoromethane	*88.1*			*77-123*	*%REC*	*1*	*27-May-2020 20:37*
Surr: Toluene-d8	*107*			*82-127*	*%REC*	*1*	*27-May-2020 20:37*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW97A-20200526
Collection Date: 26-May-2020 10:15

ANALYTICAL REPORT
WorkOrder:HS20050997
Lab ID:HS20050997-08
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 28-May-2020		Analyst: ACN
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	28-May-2020 21:12
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	28-May-2020 21:12
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	28-May-2020 21:12
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	28-May-2020 21:12
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	28-May-2020 21:12
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	28-May-2020 21:12
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	28-May-2020 21:12
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	28-May-2020 21:12
Acenaphthene	U		0.000027	0.00010	mg/L	1	28-May-2020 21:12
Acenaphthylene	U		0.000015	0.00010	mg/L	1	28-May-2020 21:12
Anthracene	U		0.000014	0.00010	mg/L	1	28-May-2020 21:12
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	28-May-2020 21:12
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	28-May-2020 21:12
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	28-May-2020 21:12
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	28-May-2020 21:12
Chrysene	U		0.000021	0.00010	mg/L	1	28-May-2020 21:12
Dibenzofuran	U		0.000020	0.00010	mg/L	1	28-May-2020 21:12
Di-n-butyl phthalate	**0.000084**	J	**0.000020**	**0.00020**	**mg/L**	1	28-May-2020 21:12
Fluoranthene	U		0.000010	0.00010	mg/L	1	28-May-2020 21:12
Fluorene	U		0.000030	0.00010	mg/L	1	28-May-2020 21:12
Naphthalene	U		0.000020	0.00010	mg/L	1	28-May-2020 21:12
Nitrobenzene	U		0.000024	0.00020	mg/L	1	28-May-2020 21:12
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	28-May-2020 21:12
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	28-May-2020 21:12
Phenanthrene	U		0.000021	0.00010	mg/L	1	28-May-2020 21:12
Phenol	U		0.000035	0.00020	mg/L	1	28-May-2020 21:12
Pyrene	U		0.000019	0.00010	mg/L	1	28-May-2020 21:12
Surr: 2,4,6-Tribromophenol	*68.3*			*34-129*	*%REC*	*1*	*28-May-2020 21:12*
Surr: 2-Fluorobiphenyl	*74.6*			*40-125*	*%REC*	*1*	*28-May-2020 21:12*
Surr: 2-Fluorophenol	*61.6*			*20-120*	*%REC*	*1*	*28-May-2020 21:12*
Surr: 4-Terphenyl-d14	*87.5*			*40-135*	*%REC*	*1*	*28-May-2020 21:12*
Surr: Nitrobenzene-d5	*78.9*			*41-120*	*%REC*	*1*	*28-May-2020 21:12*
Surr: Phenol-d6	*66.6*			*20-120*	*%REC*	*1*	*28-May-2020 21:12*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 27-May-2020		Analyst: JHD
Arsenic	**0.00438**		**0.000400**	**0.00200**	**mg/L**	1	28-May-2020 14:46

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW76B-20200526
Collection Date: 26-May-2020 08:40

ANALYTICAL REPORT
WorkOrder:HS20050997
Lab ID:HS20050997-09
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	27-May-2020 21:01
Benzene		U	0.00020	0.0010	mg/L	1	27-May-2020 21:01
Chlorobenzene		U	0.00030	0.0010	mg/L	1	27-May-2020 21:01
Ethylbenzene		U	0.00030	0.0010	mg/L	1	27-May-2020 21:01
Methylene chloride		U	0.0010	0.0020	mg/L	1	27-May-2020 21:01
Toluene		U	0.00020	0.0010	mg/L	1	27-May-2020 21:01
Xylenes, Total		U	0.00030	0.0010	mg/L	1	27-May-2020 21:01
Surr: 1,2-Dichloroethane-d4	*87.9*			*70-126*	*%REC*	*1*	*27-May-2020 21:01*
Surr: 4-Bromofluorobenzene	*93.7*			*81-113*	*%REC*	*1*	*27-May-2020 21:01*
Surr: Dibromofluoromethane	*90.5*			*77-123*	*%REC*	*1*	*27-May-2020 21:01*
Surr: Toluene-d8	*108*			*82-127*	*%REC*	*1*	*27-May-2020 21:01*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-MW76B-20200526
Collection Date: 26-May-2020 08:40

ANALYTICAL REPORT
WorkOrder:HS20050997
Lab ID:HS20050997-09
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 28-May-2020		Analyst: ACN
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	28-May-2020 21:31
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	28-May-2020 21:31
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	28-May-2020 21:31
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	28-May-2020 21:31
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	28-May-2020 21:31
2-Methylnaphthalene	U		0.000019	0.00010	mg/L	1	28-May-2020 21:31
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	28-May-2020 21:31
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	28-May-2020 21:31
Acenaphthene	U		0.000027	0.00010	mg/L	1	28-May-2020 21:31
Acenaphthylene	U		0.000015	0.00010	mg/L	1	28-May-2020 21:31
Anthracene	U		0.000014	0.00010	mg/L	1	28-May-2020 21:31
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	28-May-2020 21:31
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	28-May-2020 21:31
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	28-May-2020 21:31
Bis(2-ethylhexyl)phthalate	**0.000039**	J	**0.000037**	**0.00020**	**mg/L**	1	28-May-2020 21:31
Chrysene	U		0.000021	0.00010	mg/L	1	28-May-2020 21:31
Dibenzofuran	U		0.000020	0.00010	mg/L	1	28-May-2020 21:31
Di-n-butyl phthalate	U		0.000020	0.00020	mg/L	1	28-May-2020 21:31
Fluoranthene	U		0.000010	0.00010	mg/L	1	28-May-2020 21:31
Fluorene	U		0.000030	0.00010	mg/L	1	28-May-2020 21:31
Naphthalene	U		0.000020	0.00010	mg/L	1	28-May-2020 21:31
Nitrobenzene	U		0.000024	0.00020	mg/L	1	28-May-2020 21:31
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	28-May-2020 21:31
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	28-May-2020 21:31
Phenanthrene	U		0.000021	0.00010	mg/L	1	28-May-2020 21:31
Phenol	U		0.000035	0.00020	mg/L	1	28-May-2020 21:31
Pyrene	U		0.000019	0.00010	mg/L	1	28-May-2020 21:31
Surr: 2,4,6-Tribromophenol	*51.5*			*34-129*	*%REC*	*1*	*28-May-2020 21:31*
Surr: 2-Fluorobiphenyl	*63.0*			*40-125*	*%REC*	*1*	*28-May-2020 21:31*
Surr: 2-Fluorophenol	*52.3*			*20-120*	*%REC*	*1*	*28-May-2020 21:31*
Surr: 4-Terphenyl-d14	*91.1*			*40-135*	*%REC*	*1*	*28-May-2020 21:31*
Surr: Nitrobenzene-d5	*64.9*			*41-120*	*%REC*	*1*	*28-May-2020 21:31*
Surr: Phenol-d6	*56.1*			*20-120*	*%REC*	*1*	*28-May-2020 21:31*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 27-May-2020		Analyst: JHD
Arsenic	**0.00404**		**0.000400**	**0.00200**	**mg/L**	1	28-May-2020 14:48

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FD02-20200526
Collection Date: 26-May-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20050997
Lab ID:HS20050997-10
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**					Analyst: PC
1,2-Dichloroethane		U	0.00020	0.0010	mg/L	1	27-May-2020 21:25
Benzene		U	0.00020	0.0010	mg/L	1	27-May-2020 21:25
Chlorobenzene		U	0.00030	0.0010	mg/L	1	27-May-2020 21:25
Ethylbenzene		U	0.00030	0.0010	mg/L	1	27-May-2020 21:25
Methylene chloride		U	0.0010	0.0020	mg/L	1	27-May-2020 21:25
Toluene	**0.0011**		**0.00020**	**0.0010**	**mg/L**	1	27-May-2020 21:25
Xylenes, Total		U	0.00030	0.0010	mg/L	1	27-May-2020 21:25
Surr: 1,2-Dichloroethane-d4	*89.0*			*70-126*	*%REC*	*1*	*27-May-2020 21:25*
Surr: 4-Bromofluorobenzene	*93.7*			*81-113*	*%REC*	*1*	*27-May-2020 21:25*
Surr: Dibromofluoromethane	*91.5*			*77-123*	*%REC*	*1*	*27-May-2020 21:25*
Surr: Toluene-d8	*106*			*82-127*	*%REC*	*1*	*27-May-2020 21:25*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: WG-1620-FD02-20200526
Collection Date: 26-May-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20050997
Lab ID:HS20050997-10
Matrix:Water

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL SEMIVOLATILES BY 8270D		**Method:SW8270**			Prep:SW3510 / 28-May-2020		Analyst: ACN
1,2-Diphenylhydrazine	U		0.000021	0.00020	mg/L	1	28-May-2020 21:51
2,4-Dimethylphenol	U		0.000040	0.00020	mg/L	1	28-May-2020 21:51
2,4-Dinitrotoluene	U		0.000058	0.00020	mg/L	1	28-May-2020 21:51
2,6-Dinitrotoluene	U		0.000042	0.00020	mg/L	1	28-May-2020 21:51
2-Chloronaphthalene	U		0.000021	0.00020	mg/L	1	28-May-2020 21:51
2-Methylnaphthalene	**0.000035**	J	**0.000019**	**0.00010**	**mg/L**	1	28-May-2020 21:51
4,6-Dinitro-2-methylphenol	U		0.000020	0.00020	mg/L	1	28-May-2020 21:51
4-Nitrophenol	U		0.000047	0.0010	mg/L	1	28-May-2020 21:51
Acenaphthene	**0.0012**		**0.000027**	**0.00010**	**mg/L**	1	28-May-2020 21:51
Acenaphthylene	**0.000029**	J	**0.000015**	**0.00010**	**mg/L**	1	28-May-2020 21:51
Anthracene	**0.00024**		**0.000014**	**0.00010**	**mg/L**	1	28-May-2020 21:51
Benz(a)anthracene	U		0.000050	0.00010	mg/L	1	28-May-2020 21:51
Benzo(a)pyrene	U		0.000020	0.00010	mg/L	1	28-May-2020 21:51
Bis(2-chloroethoxy)methane	U		0.000030	0.00020	mg/L	1	28-May-2020 21:51
Bis(2-ethylhexyl)phthalate	U		0.000037	0.00020	mg/L	1	28-May-2020 21:51
Chrysene	U		0.000021	0.00010	mg/L	1	28-May-2020 21:51
Dibenzofuran	**0.00082**		**0.000020**	**0.00010**	**mg/L**	1	28-May-2020 21:51
Di-n-butyl phthalate	**0.00026**		**0.000020**	**0.00020**	**mg/L**	1	28-May-2020 21:51
Fluoranthene	**0.00032**		**0.000010**	**0.00010**	**mg/L**	1	28-May-2020 21:51
Fluorene	**0.00040**		**0.000030**	**0.00010**	**mg/L**	1	28-May-2020 21:51
Naphthalene	**0.000062**	J	**0.000020**	**0.00010**	**mg/L**	1	28-May-2020 21:51
Nitrobenzene	U		0.000024	0.00020	mg/L	1	28-May-2020 21:51
N-Nitrosodiphenylamine	U		0.000025	0.00020	mg/L	1	28-May-2020 21:51
Pentachlorophenol	U		0.000079	0.00020	mg/L	1	28-May-2020 21:51
Phenanthrene	**0.00073**		**0.000021**	**0.00010**	**mg/L**	1	28-May-2020 21:51
Phenol	U		0.000035	0.00020	mg/L	1	28-May-2020 21:51
Pyrene	**0.00021**		**0.000019**	**0.00010**	**mg/L**	1	28-May-2020 21:51
Surr: 2,4,6-Tribromophenol	*52.4*			*34-129*	*%REC*	*1*	*28-May-2020 21:51*
Surr: 2-Fluorobiphenyl	*56.5*			*40-125*	*%REC*	*1*	*28-May-2020 21:51*
Surr: 2-Fluorophenol	*47.5*			*20-120*	*%REC*	*1*	*28-May-2020 21:51*
Surr: 4-Terphenyl-d14	*87.4*			*40-135*	*%REC*	*1*	*28-May-2020 21:51*
Surr: Nitrobenzene-d5	*62.9*			*41-120*	*%REC*	*1*	*28-May-2020 21:51*
Surr: Phenol-d6	*56.7*			*20-120*	*%REC*	*1*	*28-May-2020 21:51*
ICP-MS METALS BY SW6020A		**Method:SW6020**			Prep:SW3010A / 27-May-2020		Analyst: JHD
Arsenic	**0.00657**		**0.000400**	**0.00200**	**mg/L**	1	28-May-2020 14:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20050997

Batch ID: 153854 **Start Date:** 27 May 2020 09:34 **End Date:** 27 May 2020 13:30
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20050997-03		10 (mL)	10 (mL)	1
HS20050997-04		10 (mL)	10 (mL)	1
HS20050997-05		10 (mL)	10 (mL)	1
HS20050997-06		10 (mL)	10 (mL)	1
HS20050997-07		10 (mL)	10 (mL)	1
HS20050997-08		10 (mL)	10 (mL)	1
HS20050997-09		10 (mL)	10 (mL)	1
HS20050997-10		10 (mL)	10 (mL)	1

Batch ID: 153911 **Start Date:** 28 May 2020 08:00 **End Date:** 28 May 2020 14:00
Method: SV AQ SEP FUN EXTRACT-LOWLEV - 3510C **Prep Code:** 3510_B_LOW

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20050997-03	1	1000 (mL)	1 (mL)	0.001
HS20050997-04	1	1000 (mL)	1 (mL)	0.001
HS20050997-05	1	1000 (mL)	1 (mL)	0.001
HS20050997-06	1	1000 (mL)	1 (mL)	0.001
HS20050997-07	1	1000 (mL)	1 (mL)	0.001
HS20050997-08	1	1000 (mL)	1 (mL)	0.001
HS20050997-09	1	1000 (mL)	1 (mL)	0.001
HS20050997-10	1	1000 (mL)	1 (mL)	0.001

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20050997

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 153854 (0)	**Test Name :** ICP-MS METALS BY SW6020A				**Matrix:** Water	
HS20050997-03	WG-1620-MW88B-20200526	26 May 2020 16:00		27 May 2020 13:30	28 May 2020 13:18	1
HS20050997-04	WG-1620-MW88A-20200526	26 May 2020 14:45		27 May 2020 13:30	28 May 2020 14:27	1
HS20050997-05	WG-1620-MW50B-20200526	26 May 2020 13:30		27 May 2020 13:30	28 May 2020 14:30	1
HS20050997-06	WG-1620-MW98B-20200526	26 May 2020 12:30		27 May 2020 13:30	28 May 2020 14:32	1
HS20050997-07	WG-1620-MW98A-20200526	26 May 2020 11:30		27 May 2020 13:30	28 May 2020 14:34	1
HS20050997-08	WG-1620-MW97A-20200526	26 May 2020 10:15		27 May 2020 13:30	28 May 2020 14:46	1
HS20050997-09	WG-1620-MW76B-20200526	26 May 2020 08:40		27 May 2020 13:30	28 May 2020 14:48	1
HS20050997-10	WG-1620-FD02-20200526	26 May 2020 00:00		27 May 2020 13:30	28 May 2020 14:51	1
Batch ID: 153911 (0)	**Test Name :** LOW-LEVEL SEMIVOLATILES BY 8270D				**Matrix:** Water	
HS20050997-03	WG-1620-MW88B-20200526	26 May 2020 16:00		28 May 2020 10:10	28 May 2020 19:35	1
HS20050997-04	WG-1620-MW88A-20200526	26 May 2020 14:45		28 May 2020 10:10	28 May 2020 19:54	1
HS20050997-05	WG-1620-MW50B-20200526	26 May 2020 13:30		28 May 2020 10:10	28 May 2020 20:14	1
HS20050997-06	WG-1620-MW98B-20200526	26 May 2020 12:30		28 May 2020 10:10	28 May 2020 20:33	1
HS20050997-07	WG-1620-MW98A-20200526	26 May 2020 11:30		28 May 2020 10:10	28 May 2020 20:52	1
HS20050997-08	WG-1620-MW97A-20200526	26 May 2020 10:15		28 May 2020 10:10	28 May 2020 21:12	1
HS20050997-09	WG-1620-MW76B-20200526	26 May 2020 08:40		28 May 2020 10:10	28 May 2020 21:31	1
HS20050997-10	WG-1620-FD02-20200526	26 May 2020 00:00		28 May 2020 10:10	28 May 2020 21:51	1
Batch ID: R362259 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS20050997-01	WQ-1620-TB03-20200526	26 May 2020 14:00			27 May 2020 17:48	1
HS20050997-03	WG-1620-MW88B-20200526	26 May 2020 16:00			27 May 2020 18:36	1
HS20050997-04	WG-1620-MW88A-20200526	26 May 2020 14:45			27 May 2020 19:00	1
HS20050997-05	WG-1620-MW50B-20200526	26 May 2020 13:30			27 May 2020 19:24	1
HS20050997-06	WG-1620-MW98B-20200526	26 May 2020 12:30			27 May 2020 19:49	1
HS20050997-07	WG-1620-MW98A-20200526	26 May 2020 11:30			27 May 2020 20:13	1
HS20050997-08	WG-1620-MW97A-20200526	26 May 2020 10:15			27 May 2020 20:37	1
HS20050997-09	WG-1620-MW76B-20200526	26 May 2020 08:40			27 May 2020 21:01	1
HS20050997-10	WG-1620-FD02-20200526	26 May 2020 00:00			27 May 2020 21:25	1

WorkOrder: HS20050997
InstrumentID: ICPMS05
Test Code: ICP_TW
Test Number: SW6020
Test Name: ICP-MS Metals by SW6020A

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Arsenic	7440-38-2	0.000500	0.000512	0.000400	0.00200

WorkOrder: HS20050997
InstrumentID: SV-6
Test Code: 8270_LOW_W
Test Number: SW8270
Test Name: Low-Level Semivolatiles by 8270D

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Diphenylhydrazine	122-66-7	0.00010	0.000098	0.000021	0.00020
A	2,4-Dimethylphenol	105-67-9	0.00010	0.000092	0.000040	0.00020
A	2,4-Dinitrotoluene	121-14-2	0.00010	0.000090	0.000058	0.00020
A	2,6-Dinitrotoluene	606-20-2	0.00010	0.000092	0.000042	0.00020
A	2-Chloronaphthalene	91-58-7	0.00010	0.000096	0.000021	0.00020
A	2-Methylnaphthalene	91-57-6	0.000050	0.000049	0.000019	0.00010
A	4,6-Dinitro-2-methylphenol	534-52-1	0.00010	0.000031	0.000020	0.00020
A	4-Nitrophenol	100-02-7	0.00010	0.000076	0.000047	0.0010
A	Acenaphthene	83-32-9	0.000050	0.000057	0.000027	0.00010
A	Acenaphthylene	208-96-8	0.000050	0.000053	0.000015	0.00010
A	Anthracene	120-12-7	0.000050	0.000056	0.000014	0.00010
A	Benz(a)anthracene	56-55-3	0.000050	0.000062	0.000050	0.00010
A	Benzo(a)pyrene	50-32-8	0.000050	0.000064	0.000020	0.00010
A	Bis(2-chloroethoxy)methane	111-91-1	0.00010	0.000099	0.000030	0.00020
A	Bis(2-ethylhexyl)phthalate	117-81-7	0.00010	0.00011	0.000037	0.00020
A	Chrysene	218-01-9	0.000050	0.000063	0.000021	0.00010
A	Dibenzofuran	132-64-9	0.000050	0.000044	0.000020	0.00010
A	Di-n-butyl phthalate	84-74-2	0.00010	0.00011	0.000020	0.00020
A	Fluoranthene	206-44-0	0.000050	0.000055	0.000010	0.00010
A	Fluorene	86-73-7	0.000050	0.000057	0.000030	0.00010
A	Naphthalene	91-20-3	0.000050	0.000090	0.000020	0.00010
A	Nitrobenzene	98-95-3	0.00010	0.00011	0.000024	0.00020
A	N-Nitrosodiphenylamine	86-30-6	0.00010	0.00010	0.000025	0.00020
A	Pentachlorophenol	87-86-5	0.00010	0.0000050	0.000079	0.00020
A	Phenanthrene	85-01-8	0.000050	0.000057	0.000021	0.00010
A	Phenol	108-95-2	0.00010	0.00010	0.000035	0.00020
A	Pyrene	129-00-0	0.000050	0.000066	0.000019	0.00010
S	2,4,6-Tribromophenol	118-79-6	0	0	0	0.00020
S	2-Fluorobiphenyl	321-60-8	0	0	0	0.00020
S	2-Fluorophenol	367-12-4	0	0	0	0.00020
S	4-Terphenyl-d14	1718-51-0	0	0	0	0.00020
S	Nitrobenzene-d5	4165-60-0	0	0	0	0.00020
S	Phenol-d6	13127-88-3	0	0	0	0.00020

WorkOrder: HS20050997
InstrumentID: VOA6
Test Code: 8260_LL_W
Test Number: SW8260
Test Name: Low Level Volatiles by SW8260C

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	1,2-Dichloroethane	107-06-2	0.00050	0.00052	0.00020	0.0010
A	Benzene	71-43-2	0.00050	0.00049	0.00020	0.0010
A	Chlorobenzene	108-90-7	0.0010	0.00098	0.00030	0.0010
A	Ethylbenzene	100-41-4	0.0010	0.0010	0.00030	0.0010
A	Methylene chloride	75-09-2	0.0020	0.0013	0.0010	0.0020
A	Toluene	108-88-3	0.00050	0.00052	0.00020	0.0010
A	Xylenes, Total	1330-20-7	0.0010	0.00099	0.00030	0.0010
S	1,2-Dichloroethane-d4	17060-07-0	0	0	0	0.0010
S	4-Bromofluorobenzene	460-00-4	0	0	0	0.0010
S	Dibromofluoromethane	1868-53-7	0	0	0	0.0010
S	Toluene-d8	2037-26-5	0	0	0	0.0010

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20050997

QC BATCH REPORT

Batch ID: 153854 (0) **Instrument: ICPMS05** **Method: ICP-MS METALS BY SW6020A**

MBLK Sample ID: **MBLK-153854** Units: **mg/L** Analysis Date: **28-May-2020 13:13**
Client ID: Run ID: **ICPMS05_362278** SeqNo: **5599357** PrepDate: **27-May-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.00200								

LCS Sample ID: **LCS-153854** Units: **mg/L** Analysis Date: **28-May-2020 13:15**
Client ID: Run ID: **ICPMS05_362278** SeqNo: **5599358** PrepDate: **27-May-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04959	0.00200	0.05	0	99.2	80 - 120				

MS Sample ID: **HS20050997-03MS** Units: **mg/L** Analysis Date: **28-May-2020 13:22**
Client ID: **WG-1620-MW88B-20200526** Run ID: **ICPMS05_362278** SeqNo: **5599361** PrepDate: **27-May-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0518	0.00200	0.05	0.002459	98.7	80 - 120				

MSD Sample ID: **HS20050997-03MSD** Units: **mg/L** Analysis Date: **28-May-2020 13:25**
Client ID: **WG-1620-MW88B-20200526** Run ID: **ICPMS05_362278** SeqNo: **5599362** PrepDate: **27-May-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05159	0.00200	0.05	0.002459	98.3	80 - 120	0.0518	0.408	20	

PDS Sample ID: **HS20050997-03PDS** Units: **mg/L** Analysis Date: **28-May-2020 13:27**
Client ID: **WG-1620-MW88B-20200526** Run ID: **ICPMS05_362278** SeqNo: **5599363** PrepDate: **27-May-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1103	0.00200	0.1	0.002459	108	75 - 125				

SD Sample ID: **HS20050997-03SD** Units: **mg/L** Analysis Date: **28-May-2020 13:20**
Client ID: **WG-1620-MW88B-20200526** Run ID: **ICPMS05_362278** SeqNo: **5599360** PrepDate: **27-May-2020** DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.002722	0.0100					0.002459	0	10	J

The following samples were analyzed in this batch:

HS20050997-03	HS20050997-04	HS20050997-05	HS20050997-06
HS20050997-07	HS20050997-08	HS20050997-09	HS20050997-10

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20050997

QC BATCH REPORT

Batch ID: 153911 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

MBLK Sample ID: **MBLK-153911** Units: **ug/L** Analysis Date: **29-May-2020 14:31**
Client ID: Run ID: **SV-7_362406** SeqNo: **5601715** PrepDate: **28-May-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	U	0.20								
2,4-Dimethylphenol	U	0.20								
2,4-Dinitrotoluene	U	0.20								
2,6-Dinitrotoluene	U	0.20								
2-Chloronaphthalene	U	0.20								
2-Methylnaphthalene	U	0.10								
4,6-Dinitro-2-methylphenol	U	0.20								
4-Nitrophenol	U	1.0								
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Benz(a)anthracene	U	0.10								
Benzo(a)pyrene	U	0.10								
Bis(2-chloroethoxy)methane	U	0.20								
Bis(2-ethylhexyl)phthalate	U	0.20								
Chrysene	U	0.10								
Dibenzofuran	U	0.10								
Di-n-butyl phthalate	U	0.20								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Naphthalene	U	0.10								
Nitrobenzene	U	0.20								
N-Nitrosodiphenylamine	U	0.20								
Pentachlorophenol	U	0.20								
Phenanthrene	U	0.10								
Phenol	U	0.20								
Pyrene	U	0.10								
Surr: 2,4,6-Tribromophenol	*4.414*	*0.20*	*5*	*0*	*88.3*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.377*	*0.20*	*5*	*0*	*87.5*	*40 - 125*				
Surr: 2-Fluorophenol	*4.84*	*0.20*	*5*	*0*	*96.8*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.848*	*0.20*	*5*	*0*	*97.0*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.784*	*0.20*	*5*	*0*	*75.7*	*41 - 120*				
Surr: Phenol-d6	*4.277*	*0.20*	*5*	*0*	*85.5*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20050997

QC BATCH REPORT

Batch ID: 153911 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCS Sample ID: **LCS-153911** Units: **ug/L** Analysis Date: **29-May-2020 14:12**
Client ID: Run ID: **SV-7_362406** SeqNo: **5601730** PrepDate: **28-May-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	5.921	0.20	5	0	118	39 - 127				
2,4-Dimethylphenol	4.818	0.20	5	0	96.4	35 - 120				
2,4-Dinitrotoluene	5.437	0.20	5	0	109	50 - 122				
2,6-Dinitrotoluene	4.988	0.20	5	0	99.8	50 - 120				
2-Chloronaphthalene	5.228	0.20	5	0	105	50 - 120				
2-Methylnaphthalene	4.99	0.10	5	0	99.8	50 - 120				
4,6-Dinitro-2-methylphenol	5.646	0.20	5	0	113	25 - 121				
4-Nitrophenol	3.556	1.0	5	0	71.1	30 - 130				
Acenaphthene	4.874	0.10	5	0	97.5	45 - 120				
Acenaphthylene	4.912	0.10	5	0	98.2	47 - 120				
Anthracene	5.107	0.10	5	0	102	45 - 120				
Benz(a)anthracene	4.953	0.10	5	0	99.1	40 - 120				
Benzo(a)pyrene	5.219	0.10	5	0	104	45 - 120				
Bis(2-chloroethoxy)methane	4.776	0.20	5	0	95.5	45 - 120				
Bis(2-ethylhexyl)phthalate	4.052	0.20	5	0	81.0	40 - 139				
Chrysene	5.249	0.10	5	0	105	43 - 120				
Dibenzofuran	5.238	0.10	5	0	105	50 - 120				
Di-n-butyl phthalate	5.368	0.20	5	0	107	45 - 123				
Fluoranthene	4.656	0.10	5	0	93.1	45 - 125				
Fluorene	5.399	0.10	5	0	108	49 - 120				
Naphthalene	5.046	0.10	5	0	101	45 - 120				
Nitrobenzene	5.401	0.20	5	0	108	44 - 120				
N-Nitrosodiphenylamine	4.827	0.20	5	0	96.5	40 - 125				
Pentachlorophenol	5.174	0.20	5	0	103	19 - 121				
Phenanthrene	5.076	0.10	5	0	102	45 - 121				
Phenol	5.67	0.20	5	0	113	20 - 124				
Pyrene	4.421	0.10	5	0	88.4	40 - 130				
Surr: 2,4,6-Tribromophenol	*5.86*	*0.20*	*5*	*0*	*117*	*34 - 129*				
Surr: 2-Fluorobiphenyl	*4.35*	*0.20*	*5*	*0*	*87.0*	*40 - 125*				
Surr: 2-Fluorophenol	*4.924*	*0.20*	*5*	*0*	*98.5*	*20 - 120*				
Surr: 4-Terphenyl-d14	*4.596*	*0.20*	*5*	*0*	*91.9*	*40 - 135*				
Surr: Nitrobenzene-d5	*4.179*	*0.20*	*5*	*0*	*83.6*	*41 - 120*				
Surr: Phenol-d6	*4.459*	*0.20*	*5*	*0*	*89.2*	*20 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20050997

QC BATCH REPORT

Batch ID: 153911 (0) **Instrument: SV-7** **Method: LOW-LEVEL SEMIVOLATILES BY 8270D**

LCSD Sample ID: **LCSD-153911** Units: **ug/L** Analysis Date: **29-May-2020 16:07**
Client ID: Run ID: **SV-7_362406** SeqNo: **5602101** PrepDate: **28-May-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,2-Diphenylhydrazine	5.562	0.20	5	0	111	39 - 127	5.921	6.24	20	
2,4-Dimethylphenol	4.51	0.20	5	0	90.2	35 - 120	4.818	6.6	20	
2,4-Dinitrotoluene	5.412	0.20	5	0	108	50 - 122	5.437	0.461	20	
2,6-Dinitrotoluene	5.11	0.20	5	0	102	50 - 120	4.988	2.41	20	
2-Chloronaphthalene	5.996	0.20	5	0	120	50 - 120	5.228	13.7	20	
2-Methylnaphthalene	4.92	0.10	5	0	98.4	50 - 120	4.99	1.4	20	
4,6-Dinitro-2-methylphenol	3.655	0.20	5	0	73.1	25 - 121	5.646	42.8	30	R
4-Nitrophenol	4.13	1.0	5	0	82.6	30 - 130	3.556	14.9	20	
Acenaphthene	4.633	0.10	5	0	92.7	45 - 120	4.874	5.07	20	
Acenaphthylene	4.714	0.10	5	0	94.3	47 - 120	4.912	4.11	20	
Anthracene	5.104	0.10	5	0	102	45 - 120	5.107	0.0713	20	
Benz(a)anthracene	5.645	0.10	5	0	113	40 - 120	4.953	13.1	20	
Benzo(a)pyrene	5.24	0.10	5	0	105	45 - 120	5.219	0.402	20	
Bis(2-chloroethoxy)methane	5.77	0.20	5	0	115	45 - 120	4.776	18.9	20	
Bis(2-ethylhexyl)phthalate	4.059	0.20	5	0	81.2	40 - 139	4.052	0.18	20	
Chrysene	4.22	0.10	5	0	84.4	43 - 120	5.249	21.7	20	R
Dibenzofuran	5.096	0.10	5	0	102	50 - 120	5.238	2.75	20	
Di-n-butyl phthalate	5.266	0.20	5	0	105	45 - 123	5.368	1.91	20	
Fluoranthene	6.244	0.10	5	0	125	45 - 125	4.656	29.1	20	R
Fluorene	5.261	0.10	5	0	105	49 - 120	5.399	2.59	20	
Naphthalene	4.931	0.10	5	0	98.6	45 - 120	5.046	2.31	20	
Nitrobenzene	5.908	0.20	5	0	118	44 - 120	5.401	8.97	20	
N-Nitrosodiphenylamine	4.834	0.20	5	0	96.7	40 - 125	4.827	0.144	20	
Pentachlorophenol	5.77	0.20	5	0	115	19 - 121	5.174	10.9	20	
Phenanthrene	5.177	0.10	5	0	104	45 - 121	5.076	1.96	20	
Phenol	5.876	0.20	5	0	118	20 - 124	5.67	3.56	20	
Pyrene	4.682	0.10	5	0	93.6	40 - 130	4.421	5.74	20	
Surr: 2,4,6-Tribromophenol	*5.132*	*0.20*	*5*	*0*	*103*	*34 - 129*	*5.86*	*13.2*	*20*	
Surr: 2-Fluorobiphenyl	*4.229*	*0.20*	*5*	*0*	*84.6*	*40 - 125*	*4.35*	*2.84*	*20*	
Surr: 2-Fluorophenol	*5.303*	*0.20*	*5*	*0*	*106*	*20 - 120*	*4.924*	*7.41*	*20*	
Surr: 4-Terphenyl-d14	*4.701*	*0.20*	*5*	*0*	*94.0*	*40 - 135*	*4.596*	*2.26*	*20*	
Surr: Nitrobenzene-d5	*3.993*	*0.20*	*5*	*0*	*79.9*	*41 - 120*	*4.179*	*4.56*	*20*	
Surr: Phenol-d6	*4.724*	*0.20*	*5*	*0*	*94.5*	*20 - 120*	*4.459*	*5.77*	*20*	

The following samples were analyzed in this batch: HS20050997-03 HS20050997-04 HS20050997-05 HS20050997-06 HS20050997-07 HS20050997-08 HS20050997-09 HS20050997-10

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20050997

QC BATCH REPORT

Batch ID: R362259 (0) **Instrument: VOA6** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-200527** Units: **ug/L** Analysis Date: **27-May-2020 12:36**
Client ID: Run ID: **VOA6_362259** SeqNo: **5598922** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	U	1.0								
Benzene	U	1.0								
Chlorobenzene	U	1.0								
Ethylbenzene	U	1.0								
Methylene chloride	U	2.0								
Toluene	U	1.0								
Xylenes, Total	U	1.0								
Surr: 1,2-Dichloroethane-d4	*43.75*	*1.0*	*50*	*0*	*87.5*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*47.5*	*1.0*	*50*	*0*	*95.0*	*82 - 115*				
Surr: Dibromofluoromethane	*44.66*	*1.0*	*50*	*0*	*89.3*	*73 - 126*				
Surr: Toluene-d8	*54.25*	*1.0*	*50*	*0*	*108*	*81 - 120*				

LCS Sample ID: **VLCSW-200527** Units: **ug/L** Analysis Date: **27-May-2020 11:47**
Client ID: Run ID: **VOA6_362259** SeqNo: **5598921** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	18.9	1.0	20	0	94.5	70 - 124				
Benzene	19.29	1.0	20	0	96.4	74 - 120				
Chlorobenzene	19.49	1.0	20	0	97.4	76 - 113				
Ethylbenzene	19.82	1.0	20	0	99.1	77 - 117				
Methylene chloride	20.49	2.0	20	0	102	70 - 127				
Toluene	19.69	1.0	20	0	98.5	77 - 118				
Xylenes, Total	58.93	1.0	60	0	98.2	75 - 122				
Surr: 1,2-Dichloroethane-d4	*48.77*	*1.0*	*50*	*0*	*97.5*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*48.68*	*1.0*	*50*	*0*	*97.4*	*82 - 115*				
Surr: Dibromofluoromethane	*49.02*	*1.0*	*50*	*0*	*98.0*	*73 - 126*				
Surr: Toluene-d8	*49.26*	*1.0*	*50*	*0*	*98.5*	*81 - 120*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20050997

QC BATCH REPORT

Batch ID: R362259 (0) **Instrument: VOA6** **Method: LOW LEVEL VOLATILES BY SW8260C**

MS Sample ID: **HS20050993-03MS** Units: **ug/L** Analysis Date: **27-May-2020 16:12**
Client ID: Run ID: **VOA6_362259** SeqNo: **5598924** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	18.22	1.0	20	0	91.1	70 - 127				
Benzene	19.11	1.0	20	0	95.6	70 - 127				
Chlorobenzene	20.02	1.0	20	0	100	70 - 114				
Ethylbenzene	20.95	1.0	20	0	105	70 - 124				
Methylene chloride	17.07	2.0	20	0	85.3	70 - 128				
Toluene	20.17	1.0	20	0	101	70 - 123				
Xylenes, Total	60.93	1.0	60	0	102	70 - 130				
Surr: 1,2-Dichloroethane-d4	*42.56*	*1.0*	*50*	*0*	*85.1*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*47.88*	*1.0*	*50*	*0*	*95.8*	*81 - 113*				
Surr: Dibromofluoromethane	*44.57*	*1.0*	*50*	*0*	*89.1*	*77 - 123*				
Surr: Toluene-d8	*52.05*	*1.0*	*50*	*0*	*104*	*82 - 127*				

MSD Sample ID: **HS20050993-03MSD** Units: **ug/L** Analysis Date: **27-May-2020 16:36**
Client ID: Run ID: **VOA6_362259** SeqNo: **5598925** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2-Dichloroethane	17.52	1.0	20	0	87.6	70 - 127	18.22	3.96	20	
Benzene	18.22	1.0	20	0	91.1	70 - 127	19.11	4.8	20	
Chlorobenzene	19.29	1.0	20	0	96.4	70 - 114	20.02	3.74	20	
Ethylbenzene	20.03	1.0	20	0	100	70 - 124	20.95	4.48	20	
Methylene chloride	16.58	2.0	20	0	82.9	70 - 128	17.07	2.91	20	
Toluene	19.6	1.0	20	0	98.0	70 - 123	20.17	2.85	20	
Xylenes, Total	58.29	1.0	60	0	97.2	70 - 130	60.93	4.42	20	
Surr: 1,2-Dichloroethane-d4	*43.73*	*1.0*	*50*	*0*	*87.5*	*70 - 126*	*42.56*	*2.71*	*20*	
Surr: 4-Bromofluorobenzene	*48.06*	*1.0*	*50*	*0*	*96.1*	*81 - 113*	*47.88*	*0.379*	*20*	
Surr: Dibromofluoromethane	*44.72*	*1.0*	*50*	*0*	*89.4*	*77 - 123*	*44.57*	*0.333*	*20*	
Surr: Toluene-d8	*51.84*	*1.0*	*50*	*0*	*104*	*82 - 127*	*52.05*	*0.403*	*20*	

The following samples were analyzed in this batch:

HS20050997-01	HS20050997-03	HS20050997-04	HS20050997-05
HS20050997-06	HS20050997-07	HS20050997-08	HS20050997-09
HS20050997-10			

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20050997**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	20-030-0	26-Mar-2021
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
Oklahoma	2019-141	31-Aug-2020
Texas	T104704231-20-26	30-Apr-2021

Sample Receipt Checklist

Work Order ID: HS20050997 **Date/Time Received:** **26-May-2020 17:05**

Client Name: PBW **Received by:** **Donald Gilmore**

Completed By:	/S/ Paresh M. Giga	26-May-2020 18:32	**Reviewed by:**	/S/ Dane J. Wacasey	27-May-2020 17:02
	eSignature	Date/Time		eSignature	Date/Time

Matrices: **Water** Carrier name: **ALS Courier**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:217221
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.1°C; 4.0°C uc/c	IR11	
Cooler(s)/Kit(s):	44486/45973		
Date/Time sample(s) sent to storage:	5/26/2020 18:45		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070
Houston, TX +1 281 530 5656
Middletown, PA +1 717 944 5541
Spring City, PA +1 610 948 4903
Salt Lake City, UT +1 801 266 7700
South Charleston, WV +1 304 356 3168
York, PA +1 717 505 5280

Chain of Custody Form

Page _____ of _____

COC ID: 217221

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-17-Rev0 SR 92688
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address	

Parameter/Method Request for Analysis

A 8260_LL_W (5632528 VOC Site Specific)
B 8270_LOW_W (5632532 SemiVolatiles Site specific)
C ICP_TW (5636002 6020 Metals - As)
D
E
F
G
H
I
J

HS20050997
Golder Associates Inc.
Houston TX-Wood Preserving Works

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	~~WGTB03 20200526~~ WG-1620TB03 20200526	5-26-2020	14:00	Water	1,8	2	X										
2	~~WG 20200526~~ WG-1620TB04 20200526	5-26-2020	16:00	Water	~~1,8~~	~~2~~	X										
3	WG-1620 MW 88B 20200526	5-26-2020	16:00	water	1,2,8	6	X	X	X								
4	WG-1620MW88A 20200526	5-26-2020	14:45	water	1,2,8	6	X	X	X								
5	WG-1620MW50B 20200526	5-26-2020	13:30	water	1,2,8	6	X	X	X								
6	WG-1620-MW98B 20200526	5-26-2020	12:30	water	1,2,8	6	X	X	X								
7	WG-1620-MW98A 20200526	5-26-2020	11:30	water	1,2,8	6	X	X	X								
8	WG-1620 MW97A 20200526	5-26-2020	10:15	water	1,2,8	6	X	X	X								
9	WG-1620MW76B 20200526	5-26-2020	8:40	water													
10	WG-1620 FD02 20200526	5-26-2020	—	water	1,2,8	6	X	X	X								

Sampler(s) Please Print & Sign: TIM McSpadden

Shipment Method:

Required Turnaround Time: (Check Box) ☒ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other _____

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
TIM McSpadden	5-26-2020	16:25	
Relinquished by:	Date:	Time:	Received by (Laboratory):
	5-26-20	1705	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: UPRR Houston MWPW

Cooler ID	Cooler Temp.
44486	2-1
45973	4-0

QC Package: (Check One Box Below)
☐ Level II Std QC
☐ Level III Std QC/Raw Data
☐ Level IV SW846/CLP
☐ Other
☒ TRRP Checklist
☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

44486

CUSTODY SEAL

Date: 5-26-2020 Time: 16:10
Name: Tim McSpadden
Company: Golder

Seal Broken By:
Date: 5-26-2020

44486 MAY 26 2020

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

45973

CUSTODY SEAL

Date: 5-26-2020 Time: 16:10
Name: Tim McSpadden
Company: Golder

Seal Broken By:
Date: 5-26-2020

45973 MAY 26 2020

Appendix 3D

Interim Non-Aqueous Phase Liquid (NAPL) and Total Petroleum Hydrocarbon (TPH)-NAPL Assessment Report dated May 29, 2020

GOLDER

INTERIM NON-AQUEOUS PHASE LIQUID (NAPL) AND TOTAL PETROLUEM HYDROCARBON (TPH)-NAPL ASSESSMENT REPORT

Union Pacific Railroad Houston Wood Preserving Works Facility

Submitted to:

Mr. Kevin Peterburs
Union Pacific Railroad Company
4823 N 119th Street
Milwaukee, WI 53225

Submitted by:

Golder Associates Inc.
2201 Double Creek Dr, Suite 4004,
Round Rock, Texas, USA 78664
Texas Geoscience Firm No. 50369
Texas Engineering Firm No. 2578

+1 512 671-3434

May 29, 2020

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Table 2 – Summary of Soil TPH Concentrations by Method TX1006

Table 3 – Summary of TPH Categories and TPH Mixture PCL Evaluation

FIGURES

Figure 1 – CPT/TarGOST® Location Map

Figure 2 – TarGOST® Response Distribution Map – Vadose Zone

Figure 3 – TarGOST® Response Distribution Map – A-TZ

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Figure 5 – Total Petroleum Hydrocarbon Concentrations in Soils

Figure 6 – TPH Hydrocarbon Types in Soils

ATTACHMENTS

ATTACHMENT A
Dakota Technologies TarGOST® Report

ATTACHMENT B
CPT Logs – 2019-2020

ATTACHMENT C
Maximum TarGOST® Signals Summary Tables

ATTACHMENT D
TarGOST-Monitoring Well Figures and Geologic Cross-Section

ATTACHMENT E
TPH Soil Boring Logs

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Data Usability Summary and Analytical Report – TPH Data

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ATTACHMENT H
TCEQ TRRP Tier 1 TPH Mixture PCL Calculat**ions**

EXECUTIVE SUMMARY

This Interim Non-Aqueous Phase Liquid (NAPL) and Total Petroleum Hydrocarbon(TPH)-NAPL Assessment Report, prepared by Golder Associates Inc. (Golder) on behalf of Union Pacific Railroad (UPRR), details the supplemental NAPL and TPH-NAPL assessments requested by the Texas Commission on Environmental Quality (TCEQ) that were conducted at the UPRR Houston Wood Preserving Works (HWPW) Site (the Site) in 2019 and 2020.

The NAPL assessment consisted of 54 cone-penetrometer testing (CPT)/Tar-specific Green Optical Screening Tool (TarGOST®) laser-induced fluorescence (LIF) borings that were advanced to refine previous assessments of the lateral and vertical extent of Dense NAPL (DNAPL) in the subsurface. TarGOST® borings were advanced in three areas: (1) off-site, generally north of the HWPW Site; (2) along and adjacent to the northern and western perimeter of the Site; and (3) within the Englewood Intermodal Yard in the Site interior. The assessment indicated the following for each area:

- Off-Site: There is no evidence of NAPL present off-site to the north of Liberty Road and north of the Site, within the A-Cohesive Zone (A-CZ) (vadose zone) or the A-Transmissive Zone (A-TZ). TarGOST® data from off-site borings to the north indicate the presence of NAPL in the B-Cohesive Zone/ B-Transmissive Zone (B-TZ/B-CZ), at a general depth of 24 or more feet below ground surface (bgs) and the extent of NAPL in the B-TZ/B-CZ in this area is limited to an approximate distance of 500 feet or less from the Site boundary.
- Northern and Western Perimeter of the Site: The extent of NAPL within the vadose zone, A-TZ, and B-CZ/B-TZ is delineated to the east and west along the northern perimeter of the HWPW site. TarGOST® signals indicating the potential presence of NAPL in the vadose zone and the A-TZ along the northern perimeter are consistent with historical observations, except at CPT-12-20 and CPT-13-20. Previous CPT-Rapid Optical Screening Testing (ROST™) borings had not identified elevated ROST™ responses in the vadose zone and A-TZ near TarGOST® borings CPT-12-20 and CPT-13-20. The extent of NAPL within the vadose zone, A-TZ, and B-CZ/B-TZ is delineated to the north, west, and south at the western perimeter of the HWPW site based on observations in TarGOST® borings, soil borings and groundwater sampling data. In-well DNAPL thickness measurements have been observed in B-CZ/B-TZ monitoring wells MW-12B and MW-41B on the west side of the Site; however, TarGOST® signals from all but two CPT borings in this vicinity did not indicate the potential presence of NAPL in the B-CZ/B-TZ. These data, coupled with the absence of measurable DNAPL in the nearby B-CZ/B-TZ monitoring wells, suggest a very localized area of NAPL in this unit within this area of the Site.
- Englewood Intermodal Yard: TarGOST® data in the Englewood Intermodal Yard indicate that NAPL is present in the vadose zone, the A-TZ, and the B-CZ/B-TZ, mainly near the former lagoon and former aboveground storage tank (AST) areas identified on historical aerials and maps. The TarGOST® data indicated that the extent of NAPL in each zone in the Englewood Intermodal Yard is delineated to the west, south, and east.

Findings were based on a combination of observations made from the CPT/TarGOST® data, previously collected CPT-ROST™ data, observations of DNAPL in monitoring wells, geologic boring logs, and recently collected groundwater data. TarGOST® data that indicate the presence of NAPL will be used in conjunction with other investigation data to support development of the response action objectives and support the remedial design of potential DNAPL recovery activities, which will be presented in the Revised Response Action Plan (RAP).

The TPH-NAPL assessment consisted of 56 soil samples from 28 soil borings to evaluate the horizontal and vertical extent of TPH concentrations in soils and identify possible source characteristics for TPH in soils at the Site. Following TCEQ guidance, a preliminary evaluation of TPH concentrations (TX1005 data) in soils was conducted by comparing the soil results to applicable screening level Texas Risk Reduction Program (TRRP) Protective Concentration Levels (PCLs). Results from the soil assessment indicate that TPH concentrations in soils exceeded applicable screening level TRRP PCLs on the western and northern perimeter of the Site and near the center of the Site in the Englewood Intermodal Yard. The NAPL assessment within the Englewood Intermodal Yard indicated total TPH TX1005 concentrations in eight soil samples exceeded the Tier 1 $Soil_{Res}$ PCL of 10,000 mg/kg, located within the former AST area and general area of the former lagoons within the Englewood Intermodal Yard. At each of these soil boring locations, either NAPL was visually observed or strong hydrocarbon odors were noted on the soil boring logs. The soil TPH TX1005 results are delineated to less than the Tier 1 $Soil_{Res}$ PCL to the north, south, east, and west.

Based on the profile of the predominant peaks in gas chromatograms and fractionation data, the TPH results for the soil samples were assigned four categories of different TPH types. Samples with elevated TX1005 TPH concentrations and different compositional distributions were selected for TX1006 analyses to develop TPH Mixture critical PCLs for each category identified. The soil samples with the highest total TPH concentrations were chosen as representative samples of each category and Tier 1 PCLs for Total TPH Mixture were calculated. The calculated Tier 1 TPH Mixture PCLs were used as critical PCLs to evaluate the total TPH by TX1005 Method soil sample concentration data. None of the soil samples had total TPH concentrations greater than the calculated commercial/industrial Tier 1 TPH Mixture critical PCLs, and therefore there is no Total TPH PCLE Zone for soils at the Site. However, one soil sample collected at DPT-12-20 (8-9 feet below ground surface) (adjacent to CPT-12-19) near the northern perimeter of the Site had total TPH concentrations that exceeded the calculated residential critical PCL. Additional sampling closer to the property boundary north of DPT-12-20 is recommended to evaluate the lateral extent of the total TPH concentrations exceeding the residential Tier 1 TPH Mixture critical PCL in the surface soils.

1.0 INTRODUCTION

This Interim Non-Aqueous Phase Liquid (NAPL) and Total Petroleum Hydrocarbon (TPH)-NAPL Report (Interim NAPL-TPH Report) was prepared by Golder Associates Inc. (Golder), on behalf of Union Pacific Railroad (UPRR), to summarize supplemental NAPL and TPH-NAPL assessments conducted at the UPRR former Houston Wood Preserving Works (HWPW) site (the Site). The supplemental assessments were requested by the Texas Commission on Environmental Quality (TCEQ) in a Technical Notice of Deficiency (TNOD) letter dated April 11, 2019, which included the following comment:

> *General Comments T35(4), T42(4), T44(4), and T45(4): Since the TCEQ is requiring UPRR to conduct further assessment of TPH-NAPL in the Englewood Intermodal Yard cap area as directed in the TCEQ February 6, 2019 letter and a VI assessment as directed in Comment T59 of this NOD, the additional assessment should include a re-assessment of creosote DNAPL using cone penetrometer/ rapid optical screening tool (CPT/ROST™).*

UPRR provided a description of the proposed supplemental NAPL and TPH-NAPL assessments in Worksheet 2.0 of the Conceptual Response Action Plan (RAP) – Revision No. 4 dated July 9, 2019 (Golder, 2019a). TCEQ issued a notice to proceed with proposed additional assessments with certain modifications as requested in a letter dated September 6, 2019. UPRR, Golder, and TCEQ met on September 23, 2019 at the TCEQ Austin Office to discuss the modifications to the assessments. Golder, on behalf of UPRR, submitted a response letter dated October 23, 2019 to the TCEQ September 6, 2019 letter summarizing the modifications agreed upon during the meeting. The TCEQ issued a notice to proceed with proposed NAPL and TPH-NAPL assessments as revised in the October 23, 2019 letter in a letter dated December 13, 2019.

A description of the additional NAPL assessment and TPH-NAPL assessment activities and an evaluation of the data collected are provided in the following sections.

2.0 NAPL ASSESSMENT

In response to the TCEQ's request for re-assessment of Dense NAPL (DNAPL) and to refine the observed subsurface distribution of DNAPL at the Site, Golder conducted the additional DNAPL assessment activities pursuant to the general scope detailed in the Conceptual RAP as modified in the October 23, 2019 letter and approved by TCEQ. A brief summary of the primary objectives of the assessment activities are presented below:

- Refine previous assessments of the lateral and vertical extent of DNAPL in the subsurface;
- Further update the historical DNAPL/subsurface conceptual site model (CSM) by reviewing results from previous investigations (over 90 previous cone-penetrometer testing (CPT)/Rapid Optical Screening Tool™ (ROST™) laser-induced fluorescence (LIF) borings) with the activities conducted as part of this investigation;
- Support design of potential DNAPL recovery activities (e.g., additional recovery wells) or systems, as appropriate; and
- Update the subsurface DNAPL CSM to support the risk-based DNAPL management plan to be developed in accordance with TCEQ guidance provided in RG-366 (Risk-Based NAPL Management; Texas Risk Reduction Program (TRRP-32) (TCEQ, 2013).

This Interim NAPL-TPH Report includes information to address the first two bullets, with the design of potential DNAPL recovery activities and the updated risk-based NAPL management plan to be provided in the Revised RAP that will submitted to the TCEQ by August 31, 2020.

2.1 Background

As discussed in the previous APARs and in the RAP, certain areas of the shallow groundwater bearing units (GWBUs) at the Site contain creosote-related DNAPL and associated dissolved chemicals of concern (COCs) at concentrations above their respective critical Protective Concentration Levels (cPCLs). The sources of DNAPL are likely from former operations at the Site.

Since 1995, site investigations have included activities to evaluate surface and subsurface soils for the presence of NAPL. Specifically, CPT/ROST™ investigations were conducted in 1995, 2001, 2008, and 2013 at the Site using laser-induced fluorescence (LIF) to identify the presence of NAPL (Figure 1). As part of these investigations over 100 CPT/ROST™ borings and over 300 soil borings have been installed at the Site. Based on soil borings, measured DNAPL thicknesses in existing wells, and ROST™ readings, the occurrences of NAPL in the A-Cohesive Zone (A-CZ or vadose zone), the A-Transmissive Zone (A-TZ), B-Cohesive Zone/ B-Transmissive Zone (B-TZ/B-CZ), and C-Transmissive Zone (C-TZ) were described in the updated APAR addendum dated October 22, 2010 (PBW, 2010) and Attachment 2G (Technical Impracticability Demonstration Document) of the Response Action Plan (RAP) Revision 2 dated July 20, 2016 (PBW, 2016). As detailed in these documents, evidence of DNAPL from the ROST™ borings was generally observed in the following areas within these lithologic intervals:

- Vadose zone and the A-TZ - The majority of the elevated ROST™ readings (i.e., >25 units of fluorescence percent response (% RE)) in the vadose zone and A-TZ were located in and around the HWPW Recent Process Area, Original Process Area, and the AST Area (SWMUs 4, 5, and 8, respectively), and extended into the northern portions of the Englewood IM Yard. The elevated ROST™ readings were generally consistent with intervals where NAPL was visually observed in soil borings for A-TZ wells, except for in the Englewood Intermodal Yard area. NAPL was noted on the boring logs for A-TZ wells MW-78A and MW-79A installed in the Englewood Intermodal Yard. However, there were no elevated ROST™ readings in this area of the Site. This may indicate the NAPL may have degraded through natural weathering/depletion process in this area of the Site, and as a result was less likely to be detected with the ROST™ tool.
- B-CZ/B-TZ - The majority of the elevated ROST™ readings in the B-CZ/B-TZ are in the vicinity of SWMUs 4 and 5. However, elevated ROST™ readings were observed in the B-CZ north of the Site at CPT/ROST™ boring CPT-43R-08, near MW-70B. The ROST™ readings in this area are consistent with the observations of NAPL in monitoring well soil borings in the B-CZ (i.e., MW-70B). Elevated ROST™ readings were also noted in the Englewood Intermodal Yard area (CPT-14-13). Monitoring wells MW-74B (installed within an area noted with >25% RE ROST™ readings) and MW-75B were installed in December 2011 in the Englewood Intermodal Yard to evaluate the presence of DNAPL in the B-CZ. NAPL was noted in the boring log in the B-CZ for both wells. However, no DNAPL has been detected in MW-74B during the 19 gauging events performed since well installation. In contrast, no significant ROST™ readings were noted for CPT/ROST™ borings CPT-07-13 or CPT-10-13 in the Englewood Intermodal Yard, but DNAPL has been observed in monitoring well MW-75B located in the immediate vicinity of CPT-07-13. As with the A-TZ, the NAPL in this area may be more degraded through weathering/depletion processes and less likely to be detected with the ROST™ tool. DNAPL has also been observed in wells

MW-12B and MW-41B on the western side of the Site, but minimal ROST™ responses were noted for that area; and

- C-TZ – Despite the C-TZ depth (top of unit approximately 65 feet below ground surface) being near the maximum limit of CPT penetration, 13 CPT/ROST™ borings were able to be advanced into or through the C-TZ. Most CPT borings reach refusal either at the top of the C-TZ or shallower and could not be advance through that unit. For the CPT/ROST™ borings that did advance into the C-TZ, the elevated ROST™ responses were relatively lower than the other GWBUs and centered near SWMU 5 (Original Process Area). DNAPL has been observed in C-TZ wells on the northeastern side of the Site and off-site to the northeast.

Based on this background information, Golder and UPRR working with the TCEQ developed the NAPL assessment plan detailed in the Conceptual RAP and modified in the October 23, 2019 letter to re-evaluate the NAPL at the Site. Details of the NAPL assessment methods are described in the sections below.

2.2 Assessment Methods

As part of the re-assessment of the DNAPL at the Site, Golder evaluated different qualitative NAPL screening tools for possible application at the Site. As discussed in Section 2.1, ROST™ LIF borings had been conducted at the Site during the previous NAPL assessment events. ROST™ LIF readily detects creosote and coal tar in the subsurface. However, the relative response sensitivity of the ROST™ LIF tool for coal tar and creosote is less when compared to responses to petroleum hydrocarbons such as gasoline, diesel fuel, and jet fuel (EPA, 1997). More recently, additional optical screening tools, such as the Tar-specific Green Optical Screening Tool (TarGOST®), have been developed to target heavier end petroleum hydrocarbons including creosote and coal tar. TarGOST® is a proprietary site characterization tool designed by Dakota Technologies (Dakota) for assessing NAPL, including DNAPL commonly encountered at wood treatment sites that used creosote-based preservation. Creosote DNAPLs typically contain large amounts of naturally fluorescent polycyclic aromatic hydrocarbons (PAHs). TarGOST® was specifically designed to screen for heavy molecular weight NAPL phase PAHs versus depth (Dakota, 2020; Attachment A).

As detailed in the Conceptual RAP – Revision 4 (Golder, 2019a), Golder, on behalf of UPRR, proposed to conduct the NAPL assessment using the TarGOST® system with the TarGOST® tool advanced by a CPT rig. Upon TCEQ approval of the proposed scope of work as described above, 54 CPT/TarGOST® borings were collected in three areas of the Site between December 2019 and January 2020:

- Off-site – CPT/TarGOST® borings were advanced within the City of Houston right-of-way (ROW) in the residential area north of the Site.
- Perimeter of the HWPW Site – CPT/TarGOST® borings were advanced along the west side of the Site near monitoring wells MW-41B and MW-12B, in which DNAPL has been observed, and along the north side of the Site between MW-15B and MW-18C.
- Englewood Intermodal Yard – CPT/TarGOST® borings were advanced in the areas of the former ASTs and former lagoons identified on historical aerials and maps in the Englewood Intermodal Yard and along the eastern side of the yard between MW-49B and MW-80B.

The TarGOST® system was installed within probe rods on a 20-ton Geoprobe® 2060CPT rig. Details of the TarGOST® system and setup are provided in the Dakota report provided in Attachment A. The subsurface was logged with the CPT probe and TarGOST® simultaneously. CPT is an in-situ method where a cone is pushed

into the ground to collect measurements to identify general soil type. Tip resistance on the cone, friction in the sleeve of the cone, and pore pressure in the soil are recorded as the cone is advanced.

Prior to conducting the CPT/TarGOST® borings, hydrovac excavation methods (i.e., excavation using a high-pressure water probe and vacuum) were used to clear the top 10 feet at each CPT/TarGOST® location for the presence of underground utilities and backfilled with sand at all locations and capped with an asphalt patch at off-site locations before drilling commenced. Each location was drilled to a depth of approximately 65 feet below ground surface (feet bgs) or shallower where the CPT rig reached refusal. Rods were decontaminated with pressurized water as they were removed from the ground. Each location was plugged with bentonite grout tremied from the bottom of the hole to ground surface using a direct push technology (DPT) rig to ensure the CPT holes were properly plugged. In addition, a TarGOST® reading was collected of a sample of the tar-like material that seeps up between the cracks of the Englewood Intermodal Yard in Rows A and B and is provided in Attachment A.

Advancement of the CPT probes was attempted more than once at several locations to reach the targeted depth. These locations are marked with an “A” following the location ID. For example, the rig reached refusal at CPT-19-20 at approximately 31 feet bg. Another attempt was made adjacent to the original location and was labeled CPT-19A-20.

TarGOST® logs collected at the Site are provided in Appendix A of Attachment A. The CPT logs collected at the Site in 2019 and 2020 are provided in Attachment B. CPT/TarGOST® locations were surveyed by a licensed, professional surveyor to Texas State Plane coordinates (NAD 27, Texas South Central, U.S. Feet).

2.3 Data Evaluation

TarGOST® logs provide a qualitative tool for evaluating the potential presence of NAPL in the subsurface. However, interpretation of the TarGOST® logs is needed to evaluate a fluorescence response (i.e., total fluorescence area relative to the total area of the Reference Emitter (%RE)) signal or range of signals that represents a potential for the presence or absence of NAPL. To preliminarily evaluate the potential for NAPL in the subsurface based on the TarGOST® signals, TarGOST® signals were compared to the presence of DNAPL in nearby monitoring wells (CPT-04-20 and monitoring well MW-32B and CPT-06-20 and MW-70B) and/or soil boring logs nearby. Based on CPT/TarGOST® data adjacent to wells with DNAPL, the following general preliminary observations were made:

- Signals over 20%RE may indicate NAPL zones where NAPL could potentially flow into wells completed across those zones (depending on lithological/hydrogeologic and NAPL conditions).
- Signals between 5% and 20%RE may indicate the presence of residual NAPL, but the lower %RE suggests that the NAPL is not likely to flow into a well installed at that location.
- Signals below 5%RE may indicate that no NAPL is present based on a review of TarGOST® data, comparison to existing boring logs, and potential for interferences.

It is important to note that the above general and preliminary observations should only be used as a guide for the purposes of discussing the TarGOST® data in this report. Multiple lines of evidence including TarGOST® data, nearby monitoring wells, and soil borings will be used to confirm the presence or absence of NAPL.

As part of the evaluation, Golder prepared contour maps of the maximum RE% readings from the TarGOST® logs within the vadose zone, the A-TZ, and the B-CZ/B-TZ provided as Figures 2 through 4, respectively. Golder also prepared summary tables (Tables C-1 through C-3 in Attachment C) of the maximum TarGOST® signals (RE%)

detected in two-foot intervals from each CPT/TarGOST® location to the total depth. TarGOST® %RE on the tables are color-coded on a graded scale; with values over 5% highlighted light yellow to yellow as the values increase, and at 20%RE and greater, the color scales from yellow to orange. TarGOST® logs were compared to nearby CPT/ROST™ borings and observations made in boring logs. Select log comparisons and a cross-section of the northern perimeter of the Site are provided in Attachment D.

The evaluation of TarGOST® logs at the Site is organized by the three areas that were evaluated during the 2019/2020 NAPL assessment activities (off-site, perimeter of the HWPW Site, and Englewood Intermodal Yard) and by lithologic intervals (vadose zone, A-TZ, and B-TZ/B-CZ). Of the 54 CPT/TarGOST® borings conducted at the Site, only 8 borings were advanced to the top of the C-TZ and none were able to penetrate through the C-TZ. As a result, the C-TZ is not evaluated in this report. Also, since the CPT/TarGOST® locations were pre-cleared to 8 to 10 feet bgs for utilities via hydro-excavation and backfilled with sand and an asphalt patch, TarGOST® data collected in the pre-cleared interval are considered unreliable and are not evaluated below.

TarGOST® signals vs depth logs, including spatial variability and elevated %RE signals for each of the three areas evaluated are discussed in Section 2.3.1. TarGOST® data are presented on Signal (%RE) vs depth logs and cluster diagrams. Both formats were reviewed and are included in Appendix A of Attachment A. Differences in waveforms and cluster diagrams are described in Section 2.3.2.

2.3.1 TarGOST® Responses

Off-site CPT/TarGOST® Locations

TarGOST® and CPT data were collected at CPT-01-20 through CPT-11-20 north of Liberty Road in the City of Houston right-of-way north of the Site (Figure 1). CPT-23-20 was drilled off-site northeast of the Site. CPT-01-20 through CPT-11-20 and CPT-23-20 ranged in depth from 52 to 60 feet bgs. Refusal was reached at approximately 20 feet bgs at CPT-07-20 during the first attempt. A solid-point tip was advanced past the refusal depth and TarGOST® logging resumed at the original location. Details of TarGOST® signals observed off-site are provided below.

Vadose Zone

As shown on Figure 2 and on Table C-1 of Attachment C, TarGOST® signals in the vadose zone at locations north of the Site were below 5%, which indicates the absence of NAPL and is consistent with previous investigations conducted off-site (PBW, 2010; PBW, 2016).

A-TZ

TarGOST® signals in the A-TZ (top of unit ranges from 11 to 18 feet bgs and bottom ranges from approximately 21 to 25 feet bgs) north of the Site were all below 5%RE (Figure 3; Table C-1 in Attachment C). Based on a combination of observations made in boring logs, previously collected ROST™ data, and the 2019/2020 CPT/TarGOST® data, there is no evidence of off-site NAPL within the A-TZ. Concentrations of chemicals of concerns (COCs) in groundwater samples collected from A-TZ wells during semi-annual monitoring events presented in the Interim Groundwater Monitoring Report (Golder, 2020) were below detection limits or multiple orders of magnitude below applicable TCEQ TRRP critical protective concentration levels (cPCLs). The groundwater data further support the conclusion that NAPL is not present off-site in the A-TZ.

B-CZ/B-TZ

TarGOST® signals exceeding 20%RE were observed in the B-CZ/B-TZ in off-site locations CPT-02-20, CPT-04-20, CPT-06-20, and CPT-08-20, which are located just north of the Site near monitoring wells MW-35B, MW-32B, MW-70B, and MW-71B, respectively (Figure 4; Table C-1 in Attachment C). DNAPL has been observed in wells MW-32B and MW-70B, that are part of the on-going DNAPL recovery program. The highest TarGOST® signals in the B-CZ/B-TZ are generally found at depths consistent with observations of NAPL in boring logs and elevated ROST™ readings discussed in Attachment 2G of the RAP Revision 2 (PBW, 2016). These depths correspond to where thin carbonate clayey gravel and nodule seams (~0.1 feet thick) have been described within the B-CZ. The depths of the TarGOST® signals exceeding 20%RE were generally between 26.9 and 40.7 feet bgs, as detailed below:

- The highest TarGOST® signal in CPT-02-20 was logged approximately 34.91 to 40.68 feet bgs (~20 to 57%RE), which is consistent with the observation of visible NAPL on the boring log of MW-35B (installed in 2007) at 36 feet bgs (Figure D-1 in Attachment D). Even though MW-35B is located within 50 feet of CPT-02-20 and is screened across the interval that had the elevated TarGOST® signal, no in-well NAPL has been noted at MW-35B since installation in 2007, suggesting that notwithstanding the TarGOST® %RE measurements in CPT-02-20, the DNAPL may only be at residual saturation at this location and not migrating.
- The highest TarGOST® signal in CPT-04-20 was logged approximately 26.93 to 31.11 feet bgs (~20 to 52%RE), which is consistent with the interval on boring log of MW-32B where NAPL was noted and the elevated ROST™ responses at CPT-42R-08 in 2008 (Figure D-2 in Attachment D). DNAPL has been regularly detected in MW-32B with in-depth thicknesses ranging from 1 foot to over 5 feet thick during the 1st quarter of 2020.
- The highest TarGOST® signal in CPT-06-20 was logged approximately 25.82 to 29.33 feet bgs (~20 to over 120%) and is consistent with observations (strong odor) noted on the boring log for nearby well MW-70B. This interval is represented by sandy and silty clay with abundant carbonate gravel seems within the clay unit. DNAPL has been detected in MW-70B, which is screened across the interval that had elevated TarGOST® signal (Figure D-3 in Attachment D). DNAPL has been regularly detected in MW-70B with in-depth thicknesses ranging from 3 feet to over 5 feet thick during the 1st quarter of 2020.
- The highest TarGOST® response in CPT-08-20 was near 34.87 feet bgs (~20 to 30%RE). Trace NAPL staining was noted on the boring log of nearby well MW-71B in sand and gravel seams at similar depths. In-well DNAPL has not been observed at MW-71B, suggesting that NAPL will not flow into wells at this location.

TarGOST® signals at CPT-03-20 (north of CPT-04-20) were between ~5 and 9%RE from approximately 29 to 32 feet bgs. NAPL staining was noted on the boring log of MW-68B between 34.5 and 35 feet bgs during installation in 2011, indicating the presence of NAPL then (Figure D-4 in Attachment D). Up until recently, no DNAPL has been observed in adjacent MW-68B. Since January 2020, in-well DNAPL thickness at MW-68B has ranged from less than 1 foot to over 3 feet thick, and the well has been incorporated into the DNAPL recovery well network. The relatively low TarGOST® signals at CPT-03-20 are anomalous when compared to other CPT/TarGOST® locations that were advanced near wells with DNAPL present. This anomaly may be due to isolated pockets of DNAPL within calcareous nodule beds, as noted on the boring log for MW-68B and demonstrates a possible limitation of the TarGOST® technology.

TarGOST® signals at CPT-07-20 (north of CPT-08-20) were between ~5 and 16%RE from approximately 28 to 39 feet bgs. Trace NAPL was noted within this depth interval on the MW-33BR boring log, a well located approximately 240 feet west of CPT-07-20 (Figure 4). DNAPL has not been observed in MW-33BR since

installation in 2011. Another monitoring well (MW-87C), located approximately 75 feet north of CPT-07-20, did not have NAPL noted on the boring log (Figure 4).

TarGOST® signals were below 5%RE in the B-CZ/B-TZ at CPT-01-20, CPT-05-20, CPT-09-20, and CPT-10-20. These signals indicate that the extent of NAPL is delineated off-site to the north. The boring log for monitoring well MW-63B installed in 2009 located just north of CPT-05-20 indicated NAPL in the B-CZ; however, no DNAPL has been observed in that well. TarGOST® signals were between 5 and 6%RE near 39.5 feet bgs at CPT-11-20 located east of CPT-09-20. TarGOST® signals at CPT-23-20, located northeast of the CPT-11-20 and the Site, were between ~5 and 7%RE from approximately 32 to 33 feet bgs. Monitoring well MW-54B was installed near CPT-23-20 in February 2020, and there were no observations of impacts in the B-CZ at that location. The relatively low TarGOST® signals at CPT-11-20 and CPT-23-20 coupled with observations in nearby soil borings indicate the extent of the NAPL in the B-CZ/B-TZ is delineated to the northeast.

On-Site - Perimeter of the HWPW Site

TarGOST® locations CPT-12-20 through CPT-21-20 and CPT-56-20 were drilled on-site along the north perimeter of the Site between existing monitoring wells MW-15C and MW-18C (Figure 1) and ranged in total depths from 58 to 62 feet bgs. Refusal was reached at approximately 18 feet bgs at CPT-19-20 and at approximately 25 feet bgs at CPT-20-20 during first attempts. Adjacent locations were cleared, and the CPT/TarGOST® borings were advanced to 58 feet bgs at CPT-19A-20 and 61 feet bgs at CPT-20A-20 before reaching refusal.

TarGOST® locations CPT-24-20 through CPT-27-20 and CPT-54-20 were drilled along the west perimeter of the Site (Figure 1) and ranged in total depths from 32 to 56 feet bgs. Refusal was reached at approximately 37 feet bgs at CPT-24-20 and 31 feet bgs at CPT-27-20 during the first attempts. An adjacent location was cleared, and the rods were advanced to 46 feet bgs at CPT-24A-20 before reaching refusal. A location less than 100 feet south of the original location was cleared, and the CPT rig reached refusal at 32 feet bgs at CPT-27A-20.

Details of TarGOST® signals observed along the northern and western perimeters of the Site are provided below.

Northern Perimeter

Vadose Zone

TarGOST® signals exceeding 20%RE were observed in the vadose zone along the northern perimeter in CPT-12-20, CPT-16-20, CPT-17-20, and CPT-21-20 (Figure 2). The highest TarGOST® signal in the vadose zone along the northern perimeter of the Site was observed at CPT-16-20 approximately 10 feet bgs at 140%RE. The spatial variation of TarGOST® responses within the vadose zone along the northern perimeter of the Site is illustrated in Table C-2 (Attachment C) and on Figure D-6 (Attachment D). TarGOST® signals were greater than 5% within the entire vadose zone interval at CPT-12-20, CPT-13-20, CPT-16-20, and CPT-17-20. Previous CPT-ROST™ borings CPT-18R-95 and CPT-27R-01 located near TarGOST® borings CPT-12-20 and CPT-13-20 (Figure D-6, Attachment D)) did not indicate elevated ROST™ responses in the vadose zone. CPT-ROST™ borings CPT-14R-95 and CPT-16R-95 located near CPT-16-20 and CPT-17-20, respectively (Figure D-6, Attachment D) did indicated ROST™ responses in the vadose zone.

TarGOST® signals were above 5%RE in the vadose zone at the westernmost location CPT-56-20 along the northern perimeter of the Site. Location CPT-56-20 was added after completing CPT-12-20, which indicated elevated TarGOST® signals in the vadose zone. CPT-56-20 TarGOST® signals were detected at about 16%RE

in the vadose zone immediately above the A-TZ at approximately 15.5 feet bgs. However, no observations of NAPL were noted in the vadose zone on soil boring logs for monitoring well MW-15A and MW-15B, located approximately 100 feet west of CPT-56-20, indicating the western extent of potential NAPL in the vadose zone.

TarGOST® boring CPT-21-20 is located at the eastern edge of the line of borings conducted along the northern perimeter of the Site. TarGOST® boring CPT-22-19 is located approximately 320 feet southeast of CPT-21-20. None of the TarGOST® signals at CPT-22-19 were greater than 5%RE in the vadose zone (Table C-3 in Attachment C; Figure D-6 in Attachment D). TarGOST® signals at off-site locations CPT-11-20, CPT-22-19, and CPT-23-20 are less than 5%RE in the vadose zone, providing delineation to the east (Figure 2).

A-TZ

TarGOST® signals in the A-TZ near the north perimeter of the Site exceeded 20%RE at (west to east) CPT-56-20, CPT-12-20, CPT-13-20, CPT-15-20, CPT-16-20, and CPT-21-20 (Figure D-6 in Attachment D) and are described in greater detail below.

- CPT-56-20: TarGOST® signals were elevated within the top A-TZ in a thin interval (approximately 16 to 17.3 feet bgs) at CPT-56-20, with signals exceeding 30%RE.
- CPT-12-20: TarGOST® signals were elevated within the entire A-TZ interval (approximately 14 to 22 feet bgs) at CPT-12-20, with signals exceeding 60 to 90%RE at discrete intervals. The highest TarGOST® response was detected near the base of the A-TZ at 90%RE.
- CPT-13-20: The elevated TarGOST® signals were more variable within the A-TZ interval (approximately 16 to 23 feet bgs) at CPT-13-20 compared to CPT-12-20. TarGOST® signals ranged from greater than 100%RE between 16 and 20 feet bgs, to less than 20%RE between 20 and 22 feet bgs, and increased to over 30%RE near the base of the A-TZ.
- CPT-15-20: TarGOST® signals greater than 30%RE were detected near the base of the A-TZ (approximately 26 feet bgs) at CPT-15-20. TarGOST® signals in the A-TZ above 25 feet bgs were generally less than 6%RE.
- CPT-16-20: TarGOST® signals within the A-TZ (approximately 16 to 26 feet bgs) at CPT-16-20 varied with depth. TarGOST® signals in the upper portion of the A-TZ at CPT-16-20 (16 to 20 feet bgs) ranged from below 10%RE to 20%RE. The maximum TarGOST® signal detected at CPT-16-20 was between 20 and 22 feet bgs at approximately 98%RE. Directly below that interval, TarGOST® signals were below 5%RE. TarGOST® signals increase to over 30%RE near the base of the A-TZ (24 to 26 feet bgs).
- CPT-21-20: A spike in TarGOST® signal was detected near the top of the A-TZ at 20 feet bgs at CPT-21-20. TarGOST® signals below 21 feet bgs were below 5% in the A-TZ (approximately 20 to 31.5 feet bgs).

Comparing to the previous CPT-ROST™ borings along the northern perimeter, CPT-ROST™ boring CPT-18R-95 and CPT-27R-01 located near TarGOST® borings CPT-12-20 and CPT-13-20, respectively, did not indicate elevated ROST™ responses in the A-TZ or upper portions of the A-TZ (Figure D-6 in Attachment D). However, CPT-ROST™ boring CPT-16R-95 located near CPT-17-20 (Figure 1; Figure D-6 in Attachment D) and CPT-ROST™ boring CPT-14R-95 located near CPT-16-20 indicated ROST™ responses within the A-TZ. TarGOST® signals at CPT-14-20 and CPT-15-20, which were located between CPT-13-20 and CPT-16-20, respectively, were mostly below 5%RE in the vadose zone and the A-TZ. Soil borings conducted as part of the TPH-NAPL assessment (discussed in Section 3.0) were drilled and sampled next to TarGOST® borings CPT-12-20 (DPT-12-20) and CPT-16-20 (DPT-16-20). Either visually observed NAPL or strong hydrocarbons odors were noted in the two soil borings (Attachment E). The elevated TarGOST® signals within the top of the A-TZ at CPT-12-20, CPT-13-20, and CPT-16-20 may indicate the presence of light NAPL (LNAPL) in those areas. LNAPL had been

observed in the A-TZ in a temporary well within the HWPW AST Area (SWMU 8) on the northeast side of the Site (PBW, 2010).

As discussed in the RAP Revision 2 (PBW, 2016) and the updated APAR Addendum (PBW, 2010), NAPL had been noted in the A-TZ on boring logs on the north side of the Site at MW-17, MW-72B, MW-57A, and MW-18A (Figure D-6 in Attachment D). DNAPL had historically been observed in well MW-57A, but has not been detected in the well since 2015. Therefore, the TarGOST® signals indicating the potential presence of NAPL in the A-TZ along the northern perimeter are generally consistent with historical soil boring and monitoring well observations except for the TarGOST® signals at CPT-12-20 and CPT-13-20 (Figure D-6 in Attachment D).

The extent of the TarGOST® signals greater than 5%RE in the A-TZ along the northern perimeter of the Site is not delineated to the west based on the results at CPT-56-20 (~30%RE). However, soil boring logs for monitoring wells MW-15A and MW-15B, located approximately 100 feet west of CPT-56-20, had no observations of NAPL noted indicating the western extent of potential NAPL in the A-TZ. In addition, concentrations of COCs in groundwater samples collected from A-TZ well MW-15A have been below detection limits or below applicable PCLs during recent semi-annual sampling events (Golder, 2020). The extent of the TarGOST® signals greater than 5%RE in the A-TZ along the northern perimeter of the Site to the east appears to be delineated. CPT-22-19, located approximately 320 feet southeast of CPT-21-20, had TarGOST® signals less than 5%RE in the A-TZ (Table C-3 (Attachment C); Figure 3) and serves a delineation point to the east. Off-site locations CPT-11-20, CPT-22-19, and CPT-23-20 (Figure 3) indicate that TarGOST® signals are less than 5%RE in the A-TZ, providing delineation to the northeast.

B-CZ/B-TZ

TarGOST® signals exceeding 20%RE were observed in the B-CZ/B-TZ at CPT-12-20 through CPT-21-20 along the northern perimeter. Elevated TarGOST® signals in the B-CZ/B-TZ near CPT-12-20 through CPT-18 -20 were detected in the underlying clay immediately below the A-TZ (generally between 24 and 34 feet bgs). As shown on Table C-2 (Attachment C) and Figure D-6 (Attachment D), elevated TarGOST® signals in the B-CZ/B-TZ were deeper at CPT-19-20 through CPT-21-20 (between 34 and 42 feet bgs) than at CPT-12-20 through CPT-18-20. In addition, elevated TarGOST® signals over 20% were detected between 50 and 56 feet bgs at CPT-20-20 and CPT-21-20. DNAPL had historically been observed in MW-57B near the north side of the Site and NAPL had been noted in the B-CZ/B-TZ on the boring logs of MW-17C, MW-23C, MW-72B, and MW-57B (Figure D-6 in Attachment D). TarGOST® signals indicating the potential presence of NAPL in the B-CZ/B-TZ along the northern perimeter are generally consistent with historical soil boring and monitoring well observations.

The extent of TarGOST® signals greater than 5%RE in the B-CZ/B-TZ along the northern perimeter of the Site is delineated to the west by CPT-56-20 where TarGOST® signals were below 5%RE. TarGOST® boring CPT-22-19 delineates the extent of TarGOST® signals greater than 5%RE in the B-CZ/B-TZ to the east (Figure 4).

West Perimeter

Vadose Zone

Two of the CPT/TarGOST® borings had signals exceeding 5%RE in the vadose zone at CPT-26-20 (5.93%RE approximately 11.6 feet bgs) and at CPT-27-20 (5.38% approximately 14 feet bgs), and none of the TarGOST® signals in the vadose zone exceeded 20%RE (Table C-2 in Attachment C). The signals detected in CPT-26-20 and CPT-27-20 were just slightly above 5%RE and were within one to two feet of the top of the A-TZ. TarGOST® signals at CPT-24-20, CPT24A-20, CPT-25-20, CPT-27A-20, and CPT-54-20 were all below 5% in the vadose

zone. The extent of TarGOST® signals greater than 5%RE in the vadose zone along the west perimeter of the Site is delineated to the south by CPT-27A-20 and to the north by CPT-24-20 and CPT-25-20 and to the west by CPT-54-20 (Figure 2).

A-TZ

On the west side of the Site, TarGOST® signals within the A-TZ were below 5%RE at six of the seven locations. During the first attempt at location CPT-24-20, there were no TarGOST® signals above 5%RE in the A-TZ. Since the boring reached refusal at around 37 feet bgs, the CPT/TarGOST® boring was reattempted. After clearing for utilities, a second attempt was advanced at an adjacent location (CPT-24A-20) less than 10 feet east of the original location to a depth of approximately 46 feet bgs. The TarGOST® signal between 15.5 and 17 feet bgs in the A-TZ sand indicated a ~23%RE response, demonstrating the variability in signals within a relatively small area. Figure 3 includes data collected at CPT-24A-20 to show the maximum TarGOST® signal detected in the area.

The extent of TarGOST® signals greater than 5%RE in the A-TZ is delineated to the south by CPT-25-20, CPT-26-20, CPT-27-20, and CPT-27A-20 and to the west by CPT-54-20. The extent of TarGOST® signals greater than 5%RE is not delineated to the north based on TarGOST® signals at CPT-24A-20 at the top of the A-TZ (approximately 16 feet bgs). However, concentrations of COCs in groundwater samples collected from nearby A-TZ wells, MW-13, MW-95A, and MW-38A, have been below detection limits or multiple orders of magnitude below applicable PCLs during recent semi-annual sampling events presented in the Interim Groundwater Monitoring Report (Golder, 2020). If groundwater was in direct contact with NAPL, concentrations of COCs in groundwater would likely be higher than those observed. No NAPL was noted on the boring logs of MW-13, MW-95A, MW-38A. Monitoring wells MW-13, MW-95A, and MW-38A are all located north and west of CPT-24A-20 (Figure 1 and 3), suggesting that NAPL, if present in the A-TZ, does not likely extend north and west.

B-CZ/B-TZ

During the first attempt at location CPT-27-20, TarGOST® signals above 20%RE in the B-CZ/B-TZ were detected between approximately 26 and 27 feet bgs ranging from ~29 to 34%RE (Table C-2 (Attachment C)). Since the boring reached refusal at around 32 feet bgs, the CPT-TarGOST® boring was reattempted at CPT-27A-20 less than 100 feet south of the original location. Refusal was reached at the second location at approximately the same depth (32 feet bgs). A TarGOST® signal of approximately 7%RE was detected near 32 feet bgs at CPT-27A-20. Both sets of data were used to contour the %RE responses for the B-CZ/B-TZ (Figure 4).

On the west side of the Site, DNAPL has been observed in two monitoring wells MW-12B and MW-41B with some of the thickest in-well measurements of DNAPL observed at the Site (MW-12B with >20 feet thick and MW-41B with >6 feet thick in October 2019). The TarGOST® response observed in CPT-27-20 was a few feet above the screened interval of MW-41B, located approximately 50 feet north of CPT-27-20. Monitoring well P-11 is located within 30 feet northeast of CPT-27A-20; and no DNAPL has been observed in P-11. CPT-54-20 was advanced 150 feet west of CPT-27-20 and CPT-27A-20, but also reached refusal at about 32 feet bgs. No TarGOST® signals above 5%RE were detected at CPT-54-20 (Table C-2 (Attachment C)). The extent of TarGOST® signals greater than 5%RE in the B-CZ/B-TZ along the western perimeter of the Site is delineated to the north and west by CPT-26-20 and CPT-54-20, respectively, where TarGOST® signals were below 5% in the B-CZ/B-TZ. The extent of TarGOST® signals greater than 5%RE was not delineated in the B-CZ/B-TZ to the south based on the CPT-27A-20 signals. However, COC concentrations in groundwater samples from P-11, as well as monitoring well P-12 located southeast of CPT-27A-20, have been below detection limits or multiple orders of magnitude

below applicable PCLs during previous semi-annual sampling events (Golder, 2020), suggesting that NAPL likely does not extend south of CPT-27A-20

Although, as noted above, significant in-well DNAPL thickness measurements have been observed in monitoring wells MW-12B and MW-41B, TarGOST® signals in the B-CZ/B-TZ depth interval from all but two CPT borings in this vicinity (CPT-27-20 and CPT-27A-20) were less than 5%RE. In addition, of the 13 CPT/ROST™ locations previously advanced within a 200 ft radius of MW-12B and of MW-41B, one location (CPT-19R-01) had a ROST™ response that indicated the presence of NAPL in the B-TZ/B-CZ (PBW, 2014). These data, coupled with COC concentrations below applicable PCLs (Golder, 2020) and the absence of measurable DNAPL in the six other B-CZ/B-TZ monitoring wells in this vicinity (MW-39B, MW-38B, MW-62B, P-11, and MW-42B), suggest a very localized NAPL in this unit within this area.

Englewood Intermodal Yard

The NAPL assessment conducted in the Englewood Intermodal (IM) Yard consisted of 21 CPT/TarGOST® borings conducted throughout the north and east portions of the Englewood IM Yard (Figure 1). The objective of the assessment was to evaluate the extent of NAPL in the Englewood IM Yard. CPT/TarGOST® locations CPT-28-19 through CPT-46-19 and CPT-55-19 ranged in depth between 23 and 65 feet bgs. CPT/TarGOST® location CPT-37-19 reached refusal at approximately 10 feet bgs. Because of concerns of potential underground utilities in the area, this location was not re-drilled. General observations from the CPT-TarGOST® signals for each zone are provided below.

Vadose Zone

TarGOST® signals above 20%RE were detected in the vadose zone in CPT-29-19, CPT-30-19, CPT-32-19, CPT-35-19, and CPT-42-19 (Figure 2 and Table C-3 (Attachment C)). TarGOST® borings CPT-29-19, CPT-30-19, CPT-31-19, CPT-32-19, and CPT-35-19 are located within the former lagoon area identified on historical aerials and maps of the Englewood IM Yard. CPT-42-19 is located in the area of the former ASTs. TarGOST® signals in the Englewood IM Yard are delineated to 5%RE to the east by CPT-46-19, CPT-45-19, and CPT-41-19, to the south by CPT-40-19, CPT-36-19, CPT-38-19, CPT-55-19, and to the west by CPT-28-19. As discussed in the RAP Revision 0 (PBW, 2014), previous ROST™ borings and soil borings conducted in the HWPW area indicated the presence of NAPL in the vadose zone extending from the HWPW Site into the Englewood IM Yard. Therefore, the extent of the TarGOST® signals above 5%RE to the north likely extend to the north perimeter.

A-TZ

TarGOST® signals greater than 20% were detected in the A-TZ (Figure 3 and Table C-3 (Attachment C)) at the following locations:

- CPT-30-19: The highest TarGOST® signals (>100%RE) within the A-TZ at CPT-30-19 were detected between 18 to 20 feet bgs near the top of the A-TZ. TarGOST® signals decreased with depth within the A-TZ.
- CPT-31-19: The highest TarGOST® signals (>800%RE) within the A-TZ at CPT-31-19 were detected between 24 and 26 feet bgs near the base of the A-TZ. TarGOST® signals near the top of the A-TZ (18 to 20 feet bgs) were also elevated (approximately 93%RE). TarGOST® signals in an interval between 20 and 23 feet bgs in the middle of the A-TZ were below 5%.

- CPT-32-19: TarGOST® signals within the A-TZ at CPT-32-19 ranged from ~17%RE to approximately >200%RE. The highest TarGOST® signals within the A-TZ at CPT-32-19 were near the base of the A-TZ approximately 25 feet bgs.
- CPT-36-19: TarGOST® signals within the A-TZ at CPT-36-19 ranged from below 5%RE to approximately 115%RE, near the base of the A-TZ. between 23 and 24 feet bgs. TarGOST® signals above 23 feet bgs were below 5%. DNAPL has been observed in nearby monitoring well MW-78A (Figure 3). DNAPL thickness at MW-78A has ranged from less than 1 foot to over 3 feet in the 1st quarter of 2020.
- CPT-46-19: The highest TarGOST® signals (~>570%RE) within the A-TZ at CPT-46-19 were detected between 22 and 24 feet bgs near the base of the A-TZ. TarGOST® signals above 23 feet bgs were below 5%RE. MW-49A is located near CPT-46-19 (Figure 3) and is screened from 20 to 30 feet bgs. No in-well DNAPL has been observed at MW-49A since installation in 2007.

The extent of TarGOST® signals greater than 5%RE in the A-TZ are delineated by the following locations where the TarGOST® signals were below 5%RE in the A-TZ to the west by CPT-28-19 and CPT-34-19, to the east by CPT-48-19 and CPT-22-19, and to the south by CPT-38-19, CPT-39-19, CPT-40-19, and CPT-41-19 (Figure 3). . The northern extent of elevated TarGOST® signals in the A-TZ is assumed to extend to the north perimeter of the HWPW.

B-CZ/B-TZ

The highest TarGOST® signals at the Site were detected in B-CZ/B-TZ in the Englewood IM Yard (Figure 4 and Table C-3 (Attachment C)). Intervals within the B-CZ/B-TZ with TarGOST® signals >20%RE were detected at the following locations:

- CPT-29-19: TarGOST® signals were greater than 20%RE between 40 and 47 feet bgs and between 50 and 52 feet bgs. The highest signals in the B-CZ/B-TZ at CPT-29-19 were detected between 43 and 44 feet bgs at 325%RE.
- CPT-30-19: TarGOST® signals were greater than 20%RE from the base of the A-TZ to 36 feet bgs, between 40 and 44 feet bgs, and between 50 and 56 feet bgs. The highest signals in the B-CZ/B-TZ at CPT-30-19 were detected between 52 and 53 feet bgs at 813%RE.
- CPT-31-19: TarGOST® signals were greater than 20%RE from the base of the A-TZ to approximately 35 feet bgs and between 40 and 45 feet bgs. From 24 feet bgs to 34 feet bgs, the maximum TarGOST® signals ranged from ~690 to 987%RE. A TarGOST® signal of ~813%RE was detected around 40 feet bgs.
- CPT-32-19: TarGOST® signals were greater than 20%RE from the base of the A-TZ to approximately 40 feet bgs. The highest TarGOST® signals within that interval were detected at about 1,298%RE at the base of the A-TZ at approximately 25 feet bgs (Table C-3 (Attachment C)). As shown on Figure 4, the highest TarGOST® response in the B-CZ/B-TZ detected on-site was at CPT-32-19. MW-74B is located within 20 feet of CPT-32-19 and NAPL was noted on the boring log of MW-74B at 23.5 to 24.3 feet bgs, 25.8 to 26.1 feet bgs, and 29 to 35 feet bgs along fractures in a sandy clay. MW-74B is screened from 25.5 to 36.5 feet bgs (Figure D-5 in Attachment D). However, no in-well DNAPL has been observed in this well since installation in 2011.
- CPT-35-19: TarGOST® signals were greater than 20%RE from the base of the A-TZ to approximately 35 feet bgs and between 41 and 50 feet bgs. The highest signals in the B-CZ/B-TZ at CPT-35-19 were detected between 43 and 48 feet bgs as high as 926%RE.

- CPT-36-19: TarGOST® signals were greater than 20%RE from the base of the A-TZ to approximately 35 feet bgs. the highest TarGOST® signal was detected at ~873%RE at a depth of approximately 24.5 feet bgs.
- CPT-39-19: TarGOST® signals were greater than 20%RE between 25 and 34 feet bgs, between 40 and 43 feet bgs, and near 50 feet bgs and 57 feet bgs. The highest signals at about 406%RE were detected at approximately 40 feet bgs.
- CPT-40A-19: TarGOST® signals were greater than 20%RE from the base of the A-TZ to approximately 42 feet bgs. Elevated signals were detected between 26 and 40 feet bgs ranging from 200 to over 895%RE.
- CPT-41-19: TarGOST® signals were greater than 20%RE between 26 and 32 feet bgs and at 37 feet bgs. The highest signals at CPT-41-19 (~60%RE) were detected at approximately 37 feet bgs. Monitoring well MW-75B is located less than 200 feet south of CPT-41-19 and west of CPT-44-19 and is screened from 32.3 to 37.2 feet bgs (Figure 4). DNAPL thickness in MW-75B has ranged from not detected to over 2 feet in the first quarter of 2020. NAPL was noted at 36.4 to 36.8 feet bgs on the boring log of MW-75B during installation in 2011.
- CPT-44-19: TarGOST® signals were greater than 20%RE between 32 and 34 feet bgs at a maximum signal of 22.2%RE.
- CPT-45-19: TarGOST® signals were greater than 20%RE between 31 and 34 feet bgs and between 38 and 40 feet bgs. The highest signals were detected at approximately 39 feet bgs at approximately 73%RE.
- CPT-46-19: TarGOST® signals were greater than 20%RE from the base of the A-TZ to approximately 38 feet bgs. The highest signals were detected at the top of the B-CZ (approximately 435%RE) (Table C-3, Attachment C). Monitoring well MW-49B is located within 30 feet of CPT-46-19 and screened from 30 to 35 feet bgs (Figure 4). DNAPL thickness in MW-49B has ranged from over 5 feet to over 13 feet during the 1st quarter of 2020.

Locations with TarGOST® signals above 100%RE are mainly in the areas of the former ASTs and former lagoons identified on historical aerials and maps in the IM Yard (Figure 4).

The extent of NAPL in the B-CZ/B-TZ is delineated by the following locations where the TarGOST® signals were below 5%RE across the B-CZ/B-TZ: to the west by CPT-28-19, to the east by CPT-22-19, CPT-43-19, CPT-48-19, and to the south by CPT-55-19 and CPT-42-19 (Figure 4).

2.3.2 Variability in TarGOST® Waveforms

The TarGOST® system logs the wavelength light emitted (fluorescence) of the soil after it is exposed to laser excitation light. The light is converted into electrical current pulses that are transformed into digitized transient voltage signals (waveforms). Waveforms from selected depths are called out on the left side of the TarGOST® logs. Four different wavelength bands are represented by different peaks and colors within the waveform call-out. The width of the peaks represents the lifetime of the fluorescence. Dakota produces cluster diagrams (wavelength vs lifetime) to aid in the identification of differences in waveforms between logs or within a single log. Cluster diagrams for TarGOST® borings conducted in 2019 and 2020 are provided in Appendix A of Attachment A.

Variability in TarGOST® waveforms (fluorescence signatures) may occur due to natural weathering/depletion processes, NAPL source material mixing or co-mingling, soil matrix differences, and NAPL compositional differences (Dakota, 2020; Attachment A). After review of the TarGOST® data collected from the Site, Dakota identified the following two waveforms that dominate the data set:

- Waveform #1: Logs that exhibit waveform #1 include the tar-like material from the seeps in the Englewood IM Yard - CPT-12-20, CPT-24A-20, CPT-30-19, CPT-35-19, and CPT-36-19.
- Waveform #2: Waveform #2 mainly differs from waveform #1 due to a slight increase in lifetime of fluorescence (shift up to row 2 from row 1 on cluster diagrams). Logs that exhibit waveform #2 include CPT-27-19, CPT-39-19, CPT-40A-19, CPT-45-19, CPT-46-19.
- The two waveforms are similar and appear closely related and are often seen within the same logs (Dakota, 2020). Logs that exhibit both waveforms include CPT-29-19, CPT-30-19, and CPT-32-19, which are located near the former lagoon areas within the Englewood IM Yard.

Both waveforms were observed throughout the Site. According to Dakota, the different waveforms are likely a result of subtle chemistry differences within the same basic NAPL. However, the origin of these differences is unknown (Dakota, 2020; Attachment A).

The waveforms observed in the vadose zone at CPT-42-19 and CPT-17-20 are different than the waveforms observed in the majority of other logs at the Site. Dakota indicated that the material associated with the waveforms at these locations is likely a lighter NAPL such as diesel (Dakota, 2020, Attachment A). CPT-17-20 was advanced near the former process areas on the HWPW site. CPT-42-19 was advanced in the area of former ASTs in the Englewood IM Yard. Soil samples were collected above the saturated zone at CPT-42-19 and are discussed in Section 3.0.

2.4 Limitations

TarGOST® specifically targets the PAHs found in creosote NAPLs and DNAPLs and does not respond to typical lighter end fuels like gasoline or kerosene unless co-mingled with creosote (Dakota, 2020, Attachment A). As discussed in Section 3.0, some areas in the Englewood Intermodal Yard may have soil impacted by releases of other types of fuel. Thinner, less viscous NAPLs (oil-like material) typically fluoresce at different wavelengths compared to the more viscous tar-like material, which may partially explain the differences in signal that is seen across the Site within the same GWBUs. In addition, soil matrices affect fluorescence. Sands and gravels may have as much as 10 times higher response than clays and silts, which may explain some of the differences in response observed within each log between GWBUs (sandy A-TZ vs the silty clayey B-CZ/B-TZ).

Limestone gravel fill, calcareous sands, buried wood/debris, shell hash, and other materials may result in false positives (Dakota, 2020; Attachment A). Beds of calcareous nodules are common within the B-CZ/B-TZ, especially on the east side of the Site, which was taken into consideration when reviewing the TarGOST® data. Additional limitations are discussed in the Dakota Report in Attachment A.

2.5 NAPL Assessment Conclusions

Since 1995, site investigations, including CPT/ROST™ investigations, were conducted to evaluate surface and subsurface soils for the presence of NAPL. To refine the observed subsurface distribution of DNAPL at the Site, CPT/TarGOST® data were collected in 2019 and 2020. Conclusions are summarized by the areas that were evaluated during the 2019/2020 NAPL Assessment activities (off-site, northern and western perimeter of the HWPW Site, and Englewood Intermodal Yard):

<u>Off-Site</u>

TarGOST® signals in the vadose zone and the A-TZ north of Liberty Road and north of the Site were below 5%RE. Based on a combination of observations made in boring logs, previously collected ROST™ data, and the CPT/TarGOST® data, there is no evidence of off-site NAPL present within the vadose zone or the A-TZ.

For the B-CZ/B-TZ, elevated TarGOST® signals greater than 20%RE in this zone off-site generally corresponds with observations of NAPL in wells, boring logs, and previously collected data. Based on the additional NAPL assessment activities, the extent of NAPL in the B-CZ/B-TZ off-site is 24 feet or deeper and delineated to within approximately 500 feet north of the Site.

On-Site (Northern Perimeter)

TarGOST® signals indicating the potential presence of NAPL in the vadose zone and the A-TZ along the northern perimeter are consistent with historical observations, except at CPT-12-20 and CPT-13-20. Previous CPT-ROST™ borings had not identified elevated ROST™ responses in the vadose zone and A-TZ near TarGOST® borings CPT-12-20 and CPT-13-20. The extent of the potential presence of NAPL in the vadose zone and A-TZ along the northern perimeter is delineated to the west and east by a combination of TarGOST® signals and observations on soil boring logs.

TarGOST® signals indicating the potential presence of NAPL in the B-CZ/B-TZ along the northern perimeter are consistent with historical observations. The extent of TarGOST® signals greater than 5%RE in the B-CZ/B-TZ along the northern perimeter is delineated to the west and east by TarGOST® borings CPT-56-20 and CPT-22-19, respectively.

On-Site (West Perimeter)

TarGOST® signals in the vadose zone along the west perimeter on-site were slightly above 5%RE at CPT-26-20 and CPT-27-20. The extent of TarGOST® signals greater than 5%RE in the vadose zone is delineated to the south by CPT-27A-20 and to the north by CPT-24-20 and to the west by CPT-54-20. None of the TarGOST® borings had %RE signals significantly above 5%RE along the west perimeter, except at CPT-24A-20. A TarGOST® signal between 15.5 and 17 feet bgs at CPT-24A-20 indicated an approximate 23%RE response. TarGOST® signals at CPT-24-20, an adjacent location less than 10 feet from CPT-24A-20, were all below 5%RE, demonstrating the variability in signals within a relatively small area. The extent of TarGOST® signals indicating potential NAPL, if present in the A-TZ, is delineated to the south by CPT-25-20, CPT-26-20, CPT-27-20, and CPT-27A-20, to the west by CPT-54-20, and to the northwest based on observations in soil borings and groundwater sampling data.

Significant in-well DNAPL thickness measurements have been observed in B-CZ/B-TZ monitoring wells MW-12B and MW-41B. However, TarGOST® signals from all but two CPT borings in this vicinity (CPT-27-20 and CPT-27A-20) were less than 5% in the B-CZ/B-TZ. These data, coupled with the absence of measurable DNAPL in the nearby B-CZ/B-TZ monitoring wells (MW-39B, MW-38B, MW-62B, P-11, and MW-42B), suggest a very localized NAPL in this unit within this area of the Site.

Englewood Intermodal Yard

TarGOST® signals above 20%RE were detected in the vadose zone at locations within the former lagoon area identified on historical aerials and maps of the Englewood IM Yard. TarGOST® signals above 20%RE were also detected in the vadose zone at CPT-42-19, which is located in the former ASTs area. Elevated TarGOST® signals were detected in the A-TZ also within the former lagoon area with maximum %RE signals ranging from 115%RE (CPT-36-19) to 839%RE (CPT-31-19). TarGOST® boring CPT-46-19, located east of the former AST area had a signal of 570%RE at the base of the A-TZ.

The highest TarGOST® signals at the Site were detected in the B-CZ/B-TZ in the Englewood IM Yard. Locations with TarGOST® signals above 100%RE were mainly in the former ASTs and former lagoon areas identified on historical aerials and maps, with six TarGOST® locations having signals greater than 800%RE (maximum signal of 1,298%RE at CPT-32-19). Elevated TarGOST® signals were also detected in the B-CZ/B-TZ on the east side of the Englewood IM Yard east of the former AST area at CPT-46-19 (maximum of 435%RE)).

The highest TarGOST® signals detected, 1,298%RE at CPT-32-19, was observed at the base of the A-TZ or top of the B-CZ at approximately 25 feet bgs. DNAPL recovery well MW-74B is located within 20 feet of CPT-32-19 and is screened from 25.5 to 36.5 feet bgs. During well installation, NAPL was noted on the boring log for MW-74B at intervals between 23.5 to 35 feet bgs along fractures in a sandy clay. However, since installation in 2011, no DNAPL has been observed in this well.

In contrast, monitoring well MW-49B, located within 30 feet of CPT-46-19 where TarGOST® signals range from 102%RE to 435%RE, has had DNAPL detected in the well. Also, monitoring well MW-75B, located less than 200 feet from CPT-41-19 where a maximum signal of 61%RE approximately 37 feet bgs was observed, has had DNAPL routinely detected in the well. Monitoring well MW-75B is screened from 32.3 to 37.2 feet bgs, and NAPL was noted at 36.4 to 36.8 feet bgs on the boring log of MW-75B during installation in 2011. Both MW-49B and MW-75B are part of the DNAPL Recovery Well network.

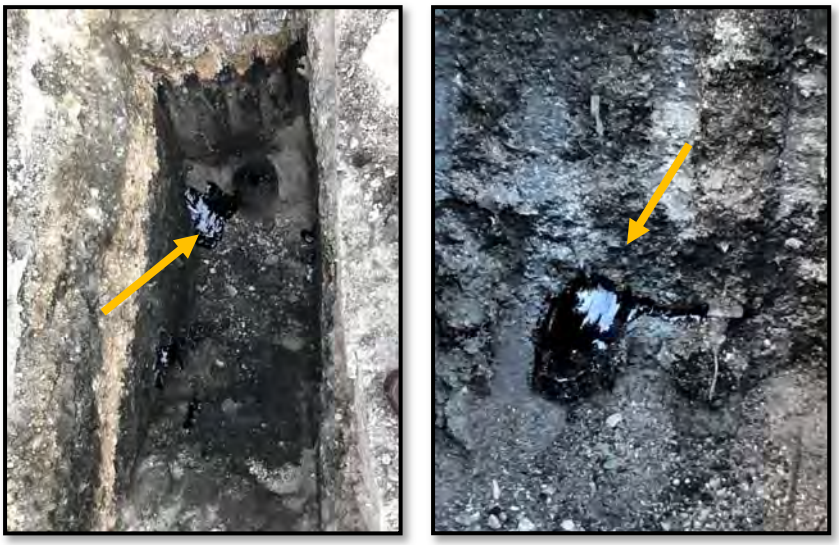
For the Englewood IM Yard, the extent of TarGOST® signals greater than 5%RE in the vadose zone, A-TZ, and B-CZ/B-TZ are delineated to the west, south, and east. The northern extent of elevated TarGOST® signals in the three zones is assumed to extend to the north perimeter of the HWPW.

3.0 TPH-NAPL ASSESSMENT

The objective of the TPH-NAPL assessment was to preliminarily identify potential TPH-NAPL sources within the Englewood IM Yard and evaluate the lateral extent of TPH in soils at the Site. Details on the background, assessment methods, data evaluation, and conclusions are provided in the following sections.

3.1 Background

During the July 2017 quarterly inspection of the capped areas, a tar-like NAPL was observed surfacing within the Englewood IM Yard through the joints and cracks in the concrete and asphalt surfaces primarily in the area shown on Figure 6. In October 2018, Golder personnel documented the excavation of four test pits in the areas where the tar-like NAPL was observed in the Englewood IM Yard, as detailed in the *Monthly Status Update – Soil Cap and Concrete Cap Repairs* dated October 31, 2018 (October 2018 Monthly Update) submitted to the TCEQ (Golder, 2018). The NAPL observed in each test pit visually appeared to be similar at each location and was described as a black, viscous material found within the top 3 feet bgs. Photographs of one of the test pits is provided below.



View of Test Pit B100, note paste-like NAPL seeping in around 3 feet bgs

As part of that test pit evaluation, samples of the tar-like NAPL were collected and analyzed for total petroleum hydrocarbons (TPH) by TX1005 Method, TPH fractionation by TX1006 Method, volatile organic compounds (VOCs) by EPA Method 8260, semi-volatile organic compounds (SVOCS) by EPA Method 8270, and reactivity/ignitability/corrosivity for waste profiling. The four NAPL samples had TPH concentrations ranging from 23,000 mg/kg to 35,000 mg/kg, with the highest concentrations detected in the C_{12}-C_{28} TPH range. Each NAPL sample was also analyzed for TPH fractionation by TX1006 Method. As detailed in the October 2018 Monthly Update (Golder, 2018), the four NAPL samples collected from the test pits appeared to have a similar distribution of TPH fractions. A Tier 1 PCL for Total TPH was established using the TCEQ Tier 1 TPH PCL Calculator (v 2.0 – 12/2016) and the TPH fractionation data collected from the test pits. The 30-Acre C/I Tier 1 $^{Tot}Soil_{Comb}$ PCL of 46,900 mg/kg was established as the appropriate Tier 1 PCL since the TPH concentration is considered protective of the underlying groundwater. None of the NAPL samples themselves had total TPH concentrations greater than the calculated TPH PCL.

Based on the results of the test pit evaluation, Golder, on behalf of UPPR, proposed a NAPL Collection System design as an interim measure as detailed in the October 2018 Monthly Update. The TCEQ approved UPRR to proceed with the interim measure in a letter dated December 6, 2018, with additional comments on the NAPL TPH assessment and requested UPRR submit a schedule "to assess and characterize the extent of environmental media affected with TPH and identify the TPH source area(s)". Golder, on behalf of UPRR, prepared a response letter dated January 9, 2019 (Golder, 2019b) that provided the following information on possible TPH source areas:

- *Based on the analytical data for the tar-like substance (NAPL) and surrounding soils, the NAPL does not appear to be creosote. As discussed in the email from Golder to the TCEQ on October 22, 2018, the specific source of the tar-like substance or NAPL is uncertain. However, historical aerials (see attached Fig XI-A-1d from the RCRA permit renewal showing the 1943 aerial (Attachment C)) indicate two lagoons or ponds in the area of the present-day Englewood Intermodal Yard. Adjacent to the lagoons were three, large, above ground storage tanks (ASTs) that were used for storage of crude oil with an estimated capacity of 55,000 barrels each (based on the description on the 1929 Sanborn Map (Attachment C)). The NAPL appears to be a heavily weathered petroleum hydrocarbon, likely from releases from the ASTs.*

The soil and groundwater within the Englewood Intermodal Yard have been extensively investigated over the past 10 years. As discussed in the Response Action Plan (RAP) (Attachment 1A, PBW, November 2014), PBW conducted a soil, groundwater, and cone penetrometer with rapid optical screening tool (CPT/ROST™) investigation in 2013 focused in the Englewood Intermodal Yard area to evaluate the lateral and vertical extent of COCs above TRRP PCLs in soils and preliminarily evaluate the presence of NAPL in the subsurface. The investigation specifically targeted the former AST and lagoon area. The ROST™ data from the investigation was incorporated into the site-wide ROST™ data and presented on Figure 4D – Vadose Zone NAPL Observation and ROST™ Reading (attached under Attachment D) presented in the RAP (November 2014). Additional soil sampling was conducted within the Englewood Intermodal Yard in May 2018 as part of a pavement improvement project where soils beneath the pavement were characterized prior to construction.

Following the TCEQ's review of the January 9, 2019 response letter, the TCEQ issued a Request for Information comment letter dated February 6, 2019 requesting UPRR to delineate the TPH impacted soils horizontally and vertically in accordance with 30 Texas Administrative Code (TAC) 350.51. Golder, on behalf of UPRR, prepared a response letter dated February 28, 2019 detailing a proposed soil assessment for TPH in and around the Englewood IM Yard, specifically in the areas where the former lagoon and ASTs were assumed to be located. The response letter provided proposed soil boring locations for the TPH assessment and a preliminary schedule, pending TCEQ approval, to address the TCEQ comments. The TCEQ did not issue a follow-up letter, but rather incorporated the February 6, 2019 request for the TPH Assessment into the Technical Notice of Deficiency (TNOD) dated April 11, 2019 , which stated *"the current assessment of the total petroleum hydrocarbon – non-aqueous phase liquid (TPH-NAPL) seep source(s) and extent is insufficient because only a limited soil assessment was performed. Additional soil and groundwater assessments is needed which shall include additional soil borings, well installation and monitoring. Additional assessment is discussed in more detail in comment nos. T35(4), T42(4), T43(3), T44(4), T45(4) and T48(3)."*

Under a cover letter dated July 10, 2019, UPRR submitted a response to the TCEQ TNOD that included the Conceptual Response Action Plan (RAP) dated July 9, 2019 detailing pre-design assessment activities including the proposed *TPH-NAPL Assessment Englewood Intermodal Yard* (Golder, 2019a). The TCEQ issued a letter dated September 6, 2019 detailing additional comments on UPRR's July 10, 2019 Response to the TNOD. The TCEQ's comments on the proposed pre-design TPH-NAPL assessment, included a request for specific additional sample locations. A meeting was held on September 23, 2019 at the TCEQ Austin office between UPRR, TCEQ, and Golder to discuss the requested additional assessment activities. Golder, on behalf of UPRR, then submitted a response letter dated October 23, 2019 confirming the additional TPH assessment locations based on the discussions with the TCEQ on September 23, 2019. The TCEQ issued a letter dated December 13, 2019 providing approval for UPRR to proceed with the TPH-NAPL pre-design assessment activities as revised in the October 23, 2019 letter.

Details of the assessment methods and results are provided in the following sections.

3.2 Assessment Methods

Following TCEQ approval and between December 2019 and February 2020, 56 soil samples from 28 soil borings were collected for TPH analysis to delineate the horizontal and vertical extent of TPH concentrations in soils as described in the October 23, 2019 letter. The soil boring locations are shown on Figure 5. Soil borings were

advanced using a hand auger and a track-mounted Geoprobe® DPT rig. To clear the borings of underground utilities, the top 5 to 8 feet of the soil borings were advanced using a hand auger.

Soil borings were drilled to the top of the uppermost GWBU (A-TZ) to assess the surface and subsurface soils at each location. Soil samples were collected continuously for the total depth of each boring and logged by field personnel and field screened using a photoionization detector (PID). Boring logs are provided in Attachment E. Following the collection of soil samples, the soil borings were plugged with bentonite grout. Soil samples were collected in laboratory-supplied containers and placed on wet ice in an insulated cooler. A chain-of-custody record accompanied the samples through receipt at ALS Environmental Laboratory in Houston, Texas.

Based on field observations and lithology, soil samples selected for analysis were collected from 1-foot sub-intervals from each soil boring from within the 0 to 5-foot and the 5-foot to top of the A-TZ depth intervals. Soil samples were analyzed for TPH by Method TX1005. Gas chromatography (GC) graphs from the samples with the highest TPH concentrations were compared to evaluate whether the general hydrocarbon composition of the TPH differed across the sampled areas. Samples with elevated TPH concentrations and different compositional distributions based on the TX1005 results were selected for Method TX1006 analyses to develop site-specific TPH mixture critical PCLs following the TCEQ Guidance Document RG- 366/TRRP-27 (TCEQ, 2010a).

Analytical data from the soil samples collected during the TPH-NAPL assessment were reviewed for adherence to established quality assurance/quality control (QA/QC) criteria, and Data Usability Summary (DUS) was prepared in accordance with TCEQ publication RG-366/TRRP-13 (TCEQ, 2010b) to demonstrate the quality of the laboratory analytical data and present any deviations from the established QA/QC criteria. Copies of the analytical data reports and the DUS are provided in Attachment F.

3.3 Data Evaluation

The TPH data evaluation included the following:

1. Evaluate the lateral extent of the TPH concentrations in soils using the TX1005 analytical data compared to applicable TCEQ TRRP PCLs.
2. Evaluate hydrocarbon types by reviewing the GC chromatograms from the samples with the highest TPH TX1005 concentrations to assess whether the general hydrocarbon composition of the TPH differed across the sampled areas.
3. Samples with elevated TPH concentrations and different compositional distributions based on the TX1005 results were selected for TX1006 analyses. The results from the TPH fractionation by Method TX1006 were used to develop TPH Mixture critical PCLs for each hydrocarbon type using the TCEQ TRRP Tier 1 TPH PCL Calculator (v 3.0 – 02/2020).
4. The TPH soil PCL Exceedance (PCLE) Zone was then established using the individual TPH Mixture cPCLs.

Discussion on delineation of the TPH concentrations in soils, different hydrocarbon types identified, establishing critical PCLs for the TPH, and TPH soil PCLE Zone are provided in the following sections.

3.3.1 TPH TX 1005 Evaluation

The TPH soil data evaluation followed a “focused on-site soil assessment” as detailed in the TCEQ Guidance Document Affected Property Assessment Requirements under TRRP, RG-366/TRRP-12, Revised May 2010 (TCEQ, 2010c) and 30 TAC §350.51(c), which states “*for soils only, the person can focus the horizontal on-site assessment to define the area exceeding the applicable critical PCL (i.e., residential or commercial/industrial).*”

Therefore, for the purposes of assessing the lateral extent of TPH TX1005 analytical results in soils, the TPH data were initially compared to the following PCLs based on the location of the soil boring:

- Along the perimeter of the Site, soil samples were compared to the Tier 2, residential, 30-acre source area PCLs; or
- Within the interior of the Site, soil samples were compared to the Tier 2, Commercial/Industrial, 30-acre source area PCLs.

A summary of the soil TPH results by TX1005 compared to the applicable PCL based on the location of the soil samples is provided in Table 1 and shown on Figure 6.

Based on the soil TPH TX1005 data, the TPH concentrations were delineated to the applicable TPH TX1005 PCLs at the western perimeter of the Site to the east, south, and west except at location DPT-26-20 (on the western perimeter), which had a TPH C_{12}-C_{28} concentration of 3,300 mg/kg that exceeded the residential PCL of 1,500 mg/kg, but was less than the commercial/industrial PCL of 4,400 mg/kg. Another soil boring, DPT-24-20 located on the west perimeter north of DPT-26-20 had TPH concentrations less than the residential PCLs. The three soil borings along the northern perimeter, DPT-12-20, DPT-16-20, and DPT-21-20 each had TPH concentrations in the C_6-C_{12} and C_{12}-C_{28} ranges that exceeded the residential PCLs. Of those samples, one had a TPH concentration that exceeded the commercial/industrial PCL (DPT-12-20 from 8-9 feet bgs, C_{12}-C_{28} range).

Soil samples were collected from depth intervals corresponding to potential surface and subsurface soil pathways under TRRP to evaluate TPH concentrations vertically to the appropriate PCL, rather than to the higher of the method quantitation level (MQL) or background. For the perimeter locations, the deeper soil samples collected from DPT-12-20 (8-9 feet bgs), DPT-16-20 (14-15 feet bgs), and DPT-26-20 (13-14 feet bgs) had concentrations detected above the MQL. The following TRRP Rule for the vertical delineation was followed: 30 TAC 350.51(d)(4): *If a person has already determined that the groundwater is impacted, then they may satisfy the requirements of this subsection by declaring the entire soil column to the top of the lowest impacted groundwater bearing unit as a soil PCLE zone.* Since the TPH soil boring locations are generally within the groundwater PCLE zones for the three GWBUs (a cumulative groundwater PCLE shown on Figure 5 using the information provided in the Interim Groundwater Monitoring Report (Golder, 2020)), the entire soil column is considered part of the affected property. The only soil boring location that appears to be outside the groundwater PCLE zones is DPT-42-19, but is likely within the overall groundwater affected property.

As part of the NAPL assessment within the Englewood Intermodal Yard, the total TPH TX1005 concentrations in soil samples collected within the vadose zone were also compared to the TCEQ theoretical residual soil saturation limit (Tier 1 $Soil_{Res}$) PCL (10,000 mg/kg) as a possible further preliminary indication of the potential presence of NAPL. Soil borings with at least one soil sample containing TPH TX1005 concentrations above the Tier 1 $Soil_{Res}$ include seven locations in the general area of the former lagoons (DPT-30-19, DPT-32-19, DPT-34-19, DPT-35-19, DPT-36-19, DPT-37-19, and DPT-38-19) and one location within the area of the former ASTs (DPT-42-19) (Table 1; Figure 5). At each of these locations where TPH concentrations were detected greater than 10,000 mg/kg, either NAPL was visually observed or strong hydrocarbon odors were noted on the soil boring logs (Attachment E).

The soil TPH TX1005 results are delineated to less than the Tier 1 $Soil_{Res}$ PCL to the north, south, east, and west (Figure 5). The area where the soil samples indicate TPH concentrations greater than the Tier 1 $Soil_{Res}$ PCL is generally within the TarGOST® 5%RE contour within the vadose zone in the Englewood Intermodal Yard (Figure 2), except at DPT-36-19 and DPT-38-19 that had TarGOST® signals less than 5%RE in the vadose zone. Based

on the samples collected as part of this assessment, total TPH concentrations detected above 10,000 mg/kg are typically found in the top six feet bgs. Since the top 8 to 10 feet of soils were cleared for potential utilities for the CPT/TarGOST® borings and backfilled with sand, the TarGOST® signals would not have detected the potential NAPL in the shallow portion of the vadose zone where these TPH concentrations were detected.

The information gathered from the TPH-NAPL assessment in combination with the data from the test pits will be used to develop the NAPL response triggers for the TPH-NAPL area in the Englewood Intermodal Yard following the TCEQ Risk-Based NAPL Management Guidance Document (RG-366/TRRP-32) (TCEQ, 2013). The NAPL response triggers and resulting response action objectives will be detailed in the Revised RAP.

3.3.2 Hydrocarbon Types

GC chromatograms for the TPH TX1005 soil samples collected in 2020 and the associated TPH fractionation data by TX1006 for selected samples were evaluated to provide an interpretation of the hydrocarbon types present in the soil samples. A summary of the soil TPH results by TX1006 is provided in Table 2. A technical memorandum prepared by a Golder chemist summarizing the interpretation of the soil data is provided in Attachment G. Based on the profile of the predominant peaks in the chromatograms and the fractionation data, the TPH results for the soil samples were assigned four categories, which may indicate different TPH types:

- nC_6 to nC_{12} Organics – GC graphs indicate the presence of VOCs;
- $>nC_{12}$ to nC_{28} Organics – appears to be impacted by diesel or other fuels of similar composition.
- $>nC_{12}$ to nC_{28} Organics with High Aromatic Content and low VOC content – typical for creosote; and
- Unresolved complex material (UCM) – potentially may include residual fuel oils (which have common names such as No. 4, 5, and 6 fuel oils) and bunker C or asphalt and lubricating oils.

GC graphs of samples with TPH concentrations below the detection limit or relatively low concentrations (<100 mg/kg) were not included in the hydrocarbon type analysis.

Soil samples falling into each category are listed in Tables 1 through 4 of the technical memorandum in Attachment G and color coded as shown on Figure 6. The general distribution of the different TPH categories appears to generally align with the previous operations at the Site:

- nC_6 to nC_{12} Organics – Observed in DPT-21-20 on the northeast portion of the HWPW Recent Process Area (SWMU 4) where drying agents (e.g., petroleum naphtha consisting of lighter fraction carbon chain compounds, including benzene (PBW, 2010)) were stored and managed during operations. This TPH category was also observed at DPT-38-19 sampled near a former lagoon or pond within the Englewood IM Yard.
- $>nC_{12}$ to nC_{28} Organics – This TPH category appears to be predominately within the former lagoon area, but was also observed in DPT-21-20 on the northeast portion of the HWPW Recent Process Area (SWMU 4) and a lower concentration detected near the southeast end of the Railroad Tie Storage Area (SWMU 12);
- $>nC_{12}$ to nC_{28} Organics with High Aromatic Content and Low VOC Content – Observed within the former HWPW area (along the northern perimeter) and within the former lagoon within the Englewood IM Yard.
- Unresolved complex material (UCM) – Observed predominately in the soil samples collected near the former ASTs within the Englewood IM Yard.

The above categories and descriptions should be considered as preliminary generalizations only. Specific releases of different types of TPH and locations are not known, and the TPH has likely gone through various phases of weathering/depletion and may have been mixed during operations. As such, this evaluation of the specific TPH types and distribution should not be used to identify specific sources at the Site, but rather as a general guide to evaluate the range of TPH characteristics at the Site for establishing critical PCLs for the TPH categories.

3.3.3 Establishing Critical PCLs

The soil samples with the highest total TPH concentrations were chosen as representative samples of each category, analyzed for TPH fractionation by Method TX1006, and Tier 1 PCLs for Total TPH were calculated using the TCEQ TRRP Tier 1 TPH PCL Calculator (v 3.0 – 02/2020). The calculations are provided in Attachment H. Based on the TPH TX1006 results at each location, the hazard index was less than 10 (§350.76(g)(8)) and the TPH concentration is considered protective of the underlying groundwater, therefore, the soil to groundwater pathway for the TPH mixture is not complete and a $^{GW}Soil_{Ing}$ PCL was not calculated (TCEQ, 2010a). The lowest of the PCLs established for the different applicable exposure pathways is the $^{Tot}Soil_{Comb}$ pathway PCL and is the critical PCL for each category, as summarized in the following table:

Category	Location ID	Depth Interval (feet bgs)	Tier 1 $^{Tot}Soil_{Comb}$ $PCL_{TPH\ Mix}$ (30-Acre Residential) (mg/kg)	Tier 1 $^{Tot}Soil_{Comb}$ $PCL_{TPH\ Mix}$ (30-Acre Commercial/ Industrial) (mg/kg)
nC_6 to nC_{12} Organics	DPT-38-19	3-4	6,287	16,766
>nC_{12} to nC_{28} Organics	DPT-34-19	4-5	9,600	60,480
>nC_{12} to nC_{28} Organics with High Aromatic Content	DPT-35-19	4-5	7,504	70,247
Unresolved complex material (UCM)	DPT-42-19	4-5	5,797	57,967

The TPH Mixture PCLs listed above were then used as the critical PCLs to evaluate the total TPH by TX1005 Method soil sample concentration data. Following the same procedures for assessing the TPH by TX1005 data, the TPH data were evaluated against the critical PCLs by comparing to the following PCLs based on the location of the soil boring:

- Along the perimeter of the Site, soil sample results for total TPH were compared to the Residential Tier 1, $^{Tot}Soil_{Comb}$ $PCL_{TPH\text{-}Mix}$, and
- Within the interior of the Site, soil samples were compared to the C/I $^{Tot}Soil_{Comb}$ $PCL_{TPH\text{-}Mix}$.

3.3.4 TPH PCLE Zone

The total TPH concentrations for the soil samples in each category were compared to the calculated critical PCLs for each category detailed in Section 3.3.3 (Table 3). None of the soil samples had total TPH concentrations greater than the calculated C/I $^{Tot}Soil_{Comb}$ $PCL_{TPH\text{-}Mix,}$ and therefore there is no Total TPH PCLE Zone for soils at the Site. However, one soil sample collected from the perimeter had total TPH concentrations that exceeded the applicable calculated Residential Tier 1, $^{Tot}Soil_{Comb}$ $PCL_{TPH\text{-}Mix}$.

Total TPH concentration in the soil sample collected at DPT-12-20 (8-9 feet bgs) (8,070 mg/kg) exceeded the Residential Tier 1, $^{Tot}Soil_{Comb}$ $PCL_{TPH\text{-}Mix}$ for the >nC_{12} to nC_{28} Organics with High Aromatic Content Category of 7,504 mg/kg. This soil sample had total TPH concentrations less than the applicable calculated C/I $^{Tot}Soil_{Comb}$ $PCL_{TPH\text{-}Mix}$ (70,247 mg/kg). Based on this TPH result, additional sampling closer to the property boundary north of DPT-12-20 is recommended to evaluate the lateral extent of the total TPH concentrations in the surface soils.

3.4 TPH Assessment Conclusions

The TPH-NAPL Assessment followed the procedures outlined in the TCEQ Guidance Document RG- 366/TRRP-27 (TCEQ, 2010a). Based on the assessment, the following conclusions were developed:

- Delineation of TPH in soils using the TPH TX1005 data from the 56 soil samples indicated that the TPH concentrations were not delineated to the applicable TPH TX1005 PCLs on the western and northern perimeter of the Site. Surface soil sample from DPT-26-20 (2-3 feet) had a TPH C_{12}-C_{28} concentration of 3,300 mg/kg that exceeded the residential PCL but was less than the commercial/industrial PCL of 4,400 mg/kg. Soil boring DPT-24-20 located on the western perimeter north of DPT-26-20 had TPH concentrations less than the residential PCLs. Soil borings along the northern perimeter DPT-12-20, DPT-16-20, and DPT-21-20 each had TPH concentrations in the C_6-C_{12} and C_{12}-C_{28} ranges that exceeded the residential PCLs. Of those samples, only one had a TPH concentration that exceeded the commercial/industrial PCL (DPT-12-20 from 8-9 feet bgs, C_{12}-C_{28} range).
- The TPH-NAPL assessment within the Englewood Intermodal Yard indicated total TPH TX1005 concentrations in eight soil samples exceeded the Tier 1 $Soil_{Res}$ PCL of 10,000 mg/kg. Except for one location (DPT-42-19) located within the former AST area, the other seven locations are in the general area of the former lagoons. At each of these soil boring locations, either NAPL was visually observed or strong hydrocarbon odors were noted on the soil boring logs. The soil TPH TX1005 results are delineated to less than the Tier 1 $Soil_{Res}$ PCL to the north, south, east, and west. The information gathered from the TPH-NAPL assessment will be used to develop the NAPL response triggers for the TPH-NAPL area in the Englewood Intermodal Yard following the TCEQ guidance. The NAPL response triggers and resulting response action objectives will be detailed in the Revised RAP.
- An evaluation conducted by Golder indicated the following four different categories of TPH mixtures based on the TPH TX1005 predominant peaks in the GC graphs and fractionation data:
    - nC_6 to nC_{12} Organics – GC graphs indicate the presence of VOCs;
    - >nC_{12} to nC_{28} Organics – appears to be impacted by diesel or other fuels of similar composition;
    - >nC_{12} to nC_{28} Organics with High Aromatic Content and low VOC content – typical for creosote; and

  - Unresolved complex material (UCM) – potentially may include residual fuel oils (which have common names such as No. 4, 5, and 6 fuel oils) and bunker C or asphalt and lubricating oils.

- Using these four categories and representative TX1006 analytical data for each category, TPH mixture PCLs were calculated following TCEQ guidance. The TPH mixture PCL analysis indicated that the soil to groundwater pathway for the TPH mixture is not complete, and therefore the $^{Tot}Soil_{Comb}$ pathway PCL is the critical PCL for each TPH category.
- The developed TPH Mixture critical PCLs ($^{Tot}Soil_{Comb}$ $PCL_{TPH\text{-}Mix}$) were used to evaluate the total TPH by TX1005 Method soil sample concentration data based on the identified TPH category for each sample. None of the soil samples had total TPH concentrations greater than the calculated C/I $^{Tot}Soil_{Comb}$ $PCL_{TPH\text{-}Mix}$, and therefore there is not a Total TPH PCLE Zone for soils at the Site. However, DPT-12-20 (8-9 feet bgs) soil sample collected from the northern perimeter had total TPH concentrations that exceeded the applicable calculated Residential Tier 1, $^{Tot}Soil_{Comb}$ $PCL_{TPH\text{-}Mix}$. for the $>nC_{12}$ to nC_{28} Organics with High Aromatic Content Category.
- Additional sampling closer to the property boundary north of DPT-12-20 is recommended to evaluate the lateral extent to the total TPH concentrations in the surface soils.

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TABLES

TABLE 1
SUMMARY OF SOIL TPH CONCENTRATIONS BY METHOD TX1005
UPRR HOUSTON WOOD PRESERVING WORKS

Perimeter/ Interior Location	Location ID	Sample Depth (ft bgs)	Sample Date	nC6 to nC12	>nC12 to nC28	>nC28 to nC35	Total TPH
			Residential Assessment Level (mg/kg)	4.7E+02	1.5E+03	1.5E+03	
			Commercial/Industrial PCL (mg/kg)	1.4E+03	4.4E+03	4.4E+03	
Perimter Sample Locations							
P	DPT-12-20	4-5	1/30/2020	290	2,300	120	2,710
P	DPT-12-20	8-9	1/30/2020	1,300	6,500	270	8,070
P	DPT-16-20	4-5	1/30/2020	270	860	28	1,160
P	DPT-16-20	14-15	1/30/2020	1,300	3,100	120	4,520
P	DPT-21-20	3-4	1/30/2020	1,300	2,800	97	4,200
P	DPT-21-20	5-6	1/30/2020	48	110	22	180
P	DPT-24-20	4-5	1/29/2020	<7.6	<10	<10	<7.6
P	DPT-24-20	8-9	1/29/2020	<7.0	<9.2	<9.2	<7.0
P	DPT-26-20	2-3	1/28/2020	170	3,300	440	3,910
P	DPT-26-20	13-14	1/29/2020	<8.2	14	<11	14
P	DPT-43-19	2-3	2/4/2020	7	430	550	987
P	DPT-43-19	12-13	2/4/2020	<7.6	<10	<10	<7.6
P	DPT-45-19	1-2	2/5/2020	9	170	250	428
P	DPT-45-19	8-9	2/5/2020	<6.4	<8.4	<8.4	<6.4
P	DPT-46-19	2-3	1/30/2020	<6.5	<8.5	<8.5	<6.5
P	DPT-46-19	9-10	1/31/2020	<6.4	<8.4	<8.4	<6.4
P	DPT-55-19	3-4	12/16/2019	<8.6	<11	<11	<8.6
P	DPT-55-19	12.3-13.3	12/16/2019	<9.4	<12	<12	<9.4
P	SB-218	15-16	12/19/2019	<6.7	<8.8	<8.8	<6.7
P	SB-218	2.25-3	12/19/2019	<6.9	150	130	280
P	SB-219	2-3	2/3/2020	<79	1,400	980	2,380
P	SB-219	7-8	2/4/2020	<6.6	<8.7	<8.7	<6.6
P	SB-220	4-5	2/3/2020	<7.0	<9.2	<9.2	<7.0
P	SB-220	8-9	2/4/2020	<7.8	19	<10	19
P	SB-221	4-5	12/16/2019	<8.5	<11	<11	<8.5
P	SB-221	9-10	12/16/2019	<8.2	<11	<11	<8.2
Interior Sample Locations							
I	DPT-28-19	4-5	2/6/2020	<7.5	<9.8	<9.8	<7.5
I	DPT-28-19	7-8	2/5/2020	<7.6	31	41	72
I	DPT-29-19	4-5	2/5/2020	650	2,600	970	4,220
I	DPT-29-19	9-10	2/5/2020	230	1,100	200	1,530
I	DPT-30-19	4-5	2/3/2020	220	9,300	3,000	12,500
I	DPT-30-19	13-14	2/5/2020	810	3,400	510	4,720
I	DPT-32-19	2-3	2/4/2020	1,300	8,700	1,800	11,800
I	DPT-32-19	11-12	2/4/2020	890	5,600	950	7,440
I	DPT-34-19	4-5	12/18/2019	<450	15,000	4,500	19,500
I	DPT-34-19	5-6	12/18/2019	<82	3,800	1,200	5,000
I	DPT-35-19	4-5	12/19/2019	900	13,000	2,900	16,800
I	DPT-35-19	6-7	12/19/2019	200	1,200	170	1,570
I	DPT-36-19	3-4	2/5/2020	140	7,100	1,600	8,840
I	DPT-36-19	5-6	2/5/2020	130	9,100	2,700	11,900
I	DPT-37-19	4-5	2/6/2020	880	9,600	1,500	12,000
I	DPT-37-19	7-8	2/4/2020	270	1,800	270	2,340
I	DPT-38-19	3-4	12/16/2019	5,000	6,400	3,100	14,500
I	DPT-38-19	5-6	12/16/2019	1,400	4,700	1,700	7,800
I	DPT-39-19	2-3	12/17/2019	<7.4	600	360	960
I	DPT-39-19	7-8	12/17/2019	<7.6	<10	<10	<7.6
I	DPT-40-19	7-8	12/18/2019	<7.0	35	23	58
I	DPT-40-19	1.25-2	12/18/2019	170	6,500	1,300	7,970
I	DPT-41-19	1-2	2/6/2020	8	130	170	308
I	DPT-41-19	5-6	2/6/2020	<6.4	<8.4	<8.4	<6.4
I	DPT-42-19	4-5	12/17/2019	<120	15,000	3,200	18,200
I	DPT-42-19	7-8	12/17/2019	140	960	210	1,310
I	SB-216	3-4	1/29/2020	<8.5	<11	<11	<8.5
I	SB-216	7-8	1/29/2020	27	360	<9.7	387
I	SB-217	3-4	1/29/2020	<8.7	<12	<12	<8.7
I	SB-217	8-9	1/29/2020	<7.7	<10	<10	<7.7

Notes:
1. All values in milligrams per kilogram (mg/kg).
2. Concentrations greater than applicable residential assessment level (RAL) are highlighted light yellow. RALs based on the lower of the Tier 2 ^{GW}Soil or Tier 1 $^{Tot}Soil_{Comb}$ PCLs (TRRP PCLs published November 2019).
3. Concentrations greater than applicable commercial/industrial (C/I) PCL are highlighted light orange. C/I PCLs based on the lower of the Tier 2 GWSoil or Tier 1 TotSoilComb PCLs (TRRP PCLs published November 2019).
4. Total TPH concentrations greater than 10,000 mg/kg (Tier 1 SoilRes PCL) in the vadose zone are highlighted blue.
5. Soil samples considered "interior", the analytical reults were compared to the C/I PCLs only under the focused on-site assessment.
6. J = Estimated value; < = Compound not detected at the specified detection limit.

TABLE 2
SUMMARY OF SOIL TPH CONCENTRATIONS BY METHOD TX1006
UPRR HOUSTON WOOD PRESERVING WORKS

Location ID	DPT-12-20	DPT-21-20	DPT-26-20	DPT-29-19	DPT-30-19	DPT-32-19	DPT-34-19	DPT-35-19	DPT-36-19	DPT-38-19	DPT-38-19	DPT-39-19	DPT-42-19	DPT-42-19
Sample Depth (ft bgs)	8-9	3-4	2-3	4-5	4-5	2-3	4-5	4-5	5-6	3-4	5-6	2-3	4-5	7-8
Sample Date	1/30/2020	1/30/2020	1/28/2020	2/5/2020	2/3/2020	2/4/2020	12/18/2019	12/19/2019	2/5/2020	12/16/2019	12/16/2019	12/17/2019	12/17/2019	12/17/2019
6 C aliphatics	<52	<26	<33	<26	<80	<110	<300	<79	<48	<62	<60	<5.0	<78	<51
>6-8 C aliphatics	<52	<26	<33	<26	<80	<110	<300	<79	<48	<62	<60	<5.0	<78	<51
>8-10 C aliphatics	<52	**53**	<33	<26	<80	<110	<300	<79	<48	**630**	**260**	<5.0	<78	<51
>10-12 C aliphatics	<52	**38 J**	<33	<26	<80	<110	<300	<79	<48	210	<60	<5.0	<78	<51
>12-16 C aliphatics	**110**	**36 J**	<33	<26	**200**	**280**	<300	**300**	**480**	<62	<60	**13**	**2,600**	**580**
>16-21 C aliphatics	**58 J**	**27 J**	<33	<26	**520**	**260**	**640**	**600**	**830**	**220**	**250**	**140**	**2,400**	**190**
>21-35 C aliphatics	**52 J**	<26	<33	**220**	**1,100**	**340**	**1,900**	**1,200**	**770**	**880**	**540**	**680**	**4,000**	**320**
Total Aliphatic Fraction	**220**	**154**	<33	**220**	**1,820**	**880**	**2,540**	**2,100**	**2,080**	**1,940**	**1,050**	**833**	**9,000**	**1,090**
>7-8 C aromatics	<52	<26	<33	<26	<80	<110	<300	<79	<48	<62	<60	<5.0	<78	<51
>8-10 C aromatics	<52	470	<33	**30 J**	<80	<110	<300	<79	<48	**490**	**120**	<5.0	<78	<51
>10-12 C aromatics	**1,100**	**440**	**76**	**420**	**150 J**	**1,200**	<300	**470**	<48	**1,400**	**390**	<5.0	<78	<51
>12-16 C aromatics	**2,000**	**710**	**1,400**	**1,100**	**590**	**2,700**	<300	**810**	**460**	**320**	**370**	**22**	**1,900**	<51
>16-21 C aromatics	**2,600**	**1,100**	**1,700**	**330**	**1,800**	**4,100**	**1,600**	**2,200**	**1,300**	**770**	**700**	**140**	**4,500**	<51
>21-35 C aromatics	**990**	**390**	**550**	**760**	**2,000**	**3,100**	**1,800**	**2,200**	**2,400**	**700**	**440**	**680**	**8,400**	**460**
Total Aromatic Fraction	**6,690**	**3,110**	**3,730**	**2,640**	**4,540**	**11,100**	**3,400**	**5,680**	**4,160**	**3,680**	**2,020**	**842**	**14,800**	**460**
Total Petroleum Hydrocarbons	**6,900**	**3,300**	**3,700**	**2,800**	**6,300**	**12,000**	**5,900**	**7,800**	**6,300**	**5,600**	**3,100**	**1,700**	**24,000**	**1,500**

Notes:

1. mg/kg - milligrams per kilogram
2. Results not offered for accreditation
3. Lab Qualifiers:
   < = analyzed but not detected above the listed Method Detection Limit (MDL)
   J = analyte detected below Sample Quantitation Limit but above the MDL

TABLE 3
SUMMARY OF TPH CATEGORIES AND TPH MIXTURE PCL EVALUATION
UPRR HOUSTON WOOD PRESERVING WORKS

Location ID	Perimter/ Interior Location	Sample Depth (ft bgs)	Sample Date	nC6 to nC12	>nC12 to nC28	>nC28 to nC35	Total Petroleum Hydrocarbon
nC6 to nC12 Category							
Tier 1 $^{Tot}Soil_{Comb}$ $PCL_{TPH\ Mix}$ (30-Acre Residential) (mg/kg)							6,287
Tier 1 $^{Tot}Soil_{Comb}$ $PCL_{TPH\ Mix}$ (30-Acre C/I) (mg/kg)							16,766
DPT-21-20	P	3-4	1/30/2020	**1300**	**2800**	**97 J**	**4200**
DPT-38-19	I	5-6	12/16/2019	**1400**	**4700**	**1700**	**7800**
DPT-38-19	I	3-4	12/16/2019	**5000**	**6400**	**3100**	**14500**
>nC12 to nC28 Organics Category							
Tier 1 $^{Tot}Soil_{Comb}$ $PCL_{TPH\ Mix}$ (30-Acre Residential) (mg/kg)							9,600
Tier 1 $^{Tot}Soil_{Comb}$ $PCL_{TPH\ Mix}$ (30-Acre C/I) (mg/kg)							60,480
DPT-21-20	P	5-6	1/30/2020	**48**	**110**	**22 J**	**180**
DPT-30-19	I	4-5	2/3/2020	**220 J**	**9300**	**3000**	**12500**
DPT-34-19	I	4-5	12/18/2019	<450	**15000**	**4500**	**19500**
DPT-34-19	I	5-6	12/18/2019	<82	**3800**	**1200**	**5000**
DPT-36-19	I	3-4	2/5/2020	**140 J**	**7100**	**1600**	**8840**
DPT-37-19	I	4-5	2/6/2020	**880 J**	**9600**	**1500**	**12000**
DPT-37-19	I	7-8	2/4/2020	**270**	**1800**	**270**	**2340**
DPT-40-19	I	1.25-2	12/18/2019	**170 J**	**6500**	**1300**	**7970**
SB-216	I	7-8	1/29/2020	**27 J**	**360**	<9.7	**387**
>nC12 to nC28 Organics with High Aromatic Content Category							
Tier 1 $^{Tot}Soil_{Comb}$ $PCL_{TPH\ Mix}$ (30-Acre Residential) (mg/kg)							7,504
Tier 1 $^{Tot}Soil_{Comb}$ $PCL_{TPH\ Mix}$ (30-Acre C/I) (mg/kg)							70,247
DPT-12-20	P	4-5	1/30/2020	**290**	**2300**	**120 J**	**2710**
DPT-12-20	P	8-9	1/30/2020	**1300**	**6500**	**270 J**	**8070**
DPT-16-20	P	4-5	1/30/2020	**270**	**860**	**28 J**	**1160**
DPT-16-20	P	14-15	1/30/2020	**1300**	**3100**	**120 J**	**4520**
DPT-26-20	P	2-3	1/28/2020	**170 J**	**3300**	**440**	**3910**
DPT-29-19	I	4-5	2/5/2020	**650**	**2600**	**970**	**4220**
DPT-29-19	I	9-10	2/5/2020	**230 J**	**1100**	**200 J**	**1530**
DPT-30-19	I	13-14	2/5/2020	**810**	**3400**	**510**	**4720**
DPT-32-19	I	2-3	2/4/2020	**1300**	**8700**	**1800**	**11800**
DPT-32-19	I	11-12	2/4/2020	**890**	**5600**	**950**	**7440**
DPT-35-19	I	4-5	12/19/2019	**900**	**13000**	**2900**	**16800**
DPT-35-19	I	6-7	12/19/2019	**200 J**	**1200**	**170 J**	**1570**
Unresolved Complex Material Category							
Tier 1 $^{Tot}Soil_{Comb}$ $PCL_{TPH\ Mix}$ (30-Acre Residential) (mg/kg)							5,797
Tier 1 $^{Tot}Soil_{Comb}$ $PCL_{TPH\ Mix}$ (30-Acre C/I) (mg/kg)							57,967
DPT-36-19	I	5-6	2/5/2020	**130 J**	**9100**	**2700**	**11900**
DPT-39-19	I	2-3	12/17/2019	<7.4	**600**	**360**	**960**
DPT-41-19	I	1-2	2/6/2020	**8.1 J**	**130**	**170**	**308**
DPT-42-19	I	4-5	12/17/2019	<120	**15000**	**3200**	**18200**
DPT-42-19	I	7-8	12/17/2019	**140 J**	**960**	**210 J**	**1310**
DPT-43-19	P	2-3	2/4/2020	**7 J**	**430**	**550**	**987**
DPT-45-19	P	1-2	2/5/2020	**8.5 J**	**170**	**250**	**428**
SB-218	I	2.25-3	12/19/2019	<6.9	**150**	**130**	**280**
SB-219	I	2-3	2/3/2020	<79	**1400**	**980**	**2380**

Notes:

1. All values in milligrams per kilogram (mg/kg).

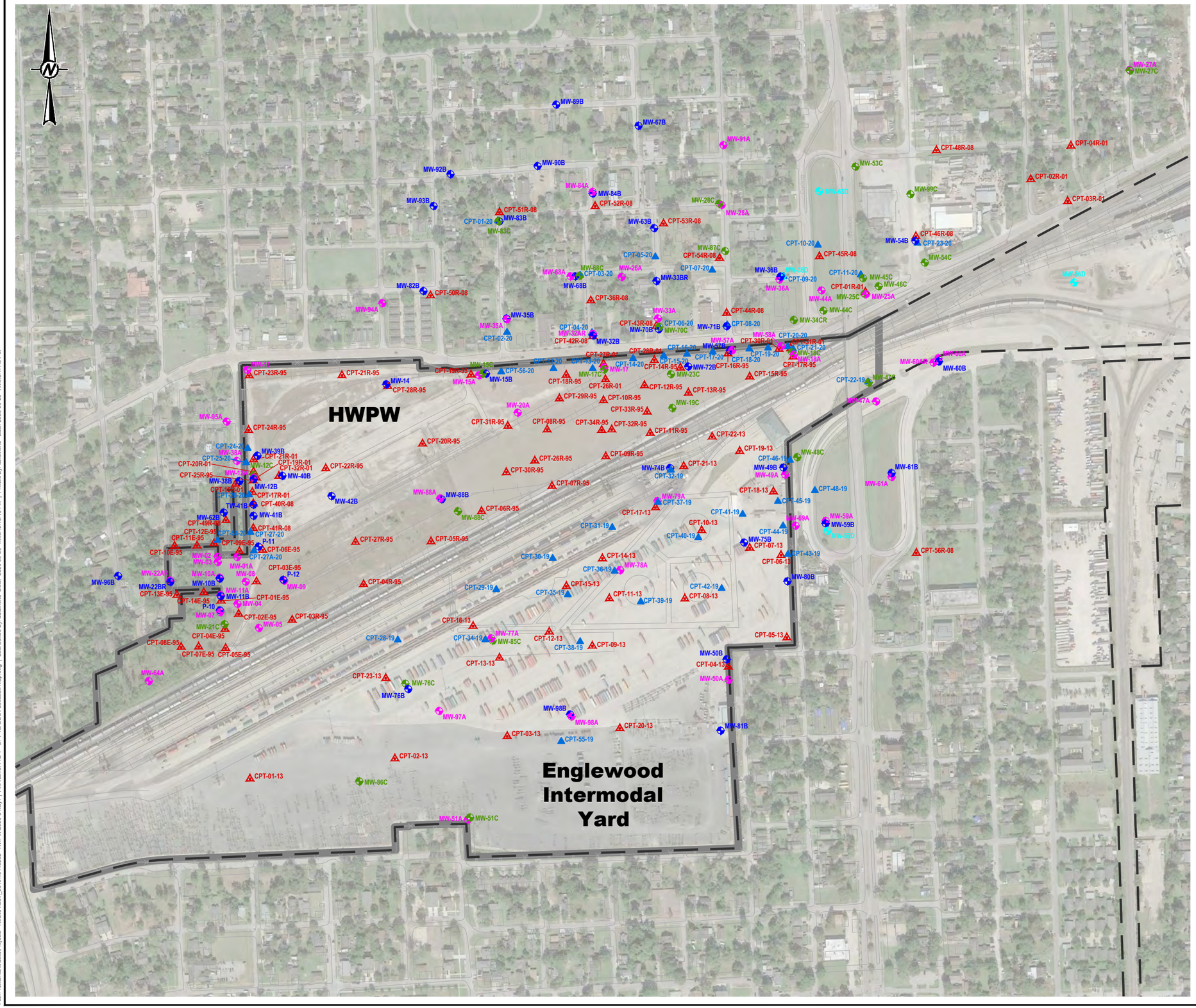
2. Concentrations greater than applicable critical PCLs are highlighted light gray (depending on location).

3. Tier 1 PCLs for Total TPH were calculated using the TCEQ TRRP Tier 1 TPH PCL Calculator (v 3.0 – 02/2020) for TCEQ Method 1006 Data for each TPH Category.

4. J = Estimated value; < = Compound not detected at the specified detection limit.

5. Soil samples considered "interior" (I), the analytical reults were compared to the C/I PCLs only, locations at the "perimter" (P) were also compared to residential PCLs.

FIGURES



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- A-TZ MONITORING WELL LOCATION
- B-CZ/B-TZ MONITORING WELL LOCATION
- C-TZ MONITORING WELL LOCATION
- D-TZ MONITORING WELL LOCATION
- CPT/ROST LOCATION (1995, 2001, 2008 & 2013)
- CPT WITH TarGOST LOCATION (2020)

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
5/29/20

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
CPT/TarGOST® LOCATION MAP

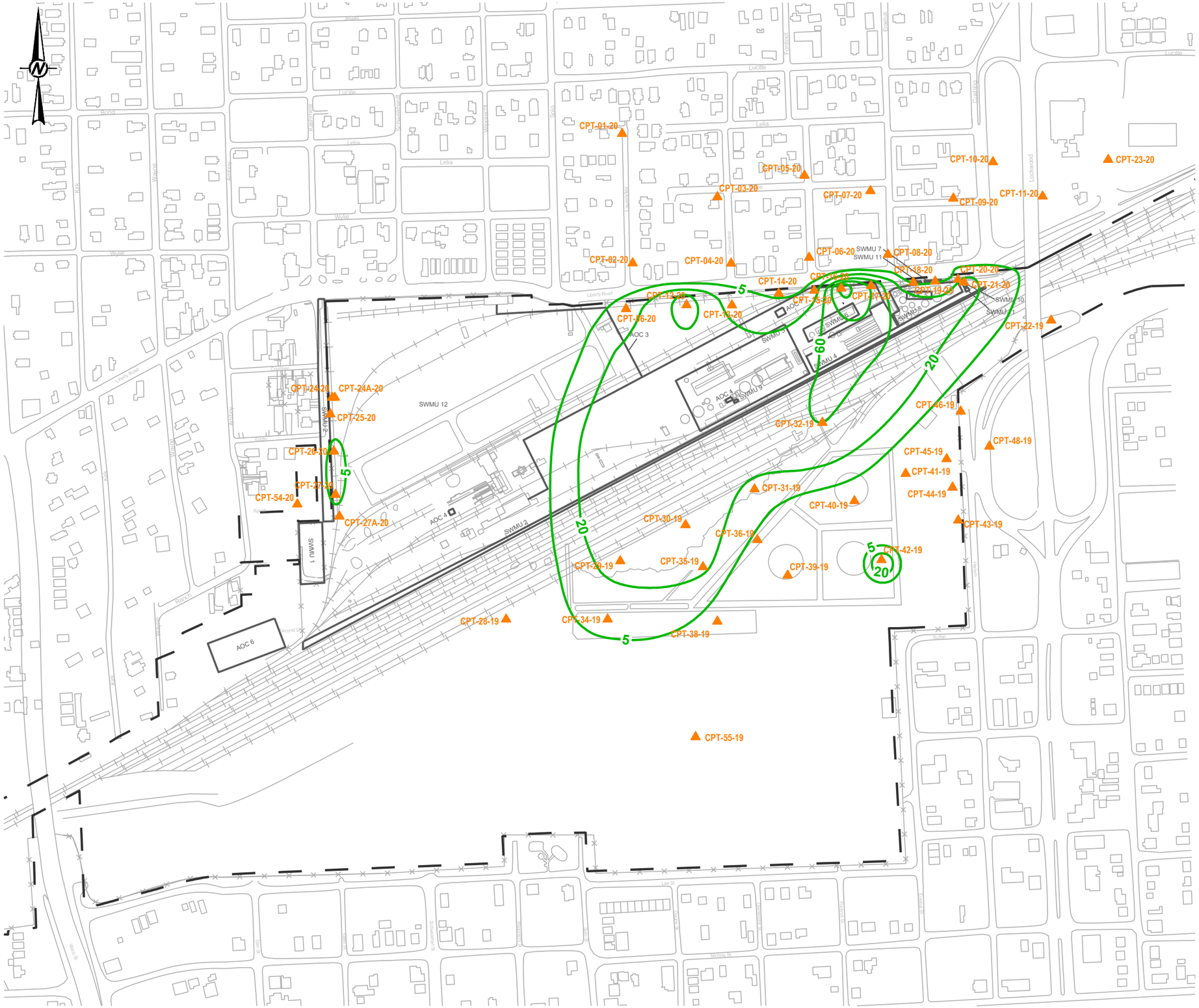
CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-05-29
DESIGNED	AJD
PREPARED	AJD/RS
REVIEWED	SB
APPROVED	ECM

PROJECT NO. 19119232 REV. 0 FIGURE 1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\Projects - Round Rock_2019\19119232 - HWPW\2020-5 May\ | File Name: FIG 1 - CPT-TarGOST Location Map.dwg | Last Edited By: adiamond Date: 2020-05-29 Time:12:13:10 PM | Printed By: adiamond Date: 2020-05-29 Time:3:47:43 PM



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- HISTORIC STRUCTURE AND FEATURE
- CPT WITH TarGOST LOCATION
- VADOSE ZONE MAXIMUM TarGOST SIGNAL (%RE) CONTOUR

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
5/29/20

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC. APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

0 170 350
1" = 350' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
TarGOST® RESPONSE DISTRIBUTION MAP - VADOSE ZONE

CONSULTANT

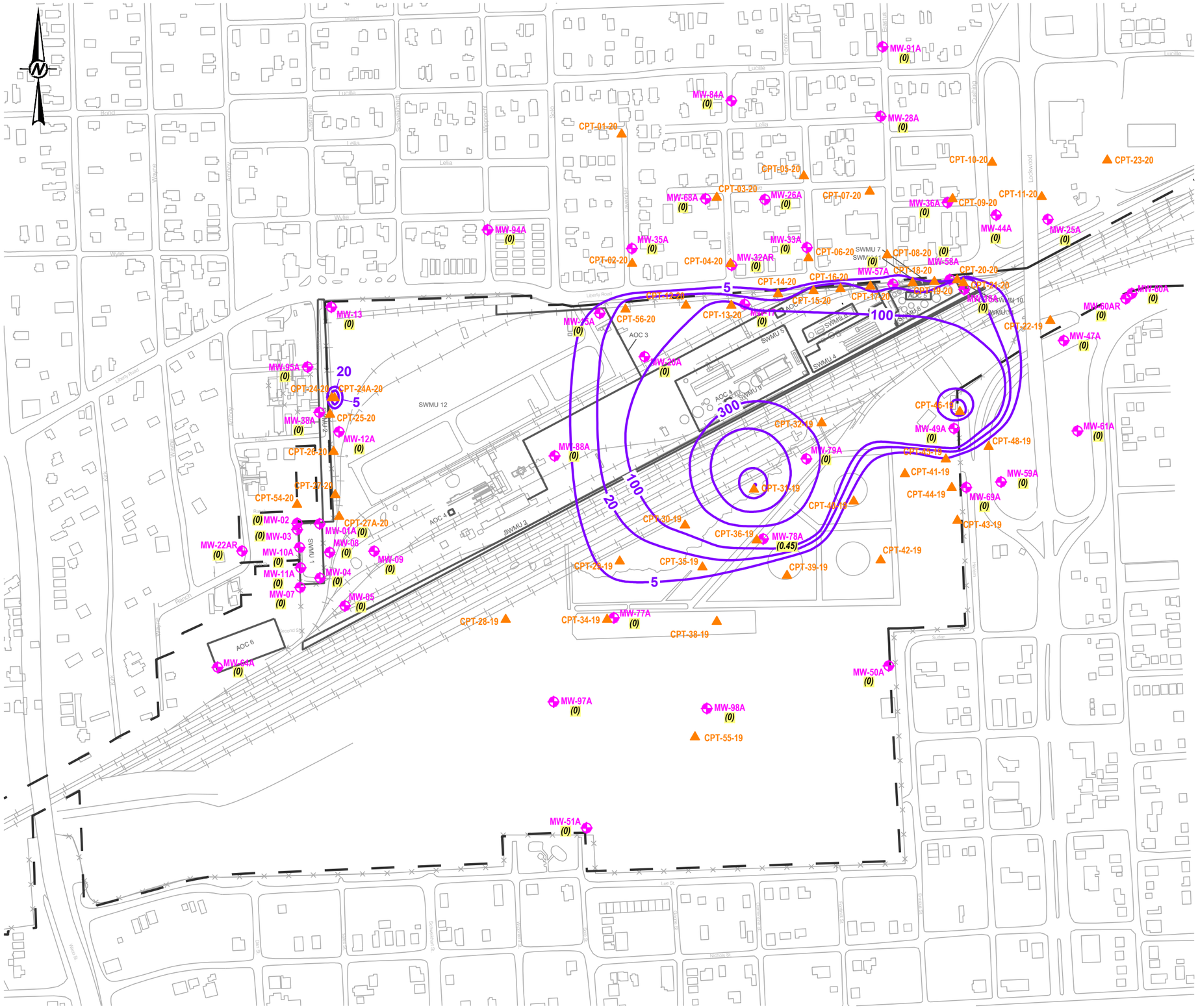
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-05-28
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\Projects - Round Rock_2019\19119232 - HWPW\2020-5 May\ | File Name: FIG 2-4 - TarGOST Response Distribution Map.dwg | Last Edited By: adiamond Date: 2020-05-29 Time:3:49:57 PM | Printed By: adiamond Date: 2020-05-29 Time:3:49:23 PM



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- HISTORIC STRUCTURE AND FEATURE
- CPT WITH TarGOST LOCATION
- A-TZ MONITORING WELL LOCATION
- A-TZ MAXIMUM TarGOST SIGNAL (%RE) CONTOUR
- (2.25) IN WELL DNAPL THICKNESS (FT) (JANUARY 2020)

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
5/29/20

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC. APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

0 170 350
1" = 350' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
TarGOST® RESPONSE DISTRIBUTION MAP - A-TZ

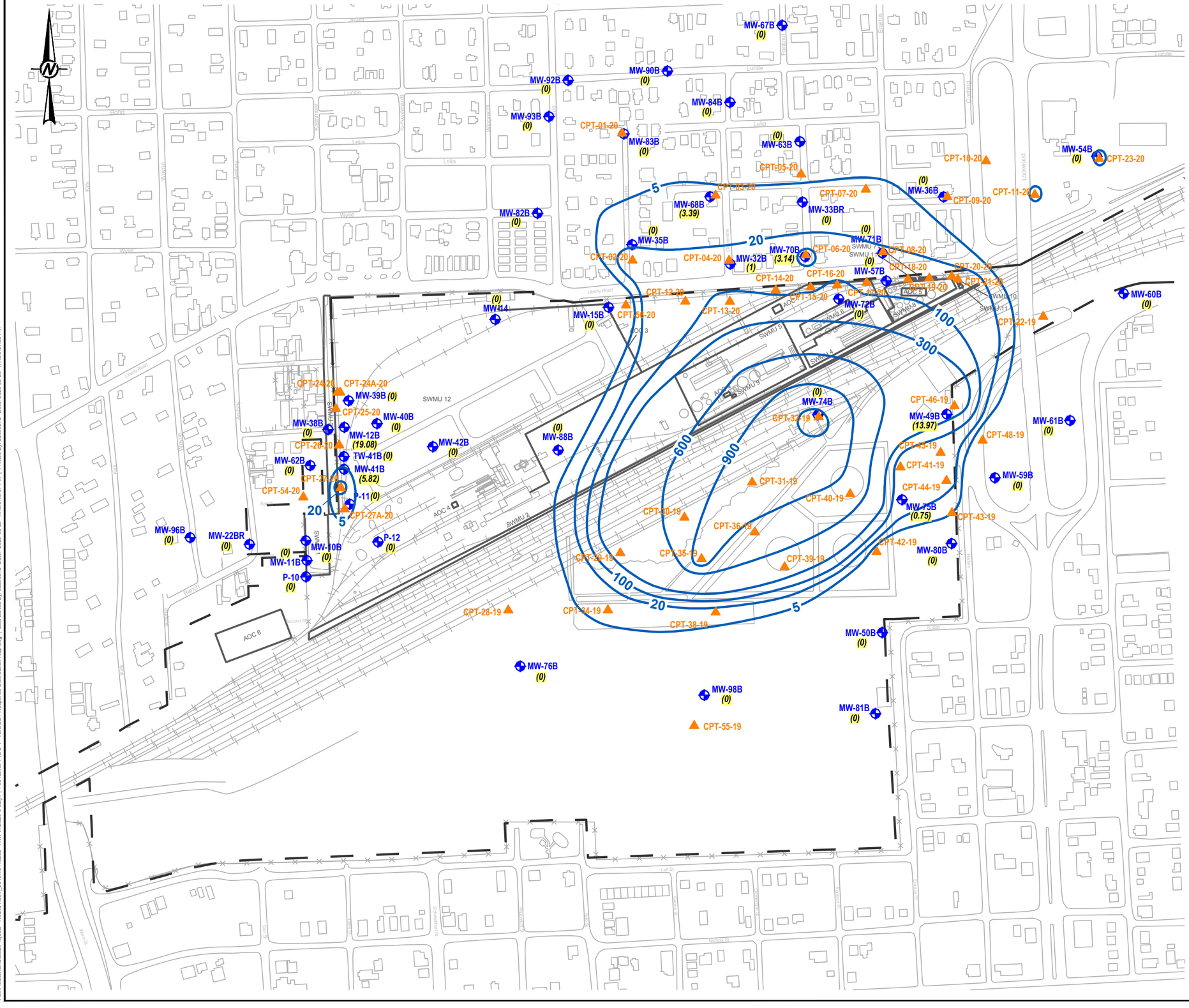
CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-05-28
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 REV. 0 FIGURE 3

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\Projects - Round Rock_2019\19119232 - HWPW\2020-5 May\ | File Name: FIG 2-4 - TarGOST Response Distribution Map.dwg | Last Edited By: adiamond Date: 2020-05-29 Time:3:49:57 PM | Printed By: adiamond Date: 2020-05-29 Time:3:50:53 PM



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- HISTORIC STRUCTURE AND FEATURE
- CPT WITH TarGOST LOCATION
- B-CZ/B-TZ MONITORING WELL LOCATION
- B-CZ/B-TZ MAXIMUM TarGOST SIGNAL (%RE) CONTOUR
- (2.25) IN WELL DNAPL THICKNESS (FT) (JANUARY 2020)

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED PROFESSIONAL GEOSCIENTIST
5/29/20

REFERENCE(S)

BASE MAP FROM ERM-SOUTHWEST, INC. APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.

0 170 350
1" = 350' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
TarGOST® RESPONSE DISTRIBUTION MAP - B-CZ/B-TZ

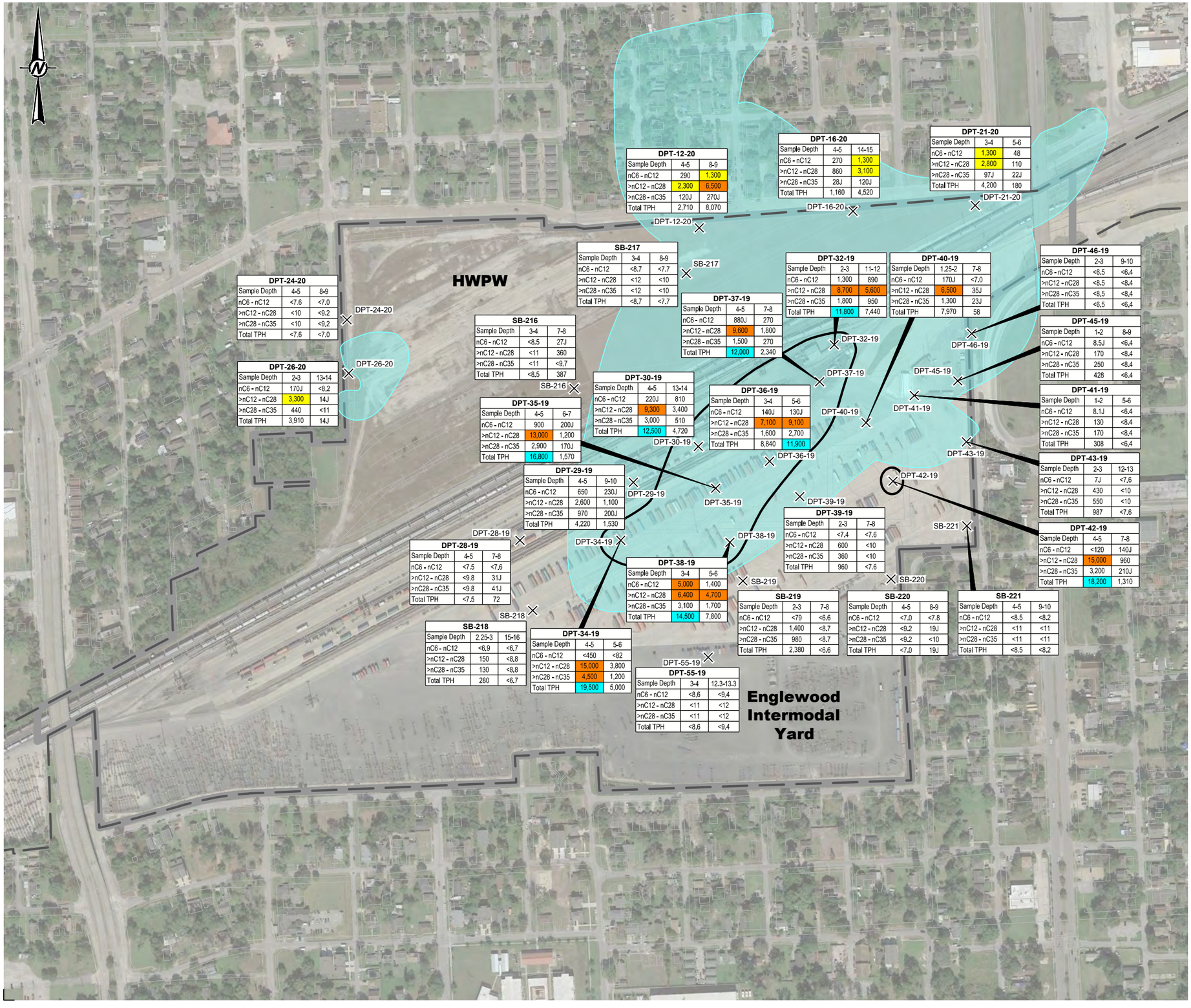
CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-05-28
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 4

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\Projects - Round Rock_2019\19119232 - HWPW\2020-5 May\ | File Name: FIG 2-4 - TarGOST Response Distribution Map.dwg | Last Edited By: ajdiamond Date: 2020-05-29 Time:3:49:57 PM | Printed By: ajdiamond Date: 2020-05-29 Time:3:51:30 PM



DPT-12-20		
Sample Depth	4-5	8-9
nC6 - nC12	290	1,300
>nC12 - nC28	2,300	6,500
>nC28 - nC35	120J	270J
Total TPH	2,710	8,070

DPT-16-20		
Sample Depth	4-5	14-15
nC6 - nC12	270	1,300
>nC12 - nC28	860	3,100
>nC28 - nC35	28J	120J
Total TPH	1,160	4,520

DPT-21-20		
Sample Depth	3-4	5-6
nC6 - nC12	1,300	48
>nC12 - nC28	2,800	110
>nC28 - nC35	97J	22J
Total TPH	4,200	180

SB-217		
Sample Depth	3-4	8-9
nC6 - nC12	<8,7	<7,7
>nC12 - nC28	<12	<10
>nC28 - nC35	<12	<10
Total TPH	<8,7	<7,7

DPT-32-19		
Sample Depth	2-3	11-12
nC6 - nC12	1,300	890
>nC12 - nC28	8,700	5,600
>nC28 - nC35	1,800	950
Total TPH	11,800	7,440

DPT-40-19		
Sample Depth	1,25-2	7-8
nC6 - nC12	170J	<7,0
>nC12 - nC28	6,500	35J
>nC28 - nC35	1,300	23J
Total TPH	7,970	58

DPT-46-19		
Sample Depth	2-3	9-10
nC6 - nC12	<6,5	<6,4
>nC12 - nC28	<8,5	<8,4
>nC28 - nC35	<8,5	<8,4
Total TPH	<6,5	<6,4

DPT-24-20		
Sample Depth	4-5	8-9
nC6 - nC12	<7,6	<7,0
>nC12 - nC28	<10	<9,2
>nC28 - nC35	<10	<9,2
Total TPH	<7,6	<7,0

DPT-37-19		
Sample Depth	4-5	7-8
nC6 - nC12	880J	270
>nC12 - nC28	9,600	1,800
>nC28 - nC35	1,500	270
Total TPH	12,000	2,340

DPT-45-19		
Sample Depth	1-2	8-9
nC6 - nC12	8.5J	<6,4
>nC12 - nC28	170	<8,4
>nC28 - nC35	250	<8,4
Total TPH	428	<6,4

SB-216		
Sample Depth	3-4	7-8
nC6 - nC12	<8,5	27J
>nC12 - nC28	<11	360
>nC28 - nC35	<11	<9,7
Total TPH	<8,5	387

DPT-26-20		
Sample Depth	2-3	13-14
nC6 - nC12	170J	<8,2
>nC12 - nC28	3,300	14J
>nC28 - nC35	440	<11
Total TPH	3,910	14J

DPT-30-19		
Sample Depth	4-5	13-14
nC6 - nC12	220J	810
>nC12 - nC28	9,300	3,400
>nC28 - nC35	3,000	510
Total TPH	12,500	4,720

DPT-36-19		
Sample Depth	3-4	5-6
nC6 - nC12	140J	130J
>nC12 - nC28	7,100	9,100
>nC28 - nC35	1,600	2,700
Total TPH	8,840	11,900

DPT-41-19		
Sample Depth	1-2	5-6
nC6 - nC12	8.1J	<6,4
>nC12 - nC28	130	<8,4
>nC28 - nC35	170	<8,4
Total TPH	308	<6,4

DPT-35-19		
Sample Depth	4-5	6-7
nC6 - nC12	900	200J
>nC12 - nC28	13,000	1,200
>nC28 - nC35	2,900	170J
Total TPH	16,800	1,570

DPT-43-19		
Sample Depth	2-3	12-13
nC6 - nC12	7J	<7,6
>nC12 - nC28	430	<10
>nC28 - nC35	550	<10
Total TPH	987	<7,6

DPT-29-19		
Sample Depth	4-5	9-10
nC6 - nC12	650	230J
>nC12 - nC28	2,600	1,100
>nC28 - nC35	970	200J
Total TPH	4,220	1,530

DPT-39-19		
Sample Depth	2-3	7-8
nC6 - nC12	<7,4	<7,6
>nC12 - nC28	600	<10
>nC28 - nC35	360	<10
Total TPH	960	<7.6

DPT-42-19		
Sample Depth	4-5	7-8
nC6 - nC12	<120	140J
>nC12 - nC28	15,000	960
>nC28 - nC35	3,200	210J
Total TPH	18,200	1,310

DPT-28-19		
Sample Depth	4-5	7-8
nC6 - nC12	<7.5	<7,6
>nC12 - nC28	<9,8	31J
>nC28 - nC35	<9,8	41J
Total TPH	<7,5	72

DPT-38-19		
Sample Depth	3-4	5-6
nC6 - nC12	5,000	1,400
>nC12 - nC28	6,400	4,700
>nC28 - nC35	3,100	1,700
Total TPH	14,500	7,800

SB-219		
Sample Depth	2-3	7-8
nC6 - nC12	<79	<6,6
>nC12 - nC28	1,400	<8,7
>nC28 - nC35	980	<8,7
Total TPH	2,380	<6,6

SB-220		
Sample Depth	4-5	8-9
nC6 - nC12	<7,0	<7,8
>nC12 - nC28	<9,2	19J
>nC28 - nC35	<9,2	<10
Total TPH	<7,0	19J

SB-221		
Sample Depth	4-5	9-10
nC6 - nC12	<8.5	<8.2
>nC12 - nC28	<11	<11
>nC28 - nC35	<11	<11
Total TPH	<8.5	<8.2

SB-218		
Sample Depth	2,25-3	15-16
nC6 - nC12	<6,9	<6,7
>nC12 - nC28	150	<8,8
>nC28 - nC35	130	<8,8
Total TPH	280	<6,7

DPT-34-19		
Sample Depth	4-5	5-6
nC6 - nC12	<450	<82
>nC12 - nC28	15,000	3,800
>nC28 - nC35	4,500	1,200
Total TPH	19,500	5,000

DPT-55-19		
Sample Depth	3-4	12,3-13,3
nC6 - nC12	<8,6	<9,4
>nC12 - nC28	<11	<12
>nC28 - nC35	<11	<12
Total TPH	<8,6	<9,4

LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- TPH (TX1005) SOIL SAMPLE LOCATION (2019-2020)
- GROUNDWATER PCLE ZONES (A-TZ, B-CZ/B-TZ & C-TZ - JANUARY 2020)
- TOTAL TPH THEORETICAL RESIDUAL SOIL SATURATION LIMIT (10,000 mg/kg)

NOTE(S)

1. SAMPLE INTERVAL IN FEET BELOW GROUND SURFACE (BGS).
2. CONCENTRATIONS GREATER THAN APPLICABLE RESIDENTIAL ASSESSMENT LEVEL (RAL) ARE HIGHLIGHTED YELLOW. RALs BASED ON THE LOWER OF THE TIER 2 ^{GW}SOIL OR TIER 1 $^{Tot}SOIL_{comb}$ PCLs.
3. CONCENTRATIONS GREATER THAN APPLICABLE COMMERCIAL/INDUSTRIAL (C/I) PCL ARE HIGHLIGHTED ORANGE. C/I PCLs BASED ON THE LOWER OF THE TIER 2 ^{GW}SOIL OR TIER 1 $^{Tot}SOIL_{comb}$ PCLs.
4. PURSUANT TO 30 TAC §350.51(c), CONCENTRATIONS ALONG THE PERIMETER OF THE SITE ARE COMPARED TO RESIDENTIAL PCLs AND CONCENTRATIONS ON THE INTERIOR OF THE SITE ARE COMPARED TO COMMERCIAL/INDUSTRIAL PCLs.
5. TOTAL TPH CONCENTRATIONS GREATER THAN 10,000 mg/kg (TIER 1 $SOIL_{Res}$ PCL) ARE HIGHLIGHTED BLUE.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
5/29/20

0 175 350
1" = 350' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
TOTAL PETROLEUM HYDROCARBON (TX1005) CONCENTRATIONS IN SOILS

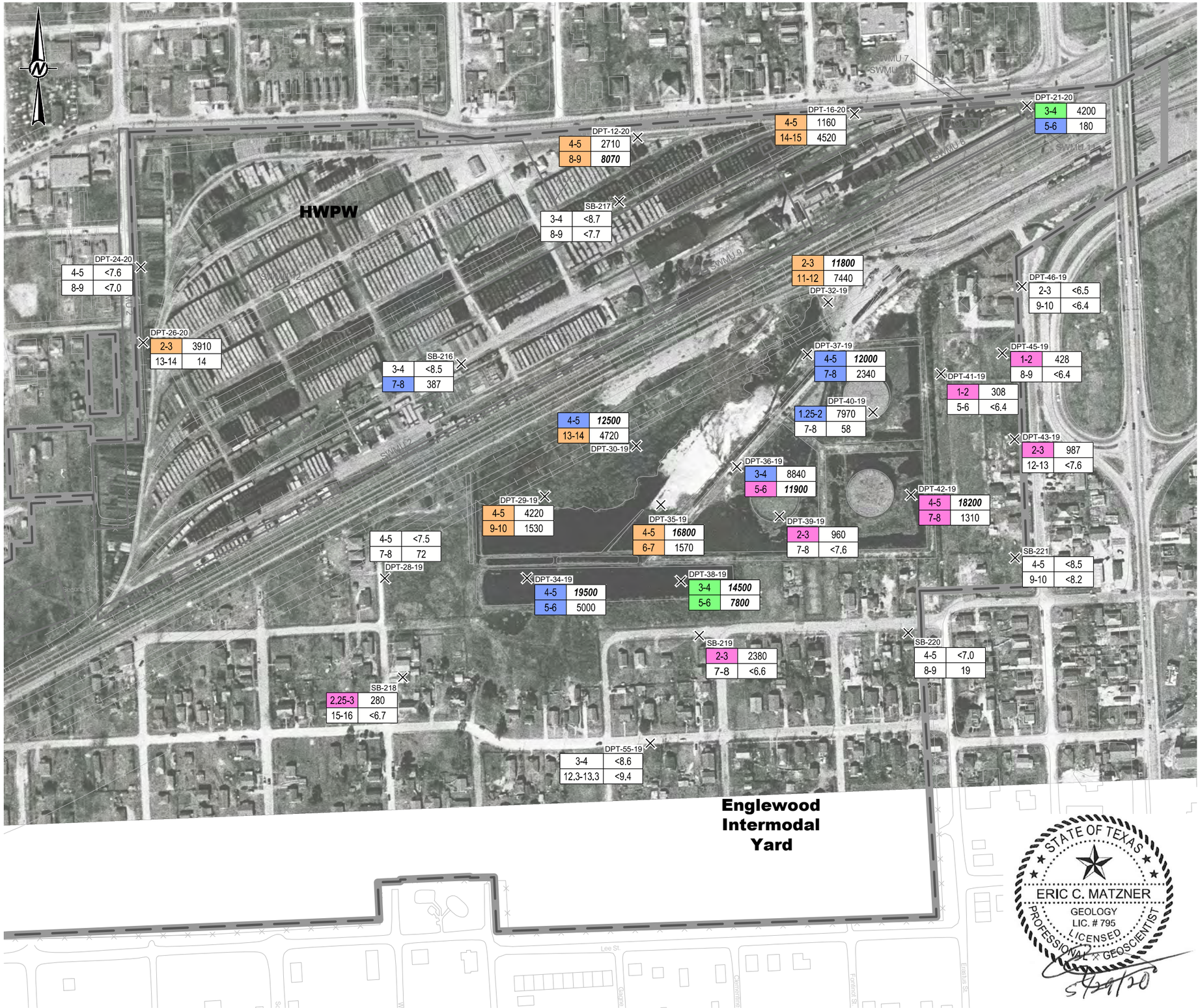
CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-05-28
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE 5

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\awarkana\data\Projects - Round Rock\ 20\19119232 - HWPW\2020-5 Mxd\ | File Name: FIG 5 - TPH Concentrations in Soils.dwg | Last Edited By: adiamond Date: 2020-05-29 Time:11:58:48 AM | Printed By: adiamond Date: 2020-05-29 Time:11:59:15 AM



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- HISTORIC STRUCTURE AND FEATURE
- TPH SOIL SAMPLE LOCATION (2019-2020)

Category	Tier 1 $^{Tot}Soil_{Comb}$ $PCL_{TPH\ Max}$ (30-Acre Residential) (mg/kg)	Tier 1 $^{Tot}Soil_{Comb}$ $PCL_{TPH\ Max}$ (30-Acre C/I) (mg/kg)
$_nC_6$ to $_nC_{12}$ Organics	6,287	16,766
$_{>n}C_{12}$ to $_nC_{28}$ Organics	9,600	60,480
$_{>n}C_{12}$ to $_nC_{28}$ Organics with High Aromatic Content	7,504	70,247
Unresolved Complex Material (UCM)	5,797	57,967

NOTE(S)

1. SAMPLE INTERVAL IN FEET BELOW GROUND SURFACE (BGS).
2. BOLD AND ITALICIZED RESULTS EXCEEDS APPLICABLE RESIDENTIAL PCL.

Sample Interval (BGS)	TPH Concentration (mg/kg)

REFERENCE(S)

BASE MAP FROM ERM-SOUTHEAST, INC APAR ADDENDUM, FIG 3-1, DATED JUNE 2004.
AERIAL IMAGE FROM ADAMS AERIAL SURVEY W.O. #36466, NEG. #938-18, FLYING DATE 2/12/1955.

0 125 250
1" = 250' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
TPH HYDROCARBON TYPES IN SOIL

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
5/29/20

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-05-28
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 REV. 0 FIGURE 6

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\Projects - Round Rock_2019\19119232 - HWPW\2020-5 Mxd\ | File Name: FIG 6 - TPH Hydrocarbon Types in Soils.dwg | Last Edited By: adiamond Date: 2020-05-29 Time:8:59:58 AM | Printed By: adiamond Date: 2020-05-29 Time:12:00:47 PM

ATTACHMENT A

Dakota Technologies TarGOST® Report

High Resolution Site Characterization Report – TarGOST® Investigation

Client: Golder

Project Name: Houston Wood Preserving Works

Location: Houston, TX

Prepared by:

Dakota Technologies, Inc.

2201-A 12th Street North

Fargo, ND 58102

701.237.4908

February 26, 2020

TABLE OF CONTENTS

1.0 TarGOST SYSTEM DESCRIPTION AND CALIBRATION 1

2.0 DATA PRESENTATION FORMATS..... 3

3.0 DISCUSSION AND COMMENTS..... 3

3.1 WAVEFORMS..... 4

3.2 CLUSTER DIAGRAMS 5

4.0 LIMITATIONS 12

APPENDICES

Appendix A TarGOST Logs and Clustering Diagrams
Appendix B TarGOST Reference Log
Appendix C TarGOST Guide
Appendix D Field Summary

1.0 TarGOST SYSTEM DESCRIPTION AND CALIBRATION

The Tar-specific Green Optical Screening Tool (TarGOST®) is a laser-induced fluorescence (LIF) screening tool specifically designed to detect non-aqueous phase liquid (NAPL) in the subsurface. It responds almost exclusively to heavy molecular weight NAPL/DNAPL phase contaminants including coal tars found at former manufactured gas plants (MGPs) and wood treating sites where creosote NAPL is the compound of concern. It does this by sensing the fluorescence of large polycyclic aromatic hydrocarbons (PAHs) found in heavy petroleum, MGP and creosote NAPLs. The TarGOST® is a modification of the Ultra-Violet Optical Screening Tool (UVOST®) that spun from LIF tools developed in the early 1990's under U.S. Air Force funding. The UVOST platform is a mature technology that has been applied at thousands of sites all over the world. TarGOST® has been in commercial use since 2003 and over 450 sites have been characterized using TarGOST.

The TarGOST system sends laser light through a fiber optic cable strung within probe rods on a direct push drill rig or cone penetrometer rig. The laser excitation light is directed out a sapphire window in the side of the probe. As the probe is advanced, the soil immediately adjacent to the window is exposed to the laser light. If heavy PAH containing NAPLs (i.e. bunker fuel, coal tar, creosote) are present, longer wavelength light is emitted (fluorescence). This "signal" light is transmitted through a return fiber, back to the surface to be analyzed. Responses are indicated in real-time on a graph of signal vs. depth. To aid in identifying relative quantity of the compound present, the main plot of a TarGOST log displays "color mixed" signal consisting of contributions from the scatter channel and three fluorescence channels. Scatter (Sctr), the first (blue) channel in waveform and fluorescence only (Fluor – the sum of the three fluorescence channels) graphs are separately displayed next to the main signal plot. The Fluor graph provides a view of the "true fluorescence" data without correction which is often helpful with lower concentrations of NAPL. The scatter signal by itself aids in detecting crude soil-color-like data and detection of false positives. Additionally, waveform callouts are selected and displayed to the left of the main plot to aid in NAPL or false positive identification.

Prior to conducting each log two measurements, the Reference Emitter (RE) and Background, are recorded. This is a calibration for the response of the system to a standard fluorescent material (the RE) and a measure of the cleanliness of the surfaces in the light path (e.g. fiber optics, mirror, window, filters). It is **not** a method of converting fluorescence to a known concentration but can be used to estimate concentration when carefully correlated with other lines of evidence. All down-hole measurements are subsequently normalized to a percentage of the RE response taken prior to the logging. For example, a 100% RE reading in-situ has a Signal identical to that of RE taken just prior to the log. Background (clean window) measurements are not applied to the data collected (i.e. it is not subtracted as a background) and is taken only as a general data quality measure employed by the operator to ensure there are no significant defects.

RE measurement serves two main purposes:

1) Qualitative examination of the performance of the instrument – The RE needs to be the correct shape to confirm that all four monitored wavelengths (fiber optics, filters, etc.) are intact and functioning properly.

2) Quantitative calibration of the instrument – The RE is used as a guide for the operator to achieve the proper signal intensity (obtained by adjusting laser energy). Keeping the RE waveform intensity in the proper range assures that the instrument is in the optimum range to allow a monotonic response across multiple orders of pore saturation for typical NAPL on typical soils.

RE total fluorescence ideally falls between 1,600 and 2,500pVs for TarGOST. PVs (picovolt-seconds), is a measure of waveform area, or total fluorescence. Precise RE intensity tuning by adjusting the laser excitation light to achieve an exact value is unnecessary because all reported data have been normalized by conversion to a percentage of the RE fluorescence (%RE).

Background values can range from 0 to 50 pVs. As the background increases beyond 50 pVs a change to the optics should be made to ensure the scatter correction applied to the data is effective.

RE and Background values for each boring are shown in the data summary portion of this report. Additional in-depth information about the TarGOST technology, field implementation and limitations are discussed in the TarGOST Guide included in Appendix C.

2.0 DATA PRESENTATION FORMATS

TarGOST data is presented in two formats. Signal (%RE) vs depth logs and clustering diagrams. Both formats are included in Appendix A.

Signal (%RE) vs depth logs are created in the field by the operator for immediate examination. Post-project these logs are reviewed and necessary changes in scaling or waveform callout selections are completed. Two scales have been chosen for your logs:

1) **0-100%RE**- all logs with the x-axis fixed from 0-100%RE. Note that this will cut off signals above 100%RE. This allows for closer examination of smaller signals. The fluorescence only column x-axis is also fixed at 0-20%RE again, this is for closer examination of small signals.
2) **0-Autoscaled high signal**- only logs that had signals over 100%RE will have the x-axis auto scaled to the max RE for that log.

Both sets of logs have a fixed depth scale of 0-65ft at the request of the Golder. More information on Signal vs Depth logs can be found in the TarGOST Reference Log in Appendix B. If other scales are desired, please do not hesitate to contact Dakota at 701-237-4908.

Clustering diagrams are a fast method to survey for differences in waveforms between various locations on site or even between differing response horizons within a single log. Information from all the waveforms of a single TarGOST log are plotted on a 2D surface, allowing a spatial method of grouping or identifying unique and/or dissimilar fluorescence waveforms. Additional information on clustering diagrams can be found in the discussion section of this report.

3.0 DISCUSSION AND COMMENTS

The site was split into two units divided by railroad tracks running SW to NE, the South side of the tracks or Intermodal facility and North side which included the vacant property and locations in the right of way of the neighborhood. For purposes of discussion the data set will be examined as a whole. Likewise, the data is presented as a singular group, not split into the designated North and South sites.

Careful co-sampling, examination, and analysis of soil cores are required to determine what benefit the waveforms (three-dimensional fluorescence signatures) may or may not provide toward identifying certain fluorescence materials encountered in-situ.

3.1 WAVEFORMS

There are two very closely related waveforms that dominate the data set. These waveforms believed to be associated with target NAPL because they match the waveform of a sample that was taken from an area of the site where NAPL material is seeping from the ground. Factors that may contribute to slight variations include instrumental differences, weathering, soil matrix, product mixing or co-mingling, and other NAPL composition differences. All of these can play a role in how a material ultimately fluoresces. An in-depth chemical analysis of samples taken from locations with differing waveforms may provide some answers. Below are examples of these waveforms.

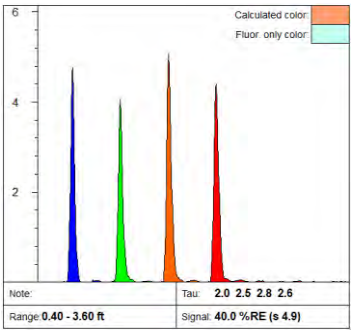


Fig 1a. Material from seep

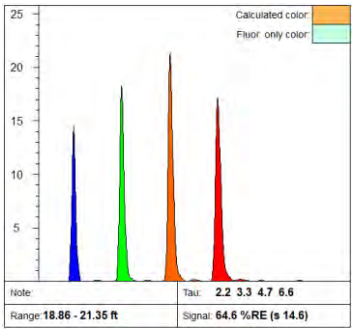


Fig 1b. NAPL waveform #1

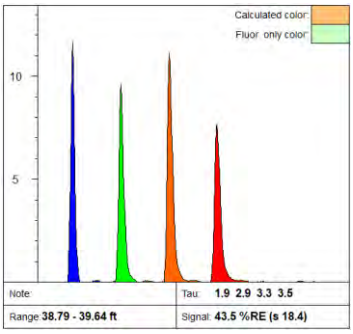
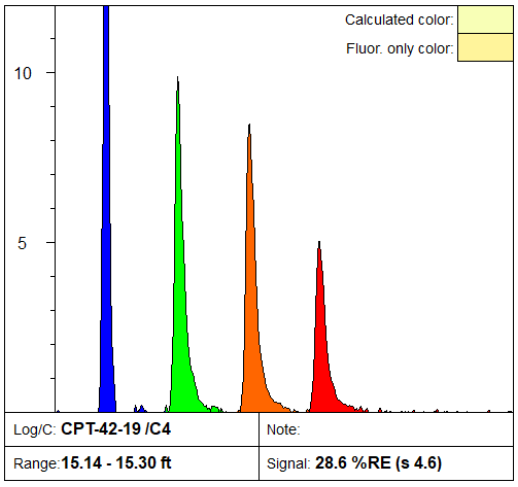
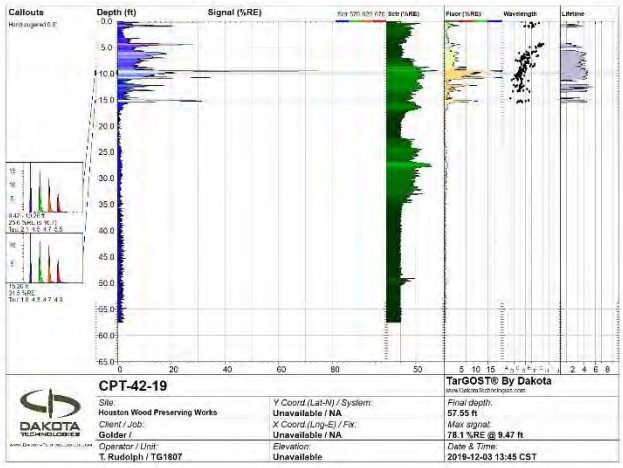


Fig 1c. NAPL waveform #2

Examination of the waveforms starts with overall shape and intensity of the three fluorescence peaks (color-coded green, orange, and red). The seep waveform in Figure 1a has a dominant orange peak with a slightly less intense red and green peaks. The calculated color of the waveform in the main plot as well as the fluorescence only colors are displayed in the upper right corner of each waveform. When reviewing logs look for these colors to indicate fluorescence that matches these waveforms. Also important in waveform examination is lifetime of the fluorescence. This is observed in the "width" of the peaks and is especially evident in the base of each peak. Wider peaks mean longer lifetimes while shorter lifetimes show up as narrow peaks. Changes in lifetimes are easily detected in cluster diagrams discussed in Section 3.2. Figure 1b shows the common NAPL waveform seen across the site we will refer to this as NAPL waveform #1. This waveform is very similar to the seep material, the minor difference is in the intensity of green and red peaks in relation to the dominate orange peak. Again, the calculated colors are displayed, and they are only slightly different than the seep waveform. In figure 1c the red peak is less intense and there is a very subtle increase in lifetime (slight widening of the base of the peaks). This waveform will be referred to as NAPL waveform #2. Often NAPL waveforms 1 and 2 are seen within the same log. This leads one to believe they are closely related – the same basic NAPL with subtle chemistry differences (origins unknown).

There are also a few examples of logs with fluorescence that doesn't appear to be the main NAPL of concern. Below is an example of one of them. Notice the differences in waveform shape from waveforms





#1 and #2.

This example is from location CPT-42-19 at 15.2ft. The waveform is most intense in the green channel with lessening intensity in the orange and red channels. The lifetime (width of the peaks) is also longer than the NAPL waveforms. Although it is not certain what this waveform represents, it is certain that it is not the same chemistry as the NAPL of concern based on the waveform analysis. This could well be a NAPL, of course, but with markedly different chemsitry (likey lighter – such as diesel). Careful sampling of locations with waveforms of unconfirmed origin like these can answer the uncertainties.

3.2 CLUSTER DIAGRAMS

Clustering diagrams are the fastest method we have found to quickly survey for differences in the waveforms between differing LIF logs or differing response horizons within a single log. These are included for each boring in Appendix A. The diagrams are broken into a 10 x 10 grid using a letter (columns) and number (rows) system. The letters from A to J represents the wavelength (x axis). The numbers 0-9 represent the lifetimes (y axis). This facilitates easy location and discussion of plotted data points. The number and letter values are also plotted on the signal vs depth logs to the far right of the main data. The numbers and letters correspond directly to grid locations on the cluster diagrams.

Cutoff Values

Every waveform of a log is represented by a colored oval on a cluster diagram. Depending on depth and rate of advancement the number of waveforms per log can number in the thousands. Many of these waveforms are of little interest because they are very small (background or clean zones of the log) and

don't rise above electronic baseline noise that "confuses" the software that breaks each waveform down into four intensities and three lifetimes. We typically implement a threshold or cutoff value which prevents data that falls below the threshold from being included in the plot and thus eliminates a lot of the scattered confusing data from interfering with the significant signals. Often this value is 5%RE or below. A value of 2%RE was chosen for this data set. The cutoff value, if implemented, is displayed at the bottom of each cluster diagram. Since all the locations were pre-cleared and backfilled the data in the pre-cleared interval is unreliable and may contains false positive fluorescence. For this reason, a cutoff corresponding to the depth of the pre-cleared interval was also implemented. Data points in the 0-10ft or 0-8ft interval were not plotted on cluster diagrams to avoid confusion. This cutoff is also displayed across the bottom of the clustering diagram. Note that all the data (including any pre-cleared interval) is displayed on the depth vs signal plots.

X-Axis: Wavelength

The "center of gravity" of the four peaks of the waveform determines the x-axis position. For example, a clean waveform dominated by the blue (laser scatter peak) plots to the left – while a waveform with dominant orange and red peaks will plot further to the right. The x-axis represents the fluorescence color (yellow on left, red on right).

Y-Axis: Lifetime

The fluorescence channel lifetimes determine the position on the y-axis of the clustering diagram. The longer the combined lifetimes, the higher on the y-axis that waveform's data point is plotted. Laser scatter (blue channel) is ignored here – because the excitation laser time profile doesn't change.

Color

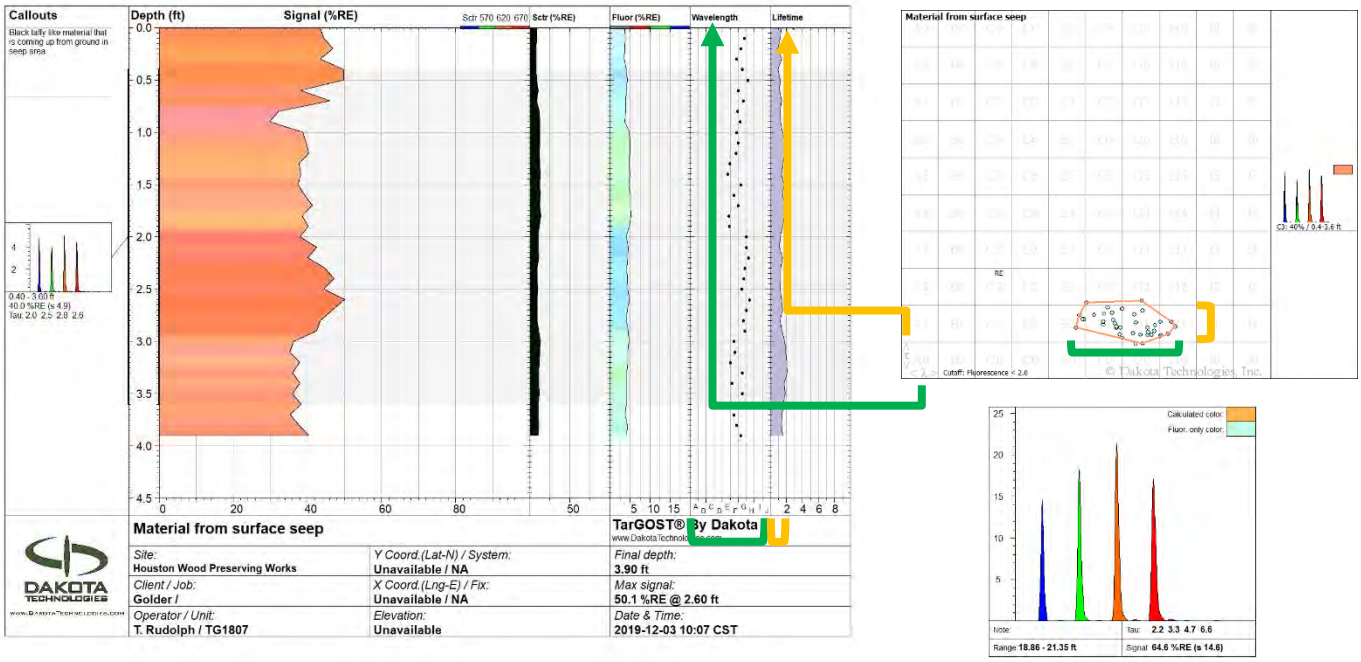
The fill colors used in the log's Fluor (%RE) only column are also used to fill the ovals that represent each waveform. This is done so that one can use the fill color to find the depth in the Fluor (%RE) only column of the TarGOST log where certain ovals originated. For instance, if the fill color of plotted ovals are pink, look for depths at which the Fluor (%RE) only column of the log that was filled with pink. This allows you to target where on the log to make further examination of the waveform to locate sampling depths or otherwise investigate your TarGOST data more fully.

Callout Indicators

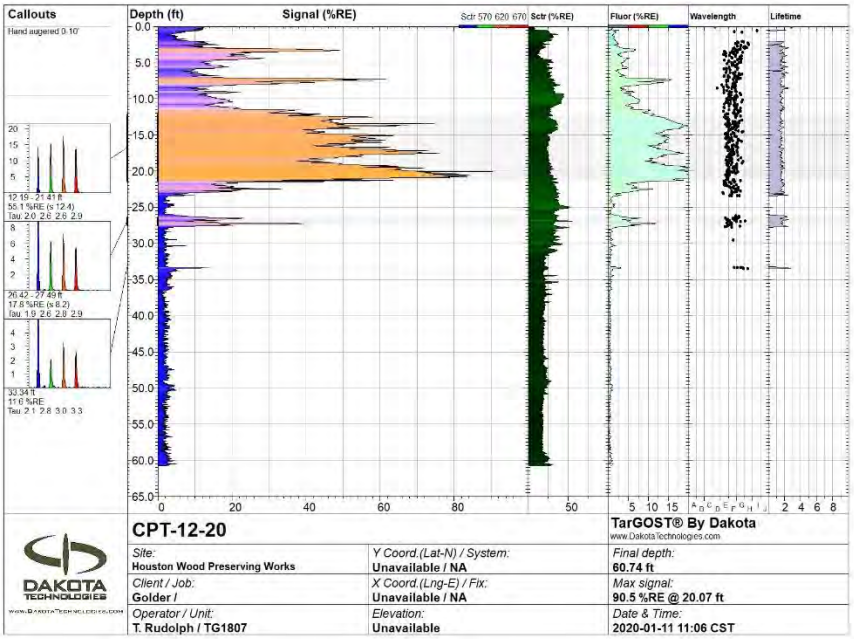
The polygons and/or circled data points on the clustering diagrams represent the data points that were selected for waveform callouts on the main log. If a depth range of the log was selected for a callout the software will draw a polygon connecting the min/max of that range for both the x axis and y axis. If a single data point was selected for a callout that data point will be circled. They will be drawn in colors

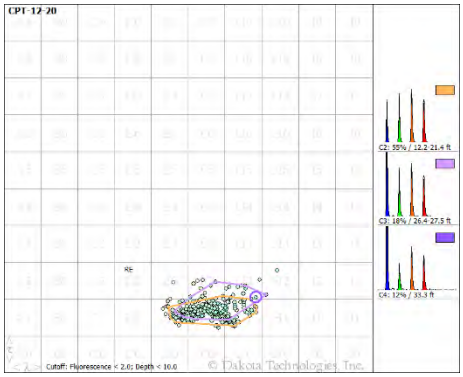
matching that of the fill color for the waveform that was called out. Additionally, the callouts are shown to the right of the diagram. The fill color of the callout is shown along with the depth interval it represents.

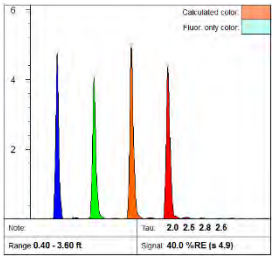
The waveforms discussed in Section 3.1 will likely plot in different areas on the cluster plot due to the slight differences in waveform channel strengths and lifetimes. Below is an example of each waveform discussed, a cluster diagram and the corresponding log.



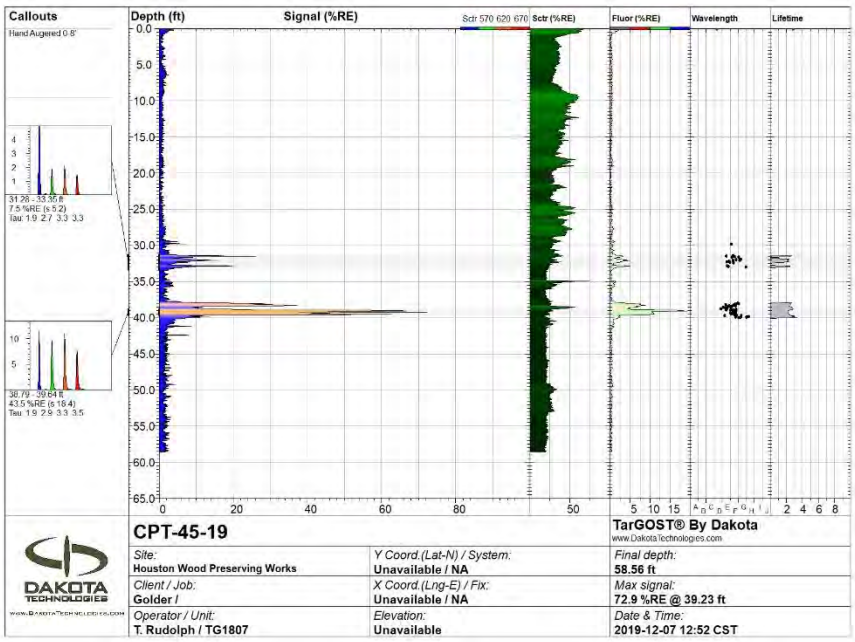
This example from the seep material shows the log (left) cluster diagram (top right) and waveform (bottom right). Notice how the points on the cluster diagram are concentrated mainly into one area E1,F1,G1. In the wavelength column of the log these data points are plotted within the E,F,G columns and the 1 column the lifetime column.

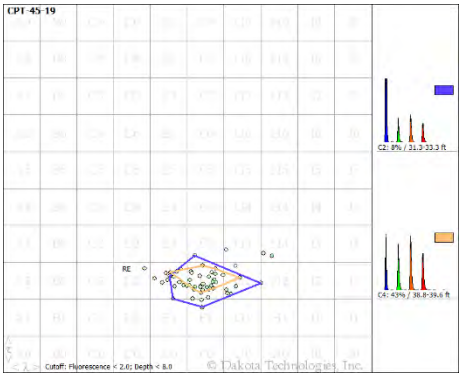


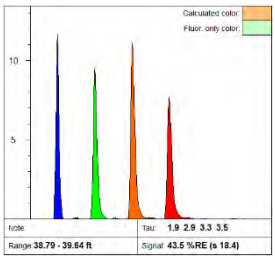




CPT-12-20 is an example of NAPL waveform #1. Again, the cluster plot is showing the majority of data points are falling in the E1,F1,G1 locations. This is consistent with material from the seep. Some logs that exhibit this waveform are: CPT-30-19, CPT-35-19, CPT-36-19, CPT-24A-20



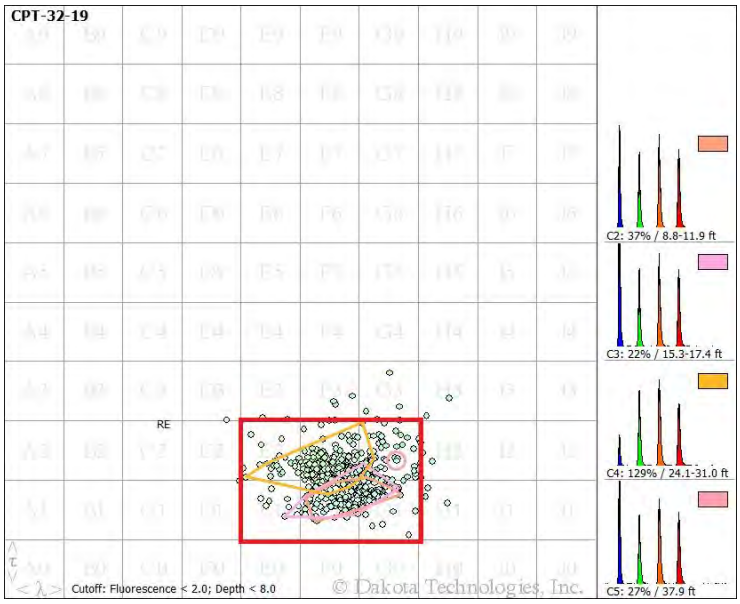




CPT-45-19 is an example of NAPL waveform #2. By only examining the signal vs depth log it appears the signal may be consistent with the previous examples, but the cluster diagram highlights the subtle difference, with waveforms clustering in the E2,F2,G2 location. This is a shift up due to a slight increase in lifetime. Waveform's fluorescence color is similar (the wavelength axis location hasn't changed from the E,F,G columns) but lifetime has increased which moves them from the 1 row up to the 2 row. As stated previously the reason for this modest but noticeable shift is not known. Other logs with this waveform include: CPT-39-19, CPT-40a-19, CPT-46-19, CPT-27-20.

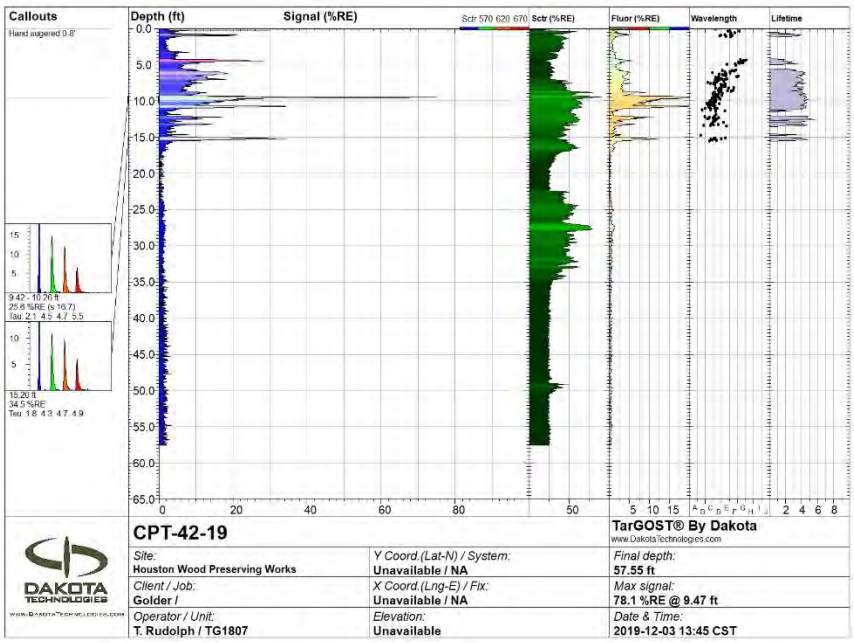
There are several logs in which both NAPL waveforms are present. Examples of those are: CPT-29-19, CPT-30-19, CPT-32-19.

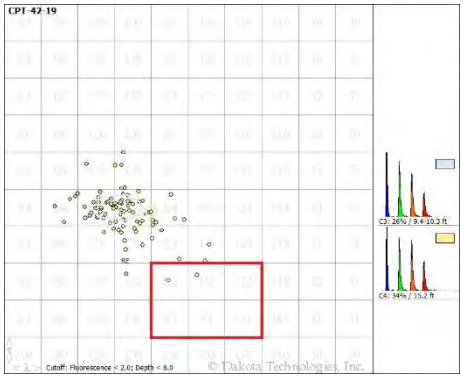
Through the examination of waveforms and clustering diagrams some trends can emerge, and reasonable conclusions can be made. For this data set the common NAPL waveforms plot in the same general areas on the cluster plots – E1,E2,G1,G2,F1,F2.

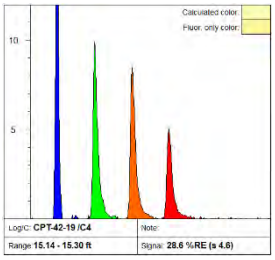


In this example from CPT-32-19 a red box was drawn to highlight the area the data points plot for the 2 NAPL waveforms. While reviewing the logs, focusing on this area in the clustering diagram can aid immensely in identifying potential NAPL.

The final example is from CPT-42-19. For reference, the previously discussed red box is left in place to mark the target NAPL waveform's clustering area.







The fluorescence in this log is clearly different and therefore it is not plotting in the area where the target NAPL waveforms generally fall, but instead is plotting further to the left and higher on the diagram. This indicates a "blue-shift" to the left in the waveform as well as an increase in the average lifetime. The waveform example demonstrates this, with the green channel dominating and the width of the peaks broadening due to a longer fluorescence lifetime. This is obviously not the target NAPL of waveform #1 or #2. Other logs that contain this relatively uncommon waveform are: CPT-17-20 @ 14.5' (callout 2), CPT-21-20 @41' (callout 4).

A few points to consider while interpreting this projects TarGOST logs include:

- All the locations were pre-cleared and backfilled with clean sand. Data collected in that interval is considered unreliable. For that reason, signals and waveforms in that interval aren't discussed in this report.
- CPT data was collecting in conjunction with the TarGOST data. Dakota has limited experience interpreting CPT data and therefore it is not addressed here.
- Sampling was not conducted in conjunction with the TarGOST while Dakota was onsite. If validation sampling is conducted it is important to consider site soil heterogeneity. We have found that often soil structures differ within several feet if not inches. For this reason, it is recommended that while logging with TarGOST an occasional duplicate boring is advanced within a few feet of an original boring. These duplicates give some indication of site heterogeneity and help with interpretation of the data. Although no direct duplicate borings were advanced, several offsets were in areas where target depths were not achieved. To some extent these may be used in the same manner to indicate heterogeneity.

4.0 LIMITATIONS

The analysis and opinions expressed in this report are based upon TarGOST data from the indicated locations and from other information discussed in this report. Exceptions, if any, are discussed in the accompanying comments section of this report. This report is prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted practices. Reported results shall not be reproduced, except in full, without written approval of Dakota. No warranties, expressed or implied are intended or made.

Additionally, the following are known limitations of the TarGOST technology and should be carefully considered while evaluating TarGOST data:

- TarGOST specifically targets the PAHs found in NAPLs such as bunker fuel, former MGP and creosote NAPLs and DNAPLs. There are most certainly other fluorescent molecular structures beside PAHs that contribute in some minor fashion, but the PAHs dominate fluorescence in most NAPLs
- TarGOST can/does detect moderate staining and residual levels of NAPL as well as free phase
- TarGOST is completely "blind" to aqueous (dissolved phase) PAHs with the exception of water near some acid tars
- TarGOST is **not** able to reliably detect "dry" PAHs (dry in the organic solvent sense) that are sorbed to soot, wood chips, and ash. They can generate a small signal, but it is often weak and not easily teased out of the background. Many times, we're left wondering whether a small signal is caused by very high

concentrations of “dry” PAHs on purifier chips or ash/soot or very low (100s of ppm) residual NAPL levels.

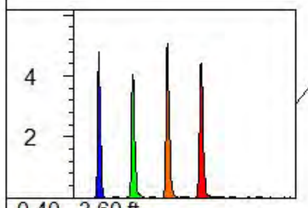
- TarGOST’s typical lab-determined LOD for NAPL on site soil is 100-500 ppm (weight of NAPL/weight of soil matrix). The more intensely the NAPL fluoresces, the lower the LOD. Note that this is not the same as weight of Total PAHs /weight of soil matrix (since not all of a NAPL’s mass is due to PAHs).
- TarGOST does, on occasion, respond to mineral or organic matter enough to be a nuisance – even blinding in rare cases. False positives include crushed limestone gravel fill, buried rotting wood/brush debris (the result of major flooding on a gravelly river), seashells (shell hash), sawdust, quick lime, and some “mystery” solids/soils that were not identifiable upon sampling.
- TarGOST has been observed to significantly respond to peat material, but most peats fluoresce weakly – often there is NAPL in the peat so it’s difficult to know for sure whether it’s been the peat or NAPL staining that’s causing the fluorescence.
- TarGOST does not respond to typical lighter end fuels like gasoline or kerosene (diesel is detected however) – unless they contain MGP waste or creosote that they are co-mingled in them.
- TarGOST calibration/setup isn’t identical unit to unit or time after time, so the response for an identical NAPL can vary with optical platform and from lab to field. However, once set up on site, the response remains stable over time and from log-to-log.
- NAPLs can vary greatly in their fluorescence response – even NAPLs found on the same site from the same source. For instance, as NAPL travels it can often leave the “stickier” molecules behind, refining itself along the journey, so the waveform often shifts as the NAPL movies further and further from the original release site.

Appendix A

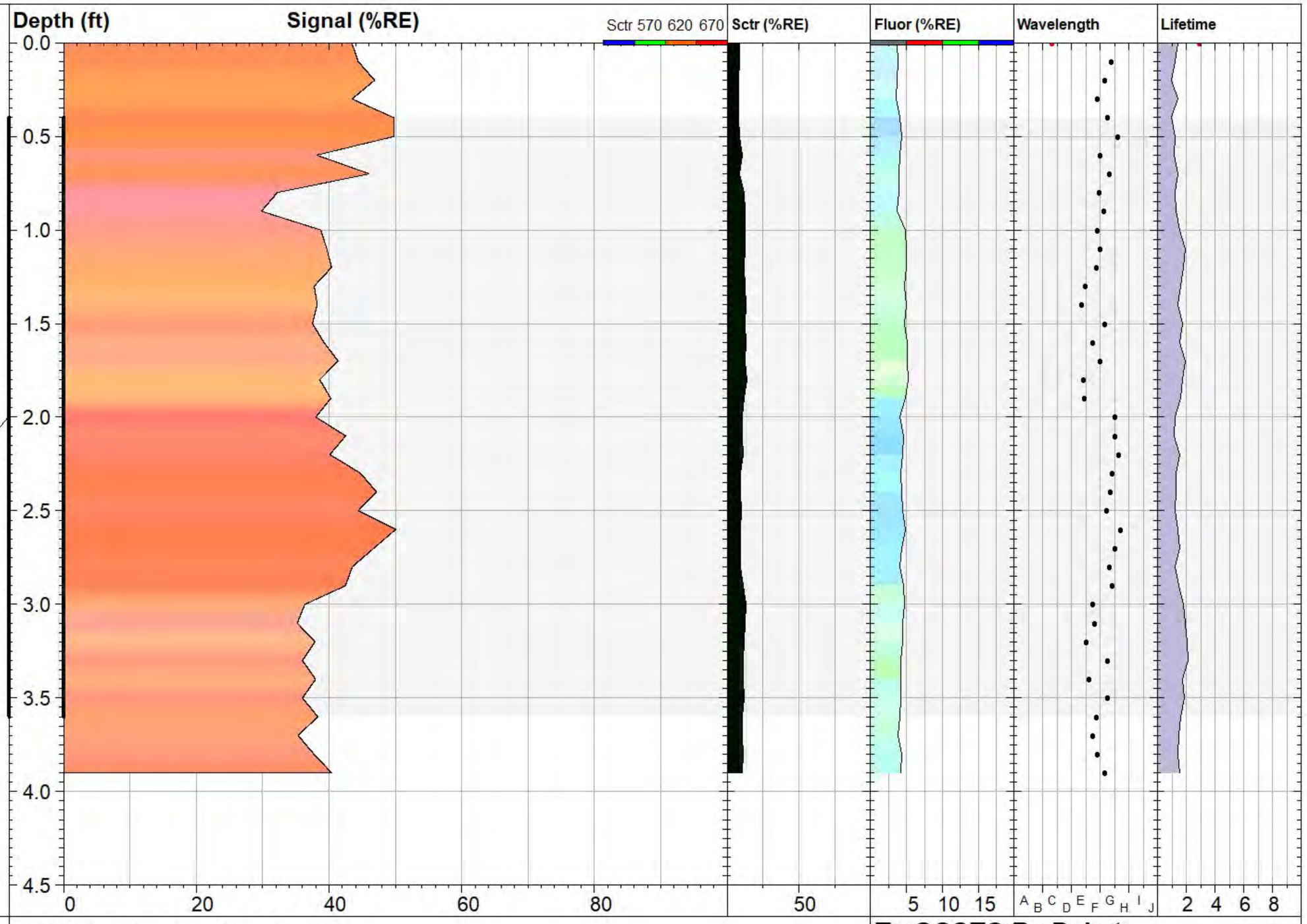
TarGOST Logs and Clustering Diagrams

Callouts

Black taffy-like material that is coming up from ground in seep area.



0.40 - 3.60 ft
40.0 %RE (s 4.9)
Tau: 2.0 2.5 2.8 2.6



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Material from surface seep

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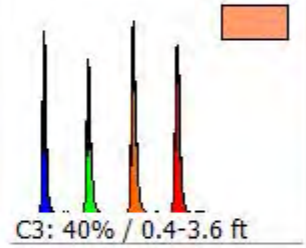
Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **3.90 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **50.1 %RE @ 2.60 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2019-12-03 10:07 CST**

Material from surface seep



RE

Cutoff: Fluorescence < 2.0

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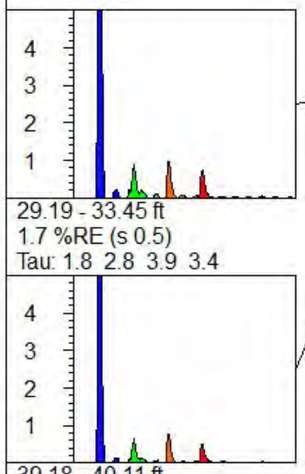
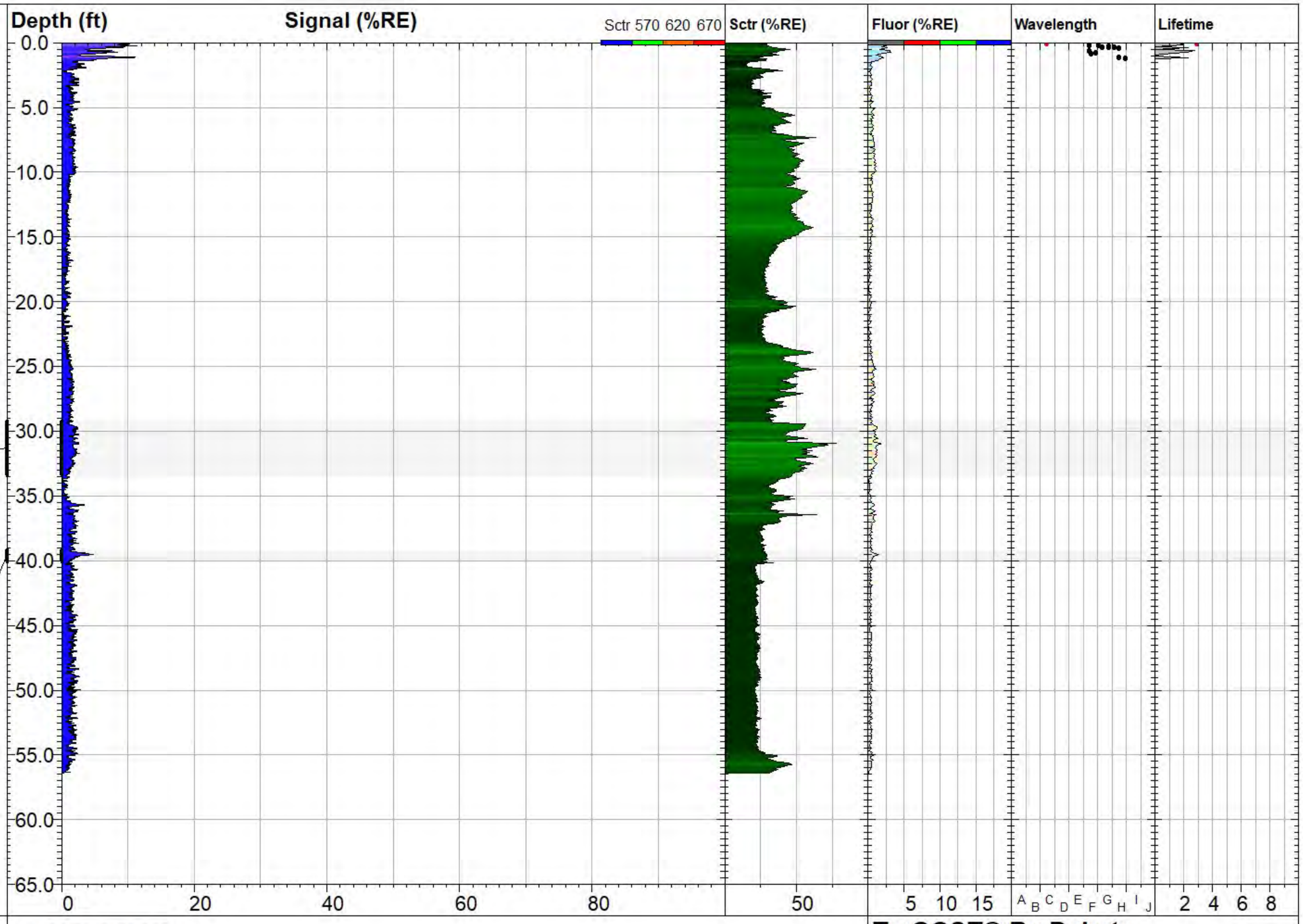
Callouts

Hand Augered to 10'.





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CPT-01-20

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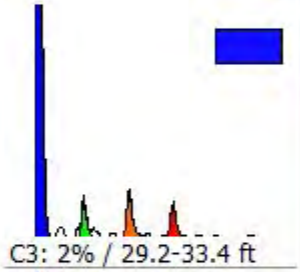
Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **56.40 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **11.6 %RE @ 0.25 ft**
Operator / Unit: **D. Thompson / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2020-01-22 10:29 CST**

CPT-01-20

RE



Cutoff: Fluorescence < 2.0; Depth < 10.0

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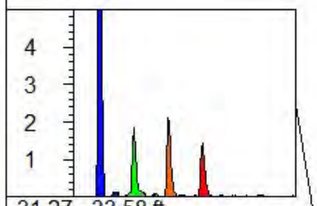
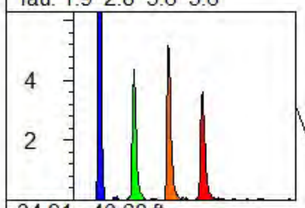
Callouts

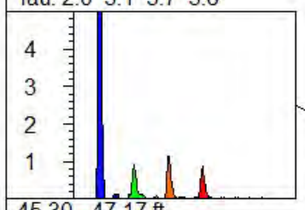
Hand Augered to 10'.



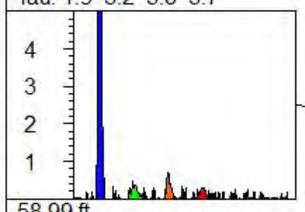
31.27 - 33.58 ft
4.6 %RE (s 5.3)
Tau: 1.9 2.8 3.6 3.6



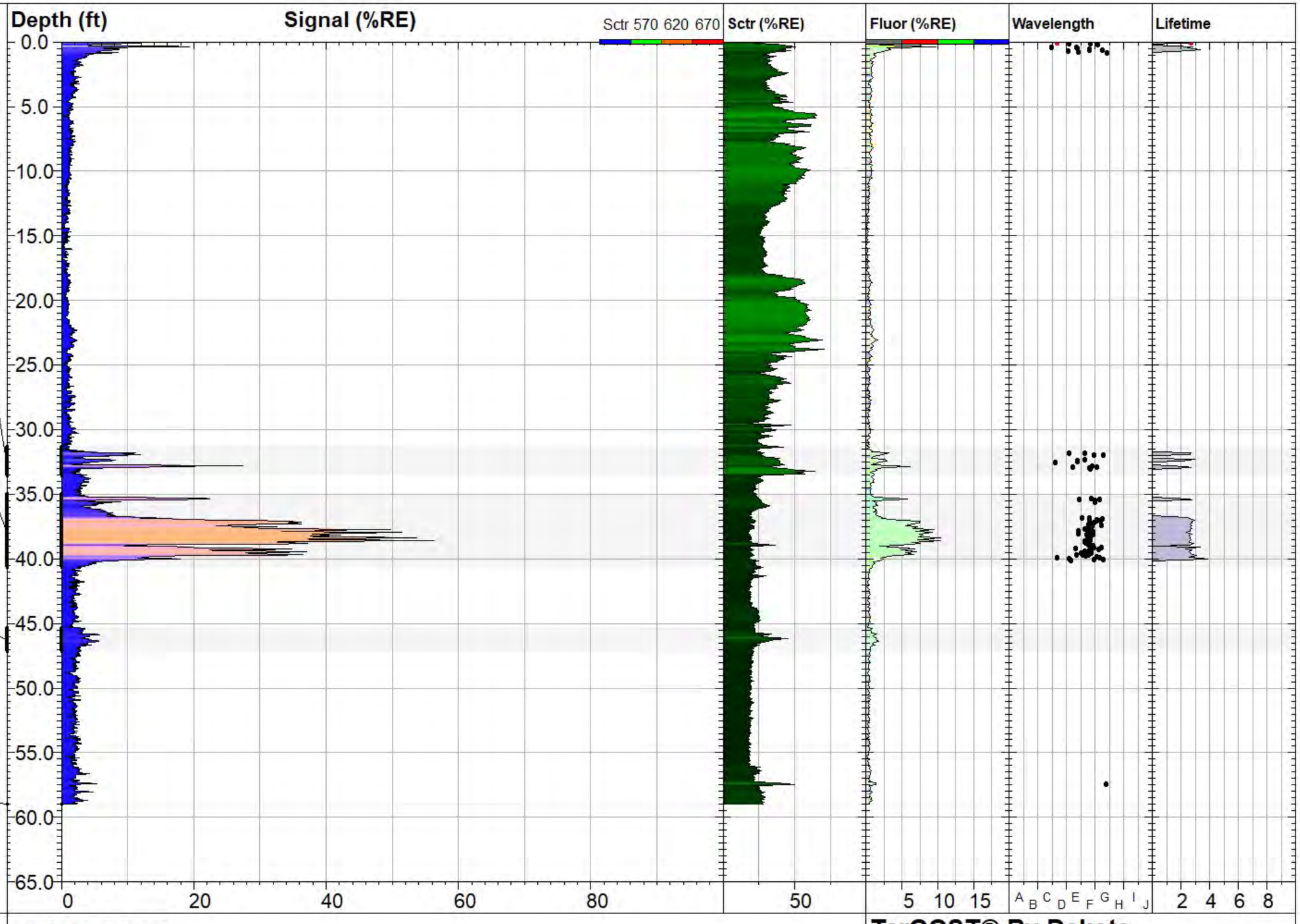
34.91 - 40.68 ft
18.4 %RE (s 15.1)
Tau: 2.0 3.1 3.7 3.8



45.30 - 47.17 ft
3.6 %RE (s 1.0)
Tau: 1.9 3.2 3.8 3.7



58.99 ft
2.3 %RE
Refusal



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CPT-02-20

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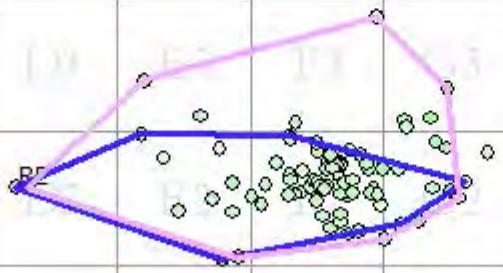
Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **58.99 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **56.7 %RE @ 38.58 ft**
Operator / Unit: **D. Thompson / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2020-01-22 12:01 CST**

CPT-02-20



C2: 5% / 31.3-33.6 ft

C3: 18% / 34.9-40.7 ft

C4: 4% / 45.3-47.2 ft

C5: 2% / 59.0 ft

τ

λ

Cutoff: Fluorescence < 2.0; Depth < 10.0

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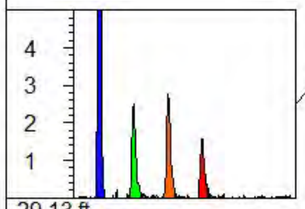
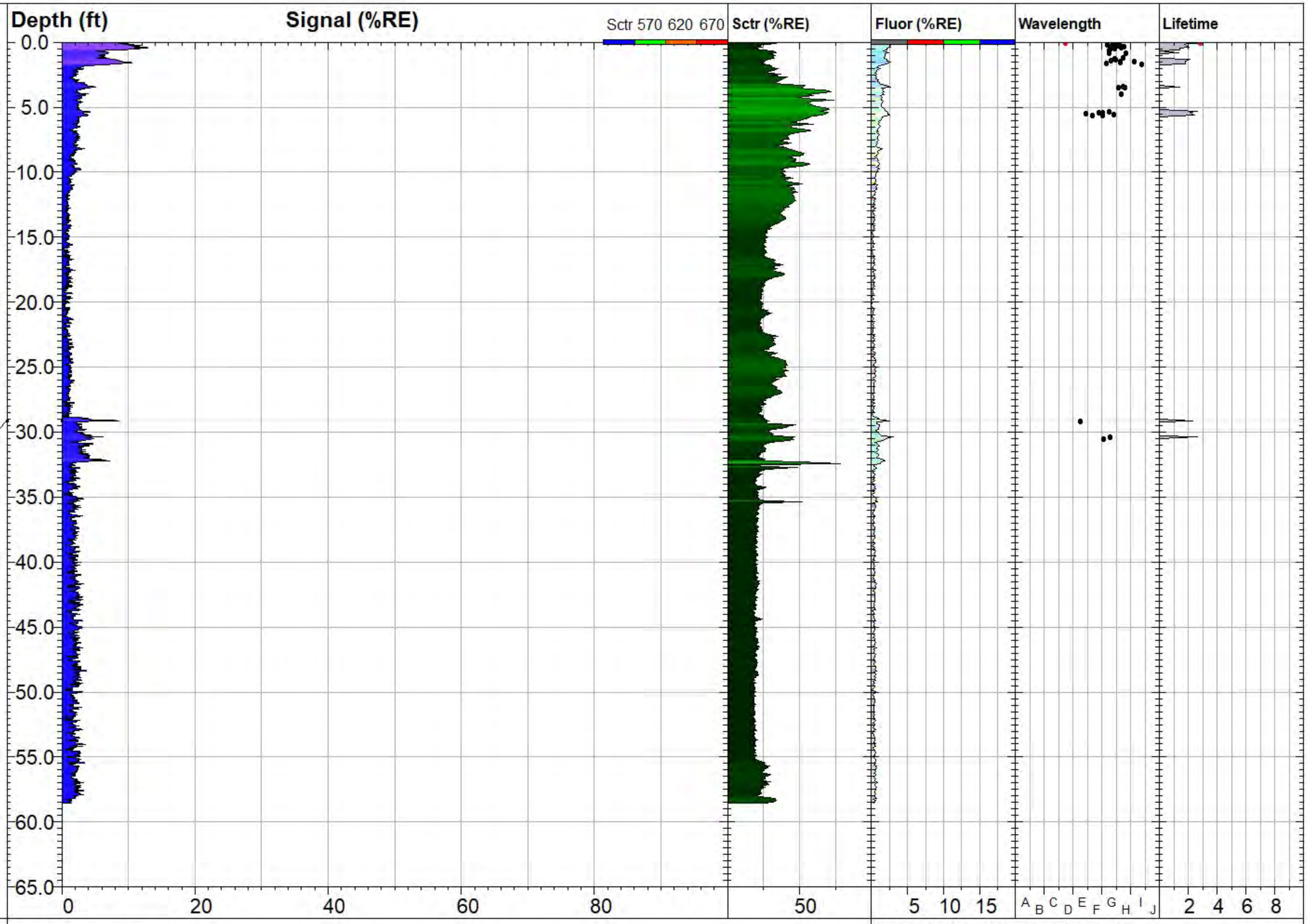
Callouts

Hand augered 0-10'



29.13 ft
8.9 %RE
Tau: 2.0 3.0 3.3 3.3



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CPT-03-20

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Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **58.53 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **13.0 %RE @ 0.41 ft**
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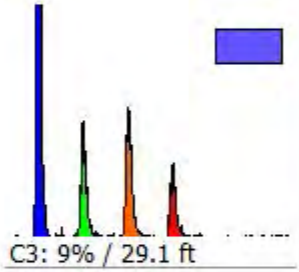
CPT-03-20



RE

Cutoff: Fluorescence < 2.0; Depth < 10.0

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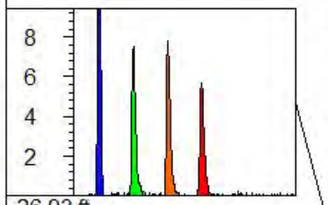
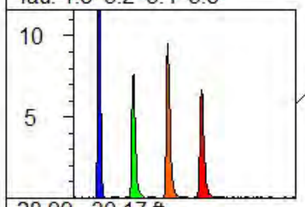
Callouts

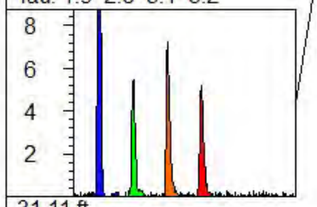
Hand augered 0-10'



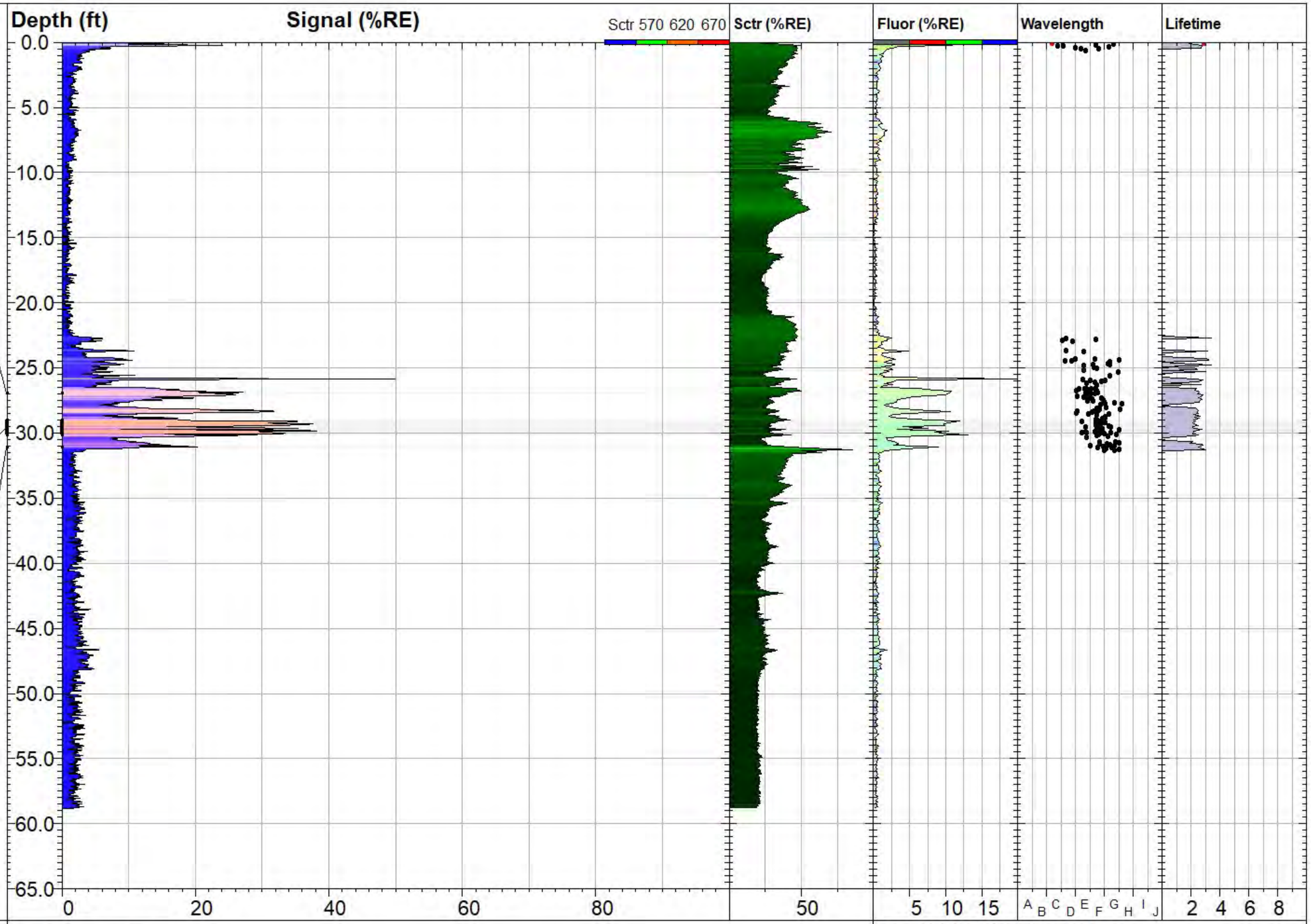
26.93 ft
20.4 %RE
Tau: 1.8 3.2 3.4 3.8



28.99 - 30.17 ft
28.4 %RE (s 7.4)
Tau: 1.9 2.8 3.1 3.2



31.11 ft
11.5 %RE
Tau: 1.8 2.6 3.4 3.4



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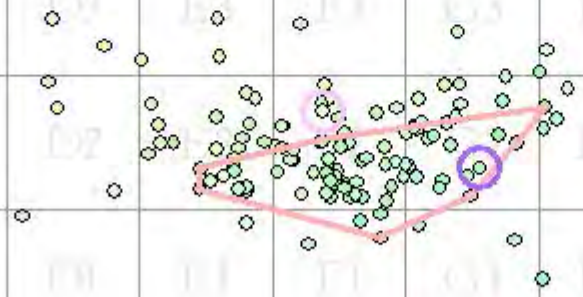
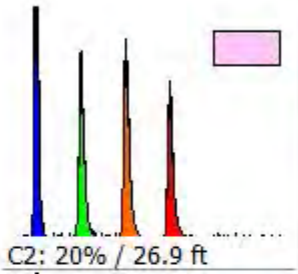
CPT-04-20

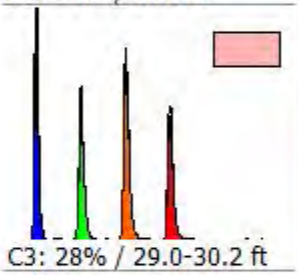
TarGOST® By Dakota
www.DakotaTechnologies.com

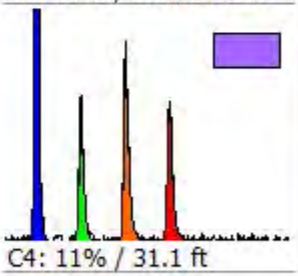
Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **58.82 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **51.6 %RE @ 25.85 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2020-01-15 11:09 CST**

CPT-04-20









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Cutoff: Fluorescence < 2.0; Depth < 10.0

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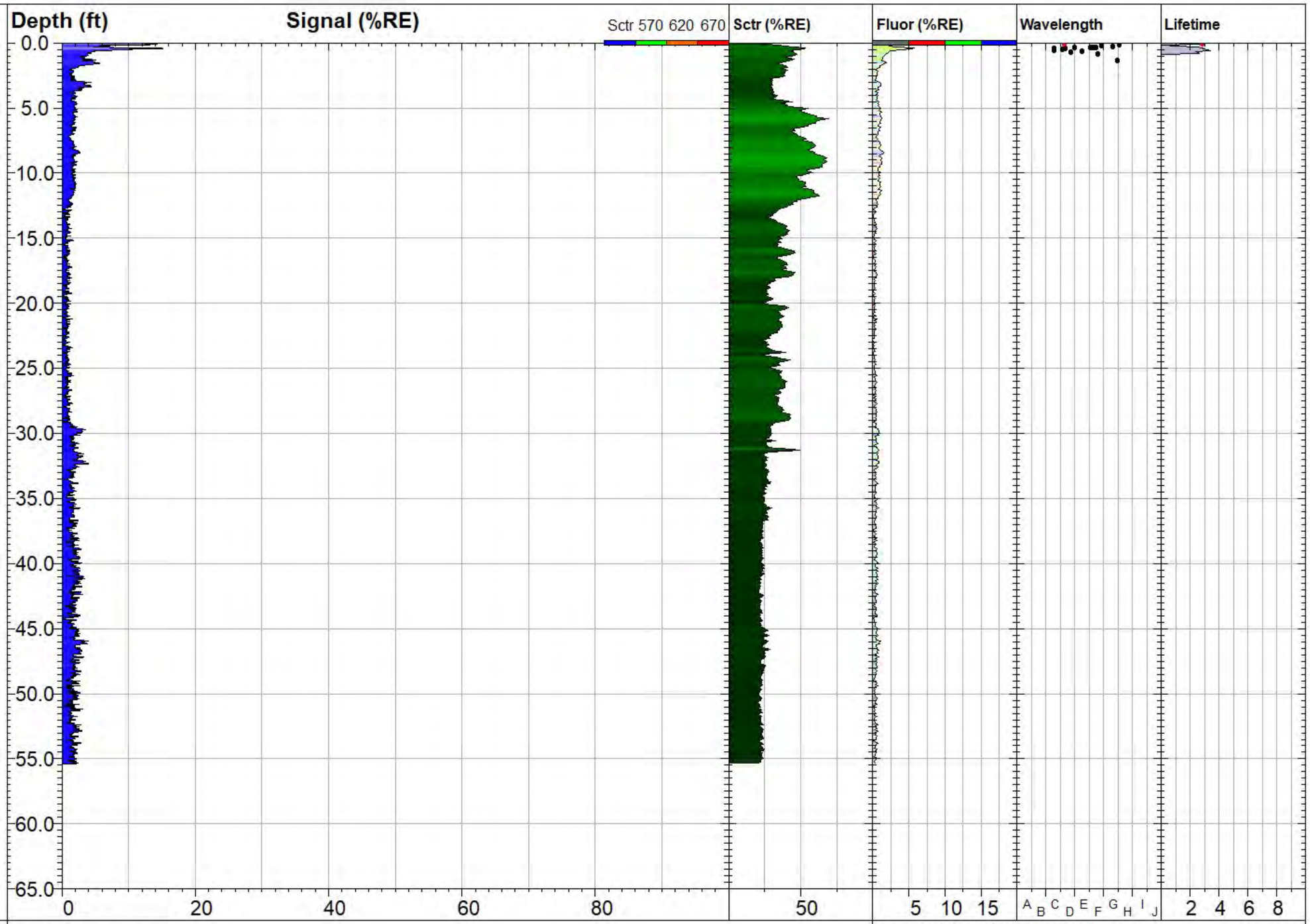
Callouts

Hand augered 0-10'



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CPT-05-20

TarGOST® By Dakota
www.DakotaTechnologies.com

Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **55.40 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **16.3 %RE @ 0.02 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2020-01-14 13:14 CST**

CPT-05-20

A9	B9	C9	D9	E9	F9	G9	H9	I9	J9
A8	B8	C8	D8	E8	F8	G8	H8	I8	J8
A7	B7	C7	D7	E7	F7	G7	H7	I7	J7
A6	B6	C6	D6	E6	F6	G6	H6	I6	J6
A5	B5	C5	D5	E5	F5	G5	H5	I5	J5
A4	B4	C4	D4	E4	F4	G4	H4	I4	J4
A3	B3	C3	D3	E3	F3	G3	H3	I3	J3
A2	B2	C2	D2	E2	F2	G2	H2	I2	J2
A1	B1	C1	D1	E1	F1	G1	H1	I1	J1
A0	B0	C0	D0	E0	F0	G0	H0	I0	J0

RE

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$<\lambda>$ Cutoff: Fluorescence < 2.0; Depth < 10.0

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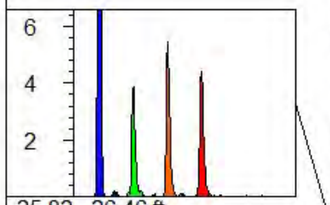
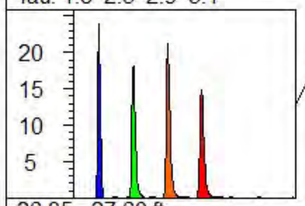
Callouts

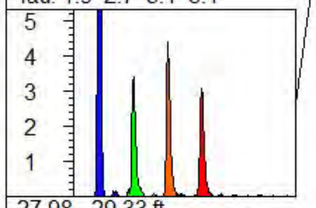
Hand augered 0-10'



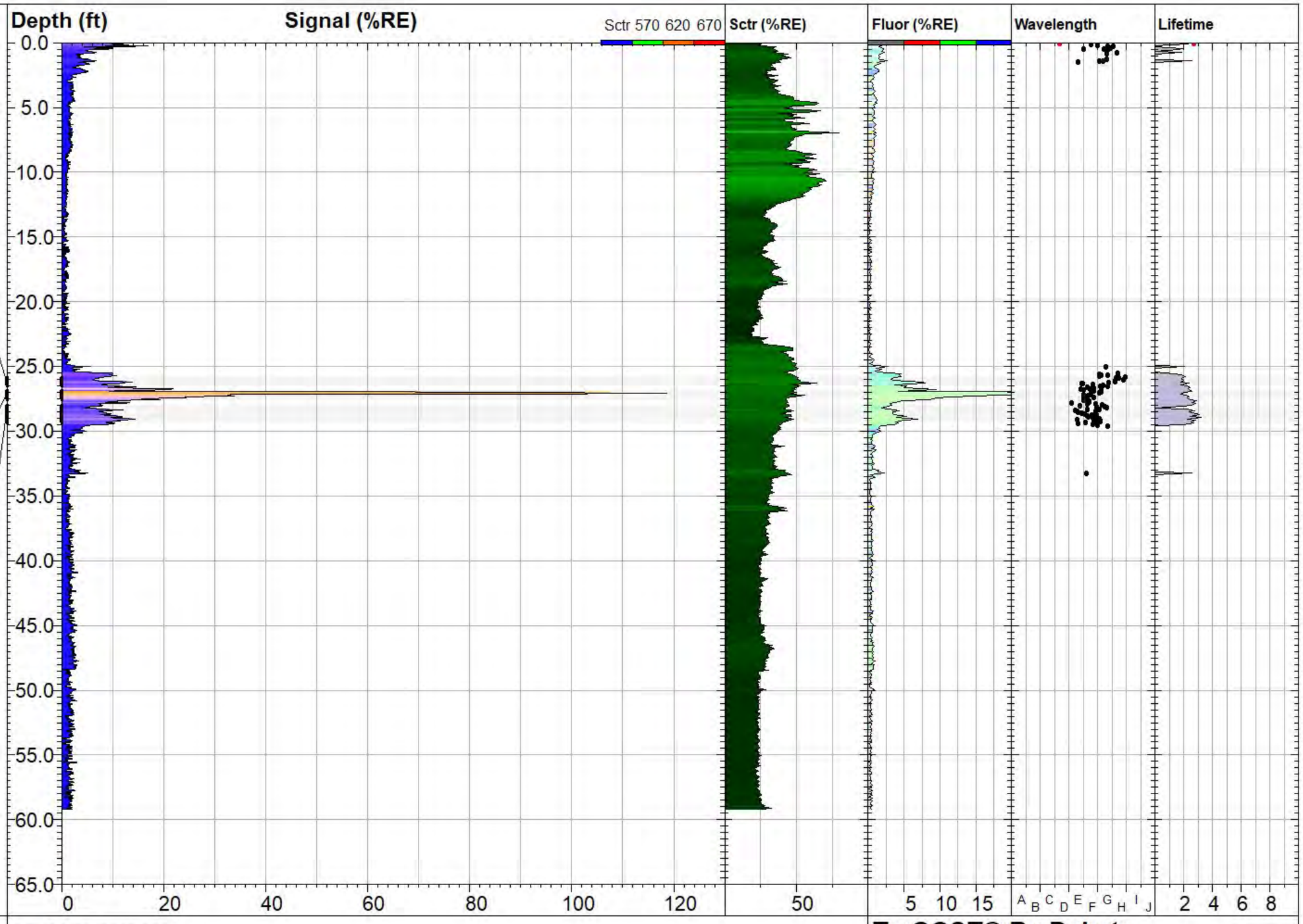
25.82 - 26.46 ft
8.9 %RE (s 2.5)
Tau: 1.8 2.5 2.9 3.1



26.85 - 27.60 ft
40.3 %RE (s 34.1)
Tau: 1.9 2.7 3.1 3.1



27.98 - 29.33 ft
9.2 %RE (s 2.5)
Tau: 1.9 3.2 3.4 3.4



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CPT-06-20

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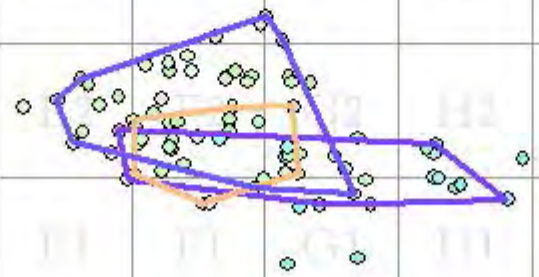
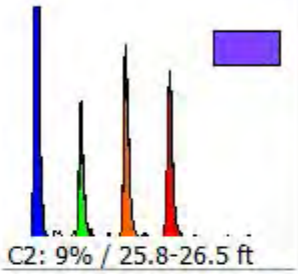
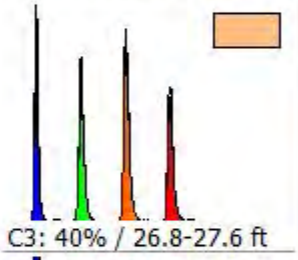
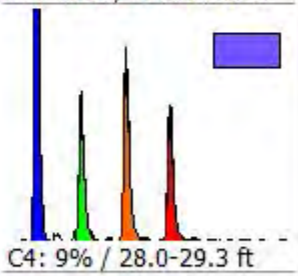
Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **59.21 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **121.3 %RE @ 27.05 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2020-01-15 13:14 CST**

CPT-06-20









Cutoff: Fluorescence < 2.0; Depth < 10.0

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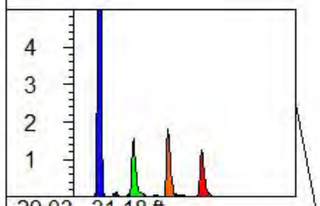
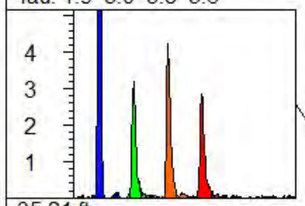
Callouts

Hand augeres 0-10'

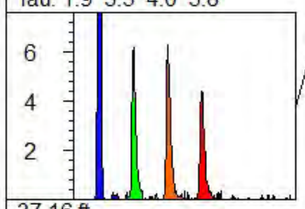
Soil point used from 20-40' through hard zone



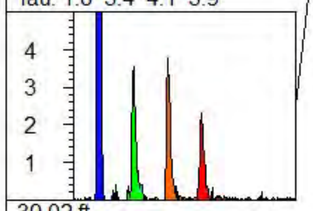
29.03 - 31.18 ft
5.6 %RE (s 1.9)
Tau: 1.9 3.0 3.8 3.6



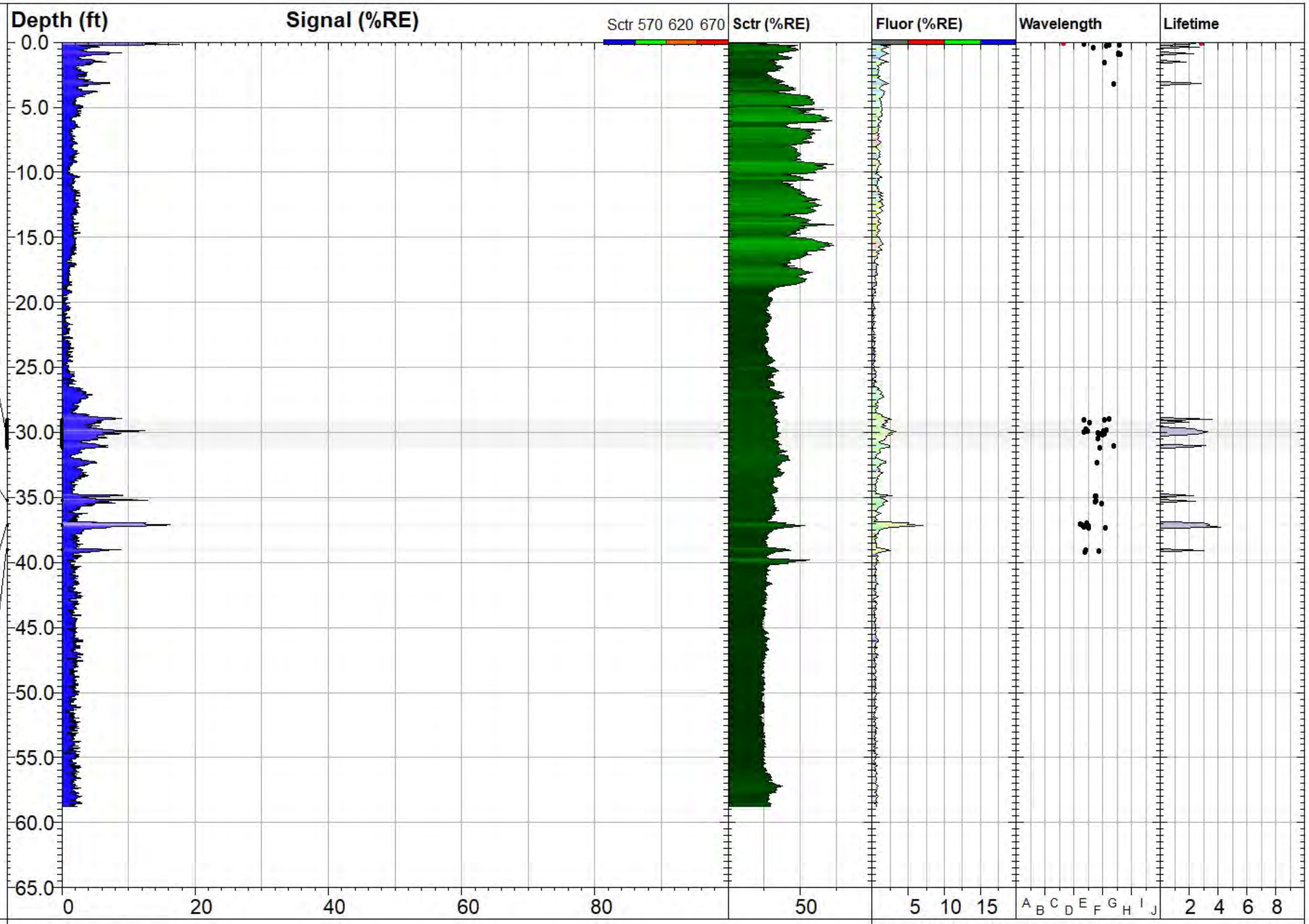
35.21 ft
12.9 %RE
Tau: 1.9 3.3 4.0 3.8



37.16 ft
13.2 %RE
Tau: 1.8 3.4 4.1 3.9



39.02 ft
8.9 %RE
Tau: 1.9 3.8 3.8 4.5



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CPT-07-20

TarGOST® By Dakota
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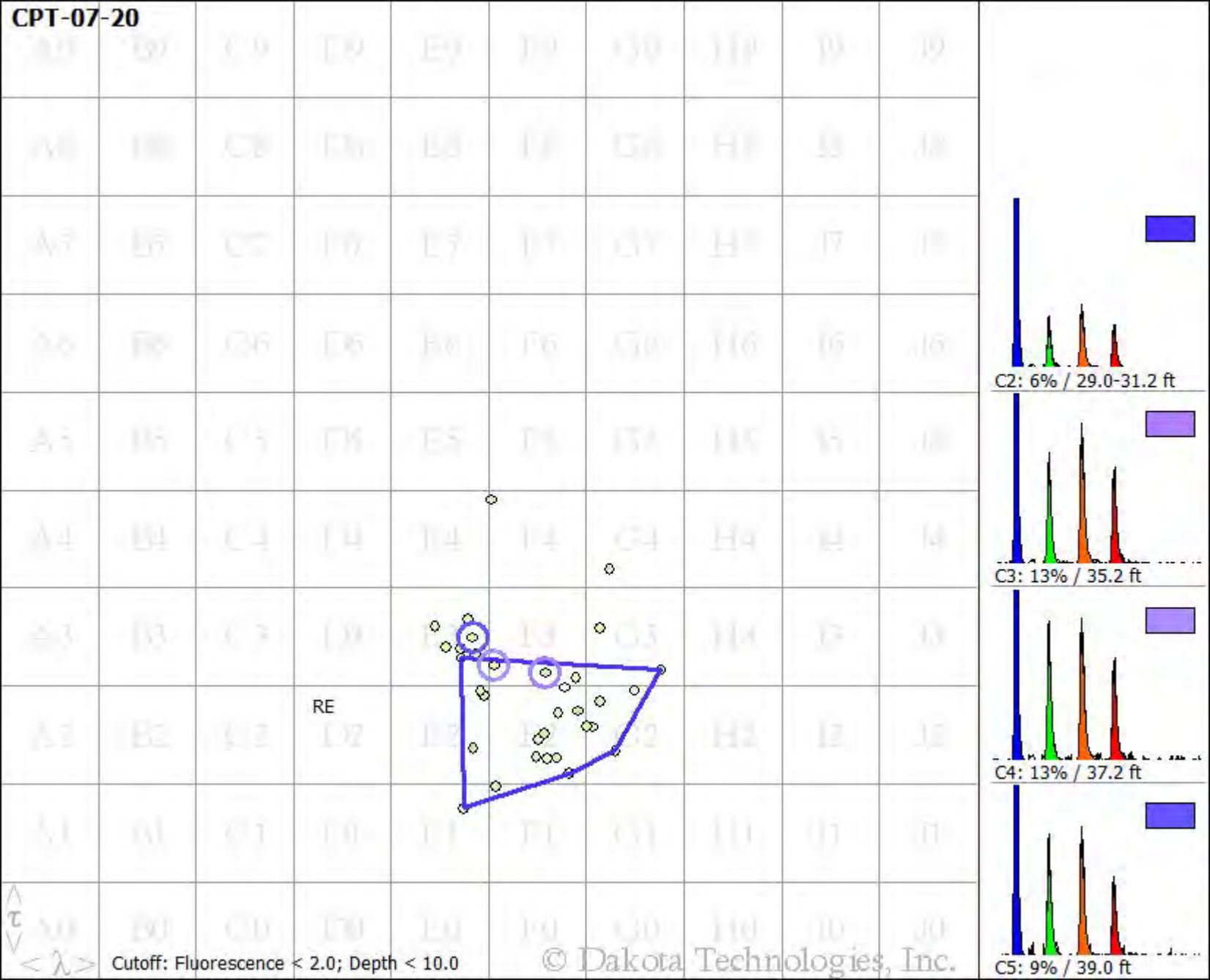
Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **58.75 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **17.7 %RE @ 0.18 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2020-01-13 14:02 CST**


CPT-07-20
RE
C2: 6% / 29.0-31.2 ft
C3: 13% / 35.2 ft
C4: 13% / 37.2 ft
C5: 9% / 39.0 ft
τ
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Cutoff: Fluorescence < 2.0; Depth < 10.0
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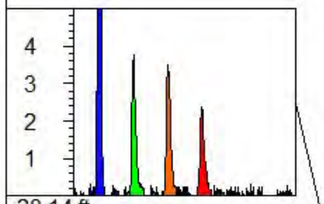
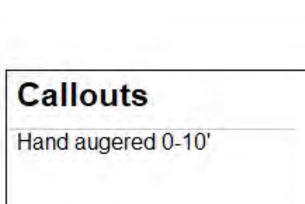
Callouts

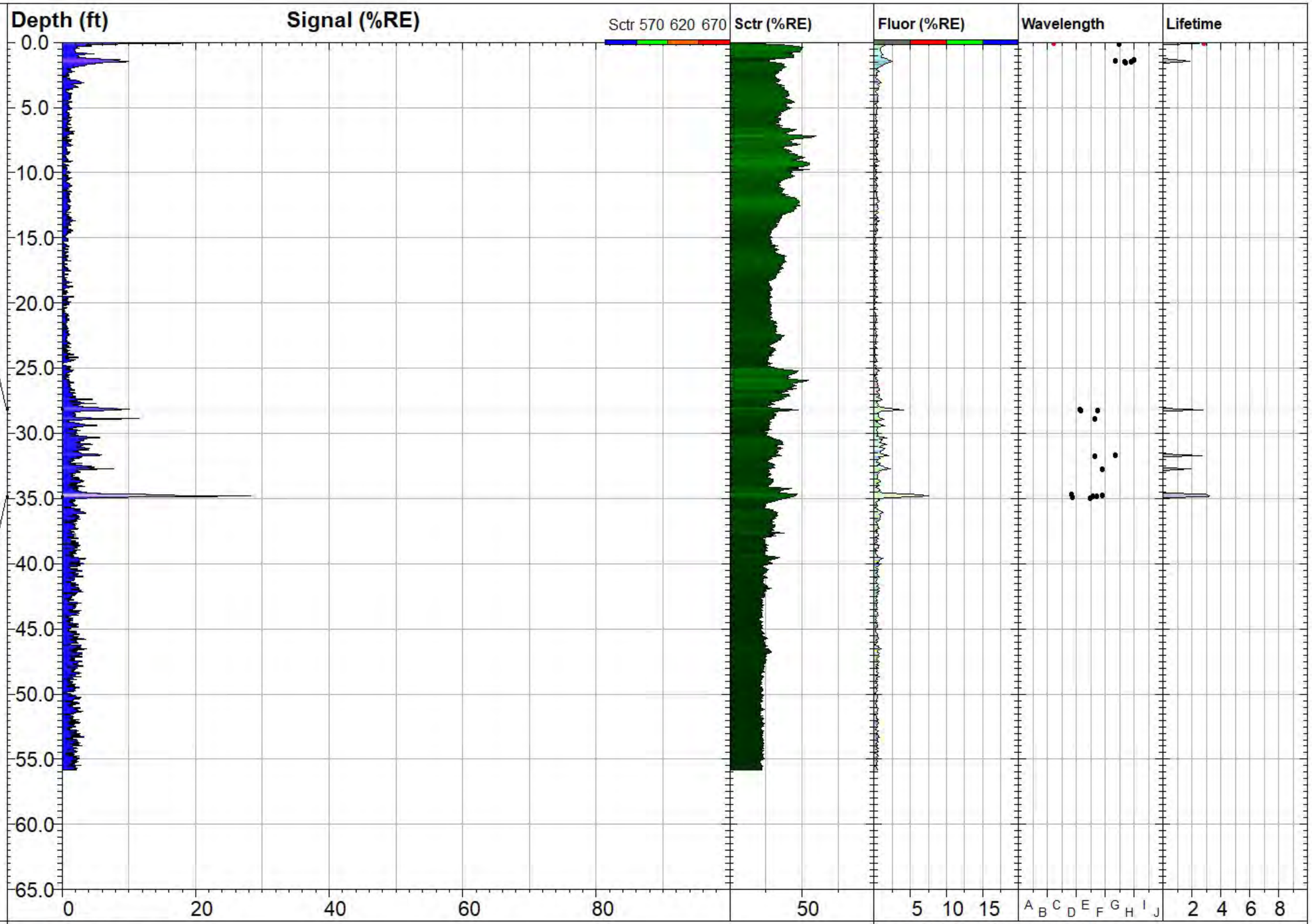
Hand augered 0-10'



28.14 ft
10.4 %RE
Tau: 1.9 3.5 3.5 4.1



34.87 ft
13.8 %RE
Tau: 1.8 4.0 3.9 3.2



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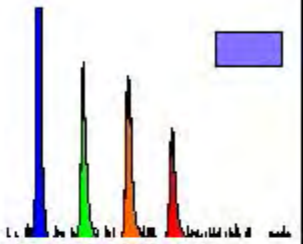
CPT-08-20

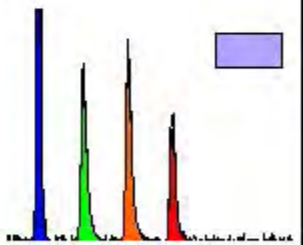
TarGOST® By Dakota
www.DakotaTechnologies.com

Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **55.82 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **29.1 %RE @ 34.81 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2020-01-14 11:07 CST**

CPT-08-20



C2: 10% / 28.1 ft



C4: 14% / 34.9 ft

RE

Cutoff: Fluorescence < 2.0; Depth < 10.0

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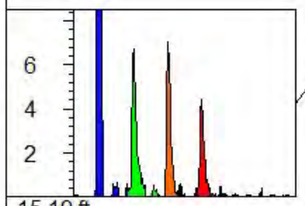
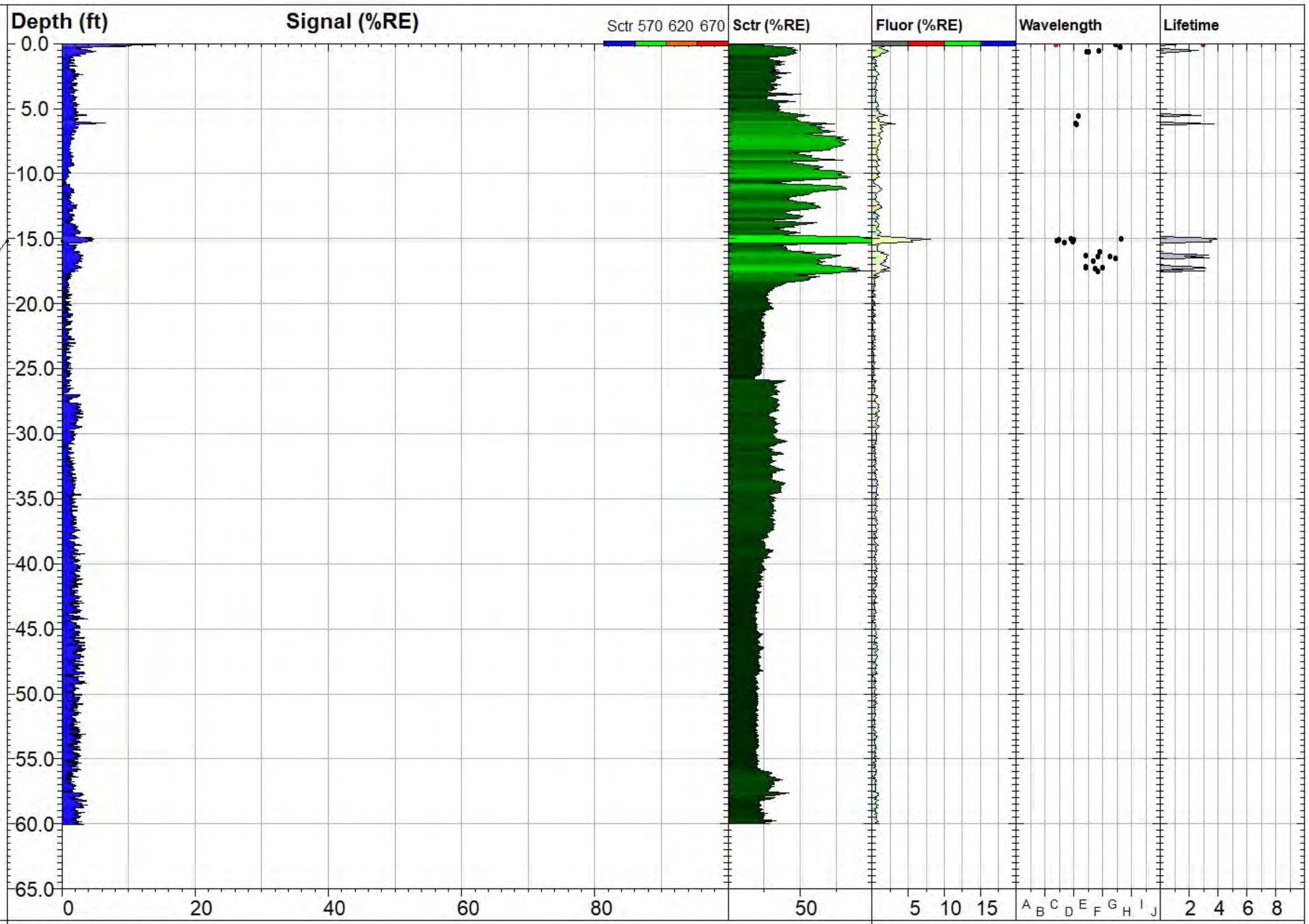
Callouts

Hand augered 0-10'



15.19 ft
4.6 %RE
Tau: 1.8 4.8 3.9 4.4

Solid point from 23-34' in hard zone.



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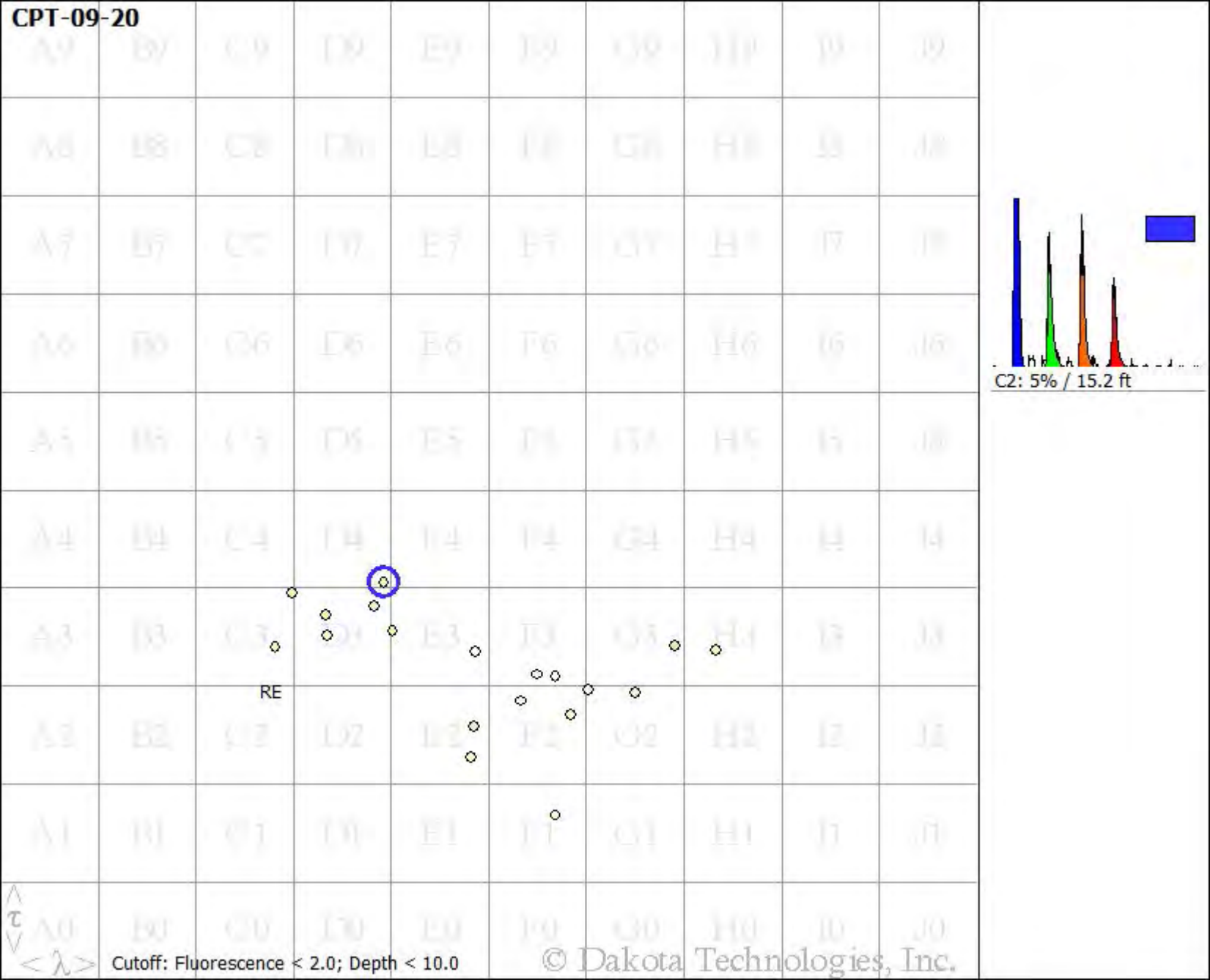
CPT-09-20

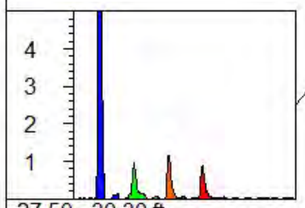
TarGOST® By Dakota
www.DakotaTechnologies.com

Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **60.06 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **14.3 %RE @ 0.10 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2020-01-13 10:41 CST**

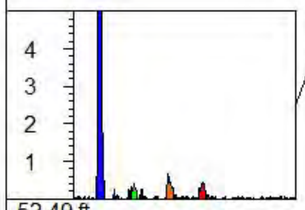

CPT-09-20
RE
C2: 5% / 15.2 ft
Cutoff: Fluorescence < 2.0; Depth < 10.0
© Dakota Technologies, Inc.

Callouts

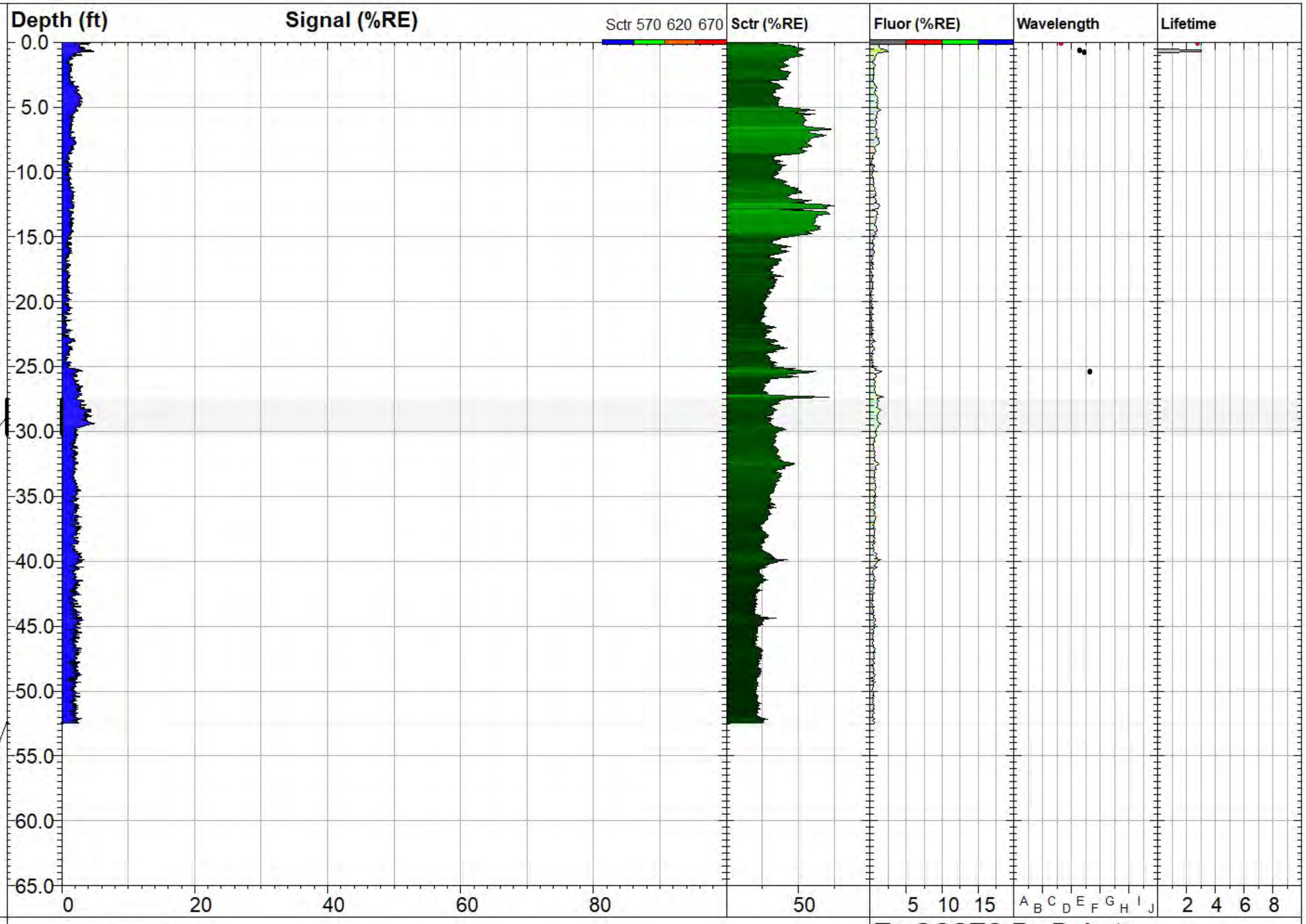
Hand Augered to 10'.



27.50 - 30.30 ft
3.0 %RE (s 0.9)
Tau: 1.9 3.2 3.6 3.6



52.49 ft
2.1 %RE
Refusal



CPT-10-20

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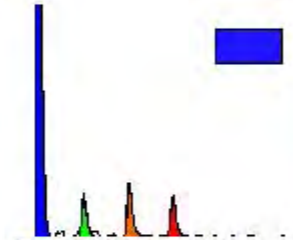
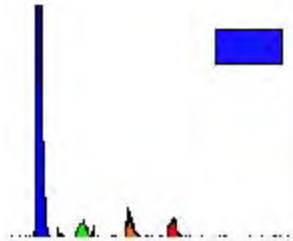
Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **52.49 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **4.9 %RE @ 0.71 ft**
Operator / Unit: **D. Thompson / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2020-01-23 13:29 CST**

CPT-10-20

RE





Cutoff: Fluorescence < 2.0; Depth < 10.0

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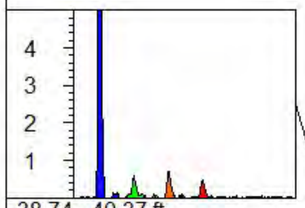
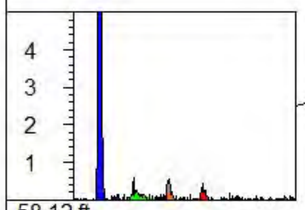
Callouts

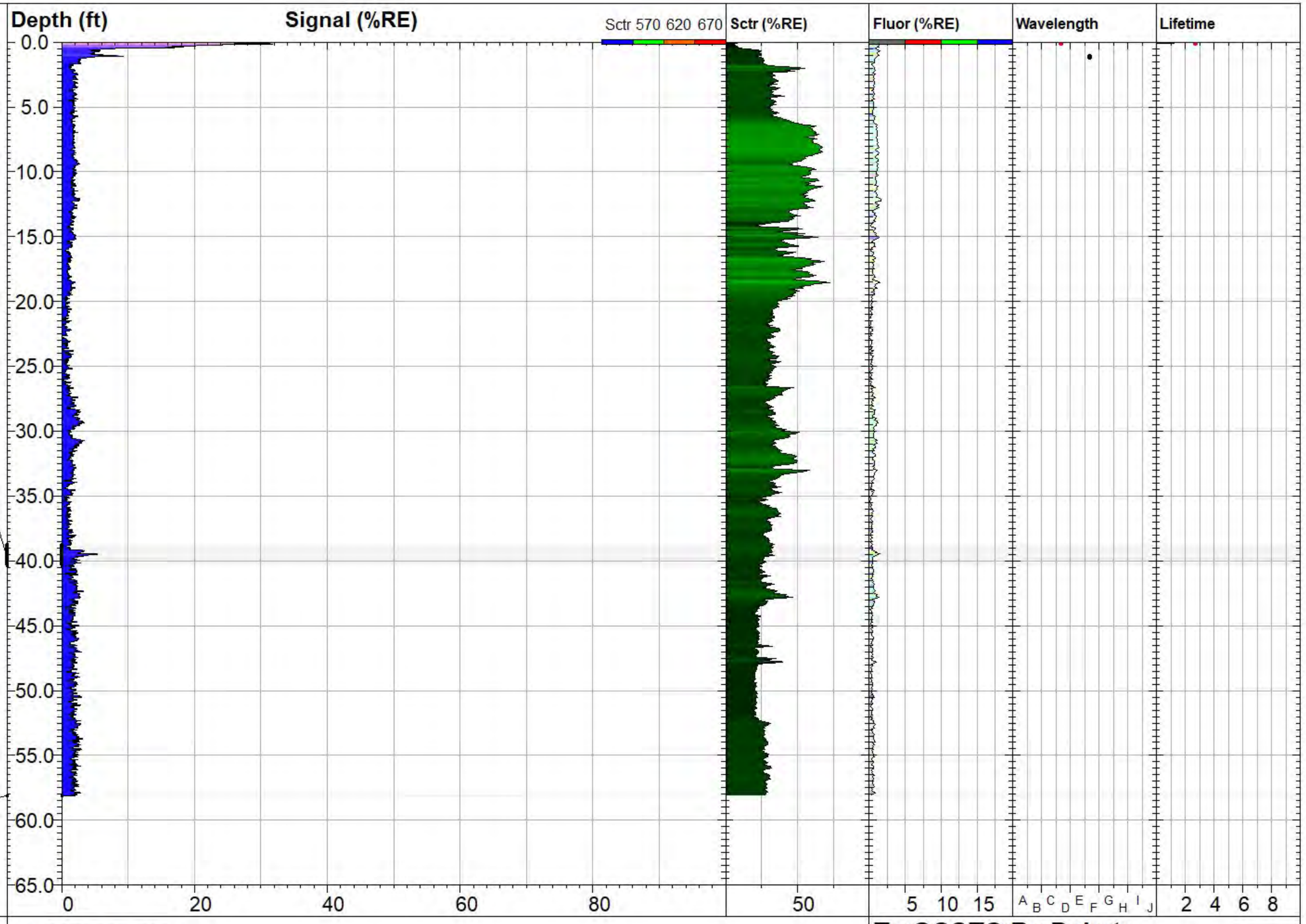
Hand Augered to 10'.



38.74 - 40.37 ft
2.1 %RE (s 1.1)
Tau: 1.9 3.6 3.3 4.1



58.12 ft
1.3 %RE
Refusal



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CPT-11-20

TarGOST® By Dakota
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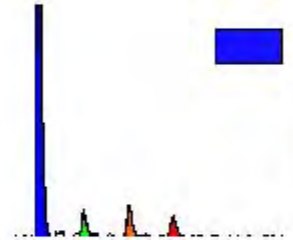
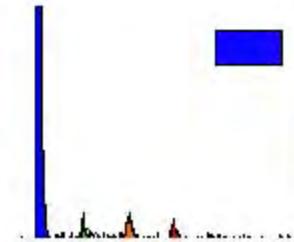
Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **58.12 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **32.4 %RE @ 0.14 ft**
Operator / Unit: **D. Thompson / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2020-01-23 11:37 CST**

CPT-11-20



C3: 2% / 38.7-40.4 ft



C5: 1% / 58.1 ft

RE

Cutoff: Fluorescence < 2.0; Depth < 10.0

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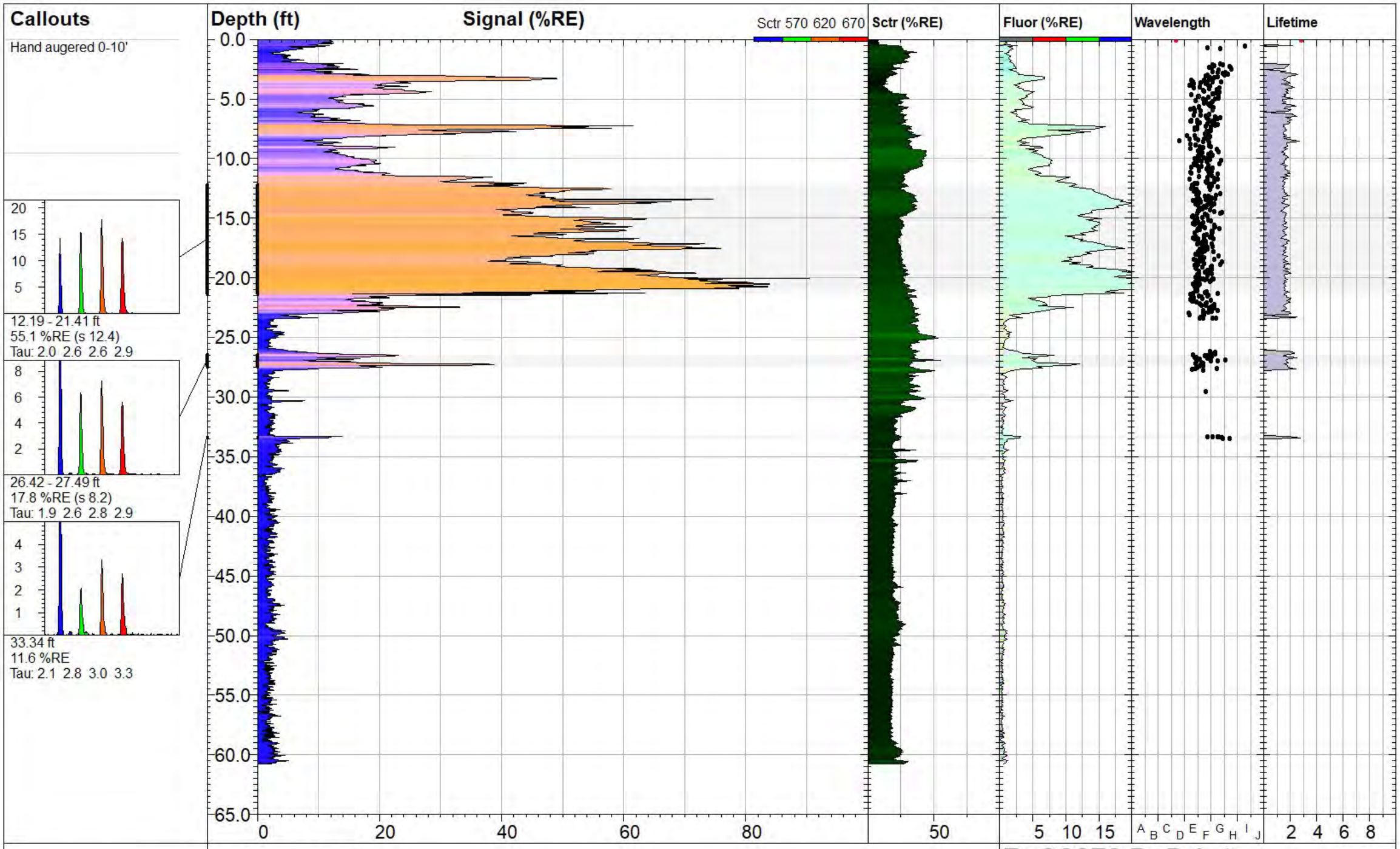

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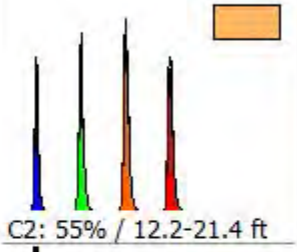
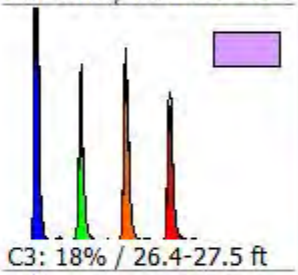
CPT-12-20

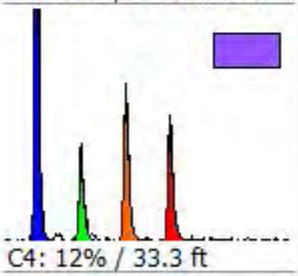
TarGOST® By Dakota
www.DakotaTechnologies.com

Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **60.74 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **90.5 %RE @ 20.07 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2020-01-11 11:06 CST**

CPT-12-20

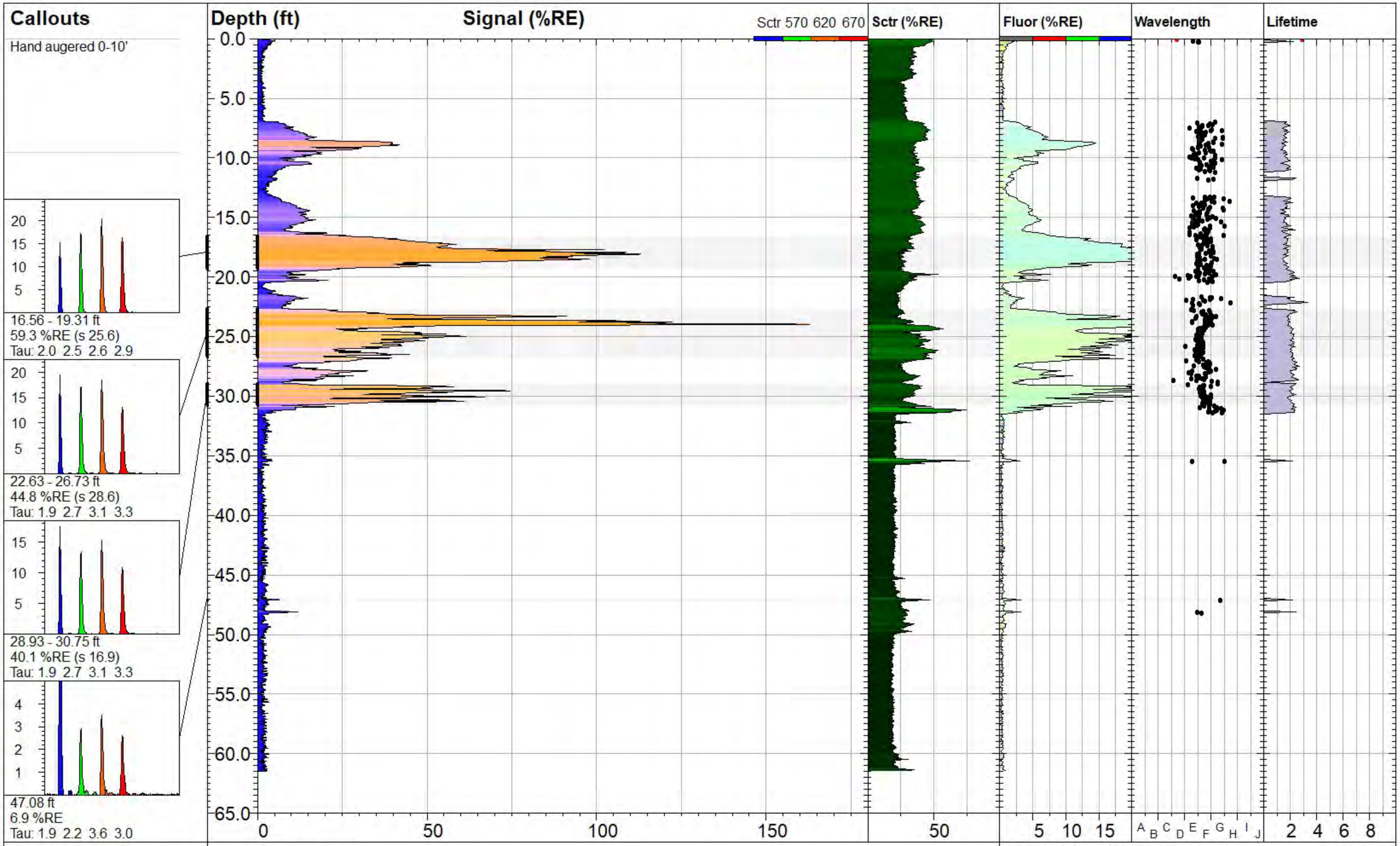






Cutoff: Fluorescence < 2.0; Depth < 10.0

© Dakota Technologies, Inc.



CPT-13-20		**TarGOST® By Dakota** www.DakotaTechnologies.com
Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **61.48 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **163.0 %RE @ 23.96 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2020-01-11 09:50 CST**

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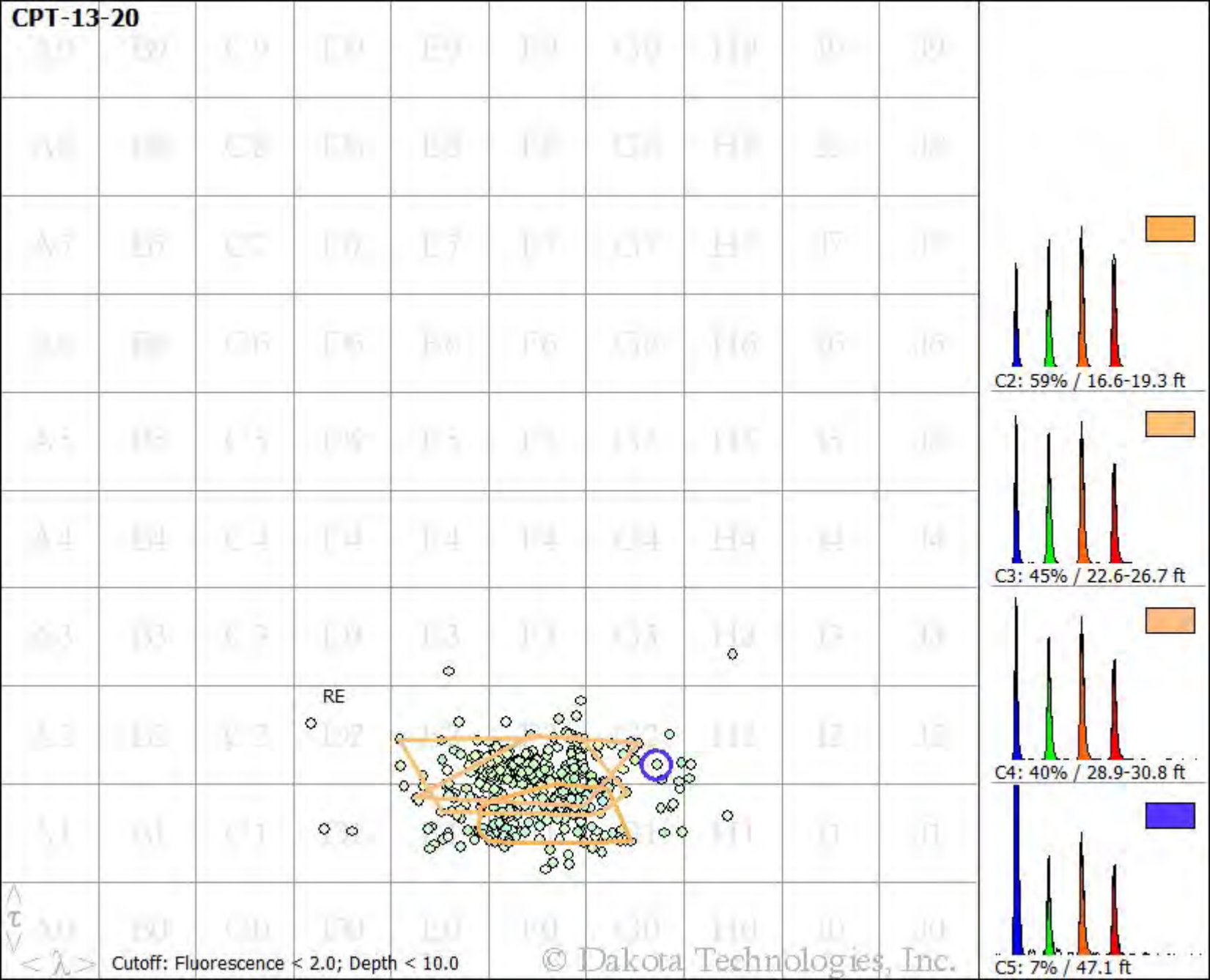
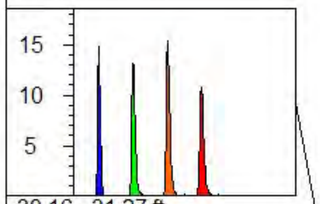
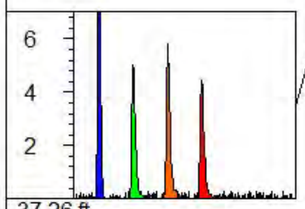

CPT-13-20
RE
C2: 59% / 16.6-19.3 ft
C3: 45% / 22.6-26.7 ft
C4: 40% / 28.9-30.8 ft
C5: 7% / 47.1 ft
Cutoff: Fluorescence < 2.0; Depth < 10.0
© Dakota Technologies, Inc.

Callouts

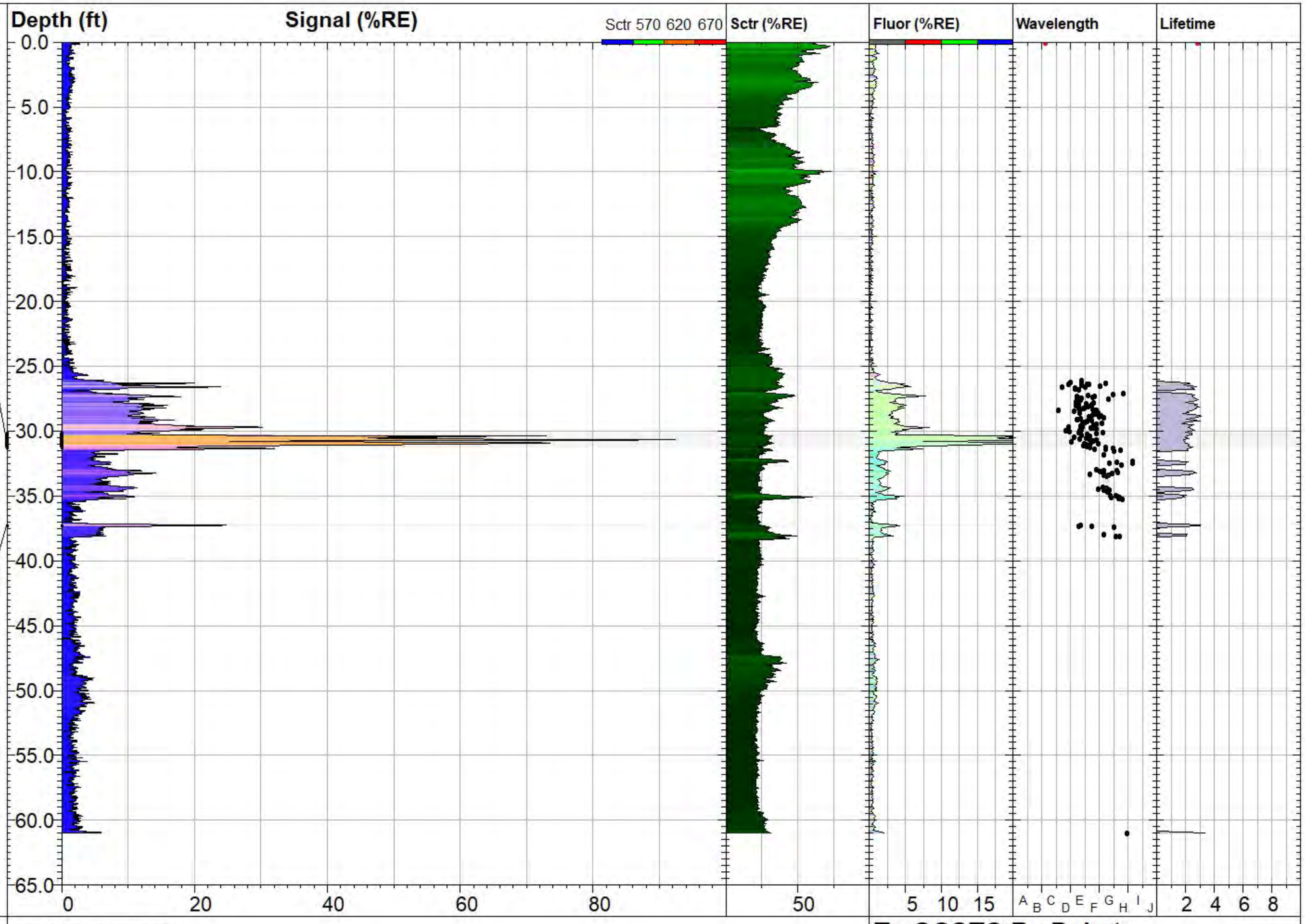
Hand augered 0-10'



30.16 - 31.27 ft
45.7 %RE (s 25.1)
Tau: 1.9 3.0 2.9 3.3



37.26 ft
25.2 %RE
Tau: 1.9 3.4 3.2 3.4



CPT-14-20

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Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **60.97 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **96.2 %RE @ 30.67 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2020-01-10 14:35 CST**

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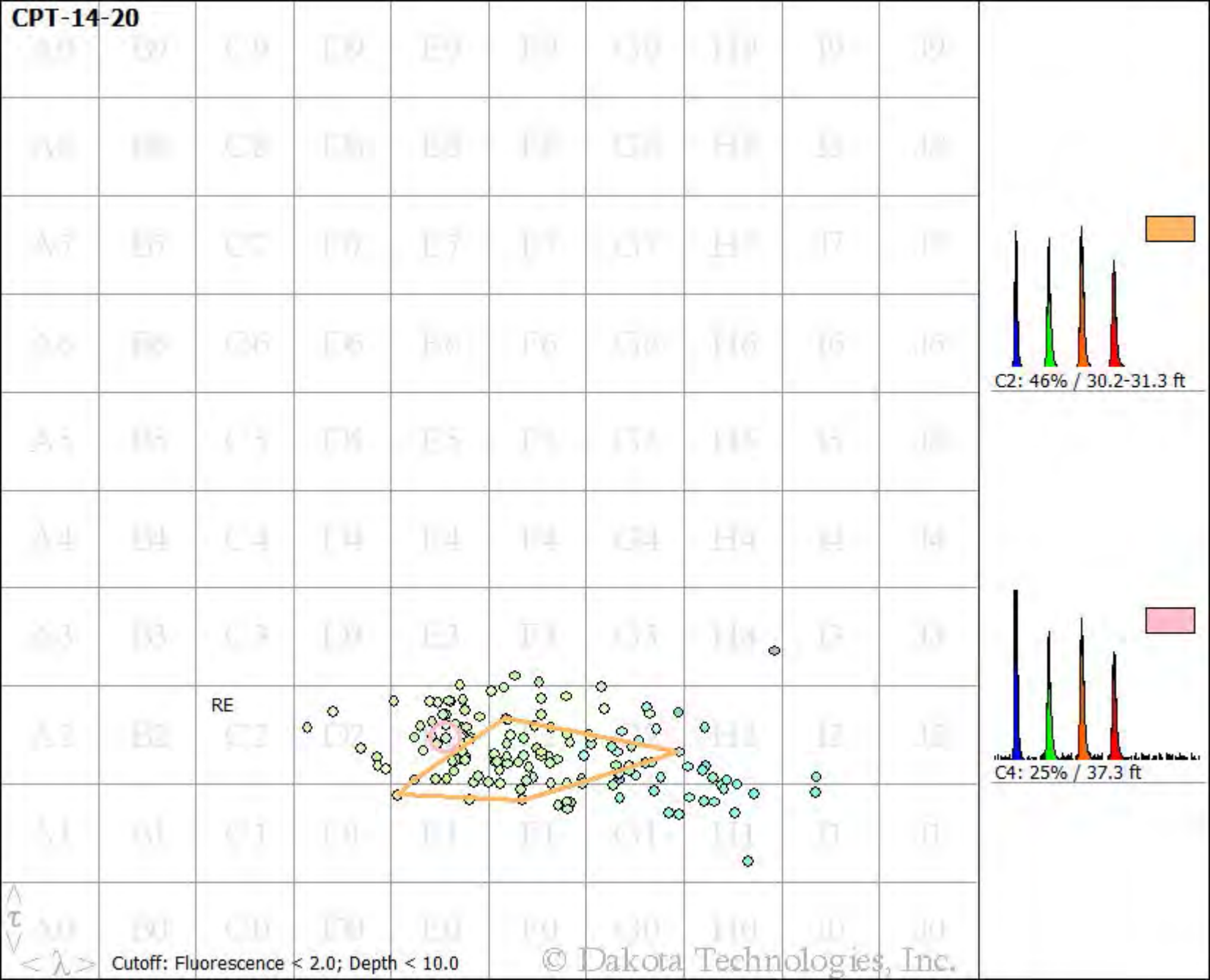
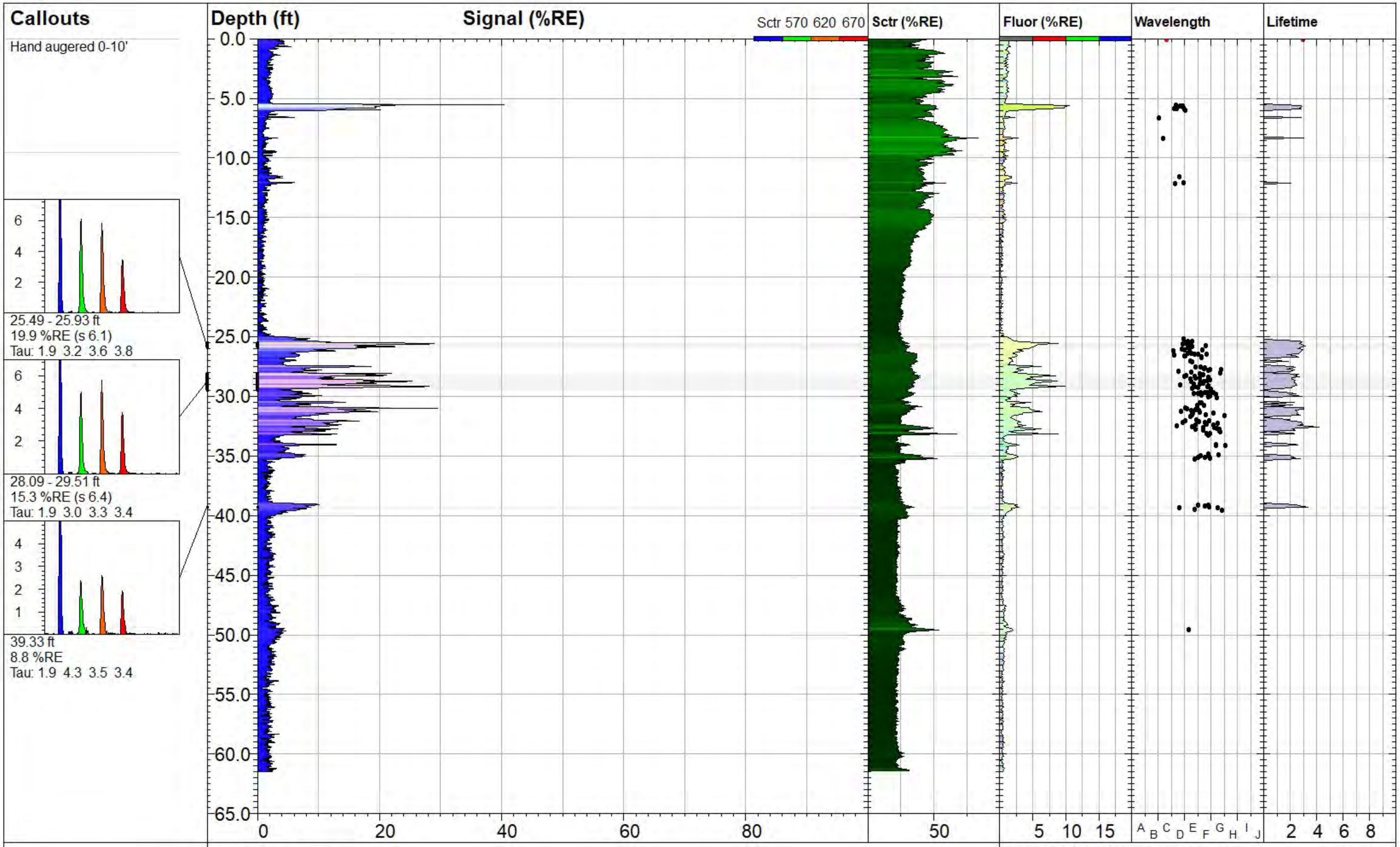

CPT-14-20
C2: 46% / 30.2-31.3 ft
C4: 25% / 37.3 ft
RE
τ
< λ >
Cutoff: Fluorescence < 2.0; Depth < 10.0
© Dakota Technologies, Inc.



CPT-15-20

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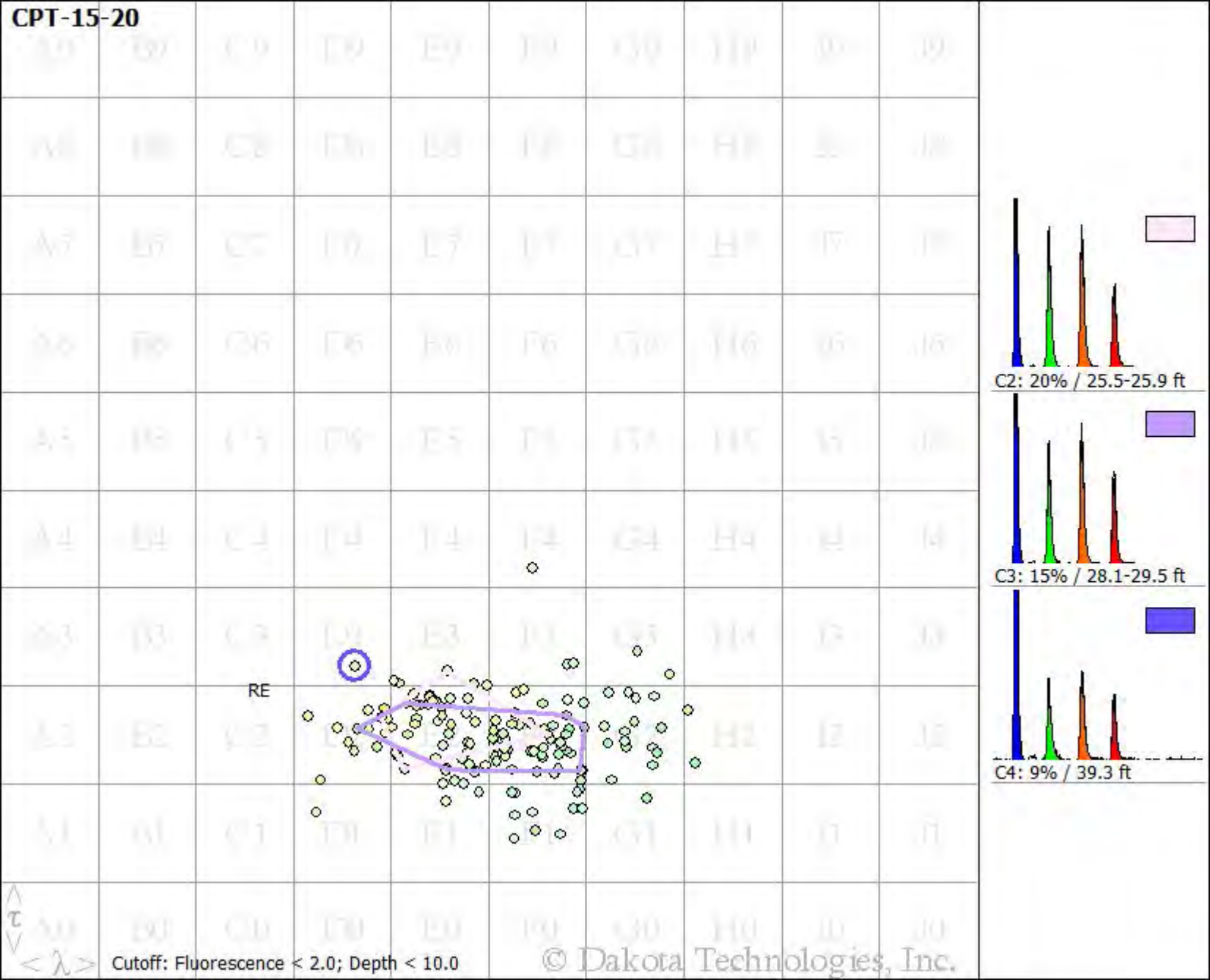
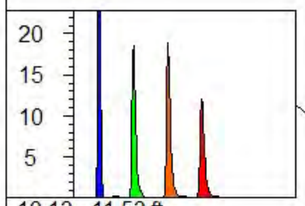
Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **61.46 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **40.9 %RE @ 5.52 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2020-01-10 12:31 CST**

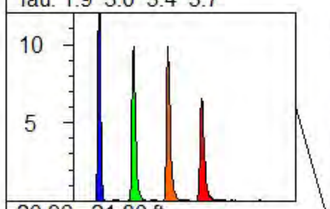

CPT-15-20
RE
C2: 20% / 25.5-25.9 ft
C3: 15% / 28.1-29.5 ft
C4: 9% / 39.3 ft
τ
< λ >
Cutoff: Fluorescence < 2.0; Depth < 10.0
© Dakota Technologies, Inc.

Callouts

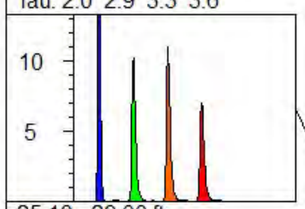
Hand augered 0-10'



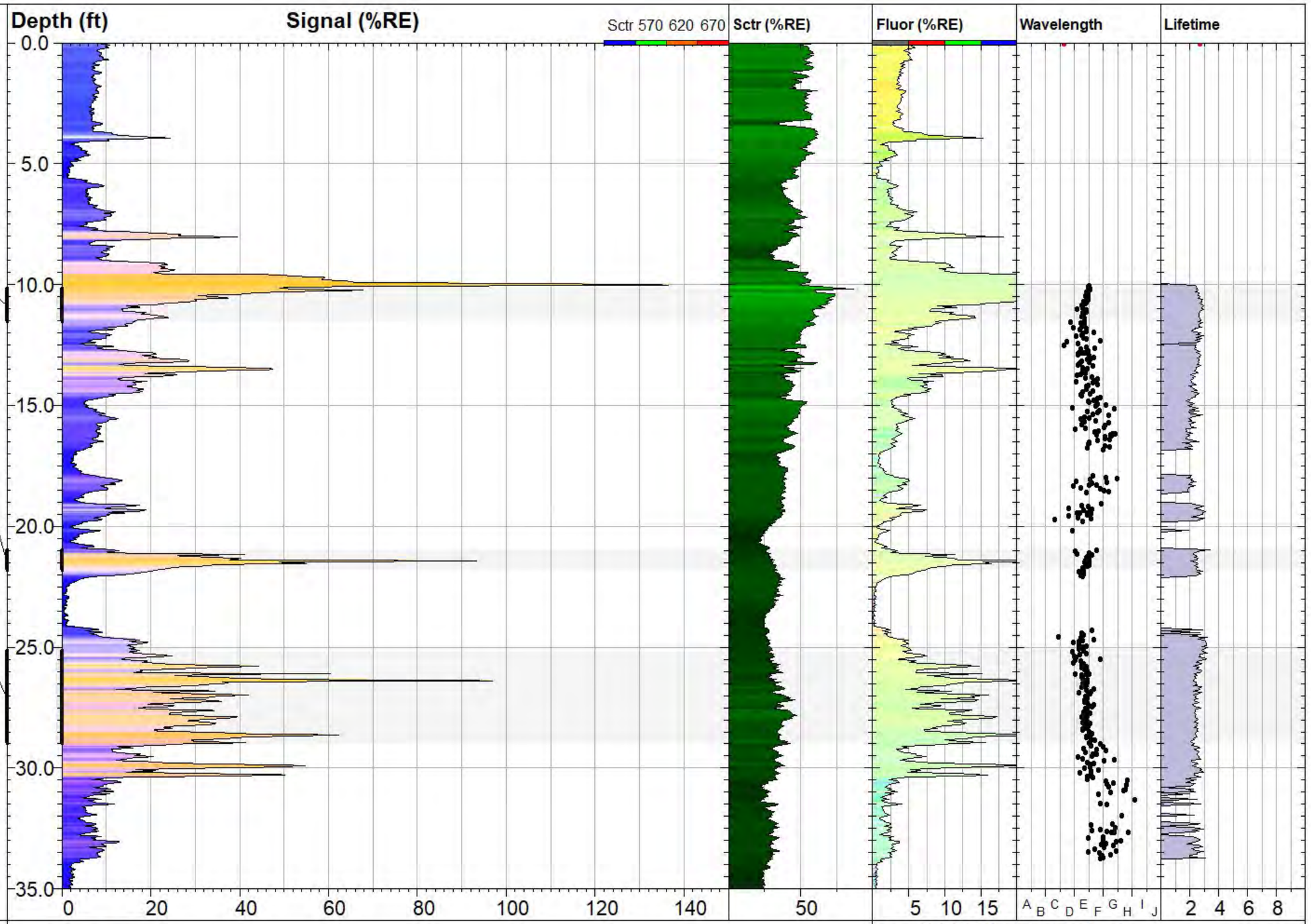
10.13 - 11.53 ft
29.3 %RE (s 14.3)
Tau: 1.9 3.0 3.4 3.7



20.96 - 21.80 ft
33.3 %RE (s 20.3)
Tau: 2.0 2.9 3.3 3.6



25.13 - 29.00 ft
30.6 %RE (s 13.7)
Tau: 1.9 3.0 3.3 3.4



CPT-16-20

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Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **61.16 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **137.4 %RE @ 10.01 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2020-01-10 10:47 CST**

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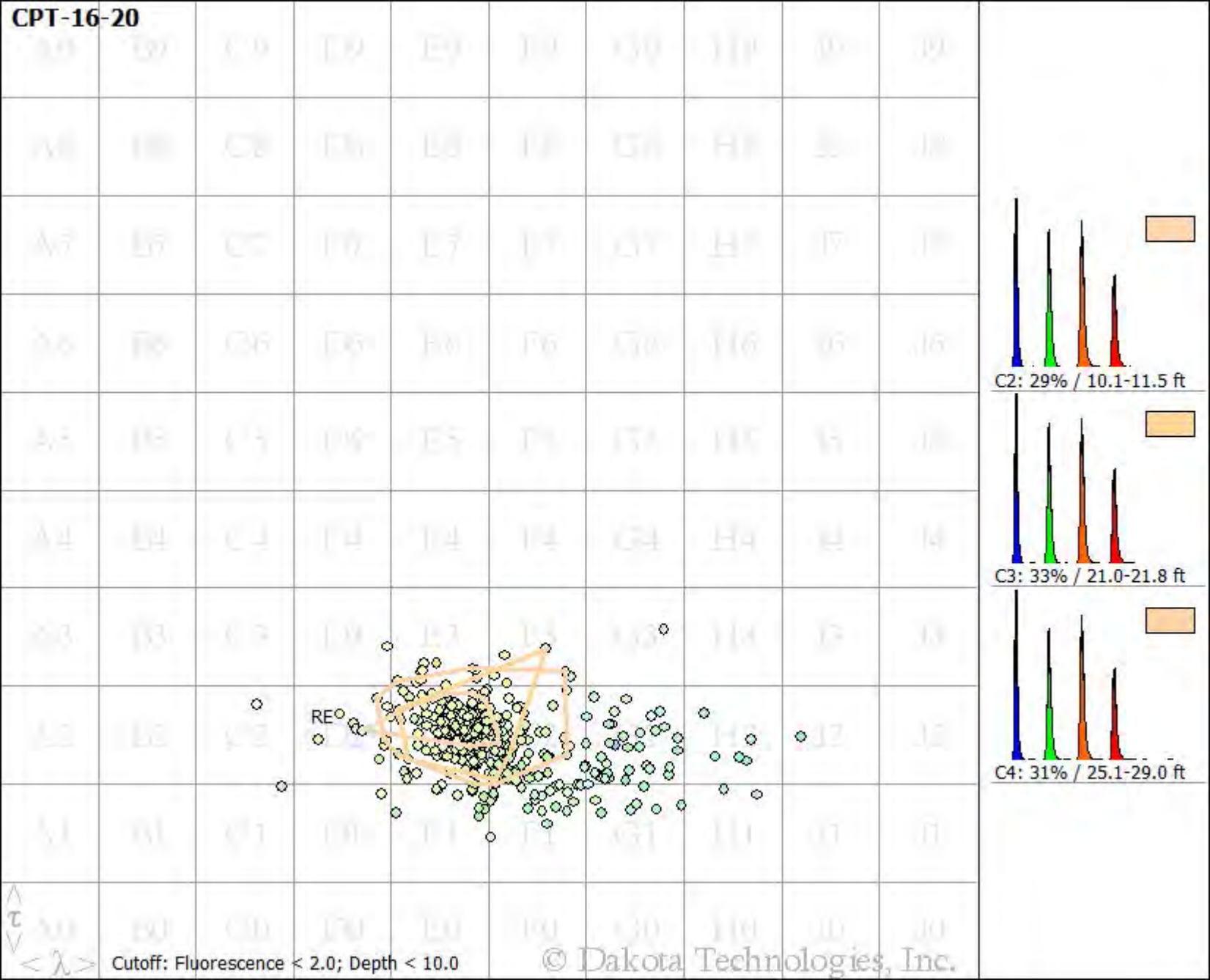
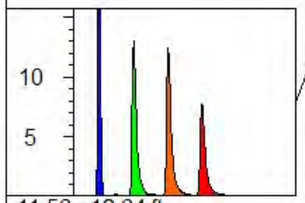

CPT-16-20
RE
C2: 29% / 10.1-11.5 ft
C3: 33% / 21.0-21.8 ft
C4: 31% / 25.1-29.0 ft
τ
< λ >
Cutoff: Fluorescence < 2.0; Depth < 10.0
© Dakota Technologies, Inc.

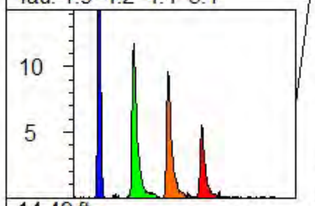
Callouts

Hand augered 0-10'

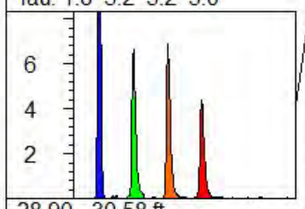
Used soild point to push through haed zone 19.8-24'



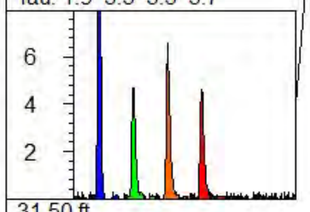
11.56 - 12.64 ft
39.7 %RE (s 26.9)
Tau: 1.9 4.2 4.4 5.1



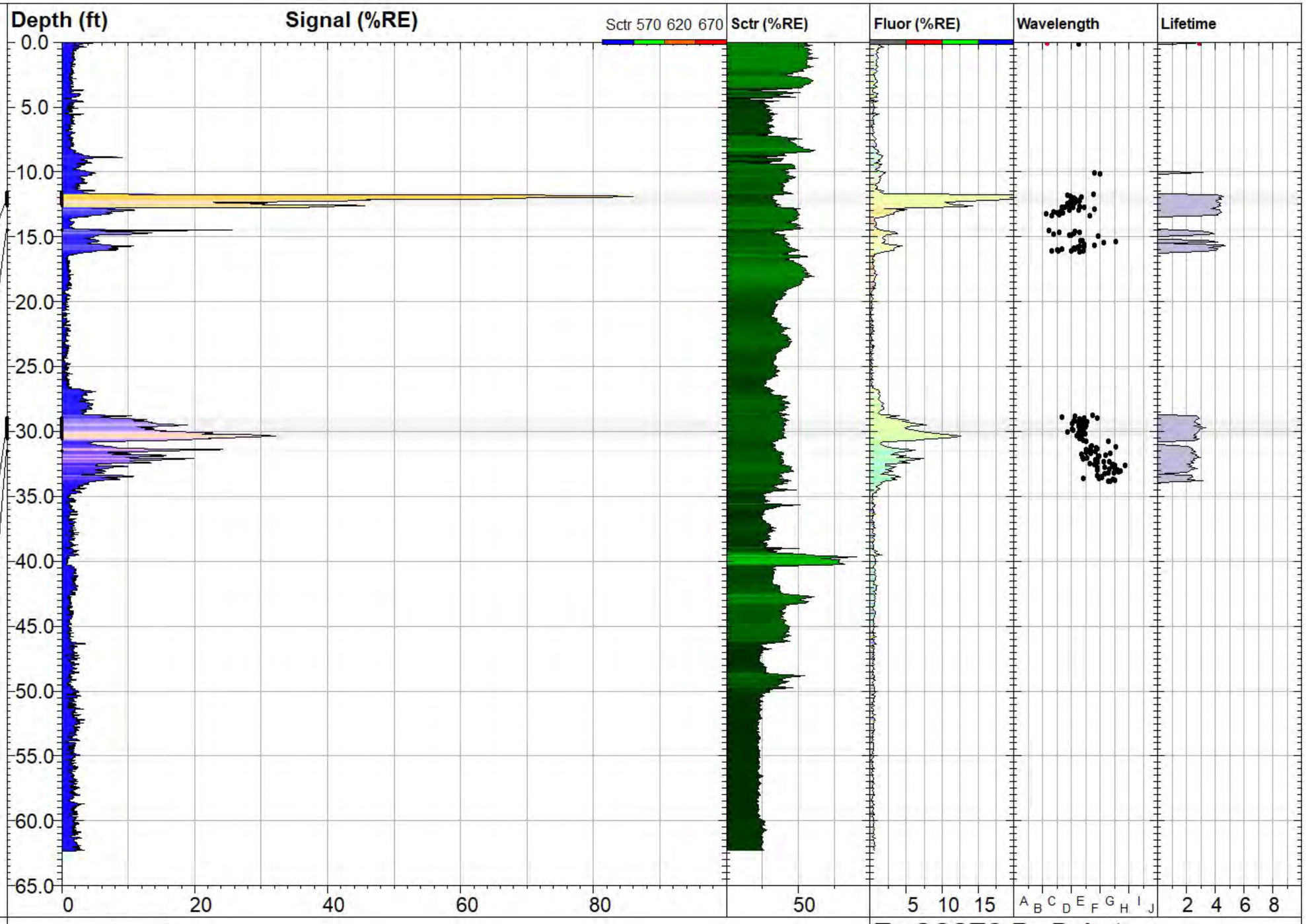
14.49 ft
26.7 %RE
Tau: 1.8 5.2 5.2 5.0



28.90 - 30.58 ft
16.5 %RE (s 6.7)
Tau: 1.9 3.3 3.5 3.7



31.50 ft
16.6 %RE
Tau: 1.9 3.0 3.2 3.2



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CPT-17-20

TarGOST® By Dakota
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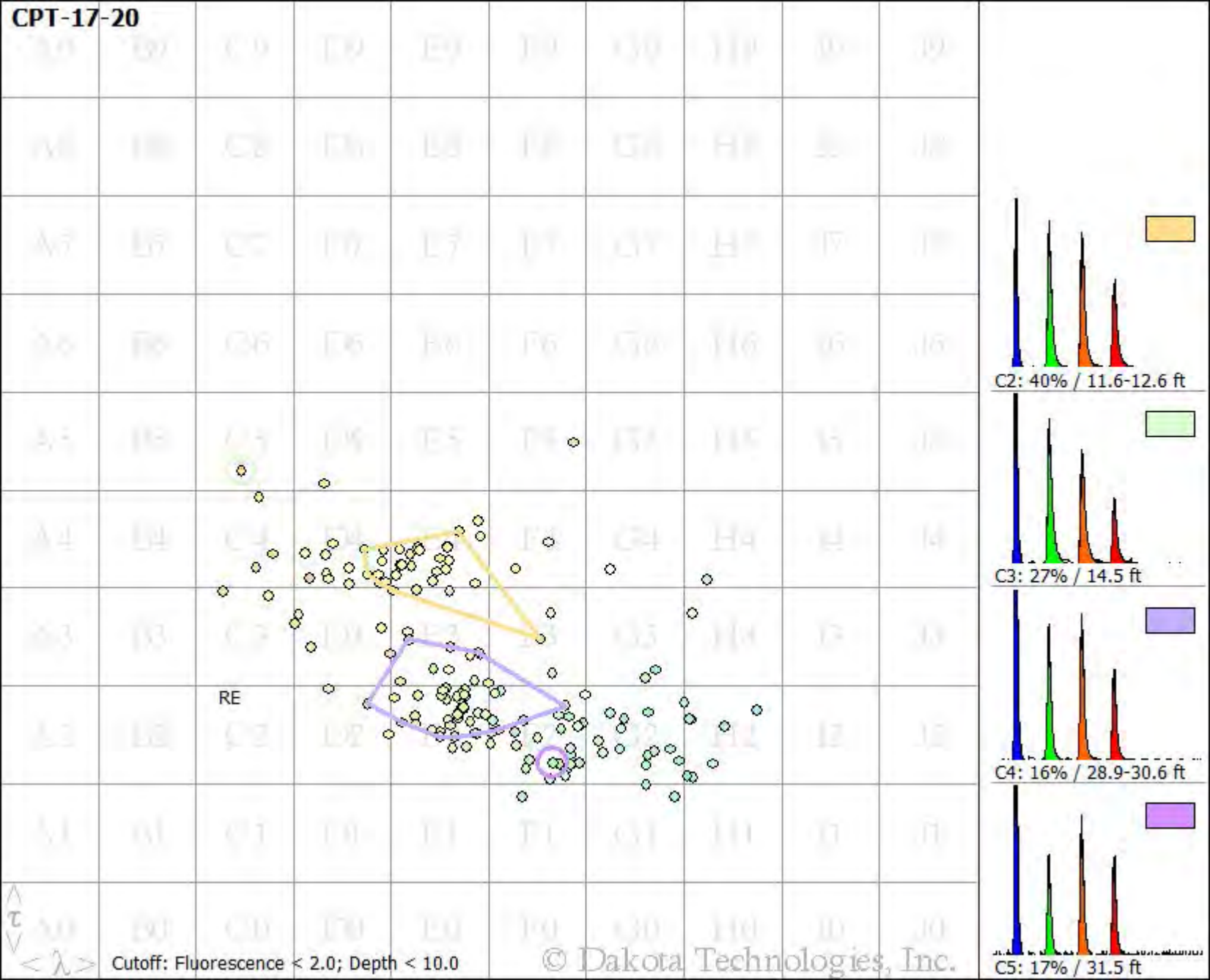
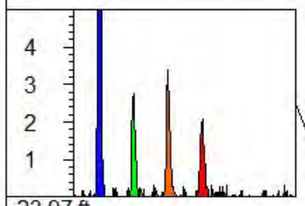
Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **62.31 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **86.4 %RE @ 11.88 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2020-01-10 08:49 CST**


CPT-17-20
RE
C2: 40% / 11.6-12.6 ft
C3: 27% / 14.5 ft
C4: 16% / 28.9-30.6 ft
C5: 17% / 31.5 ft
τ
λ
Cutoff: Fluorescence < 2.0; Depth < 10.0
© Dakota Technologies, Inc.

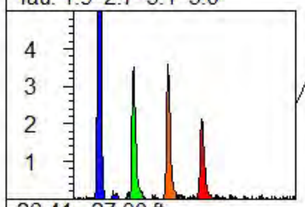
Callouts

Hand augered 0-10'

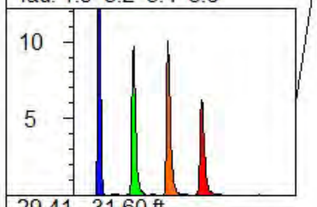
Used soild point to push through haed zone 25-34'



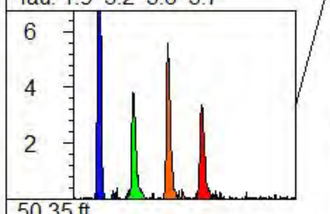
23.97 ft
9.7 %RE
Tau: 1.9 2.7 3.1 3.0



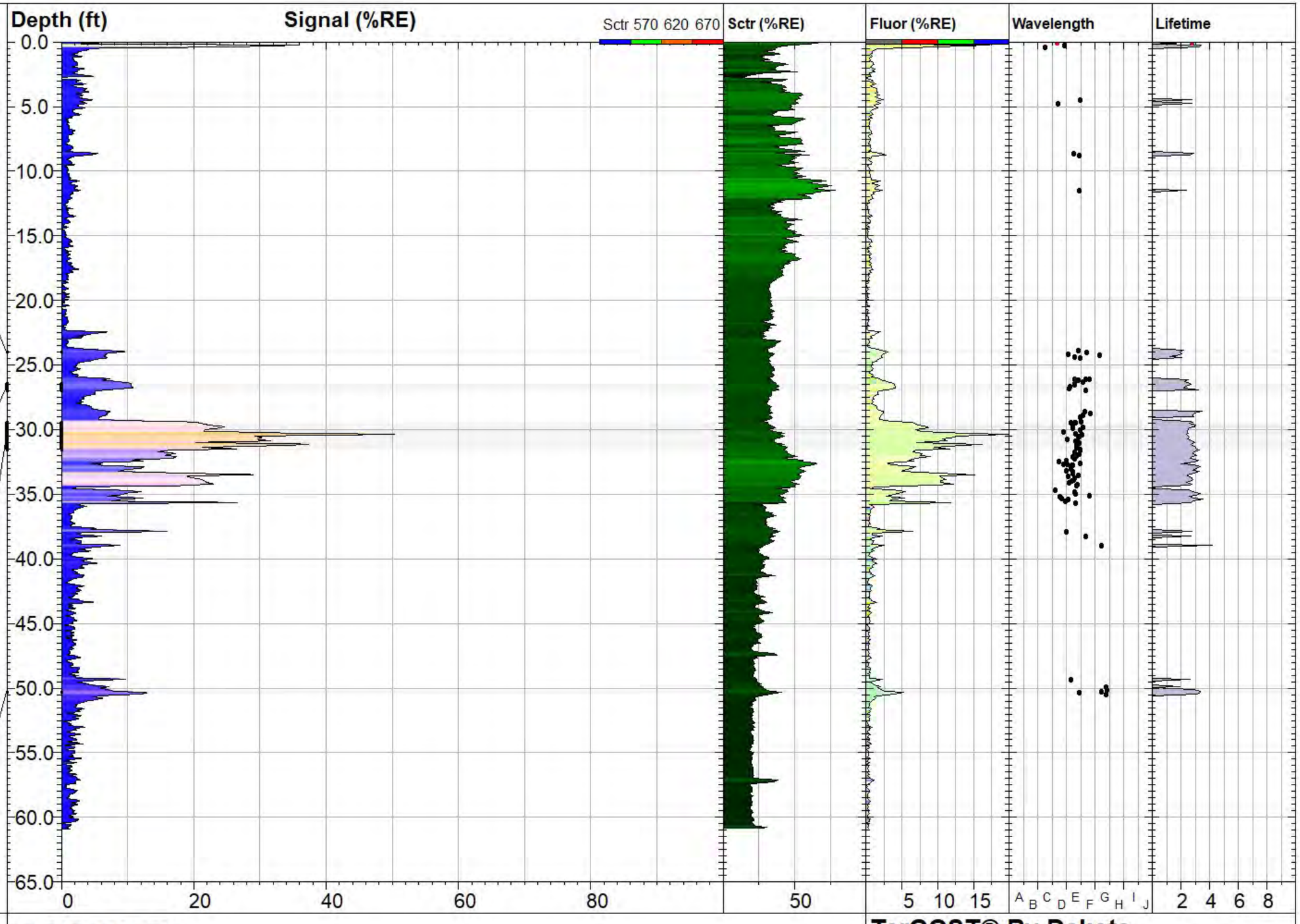
26.41 - 27.00 ft
9.2 %RE (s 2.3)
Tau: 1.9 3.2 3.4 3.8



29.41 - 31.60 ft
26.9 %RE (s 8.0)
Tau: 1.9 3.2 3.6 3.7



50.35 ft
12.9 %RE
Tau: 1.9 4.0 3.7 4.1



CPT-18-20

TarGOST® By Dakota
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Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **60.92 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **51.0 %RE @ 30.36 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2020-01-09 12:32 CST**

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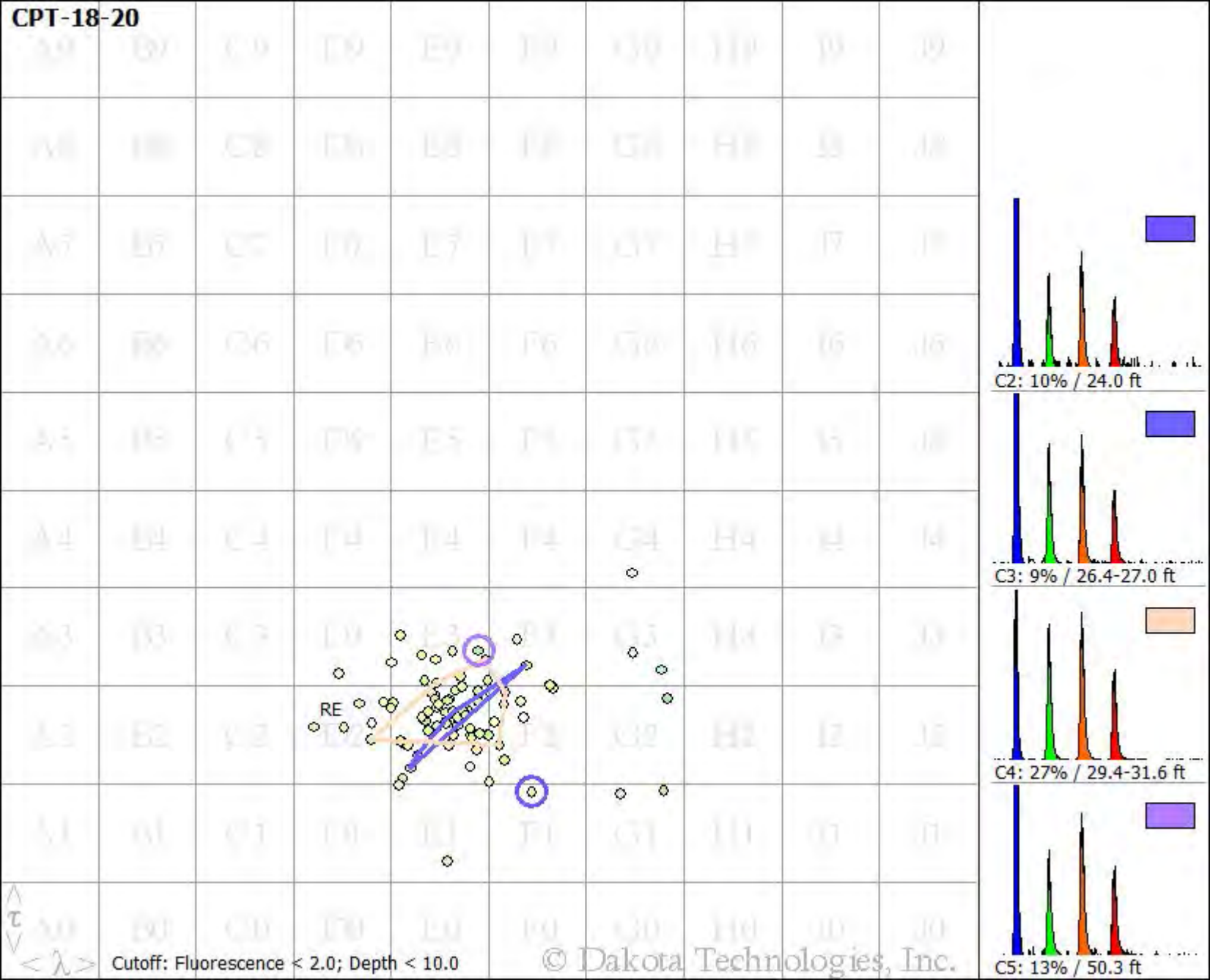
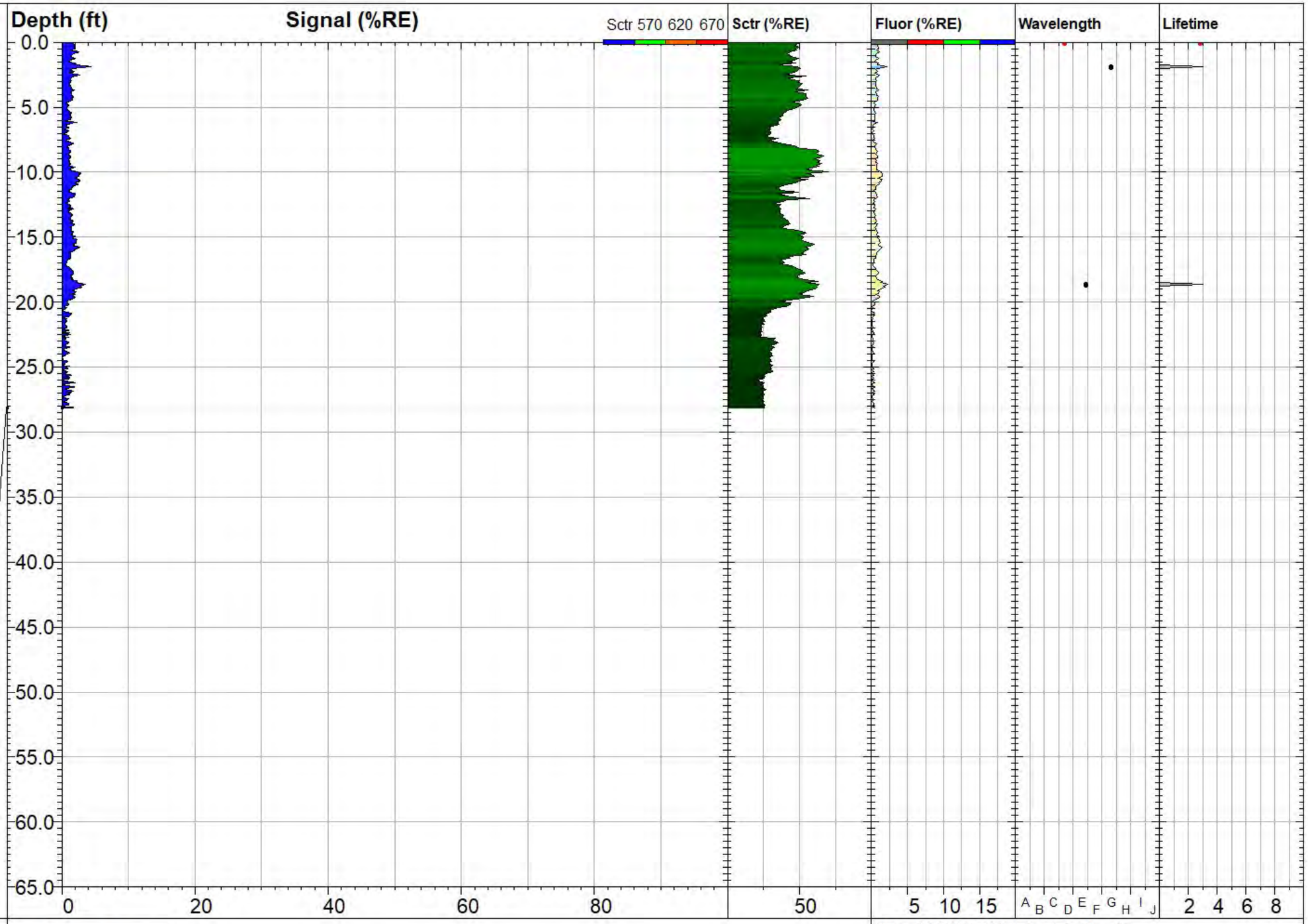

CPT-18-20
RE
C2: 10% / 24.0 ft
C3: 9% / 26.4-27.0 ft
C4: 27% / 29.4-31.6 ft
C5: 13% / 50.3 ft
Cutoff: Fluorescence < 2.0; Depth < 10.0
© Dakota Technologies, Inc.

Callouts

Hand augered 0-10'

Note 28.15:
Refusal at 28.15'



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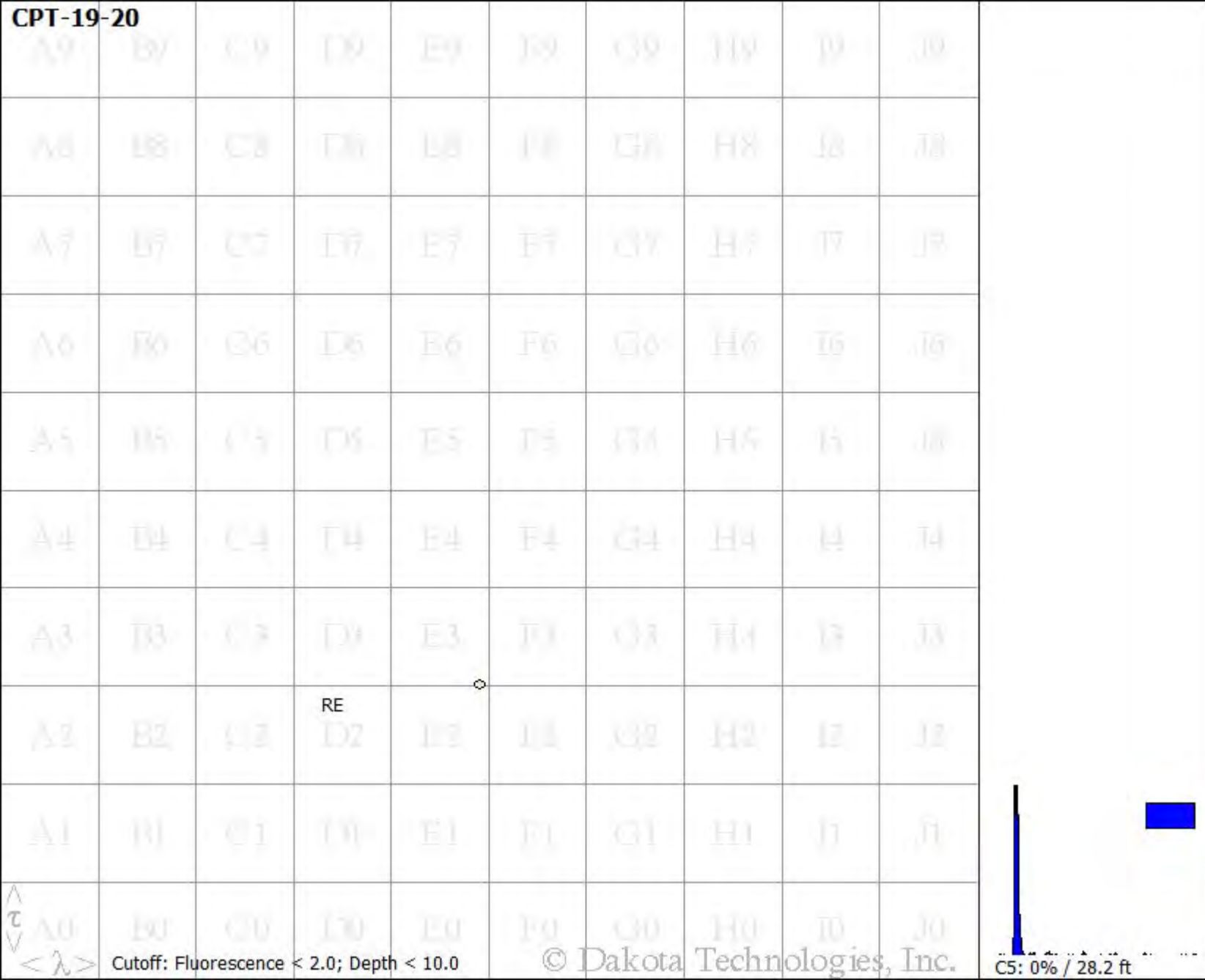
CPT-19-20

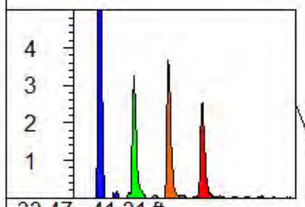
TarGOST® By Dakota
www.DakotaTechnologies.com

Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **28.15 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **4.4 %RE @ 1.87 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2020-01-09 09:21 CST**

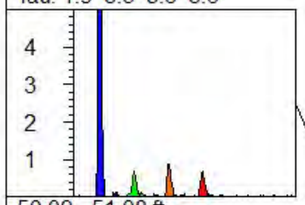

CPT-19-20
RE
Cutoff: Fluorescence < 2.0; Depth < 10.0
© Dakota Technologies, Inc.
C5: 0% / 28.2 ft

Callouts

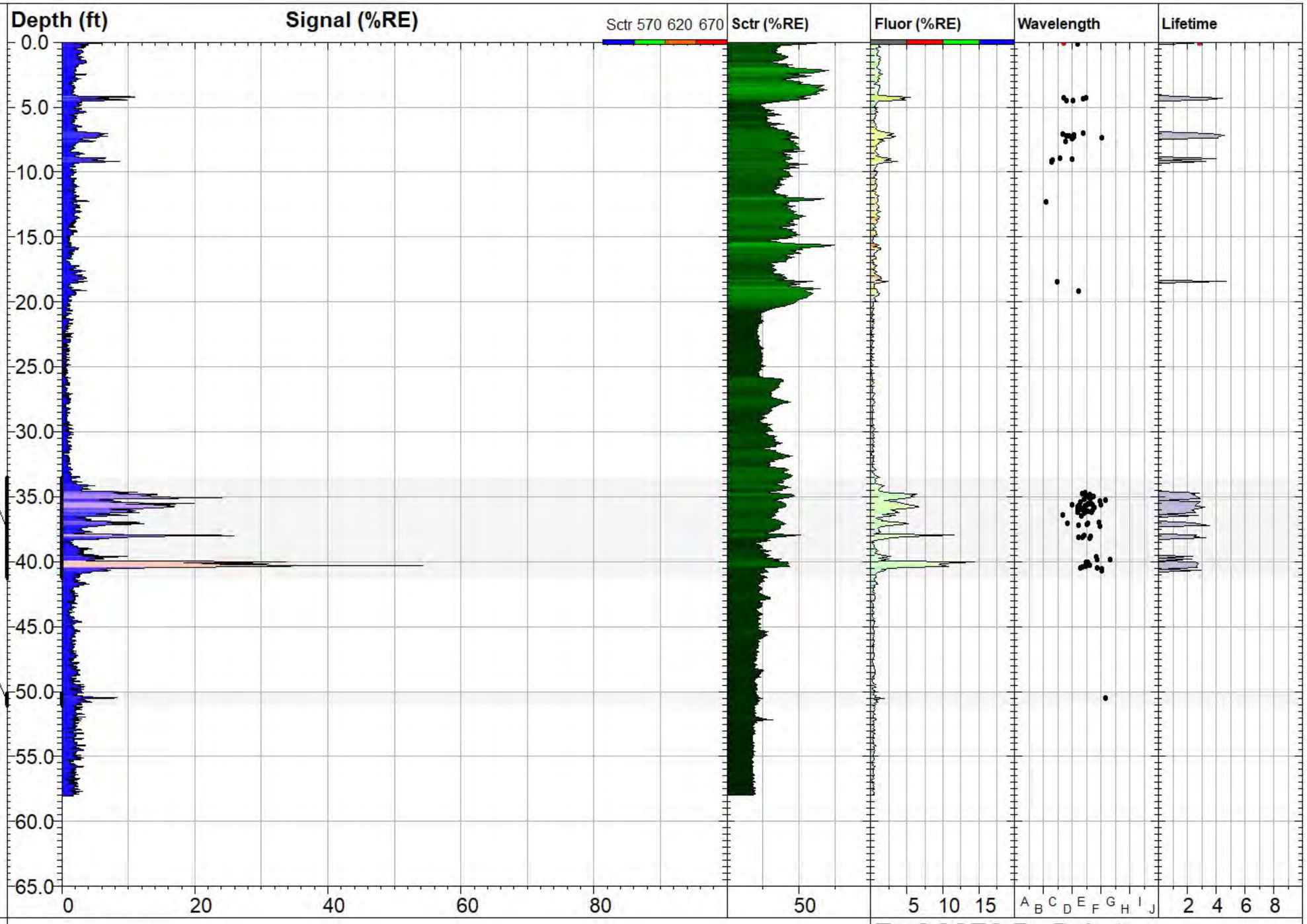
Hand augered 0-10'



33.47 - 41.31 ft
8.4 %RE (s 7.6)
Tau: 1.9 3.3 3.6 3.6



50.09 - 51.08 ft
3.4 %RE (s 1.7)
Tau: 2.0 3.1 3.3 3.8



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CPT-19A-20

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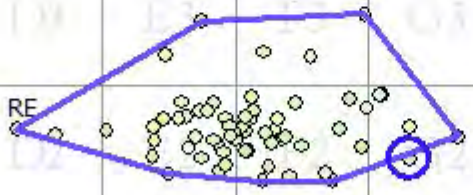
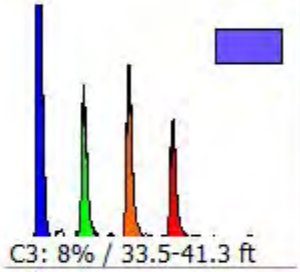
Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **58.02 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **55.0 %RE @ 40.30 ft**
Operator / Unit: **D. Thompson / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2020-01-21 11:08 CST**

CPT-19A-20





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Cutoff: Fluorescence < 2.0; Depth < 10.0

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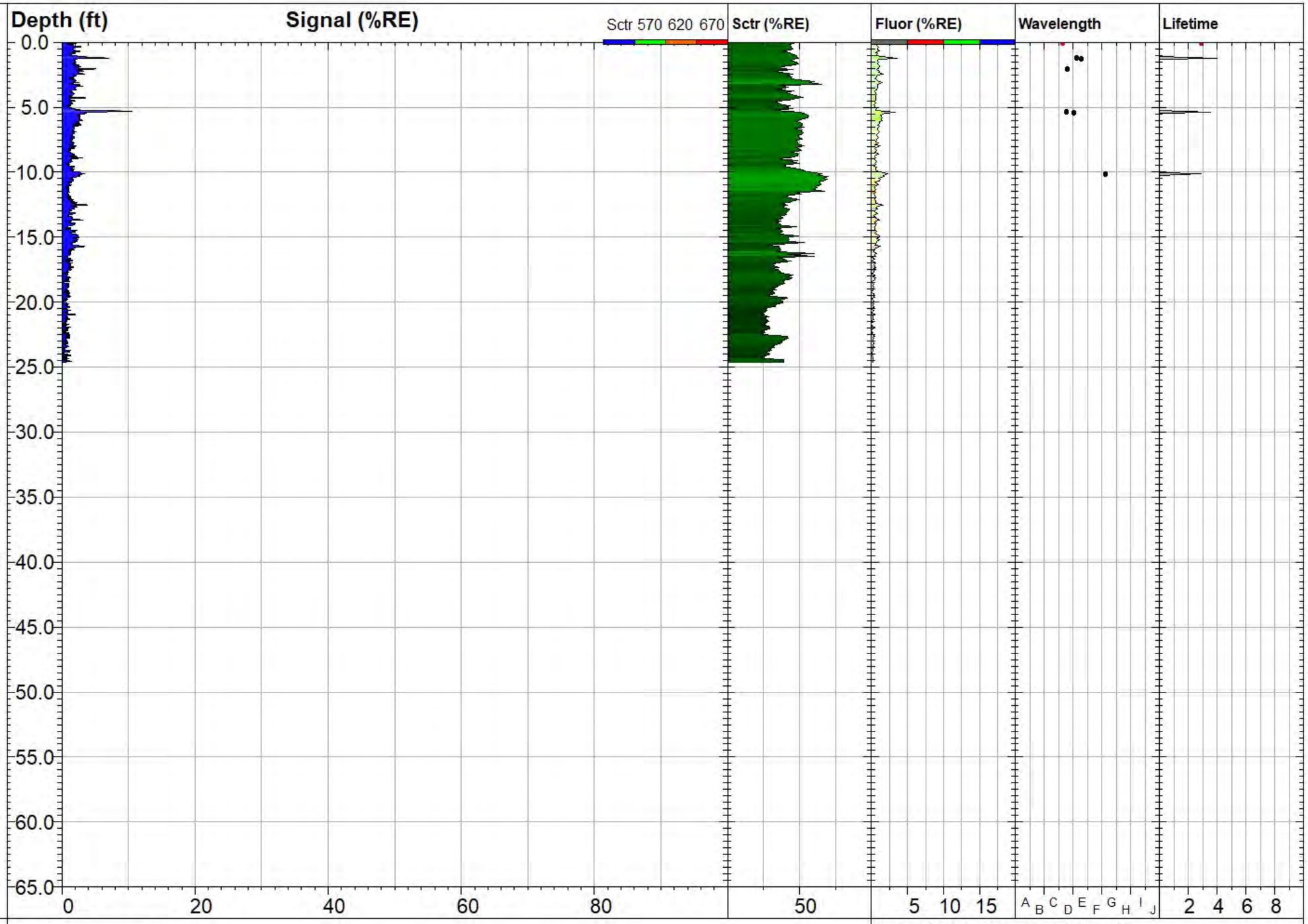
Callouts

Hand augered 0-10'

refusal @ 24.61'



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CPT-20-20

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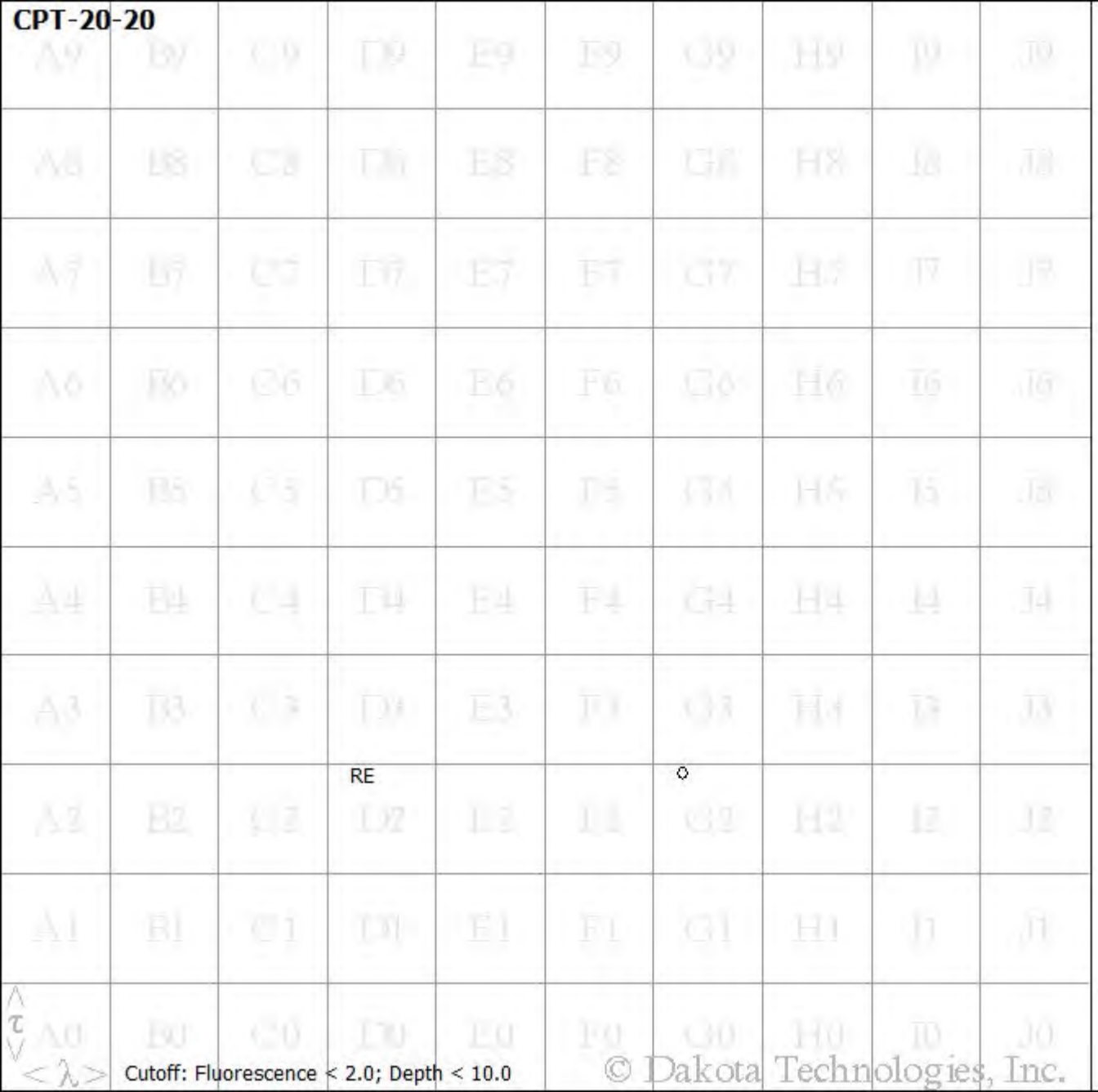
Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **24.61 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **10.5 %RE @ 5.30 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2020-01-08 13:42 CST**



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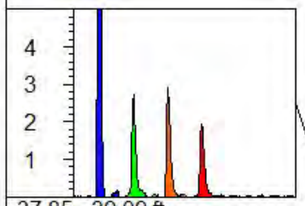
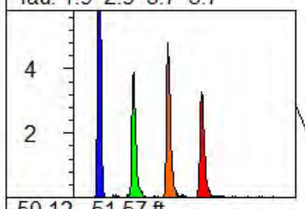
Callouts

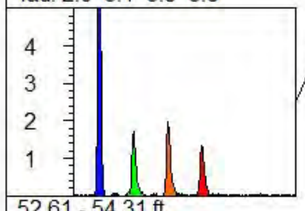
Hand augered 0-10'



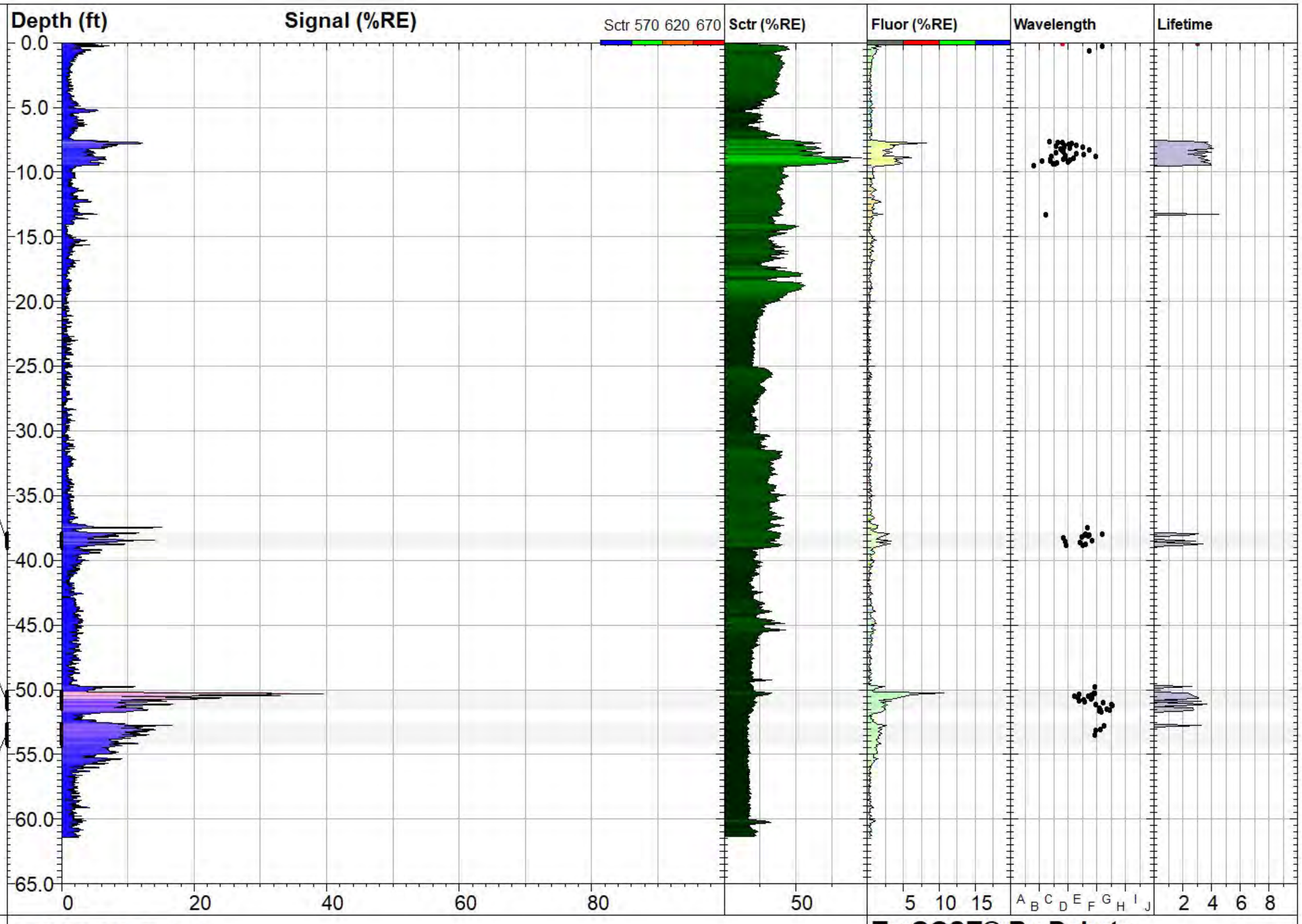
37.85 - 39.09 ft
6.6 %RE (s 3.1)
Tau: 1.9 2.9 3.7 3.7



50.12 - 51.57 ft
16.8 %RE (s 8.7)
Tau: 2.0 3.1 3.9 3.8



52.61 - 54.31 ft
10.2 %RE (s 2.3)
Tau: 2.0 3.7 3.3 3.5



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CPT-20A-20

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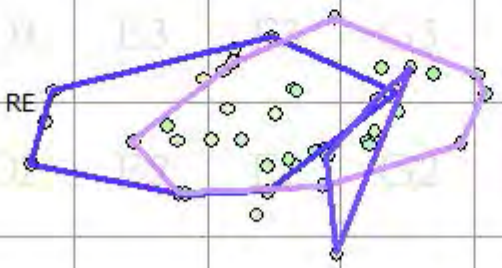
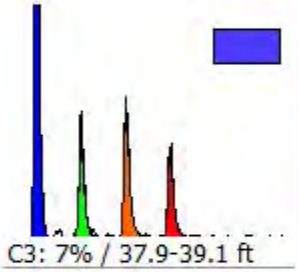
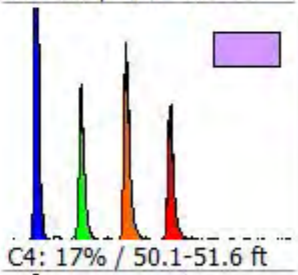
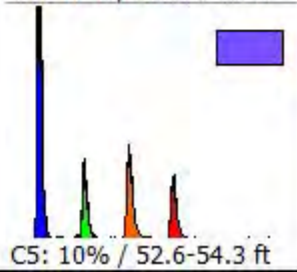
Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **61.39 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **39.6 %RE @ 50.33 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2020-01-21 09:32 CST**

CPT-20A-20









Cutoff: Fluorescence < 2.0; Depth < 10.0

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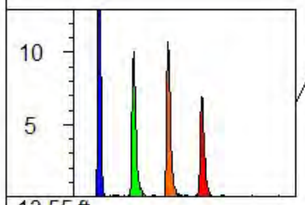
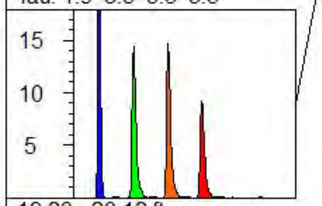
Callouts

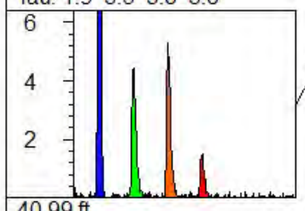
Hand Augered 0-8'



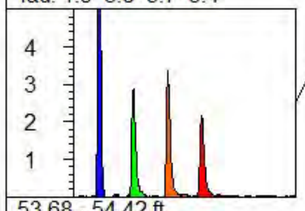
13.55 ft
23.5 %RE
Tau: 1.9 3.3 3.5 3.5



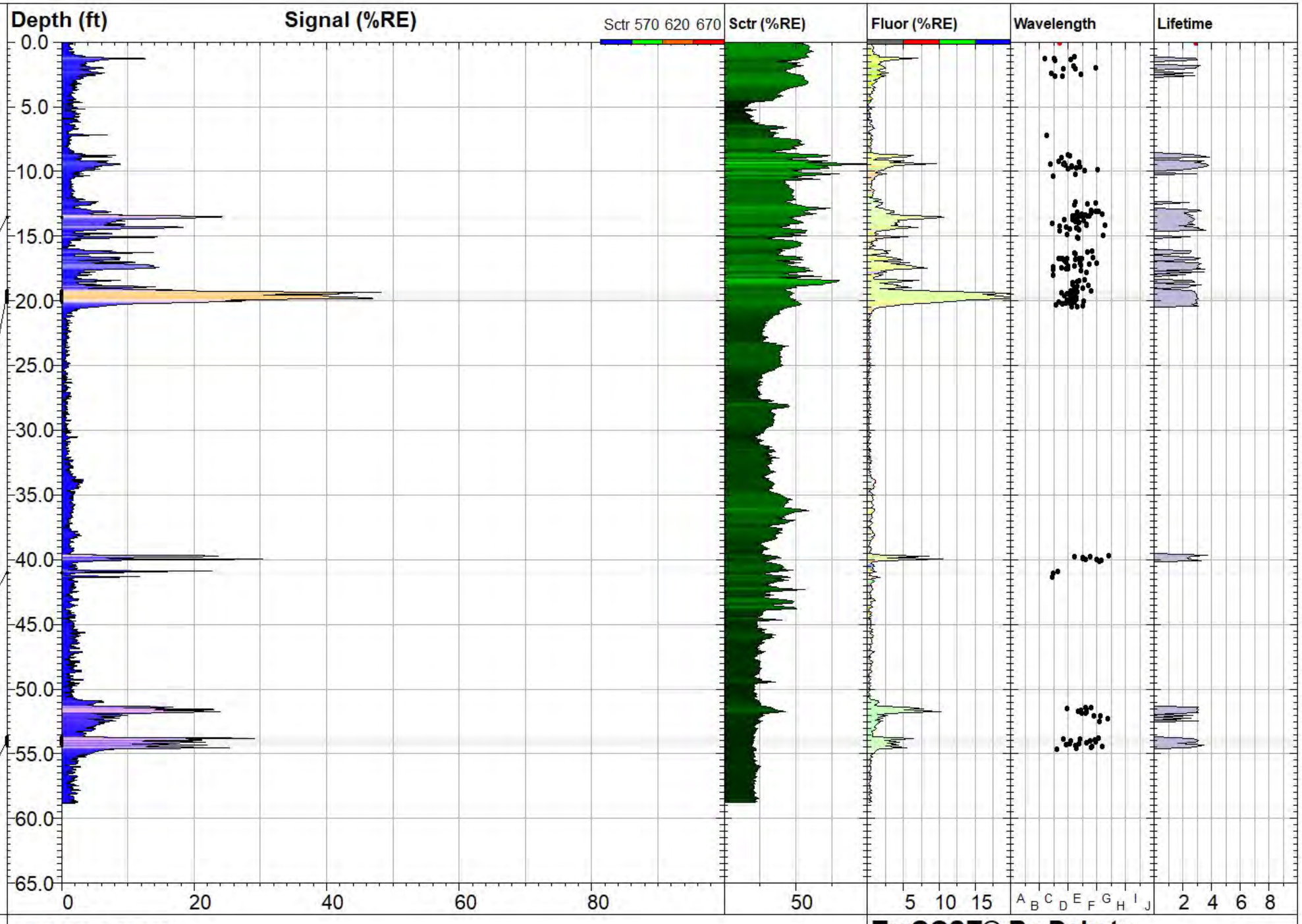
19.23 - 20.12 ft
32.5 %RE (s 8.9)
Tau: 1.9 3.5 3.8 3.8



40.99 ft
9.6 %RE
Tau: 1.9 3.8 3.7 3.4



53.68 - 54.42 ft
16.2 %RE (s 6.7)
Tau: 2.1 3.0 3.6 3.6



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CPT-21-20

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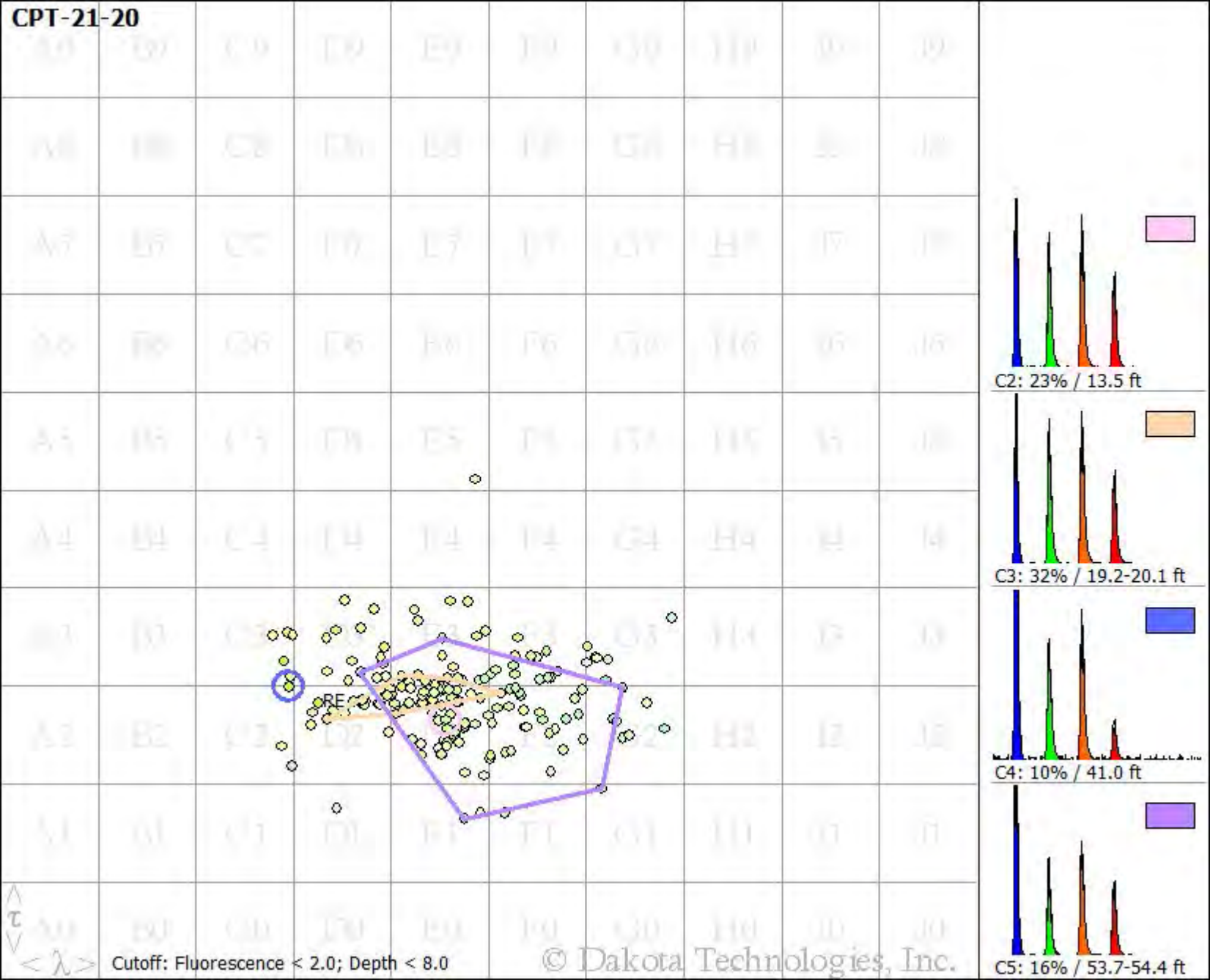
Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **58.84 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **48.9 %RE @ 19.34 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2020-01-08 11:53 CST**


CPT-21-20
C2: 23% / 13.5 ft
C3: 32% / 19.2-20.1 ft
C4: 10% / 41.0 ft
C5: 16% / 53.7-54.4 ft
Cutoff: Fluorescence < 2.0; Depth < 8.0
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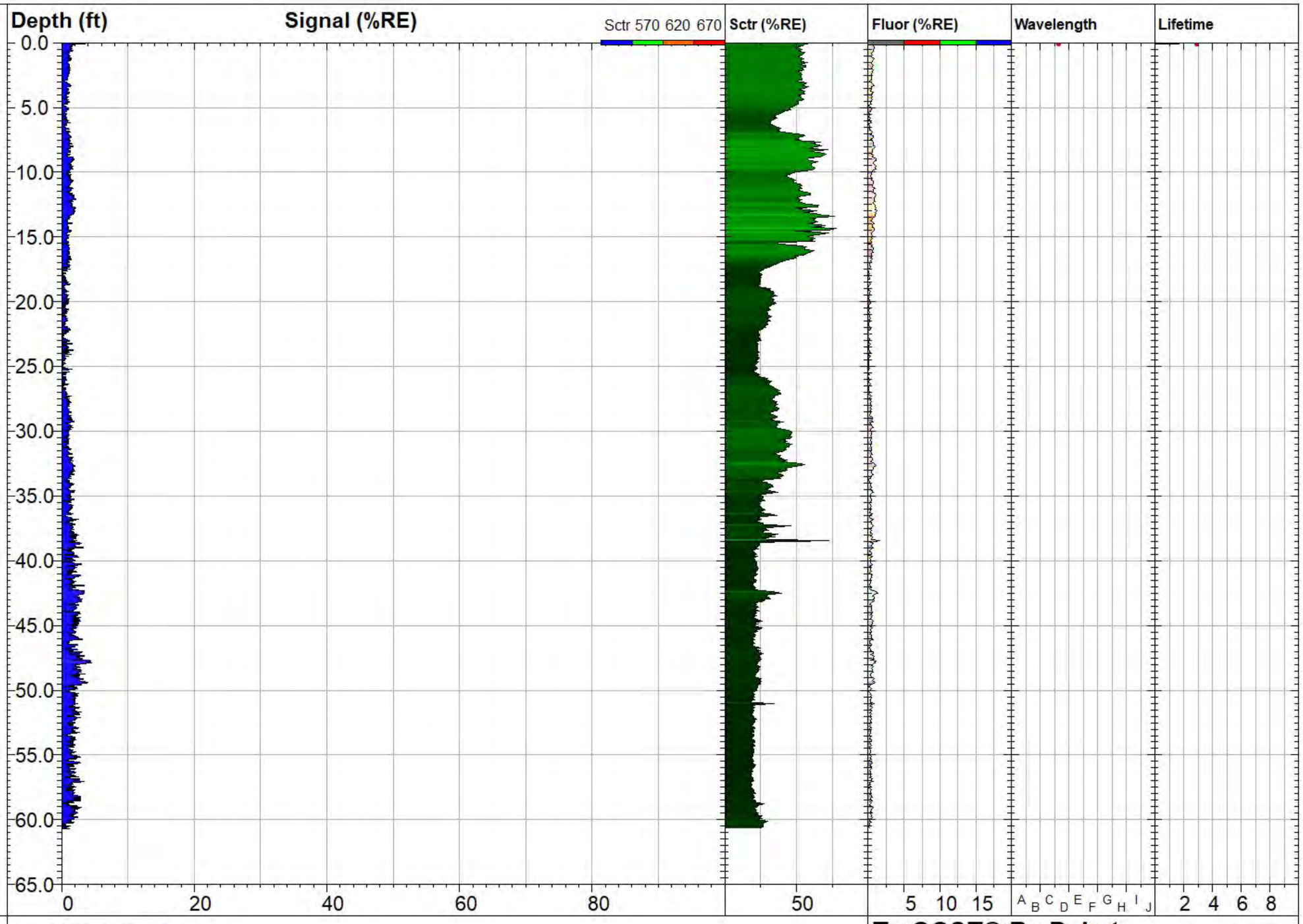
Callouts

Hand augered 0-10'



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CPT-22-19

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Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **60.68 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **4.5 %RE @ 47.88 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2019-12-08 10:16 CST**

CPT-22-19

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Cutoff: Fluorescence < 2.0; Depth < 10.0

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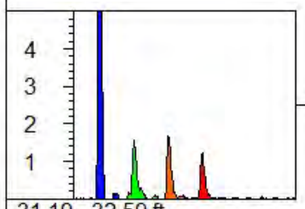
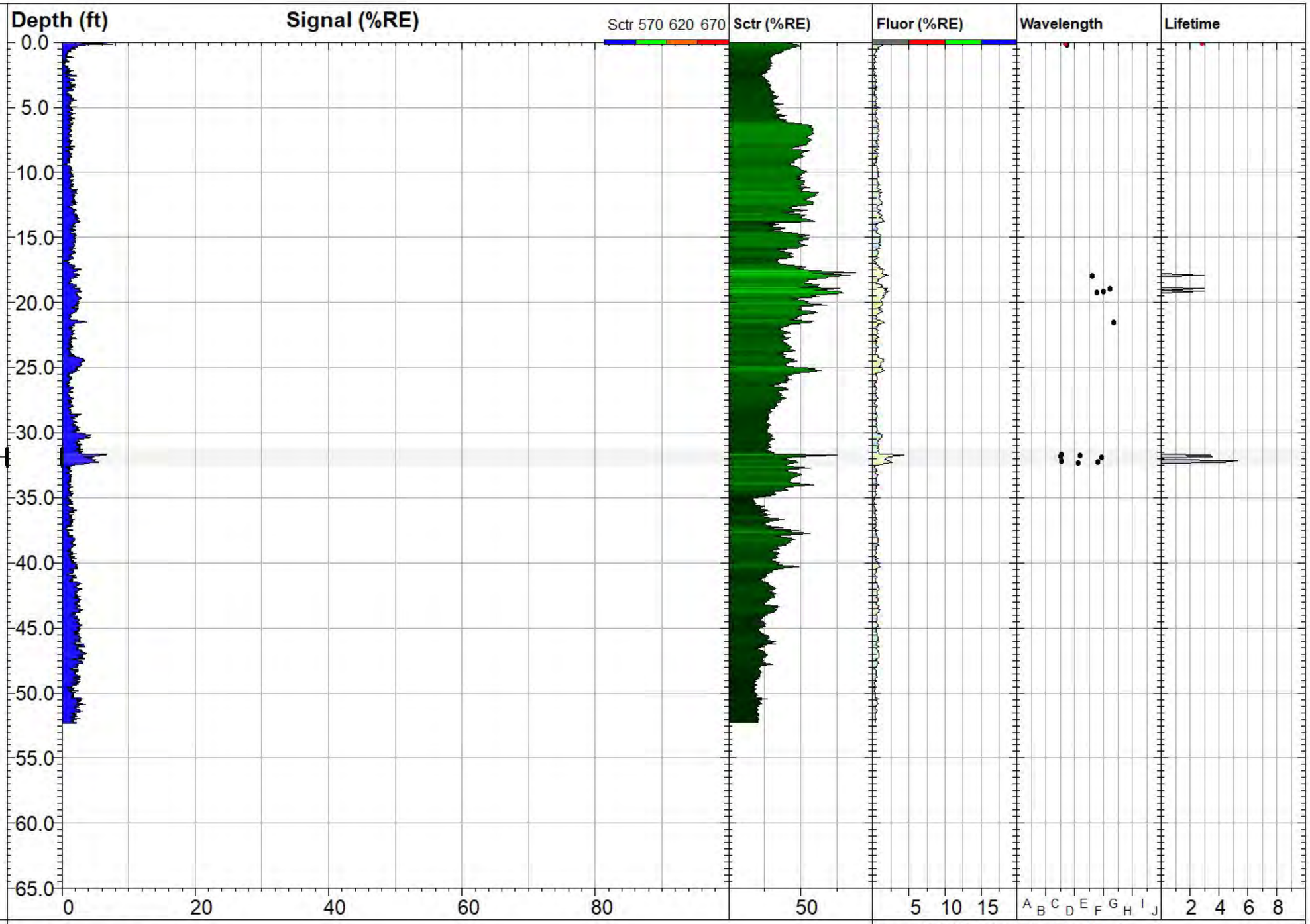
Callouts

Hand Augered to 10'.



31.19 - 32.59 ft
3.9 %RE (s 1.5)
Tau: 1.9 3.3 4.1 3.7



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CPT-23-20

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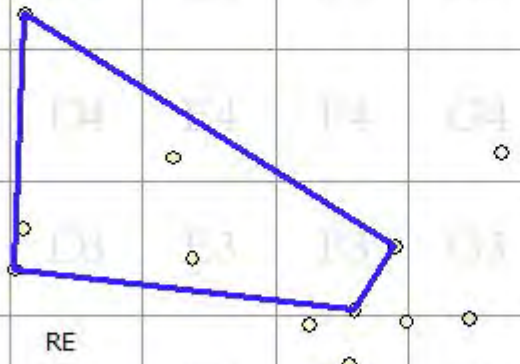
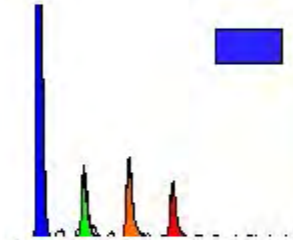
Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **52.29 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **7.6 %RE @ 0.14 ft**
Operator / Unit: **D. Thompson / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2020-01-23 10:05 CST**

CPT-23-20





Cutoff: Fluorescence < 2.0; Depth < 10.0

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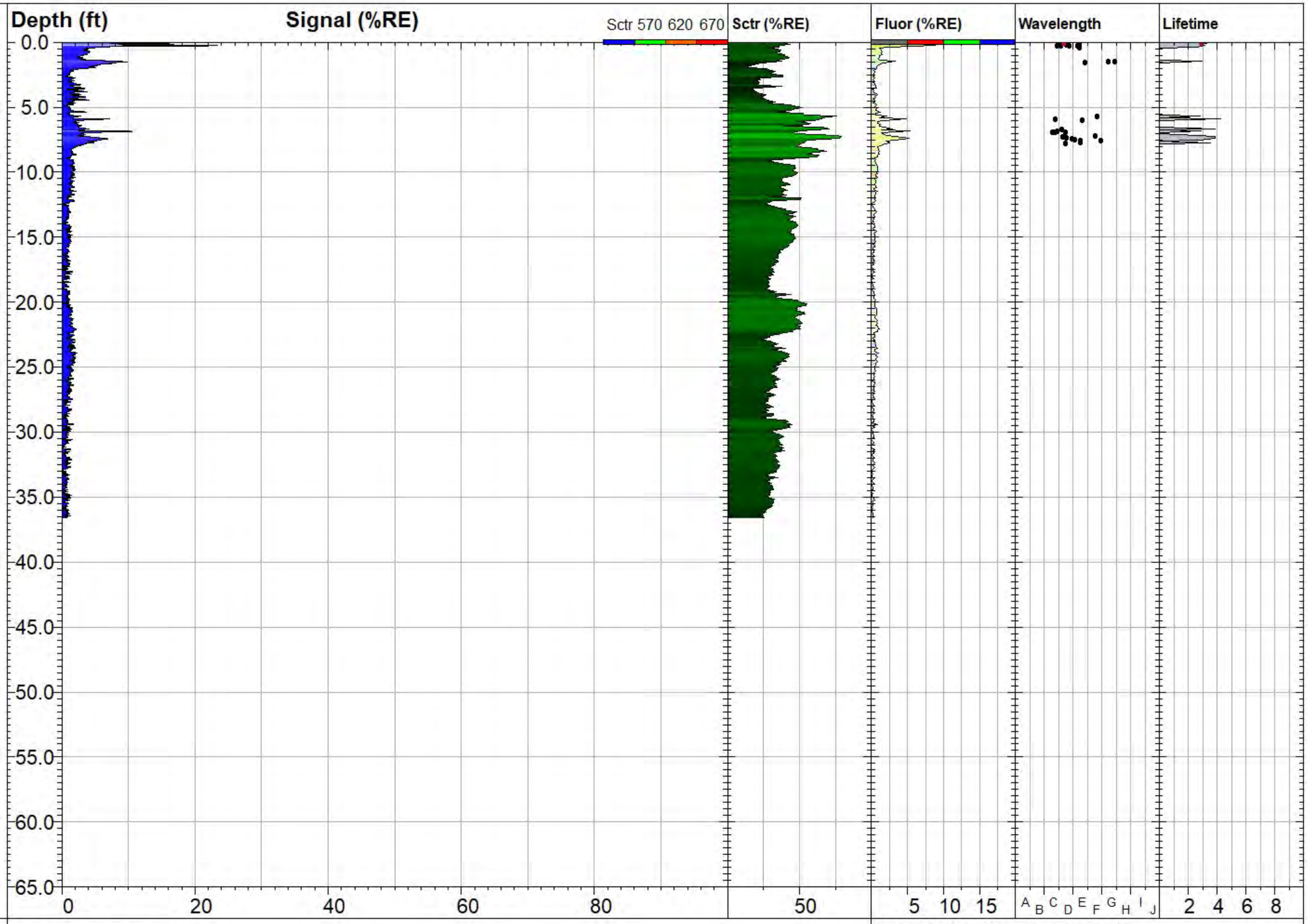
Callouts

Hand augered 0-10'



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CPT-24-20

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Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **36.59 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **24.1 %RE @ 0.26 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2020-01-11 13:36 CST**

CPT-24-20

A9	B9	C9	D9	E9	F9	G9	H9	I9	J9
A8	B8	C8	D8	E8	F8	G8	H8	I8	J8
A7	B7	C7	D7	E7	F7	G7	H7	I7	J7
A6	B6	C6	D6	E6	F6	G6	H6	I6	J6
A5	B5	C5	D5	E5	F5	G5	H5	I5	J5
A4	B4	C4	D4	E4	F4	G4	H4	I4	J4
A3	B3	C3	D3	E3	F3	G3	H3	I3	J3
A2	B2	C2	RE D2	E2	F2	G2	H2	I2	J2
A1	B1	C1	D1	E1	F1	G1	H1	I1	J1
A0	B0	C0	D0	E0	F0	G0	H0	I0	J0

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Cutoff: Fluorescence < 2.0; Depth < 10.0

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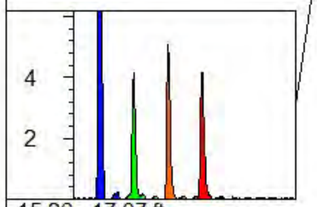
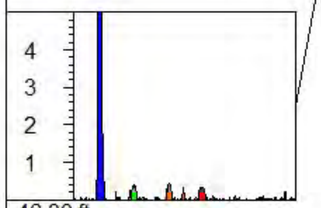
Callouts

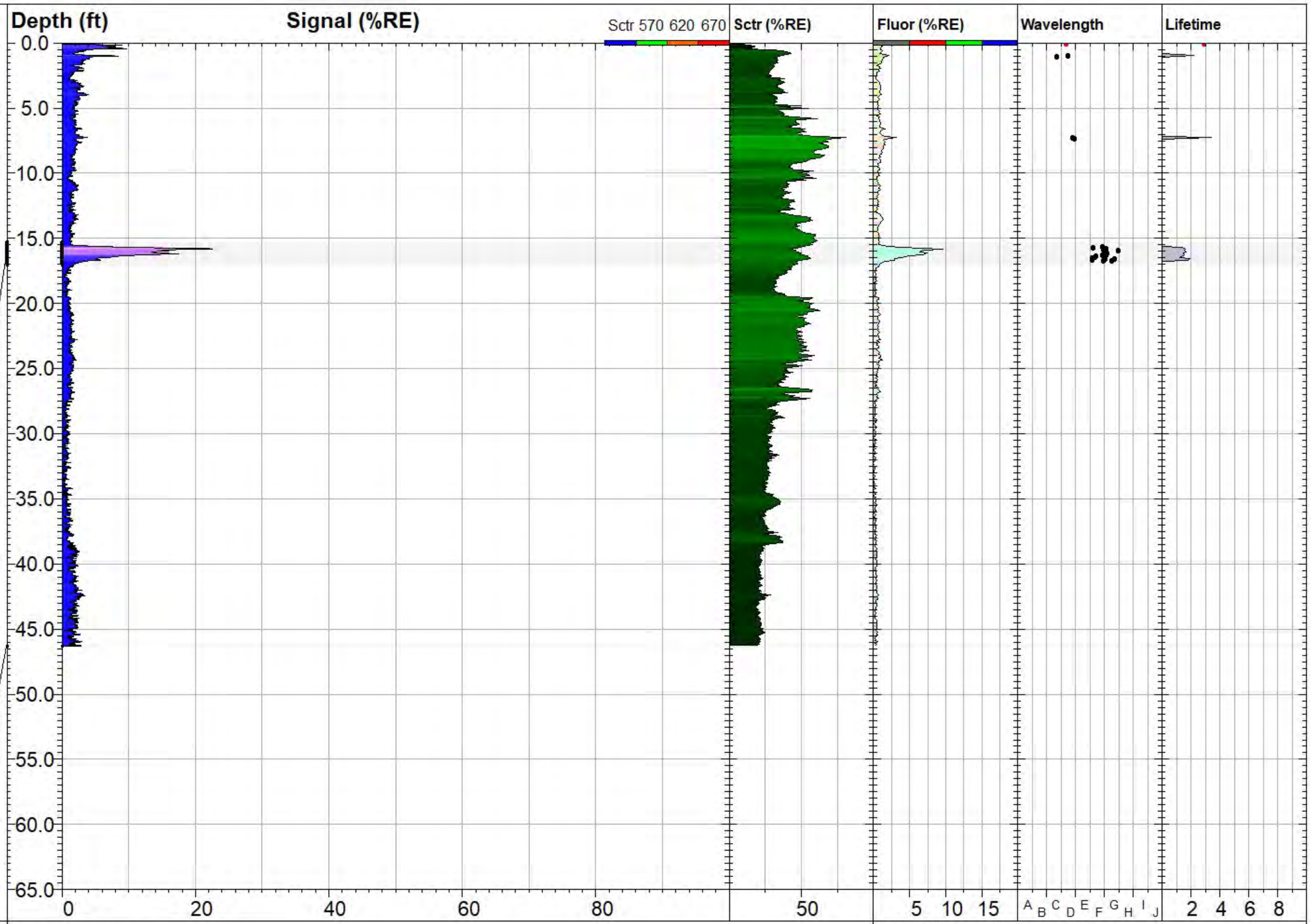
Hand Augered to 10'.



15.26 - 17.07 ft
7.1 %RE (s 6.3)
Tau: 1.9 2.5 2.5 3.2



46.30 ft
1.8 %RE
Refusal



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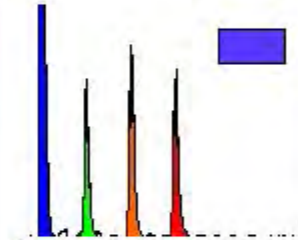
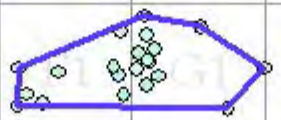
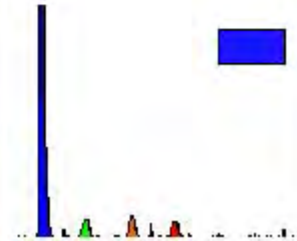
Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **46.30 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **22.7 %RE @ 15.81 ft**
Operator / Unit: **D. Thompson / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2020-01-27 10:50 CST**

CPT-24A-20



RE





Cutoff: Fluorescence < 2.0; Depth < 10.0

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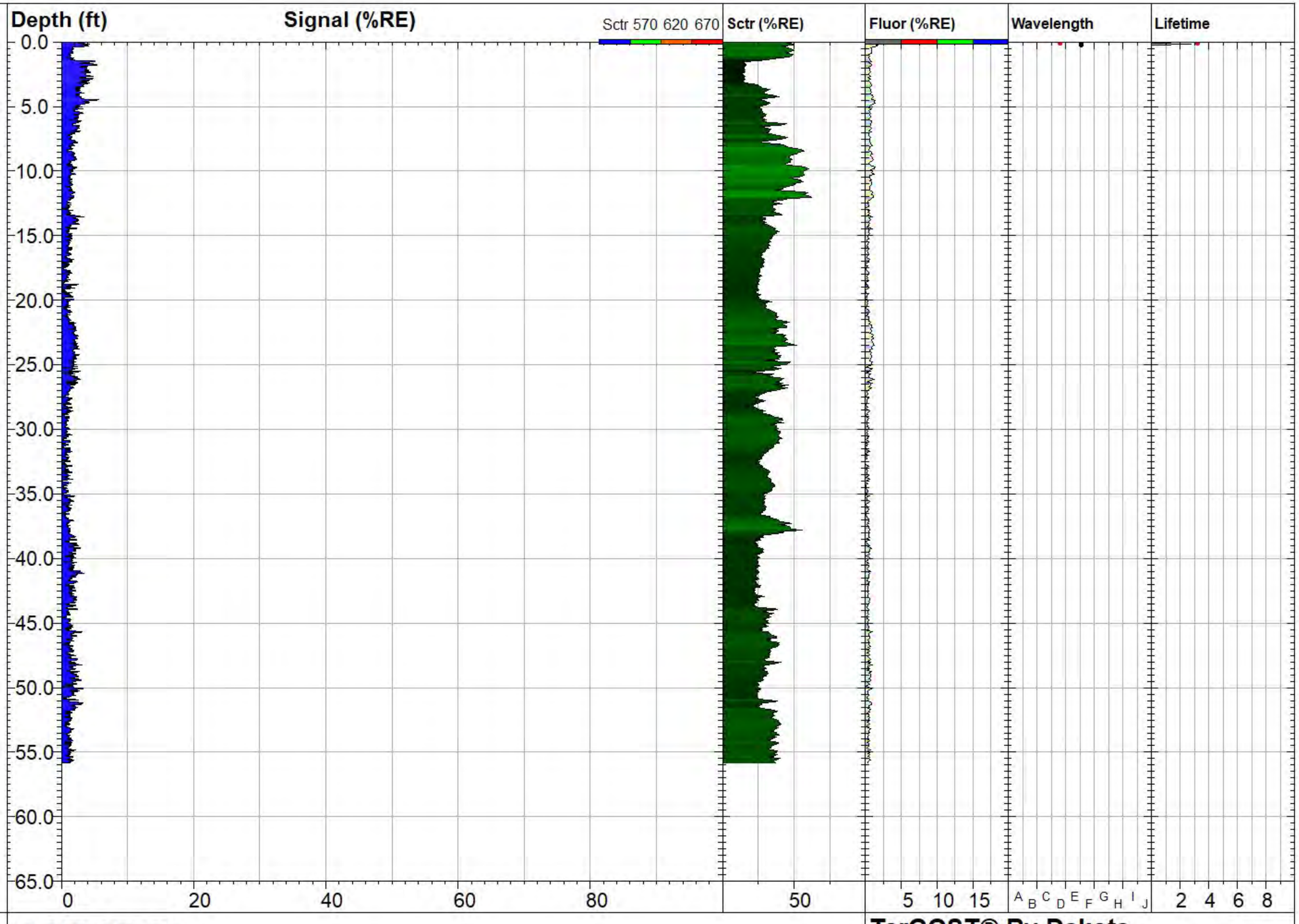
Callouts

Hand augered 0-10'

Soild point used to get through hard layer 31-43'



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CPT-25-20

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Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **55.85 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **5.8 %RE @ 4.47 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2020-01-12 09:31 CST**

CPT-25-20

A9	B9	C9	D9	E9	F9	G9	H9	I9	J9
A8	B8	C8	D8	E8	F8	G8	H8	I8	J8
A7	B7	C7	D7	E7	F7	G7	H7	I7	J7
A6	B6	C6	D6	E6	F6	G6	H6	I6	J6
A5	B5	C5	D5	E5	F5	G5	H5	I5	J5
A4	B4	C4	D4	E4	F4	G4	H4	I4	J4
A3	B3	C3	D3 RE	E3	F3	G3	H3	I3	J3
A2	B2	C2	D2	E2	F2	G2	H2	I2	J2
A1	B1	C1	D1	E1	F1	G1	H1	I1	J1
A0	B0	C0	D0	E0	F0	G0	H0	I0	J0

$\Delta\tau\nabla$ $<\lambda>$ Cutoff: Fluorescence < 2.0; Depth < 10.0

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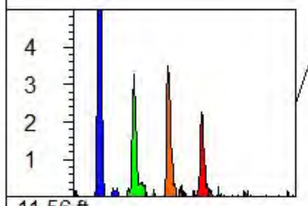
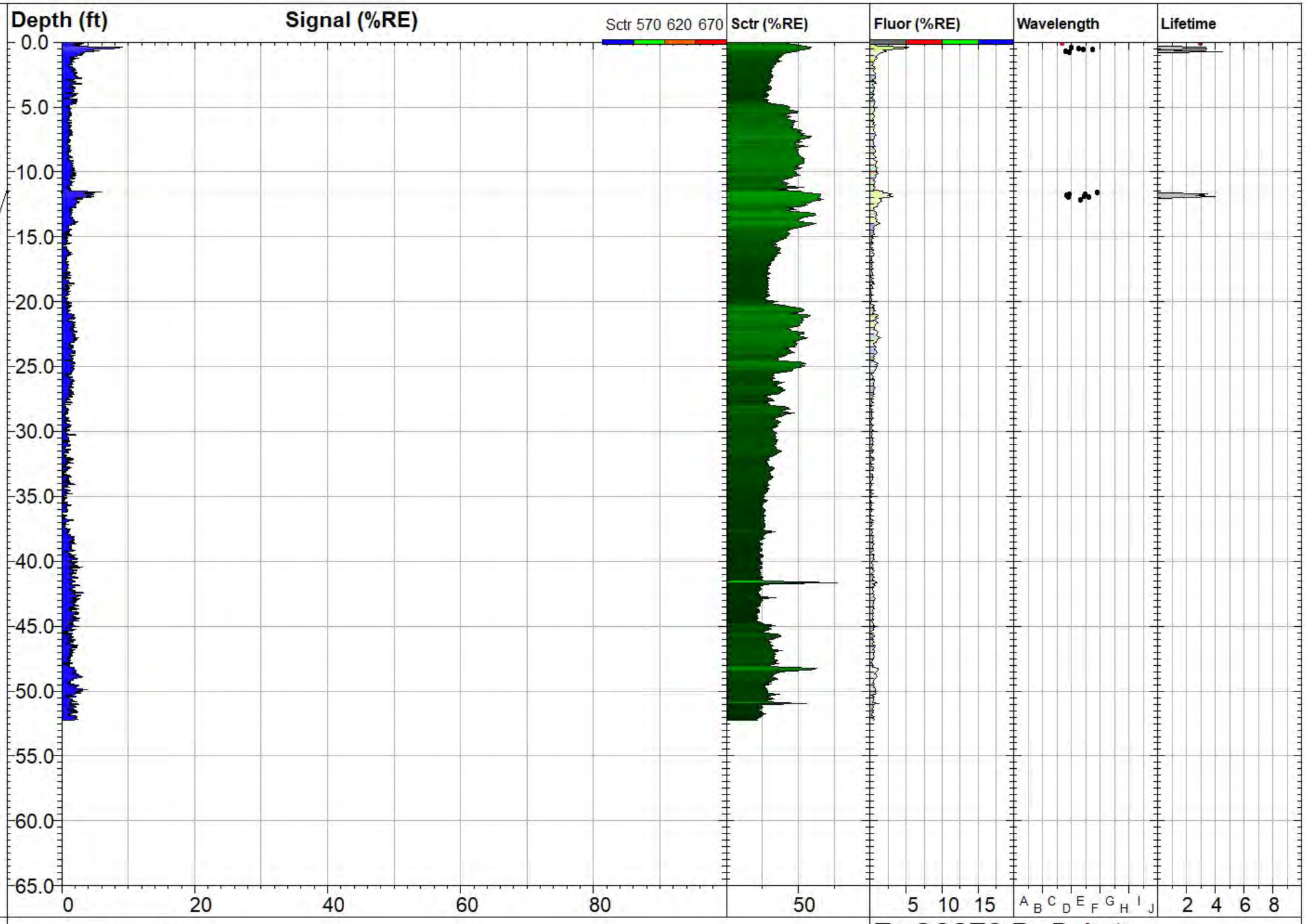
Callouts

Hand augered 0-10'

Soild point from 31-43' through hard layer



11.56 ft
5.9 %RE
Tau: 2.0 2.8 4.1 3.4



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CPT-26-20

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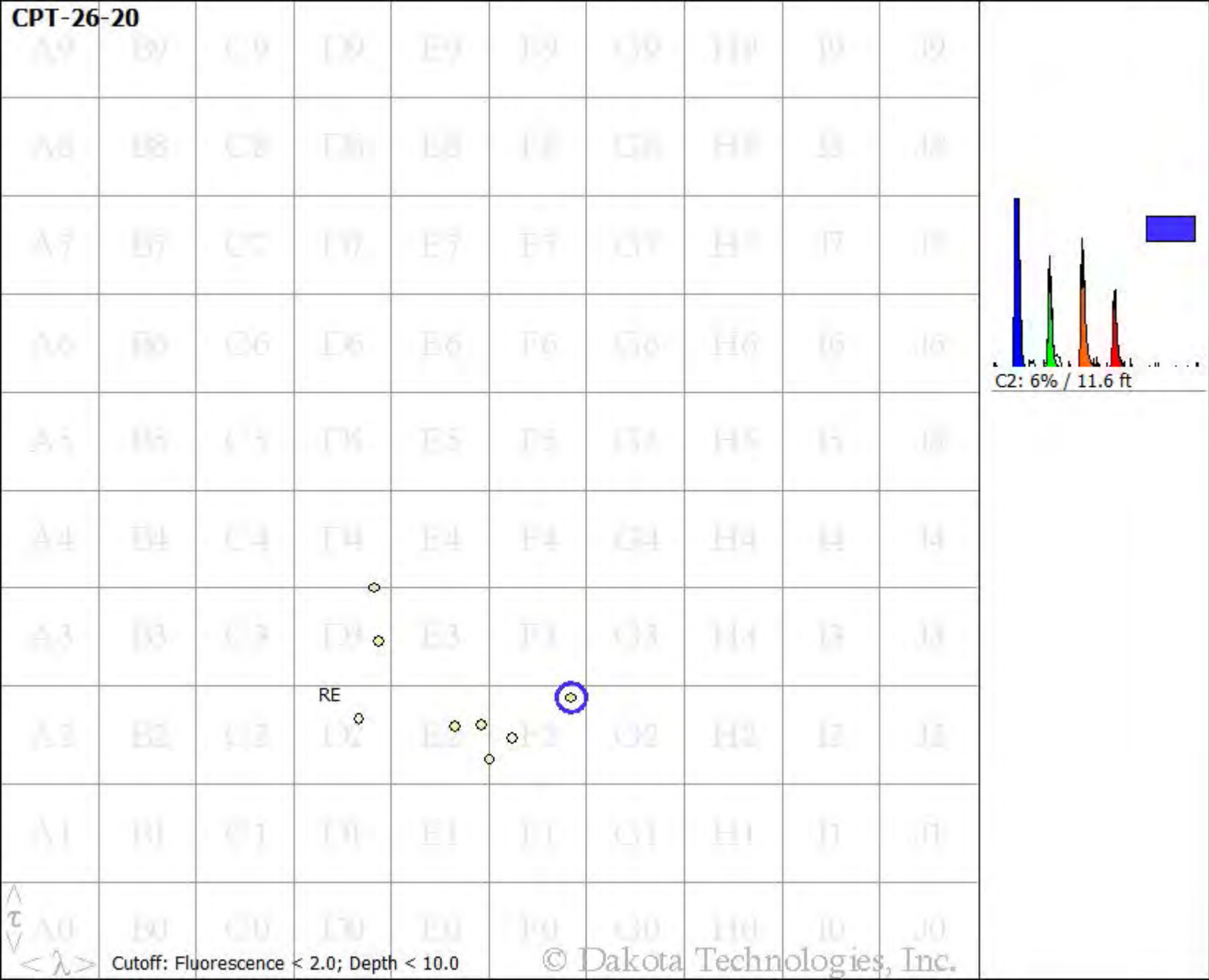
Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **52.27 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **9.1 %RE @ 0.39 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2020-01-12 11:26 CST**



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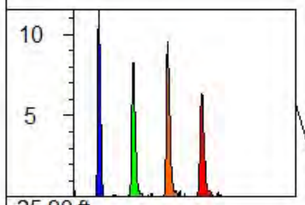
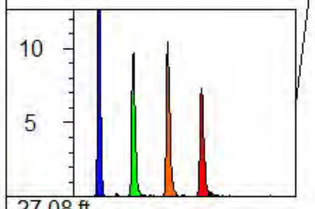
Callouts

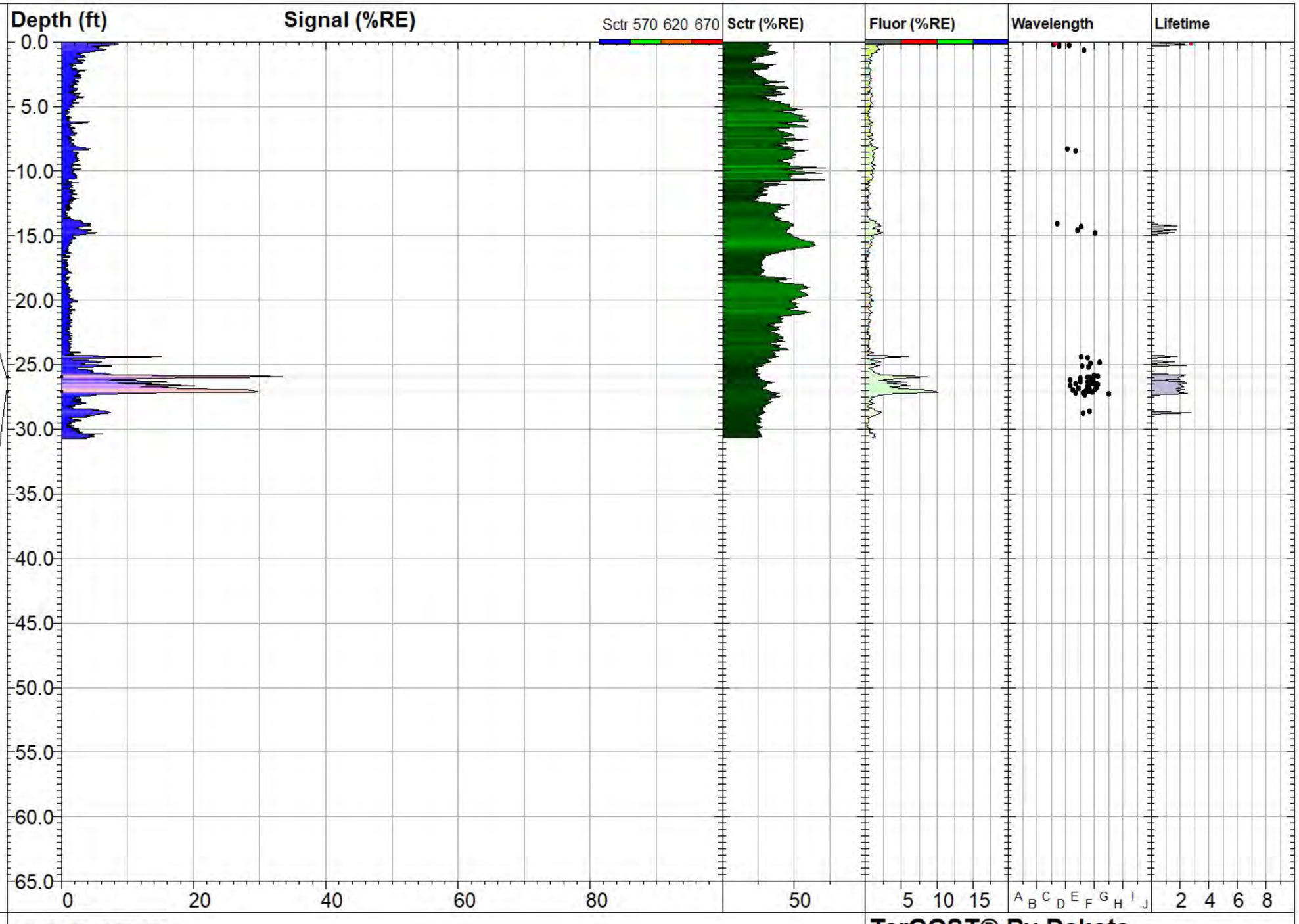
Hand Augered 0-10'



25.90 ft
34.3 %RE
Tau: 1.9 2.7 3.0 3.3



27.08 ft
29.7 %RE
Tau: 1.9 2.5 3.0 3.5



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CPT-27-20

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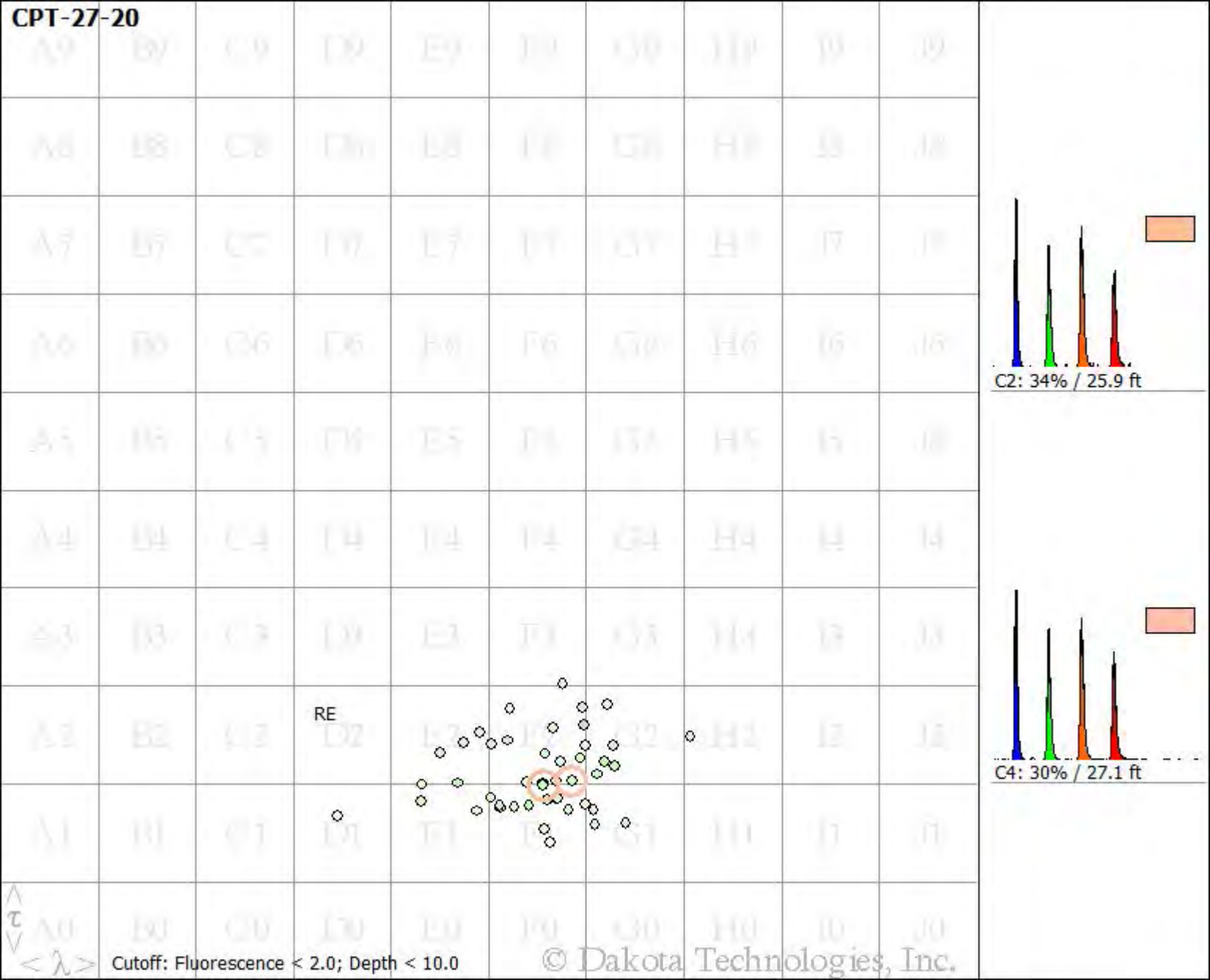
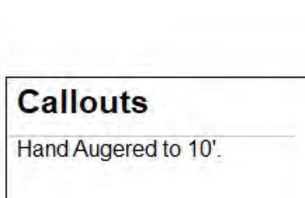
Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **30.69 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **34.3 %RE @ 25.90 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2020-01-12 14:08 CST**


CPT-27-20
RE
C2: 34% / 25.9 ft
C4: 30% / 27.1 ft
Cutoff: Fluorescence < 2.0; Depth < 10.0
© Dakota Technologies, Inc.

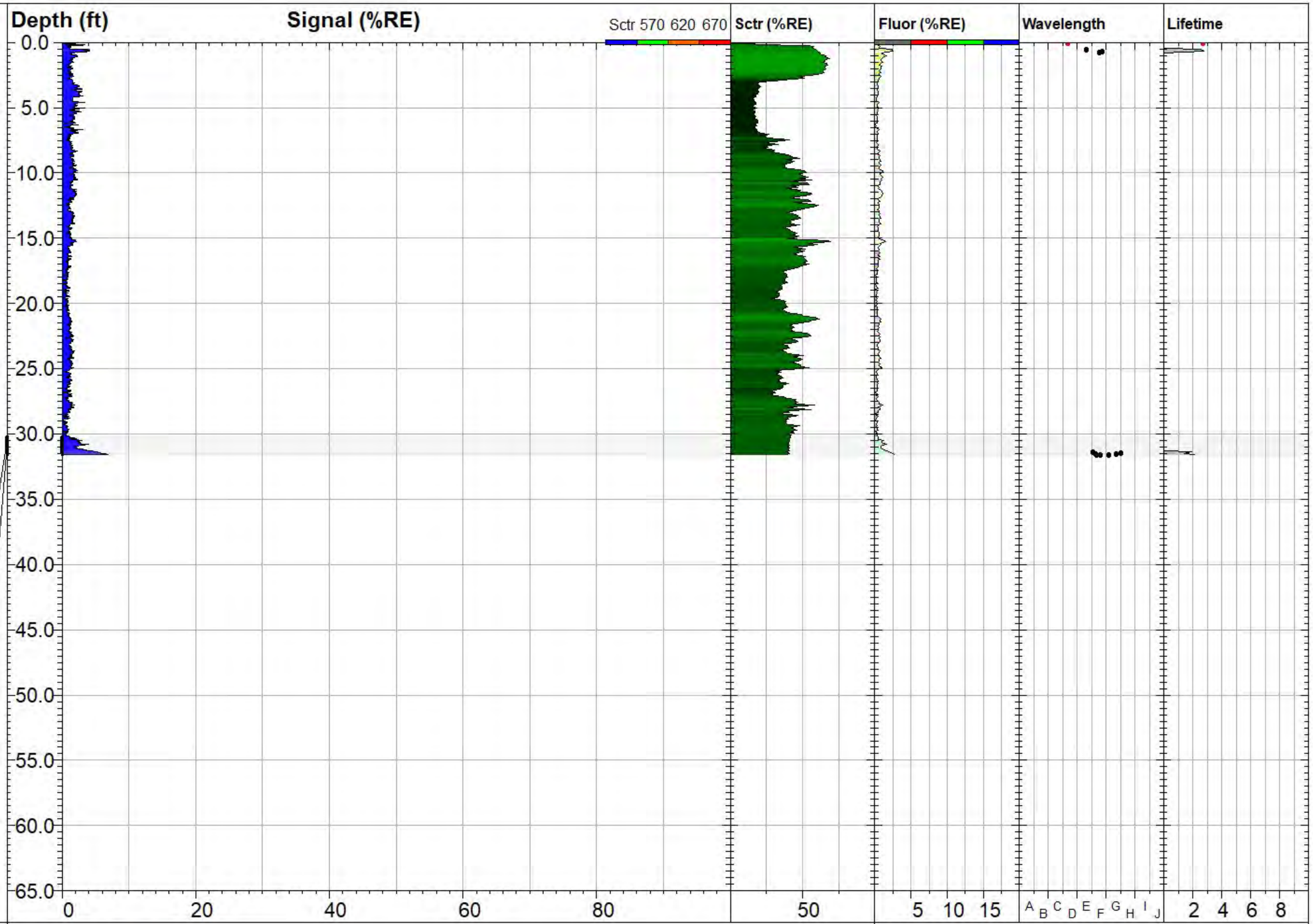
Callouts

Hand Augered to 10'.



30.19 - 31.58 ft
3.3 %RE (s 1.8)
Tau: 1.9 2.6 2.8 3.0

31.58 ft
6.7 %RE
Refusal



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CPT-27A-20

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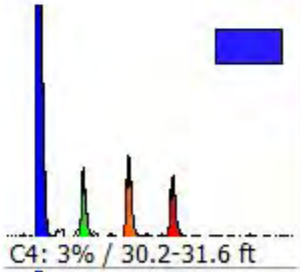
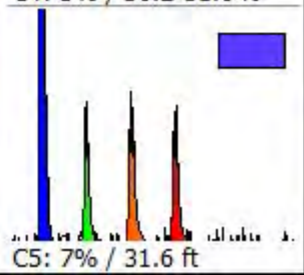
Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **31.58 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **6.9 %RE @ 31.57 ft**
Operator / Unit: **D. Thompson / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2020-01-27 14:03 CST**

CPT-27A-20

RE





Cutoff: Fluorescence < 2.0; Depth < 10.0

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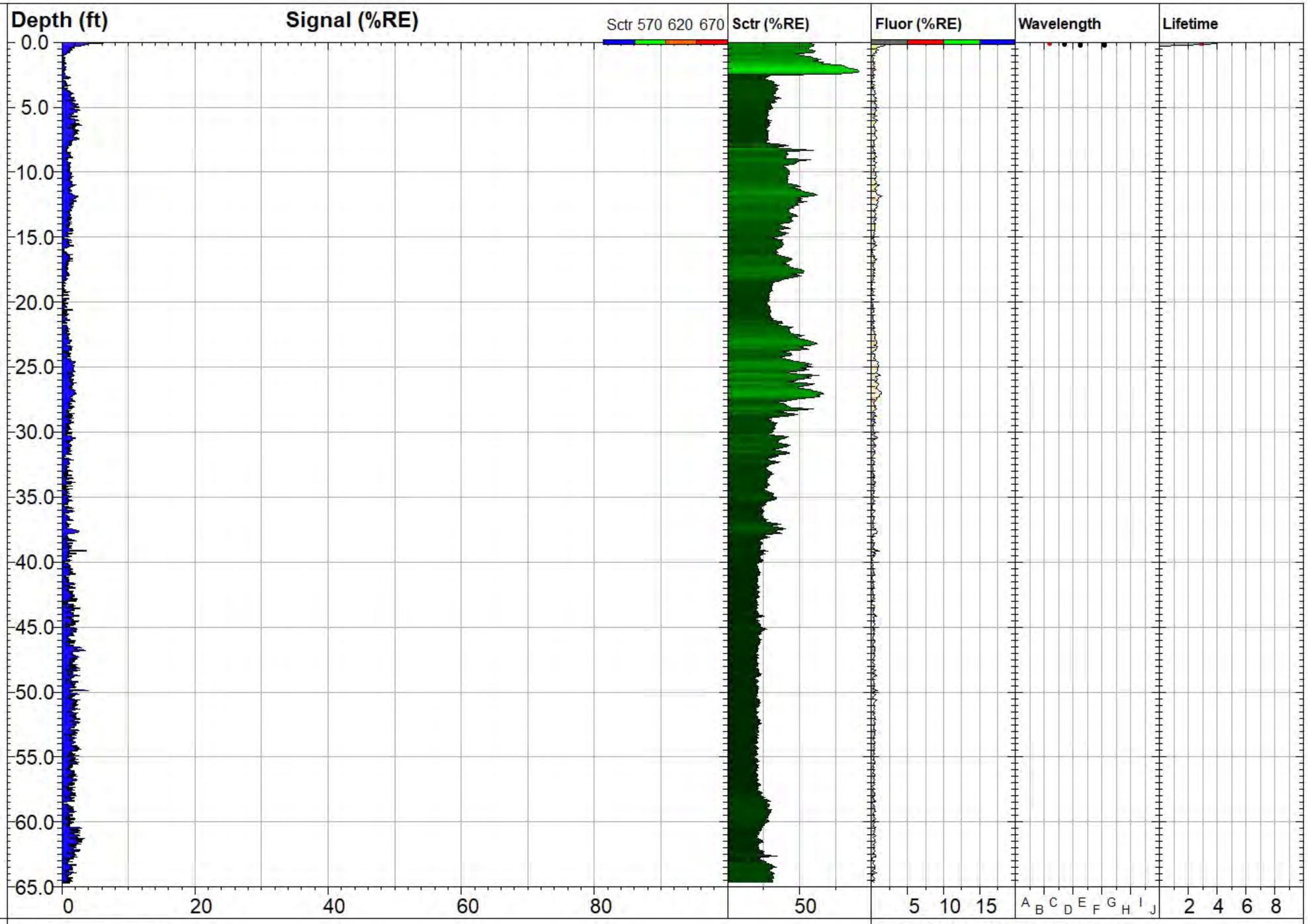
Callouts

Hand Augered 0-8'



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CPT-28-19

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Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **64.72 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **6.7 %RE @ 0.03 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2019-12-06 14:30 CST**

CPT-28-19

RE

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Cutoff: Fluorescence < 2.0; Depth < 8.0

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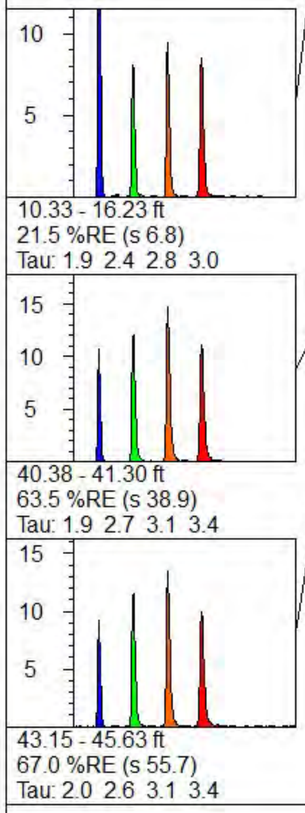
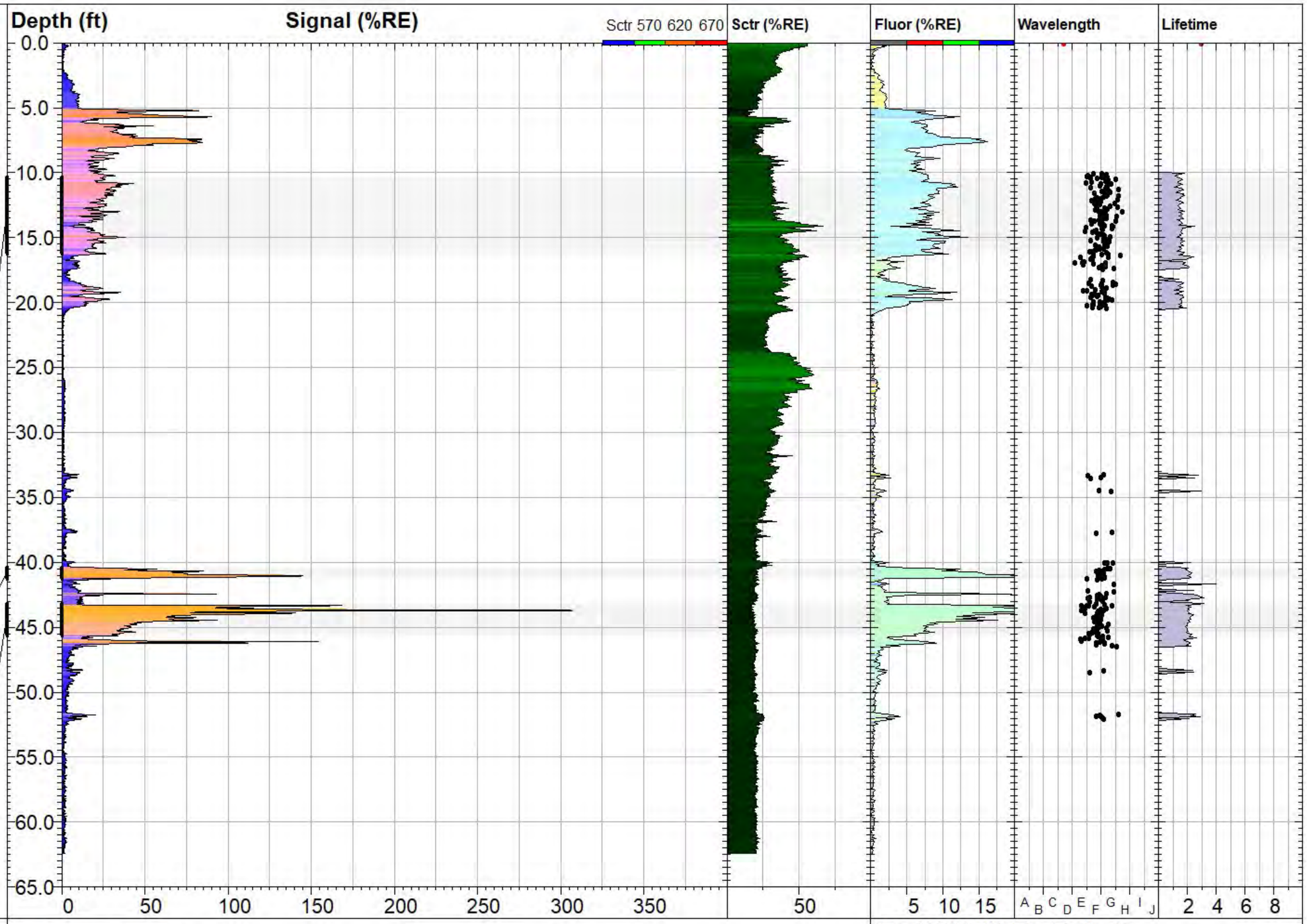
Callouts

Hand Augered 0- 8'





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CPT-29-19

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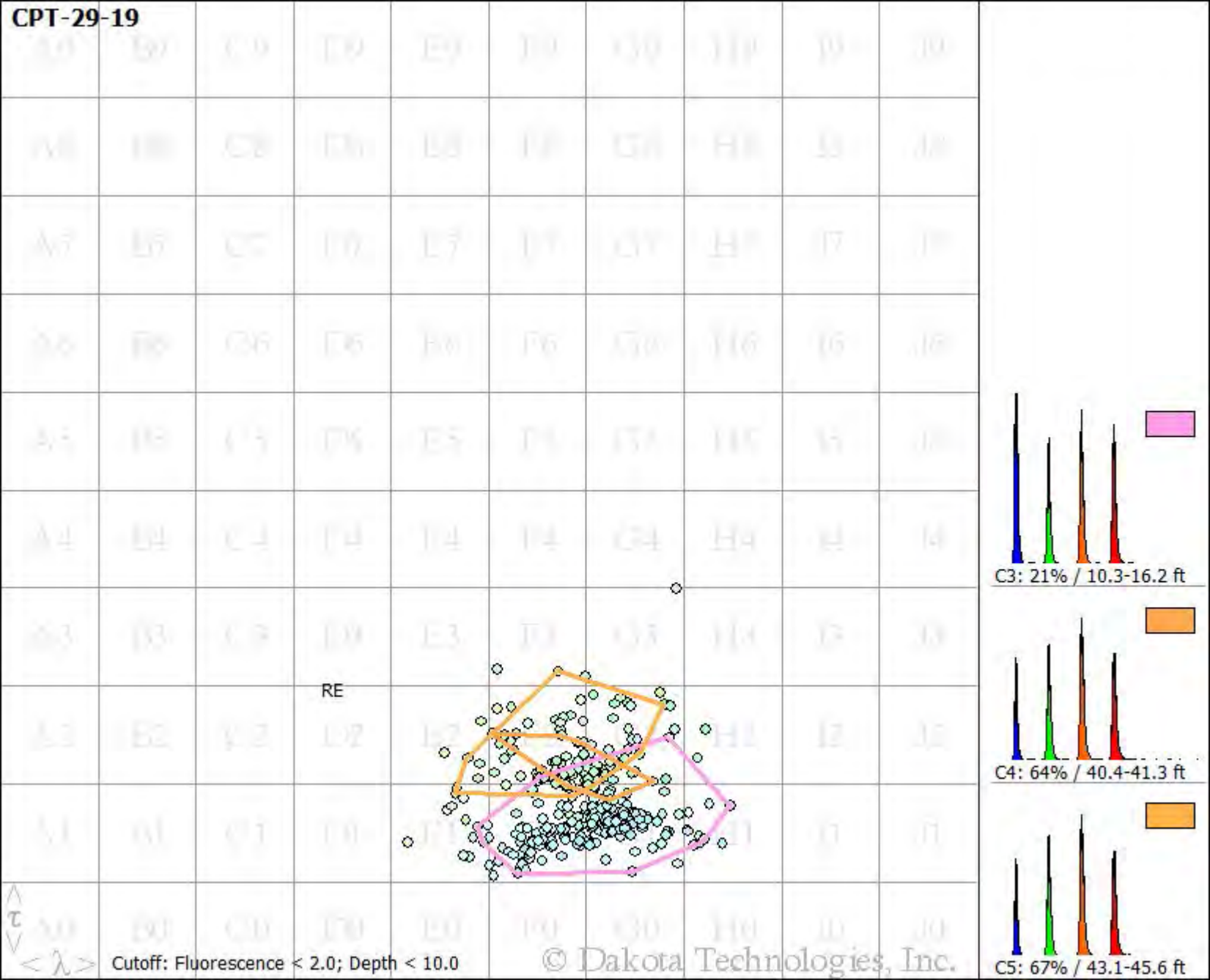
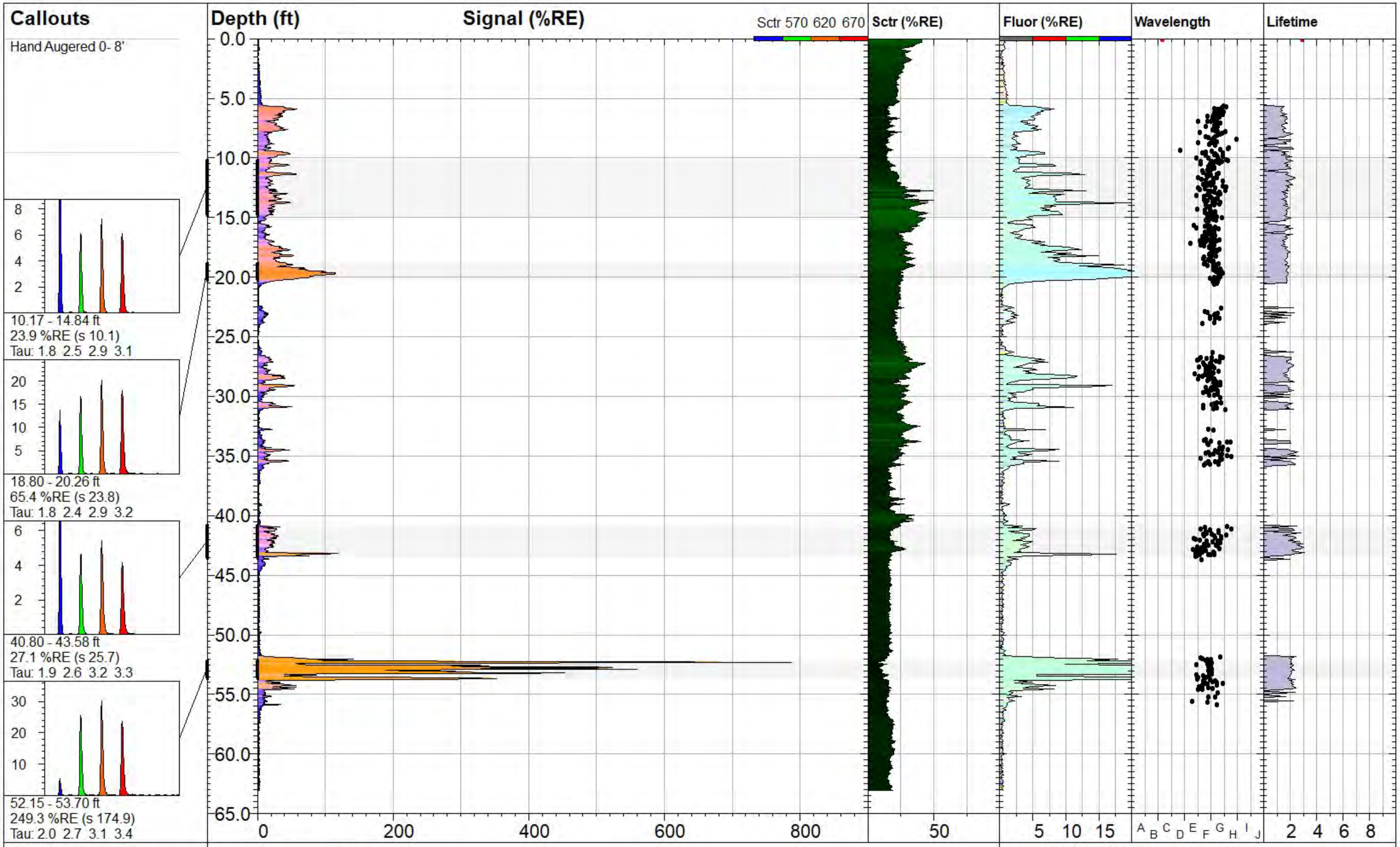
Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **62.42 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **325.5 %RE @ 43.69 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2019-12-10 09:32 CST**


CPT-29-19
RE
C3: 21% / 10.3-16.2 ft
C4: 64% / 40.4-41.3 ft
C5: 67% / 43.1-45.6 ft
Cutoff: Fluorescence < 2.0; Depth < 10.0
© Dakota Technologies, Inc.



CPT-30-19

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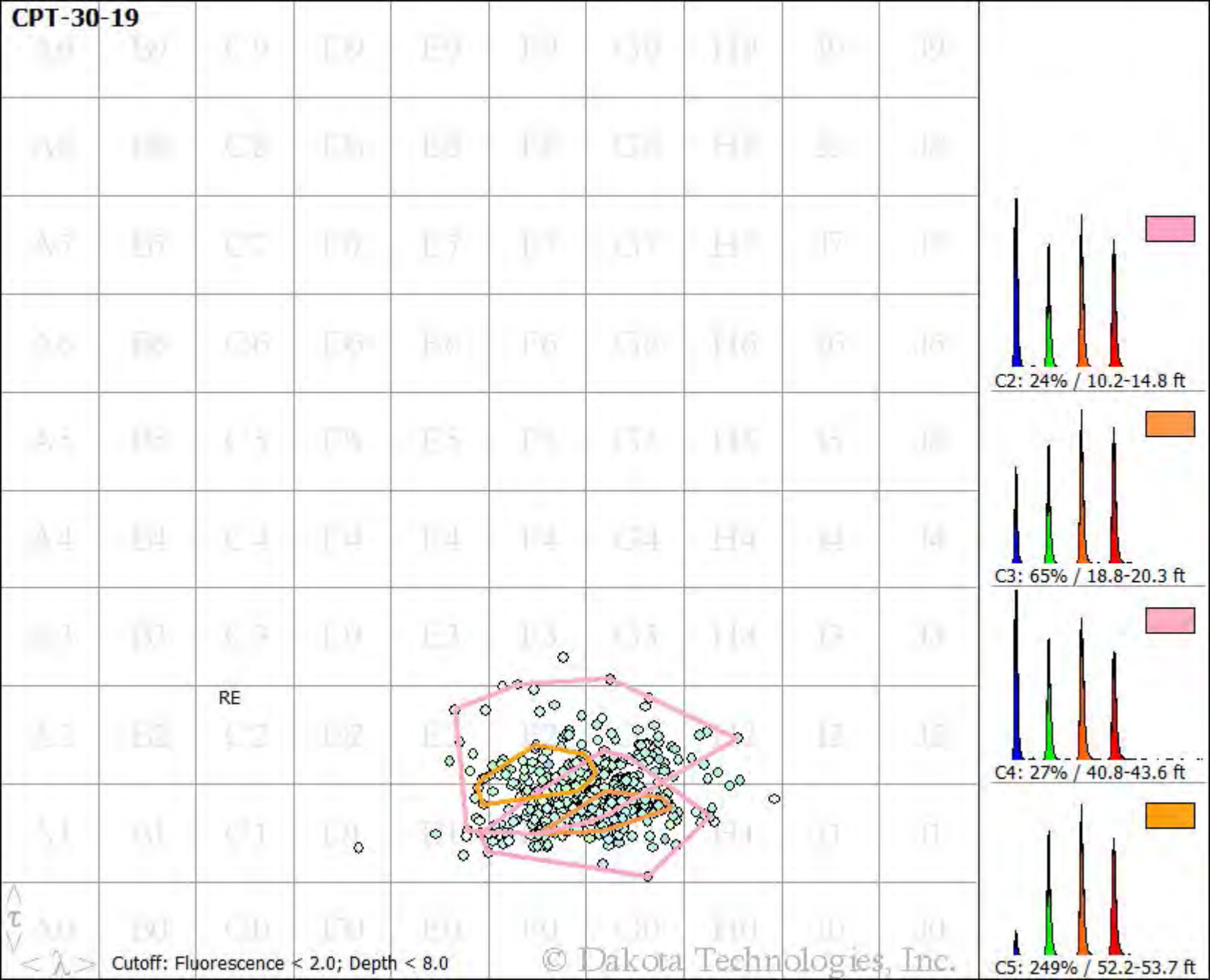
Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **63.09 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **813.3 %RE @ 52.31 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2019-12-06 11:22 CST**


CPT-30-19
RE
C2: 24% / 10.2-14.8 ft
C3: 65% / 18.8-20.3 ft
C4: 27% / 40.8-43.6 ft
C5: 249% / 52.2-53.7 ft
Cutoff: Fluorescence < 2.0; Depth < 8.0
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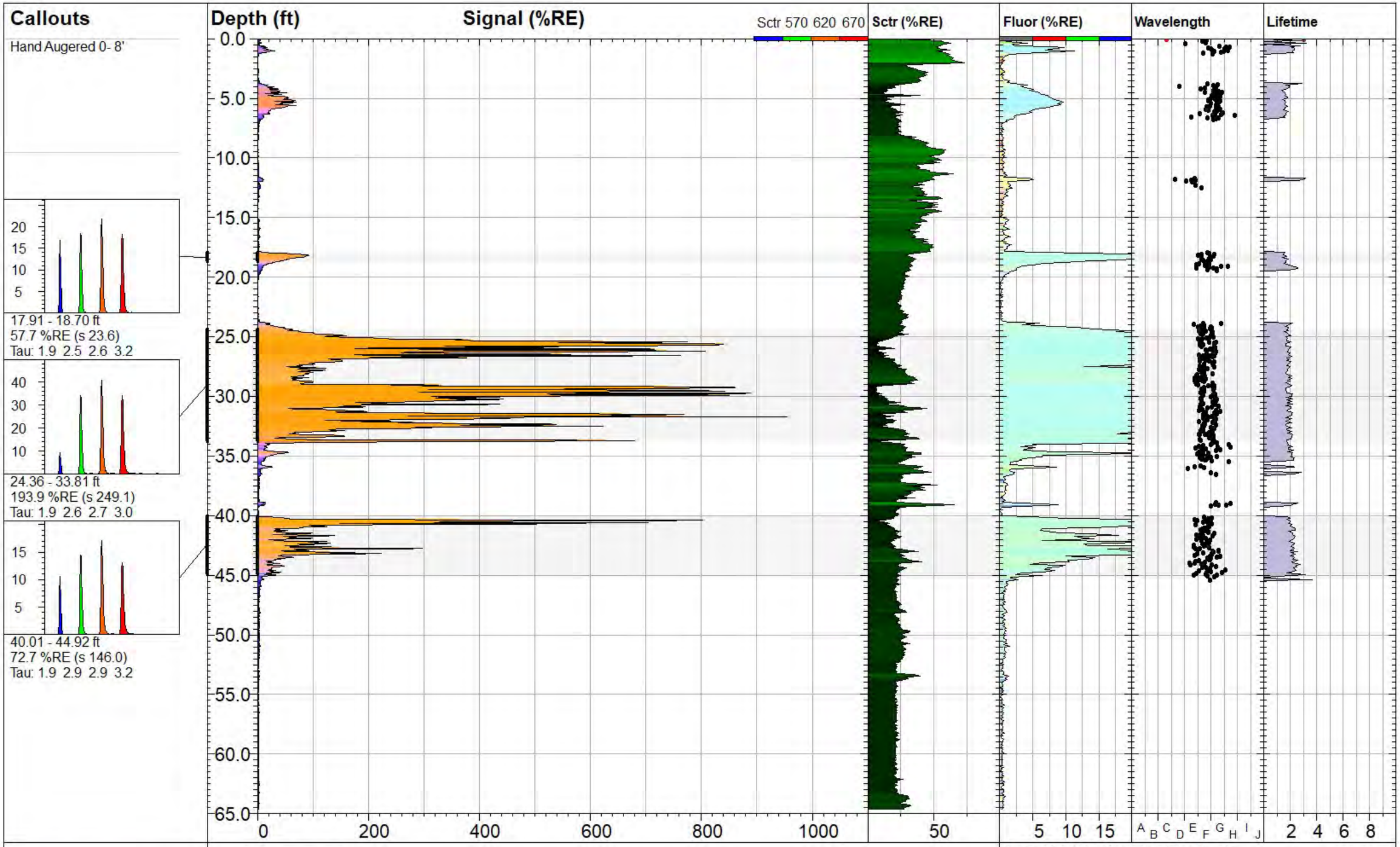

CPT-31-19

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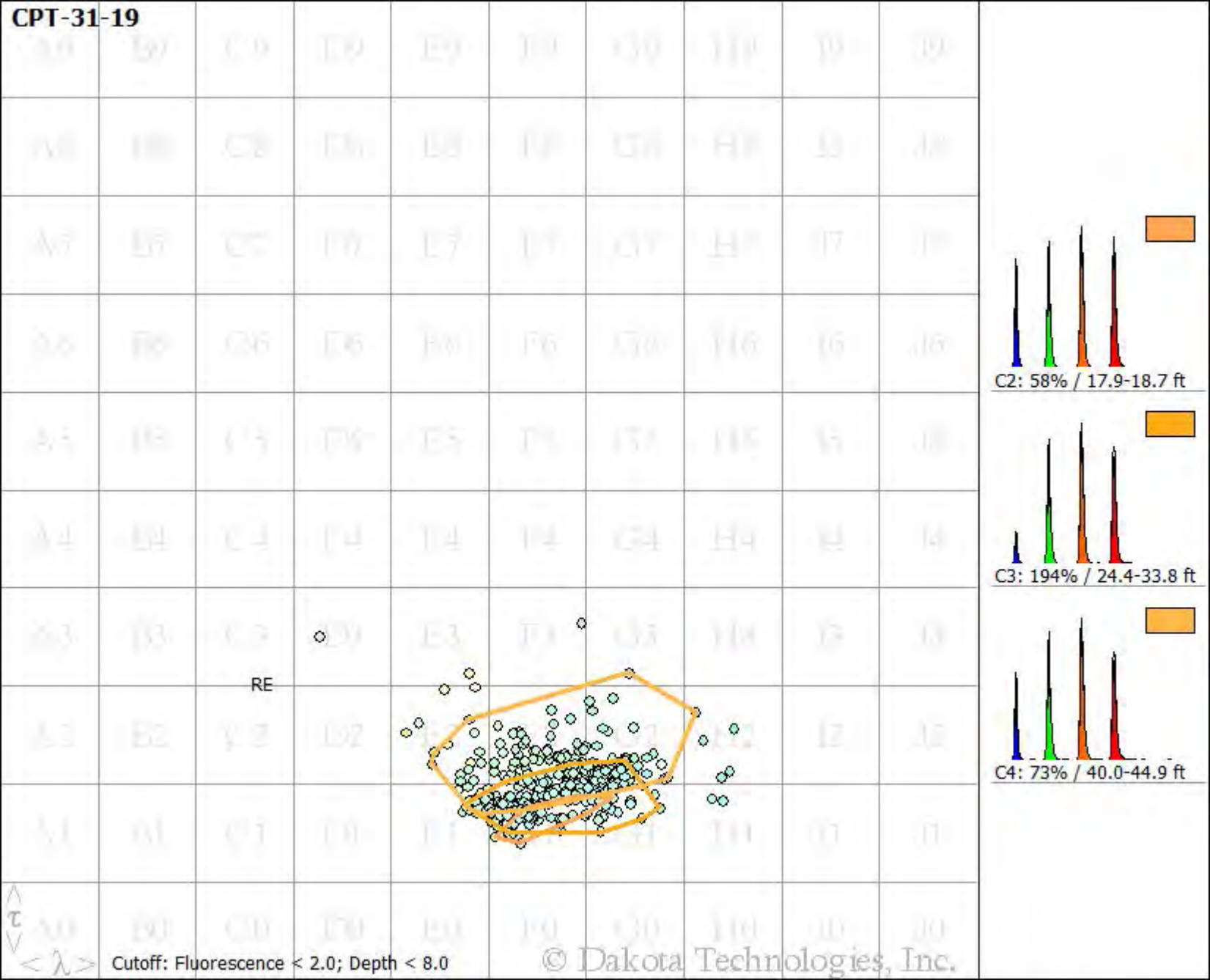
Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **64.66 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **987.1 %RE @ 31.70 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2019-12-06 09:52 CST**


CPT-31-19
RE
C2: 58% / 17.9-18.7 ft
C3: 194% / 24.4-33.8 ft
C4: 73% / 40.0-44.9 ft
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< λ >
Cutoff: Fluorescence < 2.0; Depth < 8.0
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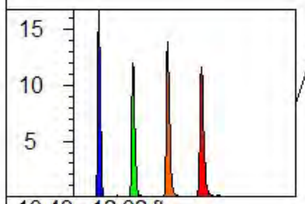
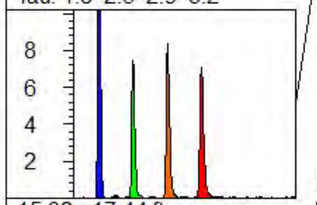
Callouts

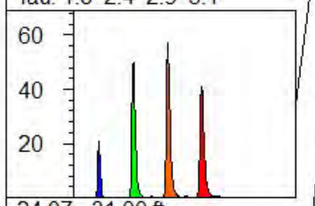
Hand augered 0-10'



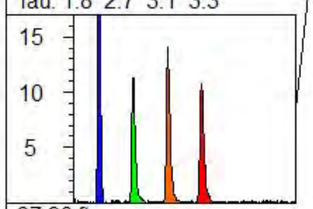
10.49 - 12.02 ft
35.2 %RE (s 11.3)
Tau: 1.8 2.5 2.9 3.2



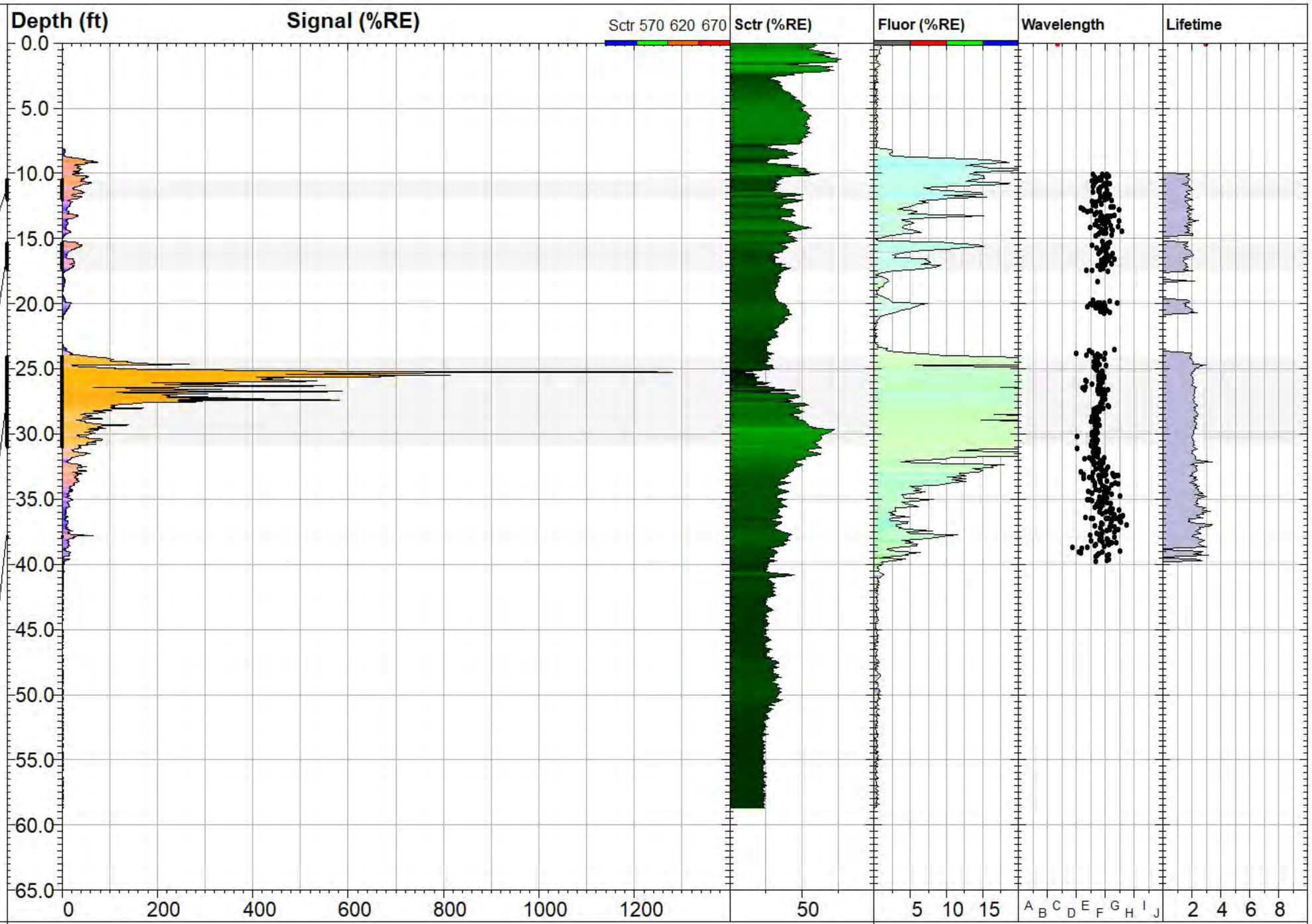
15.32 - 17.44 ft
21.8 %RE (s 9.1)
Tau: 1.8 2.4 2.9 3.1



24.07 - 31.00 ft
129.3 %RE (s 207.6)
Tau: 1.8 2.7 3.1 3.3



37.90 ft
27.2 %RE
Tau: 1.8 2.7 3.2 3.6



CPT-32-19

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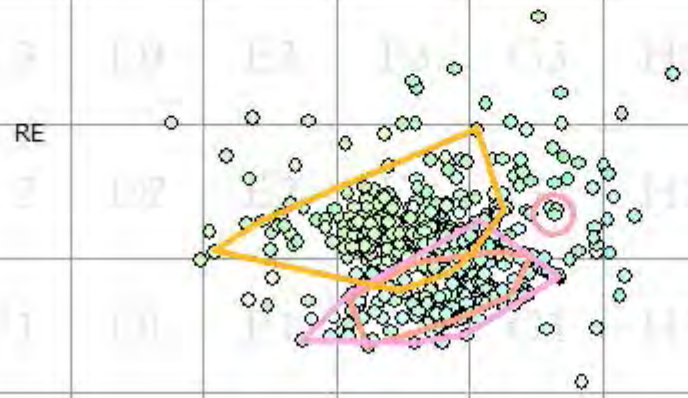
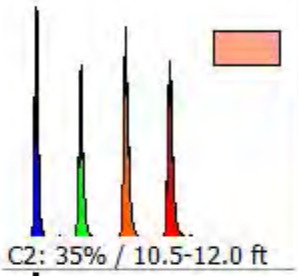
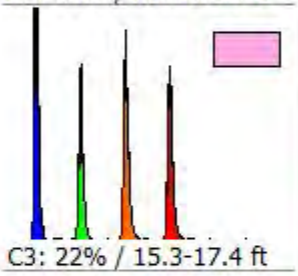
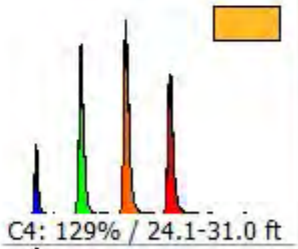
Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **58.71 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **1297.9 %RE @ 25.24 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2019-12-09 08:53 CST**

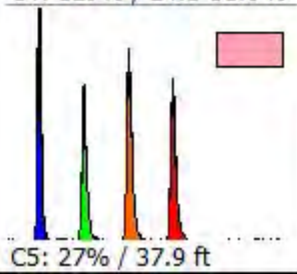
CPT-32-19











Cutoff: Fluorescence < 2.0; Depth < 10.0

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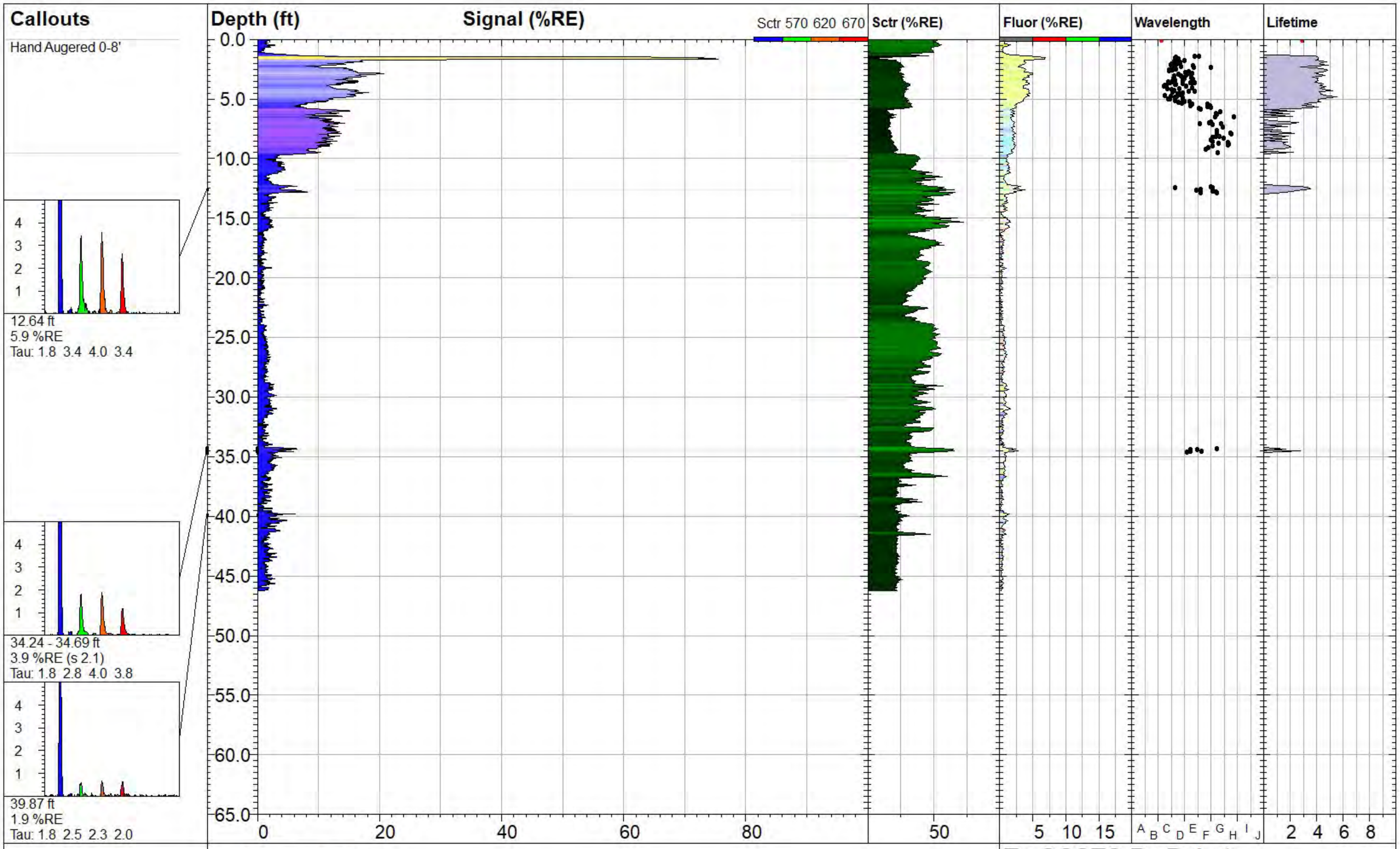

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CPT-34-19

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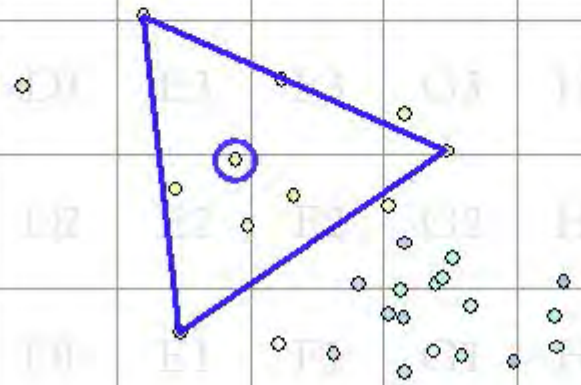
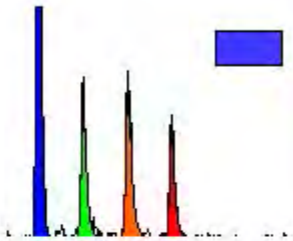
Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **46.23 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **75.6 %RE @ 1.64 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2019-12-05 13:19 CST**

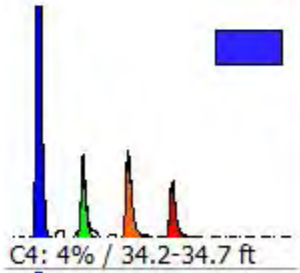
CPT-34-19



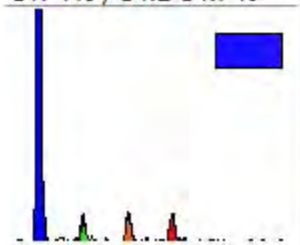
RE



C2: 6% / 12.6 ft



C4: 4% / 34.2-34.7 ft



C5: 2% / 39.9 ft

Cutoff: Fluorescence < 2.0; Depth < 8.0

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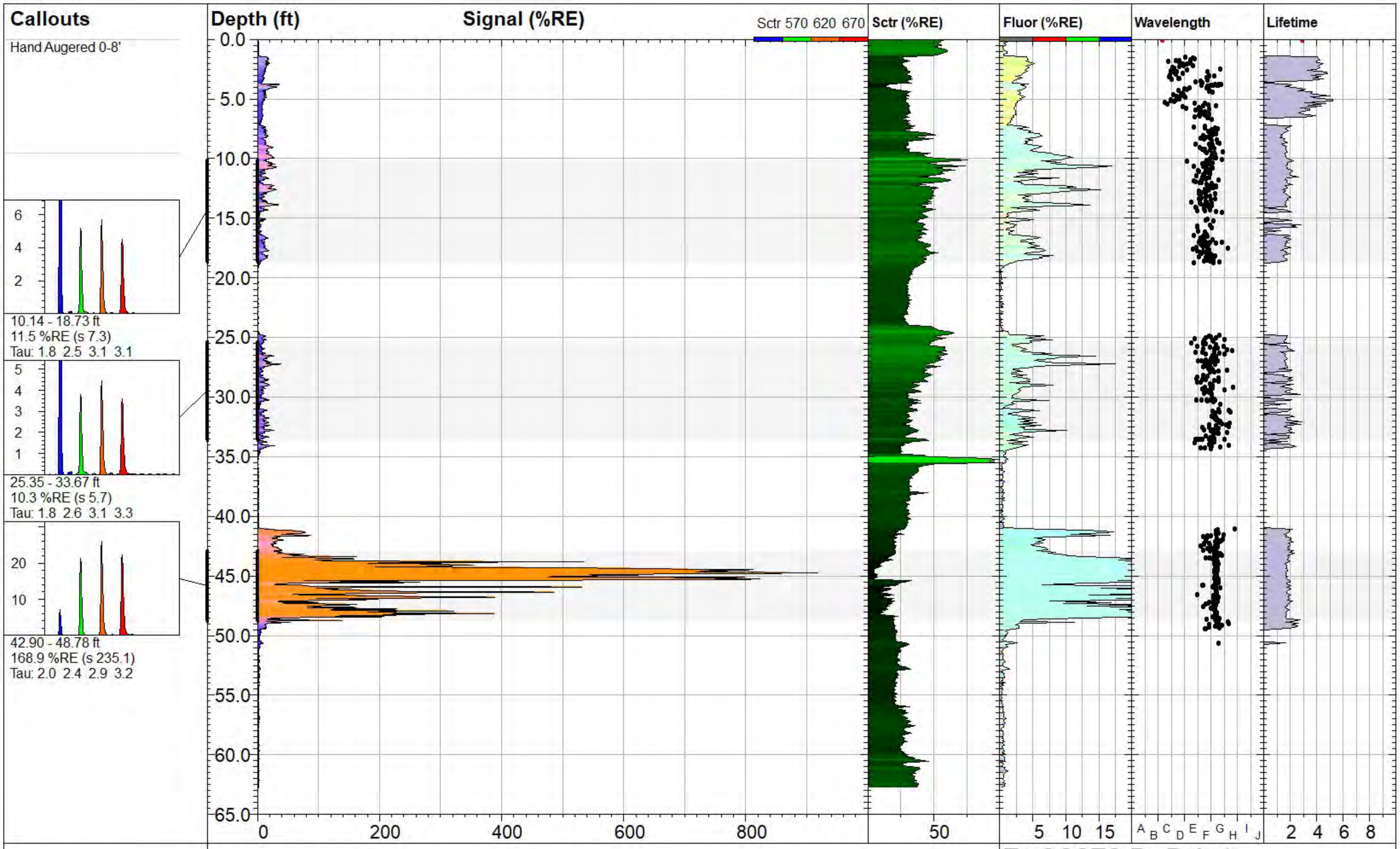

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CPT-35-19

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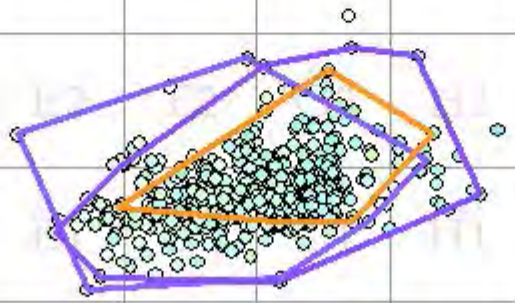
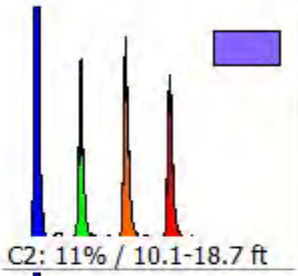
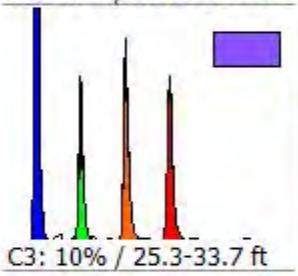
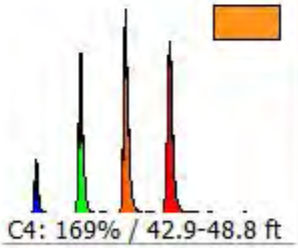
Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **62.75 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **927.1 %RE @ 44.74 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2019-12-05 11:57 CST**

CPT-35-19









Cutoff: Fluorescence < 2.0; Depth < 8.0

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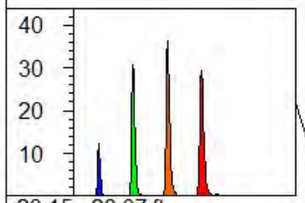
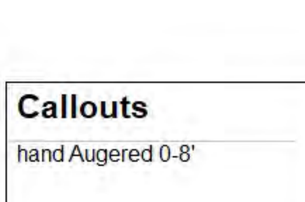
Callouts

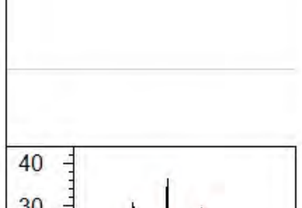
hand Augered 0-8'



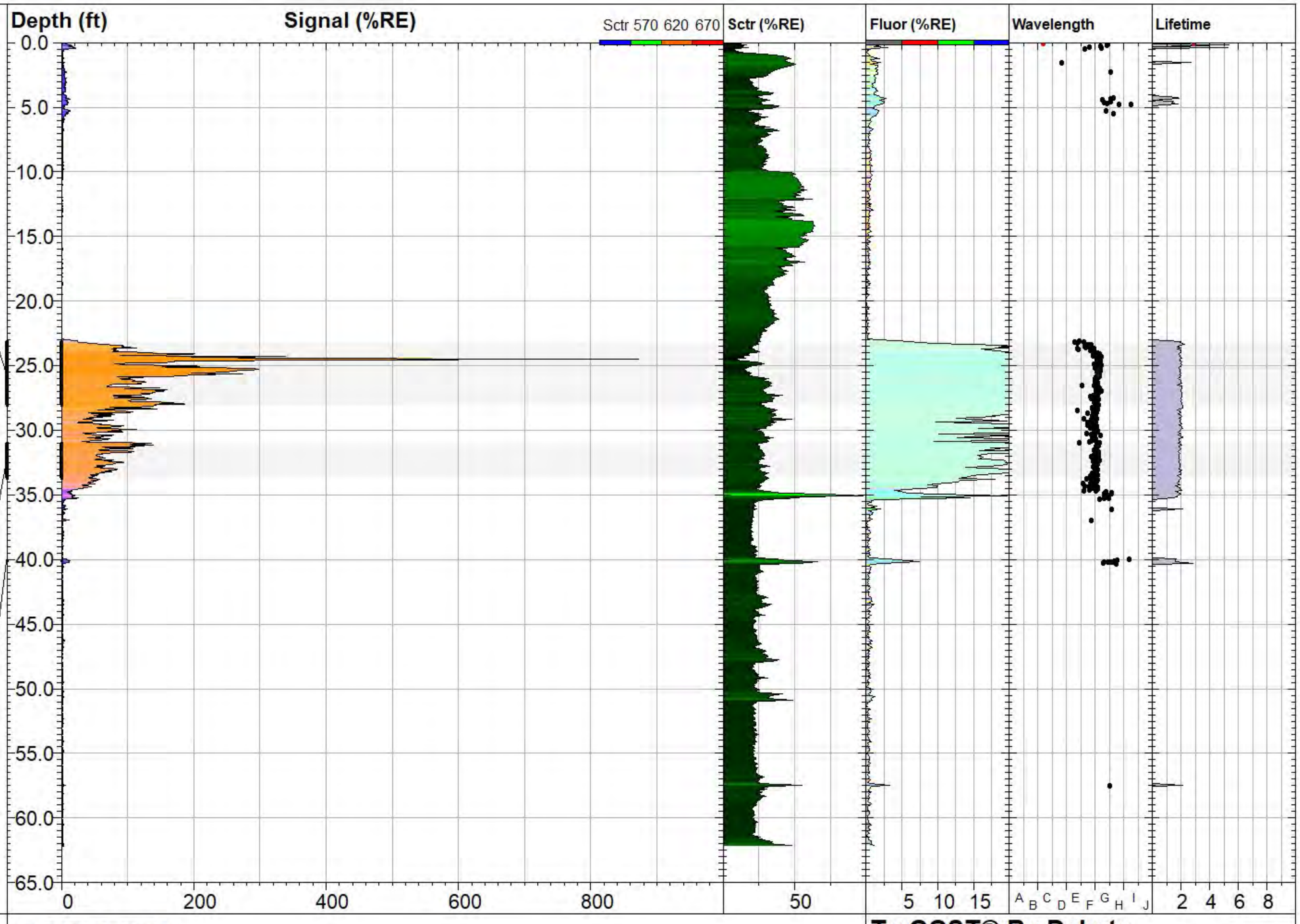
23.15 - 28.07 ft
132.0 %RE (s 100.9)
Tau: 1.8 2.6 3.0 3.3



31.02 - 33.68 ft
69.8 %RE (s 23.4)
Tau: 1.8 2.5 3.0 3.2



40.10 ft
13.0 %RE
Tau: 1.8 2.4 2.7 2.9



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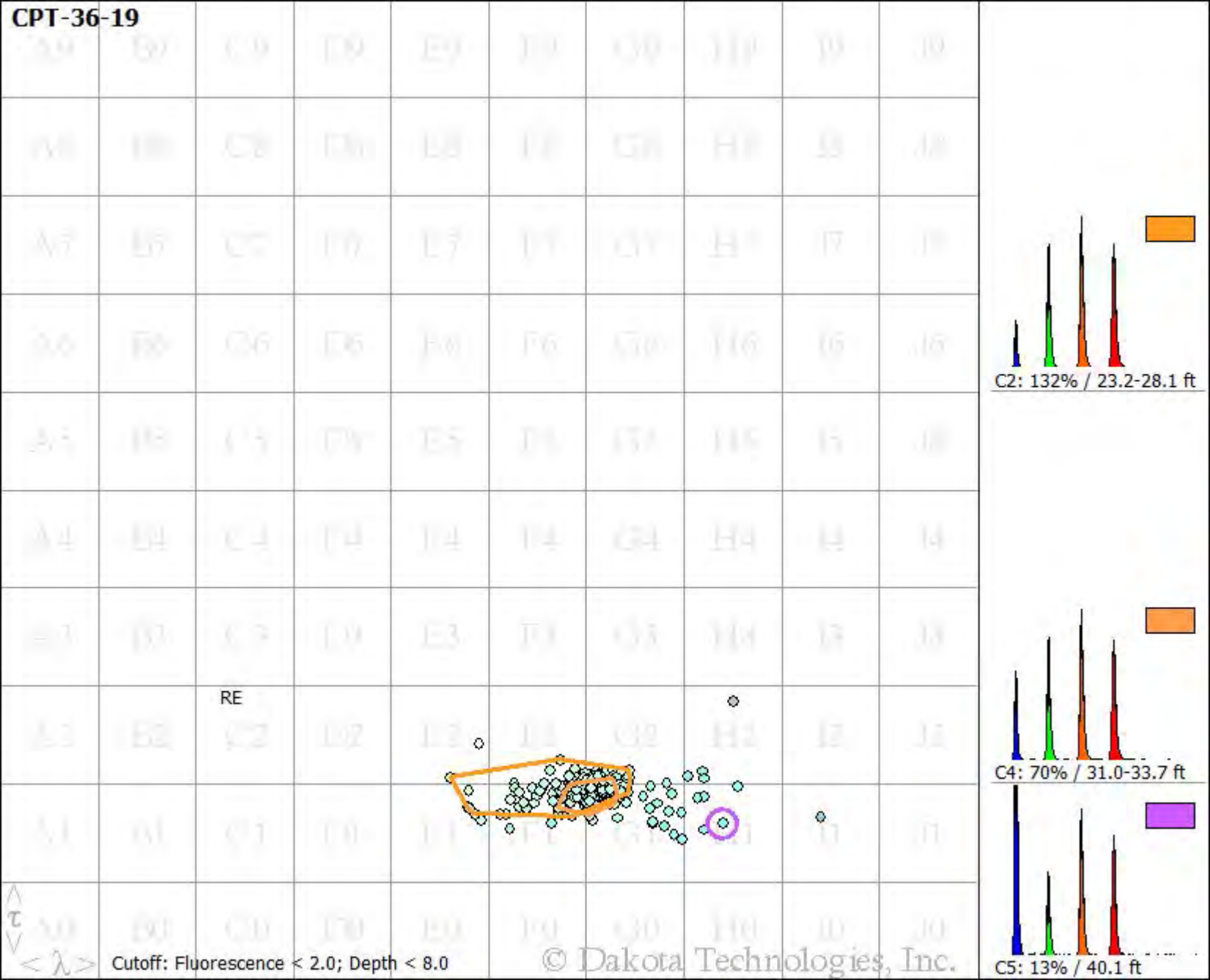
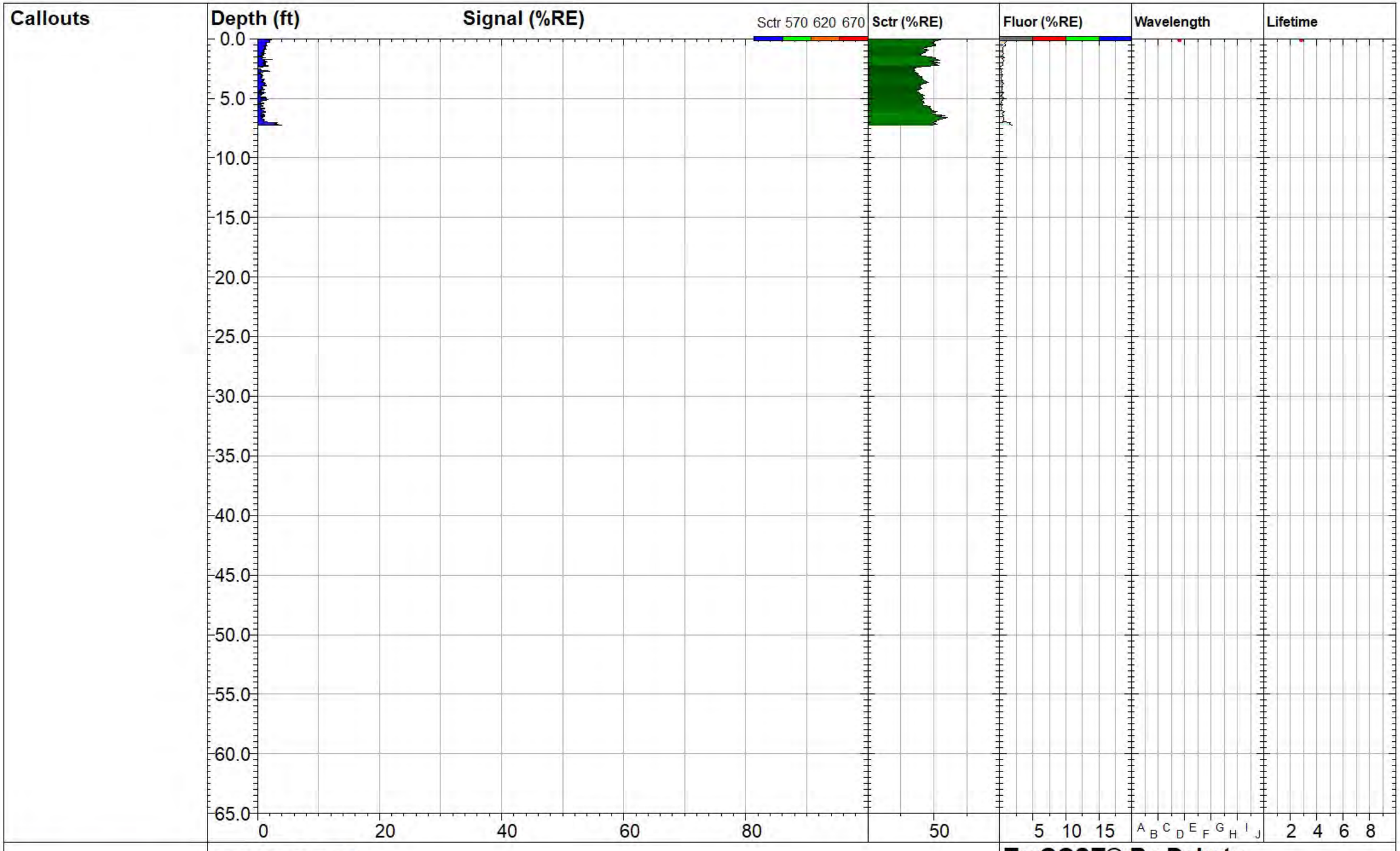
CPT-36-19

TarGOST® By Dakota
www.DakotaTechnologies.com

Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **62.18 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **874.8 %RE @ 24.50 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2019-12-04 12:17 CST**


CPT-36-19
RE
C2: 132% / 23.2-28.1 ft
C4: 70% / 31.0-33.7 ft
C5: 13% / 40.1 ft
τ
< λ >
Cutoff: Fluorescence < 2.0; Depth < 8.0
© Dakota Technologies, Inc.



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CPT-37-19

TarGOST® By Dakota
www.DakotaTechnologies.com

Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **7.26 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **4.0 %RE @ 7.24 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2019-12-06 08:46 CST**

CPT-37-19

RE

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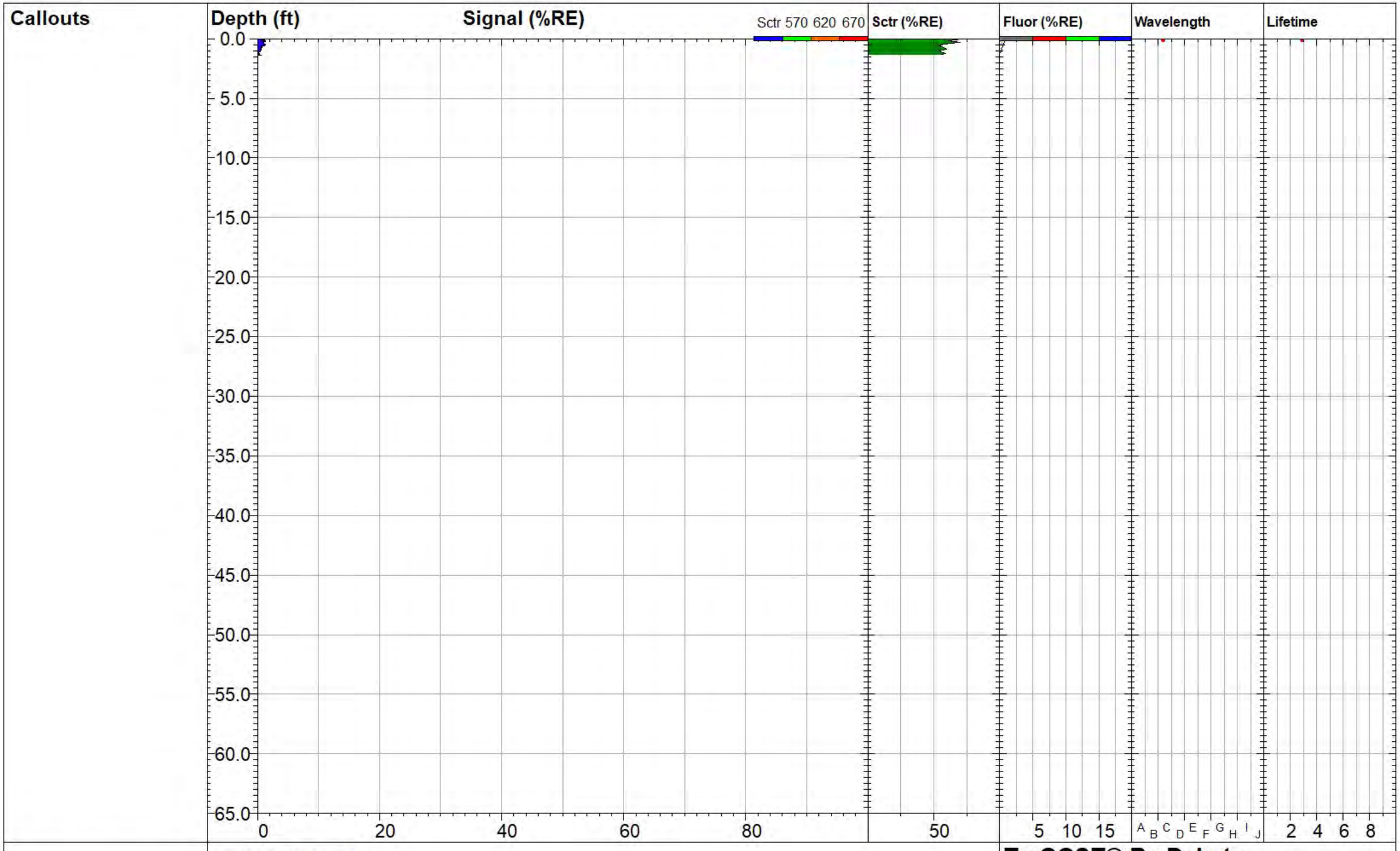
Cutoff: Fluorescence < 2.0; Depth < 8.0

© Dakota Technologies, Inc.



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CPT-38-19

TarGOST® By Dakota
www.DakotaTechnologies.com

Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **1.38 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **1.4 %RE @ 0.19 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2019-12-04 14:07 CST**

CPT-38-19

RE

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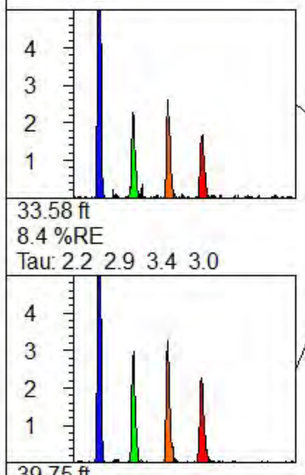
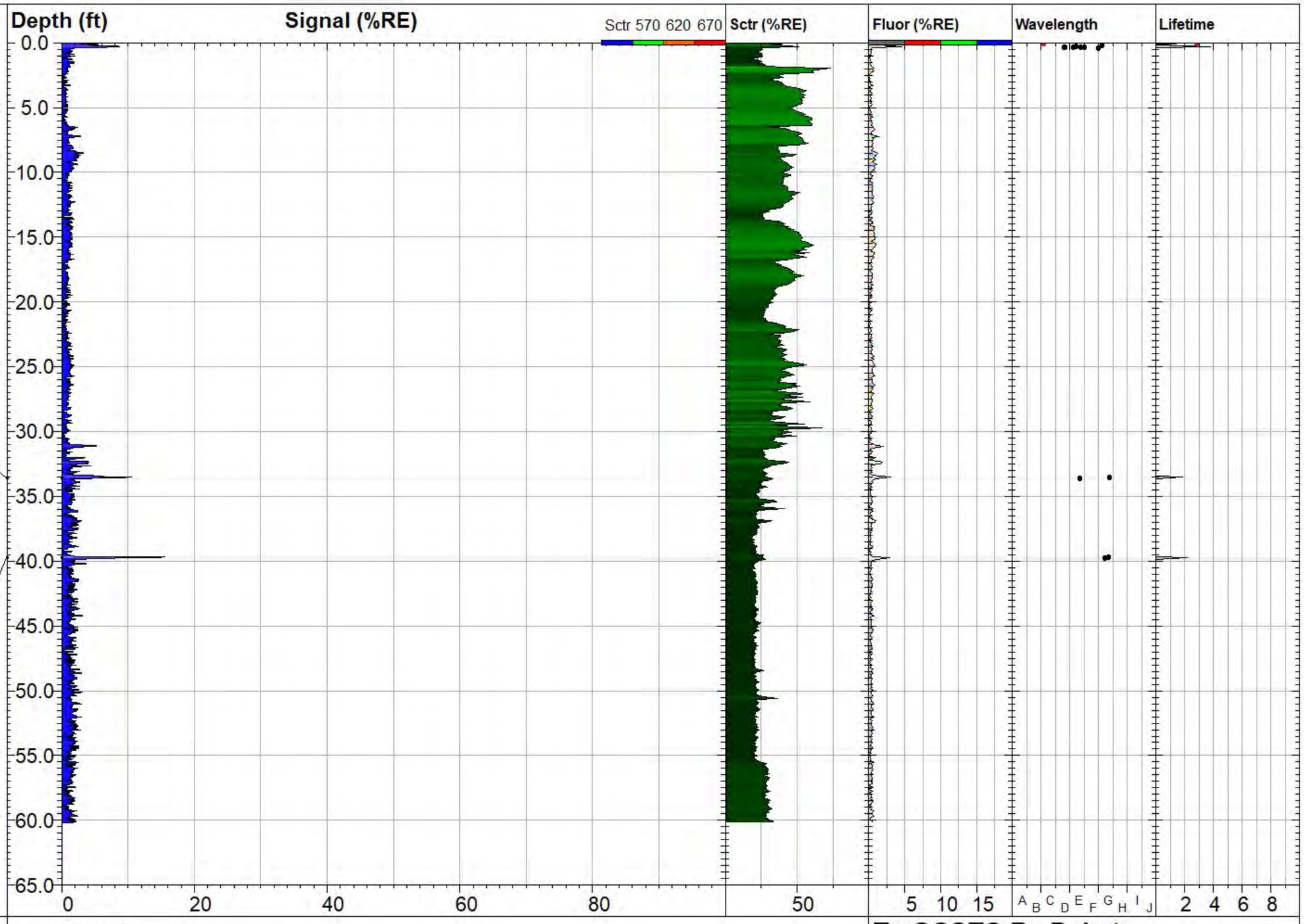
Cutoff: Fluorescence < 2.0; Depth < 8.0

© Dakota Technologies, Inc.

Callouts

Hand Augered to 8'





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CPT-38a-19

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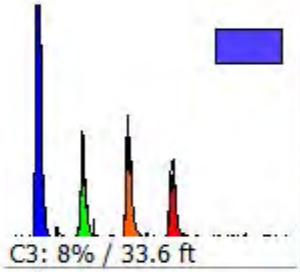
Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **60.18 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **16.3 %RE @ 39.68 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2019-12-04 14:34 CST**

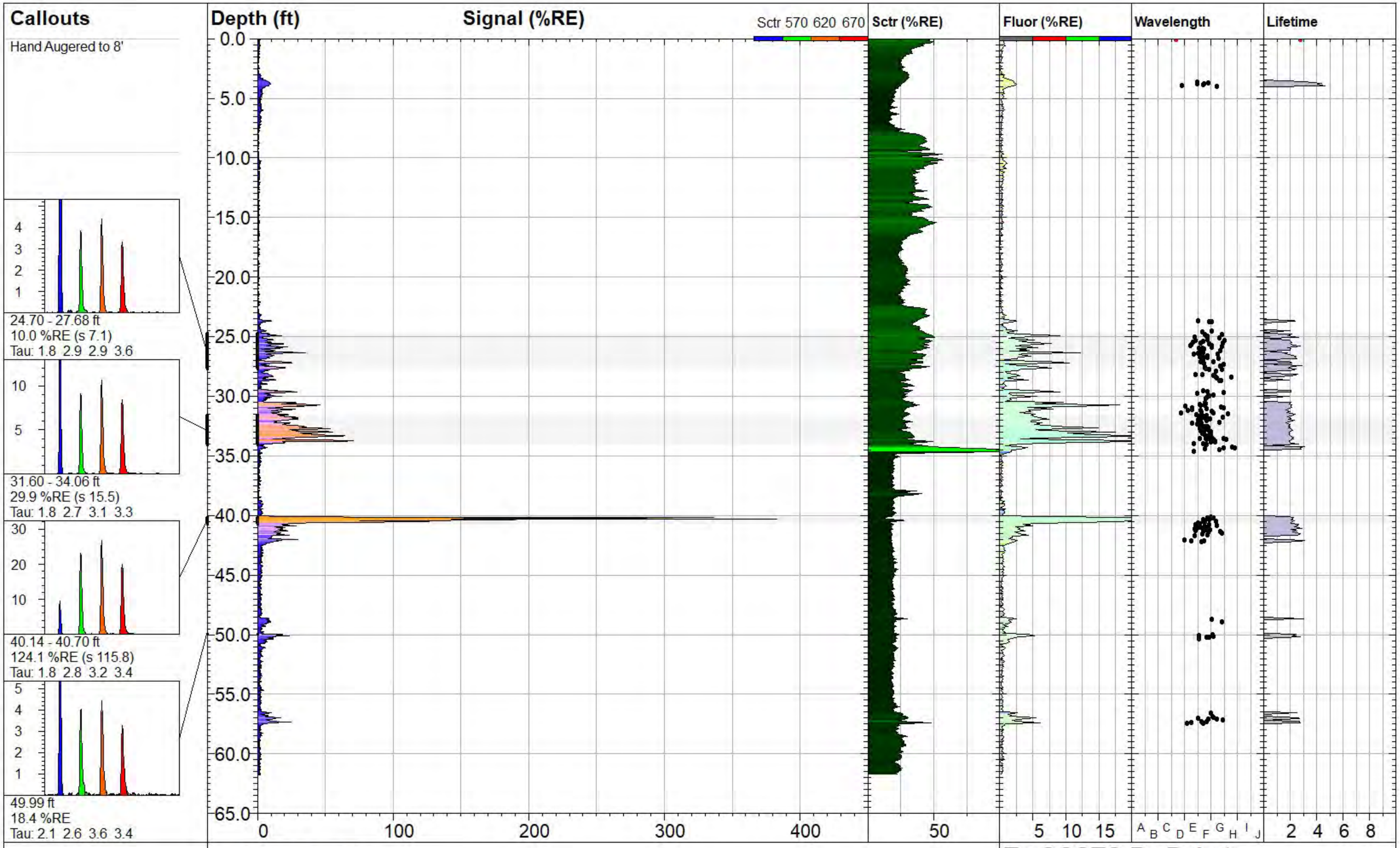
CPT-38a-19

RE



Cutoff: Fluorescence < 2.0; Depth < 8.0

© Dakota Technologies, Inc.



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CPT-39-19

TarGOST® By Dakota
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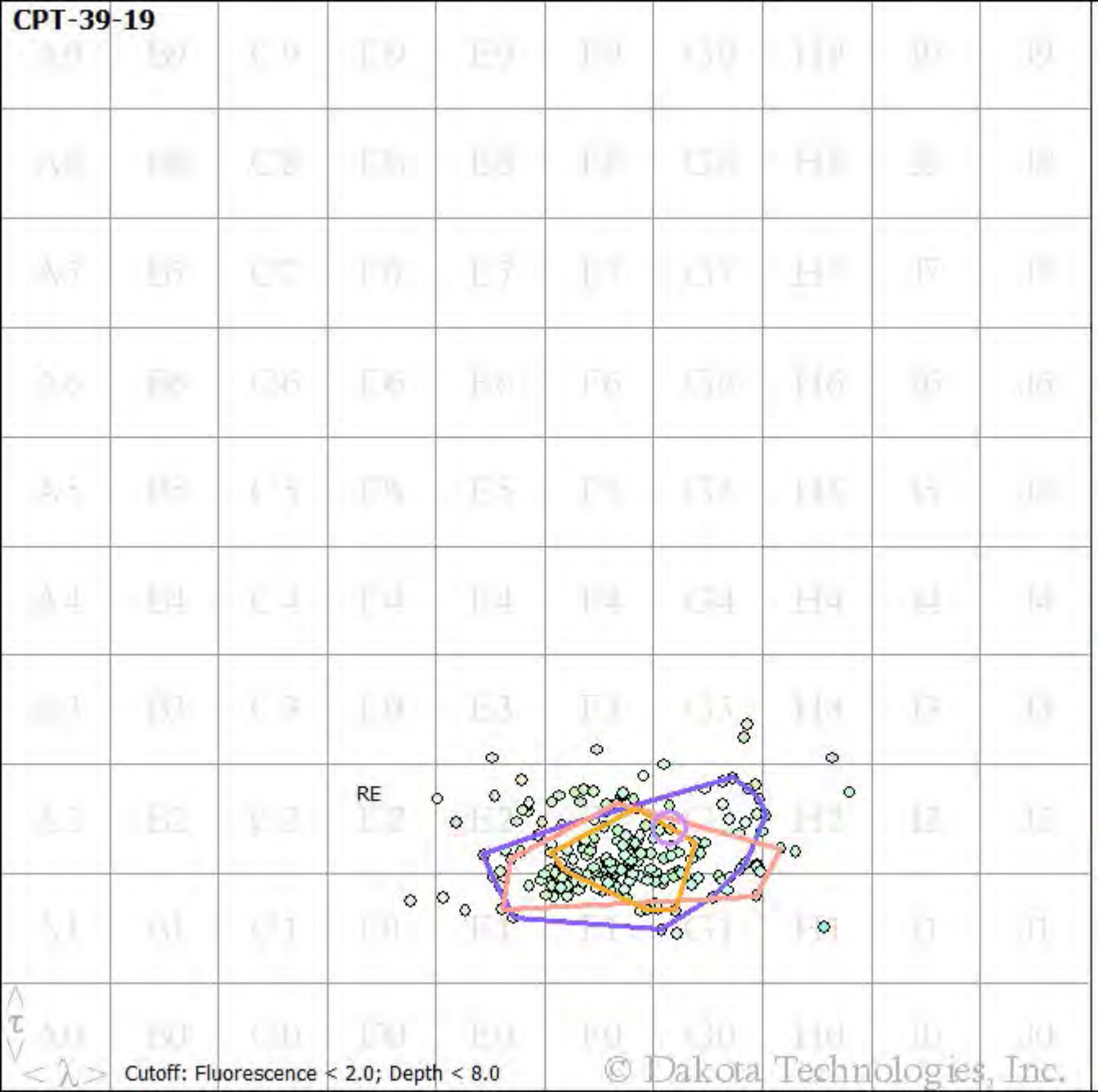
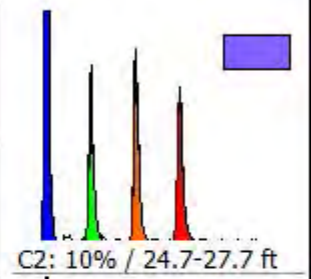
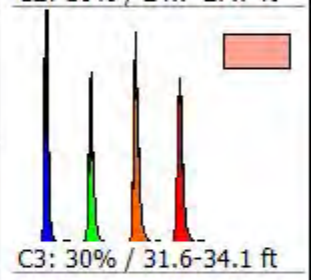
Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **61.77 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **405.6 %RE @ 40.31 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2019-12-04 10:00 CST**

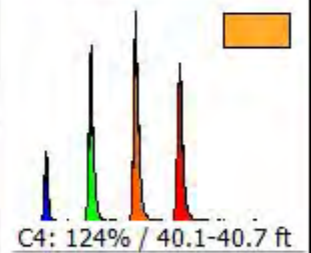
CPT-39-19

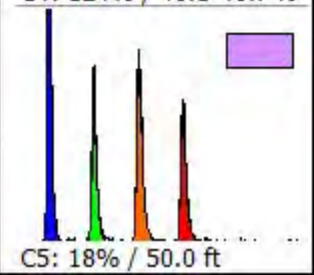


© Dakota Technologies, Inc.





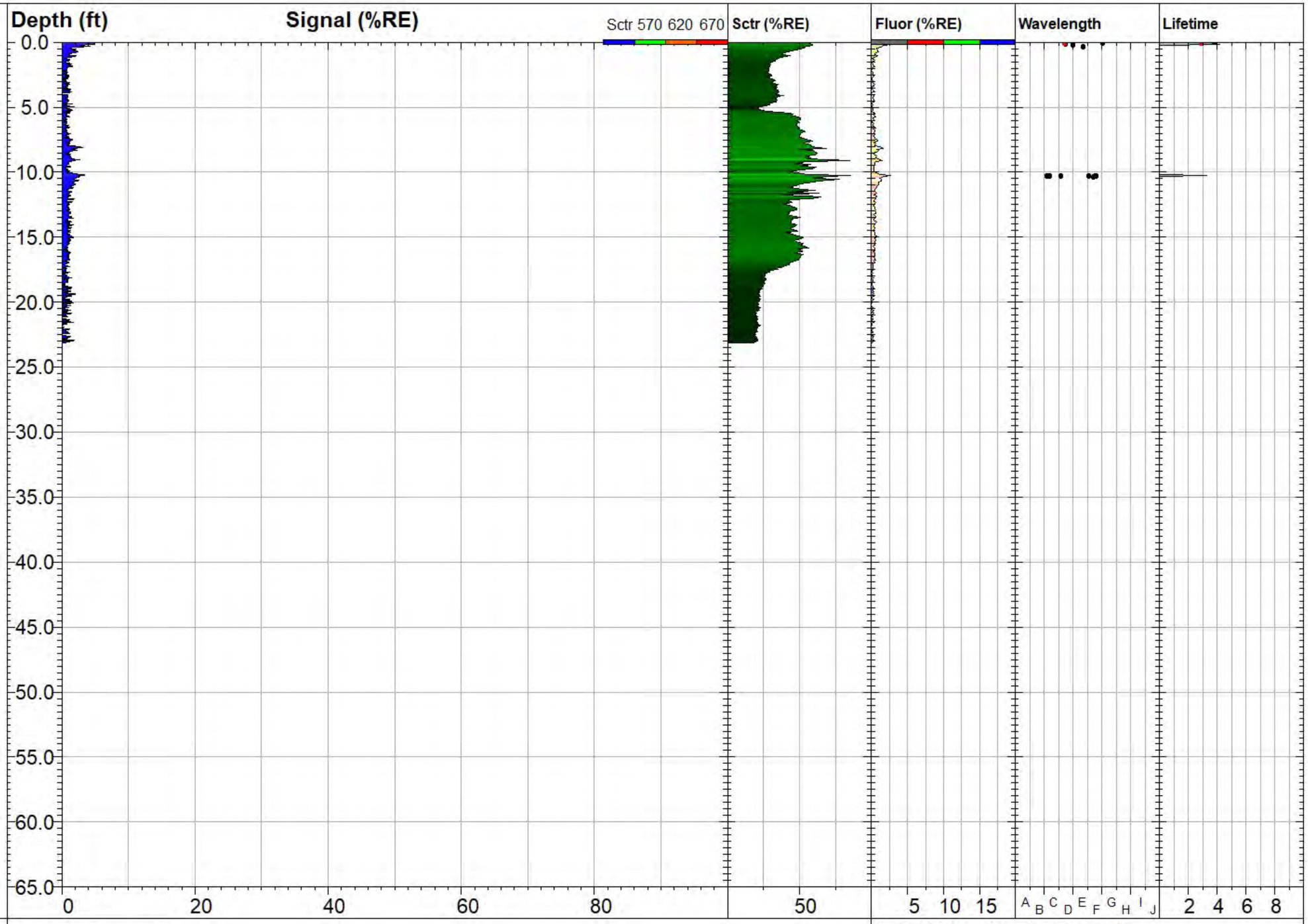




Callouts

Hand Augered to 8'

Hydraulic Refusal 23.13'



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CPT-40-19

TarGOST® By Dakota
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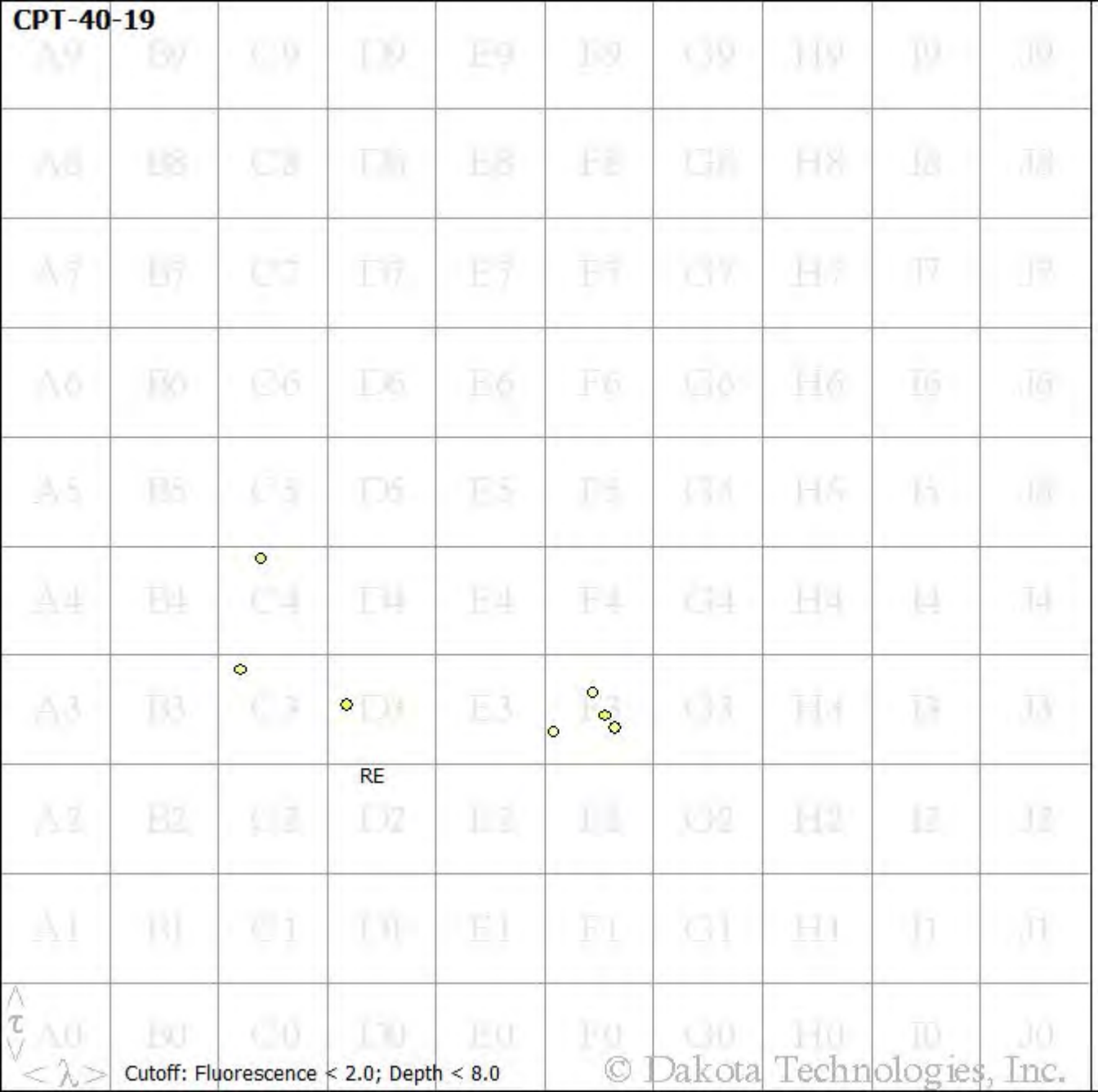
Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **23.13 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **6.4 %RE @ 0.00 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2019-12-04 08:18 CST**



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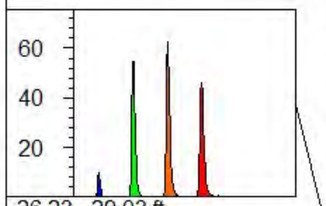
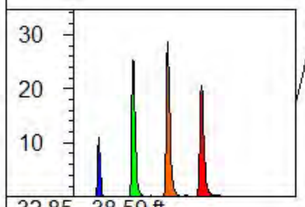
Callouts

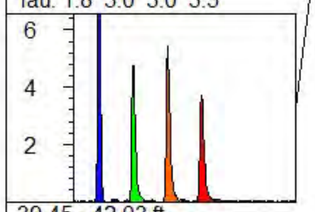
Hand Augered 0-8'



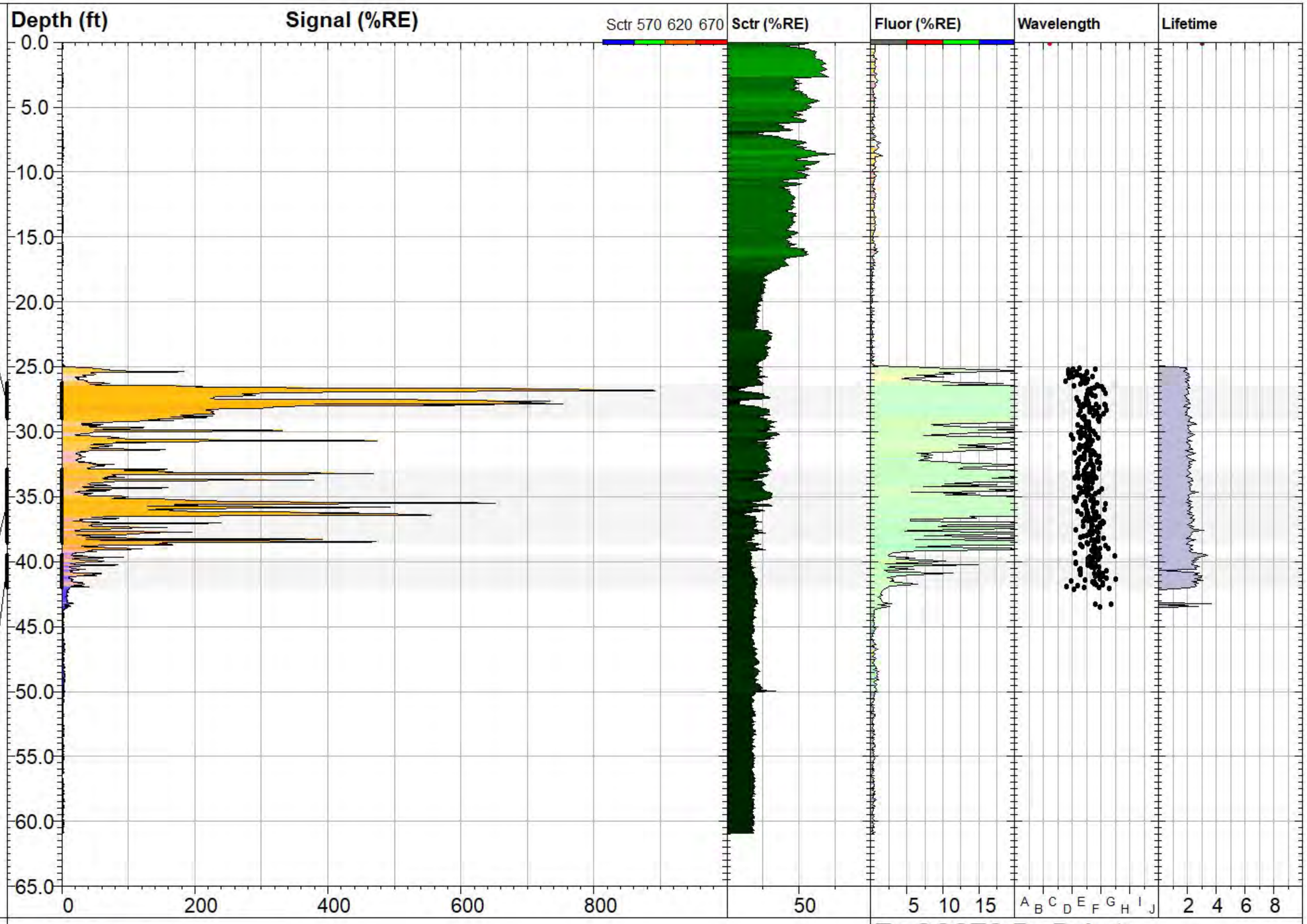
26.23 - 29.03 ft
283.3 %RE (s 222.7)
Tau: 1.8 2.9 2.9 3.5



32.85 - 38.59 ft
119.5 %RE (s 146.5)
Tau: 1.8 3.0 3.0 3.5



39.45 - 42.03 ft
28.5 %RE (s 20.4)
Tau: 1.9 3.3 3.4 3.5



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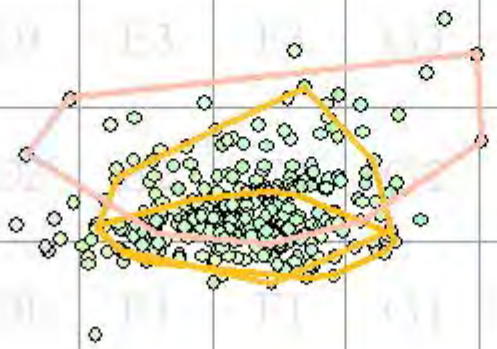
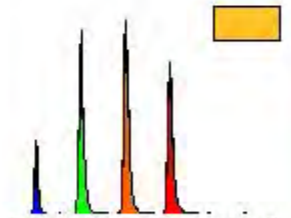
CPT-40a-19

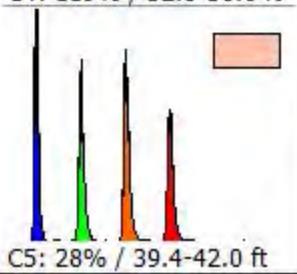
TarGOST® By Dakota
www.DakotaTechnologies.com

Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **60.94 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **895.2 %RE @ 26.82 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2019-12-05 09:39 CST**

CPT-40a-19







Cutoff: Fluorescence < 2.0; Depth < 8.0

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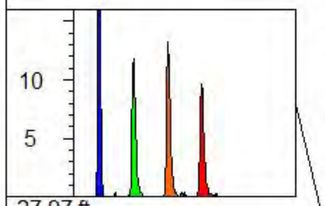
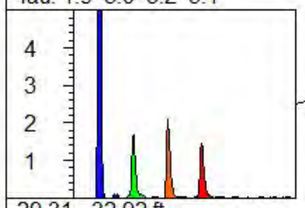
Callouts

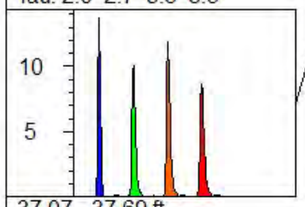
Hand Augered 0-8'



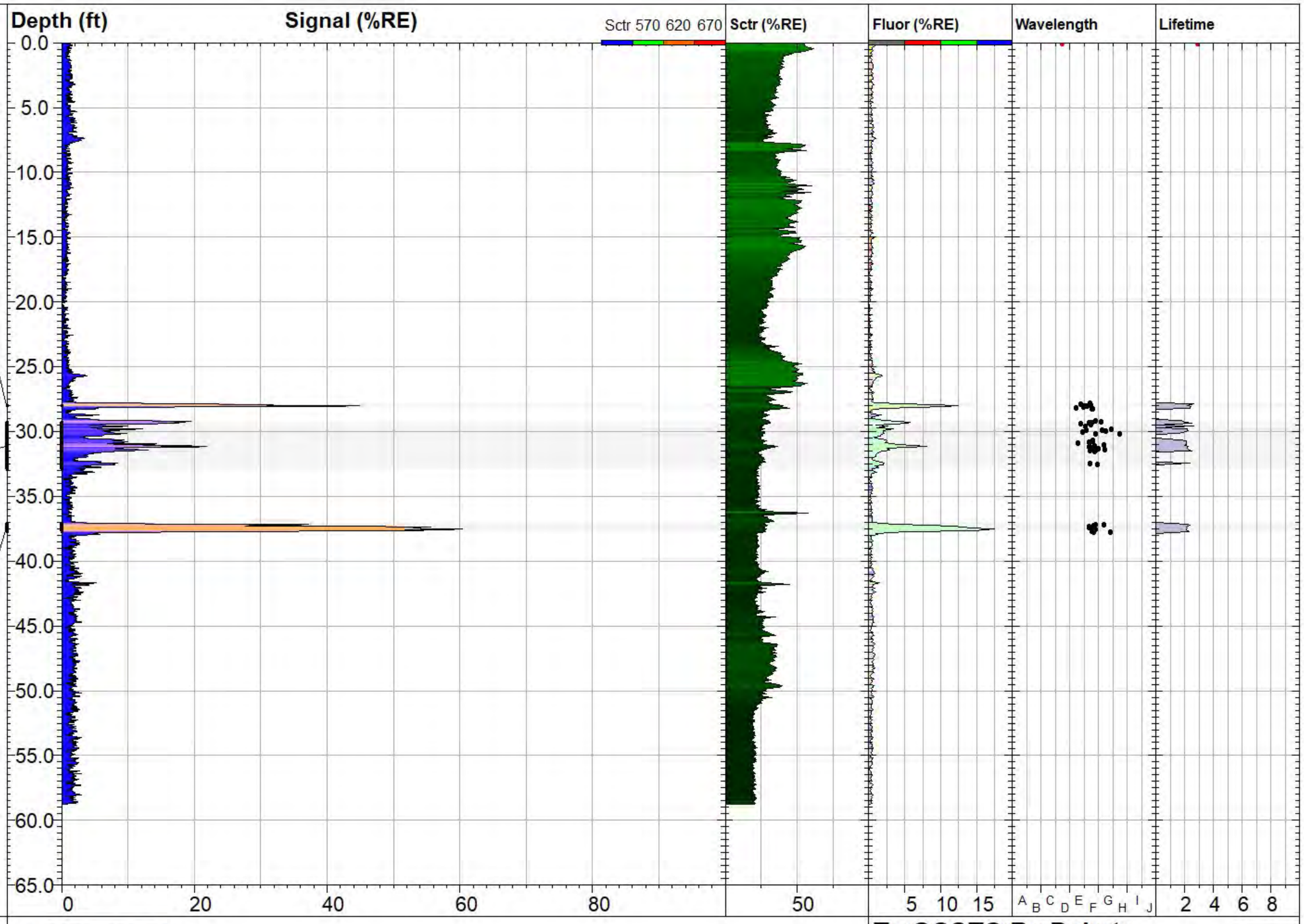
27.97 ft
30.7 %RE
Tau: 1.9 3.0 3.2 3.1



29.31 - 32.92 ft
7.5 %RE (s 4.2)
Tau: 2.0 2.7 3.3 3.3



37.07 - 37.69 ft
40.7 %RE (s 17.7)
Tau: 2.0 2.8 3.2 3.4



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CPT-41-19

TarGOST® By Dakota
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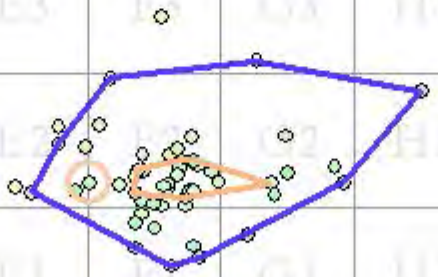
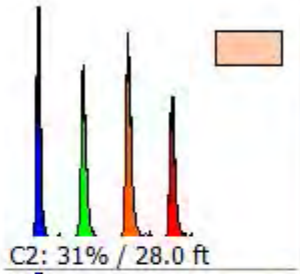
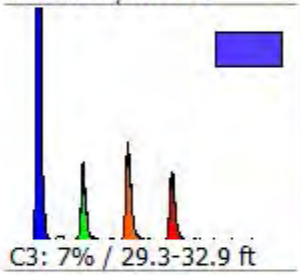
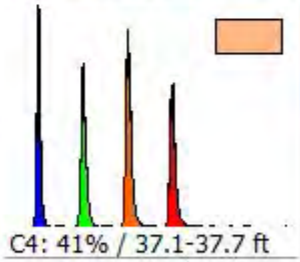
Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **58.72 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **60.8 %RE @ 37.54 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2019-12-07 08:34 CST**

CPT-41-19









Cutoff: Fluorescence < 2.0; Depth < 8.0

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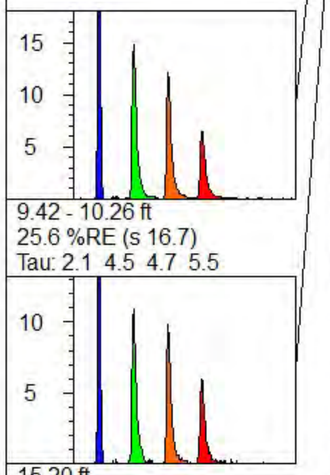
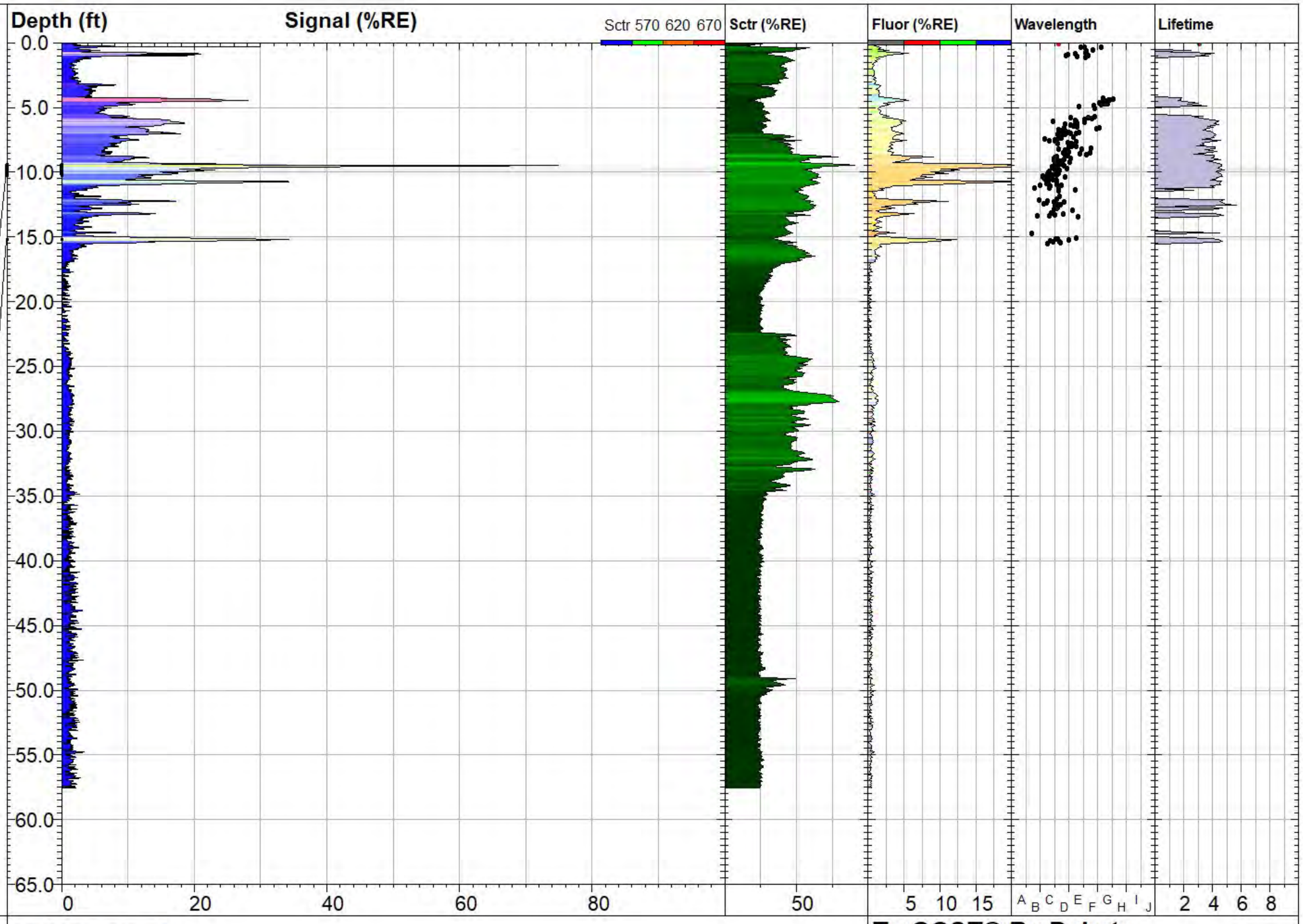
Callouts

Hand augered 0-8'





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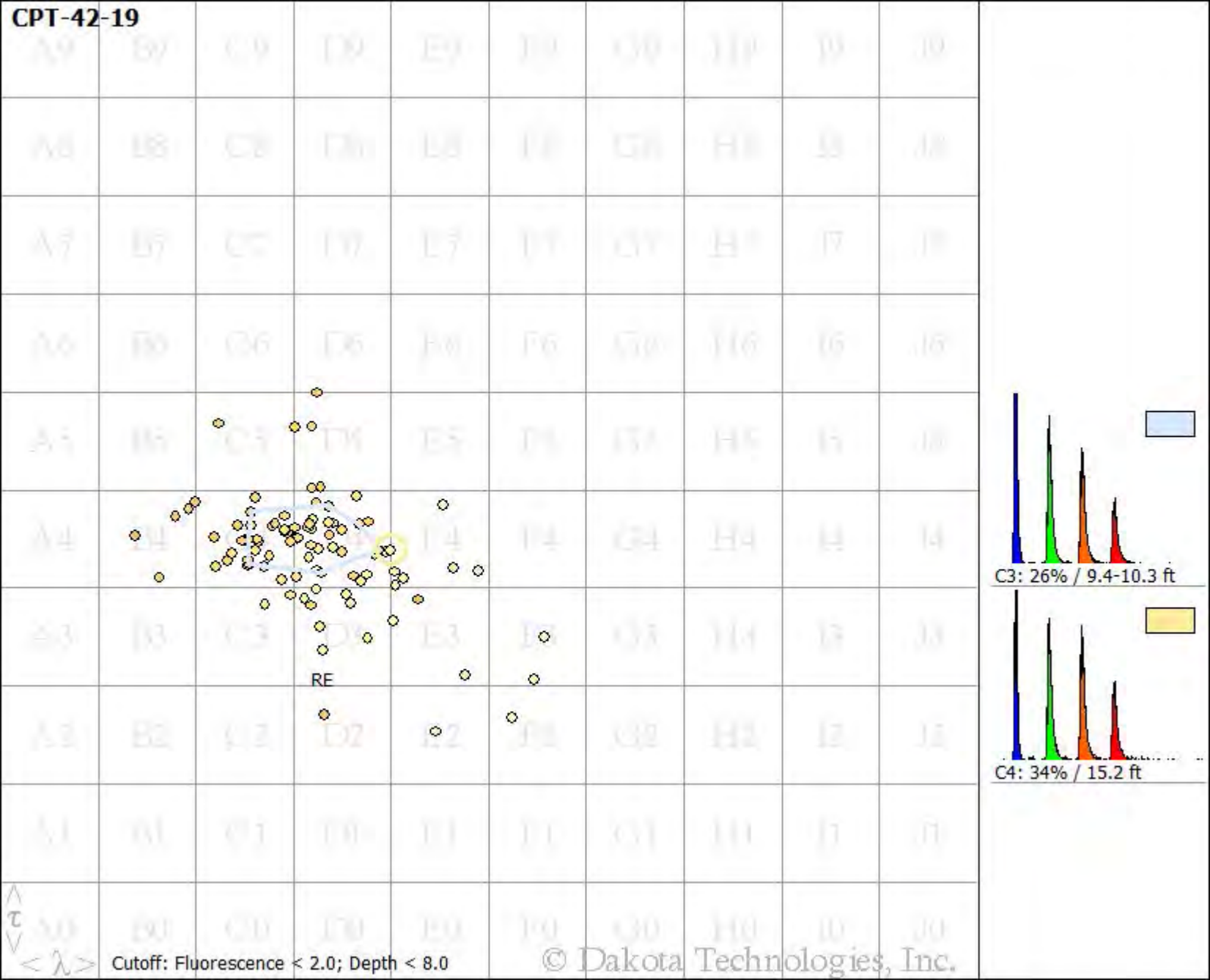
CPT-42-19

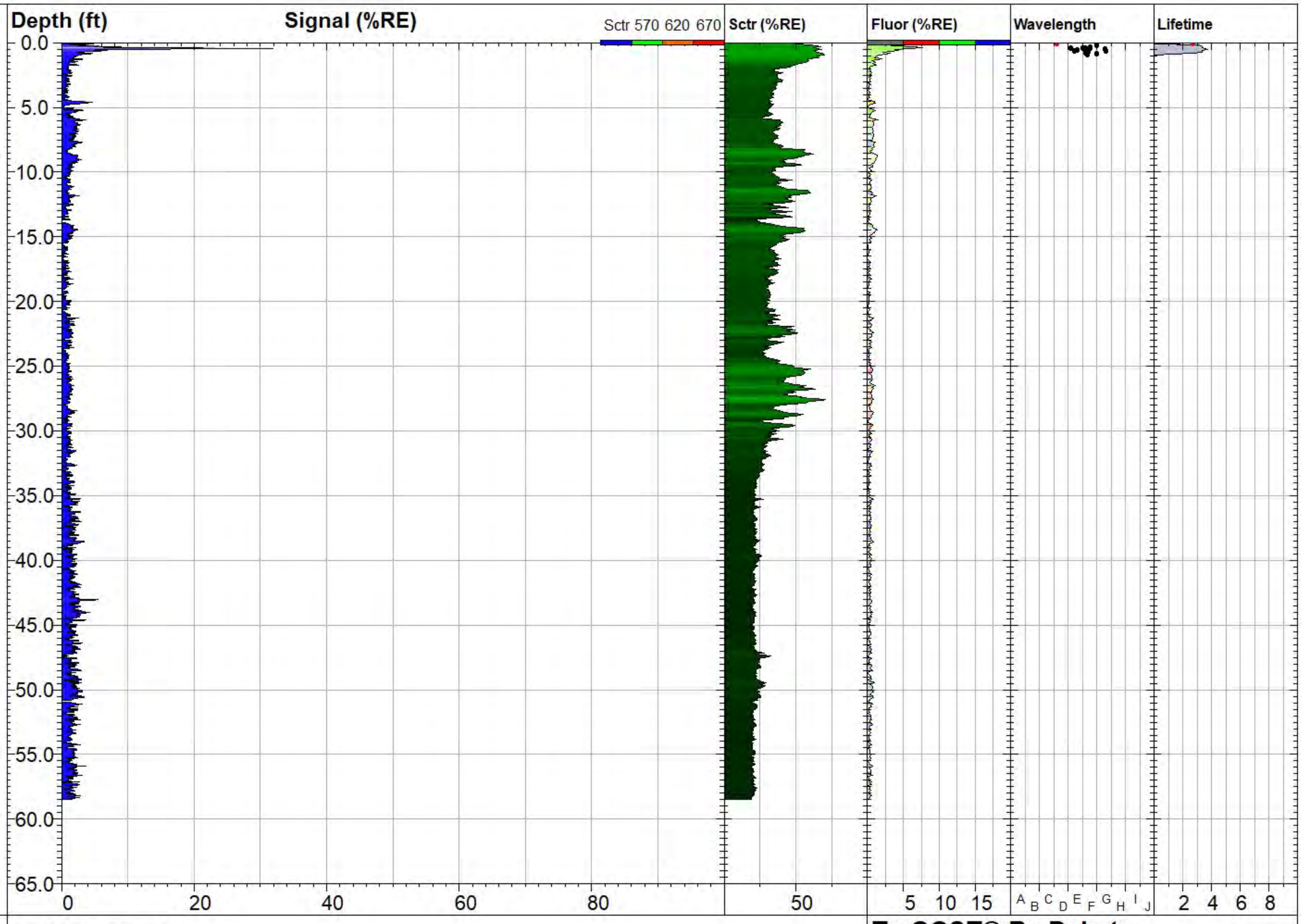
TarGOST® By Dakota
www.DakotaTechnologies.com

Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **57.55 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **78.1 %RE @ 9.47 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2019-12-03 13:45 CST**


CPT-42-19
RE
C3: 26% / 9.4-10.3 ft
C4: 34% / 15.2 ft
Cutoff: Fluorescence < 2.0; Depth < 8.0
© Dakota Technologies, Inc.

Callouts

Hand augered 0-8'



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CPT-43-19

TarGOST® By Dakota

www.DakotaTechnologies.com

Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **58.48 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **33.1 %RE @ 0.45 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2019-12-03 10:42 CST**

CPT-43-19

RE

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Cutoff: Fluorescence < 2.0; Depth < 8.0

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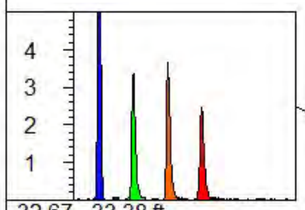
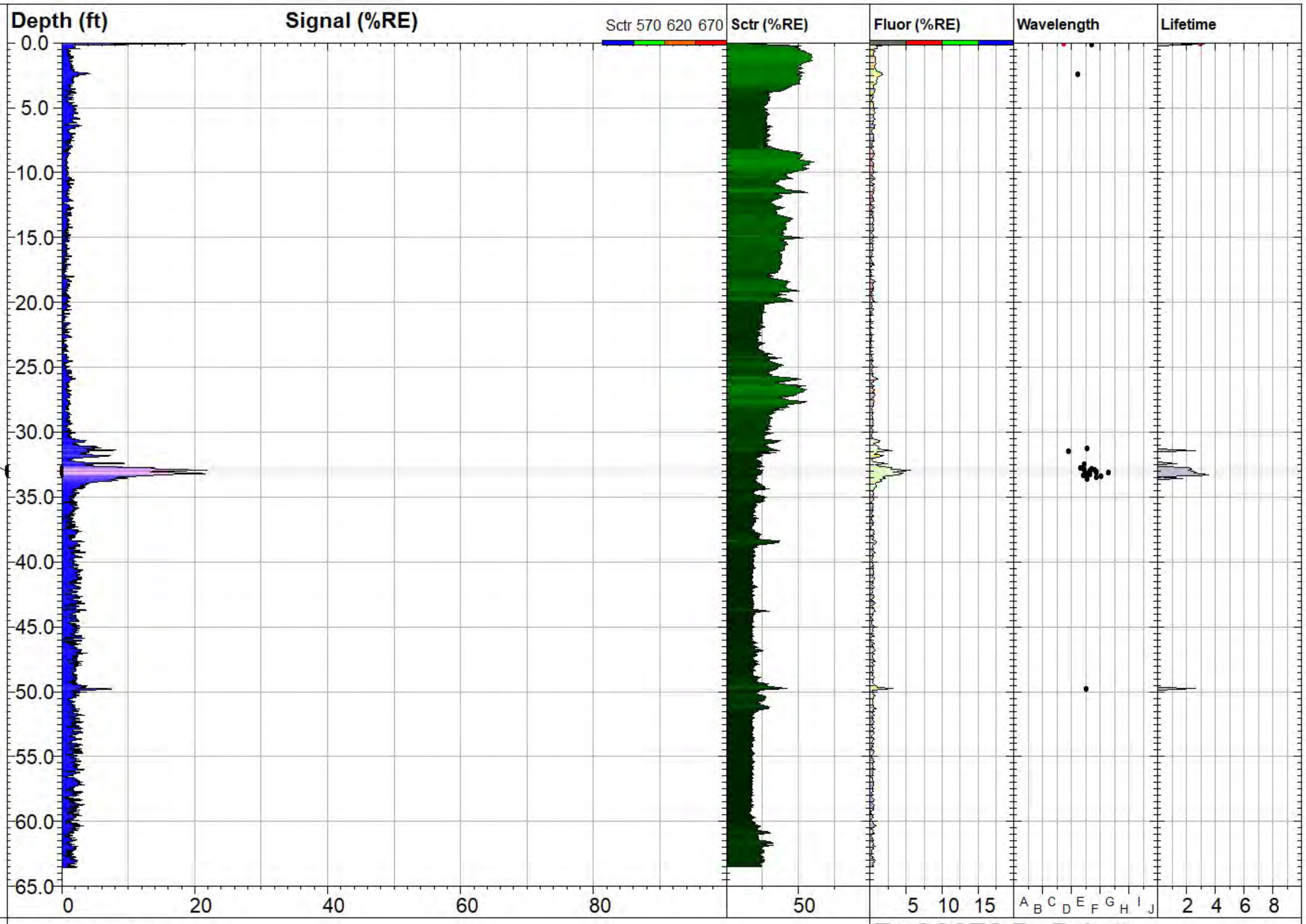
Callouts

Hand Augered and backfilled with sand to 8' BGS



32.67 - 33.38 ft
15.6 %RE (s 4.1)
Tau: 1.8 2.7 3.4 3.5



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CPT-44-19

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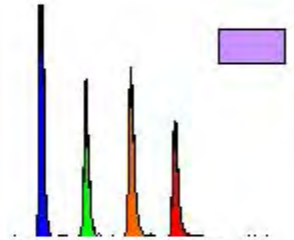
Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **63.53 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **22.2 %RE @ 32.93 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2019-12-03 09:02 CST**

CPT-44-19



RE

Cutoff: Fluorescence < 2.0; Depth < 8.0

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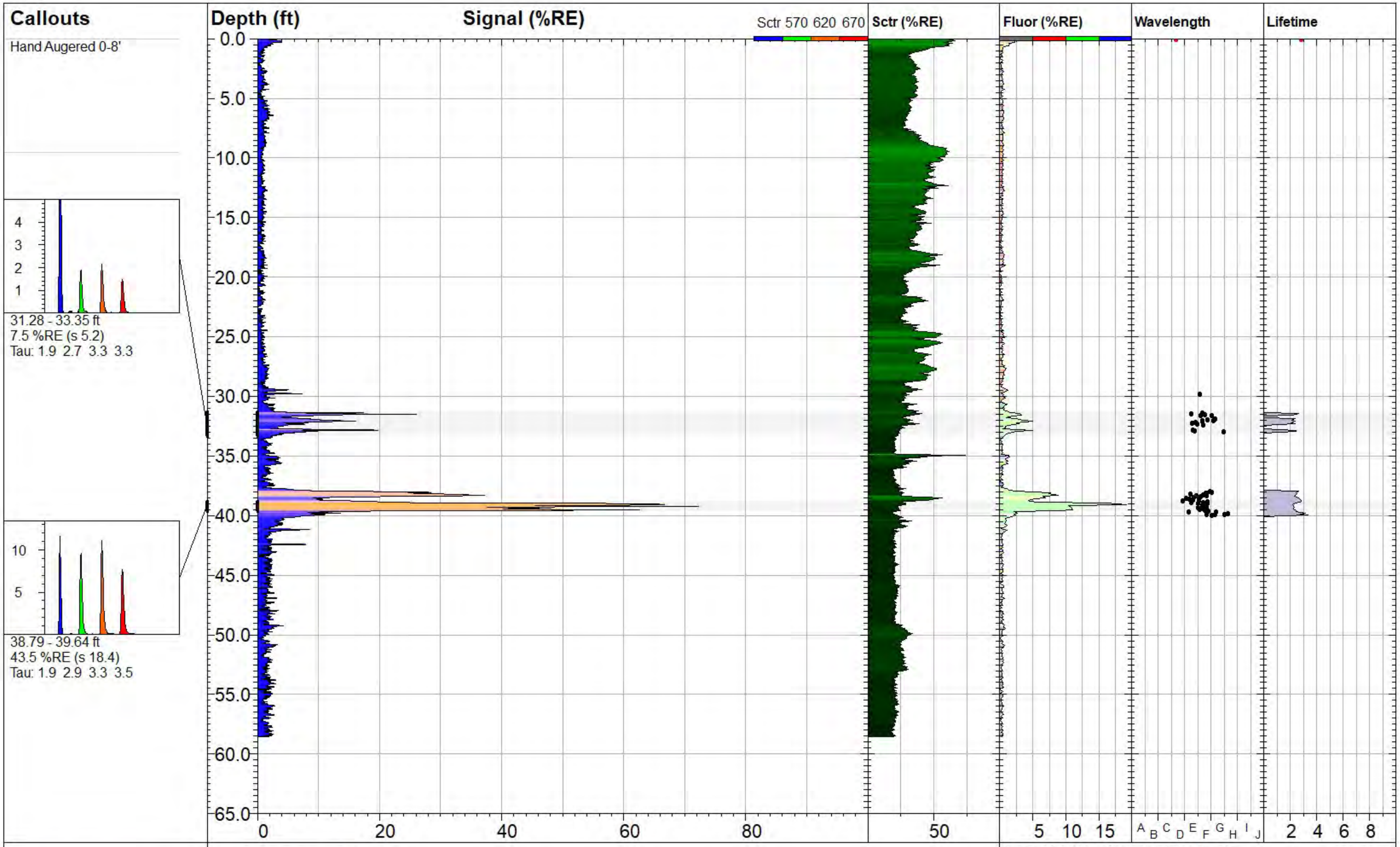

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CPT-45-19

TarGOST® By Dakota
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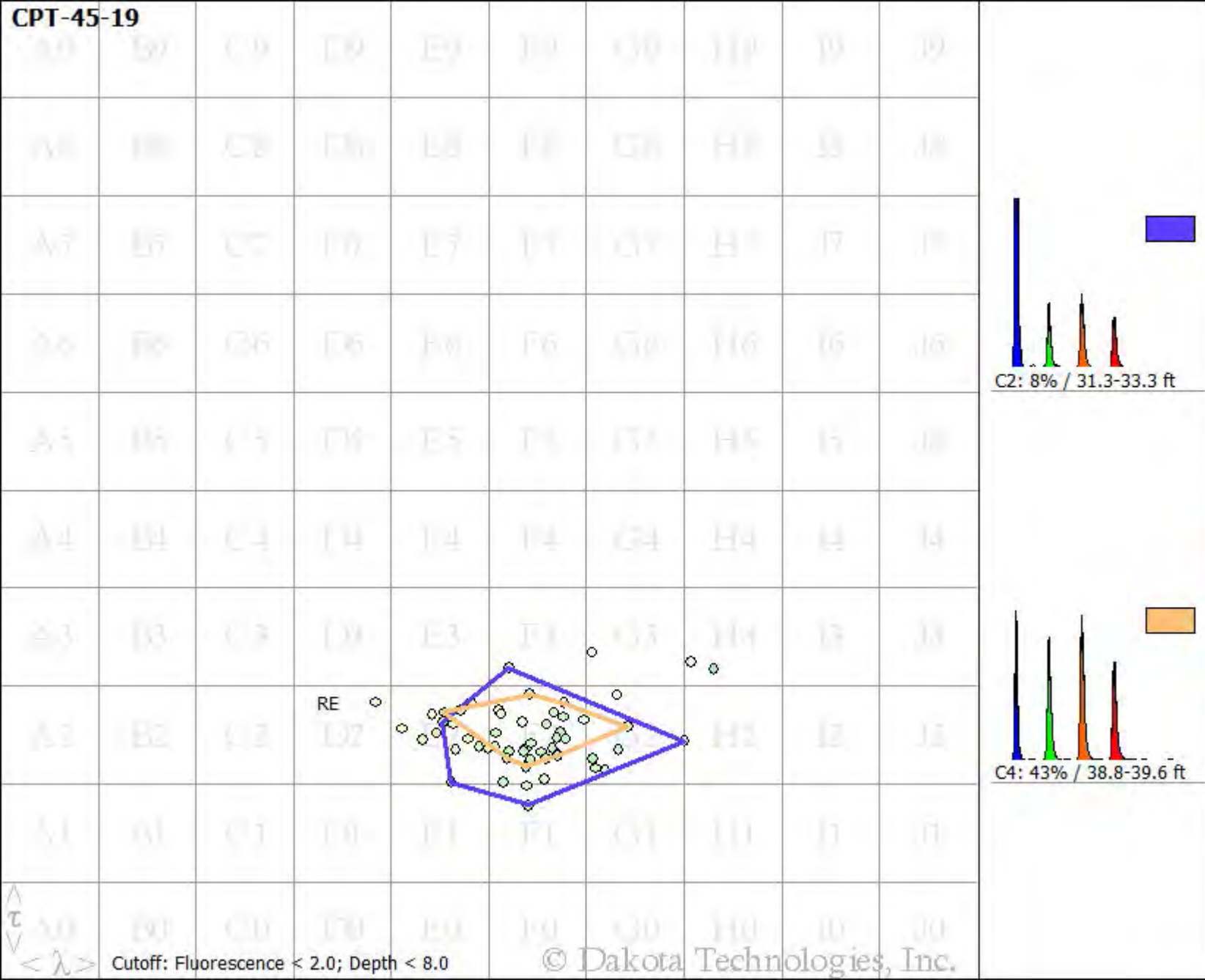
Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **58.56 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **72.9 %RE @ 39.23 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2019-12-07 12:52 CST**


CPT-45-19
RE
C2: 8% / 31.3-33.3 ft
C4: 43% / 38.8-39.6 ft
τ
< λ >
Cutoff: Fluorescence < 2.0; Depth < 8.0
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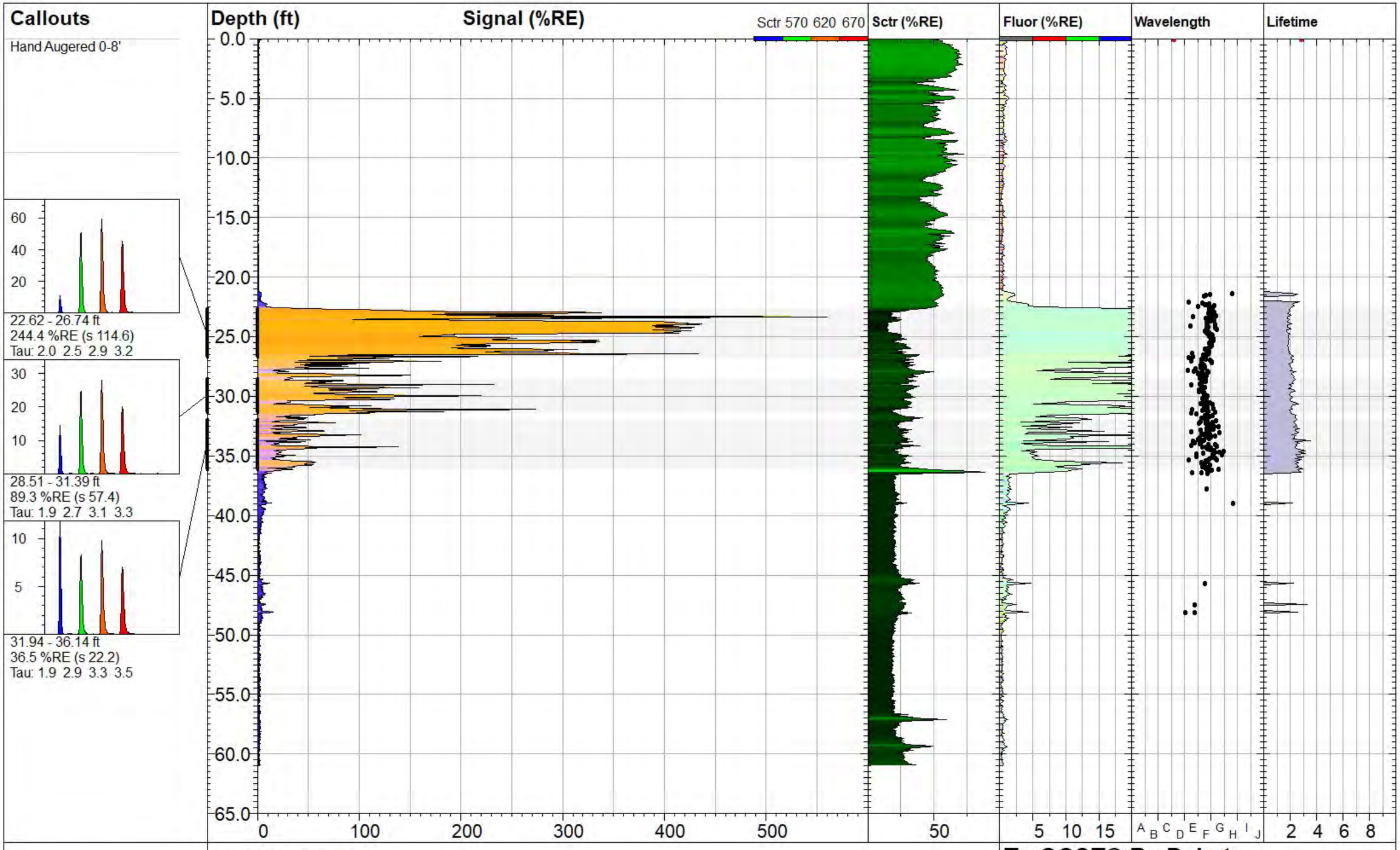

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CPT-46-19

TarGOST® By Dakota
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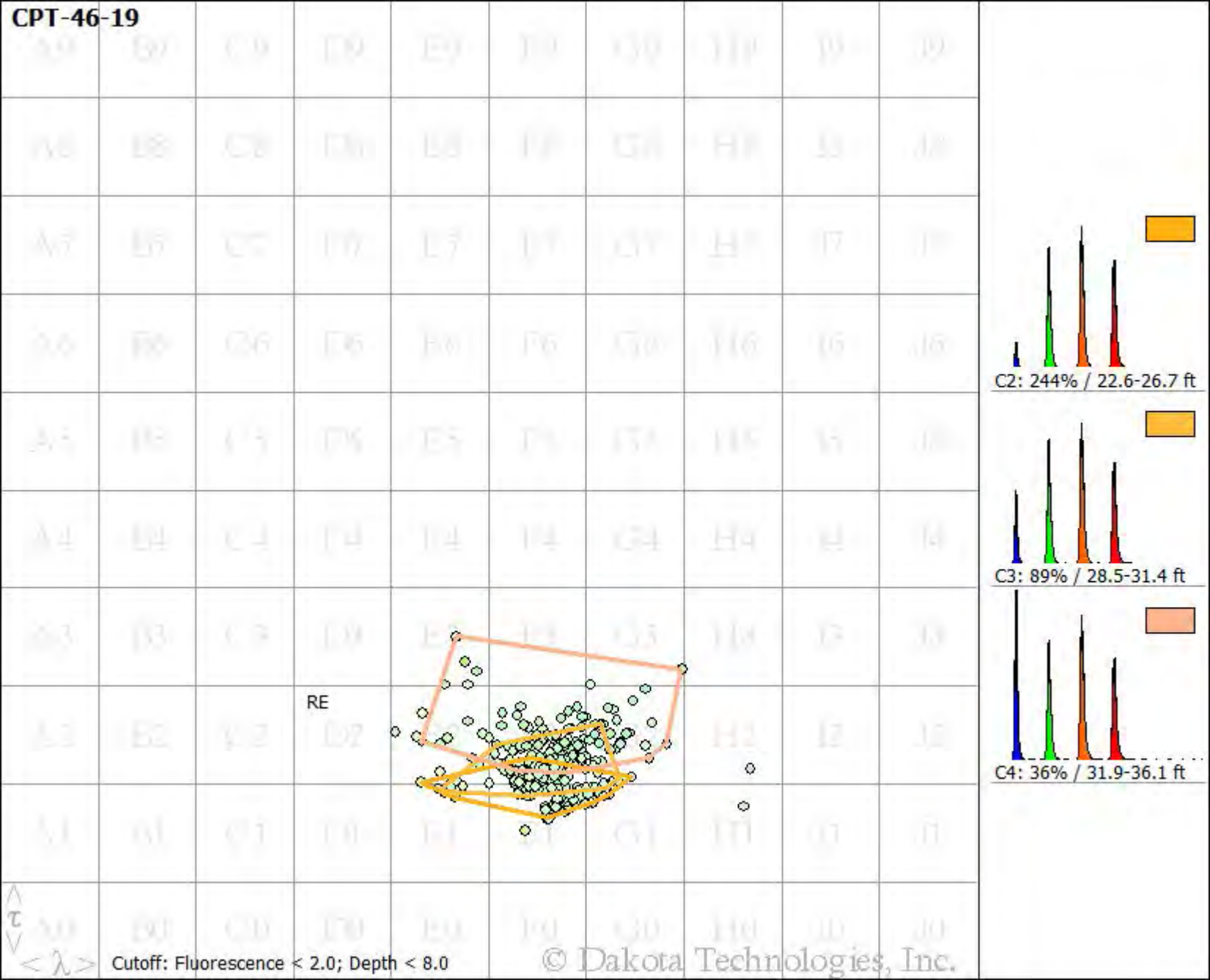
Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **60.98 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **569.8 %RE @ 23.33 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2019-12-07 10:08 CST**


CPT-46-19
RE
C2: 244% / 22.6-26.7 ft
C3: 89% / 28.5-31.4 ft
C4: 36% / 31.9-36.1 ft
τ
< λ >
Cutoff: Fluorescence < 2.0; Depth < 8.0
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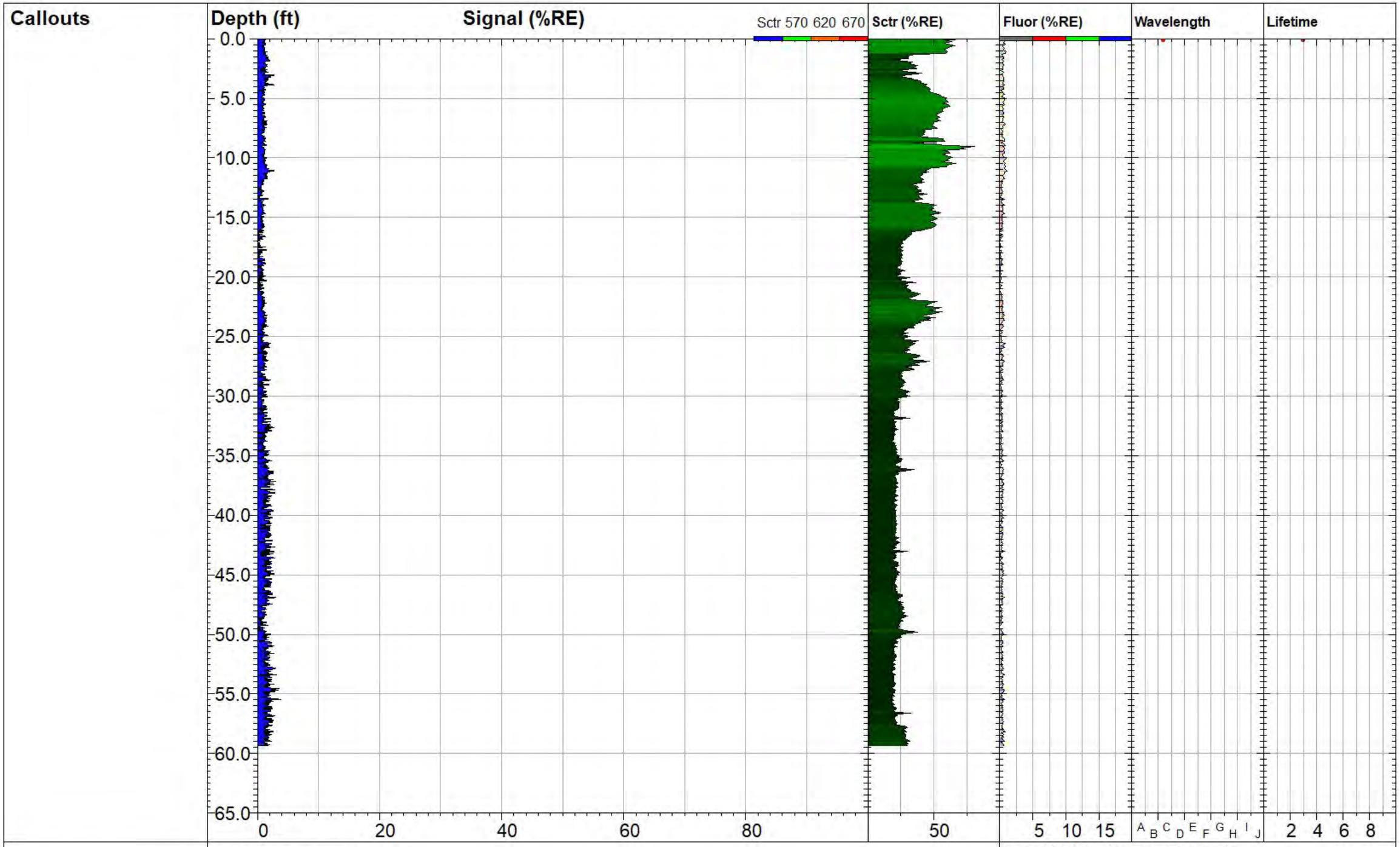

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CPT-48-19

TarGOST® By Dakota
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Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **59.35 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **3.9 %RE @ 55.45 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2019-12-08 13:49 CST**

CPT-48-19

RE

τ

<λ>

Cutoff: Fluorescence < 2.0; Depth < 8.0

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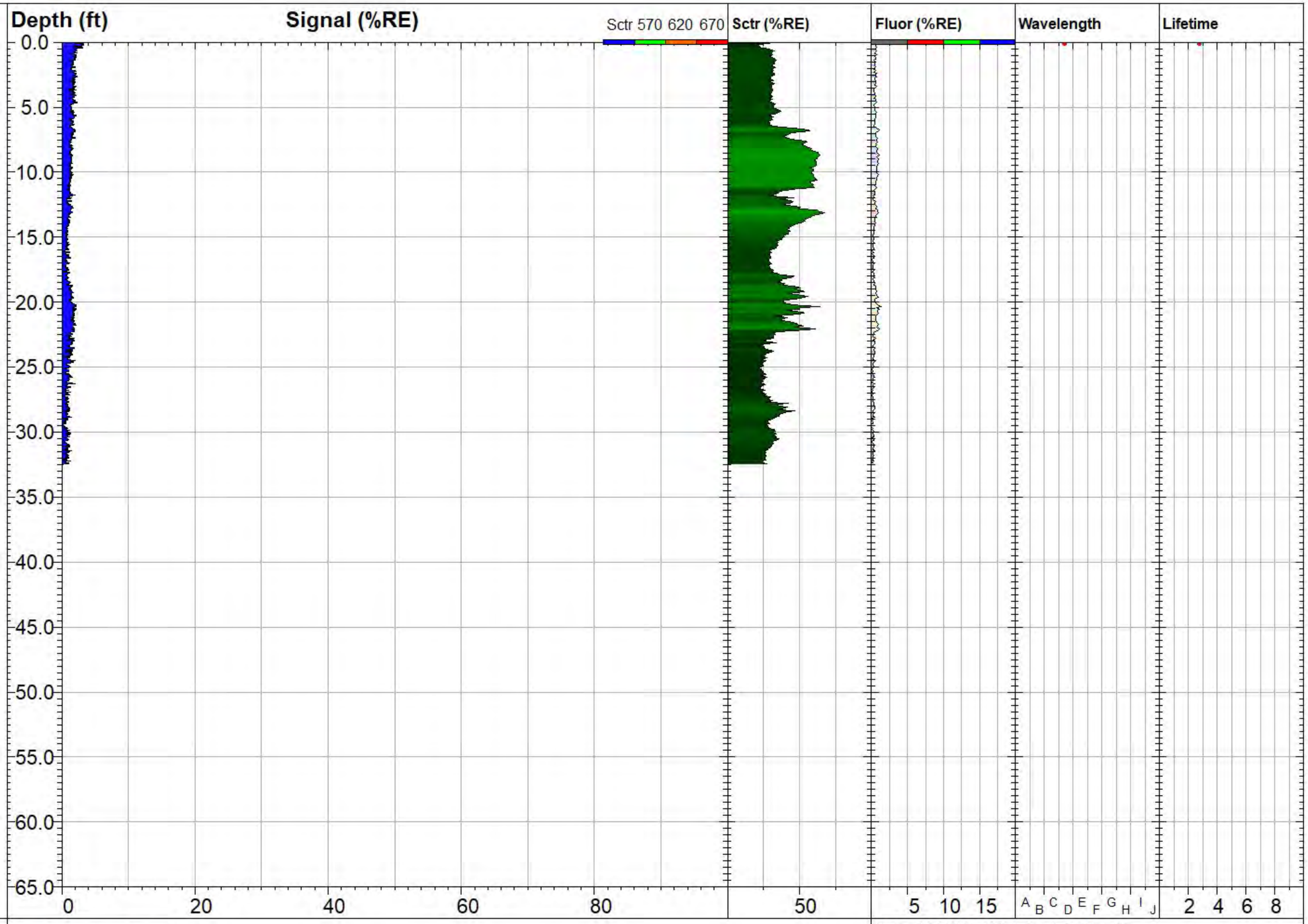
Callouts

Hand Augered to 10'.

Refusal



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CPT-54-20

TarGOST® By Dakota
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Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **32.48 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **3.3 %RE @ 0.13 ft**
Operator / Unit: **D. Thompson / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2020-01-21 13:56 CST**

CPT-54-20

A9	B9	C9	D9	E9	F9	G9	H9	I9	J9
A8	B8	C8	D8	E8	F8	G8	H8	I8	J8
A7	B7	C7	D7	E7	F7	G7	H7	I7	J7
A6	B6	C6	D6	E6	F6	G6	H6	I6	J6
A5	B5	C5	D5	E5	F5	G5	H5	I5	J5
A4	B4	C4	D4	E4	F4	G4	H4	I4	J4
A3	B3	C3	D3	E3	F3	G3	H3	I3	J3
A2	B2	C2	D2	E2	F2	G2	H2	I2	J2
A1	B1	C1	D1	E1	F1	G1	H1	I1	J1
A0	B0	C0	D0	E0	F0	G0	H0	I0	J0

RE

τ ^ v

$<\lambda>$ Cutoff: Fluorescence < 2.0; Depth < 10.0

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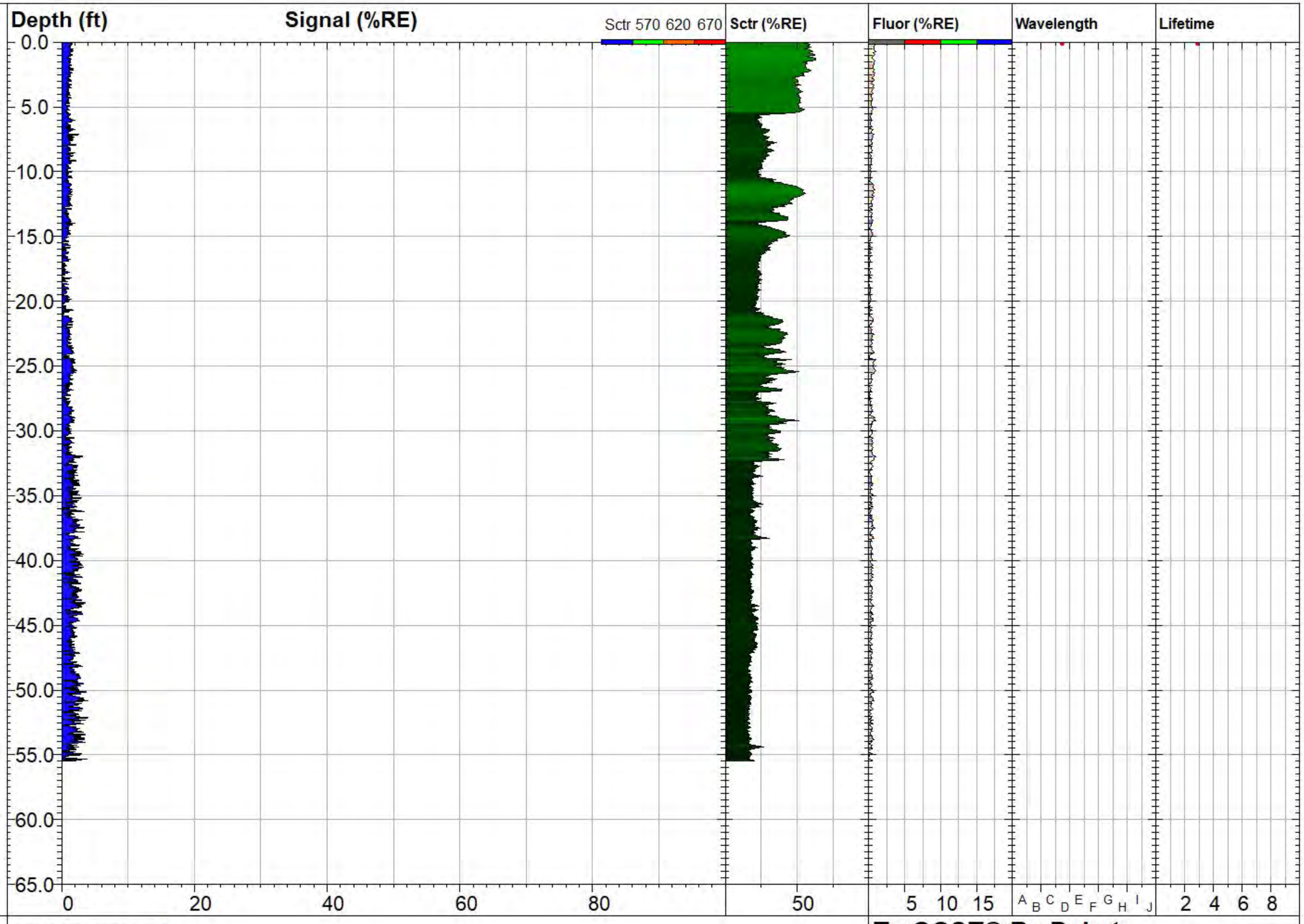
Callouts

Hand Augered 0-8'



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CPT-55-19

TarGOST® By Dakota

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Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **55.48 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **4.1 %RE @ 52.13 ft**
Operator / Unit: **T. Rudolph / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2019-12-08 08:13 CST**

CPT-55-19

RE

τ

$<\lambda>$

Cutoff: Fluorescence < 2.0; Depth < 8.0

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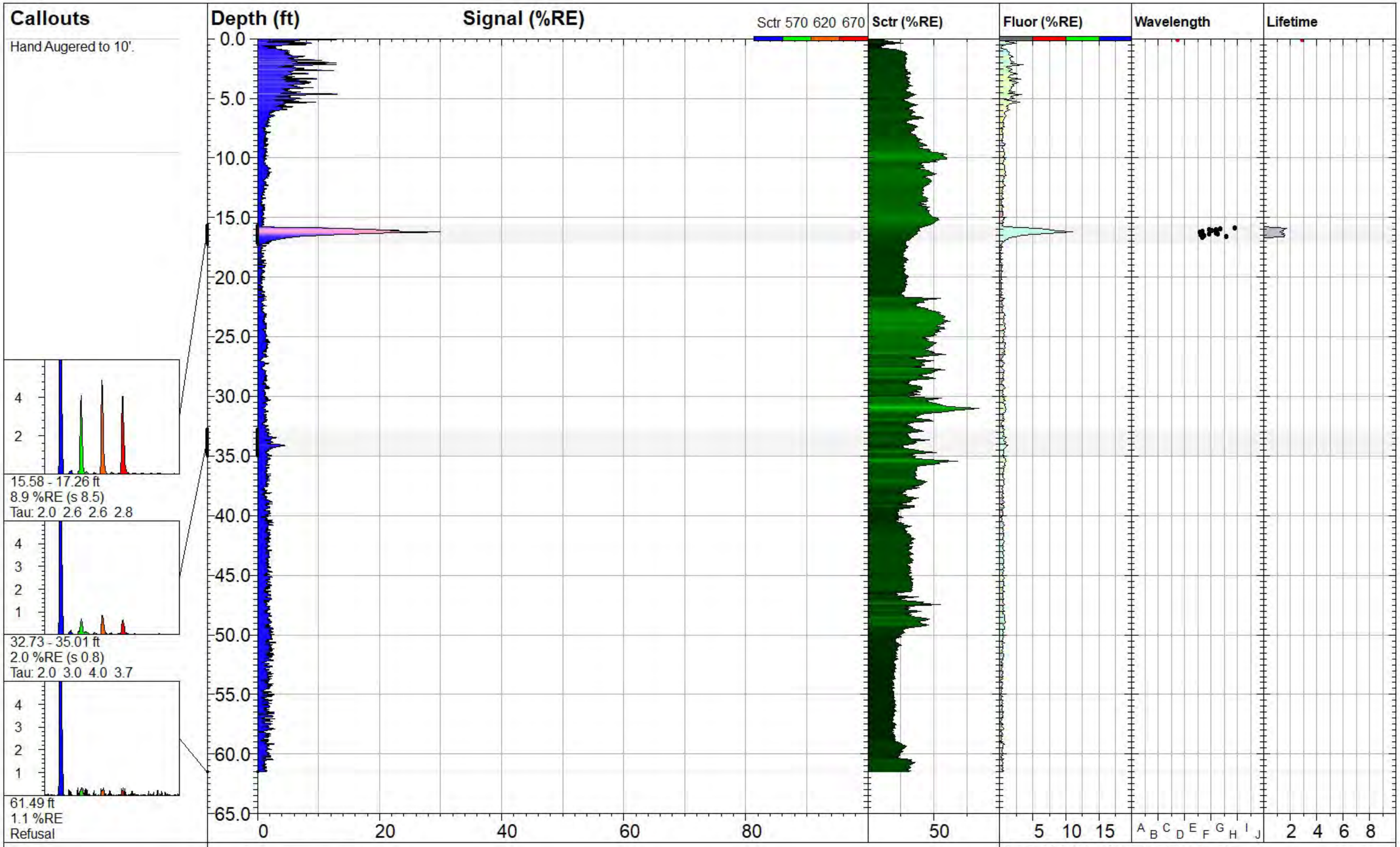

CPT-56-20

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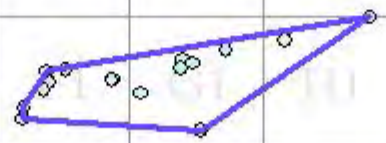
Site: **Houston Wood Preserving Works**	*Y Coord.(Lat-N) / System:* **Unavailable / NA**	*Final depth:* **61.49 ft**
Client / Job: **Golder /**	*X Coord.(Lng-E) / Fix:* **Unavailable / NA**	*Max signal:* **30.1 %RE @ 16.21 ft**
Operator / Unit: **D. Thompson / TG1807**	*Elevation:* **Unavailable**	*Date & Time:* **2020-01-27 09:11 CST**

CPT-56-20

RE



C3: 9% / 15.6-17.3 ft

C4: 2% / 32.7-35.0 ft

C5: 1% / 61.5 ft

Cutoff: Fluorescence < 2.0; Depth < 10.0

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Appendix B

TarGOST Reference Log

Dakota Technologies TarGOST Reference

2013-08-09

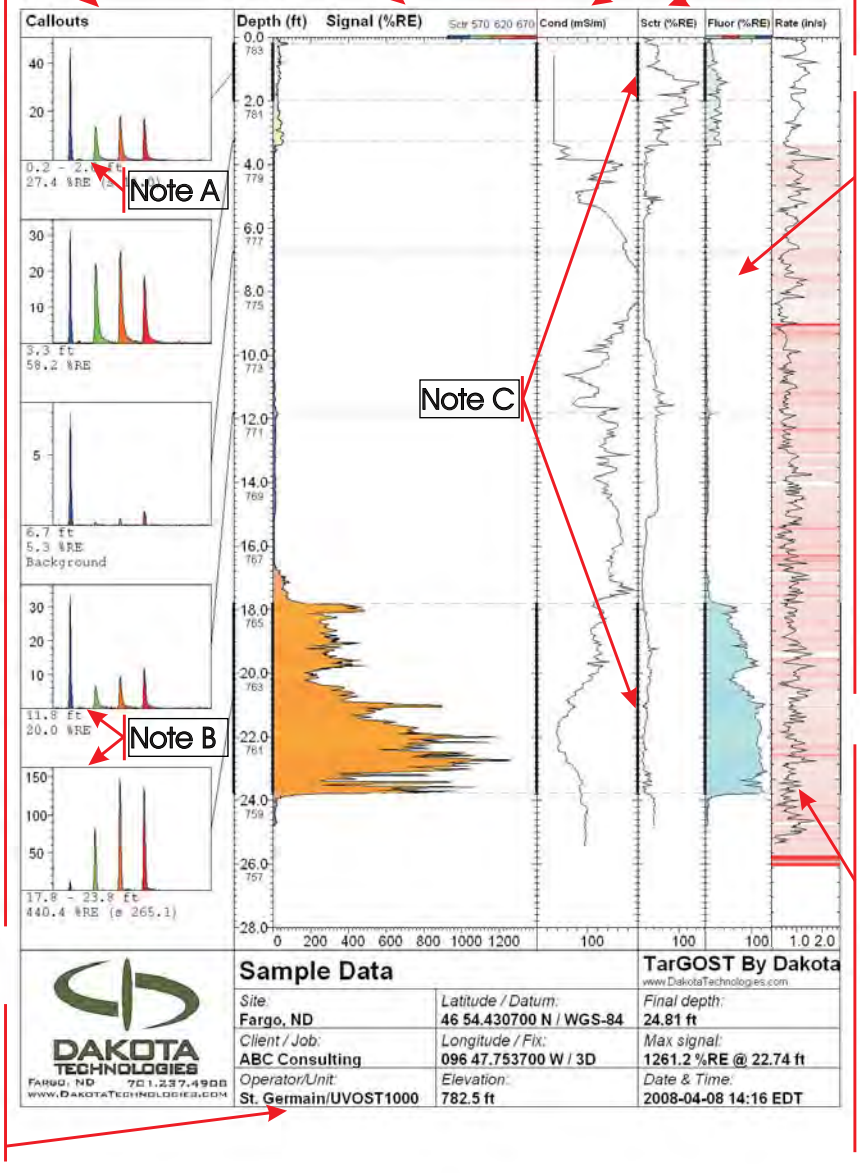
Main Plot :
Signal (total fluorescence) versus depth where signal is relative to the Reference Emitter (RE). For TarGOST data, the signal is scatter corrected due to tar's non-linear fluorescence with increasing concentration. The fill color is based on relative contribution of each channel's area to the total waveform area (see callout waveform). The channel-to-color relationship and corresponding center wavelengths are given in the upper right corner of the main plot. For TarGOST data, the first channel (blue) is always representative of the scatter.

Callouts :
Waveforms from selected depths or depth ranges showing the full mullti-wavelength waveform for that depth.

Each colored area peak is due to light at the four wavelengths. These four peaks / wavelengths are often referred to as channels.

Various products will have a unique waveform fingerprint due to the relative amplitude of the four channels or broadening of one or more channels in the time-domain.

Basic waveform statistics and any operator notes are given below the callout.



Info Box :
Contains pertinent log info including name and location.

Conductivity Plot :
The Electrical Conductivity (EC) of the soil can be logged simultaneously with the TarGOST data. EC often provides insight into consolidated versus unconsolidated stratigraphy.

Scatter Plot :
Scatter versus depth where intensity is relative to the scatter level of the Reference Emitter.

Fluorescence Plot :
A plot of the fluorescence signal alone versus depth. The scatter channel is not used in the calculation of signal intensity or coloring. Note the coloring key at the top of the plot. Intensity unit is percent of Reference Emitter fluorescence. Varying soil or product can often be visually pulled-out from the background based on the fill color of this plot if scatter dominates the color of the main plot.

Rate Plot :
The rate of probe advancement. Less than 0.8in (2cm) per second is preferred.
The red fill is the hammer counts, the number of strikes used to advance the probe. The rate and hammer counts can be indicative of various soil conditions.

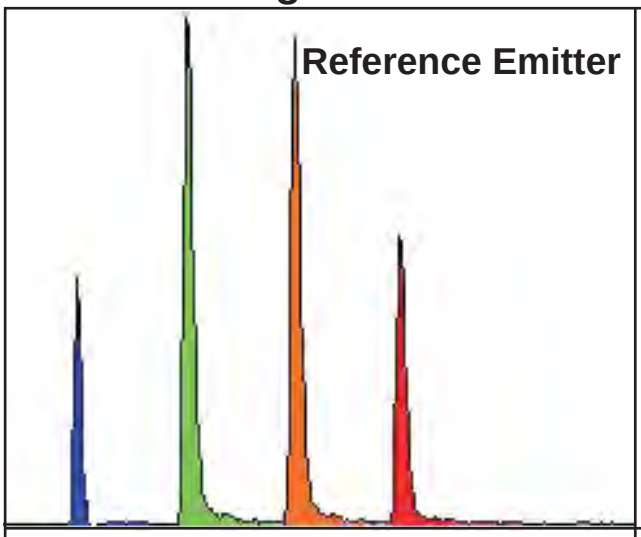
Note A :
Time is along the x axis. No scale is given, but it is constant and is roughly 250ns wide.

The y axis is in mV and directly corresponds to the amount of light striking the photodetector.

Note B :
These two waveforms show two different products, each with a unique waveform.

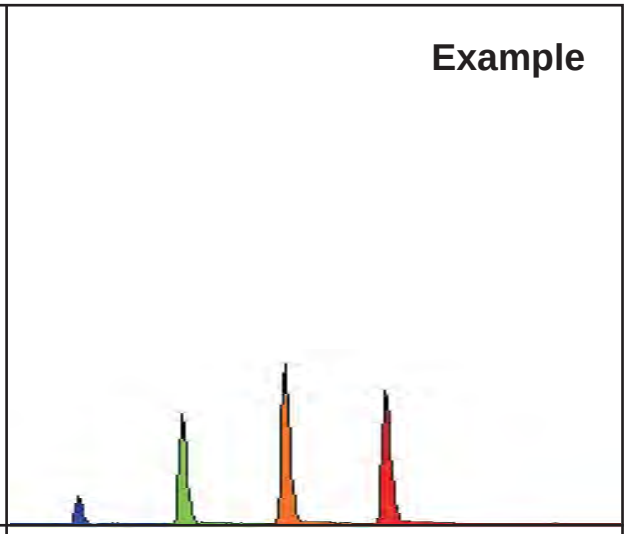
Note C :
The top zone has moderate fluorescence, but high scatter while the bottom zone has high fluorescence and low scatter. Note how this impacts the main signal plot.

Waveform Signal Calculation



Sctr	CH2		CH3		CH4		Fluor		Total%
255	785	+	772	+	462	=	2019	»	100/100
100	38.9		38.2		22.9		100		100%

Channel
Area (pVs)
Percent RE



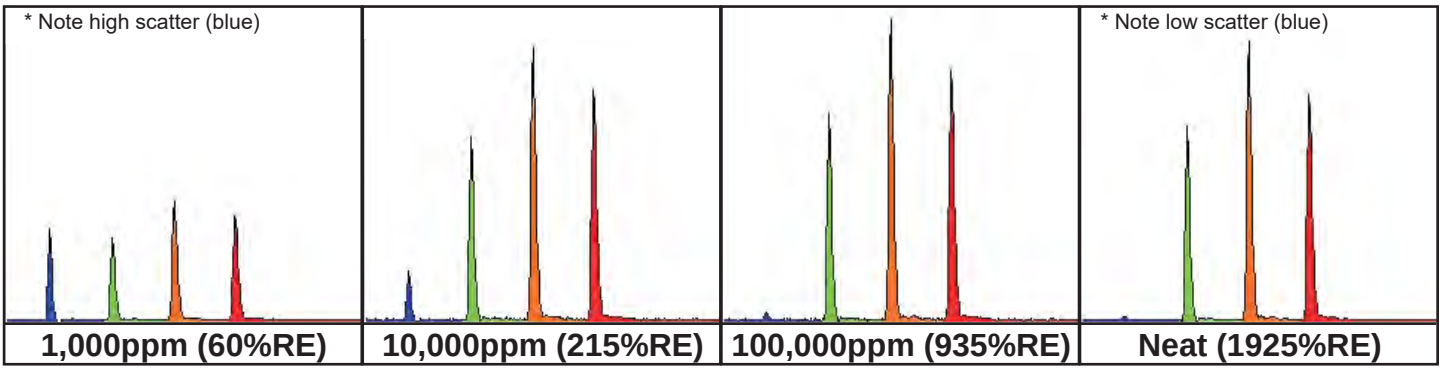
Sctr	CH2		CH3		CH4		Fluor		Total%
36	153	+	244	+	226	=	623	»	31/14
14.1	7.6		11.1		11.2		31		219%

Data Files

***.lif.raw.bin**	Raw data file. Header is ASCII format and contains information stored when the file was initially written (e.g. date, total depth, max signal, gps, etc., and any information entered by the operator). All raw waveforms are appended to the bottom of the file in a binary format.
***.lif.plt**	Stores the plot scheme history (e.g. callout depths) for associated Raw file. Transfer along with the Raw file in order to recall previous plots.
***.lif.jpg**	A jpg image of the OST log including the main signal vs. depth plot, callouts, information, etc.
***.lif.dat.txt**	Data export of a single Raw file. Tab delimited format. No string header is provided for the columns to make importing into some programs easier. Each row is a unique depth reading. The columns are: 1-Depth; 2-Total Signal (%RE); 3-Ch1%; 4-Ch2%; 5-Ch3%; 6-Ch4%; 7-Rate; 8-EC Depth; 9-EC Signal; 10-Hammer Rate Depth; 11-Hammer Rate; 12-Color (RRGGBB).
***.lif.sum.txt**	A summary file for a number of Raw files. ASCII tab delimited format. The file contains a string header. The summary includes one row for each Raw file and contains information for each file including: the file name, gps coordinates, max depth, max signal, and depth at which the max signal occured.

Non-Linear Fluorescence

Due to self-absorption, fluorescence levels (channels 2-4) are not linear with concentration, requiring the use of scatter (channel 1) correction. Creosote on sand, y-axis scaling is equal.



Appendix C

TarGOST Guide

DAKOTA TECHNOLOGIES

TarGOST® Guide

TarGOST®

Tar-specific Green Optical Screening Tool

User Guide

Version 1.1506

Table of Contents

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2010-04-22

A Introduction

The Tar-specific Green Optical Screening Tool (TarGOST®) is a laser-induced fluorescence (LIF) screening tool that is specifically designed to detect non-aqueous phase liquid (NAPL) in the subsurface. It responds almost exclusively to NAPLs found at former manufactured gas plants (MGPs) and wood-treating (creosote/pentachlorophenol) sites. It does this by sensing the fluorescence of polycyclic aromatic hydrocarbons (PAHs) and any other fluorescent molecules found in MGP and creosote LNAPLs and DNAPLs. TarGOST is a modified version of Ultra-Violet Optical Screening Tool (UVOST®). Dakota developed the UVOST early in the 1990's with U.S. Air Force funding. The UVOST platform is a mature technology that has been applied at hundreds of petroleum, oil, and lubricant (POL) contaminated sites in the U.S., Europe, and Japan since 1994. TarGOST has been in commercial use since March 2003.

B Principles of Operation

B.1 Components

The following gives an introduction to the basic components of the system.

- **Laser**

  The laser is up-hole and produces concentrated light of one narrow range of wavelengths. For TarGOST, the laser produces short (5 billionths of a second) pulses green light, as opposed to Dakota's UVOST system that uses an ultra-violet laser for excitation.

- **Fiber-Optic Cable**

  The fiber-optic cable is a robust plastic coated metal conduit that houses two fiber optic cables and the wires for the conductivity measurement. This cable is strung through the probe rods prior to field activities. One fiber carries the laser down to the probe while the other returns scattered laser and fluorescent light.

- **Shock Protected Optical Chamber (SPOC)**

The distal end of the fiber optic cable attaches to the SPOC. The SPOC houses a mirror that turns the light and a sapphire window. Light passes through the window and strikes the soil in immediate contact with the window. The resulting scattered and fluorescent light is sent up-hole for measurement. The SPOC has channels that allow the conductivity wiring to pass through to the dipole tip at the bottom of the assembly.

- **Spectrometer**

The TarGOST's custom spectrometer divides the returning light into four distinct wavelength (or color) bands and converts the light into a corresponding electrical current where the current amplitude is proportional to the light amplitude.

- **Analog to Digital Converter**

The A/D converter produces an averaged digital signal from the current provided by spectrometer that can be read by the computer software.

- **Conductivity**

The electrical conductivity of the soil can be logged simultaneously with the LIF information.

- **Depth Meter and Hammer Rate**

Depth is tracked by a string potentiometer system on the direct push equipment to insure that the optical data is tagged with its proper depth. Data density is generally less than one inch. We can also track our Hammer Rate when using a percussion delivery platform.

- **Computer and Software**

All data is logged using Dakota's proprietary Optical Screening Tool (OST) software running on a Windows platform. We use ruggedized field laptops.

B.2 Laser-Induced Fluorescence

The TarGOST system is, in its simplest sense, a front-face fluorometer that is coupled via fiber optics to a sapphire-windowed probe that is advanced into the ground.

> A front-face fluorometer is a device that shines excitation light onto, and collects emission from, the same surface. This is different from conventional fluorometers, which operate with the excitation and emission beams at 90° and usually involve clear liquid analytes.

The TarGOST system makes continuous measurements of the soil matrix as the windowed probe is pushed slowly into the subsurface.

> The measurements are made hundreds of times each second. Each individual measurement begins with a pulse of laser excitation light being launched into one of two optical fibers that are strung through the drill/push rod string. As the rod is advanced into the subsurface, the very fast pulses of laser light (nanoseconds in duration) are directed out the sapphire window and onto the soil surface that is pressed very firmly against the outside of the window.
>
> Pulses of laser light strike whatever is present just outside the surface of the window. Most of the laser light is simply reflected by the soil matrix. However, if oil-like material (OLM) or tar-like material (TLM) containing PAHs (or other fluorescent molecules) are present, the PAHs that exist in these NAPLs absorb some of the light and are driven into an electronically excited state. When these PAHs eventually return to the ground state (this typically takes less than 10 ns), a portion of the PAHs emit red-shifted light (longer wavelength light than the excitation laser). Some of this fluorescence, along with a portion of the reflected excitation laser light, are collected by the SPOC's mirror and focused into the collection optical fiber for return to the TarGOST instrument for detection.

The light returning from the windowed probe is directed into a spectrometer located inside the TarGOST system, yielding a waveform.

The TarGOST's custom spectrometer divides the returning light into four distinct wavelength (or color) bands and converts the light into a corresponding electrical current pulse where the current amplitude is proportional to the light amplitude. This current pulse is wired into a fast digital storage oscilloscope where it is converted into a transient voltage signal, is digitized, and recorded. This digitized transient is called a waveform.

Figure 1 shows an example waveform. Each peak (or channel) represents a different wavelength band. The laser light that is being reflected from the soil matrix is monitored in the first channel (blue, left-most) and the three fluorescence bands are observed in the three right-most channels (green, orange, and red).

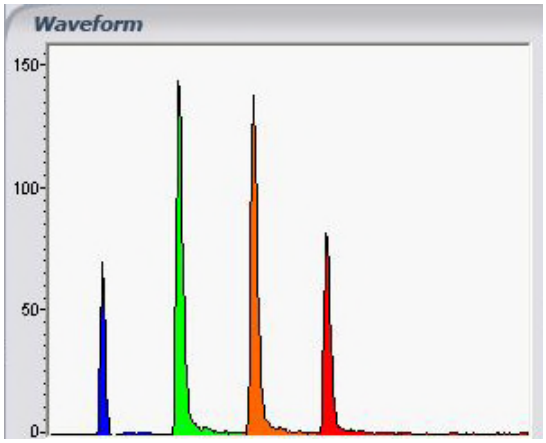


Figure 1. Example TarGOST Waveform

B.3 Scatter Correction

Due to complicated processes such as energy transfer, photon cycling, and other phenomena that "quench" the fluorescence in high NAPL concentration soils, fluorescence often does not scale linearly with concentration. To correct for this inherent property, the TarGOST system scatter corrects the data.

In calculating the TarGOST total signal, the fluorescence area is divided by the area under the laser scatter channel. This is referred to as scatter-correction or normalization. This is necessary because at very high concentrations the fluorescence does not continue to scale with concentration. The uncorrected TLM curve in Figure 2 illustrates the problem.

The addition of more and more NAPL to a soil sample should (if there were no quenching phenomenon) result in increasing fluorescence, but it only increases up to a certain point where the fluorescence response flattens out or begins to fall.

This poor type of response is called non-monotonic behavior and is obviously undesirable behavior for a screening tool. The laser scatter correction system is designed to prevent this "roll-over" affect. The scatter correction keeps this from occurring at the high end of concentrations (where soil is heavily contaminated or even saturated with NAPL). The scatter-corrected curves in Figure 2 illustrate the desired effect of scatter correction.

The laser scatter intensity is usually minimal until NAPL concentrations reach the tens or hundreds of thousands PPM level, where the quenching or saturation (non-linearity of fluorescence response) is most pronounced. Laser scatter correction generally doesn't "kick in" until high concentrations are being measured, where fluorescence response flattens out or rolls over. In this way, the scatter corrected fluorescence readings scale relatively well across a wide range of concentrations, from the typical limit of detection (LOD) of 250-500 ppm, to the almost neat NAPL encountered in soil saturated with free product. Remember that TarGOST is designed to respond only to the NAPL impacted soils, not the PAHs attached in "dry" form to soot or dissolved phase PAHs. This makes it ideal for delineating source term areas of mobile MGP NAPL.

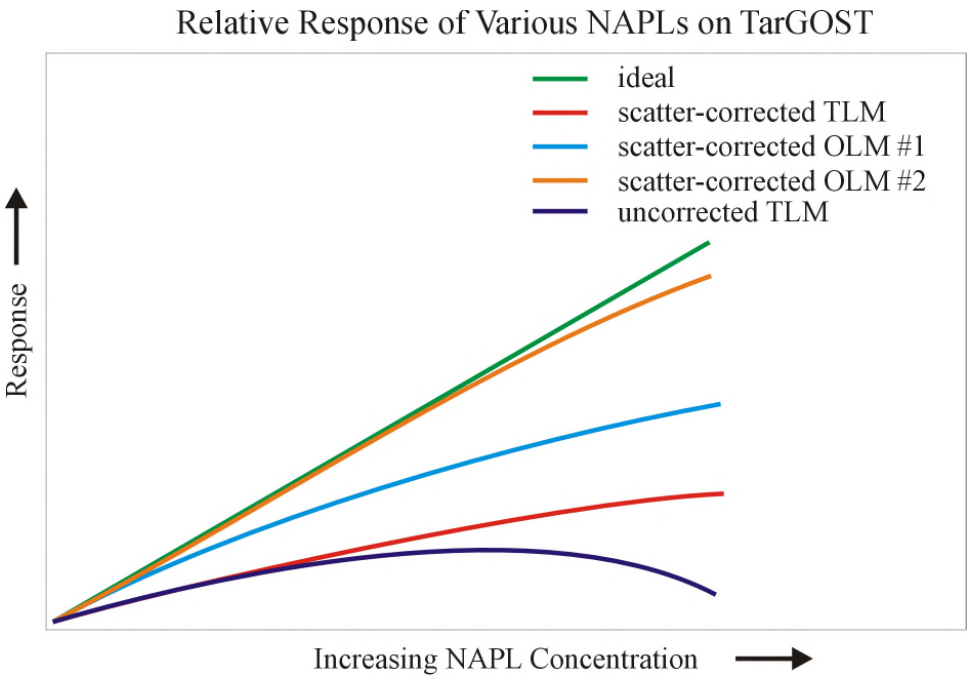


Figure 2. Variability of TarGOST Repsonse

The scatter correction works well, but it isn't perfect.

The TarGOST system is not an analytical instrument like a laboratory GC that sits in a clean, stable environment and only gets fed ultra-clean matrix-isolated analytes. Instead, it is asked to respond faithfully to an analyte that exists in a thousand different forms in an endless number of environments.

At high NAPL concentrations, even small variations in the laser scatter greatly influences the total signal, especially when the laser scatter gets close to zero.

For instance, let's imagine that with neat NAPL in front of the window, the fluorescence channels are averaging around 10,000 pico-Volt seconds (pVs) in area with each pulse of the laser. The laser scatter may be fluctuating between 400 and 800 pVs, because the scattered light is dim from being absorbed by the PAHs. Now, even if the fluorescence stays almost constant at 10,000 pVs every measurement, the relatively large variation in the tiny laser scatter that occurs will create a two or three-fold increase/decrease in total signal, even with the same NAPL sitting on the window. That's why very high readings (>500) often look unstable and jagged – because the laser scatter signal is so weak it "jitters" a lot compared to the fluorescence, causing large variations in signal, even though the fluorescence portion of the waveform is relatively stable. For this reason, any wide swings in large signals should "be taken with a grain of salt".

At low signals (0-100 %RE), it is often helpful to use the Fluor (%RE) or "Fluorescence Only" column of data. At low concentrations the change in scatter from the formation itself might actually "mess with" the Signal, causing it to change for reasons other that NAPL content. The Fluor column is the most reliable indicator of NAPL at near limits of detection quantities.

B.4 Calibration and Signal Calculation

The waveform shapes (the relative amount of signal in each channel or band and the decay time on the right side of each peak) tell us quite a bit about the qualitative nature of what's happening outside the window. But what interests people most is the amount of NAPL that is present vs. depth. We do this by portraying the signal vs. depth in a continuous log format, where the signal is relative to a known fluorescence reference emitter (RE).

To accomplish this we must reduce the waveform to a single quantitative number. We also need to normalize for any energy drift of the laser and optical alignment changes, so it is necessary to calibrate the system prior to each

sounding and plot the down-hole data. The RE is a stable and known material that can be applied to the window and measured just prior to each sounding. The signal of the down-hole sample is then plotted as a function of depth and a percent of the RE.

Figure 3 graphically illustrates the calibration waveform and its use in the determination of an example %RE.

The RE both reflects some of the laser light and fluoresces at levels that are in the same general range as soils that are moderately to heavily contaminated with MGP NAPL. The Reference Emitter waveform shown in the figure is an actual RE waveform taken with the TarGOST. By definition the RE will always have a %RE value of 100%. The example waveform on the right is a real waveform of impacted soil; notice the low scatter in the example and its impact on the total signal level of 219%.

To calculate the %RE, the area under the three fluorescence channels of the waveform is determined. As discussed in the previous section on scatter correction, the fluorescence area is divided by the laser scatter area. This fluorescence over scatter value is divided by the corresponding RE value and reported as a percent.

Once the RE is measured, all subsequent measurements can be normalized by this RE waveform, providing an apples-to-apples presentation of the data regardless of laser energy drift or other changes that would cause a difference in raw signal amplitude over time. It may be useful to think of the RE waveform as the equivalent of the single-point 100ppm isobutylene calibration used for hand-held photo-ionization detectors.

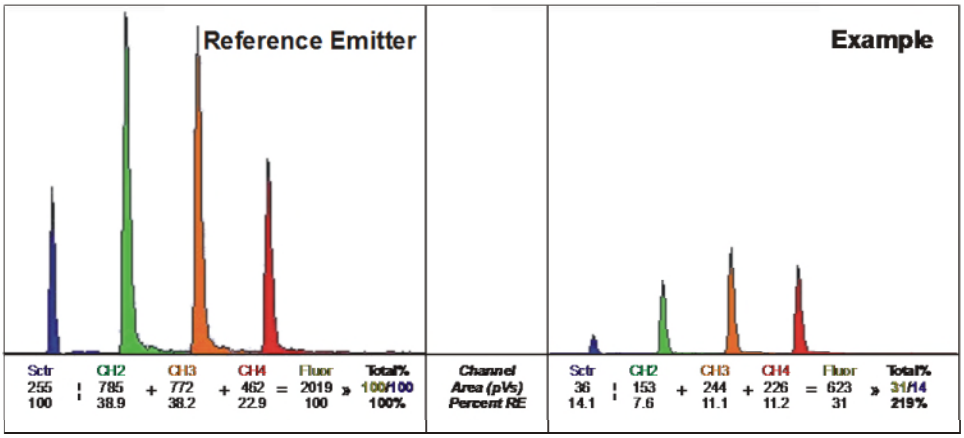


Figure 3. Example %RE Calculation

B.5 Signal vs. Depth Plotting

To better appreciate the qualitative information that TarGOST provides, the logs are color-coded by "filling in" the log's x-axis (%RE) with colors generated from the waveform at each and every depth. The color is determined by the amount of signal present in each of the four wavelength channels. See Figure 4 for an example.

This makes the interpretation of the logs easier to see "at-a-glance" as opposed to relying solely on the few selected waveforms to understand the qualitative nature of the data vs. depth. Color-coding alerts the observer to shifts in NAPL types and can also help identify weak interfering minerals like calcite and organic matter, both of which can sometimes (rarely) be mistaken for MGP waste.

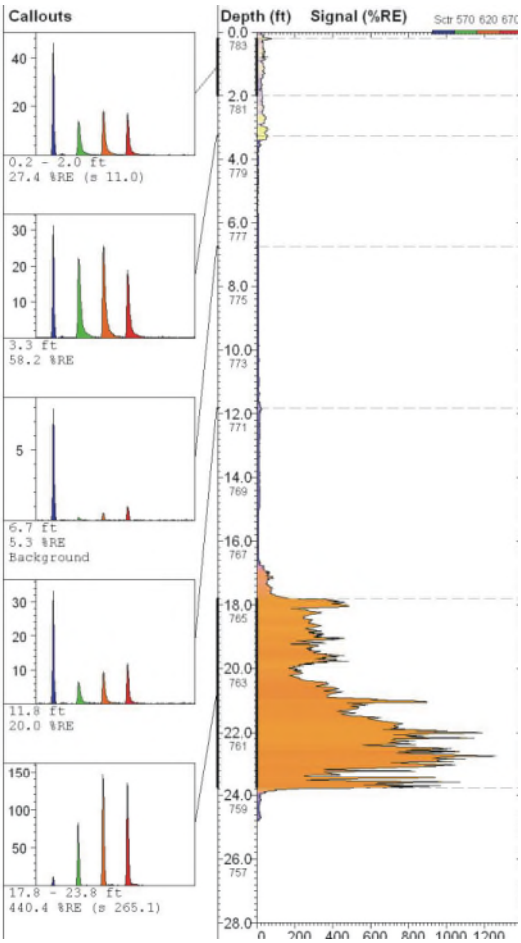


Figure 4. Depth vs %RE and Callouts

B.6 Variability and Preferential Response

NAPLs vary in fluoresce intensity and spectral distribution (color), even NAPLs found at the same site.

Figure 2 illustrates conceptually that TarGOST often responds with varying sensitivity toward different NAPLs, depending on their origin and/or variances in the conditions under which they've been exposed in the decades they've spent in the subsurface. For instance, a thick asphaltine TLM will typically fluoresce much less intensely than a less viscous "runny" OLM. This may well be due to the relative abundance of solvent in one matrix vs. the other. The more solvent available (i.e. the less viscous the NAPL), the higher the likelihood of PAHs being able to emit photons (fluoresce) before a non-radiative mechanism allows the PAH to come back down to the ground state without emitting a photon (quenching).

The preferential sensitivity of TarGOST toward the less viscous (more mobile) OLMs is welcomed by most users, since TarGOST seems to accentuate the presence of the more mobile NAPLs.

It is these more mobile NAPLs that are of the highest regulatory/compliance concern. There is an abundance of anecdotal evidence that suggests that some NAPLs may fractionate in the subsurface into OLM and TLM or even DNAPL and LNAPL. Dakota has participated in a number of investigations where a single NAPL body seems to have 'split' into two distinct NAPLs, with both NAPLs having similar but distinct waveform shapes as we moved away from the suspected release point and they appear to form two separate horizons (a "high" and "low" layer). Although there has been plenty of speculation, the exact mechanism for this phenomenon (if it actually occurs) is not known.

TarGOST uses a green laser to excite the larger (4 -5 rings and higher) PAHs that exist almost exclusively in NAPL form, as opposed to smaller (2-3 ring) PAHs that can more readily partition into the groundwater due to

their much higher solubilities in water. UVOST on the other hand employs ultra-violet (UV) light which can and does excite the smaller 2-3 ring aqueous phase PAHs and sometimes detects (marginally) high concentrations dissolved phase PAHs such as naphthalenes in the groundwater. When this behavior is combined with UVOST's non-monotonic response for many NAPLs, extremely complicated logs are generated that need to be computer analyzed to separate the NAPL fluorescence contribution from that of the dissolved phase. The dissolved phase signals can even surpass NAPL signals, making confident NAPL delineation almost impossible at many sites. This is especially true for those sites with sand/gravel, where pockets of NAPL are perched in or amongst slow-moving or stagnant groundwater.

It should also be mentioned that TarGOST was designed to exclusively detect high concentration PAH NAPLs ("heavies"). TarGOST has, by design, a very limited response (if any) to lighter fuels. While this is often desirable, there are some cases where TarGOST "missing" lighter fuels is undesirable, but this is a limitation of the TarGOST technology.

C Results

Dakota has years of experience using TarGOST. The system has both been fully tested in the lab and in the field.

C.1 Laboratory Testing

Figure 5 illustrates waveforms that are typical of those generated with TarGOST.

If the soil is free of NAPL, the laser scatter channel (leftmost) is far more intense than the three fluorescence channels. The Clean Sand waveform in the figure illustrates what clean (or very low NAPL) soil typically looks like on the TarGOST system. If NAPL is present, the fluorescence channels begin to grow in comparison to the laser channel. The 1,000ppm and 10,000ppm waveforms in the figure illustrate such a condition. Finally, with pure NAPL on the window, the increase in the fluorescence channels is minimal, but there has been significant loss of signal in the laser reflectance channel, due to absorbance by the PAH-laden NAPL.

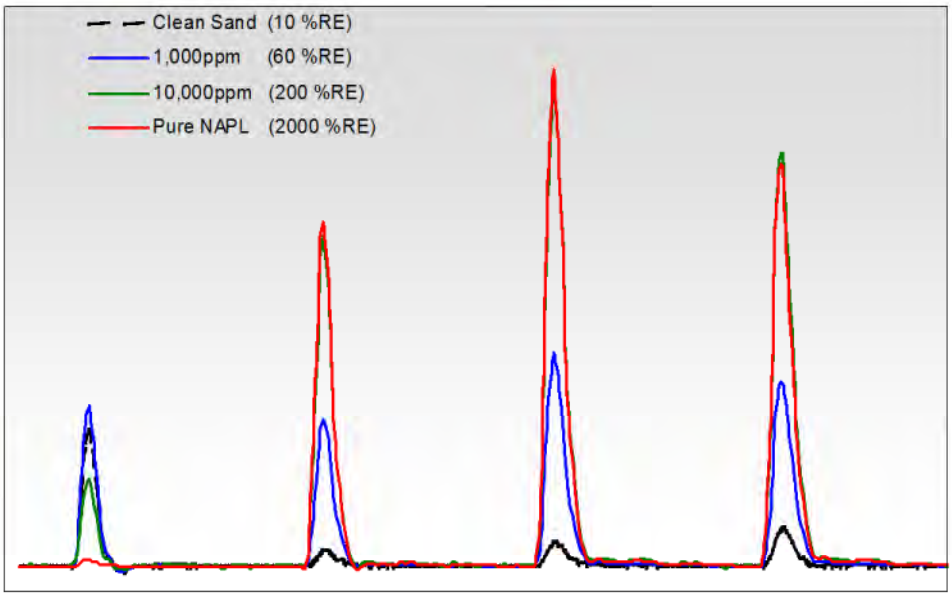


Figure 5. Example TarGOST Waveforms

Lab studies with MGP NAPL on moist Fisher® sea sand (and other soils) consistently demonstrate that TarGOST is capable of linear response vs. NAPL concentration over useful ranges, but some NAPLS are simply better behaved (more/less fluorescent) than others. Figure 6 shows examples of the range we see in TarGOST response for a variety of MGP NAPL on soils.

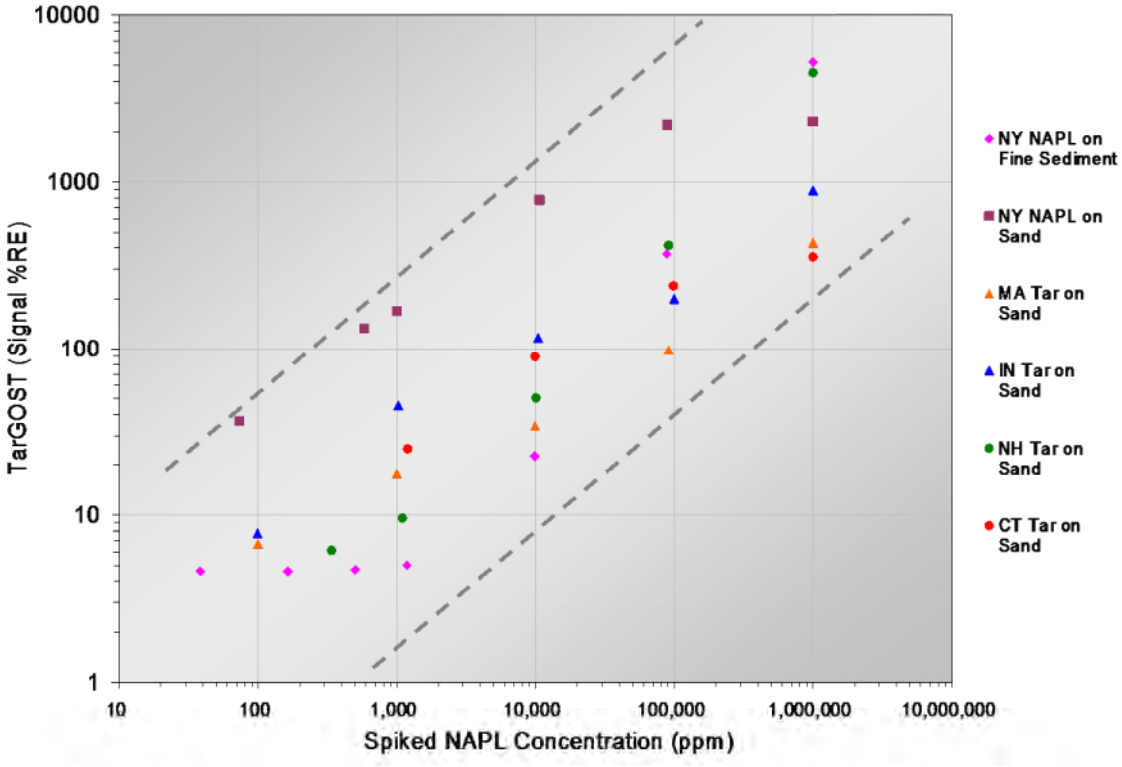


Figure 6. TarGOST response to a variety of MGP NAPLs

C.2 Real-World Data

Dakota has over twenty miles of vertical logging experience using TarGOST. Below are just a few logs of interest gathered over those years.

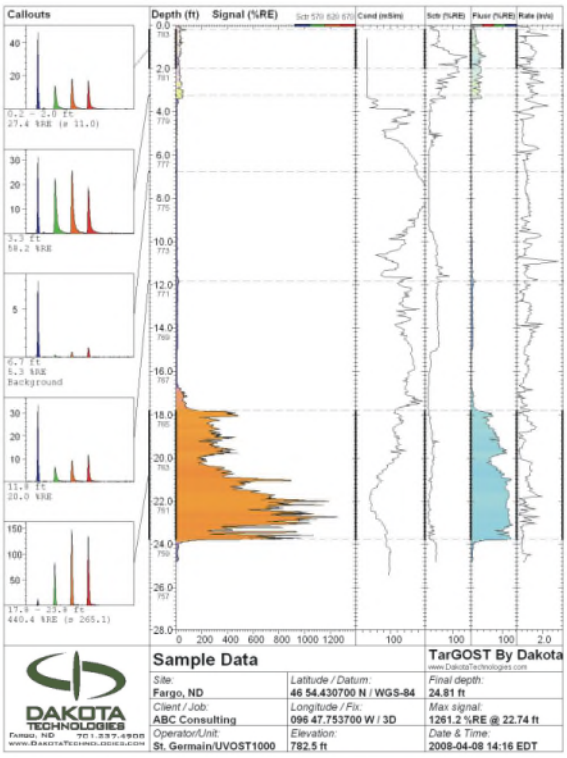


Figure 7. Example Log with EC

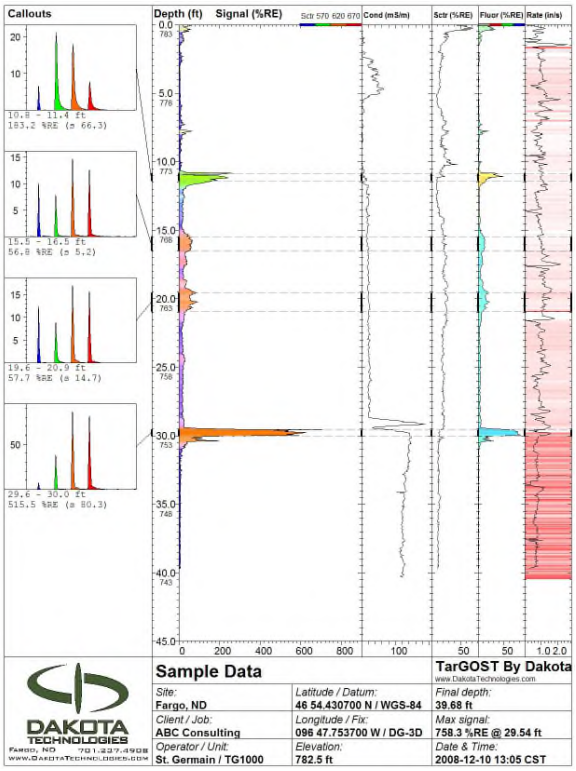


Figure 8. Example data including EC and Hammer Rate (red fill in right panel)

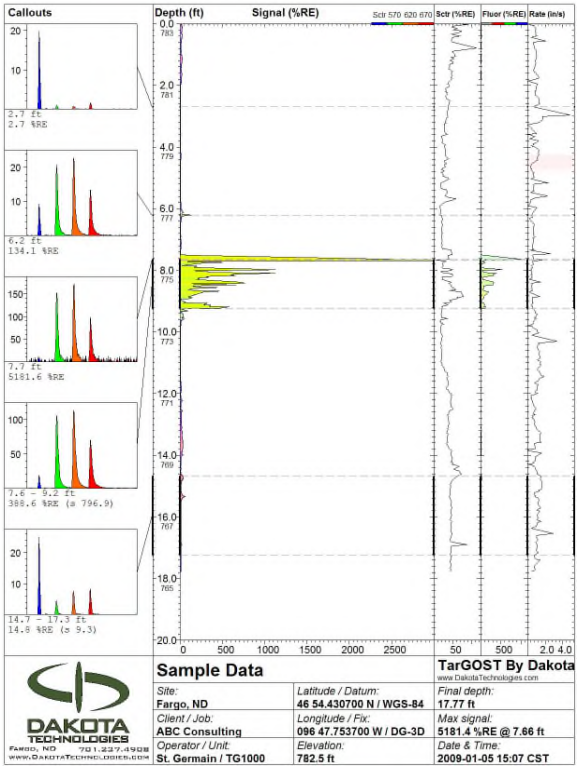


Figure 9. Example data with very high signal (low scatter)

D Theory and Results Summary

The following bulleted list is meant as a quick reference once the underlying principles of operation and results have been examined.

- TarGOST specifically targets the PAHs found in former MGP and creosote NAPLs and DNAPLs. There are most certainly other fluorescent molecular structures beside PAHs that contribute, but the PAHs dominate in most NAPLs
- TarGOST does detect moderate staining and residual levels of NAPL as well as free phase
- TarGOST is completely "blind" to aqueous (dissolved phase) PAHs
- TarGOST is not able to reliably detect "dry" PAHs (dry in the organic solvent sense) that are sorbed to soot, wood chips, and ash. They can generate a small signal but it is often weak and not easily teased out of the background. Many times we're left wondering whether a small signal is caused by very high concentrations of "dry" PAHs on purifier chips or ash/soot or very low (100s of ppm) residual NAPL levels.
- TarGOST's typical lab-determined LOD for NAPL on site soil is 100-500 ppm (weight of NAPL/weight of soil matrix). The more the NAPL fluoresces, the lower the LOD. Note that this is not the same as weight of Total PAHs /weight of soil matrix, since not all of a NAPL is PAHs
- TarGOST does, on occasion, respond to mineral or organic matter enough to be a nuisance. False positives include crushed limestone gravel fill, buried rotting wood/brush debris (the result of major flooding on a gravelly river), sea shells (shell hash), sawdust, quick lime, and some "mystery" solids/soils that were not identifiable
- TarGOST has been observed to significantly respond to peat material , but most peats fluoresce weakly – often there is NAPL in the peat so it's difficult to know for sure whether it's been the peat or NPAL staining that's causing the fluorescence
- TarGOST does not respond to typical lighter end fuels like gasoline or kerosene (diesel can/has been detected) – unless they contain MGP waste or creosote that they are co-mingled in them (pentachlorophenol an obvious example)
- TarGOST is single-point calibrated with a reference emitter (RE) immediately prior to each sounding and the results are always plotted relative to RE (%RE)
- TarGOST calibration/setup isn't perfect and the response for an identical NAPL can vary with optical platform and from lab to field. However, once set up on site, the response remains stable over time and from log-to-log. Changes to the spectrometer and mirror alignment/collimation SOP in 2007 made significant improvements to the consistency of the response
- NAPLs can vary greatly in their fluorescence response – even NAPLs found on the same site from the same source
- Thinner, less viscous NAPLs typically fluoresce much more (x10) than the more viscous TLMs. Asphalt-like TLMs which are solid/plastic fluoresce very poorly
- Scatter-correction is applied to TarGOST data to reduce/eliminate "response rollover" at high concentrations – but at low concentration (<100% RE) the Fluor (%RE) data column is better for judging "hits"
- Color-coding is determined by the relative waveform areas in each channel and provides "at-a-glance" recognition of waveform consistency or changes
- The waveforms contain both quantitative and qualitative information

E On-Site Fundamentals

E.1 Delivery Platform

Dakota has used its TarGOST systems in conjunction with nearly all commonly available direct-push (CPT and percussion) systems on land, ice, and on the water (barge).

- **Dakota's Probe Rig**

Dakota owns a Geoprobe® 5400 direct-push probe mounted on a Ford F-550 truck. When we operate our own system (TarGOST and Geoprobe) we generally send two experienced Dakota technicians.

- **Third Party Rig**

Dakota can rent a probe (for example a track rig) or our customers can hire a third party for the drilling activities. This third party option is generally a good idea when Dakota's mobilization fees are cost prohibitive or a special drilling license is required by the state.

- **Barge**

Dakota has extensive experience working from barges while providing TarGOST services. Barge sizes have ranged from 16' to 150' and we have worked in water depths of a couple of feet to 50'.

E.2 Pre-Planning

- **Free Sample Check**

Dakota will gladly look at your sample and let you know if TarGOST is the right choice for you. If your NAPL doesn't respond well with TarGOST, we'll also test your sample with UVOST to see if it is the better solution. Contact us for details, but it generally involves you sending us jars (from 5 to 40 ml) of your test NAPLs in an unrefrigerated shipping container, along with information regarding your site and contact information. In just a few days we'll let you know the results.

- **Probe Rig**

Arrange for Dakota to probe your site with our self-contained system or hire an outside drilling contractor. Dakota will need to communicate with your potential contractor to determine if they are capable of pushing direct sensing equipment. We have integrated with most Geoprobe models, many AMS probe machines, Marl rigs, homemade probe machines, CME drill rigs, mini CPT skids, tracked CPT machines and several brands of 40 ton CPT trucks.

- **Utility Clearance**

Dakota personnel have been instructed NOT TO PROCEED until underground utilities have been identified. Please communicate with Dakota to ensure that this is completed.

- **Site Access**

If any special security, permits or safety clearance is needed for Dakota's personnel or equipment is needed, alert Dakota prior to us showing up on-site.

- **Transport**

The main components of the TarGOST system are housed in a shock-protected enclosure measuring roughly 2x2x2 feet and weighing approximately 100 pounds. In addition to this enclosure, there is a rod-rack with generally four-foot rods, a computer, fiber cables, a generator, tools, spare probes and various peripheral items. When we ship the system, everything fits in a 4x4x4 foot enclosed pallet. A fork lift and secure storage should be arranged near the work site.

Figure 10. TarGOST and all peripherals in an enclosed palette being loaded for transport

- **Hole Locations**

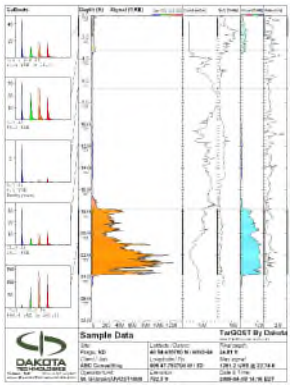
Some customers like to pre-plan the hole locations, mark the site accordingly, and record all relevant x-y and elevation data. A plan of bounding the contamination based on results determined on-site is also viable. Regardless if the hole placement follows a grid or bounding procedure, Dakota strongly prefers to start the job in what is believed to be “the heart” of the contamination. This gives everyone involved a feel for how well the NAPL is going to respond to TarGOST delineation.

- **Sampling**

Dakota recommends discrete sampling at 10% of the hole locations if semi-quantitative values are to be assigned to the LIF signals. Soil sampling can be reduced to approximately 5% of hole locations as a ground-truthing exercise. If an extensive sampling program is planned the client should consider hiring a more cost effective driller. Remember to build sampling time into you scope of work. Do consider getting TarGOST responses to homogenized splits of your samples. If your site has heterogeneous lithology (very typical), the chance of you sampling soils/NAPL that are representative of that which the TarGOST probe passed through are near zero. If heterogeneity exists, and you try to compare lab results to TarGOST %RE of adjacent logs rather than TarGOST %RE of those same samples, the correlation will be terrible (the expected result).

E.3 Daily Production

- **Footage**



TarGOST productivity can range anywhere from 200 to over 500 ft/day. If the pushes are fairly deep (>30 ft), and the obstructions or rubble are minimal, then the average is on the higher end because we spend a lot more time actually probing, not moving around from location to location and/or trying multiple times to get holes started through rubble. Other factors affecting production are grouting requirements, surface pavement, surface topography and vegetation. We typically can log between 10 and 20 locations a day.

- **Start-Up Time**

When the system first arrives on site, it is powered up and tested for proper function. If it is in Dakota's Geoprobe, the TarGOST is simply powered up and we're ready to begin probing after a very short warm-up. If a CPT or other direct-push machine is used, the TarGOST system is integrated into the delivery platform, rods are strung with the Dakota's optical fiber cable and proper depth measuring connections are made (about a 2 to 3 hour procedure).

- **Decontamination**

Typically Dakota uses a rubber rod wiper to "squeegee" any contaminated mud from the probe. If additional decontamination is required, production rates will be impacted accordingly.

- **Sampling**

If Dakota is contracted to collect soil samples, it will be prudent to do all the sampling at one time, preferably at the end of the job. Using LIF data, impacted zones can be identified and targeted for sampling, eliminating the need for continuous cores.

- **Barge Productivity**

TarGOST operations on a barge usually limit daily production to 50 – 200' of logged depth. Additional factors affecting barge productivity are; location accuracy needed, subsurface conditions, water depth and presence of current or tide.

E.4 Deliverables

- **JPEG Images**

Once a log is completed our TarGOST operators can immediately generate an image of the log. Callouts are used to show the waveform from areas of interest. Along with the %RE versus depth plot, the scatter and the fluorescence levels as a function of depth are provided. Secondary data such as the rate of probe advancement, the amount of hammering required to advance the probe with percussion systems, and conductivity may also be available. At the bottom of the log is the pertinent info for the data such as site name and location as well as basic stats such as total depth. These images can be printed on site.

- **Data in Text Format**

Along with the log image, our customers are given the data in ASCII tab delimited format. No string header is provided for the columns (to make importing into other programs easier). Each row is a unique depth reading. The columns are:

1	2	3	4	5	6	7	8	9	10	11
Depth	Total Signal (%RE)	Ch1 (%RE Sctr)	Ch2 (%RE Fluor),	Ch3 (%RE Fluor),	Ch4 (%RE Fluor),	Push Rate	Cond. Depth	Cond. Signal	Hammer Depth	Hammer Rate

TarGOST data collected with a CPT rig will not include the CPT data as that is an independent acquisition system. Dakota is only responsible for providing the LIF data.

E.5 Post-Investigation

- **Customer Care**

Dakota prides itself on going the extra mile from our customers. Whether it is providing detailed information such as this document, or walking the customer through the data on the phone long after we have left the site, we are committed to our customers being well informed and pleased with our service.

- **Hole Locations**

Once Dakota leaves, our customers may wish to survey all the TarGOST locations if it wasn't done prior to the job. Getting good positional information, including elevation, is key to any future CAD and visualization efforts.

- **Conceptual Site Model Visualization**

Dakota now provides the capability to view TarGOST/UVOST/ROST site characterization data in static or dynamic format with unparalleled resolution. Dakota can also overlay the site with aerial photographs or building CAD models over GIS terrain data to provide an accurate overall picture of the site with relevant subsurface features.

» 2-D (fence or cross section) and 3-D models such as Plume and Stick provide a variety of methods to best represent the log data
» Capable of vertical resolution less than 1 inch
» Log interpolation between direct push locations using a highly accurate modeling algorithm
» Choose a variety of display formats including static graphics and dynamic video
» Overlay site aerial photographs or satellite images onto the model
» Integrate Dakota's visual models with client's existing AutoCAD drawings

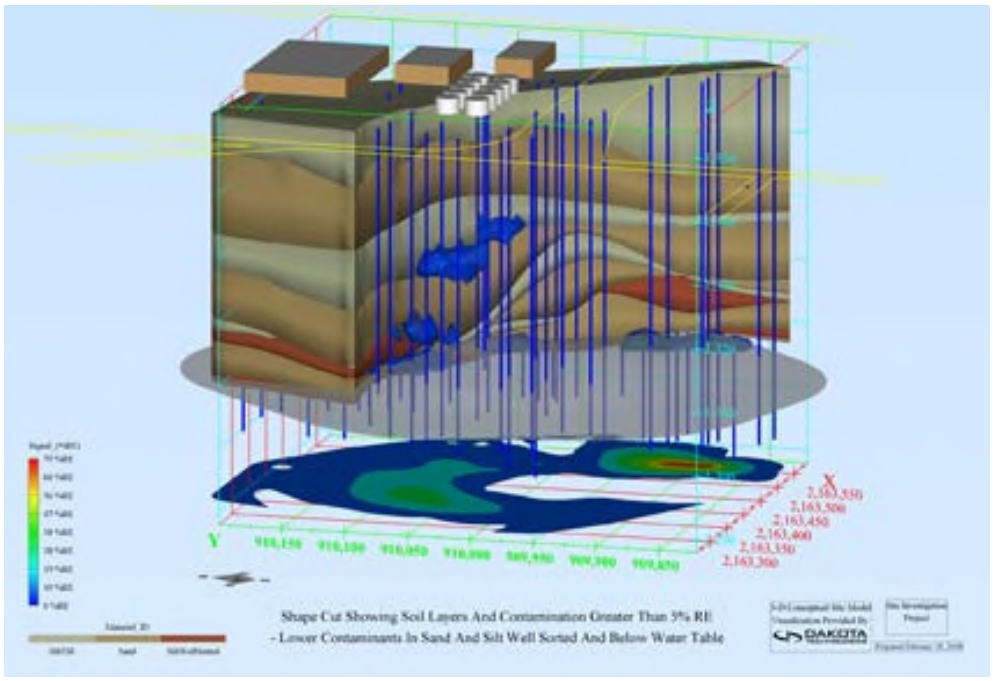


Figure 11. Geology slice and LIF data

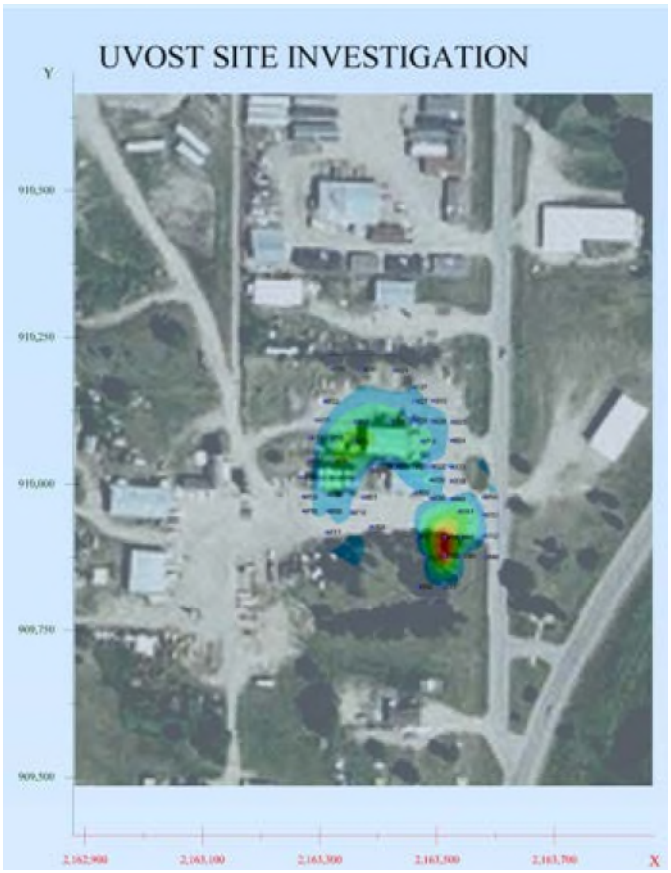


Figure 12. 2D overlay of UVOST data and site photo

Appendix D

Field Summary

DAKOTA TECHNOLOGIES

TarGOST® Field Summary Log

Houston Wood Preserving Works

Houston, TX

File Log ID	Date / Time	Final Depth *(ft)*	Max Signal *(%RE)*	Max Signal Depth *(ft)*	RE Area *(pVs)*	Background Area *(pVs)*
CPT-01-20	1/22/2020 10:29	56.4	12	0.3	2694	25
CPT-02-20	1/22/2020 12:01	59.0	57	38.6	2585	24
CPT-03-20	1/15/2020 9:31	58.5	13	0.4	2149	17
CPT-04-20	1/15/2020 11:09	58.8	52	25.9	2106	17
CPT-05-20	1/14/2020 13:14	55.4	18	0.0	2182	0
CPT-06-20	1/15/2020 13:14	59.2	121	27.1	2126	18
CPT-07-20	1/13/2020 14:02	58.8	20	0.2	2010	0
CPT-08-20	1/14/2020 11:07	55.8	30	34.8	2119	0
CPT-09-20	1/13/2020 10:41	60.1	14	0.1	2110	18
CPT-10-20	1/23/2020 13:29	52.5	5	0.7	2570	23
CPT-11-20	1/23/2020 11:37	58.1	32	0.1	2543	25
CPT-12-20	1/11/2020 11:06	60.7	91	20.1	2096	18
CPT-13-20	1/11/2020 9:50	61.5	163	24.0	2173	17
CPT-14-20	1/10/2020 14:35	61.0	96	30.7	2135	16
CPT-15-20	1/10/2020 12:31	61.5	42	5.5	2109	0
CPT-16-20	1/10/2020 10:47	61.2	140	10.0	2035	0
CPT-17-20	1/10/2020 8:49	62.3	87	11.9	2186	19
CPT-18-20	1/9/2020 12:32	60.9	53	30.4	2049	15
CPT-19-20	1/9/2020 9:21	28.2	4	1.9	2147	16
CPT-19A-20	1/21/2020 11:08	58.0	55	40.3	2684	25
CPT-20-20	1/8/2020 13:42	24.6	11	5.3	1958	18
CPT-20A-20	1/21/2020 9:32	61.4	40	50.3	2476	23
CPT-21-20	1/8/2020 11:53	58.8	49	19.3	2009	13
CPT-22-19	12/8/2019 10:16	60.7	5	47.9	2069	14
CPT-23-20	1/23/2020 10:05	52.3	8	0.1	2514	26
CPT-24-20	1/11/2020 13:36	36.6	24	0.3	2137	19
CPT-24A-20	1/27/2020 10:50	46.3	23	15.8	2605	18
CPT-25-20	1/12/2020 9:31	55.9	6	4.5	2033	18
CPT-26-20	1/12/2020 11:26	52.3	9	0.4	2067	0
CPT-27-20	1/12/2020 14:08	30.7	34	25.9	2069	17
CPT-27A-20	1/27/2020 14:03	31.6	7	31.6	2444	0
CPT-28-19	12/6/2019 14:30	64.7	7	0.0	*2067*	*15*
CPT-29-19	12/10/2019 9:32	62.4	325	43.7	2073	19
CPT-30-19	12/6/2019 11:22	63.1	814	52.3	2017	19
CPT-31-19	12/6/2019 9:52	64.7	987	31.7	2010	16
CPT-32-19	12/9/2019 8:53	58.7	1296	25.3	2057	16
CPT-34-19	12/5/2019 13:19	46.2	76	1.6	2016	12
CPT-35-19	12/5/2019 11:57	62.8	927	44.7	2019	17
CPT-36-19	12/4/2019 12:17	62.2	873	24.5	2071	16
CPT-37-19	12/6/2019 8:46	7.3	4	7.2	1977	16
CPT-38-19	12/4/2019 14:07	1.4	1	0.2	2003	13
CPT-38a-19	12/4/2019 14:34	60.2	16	39.7	2014	15
CPT-39-19	12/4/2019 10:00	61.8	406	40.3	2089	16
CPT-40-19	12/4/2019 8:18	23.1	6	0.0	2052	17
CPT-40a-19	12/5/2019 9:39	60.9	895	26.8	2044	17
CPT-41-19	12/7/2019 8:34	58.7	61	37.5	2077	16
CPT-42-19	12/3/2019 13:45	57.5	78	9.5	1996	11
CPT-43-19	12/3/2019 10:42	58.5	33	0.5	2005	16
CPT-44-19	12/3/2019 9:02	63.5	22	32.9	2031	14
CPT-45-19	12/7/2019 12:52	58.6	73	39.2	2015	14
CPT-46-19	12/7/2019 10:08	61.0	569	23.3	2005	16
CPT-48-19	12/8/2019 13:49	59.4	4	55.5	2026	16
CPT-54-20	1/21/2020 13:56	32.5	3	0.1	2728	25
CPT-55-19	12/8/2019 8:13	55.5	4	52.1	2060	18
CPT-56-20	1/27/2020 9:11	61.5	30	16.2	2726	12
Material from s	12/3/2019 10:07	3.9	50	2.6	2002	13

ATTACHMENT B

CPT Logs – 2019-2020

Walker-Hill Environmental
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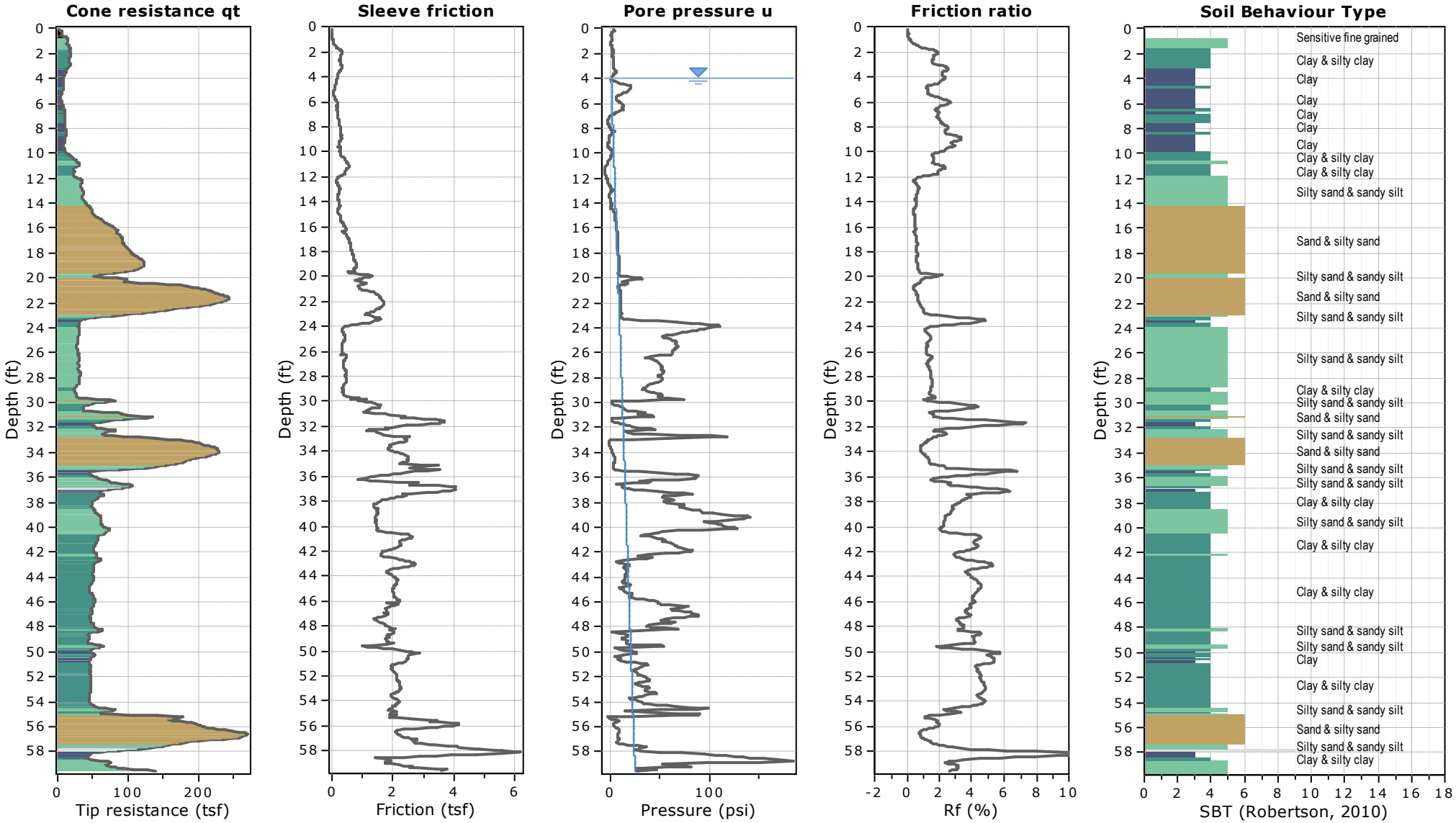
Project: H19026-37TX
Location: UPPR Houston, TX

CPT: 19119232-405CPT-01-20
Total depth: 59.58 ft, Date: 1/22/2020
Cone Type: Gregg
Cone Operator: Cody Cliburn



Walker-Hill Environmental
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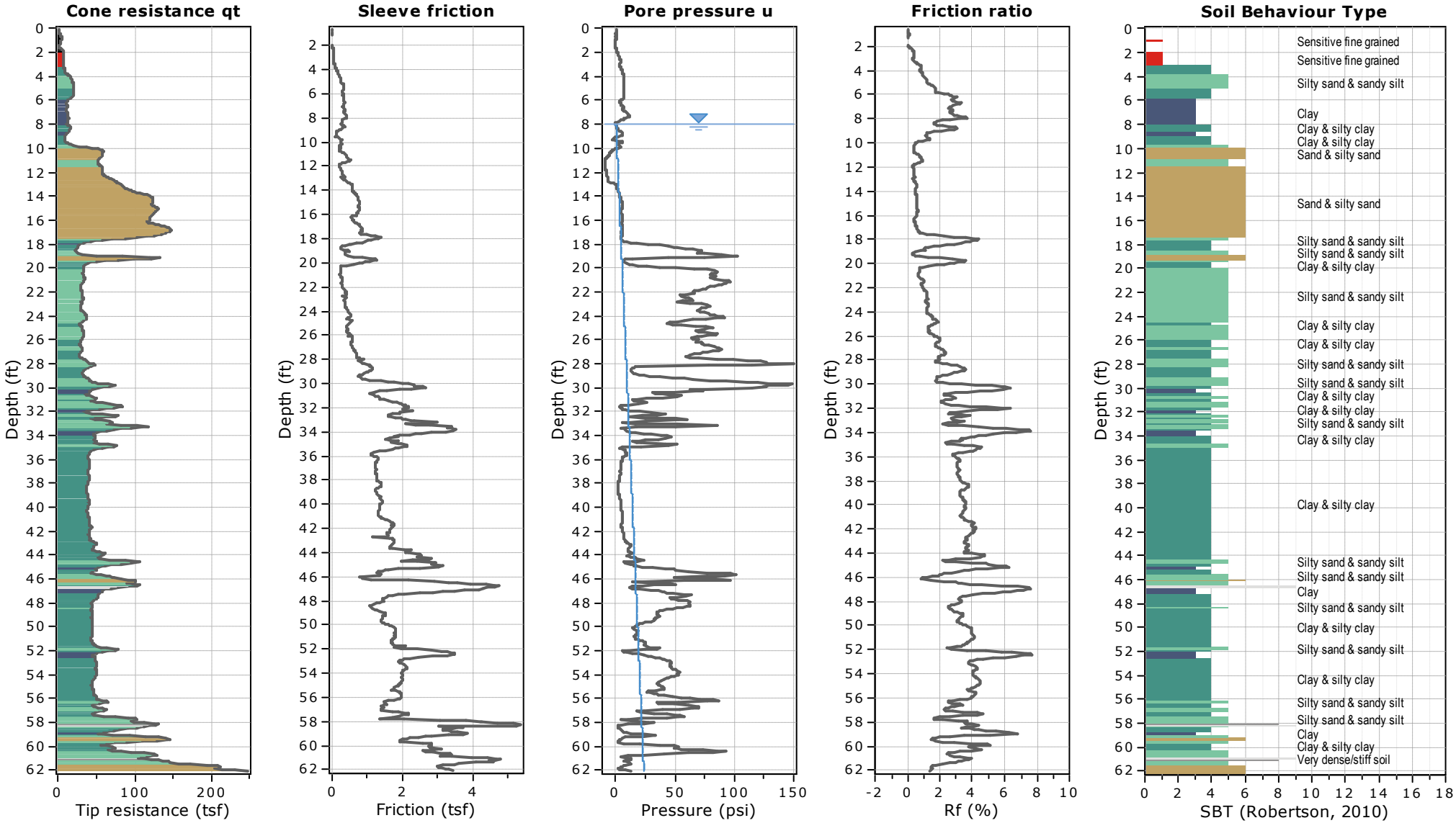
Project: H19026-37TX
Location: UPPR Houston, TX

CPT: 19119232-405CPT-02-20
Total depth: 62.07 ft, Date: 1/22/2020
Cone Type: Gregg
Cone Operator: Cody Cliburn



Walker-Hill Environmental
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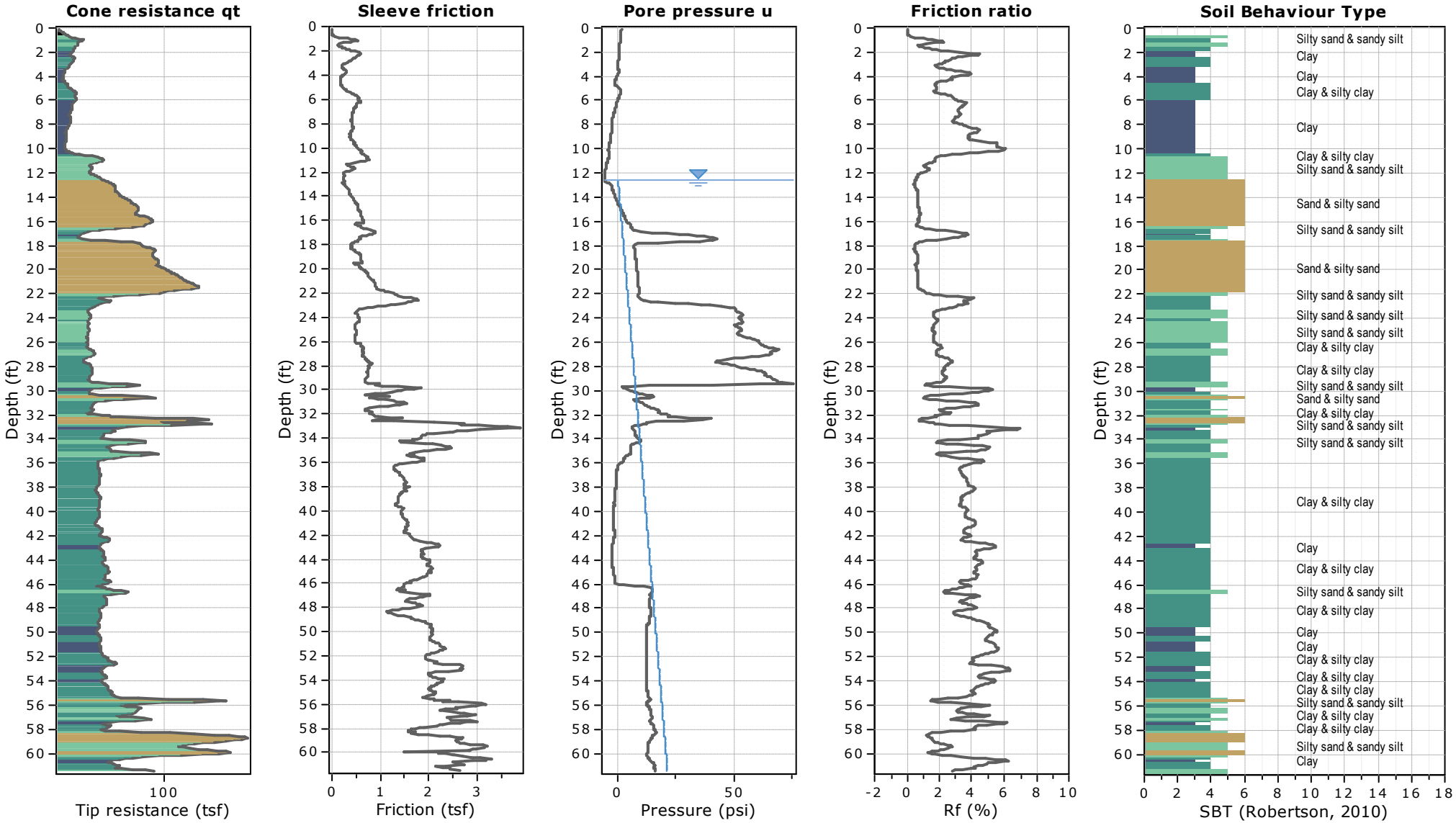
Project: H19026-37TX
Location: UPPR Houston, TX

CPT: 19119232-405CPT-03-20
Total depth: 61.48 ft, Date: 1/15/2020
Cone Type: Gregg
Cone Operator: Cody Cliburn



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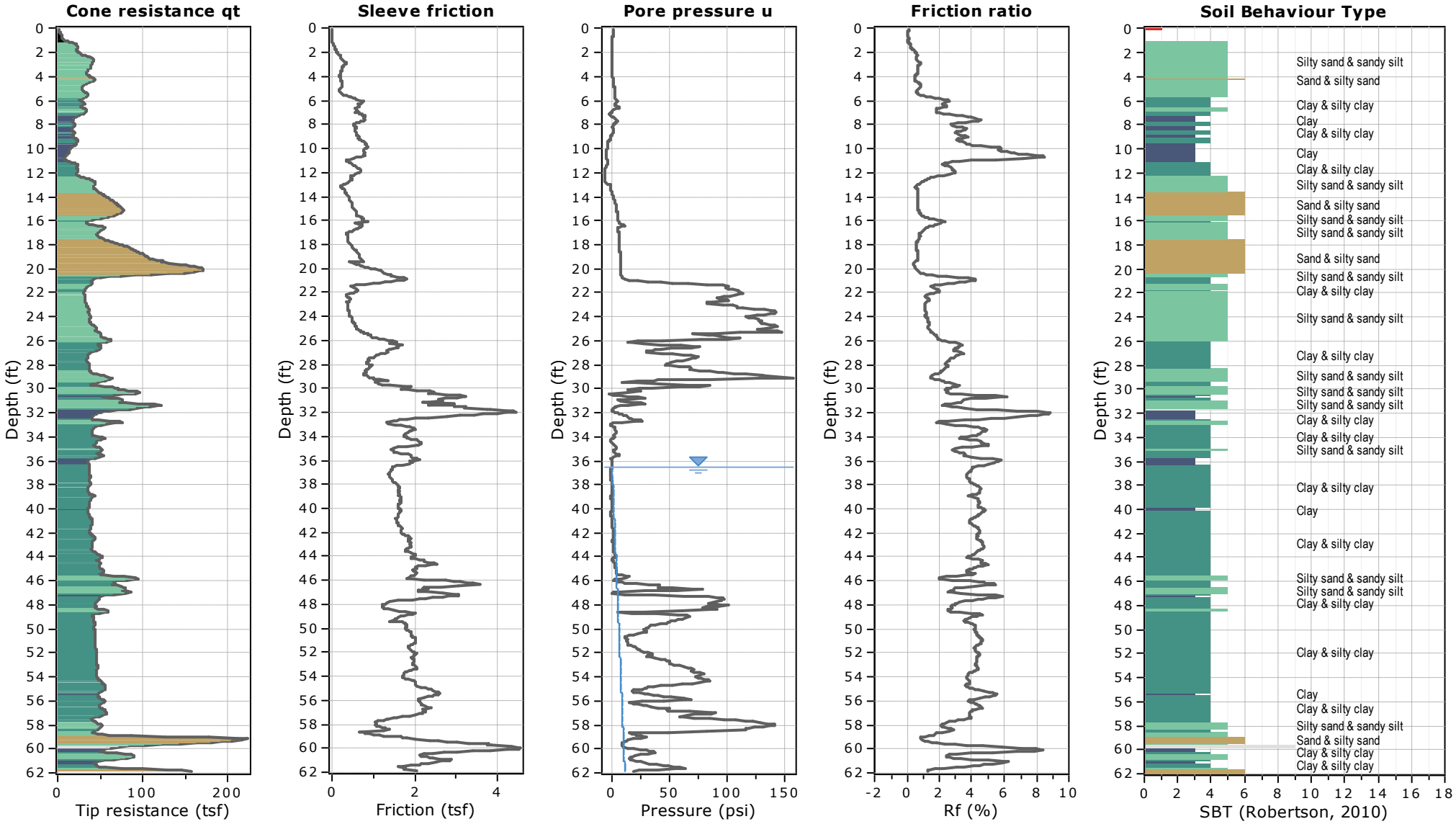
Project: H19026-37TX
Location: UPPR Houston, TX

CPT: 19119232-405CPT-04-20
Total depth: 61.88 ft, Date: 1/15/2020
Cone Type: Gregg
Cone Operator: Cody Cliburn



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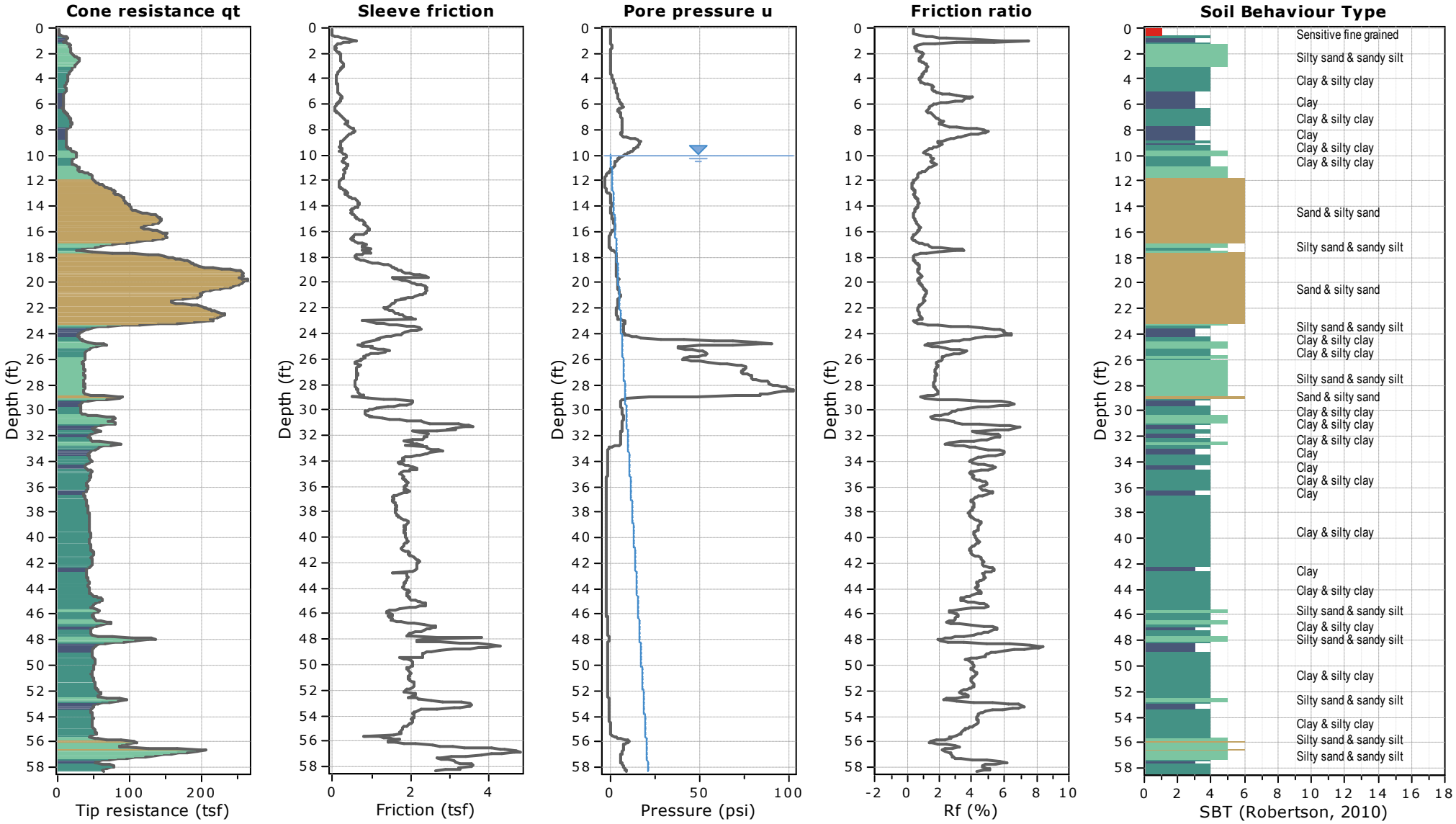
Project: H19026-37TX
Location: UPPR Houston, TX

CPT: 19119232-405CPT-05-20
Total depth: 58.33 ft, Date: 1/14/2020
Cone Type: Gregg
Cone Operator: Cody Cliburn



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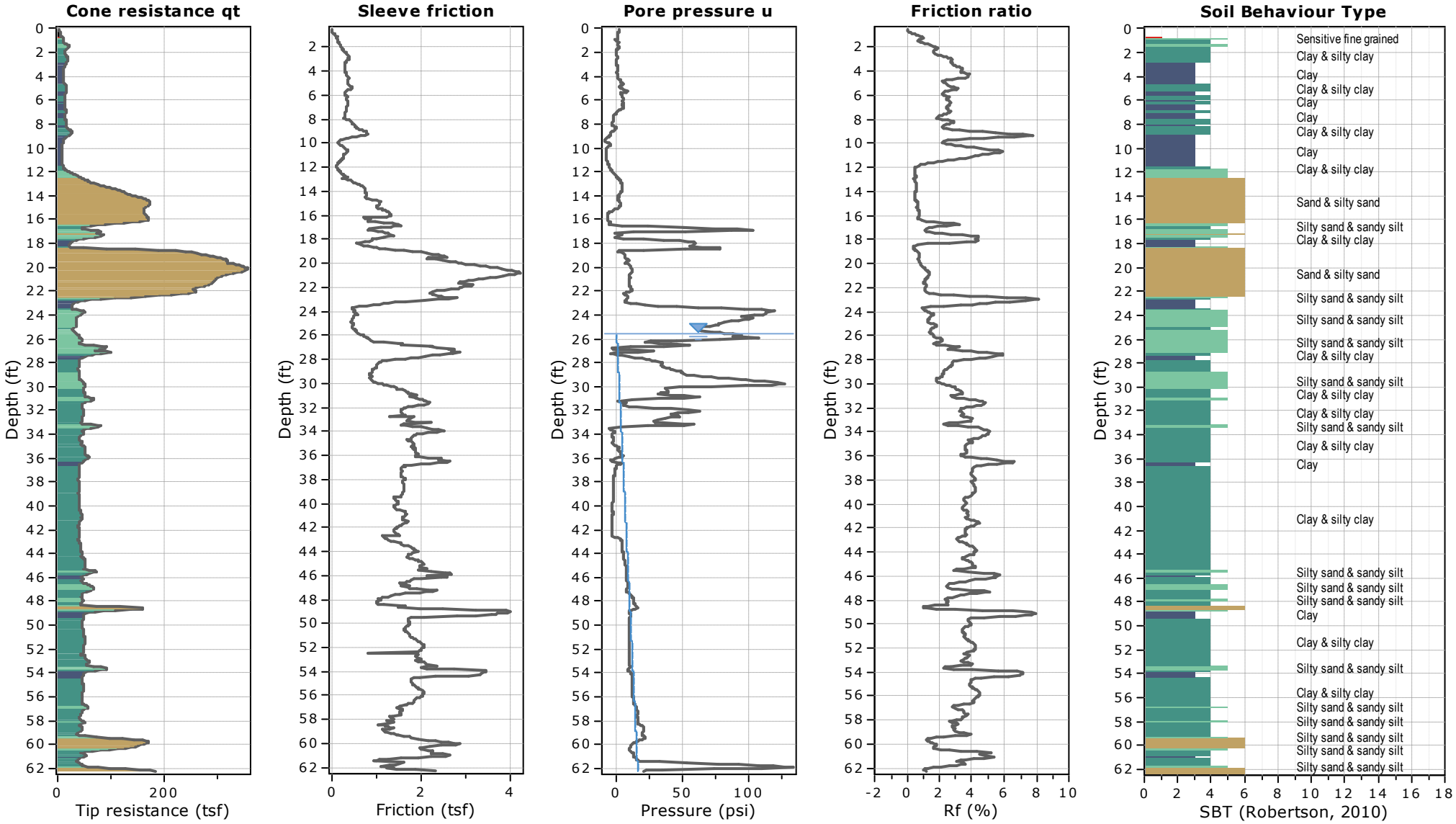
Project: H19026-37TX
Location: UPPR Houston, TX

CPT: 19119232-405CPT-06-20
Total depth: 62.27 ft, Date: 1/15/2020
Cone Type: Gregg
Cone Operator: Cody Cliburn



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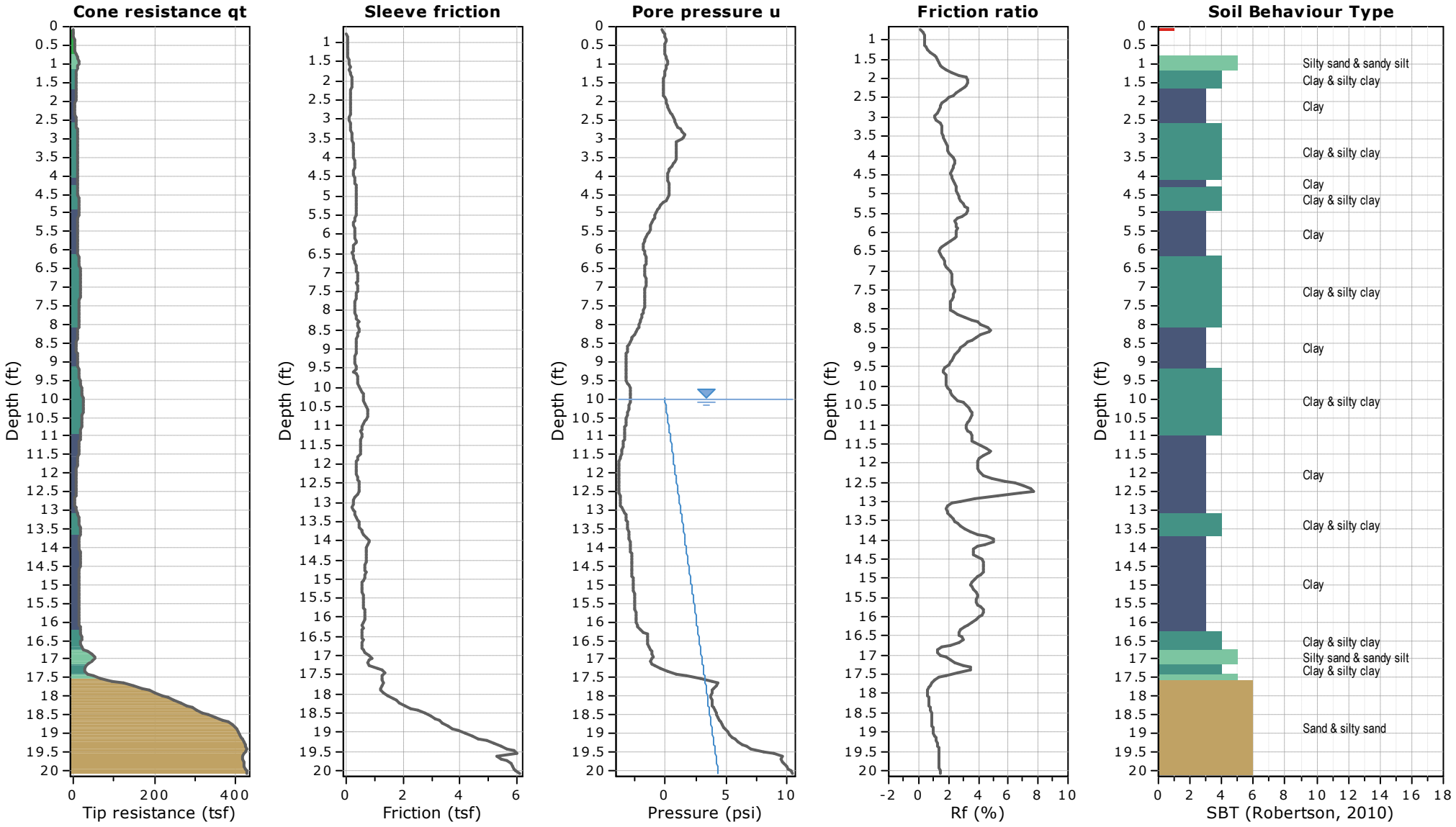
CPT: 19119232-405CPT-07-20
Total depth: 20.08 ft, Date: 1/13/2020
Cone Type: Gregg
Cone Operator: Cody Cliburn

Project: **H19026-37TX**
Location: **UPPR Houston, TX**



Walker-Hill Environmental
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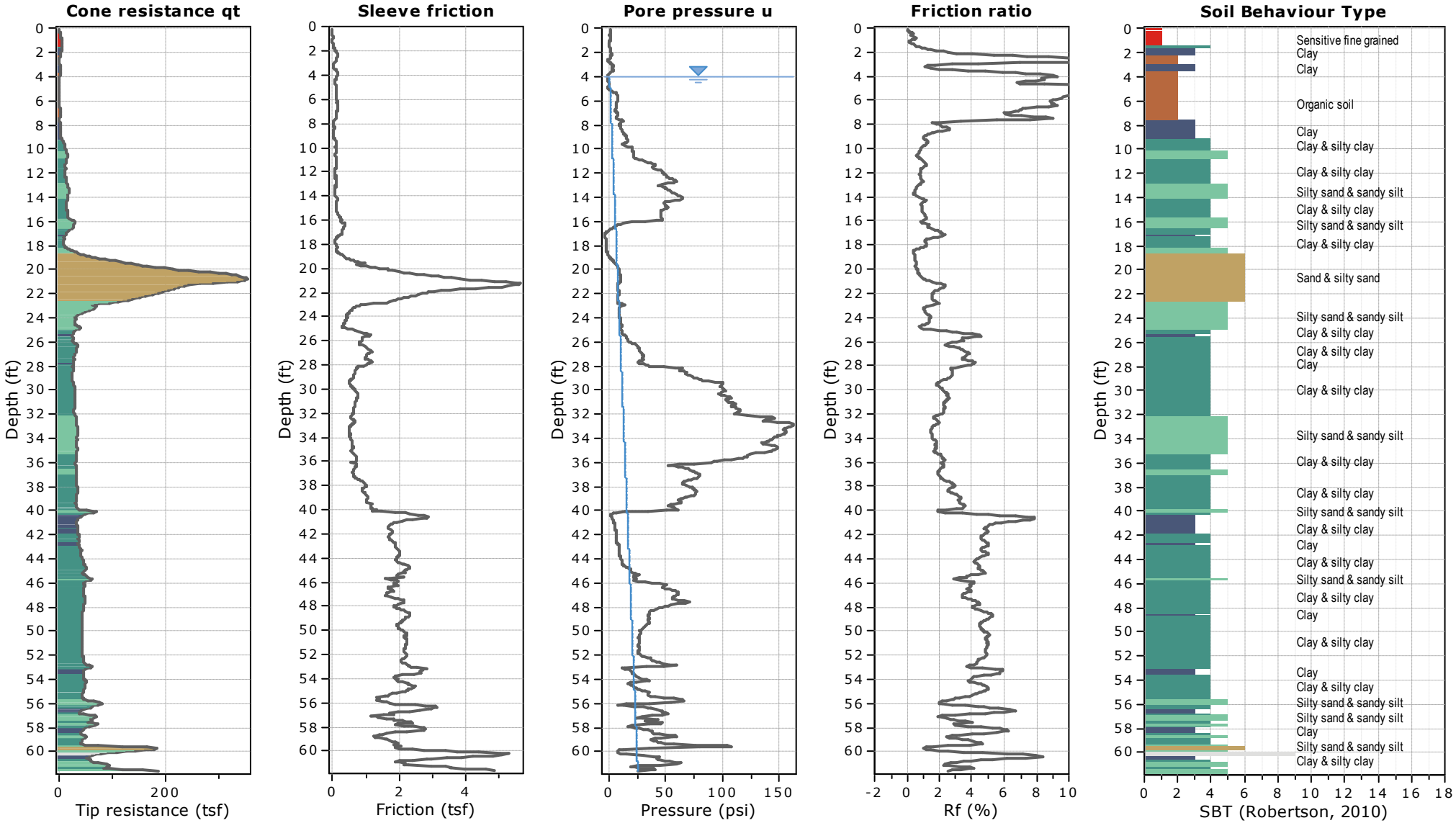
Project: H19026-37TX
Location: UPPR Houston, TX

CPT: 19119232-405CPT-07A-20
Total depth: 61.61 ft, Date: 1/14/2020
Cone Type: Gregg
Cone Operator: Cody Cliburn



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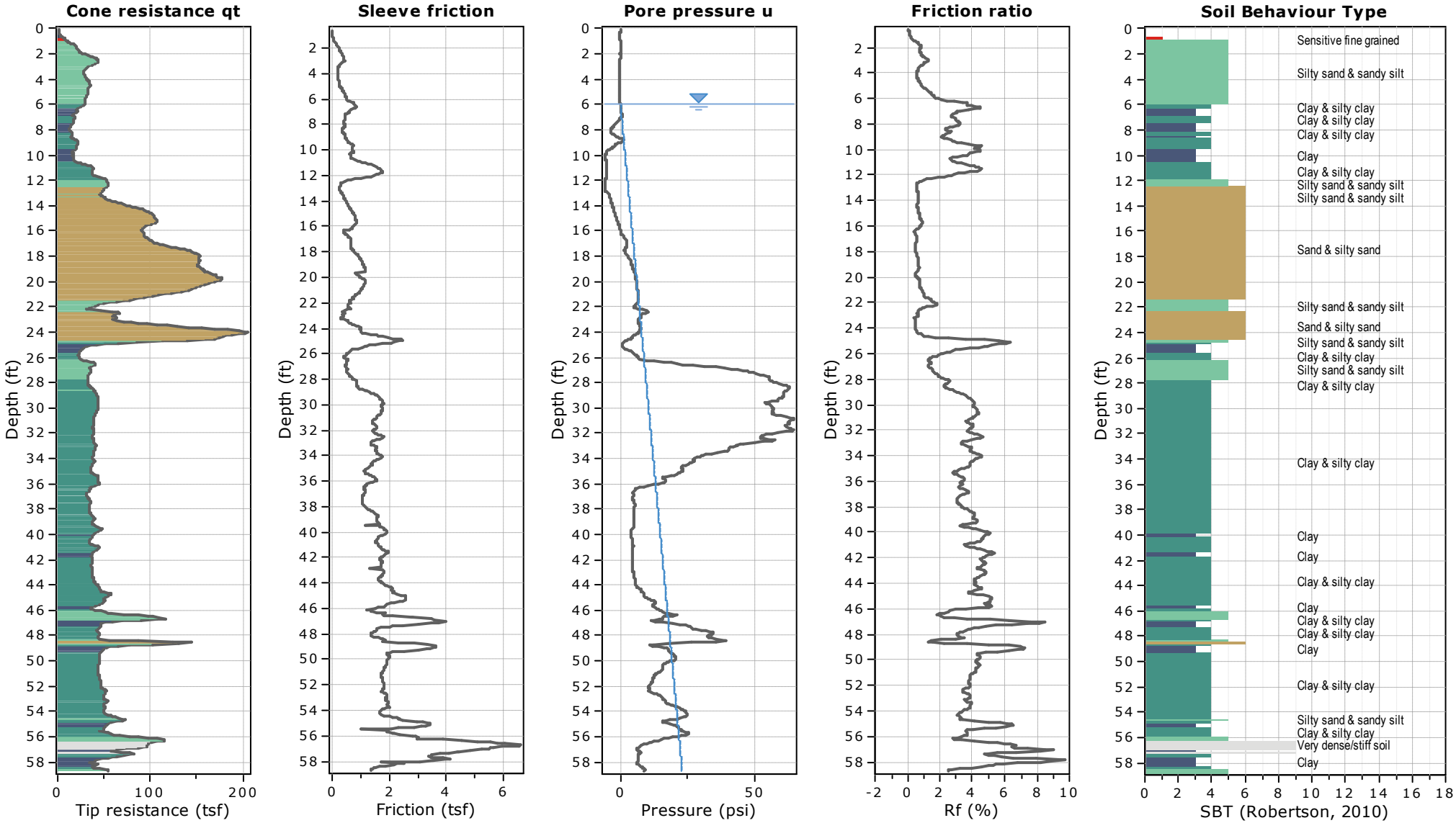
Project: H19026-37TX
Location: UPPR Houston, TX

CPT: 19119232-405CPT-08-20
Total depth: 58.73 ft, Date: 1/14/2020
Cone Type: Gregg
Cone Operator: Cody Cliburn



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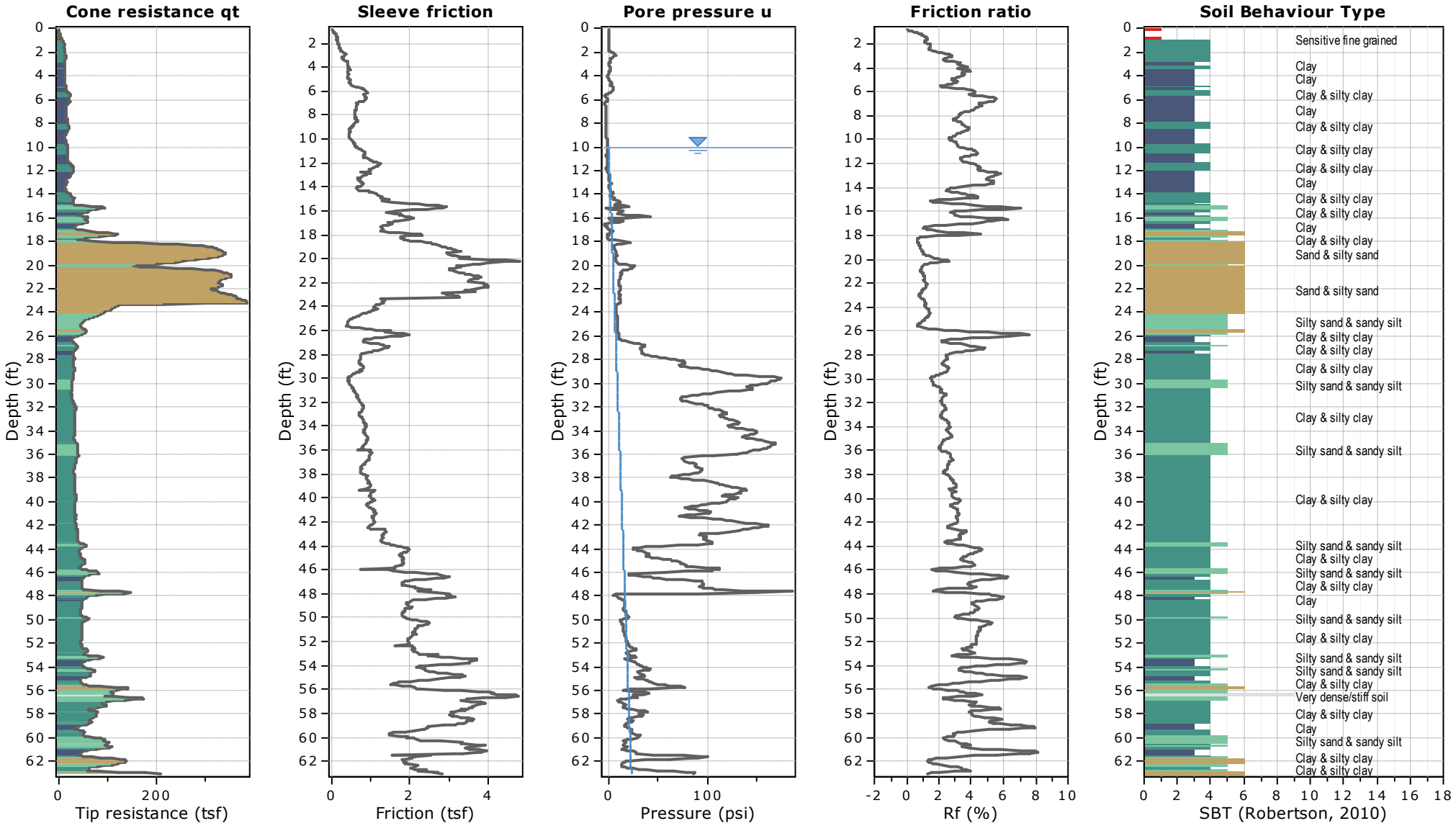
Project: H19026-37TX
Location: UPPR Houston, TX

CPT: 19119232-405CPT-09-20
Total depth: 63.06 ft, Date: 1/13/2020
Cone Type: Gregg
Cone Operator: Cody Cliburn



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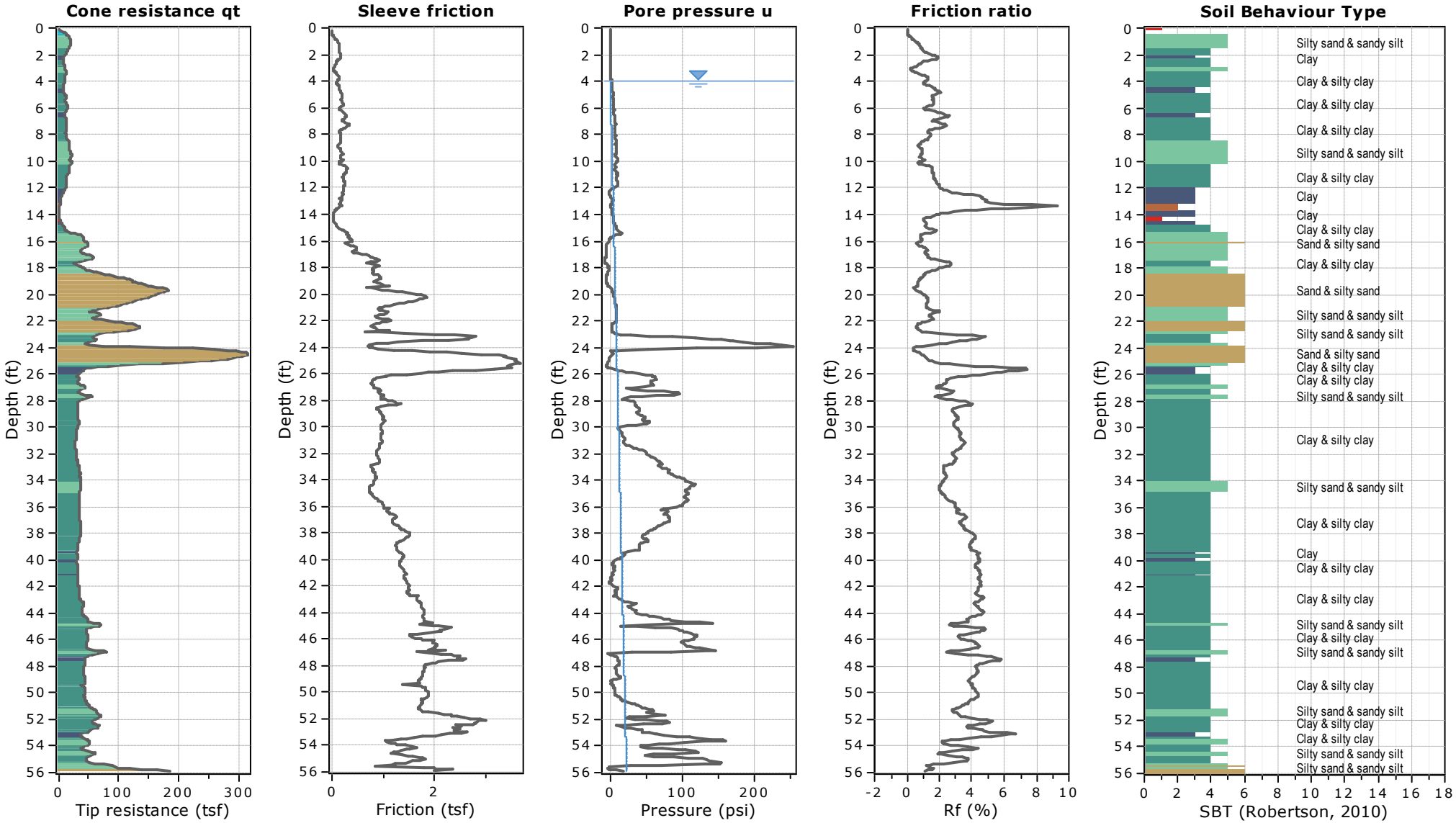
Project: H19026-37TX
Location: UPPR Houston, TX

CPT: 19119232-405CPT-10-20
Total depth: 55.91 ft, Date: 1/23/2020
Cone Type: Gregg
Cone Operator: Cody Cliburn



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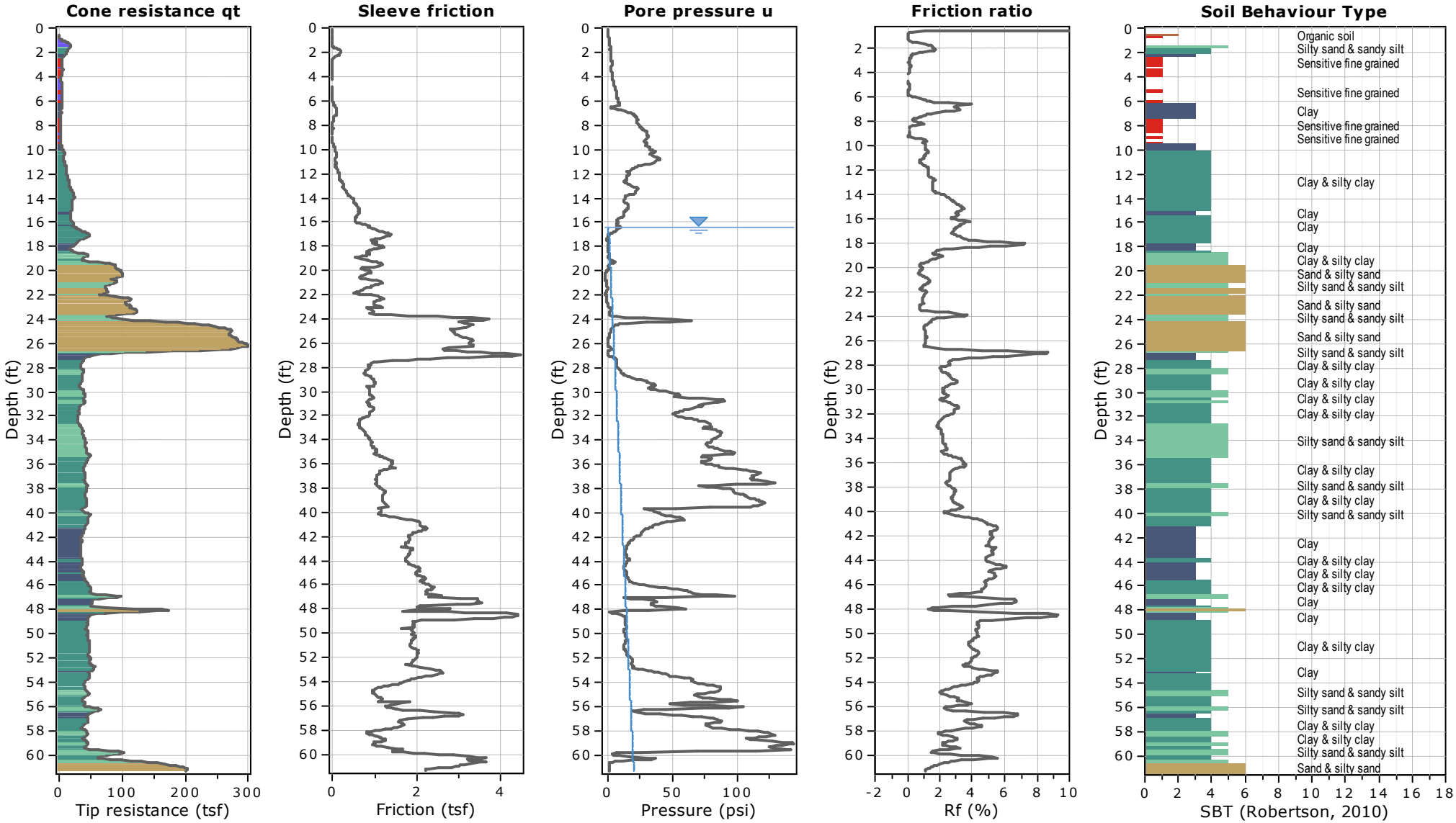
Project: **H19026-37TX**
Location: **UPPR Houston, TX**

CPT: 19119232-405CPT-11-20
Total depth: 61.35 ft, Date: 1/23/2020
Cone Type: Gregg
Cone Operator: Cody Cliburn



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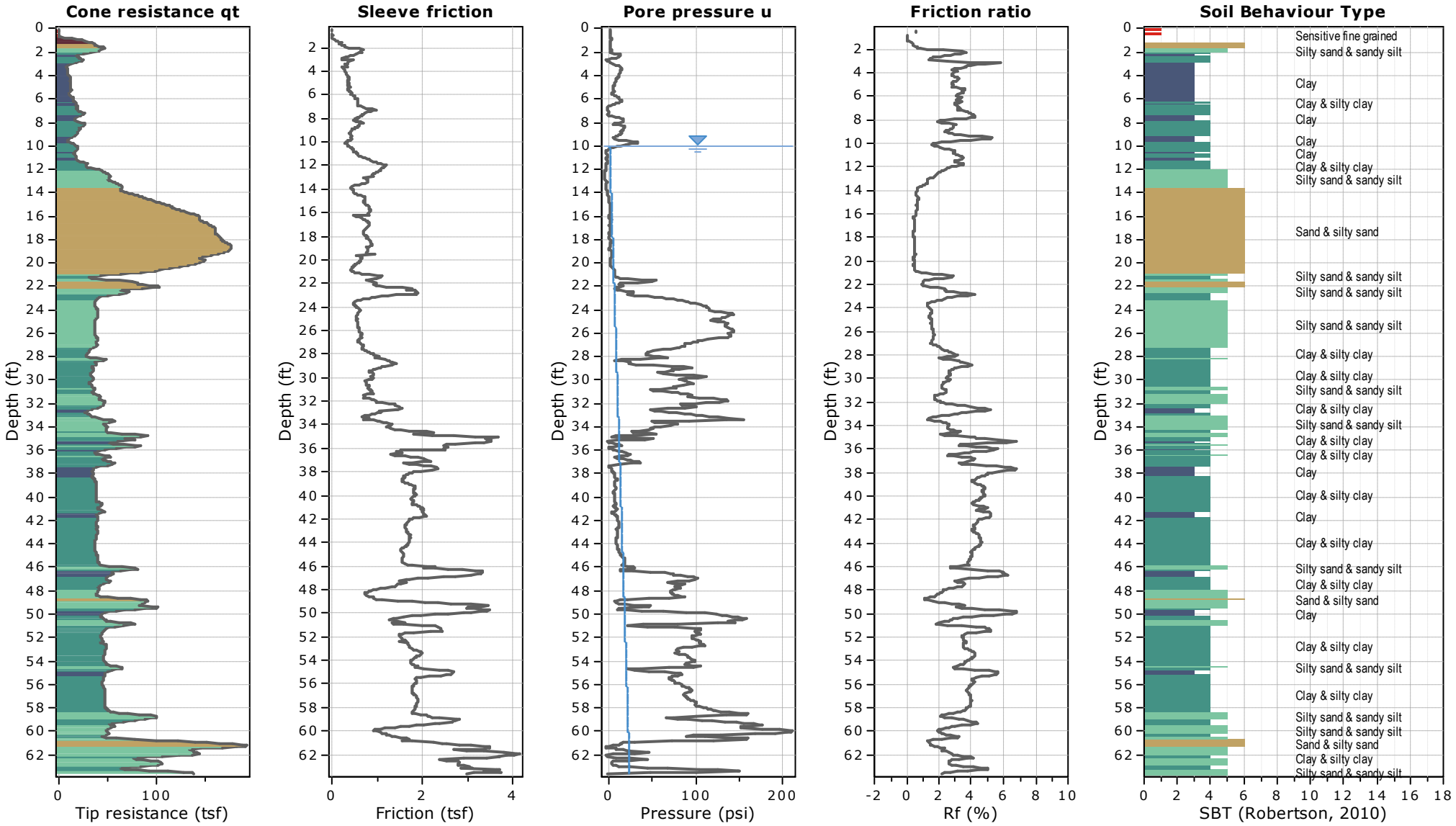
Project: H19026-37TX
Location: UPPR Houston, TX

CPT: 19119232-405CPT-12-20
Total depth: 63.65 ft, Date: 1/11/2020
Cone Type: Gregg
Cone Operator: Cody Cliburn



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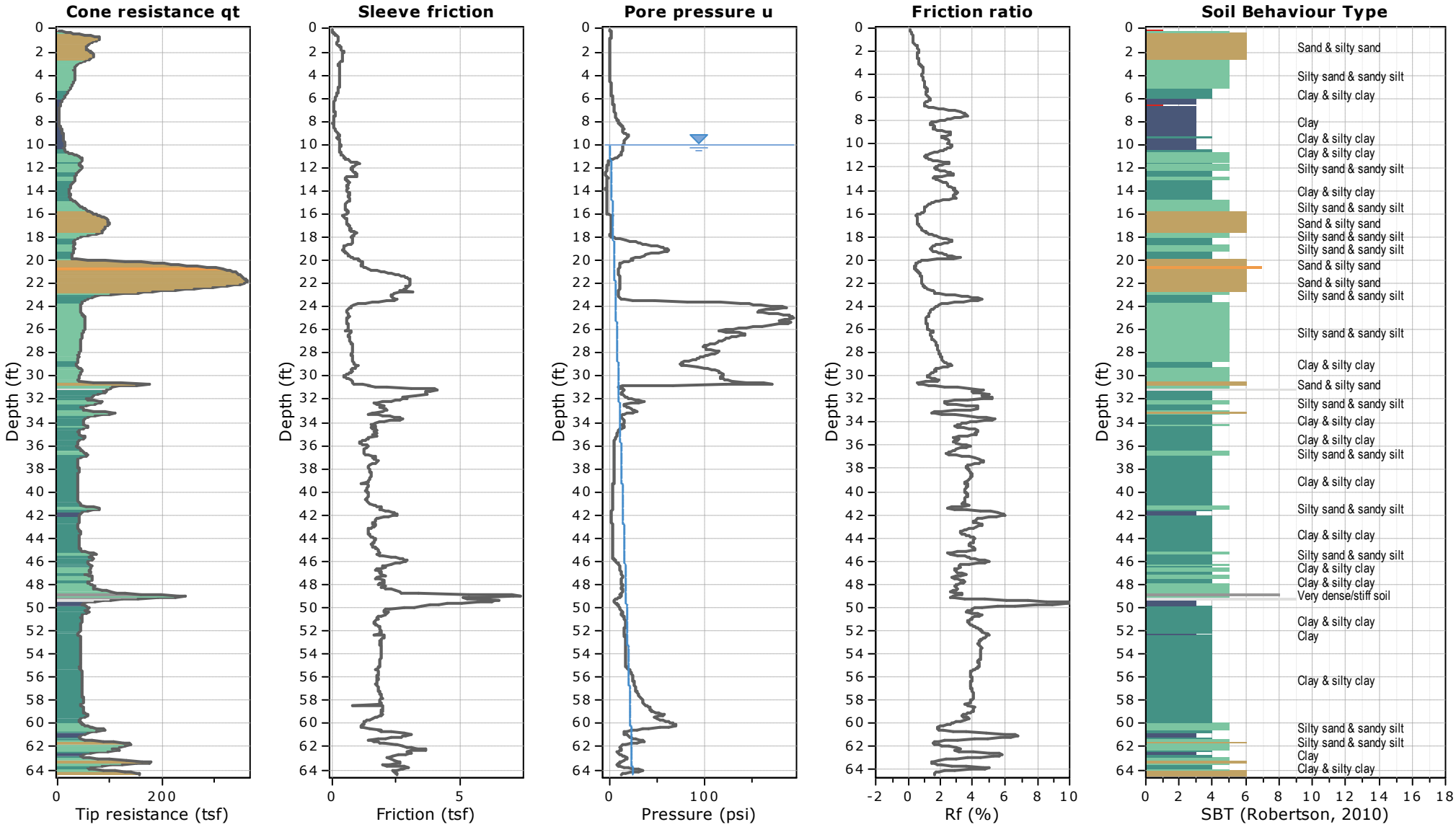
Project: **H19026-37TX**
Location: **UPPR Houston, TX**

CPT: 19119232-405CPT-13-20
Total depth: 64.44 ft, Date: 1/11/2020
Cone Type: Gregg
Cone Operator: Cody Cliburn



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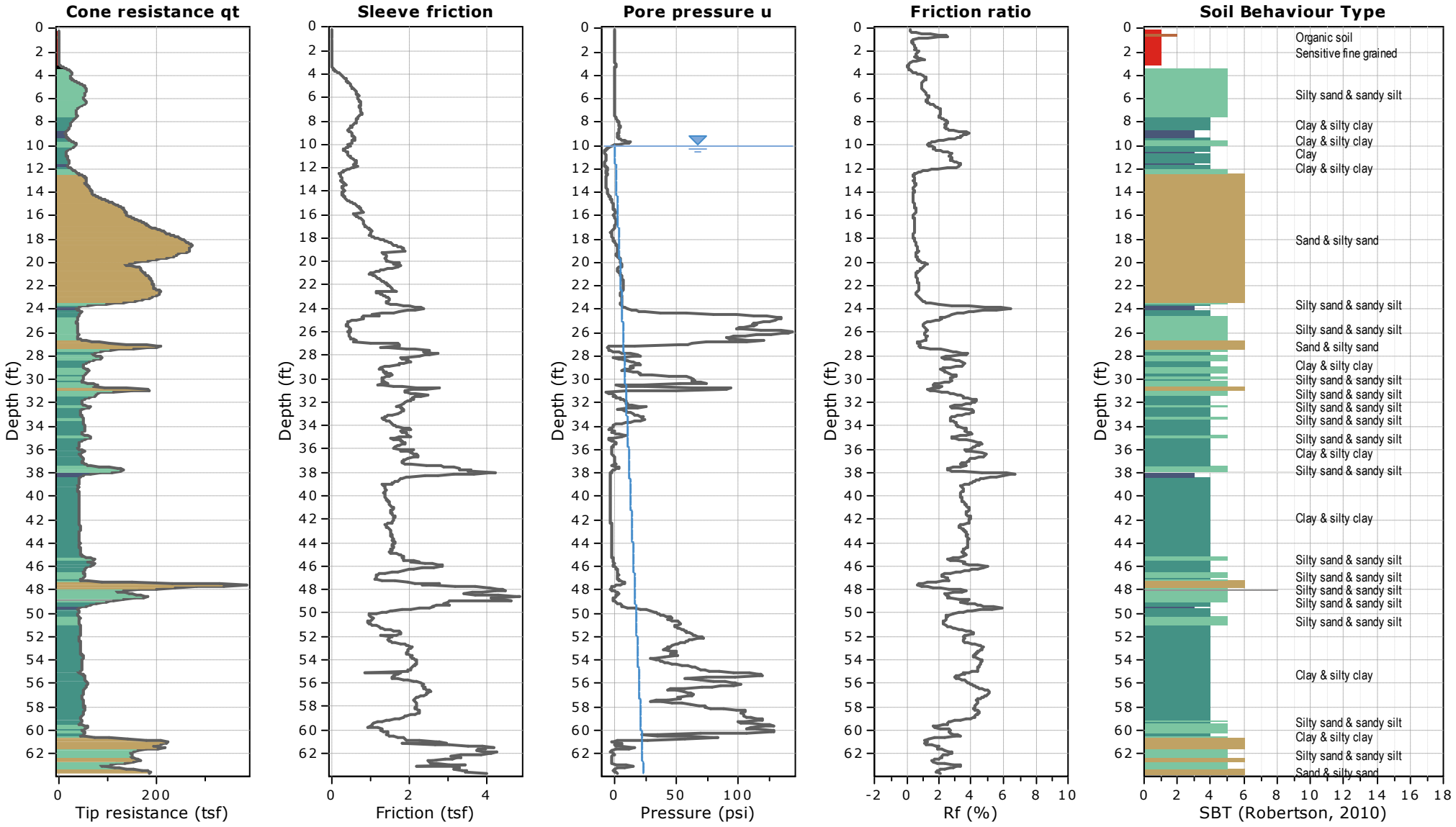
Project: H19026-37TX
Location: UPPR Houston, TX

CPT: 19119232-405CPT-14-20
Total depth: 63.71 ft, Date: 1/10/2020
Cone Type: Gregg
Cone Operator: Cody Cliburn



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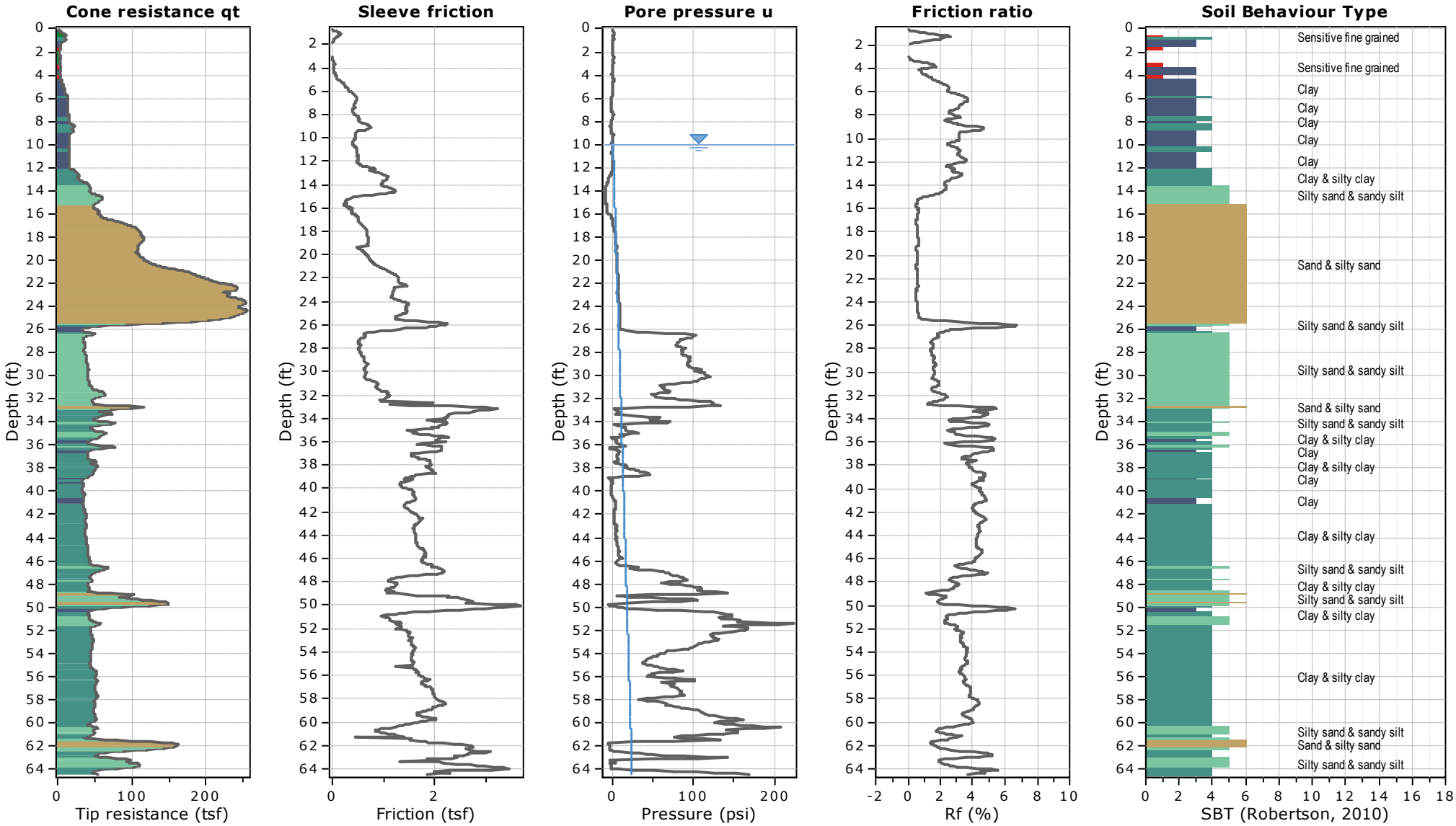
Project: H19026-37TX
Location: UPPR Houston, TX

CPT: 19119232-405CPT-15-20
Total depth: 64.50 ft, Date: 1/10/2020
Cone Type: Gregg
Cone Operator: Cody Cliburn



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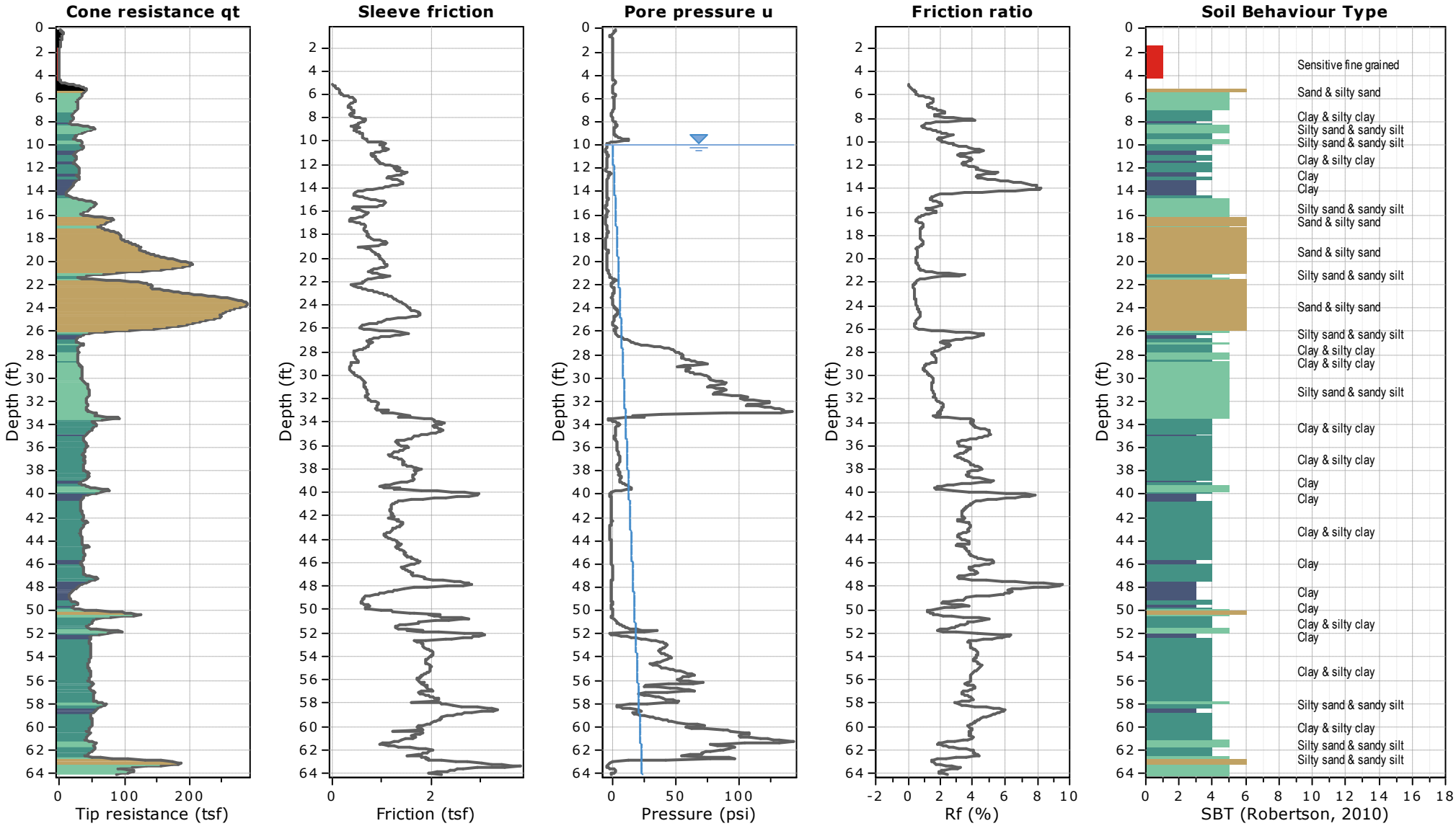
CPT: 19119232-405CPT-16-20
Total depth: 64.11 ft, Date: 1/10/2020
Cone Type: Gregg
Cone Operator: Cody Cliburn

Project: **H19026-37TX**
Location: **UPPR Houston, TX**



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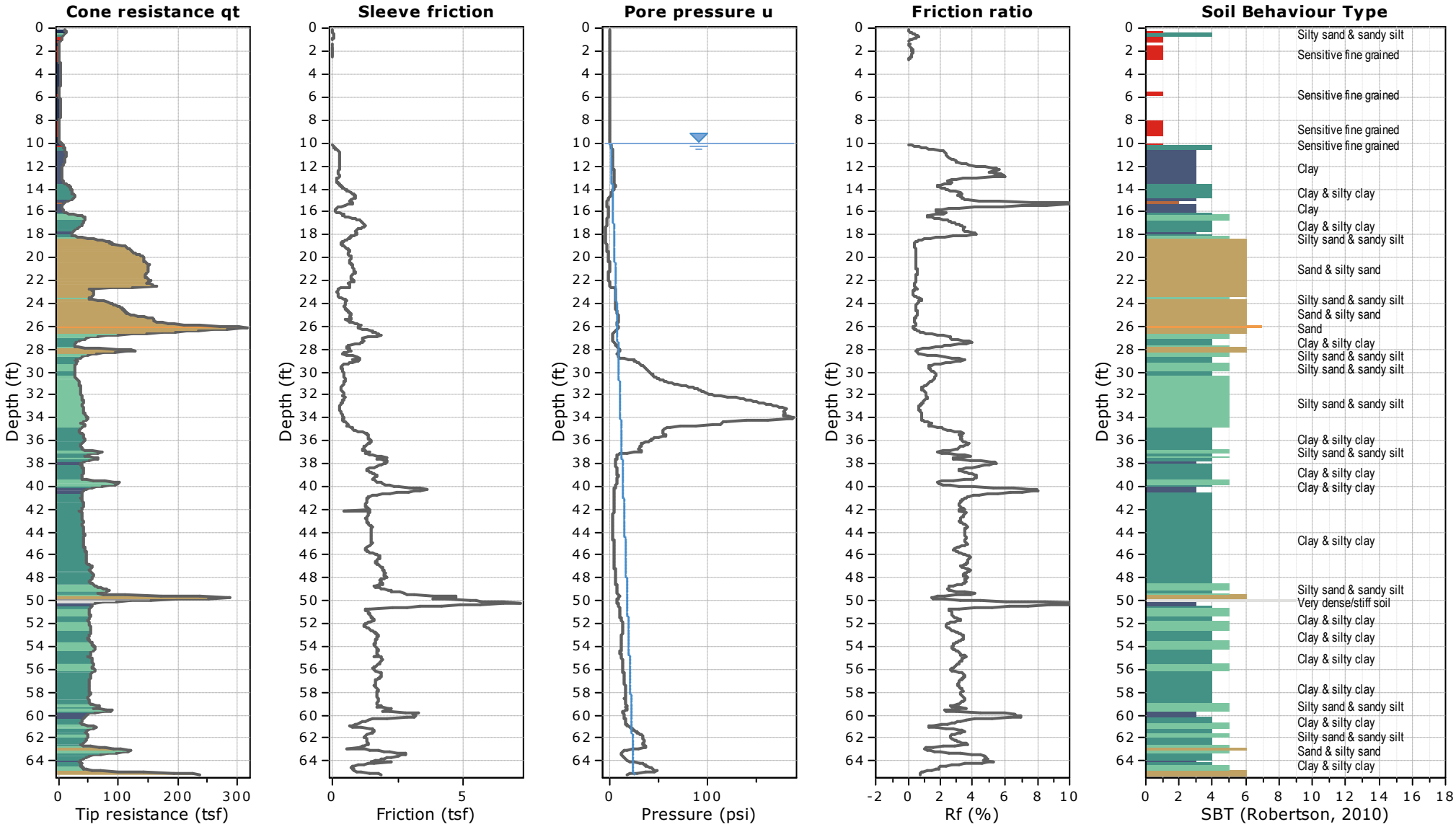
CPT: 19119232-405CPT-17-20
Total depth: 65.22 ft, Date: 1/10/2020
Cone Type: Gregg
Cone Operator: Cody Cliburn

Project: **H19026-37TX**
Location: **UPPR Houston, TX**



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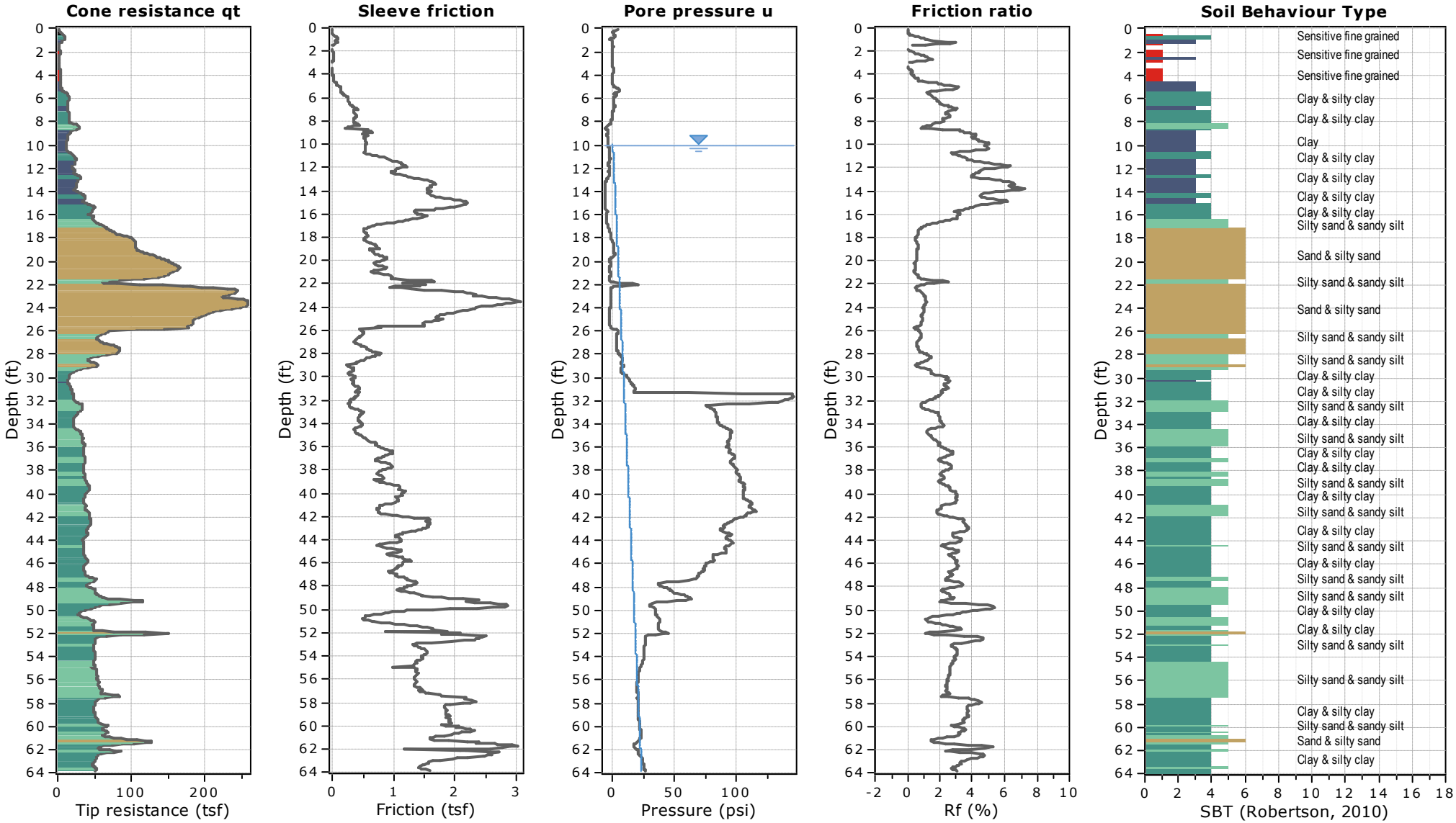
CPT: 19119232-405CPT-18-20
Total depth: 63.85 ft, Date: 1/9/2020
Cone Type: Gregg
Cone Operator: Cody Cliburn

Project: **H19026-37TX**
Location: **UPPR Houston, TX**



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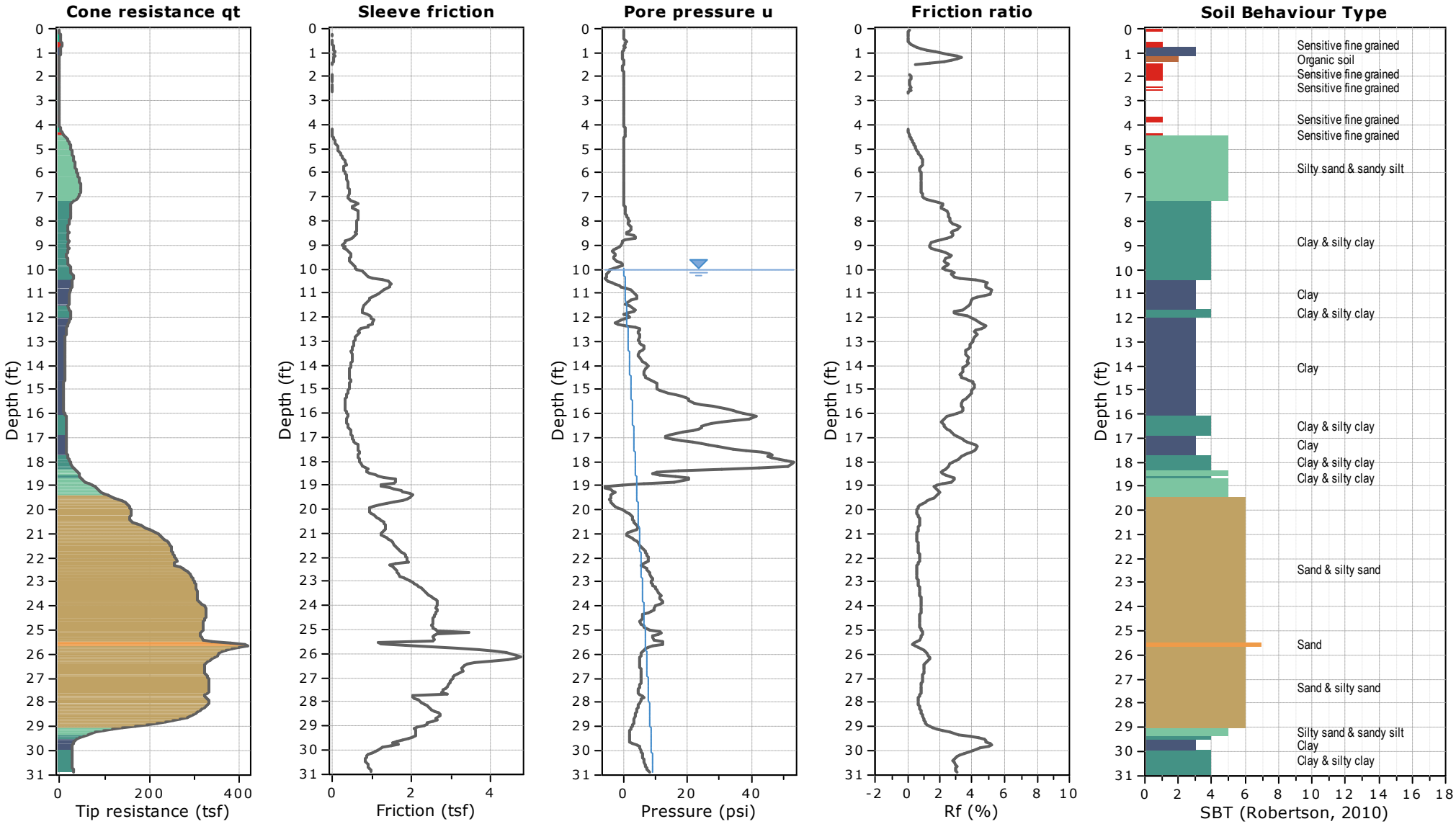
CPT: 19119232-405CPT-19-20
Total depth: 30.91 ft, Date: 1/9/2020
Cone Type: Gregg
Cone Operator: Cody Cliburn

Project: **H19026-37TX**
Location: **UPPR Houston, TX**



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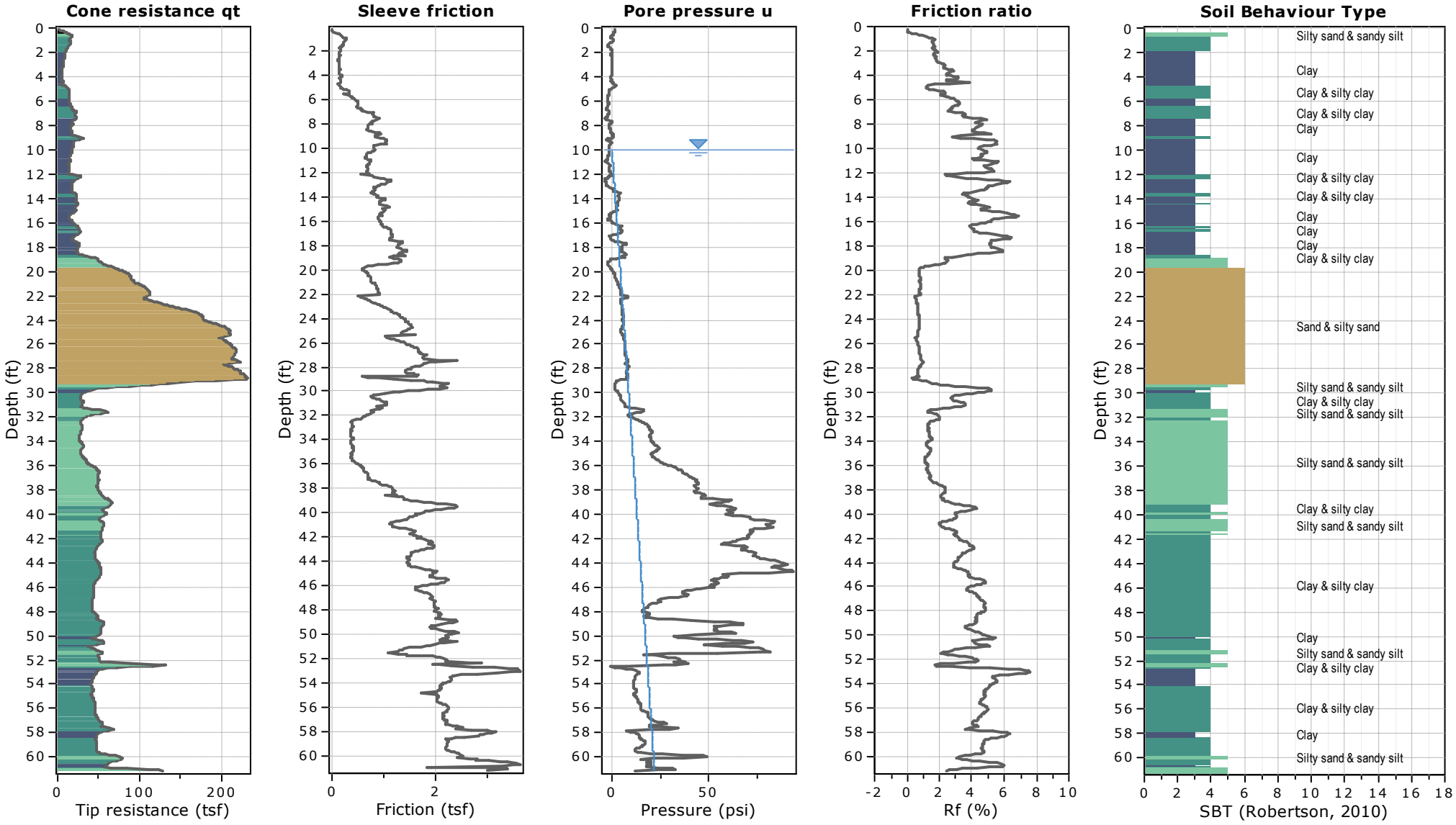
Project: **H19026-37TX**
Location: **UPPR Houston, TX**

CPT: 19119232-405CPT-19AA-20
Total depth: 61.15 ft, Date: 1/21/2020
Cone Type: Gregg
Cone Operator: Cody Cliburn



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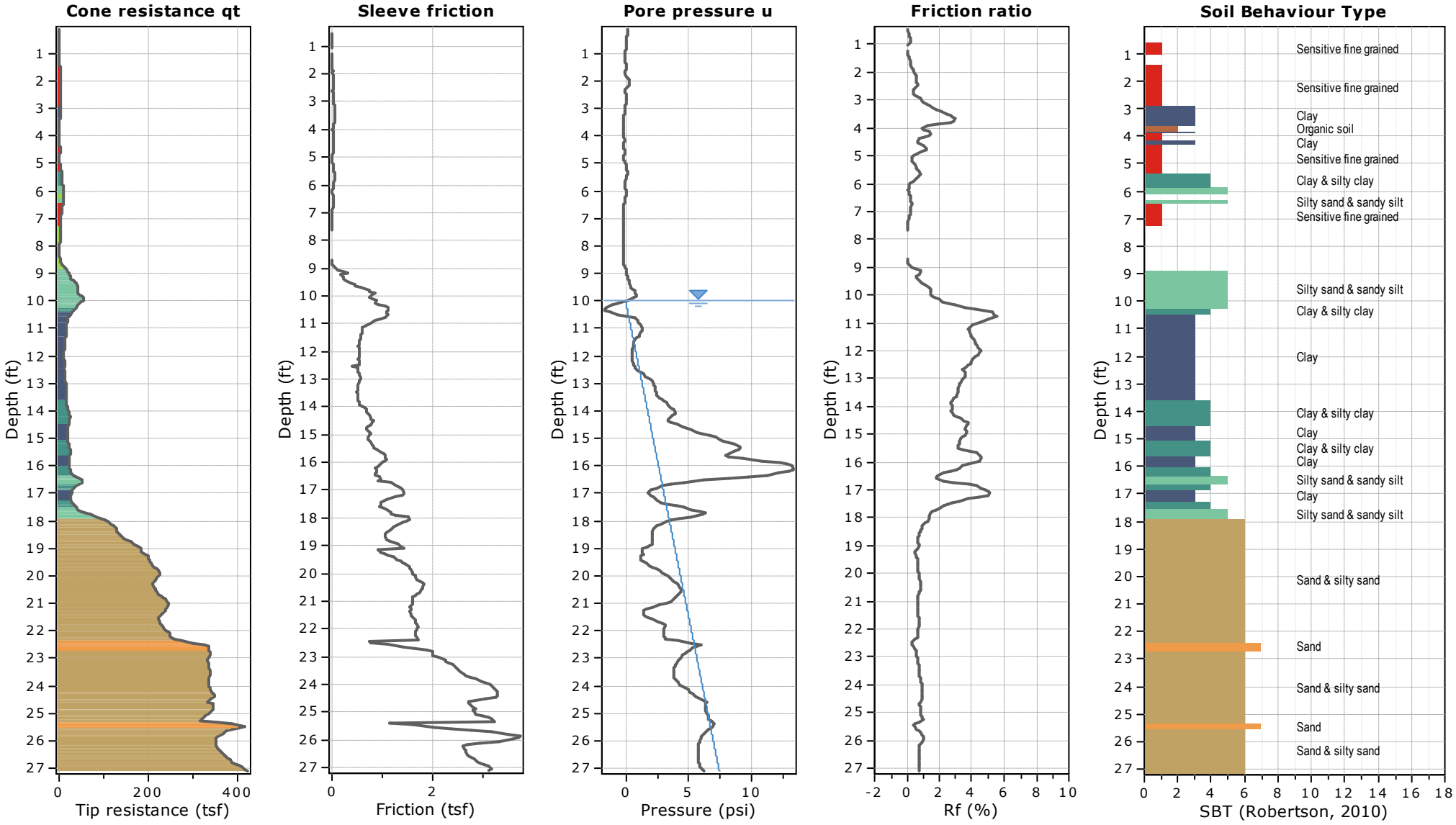
Project: H19026-37TX
Location: UPPR Houston, TX

CPT: 19119232-405CPT-20-20
Total depth: 27.10 ft, Date: 1/8/2020
Cone Type: Gregg
Cone Operator: Cody Cliburn



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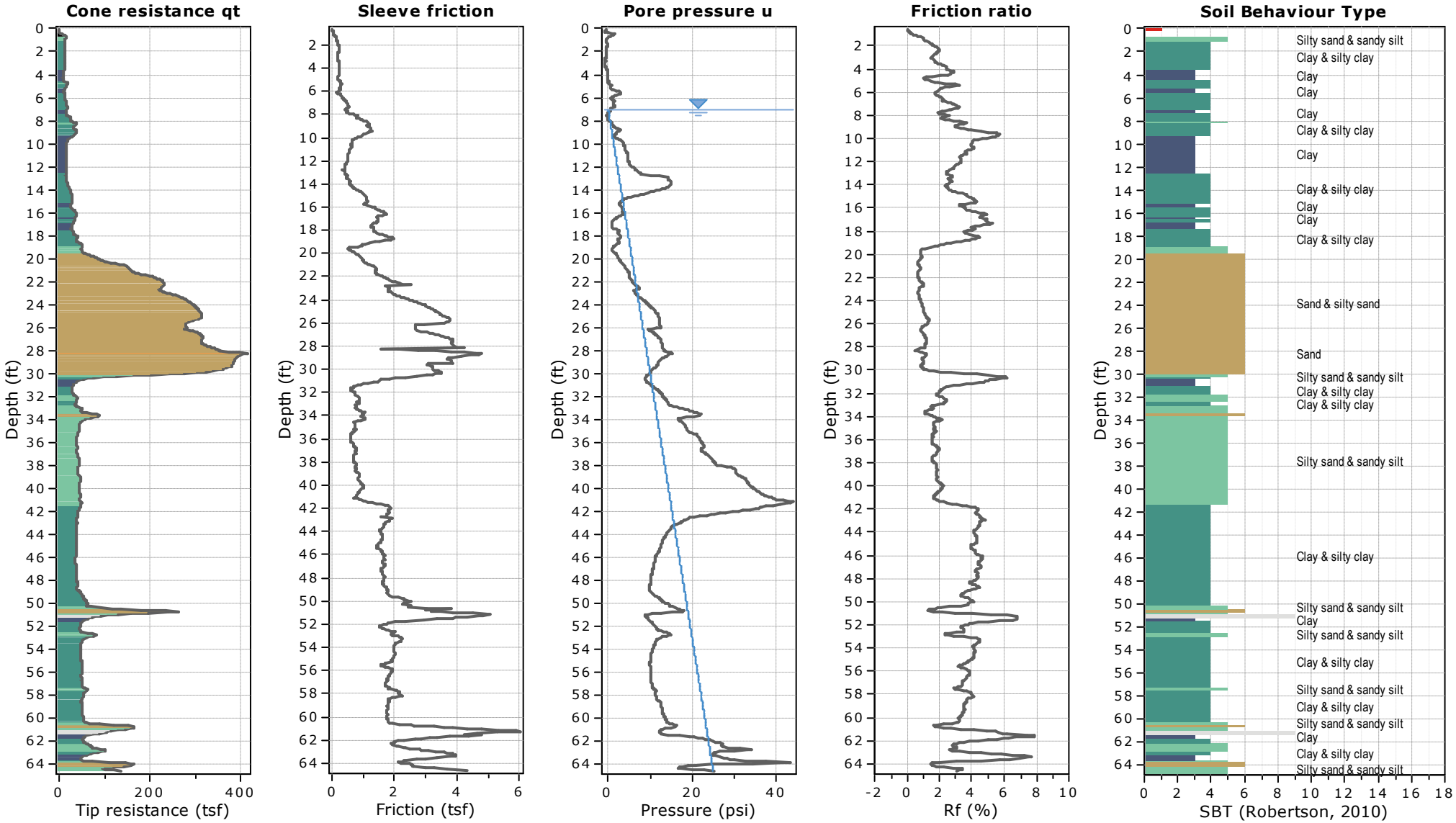
Project: H19026-37TX
Location: UPPR Houston, TX

CPT: 19119232-405CPT-20A-20
Total depth: 64.63 ft, Date: 1/21/2020
Cone Type: Gregg
Cone Operator: Cody Cliburn



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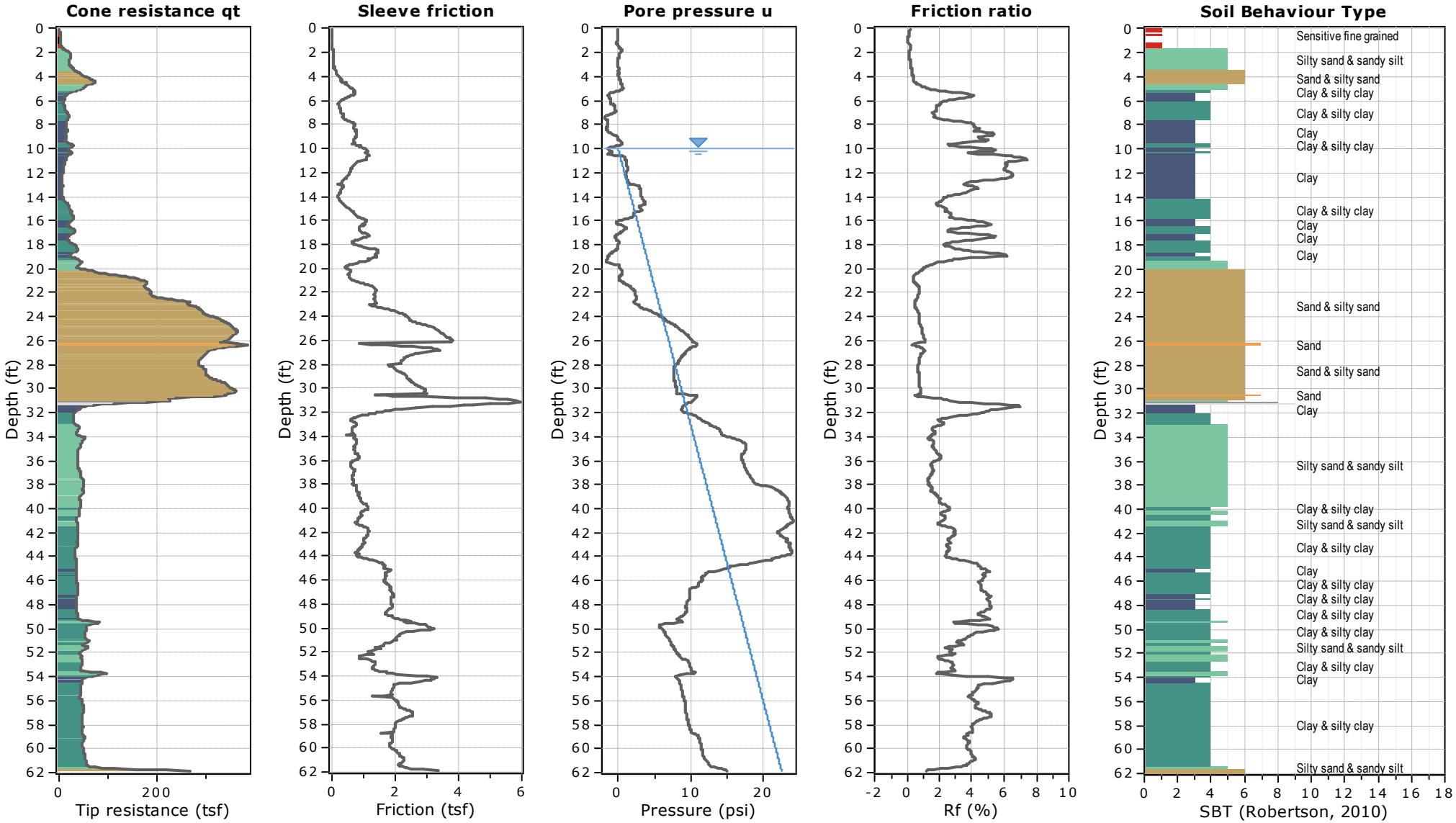
Project: H19026-37TX
Location: UPPR Houston, TX

CPT: 19119232-405CPT-21-20
Total depth: 61.88 ft, Date: 1/8/2020
Cone Type: Gregg
Cone Operator: Cody Cliburn



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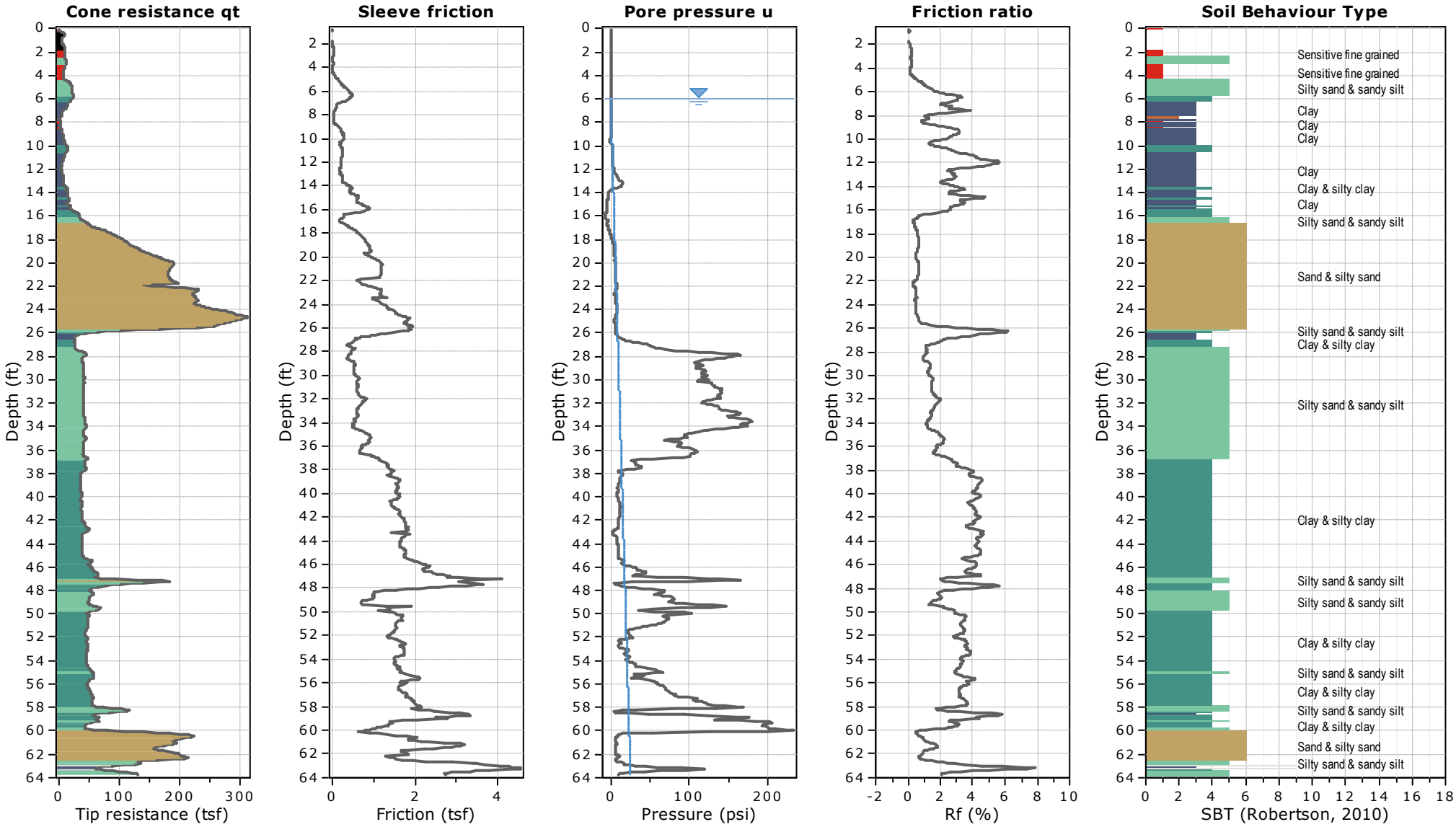
CPT: 19119232-405CPT-22-19
Total depth: 63.78 ft, Date: 12/8/2019
Cone Type: Gregg
Cone Operator: Cody Cliburn

Project: **H19026-37TX**
Location: **UPPR Houston, TX**



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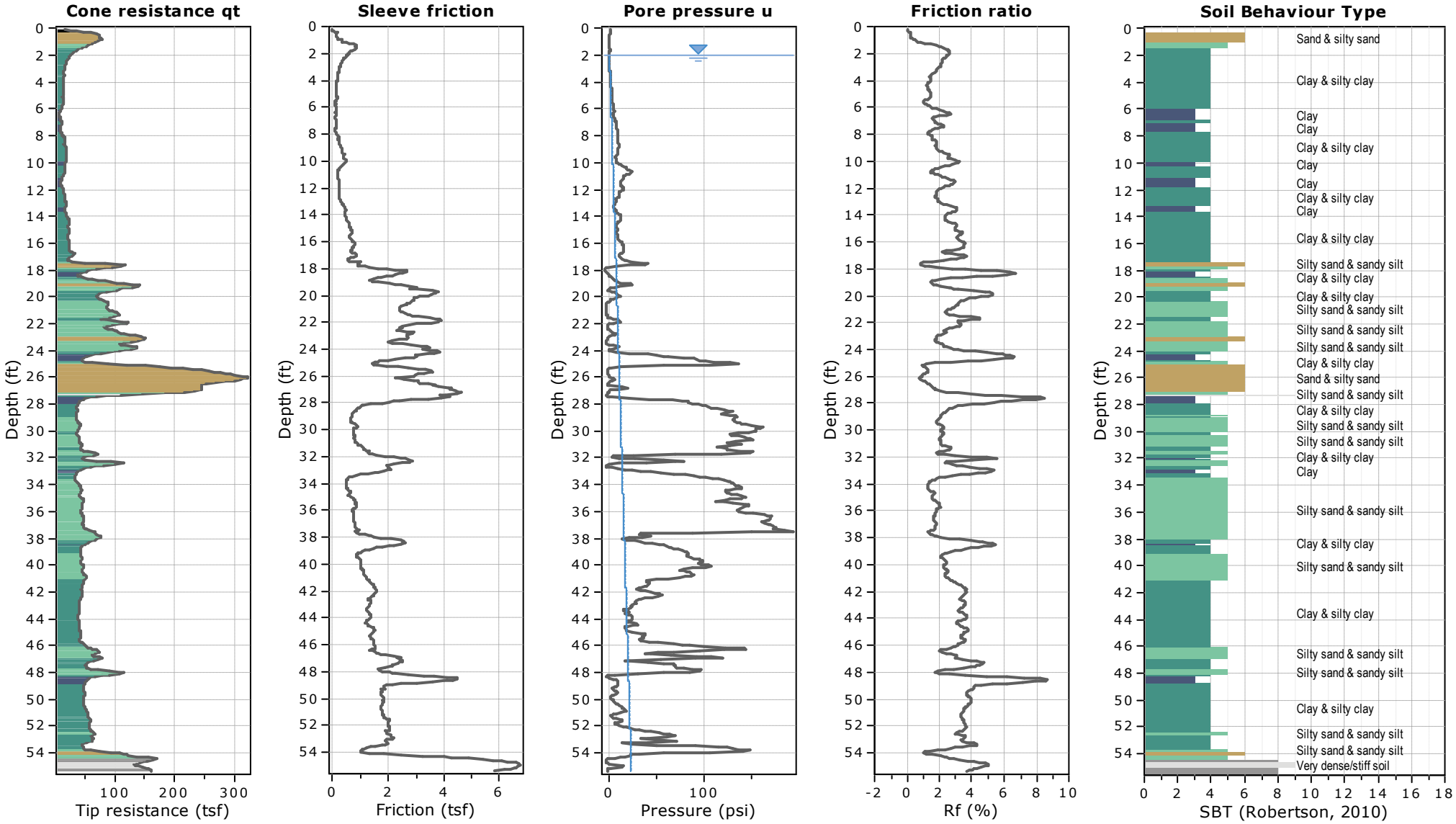
Project: H19026-37TX
Location: UPPR Houston, TX

CPT: 19119232-405CPT-23-20
Total depth: 55.38 ft, Date: 1/23/2020
Cone Type: Gregg
Cone Operator: Cody Cliburn



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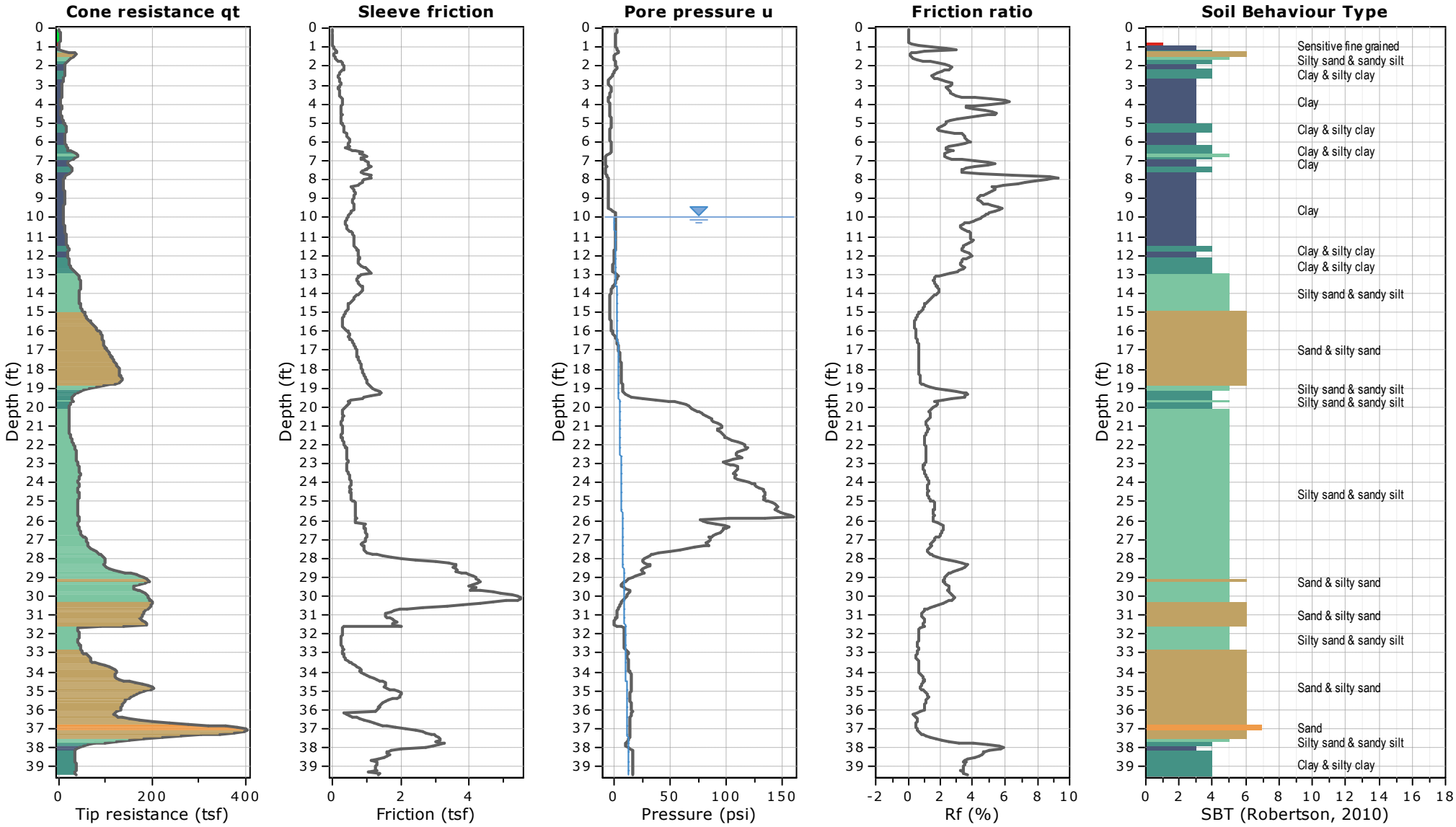
Project: H19026-37TX
Location: UPPR Houston, TX

CPT: 19119232-405CPT-24-20
Total depth: 39.44 ft, Date: 1/11/2020
Cone Type: Gregg
Cone Operator: Cody Cliburn



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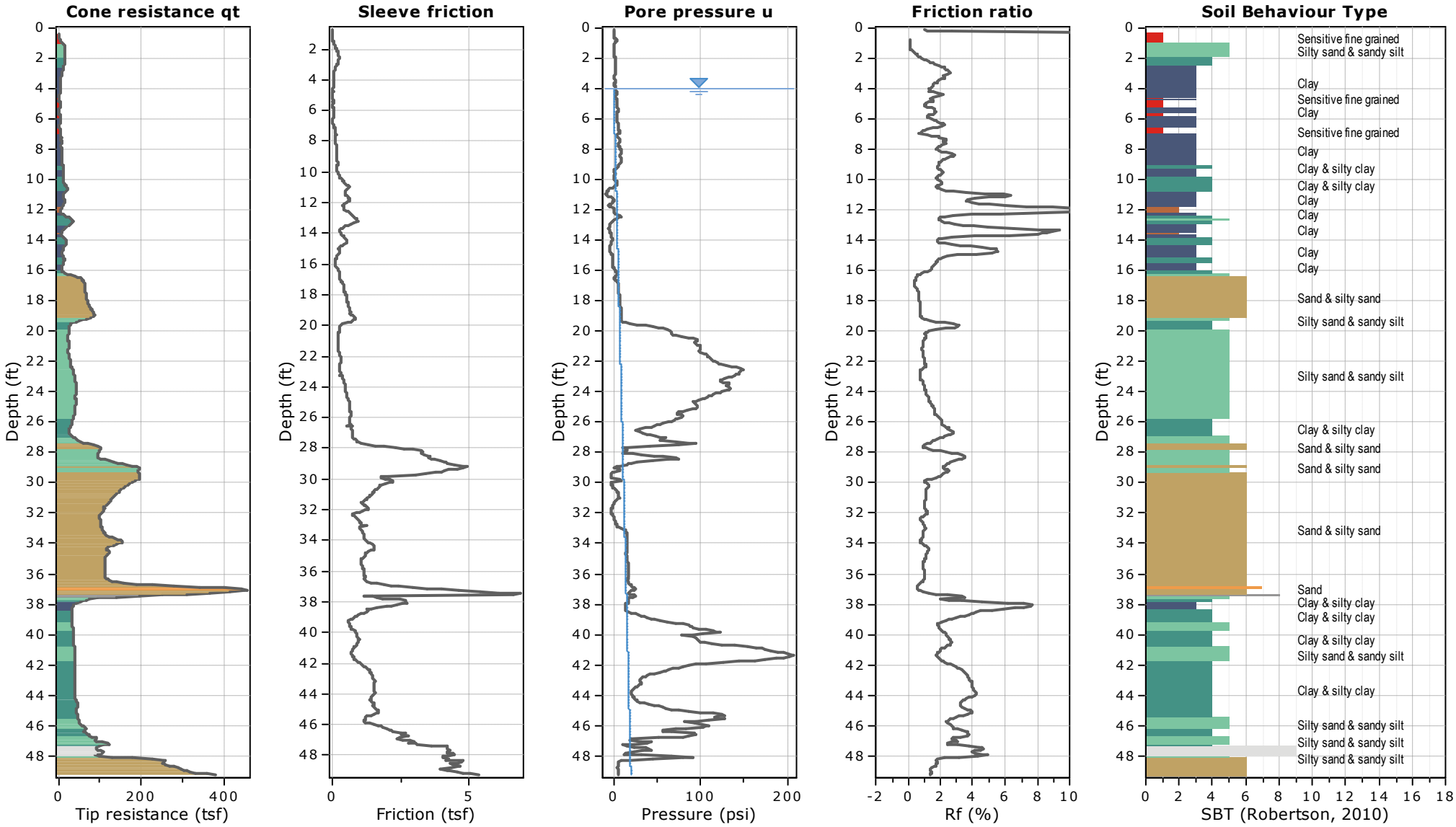
Project: **H19026-37TX**
Location: **UPPR Houston, TX**

CPT: 19119232-405CPT-24A-20
Total depth: 49.28 ft, Date: 1/27/2020
Cone Type: Gregg
Cone Operator: Cody Cliburn



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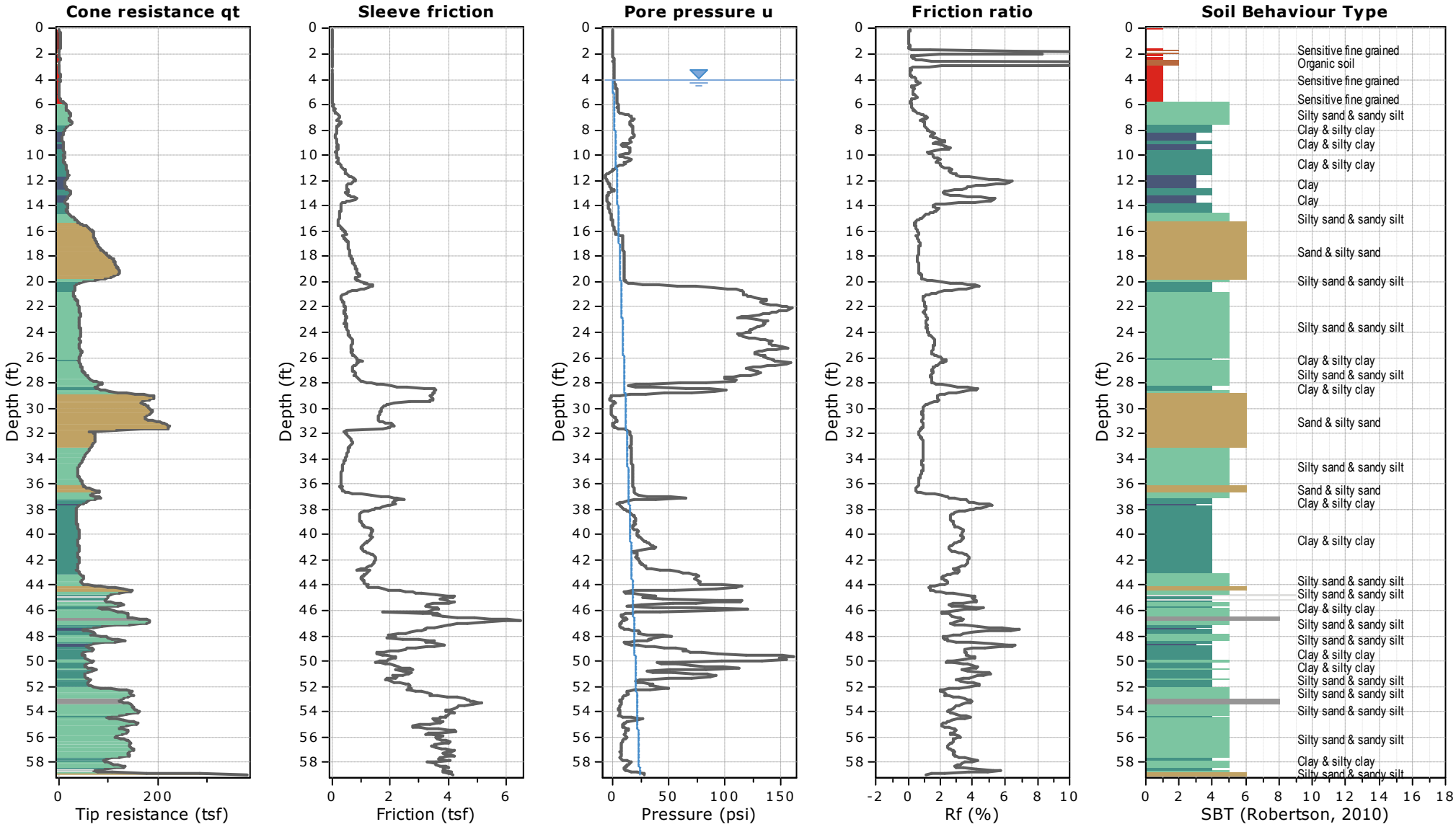
CPT: 19119232-405CPT-25-20
Total depth: 58.99 ft, Date: 1/12/2020
Cone Type: Gregg
Cone Operator: Cody Cliburn

Project: H19026-37TX
Location: UPPR Houston, TX



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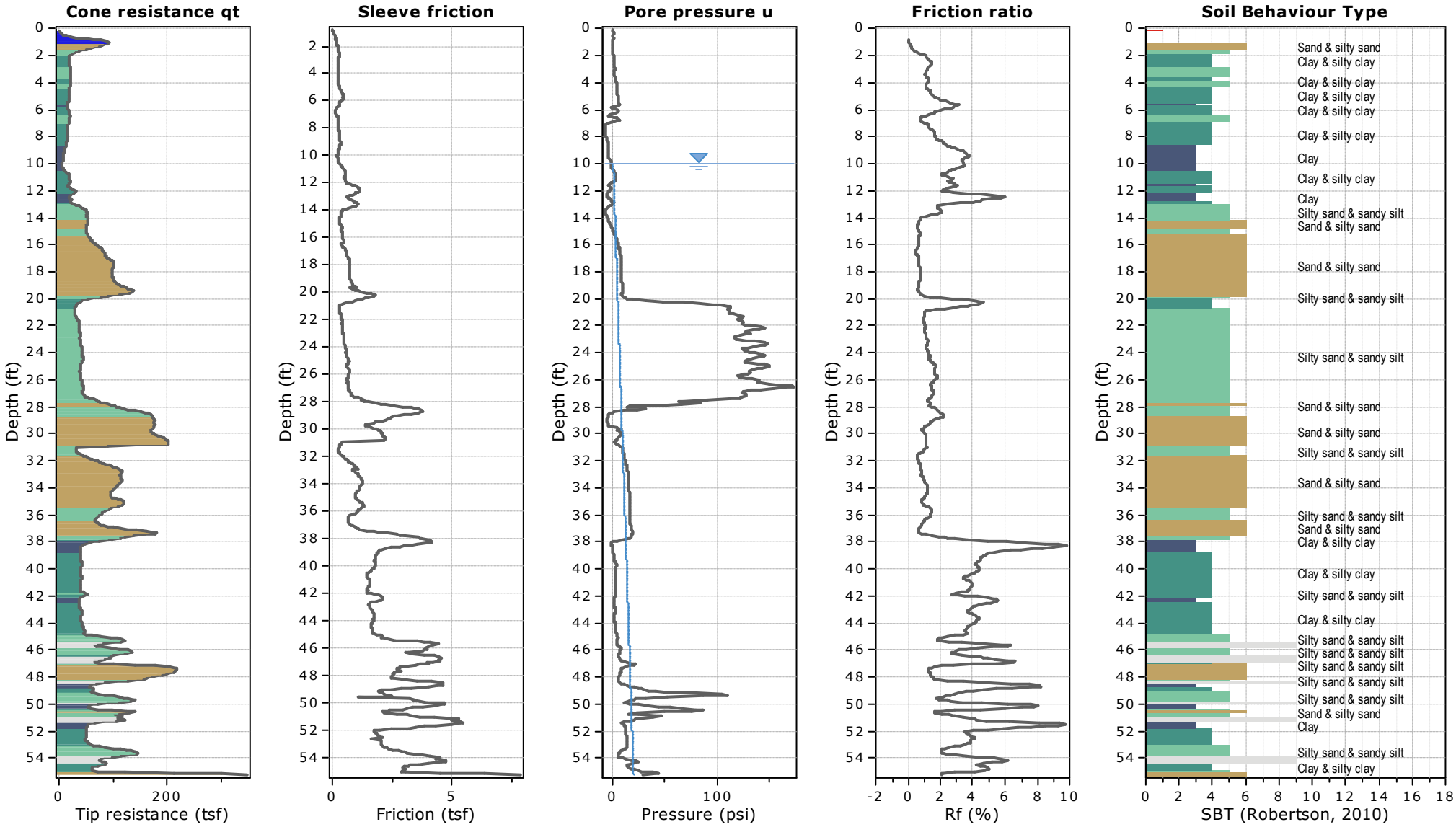
CPT: 19119232-405CPT-26-20
Total depth: 55.25 ft, Date: 1/12/2020
Cone Type: Gregg
Cone Operator: Cody Cliburn

Project: **H19026-37TX**
Location: **UPPR Houston, TX**



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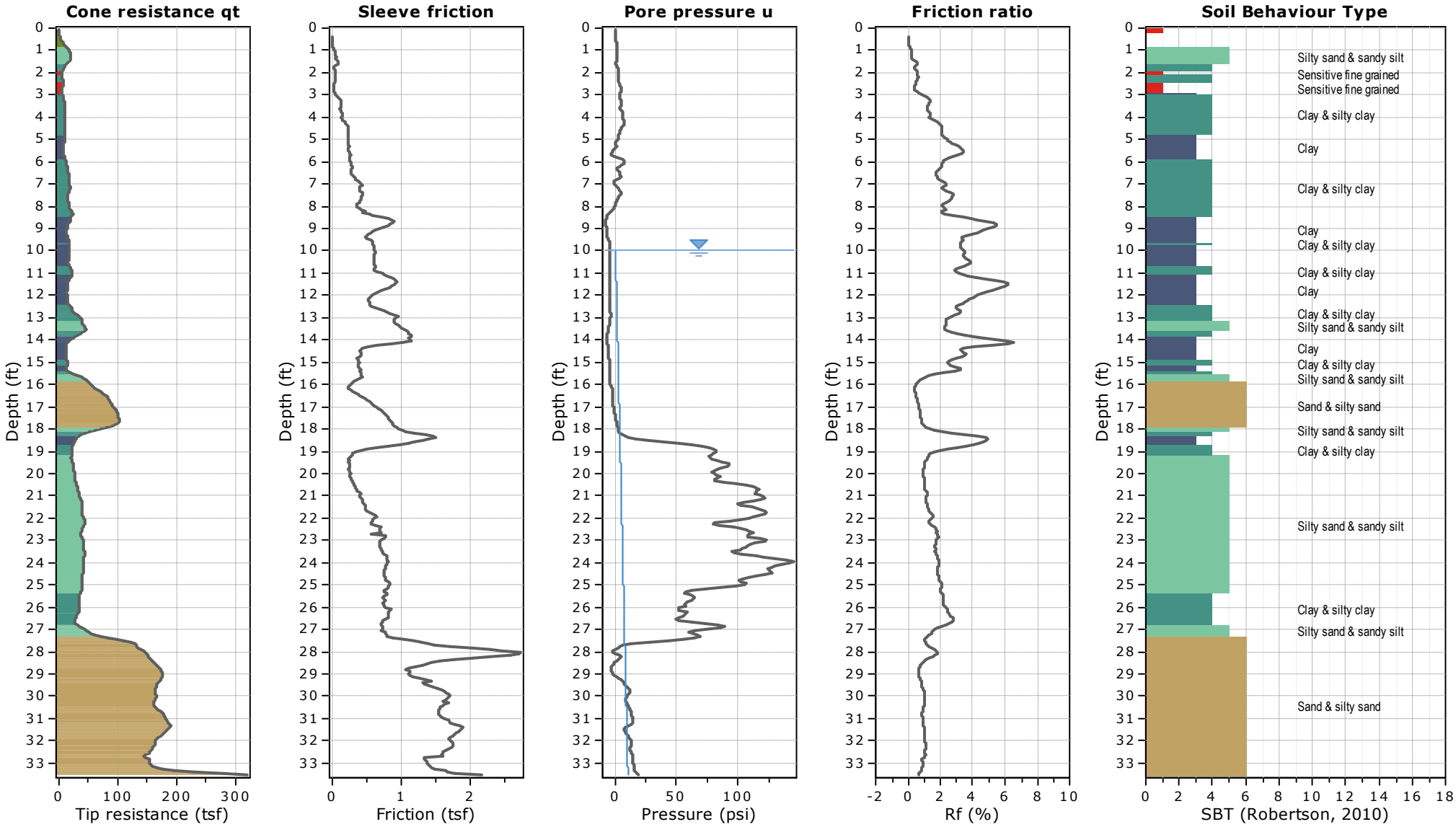
Project: H19026-37TX
Location: UPPR Houston, TX

CPT: 19119232-405CPT-27-20
Total depth: 33.53 ft, Date: 1/12/2020
Cone Type: Gregg
Cone Operator: Cody Cliburn



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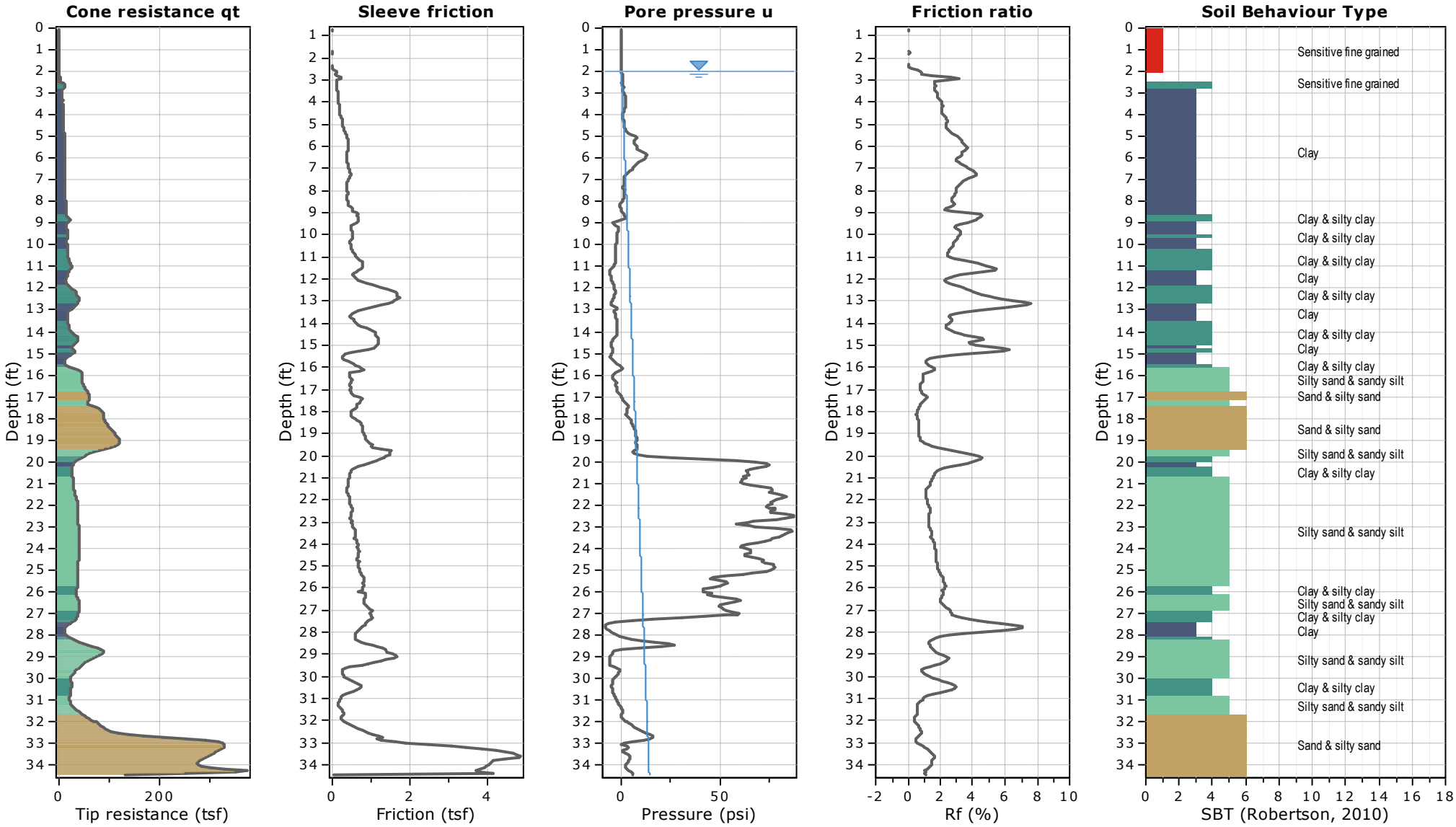
Project: H19026-37TX
Location: UPPR Houston, TX

CPT: 19119232-405CPT-27A-20
Total depth: 34.45 ft, Date: 1/27/2020
Cone Type: Gregg
Cone Operator: Cody Cliburn



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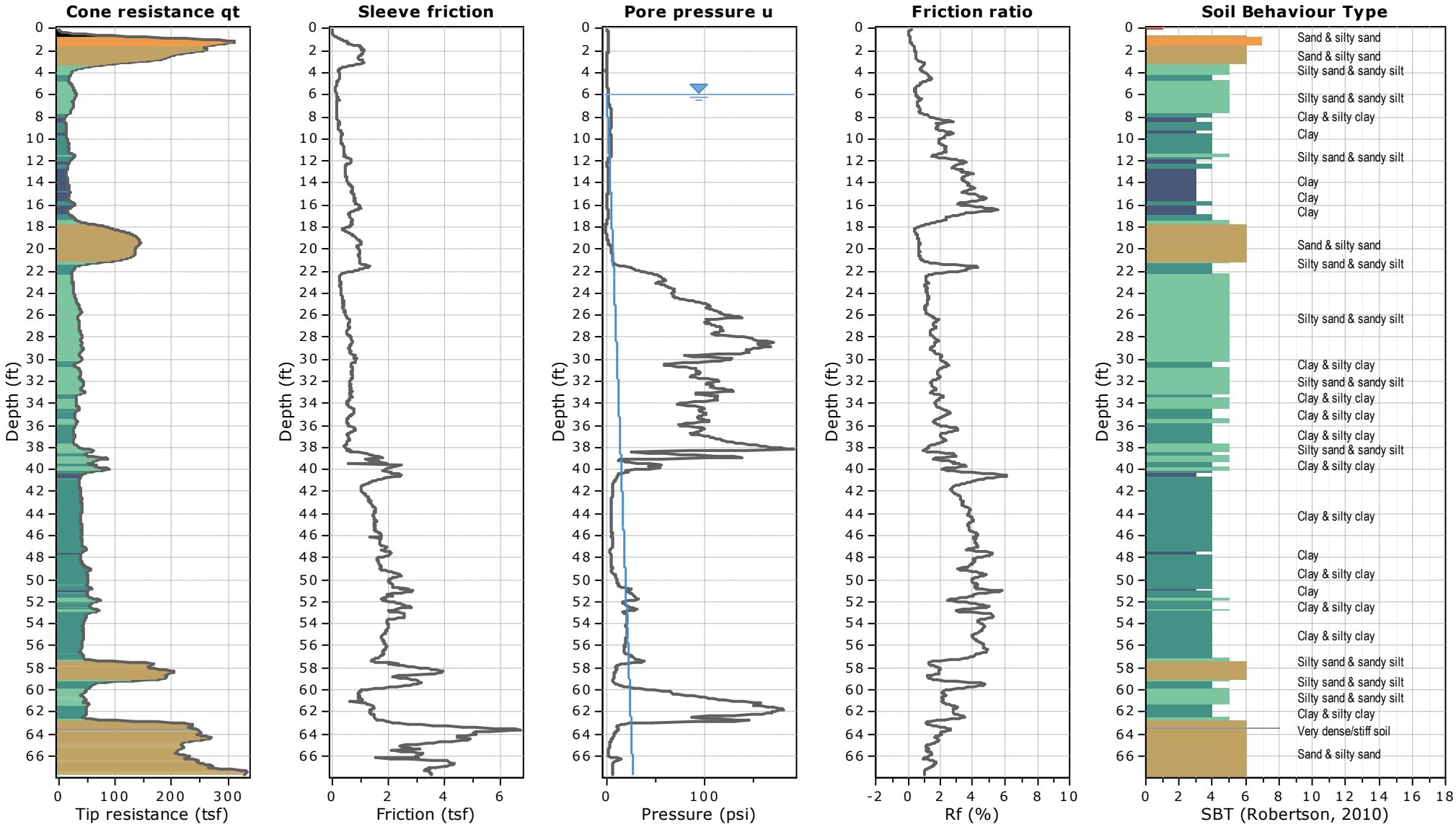
Project: **H19026-37TX**
Location: **UPPR Houston, TX**

CPT: 19119232-405CPT-28-19
Total depth: 67.72 ft, Date: 12/6/2019
Cone Type: Gregg
Cone Operator: Cody Cliburn



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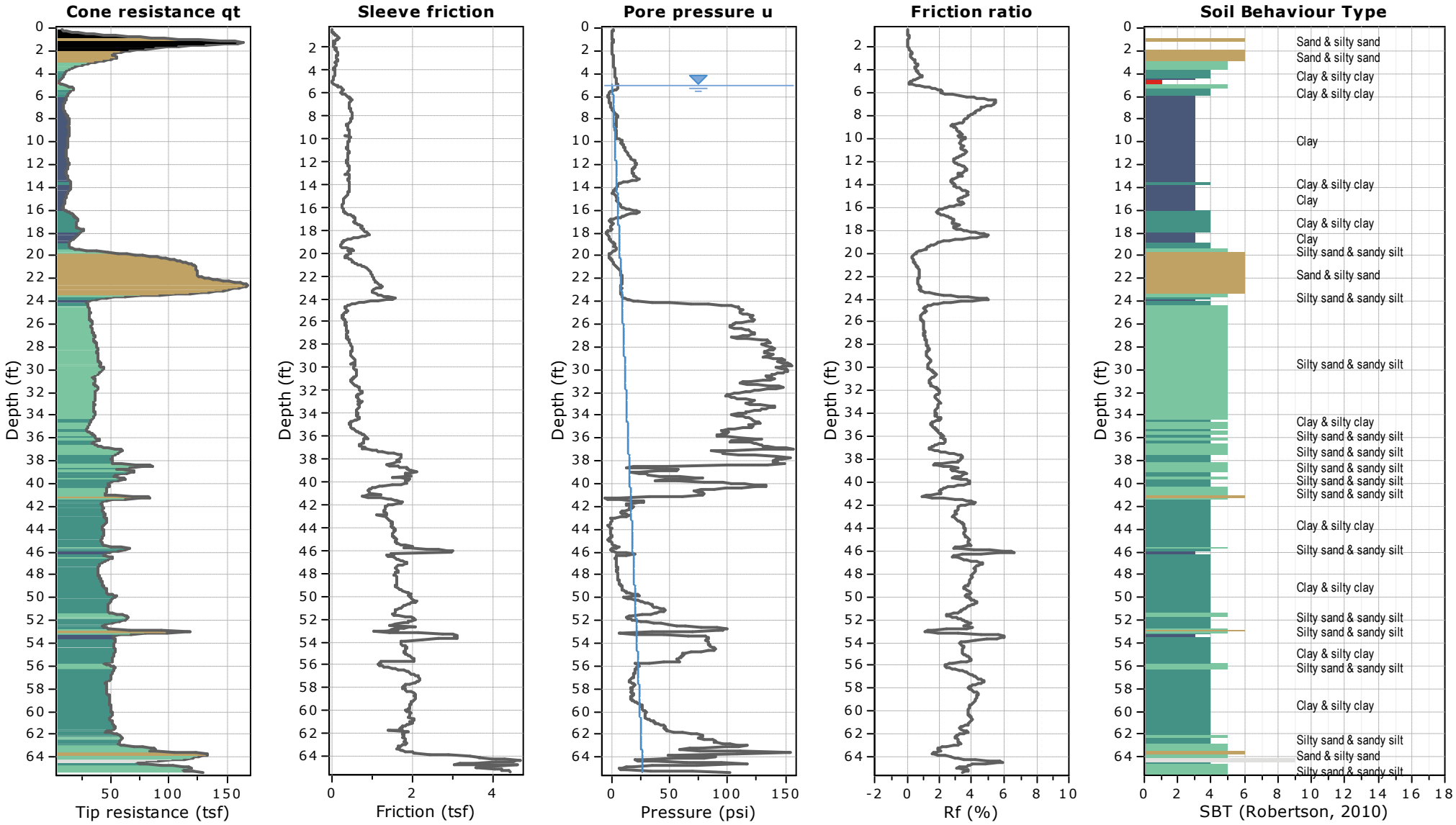
CPT: 19119232-405CPT-29-19
Total depth: 65.35 ft, Date: 12/10/2019
Cone Type: Gregg
Cone Operator: Cody Cliburn

Project: **H19026-37TX**
Location: **UPPR Houston, TX**



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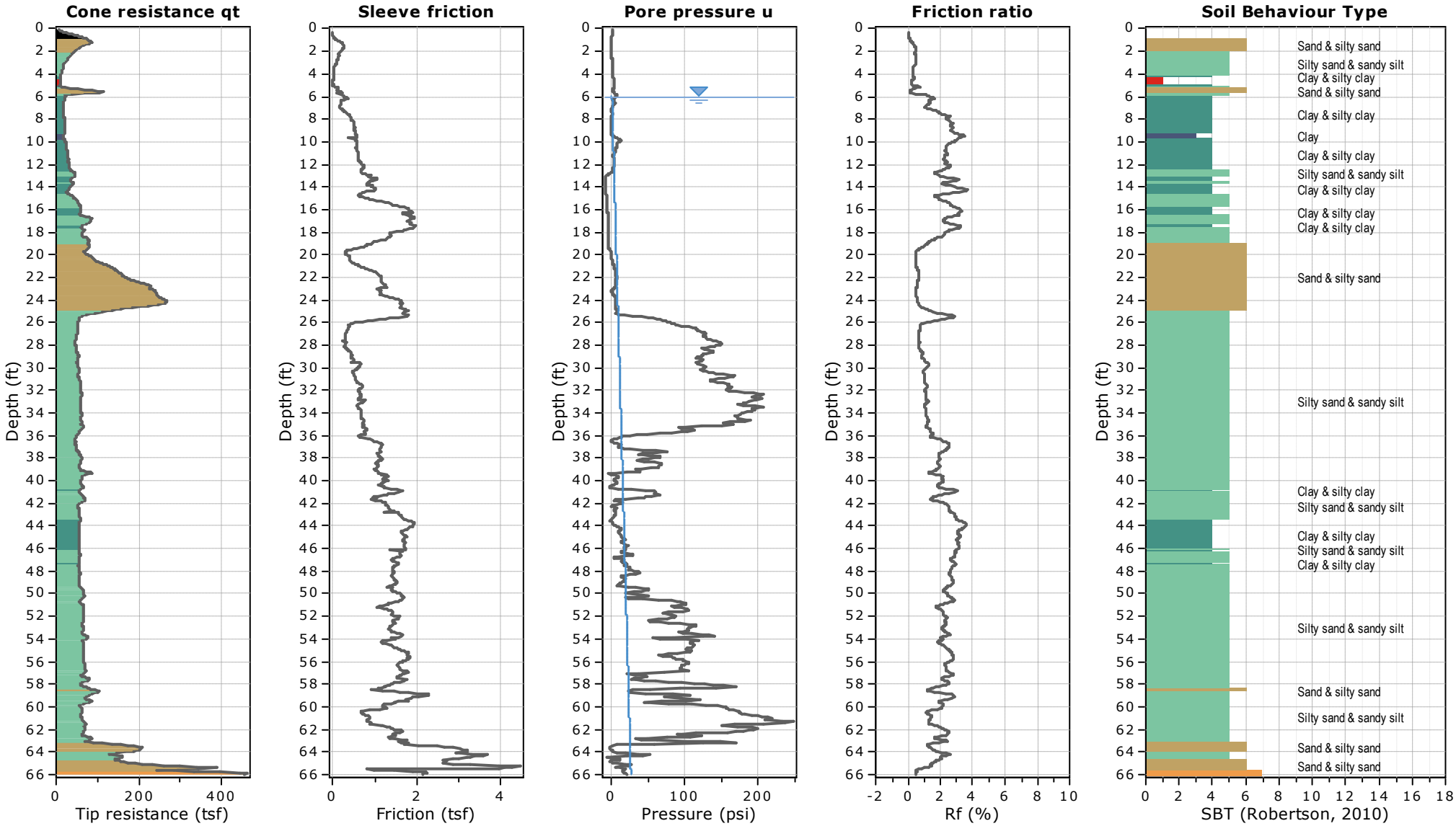
CPT: 19119232-405CPT-30-19
Total depth: 66.01 ft, Date: 12/6/2019
Cone Type: Gregg
Cone Operator: Cody Cliburn

Project: **H19026-37TX**
Location: **UPPR Houston, TX**



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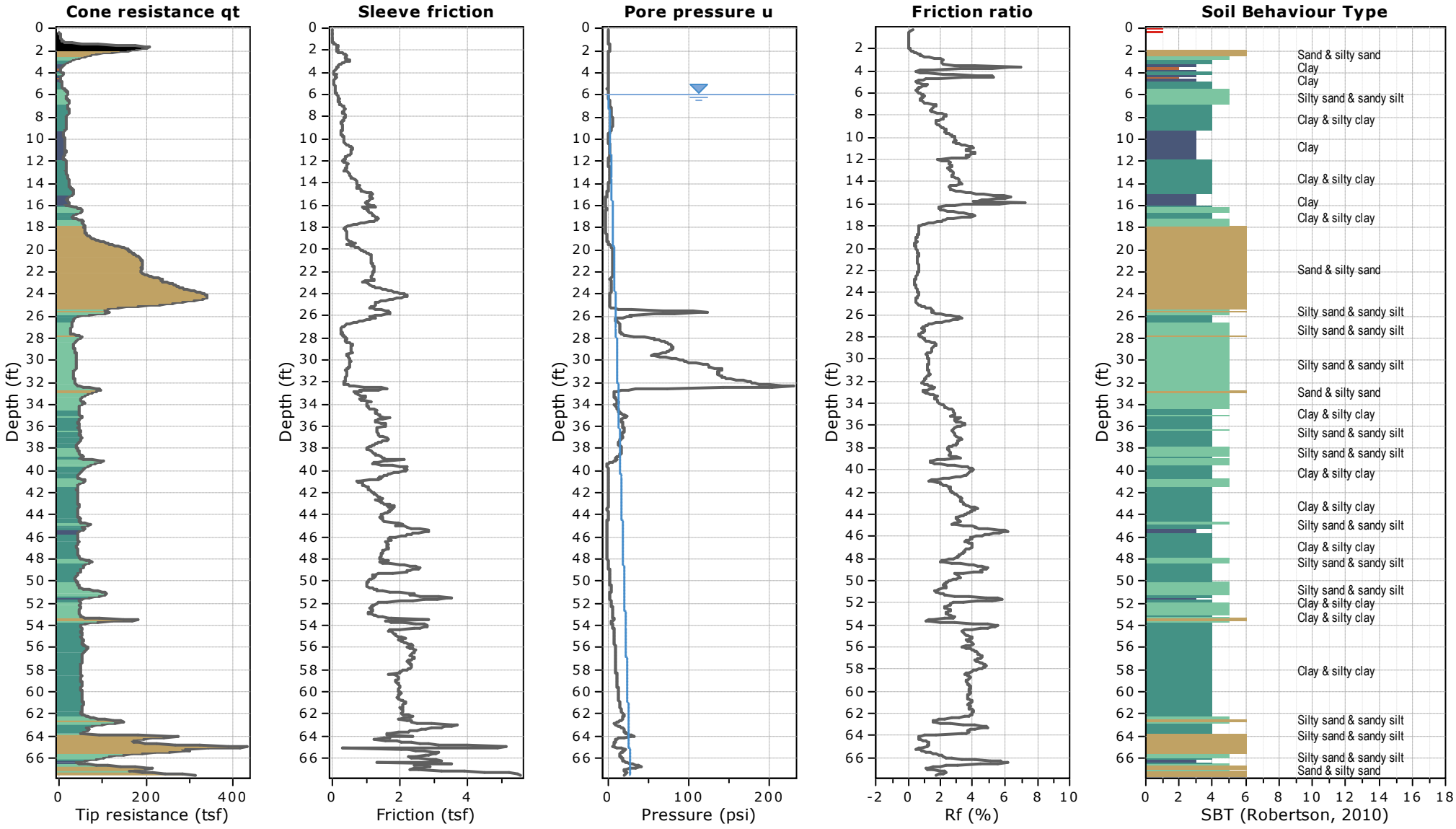
Project: **H19026-37TX**
Location: **UPPR Houston, TX**

CPT: 19119232-405CPT-31-19
Total depth: 67.59 ft, Date: 12/6/2019
Cone Type: Gregg
Cone Operator: Cody Cliburn



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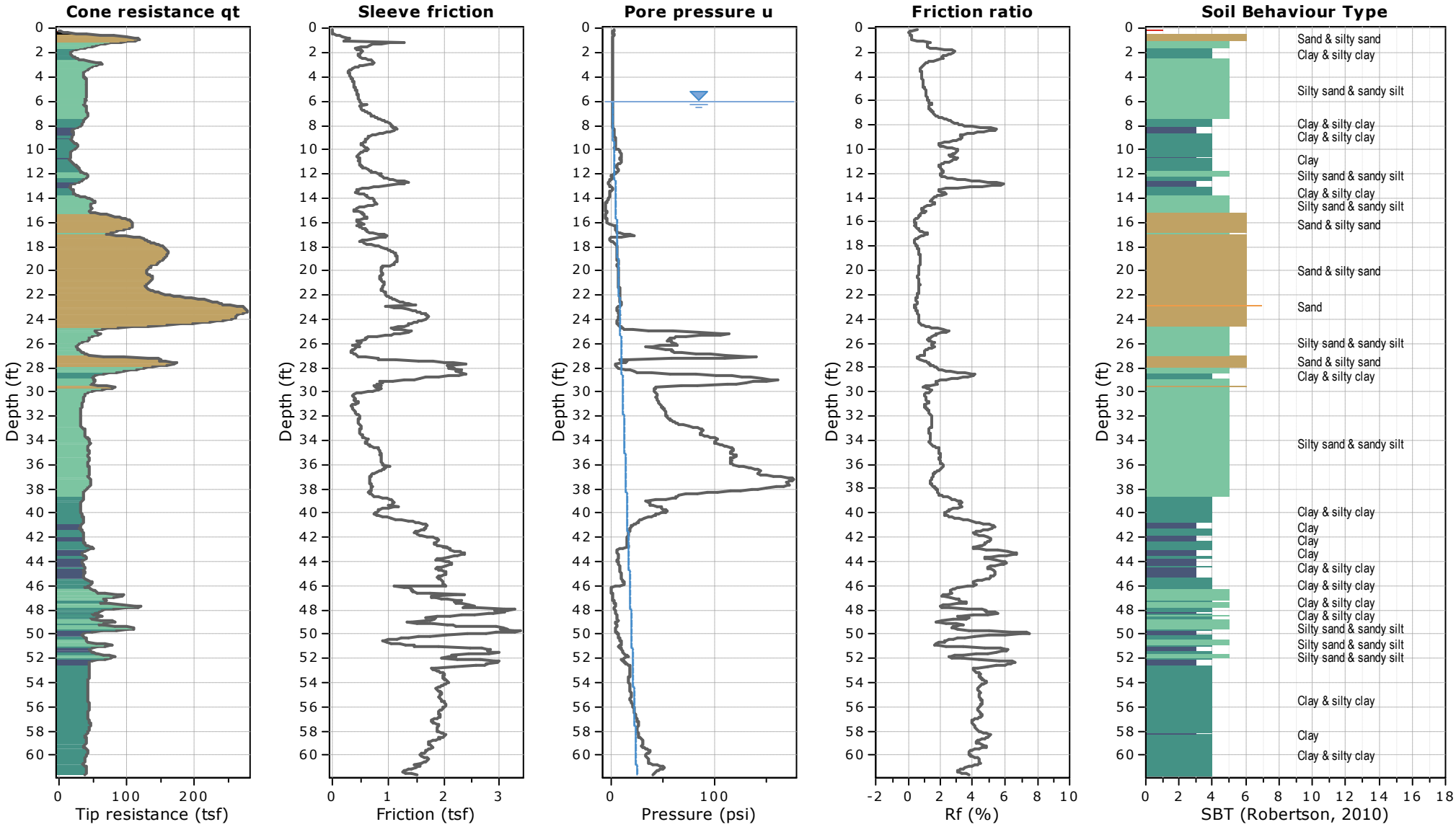
Project: H19026-37TX
Location: UPPR Houston, TX

CPT: 19119232-405CPT-32-19
Total depth: 61.61 ft, Date: 12/9/2019
Cone Type: Gregg
Cone Operator: Cody Cliburn



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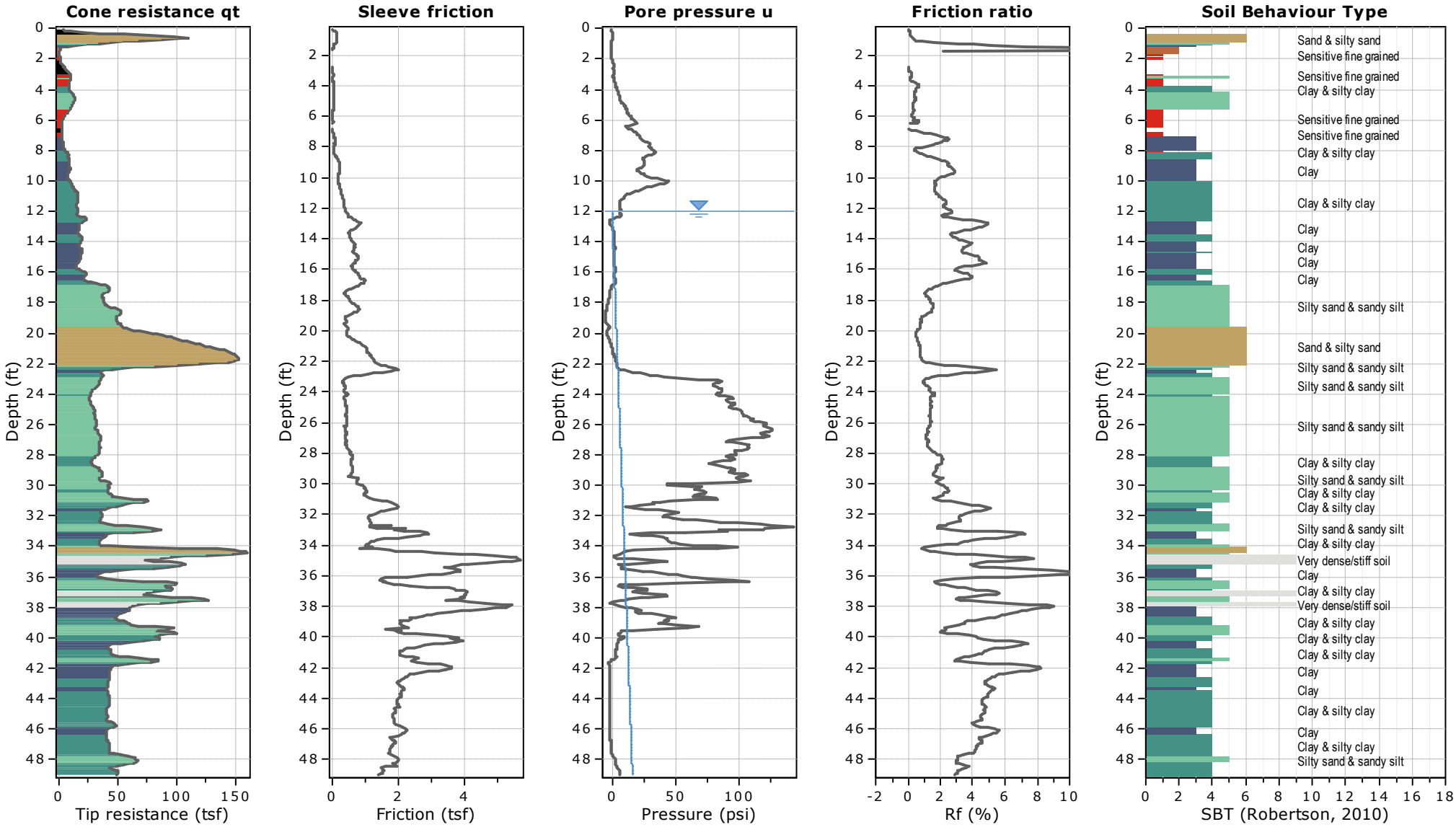
Project: H19026-37TX
Location: UPPR Houston, TX

CPT: 19119232-405CPT-34-19
Total depth: 49.02 ft, Date: 12/5/2019
Cone Type: Gregg
Cone Operator: Chris Hayslip



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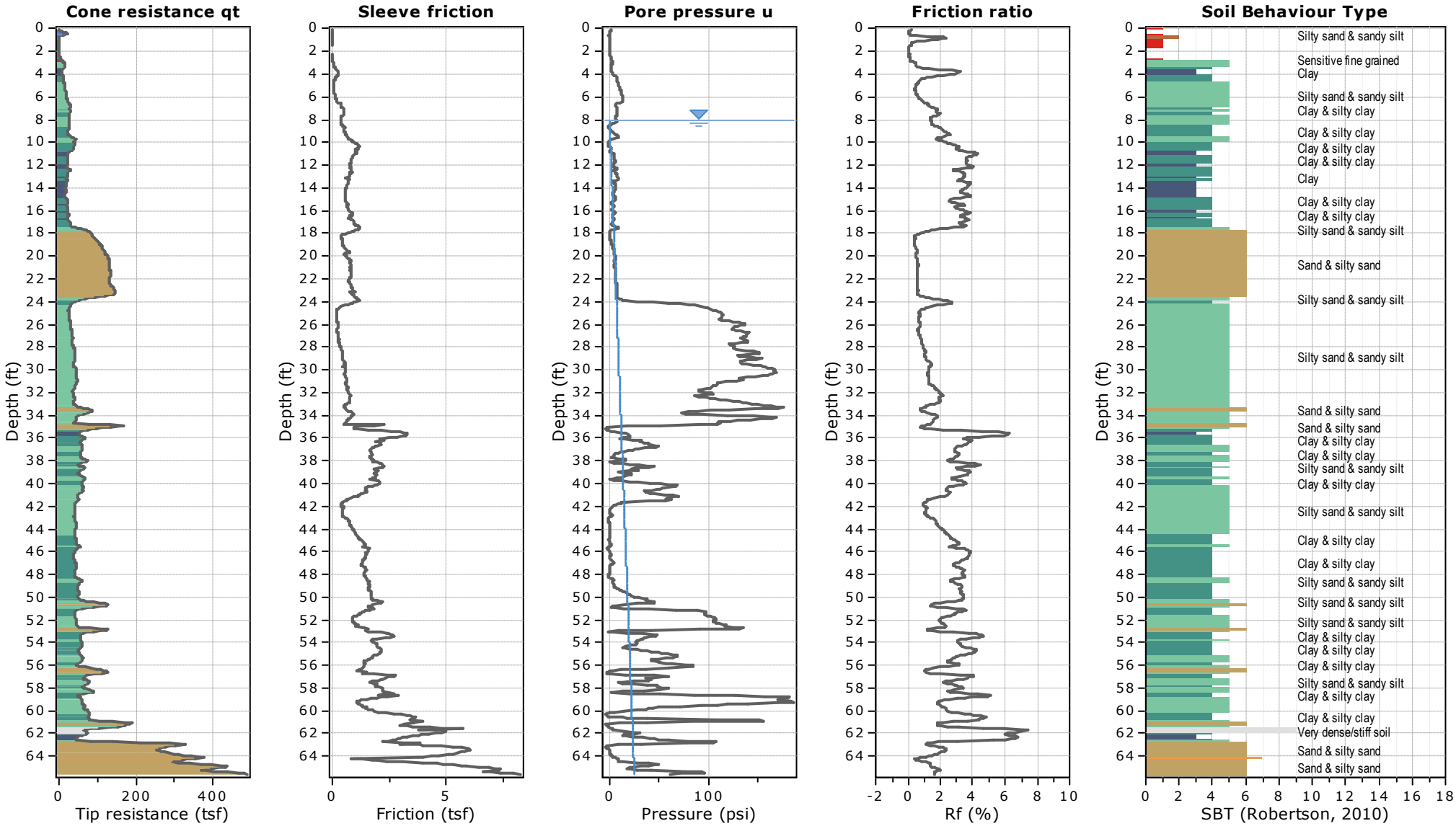
CPT: 19119232-405CPT-35-19
Total depth: 65.62 ft, Date: 12/5/2019
Cone Type: Gregg
Cone Operator: Chris Hayslip

Project: **H19026-37TX**
Location: **UPPR Houston, TX**



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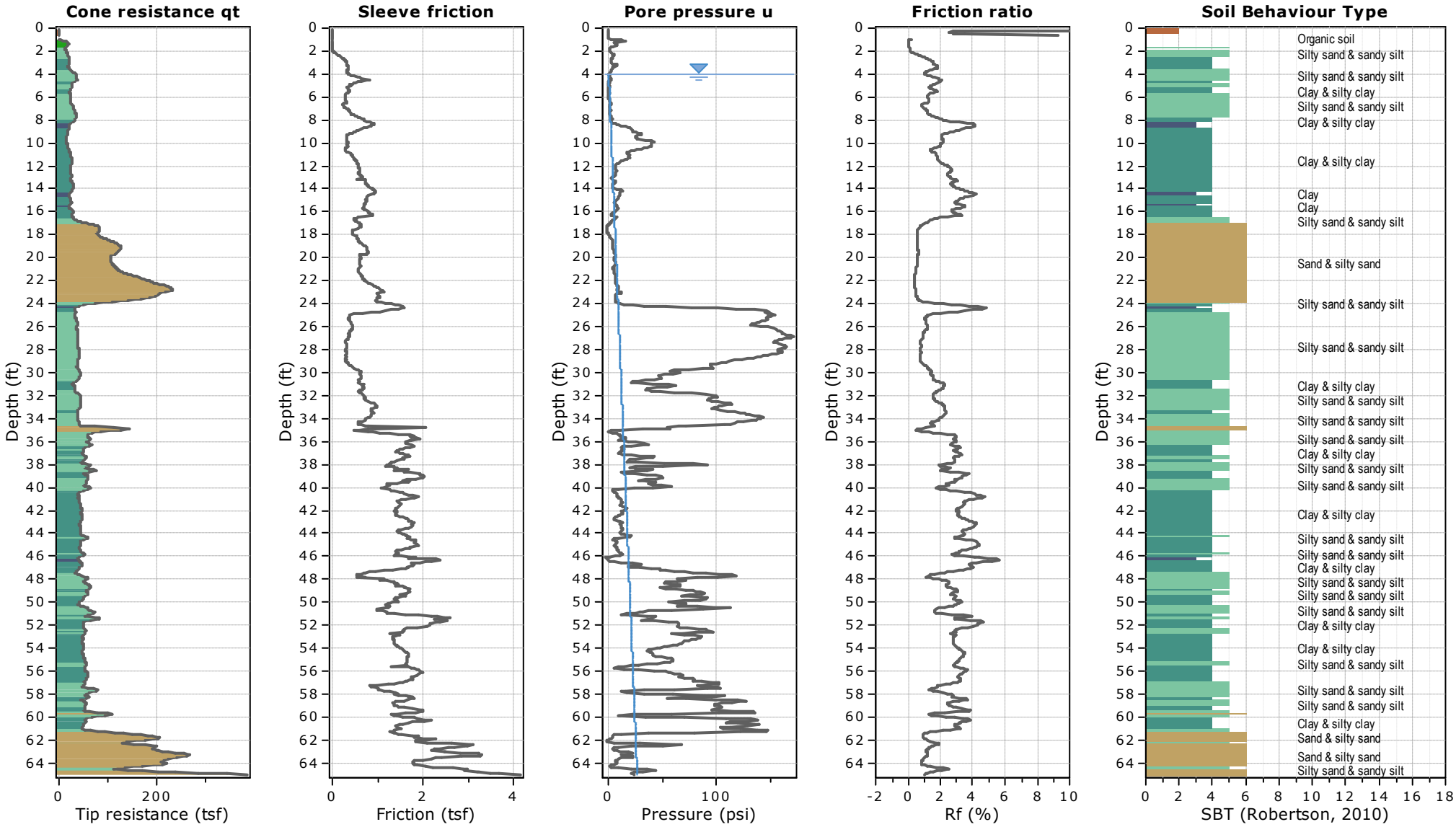
Project: **H19026-37TX**
Location: **UPPR Houston, TX**

CPT: 19119232-405CPT-36-19
Total depth: 65.03 ft, Date: 12/4/2019
Cone Type: Gregg
Cone Operator: Chris Hayslip



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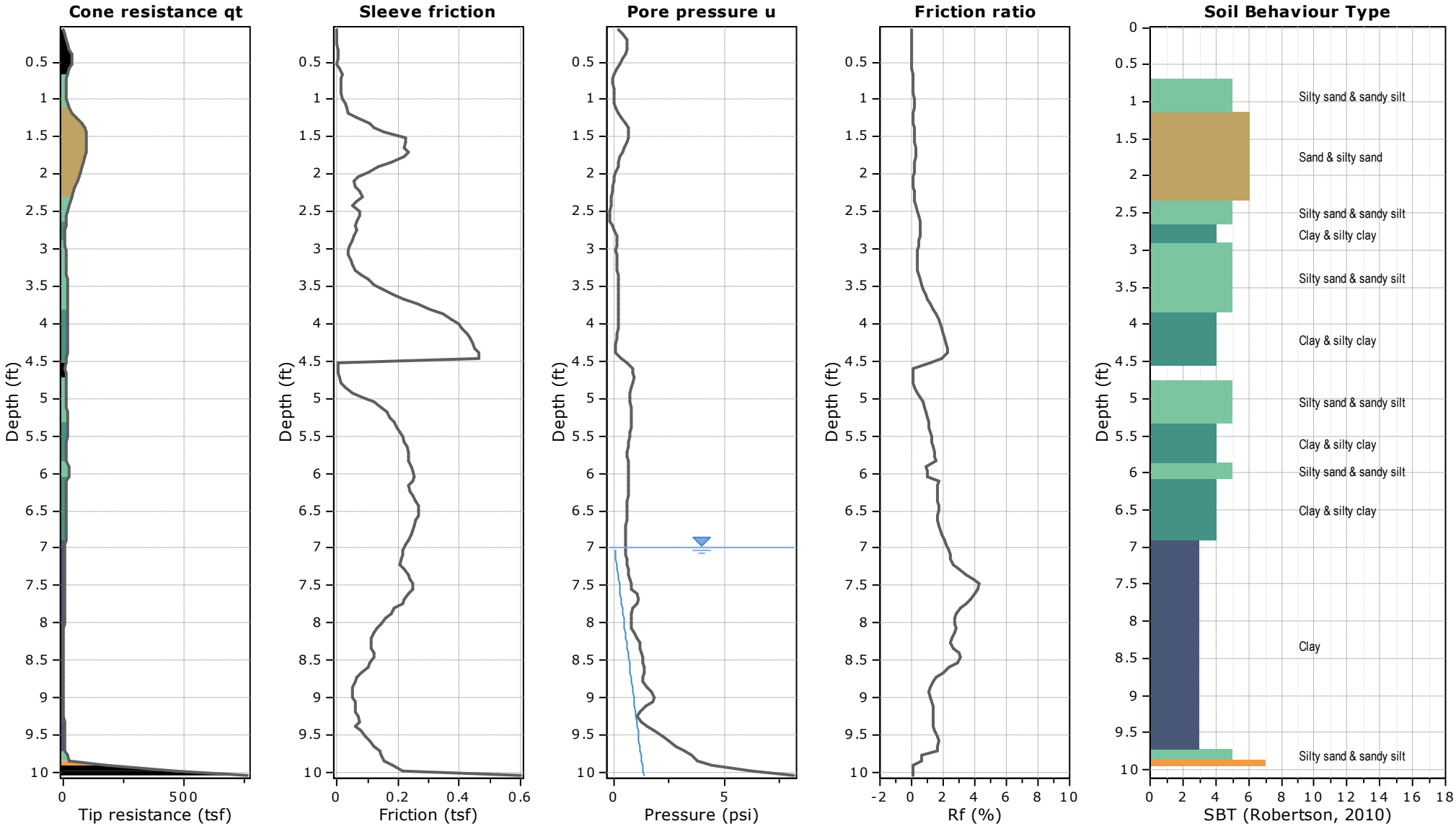
Project: H19026-37TX
Location: UPPR Houston, TX

CPT: 19119232-405CPT-37-19
Total depth: 10.04 ft, Date: 12/6/2019
Cone Type: Gregg
Cone Operator: Cody Cliburn



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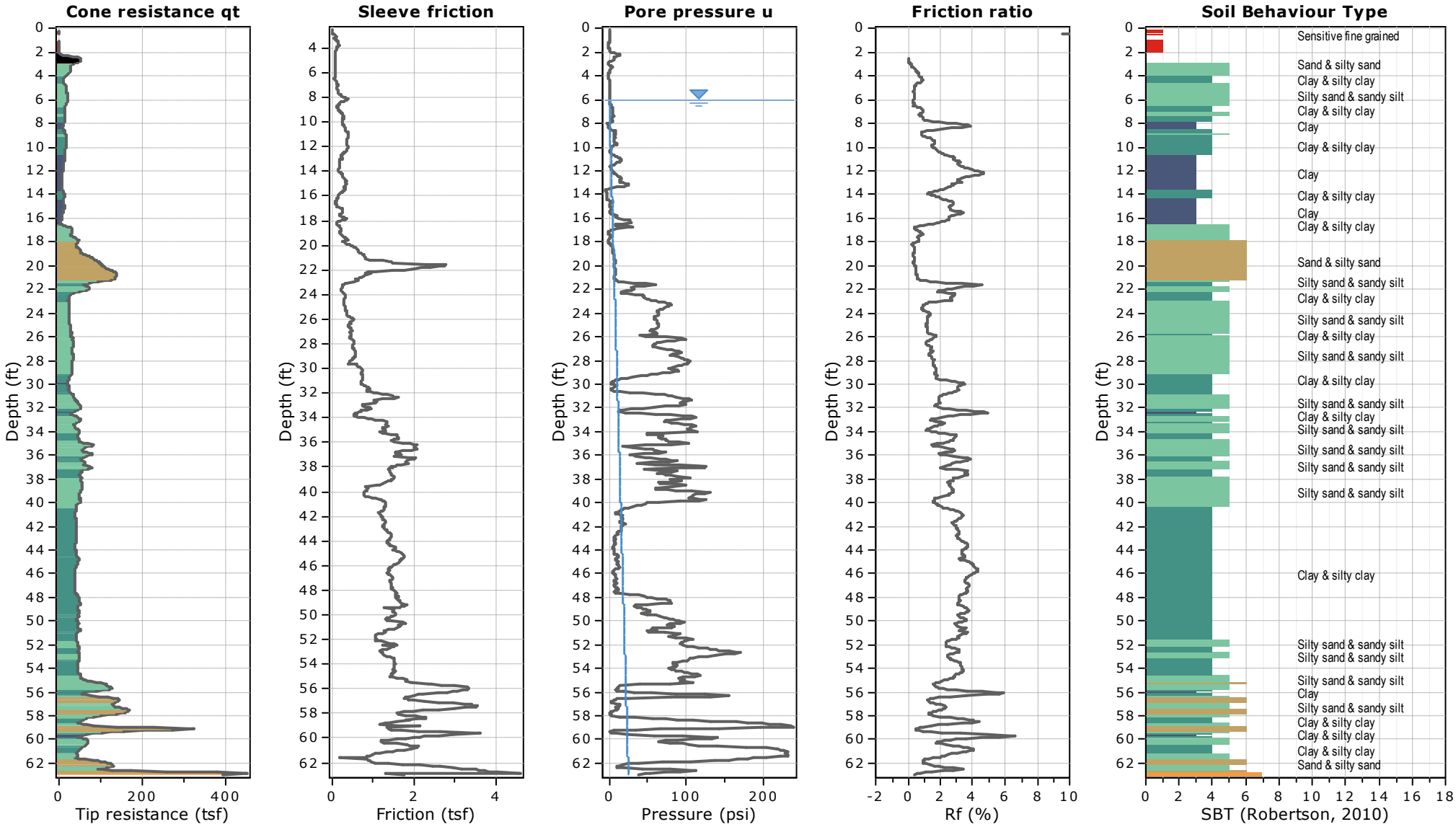
CPT: 19119232-405CPT-38A-19
Total depth: 62.99 ft, Date: 12/4/2019
Cone Type: Gregg
Cone Operator: Chris Hayslip

Project: **H19026-37TX**
Location: **UPPR Houston, TX**


Cone resistance qt
Depth (ft)
Tip resistance (tsf)
Sleeve friction
Friction (tsf)
Pore pressure u
Pressure (psi)
Friction ratio
Rf (%)
Soil Behaviour Type
SBT (Robertson, 2010)
Sensitive fine grained
Sand & silty sand
Clay & silty clay
Silty sand & sandy silt
Clay
Clay & silty clay
Silty sand & sandy silt
Clay & silty clay
Silty sand & sandy silt
Clay & silty clay
Silty sand & sandy silt

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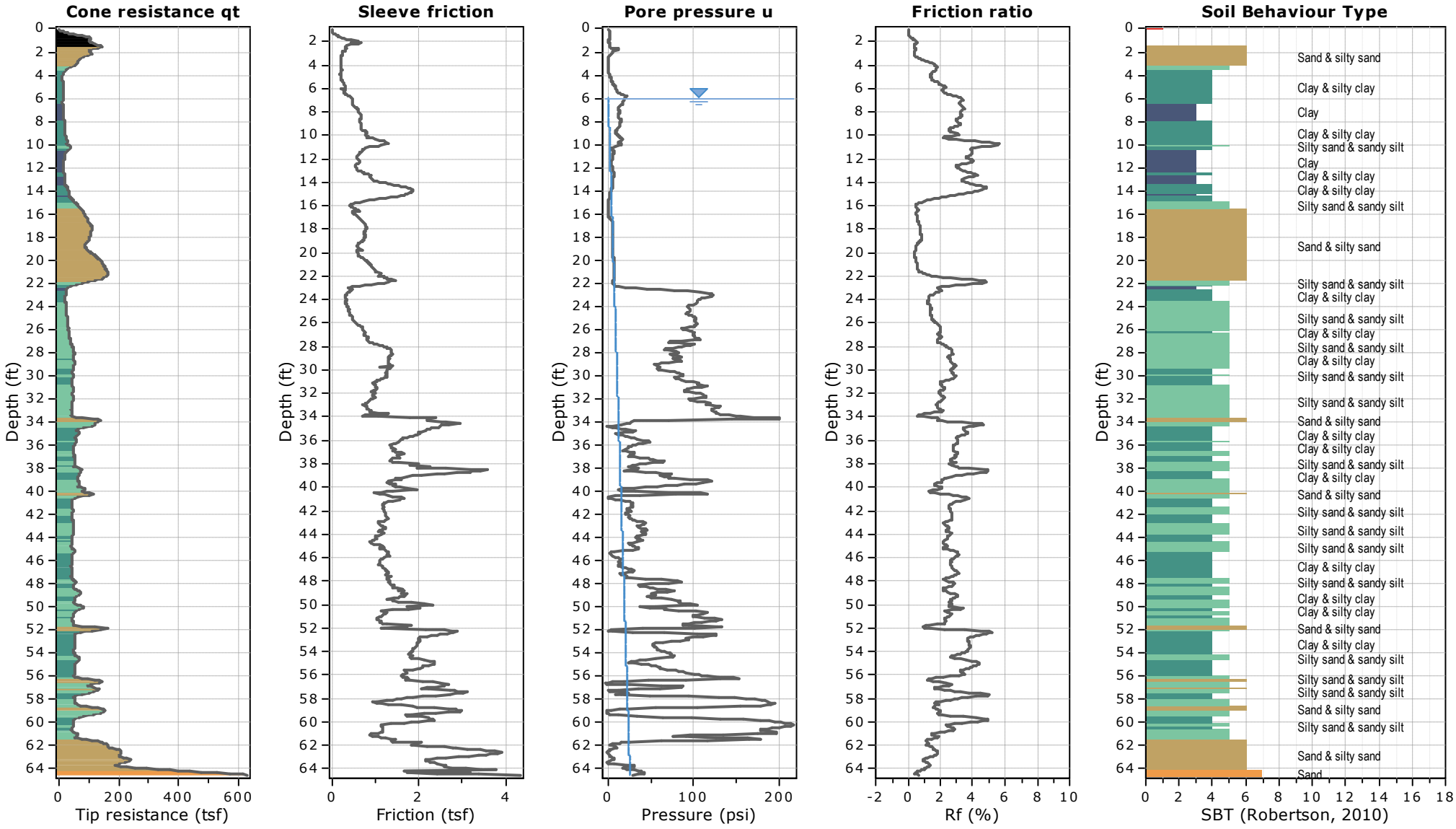
Project: H19026-37TX
Location: UPPR Houston, TX

CPT: 19119232-405CPT-39-19
Total depth: 64.57 ft, Date: 12/4/2019
Cone Type: Gregg
Cone Operator: Chris Hayslip



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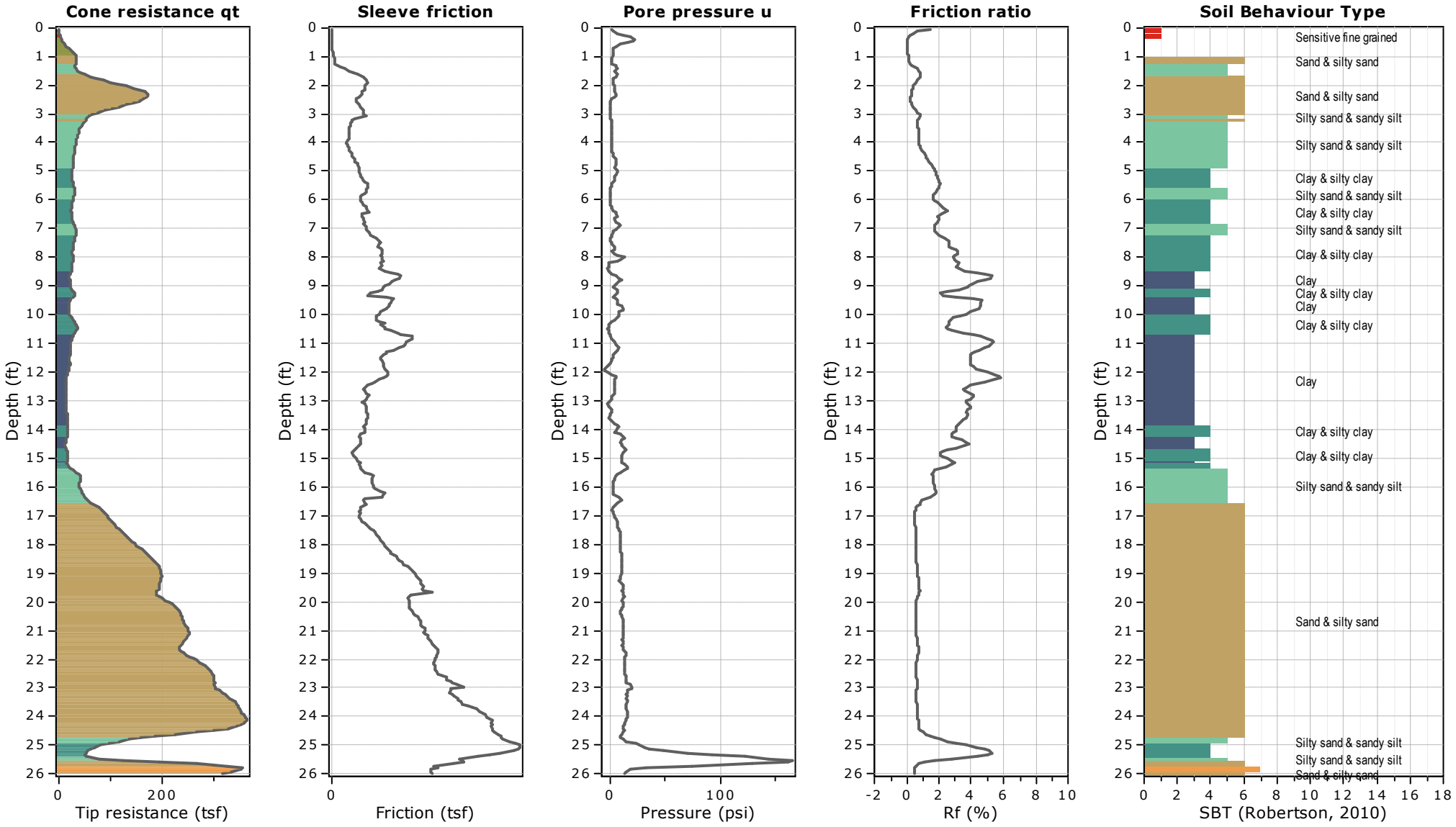
Project: H19026-37TX
Location: UPPR Houston, TX

CPT: 19119232-405CPT-40-19
Total depth: 25.98 ft, Date: 12/4/2019
Cone Type: Gregg
Cone Operator: Chris Hayslip



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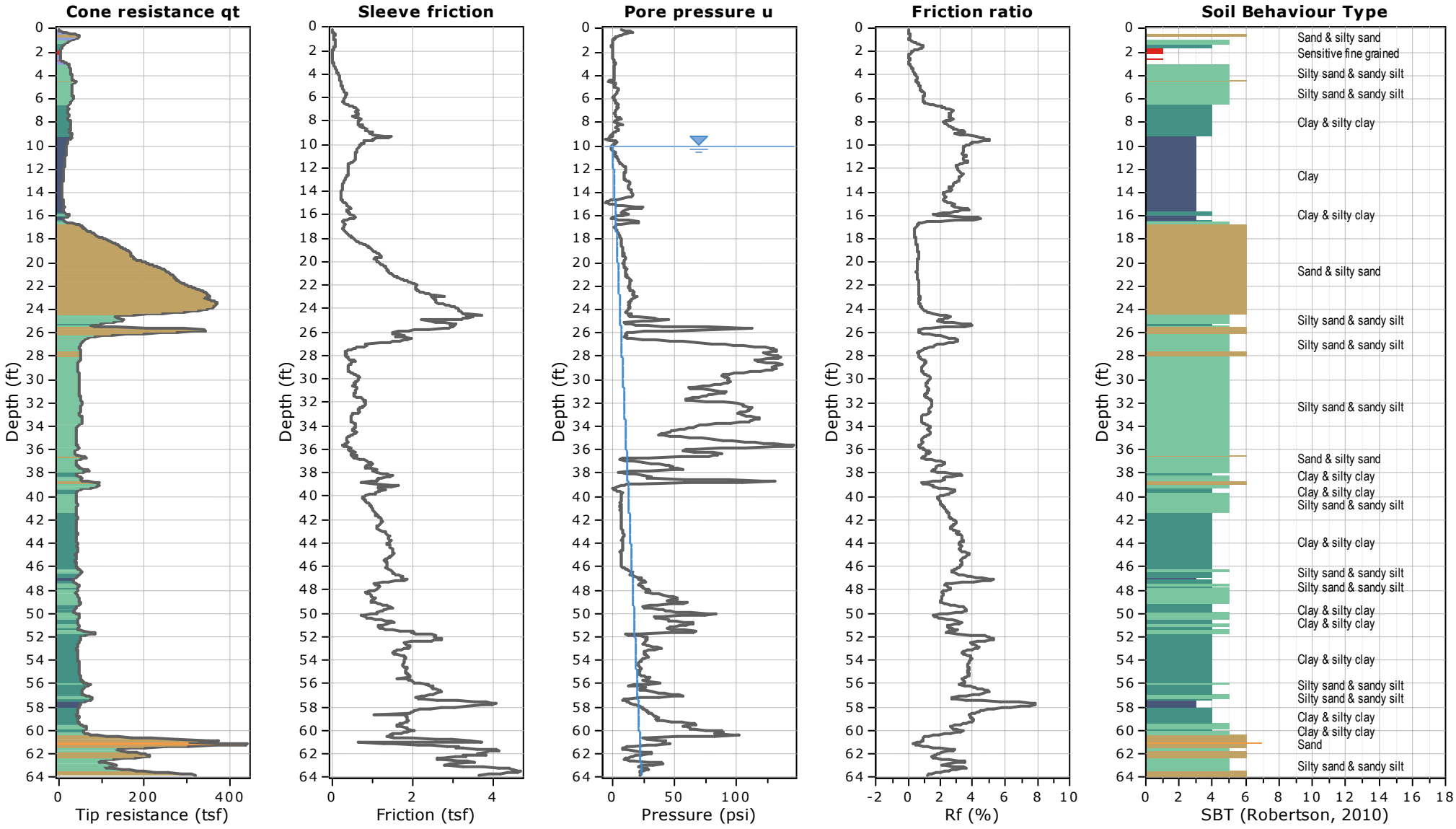
Project: H19026-37TX
Location: UPPR Houston, TX

CPT: 19119232-405CPT-40A-19
Total depth: 63.85 ft, Date: 12/5/2019
Cone Type: Gregg
Cone Operator: Chris Hayslip



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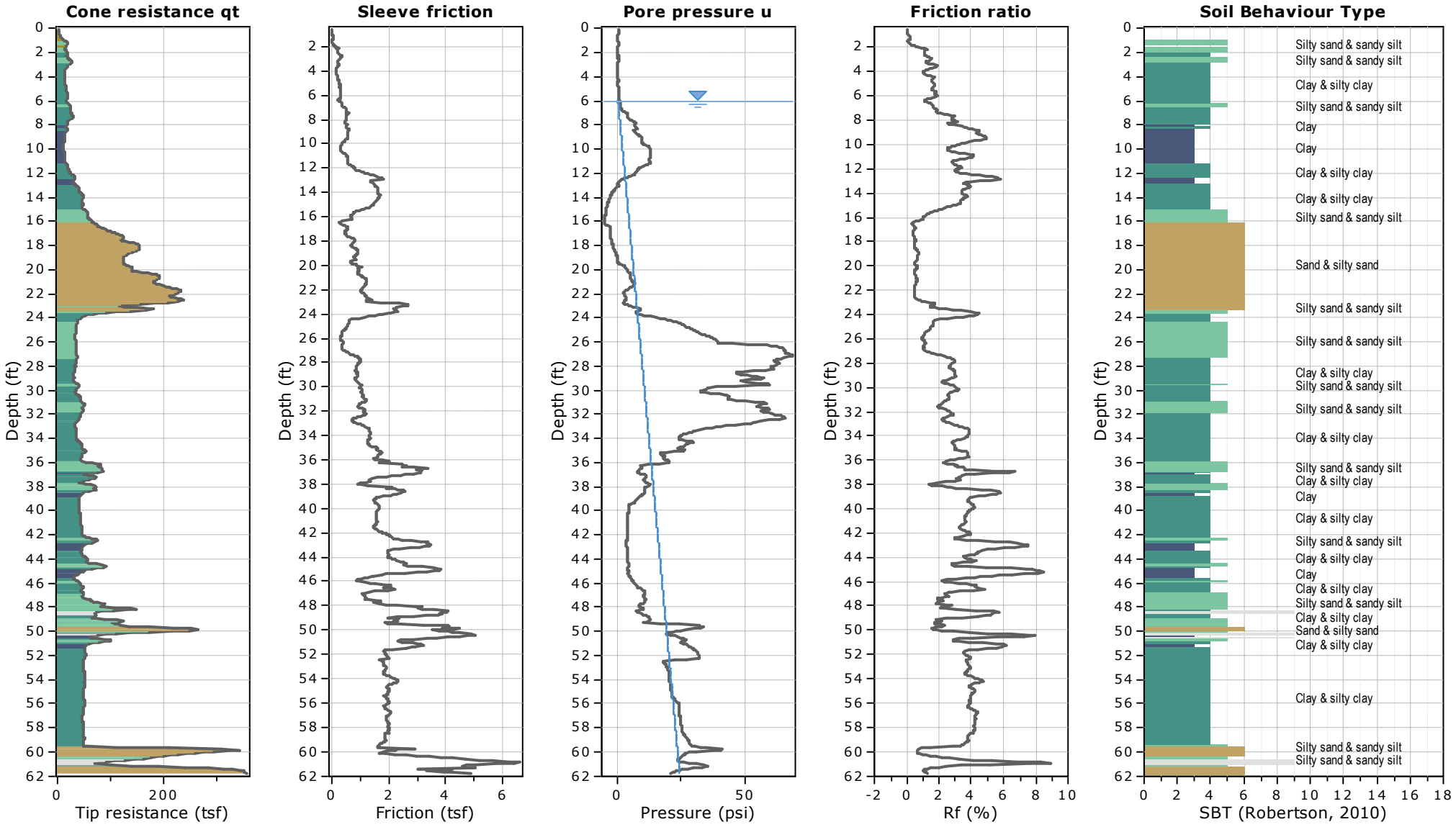
Project: H19026-37TX
Location: UPPR Houston, TX

CPT: 19119232-405CPT-41-19
Total depth: 61.81 ft, Date: 12/7/2019
Cone Type: Gregg
Cone Operator: Cody Cliburn



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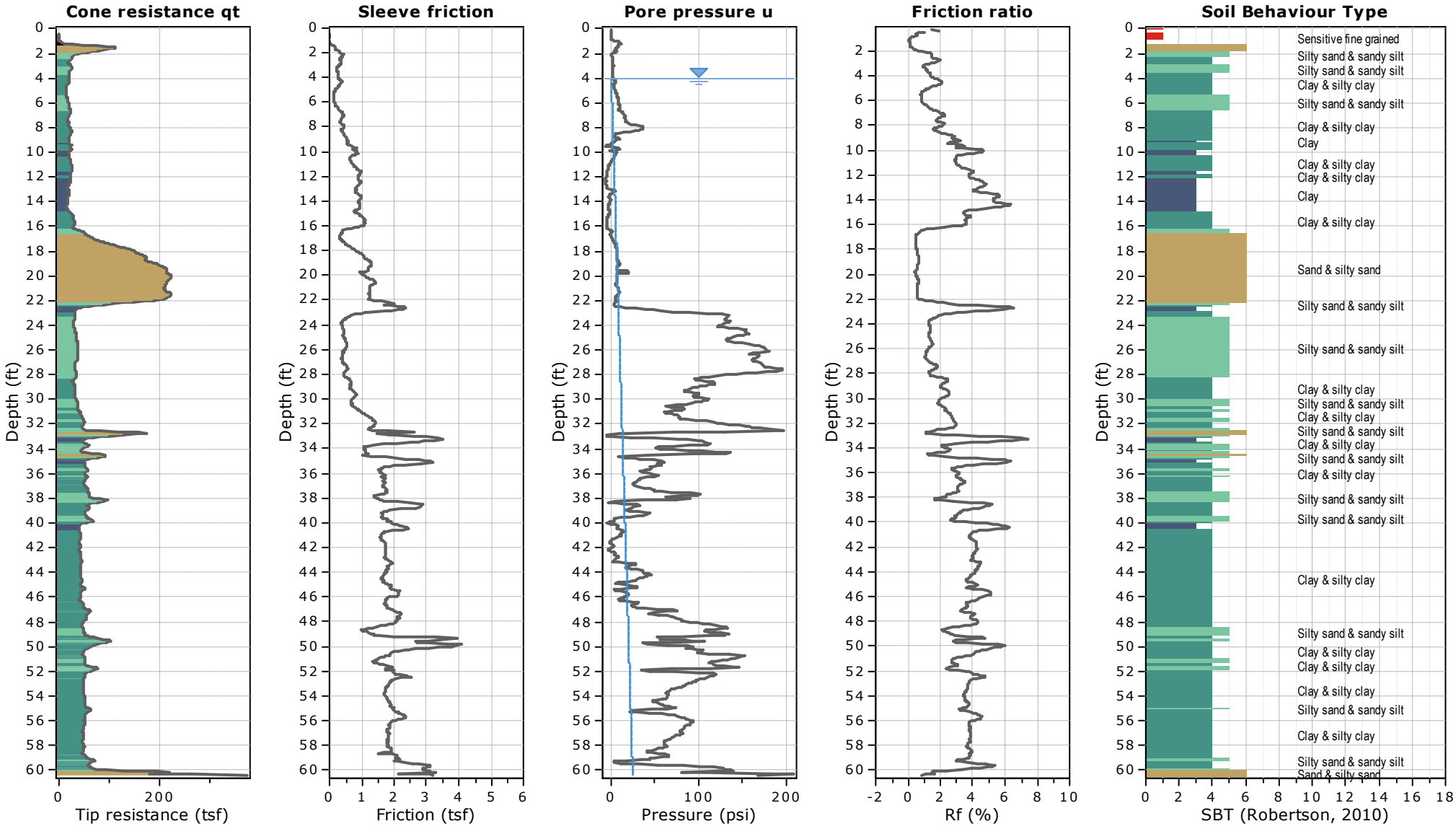
Project: H19026-37TX
Location: UPPR Houston, TX

CPT: 19119232-405CPT-42-19
Total depth: 60.43 ft, Date: 12/3/2019
Cone Type: Gregg
Cone Operator: Cody Cliburn



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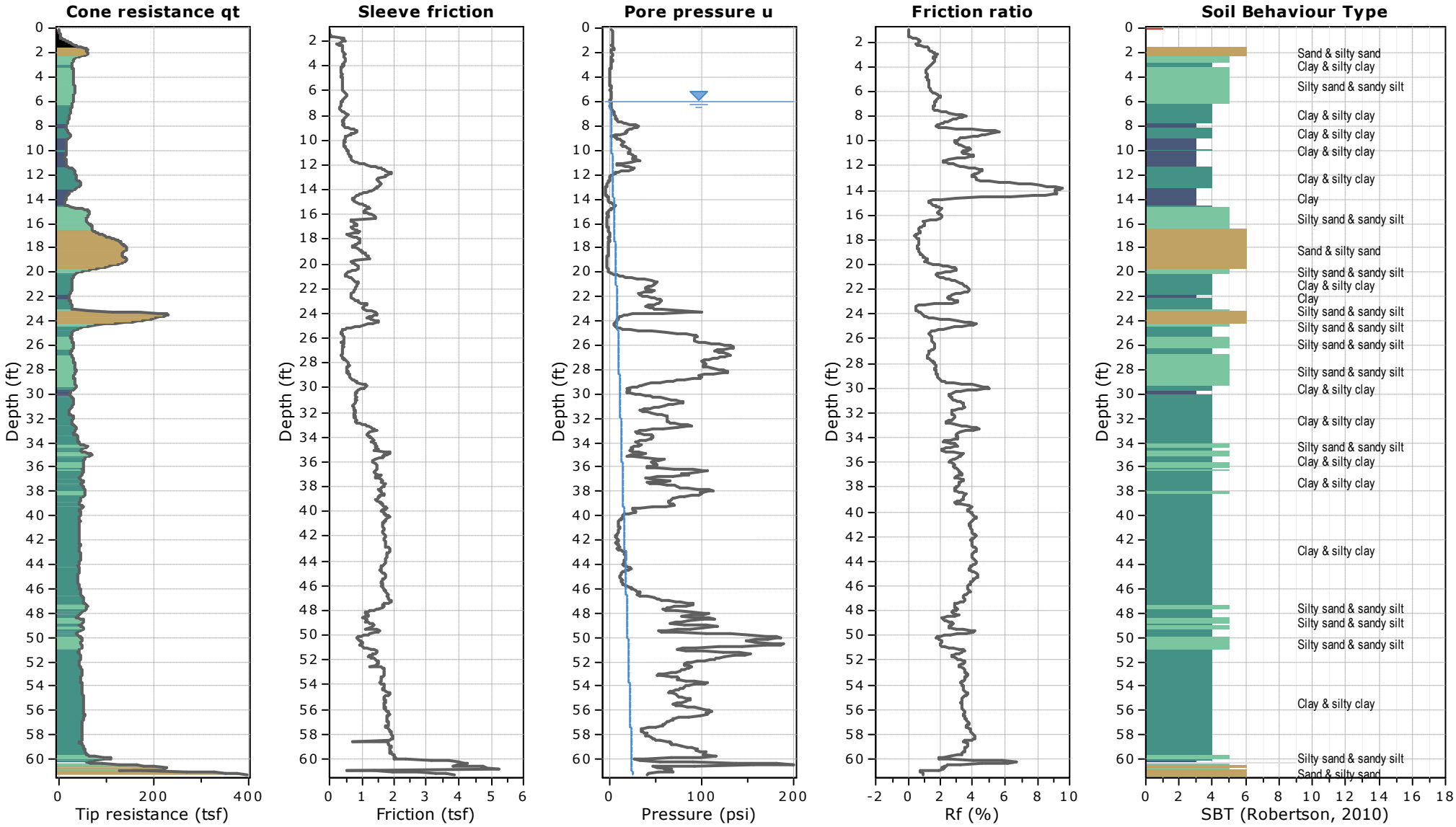
Project: H19026-37TX
Location: UPPR Houston, TX

CPT: 19119232-405CPT-43-19
Total depth: 61.29 ft, Date: 12/3/2019
Cone Type: Gregg
Cone Operator: Cody Cliburn



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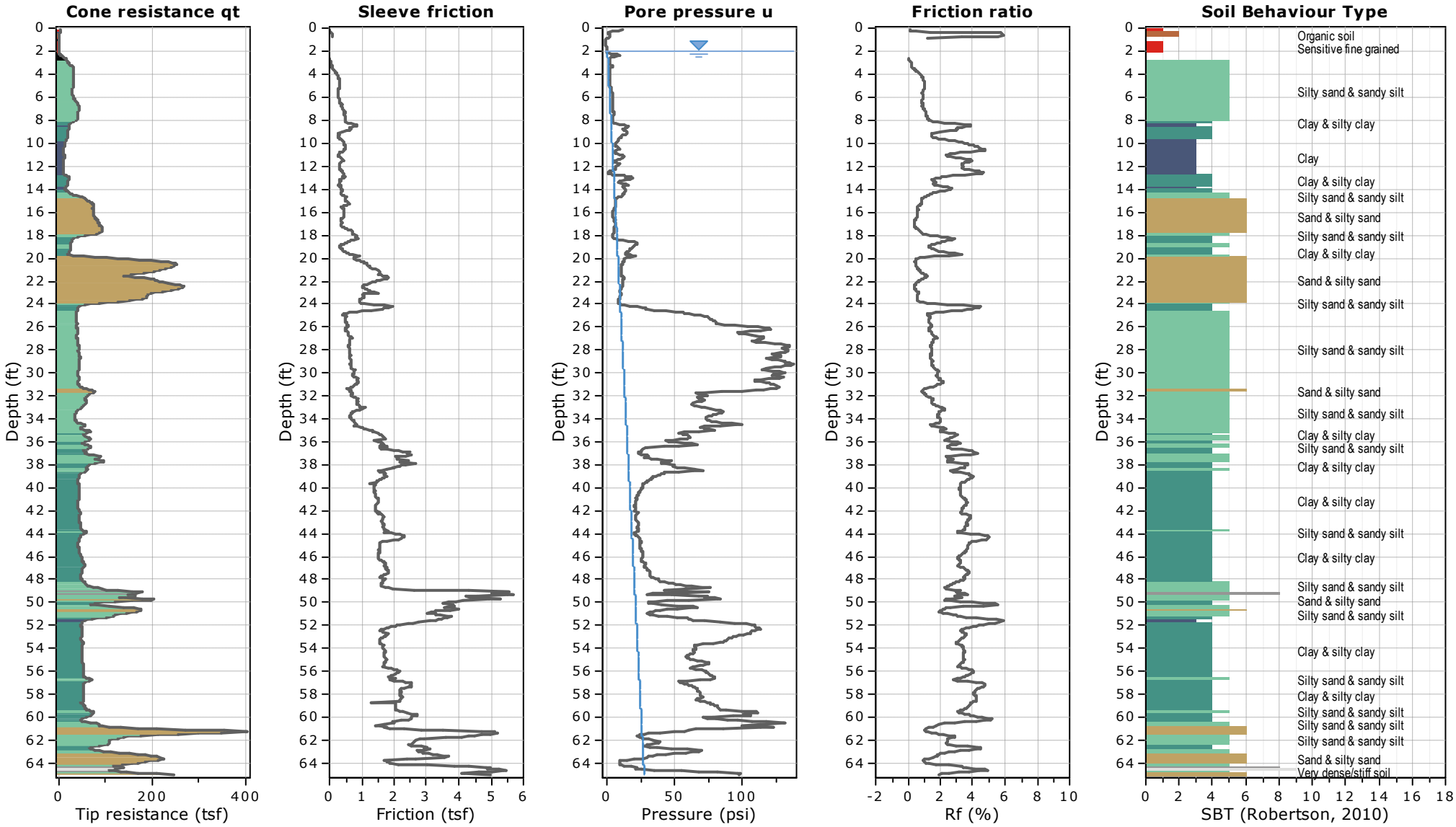
Project: H19026-37TX
Location: UPPR Houston, TX

CPT: 19119232-405CPT-44-19
Total depth: 65.03 ft, Date: 12/3/2019
Cone Type: Gregg
Cone Operator: Cody Cliburn



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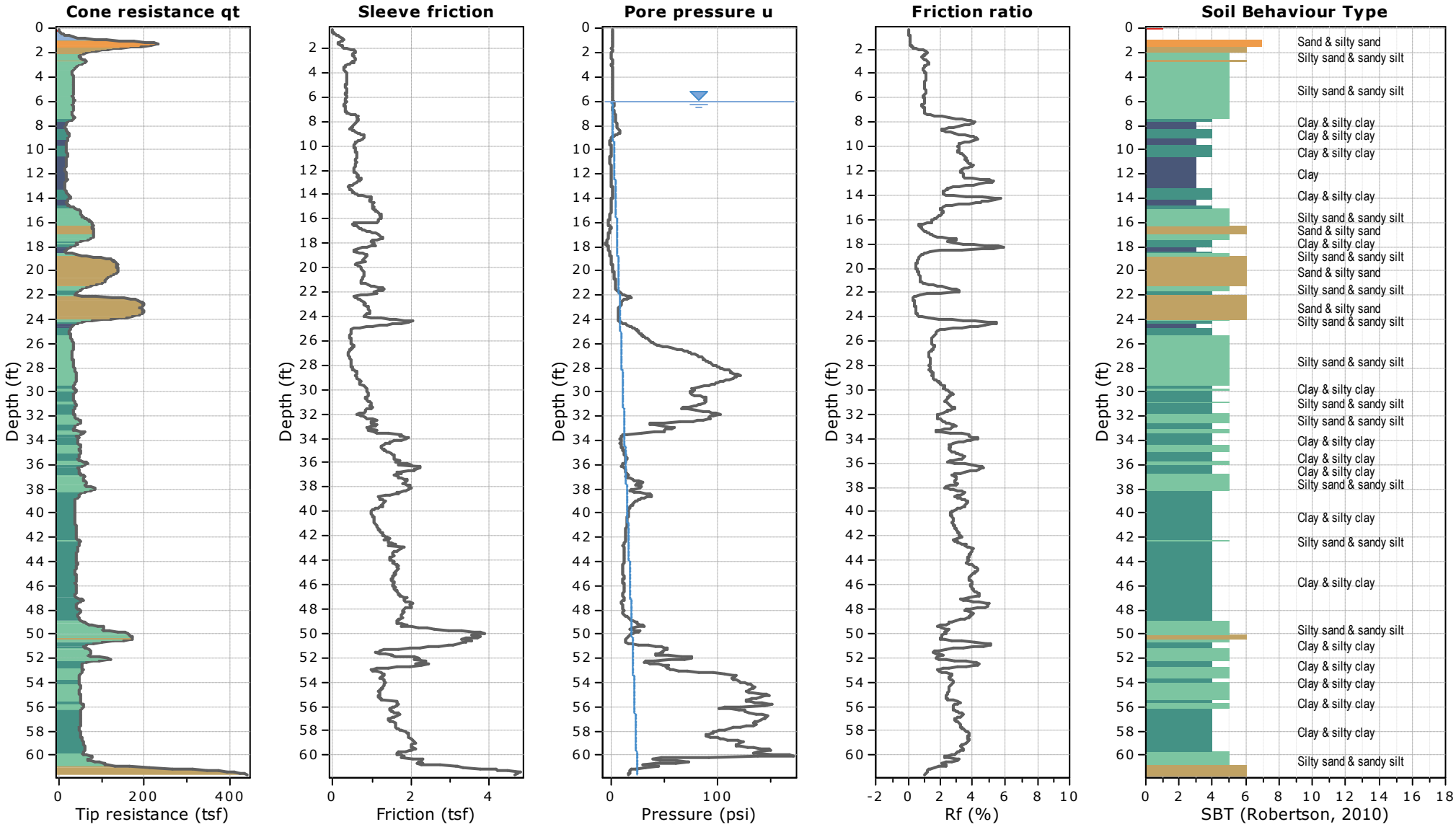
Project: H19026-37TX
Location: UPPR Houston, TX

CPT: 19119232-405CPT-45-19
Total depth: 61.61 ft, Date: 12/7/2019
Cone Type: Gregg
Cone Operator: Cody Cliburn



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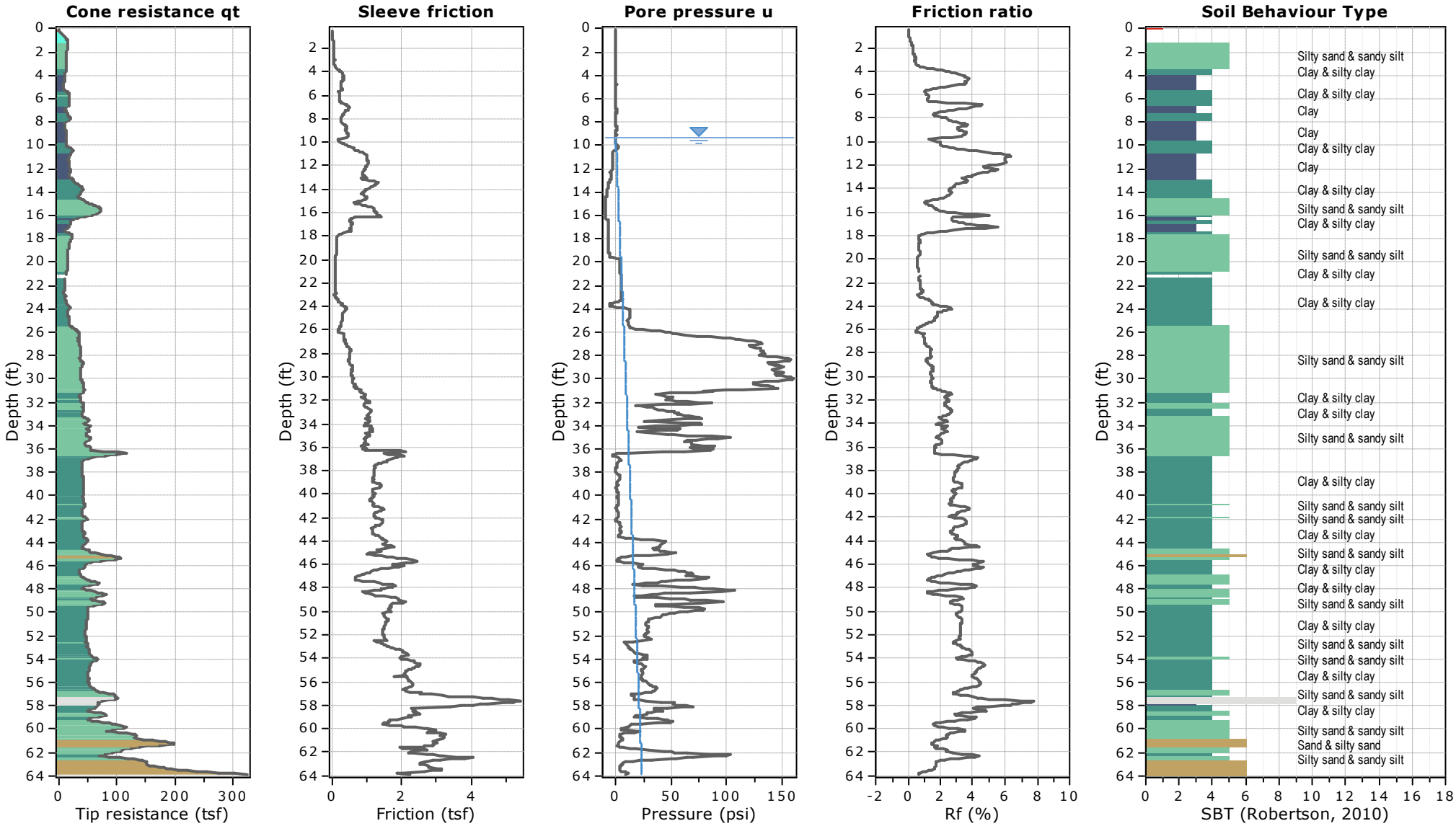
CPT: 19119232-405CPT-46-19
Total depth: 63.91 ft, Date: 12/7/2019
Cone Type: Gregg
Cone Operator: Cody Cliburn

Project: **H19026-37TX**
Location: **UPPR Houston, TX**



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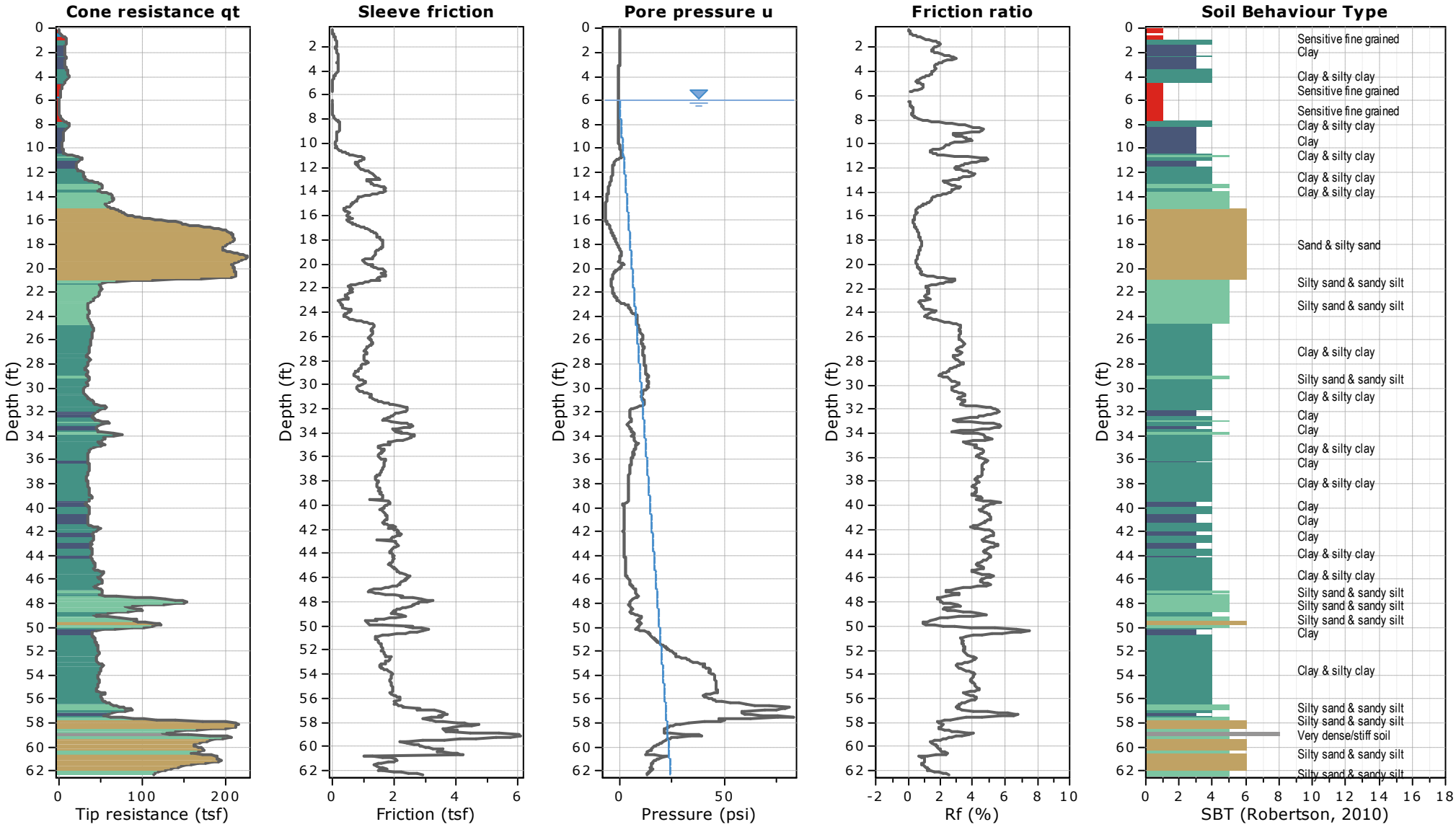
Project: H19026-37TX
Location: UPPR Houston, TX

CPT: 19119232-405CPT-48-19
Total depth: 62.34 ft, Date: 12/8/2019
Cone Type: Gregg
Cone Operator: Cody Cliburn



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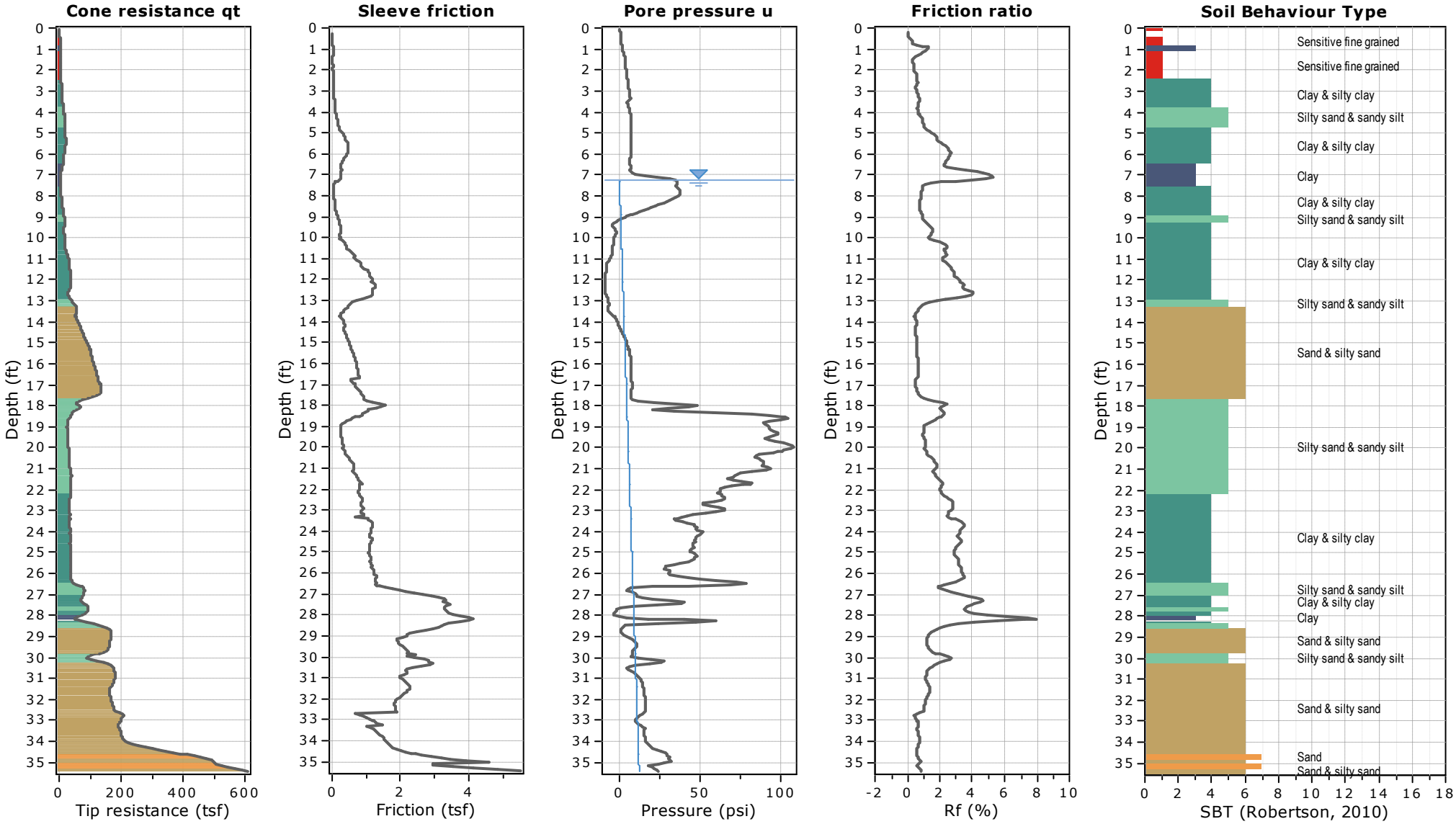
Project: H19026-37TX
Location: UPPR Houston, TX

CPT: 19119232-405CPT-54-20
Total depth: 35.43 ft, Date: 1/21/2020
Cone Type: Gregg
Cone Operator: Cody Cliburn



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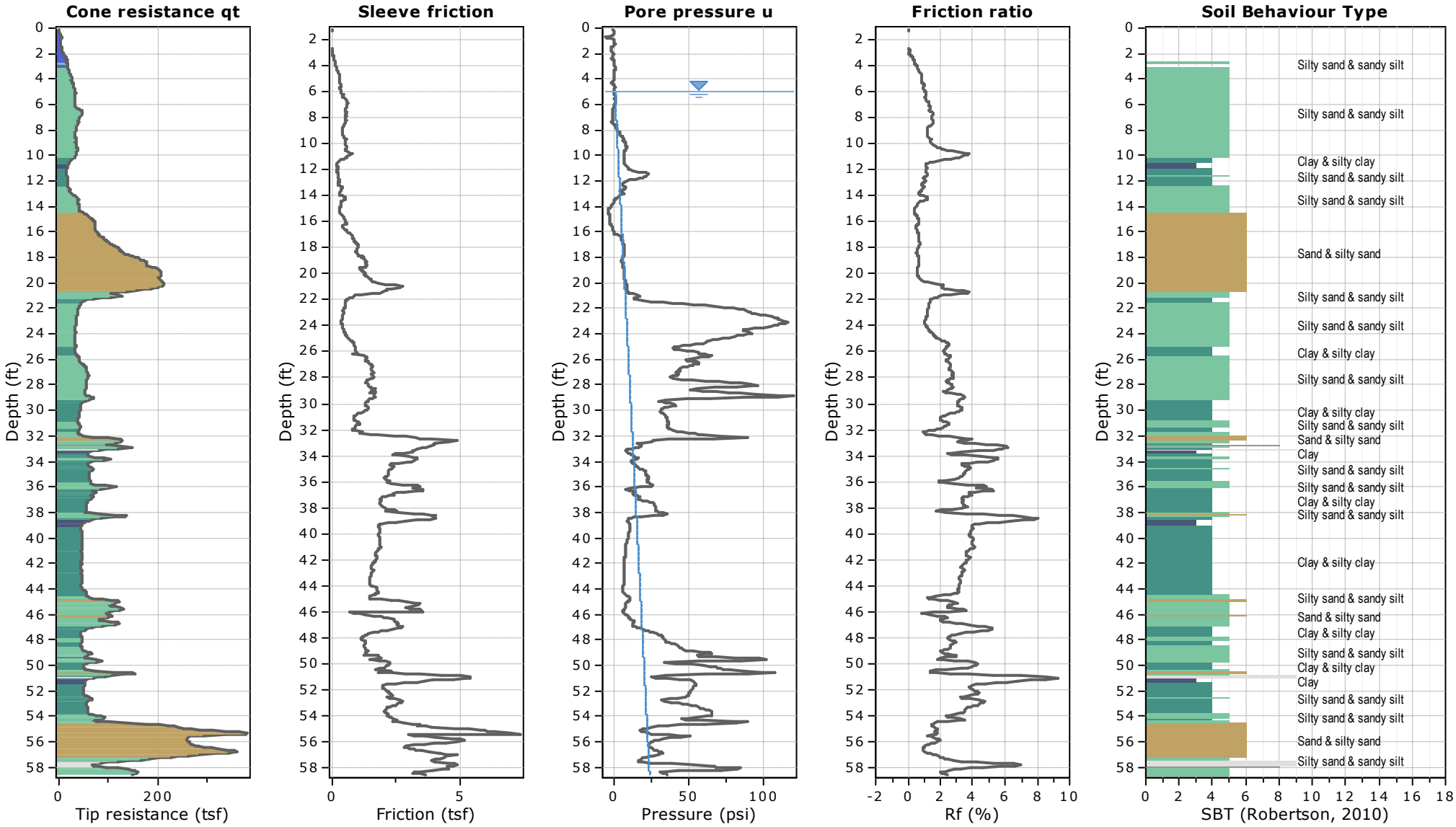
Project: H19026-37TX
Location: UPPR Houston, TX

CPT: 19119232-405CPT-55-19
Total depth: 58.60 ft, Date: 12/8/2019
Cone Type: Gregg
Cone Operator: Cody Cliburn



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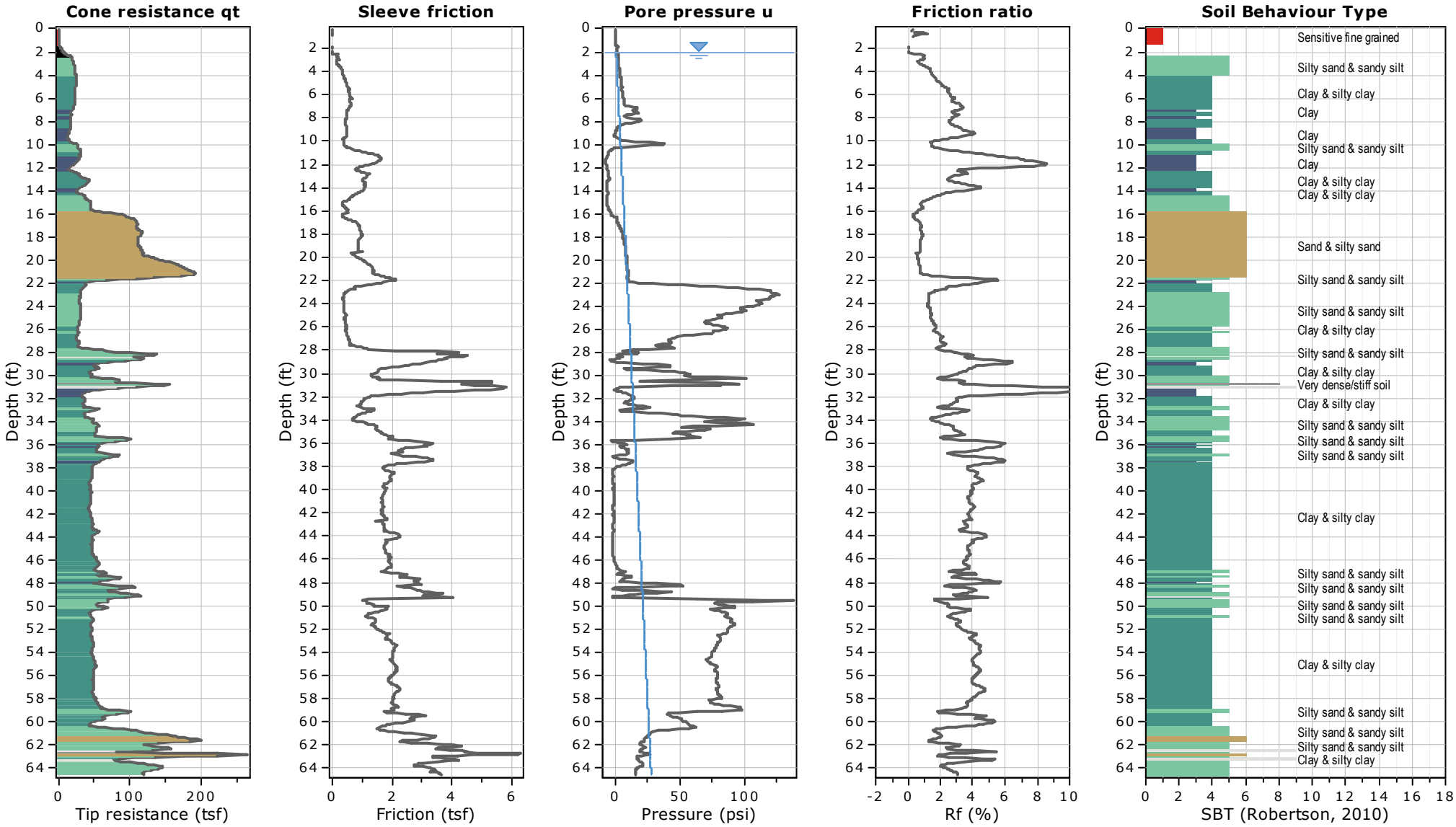
Project: H19026-37TX
Location: UPPR Houston, TX

CPT: 19119232-405CPT-56A-20
Total depth: 64.57 ft, Date: 1/27/2020
Cone Type: Gregg
Cone Operator: Cody Cliburn



ATTACHMENT C

Maximum TarGOST® Signals Summary Tables

Table C-1
Maximum TarGOST Signals - Off-Site (2019-2020)
Houston, TX - Wood Preserving Works

Top Depth (ft bgs)	Bottom Depth (ft bgs)	Off-Site											
		CPT-01	CPT02	CPT03	CPT04	CPT05	CPT06	CPT07	CPT08	CPT09	CPT10	CPT11	CPT23
0	2	11.60	19.33	13.01	24.30	17.88	18.74	17.70	26.65	14.27	4.94	32.39	7.64
2	4	2.69	3.07	5.08	3.00	4.61	5.25	7.31	3.47	3.18	2.77	2.53	2.21
4	6	2.82	2.21	4.31	2.64	2.44	2.67	3.41	1.61	3.76	3.10	2.41	2.24
6	8	2.27	2.37	2.75	2.95	2.22	2.38	2.65	1.92	6.67	2.20	2.46	1.71
8	10	2.40	1.92	3.51	2.14	2.78	2.18	2.52	1.59	1.91	1.83	2.78	1.86
10	12	2.17	1.50	1.97	1.69	2.13	1.34	2.82	1.49	1.86	1.96	2.44	2.31
12	14	1.47	1.49	1.36	1.58	1.66	1.53	2.72	2.11	2.26	1.93	2.74	2.72
14	16	1.43	1.45	1.66	2.24	1.81	1.71	2.75	1.76	4.82	1.69	2.19	2.12
16	18	1.72	1.57	2.02	2.19	1.49	1.56	2.22	1.48	3.19	1.59	1.53	2.90
18	20	1.50	1.45	1.71	1.95	1.57	1.46	1.49	1.83	1.54	1.64	2.04	3.01
20	22	1.63	1.45	1.86	1.72	1.74	1.52	1.66	1.15	1.64	1.63	1.61	3.65
22	24	1.21	2.38	1.76	11.13	1.66	1.83	1.73	1.93	2.13	1.97	1.77	2.10
24	26	1.76	1.80	1.71	51.60	1.78	10.89	1.94	2.63	1.69	3.16	1.72	3.39
26	28	1.95	2.13	1.98	27.38	1.72	121.35	4.68	5.56	2.83	3.66	2.51	1.79
28	30	2.45	2.10	8.90	38.33	3.79	14.43	12.59	12.93	3.24	4.94	3.41	2.85
30	32	2.67	12.00	6.44	33.76	3.43	4.14	8.92	6.24	2.31	2.49	3.39	6.91
32	34	2.07	27.99	7.22	3.02	4.31	5.23	5.20	8.86	2.22	2.46	2.31	5.52
34	36	3.48	22.50	3.31	3.50	2.87	2.12	12.94	29.86	2.87	2.86	2.08	2.16
36	38	2.57	52.13	3.15	3.55	2.56	2.44	16.30	3.82	2.83	2.97	1.68	1.88
38	40	4.91	56.70	2.71	3.89	3.14	2.40	8.85	3.83	3.36	3.50	5.39	2.22
40	42	2.41	13.19	3.41	3.40	3.68	3.17	2.96	3.46	3.09	3.25	2.92	3.00
42	44	1.90	2.99	3.24	4.26	3.36	2.89	3.08	3.40	3.37	2.96	3.23	3.08
44	46	2.54	5.81	3.17	3.25	4.34	3.05	3.06	3.87	3.86	3.23	2.59	3.06
46	48	2.37	5.66	3.16	5.67	4.18	3.35	3.34	4.13	3.69	3.00	2.95	3.66
48	50	3.02	2.91	3.79	4.86	3.09	2.91	2.95	3.26	3.78	3.03	2.85	2.81
50	52	2.35	2.91	3.04	3.73	3.45	3.03	2.88	3.54	3.36	2.69	3.02	3.72
52	54	2.49	2.98	3.16	3.50	3.23	2.62	2.96	3.87	3.53	3.07	3.13	2.15
54	56	2.41	3.09	3.52	3.25	2.56	3.01	2.90	3.12	3.15	--	3.06	--
56	58	1.55	5.49	3.39	3.56	--	2.60	3.01	--	3.21	--	2.82	--
58	60	--	5.08	2.23	3.23	--	2.48	3.00	--	3.95	--	2.38	--
60	62	--	--	--	--	--	--	--	--	3.52	--	--	--
62	64	--	--	--	--	--	--	--	--	--	--	--	--

Notes: Maximum TarGOST responses (RE%) for every two-foot interval are listed in the table above.
TarGOST responses are highlighted on a graded scale: Values over 5% are highlighted lighter yellow to darker yellow as the values increase. At 20%RE and greater, the color scales to orange.
Data from 0 to 10 ft bgs is not evaluated because all locations were hydro-excavated and backfilled with sand and an asphalt patch before data collection.
-- - Total depth reached

Table C-2
Maximum TarGOST Signals - Perimeter of Site (2019-2020)
Houston, TX - Wood Preserving Works

Top Depth (ft bgs)	Bottom Depth (ft bgs)	Perimeter of HWPW Site (Northern)													Perimeter of HWPW Site (Western)						
		CPT56	CPT12	CPT13	CPT14	CPT15	CPT16	CPT17	CPT18	CPT19	CPT19A	CPT20	CPT20A	CPT21	CPT24	CPT24A	CPT25	CPT26	CPT27	CPT27A	CPT54
0	2	16.14	12.96	5.13	2.85	6.19	10.87	5.93	36.07	4.43	6.15	7.20	7.40	12.98	24.12	9.71	5.37	9.13	8.54	5.76	3.31
2	4	13.51	49.20	1.93	2.05	2.69	24.94	3.48	4.77	2.69	3.75	5.28	1.85	6.64	4.06	3.97	4.80	3.10	3.78	3.52	2.25
4	6	13.26	28.67	2.40	1.47	41.97	10.82	3.49	4.66	1.76	11.21	10.51	5.55	3.66	7.36	3.54	5.75	2.41	3.53	4.16	2.35
6	8	2.88	63.20	14.11	1.68	6.34	27.26	2.07	2.02	2.30	7.11	3.11	12.25	7.47	10.58	3.92	3.02	1.66	4.31	3.91	2.05
8	10	1.83	23.16	41.87	1.62	3.32	116.13	9.29	5.53	2.04	8.88	3.18	7.36	8.95	2.17	2.29	2.39	2.03	4.39	2.49	1.68
10	12	2.27	38.52	16.11	1.63	4.29	140.09	86.44	2.84	2.81	2.62	3.43	3.30	4.39	2.26	2.46	2.10	5.93	2.69	2.39	2.00
12	14	1.79	74.88	10.98	1.73	6.37	48.79	67.17	2.17	1.83	4.21	3.94	5.38	24.26	1.95	2.51	3.48	3.23	3.27	2.02	1.73
14	16	15.72	63.72	17.57	1.52	2.00	18.86	26.73	1.70	2.67	2.56	3.41	4.31	18.41	1.58	22.72	2.70	2.09	5.38	2.16	1.25
16	18	30.15	76.10	108.81	1.63	1.64	9.49	8.24	2.57	1.82	3.58	1.81	2.80	14.70	1.60	17.52	1.87	1.60	1.58	1.46	1.28
18	20	1.44	72.20	113.27	2.43	2.01	19.61	1.50	1.17	3.55	3.95	1.36	1.48	48.86	1.27	1.41	2.71	1.83	1.78	1.37	1.76
20	22	1.41	90.59	20.82	1.62	2.05	97.78	1.35	1.21	1.46	1.71	2.08	1.69	28.01	1.67	1.72	2.11	2.17	2.47	1.50	2.16
22	24	1.49	33.23	163.04	2.16	1.94	13.15	1.32	9.71	1.55	1.73	1.30	2.56	1.45	2.27	2.27	2.67	2.57	1.68	2.04	1.94
24	26	1.98	4.45	128.20	3.94	31.05	46.77	1.70	6.95	1.50	1.43	1.50	1.82	1.28	2.02	2.12	2.96	2.03	34.32	1.87	2.09
26	28	1.83	38.95	45.91	23.97	19.95	102.90	5.12	10.80	2.01	1.72	--	1.56	1.60	1.77	1.85	2.82	1.86	29.66	1.90	2.04
28	30	2.04	5.35	75.31	30.36	29.52	65.19	19.05	24.65	1.86	1.75	--	2.20	1.44	1.77	1.31	1.77	1.50	7.48	1.78	1.47
30	32	2.16	7.93	68.57	96.26	33.09	52.61	32.41	50.98	--	1.75	--	2.03	2.49	1.70	1.30	1.65	2.24	7.06	7.36	1.52
32	34	3.17	13.91	4.13	14.53	18.25	13.60	19.93	29.15	--	3.05	--	2.15	3.49	1.53	1.45	1.91	1.84	--	--	1.25
34	36	4.58	4.53	4.25	11.47	14.30	3.26	4.16	26.75	--	24.48	--	1.88	3.24	1.41	1.61	1.97	2.12	--	--	--
36	38	2.20	3.66	2.53	25.16	3.10	2.92	2.71	16.24	--	22.57	--	16.19	2.47	1.40	1.68	1.92	1.80	--	--	--
38	40	2.47	3.63	2.68	6.76	10.88	2.72	2.70	9.05	--	26.08	--	14.74	31.76	--	2.64	2.90	2.40	--	--	--
40	42	2.57	3.81	3.23	2.72	3.17	2.98	2.50	5.49	--	55.05	--	4.17	23.25	--	2.54	3.45	3.25	--	--	--
42	44	2.46	3.34	3.39	2.84	3.18	2.96	2.29	4.75	--	2.41	--	3.37	2.69	--	3.43	2.56	3.36	--	--	--
44	46	2.50	3.14	3.14	2.93	3.06	3.41	1.94	2.59	--	2.98	--	3.36	3.60	--	2.94	3.20	2.79	--	--	--
46	48	2.37	4.51	6.89	4.48	3.75	3.66	3.49	2.83	--	2.57	--	3.04	3.19	--	2.86	2.47	2.43	--	--	--
48	50	2.71	4.65	12.08	4.85	4.86	3.54	2.75	9.67	--	3.37	--	11.88	3.23	--	--	3.12	3.87	--	--	--
50	52	3.00	4.97	3.01	5.02	4.13	3.42	3.36	12.94	--	8.39	--	39.56	24.14	--	--	3.42	2.93	--	--	--
52	54	2.58	3.18	3.22	2.83	3.82	3.30	3.42	3.63	--	3.34	--	16.78	30.58	--	--	1.82	2.51	--	--	--
54	56	2.79	3.23	3.44	3.88	2.97	3.11	2.65	3.26	--	3.60	--	11.92	26.20	--	--	2.33	--	--	--	--
56	58	2.95	3.94	3.06	2.96	3.14	3.39	2.67	2.79	--	3.38	--	5.86	3.05	--	--	--	--	--	--	--
58	60	2.81	3.71	3.05	3.12	3.95	3.05	3.48	2.78	--	1.74	--	4.38	2.46	--	--	--	--	--	--	--
60	62	2.52	5.21	3.34	6.40	3.41	3.11	3.00	2.62	--	--	--	3.70	--	--	--	--	--	--	--	--
62	64	--	--	--	--	--	--	3.41	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes: Maximum TarGOST responses (RE%) for every two-foot interval are listed in the table above.
TarGOST responses are highlighted on a graded scale: Values over 5% are highlighted lighter yellow to darker yellow as the values increase. At 20%RE and greater, the color scales to orange.
Data from 0 to 10 ft bgs is not evaluated because all locations were hydro-excavated and backfilled with sand and an asphalt patch before data collection.
-- - Total depth reached

Table C-3
Maximum TarGOST Signals (2019-2020) - Englewood Intermodal Yard
Houston, TX - Wood Preserving Works

Top Depth (ft bgs)	Bottom Depth (ft bgs)	Englewood Intermodal Yard															
		CPT22	CPT28	CPT29	CPT30	CPT31	CPT32	CPT34	CPT35	CPT36	CPT37	CPT38A	CPT39	CPT40	CPT40A	CPT41	CPT42
0	2	3.91	6.74	3.94	3.32	32.19	2.27	75.62	19.68	22.04	2.91	8.90	1.92	6.39	1.75	1.66	39.40
2	4	1.47	1.77	10.73	4.29	19.64	1.50	20.70	36.93	7.68	2.11	1.33	9.82	1.41	2.10	2.02	8.24
4	6	1.24	2.71	91.32	58.85	72.91	1.30	18.17	30.79	13.21	1.70	0.99	5.85	1.88	1.31	2.35	28.12
6	8	1.60	3.05	84.38	45.40	22.66	1.27	14.62	16.58	3.65	4.02	2.91	3.14	2.08	2.50	3.51	18.57
8	10	1.85	1.60	35.44	48.19	1.80	76.71	13.59	27.75	3.00	--	3.34	1.35	3.16	2.71	1.73	78.07
10	12	1.92	2.46	43.50	58.05	11.26	62.17	4.60	31.58	2.19	--	1.61	2.54	3.46	1.75	1.76	35.01
12	14	2.18	2.19	35.03	47.66	5.64	33.47	8.26	34.86	1.92	--	1.99	1.92	1.95	1.56	1.53	18.05
14	16	1.42	1.72	39.24	25.56	4.80	41.96	2.54	16.86	1.24	--	1.78	1.49	1.82	1.65	1.32	34.50
16	18	1.50	1.75	26.27	48.19	23.63	26.72	1.62	19.65	1.59	--	1.91	1.53	1.30	1.70	1.35	2.49
18	20	1.33	1.28	37.20	114.70	92.81	20.20	2.39	17.50	1.74	--	1.63	1.61	2.03	1.96	1.57	1.54
20	22	1.11	1.65	16.05	76.34	1.94	16.78	1.57	1.36	1.18	--	1.54	1.65	1.76	1.99	1.05	1.44
22	24	1.95	1.76	1.16	15.84	23.02	39.31	1.86	1.63	115.42	--	1.87	11.03	2.14	1.64	1.69	1.65
24	26	1.78	2.13	1.66	5.56	839.68	1297.91	1.76	15.62	872.79	--	1.91	21.99	--	188.74	3.76	2.04
26	28	1.51	2.18	2.19	22.72	811.06	607.07	2.12	39.47	190.53	--	1.69	35.45	--	895.37	32.13	1.95
28	30	1.88	1.97	2.37	54.32	913.73	173.14	3.08	20.75	147.90	--	1.56	29.57	--	340.10	46.52	1.94
30	32	1.56	2.09	1.68	52.15	987.41	85.23	3.12	18.49	139.13	--	5.23	46.25	--	474.97	22.06	1.68
32	34	2.06	2.04	10.65	21.79	690.73	52.46	2.52	26.66	95.60	--	10.80	71.82	--	472.43	8.49	1.72
34	36	2.03	1.75	7.02	48.00	56.54	22.47	6.97	27.82	51.01	--	2.86	9.90	--	657.20	2.36	2.81
36	38	2.60	2.58	9.38	9.24	10.13	67.22	2.65	2.07	11.48	--	3.02	2.63	--	564.63	60.71	2.50
38	40	3.36	3.89	7.91	6.28	14.97	25.12	6.52	2.45	7.72	--	16.30	4.28	--	485.69	2.70	2.58
40	42	3.40	2.13	146.31	34.11	807.10	4.09	4.81	89.74	12.99	--	3.69	405.78	--	89.25	5.35	2.71
42	44	3.45	2.88	325.31	120.46	307.65	3.01	3.22	541.22	3.40	--	2.76	30.88	--	18.34	3.29	3.18
44	46	2.91	2.63	94.35	12.13	48.39	2.35	3.05	926.85	2.93	--	3.20	3.84	--	3.59	3.00	3.15
46	48	4.50	3.58	158.70	3.59	4.71	3.31	2.44	513.16	4.14	--	2.46	3.20	--	4.91	2.65	3.37
48	50	3.96	4.09	12.62	5.61	4.46	2.59	--	395.81	2.66	--	3.07	18.37	--	5.25	2.38	2.52
50	52	3.03	2.92	20.58	71.73	5.46	2.82	--	9.07	3.73	--	3.28	24.65	--	4.51	3.11	2.52
52	54	3.01	2.82	12.70	813.34	3.86	3.12	--	4.72	2.98	--	3.09	3.89	--	3.48	3.06	3.73
54	56	2.87	2.88	2.97	59.59	3.15	2.47	--	2.72	3.00	--	2.69	4.38	--	3.19	2.62	3.46
56	58	3.59	2.28	2.90	6.74	3.11	2.62	--	3.19	6.12	--	2.21	26.04	--	3.42	3.00	2.82
58	60	3.09	2.14	2.78	3.30	2.84	3.03	--	2.82	2.92	--	2.41	3.87	--	4.24	3.00	--
60	62	1.84	3.51	3.15	3.55	2.74	--	--	3.16	3.41	--	2.22	3.04	--	3.28	--	--
62	64	--	2.79	2.50	3.86	3.33	--	--	2.83	3.47	--	--	--	--	--	--	--

Notes: Maximum TarGOST responses (RE%) for every two-foot interval are listed in the table above.
TarGOST responses are highlighted on a graded scale: Values over 5% are highlighted lighter yellow to darker yellow as the values increase. At 20%RE and greater, the color scales to orange.
Data from 0 to 10 ft bgs is not evaluated because all locations were hydro-excavated and backfilled with sand and an asphalt patch before data collection.
-- - Total depth reached

Table C-3
Maximum TarGOST Signals (2019-2020) - Englewood Intermodal Yard
Houston, TX - Wood Preserving Works

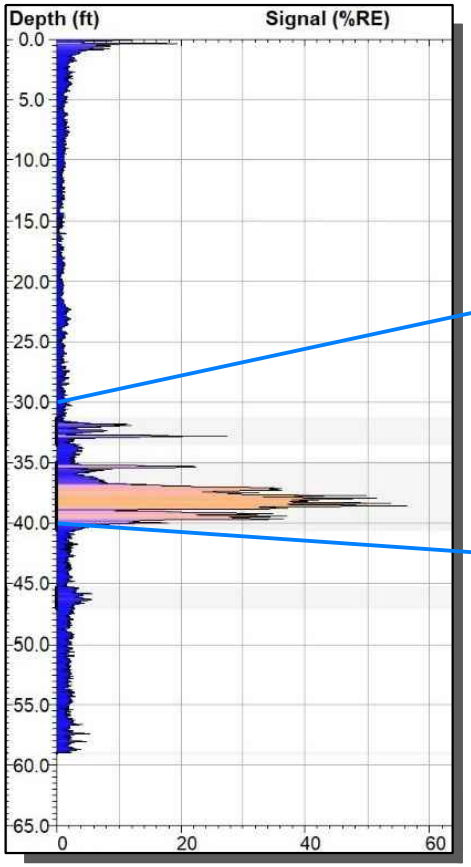
Top Depth (ft bgs)	Bottom Depth (ft bgs)	Englewood Intermodal Yard					
		CPT43	CPT44	CPT45	CPT46	CPT48	CPT55
0	2	33.09	20.51	4.80	3.68	2.04	1.75
2	4	1.60	4.34	1.84	2.01	2.80	1.85
4	6	4.72	2.70	2.11	2.27	1.38	1.41
6	8	3.19	2.93	2.61	1.73	1.71	2.68
8	10	2.98	1.50	1.54	1.96	1.49	2.10
10	12	2.71	1.88	1.24	1.93	2.66	2.12
12	14	1.75	1.84	1.54	1.41	1.73	2.12
14	16	2.44	1.58	1.47	1.34	1.32	1.58
16	18	1.43	1.59	1.37	1.55	1.50	1.32
18	20	1.85	1.95	1.67	1.49	1.36	1.66
20	22	2.51	1.53	1.32	4.07	1.56	1.79
22	24	1.90	1.58	1.41	569.09	1.56	1.92
24	26	1.57	2.03	1.56	431.37	2.26	2.27
26	28	1.90	1.43	1.86	435.29	1.70	1.80
28	30	2.29	1.59	7.72	248.25	2.15	2.08
30	32	2.22	8.30	26.03	281.79	2.20	3.14
32	34	2.38	22.20	20.48	101.87	2.90	2.78
34	36	2.92	3.98	4.03	143.33	2.34	3.05
36	38	3.01	3.12	10.38	35.17	3.03	3.59
38	40	3.48	3.53	72.94	15.00	3.06	3.36
40	42	3.07	3.20	9.07	5.56	2.49	3.36
42	44	5.67	3.67	8.25	3.25	2.99	3.59
44	46	4.28	3.51	2.79	12.27	2.69	3.08
46	48	3.17	3.97	3.45	8.49	3.04	2.65
48	50	3.19	7.44	4.30	16.07	2.29	3.30
50	52	3.36	3.78	3.25	3.26	2.79	4.00
52	54	3.24	3.62	2.97	3.03	3.23	4.14
54	56	3.81	3.44	3.03	3.17	3.89	3.92
56	58	3.31	3.40	2.73	3.16	2.81	--
58	60	2.94	3.48	2.66	3.38	2.65	--
60	62	--	3.36	--	2.64	--	--
62	64	--	2.70	--	--	--	--

Notes: Maximum TarGOST responses (RE%) for every two-foot interval are listed in the table above.
TarGOST responses are highlighted on a graded scale: Values over 5% are highlighted lighter yellow to darker yellow as the values increase. At 20%RE and greater, the color scales to orange.
Data from 0 to 10 ft bgs is not evaluated because all locations were hydro-excavated and backfilled with sand and an asphalt patch before data collection.

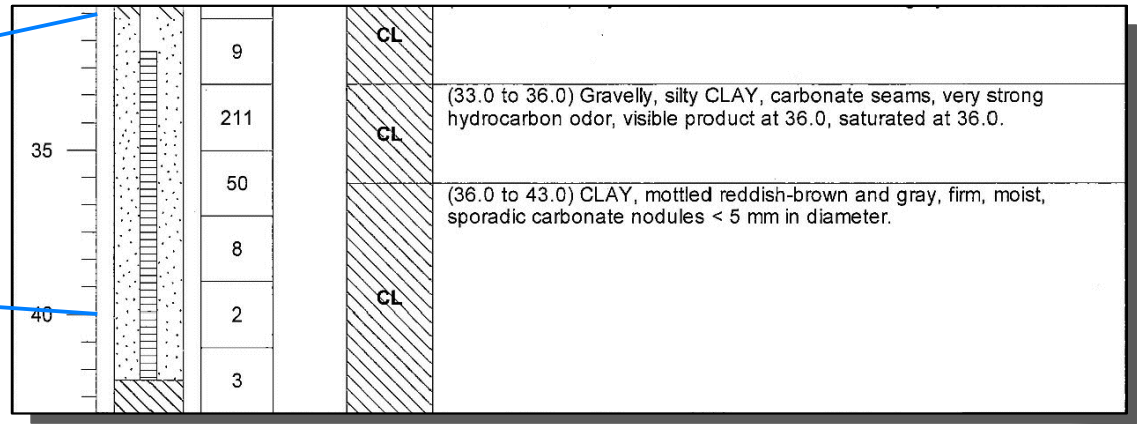
ATTACHMENT D

TarGOST-Monitoring Well Figures and Geologic Cross-Section

CPT-02-20



Boring Log MW-35B

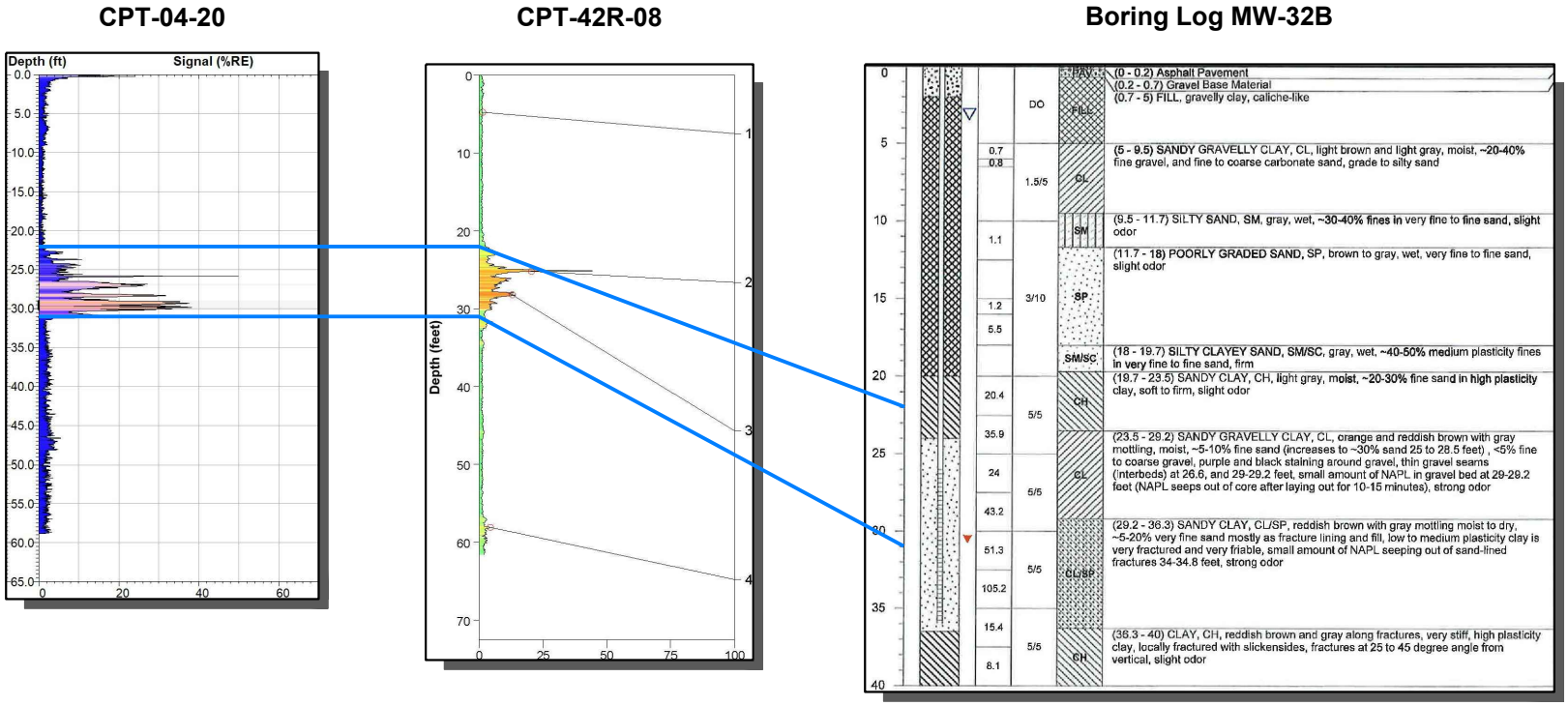


NOTE(S)

STAMPED BORING LOGS WERE PREVIOUSLY PROVIDED IN APPENDIX VI.B OF SECTION VI (GEOLOGY REPORT) OF THE RCRA PERMIT RENEWAL APPLICATION DATED DECEMBER 10, 2014.

GOLDER

FIGURE D-1



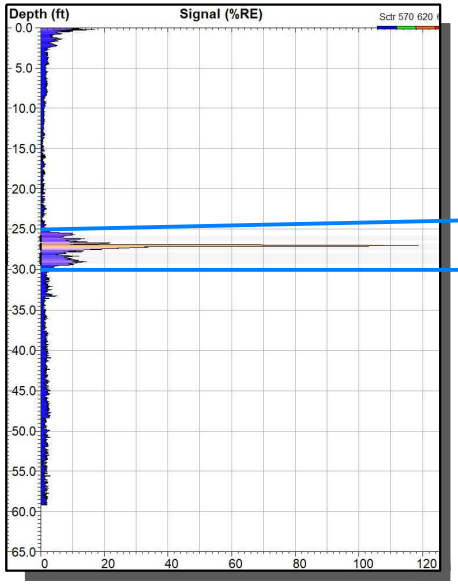
NOTE(S)

STAMPED BORING LOGS WERE PREVIOUSLY PROVIDED IN APPENDIX VI.B OF SECTION VI (GEOLOGY REPORT) OF THE RCRA PERMIT RENEWAL APPLICATION DATED DECEMBER 10, 2014.

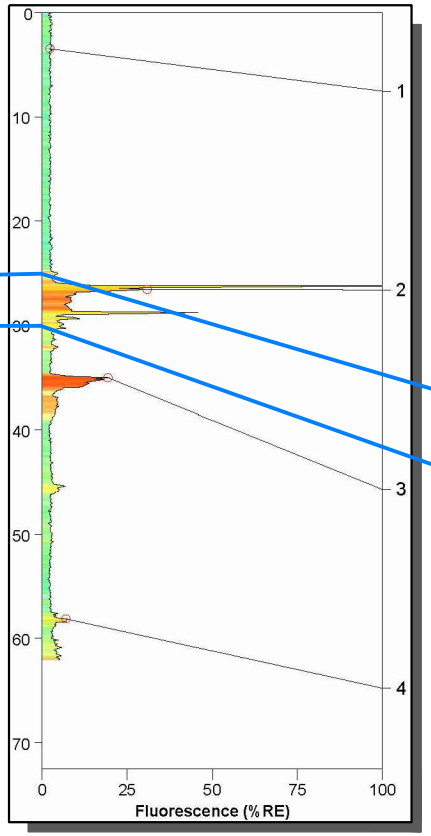
GOLDER

FIGURE D-2

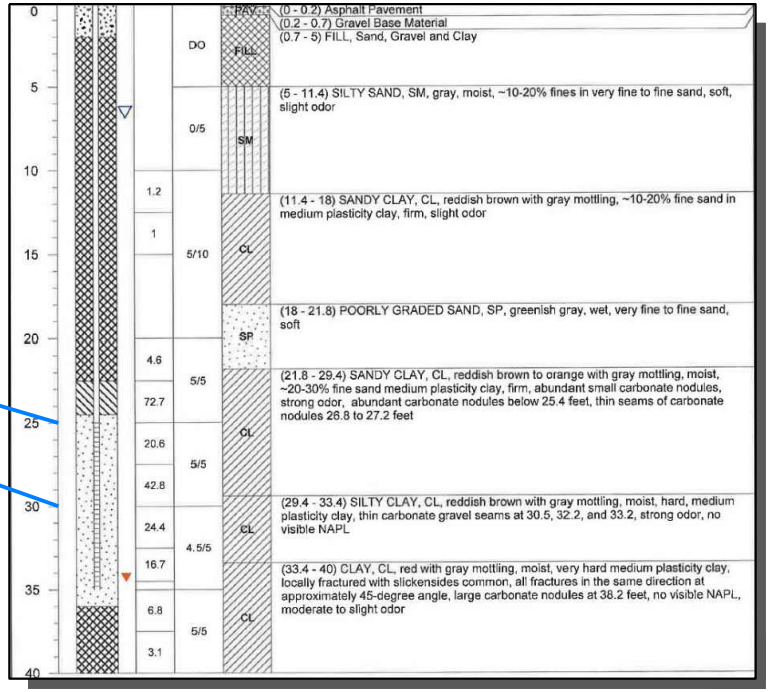
CPT-06-20



CPT-43R-08



Boring Log MW-70B



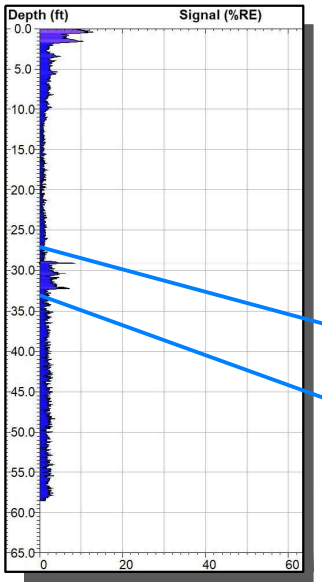
NOTE(S)

STAMPED BORING LOGS WERE PREVIOUSLY PROVIDED IN APPENDIX VI.B OF SECTION VI (GEOLOGY REPORT) OF THE RCRA PERMIT RENEWAL APPLICATION DATED DECEMBER 10, 2014.

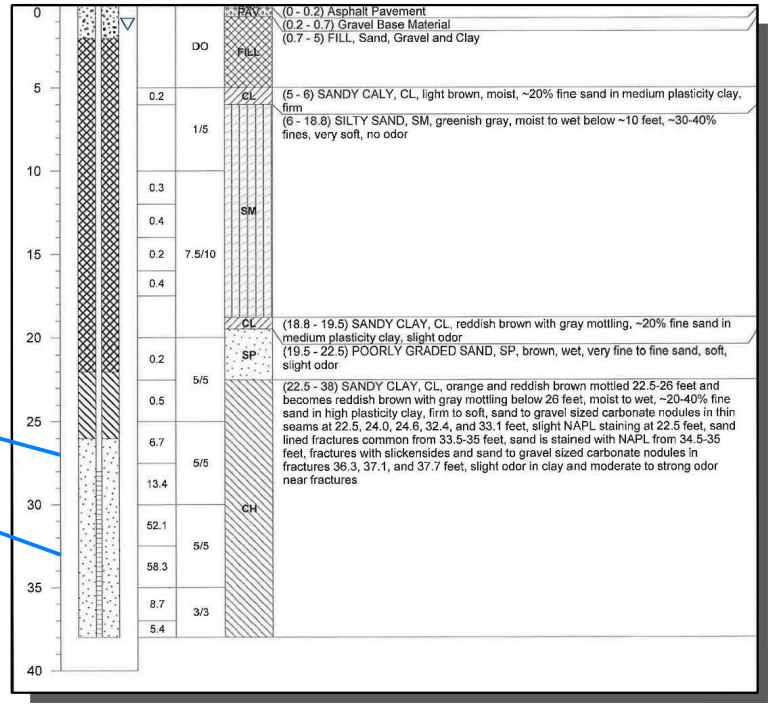
GOLDER

FIGURE D-3

CPT-03-20



Boring Log MW-68B



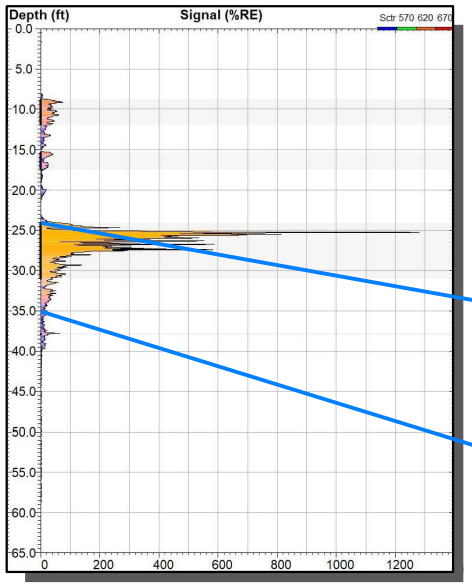
NOTE(S)

STAMPED BORING LOGS WERE PREVIOUSLY PROVIDED IN APPENDIX VI.B OF SECTION VI (GEOLOGY REPORT) OF THE RCRA PERMIT RENEWAL APPLICATION DATED DECEMBER 10, 2014.

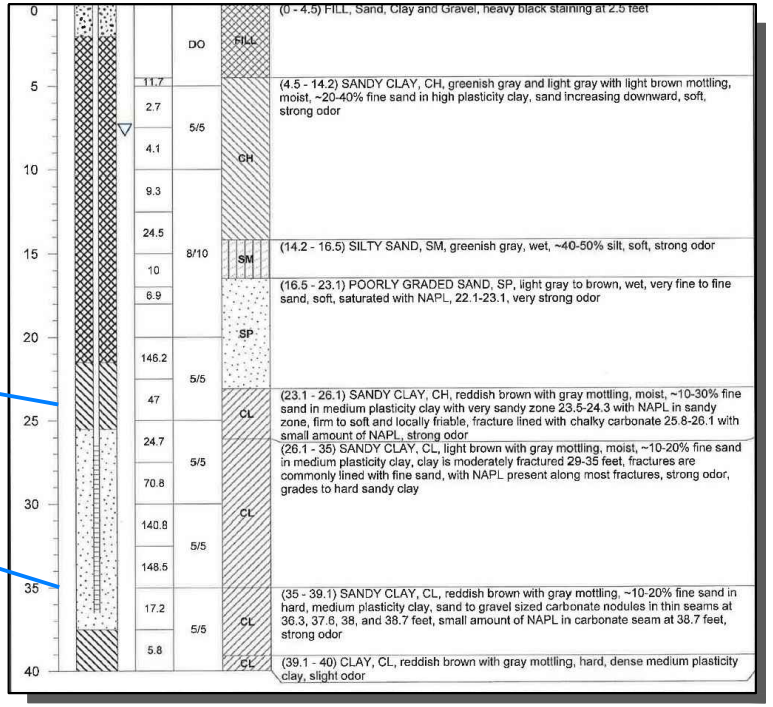
GOLDER

FIGURE D-4

CPT-32-20



Boring Log MW-74B

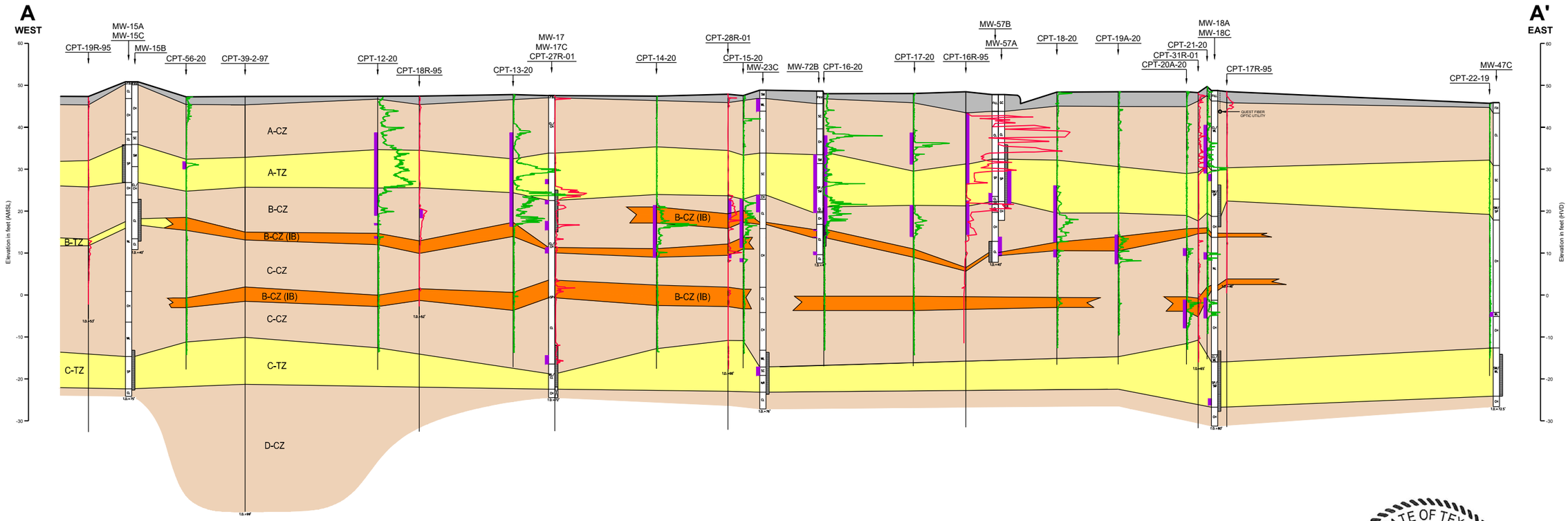


NOTE(S)

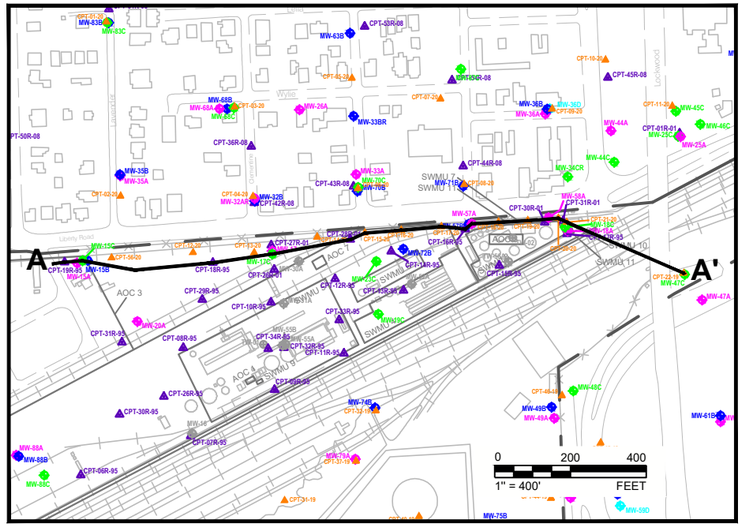
STAMPED BORING LOGS WERE PREVIOUSLY PROVIDED IN APPENDIX VI.B OF SECTION VI (GEOLOGY REPORT) OF THE RCRA PERMIT RENEWAL APPLICATION DATED DECEMBER 10, 2014.

GOLDER

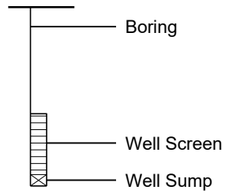
FIGURE D-5



CROSS SECTION LOCATION MAP

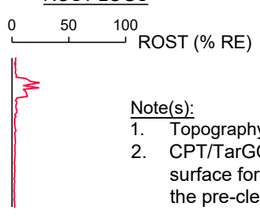


MONITORING WELL CONSTRUCTION



TarGOST LOGS

ROST LOGS



EXPLANATION

Fill: Sand, Silt, Clay & Gravel, wood fragments, bricks, scrap metal

Transmissive Zone (TZ): Sand & Silty Sand

Cohesive Zone (CZ): Clay, Silty Clay & Silt

B-CZ Interbedded Zone B-CZ (IB): Interbedded Carbonate Seams and Calcareous Nodules with Clay & Silty Clay, within the B-CZ

NAPL or Sheen/Staining Noted in Soils for Boring Log, for CPT/ROST Location ROST Result >25% RE, and for CPT/TarGOST Locations TarGOST result >5%RE.[2]

Note(s):

1. Topography is estimated.
2. CPT/TarGOST® locations were pre-cleared to 10 feet below ground surface for utilities and backfilled with sand, TarGOST® data collected in the pre-cleared interval are considered unreliable and are not evaluated.

STATE OF TEXAS
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LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
5/29/20

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
CROSS SECTION A-A'

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-05-28
DESIGNED	RS
PREPARED	RS
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | FIGURE D-6

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\Projects - Round Rock\ 19191919232 - HWPW2020-5 Mxd | File Name: FIG D-6 - Cross Section A-A'.dwg | Last Edited By: adiamond Date: 2020-05-29 Time:12:03:52 PM | Printed By: adiamond Date: 2020-05-29 Time:12:09:53 PM

ATTACHMENT E

TPH Soil Boring Logs

BORING NUMBER DPT-12-20

GOLDER

CLIENT Union Pacific Railroad
PROJECT NAME Houston, TX - Wood Preserving Works
PROJECT NUMBER 19119232
PROJECT LOCATION Houston, TX
DATE STARTED 1/29/20 **COMPLETED** 1/30/20
GROUND ELEVATION 47.5 ft **BOREHOLE SIZE** 2 inches
DRILLING CONTRACTOR Walker Hill Environmental
NORTHING 728782.497 ft
DRILLING METHOD DPT
EASTING 3167242.974 ft
LOGGED BY B Sokora **CHECKED BY** M Hermiston

DEPTH (ft)	SAMPLE INTERVAL	PID (ppm)	SOIL TYPE	GRAPHIC LOG	MATERIAL DESCRIPTION
0		1.5			TOPSOIL
					1.0
		29.8	CH		(CH) CLAY, dark gray, strong hydrocarbon (HC) odor, firm, moist
		62.5			
		48.5			
					4.0
5	4-5	69.8	CH		(CH) Same as Above (SAA) at 4' but brown
		143.8			
					6.0
		60.7	CH		(CH) SAA at 6' but gray with black and brown stains
		77.1			
	8-9	148.6			8.5
10		130.7	SP		(SP) SAND, brown, creosote mixed in, unconsolidated, wet
		74.3			
		137.3			11.5
		117.1	CL		(CL) SANDY CLAY, gray with black and orange stains, firm, moist
		142.2			13.5
15		146.0	SP		(SP) SAND, gray with HC odor, compact, wet
					16.0

Bottom of borehole at 16.0 feet.

REMARKS 0-5' was advanced using a hand auger. Coordinates and elevation are estimates.

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BORING NUMBER DPT-16-20

GOLDER

CLIENT Union Pacific Railroad
PROJECT NAME Houston, TX - Wood Preserving Works
PROJECT NUMBER 19119232
PROJECT LOCATION Houston, TX
DATE STARTED 1/30/20 **COMPLETED** 1/30/20
GROUND ELEVATION 48.4 ft **BOREHOLE SIZE** 2 inches
DRILLING CONTRACTOR Walker Hill Environmental
NORTHING 728841.681 ft
DRILLING METHOD DPT
EASTING 3167792.336 ft
LOGGED BY B Sokora **CHECKED BY** M Hermiston

DEPTH (ft)	SAMPLE INTERVAL	PID (ppm)	SOIL TYPE	GRAPHIC LOG	MATERIAL DESCRIPTION
0		0.1			TOPSOIL
		3.2			
		1.0			
					3.0
		5.6	CH		(CH) CLAY, brown-gray, cobbles, moist, soft-firm
5	4-5	132.7			5.0
		329.3	CH		(CH) Same as Above (SAA) at 5' with some hydrocarbon (HC) odor
		249.1			7.0
		283.3	CH		(CH) SAA at 7' but gray-tan, firm
		230.0			
10		223.2			
		295.9			11.0
		382.7	SP		(SP) SAND, brown-gray with strong HC odor, soft, wet
		294.0			13.0
		329.9	CL		(CL) SANDY CLAY, gray-brown to gray-tan with orange stains, strong HC odor, and some unconsolidated sand pockets, firm, moist
15	14-15	509.5	CL		14.0 (CL) SAA at 14' but gray-tan, firm-soft, moist-wet
					16.0

Bottom of borehole at 16.0 feet.

REMARKS 0-5' was advanced using a hand auger. Coordinates and elevation are estimates.

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BORING NUMBER DPT-21-20

GOLDER

CLIENT Union Pacific Railroad
PROJECT NAME Houston, TX - Wood Preserving Works
PROJECT NUMBER 19119232
PROJECT LOCATION Houston, TX
DATE STARTED 1/30/20 **COMPLETED** 1/30/20
GROUND ELEVATION 50.1 ft **BOREHOLE SIZE** 2 inches
DRILLING CONTRACTOR Walker Hill Environmental
NORTHING 728862.474 ft
DRILLING METHOD DPT
EASTING 3168229.187 ft
LOGGED BY B Sokora **CHECKED BY** M Hermiston

DEPTH (ft)	SAMPLE INTERVAL	PID (ppm)	SOIL TYPE	GRAPHIC LOG	MATERIAL DESCRIPTION
0		0.0			TOPSOIL
				1.0	
		0.1			FILL and cobbles
		0.0		3.0	
	3-4	314.2	CH		(CH) CLAY, dark brown with a lot of cobbles, red stains, and some hydrocarbon (HC) odor, soft, moist
				4.0	
5		201.2	CH		(CH) Same as Above (SAA) at 4' but with black and orange stains only
				5.0	
	5-6	92.6	CH		(CH) SAA at 5' but dark gray with no staining
				6.0	
		23.6	CH		(CH) SAA at 6' but gray, firm-soft
		9.1			
		42.5		9.5	
10		8.8	SP		(SP) SAND, dark gray with HC odor, loose, wet
		5.5		11.0	
		4.5	CH		(CH) CLAY, gray with yellow, white, and dark gray mottling, some HC odor, firm-soft, moist
		6.4		13.0	
		4.4	CH		(CH) SAA at 13' but with loose, wet, dark gray SAND pockets
15		4.4		15.0	
		3.1	CH		(CH) SAA at 15' but without SAND
		2.5		17.0	
		2.8	CH		(CH) SAA at 17' but light gray with orange stains only
		3.3		19.5	
20		4.4	SP	20.0	(SP) SAND, gray with HC odor, compact, wet
					Bottom of borehole at 20.0 feet.

REMARKS 0-5' was advanced using a hand auger. Coordinates and elevation are estimates.

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BORING NUMBER DPT-24-20

GOLDER

CLIENT Union Pacific Railroad
PROJECT NAME Houston, TX - Wood Preserving Works
PROJECT NUMBER 19119232
PROJECT LOCATION Houston, TX
DATE STARTED 1/29/20 **COMPLETED** 1/29/20
GROUND ELEVATION 46.7 ft **BOREHOLE SIZE** 2 inches
DRILLING CONTRACTOR Walker Hill Environmental
NORTHING 728453.79 ft
DRILLING METHOD DPT
EASTING 3165983.937 ft
LOGGED BY B Sokora **CHECKED BY** M Hermiston

DEPTH (ft)	SAMPLE INTERVAL	PID (ppm)	SOIL TYPE	GRAPHIC LOG	MATERIAL DESCRIPTION
0		N/A	GP		(GP) GRAVEL mixture
		N/A		1.0	CONCRETE
		1.8	CH	2.0	(CH) CLAY, gray with some tan mottling, firm, moist
		2.1			
5	4-5	2.2			
		1.9			
		0.5		6.0	(CH) Same as Above (SAA) at 6' but with cobbles
		1.3	CH		
	8-9	2.5			
10		2.3		10.0	
			CL		(CL) SANDY CLAY, gray, soft, wet
				12.0	
			CH		(CH) CLAY with sand, gray with tan mottling, soft, wet
				14.0	
15			SP		(SP) SAND with clay, gray, soft, wet
				16.0	

Bottom of borehole at 16.0 feet.

REMARKS 0-5' was advanced using a hand auger. Coordinates and elevation are estimates.

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BORING NUMBER DPT-26-20

GOLDER

CLIENT Union Pacific Railroad
PROJECT NAME Houston, TX - Wood Preserving Works
PROJECT NUMBER 19119232
PROJECT LOCATION Houston, TX
DATE STARTED 1/28/20 **COMPLETED** 1/29/20
GROUND ELEVATION 46.7 ft **BOREHOLE SIZE** 2 inches
DRILLING CONTRACTOR Walker Hill Environmental
NORTHING 728262.641 ft
DRILLING METHOD DPT
EASTING 3165990.215 ft
LOGGED BY B Sokora **CHECKED BY** M Hermiston

DEPTH (ft)	SAMPLE INTERVAL	PID (ppm)	SOIL TYPE	GRAPHIC LOG	MATERIAL DESCRIPTION
0		3.2	CL		(CL) CLAY with gravel, gray, strong hydrocarbon (HC) odor, firm, wet
		5.0			1.5
	2-3	9.0	CL		(CL) Same as Above (SAA) at 1.5' but no gravel
		7.1			
5		3.6			
		2.9			6.0
		2.1	CL		(CL) SAA at 6' but tan-gray
		2.0			
		4.1			
10		3.1			
		2.2			
		3.3			
		5.4			
	13-14	5.4			14.0
		3.7	CL		(CL) SANDY CLAY, gray, HC odor, compact, wet
15		3.6			16.0

Bottom of borehole at 16.0 feet.

REMARKS 0-5' was advanced using a hand auger. Coordinates and elevation are estimates. Concrete at the surface of this location.

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BORING NUMBER DPT-28-19

GOLDER

CLIENT Union Pacific Railroad
PROJECT NAME Houston, TX - Wood Preserving Works
PROJECT NUMBER 19119232
PROJECT LOCATION Houston, TX
DATE STARTED 2/5/20 **COMPLETED** 2/6/20
GROUND ELEVATION 49.1 ft **BOREHOLE SIZE** 2 inches
DRILLING CONTRACTOR Walker Hill Environmental
NORTHING 727665.619 ft
DRILLING METHOD DPT
EASTING 3166602.207 ft
LOGGED BY B Sokora **CHECKED BY** M Hermiston

DEPTH (ft)	SAMPLE INTERVAL	PID (ppm)	SOIL TYPE	GRAPHIC LOG	MATERIAL DESCRIPTION
0		N/A			CONCRETE
				1.0	
		N/A			FILL
		N/A			
		N/A			
		N/A		4.0	
5	4-5	4.6	CH		(CH) CLAY, gray, some hydrocarbon (HC) odor, firm-soft, moist
				5.0	
		1.5	CH		(CH) Same as Above (SAA) at 5' but brown-gray
		1.6		7.0	
	7-8	2.5	CH		(CH) SAA at 7' but wet
				8.0	
		1.8	CH		(CH) SAA at 8' but light brown-gray with gray mottling, no HC odor
				9.5	
10		1.9	CL		(CL) SANDY CLAY, light gray, firm-soft, wet
				11.0	
			CH		(CH) CLAY, light gray with yellow and black stains, firm, moist
				12.0	

Bottom of borehole at 12.0 feet.

REMARKS 0-5' was advanced using a hand auger. Coordinates and elevation are estimates.

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BORING NUMBER DPT-29-19

GOLDER

CLIENT Union Pacific Railroad
PROJECT NAME Houston, TX - Wood Preserving Works
PROJECT NUMBER 19119232
PROJECT LOCATION Houston, TX
DATE STARTED 2/5/20 **COMPLETED** 2/5/20
GROUND ELEVATION 50.5 ft **BOREHOLE SIZE** 2 inches
DRILLING CONTRACTOR Walker Hill Environmental
NORTHING 727872.88 ft
DRILLING METHOD DPT
EASTING 3167007.498 ft
LOGGED BY B Sokora **CHECKED BY** M Hermiston

DEPTH (ft)	SAMPLE INTERVAL	PID (ppm)	SOILTYPE	GRAPHIC LOG	MATERIAL DESCRIPTION
0		N/A			CONCRETE
		N/A			
		N/A			
		N/A			
					2.5
					FILL
					4.3
5	4-5	20.7	CH		(CH) CLAY, dark gray, hydrocarbon (HC) odor, visible creosote, black stains, wood pieces, and assorted debris, soft, wet (with product)
		116.1			5.5
			CH		(CH) Same as Above (SAA) at 5.5' but brown-gray
		119.8			7.0
		117.5	CH		(CH) SAA at 7' but no visible creosote
					8.0
		78.5	CH		(CH) SAA at 8' but with yellow and black stains, firm
					9.0
10	9-10	184.0	CH		(CH) SAA at 9' but with cobbles
					10.0
		148.7	CH		(CH) Same as Above (SAA) at 10' but firm-hard
					11.0
		127.1	CH		(CH) SAA at 11' but with light gray, orange, and black stains and without cobbles
		78.0			
		62.9			
		55.3			
15					
		24.4			15.5
			CL		16.0 (CL) SANDY CLAY, light gray with HC odor and orange and black stains, firm, moist
					Bottom of borehole at 16.0 feet.

REMARKS 0-5' was advanced using a hand auger. Coordinates and elevation are estimates.

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BORING NUMBER DPT-30-19

GOLDER

CLIENT Union Pacific Railroad
PROJECT NAME Houston, TX - Wood Preserving Works
PROJECT NUMBER 19119232
PROJECT LOCATION Houston, TX
DATE STARTED 2/3/20 **COMPLETED** 2/5/20
GROUND ELEVATION 50.0 ft **BOREHOLE SIZE** 2 inches
DRILLING CONTRACTOR Walker Hill Environmental
NORTHING 728000.981 ft
DRILLING METHOD DPT
EASTING 3167239.561 ft
LOGGED BY B Sokora **CHECKED BY** M Hermiston

DEPTH (ft)	SAMPLE INTERVAL	PID (ppm)	SOIL TYPE	GRAPHIC LOG	MATERIAL DESCRIPTION
0		N/A			FILL-Black
		N/A			
		N/A			
					3.0
		6.5			Same as Above (SAA) at 3' but with hydrocarbon (HC) odor and visible creosote
			CH		(CH) CLAY, brown-black with HC odor and visible creosote, with fill mixed in, firm-soft. moist
5	4-5	33.5			5.0
		52.9	CH		(CH) SAA at 5' but brown-gray, firm, no visible creosote or fill
					6.0
		96.8	CH		(CH) SAA at 6' but with visible creosote
					7.0
		159.6	CH		(CH) SAA at 7' but with no visible creosote
		116.4			9.0
10		67.8	CH		(CH) SAA at 9' but with red stains
					10.0
		88.5	CH		(CH) SAA at 10' but with visible creosote
					11.0
		185.2	CH		(CH) SAA at 11' but with no visible creosote
					12.0
		113.7	CH		(CH) SAA at 12' but light gray with yellow and black stains
	13-14				13.0
		282.7	CH		(CH) SAA at 13' but with cobbles
					14.0
15		197.5	CH		(CH) SAA at 14' but without cobbles
					15.0
			CL		(CL) SANDY CLAY, light gray with yellow and brown stains, firm, moist
					16.0

Bottom of borehole at 16.0 feet.

REMARKS 0-5' was advanced using a hand auger. Coordinates and elevation are estimates Concrete at the surface of this location.

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BORING NUMBER DPT-32-19

GOLDER

CLIENT Union Pacific Railroad
PROJECT NAME Houston, TX - Wood Preserving Works
PROJECT NUMBER 19119232
PROJECT LOCATION Houston, TX
DATE STARTED 2/4/20 **COMPLETED** 2/4/20
GROUND ELEVATION 47.8 ft **BOREHOLE SIZE** 2 inches
DRILLING CONTRACTOR Walker Hill Environmental
NORTHING 728364.623 ft
DRILLING METHOD DPT
EASTING 3167725.451 ft
LOGGED BY B Sokora **CHECKED BY** M Hermiston

DEPTH (ft)	SAMPLE INTERVAL	PID (ppm)	SOIL TYPE	GRAPHIC LOG	MATERIAL DESCRIPTION
0		8.9			FILL
		37			
	2-3	172.7			
		166.4	CH		(CH) CLAY, brown with strong hydrocarbon (HC) odor and visible creosote, firm-soft, moist
					3.5
			CH		4.0 (CH) Same as Above (SAA) at 3.5' but brown-gray
		111.4			(CH) SAA at 4' without visible creosote
5			CH		5.0
		107.2	CH		(CH) SAA at 5' with visible creosote
					6.0
		154.9	CH		(CH) SAA at 6' without visible creosote, with yellow, black, and brown stains
		116.6			
		154.6			9.0
10		166.6	CH		(CH) SAA at 9' but with some visible creosote
		136.1			
	11-12	166.9			12.0
		130.0	CH		(CH) SAA at 12' but with black stains only
					13.5
		128.3	CL		(CL) SANDY CLAY, gray with brown stains and HC odor, firm-soft, moist
					14.5
15		153.9	SP		(SP) SAND, gray with brown stains and HC odor, compact, wet
					16.0

Bottom of borehole at 16.0 feet.

REMARKS 0-5' was advanced using a hand auger. Coordinates and elevation are estimates.

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BORING NUMBER DPT-34-19

GOLDER

CLIENT Union Pacific Railroad
PROJECT NAME Houston, TX - Wood Preserving Works
PROJECT NUMBER 19119232
PROJECT LOCATION Houston, TX
DATE STARTED 12/18/19 **COMPLETED** 12/18/19
GROUND ELEVATION 49.6 ft **BOREHOLE SIZE** 2 inches
DRILLING CONTRACTOR Walker Hill Environmental
NORTHING 727665.981 ft
DRILLING METHOD DPT
EASTING 3166962.592 ft
LOGGED BY S Balke **CHECKED BY** M Hermiston

DEPTH (ft)	SAMPLE INTERVAL	PID (ppm)	SOIL TYPE	GRAPHIC LOG	MATERIAL DESCRIPTION
0		N/A			CONCRETE
		N/A			2.0
		30.1			FILL black with gravel, assorted debris, glass pieces, pockets of NAPL starting at 3', and coarse sand, strong odor
		22.3			
5	4-5	41.5			5.5
	5-6	13.3			6.0 (SM) CLAYEY SILT dark gray with black staining and some sand, very soft, moist
		6.2	SM / CL		(CL) SILTY CLAY dark gray with fine grain sand and black staining, lighter with depth, soft, moist
		4.7			
		6.7			9.0
10		5.4	CL		(CL) Same as Above (SAA) at 9' but with CaCO3 nodules, more fine grain sand and lighter with depth, firm
		5.2			
		5.5			11.5
		5.3	CL		(CL) SAA at 11.5' with iron concentrations and depletions
		5.2			13.0
15		5.3	CL		(CL) SANDY CLAY tan with silt, iron staining, more fine grain sand with depth, soft
		N/A	SM		15.0 (SM) SILTY SAND green-tan fine grain sand with silt, very soft, wet
					16.0

Bottom of borehole at 16.0 feet.

REMARKS 0-5' was advanced using a hand auger. Coordinates and elevation are estimates.

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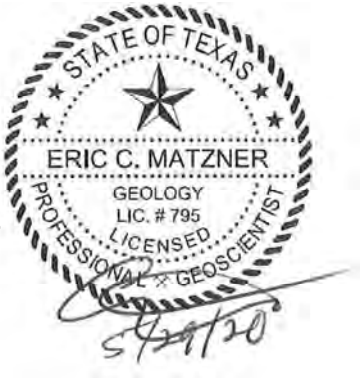
BORING NUMBER DPT-35-19

GOLDER

CLIENT Union Pacific Railroad
PROJECT NAME Houston, TX - Wood Preserving Works
PROJECT NUMBER 19119232
PROJECT LOCATION Houston, TX
DATE STARTED 12/19/19 **COMPLETED** 12/19/19
GROUND ELEVATION 49.8 ft **BOREHOLE SIZE** 2 inches
DRILLING CONTRACTOR Walker Hill Environmental
NORTHING 727851.803 ft
DRILLING METHOD DPT
EASTING 3167301.512 ft
LOGGED BY S Balke **CHECKED BY** M Hermiston

DEPTH (ft)	SAMPLE INTERVAL	PID (ppm)	SOIL TYPE	GRAPHIC LOG	MATERIAL DESCRIPTION
0		N/A			CONCRETE
		N/A			
					2.0
		29.2			FILL black , gravel, sand, glass pieces, assorted debris, strong hydrocarbon (HC) odor, very wet
					3.1
		41.1			3.4 FILL white silty white material, ash, very ~~strong~~ odor - HC and NH4
			CL		(CL) FILL black, gravel, sand, glass pieces, assorted debris strong hydrocarbon (HC) odor, very wet, pockets of silty white material (ash, very strong odor - HC and NH4)
	4-5	150.6			4.5
5			CL		(CL) CLAY dark gray , soft, wet
		67.0			
	6-7	55.0			6.5
			CL		(CL) Same as Above (SAA) at 6.5' but with very strong odor, HC staining
		N/A			8.0
		N/A	CL		(CL) SAA at 8' but lighter with depth, HC staining, very strong odor, CaCO3 nodules
10		N/A			10.0
		N/A	CL		(CL) SAA at 10' but tan
					11.0
		N/A	CL		(CL) SAA at 11' but with iron staining
		N/A			
		N/A			
		N/A			
15		N/A			
					15.5
		N/A			16.0 (SP) SAND green-tan , soft, wet
			SP		Bottom of borehole at 16.0 feet.

REMARKS Extra sample collected of white material from 3.1', 0-5' was advanced using a hand auger; stopped work due to high PID readings near samples cores, logged generally based on sight w/o breaking up most of the sample core; No PID readings past 7'.



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BORING NUMBER DPT-36-19

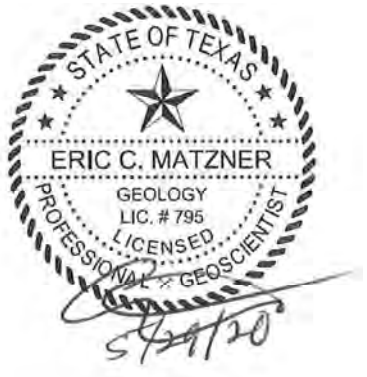
GOLDER

CLIENT Union Pacific Railroad
PROJECT NAME Houston, TX - Wood Preserving Works
PROJECT NUMBER 19119232
PROJECT LOCATION Houston, TX
DATE STARTED 2/5/20 **COMPLETED** 2/5/20
GROUND ELEVATION 49.2 ft **BOREHOLE SIZE** 2 inches
DRILLING CONTRACTOR Walker Hill Environmental
NORTHING 727948.123 ft
DRILLING METHOD DPT
EASTING 3167494.441 ft
LOGGED BY B Sokora **CHECKED BY** M Hermiston

DEPTH (ft)	SAMPLE INTERVAL	PID (ppm)	SOIL TYPE	GRAPHIC LOG	MATERIAL DESCRIPTION
0		N/A N/A N/A			FILL, sand 3.0
	3-4	16.7	CH		(CH) CLAY, dark gray-brown with strong hydrocarbon (HC) odor, firm-soft, moist 4.0
5		15.1	SP		(SP) SAND, light gray with strong HC odor and black stains, compact, moist
	5-6	9.5			6.0
		2.8	CH		(CH) CLAY, dark gray with black stains and HC odor, firm-soft, moist 7.0
		0.0	SP		(SP) SAND, gray-brown, compact, moist 8.0

Bottom of borehole at 8.0 feet.

REMARKS 0-5' was advanced using a hand auger. Coordinates and elevation are estimates. Concrete at the surface of this location.



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BORING NUMBER DPT-37-19

GOLDER

CLIENT Union Pacific Railroad
PROJECT NAME Houston, TX - Wood Preserving Works
PROJECT NUMBER 19119232
PROJECT LOCATION Houston, TX
DATE STARTED 2/4/20 **COMPLETED** 2/6/20
GROUND ELEVATION 49.6 ft **BOREHOLE SIZE** 2 inches
DRILLING CONTRACTOR Walker Hill Environmental
NORTHING 728232.383 ft
DRILLING METHOD DPT
EASTING 3167673.18 ft
LOGGED BY B Sokora **CHECKED BY** M Hermiston

DEPTH (ft)	SAMPLE INTERVAL	PID (ppm)	SOIL TYPE	GRAPHIC LOG	MATERIAL DESCRIPTION
0		N/A			CONCRETE
		N/A			
		N/A			2.0
					FILL SAND
		72.9	CH		3.0
					(CH) CLAY, gray with strong hydrocarbon (HC) odor and visible creosote, soft, wet (from product)
	4-5	137.9	CH		4.0
5					(CH) Same as Above (SAA) at 4' but gray-light tan
		N/A			
		53.0	CH		6.5
	7-8	140.8			(CH) SAA at 6.5' but gray with brown stains without visible creosote, firm, moist
		106.7	CH		8.0
					(CH) SAA at 8' but moist-wet
10		100.9	CH		9.0
					(CH) SAA at 9' but with light gray, brown, and yellow stains, moist
					10.0
					Bottom of borehole at 10.0 feet.

REMARKS 0-5' was advanced using a hand auger, Refusal at 10'. Coordinates and elevation are estimates.

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BORING NUMBER DPT-38-19

GOLDER

CLIENT Union Pacific Railroad
PROJECT NAME Houston, TX - Wood Preserving Works
PROJECT NUMBER 19119232
PROJECT LOCATION Houston, TX
DATE STARTED 12/16/19 **COMPLETED** 12/17/19
GROUND ELEVATION 49.3 ft **BOREHOLE SIZE** 2 inches
DRILLING CONTRACTOR Walker Hill Environmental
NORTHING 727658.424 ft
DRILLING METHOD DPT
EASTING 3167352.576 ft
LOGGED BY S Balke **CHECKED BY** M Hermiston

DEPTH (ft)	SAMPLE INTERVAL	PID (ppm)	SOIL TYPE	GRAPHIC LOG	MATERIAL DESCRIPTION
0		N/A			CONCRETE
		N/A			
		256.8			
2.0					FILL GRAVEL, black, glass pieces, with pockets of NAPL
	3-4	359			
4.5					
5		332.3	CL		(CL) CLAY dark gray to black with pockets of NAPL and fill, soft, moist
	5-6	170.8			
6.0					
		62.4	CL		(CL) Same as Above (SAA) at 6' but dark gray only, lighter with depth, pockets of black staining, no NAPL or fill pockets, iron concentrations and depletions, firm
		94.1			
8.0					
		27.9	CL		(CL) SAA at 8' but light gray, with fine grain sand, more sand with depth, very little black staining, dry
10		21.8			
		12.8			
11.1					
		6.0	CL		(CL) SAA at 11.1' but with many iron concentrations, CACO3 pockets, color change to tan with depth, moist
		2.8			
		1.9			
14.0					
15		1.6	CL		(CL) SANDY CLAY tan with fine grain sand, iron staining, soft, wet
15.5					
		N/A	SP		(SP) SAND tan, fine grained, soft, wet
16.0					Bottom of borehole at 16.0 feet.

REMARKS 0-5' was advanced using a hand auger. Coordinates and elevation are estimates.

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BORING NUMBER DPT-39-19

GOLDER

CLIENT Union Pacific Railroad
PROJECT NAME Houston, TX - Wood Preserving Works
PROJECT NUMBER 19119232
PROJECT LOCATION Houston, TX
DATE STARTED 12/17/19 **COMPLETED** 12/17/19
GROUND ELEVATION 48.7 ft **BOREHOLE SIZE** 2 inches
DRILLING CONTRACTOR Walker Hill Environmental
NORTHING 727822.125 ft
DRILLING METHOD DPT
EASTING 3167602.163 ft
LOGGED BY S Balke **CHECKED BY** M Hermiston

DEPTH (ft)	SAMPLE INTERVAL	PID (ppm)	SOIL TYPE	GRAPHIC LOG	MATERIAL DESCRIPTION
0		N/A			CONCRETE
		N/A			2.0
	2-3	9.8			FILL black with gravel, coarse sand, glass pieces, HC odor
		6.9			4.0
5		4.1	SC		(SC) CLAYEY SAND black to dark gray coarse sand with clay, gravel, black staining, soft, wet
		3.7	CL		5.0 (CL) CLAY dark gray with slight odor and very little medium grain sand, firm, moist
		3.4	CL		6.0 (CL) Same as Above (SAA) at 6' but drier, lighter, and more medium grain sand with depth, iron concentrations and depletions
	7-8	5.8			
		4.9			
10		4.1			
		3.4	CL		10.5 (CL) SANDY CLAY light gray medium grain sand, CaCO3 nodules and pockets, soft, moist, fades to tan color with depth
		2.8			
		3.4			
		3.6			14.0
		N/A	CL		14.5 (CL) SAA at 14' but with iron staining
15					(SC) CLAYEY SAND green-tan fine-medium grain sand with clay, soft, wet
		N/A	SC		15.7
			SM		16.0 (SM) SILTY SAND gray fine-medium grain sand with silt, very soft, wet
					Bottom of borehole at 16.0 feet.

REMARKS 0-5' was advanced using a hand auger. Coordinates and elevation are estimates.

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BORING NUMBER DPT-40-19

GOLDER

CLIENT Union Pacific Railroad
PROJECT NAME Houston, TX - Wood Preserving Works
PROJECT NUMBER 19119232
PROJECT LOCATION Houston, TX
DATE STARTED 12/18/19 **COMPLETED** 12/18/19
GROUND ELEVATION 48.2 ft **BOREHOLE SIZE** 2 inches
DRILLING CONTRACTOR Walker Hill Environmental
NORTHING 728086.085 ft
DRILLING METHOD DPT
EASTING 3167839.252 ft
LOGGED BY S Balke **CHECKED BY** M Hermiston

DEPTH (ft)	SAMPLE INTERVAL	PID (ppm)	SOIL TYPE	GRAPHIC LOG	MATERIAL DESCRIPTION
0		N/A			CONCRETE
					1.3
	1-2	110.2			FILL black with gravel, few cobbles, coarse sand, and assorted debris
					2.0
		20.4			SAND tan with pockets of gray clay and black-stained sand/silty clay, very soft, moist
					3.0
		13.3	SM		(SM) SILTY SAND dark gray fine sand with silt, very soft, moist
					4.0
5		14.3	CL		(CL) SILTY CLAY, with iron concentrations and depletions, black staining, some fine sand, more sand and lighter with depth, soft, moist
		9.1			
		9.0			
	7-8	9.5			
					8.0
		5.5	CL		(CL) CLAY gray with gravel and CaCO3 nodules, firm, dry
					9.5
10		6.3	CL		(CL) SANDY CLAY light gray with iron concentrations and depletions, soft, moist, green color with depth
		5.8			
		6.2			
					12.0
		6.5	CL		12.5 (CL) Same as Above (SAA) at 12' but with CaCO3 nodules and pockets
		5.9	SC		(SC) CLAYEY SAND tan fine grain sand with clay, iron staining, soft, wet
15		6.2			
					14.8
		N/A	SP		(SP) SAND tan-green fine grain sand with CaCO3 pockets, very soft, wet
					16.0

Bottom of borehole at 16.0 feet.

REMARKS 0-5' was advanced using a hand auger. Coordinates and elevation are estimates.

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BORING NUMBER DPT-41-19

GOLDER

CLIENT Union Pacific Railroad
PROJECT NAME Houston, TX - Wood Preserving Works
PROJECT NUMBER 19119232
PROJECT LOCATION Houston, TX
DATE STARTED 2/6/20 **COMPLETED** 2/6/20
GROUND ELEVATION 47.2 ft **BOREHOLE SIZE** 2 inches
DRILLING CONTRACTOR Walker Hill Environmental
NORTHING 728183.236 ft
DRILLING METHOD DPT
EASTING 3168011.343 ft
LOGGED BY B Sokora **CHECKED BY** M Hermiston

DEPTH (ft)	SAMPLE INTERVAL	PID (ppm)	SOIL TYPE	GRAPHIC LOG		MATERIAL DESCRIPTION
0					0.5	FILL SAND
		1.4	CL		1.0	(CL) SANDY CLAY, gray, soft, wet
	1-2	2.2	CL			(CL) Same as Above (SAA) at 1' but dark gray-brown, moist
		1.1			3.0	
		0.7	CL		4.0	(CL) SAA at 3' but gray
5		0.6	CL		5.0	(CL) SAA at 4' but light gray with gray mottling
	5-6	0.8	CH		6.0	(CH) CLAY, gray with cobbles, firm-hard, moist
		0.0	CH			(CH) SAA at 6' but with yellow stains
		0.0			8.0	
		0.0	CH			(CH) SAA at 8' but without cobbles, with yellow and black stains, firm
10		0.0			10.0	
		0.0	CH		11.0	(CH) SAA at 10' but without black stains
		0.0	CH		12.0	(CH) SAA at 11' but with black stains
		0.0	CH		12.5	(CH) SAA at 12' but with gray stains only
		0.0	CL			(CL) SANDY CLAY, light gray, firm, moist
		0.0			14.5	
15		0.0	SP		15.0	(SP) SAND, light-gray, compact, moist
			SP		16.0	(SP) SAA at 15' but wet

Bottom of borehole at 16.0 feet.

REMARKS 0-5' was advanced using a hand auger. Coordinates and elevation are estimates. Concrete at the surface of this location.

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BORING NUMBER DPT-42-19

GOLDER

CLIENT Union Pacific Railroad
PROJECT NAME Houston, TX - Wood Preserving Works
PROJECT NUMBER 19119232
PROJECT LOCATION Houston, TX
DATE STARTED 12/17/19 **COMPLETED** 12/17/19
GROUND ELEVATION 48.7 ft **BOREHOLE SIZE** 2 inches
DRILLING CONTRACTOR Walker Hill Environmental
NORTHING 727876.787 ft
DRILLING METHOD DPT
EASTING 3167935.238 ft
LOGGED BY S Balke **CHECKED BY** M Hermiston

DEPTH (ft)	SAMPLE INTERVAL	PID (ppm)	SOIL TYPE	GRAPHIC LOG	MATERIAL DESCRIPTION
0		N/A			CONCRETE
		11.0			1.5 FILL with gravel, black, few cobbles, coarse sand, trash and rubber pieces
		5.0	CL		2.5 (CL) CLAY with some coarse sand and pockets of varied NAPL starting at 3.8', dark gray, black staining, debris, strong fuel-like odor, firm, dry
		23.5			
5	4-5	84.1			
		171.4			
		251.7			7.0
	7-8	254.0	CL		(CL) Same as Above (SAA) at 7' but with iron concentrations and depletions, no visible product, lighter gray and more medium grain sand with depth
		134.9			8.9
10		111.2	CL		(CL) SAA at 8.9' but with CaCO3 nodules, medium grain sand, few iron concentrations, iron staining, firm, moist, green with depth
		128.0			11.5
		54.0	SC		(SC) CLAYEY SAND, light gray, medium grain sand with clay, strong odor, soft, wet, clay lense at 12', very strong odor starting at 13'
		N/A			
		N/A			14.0
15		N/A	SC		(SC) SAA at 14' but some dark gray staining, more sand with depth, very few iron concentrations
		N/A			15.6
			SP		16.0 (SP) SAND, tan, fine-medium grain sand with silt, very soft, wet
					Bottom of borehole at 16.0 feet.

REMARKS 0-5' was advanced using a hand auger. Coordinates and elevation are estimates.

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BORING NUMBER DPT-43-19

GOLDER

CLIENT Union Pacific Railroad
PROJECT NAME Houston, TX - Wood Preserving Works
PROJECT NUMBER 19119232
PROJECT LOCATION Houston, TX
DATE STARTED 2/4/20 **COMPLETED** 2/4/20
GROUND ELEVATION 47.7 ft **BOREHOLE SIZE** 2 inches
DRILLING CONTRACTOR Walker Hill Environmental
NORTHING 728017.778 ft
DRILLING METHOD DPT
EASTING 3168197.947 ft
LOGGED BY B Sokora **CHECKED BY** M Hermiston

DEPTH (ft)	SAMPLE INTERVAL	PID (ppm)	SOIL TYPE	GRAPHIC LOG	MATERIAL DESCRIPTION
0		N/A			FILL
		N/A			
	2-3	3.4			2.5
		2.7	CH		(CH) CLAY, gray-dark brown, firm-hard, moist
5		2.6			
		3.4			
		5.4			
		5.3			
		6.3			
10		3.4			10.0
		2.0	CH		(CH) Same as Above (SAA) at 10' but light gray
		6.7			11.5
	12-13	6.7	CL		(CL) SANDY CLAY, light-gray with red stains, firm, moist
		6.1			13.5
		6.5	SC		(SC) CLAYEY SAND, tan with red and black stains, compact, moist
15					15.0
			SC		(SC) SAA at 15' but gray
					16.0

Bottom of borehole at 16.0 feet.

REMARKS 0-5' was advanced using a hand auger. Coordinates and elevation are estimates. Concrete at the surface of this location.

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BORING NUMBER DPT-45-19

GOLDER

CLIENT Union Pacific Railroad
PROJECT NAME Houston, TX - Wood Preserving Works
PROJECT NUMBER 19119232
PROJECT LOCATION Houston, TX
DATE STARTED 2/5/20 **COMPLETED** 2/5/20
GROUND ELEVATION 47.8 ft **BOREHOLE SIZE** 2 inches
DRILLING CONTRACTOR Walker Hill Environmental
NORTHING 728235.607 ft
DRILLING METHOD DPT
EASTING 3168166.934 ft
LOGGED BY B Sokora **CHECKED BY** M Hermiston

DEPTH (ft)	SAMPLE INTERVAL	PID (ppm)	SOIL TYPE	GRAPHIC LOG		MATERIAL DESCRIPTION
0		N/A			1.0	FILL SAND
	1-2	1.8	CL		2.0	(CL) SANDY CLAY, dark gray-brown with some hydrocarbon (HC) odor, compact, moist
		0.6	SP		3.0	(SP) SAND, light brown, compact, moist
		0.9	CH		4.0	(CH) CLAY, gray, firm-hard, moist
5		0.7	CH		5.0	(CH) Same as Above (SAA) at 4' but light gray
		1.1	CH		6.5	(CH) SAA at 5' but gray with orange stains, firm, moist
		0.6	CL			(CL) SANDY CLAY, gray with orange stains, firm, moist
		1.1			8.0	
	8-9	2.0	CH		9.0	(CH) CLAY, gray with cobbles and orange stains, hard, dry
10		1.3	CH		9.8	(CH) SAA at 9' but without cobbles, firm-soft, moist
			CL		11.5	(CL) SANDY CLAY, light gray-gray, soft, wet
			CH		12.0	(CH) CLAY, gray with orange stains, firm, moist

Bottom of borehole at 12.0 feet.

REMARKS 0-5' was advanced using a hand auger. Coordinates and elevation are estimates. Concrete at the surface of this location.

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BORING NUMBER DPT-46-20

GOLDER

CLIENT Union Pacific Railroad
PROJECT NAME Houston, TX - Wood Preserving Works
PROJECT NUMBER 19119232
PROJECT LOCATION Houston, TX
DATE STARTED 1/30/20 **COMPLETED** 1/31/20
GROUND ELEVATION 45.8 ft **BOREHOLE SIZE** 2 inches
DRILLING CONTRACTOR Walker Hill Environmental
NORTHING 728404.796 ft
DRILLING METHOD DPT
EASTING 3168216.654 ft
LOGGED BY B Sokora **CHECKED BY** M Hermiston

DEPTH (ft)	SAMPLE INTERVAL	PID (ppm)	SOIL TYPE	GRAPHIC LOG	MATERIAL DESCRIPTION
0		0.0			TOPSOIL
		0.0		1.5	
		0.0	CH		(CH) CLAY, dark brown with organics and cobbles, soft, moist
	2-3	0.9			
		0.0		4.0	
		0.0	CH		(CH) Same as Above (SAA) at 4' but with black stains
5		0.0	CH	5.0	(CH) SAA at 5' but with orange and black stains
		0.0			
		0.0			
		0.0		8.0	
		1.3	CL		(CL) SANDY CLAY, tan-gray with yellow, black, and red stains, firm-soft, moist
10	9-10	2.1		10.0	
			SP		(SP) SAND with clay, gray-brown, compact, wet
				12.0	

Bottom of borehole at 12.0 feet.

REMARKS 0-5' was advanced using a hand auger. Coordinates and elevation are estimates.

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BORING NUMBER DPT-55-19

GOLDER

CLIENT Union Pacific Railroad
PROJECT NAME Houston, TX - Wood Preserving Works
PROJECT NUMBER 19119232
PROJECT LOCATION Houston, TX
DATE STARTED 12/16/19 **COMPLETED** 12/16/19
GROUND ELEVATION 47.6 ft **BOREHOLE SIZE** 2 inches
DRILLING CONTRACTOR Walker Hill Environmental
NORTHING 727247.655 ft
DRILLING METHOD DPT
EASTING 3167274.924 ft
LOGGED BY S Balke **CHECKED BY** M Hermiston

DEPTH (ft)	SAMPLE INTERVAL	PID (ppm)	SOIL TYPE	GRAPHIC LOG	MATERIAL DESCRIPTION
0		N/A			FILL black cobble roadbase
		0.2			1.5
		0.2			FILL black with gravel and cobbles
					3.0
	3-4	0.1	CL		(CL) CLAY dark gray with medium grain sand, with light gray mottling, some gravel, some iron concentrations and deposits, soft, dry
5		0.1			5.0
		0.1	CL		(CL) Same as Above (SAA) at 5' but lighter and more iron with depth
		0.1			6.5
		0.1	CL		(CL) SAA at 6.5' but more medium grain sand with depth
		0.1			
		0.1			
10		0.1			10.0
		0.1	CL		(CL) SANDY CLAY light brown with fine-medium grain sand with CaCO3 pockets, very soft, wet
		0.1			12.0
	12-13	0.1	CL		(CL) SAA at 13.3' but with iron streaking and concentrations, more fine-medium grain sand and lighter with depth
		N/A	SM		13.3
15		N/A			(SM) SILTY SAND light brown fine-medium grain sand with silt, few iron concentrations, very soft, wet, red color at 16'
		N/A			16.0

Bottom of borehole at 16.0 feet.

REMARKS 0-5' was advanced using a hand auger. Coordinates and elevation are estimates.

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BORING NUMBER SB-216

GOLDER

CLIENT Union Pacific Railroad
PROJECT NAME Houston, TX - Wood Preserving Works
PROJECT NUMBER 19119232
PROJECT LOCATION Houston, TX
DATE STARTED 1/29/20 **COMPLETED** 1/29/20
GROUND ELEVATION ft **BOREHOLE SIZE** 2 inches
DRILLING CONTRACTOR Walker Hill Environmental
NORTHING 728208.689 ft
DRILLING METHOD DPT
EASTING 3166795.975 ft
LOGGED BY B Sokora **CHECKED BY** M Hermiston

DEPTH (ft)	SAMPLE INTERVAL	PID (ppm)	SOIL TYPE	GRAPHIC LOG	MATERIAL DESCRIPTION
0		N/A	GP		(GP) GRAVEL mixture with cobbles
		N/A			
		3.2			
	3-4	4.1	CH		(CH) CLAY, gray with hydrocarbon (HC) odor, firm-soft, wet
5		3.2			
		3.8			
		4.1		7.0	
	7-8	17.8	CL	8.0	(CL) SANDY CLAY, gray with cobbles and HC odor, firm, moist
		16.6	CH		(CH) CLAY, gray with orange stains and HC odor, firm, moist
10		14.9			
		7.2			
		6.6			
		3.3			
		3.7			
15		4.4		15.0	
		9.8	SP	16.0	(SP) SAND, gray with HC odor, compact, wet

Bottom of borehole at 16.0 feet.

REMARKS 0-5' was advanced using a hand auger. Coordinates and elevation are estimates.

STATE OF TEXAS
ERIC C. MATZNER
GEOLOGY
LIC. # 795
LICENSED
PROFESSIONAL GEOSCIENTIST
5/29/20

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BORING NUMBER SB-217

GOLDER

CLIENT Union Pacific Railroad
PROJECT NAME Houston, TX - Wood Preserving Works
PROJECT NUMBER 19119232
PROJECT LOCATION Houston, TX
DATE STARTED 1/29/20 **COMPLETED** 1/29/20
GROUND ELEVATION ft **BOREHOLE SIZE** 2 inches
DRILLING CONTRACTOR Walker Hill Environmental
NORTHING 728619.641 ft
DRILLING METHOD DPT
EASTING 3167196.466 ft
LOGGED BY B Sokora **CHECKED BY** M Hermiston

DEPTH (ft)	SAMPLE INTERVAL	PID (ppm)	SOI TYPE	GRAPHIC LOG	MATERIAL DESCRIPTION
0		2.9	GP		(GP) GRAVEL mixture
		2.1			
		3.2	CH		(CH) CLAY, gray with hydrocarbon (HC) odor, firm, wet
	3-4	3.4			
5		1.8			
		2.3			
		2.4			
		1.3			
	8-9	3.2	CH		(CH) Same as Above (SAA) at 8' but with orange stains and without HC odor, moist
10		2.7			
		2.4			
		2.5	CL		(CL) SANDY CLAY, gray, firm, moist
		2.3			
		2.2	CL		(CL) SAA at 13.5' but wet
15					

2.0
8.0
11.0
13.5
16.0

Bottom of borehole at 16.0 feet.

REMARKS 0-5' was advanced using a hand auger. Coordinates and elevation are estimates.

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BORING NUMBER SB-218

GOLDER

CLIENT Union Pacific Railroad
PROJECT NAME Houston, TX - Wood Preserving Works
PROJECT NUMBER 19119232
PROJECT LOCATION Houston, TX
DATE STARTED 12/19/19 **COMPLETED** 12/19/19
GROUND ELEVATION ft **BOREHOLE SIZE** 2 inches
DRILLING CONTRACTOR Walker Hill Environmental
NORTHING 727414.786 ft
DRILLING METHOD DPT
EASTING 3166647.798 ft
LOGGED BY S Balke **CHECKED BY** M Hermiston

DEPTH (ft)	SAMPLE INTERVAL	PID (ppm)	SOILTYPE	GRAPHIC LOG	MATERIAL DESCRIPTION
0		N/A			CONCRETE
		N/A			
					2.3
	2-3	10.8			FILL CLAY with fine grain sand, gravel, black, iron staining, slight hydrocarbon (HC) odor- different from other boring locations
					3.4
		3.5	CL		(CL) CLAY with fine grain sand, dark gray, few iron concentrations and depletions, firm, dry
5		3.7			
					5.5
		3.6	CL		6.1 (CL) Same as Above (SAA) at 5.5' but more fine grain sand and lighter gray with depth, few CaCO3 nodules
		2.8	CL		(CL) SANDY CLAY with fine grain sand, light gray, more moisture with depth, CaCO3 nodules, soft, moist
		3.1			
					8.5
		4.4	CL		(CL) CLAY with fine grain sand, tan, iron-manganese nodules, orange mottling, hard, dry, thin layer of CaCO3 gravels at 11.3'
10		3.5			
		4.1			
		2.5			
		1.4			
					13.3
		4.0	CL		(CL) SANDY CLAY with fine grain sand, tan with iron staining, firm, moist
					14.5
15		4.2	SC		(SC) CLAYEY SAND fine grain sand with clay, tan, silt, pockets of red clay and sand, iron staining, soft, moist
	15-16	4.6			15.9
					16.0 (SM) SILTY SAND, green-gray fine grain sand with silt, very soft, wet
			SM		Bottom of borehole at 16.0 feet.

REMARKS 0-5' was advanced using a hand auger. Coordinates and elevation are estimates.

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BORING NUMBER SB-219

GOLDER

CLIENT Union Pacific Railroad
PROJECT NAME Houston, TX - Wood Preserving Works
PROJECT NUMBER 19119232
PROJECT LOCATION Houston, TX
DATE STARTED 2/3/20 **COMPLETED** 2/4/20
GROUND ELEVATION ft **BOREHOLE SIZE** 2 inches
DRILLING CONTRACTOR Walker Hill Environmental
NORTHING 727520.281 ft
DRILLING METHOD DPT
EASTING 3167398.955 ft
LOGGED BY B Sokora **CHECKED BY** M Hermiston

DEPTH (ft)	SAMPLE INTERVAL	PID (ppm)	SOIL TYPE	GRAPHIC LOG		MATERIAL DESCRIPTION
0						
		3.9			0.8	FILL SAND
		12.3	CH		2.0	(CH) CLAY, dark gray with cobbles, firm-soft, moist
	2-3	16.9	CH		3.0	(CH) Same as Above (SAA) at 2' but dark gray-brown with hydrocarbon (HC) odor
		8.5	CH			(CH) SAA at 3' but dark brown without HC odor
5		8.0			5.0	
		3.6	CH			(CH) SAA at 5' but gray, firm
		4.1			7.0	
	7-8	5.4	CH			(CH) SAA at 7' but with red and black stains
		4.4				
10		4.9				
		4.9				
		4.3				
		4.1				
		3.7			14.0	
15		3.7	CL		15.0	(CL) SANDY CLAY, gray with red and black stains, firm, wet
		N/A	SP		16.0	(SP) SAND, gray with red stains, compact, wet

Bottom of borehole at 16.0 feet.

REMARKS 0-5' was advanced using a hand auger. Coordinates and elevation are estimates.

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BORING NUMBER SB-220

GOLDER

CLIENT Union Pacific Railroad
PROJECT NAME Houston, TX - Wood Preserving Works
PROJECT NUMBER 19119232
PROJECT LOCATION Houston, TX
DATE STARTED 2/3/20 **COMPLETED** 2/4/20
GROUND ELEVATION ft **BOREHOLE SIZE** 2 inches
DRILLING CONTRACTOR Walker Hill Environmental
NORTHING 727527.364 ft
DRILLING METHOD DPT
EASTING 3167928.277 ft
LOGGED BY B Sokora **CHECKED BY** M Hermiston

DEPTH (ft)	SAMPLE INTERVAL	PID (ppm)	SOIL TYPE	GRAPHIC LOG	MATERIAL DESCRIPTION
0		N/A			FILL SAND
		2.6	CH		(CH) CLAY, gray, firm-soft, moist
		3.0			
		3.0	CL		(CL) SANDY CLAY, gray with brown mottling, firm-soft, moist
5	4-5	3.6			
		3.4			
		5.2			
		3.1	CL		(CL) Same as Above (SAA) at 7' but firm-hard
	8-9	6.5			
10			SP		(SP) SAND, gray, unconsolidated, wet
			CL		(CL) SANDY CLAY, gray with tan mottling, firm-soft, moist

1.0
3.5
7.0
9.0
10.0
12.0

Bottom of borehole at 12.0 feet.

REMARKS 0-5' was advanced using a hand auger. Coordinates and elevation are estimates.

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BORING NUMBER SB-221

GOLDER

CLIENT Union Pacific Railroad
PROJECT NAME Houston, TX - Wood Preserving Works
PROJECT NUMBER 19119232
PROJECT LOCATION Houston, TX
DATE STARTED 12/16/19 **COMPLETED** 12/16/19
GROUND ELEVATION ft **BOREHOLE SIZE** 2 inches
DRILLING CONTRACTOR Walker Hill Environmental
NORTHING 727717.173 ft
DRILLING METHOD DPT
EASTING 3168199.247 ft
LOGGED BY S Balke **CHECKED BY** M Hermiston

DEPTH (ft)	SAMPLE INTERVAL	PID (ppm)	SOIL TYPE	GRAPHIC LOG	MATERIAL DESCRIPTION
0		N/A			CONCRETE
		N/A			
					2.0
		0.3	CL		(CL) CLAY with fine-medium grain sand, dark gray, iron staining, concentrations, and depletions, lighter grey with depth, soft, moist
		0.3			
					4.0
5	4-5	0.6	CL		(CL) Same as Above (SAA) at 4' but light gray, very little fine-medium grain sand, with CaCO3 nodules, Mn and iron staining and nodules, some dark grey mottling, firm, dry
		0.3			
		0.7			
					7.0
		0.3	CL		(CL) SAA at 7' but with tan mottling
		0.6			
					8.5
10	9-10	0.7	CL		(CL) SAA at 8.5' but more fine-medium grain sand with depth, red-brown mottling
					10.2
		0.6	CL		(CL) SANDY CLAY with fine-medium grain sand, gray with dark gray mottling, iron concentrations, more sand with depth, very soft, wet
		0.5			
		N/A			
					12.5
		N/A	SC		(SC) CLAYEY SAND, tan fine-medium grain sand with clay, with iron concentrations, soft, wet
					13.5
15		N/A	SP		(SP) SAND tan fine-medium grain sand with iron concentrations, soft, wet
		N/A			
					16.0

Bottom of borehole at 16.0 feet.

REMARKS 0-5' was advanced using a hand auger. Coordinates and elevation are estimates.

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ATTACHMENT F

Data Usability Summary and Analytical Report – TPH Data

Memorandum

March 9, 2020
Revision: April 23, 2020

To:	Eric Matzner	Ref. No.:	11183954-1620
From:	Chris G. Knight/eew/556-NF	Tel:	512-506-8803
CC:	Jesse Orth, Jon Lang; Julie Lidstone		

Subject: **Data Usability Summary**
TPH Assessment
Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works
Houston, Texas
December 2019 – February 2020

1. Scope of Data Usability Study

This document details a Data Usability Summary (DUS) of analytical results for soil samples collected in support of the TPH Assessment at the Union Pacific Railroad (UPRR) / Houston TX-Wood Preserving Works site during December 2019 – February 2020. Samples were submitted to ALS Environmental (ALS), located in Houston, Texas and are reported in data packages HS19120951, HS19121010, HS19121108, HS20011392, HS20011494, HS20020158, and HS20020239. The intended use of the data is to support the TPH Assessment at the site by providing current concentration of chemicals of concern.

Data were reviewed and validated by Chris G. Knight of GHD, in accordance with Title 30 of the Texas Administrative Code Section 350.54 (30 TAC 350.54) as described in the Texas Commission on Environmental Quality (TCEQ) Regulatory Guidance document entitled "Review and Reporting of COC Concentration Data under TRRP", (RG-366/TRRP-13), revised May 2010, herein referred to as "TRRP-13 Guidance". Evaluation of the data was based on information obtained from the chain of custody forms, the finished report forms, method blank data, recovery data from surrogate spikes/laboratory control samples (LCS)/matrix spikes (MS), the laboratory review checklists (LRC), and the laboratory exception reports (ER).

A sample collection and analysis summary is presented in Table 1. This summary provides a cross-reference of field sample identification numbers and location identification. Each sample is assigned a unique field identification number.

The validated sample results are presented in Table 2. A summary of the analytical methodology is presented in Table 3.

2. Laboratory Qualifications

The Laboratory's quality assurance program is consistent with the quality standards outlined in the National Environmental Laboratory Accreditation Program (NELAP). This laboratory was accredited under Texas Certification number # TX104704231 at the time the analysis was performed and the certificate is included in Attachment A.

i) With the exception of total petroleum hydrocarbons (TPH) by method TX1006, ALS is NELAC-accredited under the Texas Laboratory Program for the analytes, matrices, and methods associated with these laboratory data packages. Because TCEQ does not offer accreditation for these analytes, the results are flagged with "n" in the analytical reports. No further action was required.

3. Project Objectives

3.1 Sampling/Analytical QA/QC Objectives

The QA/QC program was designed to identify contamination resulting from the sampling, sample transport and analytical process through the analysis of method blanks. The QA/QC program was designed to evaluate the quality of the resulting data with respect to bias and precision through analysis of LCS and MS analyses.

4. Data Review/Validation Results

4.1 Sample Holding Time and Preservation

Samples were shipped with a chain of custody and the paper work was filled out properly with the following exceptions:

i) HS19120951– Select sample names were changed from the original chain of custody per client direction. No further action was required.

All samples were delivered on ice and stored by the laboratory at the required temperature (0-6°C).

The sample chain of custody documents and the analytical reports were used to determine sample holding times. All samples were prepared and analyzed within the required holding times.

4.2 Sample Containers

Sample containers used were certified pre-cleaned glass containers provided by the laboratory. These containers meet or exceed analyte specifications established in the United States Environmental Protection Agency (USEPA) *Specifications and Guidance for Contaminant-free Sample Containers*.

4.3 Calibrations

According to the LRC, initial calibration and continuing calibration data met the criteria for the selected method.

4.4 Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures. As these were not discrete samples handled in the field, these blanks are not listed on the sample identification cross-reference list found in the data packages.

For this study, laboratory method blanks were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch and results are reported in the laboratory data packages.

The method blank results were non-detect or below the method quantitation limit (MQL), indicating that laboratory contamination was not a factor for this investigation.

4.5 Internal Standard and Surrogate Spike Recoveries

Recoveries of internal standards are addressed in the LRC of the data packages. All internal standard recoveries associated with the compounds of interest were acceptable per the LRC.

In accordance with the methods employed, all samples, blanks, and QC samples analyzed for TPH determinations are spiked with surrogate compounds prior to sample analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project. Each individual surrogate compound is expected to meet the laboratory control limits. According to the TRRP-13 Guidelines, one outlying surrogate is acceptable for methods with multiple surrogate spike compounds as long as the recovery is at least ten percent. Sample analyzed at elevated sample dilutions (five times or greater) were not assessed.

Surrogate recoveries were assessed against laboratory control limits and/or the guidance in TRRP-13. All surrogate recoveries met the above criteria.

4.6 Laboratory Control Sample Analysis

LCS/laboratory control sample duplicate (LCSD) are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects. The relative percent difference (RPD) of the LCS/LCSD recoveries is used to evaluate analytical precision. The recovery ranges established by the laboratory are adopted as the acceptance criteria for the project.

For this study, LCS/LCSD were analyzed at a minimum frequency of one per twenty investigative samples and/or one per analytical batch.

The LCS/LCSD contained all analytes specified in the methods. All LCS recoveries and/or RPDs were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision.

4.7 Matrix Spike Analysis

To evaluate the effects of sample matrices on the preparation process, measurement procedures, and accuracy of a particular analysis, samples are spiked with known concentrations of the analytes of interest

and analyzed as MS/matrix spike duplicate (MSD) samples. The RPD between the MS and MSD is used to assess analytical precision.

MS/MSD analyses were performed as specified in Table 1. The recovery ranges established by the laboratory is adopted as the acceptance criteria for the project.

The MS/MSD samples were spiked with all analytes specified in the methods. All percent recoveries and the RPD value were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision with the following exception:

i) One MS/MSD was reported with elevated recoveries and/or elevated RPDs for TPH determinations due to possible matrix interferences and were not assessed. No further action was required.

The laboratory also performed additional MS/MSD on non-site samples. These cannot be used to assess accuracy and precision for the site samples.

4.8 Field Procedures

Golder Associates, Inc. collected soil samples in accordance with their Standard Operating Procedures (SOP) for sample collection.

4.9 Analyte Reporting

The laboratory reported detected results for each analyte down to the sample detection limit (SDL), which is defined as the method detection limit (MDL) with sample-specific adjustments for dilutions, aliquot size, volumes, etc. Positive analyte detections less than the MQL but greater than the SDL were qualified as estimated (J) in Table 2.

The detectability check standard (DCS) results supported the laboratory MDLs.

All soil results were reported on a dry weight basis.

5. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are usable for the purpose of supporting the TPH Assessment at the site by providing current concentration of chemicals of concern in soil samples without qualification.

Table 1

Sample Collection and Analysis Summary
TPH Assessment
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
December 2019 - February 2020

Work Order	Sample Identification	Location	Matrix	Initial Sample Depth (ft bgs)	Final Sample Depth (ft bgs)	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Analysis/Parameters: TPH (TX1005)	Analysis/Parameters: TPH (TX1006)	Comments
HS19120951	SO-1620-SB221(4-5)-20191216	SB-221	Soil	4	5	12/16/2019	10:55	X		
	SO-1620-SB221(9-10)-20191216	SB-221	Soil	9	10	12/16/2019	11:40	X		
	SO-1620-DPT5519(3-4)-20191216	DPT-55-19	Soil	3	4	12/16/2019	14:25	X		
	SO-1620-DPT5519(12.3-13.3)-20191216	DPT-55-19	Soil	12.3	13.3	12/16/2019	14:58	X		
	SO-1620-DPT3819(3-4)-20191216	DPT-38-19	Soil	3	4	12/16/2019	16:50	X	X	
	SO-1620-DPT3819(5-6)-20191216	DPT-38-19	Soil	5	6	12/16/2019	16:55	X	X	MS/MSD-P
HS19121010	SO-1620-DPT3919(2-3)-20191217	DPT-39-19	Soil	2	3	12/17/2019	12:10	X	X	
	SO-1620-DPT3919(7-8)-20191217	DPT-39-19	Soil	7	8	12/17/2019	12:15	X		
	SO-1620-DPT4219(4-5)-20191217	DPT-42-19	Soil	4	5	12/17/2019	15:05	X	X	
	SO-1620-DPT4219(7-8)-20191217	DPT-42-19	Soil	7	8	12/17/2019	15:10	X	X	
HS19121108	SO-1620-DPT4019(1.25-2)-20191	DPT-40-19	Soil	1.25	2	12/18/2019	10:05	X		
	SO-1620-DPT4019(7-8)-20191218	DPT-40-19	Soil	7	8	12/18/2019	11:45	X		
	SO-1620-DPT3419(4-5)-20191218	DPT-34-19	Soil	4	5	12/18/2019	13:45	X	X	
	SO-1620-DPT3419(5-6)-20191218	DPT-34-19	Soil	5	6	12/18/2019	15:10	X		
	SO-1620-SB218(2.25-3)-20191219	SB-218	Soil	2.25	3	12/19/2019	10:15	X		
	SO-1620-SB218((15-16)-20191219	SB-218	Soil	15	16	12/19/2019	11:25	X		
	SO-1620-DPT3519(4-5)-20191219	DPT-35-19	Soil	4	5	12/19/2019	13:45	X	X	MS/MSD-P
	SO-1620-DPT3519(6-7)-20191219	DPT-35-19	Soil	6	7	12/19/2019	15:50	X		

Table 1

Sample Collection and Analysis Summary
TPH Assessment
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
December 2019 - February 2020

Work Order	Sample Identification	Location	Matrix	Initial Sample Depth (ft bgs)	Final Sample Depth (ft bgs)	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Analysis/Parameters: TPH (TX1005)	Analysis/Parameters: TPH (TX1006)	Comments
HS20011392	SO-1620-CPT2620(2-3)-20200128	DPT-26-20	Soil	2	3	01/28/2020	16:35	X	X	
	SO-1620-CPT2620(13-14)-202001	DPT-26-20	Soil	13	14	01/29/2020	11:35	X		
	SO-1620-CPT2420(4-5)-20200129	DPT-24-20	Soil	4	5	01/29/2020	11:40	X		
	SO-1620-CPT2420(8-9)-20200129	DPT-24-20	Soil	8	9	01/29/2020	11:45	X		
	SO-1620-SB216(3-4)-20200129	SB-216	Soil	3	4	01/29/2020	14:40	X		
	SO-1620-SB216(7-8)-20200129	SB-216	Soil	7	8	01/29/2020	14:45	X		
	SO-1620-SB217(3-4)-20200129	SB-217	Soil	3	4	01/29/2020	16:30	X		
	SO-1620-SB217(8-9)-20200129	SB-217	Soil	8	9	01/29/2020	16:35	X		
HS20011494	SO-1620-CPT1220(4-5)-20200130	DPT-12-20	Soil	4	5	01/30/2020	10:35	X		
	SO-1620-CPT1220(8-9)-20200130	DPT-12-20	Soil	8	9	01/30/2020	10:40	X	X	
	SO-1620-CPT1620(4-5)-20200130	DPT-16-20	Soil	4	5	01/30/2020	13:05	X		
	SO-1620-CPT1620(14-15)-202001	DPT-16-20	Soil	14	15	01/30/2020	13:10	X		
	SO-1620-CPT2120(3-4)-20200130	DPT-21-20	Soil	3	4	01/30/2020	13:20	X	X	
	SO-1620-CPT2120(5-6)-20200130	DPT-21-20	Soil	5	6	01/30/2020	15:25	X		
	SO-1620-CPT4619(2-3)-20200130	DPT-46-19	Soil	2	3	01/30/2020	16:40	X		
	SO-1620-CPT4619(9-10)-20200131	DPT-46-19	Soil	9	10	01/31/2020	09:10	X		
HS20020158	SO-1620-SB22019(4-5)-20200203	SB-220	Soil	4	5	02/03/2020	16:55	X		
	SO-1620-SB21919(2-3)-20200203	SB-219	Soil	2	3	02/03/2020	17:15	X		
	SO-1620-CPT3019(4-5)-20200203	DPT-30-19	Soil	4	5	02/03/2020	17:20	X	X	
	SO-1620-CPT37(7-8)-20200204	DPT-37-19	Soil	7	8	02/04/2020	10:45	X		
	SO-1620-CPT3219(2-3)-20200204	DPT-32-19	Soil	2	3	02/04/2020	13:50	X	X	
	SO-1620-CPT3219(11-12)-202002	DPT-32-19	Soil	11	12	02/04/2020	13:55	X		

Table 1

Sample Collection and Analysis Summary
TPH Assessment
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
December 2019 - February 2020

Work Order	Sample Identification	Location	Matrix	Initial Sample Depth (ft bgs)	Final Sample Depth (ft bgs)	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Analysis/Parameters: TPH (TX1005)	Analysis/Parameters: TPH (TX1006)	Comments
HS20020158	SO-1620-SB220(8-9)-20200204	SB-220	Soil	8	9	02/04/2020	14:10	X		
	SO-1620-SB219(7-8)-20200204	SB-219	Soil	7	8	02/04/2020	15:10	X		
HS20020239	SO-1620-CPT4319(2-3)-20200204	DPT-43-19	Soil	2	3	02/04/2020	17:00	X		
	SO-1620-CPT4319(12-13)-202002	DPT-43-19	Soil	12	13	02/04/2020	17:05	X		
	SO-1620-CPT3019(13-14)-202002	DPT-30-19	Soil	13	14	02/05/2020	10:00	X		
	SO-1620-CPT3619(3-4)-20200205	DPT-36-19	Soil	3	4	02/05/2020	11:35	X		
	SO-1620-CPT3619(5-6)-20200205	DPT-36-19	Soil	5	6	02/05/2020	11:45	X	X	
	SO-1620-CPT2819(7-8)-20200205	DPT-28-19	Soil	7	8	02/05/2020	13:50	X		
	SO-1620-CPT2919(4-5)-20200205	DPT-29-19	Soil	4	5	02/05/2020	16:25	X	X	
	SO-1620-CPT2919(9-10)-20200205	DPT-29-19	Soil	9	10	02/05/2020	16:35	X		
	SO-1620-CPT4519(1-2)-20200205	DPT-45-19	Soil	1	2	02/05/2020	16:45	X		
	SO-1620-CPT4519(8-9)-20200205	DPT-45-19	Soil	8	9	02/05/2020	16:50	X		
	SO-1620-CPT4119(1-2)-20200206	DPT-41-19	Soil	1	2	02/06/2020	10:15	X		
	SO-1620-CPT4119(5-6)-20200206	DPT-41-19	Soil	5	6	02/06/2020	10:20	X		
	SO-1620-CPT2819(4-5)-20200206	DPT-28-19	Soil	4	5	02/06/2020	10:40	X		
	SO-1620-CPT3719(4-5)-20200206	DPT-37-19	Soil	4	5	02/06/2020	11:55	X		

Notes:

ft bgs - Feet Below Ground Surface
TPH - Total Petroleum Hydrocarbons
MS/MSD-P - Matrix Spike/ Matrix Spike Duplicate (partial parameters)

Table 2

Analytical Results Summary
TPH Assessment
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
December 2019 - February 2020

	Location ID:	DPT-12-20	DPT-12-20	DPT-16-20	DPT-16-20
	Sample Name:	SO-1620-CPT1220(4-5)-20200130	SO-1620-CPT1220(8-9)-20200130	SO-1620-CPT1620(4-5)-20200130	SO-1620-CPT1620(14-15)-202001
	Sample Date:	01/30/2020	01/30/2020	01/30/2020	01/30/2020
	Depth:	4-5 ft bgs	8-9 ft bgs	4-5 ft bgs	14-15 ft bgs
Parameters	**Unit**				
Total Petroleum Hydrocarbons					
Aliphatics relative % distribution	%	--	3.2	--	--
Aromatics relative % distribution	%	--	97	--	--
Total Petroleum Hydrocarbons	mg/kg	2710	8070	1160	4520
Total Petroleum Hydrocarbons (>C10-C12) Aliphatic	mg/kg	--	<52	--	--
Total Petroleum Hydrocarbons (>C10-C12) Aromatic	mg/kg	--	1100	--	--
Total Petroleum Hydrocarbons (>C12-C16) Aliphatic	mg/kg	--	110	--	--
Total Petroleum Hydrocarbons (>C12-C16) Aromatic	mg/kg	--	2000	--	--
Total Petroleum Hydrocarbons (>C12-C28)	mg/kg	2300	6500	860	3100
Total Petroleum Hydrocarbons (>C16-C21) Aliphatic	mg/kg	--	58 J	--	--
Total Petroleum Hydrocarbons (>C16-C21) Aromatic	mg/kg	--	2600	--	--
Total Petroleum Hydrocarbons (>C21-C35) Aliphatic	mg/kg	--	52 J	--	--
Total Petroleum Hydrocarbons (>C21-C35) Aromatic	mg/kg	--	990	--	--
Total Petroleum Hydrocarbons (>C28-C35)	mg/kg	120 J	270 J	28 J	120 J
Total Petroleum Hydrocarbons (>C6-C35) Aliphatics & Aromatics	mg/kg	--	6900	--	--
Total Petroleum Hydrocarbons (>C6-C8) Aliphatic	mg/kg	--	<52	--	--
Total Petroleum Hydrocarbons (>C7-C8) Aromatic	mg/kg	--	<52	--	--
Total Petroleum Hydrocarbons (>C8-C10) Aliphatic	mg/kg	--	<52	--	--
Total Petroleum Hydrocarbons (>C8-C10) Aromatic	mg/kg	--	<52	--	--
Total Petroleum Hydrocarbons (C6) Aliphatic	mg/kg	--	<52	--	--
Total Petroleum Hydrocarbons (C6-C12)	mg/kg	290	1300	270	1300
Total Petroleum Hydrocarbons Aliphatic Fraction	mg/kg	--	220	--	--
Total Petroleum Hydrocarbons Aromatic Fraction	mg/kg	--	6690	--	--

Table 2

Analytical Results Summary
TPH Assessment
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
December 2019 - February 2020

	Location ID:	DPT-21-20	DPT-21-20	DPT-24-20	DPT-24-20
	Sample Name:	SO-1620-CPT2120(3-4)-20200130	SO-1620-CPT2120(5-6)-20200130	SO-1620-CPT2420(4-5)-20200129	SO-1620-CPT2420(8-9)-20200129
	Sample Date:	01/30/2020	01/30/2020	01/29/2020	01/29/2020
	Depth:	3-4 ft bgs	5-6 ft bgs	4-5 ft bgs	8-9 ft bgs
Parameters	**Unit**				
Total Petroleum Hydrocarbons					
Aliphatics relative % distribution	%	4.7	--	--	--
Aromatics relative % distribution	%	95	--	--	--
Total Petroleum Hydrocarbons	mg/kg	4200	180	<7.6	<7.0
Total Petroleum Hydrocarbons (>C10-C12) Aliphatic	mg/kg	38 J	--	--	--
Total Petroleum Hydrocarbons (>C10-C12) Aromatic	mg/kg	440	--	--	--
Total Petroleum Hydrocarbons (>C12-C16) Aliphatic	mg/kg	36 J	--	--	--
Total Petroleum Hydrocarbons (>C12-C16) Aromatic	mg/kg	710	--	--	--
Total Petroleum Hydrocarbons (>C12-C28)	mg/kg	2800	110	<10	<9.2
Total Petroleum Hydrocarbons (>C16-C21) Aliphatic	mg/kg	27 J	--	--	--
Total Petroleum Hydrocarbons (>C16-C21) Aromatic	mg/kg	1100	--	--	--
Total Petroleum Hydrocarbons (>C21-C35) Aliphatic	mg/kg	<26	--	--	--
Total Petroleum Hydrocarbons (>C21-C35) Aromatic	mg/kg	390	--	--	--
Total Petroleum Hydrocarbons (>C28-C35)	mg/kg	97 J	22 J	<10	<9.2
Total Petroleum Hydrocarbons (>C6-C35) Aliphatics & Aromatics	mg/kg	3300	--	--	--
Total Petroleum Hydrocarbons (>C6-C8) Aliphatic	mg/kg	<26	--	--	--
Total Petroleum Hydrocarbons (>C7-C8) Aromatic	mg/kg	<26	--	--	--
Total Petroleum Hydrocarbons (>C8-C10) Aliphatic	mg/kg	53	--	--	--
Total Petroleum Hydrocarbons (>C8-C10) Aromatic	mg/kg	470	--	--	--
Total Petroleum Hydrocarbons (C6) Aliphatic	mg/kg	<26	--	--	--
Total Petroleum Hydrocarbons (C6-C12)	mg/kg	1300	48	<7.6	<7.0
Total Petroleum Hydrocarbons Aliphatic Fraction	mg/kg	154	--	--	--
Total Petroleum Hydrocarbons Aromatic Fraction	mg/kg	3110	--	--	--

Table 2

Analytical Results Summary
TPH Assessment
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
December 2019 - February 2020

	Location ID:	DPT-26-20	DPT-26-20	DPT-28-19	DPT-28-19
	Sample Name:	SO-1620-CPT2620(2-3)-20200128	SO-1620-CPT2620(13-14)-202001	SO-1620-CPT2819(7-8)-20200205	SO-1620-CPT2819(4-5)-20200206
	Sample Date:	01/28/2020	01/29/2020	02/05/2020	02/06/2020
	Depth:	2-3 ft bgs	13-14 ft bgs	7-8 ft bgs	4-5 ft bgs
Parameters	**Unit**				
Total Petroleum Hydrocarbons					
Aliphatics relative % distribution	%	0	--	--	--
Aromatics relative % distribution	%	100	--	--	--
Total Petroleum Hydrocarbons	mg/kg	3910	14.0 J	72.0	<7.5
Total Petroleum Hydrocarbons (>C10-C12) Aliphatic	mg/kg	<33	--	--	--
Total Petroleum Hydrocarbons (>C10-C12) Aromatic	mg/kg	76	--	--	--
Total Petroleum Hydrocarbons (>C12-C16) Aliphatic	mg/kg	<33	--	--	--
Total Petroleum Hydrocarbons (>C12-C16) Aromatic	mg/kg	1400	--	--	--
Total Petroleum Hydrocarbons (>C12-C28)	mg/kg	3300	14 J	31 J	<9.8
Total Petroleum Hydrocarbons (>C16-C21) Aliphatic	mg/kg	<33	--	--	--
Total Petroleum Hydrocarbons (>C16-C21) Aromatic	mg/kg	1700	--	--	--
Total Petroleum Hydrocarbons (>C21-C35) Aliphatic	mg/kg	<33	--	--	--
Total Petroleum Hydrocarbons (>C21-C35) Aromatic	mg/kg	550	--	--	--
Total Petroleum Hydrocarbons (>C28-C35)	mg/kg	440	<11	41 J	<9.8
Total Petroleum Hydrocarbons (>C6-C35) Aliphatics & Aromatics	mg/kg	3700	--	--	--
Total Petroleum Hydrocarbons (>C6-C8) Aliphatic	mg/kg	<33	--	--	--
Total Petroleum Hydrocarbons (>C7-C8) Aromatic	mg/kg	<33	--	--	--
Total Petroleum Hydrocarbons (>C8-C10) Aliphatic	mg/kg	<33	--	--	--
Total Petroleum Hydrocarbons (>C8-C10) Aromatic	mg/kg	<33	--	--	--
Total Petroleum Hydrocarbons (C6) Aliphatic	mg/kg	<33	--	--	--
Total Petroleum Hydrocarbons (C6-C12)	mg/kg	170 J	<8.2	<7.6	<7.5
Total Petroleum Hydrocarbons Aliphatic Fraction	mg/kg	<33	--	--	--
Total Petroleum Hydrocarbons Aromatic Fraction	mg/kg	3730	--	--	--

Table 2

Analytical Results Summary
TPH Assessment
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
December 2019 - February 2020

	Location ID:	DPT-29-19	DPT-29-19	DPT-30-19	DPT-30-19
	Sample Name:	SO-1620-CPT2919(4-5)-20200205	SO-1620-CPT2919(9-10)-20200205	SO-1620-CPT3019(4-5)-20200203	SO-1620-CPT3019(13-14)-202002
	Sample Date:	02/05/2020	02/05/2020	02/03/2020	02/05/2020
	Depth:	4-5 ft bgs	9-10 ft bgs	4-5 ft bgs	13-14 ft bgs
Parameters	**Unit**				
Total Petroleum Hydrocarbons					
Aliphatics relative % distribution	%	7.8	--	28	--
Aromatics relative % distribution	%	92	--	72	--
Total Petroleum Hydrocarbons	mg/kg	4220	1530	12500	4720
Total Petroleum Hydrocarbons (>C10-C12) Aliphatic	mg/kg	<26	--	<80	--
Total Petroleum Hydrocarbons (>C10-C12) Aromatic	mg/kg	420	--	150 J	--
Total Petroleum Hydrocarbons (>C12-C16) Aliphatic	mg/kg	<26	--	200	--
Total Petroleum Hydrocarbons (>C12-C16) Aromatic	mg/kg	1100	--	590	--
Total Petroleum Hydrocarbons (>C12-C28)	mg/kg	2600	1100	9300	3400
Total Petroleum Hydrocarbons (>C16-C21) Aliphatic	mg/kg	<26	--	520	--
Total Petroleum Hydrocarbons (>C16-C21) Aromatic	mg/kg	330	--	1800	--
Total Petroleum Hydrocarbons (>C21-C35) Aliphatic	mg/kg	220	--	1100	--
Total Petroleum Hydrocarbons (>C21-C35) Aromatic	mg/kg	760	--	2000	--
Total Petroleum Hydrocarbons (>C28-C35)	mg/kg	970	200 J	3000	510
Total Petroleum Hydrocarbons (>C6-C35) Aliphatics & Aromatics	mg/kg	2800	--	6300	--
Total Petroleum Hydrocarbons (>C6-C8) Aliphatic	mg/kg	<26	--	<80	--
Total Petroleum Hydrocarbons (>C7-C8) Aromatic	mg/kg	<26	--	<80	--
Total Petroleum Hydrocarbons (>C8-C10) Aliphatic	mg/kg	<26	--	<80	--
Total Petroleum Hydrocarbons (>C8-C10) Aromatic	mg/kg	30 J	--	<80	--
Total Petroleum Hydrocarbons (C6) Aliphatic	mg/kg	<26	--	<80	--
Total Petroleum Hydrocarbons (C6-C12)	mg/kg	650	230 J	220 J	810
Total Petroleum Hydrocarbons Aliphatic Fraction	mg/kg	220	--	1820	--
Total Petroleum Hydrocarbons Aromatic Fraction	mg/kg	2640	--	4540	--

Table 2

Analytical Results Summary
TPH Assessment
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
December 2019 - February 2020

	Location ID:	DPT-32-19	DPT-32-19	DPT-34-19	DPT-34-19
	Sample Name:	SO-1620-CPT3219(2-3)-20200204	SO-1620-CPT3219(11-12)-202002	SO-1620-DPT3419(4-5)-20191218	SO-1620-DPT3419(5-6)-20191218
	Sample Date:	02/04/2020	02/04/2020	12/18/2019	12/18/2019
	Depth:	2-3 ft bgs	11-12 ft bgs	4-5 ft bgs	5-6 ft bgs
Parameters	**Unit**				
Total Petroleum Hydrocarbons					
Aliphatics relative % distribution	%	7.4	--	42	--
Aromatics relative % distribution	%	93	--	58	--
Total Petroleum Hydrocarbons	mg/kg	11800	7440	19500	5000
Total Petroleum Hydrocarbons (>C10-C12) Aliphatic	mg/kg	<110	--	<300	--
Total Petroleum Hydrocarbons (>C10-C12) Aromatic	mg/kg	1200	--	<300	--
Total Petroleum Hydrocarbons (>C12-C16) Aliphatic	mg/kg	280	--	<300	--
Total Petroleum Hydrocarbons (>C12-C16) Aromatic	mg/kg	2700	--	<300	--
Total Petroleum Hydrocarbons (>C12-C28)	mg/kg	8700	5600	15000	3800
Total Petroleum Hydrocarbons (>C16-C21) Aliphatic	mg/kg	260	--	640	--
Total Petroleum Hydrocarbons (>C16-C21) Aromatic	mg/kg	4100	--	1600	--
Total Petroleum Hydrocarbons (>C21-C35) Aliphatic	mg/kg	340	--	1900	--
Total Petroleum Hydrocarbons (>C21-C35) Aromatic	mg/kg	3100	--	1800	--
Total Petroleum Hydrocarbons (>C28-C35)	mg/kg	1800	950	4500	1200
Total Petroleum Hydrocarbons (>C6-C35) Aliphatics & Aromatics	mg/kg	12000	--	5900	--
Total Petroleum Hydrocarbons (>C6-C8) Aliphatic	mg/kg	<110	--	<300	--
Total Petroleum Hydrocarbons (>C7-C8) Aromatic	mg/kg	<110	--	<300	--
Total Petroleum Hydrocarbons (>C8-C10) Aliphatic	mg/kg	<110	--	<300	--
Total Petroleum Hydrocarbons (>C8-C10) Aromatic	mg/kg	<110	--	<300	--
Total Petroleum Hydrocarbons (C6) Aliphatic	mg/kg	<110	--	<300	--
Total Petroleum Hydrocarbons (C6-C12)	mg/kg	1300	890	<450	<82
Total Petroleum Hydrocarbons Aliphatic Fraction	mg/kg	880	--	2540	--
Total Petroleum Hydrocarbons Aromatic Fraction	mg/kg	11100	--	3400	--

Table 2

Analytical Results Summary
TPH Assessment
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
December 2019 - February 2020

	Location ID:	DPT-35-19	DPT-35-19	DPT-36-19	DPT-36-19
	Sample Name:	SO-1620-DPT3519(4-5)-20191219	SO-1620-DPT3519(6-7)-20191219	SO-1620-CPT3619(3-4)-20200205	SO-1620-CPT3619(5-6)-20200205
	Sample Date:	12/19/2019	12/19/2019	02/05/2020	02/05/2020
	Depth:	4-5 ft bgs	6-7 ft bgs	3-4 ft bgs	5-6 ft bgs
Parameters	**Unit**				
Total Petroleum Hydrocarbons					
Aliphatics relative % distribution	%	27	--	--	33
Aromatics relative % distribution	%	73	--	--	67
Total Petroleum Hydrocarbons	mg/kg	16800	1570	8840	11900
Total Petroleum Hydrocarbons (>C10-C12) Aliphatic	mg/kg	<79	--	--	<48
Total Petroleum Hydrocarbons (>C10-C12) Aromatic	mg/kg	470	--	--	<48
Total Petroleum Hydrocarbons (>C12-C16) Aliphatic	mg/kg	300	--	--	480
Total Petroleum Hydrocarbons (>C12-C16) Aromatic	mg/kg	810	--	--	460
Total Petroleum Hydrocarbons (>C12-C28)	mg/kg	13000	1200	7100	9100
Total Petroleum Hydrocarbons (>C16-C21) Aliphatic	mg/kg	600	--	--	830
Total Petroleum Hydrocarbons (>C16-C21) Aromatic	mg/kg	2200	--	--	1300
Total Petroleum Hydrocarbons (>C21-C35) Aliphatic	mg/kg	1200	--	--	770
Total Petroleum Hydrocarbons (>C21-C35) Aromatic	mg/kg	2200	--	--	2400
Total Petroleum Hydrocarbons (>C28-C35)	mg/kg	2900	170 J	1600	2700
Total Petroleum Hydrocarbons (>C6-C35) Aliphatics & Aromatics	mg/kg	7800	--	--	6300
Total Petroleum Hydrocarbons (>C6-C8) Aliphatic	mg/kg	<79	--	--	<48
Total Petroleum Hydrocarbons (>C7-C8) Aromatic	mg/kg	<79	--	--	<48
Total Petroleum Hydrocarbons (>C8-C10) Aliphatic	mg/kg	<79	--	--	<48
Total Petroleum Hydrocarbons (>C8-C10) Aromatic	mg/kg	<79	--	--	<48
Total Petroleum Hydrocarbons (C6) Aliphatic	mg/kg	<79	--	--	<48
Total Petroleum Hydrocarbons (C6-C12)	mg/kg	900	200 J	140 J	130 J
Total Petroleum Hydrocarbons Aliphatic Fraction	mg/kg	2100	--	--	2080
Total Petroleum Hydrocarbons Aromatic Fraction	mg/kg	5680	--	--	4160

Table 2

Analytical Results Summary
TPH Assessment
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
December 2019 - February 2020

	Location ID:	DPT-37-19	DPT-37-19	DPT-38-19	DPT-38-19
	Sample Name:	SO-1620-CPT37(7-8)-20200204	SO-1620-CPT3719(4-5)-20200206	SO-1620-DPT3819(3-4)-20191216	SO-1620-DPT3819(5-6)-20191216
	Sample Date:	02/04/2020	02/06/2020	12/16/2019	12/16/2019
	Depth:	7-8 ft bgs	4-5 ft bgs	3-4 ft bgs	5-6 ft bgs
Parameters	**Unit**				
Total Petroleum Hydrocarbons					
Aliphatics relative % distribution	%	--	--	35	34
Aromatics relative % distribution	%	--	--	65	66
Total Petroleum Hydrocarbons	mg/kg	2340	12000	14500	7800
Total Petroleum Hydrocarbons (>C10-C12) Aliphatic	mg/kg	--	--	210	<60
Total Petroleum Hydrocarbons (>C10-C12) Aromatic	mg/kg	--	--	1400	390
Total Petroleum Hydrocarbons (>C12-C16) Aliphatic	mg/kg	--	--	<62	<60
Total Petroleum Hydrocarbons (>C12-C16) Aromatic	mg/kg	--	--	320	370
Total Petroleum Hydrocarbons (>C12-C28)	mg/kg	1800	9600	6400	4700
Total Petroleum Hydrocarbons (>C16-C21) Aliphatic	mg/kg	--	--	220	250
Total Petroleum Hydrocarbons (>C16-C21) Aromatic	mg/kg	--	--	770	700
Total Petroleum Hydrocarbons (>C21-C35) Aliphatic	mg/kg	--	--	880	540
Total Petroleum Hydrocarbons (>C21-C35) Aromatic	mg/kg	--	--	700	440
Total Petroleum Hydrocarbons (>C28-C35)	mg/kg	270	1500	3100	1700
Total Petroleum Hydrocarbons (>C6-C35) Aliphatics & Aromatics	mg/kg	--	--	5600	3100
Total Petroleum Hydrocarbons (>C6-C8) Aliphatic	mg/kg	--	--	<62	<60
Total Petroleum Hydrocarbons (>C7-C8) Aromatic	mg/kg	--	--	<62	<60
Total Petroleum Hydrocarbons (>C8-C10) Aliphatic	mg/kg	--	--	630	260
Total Petroleum Hydrocarbons (>C8-C10) Aromatic	mg/kg	--	--	490	120
Total Petroleum Hydrocarbons (C6) Aliphatic	mg/kg	--	--	<62	<60
Total Petroleum Hydrocarbons (C6-C12)	mg/kg	270	880 J	5000	1400
Total Petroleum Hydrocarbons Aliphatic Fraction	mg/kg	--	--	1940	1050
Total Petroleum Hydrocarbons Aromatic Fraction	mg/kg	--	--	3680	2020

Table 2

Analytical Results Summary
TPH Assessment
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
December 2019 - February 2020

	Location ID:	DPT-39-19	DPT-39-19	DPT-40-19	DPT-40-19
	Sample Name:	SO-1620-DPT3919(2-3)-20191217	SO-1620-DPT3919(7-8)-20191217	SO-1620-DPT4019(1.25-2)-20191	SO-1620-DPT4019(7-8)-20191218
	Sample Date:	12/17/2019	12/17/2019	12/18/2019	12/18/2019
	Depth:	2-3 ft bgs	7-8 ft bgs	1.25-2 ft bgs	7-8 ft bgs
Parameters	**Unit**				
Total Petroleum Hydrocarbons					
Aliphatics relative % distribution	%	50	--	--	--
Aromatics relative % distribution	%	50	--	--	--
Total Petroleum Hydrocarbons	mg/kg	960	<7.6	7970	58.0
Total Petroleum Hydrocarbons (>C10-C12) Aliphatic	mg/kg	<5.0	--	--	--
Total Petroleum Hydrocarbons (>C10-C12) Aromatic	mg/kg	<5.0	--	--	--
Total Petroleum Hydrocarbons (>C12-C16) Aliphatic	mg/kg	13	--	--	--
Total Petroleum Hydrocarbons (>C12-C16) Aromatic	mg/kg	22	--	--	--
Total Petroleum Hydrocarbons (>C12-C28)	mg/kg	600	<10	6500	35 J
Total Petroleum Hydrocarbons (>C16-C21) Aliphatic	mg/kg	140	--	--	--
Total Petroleum Hydrocarbons (>C16-C21) Aromatic	mg/kg	140	--	--	--
Total Petroleum Hydrocarbons (>C21-C35) Aliphatic	mg/kg	680	--	--	--
Total Petroleum Hydrocarbons (>C21-C35) Aromatic	mg/kg	680	--	--	--
Total Petroleum Hydrocarbons (>C28-C35)	mg/kg	360	<10	1300	23 J
Total Petroleum Hydrocarbons (>C6-C35) Aliphatics & Aromatics	mg/kg	1700	--	--	--
Total Petroleum Hydrocarbons (>C6-C8) Aliphatic	mg/kg	<5.0	--	--	--
Total Petroleum Hydrocarbons (>C7-C8) Aromatic	mg/kg	<5.0	--	--	--
Total Petroleum Hydrocarbons (>C8-C10) Aliphatic	mg/kg	<5.0	--	--	--
Total Petroleum Hydrocarbons (>C8-C10) Aromatic	mg/kg	<5.0	--	--	--
Total Petroleum Hydrocarbons (C6) Aliphatic	mg/kg	<5.0	--	--	--
Total Petroleum Hydrocarbons (C6-C12)	mg/kg	<7.4	<7.6	170 J	<7.0
Total Petroleum Hydrocarbons Aliphatic Fraction	mg/kg	833	--	--	--
Total Petroleum Hydrocarbons Aromatic Fraction	mg/kg	842	--	--	--

Table 2

Analytical Results Summary
TPH Assessment
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
December 2019 - February 2020

	Location ID:	DPT-41-19	DPT-41-19	DPT-42-19	DPT-42-19
	Sample Name:	SO-1620-CPT4119(1-2)-20200206	SO-1620-CPT4119(5-6)-20200206	SO-1620-DPT4219(4-5)-20191217	SO-1620-DPT4219(7-8)-20191217
	Sample Date:	02/06/2020	02/06/2020	12/17/2019	12/17/2019
	Depth:	1-2 ft bgs	5-6 ft bgs	4-5 ft bgs	7-8 ft bgs
Parameters	**Unit**				
Total Petroleum Hydrocarbons					
Aliphatics relative % distribution	%	--	--	38	70
Aromatics relative % distribution	%	--	--	62	30
Total Petroleum Hydrocarbons	mg/kg	308	<6.4	18200	1310
Total Petroleum Hydrocarbons (>C10-C12) Aliphatic	mg/kg	--	--	<78	<51
Total Petroleum Hydrocarbons (>C10-C12) Aromatic	mg/kg	--	--	<78	<51
Total Petroleum Hydrocarbons (>C12-C16) Aliphatic	mg/kg	--	--	2600	580
Total Petroleum Hydrocarbons (>C12-C16) Aromatic	mg/kg	--	--	1900	<51
Total Petroleum Hydrocarbons (>C12-C28)	mg/kg	130	<8.4	15000	960
Total Petroleum Hydrocarbons (>C16-C21) Aliphatic	mg/kg	--	--	2400	190
Total Petroleum Hydrocarbons (>C16-C21) Aromatic	mg/kg	--	--	4500	<51
Total Petroleum Hydrocarbons (>C21-C35) Aliphatic	mg/kg	--	--	4000	320
Total Petroleum Hydrocarbons (>C21-C35) Aromatic	mg/kg	--	--	8400	460
Total Petroleum Hydrocarbons (>C28-C35)	mg/kg	170	<8.4	3200	210 J
Total Petroleum Hydrocarbons (>C6-C35) Aliphatics & Aromatics	mg/kg	--	--	24000	1500
Total Petroleum Hydrocarbons (>C6-C8) Aliphatic	mg/kg	--	--	<78	<51
Total Petroleum Hydrocarbons (>C7-C8) Aromatic	mg/kg	--	--	<78	<51
Total Petroleum Hydrocarbons (>C8-C10) Aliphatic	mg/kg	--	--	<78	<51
Total Petroleum Hydrocarbons (>C8-C10) Aromatic	mg/kg	--	--	<78	<51
Total Petroleum Hydrocarbons (C6) Aliphatic	mg/kg	--	--	<78	<51
Total Petroleum Hydrocarbons (C6-C12)	mg/kg	8.1 J	<6.4	<120	140 J
Total Petroleum Hydrocarbons Aliphatic Fraction	mg/kg	--	--	9000	1090
Total Petroleum Hydrocarbons Aromatic Fraction	mg/kg	--	--	14800	460

Table 2

Analytical Results Summary
TPH Assessment
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
December 2019 - February 2020

	Location ID:	DPT-43-19	DPT-43-19	DPT-45-19	DPT-45-19
	Sample Name:	SO-1620-CPT4319(2-3)-20200204	SO-1620-CPT4319(12-13)-202002	SO-1620-CPT4519(1-2)-20200205	SO-1620-CPT4519(8-9)-20200205
	Sample Date:	02/04/2020	02/04/2020	02/05/2020	02/05/2020
	Depth:	2-3 ft bgs	12-13 ft bgs	1-2 ft bgs	8-9 ft bgs
Parameters	**Unit**				
Total Petroleum Hydrocarbons					
Aliphatics relative % distribution	%	--	--	--	--
Aromatics relative % distribution	%	--	--	--	--
Total Petroleum Hydrocarbons	mg/kg	987	<7.6	428	<6.4
Total Petroleum Hydrocarbons (>C10-C12) Aliphatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C10-C12) Aromatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C12-C16) Aliphatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C12-C16) Aromatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C12-C28)	mg/kg	430	<10	170	<8.4
Total Petroleum Hydrocarbons (>C16-C21) Aliphatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C16-C21) Aromatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C21-C35) Aliphatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C21-C35) Aromatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C28-C35)	mg/kg	550	<10	250	<8.4
Total Petroleum Hydrocarbons (>C6-C35) Aliphatics & Aromatics	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C6-C8) Aliphatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C7-C8) Aromatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C8-C10) Aliphatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C8-C10) Aromatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (C6) Aliphatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (C6-C12)	mg/kg	7.0 J	<7.6	8.5 J	<6.4
Total Petroleum Hydrocarbons Aliphatic Fraction	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons Aromatic Fraction	mg/kg	--	--	--	--

Table 2

Analytical Results Summary
TPH Assessment
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
December 2019 - February 2020

	Location ID:	DPT-46-19	DPT-46-19	DPT-55-19	DPT-55-19
	Sample Name:	SO-1620-CPT4619(2-3)-20200130	SO-1620-CPT4619(9-10)-20200131	SO-1620-DPT5519(3-4)-20191216	SO-1620-DPT5519(12.3-13.3)-20191216
	Sample Date:	01/30/2020	01/31/2020	12/16/2019	12/16/2019
	Depth:	2-3 ft bgs	9-10 ft bgs	3-4 ft bgs	12.3-13.3 ft bgs
Parameters	**Unit**				
Total Petroleum Hydrocarbons					
Aliphatics relative % distribution	%	--	--	--	--
Aromatics relative % distribution	%	--	--	--	--
Total Petroleum Hydrocarbons	mg/kg	<6.5	<6.4	<8.6	<9.4
Total Petroleum Hydrocarbons (>C10-C12) Aliphatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C10-C12) Aromatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C12-C16) Aliphatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C12-C16) Aromatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C12-C28)	mg/kg	<8.5	<8.4	<11	<12
Total Petroleum Hydrocarbons (>C16-C21) Aliphatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C16-C21) Aromatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C21-C35) Aliphatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C21-C35) Aromatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C28-C35)	mg/kg	<8.5	<8.4	<11	<12
Total Petroleum Hydrocarbons (>C6-C35) Aliphatics & Aromatics	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C6-C8) Aliphatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C7-C8) Aromatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C8-C10) Aliphatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C8-C10) Aromatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (C6) Aliphatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (C6-C12)	mg/kg	<6.5	<6.4	<8.6	<9.4
Total Petroleum Hydrocarbons Aliphatic Fraction	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons Aromatic Fraction	mg/kg	--	--	--	--

Table 2

Analytical Results Summary
TPH Assessment
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
December 2019 - February 2020

	Location ID:	SB-216	SB-216	SB-217	SB-217
	Sample Name:	SO-1620-SB216(3-4)-20200129	SO-1620-SB216(7-8)-20200129	SO-1620-SB217(3-4)-20200129	SO-1620-SB217(8-9)-20200129
	Sample Date:	01/29/2020	01/29/2020	01/29/2020	01/29/2020
	Depth:	3-4 ft bgs	7-8 ft bgs	3-4 ft bgs	8-9 ft bgs
Parameters	**Unit**				
Total Petroleum Hydrocarbons					
Aliphatics relative % distribution	%	--	--	--	--
Aromatics relative % distribution	%	--	--	--	--
Total Petroleum Hydrocarbons	mg/kg	<8.5	387	<8.7	<7.7
Total Petroleum Hydrocarbons (>C10-C12) Aliphatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C10-C12) Aromatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C12-C16) Aliphatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C12-C16) Aromatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C12-C28)	mg/kg	<11	360	<12	<10
Total Petroleum Hydrocarbons (>C16-C21) Aliphatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C16-C21) Aromatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C21-C35) Aliphatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C21-C35) Aromatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C28-C35)	mg/kg	<11	<9.7	<12	<10
Total Petroleum Hydrocarbons (>C6-C35) Aliphatics & Aromatics	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C6-C8) Aliphatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C7-C8) Aromatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C8-C10) Aliphatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C8-C10) Aromatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (C6) Aliphatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (C6-C12)	mg/kg	<8.5	27 J	<8.7	<7.7
Total Petroleum Hydrocarbons Aliphatic Fraction	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons Aromatic Fraction	mg/kg	--	--	--	--

Table 2

Analytical Results Summary
TPH Assessment
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
December 2019 - February 2020

	Location ID:	SB-218	SB-218	SB-219	SB-219
	Sample Name:	SO-1620-SB218(2.25-3)-20191219	SO-1620-SB218((15-16)-20191219	SO-1620-SB21919(2-3)-20200203	SO-1620-SB219(7-8)-20200204
	Sample Date:	12/19/2019	12/19/2019	02/03/2020	02/04/2020
	Depth:	2.25-3 ft bgs	15-16 ft bgs	2-3 ft bgs	7-8 ft bgs
Parameters	**Unit**				
Total Petroleum Hydrocarbons					
Aliphatics relative % distribution	%	--	--	--	--
Aromatics relative % distribution	%	--	--	--	--
Total Petroleum Hydrocarbons	mg/kg	280	<6.7	2380	<6.6
Total Petroleum Hydrocarbons (>C10-C12) Aliphatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C10-C12) Aromatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C12-C16) Aliphatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C12-C16) Aromatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C12-C28)	mg/kg	150	<8.8	1400	<8.7
Total Petroleum Hydrocarbons (>C16-C21) Aliphatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C16-C21) Aromatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C21-C35) Aliphatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C21-C35) Aromatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C28-C35)	mg/kg	130	<8.8	980	<8.7
Total Petroleum Hydrocarbons (>C6-C35) Aliphatics & Aromatics	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C6-C8) Aliphatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C7-C8) Aromatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C8-C10) Aliphatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C8-C10) Aromatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (C6) Aliphatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (C6-C12)	mg/kg	<6.9	<6.7	<79	<6.6
Total Petroleum Hydrocarbons Aliphatic Fraction	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons Aromatic Fraction	mg/kg	--	--	--	--

Table 2

Analytical Results Summary
TPH Assessment
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
December 2019 - February 2020

	Location ID:	SB-220	SB-220	SB-221	SB-221
	Sample Name:	SO-1620-SB22019(4-5)-20200203	SO-1620-SB220(8-9)-20200204	SO-1620-SB221(4-5)-20191216	SO-1620-SB221(9-10)-20191216
	Sample Date:	02/03/2020	02/04/2020	12/16/2019	12/16/2019
	Depth:	4-5 ft bgs	8-9 ft bgs	4-5 ft bgs	9-10 ft bgs
Parameters	**Unit**				
Total Petroleum Hydrocarbons					
Aliphatics relative % distribution	%	--	--	--	--
Aromatics relative % distribution	%	--	--	--	--
Total Petroleum Hydrocarbons	mg/kg	<7.0	19.0 J	<8.5	<8.2
Total Petroleum Hydrocarbons (>C10-C12) Aliphatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C10-C12) Aromatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C12-C16) Aliphatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C12-C16) Aromatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C12-C28)	mg/kg	<9.2	19 J	<11	<11
Total Petroleum Hydrocarbons (>C16-C21) Aliphatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C16-C21) Aromatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C21-C35) Aliphatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C21-C35) Aromatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C28-C35)	mg/kg	<9.2	<10	<11	<11
Total Petroleum Hydrocarbons (>C6-C35) Aliphatics & Aromatics	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C6-C8) Aliphatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C7-C8) Aromatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C8-C10) Aliphatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (>C8-C10) Aromatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (C6) Aliphatic	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons (C6-C12)	mg/kg	<7.0	<7.8	<8.5	<8.2
Total Petroleum Hydrocarbons Aliphatic Fraction	mg/kg	--	--	--	--
Total Petroleum Hydrocarbons Aromatic Fraction	mg/kg	--	--	--	--

Notes:

ft bgs - Feet below ground surface
< - Not detected at the associated reporting limit
J - Estimated concentration
"--" - Not applicable

Table 3

Analytical Methods
TPH Assessment
Union Pacific Railroad (UPRR)/Houston, TX-Wood Preserving Works
Houston, Texas
December 2019 - February 2020

Parameter	Method	Matrix	Holding Time	
			Collection to Extraction (Days)	Extraction to Analysis (Days)
TPH (TX1005)	TX1005	Soil	14	40
TPH (TX1006)	TX1006	Soil	14	40

Notes:

TPH - Total Petroleum Hydrocarbons

Attachment A
Laboratory NELAP Certificate

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-19-23

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

Expiration Date: 4/30/2020

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2019

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: ***Drinking Water***

Method EPA 1613

Analyte	AB	Analyte ID	Method ID
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10120408

Method EPA 200.8

Analyte	AB	Analyte ID	Method ID
Copper	TX	1055	10014605
Lead	TX	1075	10014605

Texas Commission on Environmental Quality

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Matrix: ***Non-Potable Water***

Method EPA 1010

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10116606

Method EPA 120.1

Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	10006403

Method EPA 1311

Analyte	AB	Analyte ID	Method ID
TCLP	TX	849	10118806

Method EPA 1312

Analyte	AB	Analyte ID	Method ID
SPLP	TX	850	10119003

Method EPA 160.4

Analyte	AB	Analyte ID	Method ID
Residue-volatile	TX	1970	10010409

Method EPA 1613

Analyte	AB	Analyte ID	Method ID
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10120408
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10120408
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10120408
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10120408
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10120408
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10120408
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10120408
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10120408
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10120408
1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10120408
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10120408
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10120408
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10120408
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10120408

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Matrix: ***Non-Potable Water***

2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10120408
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10120408
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10120408
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10120408
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10120408
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10120408
Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10120408
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10120408
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10120408
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10120408
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10120408

Method EPA 1664

Analyte	**AB**	**Analyte ID**	**Method ID**
n-Hexane Extractable Material (HEM) (O&G)	TX	1803	10127807

Method EPA 180.1

Analyte	**AB**	**Analyte ID**	**Method ID**
Turbidity	TX	2055	10011606

Method EPA 200.8

Analyte	**AB**	**Analyte ID**	**Method ID**
Aluminum	TX	1000	10014605
Antimony	TX	1005	10014605
Arsenic	TX	1010	10014605
Barium	TX	1015	10014605
Beryllium	TX	1020	10014605
Boron	TX	1025	10014605
Cadmium	TX	1030	10014605
Calcium	TX	1035	10014605
Chromium	TX	1040	10014605
Cobalt	TX	1050	10014605
Copper	TX	1055	10014605
Iron	TX	1070	10014605

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Matrix: ***Non-Potable Water***

Lead	TX	1075	10014605
Magnesium	TX	1085	10014605
Manganese	TX	1090	10014605
Molybdenum	TX	1100	10014605
Nickel	TX	1105	10014605
Potassium	TX	1125	10014605
Selenium	TX	1140	10014605
Silver	TX	1150	10014605
Sodium	TX	1155	10014605
Strontium	TX	1160	10014605
Thallium	TX	1165	10014605
Tin	TX	1175	10014605
Titanium	TX	1180	10014605
Uranium	TX	3035	10014605
Vanadium	TX	1185	10014605
Zinc	TX	1190	10014605

Method EPA 245.1

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10036609

Method EPA 300.0

Analyte	**AB**	**Analyte ID**	**Method ID**
Bromide	TX	1540	10053200
Chloride	TX	1575	10053200
Fluoride	TX	1730	10053200
Nitrate as N	TX	1810	10053200
Nitrate-nitrite	TX	1820	10053200
Nitrite as N	TX	1840	10053200
Orthophosphate as P	TX	1870	10053200
Sulfate	TX	2000	10053200

Method EPA 325.1

Analyte	**AB**	**Analyte ID**	**Method ID**

Texas Commission on Environmental Quality

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Houston, TX 77099-4338

Issue Date: 5/1/2019

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Matrix: ***Non-Potable Water***

Chloride	TX	1575	10056801

Method EPA 335.1

Analyte	AB	Analyte ID	Method ID
Amenable cyanide	TX	1510	10060001

Method EPA 335.2

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	10278203

Method EPA 335.4

Analyte	AB	Analyte ID	Method ID
Total cyanide	TX	1645	10061402

Method EPA 350.3

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	10064401

Method EPA 365.3

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	10070801
Phosphorus	TX	1910	10070801

Method EPA 375.4

Analyte	AB	Analyte ID	Method ID
Sulfate	TX	2000	10073800

Method EPA 376.1

Analyte	AB	Analyte ID	Method ID
Sulfide	TX	2005	10074201

Method EPA 410.4

Analyte	AB	Analyte ID	Method ID
Chemical oxygen demand (COD)	TX	1565	10077404

Method EPA 415.1

Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	10078407

Method EPA 420.1

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10079400

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

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ALS Laboratory Group, Environmental Services Division (Houston, Texas)

Expiration Date: 4/30/2020

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Issue Date: 5/1/2019

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Matrix: ***Non-Potable Water***

Method EPA 420.4

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10080203

Method EPA 6020

Analyte	AB	Analyte ID	Method ID
Aluminum	TX	1000	10156419
Antimony	TX	1005	10156419
Arsenic	TX	1010	10156419
Barium	TX	1015	10156419
Beryllium	TX	1020	10156419
Boron	TX	1025	10156419
Cadmium	TX	1030	10156419
Calcium	TX	1035	10156419
Chromium	TX	1040	10156419
Cobalt	TX	1050	10156419
Copper	TX	1055	10156419
Iron	TX	1070	10156419
Lead	TX	1075	10156419
Lithium	TX	1080	10156419
Magnesium	TX	1085	10156419
Manganese	TX	1090	10156419
Molybdenum	TX	1100	10156419
Nickel	TX	1105	10156419
Potassium	TX	1125	10156419
Selenium	TX	1140	10156419
Silver	TX	1150	10156419
Sodium	TX	1155	10156419
Strontium	TX	1160	10156419
Thallium	TX	1165	10156419
Tin	TX	1175	10156419
Titanium	TX	1180	10156419

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

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ALS Laboratory Group, Environmental Services Division (Houston, Texas)

Expiration Date: 4/30/2020

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2019

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Matrix: ***Non-Potable Water***

Vanadium	TX	1185	10156419
Zinc	TX	1190	10156419

Method EPA 608

Analyte	AB	Analyte ID	Method ID
4,4'-DDD	TX	7355	10103603
4,4'-DDE	TX	7360	10103603
4,4'-DDT	TX	7365	10103603
Aldrin	TX	7025	10103603
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10103603
alpha-Chlordane	TX	7240	10103603
Aroclor-1016 (PCB-1016)	TX	8880	10103603
Aroclor-1221 (PCB-1221)	TX	8885	10103603
Aroclor-1232 (PCB-1232)	TX	8890	10103603
Aroclor-1242 (PCB-1242)	TX	8895	10103603
Aroclor-1248 (PCB-1248)	TX	8900	10103603
Aroclor-1254 (PCB-1254)	TX	8905	10103603
Aroclor-1260 (PCB-1260)	TX	8910	10103603
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10103603
Chlordane (tech.)	TX	7250	10103603
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10103603
Dieldrin	TX	7470	10103603
Endosulfan I	TX	7510	10103603
Endosulfan II	TX	7515	10103603
Endosulfan sulfate	TX	7520	10103603
Endrin	TX	7540	10103603
Endrin aldehyde	TX	7530	10103603
Endrin ketone	TX	7535	10103603
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10103603
gamma-Chlordane	TX	7245	10103603
Heptachlor	TX	7685	10103603

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Matrix: ***Non-Potable Water***

Heptachlor epoxide	TX	7690	10103603
Methoxychlor	TX	7810	10103603
Toxaphene (Chlorinated camphene)	TX	8250	10103603

Method EPA 624

Analyte	AB	Analyte ID	Method ID
1,1,1-Trichloroethane	TX	5160	10107207
1,1,2,2-Tetrachloroethane	TX	5110	10107207
1,1,2-Trichloroethane	TX	5165	10107207
1,1-Dichloroethane	TX	4630	10107207
1,1-Dichloroethylene	TX	4640	10107207
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10107207
1,2-Dichlorobenzene	TX	4610	10107207
1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10107207
1,2-Dichloropropane	TX	4655	10107207
1,3-Dichlorobenzene	TX	4615	10107207
1,4-Dichlorobenzene	TX	4620	10107207
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10107207
2-Chloroethyl vinyl ether	TX	4500	10107207
Acetone (2-Propanone)	TX	4315	10107207
Acrolein (Propenal)	TX	4325	10107207
Acrylonitrile	TX	4340	10107207
Benzene	TX	4375	10107207
Bromodichloromethane	TX	4395	10107207
Bromoform	TX	4400	10107207
Carbon tetrachloride	TX	4455	10107207
Chlorobenzene	TX	4475	10107207
Chlorodibromomethane	TX	4575	10107207
Chloroethane (Ethyl chloride)	TX	4485	10107207
Chloroform	TX	4505	10107207
cis-1,2-Dichloroethylene	TX	4645	10107207

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Matrix: ***Non-Potable Water***

cis-1,3-Dichloropropene	TX	4680	10107207
Ethylbenzene	TX	4765	10107207
m+p-xylene	TX	5240	10107207
Methyl bromide (Bromomethane)	TX	4950	10107207
Methyl chloride (Chloromethane)	TX	4960	10107207
Methyl tert-butyl ether (MTBE)	TX	5000	10107207
Methylene chloride (Dichloromethane)	TX	4975	10107207
Naphthalene	TX	5005	10107207
o-Xylene	TX	5250	10107207
Tetrachloroethylene (Perchloroethylene)	TX	5115	10107207
Toluene	TX	5140	10107207
trans-1,2-Dichloroethylene	TX	4700	10107207
trans-1,3-Dichloropropylene	TX	4685	10107207
Trichloroethene (Trichloroethylene)	TX	5170	10107207
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10107207
Vinyl chloride	TX	5235	10107207
Xylene (total)	TX	5260	10107207

Method EPA 625

Analyte	**AB**	**Analyte ID**	**Method ID**
1,2,4,5-Tetrachlorobenzene	TX	6715	10107401
1,2,4-Trichlorobenzene	TX	5155	10107401
1,2-Dichlorobenzene	TX	4610	10107401
1,2-Diphenylhydrazine	TX	6220	10107401
1,3-Dichlorobenzene	TX	4615	10107401
1,4-Dichlorobenzene	TX	4620	10107401
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10107401
2,4,5-Trichlorophenol	TX	6835	10107401
2,4,6-Trichlorophenol	TX	6840	10107401
2,4-Dichlorophenol	TX	6000	10107401
2,4-Dimethylphenol	TX	6130	10107401

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Matrix: ***Non-Potable Water***

2,4-Dinitrophenol	TX	6175	10107401
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10107401
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10107401
2-Chloronaphthalene	TX	5795	10107401
2-Chlorophenol	TX	5800	10107401
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10107401
2-Methylphenol (o-Cresol)	TX	6400	10107401
2-Nitrophenol	TX	6490	10107401
3,3'-Dichlorobenzidine	TX	5945	10107401
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10107401
4-Chloro-3-methylphenol	TX	5700	10107401
4-Chlorophenyl phenylether	TX	5825	10107401
4-Methylphenol (p-Cresol)	TX	6410	10107401
4-Nitrophenol	TX	6500	10107401
Acenaphthene	TX	5500	10107401
Acenaphthylene	TX	5505	10107401
Anthracene	TX	5555	10107401
Benzidine	TX	5595	10107401
Benzo(a)anthracene	TX	5575	10107401
Benzo(a)pyrene	TX	5580	10107401
Benzo(b)fluoranthene	TX	5585	10107401
Benzo(g,h,i)perylene	TX	5590	10107401
Benzo(k)fluoranthene	TX	5600	10107401
bis(2-Chloroethoxy)methane	TX	5760	10107401
bis(2-Chloroethyl) ether	TX	5765	10107401
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10107401
Butyl benzyl phthalate	TX	5670	10107401
Chrysene	TX	5855	10107401
Dibenz(a,h) anthracene	TX	5895	10107401
Diethyl phthalate	TX	6070	10107401

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Dimethyl phthalate	TX	6135	10107401
Di-n-butyl phthalate	TX	5925	10107401
Di-n-octyl phthalate	TX	6200	10107401
Fluoranthene	TX	6265	10107401
Fluorene	TX	6270	10107401
Hexachlorobenzene	TX	6275	10107401
Hexachlorobutadiene	TX	4835	10107401
Hexachlorocyclopentadiene	TX	6285	10107401
Hexachloroethane	TX	4840	10107401
Indeno(1,2,3-cd) pyrene	TX	6315	10107401
Isophorone	TX	6320	10107401
Naphthalene	TX	5005	10107401
Nitrobenzene	TX	5015	10107401
n-Nitrosodiethylamine	TX	6525	10107401
n-Nitrosodimethylamine	TX	6530	10107401
n-Nitrosodi-n-butylamine	TX	5025	10107401
n-Nitrosodi-n-propylamine	TX	6545	10107401
n-Nitrosodiphenylamine	TX	6535	10107401
Pentachlorobenzene	TX	6590	10107401
Pentachlorophenol	TX	6605	10107401
Phenanthrene	TX	6615	10107401
Phenol	TX	6625	10107401
Pyrene	TX	6665	10107401
Pyridine	TX	5095	10107401

Method EPA 7196

Analyte	**AB**	**Analyte ID**	**Method ID**
Chromium (VI)	TX	1045	10162206

Method EPA 7470

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10165603

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Matrix: ***Non-Potable Water***

Method EPA 8011

Analyte	AB	Analyte ID	Method ID
1,2,3-Trichloropropane	TX	5180	10173009
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10173009
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10173009

Method EPA 8015

Analyte	AB	Analyte ID	Method ID
Diesel range organics (DRO)	TX	9369	10173203
Ethanol	TX	4750	10173203
Ethylene glycol	TX	4785	10173203
Gasoline range organics (GRO)	TX	9408	10173203
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10173203
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10173203
Methanol	TX	4930	10173203
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10173203
n-Propanol (1-Propanol)	TX	5055	10173203
Propylene Glycol	TX	6657	10173203
tert-Butyl alcohol	TX	4420	10173203

Method EPA 8021

Analyte	AB	Analyte ID	Method ID
Benzene	TX	4375	10174400
Ethylbenzene	TX	4765	10174400
m+p-xylene	TX	5240	10174400
Methyl tert-butyl ether (MTBE)	TX	5000	10174400
o-Xylene	TX	5250	10174400
Toluene	TX	5140	10174400
Xylene (total)	TX	5260	10174400

Method EPA 8081

Analyte	AB	Analyte ID	Method ID
4,4'-DDD	TX	7355	10178402
4,4'-DDE	TX	7360	10178402

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Matrix: ***Non-Potable Water***

4,4'-DDT	TX	7365	10178402
Aldrin	TX	7025	10178402
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10178402
alpha-Chlordane	TX	7240	10178402
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10178402
Chlordane (tech.)	TX	7250	10178402
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10178402
Dieldrin	TX	7470	10178402
Endosulfan I	TX	7510	10178402
Endosulfan II	TX	7515	10178402
Endosulfan sulfate	TX	7520	10178402
Endrin	TX	7540	10178402
Endrin aldehyde	TX	7530	10178402
Endrin ketone	TX	7535	10178402
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10178402
gamma-Chlordane	TX	7245	10178402
Heptachlor	TX	7685	10178402
Heptachlor epoxide	TX	7690	10178402
Hexachlorobenzene	TX	6275	10178402
Methoxychlor	TX	7810	10178402
Mirex	TX	7870	10178402
Toxaphene (Chlorinated camphene)	TX	8250	10178402

Method EPA 8082

Analyte	**AB**	**Analyte ID**	**Method ID**
Aroclor-1016 (PCB-1016)	TX	8880	10179201
Aroclor-1221 (PCB-1221)	TX	8885	10179201
Aroclor-1232 (PCB-1232)	TX	8890	10179201
Aroclor-1242 (PCB-1242)	TX	8895	10179201
Aroclor-1248 (PCB-1248)	TX	8900	10179201
Aroclor-1254 (PCB-1254)	TX	8905	10179201

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Matrix: ***Non-Potable Water***

Aroclor-1260 (PCB-1260)	TX	8910	10179201
PCBs (total)	TX	8870	10179201

Method EPA 8151

Analyte	AB	Analyte ID	Method ID
2,4,5-T	TX	8655	10183003
2,4-D	TX	8545	10183003
2,4-DB	TX	8560	10183003
Dalapon	TX	8555	10183003
Dicamba	TX	8595	10183003
Dichloroprop (Dichlorprop, Weedone)	TX	8605	10183003
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10183003
MCPA	TX	7775	10183003
MCPP	TX	7780	10183003
Silvex (2,4,5-TP)	TX	8650	10183003

Method EPA 8260

Analyte	AB	Analyte ID	Method ID
1,1,1,2-Tetrachloroethane	TX	5105	10184404
1,1,1-Trichloroethane	TX	5160	10184404
1,1,2,2-Tetrachloroethane	TX	5110	10184404
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	TX	5195	10184404
1,1,2-Trichloroethane	TX	5165	10184404
1,1-Dichloroethane	TX	4630	10184404
1,1-Dichloroethylene	TX	4640	10184404
1,1-Dichloropropene	TX	4670	10184404
1,2,3-Trichlorobenzene	TX	5150	10184404
1,2,3-Trichloropropane	TX	5180	10184404
1,2,4-Trichlorobenzene	TX	5155	10184404
1,2,4-Trimethylbenzene	TX	5210	10184404
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10184404
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10184404
1,2-Dichlorobenzene	TX	4610	10184404

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Matrix: ***Non-Potable Water***

1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10184404
1,2-Dichloropropane	TX	4655	10184404
1,3,5-Trimethylbenzene	TX	5215	10184404
1,3-Dichlorobenzene	TX	4615	10184404
1,3-Dichloropropane	TX	4660	10184404
1,4-Dichlorobenzene	TX	4620	10184404
1,4-Dioxane (1,4-Diethyleneoxide)	TX	4735	10184404
1-Chlorohexane	TX	4510	10184404
1-Propanol	TX	5060	10184404
2,2-Dichloropropane	TX	4665	10184404
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10184404
2-Chloroethyl vinyl ether	TX	4500	10184404
2-Chlorotoluene	TX	4535	10184404
2-Hexanone (MBK)	TX	4860	10184404
2-Pentanone	TX	5045	10184404
4-Chlorotoluene	TX	4540	10184404
4-Isopropyltoluene (p-Cymene)	TX	4915	10184404
4-Methyl-2-pentanone (MIBK)	TX	4995	10184404
Acetone (2-Propanone)	TX	4315	10184404
Acetonitrile	TX	4320	10184404
Acrolein (Propenal)	TX	4325	10184404
Acrylonitrile	TX	4340	10184404
Allyl alcohol	TX	4350	10184404
Allyl chloride (3-Chloropropene)	TX	4355	10184404
Benzene	TX	4375	10184404
Benzyl chloride	TX	5635	10184404
Bromobenzene	TX	4385	10184404
Bromochloromethane	TX	4390	10184404
Bromodichloromethane	TX	4395	10184404
Bromoform	TX	4400	10184404

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Matrix: ***Non-Potable Water***

Carbon disulfide	TX	4450	10184404
Carbon tetrachloride	TX	4455	10184404
Chlorobenzene	TX	4475	10184404
Chlorodibromomethane	TX	4575	10184404
Chloroethane (Ethyl chloride)	TX	4485	10184404
Chloroform	TX	4505	10184404
Chloroprene (2-Chloro-1,3-butadiene)	TX	4525	10184404
cis-1,2-Dichloroethylene	TX	4645	10184404
cis-1,3-Dichloropropene	TX	4680	10184404
Dibromofluoromethane	TX	4590	10184404
Dibromomethane (Methylene bromide)	TX	4595	10184404
Dichlorodifluoromethane (Freon-12)	TX	4625	10184404
Diethyl ether	TX	4725	10184404
Di-isopropylether (DIPE)	TX	9375	10184404
Epichlorohydrin (1-Chloro-2,3-epoxypropane)	TX	4745	10184404
Ethanol	TX	4750	10184404
Ethyl acetate	TX	4755	10184404
Ethyl methacrylate	TX	4810	10184404
Ethylbenzene	TX	4765	10184404
Ethylene oxide	TX	4795	10184404
Ethyl-t-butylether (ETBE) (2-Ethoxy-2-methylpropane)	TX	4770	10184404
Hexachlorobutadiene	TX	4835	10184404
Iodomethane (Methyl iodide)	TX	4870	10184404
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10184404
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10184404
Isopropylbenzene (Cumene)	TX	4900	10184404
m+p-xylene	TX	5240	10184404
Methacrylonitrile	TX	4925	10184404
Methyl acetate	TX	4940	10184404
Methyl acrylate	TX	4945	10184404

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Matrix: ***Non-Potable Water***

Methyl bromide (Bromomethane)	TX	4950	10184404
Methyl chloride (Chloromethane)	TX	4960	10184404
Methyl methacrylate	TX	4990	10184404
Methyl tert-butyl ether (MTBE)	TX	5000	10184404
Methylcyclohexane	TX	4965	10184404
Methylene chloride (Dichloromethane)	TX	4975	10184404
Naphthalene	TX	5005	10184404
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10184404
n-Butylbenzene	TX	4435	10184404
n-Propylbenzene	TX	5090	10184404
o-Xylene	TX	5250	10184404
Pentachloroethane	TX	5035	10184404
Propionitrile (Ethyl cyanide)	TX	5080	10184404
Pyridine	TX	5095	10184404
sec-Butylbenzene	TX	4440	10184404
Styrene	TX	5100	10184404
T-amylmethylether (TAME)	TX	4370	10184404
tert-Butyl alcohol	TX	4420	10184404
tert-Butylbenzene	TX	4445	10184404
Tetrachloroethylene (Perchloroethylene)	TX	5115	10184404
Toluene	TX	5140	10184404
trans-1,2-Dichloroethylene	TX	4700	10184404
trans-1,3-Dichloropropylene	TX	4685	10184404
trans-1,4-Dichloro-2-butene	TX	4605	10184404
Trichloroethene (Trichloroethylene)	TX	5170	10184404
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10184404
Vinyl acetate	TX	5225	10184404
Vinyl chloride	TX	5235	10184404
Xylene (total)	TX	5260	10184404

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Matrix: ***Non-Potable Water***

Method EPA 8270

Analyte	AB	Analyte ID	Method ID
1,2,4,5-Tetrachlorobenzene	TX	6715	10185203
1,2,4-Trichlorobenzene	TX	5155	10185203
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10185203
1,2-Dichlorobenzene	TX	4610	10185203
1,2-Dinitrobenzene	TX	6155	10185203
1,2-Diphenylhydrazine	TX	6220	10185203
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10185203
1,3-Dichlorobenzene	TX	4615	10185203
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10185203
1,4-Dichlorobenzene	TX	4620	10185203
1,4-Dinitrobenzene	TX	6165	10185203
1,4-Naphthoquinone	TX	6420	10185203
1,4-Phenylenediamine	TX	6630	10185203
1-Chloronaphthalene	TX	5790	10185203
1-Naphthylamine	TX	6425	10185203
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10185203
2,3,4,6-Tetrachlorophenol	TX	6735	10185203
2,4,5-Trichlorophenol	TX	6835	10185203
2,4,5-Trimethylaniline	TX	6880	10185203
2,4,6-Trichlorophenol	TX	6840	10185203
2,4-Diaminotoluene	TX	5880	10185203
2,4-Dichlorophenol	TX	6000	10185203
2,4-Dimethylphenol	TX	6130	10185203
2,4-Dinitrophenol	TX	6175	10185203
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10185203
2,6-Dichlorophenol	TX	6005	10185203
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10185203
2-Acetylaminofluorene	TX	5515	10185203

Texas Commission on Environmental Quality

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ALS Laboratory Group, Environmental Services Division (Houston, Texas)

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Houston, TX 77099-4338

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Matrix: ***Non-Potable Water***

2-Chloronaphthalene	TX	5795	10185203
2-Chlorophenol	TX	5800	10185203
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10185203
2-Methylaniline (o-Toluidine)	TX	5145	10185203
2-Methylnaphthalene	TX	6385	10185203
2-Methylphenol (o-Cresol)	TX	6400	10185203
2-Naphthylamine	TX	6430	10185203
2-Nitroaniline	TX	6460	10185203
2-Nitrophenol	TX	6490	10185203
2-Picoline (2-Methylpyridine)	TX	5050	10185203
3,3'-Dichlorobenzidine	TX	5945	10185203
3,3'-Dimethylbenzidine	TX	6120	10185203
3-Methylcholanthrene	TX	6355	10185203
3-Methylphenol (m-Cresol)	TX	6405	10185203
3-Nitroaniline	TX	6465	10185203
4-Aminobiphenyl	TX	5540	10185203
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10185203
4-Chloro-3-methylphenol	TX	5700	10185203
4-Chloroaniline	TX	5745	10185203
4-Chlorophenyl phenylether	TX	5825	10185203
4-Dimethyl aminoazobenzene	TX	6105	10185203
4-Methylphenol (p-Cresol)	TX	6410	10185203
4-Nitroaniline	TX	6470	10185203
4-Nitrobiphenyl	TX	6480	10185203
4-Nitrophenol	TX	6500	10185203
4-Nitroquinoline-1-oxide	TX	6510	10185203
5-Chloro-2-methylaniline	TX	5695	10185203
5-Nitro-o-toluidine	TX	6570	10185203
7,12-Dimethylbenz(a) anthracene	TX	6115	10185203
a-a-Dimethylphenethylamine	TX	6125	10185203

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Matrix: ***Non-Potable Water***

Acenaphthene	TX	5500	10185203
Acenaphthylene	TX	5505	10185203
Acetophenone	TX	5510	10185203
Aniline	TX	5545	10185203
Anthracene	TX	5555	10185203
Aramite	TX	5560	10185203
Atrazine	TX	7065	10185203
Azinphos-methyl (Guthion)	TX	7075	10185203
Azobenzene	TX	5562	10185203
Benzenethiol (Thiophenol)	TX	6750	10185203
Benzidine	TX	5595	10185203
Benzo(a)anthracene	TX	5575	10185203
Benzo(a)pyrene	TX	5580	10185203
Benzo(b)fluoranthene	TX	5585	10185203
Benzo(e)pyrene	TX	5605	10185203
Benzo(g,h,i)perylene	TX	5590	10185203
Benzo(k)fluoranthene	TX	5600	10185203
Benzoic acid	TX	5610	10185203
Benzyl alcohol	TX	5630	10185203
Biphenyl	TX	5640	10185203
bis(2-Chloroethoxy)methane	TX	5760	10185203
bis(2-Chloroethyl) ether	TX	5765	10185203
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10185203
Butyl benzyl phthalate	TX	5670	10185203
Caprolactam	TX	7180	10185203
Captan	TX	7190	10185203
Carbaryl (Sevin)	TX	7195	10185203
Carbazole	TX	5680	10185203
Carbophenothion	TX	7220	10185203
Chlorobenzilate	TX	7260	10185203

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Matrix: ***Non-Potable Water***

Chrysene	TX	5855	10185203
Coumaphos	TX	7315	10185203
Demeton	TX	7390	10185203
Demeton	TX	7390	10185203
Demeton-o	TX	7395	10185203
Demeton-s	TX	7385	10185203
Diallate	TX	7405	10185203
Dibenz(a,h) anthracene	TX	5895	10185203
Dibenz(a,j) acridine	TX	5900	10185203
Dibenzofuran	TX	5905	10185203
Dichlorovos (DDVP, Dichlorvos)	TX	8610	10185203
Diethyl phthalate	TX	6070	10185203
Dimethoate	TX	7475	10185203
Dimethoate	TX	7475	10185203
Dimethyl phthalate	TX	6135	10185203
Di-n-butyl phthalate	TX	5925	10185203
Di-n-octyl phthalate	TX	6200	10185203
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10185203
Dioxathion	TX	7495	10185203
Diphenylamine	TX	6205	10185203
Disulfoton	TX	8625	10185203
Ethion	TX	7565	10185203
Ethyl methanesulfonate	TX	6260	10185203
Famphur	TX	7580	10185203
Fluoranthene	TX	6265	10185203
Fluorene	TX	6270	10185203
Hexachlorobenzene	TX	6275	10185203
Hexachlorobutadiene	TX	4835	10185203
Hexachlorocyclopentadiene	TX	6285	10185203
Hexachloroethane	TX	4840	10185203

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Matrix: ***Non-Potable Water***

Hexachlorophene	TX	6290	10185203
Hexachloropropene	TX	6295	10185203
Indeno(1,2,3-cd) pyrene	TX	6315	10185203
Isodrin	TX	7725	10185203
Isophorone	TX	6320	10185203
Isosafrole	TX	6325	10185203
Kepone	TX	7740	10185203
Maleic anhydride	TX	6335	10185203
Methapyrilene	TX	6345	10185203
Methyl methanesulfonate	TX	6375	10185203
Methyl parathion (Parathion, methyl)	TX	7825	10185203
Mevinphos	TX	7850	10185203
Naled	TX	7905	10185203
Naphthalene	TX	5005	10185203
Nitrobenzene	TX	5015	10185203
n-Nitrosodiethylamine	TX	6525	10185203
n-Nitrosodimethylamine	TX	6530	10185203
n-Nitrosodi-n-butylamine	TX	5025	10185203
n-Nitrosodi-n-propylamine	TX	6545	10185203
n-Nitrosodiphenylamine	TX	6535	10185203
n-Nitrosomethylethylamine	TX	6550	10185203
n-Nitrosomorpholine	TX	6555	10185203
n-Nitrosopiperidine	TX	6560	10185203
n-Nitrosopyrrolidine	TX	6565	10185203
o,o,o-Triethyl phosphorothioate	TX	8290	10185203
o-Anisidine	TX	5550	10185203
Parathion, ethyl	TX	7955	10185203
p-Cresidine	TX	5860	10185203
Pentachlorobenzene	TX	6590	10185203
Pentachloronitrobenzene (PCNB)	TX	6600	10185203

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Matrix: ***Non-Potable Water***

Pentachlorophenol	TX	6605	10185203
Phenacetin	TX	6610	10185203
Phenanthrene	TX	6615	10185203
Phenol	TX	6625	10185203
Phorate	TX	7985	10185203
Phosmet (Imidan)	TX	8000	10185203
Phthalic anhydride	TX	6640	10185203
Pronamide (Kerb)	TX	6650	10185203
Pyrene	TX	6665	10185203
Pyridine	TX	5095	10185203
Quinoline	TX	6670	10185203
Resorcinol	TX	6680	10185203
Safrole	TX	6685	10185203
Sulfotepp	TX	8155	10185203
Terbufos	TX	8185	10185203
Tetrachlorvinphos (Stirophos, Gardona)	TX	8197	10185203
Thionazin (Zinophos)	TX	8235	10185203
Toluene diisocyanate	TX	6775	10185203
Trifluralin (Treflan)	TX	8295	10185203

Method EPA 8290

Analyte	**AB**	**Analyte ID**	**Method ID**
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10187209
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10187209
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10187209
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10187209
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10187209
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10187209
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10187209
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10187209
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10187209

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Matrix: ***Non-Potable Water***

1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10187209
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10187209
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10187209
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10187209
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10187209
2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10187209
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10187209
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10187209
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10187209
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10187209
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10187209
Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10187209
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10187209
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10187209
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10187209
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10187209

Method EPA 8316

Analyte	**AB**	**Analyte ID**	**Method ID**
Acrylamide	TX	4330	10188202

Method EPA 8330

Analyte	**AB**	**Analyte ID**	**Method ID**
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10189807
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10189807
2,4,6-Trinitrotoluene (2,4,6-TNT)	TX	9651	10189807
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10189807
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10189807
2-Amino-4,6-dinitrotoluene (2-am-dnt)	TX	9303	10189807
2-Nitrotoluene	TX	9507	10189807
3-Nitrotoluene	TX	9510	10189807
4-Amino-2,6-dinitrotoluene (4-am-dnt)	TX	9306	10189807
4-Nitrotoluene	TX	9513	10189807

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Matrix: ***Non-Potable Water***

Methyl-2,4,6-trinitrophenylnitramine (tetryl)	TX	6415	10189807
Nitrobenzene	TX	5015	10189807
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	TX	9522	10189807
RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine)	TX	9432	10189807

Method EPA 9014

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	10193803
Total cyanide	TX	1645	10193803

Method EPA 9038

Analyte	**AB**	**Analyte ID**	**Method ID**
Sulfate	TX	2000	10196608

Method EPA 9040

Analyte	**AB**	**Analyte ID**	**Method ID**
pH	TX	1900	10196802

Method EPA 9050

Analyte	**AB**	**Analyte ID**	**Method ID**
Conductivity	TX	1610	10198604

Method EPA 9056

Analyte	**AB**	**Analyte ID**	**Method ID**
Bromide	TX	1540	10199209
Chloride	TX	1575	10199209
Fluoride	TX	1730	10199209
Nitrate as N	TX	1810	10199209
Nitrate-nitrite	TX	1820	10199209
Nitrite as N	TX	1840	10199209
Orthophosphate as P	TX	1870	10199209
Sulfate	TX	2000	10199209

Method EPA 9060

Analyte	**AB**	**Analyte ID**	**Method ID**
Total Organic Carbon (TOC)	TX	2040	10200201

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Matrix: ***Non-Potable Water***

Method EPA 9065

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200405

Method EPA 9066

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200609

Method EPA 9250

Analyte	AB	Analyte ID	Method ID
Chloride	TX	1575	10207202

Method EPA RSK 175

Analyte	AB	Analyte ID	Method ID
2-methylpropane (Isobutane)	TX	4942	10212905
Ethane	TX	4747	10212905
Ethene	TX	4752	10212905
Methane	TX	4926	10212905
n-Butane	TX	5007	10212905
n-Propane	TX	5029	10212905

Method HACH 8000

Analyte	AB	Analyte ID	Method ID
Chemical oxygen demand (COD)	TX	1565	60003001

Method SM 2120 B

Analyte	AB	Analyte ID	Method ID
Color	TX	1605	20223807

Method SM 2310 B (4a)

Analyte	AB	Analyte ID	Method ID
Acidity, as CaCO3	TX	1500	20002806

Method SM 2320 B

Analyte	AB	Analyte ID	Method ID
Alkalinity as CaCO3	TX	1505	20045005

Method SM 2340 B

Analyte	AB	Analyte ID	Method ID

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Matrix: ***Non-Potable Water***

Total hardness as CaCO3	TX	1755	20046008

Method SM 2510 B

Analyte	**AB**	**Analyte ID**	**Method ID**
Conductivity	TX	1610	20048004

Method SM 2540 B

Analyte	**AB**	**Analyte ID**	**Method ID**
Residue-total (total solids)	TX	1950	20004608

Method SM 2540 C

Analyte	**AB**	**Analyte ID**	**Method ID**
Residue-filterable (TDS)	TX	1955	20049803

Method SM 2540 D

Analyte	**AB**	**Analyte ID**	**Method ID**
Residue-nonfilterable (TSS)	TX	1960	20004802

Method SM 3500-Cr B

Analyte	**AB**	**Analyte ID**	**Method ID**
Chromium (VI)	TX	1045	20065809

Method SM 4500-Cl F

Analyte	**AB**	**Analyte ID**	**Method ID**
Total residual chlorine	TX	1940	20080482

Method SM 4500-Cl^- E

Analyte	**AB**	**Analyte ID**	**Method ID**
Chloride	TX	1575	20019209

Method SM 4500-CN^- C

Analyte	**AB**	**Analyte ID**	**Method ID**
Total cyanide	TX	1645	20020808

Method SM 4500-CN^- E

Analyte	**AB**	**Analyte ID**	**Method ID**
Total cyanide	TX	1645	20021209

Method SM 4500-CN^- G

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	20021607

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Matrix: ***Non-Potable Water***

Method SM 4500-H+ B

Analyte	AB	Analyte ID	Method ID
pH	TX	1900	20104603

Method SM 4500-NH3 D

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	20108809
Kjeldahl Nitrogen (Total Kjeldahl Nitrogen-TKN)	TX	1790	20108809

Method SM 4500-NH3 F

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	20023001

Method SM 4500-O G

Analyte	AB	Analyte ID	Method ID
Oxygen, dissolved	TX	1880	20025405

Method SM 4500-P E

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	20025803
Phosphorus	TX	1910	20025803

Method SM 4500-$S2^{-}$ F

Analyte	AB	Analyte ID	Method ID
Sulfide	TX	2005	20126209

Method SM 4500-SiO2 D

Analyte	AB	Analyte ID	Method ID
Silica as SiO2	TX	1990	20127202

Method SM 4500-$SO3^{-}$ B

Analyte	AB	Analyte ID	Method ID
Sulfite	TX	2015	20026806

Method SM 5210 B

Analyte	AB	Analyte ID	Method ID
Biochemical oxygen demand (BOD)	TX	1530	20027401
Carbonaceous BOD, CBOD	TX	1555	20027401

Method SM 5310 B

Analyte	AB	Analyte ID	Method ID

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Matrix: ***Non-Potable Water***

Total Organic Carbon (TOC)	TX	2040	20137206

Method SM 5310 C

Analyte	**AB**	**Analyte ID**	**Method ID**
Total Organic Carbon (TOC)	TX	2040	20138209

Method SM 5540 C

Analyte	**AB**	**Analyte ID**	**Method ID**
Surfactants - MBAS	TX	2025	20144405

Method TCEQ 1005

Analyte	**AB**	**Analyte ID**	**Method ID**
Total Petroleum Hydrocarbons (TPH)	TX	2050	90019208

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Matrix: ***Solid & Chemical Materials***

Method ASTM D2216

Analyte	AB	Analyte ID	Method ID
Moisture	TX	10337	ASTM D2216-05

Method EPA 1010

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10116606

Method EPA 1030

Analyte	AB	Analyte ID	Method ID
Ignitability	TX	1780	10117201

Method EPA 1311

Analyte	AB	Analyte ID	Method ID
TCLP	TX	849	10118806

Method EPA 1312

Analyte	AB	Analyte ID	Method ID
SPLP	TX	850	10119003

Method EPA 1668

Analyte	AB	Analyte ID	Method ID
Decachlorobiphenyls	TX	10332	10262007
Dichlorobiphenyls	TX	464	10262007
Heptachlorobiphenyls	TX	486	10262007
Hexachlorobiphenyls	TX	487	10262007
Monochlorobiphenyls	TX	501	10262007
Nonachlorobiphenyls	TX	507	10262007
Octachlorobiphenyls	TX	508	10262007
Pentachlorobiphenyls	TX	515	10262007
Tetrachlorobiphenyls	TX	528	10262007
Trichlorobiphenyls	TX	541	10262007

Method EPA 200.8

Analyte	AB	Analyte ID	Method ID
Uranium	TX	3035	10014605

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Matrix: ***Solid & Chemical Materials***

Method EPA 300.0

Analyte	AB	Analyte ID	Method ID
Bromide	TX	1540	10053200
Chloride	TX	1575	10053200
Fluoride	TX	1730	10053200
Nitrate as N	TX	1810	10053200
Nitrate-nitrite	TX	1820	10053200
Nitrite as N	TX	1840	10053200
Orthophosphate as P	TX	1870	10053200
Sulfate	TX	2000	10053200

Method EPA 310.1

Analyte	AB	Analyte ID	Method ID
Alkalinity as CaCO3	TX	1505	10054805

Method EPA 350.3

Analyte	AB	Analyte ID	Method ID
Ammonia as N	TX	1515	10064401

Method EPA 365.3

Analyte	AB	Analyte ID	Method ID
Orthophosphate as P	TX	1870	10070801
Phosphorus	TX	1910	10070801

Method EPA 6020

Analyte	AB	Analyte ID	Method ID
Aluminum	TX	1000	10156204
Antimony	TX	1005	10156204
Arsenic	TX	1010	10156204
Barium	TX	1015	10156204
Beryllium	TX	1020	10156204
Boron	TX	1025	10156204
Cadmium	TX	1030	10156204
Calcium	TX	1035	10156204
Chromium	TX	1040	10156204

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Matrix: ***Solid & Chemical Materials***

Cobalt	TX	1050	10156204
Copper	TX	1055	10156204
Iron	TX	1070	10156204
Lead	TX	1075	10156204
Lithium	TX	1080	10156204
Magnesium	TX	1085	10156204
Manganese	TX	1090	10156204
Molybdenum	TX	1100	10156204
Nickel	TX	1105	10156204
Potassium	TX	1125	10156204
Selenium	TX	1140	10156204
Silver	TX	1150	10156204
Sodium	TX	1155	10156204
Strontium	TX	1160	10156204
Thallium	TX	1165	10156204
Tin	TX	1175	10156204
Titanium	TX	1180	10156204
Vanadium	TX	1185	10156204
Zinc	TX	1190	10156204

Method EPA 7196

Analyte	**AB**	**Analyte ID**	**Method ID**
Chromium (VI)	TX	1045	10162206

Method EPA 7470

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10165603

Method EPA 7471

Analyte	**AB**	**Analyte ID**	**Method ID**
Mercury	TX	1095	10166004

Method EPA 8015

Analyte	**AB**	**Analyte ID**	**Method ID**
Diesel range organics (DRO)	TX	9369	10173203

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Matrix: ***Solid & Chemical Materials***

Ethanol	TX	4750	10173203
Ethylene glycol	TX	4785	10173203
Gasoline range organics (GRO)	TX	9408	10173203
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10173203
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10173203
Methanol	TX	4930	10173203
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10173203
n-Propanol (1-Propanol)	TX	5055	10173203
Propylene Glycol	TX	6657	10173203
tert-Butyl alcohol	TX	4420	10173203

Method EPA 8021

Analyte	**AB**	**Analyte ID**	**Method ID**
Benzene	TX	4375	10174400
Ethylbenzene	TX	4765	10174400
m+p-xylene	TX	5240	10174400
Methyl tert-butyl ether (MTBE)	TX	5000	10174400
o-Xylene	TX	5250	10174400
Toluene	TX	5140	10174400
Xylene (total)	TX	5260	10174400

Method EPA 8081

Analyte	**AB**	**Analyte ID**	**Method ID**
4,4'-DDD	TX	7355	10178402
4,4'-DDE	TX	7360	10178402
4,4'-DDT	TX	7365	10178402
Aldrin	TX	7025	10178402
alpha-BHC (alpha-Hexachlorocyclohexane)	TX	7110	10178402
alpha-Chlordane	TX	7240	10178402
beta-BHC (beta-Hexachlorocyclohexane)	TX	7115	10178402
Chlordane (tech.)	TX	7250	10178402
delta-BHC (delta-Hexachlorocyclohexane)	TX	7105	10178402
Dieldrin	TX	7470	10178402

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Matrix: ***Solid & Chemical Materials***

Endosulfan I	TX	7510	10178402
Endosulfan II	TX	7515	10178402
Endosulfan sulfate	TX	7520	10178402
Endrin	TX	7540	10178402
Endrin aldehyde	TX	7530	10178402
Endrin ketone	TX	7535	10178402
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	TX	7120	10178402
gamma-Chlordane	TX	7245	10178402
Heptachlor	TX	7685	10178402
Heptachlor epoxide	TX	7690	10178402
Methoxychlor	TX	7810	10178402
Mirex	TX	7870	10178402
Toxaphene (Chlorinated camphene)	TX	8250	10178402

Method EPA 8082

Analyte	**AB**	**Analyte ID**	**Method ID**
Aroclor-1016 (PCB-1016)	TX	8880	10179201
Aroclor-1221 (PCB-1221)	TX	8885	10179201
Aroclor-1232 (PCB-1232)	TX	8890	10179201
Aroclor-1242 (PCB-1242)	TX	8895	10179201
Aroclor-1248 (PCB-1248)	TX	8900	10179201
Aroclor-1254 (PCB-1254)	TX	8905	10179201
Aroclor-1260 (PCB-1260)	TX	8910	10179201
PCBs (total)	TX	8870	10179201

Method EPA 8260

Analyte	**AB**	**Analyte ID**	**Method ID**
1,1,1,2-Tetrachloroethane	TX	5105	10184404
1,1,1-Trichloroethane	TX	5160	10184404
1,1,2,2-Tetrachloroethane	TX	5110	10184404
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	TX	5195	10184404
1,1,2-Trichloroethane	TX	5165	10184404
1,1-Dichloroethane	TX	4630	10184404

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Matrix: ***Solid & Chemical Materials***

1,1-Dichloroethylene	TX	4640	10184404
1,1-Dichloropropene	TX	4670	10184404
1,2,3-Trichlorobenzene	TX	5150	10184404
1,2,3-Trichloropropane	TX	5180	10184404
1,2,4-Trichlorobenzene	TX	5155	10184404
1,2,4-Trimethylbenzene	TX	5210	10184404
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10184404
1,2-Dibromoethane (EDB, Ethylene dibromide)	TX	4585	10184404
1,2-Dichlorobenzene	TX	4610	10184404
1,2-Dichloroethane (Ethylene dichloride)	TX	4635	10184404
1,2-Dichloropropane	TX	4655	10184404
1,3,5-Trimethylbenzene	TX	5215	10184404
1,3-Dichlorobenzene	TX	4615	10184404
1,3-Dichloropropane	TX	4660	10184404
1,4-Dichlorobenzene	TX	4620	10184404
1,4-Dioxane (1,4-Diethyleneoxide)	TX	4735	10184404
1-Chlorohexane	TX	4510	10184404
1-Propanol	TX	5060	10184404
2,2-Dichloropropane	TX	4665	10184404
2-Butanone (Methyl ethyl ketone, MEK)	TX	4410	10184404
2-Chloroethyl vinyl ether	TX	4500	10184404
2-Chlorotoluene	TX	4535	10184404
2-Hexanone (MBK)	TX	4860	10184404
4-Chlorotoluene	TX	4540	10184404
4-Isopropyltoluene (p-Cymene)	TX	4915	10184404
4-Methyl-2-pentanone (MIBK)	TX	4995	10184404
Acetone (2-Propanone)	TX	4315	10184404
Acetonitrile	TX	4320	10184404
Acrolein (Propenal)	TX	4325	10184404
Acrylonitrile	TX	4340	10184404

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Matrix: ***Solid & Chemical Materials***

Allyl chloride (3-Chloropropene)	TX	4355	10184404
Benzene	TX	4375	10184404
Benzyl chloride	TX	5635	10184404
Bromobenzene	TX	4385	10184404
Bromochloromethane	TX	4390	10184404
Bromodichloromethane	TX	4395	10184404
Bromoform	TX	4400	10184404
Carbon disulfide	TX	4450	10184404
Carbon tetrachloride	TX	4455	10184404
Chlorobenzene	TX	4475	10184404
Chlorodibromomethane	TX	4575	10184404
Chloroethane (Ethyl chloride)	TX	4485	10184404
Chloroform	TX	4505	10184404
Chloroprene (2-Chloro-1,3-butadiene)	TX	4525	10184404
cis-1,2-Dichloroethylene	TX	4645	10184404
cis-1,3-Dichloropropene	TX	4680	10184404
Dibromofluoromethane	TX	4590	10184404
Dibromomethane (Methylene bromide)	TX	4595	10184404
Dichlorodifluoromethane (Freon-12)	TX	4625	10184404
Diethyl ether	TX	4725	10184404
Epichlorohydrin (1-Chloro-2,3-epoxypropane)	TX	4745	10184404
Ethanol	TX	4750	10184404
Ethyl acetate	TX	4755	10184404
Ethyl methacrylate	TX	4810	10184404
Ethylbenzene	TX	4765	10184404
Ethylene oxide	TX	4795	10184404
Hexachlorobutadiene	TX	4835	10184404
Iodomethane (Methyl iodide)	TX	4870	10184404
Isobutyl alcohol (2-Methyl-1-propanol)	TX	4875	10184404
Isopropyl alcohol (2-Propanol, Isopropanol)	TX	4895	10184404

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Matrix: ***Solid & Chemical Materials***

Isopropylbenzene (Cumene)	TX	4900	10184404
m+p-xylene	TX	5240	10184404
Methacrylonitrile	TX	4925	10184404
Methyl acetate	TX	4940	10184404
Methyl acrylate	TX	4945	10184404
Methyl bromide (Bromomethane)	TX	4950	10184404
Methyl chloride (Chloromethane)	TX	4960	10184404
Methyl methacrylate	TX	4990	10184404
Methyl tert-butyl ether (MTBE)	TX	5000	10184404
Methylcyclohexane	TX	4965	10184404
Methylene chloride (Dichloromethane)	TX	4975	10184404
Naphthalene	TX	5005	10184404
n-Butyl alcohol (1-Butanol, n-Butanol)	TX	4425	10184404
n-Butylbenzene	TX	4435	10184404
n-Propylbenzene	TX	5090	10184404
o-Xylene	TX	5250	10184404
Pentachloroethane	TX	5035	10184404
Propionitrile (Ethyl cyanide)	TX	5080	10184404
Pyridine	TX	5095	10184404
sec-Butylbenzene	TX	4440	10184404
Styrene	TX	5100	10184404
tert-Butyl alcohol	TX	4420	10184404
tert-Butylbenzene	TX	4445	10184404
Tetrachloroethylene (Perchloroethylene)	TX	5115	10184404
Toluene	TX	5140	10184404
trans-1,2-Dichloroethylene	TX	4700	10184404
trans-1,3-Dichloropropylene	TX	4685	10184404
trans-1,4-Dichloro-2-butene	TX	4605	10184404
Trichloroethene (Trichloroethylene)	TX	5170	10184404
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	TX	5175	10184404

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Matrix: ***Solid & Chemical Materials***

Vinyl acetate	TX	5225	10184404
Vinyl chloride	TX	5235	10184404
Xylene (total)	TX	5260	10184404

Method EPA 8270

Analyte	AB	Analyte ID	Method ID
1,2,4,5-Tetrachlorobenzene	TX	6715	10185203
1,2,4-Trichlorobenzene	TX	5155	10185203
1,2-Dibromo-3-chloropropane (DBCP)	TX	4570	10185203
1,2-Dichlorobenzene	TX	4610	10185203
1,2-Dinitrobenzene	TX	6155	10185203
1,2-Diphenylhydrazine	TX	6220	10185203
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10185203
1,3-Dichlorobenzene	TX	4615	10185203
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10185203
1,4-Dichlorobenzene	TX	4620	10185203
1,4-Dinitrobenzene	TX	6165	10185203
1,4-Naphthoquinone	TX	6420	10185203
1,4-Phenylenediamine	TX	6630	10185203
1-Chloronaphthalene	TX	5790	10185203
1-Naphthylamine	TX	6425	10185203
2,2'-Oxybis(1-chloropropane) (bis(2-Chloro-1-methylethyl)ether)	TX	4659	10185203
2,3,4,6-Tetrachlorophenol	TX	6735	10185203
2,4,5-Trichlorophenol	TX	6835	10185203
2,4,5-Trimethylaniline	TX	6880	10185203
2,4,6-Trichlorophenol	TX	6840	10185203
2,4-Diaminotoluene	TX	5880	10185203
2,4-Dichlorophenol	TX	6000	10185203
2,4-Dimethylphenol	TX	6130	10185203
2,4-Dinitrophenol	TX	6175	10185203
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10185203

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Matrix: ***Solid & Chemical Materials***

2,6-Dichlorophenol	TX	6005	10185203
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10185203
2-Acetylaminofluorene	TX	5515	10185203
2-Chloronaphthalene	TX	5795	10185203
2-Chlorophenol	TX	5800	10185203
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	TX	6360	10185203
2-Methylaniline (o-Toluidine)	TX	5145	10185203
2-Methylnaphthalene	TX	6385	10185203
2-Methylphenol (o-Cresol)	TX	6400	10185203
2-Naphthylamine	TX	6430	10185203
2-Nitroaniline	TX	6460	10185203
2-Nitrophenol	TX	6490	10185203
2-Picoline (2-Methylpyridine)	TX	5050	10185203
3,3'-Dichlorobenzidine	TX	5945	10185203
3,3'-Dimethylbenzidine	TX	6120	10185203
3-Methylcholanthrene	TX	6355	10185203
3-Methylphenol (m-Cresol)	TX	6405	10185203
3-Nitroaniline	TX	6465	10185203
4-Aminobiphenyl	TX	5540	10185203
4-Bromophenyl phenyl ether (BDE-3)	TX	5660	10185203
4-Chloro-3-methylphenol	TX	5700	10185203
4-Chloroaniline	TX	5745	10185203
4-Chlorophenyl phenylether	TX	5825	10185203
4-Methylphenol (p-Cresol)	TX	6410	10185203
4-Nitroaniline	TX	6470	10185203
4-Nitrophenol	TX	6500	10185203
4-Nitroquinoline-1-oxide	TX	6510	10185203
5-Nitro-o-toluidine	TX	6570	10185203
7,12-Dimethylbenz(a) anthracene	TX	6115	10185203
a-a-Dimethylphenethylamine	TX	6125	10185203

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Matrix: ***Solid & Chemical Materials***

Acenaphthene	TX	5500	10185203
Acenaphthylene	TX	5505	10185203
Acetophenone	TX	5510	10185203
Aniline	TX	5545	10185203
Anthracene	TX	5555	10185203
Aramite	TX	5560	10185203
Atrazine	TX	7065	10185203
Azinphos-methyl (Guthion)	TX	7075	10185203
Azobenzene	TX	5562	10185203
Benzenethiol (Thiophenol)	TX	6750	10185203
Benzidine	TX	5595	10185203
Benzo(a)anthracene	TX	5575	10185203
Benzo(a)pyrene	TX	5580	10185203
Benzo(b)fluoranthene	TX	5585	10185203
Benzo(e)pyrene	TX	5605	10185203
Benzo(g,h,i)perylene	TX	5590	10185203
Benzo(k)fluoranthene	TX	5600	10185203
Benzoic acid	TX	5610	10185203
Benzyl alcohol	TX	5630	10185203
Biphenyl	TX	5640	10185203
bis(2-Chloroethoxy)methane	TX	5760	10185203
bis(2-Chloroethyl) ether	TX	5765	10185203
bis(2-Ethylhexyl) phthalate (Di(2-Ethylhexyl) phthalate, DEHP)	TX	6065	10185203
Butyl benzyl phthalate	TX	5670	10185203
Caprolactam	TX	7180	10185203
Carbaryl (Sevin)	TX	7195	10185203
Carbazole	TX	5680	10185203
Carbophenothion	TX	7220	10185203
Chlorobenzilate	TX	7260	10185203
Chrysene	TX	5855	10185203

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Matrix: ***Solid & Chemical Materials***

Demeton	TX	7390	10185203
Demeton-o	TX	7395	10185203
Demeton-s	TX	7385	10185203
Diallate	TX	7405	10185203
Dibenz(a,h) anthracene	TX	5895	10185203
Dibenz(a,j) acridine	TX	5900	10185203
Dibenzo(a,e) pyrene	TX	5890	10185203
Dibenzofuran	TX	5905	10185203
Dichlorovos (DDVP, Dichlorvos)	TX	8610	10185203
Diethyl phthalate	TX	6070	10185203
Dimethoate	TX	7475	10185203
Dimethyl phthalate	TX	6135	10185203
Di-n-butyl phthalate	TX	5925	10185203
Di-n-octyl phthalate	TX	6200	10185203
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	TX	8620	10185203
Diphenylamine	TX	6205	10185203
Disulfoton	TX	8625	10185203
Ethyl methanesulfonate	TX	6260	10185203
Fluoranthene	TX	6265	10185203
Fluorene	TX	6270	10185203
Hexachlorobenzene	TX	6275	10185203
Hexachlorobutadiene	TX	4835	10185203
Hexachlorocyclopentadiene	TX	6285	10185203
Hexachloroethane	TX	4840	10185203
Hexachlorophene	TX	6290	10185203
Hexachloropropene	TX	6295	10185203
Indeno(1,2,3-cd) pyrene	TX	6315	10185203
Isodrin	TX	7725	10185203
Isophorone	TX	6320	10185203
Isosafrole	TX	6325	10185203

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Matrix: ***Solid & Chemical Materials***

Kepone	TX	7740	10185203
Malathion	TX	7770	10185203
Methapyrilene	TX	6345	10185203
Methyl methanesulfonate	TX	6375	10185203
Methyl parathion (Parathion, methyl)	TX	7825	10185203
Mevinphos	TX	7850	10185203
Naphthalene	TX	5005	10185203
Nitrobenzene	TX	5015	10185203
n-Nitrosodiethylamine	TX	6525	10185203
n-Nitrosodimethylamine	TX	6530	10185203
n-Nitrosodi-n-butylamine	TX	5025	10185203
n-Nitrosodi-n-propylamine	TX	6545	10185203
n-Nitrosodiphenylamine	TX	6535	10185203
n-Nitrosomethylethylamine	TX	6550	10185203
n-Nitrosomorpholine	TX	6555	10185203
n-Nitrosopiperidine	TX	6560	10185203
n-Nitrosopyrrolidine	TX	6565	10185203
o,o,o-Triethyl phosphorothioate	TX	8290	10185203
o-Anisidine	TX	5550	10185203
Parathion, ethyl	TX	7955	10185203
p-Cresidine	TX	5860	10185203
Pentachlorobenzene	TX	6590	10185203
Pentachloronitrobenzene (PCNB)	TX	6600	10185203
Pentachlorophenol	TX	6605	10185203
Phenacetin	TX	6610	10185203
Phenanthrene	TX	6615	10185203
Phenol	TX	6625	10185203
Phorate	TX	7985	10185203
Pronamide (Kerb)	TX	6650	10185203
Pyrene	TX	6665	10185203

Texas Commission on Environmental Quality

NELAP - Recognized Laboratory Fields of Accreditation

Certificate: T104704231-19-23

ALS Laboratory Group, Environmental Services Division (Houston, Texas)

Expiration Date: 4/30/2020

10450 Stancliff Road, Suite 210
Houston, TX 77099-4338

Issue Date: 5/1/2019

These fields of accreditation supercede all previous fields. The Texas Commission on Environmental Quality urges customers to verify the laboratory's current accreditation status for particular methods and analyses.

Matrix: ***Solid & Chemical Materials***

Pyridine	TX	5095	10185203
Quinoline	TX	6670	10185203
Safrole	TX	6685	10185203
Sulfotepp	TX	8155	10185203
Terbufos	TX	8185	10185203
Tetrachlorvinphos (Stirophos, Gardona)	TX	8197	10185203
Thionazin (Zinophos)	TX	8235	10185203
Toluene diisocyanate	TX	6775	10185203

Method EPA 8290

Analyte	AB	Analyte ID	Method ID
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	TX	9516	10187209
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	TX	9519	10187209
1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	TX	9420	10187209
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	TX	9426	10187209
1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	TX	9423	10187209
1,2,3,4,7,8-Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	TX	9471	10187209
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	TX	9453	10187209
1,2,3,6,7,8-Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	TX	9474	10187209
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin(1,2,3,6,7,8-HxCDD)	TX	9456	10187209
1,2,3,7,8,9-Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	TX	9477	10187209
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-HxCDD)	TX	9459	10187209
1,2,3,7,8-Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	TX	9543	10187209
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (1,2,3,7,8-PeCDD)	TX	9540	10187209
2,3,4,6,7,8-Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	TX	9480	10187209
2,3,4,7,8-Pentachlorodibenzofuran (2,3,4,7,8-PeCDF	TX	9549	10187209
2,3,7,8-Tetrachlorodibenzofuran (2,3,7,8-TCDF)	TX	9612	10187209
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	TX	9618	10187209
Total Heptachlorodibenzofuran (Total HpCDF)	TX	9444	10187209
Total Heptachlorodibenzo-p-dioxin (Total HpCDD)	TX	9438	10187209
Total Hexachlorodibenzofuran (Total HxCDF)	TX	9483	10187209

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Matrix: ***Solid & Chemical Materials***

Total Hexachlorodibenzo-p-dioxin (Total HxCDD)	TX	9468	10187209
Total Pentachlorodibenzofuran (Total PeCDF)	TX	9552	10187209
Total Pentachlorodibenzo-p-dioxin (Total PeCDD)	TX	9555	10187209
Total Tetrachlorodibenzofuran (Total TCDF)	TX	9615	10187209
Total Tetrachlorodibenzo-p-dioxin (Total TCDD)	TX	9609	10187209

Method EPA 8316

Analyte	**AB**	**Analyte ID**	**Method ID**
Acrylamide	TX	4330	10188202

Method EPA 8330

Analyte	**AB**	**Analyte ID**	**Method ID**
1,3,5-Trinitrobenzene (1,3,5-TNB)	TX	6885	10189807
1,3-Dinitrobenzene (1,3-DNB)	TX	6160	10189807
2,4,6-Trinitrotoluene (2,4,6-TNT)	TX	9651	10189807
2,4-Dinitrotoluene (2,4-DNT)	TX	6185	10189807
2,6-Dinitrotoluene (2,6-DNT)	TX	6190	10189807
2-Amino-4,6-dinitrotoluene (2-am-dnt)	TX	9303	10189807
2-Nitrotoluene	TX	9507	10189807
3-Nitrotoluene	TX	9510	10189807
4-Amino-2,6-dinitrotoluene (4-am-dnt)	TX	9306	10189807
4-Nitrotoluene	TX	9513	10189807
Methyl-2,4,6-trinitrophenylnitramine (tetryl)	TX	6415	10189807
Nitrobenzene	TX	5015	10189807
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	TX	9522	10189807
RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine)	TX	9432	10189807

Method EPA 9014

Analyte	**AB**	**Analyte ID**	**Method ID**
Amenable cyanide	TX	1510	10193803
Total cyanide	TX	1645	10193803

Method EPA 9038

Analyte	**AB**	**Analyte ID**	**Method ID**
Sulfate	TX	2000	10196608

Texas Commission on Environmental Quality

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Issue Date: 5/1/2019

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Matrix: ***Solid & Chemical Materials***

Method EPA 9040

Analyte	AB	Analyte ID	Method ID
Corrosivity	TX	1615	10197203
pH	TX	1900	10196802

Method EPA 9045

Analyte	AB	Analyte ID	Method ID
Corrosivity	TX	1615	10197805
pH	TX	1900	10197805

Method EPA 9050

Analyte	AB	Analyte ID	Method ID
Conductivity	TX	1610	10198604

Method EPA 9056

Analyte	AB	Analyte ID	Method ID
Bromide	TX	1540	10199209
Chloride	TX	1575	10199209
Fluoride	TX	1730	10199209
Nitrate as N	TX	1810	10199209
Nitrate-nitrite	TX	1820	10199209
Nitrite as N	TX	1840	10199209
Orthophosphate as P	TX	1870	10199209
Sulfate	TX	2000	10199209

Method EPA 9060

Analyte	AB	Analyte ID	Method ID
Total Organic Carbon (TOC)	TX	2040	10200201

Method EPA 9065

Analyte	AB	Analyte ID	Method ID
Total phenolics	TX	1905	10200405

Method EPA 9071

Analyte	AB	Analyte ID	Method ID
n-Hexane Extractable Material (HEM) (O&G)	TX	1803	10201204

Texas Commission on Environmental Quality

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Issue Date: 5/1/2019

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Matrix: ***Solid & Chemical Materials***

Method	Analyte	AB	Analyte ID	Method ID
EPA 9095	Paint Filter Liquids Test	TX	10312	10204009
EPA 9250	Chloride	TX	1575	10207202
SM 2320 B	Alkalinity as CaCO3	TX	1505	20045005
SM 2510 B	Conductivity	TX	1610	20048004
SM 2540 G	Residue-total (total solids)	TX	1950	20005203
SSA/ASA Part 3:34	Carbon, organic (Walkley-Black)	TX	10340	SSA/ASA Pt 3:34
TCEQ 1005	Total Petroleum Hydrocarbons (TPH)	TX	2050	90019208

10450 Stancliff Rd. Suite 210
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T: +1 281 530 5656
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January 28, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS19120951**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 6 sample(s) on Dec 17, 2019 for the analysis presented in the following report.

This is a REVISED REPORT. Please see the Case Narrative for discussion concerning this revision.

Regards,

Generated By: DANE.WACASEY
Dane J. Wacasey

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS19120951

CASE NARRATIVE

Work Order Comments

• This report was revised January 28, 2020 in order to adjust select sample IDs per client direction received via email.

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS19120951**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS19120951**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data								
Laboratory Name: ALS Laboratory Group			LRC Date: 01/10/2020					
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS19120951					
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 148904, 148916, 149362, R353203					
#[1]	A[2]	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			1
		Were MS/MSD RPDs within laboratory QC limits?		X			2
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				3

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 01/10/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS19120951				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 148904, 148916, 149362, R353203				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?			X		
		Were ion abundance data within the method-required QC limits?			X		
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?			X		
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 01/10/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS19120951
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 148904, 148916, 149362, R353203

ER#[5]	Description
1	Batch 148916, Texas TPH by Method TX1005, Sample SO-1620-DPT3819(5-6)-20191216, MS/MSD recovered above upper control limits due to sample matrix interference.
2	Batch 148916, Texas TPH by Method TX1005, Sample SO-1620-DPT3819(5-6)-20191216, MS/MSD RPD recovered above upper control limits for >nC12 to nC28 due to possible heterogeneity of the soil matrix.
3	TPH TX 1006: ALS is NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package. Because TCEQ does not offer accreditation for TX 1006, the results are flagged with n.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS19120951

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19120951-01	SO-1620-SB221(4-5)-20191216	Soil		16-Dec-2019 10:55	17-Dec-2019 16:25	☐
HS19120951-02	SO-1620-SB221(9-10)-20191216	Soil		16-Dec-2019 11:40	17-Dec-2019 16:25	☐
HS19120951-03	SO-1620-DPT5519(3-4)-20191216	Soil		16-Dec-2019 14:25	17-Dec-2019 16:25	☐
HS19120951-04	SO-1620-DPT5519(12.3-13.3)-20191216	Soil		16-Dec-2019 14:58	17-Dec-2019 16:25	☐
HS19120951-05	SO-1620-DPT3819(3-4)-20191216	Soil		16-Dec-2019 16:50	17-Dec-2019 16:25	☐
HS19120951-06	SO-1620-DPT3819(5-6)-20191216	Soil		16-Dec-2019 16:55	17-Dec-2019 16:25	☐

Revision:1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SB221(4-5)-20191216
Collection Date: 16-Dec-2019 10:55

ANALYTICAL REPORT
WorkOrder:HS19120951
Lab ID:HS19120951-01
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 19-Dec-2019		Analyst: MBG
nC6 to nC12	< 8.5		8.5	57	mg/Kg-dry	1	25-Dec-2019 03:08
>nC12 to nC28	< 11		11	57	mg/Kg-dry	1	25-Dec-2019 03:08
>nC28 to nC35	< 11		11	57	mg/Kg-dry	1	25-Dec-2019 03:08
Total Petroleum Hydrocarbon	< 8.5		8.5	57	mg/Kg-dry	1	25-Dec-2019 03:08
Surr: 2-Fluorobiphenyl	*82.8*			*70-130*	*%REC*	*1*	*25-Dec-2019 03:08*
Surr: Trifluoromethyl benzene	*94.7*			*70-130*	*%REC*	*1*	*25-Dec-2019 03:08*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: TH
Percent Moisture	**14.2**		**0.0100**	**0.0100**	**wt%**	1	23-Dec-2019 11:59

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SB221(9-10)-20191216
Collection Date: 16-Dec-2019 11:40

ANALYTICAL REPORT
WorkOrder:HS19120951
Lab ID:HS19120951-02
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 19-Dec-2019		Analyst: MBG
nC6 to nC12	< 8.2		8.2	55	mg/Kg-dry	1	25-Dec-2019 03:37
>nC12 to nC28	< 11		11	55	mg/Kg-dry	1	25-Dec-2019 03:37
>nC28 to nC35	< 11		11	55	mg/Kg-dry	1	25-Dec-2019 03:37
Total Petroleum Hydrocarbon	< 8.2		8.2	55	mg/Kg-dry	1	25-Dec-2019 03:37
Surr: 2-Fluorobiphenyl	*87.0*			*70-130*	*%REC*	*1*	*25-Dec-2019 03:37*
Surr: Trifluoromethyl benzene	*98.9*			*70-130*	*%REC*	*1*	*25-Dec-2019 03:37*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: TH
Percent Moisture	**16.4**		**0.0100**	**0.0100**	**wt%**	1	23-Dec-2019 11:59

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-DPT5519(3-4)-20191216
Collection Date: 16-Dec-2019 14:25

ANALYTICAL REPORT
WorkOrder:HS19120951
Lab ID:HS19120951-03
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 19-Dec-2019		Analyst: MBG
nC6 to nC12	< 8.6		8.6	58	mg/Kg-dry	1	25-Dec-2019 04:06
>nC12 to nC28	< 11		11	58	mg/Kg-dry	1	25-Dec-2019 04:06
>nC28 to nC35	< 11		11	58	mg/Kg-dry	1	25-Dec-2019 04:06
Total Petroleum Hydrocarbon	< 8.6		8.6	58	mg/Kg-dry	1	25-Dec-2019 04:06
Surr: 2-Fluorobiphenyl	*81.6*			*70-130*	*%REC*	*1*	*25-Dec-2019 04:06*
Surr: Trifluoromethyl benzene	*92.7*			*70-130*	*%REC*	*1*	*25-Dec-2019 04:06*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: TH
Percent Moisture	**13.5**		**0.0100**	**0.0100**	**wt%**	1	23-Dec-2019 11:59

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS19120951
Sample ID: SO-1620-DPT5519(12.3-13.3)-20191216
Lab ID:HS19120951-04
Collection Date: 16-Dec-2019 14:58
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 19-Dec-2019		Analyst: MBG
nC6 to nC12	< 9.4		9.4	63	mg/Kg-dry	1	25-Dec-2019 04:34
>nC12 to nC28	< 12		12	63	mg/Kg-dry	1	25-Dec-2019 04:34
>nC28 to nC35	< 12		12	63	mg/Kg-dry	1	25-Dec-2019 04:34
Total Petroleum Hydrocarbon	< 9.4		9.4	63	mg/Kg-dry	1	25-Dec-2019 04:34
Surr: 2-Fluorobiphenyl	*86.2*			*70-130*	*%REC*	*1*	*25-Dec-2019 04:34*
Surr: Trifluoromethyl benzene	*96.9*			*70-130*	*%REC*	*1*	*25-Dec-2019 04:34*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: TH
Percent Moisture	**22.4**		**0.0100**	**0.0100**	**wt%**	1	23-Dec-2019 11:59

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-DPT3819(3-4)-20191216
Collection Date: 16-Dec-2019 16:50

ANALYTICAL REPORT
WorkOrder:HS19120951
Lab ID:HS19120951-05
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 19-Dec-2019		Analyst: MBG
nC6 to nC12	**5,000**		**92**	**620**	**mg/Kg-dry**	10	24-Dec-2019 12:01
>nC12 to nC28	**6,400**		**120**	**620**	**mg/Kg-dry**	10	24-Dec-2019 12:01
>nC28 to nC35	**3,100**		**120**	**620**	**mg/Kg-dry**	10	24-Dec-2019 12:01
Total Petroleum Hydrocarbon	**14,500**		**92**	**620**	**mg/Kg-dry**	10	24-Dec-2019 12:01
Surr: 2-Fluorobiphenyl	*76.7*			*70-130*	*%REC*	*10*	*24-Dec-2019 12:01*
Surr: Trifluoromethyl benzene	*81.0*			*70-130*	*%REC*	*10*	*24-Dec-2019 12:01*
PETROLEUM HYDROCARBONS BY TX1006	**Method:TX1006**				Prep:TX1006PR / 02-Jan-2020		Analyst: MBG
Aliphatics nC6	< 62	n	62	120	mg/Kg-dry	10	02-Jan-2020 15:44
Aliphatics >nC6 to nC8	< 62	n	62	120	mg/Kg-dry	10	02-Jan-2020 15:44
Aliphatics >nC8 to nC10	**630**	n	**62**	**120**	**mg/Kg-dry**	10	02-Jan-2020 15:44
Aliphatics >nC10 to nC12	**210**	n	**62**	**120**	**mg/Kg-dry**	10	02-Jan-2020 15:44
Aliphatics >nC12 to nC16	< 62	n	62	120	mg/Kg-dry	10	02-Jan-2020 15:44
Aliphatics >nC16 to nC21	**220**	n	**62**	**120**	**mg/Kg-dry**	10	02-Jan-2020 15:44
Aliphatics >nC21 to nC35	**880**	n	**62**	**120**	**mg/Kg-dry**	10	02-Jan-2020 15:44
Total Aliphatic Fraction	**1,940**	n	**62**	**120**	**mg/Kg-dry**	10	02-Jan-2020 15:44
Aliphatics Relative % Distribution	**35**	n	**0**	**0**	**%-dry**	10	02-Jan-2020 15:44
Aromatics >nC7 to nC8	< 62	n	62	120	mg/Kg-dry	10	02-Jan-2020 16:13
Aromatics >nC8 to nC10	**490**	n	**62**	**120**	**mg/Kg-dry**	10	02-Jan-2020 16:13
Aromatics >nC10 to nC12	**1,400**	n	**62**	**120**	**mg/Kg-dry**	10	02-Jan-2020 16:13
Aromatics >nC12 to nC16	**320**	n	**62**	**120**	**mg/Kg-dry**	10	02-Jan-2020 16:13
Aromatics >nC16 to nC21	**770**	n	**62**	**120**	**mg/Kg-dry**	10	02-Jan-2020 16:13
Aromatics >nC21 to nC35	**700**	n	**62**	**120**	**mg/Kg-dry**	10	02-Jan-2020 16:13
Total Aromatic Fraction	**3,680**	n	**62**	**120**	**mg/Kg-dry**	10	02-Jan-2020 16:13
Aromatics Relative % Distribution	**65**	n	**0**	**0**	**%-dry**	10	02-Jan-2020 16:13
Total Petroleum Hydrocarbons	**5,600**	n	**62**	**120**	**mg/Kg-dry**	10	02-Jan-2020 15:44
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: TH
Percent Moisture	**22.7**		**0.0100**	**0.0100**	**wt%**	1	23-Dec-2019 11:59

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-DPT3819(5-6)-20191216
Collection Date: 16-Dec-2019 16:55

ANALYTICAL REPORT
WorkOrder:HS19120951
Lab ID:HS19120951-06
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 19-Dec-2019		Analyst: MBG
nC6 to nC12	**1,400**		**89**	**600**	**mg/Kg-dry**	10	24-Dec-2019 08:37
>nC12 to nC28	**4,700**		**120**	**600**	**mg/Kg-dry**	10	24-Dec-2019 08:37
>nC28 to nC35	**1,700**		**120**	**600**	**mg/Kg-dry**	10	24-Dec-2019 08:37
Total Petroleum Hydrocarbon	**7,800**		**89**	**600**	**mg/Kg-dry**	10	24-Dec-2019 08:37
Surr: 2-Fluorobiphenyl	*70.5*			*70-130*	*%REC*	*10*	*24-Dec-2019 08:37*
Surr: Trifluoromethyl benzene	*74.5*			*70-130*	*%REC*	*10*	*24-Dec-2019 08:37*
PETROLEUM HYDROCARBONS BY TX1006	**Method:TX1006**				Prep:TX1006PR / 02-Jan-2020		Analyst: MBG
Aliphatics nC6	< 60	n	60	120	mg/Kg-dry	10	02-Jan-2020 16:43
Aliphatics >nC6 to nC8	< 60	n	60	120	mg/Kg-dry	10	02-Jan-2020 16:43
Aliphatics >nC8 to nC10	**260**	n	**60**	**120**	**mg/Kg-dry**	10	02-Jan-2020 16:43
Aliphatics >nC10 to nC12	< 60	n	60	120	mg/Kg-dry	10	02-Jan-2020 16:43
Aliphatics >nC12 to nC16	< 60	n	60	120	mg/Kg-dry	10	02-Jan-2020 16:43
Aliphatics >nC16 to nC21	**250**	n	**60**	**120**	**mg/Kg-dry**	10	02-Jan-2020 16:43
Aliphatics >nC21 to nC35	**540**	n	**60**	**120**	**mg/Kg-dry**	10	02-Jan-2020 16:43
Total Aliphatic Fraction	**1,050**	n	**60**	**120**	**mg/Kg-dry**	10	02-Jan-2020 16:43
Aliphatics Relative % Distribution	**34**	n	**0**	**0**	**%-dry**	10	02-Jan-2020 16:43
Aromatics >nC7 to nC8	< 60	n	60	120	mg/Kg-dry	10	02-Jan-2020 17:12
Aromatics >nC8 to nC10	**120**	n	**60**	**120**	**mg/Kg-dry**	10	02-Jan-2020 17:12
Aromatics >nC10 to nC12	**390**	n	**60**	**120**	**mg/Kg-dry**	10	02-Jan-2020 17:12
Aromatics >nC12 to nC16	**370**	n	**60**	**120**	**mg/Kg-dry**	10	02-Jan-2020 17:12
Aromatics >nC16 to nC21	**700**	n	**60**	**120**	**mg/Kg-dry**	10	02-Jan-2020 17:12
Aromatics >nC21 to nC35	**440**	n	**60**	**120**	**mg/Kg-dry**	10	02-Jan-2020 17:12
Total Aromatic Fraction	**2,020**	n	**60**	**120**	**mg/Kg-dry**	10	02-Jan-2020 17:12
Aromatics Relative % Distribution	**66**	n	**0**	**0**	**%-dry**	10	02-Jan-2020 17:12
Total Petroleum Hydrocarbons	**3,100**	n	**60**	**120**	**mg/Kg-dry**	10	02-Jan-2020 16:43
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: TH
Percent Moisture	**18.8**		**0.0100**	**0.0100**	**wt%**	1	23-Dec-2019 11:59

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19120951

Batch ID: 148904 **Start Date:** 19 Dec 2019 12:30 **End Date:** 19 Dec 2019 19:00
Method: TX 1005 PREP **Prep Code:** TX 1005_S PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19120951-01	1	10.16 (g)	10 (mL)	0.9843
HS19120951-02	1	10.86 (g)	10 (mL)	0.9208
HS19120951-03	1	10.01 (g)	10 (mL)	0.999
HS19120951-04	1	10.17 (g)	10 (mL)	0.9833

Batch ID: 148916 **Start Date:** 19 Dec 2019 14:00 **End Date:** 19 Dec 2019 19:30
Method: TX 1005 PREP **Prep Code:** TX 1005_S PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19120951-05	1	10.39 (g)	10 (mL)	0.9625
HS19120951-06	1	10.21 (g)	10 (mL)	0.9794

Batch ID: 149362 **Start Date:** 02 Jan 2020 12:30 **End Date:** 03 Jan 2020 15:30
Method: TX 1006 PREP **Prep Code:** TX 1006_S PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19120951-05		10.39 (g)	10 (mL)	0.9625
HS19120951-06		10.21 (g)	10 (mL)	0.9794

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19120951

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 148904 (0)	**Test Name :** TEXAS TPH BY TX1005				**Matrix:** Soil	
HS19120951-01	SO-1620-SB221(4-5)-20191216	16 Dec 2019 10:55		19 Dec 2019 12:30	25 Dec 2019 03:08	1
HS19120951-02	SO-1620-SB221(9-10)-20191216	16 Dec 2019 11:40		19 Dec 2019 12:30	25 Dec 2019 03:37	1
HS19120951-03	SO-1620-DPT5519(3-4)-20191216	16 Dec 2019 14:25		19 Dec 2019 12:30	25 Dec 2019 04:06	1
HS19120951-04	SO-1620-DPT5519(12.3-13.3)-20191216	16 Dec 2019 14:58		19 Dec 2019 12:30	25 Dec 2019 04:34	1
Batch ID: 148916 (0)	**Test Name :** TEXAS TPH BY TX1005				**Matrix:** Soil	
HS19120951-05	SO-1620-DPT3819(3-4)-20191216	16 Dec 2019 16:50		19 Dec 2019 14:00	24 Dec 2019 12:01	10
HS19120951-06	SO-1620-DPT3819(5-6)-20191216	16 Dec 2019 16:55		19 Dec 2019 14:00	24 Dec 2019 08:37	10
Batch ID: 149362 (0)	**Test Name :** PETROLEUM HYDROCARBONS BY TX1006				**Matrix:** Soil	
HS19120951-05	SO-1620-DPT3819(3-4)-20191216	16 Dec 2019 16:50		02 Jan 2020 12:30	02 Jan 2020 16:13	10
HS19120951-05	SO-1620-DPT3819(3-4)-20191216	16 Dec 2019 16:50		02 Jan 2020 12:30	02 Jan 2020 15:44	10
HS19120951-06	SO-1620-DPT3819(5-6)-20191216	16 Dec 2019 16:55		02 Jan 2020 12:30	02 Jan 2020 17:12	10
HS19120951-06	SO-1620-DPT3819(5-6)-20191216	16 Dec 2019 16:55		02 Jan 2020 12:30	02 Jan 2020 16:43	10
Batch ID: R353203 (0)	**Test Name :** MOISTURE - ASTM D2216				**Matrix:** Soil	
HS19120951-01	SO-1620-SB221(4-5)-20191216	16 Dec 2019 10:55			23 Dec 2019 11:59	1
HS19120951-02	SO-1620-SB221(9-10)-20191216	16 Dec 2019 11:40			23 Dec 2019 11:59	1
HS19120951-03	SO-1620-DPT5519(3-4)-20191216	16 Dec 2019 14:25			23 Dec 2019 11:59	1
HS19120951-04	SO-1620-DPT5519(12.3-13.3)-20191216	16 Dec 2019 14:58			23 Dec 2019 11:59	1
HS19120951-05	SO-1620-DPT3819(3-4)-20191216	16 Dec 2019 16:50			23 Dec 2019 11:59	1
HS19120951-06	SO-1620-DPT3819(5-6)-20191216	16 Dec 2019 16:55			23 Dec 2019 11:59	1

Revision: 1

WorkOrder: HS19120951
InstrumentID: FID-13
Test Code: TX1005_S_REV3
Test Number: TX1005
Test Name: Texas TPH by TX1005

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	nC6 to nC12	TPH-1005-1	25	25	7.4	50
A	>nC12 to nC28	TPH-1005-2	25	22	9.8	50
A	>nC28 to nC35	TPH-1005-4	25	22	9.8	50
A	Total Petroleum Hydrocarbon	TPH	25	22	7.4	50
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	Trifluoromethyl benzene	98-08-8	0	0	0	0

Revision:1

WorkOrder: HS19120951
InstrumentID: FID-12
Test Code: TX1005_S_REV3
Test Number: TX1005
Test Name: Texas TPH by TX1005

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	nC6 to nC12	TPH-1005-1	25	28	7.4	50
A	>nC12 to nC28	TPH-1005-2	25	26	9.8	50
A	>nC28 to nC35	TPH-1005-4	25	26	9.8	50
A	Total Petroleum Hydrocarbon	TPH	25	26	7.4	50
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	Trifluoromethyl benzene	98-08-8	0	0	0	0

Revision:1

WorkOrder: HS19120951
InstrumentID: FID-11
Test Code: TX1006_S
Test Number: TX1006
Test Name: Petroleum Hydrocarbons by

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Aliphatics nC6	PHC6ALIP	0	0	5.0	10
A	Aliphatics >nC6 to nC8	PHCG68ALIP	0	0	5.0	10
A	Aliphatics >nC8 to nC10	PHCG810ALIP	0	0	5.0	10
A	Aliphatics >nC10 to nC12	PHCG1012ALIP	0	0	5.0	10
A	Aliphatics >nC12 to nC16	PHCG1216ALIP	0	0	5.0	10
A	Aliphatics >nC16 to nC21	PHCG1621ALIP	0	0	5.0	10
A	Aliphatics >nC21 to nC35	PHCG2135ALIP	0	0	5.0	10
A	Total Aliphatic Fraction	TOTALIPFRACT	0	0	5.0	10
A	Aliphatics Relative % Distribution	ALPRELPERDIST	0	0	0	0
A	Aromatics >nC7 to nC8	PHCG78AROM	0	0	5.0	10
A	Aromatics >nC8 to nC10	PHCG810AROM	0	0	5.0	10
A	Aromatics >nC10 to nC12	PHCG1012AROM	0	0	5.0	10
A	Aromatics >nC12 to nC16	PHCG1216AROM	0	0	5.0	10
A	Aromatics >nC16 to nC21	PHCG1621AROM	0	0	5.0	10
A	Aromatics >nC21 to nC35	PHCG2135AROM	0	0	5.0	10
A	Total Aromatic Fraction	TOTAROFRACT	0	0	5.0	10
A	Aromatics Relative % Distribution	ARORELPERCDIST	0	0	0	0
A	Total Petroleum Hydrocarbons	PHCG635AROMALIP	0	0	5.0	10

Revision:1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19120951

QC BATCH REPORT

Batch ID: 148904 (0) **Instrument: FID-13** **Method: TEXAS TPH BY TX1005**

MBLK Sample ID: **MBLK-148904** Units: **mg/Kg** Analysis Date: **26-Dec-2019 13:15**
Client ID: Run ID: **FID-13_353321** SeqNo: **5410234** PrepDate: **19-Dec-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	< 7.4	50								
>nC12 to nC28	< 9.8	50								
>nC28 to nC35	< 9.8	50								
Total Petroleum Hydrocarbon	< 7.4	50								
Surr: 2-Fluorobiphenyl	*23.11*	*0*	*25*	*0*	*92.4*	*70 - 130*				
Surr: Trifluoromethyl benzene	*26.24*	*0*	*25*	*0*	*105*	*70 - 130*				

LCS Sample ID: **LCS-148904** Units: **mg/Kg** Analysis Date: **24-Dec-2019 16:26**
Client ID: Run ID: **FID-13_353321** SeqNo: **5410237** PrepDate: **19-Dec-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	235.8	50	250	0	94.3	75 - 125				
>nC12 to nC28	253.6	50	250	0	101	75 - 125				
Surr: 2-Fluorobiphenyl	*18.93*	*0*	*25*	*0*	*75.7*	*70 - 130*				
Surr: Trifluoromethyl benzene	*19.9*	*0*	*25*	*0*	*79.6*	*70 - 130*				

LCSD Sample ID: **LCSD-148904** Units: **mg/Kg** Analysis Date: **24-Dec-2019 16:55**
Client ID: Run ID: **FID-13_353321** SeqNo: **5410238** PrepDate: **19-Dec-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	252.2	50	250	0	101	75 - 125	235.8	6.73	20	
>nC12 to nC28	269.5	50	250	0	108	75 - 125	253.6	6.09	20	
Surr: 2-Fluorobiphenyl	*21.86*	*0*	*25*	*0*	*87.5*	*70 - 130*	*18.93*	*14.4*	*20*	
Surr: Trifluoromethyl benzene	*22.17*	*0*	*25*	*0*	*88.7*	*70 - 130*	*19.9*	*10.8*	*20*	

MS Sample ID: **HS19120555-24MS** Units: **mg/Kg** Analysis Date: **26-Dec-2019 13:45**
Client ID: Run ID: **FID-13_353321** SeqNo: **5410235** PrepDate: **19-Dec-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	259.3	45	227.3	1.63	113	75 - 125				
>nC12 to nC28	266.4	45	227.3	0	117	75 - 125				
Surr: 2-Fluorobiphenyl	*22.23*	*0*	*22.73*	*0*	*97.8*	*70 - 130*				
Surr: Trifluoromethyl benzene	*21.97*	*0*	*22.73*	*0*	*96.6*	*70 - 130*				

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19120951

QC BATCH REPORT

Batch ID: 148904 (0) **Instrument: FID-13** **Method: TEXAS TPH BY TX1005**

MSD Sample ID: **HS19120555-24MSD** Units: **mg/Kg** Analysis Date: **26-Dec-2019 14:14**
Client ID: Run ID: **FID-13_353321** SeqNo: **5410236** PrepDate: **19-Dec-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	285.8	46	230.6	1.63	123	75 - 125	259.3	9.72	20	
>nC12 to nC28	257.5	46	230.6	0	112	75 - 125	266.4	3.41	20	
Surr: 2-Fluorobiphenyl	*25.46*	*0*	*23.06*	*0*	*110*	*70 - 130*	*22.23*	*13.6*	*20*	
Surr: Trifluoromethyl benzene	*25.48*	*0*	*23.06*	*0*	*110*	*70 - 130*	*21.97*	*14.8*	*20*	

The following samples were analyzed in this batch: HS19120951-01 HS19120951-02 HS19120951-03 HS19120951-04

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19120951

QC BATCH REPORT

Batch ID: 148916 (0) **Instrument: FID-12** **Method: TEXAS TPH BY TX1005**

MBLK Sample ID: **MBLK-148916** Units: **mg/Kg** Analysis Date: **24-Dec-2019 07:11**
Client ID: Run ID: **FID-12_353318** SeqNo: **5410173** PrepDate: **19-Dec-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	< 7.4	50								
>nC12 to nC28	< 9.8	50								
>nC28 to nC35	< 9.8	50								
Total Petroleum Hydrocarbon	< 7.4	50								
Surr: 2-Fluorobiphenyl	*22.03*	*0*	*25*	*0*	*88.1*	*70 - 130*				
Surr: Trifluoromethyl benzene	*27.32*	*0*	*25*	*0*	*109*	*70 - 130*				

LCS Sample ID: **LCS-148916** Units: **mg/Kg** Analysis Date: **24-Dec-2019 07:40**
Client ID: Run ID: **FID-12_353318** SeqNo: **5410174** PrepDate: **19-Dec-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	295.7	50	250	0	118	75 - 125				
>nC12 to nC28	282.9	50	250	0	113	75 - 125				
Surr: 2-Fluorobiphenyl	*23.63*	*0*	*25*	*0*	*94.5*	*70 - 130*				
Surr: Trifluoromethyl benzene	*27.18*	*0*	*25*	*0*	*109*	*70 - 130*				

LCSD Sample ID: **LCSD-148916** Units: **mg/Kg** Analysis Date: **24-Dec-2019 08:08**
Client ID: Run ID: **FID-12_353318** SeqNo: **5410175** PrepDate: **19-Dec-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	287.7	50	250	0	115	75 - 125	295.7	2.72	20	
>nC12 to nC28	290.2	50	250	0	116	75 - 125	282.9	2.55	20	
Surr: 2-Fluorobiphenyl	*24.17*	*0*	*25*	*0*	*96.7*	*70 - 130*	*23.63*	*2.27*	*20*	
Surr: Trifluoromethyl benzene	*26.92*	*0*	*25*	*0*	*108*	*70 - 130*	*27.18*	*0.955*	*20*	

MS Sample ID: **HS19120951-06MS** Units: **mg/Kg** Analysis Date: **24-Dec-2019 09:06**
Client ID: **SO-1620-DPT3819(5-6)-20191216** Run ID: **FID-12_353318** SeqNo: **5410177** PrepDate: **19-Dec-2019** DF: **10**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	1770	490	245.6	1134	259	75 - 125				SO
>nC12 to nC28	4735	490	245.6	3844	363	75 - 125				SO
Surr: 2-Fluorobiphenyl	*22.98*	*0*	*24.56*	*0*	*93.6*	*70 - 130*				
Surr: Trifluoromethyl benzene	*24.63*	*0*	*24.56*	*0*	*100*	*70 - 130*				

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19120951

QC BATCH REPORT

Batch ID: 148916 (0) **Instrument: FID-12** **Method: TEXAS TPH BY TX1005**

MSD Sample ID: **HS19120951-06MSD** Units: **mg/Kg** Analysis Date: **24-Dec-2019 09:35**
Client ID: **SO-1620-DPT3819(5-6)-20191216** Run ID: **FID-12_353318** SeqNo: **5410178** PrepDate: **19-Dec-2019** DF: **10**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	1945	490	242.7	1134	334	75 - 125	1770	9.41	20	SO
>nC12 to nC28	6080	490	242.7	3844	921	75 - 125	4735	24.9	20	SRO
Surr: 2-Fluorobiphenyl	*21.92*	*0*	*24.27*	*0*	*90.3*	*70 - 130*	*22.98*	*4.72*	*20*	
Surr: Trifluoromethyl benzene	*24.59*	*0*	*24.27*	*0*	*101*	*70 - 130*	*24.63*	*0.158*	*20*	

The following samples were analyzed in this batch: HS19120951-05 HS19120951-06

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19120951

QC BATCH REPORT

Batch ID: 149362 (0) **Instrument: FID-11** **Method: PETROLEUM HYDROCARBONS BY TX1006**

MBLK Sample ID: **MBLK-149362** Units: **mg/Kg** Analysis Date: **03-Jan-2020 21:09**
Client ID: Run ID: **FID-11_354135** SeqNo: **5430308** PrepDate: **02-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics nC6	< 5.0	10								
Aliphatics >nC6 to nC8	< 5.0	10								
Aliphatics >nC8 to nC10	< 5.0	10								
Aliphatics >nC10 to nC12	< 5.0	10								
Aliphatics >nC12 to nC16	< 5.0	10								
Aliphatics >nC16 to nC21	< 5.0	10								
Aliphatics >nC21 to nC35	< 5.0	10								
Total Aliphatic Fraction	< 5.0	10								
Aliphatics Relative % Distribution	0	0								
Total Petroleum Hydrocarbons	< 5.0	10								

MBLK Sample ID: **MBLK-149362** Units: **mg/Kg** Analysis Date: **04-Jan-2020 02:00**
Client ID: Run ID: **FID-11_354136** SeqNo: **5430350** PrepDate: **02-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >nC7 to nC8	< 5.0	10								
Aromatics >nC8 to nC10	< 5.0	10								
Aromatics >nC10 to nC12	< 5.0	10								
Aromatics >nC12 to nC16	< 5.0	10								
Aromatics >nC16 to nC21	< 5.0	10								
Aromatics >nC21 to nC35	< 5.0	10								
Total Aromatic Fraction	< 5.0	10								
Aromatics Relative % Distribution	0	0								

LCS Sample ID: **LCS-149362** Units: **mg/Kg** Analysis Date: **03-Jan-2020 21:38**
Client ID: Run ID: **FID-11_354135** SeqNo: **5430309** PrepDate: **02-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Petroleum Hydrocarbons	456.4	10	500	0	91.3	60 - 140				

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19120951

QC BATCH REPORT

Batch ID: 149362 (0) **Instrument:** FID-11 **Method:** PETROLEUM HYDROCARBONS BY TX1006

LCSD Sample ID: **LCSD-149362** Units: **mg/Kg** Analysis Date: **03-Jan-2020 22:07**
Client ID: Run ID: **FID-11_354135** SeqNo: **5430310** PrepDate: **02-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Petroleum Hydrocarbons	505.1	10	500	0	101	60 - 140	456.4	10.1	30	

The following samples were analyzed in this batch: HS19120951-05 HS19120951-06

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19120951

QC BATCH REPORT

Batch ID: R353203 (0) **Instrument:** Balance1 **Method:** MOISTURE - ASTM D2216

DUP Sample ID: **HS19120555-24DUP** Units: **wt%** Analysis Date: **23-Dec-2019 11:59**
Client ID: Run ID: **Balance1_353203** SeqNo: **5407471** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	23.3	0.0100					23.3	0	20	

The following samples were analyzed in this batch: HS19120951-01 HS19120951-02 HS19120951-03 HS19120951-04 HS19120951-05 HS19120951-06

Revision: 1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS19120951**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/Kg-dry	Milligrams per Kilogram- Dry weight corrected

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Sample Receipt Checklist

Client Name: PBW
Work Order: HS19120951

Date/Time Received: **17-Dec-2019 16:25**
Received by: **DDG**

Checklist completed by: *Nilesh D. Ranchod* eSignature — 17-Dec-2019 Date

Reviewed by: *Dane J. Wacasey* eSignature — 19-Dec-2019 Date

Matrices: **Soil**

Carrier name: **ALS Courier**

	Yes	No	Not Present
Shipping container/cooler in good condition?	☑	☐	☐
Custody seals intact on shipping container/cooler?	☐	☐	☑
Custody seals intact on sample bottles?	☐	☐	☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	☐	☑	☐
Chain of custody present?	☑	☐	
Chain of custody signed when relinquished and received?	☑	☐	
Samplers name present on COC?	☑	☐	
Chain of custody agrees with sample labels?	☑	☐	
Samples in proper container/bottle?	☑	☐	
Sample containers intact?	☑	☐	
Sufficient sample volume for indicated test?	☑	☐	
All samples received within holding time?	☑	☐	
Container/Temp Blank temperature in compliance?	☑	☐	

1 Page(s)

COC IDs:212489

Temperature(s)/Thermometer(s):	1.1c UC/C	IR # 25
Cooler(s)/Kit(s):	RED	
Date/Time sample(s) sent to storage:	12/17/2019 5:50PM	

	Yes	No	
Water - VOA vials have zero headspace?	☐	☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	☐	☐	N/A ☑
pH adjusted?	☐	☐	N/A ☑

pH adjusted by:

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

Page 1 of ____

COC ID: 212489

HS19120951

WV

Golder Associates Inc.
Houston TX-Wood Preserving Works

Customer Information		Project Information		ALS Project Manager:
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	
Work Order		Project Number	1620-10-Rev0 SR 92688	
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P	
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	
Phone	(512) 671-3434	Phone		
Fax	(512) 671-3446	Fax		
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address		

A: TX1005_S_REV3 (5643233 TX1005 TPH)
B: MOIST_ASTM (5651931 Moisture Content)
C: TX1006_S (5645481 TPH TX1006) (HOLD)
D:
E:
F:
G:
H:
I:
J:

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620- DPTA19 (4-5)-20191216	12-16-19	10:55	Soil	6	1	X	X	X								
2	" -DPTA19(9-10)- "	12-16-19	11:40														
3	" -DPT5519(3-4)- "	12-16-19	14:25														
4	" -DPT5519(12.3-13.3)- "	12-16-19	14:58														
5	" -DPT3819(3-4)- "	12-16-19	16:50														
6	" -DPT3819(5-6)- "	12-16-19	16:55														
7	~~SO-1620-DPT3919(2-3)-20191217~~	~~12-17-19~~	~~12:10~~														
8	~~" -DPT3919(7-8) "~~	~~12-17-19~~	~~12:15~~														
9	~~" -DPT4219(4-5) "~~	~~12-17-19~~	~~15:05~~														
10	~~" -DPT4219(7-8) "~~	~~12-17-19~~	~~15:10~~														

Sampler(s) Please Print & Sign: Sweta Bulsara Sale Bale

Shipment Method: Courier

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other ____

Results Due Date:

Relinquished by: Sale Bale Date: 12-17-19 Time: 15:30 Received by: D. Lee

Relinquished by: D. Date: 12-17-19 Time: 16:25 Received by (Laboratory): D. Lee

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR HWPW 1620 TPH NAPL Assessment

Cooler ID	Cooler Temp.
~~1554~~ DG	
~~1564~~ 3	1.1
RSL	

QC Package: (Check One Box Below)
[X] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW1/2/CLP
[ ] Other
[ ] TRRP Checklist
[ ] TRRP Level IV

14 of 25

CCO

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

January 28, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS19121010**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 4 sample(s) on Dec 18, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: DANE.WACASEY
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS19121010**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS19121010**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 01/14/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS19121010				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 148954, 149362, R353367				
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?		X			1
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				2
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				2

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 01/14/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS19121010				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 148954, 149362, R353367				
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?			X		
		Were ion abundance data within the method-required QC limits?			X		
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?			X		
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 01/14/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS19121010
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 148954, 149362, R353367

ER#[5]	Description
1	Batch 148954, TPH by method TX1005, sample SQ-1620-DPT4219(4-5)-20191217, surrogate 2-Fluorobiphenyl was recovered outside of control limits due to matrix effect.
2	TPH TX 1006: ALS is NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package. Because TCEQ does not offer accreditation for TX 1006, the results are flagged with n.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS19121010

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19121010-01	SQ-1620-DPT3919(2-3)-20191217	Soil		17-Dec-2019 12:10	18-Dec-2019 11:29	☐
HS19121010-02	SQ-1620-DPT3919(7-8)-20191217	Soil		17-Dec-2019 12:15	18-Dec-2019 11:29	☐
HS19121010-03	SQ-1620-DPT4219(4-5)-20191217	Soil		17-Dec-2019 15:05	18-Dec-2019 11:29	☐
HS19121010-04	SQ-1620-DPT4219(7-8)-20191217	Soil		17-Dec-2019 15:10	18-Dec-2019 11:29	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SQ-1620-DPT3919(2-3)-20191217
Collection Date: 17-Dec-2019 12:10

ANALYTICAL REPORT
WorkOrder:HS19121010
Lab ID:HS19121010-01
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 20-Dec-2019		Analyst: GR
nC6 to nC12	< 7.4		7.4	50	mg/Kg-dry	1	27-Dec-2019 11:39
>nC12 to nC28	**600**		**9.8**	**50**	**mg/Kg-dry**	1	27-Dec-2019 11:39
>nC28 to nC35	**360**		**9.8**	**50**	**mg/Kg-dry**	1	27-Dec-2019 11:39
Total Petroleum Hydrocarbon	**960**		**7.4**	**50**	**mg/Kg-dry**	1	27-Dec-2019 11:39
Surr: 2-Fluorobiphenyl	*102*			*70-130*	*%REC*	*1*	*27-Dec-2019 11:39*
Surr: Trifluoromethyl benzene	*98.4*			*70-130*	*%REC*	*1*	*27-Dec-2019 11:39*
PETROLEUM HYDROCARBONS BY TX1006	**Method:TX1006**				Prep:TX1006PR / 02-Jan-2020		Analyst: MBG
Aliphatics nC6	< 5.0	n	5.0	10	mg/Kg-dry	1	03-Jan-2020 18:14
Aliphatics >nC6 to nC8	< 5.0	n	5.0	10	mg/Kg-dry	1	03-Jan-2020 18:14
Aliphatics >nC8 to nC10	< 5.0	n	5.0	10	mg/Kg-dry	1	03-Jan-2020 18:14
Aliphatics >nC10 to nC12	< 5.0	n	5.0	10	mg/Kg-dry	1	03-Jan-2020 18:14
Aliphatics >nC12 to nC16	**13**	n	**5.0**	**10**	**mg/Kg-dry**	1	03-Jan-2020 18:14
Aliphatics >nC16 to nC21	**140**	n	**5.0**	**10**	**mg/Kg-dry**	1	03-Jan-2020 18:14
Aliphatics >nC21 to nC35	**680**	n	**5.0**	**10**	**mg/Kg-dry**	1	03-Jan-2020 18:14
Total Aliphatic Fraction	**833**	n	**5.0**	**10**	**mg/Kg-dry**	1	03-Jan-2020 18:14
Aliphatics Relative % Distribution	**50**	n	**0**	**0**	**%-dry**	1	03-Jan-2020 18:14
Aromatics >nC7 to nC8	< 5.0	n	5.0	10	mg/Kg-dry	1	03-Jan-2020 19:42
Aromatics >nC8 to nC10	< 5.0	n	5.0	10	mg/Kg-dry	1	03-Jan-2020 19:42
Aromatics >nC10 to nC12	< 5.0	n	5.0	10	mg/Kg-dry	1	03-Jan-2020 19:42
Aromatics >nC12 to nC16	**22**	n	**5.0**	**10**	**mg/Kg-dry**	1	03-Jan-2020 19:42
Aromatics >nC16 to nC21	**140**	n	**5.0**	**10**	**mg/Kg-dry**	1	03-Jan-2020 19:42
Aromatics >nC21 to nC35	**680**	n	**5.0**	**10**	**mg/Kg-dry**	1	03-Jan-2020 19:42
Total Aromatic Fraction	**842**	n	**5.0**	**10**	**mg/Kg-dry**	1	03-Jan-2020 19:42
Aromatics Relative % Distribution	**50**	n	**0**	**0**	**%-dry**	1	03-Jan-2020 19:42
Total Petroleum Hydrocarbons	**1,700**	n	**5.0**	**10**	**mg/Kg-dry**	1	03-Jan-2020 18:14
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**15.1**		**0.0100**	**0.0100**	**wt%**	1	26-Dec-2019 10:25

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SQ-1620-DPT3919(7-8)-20191217
Collection Date: 17-Dec-2019 12:15

ANALYTICAL REPORT
WorkOrder:HS19121010
Lab ID:HS19121010-02
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 20-Dec-2019		Analyst: GR
nC6 to nC12	< 7.6		7.6	52	mg/Kg-dry	1	27-Dec-2019 12:09
>nC12 to nC28	< 10		10	52	mg/Kg-dry	1	27-Dec-2019 12:09
>nC28 to nC35	< 10		10	52	mg/Kg-dry	1	27-Dec-2019 12:09
Total Petroleum Hydrocarbon	< 7.6		7.6	52	mg/Kg-dry	1	27-Dec-2019 12:09
Surr: 2-Fluorobiphenyl	*93.0*			*70-130*	*%REC*	*1*	*27-Dec-2019 12:09*
Surr: Trifluoromethyl benzene	*96.4*			*70-130*	*%REC*	*1*	*27-Dec-2019 12:09*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**15.1**		**0.0100**	**0.0100**	**wt%**	1	26-Dec-2019 10:25

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SQ-1620-DPT4219(4-5)-20191217
Collection Date: 17-Dec-2019 15:05

ANALYTICAL REPORT
WorkOrder:HS19121010
Lab ID:HS19121010-03
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 20-Dec-2019		Analyst: GR
nC6 to nC12	< 120		120	780	mg/Kg-dry	10	27-Dec-2019 12:38
>nC12 to nC28	**15,000**		**150**	**780**	**mg/Kg-dry**	10	27-Dec-2019 12:38
>nC28 to nC35	**3,200**		**150**	**780**	**mg/Kg-dry**	10	27-Dec-2019 12:38
Total Petroleum Hydrocarbon	**18,200**		**120**	**780**	**mg/Kg-dry**	10	27-Dec-2019 12:38
Surr: 2-Fluorobiphenyl	*177*	*S*		*70-130*	*%REC*	*10*	*27-Dec-2019 12:38*
Surr: Trifluoromethyl benzene	*96.6*			*70-130*	*%REC*	*10*	*27-Dec-2019 12:38*
PETROLEUM HYDROCARBONS BY TX1006	**Method:TX1006**				Prep:TX1006PR / 02-Jan-2020		Analyst: MBG
Aliphatics nC6	< 78	n	78	160	mg/Kg-dry	10	03-Jan-2020 18:43
Aliphatics >nC6 to nC8	< 78	n	78	160	mg/Kg-dry	10	03-Jan-2020 18:43
Aliphatics >nC8 to nC10	< 78	n	78	160	mg/Kg-dry	10	03-Jan-2020 18:43
Aliphatics >nC10 to nC12	< 78	n	78	160	mg/Kg-dry	10	03-Jan-2020 18:43
Aliphatics >nC12 to nC16	**2,600**	n	**78**	**160**	**mg/Kg-dry**	10	03-Jan-2020 18:43
Aliphatics >nC16 to nC21	**2,400**	n	**78**	**160**	**mg/Kg-dry**	10	03-Jan-2020 18:43
Aliphatics >nC21 to nC35	**4,000**	n	**78**	**160**	**mg/Kg-dry**	10	03-Jan-2020 18:43
Total Aliphatic Fraction	**9,000**	n	**78**	**160**	**mg/Kg-dry**	10	03-Jan-2020 18:43
Aliphatics Relative % Distribution	**38**	n	**0**	**0**	**%-dry**	10	03-Jan-2020 18:43
Aromatics >nC7 to nC8	< 78	n	78	160	mg/Kg-dry	10	03-Jan-2020 20:11
Aromatics >nC8 to nC10	< 78	n	78	160	mg/Kg-dry	10	03-Jan-2020 20:11
Aromatics >nC10 to nC12	< 78	n	78	160	mg/Kg-dry	10	03-Jan-2020 20:11
Aromatics >nC12 to nC16	**1,900**	n	**78**	**160**	**mg/Kg-dry**	10	03-Jan-2020 20:11
Aromatics >nC16 to nC21	**4,500**	n	**78**	**160**	**mg/Kg-dry**	10	03-Jan-2020 20:11
Aromatics >nC21 to nC35	**8,400**	n	**78**	**160**	**mg/Kg-dry**	10	03-Jan-2020 20:11
Total Aromatic Fraction	**14,800**	n	**78**	**160**	**mg/Kg-dry**	10	03-Jan-2020 20:11
Aromatics Relative % Distribution	**62**	n	**0**	**0**	**%-dry**	10	03-Jan-2020 20:11
Total Petroleum Hydrocarbons	**24,000**	n	**78**	**160**	**mg/Kg-dry**	10	03-Jan-2020 18:43
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**19.5**		**0.0100**	**0.0100**	**wt%**	1	26-Dec-2019 10:25

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SQ-1620-DPT4219(7-8)-20191217
Collection Date: 17-Dec-2019 15:10

ANALYTICAL REPORT
WorkOrder:HS19121010
Lab ID:HS19121010-04
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 20-Dec-2019		Analyst: GR
nC6 to nC12	**140**	J	**75**	**510**	**mg/Kg-dry**	10	31-Dec-2019 09:52
>nC12 to nC28	**960**		**99**	**510**	**mg/Kg-dry**	10	31-Dec-2019 09:52
>nC28 to nC35	**210**	J	**99**	**510**	**mg/Kg-dry**	10	31-Dec-2019 09:52
Total Petroleum Hydrocarbon	**1,310**		**75**	**510**	**mg/Kg-dry**	10	31-Dec-2019 09:52
Surr: 2-Fluorobiphenyl	*109*			*70-130*	*%REC*	*10*	*31-Dec-2019 09:52*
Surr: Trifluoromethyl benzene	*121*			*70-130*	*%REC*	*10*	*31-Dec-2019 09:52*
PETROLEUM HYDROCARBONS BY TX1006	**Method:TX1006**				Prep:TX1006PR / 02-Jan-2020		Analyst: MBG
Aliphatics nC6	< 51	n	51	100	mg/Kg-dry	10	03-Jan-2020 19:12
Aliphatics >nC6 to nC8	< 51	n	51	100	mg/Kg-dry	10	03-Jan-2020 19:12
Aliphatics >nC8 to nC10	< 51	n	51	100	mg/Kg-dry	10	03-Jan-2020 19:12
Aliphatics >nC10 to nC12	< 51	n	51	100	mg/Kg-dry	10	03-Jan-2020 19:12
Aliphatics >nC12 to nC16	**580**	n	**51**	**100**	**mg/Kg-dry**	10	03-Jan-2020 19:12
Aliphatics >nC16 to nC21	**190**	n	**51**	**100**	**mg/Kg-dry**	10	03-Jan-2020 19:12
Aliphatics >nC21 to nC35	**320**	n	**51**	**100**	**mg/Kg-dry**	10	03-Jan-2020 19:12
Total Aliphatic Fraction	**1,090**	n	**51**	**100**	**mg/Kg-dry**	10	03-Jan-2020 19:12
Aliphatics Relative % Distribution	**70**	n	**0**	**0**	**%-dry**	10	03-Jan-2020 19:12
Aromatics >nC7 to nC8	< 51	n	51	100	mg/Kg-dry	10	03-Jan-2020 20:40
Aromatics >nC8 to nC10	< 51	n	51	100	mg/Kg-dry	10	03-Jan-2020 20:40
Aromatics >nC10 to nC12	< 51	n	51	100	mg/Kg-dry	10	03-Jan-2020 20:40
Aromatics >nC12 to nC16	< 51	n	51	100	mg/Kg-dry	10	03-Jan-2020 20:40
Aromatics >nC16 to nC21	< 51	n	51	100	mg/Kg-dry	10	03-Jan-2020 20:40
Aromatics >nC21 to nC35	**460**	n	**51**	**100**	**mg/Kg-dry**	10	03-Jan-2020 20:40
Total Aromatic Fraction	**460**	n	**51**	**100**	**mg/Kg-dry**	10	03-Jan-2020 20:40
Aromatics Relative % Distribution	**30**	n	**0**	**0**	**%-dry**	10	03-Jan-2020 20:40
Total Petroleum Hydrocarbons	**1,500**	n	**51**	**100**	**mg/Kg-dry**	10	03-Jan-2020 19:12
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**15.0**		**0.0100**	**0.0100**	**wt%**	1	26-Dec-2019 10:25

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19121010

Batch ID: 148954 **Start Date:** 20 Dec 2019 11:30 **End Date:** 20 Dec 2019 19:00
Method: TX 1005 PREP **Prep Code:** TX 1005_S PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19121010-01	1	11.76 (g)	10 (mL)	0.8503
HS19121010-02	1	11.43 (g)	10 (mL)	0.8749
HS19121010-03	1	7.97 (g)	10 (mL)	1.255
HS19121010-04	1	11.62 (g)	10 (mL)	0.8606

Batch ID: 149362 **Start Date:** 02 Jan 2020 12:30 **End Date:** 03 Jan 2020 15:30
Method: TX 1006 PREP **Prep Code:** TX 1006_S PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19121010-01		11.76 (g)	10 (mL)	0.8503
HS19121010-03		7.97 (g)	10 (mL)	1.255
HS19121010-04		11.62 (g)	10 (mL)	0.8606

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19121010

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 148954 (0)	**Test Name :** TEXAS TPH BY TX1005				**Matrix:** Soil	
HS19121010-01	SQ-1620-DPT3919(2-3)-20191217	17 Dec 2019 12:10		20 Dec 2019 11:30	27 Dec 2019 11:39	1
HS19121010-02	SQ-1620-DPT3919(7-8)-20191217	17 Dec 2019 12:15		20 Dec 2019 11:30	27 Dec 2019 12:09	1
HS19121010-03	SQ-1620-DPT4219(4-5)-20191217	17 Dec 2019 15:05		20 Dec 2019 11:30	27 Dec 2019 12:38	10
HS19121010-04	SQ-1620-DPT4219(7-8)-20191217	17 Dec 2019 15:10		20 Dec 2019 11:30	31 Dec 2019 09:52	10
Batch ID: 149362 (0)	**Test Name :** PETROLEUM HYDROCARBONS BY TX1006				**Matrix:** Soil	
HS19121010-01	SQ-1620-DPT3919(2-3)-20191217	17 Dec 2019 12:10		02 Jan 2020 12:30	03 Jan 2020 19:42	1
HS19121010-01	SQ-1620-DPT3919(2-3)-20191217	17 Dec 2019 12:10		02 Jan 2020 12:30	03 Jan 2020 18:14	1
HS19121010-03	SQ-1620-DPT4219(4-5)-20191217	17 Dec 2019 15:05		02 Jan 2020 12:30	03 Jan 2020 20:11	10
HS19121010-03	SQ-1620-DPT4219(4-5)-20191217	17 Dec 2019 15:05		02 Jan 2020 12:30	03 Jan 2020 18:43	10
HS19121010-04	SQ-1620-DPT4219(7-8)-20191217	17 Dec 2019 15:10		02 Jan 2020 12:30	03 Jan 2020 20:40	10
HS19121010-04	SQ-1620-DPT4219(7-8)-20191217	17 Dec 2019 15:10		02 Jan 2020 12:30	03 Jan 2020 19:12	10
Batch ID: R353367 (0)	**Test Name :** MOISTURE - ASTM D2216				**Matrix:** Soil	
HS19121010-01	SQ-1620-DPT3919(2-3)-20191217	17 Dec 2019 12:10			26 Dec 2019 10:25	1
HS19121010-02	SQ-1620-DPT3919(7-8)-20191217	17 Dec 2019 12:15			26 Dec 2019 10:25	1
HS19121010-03	SQ-1620-DPT4219(4-5)-20191217	17 Dec 2019 15:05			26 Dec 2019 10:25	1
HS19121010-04	SQ-1620-DPT4219(7-8)-20191217	17 Dec 2019 15:10			26 Dec 2019 10:25	1

WorkOrder: HS19121010
InstrumentID: FID-10
Test Code: TX1005_S_REV3
Test Number: TX1005
Test Name: Texas TPH by TX1005

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	nC6 to nC12	TPH-1005-1	25	25	7.4	50
A	>nC12 to nC28	TPH-1005-2	25	25	9.8	50
A	>nC28 to nC35	TPH-1005-4	25	25	9.8	50
A	Total Petroleum Hydrocarbon	TPH	25	25	7.4	50
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	Trifluoromethyl benzene	98-08-8	0	0	0	0

WorkOrder: HS19121010
InstrumentID: FID-11
Test Code: TX1006_S
Test Number: TX1006
Test Name: Petroleum Hydrocarbons by

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Aliphatics nC6	PHC6ALIP	0	0	5.0	10
A	Aliphatics >nC6 to nC8	PHCG68ALIP	0	0	5.0	10
A	Aliphatics >nC8 to nC10	PHCG810ALIP	0	0	5.0	10
A	Aliphatics >nC10 to nC12	PHCG1012ALIP	0	0	5.0	10
A	Aliphatics >nC12 to nC16	PHCG1216ALIP	0	0	5.0	10
A	Aliphatics >nC16 to nC21	PHCG1621ALIP	0	0	5.0	10
A	Aliphatics >nC21 to nC35	PHCG2135ALIP	0	0	5.0	10
A	Total Aliphatic Fraction	TOTALIPFRACT	0	0	5.0	10
A	Aliphatics Relative % Distribution	ALPRELPERDIST	0	0	0	0
A	Aromatics >nC7 to nC8	PHCG78AROM	0	0	5.0	10
A	Aromatics >nC8 to nC10	PHCG810AROM	0	0	5.0	10
A	Aromatics >nC10 to nC12	PHCG1012AROM	0	0	5.0	10
A	Aromatics >nC12 to nC16	PHCG1216AROM	0	0	5.0	10
A	Aromatics >nC16 to nC21	PHCG1621AROM	0	0	5.0	10
A	Aromatics >nC21 to nC35	PHCG2135AROM	0	0	5.0	10
A	Total Aromatic Fraction	TOTAROFRACT	0	0	5.0	10
A	Aromatics Relative % Distribution	ARORELPERCDIST	0	0	0	0
A	Total Petroleum Hydrocarbons	PHCG635AROMALIP	0	0	5.0	10

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19121010

QC BATCH REPORT

Batch ID: 148954 (0) **Instrument: FID-10** **Method: TEXAS TPH BY TX1005**

MBLK Sample ID: **MBLK-148954** Units: **mg/Kg** Analysis Date: **25-Dec-2019 09:16**
Client ID: Run ID: **FID-10_353528** SeqNo: **5415744** PrepDate: **20-Dec-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	< 7.4	50								
>nC12 to nC28	< 9.8	50								
>nC28 to nC35	< 9.8	50								
Total Petroleum Hydrocarbon	< 7.4	50								
Surr: 2-Fluorobiphenyl	*23.29*	*0*	*25*	*0*	*93.2*	*70 - 130*				
Surr: Trifluoromethyl benzene	*24.33*	*0*	*25*	*0*	*97.3*	*70 - 130*				

LCS Sample ID: **LCS-148954** Units: **mg/Kg** Analysis Date: **25-Dec-2019 09:45**
Client ID: Run ID: **FID-10_353528** SeqNo: **5415745** PrepDate: **20-Dec-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	249.9	50	250	0	100.0	75 - 125				
>nC12 to nC28	201.4	50	250	0	80.6	75 - 125				
Surr: 2-Fluorobiphenyl	*29.43*	*0*	*25*	*0*	*118*	*70 - 130*				
Surr: Trifluoromethyl benzene	*26.12*	*0*	*25*	*0*	*104*	*70 - 130*				

LCSD Sample ID: **LCSD-148954** Units: **mg/Kg** Analysis Date: **25-Dec-2019 10:14**
Client ID: Run ID: **FID-10_353528** SeqNo: **5415746** PrepDate: **20-Dec-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	234.7	50	250	0	93.9	75 - 125	249.9	6.27	20	
>nC12 to nC28	195.6	50	250	0	78.2	75 - 125	201.4	2.95	20	
Surr: 2-Fluorobiphenyl	*28.03*	*0*	*25*	*0*	*112*	*70 - 130*	*29.43*	*4.86*	*20*	
Surr: Trifluoromethyl benzene	*25.24*	*0*	*25*	*0*	*101*	*70 - 130*	*26.12*	*3.42*	*20*	

MS Sample ID: **HS19120875-04MS** Units: **mg/Kg** Analysis Date: **25-Dec-2019 11:13**
Client ID: Run ID: **FID-10_353528** SeqNo: **5415748** PrepDate: **20-Dec-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	238.6	48	241.3	0	98.9	75 - 125				
>nC12 to nC28	202.4	48	241.3	0	83.9	75 - 125				
Surr: 2-Fluorobiphenyl	*27.89*	*0*	*24.13*	*0*	*116*	*70 - 130*				
Surr: Trifluoromethyl benzene	*24.75*	*0*	*24.13*	*0*	*103*	*70 - 130*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19121010

QC BATCH REPORT

Batch ID: 148954 (0) **Instrument: FID-10** **Method: TEXAS TPH BY TX1005**

MSD Sample ID: **HS19120875-04MSD** Units: **mg/Kg** Analysis Date: **25-Dec-2019 11:42**
Client ID: Run ID: **FID-10_353528** SeqNo: **5415749** PrepDate: **20-Dec-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	239.7	48	241.8	0	99.1	75 - 125	238.6	0.464	20	
>nC12 to nC28	191.1	48	241.8	0	79.0	75 - 125	202.4	5.73	20	
Surr: 2-Fluorobiphenyl	*25.38*	*0*	*24.18*	*0*	*105*	*70 - 130*	*27.89*	*9.43*	*20*	
Surr: Trifluoromethyl benzene	*22.84*	*0*	*24.18*	*0*	*94.5*	*70 - 130*	*24.75*	*8.03*	*20*	

The following samples were analyzed in this batch: HS19121010-01 HS19121010-02 HS19121010-03 HS19121010-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19121010

QC BATCH REPORT

Batch ID: 149362 (0) **Instrument: FID-11** **Method: PETROLEUM HYDROCARBONS BY TX1006**

MBLK Sample ID: **MBLK-149362** Units: **mg/Kg** Analysis Date: **03-Jan-2020 21:09**
Client ID: Run ID: **FID-11_354135** SeqNo: **5430308** PrepDate: **02-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics nC6	< 5.0	10								
Aliphatics >nC6 to nC8	< 5.0	10								
Aliphatics >nC8 to nC10	< 5.0	10								
Aliphatics >nC10 to nC12	< 5.0	10								
Aliphatics >nC12 to nC16	< 5.0	10								
Aliphatics >nC16 to nC21	< 5.0	10								
Aliphatics >nC21 to nC35	< 5.0	10								
Total Aliphatic Fraction	< 5.0	10								
Aliphatics Relative % Distribution	0	0								
Total Petroleum Hydrocarbons	< 5.0	10								

MBLK Sample ID: **MBLK-149362** Units: **mg/Kg** Analysis Date: **04-Jan-2020 02:00**
Client ID: Run ID: **FID-11_354136** SeqNo: **5430350** PrepDate: **02-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >nC7 to nC8	< 5.0	10								
Aromatics >nC8 to nC10	< 5.0	10								
Aromatics >nC10 to nC12	< 5.0	10								
Aromatics >nC12 to nC16	< 5.0	10								
Aromatics >nC16 to nC21	< 5.0	10								
Aromatics >nC21 to nC35	< 5.0	10								
Total Aromatic Fraction	< 5.0	10								
Aromatics Relative % Distribution	0	0								

LCS Sample ID: **LCS-149362** Units: **mg/Kg** Analysis Date: **03-Jan-2020 21:38**
Client ID: Run ID: **FID-11_354135** SeqNo: **5430309** PrepDate: **02-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Petroleum Hydrocarbons	456.4	10	500	0	91.3	60 - 140				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19121010

QC BATCH REPORT

Batch ID: 149362 (0) **Instrument:** FID-11 **Method:** PETROLEUM HYDROCARBONS BY TX1006

LCSD Sample ID: **LCSD-149362** Units: **mg/Kg** Analysis Date: **03-Jan-2020 22:07**
Client ID: Run ID: **FID-11_354135** SeqNo: **5430310** PrepDate: **02-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Petroleum Hydrocarbons	505.1	10	500	0	101	60 - 140	456.4	10.1	30	

The following samples were analyzed in this batch: HS19121010-01 HS19121010-03 HS19121010-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19121010

QC BATCH REPORT

Batch ID: R353367 (0) **Instrument:** Balance1 **Method:** MOISTURE - ASTM D2216

DUP Sample ID: **HS19121291-03DUP** Units: **wt%** Analysis Date: **26-Dec-2019 10:25**
Client ID: Run ID: **Balance1_353367** SeqNo: **5411589** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	16.2	0.0100					15.8	2.5	20	

The following samples were analyzed in this batch: HS19121010-01 HS19121010-02 HS19121010-03 HS19121010-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS19121010**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/Kg-dry	Milligrams per Kilogram- Dry weight corrected

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Sample Receipt Checklist

Client Name: PBW
Work Order: HS19121010

Date/Time Received: **18-Dec-2019 11:29**
Received by: **NDR**

Checklist completed by: *Nilesh D. Ranchod* eSignature 18-Dec-2019 Date

Reviewed by: *Dane J. Wacasey* eSignature 22-Dec-2019 Date

Matrices: **Soil**

Carrier name: **ALS Courier**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☑	No ☐	Not Present ☐
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:212488
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.1c UC/C		IR # 11
Cooler(s)/Kit(s):	24728		
Date/Time sample(s) sent to storage:	12/18/2019 7:12pm		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

Page 2 of ____

COC ID: 212488

HS19121010

Golder Associates Inc.
Houston TX-Wood Preserving Works

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-10-Rev0 SR 92688
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address	

ALS Project Manager:

A: TX1005_S_REV3 (5643233 TX1005 TPH)
B: MOIST_ASTM (5631931 Moisture Content)
C: TX1006_S (5645481 TPH TX1006) [HOLD]
D:
E:
F:
G:
H:
I:
J:

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620-DPT319(2-3)-20191217	12-17-19	12:10	Soil	8	+3	X	X	X								
2	" DPT319(7-8) "	12-17-19	12:15														
3	" DPT429(4-5) "	12-17-19	15:05														
4	" DPT429(7-8) "	12-17-19	15:10														
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Sam Baltze Sam Baltze

Shipment Method: Couriers

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other ____

Results Due Date:

Relinquished by: Sam Baltze Date: 12.18.19 Time: 11:00 Received by: NK 12/18/19 11.00

Relinquished by: Date: Time: Received by (Laboratory): NK 12/18/19 11.29

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR HWPW 1620 TPH NAPL Assessment

Cooler ID	Cooler Temp.
24725	UC
	2.1

QC Package: (Check One Box Below)
[X] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[ ] TRRP Checklist
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

IC ✱ II

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
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January 28, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS19121108**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 8 sample(s) on Dec 19, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: DANE.WACASEY
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS19121108**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS19121108**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 01/13/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS19121108				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 149026, 149028, 149540, R353569				
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?		X			1
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			2
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				3

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 01/13/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS19121108				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 149026, 149028, 149540, R353569				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?			X		
		Were ion abundance data within the method-required QC limits?			X		
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?			X		
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 01/13/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS19121108
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 149026, 149028, 149540, R353569

ER#[5]	Description
1	Batch 149026, TPH by method TX1005, SQ-1620-DPT3419(4-5)-20191218 (HS19121108-03), the surrogate recoveries could not be determined due to dilution below the calibration range.
2	Batch 149026, TPH by method TX1005, sample HS19120963-03, the MS/MSD were performed on an unrelated sample.
3	TPH TX 1006: ALS is NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package. Because TCEQ does not offer accreditation for TX 1006, the results are flagged with n.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS19121108

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19121108-01	SQ-1620-DPT4019(1.25-2)-20191218	Soil		18-Dec-2019 10:05	19-Dec-2019 18:25	☐
HS19121108-02	SQ-1620-DPT4019(7-8)-20191218	Soil		18-Dec-2019 11:45	19-Dec-2019 18:25	☐
HS19121108-03	SQ-1620-DPT3419(4-5)-20191218	Soil		18-Dec-2019 13:45	19-Dec-2019 18:25	☐
HS19121108-04	SQ-1620-DPT3419(5-6)-20191218	Soil		18-Dec-2019 15:10	19-Dec-2019 18:25	☐
HS19121108-05	SQ-1620-SB218(2.25-3)-20191219	Soil		19-Dec-2019 10:15	19-Dec-2019 18:25	☐
HS19121108-06	SQ-1620-SB218((15-16)-20191219	Soil		19-Dec-2019 11:25	19-Dec-2019 18:25	☐
HS19121108-07	SQ-1620-DPT3519(4-5)-20191219	Soil		19-Dec-2019 13:45	19-Dec-2019 18:25	☐
HS19121108-08	SQ-1620-DPT3519(6-7)-20191219	Soil		19-Dec-2019 15:50	19-Dec-2019 18:25	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SQ-1620-DPT4019(1.25-2)-20191218
Collection Date: 18-Dec-2019 10:05

ANALYTICAL REPORT
WorkOrder:HS19121108
Lab ID:HS19121108-01
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 23-Dec-2019		Analyst: MBG
nC6 to nC12	**170**	J	**81**	**550**	**mg/Kg-dry**	10	30-Dec-2019 20:57
>nC12 to nC28	**6,500**		**110**	**550**	**mg/Kg-dry**	10	30-Dec-2019 20:57
>nC28 to nC35	**1,300**		**110**	**550**	**mg/Kg-dry**	10	30-Dec-2019 20:57
Total Petroleum Hydrocarbon	**7,970**		**81**	**550**	**mg/Kg-dry**	10	30-Dec-2019 20:57
Surr: 2-Fluorobiphenyl	*115*			*70-130*	*%REC*	*10*	*30-Dec-2019 20:57*
Surr: Trifluoromethyl benzene	*82.3*			*70-130*	*%REC*	*10*	*30-Dec-2019 20:57*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**15.9**		**0.0100**	**0.0100**	**wt%**	1	30-Dec-2019 10:09

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SQ-1620-DPT4019(7-8)-20191218
Collection Date: 18-Dec-2019 11:45

ANALYTICAL REPORT
WorkOrder:HS19121108
Lab ID:HS19121108-02
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 23-Dec-2019		Analyst: MBG
nC6 to nC12	< 7.0		7.0	47	mg/Kg-dry	1	30-Dec-2019 21:26
>nC12 to nC28	**35**	J	**9.3**	**47**	**mg/Kg-dry**	1	30-Dec-2019 21:26
>nC28 to nC35	**23**	J	**9.3**	**47**	**mg/Kg-dry**	1	30-Dec-2019 21:26
Total Petroleum Hydrocarbon	**58.0**		**7.0**	**47**	**mg/Kg-dry**	1	30-Dec-2019 21:26
Surr: 2-Fluorobiphenyl	*100*			*70-130*	*%REC*	*1*	*30-Dec-2019 21:26*
Surr: Trifluoromethyl benzene	*102*			*70-130*	*%REC*	*1*	*30-Dec-2019 21:26*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**13.9**		**0.0100**	**0.0100**	**wt%**	1	30-Dec-2019 10:09

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SQ-1620-DPT3419(4-5)-20191218
Collection Date: 18-Dec-2019 13:45

ANALYTICAL REPORT
WorkOrder:HS19121108
Lab ID:HS19121108-03
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 23-Dec-2019		Analyst: MBG
nC6 to nC12	< 450		450	3000	mg/Kg-dry	50	03-Jan-2020 20:11
>nC12 to nC28	**15,000**		**590**	**3000**	**mg/Kg-dry**	50	03-Jan-2020 20:11
>nC28 to nC35	**4,500**		**590**	**3000**	**mg/Kg-dry**	50	03-Jan-2020 20:11
Total Petroleum Hydrocarbon	**19,500**		**450**	**3000**	**mg/Kg-dry**	50	03-Jan-2020 20:11
Surr: 2-Fluorobiphenyl	*0*	*S*		*70-130*	*%REC*	*50*	*03-Jan-2020 20:11*
Surr: Trifluoromethyl benzene	*0*	*S*		*70-130*	*%REC*	*50*	*03-Jan-2020 20:11*
PETROLEUM HYDROCARBONS BY TX1006	**Method:TX1006**				Prep:TX1006PR / 06-Jan-2020		Analyst: MBG
Aliphatics nC6	< 300	n	300	610	mg/Kg-dry	50	06-Jan-2020 17:40
Aliphatics >nC6 to nC8	< 300	n	300	610	mg/Kg-dry	50	06-Jan-2020 17:40
Aliphatics >nC8 to nC10	< 300	n	300	610	mg/Kg-dry	50	06-Jan-2020 17:40
Aliphatics >nC10 to nC12	< 300	n	300	610	mg/Kg-dry	50	06-Jan-2020 17:40
Aliphatics >nC12 to nC16	< 300	n	300	610	mg/Kg-dry	50	06-Jan-2020 17:40
Aliphatics >nC16 to nC21	**640**	n	**300**	**610**	**mg/Kg-dry**	50	06-Jan-2020 17:40
Aliphatics >nC21 to nC35	**1,900**	n	**300**	**610**	**mg/Kg-dry**	50	06-Jan-2020 17:40
Total Aliphatic Fraction	**2,540**	n	**300**	**610**	**mg/Kg-dry**	50	06-Jan-2020 17:40
Aliphatics Relative % Distribution	**42**	n	**0**	**0**	**%-dry**	50	06-Jan-2020 17:40
Aromatics >nC7 to nC8	< 300	n	300	610	mg/Kg-dry	50	06-Jan-2020 17:40
Aromatics >nC8 to nC10	< 300	n	300	610	mg/Kg-dry	50	06-Jan-2020 17:40
Aromatics >nC10 to nC12	< 300	n	300	610	mg/Kg-dry	50	06-Jan-2020 17:40
Aromatics >nC12 to nC16	< 300	n	300	610	mg/Kg-dry	50	06-Jan-2020 17:40
Aromatics >nC16 to nC21	**1,600**	n	**300**	**610**	**mg/Kg-dry**	50	06-Jan-2020 17:40
Aromatics >nC21 to nC35	**1,800**	n	**300**	**610**	**mg/Kg-dry**	50	06-Jan-2020 17:40
Total Aromatic Fraction	**3,400**	n	**300**	**610**	**mg/Kg-dry**	50	06-Jan-2020 17:40
Aromatics Relative % Distribution	**58**	n	**0**	**0**	**%-dry**	50	06-Jan-2020 17:40
Total Petroleum Hydrocarbons	**5,900**	n	**300**	**610**	**mg/Kg-dry**	50	06-Jan-2020 17:40
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**27.9**		**0.0100**	**0.0100**	**wt%**	1	30-Dec-2019 10:09

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SQ-1620-DPT3419(5-6)-20191218
Collection Date: 18-Dec-2019 15:10

ANALYTICAL REPORT
WorkOrder:HS19121108
Lab ID:HS19121108-04
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 23-Dec-2019		Analyst: MBG
nC6 to nC12	< 82		82	550	mg/Kg-dry	10	30-Dec-2019 22:24
>nC12 to nC28	**3,800**		**110**	**550**	**mg/Kg-dry**	10	30-Dec-2019 22:24
>nC28 to nC35	**1,200**		**110**	**550**	**mg/Kg-dry**	10	30-Dec-2019 22:24
Total Petroleum Hydrocarbon	**5,000**		**82**	**550**	**mg/Kg-dry**	10	30-Dec-2019 22:24
Surr: 2-Fluorobiphenyl	*109*			*70-130*	*%REC*	*10*	*30-Dec-2019 22:24*
Surr: Trifluoromethyl benzene	*124*			*70-130*	*%REC*	*10*	*30-Dec-2019 22:24*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**25.2**		**0.0100**	**0.0100**	**wt%**	1	30-Dec-2019 10:09

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SQ-1620-SB218(2.25-3)-20191219
Collection Date: 19-Dec-2019 10:15

ANALYTICAL REPORT
WorkOrder:HS19121108
Lab ID:HS19121108-05
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 23-Dec-2019		Analyst: GR
nC6 to nC12	< 6.9		6.9	46	mg/Kg-dry	1	27-Dec-2019 21:41
>nC12 to nC28	**150**		**9.1**	**46**	**mg/Kg-dry**	1	27-Dec-2019 21:41
>nC28 to nC35	**130**		**9.1**	**46**	**mg/Kg-dry**	1	27-Dec-2019 21:41
Total Petroleum Hydrocarbon	**280**		**6.9**	**46**	**mg/Kg-dry**	1	27-Dec-2019 21:41
Surr: 2-Fluorobiphenyl	*81.8*			*70-130*	*%REC*	*1*	*27-Dec-2019 21:41*
Surr: Trifluoromethyl benzene	*94.4*			*70-130*	*%REC*	*1*	*27-Dec-2019 21:41*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**17.7**		**0.0100**	**0.0100**	**wt%**	1	30-Dec-2019 10:09

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SQ-1620-SB218((15-16)-20191219
Collection Date: 19-Dec-2019 11:25

ANALYTICAL REPORT
WorkOrder:HS19121108
Lab ID:HS19121108-06
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 23-Dec-2019		Analyst: GR
nC6 to nC12	< 6.7		6.7	45	mg/Kg-dry	1	27-Dec-2019 22:10
>nC12 to nC28	< 8.8		8.8	45	mg/Kg-dry	1	27-Dec-2019 22:10
>nC28 to nC35	< 8.8		8.8	45	mg/Kg-dry	1	27-Dec-2019 22:10
Total Petroleum Hydrocarbon	< 6.7		6.7	45	mg/Kg-dry	1	27-Dec-2019 22:10
Surr: 2-Fluorobiphenyl	*89.9*			*70-130*	*%REC*	*1*	*27-Dec-2019 22:10*
Surr: Trifluoromethyl benzene	*98.4*			*70-130*	*%REC*	*1*	*27-Dec-2019 22:10*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**12.3**		**0.0100**	**0.0100**	**wt%**	1	30-Dec-2019 10:09

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SQ-1620-DPT3519(4-5)-20191219
Collection Date: 19-Dec-2019 13:45

ANALYTICAL REPORT
WorkOrder:HS19121108
Lab ID:HS19121108-07
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 23-Dec-2019		Analyst: GR
nC6 to nC12	**900**		**120**	**790**	**mg/Kg-dry**	10	27-Dec-2019 22:39
>nC12 to nC28	**13,000**		**150**	**790**	**mg/Kg-dry**	10	27-Dec-2019 22:39
>nC28 to nC35	**2,900**		**150**	**790**	**mg/Kg-dry**	10	27-Dec-2019 22:39
Total Petroleum Hydrocarbon	**16,800**		**120**	**790**	**mg/Kg-dry**	10	27-Dec-2019 22:39
Surr: 2-Fluorobiphenyl	*113*			*70-130*	*%REC*	*10*	*27-Dec-2019 22:39*
Surr: Trifluoromethyl benzene	*98.3*			*70-130*	*%REC*	*10*	*27-Dec-2019 22:39*
PETROLEUM HYDROCARBONS BY TX1006	**Method:TX1006**				Prep:TX1006PR / 06-Jan-2020		Analyst: MBG
Aliphatics nC6	< 79	n	79	160	mg/Kg-dry	10	06-Jan-2020 18:10
Aliphatics >nC6 to nC8	< 79	n	79	160	mg/Kg-dry	10	06-Jan-2020 18:10
Aliphatics >nC8 to nC10	< 79	n	79	160	mg/Kg-dry	10	06-Jan-2020 18:10
Aliphatics >nC10 to nC12	< 79	n	79	160	mg/Kg-dry	10	06-Jan-2020 18:10
Aliphatics >nC12 to nC16	**300**	n	**79**	**160**	**mg/Kg-dry**	10	06-Jan-2020 18:10
Aliphatics >nC16 to nC21	**600**	n	**79**	**160**	**mg/Kg-dry**	10	06-Jan-2020 18:10
Aliphatics >nC21 to nC35	**1,200**	n	**79**	**160**	**mg/Kg-dry**	10	06-Jan-2020 18:10
Total Aliphatic Fraction	**2,100**	n	**79**	**160**	**mg/Kg-dry**	10	06-Jan-2020 18:10
Aliphatics Relative % Distribution	**27**	n	**0**	**0**	**%-dry**	10	06-Jan-2020 18:10
Aromatics >nC7 to nC8	< 79	n	79	160	mg/Kg-dry	10	06-Jan-2020 18:10
Aromatics >nC8 to nC10	< 79	n	79	160	mg/Kg-dry	10	06-Jan-2020 18:10
Aromatics >nC10 to nC12	**470**	n	**79**	**160**	**mg/Kg-dry**	10	06-Jan-2020 18:10
Aromatics >nC12 to nC16	**810**	n	**79**	**160**	**mg/Kg-dry**	10	06-Jan-2020 18:10
Aromatics >nC16 to nC21	**2,200**	n	**79**	**160**	**mg/Kg-dry**	10	06-Jan-2020 18:10
Aromatics >nC21 to nC35	**2,200**	n	**79**	**160**	**mg/Kg-dry**	10	06-Jan-2020 18:10
Total Aromatic Fraction	**5,680**	n	**79**	**160**	**mg/Kg-dry**	10	06-Jan-2020 18:10
Aromatics Relative % Distribution	**73**	n	**0**	**0**	**%-dry**	10	06-Jan-2020 18:10
Total Petroleum Hydrocarbons	**7,800**	n	**79**	**160**	**mg/Kg-dry**	10	06-Jan-2020 18:10
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**35.8**		**0.0100**	**0.0100**	**wt%**	1	30-Dec-2019 10:09

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SQ-1620-DPT3519(6-7)-20191219
Collection Date: 19-Dec-2019 15:50

ANALYTICAL REPORT
WorkOrder:HS19121108
Lab ID:HS19121108-08
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 23-Dec-2019		Analyst: GR
nC6 to nC12	**200**	J	**82**	**550**	**mg/Kg-dry**	10	03-Jan-2020 21:38
>nC12 to nC28	**1,200**		**110**	**550**	**mg/Kg-dry**	10	03-Jan-2020 21:38
>nC28 to nC35	**170**	J	**110**	**550**	**mg/Kg-dry**	10	03-Jan-2020 21:38
Total Petroleum Hydrocarbon	**1,570**		**82**	**550**	**mg/Kg-dry**	10	03-Jan-2020 21:38
Surr: 2-Fluorobiphenyl	*102*			*70-130*	*%REC*	*10*	*03-Jan-2020 21:38*
Surr: Trifluoromethyl benzene	*104*			*70-130*	*%REC*	*10*	*03-Jan-2020 21:38*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**17.6**		**0.0100**	**0.0100**	**wt%**	1	30-Dec-2019 10:09

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19121108

Batch ID: 149026 **Start Date:** 23 Dec 2019 09:30 **End Date:** 23 Dec 2019 11:30
Method: TX 1005 PREP **Prep Code:** TX 1005_S PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19121108-01	1	10.84 (g)	10 (mL)	0.9225
HS19121108-02	1	12.23 (g)	10 (mL)	0.8177
HS19121108-03	1	11.4 (g)	10 (mL)	0.8772
HS19121108-04	1	12.16 (g)	10 (mL)	0.8224

Batch ID: 149028 **Start Date:** 23 Dec 2019 10:30 **End Date:** 23 Dec 2019 12:30
Method: TX 1005 PREP **Prep Code:** TX 1005_S PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19121108-05	1	13.13 (g)	10 (mL)	0.7616
HS19121108-06	1	12.71 (g)	10 (mL)	0.7868
HS19121108-07	1	9.88 (g)	10 (mL)	1.012
HS19121108-08	1	11.02 (g)	10 (mL)	0.9074

Batch ID: 149540 **Start Date:** 06 Jan 2020 12:00 **End Date:** 06 Jan 2020 15:00
Method: TX 1006 PREP **Prep Code:** TX 1006_S PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19121108-03		11.4 (g)	10 (mL)	0.8772
HS19121108-07		9.88 (g)	10 (mL)	1.012

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19121108

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 149026 (0)	**Test Name :** TEXAS TPH BY TX1005				**Matrix:** Soil	
HS19121108-01	SQ-1620-DPT4019(1.25-2)-20191218	18 Dec 2019 10:05		23 Dec 2019 09:30	30 Dec 2019 20:57	10
HS19121108-02	SQ-1620-DPT4019(7-8)-20191218	18 Dec 2019 11:45		23 Dec 2019 09:30	30 Dec 2019 21:26	1
HS19121108-03	SQ-1620-DPT3419(4-5)-20191218	18 Dec 2019 13:45		23 Dec 2019 09:30	03 Jan 2020 20:11	50
HS19121108-04	SQ-1620-DPT3419(5-6)-20191218	18 Dec 2019 15:10		23 Dec 2019 09:30	30 Dec 2019 22:24	10
Batch ID: 149028 (0)	**Test Name :** TEXAS TPH BY TX1005				**Matrix:** Soil	
HS19121108-05	SQ-1620-SB218(2.25-3)-20191219	19 Dec 2019 10:15		23 Dec 2019 10:30	27 Dec 2019 21:41	1
HS19121108-06	SQ-1620-SB218((15-16)-20191219	19 Dec 2019 11:25		23 Dec 2019 10:30	27 Dec 2019 22:10	1
HS19121108-07	SQ-1620-DPT3519(4-5)-20191219	19 Dec 2019 13:45		23 Dec 2019 10:30	27 Dec 2019 22:39	10
HS19121108-08	SQ-1620-DPT3519(6-7)-20191219	19 Dec 2019 15:50		23 Dec 2019 10:30	03 Jan 2020 21:38	10
Batch ID: 149540 (0)	**Test Name :** PETROLEUM HYDROCARBONS BY TX1006				**Matrix:** Soil	
HS19121108-03	SQ-1620-DPT3419(4-5)-20191218	18 Dec 2019 13:45		06 Jan 2020 12:00	06 Jan 2020 17:40	50
HS19121108-03	SQ-1620-DPT3419(4-5)-20191218	18 Dec 2019 13:45		06 Jan 2020 12:00	06 Jan 2020 17:40	50
HS19121108-07	SQ-1620-DPT3519(4-5)-20191219	19 Dec 2019 13:45		06 Jan 2020 12:00	06 Jan 2020 18:10	10
HS19121108-07	SQ-1620-DPT3519(4-5)-20191219	19 Dec 2019 13:45		06 Jan 2020 12:00	06 Jan 2020 18:10	10
Batch ID: R353569 (0)	**Test Name :** MOISTURE - ASTM D2216				**Matrix:** Soil	
HS19121108-01	SQ-1620-DPT4019(1.25-2)-20191218	18 Dec 2019 10:05			30 Dec 2019 10:09	1
HS19121108-02	SQ-1620-DPT4019(7-8)-20191218	18 Dec 2019 11:45			30 Dec 2019 10:09	1
HS19121108-03	SQ-1620-DPT3419(4-5)-20191218	18 Dec 2019 13:45			30 Dec 2019 10:09	1
HS19121108-04	SQ-1620-DPT3419(5-6)-20191218	18 Dec 2019 15:10			30 Dec 2019 10:09	1
HS19121108-05	SQ-1620-SB218(2.25-3)-20191219	19 Dec 2019 10:15			30 Dec 2019 10:09	1
HS19121108-06	SQ-1620-SB218((15-16)-20191219	19 Dec 2019 11:25			30 Dec 2019 10:09	1
HS19121108-07	SQ-1620-DPT3519(4-5)-20191219	19 Dec 2019 13:45			30 Dec 2019 10:09	1
HS19121108-08	SQ-1620-DPT3519(6-7)-20191219	19 Dec 2019 15:50			30 Dec 2019 10:09	1

WorkOrder: HS19121108
InstrumentID: FID-11
Test Code: TX1005_S_REV3
Test Number: TX1005
Test Name: Texas TPH by TX1005

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	nC6 to nC12	TPH-1005-1	25	30	7.4	50
A	>nC12 to nC28	TPH-1005-2	25	22	9.8	50
A	>nC28 to nC35	TPH-1005-4	25	22	9.8	50
A	Total Petroleum Hydrocarbon	TPH	25	22	7.4	50
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	Trifluoromethyl benzene	98-08-8	0	0	0	0

WorkOrder: HS19121108
InstrumentID: FID-11
Test Code: TX1006_S
Test Number: TX1006
Test Name: Petroleum Hydrocarbons by

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Aliphatics nC6	PHC6ALIP	0	0	5.0	10
A	Aliphatics >nC6 to nC8	PHCG68ALIP	0	0	5.0	10
A	Aliphatics >nC8 to nC10	PHCG810ALIP	0	0	5.0	10
A	Aliphatics >nC10 to nC12	PHCG1012ALIP	0	0	5.0	10
A	Aliphatics >nC12 to nC16	PHCG1216ALIP	0	0	5.0	10
A	Aliphatics >nC16 to nC21	PHCG1621ALIP	0	0	5.0	10
A	Aliphatics >nC21 to nC35	PHCG2135ALIP	0	0	5.0	10
A	Total Aliphatic Fraction	TOTALIPFRACT	0	0	5.0	10
A	Aliphatics Relative % Distribution	ALPRELPERDIST	0	0	0	0
A	Total Petroleum Hydrocarbons	PHCG635AROMALIP	0	0	5.0	10

WorkOrder: HS19121108
InstrumentID: FID-10
Test Code: TX1006_S
Test Number: TX1006
Test Name: Petroleum Hydrocarbons by

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Aromatics >nC7 to nC8	PHCG78AROM	0	0	5.0	10
A	Aromatics >nC8 to nC10	PHCG810AROM	0	0	5.0	10
A	Aromatics >nC10 to nC12	PHCG1012AROM	0	0	5.0	10
A	Aromatics >nC12 to nC16	PHCG1216AROM	0	0	5.0	10
A	Aromatics >nC16 to nC21	PHCG1621AROM	0	0	5.0	10
A	Aromatics >nC21 to nC35	PHCG2135AROM	0	0	5.0	10
A	Total Aromatic Fraction	TOTAROFRACT	0	0	5.0	10
A	Aromatics Relative % Distribution	ARORELPERCDIST	0	0	0	0

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19121108

QC BATCH REPORT

Batch ID: 149026 (0) **Instrument: FID-11** **Method: TEXAS TPH BY TX1005**

MBLK Sample ID: **MBLK-149026** Units: **mg/Kg** Analysis Date: **30-Dec-2019 10:50**
Client ID: Run ID: **FID-11_353740** SeqNo: **5421274** PrepDate: **23-Dec-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	< 7.4	50								
>nC12 to nC28	< 9.8	50								
>nC28 to nC35	< 9.8	50								
Total Petroleum Hydrocarbon	< 7.4	50								
Surr: 2-Fluorobiphenyl	*30.66*	*0*	*25*	*0*	*123*	*70 - 130*				
Surr: Trifluoromethyl benzene	*32.32*	*0*	*25*	*0*	*129*	*70 - 130*				

LCS Sample ID: **LCS-149026** Units: **mg/Kg** Analysis Date: **30-Dec-2019 11:19**
Client ID: Run ID: **FID-11_353740** SeqNo: **5421275** PrepDate: **23-Dec-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	286.3	50	250	0	115	75 - 125				
>nC12 to nC28	246.7	50	250	0	98.7	75 - 125				
Surr: 2-Fluorobiphenyl	*32.26*	*0*	*25*	*0*	*129*	*70 - 130*				
Surr: Trifluoromethyl benzene	*32.35*	*0*	*25*	*0*	*129*	*70 - 130*				

LCSD Sample ID: **LCSD-149026** Units: **mg/Kg** Analysis Date: **30-Dec-2019 12:13**
Client ID: Run ID: **FID-11_353740** SeqNo: **5421276** PrepDate: **23-Dec-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	300.9	50	250	0	120	75 - 125	286.3	4.97	20	
>nC12 to nC28	276.1	50	250	0	110	75 - 125	246.7	11.3	20	
Surr: 2-Fluorobiphenyl	*31.7*	*0*	*25*	*0*	*127*	*70 - 130*	*32.26*	*1.73*	*20*	
Surr: Trifluoromethyl benzene	*30.8*	*0*	*25*	*0*	*123*	*70 - 130*	*32.35*	*4.9*	*20*	

MS Sample ID: **HS19120963-03MS** Units: **mg/Kg** Analysis Date: **30-Dec-2019 13:11**
Client ID: Run ID: **FID-11_353740** SeqNo: **5421278** PrepDate: **23-Dec-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	1128	47	236.1	855.5	115	75 - 125				E
>nC12 to nC28	3167	47	236.1	2679	207	75 - 125				SEO
Surr: 2-Fluorobiphenyl	*52.13*	*0*	*23.61*	*0*	*221*	*70 - 130*				S
Surr: Trifluoromethyl benzene	*22.51*	*0*	*23.61*	*0*	*95.3*	*70 - 130*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19121108

QC BATCH REPORT

Batch ID: 149026 (0) **Instrument: FID-11** **Method: TEXAS TPH BY TX1005**

MSD Sample ID: **HS19120963-03MSD** Units: **mg/Kg** Analysis Date: **30-Dec-2019 13:40**
Client ID: Run ID: **FID-11_353740** SeqNo: **5421279** PrepDate: **23-Dec-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	1107	47	237.4	855.5	106	75 - 125	1128	1.82	20	E
>nC12 to nC28	3095	47	237.4	2679	175	75 - 125	3167	2.3	20	SEO
Surr: 2-Fluorobiphenyl	*51.86*	*0*	*23.74*	*0*	*218*	*70 - 130*	*52.13*	*0.509*	*20*	S
Surr: Trifluoromethyl benzene	*22.59*	*0*	*23.74*	*0*	*95.1*	*70 - 130*	*22.51*	*0.368*	*20*	

The following samples were analyzed in this batch: HS19121108-01 HS19121108-02 HS19121108-03 HS19121108-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19121108

QC BATCH REPORT

Batch ID: 149028 (0) **Instrument: FID-11** **Method: TEXAS TPH BY TX1005**

MBLK Sample ID: **MBLK-149028** Units: **mg/Kg** Analysis Date: **27-Dec-2019 17:45**
Client ID: Run ID: **FID-11_353511** SeqNo: **5415294** PrepDate: **23-Dec-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	< 7.4	50								
>nC12 to nC28	< 9.8	50								
>nC28 to nC35	< 9.8	50								
Total Petroleum Hydrocarbon	< 7.4	50								
Surr: 2-Fluorobiphenyl	*26.84*	*0*	*25*	*0*	*107*	*70 - 130*				
Surr: Trifluoromethyl benzene	*28.05*	*0*	*25*	*0*	*112*	*70 - 130*				

LCS Sample ID: **LCS-149028** Units: **mg/Kg** Analysis Date: **27-Dec-2019 18:14**
Client ID: Run ID: **FID-11_353511** SeqNo: **5415295** PrepDate: **23-Dec-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	261.2	50	250	0	104	75 - 125				
>nC12 to nC28	258.7	50	250	0	103	75 - 125				
Surr: 2-Fluorobiphenyl	*30.91*	*0*	*25*	*0*	*124*	*70 - 130*				
Surr: Trifluoromethyl benzene	*30.3*	*0*	*25*	*0*	*121*	*70 - 130*				

LCSD Sample ID: **LCSD-149028** Units: **mg/Kg** Analysis Date: **27-Dec-2019 18:44**
Client ID: Run ID: **FID-11_353511** SeqNo: **5415296** PrepDate: **23-Dec-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	260.7	50	250	0	104	75 - 125	261.2	0.196	20	
>nC12 to nC28	261.6	50	250	0	105	75 - 125	258.7	1.15	20	
Surr: 2-Fluorobiphenyl	*30.25*	*0*	*25*	*0*	*121*	*70 - 130*	*30.91*	*2.18*	*20*	
Surr: Trifluoromethyl benzene	*29.53*	*0*	*25*	*0*	*118*	*70 - 130*	*30.3*	*2.56*	*20*	

MS Sample ID: **HS19121244-01MS** Units: **mg/Kg** Analysis Date: **27-Dec-2019 19:43**
Client ID: Run ID: **FID-11_353511** SeqNo: **5415298** PrepDate: **23-Dec-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	228.4	47	235.4	0.5579	96.8	75 - 125				
>nC12 to nC28	212	47	235.4	0	90.1	75 - 125				
Surr: 2-Fluorobiphenyl	*24.1*	*0*	*23.54*	*0*	*102*	*70 - 130*				
Surr: Trifluoromethyl benzene	*23.38*	*0*	*23.54*	*0*	*99.3*	*70 - 130*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19121108

QC BATCH REPORT

Batch ID: 149028 (0) **Instrument: FID-11** **Method: TEXAS TPH BY TX1005**

MSD Sample ID: **HS19121244-01MSD** Units: **mg/Kg** Analysis Date: **27-Dec-2019 20:12**
Client ID: Run ID: **FID-11_353511** SeqNo: **5415299** PrepDate: **23-Dec-2019** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	227.9	48	240.4	0.5579	94.6	75 - 125	228.4	0.193	20	
>nC12 to nC28	214.8	48	240.4	0	89.4	75 - 125	212	1.32	20	
Surr: 2-Fluorobiphenyl	*24.56*	*0*	*24.04*	*0*	*102*	*70 - 130*	*24.1*	*1.85*	*20*	
Surr: Trifluoromethyl benzene	*23.71*	*0*	*24.04*	*0*	*98.7*	*70 - 130*	*23.38*	*1.42*	*20*	

The following samples were analyzed in this batch: HS19121108-05 HS19121108-06 HS19121108-07 HS19121108-08

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19121108

QC BATCH REPORT

Batch ID: 149540 (0) **Instrument: FID-11** **Method: PETROLEUM HYDROCARBONS BY TX1006**

MBLK Sample ID: **MBLK-149540** Units: **mg/Kg** Analysis Date: **06-Jan-2020 19:08**
Client ID: Run ID: **FID-11_354177** SeqNo: **5431052** PrepDate: **06-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics nC6	< 5.0	10								
Aliphatics >nC6 to nC8	< 5.0	10								
Aliphatics >nC8 to nC10	< 5.0	10								
Aliphatics >nC10 to nC12	< 5.0	10								
Aliphatics >nC12 to nC16	< 5.0	10								
Aliphatics >nC16 to nC21	< 5.0	10								
Aliphatics >nC21 to nC35	< 5.0	10								
Total Aliphatic Fraction	< 5.0	10								
Aliphatics Relative % Distribution	0	0								
Total Petroleum Hydrocarbons	< 5.0	10								

MBLK Sample ID: **MBLK-149540** Units: **mg/Kg** Analysis Date: **06-Jan-2020 19:08**
Client ID: Run ID: **FID-10_354183** SeqNo: **5431114** PrepDate: **06-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >nC7 to nC8	< 5.0	10								
Aromatics >nC8 to nC10	< 5.0	10								
Aromatics >nC10 to nC12	< 5.0	10								
Aromatics >nC12 to nC16	< 5.0	10								
Aromatics >nC16 to nC21	< 5.0	10								
Aromatics >nC21 to nC35	< 5.0	10								
Total Aromatic Fraction	< 5.0	10								
Aromatics Relative % Distribution	0	0								

LCS Sample ID: **LCS-149540** Units: **mg/Kg** Analysis Date: **06-Jan-2020 19:38**
Client ID: Run ID: **FID-11_354177** SeqNo: **5431053** PrepDate: **06-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Petroleum Hydrocarbons	463.2	10	500	0	92.6	60 - 140				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19121108

QC BATCH REPORT

Batch ID: 149540 (0) **Instrument:** FID-11 **Method:** PETROLEUM HYDROCARBONS BY TX1006

LCSD Sample ID: **LCSD-149540** Units: **mg/Kg** Analysis Date: **06-Jan-2020 20:07**
Client ID: Run ID: **FID-11_354177** SeqNo: **5431054** PrepDate: **06-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Petroleum Hydrocarbons	464.4	10	500	0	92.9	60 - 140	463.2	0.25	30	

The following samples were analyzed in this batch: HS19121108-03 HS19121108-07

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS19121108

QC BATCH REPORT

Batch ID: **R353569 (0)** **Instrument:** **Balance1** **Method:** **MOISTURE - ASTM D2216**

DUP Sample ID: **HS19121255-02DUP** Units: **wt%** Analysis Date: **30-Dec-2019 10:09**
Client ID: Run ID: **Balance1_353569** SeqNo: **5417236** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	23.2	0.0100					23.3	0.43	20	

The following samples were analyzed in this batch:

HS19121108-01	HS19121108-02	HS19121108-03	HS19121108-04
HS19121108-05	HS19121108-06	HS19121108-07	HS19121108-08

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS19121108**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/Kg-dry	Milligrams per Kilogram- Dry weight corrected

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS19121108

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS19121108-01	SQ-1620-DPT4019(1.25-2)-20191218	Login	12/19/2019 7:57:07 PM	NDR	SPA082
HS19121108-01	SQ-1620-DPT4019(1.25-2)-20191218	Login	12/19/2019 7:57:07 PM	NDR	LF019

Sample Receipt Checklist

Client Name: PBW
Work Order: HS19121108

Date/Time Received: **19-Dec-2019 18:25**
Received by: **NDR**

Checklist completed by: *Nilesh D. Ranchod* eSignature — 19-Dec-2019 Date

Reviewed by: *Dane J. Wacasey* eSignature — 24-Dec-2019 Date

Matrices: **Soil**

Carrier name: **ALS Courier**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☑	No ☐	Not Present ☐
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:212487
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.2°C uc/c		IR # 11
Cooler(s)/Kit(s):	45513		
Date/Time sample(s) sent to storage:	12/19/2019 8:15pm		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600
Holland, MI +1 616 399 6070

Chain of Custody Form

Page 3 of ____

COC ID: 212487

HS19121108

Golder Associates Inc.
Houston TX-Wood Preserving Works

Customer Information		Project Information		ALS Project Manager:
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A TX1005_S_REV3 (5643233 TX1005 TPH)
Work Order		Project Number	1620-10-Rev0 SR 92688	B MOIST_ASTM (5631931 Moisture Content)
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P	C TX1006_S (5645481 TPH TX1006) [HOLD]
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E F
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G
Phone	(512) 671-3434	Phone		H
Fax	(512) 671-3446	Fax		I
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address		J

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620-DPT4019(1.25-2)-20191218	12-18-19	10:05	Soil	8	x3	X	X	X								
2	" -DPT4019(7-8)- "	12-18-19	11:45														
3	" -DPT3419(4-5)- "	12-18-19	13:45														
4	" -DPT3419(5-6)- "	12-18-19	15:10														
5	SO-1620-DPTD19(2.5-3)-20191219	12-19-19	10:15														
6	" -DPTD19(15-16)-20191219	12-19-19	11:25														
7	" -DPT3519(4-5)- "	12-19-19	13:45														
8	" -DPT3519(6-7)- "	12-19-19	15:50														
9																	
10																	

Sampler(s) Please Print & Sign: Sarah Balke Sarah Balke

Shipment Method: Courier

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other ____

Results Due Date:

Relinquished by: Sarah Balke Date: 12.19.19 Time: 1145 Received by:

Relinquished by: Date: 12.19.19 Time: 1825 Received by (Laboratory):

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR HWPW 1620 TPH NAPL Assessment

Cooler ID	Cooler Temp.
45513	4C 1.2

QC Package: (Check One Box Below)

- [X] Level II Std QC
- [ ] Level III Std QC/Raw Data
- [ ] Level IV SW846/CLP
- [ ] Other
- [ ] TRRP Checklist
- [ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

FR II C/F-10

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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February 17, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20011392**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 8 sample(s) on Jan 30, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: DAYNA.FISHER
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20011392**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS20011392**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/17/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20011392				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150196, 150682, R355773				
#[1]	A[2]	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				1

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/17/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20011392				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150196, 150682, R355773				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?			X		
		Were ion abundance data within the method-required QC limits?			X		
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?			X		
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 02/17/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20011392
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 150196, 150682, R355773

ER#[5]	Description
1	TPH TX 1006: ALS is NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package. Because TCEQ does not offer accreditation for TX 1006, the results are flagged with n.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20011392

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20011392-01	SO-1620-CPT2620(2-3)-20200128	Soil		28-Jan-2020 16:35	30-Jan-2020 05:30	☐
HS20011392-02	SO-1620-CPT2620(13-14)-20200129	Soil		29-Jan-2020 11:35	30-Jan-2020 05:30	☐
HS20011392-03	SO-1620-CPT2420(4-5)-20200129	Soil		29-Jan-2020 11:40	30-Jan-2020 05:30	☐
HS20011392-04	SO-1620-CPT2420(8-9)-20200129	Soil		29-Jan-2020 11:45	30-Jan-2020 05:30	☐
HS20011392-05	SO-1620-SB216(3-4)-20200129	Soil		29-Jan-2020 14:40	30-Jan-2020 05:30	☐
HS20011392-06	SO-1620-SB216(7-8)-20200129	Soil		29-Jan-2020 14:45	30-Jan-2020 05:30	☐
HS20011392-07	SO-1620-SB217(3-4)-20200129	Soil		29-Jan-2020 16:30	30-Jan-2020 05:30	☐
HS20011392-08	SO-1620-SB217(8-9)-20200129	Soil		29-Jan-2020 16:35	30-Jan-2020 05:30	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-CPT2620(2-3)-20200128
Collection Date: 28-Jan-2020 16:35

ANALYTICAL REPORT
WorkOrder:HS20011392
Lab ID:HS20011392-01
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 31-Jan-2020		Analyst: MBG
nC6 to nC12	**170**	J	**48**	**330**	**mg/Kg-dry**	5	04-Feb-2020 17:16
>nC12 to nC28	**3,300**		**64**	**330**	**mg/Kg-dry**	5	04-Feb-2020 17:16
>nC28 to nC35	**440**		**64**	**330**	**mg/Kg-dry**	5	04-Feb-2020 17:16
Total Petroleum Hydrocarbon	**3,910**		**48**	**330**	**mg/Kg-dry**	5	04-Feb-2020 17:16
Surr: 2-Fluorobiphenyl	*72.4*			*70-130*	*%REC*	*5*	*04-Feb-2020 17:16*
Surr: Trifluoromethyl benzene	*79.7*			*70-130*	*%REC*	*5*	*04-Feb-2020 17:16*
PETROLEUM HYDROCARBONS BY TX1006	**Method:TX1006**				Prep:TX1006PR / 13-Feb-2020		Analyst: MBG
Aliphatics nC6	< 33	n	33	65	mg/Kg-dry	5	14-Feb-2020 18:13
Aliphatics >nC6 to nC8	< 33	n	33	65	mg/Kg-dry	5	14-Feb-2020 18:13
Aliphatics >nC8 to nC10	< 33	n	33	65	mg/Kg-dry	5	14-Feb-2020 18:13
Aliphatics >nC10 to nC12	< 33	n	33	65	mg/Kg-dry	5	14-Feb-2020 18:13
Aliphatics >nC12 to nC16	< 33	n	33	65	mg/Kg-dry	5	14-Feb-2020 18:13
Aliphatics >nC16 to nC21	< 33	n	33	65	mg/Kg-dry	5	14-Feb-2020 18:13
Aliphatics >nC21 to nC35	< 33	n	33	65	mg/Kg-dry	5	14-Feb-2020 18:13
Total Aliphatic Fraction	< 33	n	33	65	mg/Kg-dry	5	14-Feb-2020 18:13
Aliphatics Relative % Distribution	**0**	n	**0**	**0**	**%-dry**	5	14-Feb-2020 18:13
Aromatics >nC7 to nC8	< 33	n	33	65	mg/Kg-dry	5	14-Feb-2020 18:13
Aromatics >nC8 to nC10	< 33	n	33	65	mg/Kg-dry	5	14-Feb-2020 18:13
Aromatics >nC10 to nC12	**76**	n	**33**	**65**	**mg/Kg-dry**	5	14-Feb-2020 18:13
Aromatics >nC12 to nC16	**1,400**	n	**33**	**65**	**mg/Kg-dry**	5	14-Feb-2020 18:13
Aromatics >nC16 to nC21	**1,700**	n	**33**	**65**	**mg/Kg-dry**	5	14-Feb-2020 18:13
Aromatics >nC21 to nC35	**550**	n	**33**	**65**	**mg/Kg-dry**	5	14-Feb-2020 18:13
Total Aromatic Fraction	**3,730**	n	**33**	**65**	**mg/Kg-dry**	5	14-Feb-2020 18:13
Aromatics Relative % Distribution	**100**	n	**0**	**0**	**%-dry**	5	14-Feb-2020 18:13
Total Petroleum Hydrocarbons	**3,700**	n	**33**	**65**	**mg/Kg-dry**	5	14-Feb-2020 18:13
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**16.5**		**0.0100**	**0.0100**	**wt%**	1	05-Feb-2020 11:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20011392
Sample ID: SO-1620-CPT2620(13-14)-20200129
Lab ID:HS20011392-02
Collection Date: 29-Jan-2020 11:35
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 31-Jan-2020		Analyst: MBG
nC6 to nC12	< 8.2		8.2	55	mg/Kg-dry	1	31-Jan-2020 20:12
>nC12 to nC28	**14**	J	**11**	**55**	**mg/Kg-dry**	1	31-Jan-2020 20:12
>nC28 to nC35	< 11		11	55	mg/Kg-dry	1	31-Jan-2020 20:12
Total Petroleum Hydrocarbon	**14.0**	J	**8.2**	**55**	**mg/Kg-dry**	1	31-Jan-2020 20:12
Surr: 2-Fluorobiphenyl	*92.6*			*70-130*	*%REC*	*1*	*31-Jan-2020 20:12*
Surr: Trifluoromethyl benzene	*96.6*			*70-130*	*%REC*	*1*	*31-Jan-2020 20:12*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**18.0**		**0.0100**	**0.0100**	**wt%**	1	05-Feb-2020 11:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-CPT2420(4-5)-20200129
Collection Date: 29-Jan-2020 11:40

ANALYTICAL REPORT
WorkOrder:HS20011392
Lab ID:HS20011392-03
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 31-Jan-2020		Analyst: MBG
nC6 to nC12	< 7.6		7.6	51	mg/Kg-dry	1	31-Jan-2020 20:41
>nC12 to nC28	< 10		10	51	mg/Kg-dry	1	31-Jan-2020 20:41
>nC28 to nC35	< 10		10	51	mg/Kg-dry	1	31-Jan-2020 20:41
Total Petroleum Hydrocarbon	< 7.6		7.6	51	mg/Kg-dry	1	31-Jan-2020 20:41
Surr: 2-Fluorobiphenyl	*87.2*			*70-130*	*%REC*	*1*	*31-Jan-2020 20:41*
Surr: Trifluoromethyl benzene	*87.7*			*70-130*	*%REC*	*1*	*31-Jan-2020 20:41*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**19.7**		**0.0100**	**0.0100**	**wt%**	1	05-Feb-2020 11:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-CPT2420(8-9)-20200129
Collection Date: 29-Jan-2020 11:45

ANALYTICAL REPORT
WorkOrder:HS20011392
Lab ID:HS20011392-04
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 31-Jan-2020		Analyst: MBG
nC6 to nC12	< 7.0		7.0	47	mg/Kg-dry	1	31-Jan-2020 21:10
>nC12 to nC28	< 9.2		9.2	47	mg/Kg-dry	1	31-Jan-2020 21:10
>nC28 to nC35	< 9.2		9.2	47	mg/Kg-dry	1	31-Jan-2020 21:10
Total Petroleum Hydrocarbon	< 7.0		7.0	47	mg/Kg-dry	1	31-Jan-2020 21:10
Surr: 2-Fluorobiphenyl	*98.9*			*70-130*	*%REC*	*1*	*31-Jan-2020 21:10*
Surr: Trifluoromethyl benzene	*109*			*70-130*	*%REC*	*1*	*31-Jan-2020 21:10*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**17.4**		**0.0100**	**0.0100**	**wt%**	1	05-Feb-2020 11:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20011392
Sample ID: SO-1620-SB216(3-4)-20200129
Lab ID:HS20011392-05
Collection Date: 29-Jan-2020 14:40
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 31-Jan-2020		Analyst: MBG
nC6 to nC12	< 8.5		8.5	57	mg/Kg-dry	1	31-Jan-2020 21:39
>nC12 to nC28	< 11		11	57	mg/Kg-dry	1	31-Jan-2020 21:39
>nC28 to nC35	< 11		11	57	mg/Kg-dry	1	31-Jan-2020 21:39
Total Petroleum Hydrocarbon	< 8.5		8.5	57	mg/Kg-dry	1	31-Jan-2020 21:39
Surr: 2-Fluorobiphenyl	*79.3*			*70-130*	*%REC*	*1*	*31-Jan-2020 21:39*
Surr: Trifluoromethyl benzene	*89.5*			*70-130*	*%REC*	*1*	*31-Jan-2020 21:39*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**19.7**		**0.0100**	**0.0100**	**wt%**	1	05-Feb-2020 11:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SB216(7-8)-20200129
Collection Date: 29-Jan-2020 14:45

ANALYTICAL REPORT
WorkOrder:HS20011392
Lab ID:HS20011392-06
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 31-Jan-2020		Analyst: MBG
nC6 to nC12	**27**	J	**7.3**	**49**	**mg/Kg-dry**	1	31-Jan-2020 22:08
>nC12 to nC28	**360**		**9.7**	**49**	**mg/Kg-dry**	1	31-Jan-2020 22:08
>nC28 to nC35	< 9.7		9.7	49	mg/Kg-dry	1	31-Jan-2020 22:08
Total Petroleum Hydrocarbon	**387**		**7.3**	**49**	**mg/Kg-dry**	1	31-Jan-2020 22:08
Surr: 2-Fluorobiphenyl	*89.1*			*70-130*	*%REC*	*1*	*31-Jan-2020 22:08*
Surr: Trifluoromethyl benzene	*82.3*			*70-130*	*%REC*	*1*	*31-Jan-2020 22:08*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**15.2**		**0.0100**	**0.0100**	**wt%**	1	05-Feb-2020 11:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20011392
Sample ID: SO-1620-SB217(3-4)-20200129
Lab ID:HS20011392-07
Collection Date: 29-Jan-2020 16:30
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 31-Jan-2020		Analyst: MBG
nC6 to nC12	< 8.7		8.7	59	mg/Kg-dry	1	31-Jan-2020 22:37
>nC12 to nC28	< 12		12	59	mg/Kg-dry	1	31-Jan-2020 22:37
>nC28 to nC35	< 12		12	59	mg/Kg-dry	1	31-Jan-2020 22:37
Total Petroleum Hydrocarbon	< 8.7		8.7	59	mg/Kg-dry	1	31-Jan-2020 22:37
Surr: 2-Fluorobiphenyl	*86.1*			*70-130*	*%REC*	*1*	*31-Jan-2020 22:37*
Surr: Trifluoromethyl benzene	*90.9*			*70-130*	*%REC*	*1*	*31-Jan-2020 22:37*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**17.8**		**0.0100**	**0.0100**	**wt%**	1	05-Feb-2020 11:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20011392
Sample ID: SO-1620-SB217(8-9)-20200129
Lab ID:HS20011392-08
Collection Date: 29-Jan-2020 16:35
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 31-Jan-2020		Analyst: MBG
nC6 to nC12	< 7.7		7.7	52	mg/Kg-dry	1	31-Jan-2020 23:06
>nC12 to nC28	< 10		10	52	mg/Kg-dry	1	31-Jan-2020 23:06
>nC28 to nC35	< 10		10	52	mg/Kg-dry	1	31-Jan-2020 23:06
Total Petroleum Hydrocarbon	< 7.7		7.7	52	mg/Kg-dry	1	31-Jan-2020 23:06
Surr: 2-Fluorobiphenyl	*82.4*			*70-130*	*%REC*	*1*	*31-Jan-2020 23:06*
Surr: Trifluoromethyl benzene	*88.6*			*70-130*	*%REC*	*1*	*31-Jan-2020 23:06*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**14.8**		**0.0100**	**0.0100**	**wt%**	1	05-Feb-2020 11:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011392

Batch ID: 150196 **Start Date:** 31 Jan 2020 10:30 **End Date:** 31 Jan 2020 13:00
Method: TX 1005 PREP **Prep Code:** TX 1005_S PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20011392-01	1	9.2 (g)	10 (mL)	1.087
HS20011392-02	1	11.1 (g)	10 (mL)	0.9009
HS20011392-03	1	12.15 (g)	10 (mL)	0.823
HS20011392-04	1	12.81 (g)	10 (mL)	0.7806
HS20011392-05	1	10.92 (g)	10 (mL)	0.9158
HS20011392-06	1	11.94 (g)	10 (mL)	0.8375
HS20011392-07	1	10.34 (g)	10 (mL)	0.9671
HS20011392-08	1	11.29 (g)	10 (mL)	0.8857

Batch ID: 150682 **Start Date:** 13 Feb 2020 11:30 **End Date:** 13 Feb 2020 12:30
Method: TX 1006 PREP **Prep Code:** TX 1006_S PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20011392-01		9.2 (g)	10 (mL)	1.087

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011392

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 150196 (0)	**Test Name :** TEXAS TPH BY TX1005				**Matrix:** Soil	
HS20011392-01	SO-1620-CPT2620(2-3)-20200128	28 Jan 2020 16:35		31 Jan 2020 10:30	04 Feb 2020 17:16	5
HS20011392-02	SO-1620-CPT2620(13-14)-20200129	29 Jan 2020 11:35		31 Jan 2020 10:30	31 Jan 2020 20:12	1
HS20011392-03	SO-1620-CPT2420(4-5)-20200129	29 Jan 2020 11:40		31 Jan 2020 10:30	31 Jan 2020 20:41	1
HS20011392-04	SO-1620-CPT2420(8-9)-20200129	29 Jan 2020 11:45		31 Jan 2020 10:30	31 Jan 2020 21:10	1
HS20011392-05	SO-1620-SB216(3-4)-20200129	29 Jan 2020 14:40		31 Jan 2020 10:30	31 Jan 2020 21:39	1
HS20011392-06	SO-1620-SB216(7-8)-20200129	29 Jan 2020 14:45		31 Jan 2020 10:30	31 Jan 2020 22:08	1
HS20011392-07	SO-1620-SB217(3-4)-20200129	29 Jan 2020 16:30		31 Jan 2020 10:30	31 Jan 2020 22:37	1
HS20011392-08	SO-1620-SB217(8-9)-20200129	29 Jan 2020 16:35		31 Jan 2020 10:30	31 Jan 2020 23:06	1
Batch ID: 150682 (0)	**Test Name :** PETROLEUM HYDROCARBONS BY TX1006				**Matrix:** Soil	
HS20011392-01	SO-1620-CPT2620(2-3)-20200128	28 Jan 2020 16:35		13 Feb 2020 11:30	14 Feb 2020 18:13	5
HS20011392-01	SO-1620-CPT2620(2-3)-20200128	28 Jan 2020 16:35		13 Feb 2020 11:30	14 Feb 2020 18:13	5
Batch ID: R355773 (0)	**Test Name :** MOISTURE - ASTM D2216				**Matrix:** Soil	
HS20011392-01	SO-1620-CPT2620(2-3)-20200128	28 Jan 2020 16:35			05 Feb 2020 11:30	1
HS20011392-02	SO-1620-CPT2620(13-14)-20200129	29 Jan 2020 11:35			05 Feb 2020 11:30	1
HS20011392-03	SO-1620-CPT2420(4-5)-20200129	29 Jan 2020 11:40			05 Feb 2020 11:30	1
HS20011392-04	SO-1620-CPT2420(8-9)-20200129	29 Jan 2020 11:45			05 Feb 2020 11:30	1
HS20011392-05	SO-1620-SB216(3-4)-20200129	29 Jan 2020 14:40			05 Feb 2020 11:30	1
HS20011392-06	SO-1620-SB216(7-8)-20200129	29 Jan 2020 14:45			05 Feb 2020 11:30	1
HS20011392-07	SO-1620-SB217(3-4)-20200129	29 Jan 2020 16:30			05 Feb 2020 11:30	1
HS20011392-08	SO-1620-SB217(8-9)-20200129	29 Jan 2020 16:35			05 Feb 2020 11:30	1

WorkOrder: HS20011392
InstrumentID: FID-10
Test Code: TX1005_S_REV3
Test Number: TX1005
Test Name: Texas TPH by TX1005

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	nC6 to nC12	TPH-1005-1	25	24	7.4	50
A	>nC12 to nC28	TPH-1005-2	25	25	9.8	50
A	>nC28 to nC35	TPH-1005-4	25	24	9.8	50
A	Total Petroleum Hydrocarbon	TPH	25	24	7.4	50
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	Trifluoromethyl benzene	98-08-8	0	0	0	0

WorkOrder: HS20011392
InstrumentID: FID-12
Test Code: TX1006_S
Test Number: TX1006
Test Name: Petroleum Hydrocarbons by

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Aliphatics nC6	PHC6ALIP	0	0	5.0	10
A	Aliphatics >nC6 to nC8	PHCG68ALIP	0	0	5.0	10
A	Aliphatics >nC8 to nC10	PHCG810ALIP	0	0	5.0	10
A	Aliphatics >nC10 to nC12	PHCG1012ALIP	0	0	5.0	10
A	Aliphatics >nC12 to nC16	PHCG1216ALIP	0	0	5.0	10
A	Aliphatics >nC16 to nC21	PHCG1621ALIP	0	0	5.0	10
A	Aliphatics >nC21 to nC35	PHCG2135ALIP	0	0	5.0	10
A	Total Aliphatic Fraction	TOTALIPFRACT	0	0	5.0	10
A	Aliphatics Relative % Distribution	ALPRELPERDIST	0	0	0	0
A	Total Petroleum Hydrocarbons	PHCG635AROMALIP	0	0	5.0	10

WorkOrder: HS20011392
InstrumentID: FID-13
Test Code: TX1006_S
Test Number: TX1006
Test Name: Petroleum Hydrocarbons by

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Aromatics >nC7 to nC8	PHCG78AROM	0	0	5.0	10
A	Aromatics >nC8 to nC10	PHCG810AROM	0	0	5.0	10
A	Aromatics >nC10 to nC12	PHCG1012AROM	0	0	5.0	10
A	Aromatics >nC12 to nC16	PHCG1216AROM	0	0	5.0	10
A	Aromatics >nC16 to nC21	PHCG1621AROM	0	0	5.0	10
A	Aromatics >nC21 to nC35	PHCG2135AROM	0	0	5.0	10
A	Total Aromatic Fraction	TOTAROFRACT	0	0	5.0	10
A	Aromatics Relative % Distribution	ARORELPERCDIST	0	0	0	0

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011392

QC BATCH REPORT

Batch ID: 150196 (0) **Instrument: FID-10** **Method: TEXAS TPH BY TX1005**

MBLK Sample ID: **MBLK-150196** Units: **mg/Kg** Analysis Date: **31-Jan-2020 16:49**
Client ID: Run ID: **FID-10_355525** SeqNo: **5456869** PrepDate: **31-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	< 7.4	50								
>nC12 to nC28	< 9.8	50								
>nC28 to nC35	< 9.8	50								
Total Petroleum Hydrocarbon	< 7.4	50								
Surr: 2-Fluorobiphenyl	*24.84*	*0*	*25*	*0*	*99.4*	*70 - 130*				
Surr: Trifluoromethyl benzene	*23.71*	*0*	*25*	*0*	*94.8*	*70 - 130*				

LCS Sample ID: **LCS-150196** Units: **mg/Kg** Analysis Date: **31-Jan-2020 17:18**
Client ID: Run ID: **FID-10_355525** SeqNo: **5456870** PrepDate: **31-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	257	50	250	0	103	75 - 125				
>nC12 to nC28	237.8	50	250	0	95.1	75 - 125				
Surr: 2-Fluorobiphenyl	*29.39*	*0*	*25*	*0*	*118*	*70 - 130*				
Surr: Trifluoromethyl benzene	*24.85*	*0*	*25*	*0*	*99.4*	*70 - 130*				

LCSD Sample ID: **LCSD-150196** Units: **mg/Kg** Analysis Date: **31-Jan-2020 17:47**
Client ID: Run ID: **FID-10_355525** SeqNo: **5456871** PrepDate: **31-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	254	50	250	0	102	75 - 125	257	1.16	20	
>nC12 to nC28	214.5	50	250	0	85.8	75 - 125	237.8	10.3	20	
Surr: 2-Fluorobiphenyl	*27.2*	*0*	*25*	*0*	*109*	*70 - 130*	*29.39*	*7.73*	*20*	
Surr: Trifluoromethyl benzene	*23.52*	*0*	*25*	*0*	*94.1*	*70 - 130*	*24.85*	*5.51*	*20*	

MS Sample ID: **HS20011400-03MS** Units: **mg/Kg** Analysis Date: **31-Jan-2020 18:45**
Client ID: Run ID: **FID-10_355525** SeqNo: **5456873** PrepDate: **31-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	231.4	48	238.3	0	97.1	75 - 125				
>nC12 to nC28	193.6	48	238.3	0	81.2	75 - 125				
Surr: 2-Fluorobiphenyl	*27.34*	*0*	*23.83*	*0*	*115*	*70 - 130*				
Surr: Trifluoromethyl benzene	*22.99*	*0*	*23.83*	*0*	*96.4*	*70 - 130*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011392

QC BATCH REPORT

Batch ID: 150196 (0) **Instrument: FID-10** **Method: TEXAS TPH BY TX1005**

MSD Sample ID: **HS20011400-03MSD** Units: **mg/Kg** Analysis Date: **31-Jan-2020 19:14**
Client ID: Run ID: **FID-10_355525** SeqNo: **5456874** PrepDate: **31-Jan-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	209.7	48	241.3	0	86.9	75 - 125	231.4	9.81	20	
>nC12 to nC28	201.6	48	241.3	0	83.5	75 - 125	193.6	4.05	20	
Surr: 2-Fluorobiphenyl	*22.45*	*0*	*24.13*	*0*	*93.0*	*70 - 130*	*27.34*	*19.6*	*20*	
Surr: Trifluoromethyl benzene	*20.03*	*0*	*24.13*	*0*	*83.0*	*70 - 130*	*22.99*	*13.8*	*20*	

The following samples were analyzed in this batch: HS20011392-01 HS20011392-02 HS20011392-03 HS20011392-04 HS20011392-05 HS20011392-06 HS20011392-07 HS20011392-08

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011392

QC BATCH REPORT

Batch ID: 150682 (0) **Instrument: FID-12** **Method: PETROLEUM HYDROCARBONS BY TX1006**

MBLK Sample ID: **MBLK-150682** Units: **mg/Kg** Analysis Date: **14-Feb-2020 16:17**
Client ID: Run ID: **FID-12_356400** SeqNo: **5475560** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics nC6	< 5.0	10								
Aliphatics >nC6 to nC8	< 5.0	10								
Aliphatics >nC8 to nC10	< 5.0	10								
Aliphatics >nC10 to nC12	< 5.0	10								
Aliphatics >nC12 to nC16	< 5.0	10								
Aliphatics >nC16 to nC21	< 5.0	10								
Aliphatics >nC21 to nC35	< 5.0	10								
Total Aliphatic Fraction	< 5.0	10								
Aliphatics Relative % Distribution	0	0								
Total Petroleum Hydrocarbons	< 5.0	10								

MBLK Sample ID: **MBLK-150682** Units: **mg/Kg** Analysis Date: **14-Feb-2020 16:17**
Client ID: Run ID: **FID-13_356405** SeqNo: **5475605** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >nC7 to nC8	< 5.0	10								
Aromatics >nC8 to nC10	< 5.0	10								
Aromatics >nC10 to nC12	< 5.0	10								
Aromatics >nC12 to nC16	< 5.0	10								
Aromatics >nC16 to nC21	< 5.0	10								
Aromatics >nC21 to nC35	< 5.0	10								
Total Aromatic Fraction	< 5.0	10								
Aromatics Relative % Distribution	0	0								

LCS Sample ID: **LCS-150682** Units: **mg/Kg** Analysis Date: **14-Feb-2020 16:46**
Client ID: Run ID: **FID-12_356400** SeqNo: **5475561** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Petroleum Hydrocarbons	609.2	10	500	0	122	60 - 140				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011392

QC BATCH REPORT

Batch ID: 150682 (0) **Instrument:** FID-12 **Method:** PETROLEUM HYDROCARBONS BY TX1006

LCSD Sample ID: **LCSD-150682** Units: **mg/Kg** Analysis Date: **14-Feb-2020 17:15**
Client ID: Run ID: **FID-12_356400** SeqNo: **5475562** PrepDate: **13-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Petroleum Hydrocarbons	596.3	10	500	0	119	60 - 140	609.2	2.13	30	

The following samples were analyzed in this batch: HS20011392-01

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011392

QC BATCH REPORT

Batch ID: **R355773 (0)** **Instrument:** **Balance1** **Method:** **MOISTURE - ASTM D2216**

DUP Sample ID: **HS20011392-08DUP** Units: **wt%** Analysis Date: **05-Feb-2020 11:30**
Client ID: **SO-1620-SB217(8-9)-20200129** Run ID: **Balance1_355773** SeqNo: **5462055** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	15	0.0100					14.8	1.34	20	

The following samples were analyzed in this batch:

HS20011392-01	HS20011392-02	HS20011392-03	HS20011392-04
HS20011392-05	HS20011392-06	HS20011392-07	HS20011392-08

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20011392**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/Kg-dry	Milligrams per Kilogram- Dry weight corrected

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20011392

Date/Time Received: **30-Jan-2020 05:30**
Received by: **DDG**

Checklist completed by: *Nilesh D. Ranchod* eSignature — 30-Jan-2020 Date

Reviewed by: *Dane J. Wacasey* eSignature — 4-Feb-2020 Date

Matrices: **Soil**

Carrier name: **ALS Courier**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☑	No ☐	Not Present ☐
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:212485
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	0.8C UC/C		IR # 11
Cooler(s)/Kit(s):	45627		
Date/Time sample(s) sent to storage:	01/30/2020 15:00		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

Page 1 of 1

COC ID: 212485

HS20011392

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-10-Rev0 SR 92688
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address	

A TX1005_S_REV3 (5643233 TX1005 TPH)
B MOIST_ASTM (5631931 Moisture Content)
C TX1006_S (5645461 TPH TX1006) [HOLD]
D
E
F Per Golder MSA
G
H
I
J

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620-CPT2620(2-3)-20200128	1-28-20	1635	Soil	8	2	X	X	X		Just A+C for all Samples						
2	CPT2620(13-14)-20200129	1-29-20	1135				X		X								
3	CPT2420(4-5)		1140				X		X								
4	CPT2420(8-9)		1145				X		X								
5	SB21620(3-4)		1440				X		X								
6	SB21620(7-8)		1445				X		X		Hold 1006						
7	SB21720(3-4)		1630				X		X		Sampling						
8	SB21720(8-9)		1635				X		X								
9																	
10																	

Sampler(s) Please Print & Sign: Blake Sakora

Relinquished by: Blake Sakora Date: 1-29-20 Time: 1655 Received by:

Relinquished by: Date: 1-30-20 Time: 0515 Received by (Laboratory):

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Shipment Method

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Notes: UPRR HWPW 1620 TPH NAPL Assessment

Cooler ID	Cooler Temp.
4560271	0.5

QC Package: (Check One Box Below)

[X] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[ ] TRRP Checklist
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Houston, TX 77099
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February 21, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20011494**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 8 sample(s) on Jan 31, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20011494**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS20011494**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data								
Laboratory Name: ALS Laboratory Group			LRC Date: 02/21/2020					
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20011494					
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150266,150790,R356210					
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]	
R1	OI	**Chain-of-custody (C-O-C)**						
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X					
		Were all departures from standard conditions described in an exception report?	X					
R2	OI	**Sample and quality control (QC) identification**						
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X					
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X					
R3	OI	**Test reports**						
		Were all samples prepared and analyzed within holding times?	X					
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X					
		Were calculations checked by a peer or supervisor?	X					
		Were all analyte identifications checked by a peer or supervisor?	X					
		Were sample detection limits reported for all analytes not detected?	X					
		Were all results for soil and sediment samples reported on a dry weight basis?	X					
		Were % moisture (or solids) reported for all soil and sediment samples?	X					
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X			
		If required for the project, TICs reported?			X			
R4	O	**Surrogate recovery data**						
		Were surrogates added prior to extraction?	X					
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X					
R5	OI	**Test reports/summary forms for blank samples**						
		Were appropriate type(s) of blanks analyzed?	X					
		Were blanks analyzed at the appropriate frequency?	X					
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X					
		Were blank concentrations < MQL?	X					
R6	OI	**Laboratory control samples (LCS):**						
		Were all COCs included in the LCS?	X					
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X					
		Were LCSs analyzed at the required frequency?	X					
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X					
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X					
		Was the LCSD RPD within QC limits?	X					
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**						
		Were the project/method specified analytes included in the MS and MSD?	X					
		Were MS/MSD analyzed at the appropriate frequency?	X					
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X					
		Were MS/MSD RPDs within laboratory QC limits?	X					
R8	OI	**Analytical duplicate data**						
		Were appropriate analytical duplicates analyzed for each matrix?	X					
		Were analytical duplicates analyzed at the appropriate frequency?	X					
		Were RPDs or relative standard deviations within the laboratory QC limits?	X					
R9	OI	**Method quantitation limits (MQLs):**						
		Are the MQLs for each method analyte included in the laboratory data package?	X					
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X					
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X					
R10	OI	**Other problems/anomalies**						
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X					
		Were all necessary corrective actions performed for the reported data?	X					
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X					
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				1	

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/21/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20011494				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150266,150790,R356210				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?			X		
		Were ion abundance data within the method-required QC limits?			X		
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?			X		
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 02/21/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20011494
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 150266,150790,R356210

ER#[5]	Description
1	TPH TX 1006: ALS is NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package. Because TCEQ does not offer accreditation for TX 1006, the results are flagged with n.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20011494

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20011494-01	SO-1620-CPT1220(4-5)-20200130	Soil		30-Jan-2020 10:35	31-Jan-2020 11:10	☐
HS20011494-02	SO-1620-CPT1220(8-9)-20200130	Soil		30-Jan-2020 10:40	31-Jan-2020 11:10	☐
HS20011494-03	SO-1620-CPT1620(4-5)-20200130	Soil		30-Jan-2020 13:05	31-Jan-2020 11:10	☐
HS20011494-04	SO-1620-CPT1620(14-15)-20200130	Soil		30-Jan-2020 13:10	31-Jan-2020 11:10	☐
HS20011494-05	SO-1620-CPT2120(3-4)-20200130	Soil		30-Jan-2020 13:20	31-Jan-2020 11:10	☐
HS20011494-06	SO-1620-CPT2120(5-6)-20200130	Soil		30-Jan-2020 15:25	31-Jan-2020 11:10	☐
HS20011494-07	SO-1620-CPT4619(2-3)-20200130	Soil		30-Jan-2020 16:40	31-Jan-2020 11:10	☐
HS20011494-08	SO-1620-CPT4619(9-10)-20200131	Soil		31-Jan-2020 09:10	31-Jan-2020 11:10	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-CPT1220(4-5)-20200130
Collection Date: 30-Jan-2020 10:35

ANALYTICAL REPORT
WorkOrder:HS20011494
Lab ID:HS20011494-01
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 04-Feb-2020		Analyst: MBG
nC6 to nC12	**290**		**33**	**220**	**mg/Kg-dry**	5	07-Feb-2020 07:29
>nC12 to nC28	**2,300**		**43**	**220**	**mg/Kg-dry**	5	07-Feb-2020 07:29
>nC28 to nC35	**120**	J	**43**	**220**	**mg/Kg-dry**	5	07-Feb-2020 07:29
Total Petroleum Hydrocarbon	**2,710**		**33**	**220**	**mg/Kg-dry**	5	07-Feb-2020 07:29
Surr: 2-Fluorobiphenyl	*85.0*			*70-130*	*%REC*	*5*	*07-Feb-2020 07:29*
Surr: Trifluoromethyl benzene	*78.1*			*70-130*	*%REC*	*5*	*07-Feb-2020 07:29*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**16.2**		**0.0100**	**0.0100**	**wt%**	1	12-Feb-2020 13:42

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-CPT1220(8-9)-20200130
Collection Date: 30-Jan-2020 10:40

ANALYTICAL REPORT
WorkOrder:HS20011494
Lab ID:HS20011494-02
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 04-Feb-2020		Analyst: MBG
nC6 to nC12	**1,300**		**77**	**520**	**mg/Kg-dry**	10	07-Feb-2020 07:58
>nC12 to nC28	**6,500**		**100**	**520**	**mg/Kg-dry**	10	07-Feb-2020 07:58
>nC28 to nC35	**270**	J	**100**	**520**	**mg/Kg-dry**	10	07-Feb-2020 07:58
Total Petroleum Hydrocarbon	**8,070**		**77**	**520**	**mg/Kg-dry**	10	07-Feb-2020 07:58
Surr: 2-Fluorobiphenyl	*81.8*			*70-130*	*%REC*	*10*	*07-Feb-2020 07:58*
Surr: Trifluoromethyl benzene	*78.9*			*70-130*	*%REC*	*10*	*07-Feb-2020 07:58*
PETROLEUM HYDROCARBONS BY TX1006	**Method:TX1006**				Prep:TX1006PR / 17-Feb-2020		Analyst: JLJ
Aliphatics nC6	< 52	n	52	100	mg/Kg-dry	10	18-Feb-2020 18:47
Aliphatics >nC6 to nC8	< 52	n	52	100	mg/Kg-dry	10	18-Feb-2020 18:47
Aliphatics >nC8 to nC10	< 52	n	52	100	mg/Kg-dry	10	18-Feb-2020 18:47
Aliphatics >nC10 to nC12	< 52	n	52	100	mg/Kg-dry	10	18-Feb-2020 18:47
Aliphatics >nC12 to nC16	**110**	n	**52**	**100**	**mg/Kg-dry**	10	18-Feb-2020 18:47
Aliphatics >nC16 to nC21	**58**	Jn	**52**	**100**	**mg/Kg-dry**	10	18-Feb-2020 18:47
Aliphatics >nC21 to nC35	**52**	Jn	**52**	**100**	**mg/Kg-dry**	10	18-Feb-2020 18:47
Total Aliphatic Fraction	**220**	n	**52**	**100**	**mg/Kg-dry**	10	18-Feb-2020 18:47
Aliphatics Relative % Distribution	**3.2**	n	**0**	**0**	**%-dry**	10	18-Feb-2020 18:47
Aromatics >nC7 to nC8	< 52	n	52	100	mg/Kg-dry	10	18-Feb-2020 18:47
Aromatics >nC8 to nC10	< 52	n	52	100	mg/Kg-dry	10	18-Feb-2020 18:47
Aromatics >nC10 to nC12	**1,100**	n	**52**	**100**	**mg/Kg-dry**	10	18-Feb-2020 18:47
Aromatics >nC12 to nC16	**2,000**	n	**52**	**100**	**mg/Kg-dry**	10	18-Feb-2020 18:47
Aromatics >nC16 to nC21	**2,600**	n	**52**	**100**	**mg/Kg-dry**	10	18-Feb-2020 18:47
Aromatics >nC21 to nC35	**990**	n	**52**	**100**	**mg/Kg-dry**	10	18-Feb-2020 18:47
Total Aromatic Fraction	**6,690**	n	**52**	**100**	**mg/Kg-dry**	10	18-Feb-2020 18:47
Aromatics Relative % Distribution	**97**	n	**0**	**0**	**%-dry**	10	18-Feb-2020 18:47
Total Petroleum Hydrocarbons	**6,900**	n	**52**	**100**	**mg/Kg-dry**	10	18-Feb-2020 18:47
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**13.4**		**0.0100**	**0.0100**	**wt%**	1	12-Feb-2020 13:42

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-CPT1620(4-5)-20200130
Collection Date: 30-Jan-2020 13:05

ANALYTICAL REPORT
WorkOrder:HS20011494
Lab ID:HS20011494-03
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 04-Feb-2020		Analyst: MBG
nC6 to nC12	**270**		**6.9**	**47**	**mg/Kg-dry**	1	05-Feb-2020 22:36
>nC12 to nC28	**860**		**9.1**	**47**	**mg/Kg-dry**	1	05-Feb-2020 22:36
>nC28 to nC35	**28**	J	**9.1**	**47**	**mg/Kg-dry**	1	05-Feb-2020 22:36
Total Petroleum Hydrocarbon	**1,160**		**6.9**	**47**	**mg/Kg-dry**	1	05-Feb-2020 22:36
Surr: 2-Fluorobiphenyl	*81.8*			*70-130*	*%REC*	*1*	*05-Feb-2020 22:36*
Surr: Trifluoromethyl benzene	*78.2*			*70-130*	*%REC*	*1*	*05-Feb-2020 22:36*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**16.6**		**0.0100**	**0.0100**	**wt%**	1	12-Feb-2020 13:42

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-CPT1620(14-15)-20200130
Collection Date: 30-Jan-2020 13:10

ANALYTICAL REPORT
WorkOrder:HS20011494
Lab ID:HS20011494-04
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 04-Feb-2020		Analyst: MBG
nC6 to nC12	**1,300**		**63**	**420**	**mg/Kg-dry**	10	07-Feb-2020 08:28
>nC12 to nC28	**3,100**		**83**	**420**	**mg/Kg-dry**	10	07-Feb-2020 08:28
>nC28 to nC35	**120**	J	**83**	**420**	**mg/Kg-dry**	10	07-Feb-2020 08:28
Total Petroleum Hydrocarbon	**4,520**		**63**	**420**	**mg/Kg-dry**	10	07-Feb-2020 08:28
Surr: 2-Fluorobiphenyl	*107*			*70-130*	*%REC*	*10*	*07-Feb-2020 08:28*
Surr: Trifluoromethyl benzene	*90.1*			*70-130*	*%REC*	*10*	*07-Feb-2020 08:28*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**15.5**		**0.0100**	**0.0100**	**wt%**	1	12-Feb-2020 13:42

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-CPT2120(3-4)-20200130
Collection Date: 30-Jan-2020 13:20

ANALYTICAL REPORT
WorkOrder:HS20011494
Lab ID:HS20011494-05
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 04-Feb-2020		Analyst: MBG
nC6 to nC12	**1,300**		**38**	**260**	**mg/Kg-dry**	5	07-Feb-2020 08:57
>nC12 to nC28	**2,800**		**50**	**260**	**mg/Kg-dry**	5	07-Feb-2020 08:57
>nC28 to nC35	**97**	J	**50**	**260**	**mg/Kg-dry**	5	07-Feb-2020 08:57
Total Petroleum Hydrocarbon	**4,200**		**38**	**260**	**mg/Kg-dry**	5	07-Feb-2020 08:57
Surr: 2-Fluorobiphenyl	*97.2*			*70-130*	*%REC*	*5*	*07-Feb-2020 08:57*
Surr: Trifluoromethyl benzene	*88.7*			*70-130*	*%REC*	*5*	*07-Feb-2020 08:57*
PETROLEUM HYDROCARBONS BY TX1006	**Method:TX1006**				Prep:TX1006PR / 17-Feb-2020		Analyst: JLJ
Aliphatics nC6	< 26	n	26	51	mg/Kg-dry	5	18-Feb-2020 19:16
Aliphatics >nC6 to nC8	< 26	n	26	51	mg/Kg-dry	5	18-Feb-2020 19:16
Aliphatics >nC8 to nC10	**53**	n	**26**	**51**	**mg/Kg-dry**	5	18-Feb-2020 19:16
Aliphatics >nC10 to nC12	**38**	Jn	**26**	**51**	**mg/Kg-dry**	5	18-Feb-2020 19:16
Aliphatics >nC12 to nC16	**36**	Jn	**26**	**51**	**mg/Kg-dry**	5	18-Feb-2020 19:16
Aliphatics >nC16 to nC21	**27**	Jn	**26**	**51**	**mg/Kg-dry**	5	18-Feb-2020 19:16
Aliphatics >nC21 to nC35	< 26	n	26	51	mg/Kg-dry	5	18-Feb-2020 19:16
Total Aliphatic Fraction	**154**	n	**26**	**51**	**mg/Kg-dry**	5	18-Feb-2020 19:16
Aliphatics Relative % Distribution	**4.7**	n	**0**	**0**	**%-dry**	5	18-Feb-2020 19:16
Aromatics >nC7 to nC8	< 26	n	26	51	mg/Kg-dry	5	18-Feb-2020 19:16
Aromatics >nC8 to nC10	**470**	n	**26**	**51**	**mg/Kg-dry**	5	18-Feb-2020 19:16
Aromatics >nC10 to nC12	**440**	n	**26**	**51**	**mg/Kg-dry**	5	18-Feb-2020 19:16
Aromatics >nC12 to nC16	**710**	n	**26**	**51**	**mg/Kg-dry**	5	18-Feb-2020 19:16
Aromatics >nC16 to nC21	**1,100**	n	**26**	**51**	**mg/Kg-dry**	5	18-Feb-2020 19:16
Aromatics >nC21 to nC35	**390**	n	**26**	**51**	**mg/Kg-dry**	5	18-Feb-2020 19:16
Total Aromatic Fraction	**3,110**	n	**26**	**51**	**mg/Kg-dry**	5	18-Feb-2020 19:16
Aromatics Relative % Distribution	**95**	n	**0**	**0**	**%-dry**	5	18-Feb-2020 19:16
Total Petroleum Hydrocarbons	**3,300**	n	**26**	**51**	**mg/Kg-dry**	5	18-Feb-2020 19:16
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**19.6**		**0.0100**	**0.0100**	**wt%**	1	12-Feb-2020 13:42

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20011494
Sample ID: SO-1620-CPT2120(5-6)-20200130
Lab ID:HS20011494-06
Collection Date: 30-Jan-2020 15:25
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 04-Feb-2020		Analyst: MBG
nC6 to nC12	**48**		**6.2**	**42**	**mg/Kg-dry**	1	06-Feb-2020 00:04
>nC12 to nC28	**110**		**8.2**	**42**	**mg/Kg-dry**	1	06-Feb-2020 00:04
>nC28 to nC35	**22**	J	**8.2**	**42**	**mg/Kg-dry**	1	06-Feb-2020 00:04
Total Petroleum Hydrocarbon	**180**		**6.2**	**42**	**mg/Kg-dry**	1	06-Feb-2020 00:04
Surr: 2-Fluorobiphenyl	*87.1*			*70-130*	*%REC*	*1*	*06-Feb-2020 00:04*
Surr: Trifluoromethyl benzene	*82.1*			*70-130*	*%REC*	*1*	*06-Feb-2020 00:04*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**15.0**		**0.0100**	**0.0100**	**wt%**	1	12-Feb-2020 13:42

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-CPT4619(2-3)-20200130
Collection Date: 30-Jan-2020 16:40

ANALYTICAL REPORT
WorkOrder:HS20011494
Lab ID:HS20011494-07
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 04-Feb-2020		Analyst: MBG
nC6 to nC12	< 6.5		6.5	44	mg/Kg-dry	1	06-Feb-2020 00:33
>nC12 to nC28	< 8.5		8.5	44	mg/Kg-dry	1	06-Feb-2020 00:33
>nC28 to nC35	< 8.5		8.5	44	mg/Kg-dry	1	06-Feb-2020 00:33
Total Petroleum Hydrocarbon	< 6.5		6.5	44	mg/Kg-dry	1	06-Feb-2020 00:33
Surr: 2-Fluorobiphenyl	*93.4*			*70-130*	*%REC*	*1*	*06-Feb-2020 00:33*
Surr: Trifluoromethyl benzene	*90.2*			*70-130*	*%REC*	*1*	*06-Feb-2020 00:33*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**15.4**		**0.0100**	**0.0100**	**wt%**	1	12-Feb-2020 13:42

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-CPT4619(9-10)-20200131
Collection Date: 31-Jan-2020 09:10

ANALYTICAL REPORT
WorkOrder:HS20011494
Lab ID:HS20011494-08
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 04-Feb-2020		Analyst: MBG
nC6 to nC12	< 6.4		6.4	43	mg/Kg-dry	1	06-Feb-2020 01:03
>nC12 to nC28	< 8.4		8.4	43	mg/Kg-dry	1	06-Feb-2020 01:03
>nC28 to nC35	< 8.4		8.4	43	mg/Kg-dry	1	06-Feb-2020 01:03
Total Petroleum Hydrocarbon	< 6.4		6.4	43	mg/Kg-dry	1	06-Feb-2020 01:03
Surr: 2-Fluorobiphenyl	*88.2*			*70-130*	*%REC*	*1*	*06-Feb-2020 01:03*
Surr: Trifluoromethyl benzene	*83.6*			*70-130*	*%REC*	*1*	*06-Feb-2020 01:03*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**18.8**		**0.0100**	**0.0100**	**wt%**	1	12-Feb-2020 13:42

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011494

Batch ID: 150266 **Start Date:** 04 Feb 2020 09:00 **End Date:** 04 Feb 2020 13:30
Method: TX 1005 PREP **Prep Code:** TX 1005_S PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20011494-01	1	13.53 (g)	10 (mL)	0.7391
HS20011494-02	1	11.17 (g)	10 (mL)	0.8953
HS20011494-03	1	12.89 (g)	10 (mL)	0.7758
HS20011494-04	1	13.94 (g)	10 (mL)	0.7174
HS20011494-05	1	12.14 (g)	10 (mL)	0.8237
HS20011494-06	1	14 (g)	10 (mL)	0.7143
HS20011494-07	1	13.58 (g)	10 (mL)	0.7364
HS20011494-08	1	14.31 (g)	10 (mL)	0.6988

Batch ID: 150790 **Start Date:** 17 Feb 2020 14:30 **End Date:** 18 Feb 2020 12:00
Method: TX 1006 PREP **Prep Code:** TX 1006_S PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20011494-02		11.17 (g)	10 (mL)	0.8953
HS20011494-05		12.14 (g)	10 (mL)	0.8237

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011494

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 150266 (0)	**Test Name :** TEXAS TPH BY TX1005				**Matrix:** Soil	
HS20011494-01	SO-1620-CPT1220(4-5)-20200130	30 Jan 2020 10:35		04 Feb 2020 09:00	07 Feb 2020 07:29	5
HS20011494-02	SO-1620-CPT1220(8-9)-20200130	30 Jan 2020 10:40		04 Feb 2020 09:00	07 Feb 2020 07:58	10
HS20011494-03	SO-1620-CPT1620(4-5)-20200130	30 Jan 2020 13:05		04 Feb 2020 09:00	05 Feb 2020 22:36	1
HS20011494-04	SO-1620-CPT1620(14-15)-20200130	30 Jan 2020 13:10		04 Feb 2020 09:00	07 Feb 2020 08:28	10
HS20011494-05	SO-1620-CPT2120(3-4)-20200130	30 Jan 2020 13:20		04 Feb 2020 09:00	07 Feb 2020 08:57	5
HS20011494-06	SO-1620-CPT2120(5-6)-20200130	30 Jan 2020 15:25		04 Feb 2020 09:00	06 Feb 2020 00:04	1
HS20011494-07	SO-1620-CPT4619(2-3)-20200130	30 Jan 2020 16:40		04 Feb 2020 09:00	06 Feb 2020 00:33	1
HS20011494-08	SO-1620-CPT4619(9-10)-20200131	31 Jan 2020 09:10		04 Feb 2020 09:00	06 Feb 2020 01:03	1
Batch ID: 150790 (0)	**Test Name :** PETROLEUM HYDROCARBONS BY TX1006				**Matrix:** Soil	
HS20011494-02	SO-1620-CPT1220(8-9)-20200130	30 Jan 2020 10:40		17 Feb 2020 14:30	18 Feb 2020 18:47	10
HS20011494-05	SO-1620-CPT2120(3-4)-20200130	30 Jan 2020 13:20		17 Feb 2020 14:30	18 Feb 2020 19:16	5
Batch ID: 150790 (1)	**Test Name :** PETROLEUM HYDROCARBONS BY TX1006				**Matrix:** Soil	
HS20011494-02	SO-1620-CPT1220(8-9)-20200130	30 Jan 2020 10:40		17 Feb 2020 14:30	18 Feb 2020 18:47	10
HS20011494-05	SO-1620-CPT2120(3-4)-20200130	30 Jan 2020 13:20		17 Feb 2020 14:30	18 Feb 2020 19:16	5
Batch ID: R356210 (0)	**Test Name :** MOISTURE - ASTM D2216				**Matrix:** Soil	
HS20011494-01	SO-1620-CPT1220(4-5)-20200130	30 Jan 2020 10:35			12 Feb 2020 13:42	1
HS20011494-02	SO-1620-CPT1220(8-9)-20200130	30 Jan 2020 10:40			12 Feb 2020 13:42	1
HS20011494-03	SO-1620-CPT1620(4-5)-20200130	30 Jan 2020 13:05			12 Feb 2020 13:42	1
HS20011494-04	SO-1620-CPT1620(14-15)-20200130	30 Jan 2020 13:10			12 Feb 2020 13:42	1
HS20011494-05	SO-1620-CPT2120(3-4)-20200130	30 Jan 2020 13:20			12 Feb 2020 13:42	1
HS20011494-06	SO-1620-CPT2120(5-6)-20200130	30 Jan 2020 15:25			12 Feb 2020 13:42	1
HS20011494-07	SO-1620-CPT4619(2-3)-20200130	30 Jan 2020 16:40			12 Feb 2020 13:42	1
HS20011494-08	SO-1620-CPT4619(9-10)-20200131	31 Jan 2020 09:10			12 Feb 2020 13:42	1

WorkOrder: HS20011494
InstrumentID: FID-11
Test Code: TX1005_S_REV3
Test Number: TX1005
Test Name: Texas TPH by TX1005

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	nC6 to nC12	TPH-1005-1	25	23	7.4	50
A	>nC12 to nC28	TPH-1005-2	25	26	9.8	50
A	>nC28 to nC35	TPH-1005-4	25	23	9.8	50
A	Total Petroleum Hydrocarbon	TPH	25	23	7.4	50
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	Trifluoromethyl benzene	98-08-8	0	0	0	0

WorkOrder: HS20011494
InstrumentID: FID-10
Test Code: TX1006_S
Test Number: TX1006
Test Name: Petroleum Hydrocarbons by

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Aliphatics nC6	PHC6ALIP	0	0	5.0	10
A	Aliphatics >nC6 to nC8	PHCG68ALIP	0	0	5.0	10
A	Aliphatics >nC8 to nC10	PHCG810ALIP	0	0	5.0	10
A	Aliphatics >nC10 to nC12	PHCG1012ALIP	0	0	5.0	10
A	Aliphatics >nC12 to nC16	PHCG1216ALIP	0	0	5.0	10
A	Aliphatics >nC16 to nC21	PHCG1621ALIP	0	0	5.0	10
A	Aliphatics >nC21 to nC35	PHCG2135ALIP	0	0	5.0	10
A	Total Aliphatic Fraction	TOTALIPFRACT	0	0	5.0	10
A	Aliphatics Relative % Distribution	ALPRELPERDIST	0	0	0	0
A	Aromatics >nC7 to nC8	PHCG78AROM	0	0	5.0	10
A	Aromatics >nC8 to nC10	PHCG810AROM	0	0	5.0	10
A	Aromatics >nC10 to nC12	PHCG1012AROM	0	0	5.0	10
A	Aromatics >nC12 to nC16	PHCG1216AROM	0	0	5.0	10
A	Aromatics >nC16 to nC21	PHCG1621AROM	0	0	5.0	10
A	Aromatics >nC21 to nC35	PHCG2135AROM	0	0	5.0	10
A	Total Aromatic Fraction	TOTAROFRACT	0	0	5.0	10
A	Aromatics Relative % Distribution	ARORELPERCDIST	0	0	0	0
A	Total Petroleum Hydrocarbons	PHCG635AROMALIP	0	0	5.0	10

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011494

QC BATCH REPORT

Batch ID: 150266 (0) **Instrument: FID-11** **Method: TEXAS TPH BY TX1005**

MBLK Sample ID: **MBLK-150266** Units: **mg/Kg** Analysis Date: **05-Feb-2020 18:40**
Client ID: Run ID: **FID-11_355778** SeqNo: **5462136** PrepDate: **04-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	< 7.4	50								
>nC12 to nC28	< 9.8	50								
>nC28 to nC35	< 9.8	50								
Total Petroleum Hydrocarbon	< 7.4	50								
Surr: 2-Fluorobiphenyl	*24.4*	*0*	*25*	*0*	*97.6*	*70 - 130*				
Surr: Trifluoromethyl benzene	*23.86*	*0*	*25*	*0*	*95.4*	*70 - 130*				

LCS Sample ID: **LCS-150266** Units: **mg/Kg** Analysis Date: **05-Feb-2020 19:10**
Client ID: Run ID: **FID-11_355778** SeqNo: **5462137** PrepDate: **04-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	222.8	50	250	0	89.1	75 - 125				
>nC12 to nC28	221.6	50	250	0	88.6	75 - 125				
Surr: 2-Fluorobiphenyl	*26.55*	*0*	*25*	*0*	*106*	*70 - 130*				
Surr: Trifluoromethyl benzene	*24.53*	*0*	*25*	*0*	*98.1*	*70 - 130*				

LCSD Sample ID: **LCSD-150266** Units: **mg/Kg** Analysis Date: **05-Feb-2020 19:39**
Client ID: Run ID: **FID-11_355778** SeqNo: **5462138** PrepDate: **04-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	220.2	50	250	0	88.1	75 - 125	222.8	1.17	20	
>nC12 to nC28	219.5	50	250	0	87.8	75 - 125	221.6	0.942	20	
Surr: 2-Fluorobiphenyl	*26.72*	*0*	*25*	*0*	*107*	*70 - 130*	*26.55*	*0.642*	*20*	
Surr: Trifluoromethyl benzene	*24.45*	*0*	*25*	*0*	*97.8*	*70 - 130*	*24.53*	*0.344*	*20*	

MS Sample ID: **HS20011502-01MS** Units: **mg/Kg** Analysis Date: **05-Feb-2020 20:38**
Client ID: Run ID: **FID-11_355778** SeqNo: **5462140** PrepDate: **04-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	256.9	48	241.3	14.72	100	75 - 125				
>nC12 to nC28	266.4	48	241.3	8.83	107	75 - 125				
Surr: 2-Fluorobiphenyl	*24.29*	*0*	*24.13*	*0*	*101*	*70 - 130*				
Surr: Trifluoromethyl benzene	*22.9*	*0*	*24.13*	*0*	*94.9*	*70 - 130*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011494

QC BATCH REPORT

Batch ID: 150266 (0) **Instrument: FID-11** **Method: TEXAS TPH BY TX1005**

MSD Sample ID: **HS20011502-01MSD** Units: **mg/Kg** Analysis Date: **05-Feb-2020 21:07**
Client ID: Run ID: **FID-11_355778** SeqNo: **5462141** PrepDate: **04-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	251	47	236.5	14.72	99.9	75 - 125	256.9	2.31	20	
>nC12 to nC28	272.2	47	236.5	8.83	111	75 - 125	266.4	2.15	20	
Surr: 2-Fluorobiphenyl	*23.63*	*0*	*23.65*	*0*	*99.9*	*70 - 130*	*24.29*	*2.77*	*20*	
Surr: Trifluoromethyl benzene	*22.22*	*0*	*23.65*	*0*	*94.0*	*70 - 130*	*22.9*	*3.02*	*20*	

The following samples were analyzed in this batch:

HS20011494-01	HS20011494-02	HS20011494-03	HS20011494-04
HS20011494-05	HS20011494-06	HS20011494-07	HS20011494-08

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011494

QC BATCH REPORT

Batch ID: 150790 (0) **Instrument: FID-10** **Method: PETROLEUM HYDROCARBONS BY TX1006**

MBLK Sample ID: **MBLK-150790** Units: **mg/Kg** Analysis Date: **18-Feb-2020 17:18**
Client ID: Run ID: **FID-10_356767** SeqNo: **5482498** PrepDate: **17-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics nC6	< 5.0	10								
Aliphatics >nC6 to nC8	< 5.0	10								
Aliphatics >nC8 to nC10	< 5.0	10								
Aliphatics >nC10 to nC12	< 5.0	10								
Aliphatics >nC12 to nC16	< 5.0	10								
Aliphatics >nC16 to nC21	< 5.0	10								
Aliphatics >nC21 to nC35	< 5.0	10								
Total Aliphatic Fraction	< 5.0	10								
Aliphatics Relative % Distribution		0								
Total Petroleum Hydrocarbons	< 5.0	10								

LCS Sample ID: **LCS-150790** Units: **mg/Kg** Analysis Date: **18-Feb-2020 17:48**
Client ID: Run ID: **FID-10_356767** SeqNo: **5482499** PrepDate: **17-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Petroleum Hydrocarbons	427.2	10	500	0	85.4	60 - 140				

LCSD Sample ID: **LCSD-150790** Units: **mg/Kg** Analysis Date: **18-Feb-2020 18:17**
Client ID: Run ID: **FID-10_356767** SeqNo: **5482500** PrepDate: **17-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Petroleum Hydrocarbons	426.3	10	500	0	85.3	60 - 140	427.2	0.192	30	

The following samples were analyzed in this batch: HS20011494-02 HS20011494-05

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011494

QC BATCH REPORT

Batch ID: 150790 (1) **Instrument: FID-10** **Method: PETROLEUM HYDROCARBONS BY TX1006**

MBLK Sample ID: **MBLK-150790** Units: **mg/Kg** Analysis Date: **18-Feb-2020 17:18**
Client ID: Run ID: **FID-10_356767** SeqNo: **5482535** PrepDate: **17-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >nC7 to nC8	< 5.0	10								
Aromatics >nC8 to nC10	< 5.0	10								
Aromatics >nC10 to nC12	< 5.0	10								
Aromatics >nC12 to nC16	< 5.0	10								
Aromatics >nC16 to nC21	< 5.0	10								
Aromatics >nC21 to nC35	< 5.0	10								
Total Aromatic Fraction	< 5.0	10								
Aromatics Relative % Distribution		0								

The following samples were analyzed in this batch: HS20011494-02 HS20011494-05

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20011494

QC BATCH REPORT

Batch ID: **R356210 (0)** **Instrument:** **Balance1** **Method:** **MOISTURE - ASTM D2216**

DUP Sample ID: **HS20020239-04DUP** Units: **wt%** Analysis Date: **12-Feb-2020 13:42**
Client ID: Run ID: **Balance1_356210** SeqNo: **5471584** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	20.2	0.0100					20.8	2.93	20	

The following samples were analyzed in this batch:

HS20011494-01	HS20011494-02	HS20011494-03	HS20011494-04
HS20011494-05	HS20011494-06	HS20011494-07	HS20011494-08

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20011494**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/Kg-dry	Milligrams per Kilogram- Dry weight corrected

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20011494

Date/Time Received: **31-Jan-2020 11:10**
Received by: **AC**

Checklist completed by: *Nilesh D. Ranchod* eSignature — 31-Jan-2020 Date
Reviewed by: *Dane J. Wacasey* eSignature — 5-Feb-2020 Date

Matrices: **Soil**
Carrier name: **Client**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☑	No ☐	Not Present ☐
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:212480
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☐	No ☑	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	1.3C UC/C	IR # 25
Cooler(s)/Kit(s):	43199	
Date/Time sample(s) sent to storage:	01/31/2020 15:00	

Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes: 2oz jar not received; used 1 x TX1005 vial assigned for Moisture

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

Page 1 of 1

COC ID: 212480

HS20011494

, WV

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information			
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works	A	TX1005_S_REV3 (5643233 TX1005 TPH)
Work Order		Project Number	1620-10-Rev0 SR 92688	B	MOIST_ASTM (5631931 Moisture Content)
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P	C	TX1006_S (5645481 TPH TX1006) [HOLD]
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable	D	
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750	E F	
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750	G	
Phone	(512) 671-3434	Phone		H	
Fax	(512) 671-3446	Fax		I	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address		J	

Per Golder MSA

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SG-1620-CPT1220([redacted])-20200130	1-30-20	1035	Soil	6	2	X	X	X								Hold 1006 Sampling
2	CPT1220([redacted])		1040														
3	CPT1620(4-5)		1305														
4	CPT1620(14-15)		1310														
5	CPT2120(3-4)		1520														
6	CPT2120(5-6)		1525														
7	CPT4620([redacted])		1640														
8	CPT4620([redacted])-20200131	1-31-20	[redacted]														
9																	
10																	

Sampler(s) Please Print & Sign: Blake Sokora, Blake Sokora

Shipment Method:

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: Blake Sokora Date: 1-31-2020 Time: 1110

Relinquished by: Date: 1/31/2020 Time: 11:10

Received by:

Received by (Laboratory): AC

Logged by (Laboratory): Date: Time:

Checked by (Laboratory):

Notes: UPRR HWPW 1620 TPH NAPL Assessment

Cooler ID	Cooler Temp.
	U/C
43199	1.3
	IR #25
	CF 0.0

QC Package: (Check One Box Below)

- [X] Level II Std QC
- [ ] Level III Std QC/Raw Data
- [ ] Level IV SW846/CLP
- [ ] Other
- [ ] TRRP Checklist
- [ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

February 21, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20020158**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 8 sample(s) on Feb 04, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20020158**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS20020158**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/21/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020158				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150351,150790,R356024				
#[1]	A[2]	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?		X			1
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				2

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/21/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020158				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150351,150790,R356024				
#[1]	**A[2]**	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?			X		
		Were ion abundance data within the method-required QC limits?			X		
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?			X		
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 02/21/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20020158
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 150351,150790,R356024

ER#[5]	Description
1	Texas TPH by TX1005, sample SO-1620-CPT3219(2-3)-20200204, the surrogate recoveries could not be determined due to dilution below the calibration range.
2	TPH TX 1006: ALS is NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package. Because TCEQ does not offer accreditation for TX 1006, the results are flagged with n.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20020158

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20020158-01	SO-1620-SB22019(4-5)-20200203	Soil		03-Feb-2020 16:55	04-Feb-2020 16:50	☐
HS20020158-02	SO-1620-SB21919(2-3)-20200203	Soil		03-Feb-2020 17:15	04-Feb-2020 16:50	☐
HS20020158-03	SO-1620-CPT3019(4-5)-20200203	Soil		03-Feb-2020 17:20	04-Feb-2020 16:50	☐
HS20020158-04	SO-1620-CPT37(7-8)-20200204	Soil		04-Feb-2020 10:45	04-Feb-2020 16:50	☐
HS20020158-05	SO-1620-CPT3219(2-3)-20200204	Soil		04-Feb-2020 13:50	04-Feb-2020 16:50	☐
HS20020158-06	SO-1620-CPT3219(11-12)-20200204	Soil		04-Feb-2020 13:55	04-Feb-2020 16:50	☐
HS20020158-07	SO-1620-SB220(8-9)-20200204	Soil		04-Feb-2020 14:10	04-Feb-2020 16:50	☐
HS20020158-08	SO-1620-SB219(7-8)-20200204	Soil		04-Feb-2020 15:10	04-Feb-2020 16:50	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SB22019(4-5)-20200203
Collection Date: 03-Feb-2020 16:55

ANALYTICAL REPORT
WorkOrder:HS20020158
Lab ID:HS20020158-01
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 05-Feb-2020		Analyst: MBG
nC6 to nC12	< 7.0		7.0	47	mg/Kg-dry	1	06-Feb-2020 02:31
>nC12 to nC28	< 9.2		9.2	47	mg/Kg-dry	1	06-Feb-2020 02:31
>nC28 to nC35	< 9.2		9.2	47	mg/Kg-dry	1	06-Feb-2020 02:31
Total Petroleum Hydrocarbon	< 7.0		7.0	47	mg/Kg-dry	1	06-Feb-2020 02:31
Surr: 2-Fluorobiphenyl	*89.0*			*70-130*	*%REC*	*1*	*06-Feb-2020 02:31*
Surr: Trifluoromethyl benzene	*82.2*			*70-130*	*%REC*	*1*	*06-Feb-2020 02:31*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**15.1**		**0.0100**	**0.0100**	**wt%**	1	10-Feb-2020 11:08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SB21919(2-3)-20200203
Collection Date: 03-Feb-2020 17:15

ANALYTICAL REPORT
WorkOrder:HS20020158
Lab ID:HS20020158-02
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 05-Feb-2020		Analyst: MBG
nC6 to nC12	< 79		79	530	mg/Kg-dry	10	06-Feb-2020 03:00
>nC12 to nC28	**1,400**		**100**	**530**	**mg/Kg-dry**	10	06-Feb-2020 03:00
>nC28 to nC35	**980**		**100**	**530**	**mg/Kg-dry**	10	06-Feb-2020 03:00
Total Petroleum Hydrocarbon	**2,380**		**79**	**530**	**mg/Kg-dry**	10	06-Feb-2020 03:00
Surr: 2-Fluorobiphenyl	*121*			*70-130*	*%REC*	*10*	*06-Feb-2020 03:00*
Surr: Trifluoromethyl benzene	*92.8*			*70-130*	*%REC*	*10*	*06-Feb-2020 03:00*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**13.4**		**0.0100**	**0.0100**	**wt%**	1	10-Feb-2020 11:08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-CPT3019(4-5)-20200203
Collection Date: 03-Feb-2020 17:20

ANALYTICAL REPORT
WorkOrder:HS20020158
Lab ID:HS20020158-03
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 05-Feb-2020		Analyst: MBG
nC6 to nC12	**220**	J	**120**	**800**	**mg/Kg-dry**	10	06-Feb-2020 04:28
>nC12 to nC28	**9,300**		**160**	**800**	**mg/Kg-dry**	10	06-Feb-2020 04:28
>nC28 to nC35	**3,000**		**160**	**800**	**mg/Kg-dry**	10	06-Feb-2020 04:28
Total Petroleum Hydrocarbon	**12,500**		**120**	**800**	**mg/Kg-dry**	10	06-Feb-2020 04:28
Surr: 2-Fluorobiphenyl	*128*			*70-130*	*%REC*	*10*	*06-Feb-2020 04:28*
Surr: Trifluoromethyl benzene	*106*			*70-130*	*%REC*	*10*	*06-Feb-2020 04:28*
PETROLEUM HYDROCARBONS BY TX1006	**Method:TX1006**				Prep:TX1006PR / 17-Feb-2020		Analyst: JLJ
Aliphatics nC6	< 80	n	80	160	mg/Kg-dry	10	18-Feb-2020 19:46
Aliphatics >nC6 to nC8	< 80	n	80	160	mg/Kg-dry	10	18-Feb-2020 19:46
Aliphatics >nC8 to nC10	< 80	n	80	160	mg/Kg-dry	10	18-Feb-2020 19:46
Aliphatics >nC10 to nC12	< 80	n	80	160	mg/Kg-dry	10	18-Feb-2020 19:46
Aliphatics >nC12 to nC16	**200**	n	**80**	**160**	**mg/Kg-dry**	10	18-Feb-2020 19:46
Aliphatics >nC16 to nC21	**520**	n	**80**	**160**	**mg/Kg-dry**	10	18-Feb-2020 19:46
Aliphatics >nC21 to nC35	**1,100**	n	**80**	**160**	**mg/Kg-dry**	10	18-Feb-2020 19:46
Total Aliphatic Fraction	**1,820**	n	**80**	**160**	**mg/Kg-dry**	10	18-Feb-2020 19:46
Aliphatics Relative % Distribution	**28**	n	**0**	**0**	**%-dry**	10	18-Feb-2020 19:46
Aromatics >nC7 to nC8	< 80	n	80	160	mg/Kg-dry	10	18-Feb-2020 19:46
Aromatics >nC8 to nC10	< 80	n	80	160	mg/Kg-dry	10	18-Feb-2020 19:46
Aromatics >nC10 to nC12	**150**	Jn	**80**	**160**	**mg/Kg-dry**	10	18-Feb-2020 19:46
Aromatics >nC12 to nC16	**590**	n	**80**	**160**	**mg/Kg-dry**	10	18-Feb-2020 19:46
Aromatics >nC16 to nC21	**1,800**	n	**80**	**160**	**mg/Kg-dry**	10	18-Feb-2020 19:46
Aromatics >nC21 to nC35	**2,000**	n	**80**	**160**	**mg/Kg-dry**	10	18-Feb-2020 19:46
Total Aromatic Fraction	**4,540**	n	**80**	**160**	**mg/Kg-dry**	10	18-Feb-2020 19:46
Aromatics Relative % Distribution	**72**	n	**0**	**0**	**%-dry**	10	18-Feb-2020 19:46
Total Petroleum Hydrocarbons	**6,300**	n	**80**	**160**	**mg/Kg-dry**	10	18-Feb-2020 19:46
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**33.8**		**0.0100**	**0.0100**	**wt%**	1	10-Feb-2020 11:08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-CPT37(7-8)-20200204
Collection Date: 04-Feb-2020 10:45

ANALYTICAL REPORT
WorkOrder:HS20020158
Lab ID:HS20020158-04
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 05-Feb-2020		Analyst: MBG
nC6 to nC12	**270**		**37**	**250**	**mg/Kg-dry**	5	12-Feb-2020 09:59
>nC12 to nC28	**1,800**		**49**	**250**	**mg/Kg-dry**	5	12-Feb-2020 09:59
>nC28 to nC35	**270**		**49**	**250**	**mg/Kg-dry**	5	12-Feb-2020 09:59
Total Petroleum Hydrocarbon	**2,340**		**37**	**250**	**mg/Kg-dry**	5	12-Feb-2020 09:59
Surr: 2-Fluorobiphenyl	*86.6*			*70-130*	*%REC*	*5*	*12-Feb-2020 09:59*
Surr: Trifluoromethyl benzene	*112*			*70-130*	*%REC*	*5*	*12-Feb-2020 09:59*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**14.4**		**0.0100**	**0.0100**	**wt%**	1	10-Feb-2020 11:08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-CPT3219(2-3)-20200204
Collection Date: 04-Feb-2020 13:50

ANALYTICAL REPORT
WorkOrder:HS20020158
Lab ID:HS20020158-05
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005		**Method:TX1005**			Prep:TX1005PR / 05-Feb-2020		Analyst: MBG
nC6 to nC12	**1,300**		**160**	**1100**	**mg/Kg-dry**	20	12-Feb-2020 10:28
>nC12 to nC28	**8,700**		**210**	**1100**	**mg/Kg-dry**	20	12-Feb-2020 10:28
>nC28 to nC35	**1,800**		**210**	**1100**	**mg/Kg-dry**	20	12-Feb-2020 10:28
Total Petroleum Hydrocarbon	**11,800**		**160**	**1100**	**mg/Kg-dry**	20	12-Feb-2020 10:28
Surr: 2-Fluorobiphenyl	*0*	*S*		*70-130*	*%REC*	*20*	*12-Feb-2020 10:28*
Surr: Trifluoromethyl benzene	*0*	*S*		*70-130*	*%REC*	*20*	*12-Feb-2020 10:28*
PETROLEUM HYDROCARBONS BY TX1006		**Method:TX1006**			Prep:TX1006PR / 17-Feb-2020		Analyst: JLJ
Aliphatics nC6	< 110	n	110	210	mg/Kg-dry	20	18-Feb-2020 20:15
Aliphatics >nC6 to nC8	< 110	n	110	210	mg/Kg-dry	20	18-Feb-2020 20:15
Aliphatics >nC8 to nC10	< 110	n	110	210	mg/Kg-dry	20	18-Feb-2020 20:15
Aliphatics >nC10 to nC12	< 110	n	110	210	mg/Kg-dry	20	18-Feb-2020 20:15
Aliphatics >nC12 to nC16	**280**	n	**110**	**210**	**mg/Kg-dry**	20	18-Feb-2020 20:15
Aliphatics >nC16 to nC21	**260**	n	**110**	**210**	**mg/Kg-dry**	20	18-Feb-2020 20:15
Aliphatics >nC21 to nC35	**340**	n	**110**	**210**	**mg/Kg-dry**	20	18-Feb-2020 20:15
Total Aliphatic Fraction	**880**	n	**110**	**210**	**mg/Kg-dry**	20	18-Feb-2020 20:15
Aliphatics Relative % Distribution	**7.4**	n	**0**	**0**	**%-dry**	20	18-Feb-2020 20:15
Aromatics >nC7 to nC8	< 110	n	110	210	mg/Kg-dry	20	18-Feb-2020 20:15
Aromatics >nC8 to nC10	< 110	n	110	210	mg/Kg-dry	20	18-Feb-2020 20:15
Aromatics >nC10 to nC12	**1,200**	n	**110**	**210**	**mg/Kg-dry**	20	18-Feb-2020 20:15
Aromatics >nC12 to nC16	**2,700**	n	**110**	**210**	**mg/Kg-dry**	20	18-Feb-2020 20:15
Aromatics >nC16 to nC21	**4,100**	n	**110**	**210**	**mg/Kg-dry**	20	18-Feb-2020 20:15
Aromatics >nC21 to nC35	**3,100**	n	**110**	**210**	**mg/Kg-dry**	20	18-Feb-2020 20:15
Total Aromatic Fraction	**11,100**	n	**110**	**210**	**mg/Kg-dry**	20	18-Feb-2020 20:15
Aromatics Relative % Distribution	**93**	n	**0**	**0**	**%-dry**	20	18-Feb-2020 20:15
Total Petroleum Hydrocarbons	**12,000**	n	**110**	**210**	**mg/Kg-dry**	20	18-Feb-2020 20:15
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**17.7**		**0.0100**	**0.0100**	**wt%**	1	10-Feb-2020 11:08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20020158
Sample ID: SO-1620-CPT3219(11-12)-20200204
Lab ID:HS20020158-06
Collection Date: 04-Feb-2020 13:55
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 05-Feb-2020		Analyst: MBG
nC6 to nC12	**890**		**70**	**470**	**mg/Kg-dry**	10	06-Feb-2020 05:56
>nC12 to nC28	**5,600**		**92**	**470**	**mg/Kg-dry**	10	06-Feb-2020 05:56
>nC28 to nC35	**950**		**92**	**470**	**mg/Kg-dry**	10	06-Feb-2020 05:56
Total Petroleum Hydrocarbon	**7,440**		**70**	**470**	**mg/Kg-dry**	10	06-Feb-2020 05:56
Surr: 2-Fluorobiphenyl	*127*			*70-130*	*%REC*	*10*	*06-Feb-2020 05:56*
Surr: Trifluoromethyl benzene	*99.8*			*70-130*	*%REC*	*10*	*06-Feb-2020 05:56*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**15.0**		**0.0100**	**0.0100**	**wt%**	1	10-Feb-2020 11:08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-SB220(8-9)-20200204
Collection Date: 04-Feb-2020 14:10

ANALYTICAL REPORT
WorkOrder:HS20020158
Lab ID:HS20020158-07
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 05-Feb-2020		Analyst: MBG
nC6 to nC12	< 7.8		7.8	53	mg/Kg-dry	1	06-Feb-2020 06:25
>nC12 to nC28	**19**	J	**10**	**53**	**mg/Kg-dry**	1	06-Feb-2020 06:25
>nC28 to nC35	< 10		10	53	mg/Kg-dry	1	06-Feb-2020 06:25
Total Petroleum Hydrocarbon	**19.0**	J	**7.8**	**53**	**mg/Kg-dry**	1	06-Feb-2020 06:25
Surr: 2-Fluorobiphenyl	*104*			*70-130*	*%REC*	*1*	*06-Feb-2020 06:25*
Surr: Trifluoromethyl benzene	*90.0*			*70-130*	*%REC*	*1*	*06-Feb-2020 06:25*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**15.4**		**0.0100**	**0.0100**	**wt%**	1	10-Feb-2020 11:08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20020158
Sample ID: SO-1620-SB219(7-8)-20200204
Lab ID:HS20020158-08
Collection Date: 04-Feb-2020 15:10
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 05-Feb-2020		Analyst: MBG
nC6 to nC12	< 6.6		6.6	44	mg/Kg-dry	1	06-Feb-2020 06:54
>nC12 to nC28	< 8.7		8.7	44	mg/Kg-dry	1	06-Feb-2020 06:54
>nC28 to nC35	< 8.7		8.7	44	mg/Kg-dry	1	06-Feb-2020 06:54
Total Petroleum Hydrocarbon	< 6.6		6.6	44	mg/Kg-dry	1	06-Feb-2020 06:54
Surr: 2-Fluorobiphenyl	*99.5*			*70-130*	*%REC*	*1*	*06-Feb-2020 06:54*
Surr: Trifluoromethyl benzene	*87.2*			*70-130*	*%REC*	*1*	*06-Feb-2020 06:54*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**14.9**		**0.0100**	**0.0100**	**wt%**	1	10-Feb-2020 11:08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020158

Batch ID: 150351 **Start Date:** 05 Feb 2020 14:00 **End Date:** 05 Feb 2020 15:30
Method: TX 1005 PREP **Prep Code:** TX 1005_S PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20020158-01	1	12.5 (g)	10 (mL)	0.8
HS20020158-02	1	10.85 (g)	10 (mL)	0.9217
HS20020158-03	1	9.39 (g)	10 (mL)	1.065
HS20020158-04	1	11.61 (g)	10 (mL)	0.8613
HS20020158-05	1	11.55 (g)	10 (mL)	0.8658
HS20020158-06	1	12.53 (g)	10 (mL)	0.7981
HS20020158-07	1	11.19 (g)	10 (mL)	0.8937
HS20020158-08	1	13.26 (g)	10 (mL)	0.7541

Batch ID: 150790 **Start Date:** 17 Feb 2020 14:30 **End Date:** 18 Feb 2020 12:00
Method: TX 1006 PREP **Prep Code:** TX 1006_S PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20020158-03		9.39 (g)	10 (mL)	1.065
HS20020158-05		11.55 (g)	10 (mL)	0.8658

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020158

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 150351 (0)	**Test Name :** TEXAS TPH BY TX1005				**Matrix:** Soil	
HS20020158-01	SO-1620-SB22019(4-5)-20200203	03 Feb 2020 16:55		05 Feb 2020 15:00	06 Feb 2020 02:31	1
HS20020158-02	SO-1620-SB21919(2-3)-20200203	03 Feb 2020 17:15		05 Feb 2020 15:00	06 Feb 2020 03:00	10
HS20020158-03	SO-1620-CPT3019(4-5)-20200203	03 Feb 2020 17:20		05 Feb 2020 15:00	06 Feb 2020 04:28	10
HS20020158-04	SO-1620-CPT37(7-8)-20200204	04 Feb 2020 10:45		05 Feb 2020 15:00	12 Feb 2020 09:59	5
HS20020158-05	SO-1620-CPT3219(2-3)-20200204	04 Feb 2020 13:50		05 Feb 2020 15:00	12 Feb 2020 10:28	20
HS20020158-06	SO-1620-CPT3219(11-12)-20200204	04 Feb 2020 13:55		05 Feb 2020 15:00	06 Feb 2020 05:56	10
HS20020158-07	SO-1620-SB220(8-9)-20200204	04 Feb 2020 14:10		05 Feb 2020 15:00	06 Feb 2020 06:25	1
HS20020158-08	SO-1620-SB219(7-8)-20200204	04 Feb 2020 15:10		05 Feb 2020 15:00	06 Feb 2020 06:54	1
Batch ID: 150790 (0)	**Test Name :** PETROLEUM HYDROCARBONS BY TX1006				**Matrix:** Soil	
HS20020158-03	SO-1620-CPT3019(4-5)-20200203	03 Feb 2020 17:20		17 Feb 2020 14:30	18 Feb 2020 19:46	10
HS20020158-05	SO-1620-CPT3219(2-3)-20200204	04 Feb 2020 13:50		17 Feb 2020 14:30	18 Feb 2020 20:15	20
Batch ID: 150790 (1)	**Test Name :** PETROLEUM HYDROCARBONS BY TX1006				**Matrix:** Soil	
HS20020158-03	SO-1620-CPT3019(4-5)-20200203	03 Feb 2020 17:20		17 Feb 2020 14:30	18 Feb 2020 19:46	10
HS20020158-05	SO-1620-CPT3219(2-3)-20200204	04 Feb 2020 13:50		17 Feb 2020 14:30	18 Feb 2020 20:15	20
Batch ID: R356024 (0)	**Test Name :** MOISTURE - ASTM D2216				**Matrix:** Soil	
HS20020158-01	SO-1620-SB22019(4-5)-20200203	03 Feb 2020 16:55			10 Feb 2020 11:08	1
HS20020158-02	SO-1620-SB21919(2-3)-20200203	03 Feb 2020 17:15			10 Feb 2020 11:08	1
HS20020158-03	SO-1620-CPT3019(4-5)-20200203	03 Feb 2020 17:20			10 Feb 2020 11:08	1
HS20020158-04	SO-1620-CPT37(7-8)-20200204	04 Feb 2020 10:45			10 Feb 2020 11:08	1
HS20020158-05	SO-1620-CPT3219(2-3)-20200204	04 Feb 2020 13:50			10 Feb 2020 11:08	1
HS20020158-06	SO-1620-CPT3219(11-12)-20200204	04 Feb 2020 13:55			10 Feb 2020 11:08	1
HS20020158-07	SO-1620-SB220(8-9)-20200204	04 Feb 2020 14:10			10 Feb 2020 11:08	1
HS20020158-08	SO-1620-SB219(7-8)-20200204	04 Feb 2020 15:10			10 Feb 2020 11:08	1

WorkOrder: HS20020158
InstrumentID: FID-10
Test Code: TX1005_S_REV3
Test Number: TX1005
Test Name: Texas TPH by TX1005

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	nC6 to nC12	TPH-1005-1	25	24	7.4	50
A	>nC12 to nC28	TPH-1005-2	25	25	9.8	50
A	>nC28 to nC35	TPH-1005-4	25	24	9.8	50
A	Total Petroleum Hydrocarbon	TPH	25	24	7.4	50
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	Trifluoromethyl benzene	98-08-8	0	0	0	0

WorkOrder: HS20020158
InstrumentID: FID-13
Test Code: TX1005_S_REV3
Test Number: TX1005
Test Name: Texas TPH by TX1005

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	nC6 to nC12	TPH-1005-1	25	29	7.4	50
A	>nC12 to nC28	TPH-1005-2	25	22	9.8	50
A	>nC28 to nC35	TPH-1005-4	25	22	9.8	50
A	Total Petroleum Hydrocarbon	TPH	25	22	7.4	50
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	Trifluoromethyl benzene	98-08-8	0	0	0	0

WorkOrder: HS20020158
InstrumentID: FID-10
Test Code: TX1006_S
Test Number: TX1006
Test Name: Petroleum Hydrocarbons by

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Aliphatics nC6	PHC6ALIP	0	0	5.0	10
A	Aliphatics >nC6 to nC8	PHCG68ALIP	0	0	5.0	10
A	Aliphatics >nC8 to nC10	PHCG810ALIP	0	0	5.0	10
A	Aliphatics >nC10 to nC12	PHCG1012ALIP	0	0	5.0	10
A	Aliphatics >nC12 to nC16	PHCG1216ALIP	0	0	5.0	10
A	Aliphatics >nC16 to nC21	PHCG1621ALIP	0	0	5.0	10
A	Aliphatics >nC21 to nC35	PHCG2135ALIP	0	0	5.0	10
A	Total Aliphatic Fraction	TOTALIPFRACT	0	0	5.0	10
A	Aliphatics Relative % Distribution	ALPRELPERDIST	0	0	0	0
A	Aromatics >nC7 to nC8	PHCG78AROM	0	0	5.0	10
A	Aromatics >nC8 to nC10	PHCG810AROM	0	0	5.0	10
A	Aromatics >nC10 to nC12	PHCG1012AROM	0	0	5.0	10
A	Aromatics >nC12 to nC16	PHCG1216AROM	0	0	5.0	10
A	Aromatics >nC16 to nC21	PHCG1621AROM	0	0	5.0	10
A	Aromatics >nC21 to nC35	PHCG2135AROM	0	0	5.0	10
A	Total Aromatic Fraction	TOTAROFRACT	0	0	5.0	10
A	Aromatics Relative % Distribution	ARORELPERCDIST	0	0	0	0
A	Total Petroleum Hydrocarbons	PHCG635AROMALIP	0	0	5.0	10

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020158

QC BATCH REPORT

Batch ID: 150351 (0) **Instrument: FID-10** **Method: TEXAS TPH BY TX1005**

MBLK Sample ID: **MBLK-150351** Units: **mg/Kg** Analysis Date: **05-Feb-2020 18:40**
Client ID: Run ID: **FID-10_355750** SeqNo: **5461587** PrepDate: **05-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	< 7.4	50								
>nC12 to nC28	< 9.8	50								
>nC28 to nC35	< 9.8	50								
Total Petroleum Hydrocarbon	< 7.4	50								
Surr: 2-Fluorobiphenyl	*27.01*	*0*	*25*	*0*	*108*	*70 - 130*				
Surr: Trifluoromethyl benzene	*25.54*	*0*	*25*	*0*	*102*	*70 - 130*				

LCS Sample ID: **LCS-150351** Units: **mg/Kg** Analysis Date: **05-Feb-2020 19:10**
Client ID: Run ID: **FID-10_355750** SeqNo: **5461588** PrepDate: **05-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	213.4	50	250	0	85.4	75 - 125				
>nC12 to nC28	204	50	250	0	81.6	75 - 125				
Surr: 2-Fluorobiphenyl	*27.33*	*0*	*25*	*0*	*109*	*70 - 130*				
Surr: Trifluoromethyl benzene	*23*	*0*	*25*	*0*	*92.0*	*70 - 130*				

LCSD Sample ID: **LCSD-150351** Units: **mg/Kg** Analysis Date: **05-Feb-2020 19:39**
Client ID: Run ID: **FID-10_355750** SeqNo: **5461589** PrepDate: **05-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	212.7	50	250	0	85.1	75 - 125	213.4	0.353	20	
>nC12 to nC28	195.5	50	250	0	78.2	75 - 125	204	4.28	20	
Surr: 2-Fluorobiphenyl	*27.77*	*0*	*25*	*0*	*111*	*70 - 130*	*27.33*	*1.6*	*20*	
Surr: Trifluoromethyl benzene	*23.38*	*0*	*25*	*0*	*93.5*	*70 - 130*	*23*	*1.61*	*20*	

MS Sample ID: **HS20020126-01MS** Units: **mg/Kg** Analysis Date: **05-Feb-2020 20:38**
Client ID: Run ID: **FID-10_355750** SeqNo: **5461591** PrepDate: **05-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	190.6	46	231.1	0	82.5	75 - 125				
>nC12 to nC28	190.4	46	231.1	0	82.4	75 - 125				
Surr: 2-Fluorobiphenyl	*23.46*	*0*	*23.11*	*0*	*102*	*70 - 130*				
Surr: Trifluoromethyl benzene	*18.92*	*0*	*23.11*	*0*	*81.9*	*70 - 130*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020158

QC BATCH REPORT

Batch ID: 150351 (0) **Instrument: FID-10** **Method: TEXAS TPH BY TX1005**

MSD Sample ID: **HS20020126-01MSD** Units: **mg/Kg** Analysis Date: **05-Feb-2020 21:07**
Client ID: Run ID: **FID-10_355750** SeqNo: **5461592** PrepDate: **05-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	204.7	46	230	0	89.0	75 - 125	190.6	7.1	20	
>nC12 to nC28	201.6	46	230	0	87.7	75 - 125	190.4	5.74	20	
Surr: 2-Fluorobiphenyl	*23.87*	*0*	*23*	*0*	*104*	*70 - 130*	*23.46*	*1.76*	*20*	
Surr: Trifluoromethyl benzene	*19.9*	*0*	*23*	*0*	*86.5*	*70 - 130*	*18.92*	*5.03*	*20*	

The following samples were analyzed in this batch: HS20020158-01 HS20020158-02 HS20020158-03 HS20020158-04 HS20020158-05 HS20020158-06 HS20020158-07 HS20020158-08

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020158

QC BATCH REPORT

Batch ID: 150790 (0) **Instrument: FID-10** **Method: PETROLEUM HYDROCARBONS BY TX1006**

MBLK Sample ID: **MBLK-150790** Units: **mg/Kg** Analysis Date: **18-Feb-2020 17:18**
Client ID: Run ID: **FID-10_356767** SeqNo: **5482498** PrepDate: **17-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics nC6	< 5.0	10								
Aliphatics >nC6 to nC8	< 5.0	10								
Aliphatics >nC8 to nC10	< 5.0	10								
Aliphatics >nC10 to nC12	< 5.0	10								
Aliphatics >nC12 to nC16	< 5.0	10								
Aliphatics >nC16 to nC21	< 5.0	10								
Aliphatics >nC21 to nC35	< 5.0	10								
Total Aliphatic Fraction	< 5.0	10								
Aliphatics Relative % Distribution		0								
Total Petroleum Hydrocarbons	< 5.0	10								

LCS Sample ID: **LCS-150790** Units: **mg/Kg** Analysis Date: **18-Feb-2020 17:48**
Client ID: Run ID: **FID-10_356767** SeqNo: **5482499** PrepDate: **17-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Petroleum Hydrocarbons	427.2	10	500	0	85.4	60 - 140				

LCSD Sample ID: **LCSD-150790** Units: **mg/Kg** Analysis Date: **18-Feb-2020 18:17**
Client ID: Run ID: **FID-10_356767** SeqNo: **5482500** PrepDate: **17-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Petroleum Hydrocarbons	426.3	10	500	0	85.3	60 - 140	427.2	0.192	30	

The following samples were analyzed in this batch: HS20020158-03 HS20020158-05

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020158

QC BATCH REPORT

Batch ID: 150790 (1) **Instrument: FID-10** **Method: PETROLEUM HYDROCARBONS BY TX1006**

MBLK Sample ID: **MBLK-150790** Units: **mg/Kg** Analysis Date: **18-Feb-2020 17:18**
Client ID: Run ID: **FID-10_356767** SeqNo: **5482535** PrepDate: **17-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >nC7 to nC8	< 5.0	10								
Aromatics >nC8 to nC10	< 5.0	10								
Aromatics >nC10 to nC12	< 5.0	10								
Aromatics >nC12 to nC16	< 5.0	10								
Aromatics >nC16 to nC21	< 5.0	10								
Aromatics >nC21 to nC35	< 5.0	10								
Total Aromatic Fraction	< 5.0	10								
Aromatics Relative % Distribution		0								

The following samples were analyzed in this batch: HS20020158-03 HS20020158-05

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020158

QC BATCH REPORT

Batch ID: **R356024 (0)** **Instrument:** **Balance1** **Method:** **MOISTURE - ASTM D2216**

DUP Sample ID: **HS20020158-08DUP** Units: **wt%** Analysis Date: **10-Feb-2020 11:08**
Client ID: **SO-1620-SB219(7-8)-20200204** Run ID: **Balance1_356024** SeqNo: **5467487** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	14.9	0.0100					14.9	0	20	

The following samples were analyzed in this batch:

HS20020158-01	HS20020158-02	HS20020158-03	HS20020158-04
HS20020158-05	HS20020158-06	HS20020158-07	HS20020158-08

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20020158**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/Kg-dry	Milligrams per Kilogram- Dry weight corrected

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20020158

Date/Time Received: **04-Feb-2020 16:50**
Received by: **DDG**

Checklist completed by: *Paresh M. Giga* 5-Feb-2020
eSignature | Date

Reviewed by: _____
eSignature | Date

Matrices: **Soil**

Carrier name: **ALS Courier**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☑	No ☐	Not Present ☐
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:212481
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	0.4c U/C	IR25	
Cooler(s)/Kit(s):	45593		
Date/Time sample(s) sent to storage:	2/4/2020 18:00		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600
Holland, MI +1 616 399 6070

Chain of Custody Form

Page 1 of 1

COC ID: 212481

HS20020158

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-10-Rev0 SR 92663
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address	

A TX1005_S_REV3 (5643233 TX1005 TPH)
B MOIST_ASTM (5631931 Moisture Content)
C TX1006_S (5645481 TPH TX1006) [HOLD]
D
E
F
G
H
I
J

Per Golder MSA

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620-SB2209(4-5)-20200203	2-3-20	1655	Soil	6	3	X	X	X								
2	SB2119(2-3)-20200203	2-3-20	1715														
3	CPT3019(4-5)-20200203	2-3-20	1720														
4	CPT37(7-8)-20200204	2-4-20	1045														
5	CPT3219(2-3)		1350														
6	CPT3219(11-12)		1355														
7	SB220(8-9)		1410														
8	SB219(7-8)		1510														
9																	
10																	

Hold 1006 Sample

Sampler(s) Please Print & Sign: Blake Sokola

Shipment Method:

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: Blake Sokola Date: 2-4-20 Time: 1520 Received by:

Relinquished by: Date: Time: Received by (Laboratory):

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR HWPW 1620 TPH NAPL Assessment

Cooler ID	Cooler Temp.
455973	0.4

QC Package: (Check One Box Below)
[X] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] TRRP Checklist
[ ] TRRP Level IV
[ ] Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

February 24, 2020

Eric Matzner
Golder Associates Inc.
2201 Double Creek Drive
Suite 4004
Round Rock, TX 78664

Work Order: **HS20020239**

Laboratory Results for: **Houston TX-Wood Preserving Works**

Dear Eric,

ALS Environmental received 14 sample(s) on Feb 06, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

Client:	Golder Associates Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Houston TX-Wood Preserving Works	
WorkOrder:	**HS20020239**	

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:

a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	Golder Associates Inc.
Project:	Houston TX-Wood Preserving Works
WorkOrder:	**HS20020239**

TRRP Laboratory Data Package Cover Page

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Dane J. Wacasey

Laboratory Review Checklist: Reportable Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/24/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020239				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150420,150437,150896,R356210,R356211				
#[1]	A[2]	**Description**	**Yes**	**No**	**NA[3]**	**NR[4]**	**ER#[5]**
R1	OI	**Chain-of-custody (C-O-C)**					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?	X				
R2	OI	**Sample and quality control (QC) identification**					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test reports**					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?	X				
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X		
		If required for the project, TICs reported?			X		
R4	O	**Surrogate recovery data**					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?		X			1
R5	OI	**Test reports/summary forms for blank samples**					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	**Laboratory control samples (LCS):**					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical duplicate data**					
		Were appropriate analytical duplicates analyzed for each matrix?	X				
		Were analytical duplicates analyzed at the appropriate frequency?	X				
		Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method quantitation limits (MQLs):**					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other problems/anomalies**					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Were all necessary corrective actions performed for the reported data?	X				
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X				2

Laboratory Review Checklist: Supporting Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 02/24/2020				
Project Name: Houston TX-Wood Preserving Works			Laboratory Job Number: HS20020239				
Reviewer Name: Dane Wacasey			Prep Batch Number(s): 150420,150437,150896,R356210,R356211				
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?			X		
		Were ion abundance data within the method-required QC limits?			X		
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?			X		
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports	
Laboratory Name: ALS Laboratory Group	LRC Date: 02/24/2020
Project Name: Houston TX-Wood Preserving Works	Laboratory Job Number: HS20020239
Reviewer Name: Dane Wacasey	Prep Batch Number(s): 150420,150437,150896,R356210,R356211

ER#[5]	Description
1	Texas TPH by TX1005, sample SO-1620-CPT3719(4-5)-20200206, the surrogates could not be determined due to dilution below the calibration range.
2	TPH TX 1006: ALS is NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package. Because TCEQ does not offer accreditation for TX 1006, the results are flagged with n.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Work Order: HS20020239

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20020239-01	SO-1620-CPT4319(2-3)-20200204	Soil		04-Feb-2020 17:00	06-Feb-2020 16:05	☐
HS20020239-02	SO-1620-CPT4319(12-13)-20200204	Soil		04-Feb-2020 17:05	06-Feb-2020 16:05	☐
HS20020239-03	SO-1620-CPT3019(13-14)-20200205	Soil		05-Feb-2020 10:00	06-Feb-2020 16:05	☐
HS20020239-04	SO-1620-CPT3619(3-4)-20200205	Soil		05-Feb-2020 11:35	06-Feb-2020 16:05	☐
HS20020239-05	SO-1620-CPT3619(5-6)-20200205	Soil		05-Feb-2020 11:45	06-Feb-2020 16:05	☐
HS20020239-06	SO-1620-CPT2819(7-8)-20200205	Soil		05-Feb-2020 13:50	06-Feb-2020 16:05	☐
HS20020239-07	SO-1620-CPT2919(4-5)-20200205	Soil		05-Feb-2020 16:25	06-Feb-2020 16:05	☐
HS20020239-08	SO-1620-CPT2919(9-10)-20200205	Soil		05-Feb-2020 16:35	06-Feb-2020 16:05	☐
HS20020239-09	SO-1620-CPT4519(1-2)-20200205	Soil		05-Feb-2020 16:45	06-Feb-2020 16:05	☐
HS20020239-10	SO-1620-CPT4519(8-9)-20200205	Soil		05-Feb-2020 16:50	06-Feb-2020 16:05	☐
HS20020239-11	SO-1620-CPT4119(1-2)-20200206	Soil		06-Feb-2020 10:15	06-Feb-2020 16:05	☐
HS20020239-12	SO-1620-CPT4119(5-6)-20200206	Soil		06-Feb-2020 10:20	06-Feb-2020 16:05	☐
HS20020239-13	SO-1620-CPT2819(4-5)-20200206	Soil		06-Feb-2020 10:40	06-Feb-2020 16:05	☐
HS20020239-14	SO-1620-CPT3719(4-5)-20200206	Soil		06-Feb-2020 11:55	06-Feb-2020 16:05	☐

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-CPT4319(2-3)-20200204
Collection Date: 04-Feb-2020 17:00

ANALYTICAL REPORT
WorkOrder:HS20020239
Lab ID:HS20020239-01
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 07-Feb-2020		Analyst: MBG
nC6 to nC12	**7.0**	J	**6.6**	**44**	**mg/Kg-dry**	1	07-Feb-2020 20:20
>nC12 to nC28	**430**		**8.6**	**44**	**mg/Kg-dry**	1	07-Feb-2020 20:20
>nC28 to nC35	**550**		**8.6**	**44**	**mg/Kg-dry**	1	07-Feb-2020 20:20
Total Petroleum Hydrocarbon	**987**		**6.6**	**44**	**mg/Kg-dry**	1	07-Feb-2020 20:20
Surr: 2-Fluorobiphenyl	*70.6*			*70-130*	*%REC*	*1*	*07-Feb-2020 20:20*
Surr: Trifluoromethyl benzene	*83.0*			*70-130*	*%REC*	*1*	*07-Feb-2020 20:20*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**18.0**		**0.0100**	**0.0100**	**wt%**	1	12-Feb-2020 13:42

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-CPT4319(12-13)-20200204
Collection Date: 04-Feb-2020 17:05

ANALYTICAL REPORT
WorkOrder:HS20020239
Lab ID:HS20020239-02
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 07-Feb-2020		Analyst: MBG
nC6 to nC12	< 7.6		7.6	51	mg/Kg-dry	1	07-Feb-2020 20:49
>nC12 to nC28	< 10		10	51	mg/Kg-dry	1	07-Feb-2020 20:49
>nC28 to nC35	< 10		10	51	mg/Kg-dry	1	07-Feb-2020 20:49
Total Petroleum Hydrocarbon	< 7.6		7.6	51	mg/Kg-dry	1	07-Feb-2020 20:49
Surr: 2-Fluorobiphenyl	*73.2*			*70-130*	*%REC*	*1*	*07-Feb-2020 20:49*
Surr: Trifluoromethyl benzene	*85.1*			*70-130*	*%REC*	*1*	*07-Feb-2020 20:49*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**14.6**		**0.0100**	**0.0100**	**wt%**	1	12-Feb-2020 13:42

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20020239
Sample ID: SO-1620-CPT3019(13-14)-20200205
Lab ID:HS20020239-03
Collection Date: 05-Feb-2020 10:00
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 07-Feb-2020		Analyst: MBG
nC6 to nC12	**810**		**67**	**450**	**mg/Kg-dry**	10	11-Feb-2020 13:32
>nC12 to nC28	**3,400**		**88**	**450**	**mg/Kg-dry**	10	11-Feb-2020 13:32
>nC28 to nC35	**510**		**88**	**450**	**mg/Kg-dry**	10	11-Feb-2020 13:32
Total Petroleum Hydrocarbon	**4,720**		**67**	**450**	**mg/Kg-dry**	10	11-Feb-2020 13:32
Surr: 2-Fluorobiphenyl	*119*			*70-130*	*%REC*	*10*	*11-Feb-2020 13:32*
Surr: Trifluoromethyl benzene	*107*			*70-130*	*%REC*	*10*	*11-Feb-2020 13:32*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**13.3**		**0.0100**	**0.0100**	**wt%**	1	12-Feb-2020 13:42

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-CPT3619(3-4)-20200205
Collection Date: 05-Feb-2020 11:35

ANALYTICAL REPORT
WorkOrder:HS20020239
Lab ID:HS20020239-04
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 07-Feb-2020		Analyst: MBG
nC6 to nC12	**140**	J	**77**	**520**	**mg/Kg-dry**	10	10-Feb-2020 22:32
>nC12 to nC28	**7,100**		**100**	**520**	**mg/Kg-dry**	10	10-Feb-2020 22:32
>nC28 to nC35	**1,600**		**100**	**520**	**mg/Kg-dry**	10	10-Feb-2020 22:32
Total Petroleum Hydrocarbon	**8,840**		**77**	**520**	**mg/Kg-dry**	10	10-Feb-2020 22:32
Surr: 2-Fluorobiphenyl	*102*			*70-130*	*%REC*	*10*	*10-Feb-2020 22:32*
Surr: Trifluoromethyl benzene	*89.2*			*70-130*	*%REC*	*10*	*10-Feb-2020 22:32*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**20.8**		**0.0100**	**0.0100**	**wt%**	1	12-Feb-2020 13:42

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-CPT3619(5-6)-20200205
Collection Date: 05-Feb-2020 11:45

ANALYTICAL REPORT
WorkOrder:HS20020239
Lab ID:HS20020239-05
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 07-Feb-2020		Analyst: MBG
nC6 to nC12	**130**	J	**72**	**480**	**mg/Kg-dry**	10	10-Feb-2020 23:01
>nC12 to nC28	**9,100**		**95**	**480**	**mg/Kg-dry**	10	10-Feb-2020 23:01
>nC28 to nC35	**2,700**		**95**	**480**	**mg/Kg-dry**	10	10-Feb-2020 23:01
Total Petroleum Hydrocarbon	**11,900**		**72**	**480**	**mg/Kg-dry**	10	10-Feb-2020 23:01
Surr: 2-Fluorobiphenyl	*126*			*70-130*	*%REC*	*10*	*10-Feb-2020 23:01*
Surr: Trifluoromethyl benzene	*94.7*			*70-130*	*%REC*	*10*	*10-Feb-2020 23:01*
PETROLEUM HYDROCARBONS BY TX1006	**Method:TX1006**				Prep:TX1006PR / 20-Feb-2020		Analyst: JLJ
Aliphatics nC6	< 48	n	48	97	mg/Kg-dry	10	21-Feb-2020 20:51
Aliphatics >nC6 to nC8	< 48	n	48	97	mg/Kg-dry	10	21-Feb-2020 20:51
Aliphatics >nC8 to nC10	< 48	n	48	97	mg/Kg-dry	10	21-Feb-2020 20:51
Aliphatics >nC10 to nC12	< 48	n	48	97	mg/Kg-dry	10	21-Feb-2020 20:51
Aliphatics >nC12 to nC16	**480**	n	**48**	**97**	**mg/Kg-dry**	10	21-Feb-2020 20:51
Aliphatics >nC16 to nC21	**830**	n	**48**	**97**	**mg/Kg-dry**	10	21-Feb-2020 20:51
Aliphatics >nC21 to nC35	**770**	n	**48**	**97**	**mg/Kg-dry**	10	21-Feb-2020 20:51
Total Aliphatic Fraction	**2,080**	n	**48**	**97**	**mg/Kg-dry**	10	21-Feb-2020 20:51
Aliphatics Relative % Distribution	**33**	n	**0**	**0**	**%-dry**	10	21-Feb-2020 20:51
Aromatics >nC7 to nC8	< 48	n	48	97	mg/Kg-dry	10	21-Feb-2020 20:51
Aromatics >nC8 to nC10	< 48	n	48	97	mg/Kg-dry	10	21-Feb-2020 20:51
Aromatics >nC10 to nC12	< 48	n	48	97	mg/Kg-dry	10	21-Feb-2020 20:51
Aromatics >nC12 to nC16	**460**	n	**48**	**97**	**mg/Kg-dry**	10	21-Feb-2020 20:51
Aromatics >nC16 to nC21	**1,300**	n	**48**	**97**	**mg/Kg-dry**	10	21-Feb-2020 20:51
Aromatics >nC21 to nC35	**2,400**	n	**48**	**97**	**mg/Kg-dry**	10	21-Feb-2020 20:51
Total Aromatic Fraction	**4,160**	n	**48**	**97**	**mg/Kg-dry**	10	21-Feb-2020 20:51
Aromatics Relative % Distribution	**67**	n	**0**	**0**	**%-dry**	10	21-Feb-2020 20:51
Total Petroleum Hydrocarbons	**6,300**	n	**48**	**97**	**mg/Kg-dry**	10	21-Feb-2020 20:51
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**16.4**		**0.0100**	**0.0100**	**wt%**	1	12-Feb-2020 13:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-CPT2819(7-8)-20200205
Collection Date: 05-Feb-2020 13:50

ANALYTICAL REPORT
WorkOrder:HS20020239
Lab ID:HS20020239-06
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 07-Feb-2020		Analyst: MBG
nC6 to nC12	< 7.6		7.6	51	mg/Kg-dry	1	10-Feb-2020 23:30
>nC12 to nC28	**31**	J	**10**	**51**	**mg/Kg-dry**	1	10-Feb-2020 23:30
>nC28 to nC35	**41**	J	**10**	**51**	**mg/Kg-dry**	1	10-Feb-2020 23:30
Total Petroleum Hydrocarbon	**72.0**		**7.6**	**51**	**mg/Kg-dry**	1	10-Feb-2020 23:30
Surr: 2-Fluorobiphenyl	*89.4*			*70-130*	*%REC*	*1*	*10-Feb-2020 23:30*
Surr: Trifluoromethyl benzene	*104*			*70-130*	*%REC*	*1*	*10-Feb-2020 23:30*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**19.5**		**0.0100**	**0.0100**	**wt%**	1	12-Feb-2020 13:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-CPT2919(4-5)-20200205
Collection Date: 05-Feb-2020 16:25

ANALYTICAL REPORT
WorkOrder:HS20020239
Lab ID:HS20020239-07
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005		**Method:TX1005**			Prep:TX1005PR / 07-Feb-2020		Analyst: MBG
nC6 to nC12	**650**		**38**	**260**	**mg/Kg-dry**	2	12-Feb-2020 09:59
>nC12 to nC28	**2,600**		**50**	**260**	**mg/Kg-dry**	2	12-Feb-2020 09:59
>nC28 to nC35	**970**		**50**	**260**	**mg/Kg-dry**	2	12-Feb-2020 09:59
Total Petroleum Hydrocarbon	**4,220**		**38**	**260**	**mg/Kg-dry**	2	12-Feb-2020 09:59
Surr: 2-Fluorobiphenyl	*86.0*			*70-130*	*%REC*	*2*	*12-Feb-2020 09:59*
Surr: Trifluoromethyl benzene	*99.6*			*70-130*	*%REC*	*2*	*12-Feb-2020 09:59*
PETROLEUM HYDROCARBONS BY TX1006		**Method:TX1006**			Prep:TX1006PR / 20-Feb-2020		Analyst: JLJ
Aliphatics nC6	< 26	n	26	51	mg/Kg-dry	2	21-Feb-2020 21:20
Aliphatics >nC6 to nC8	< 26	n	26	51	mg/Kg-dry	2	21-Feb-2020 21:20
Aliphatics >nC8 to nC10	< 26	n	26	51	mg/Kg-dry	2	21-Feb-2020 21:20
Aliphatics >nC10 to nC12	< 26	n	26	51	mg/Kg-dry	2	21-Feb-2020 21:20
Aliphatics >nC12 to nC16	< 26	n	26	51	mg/Kg-dry	2	21-Feb-2020 21:20
Aliphatics >nC16 to nC21	< 26	n	26	51	mg/Kg-dry	2	21-Feb-2020 21:20
Aliphatics >nC21 to nC35	**220**	n	**26**	**51**	**mg/Kg-dry**	2	21-Feb-2020 21:20
Total Aliphatic Fraction	**220**	n	**26**	**51**	**mg/Kg-dry**	2	21-Feb-2020 21:20
Aliphatics Relative % Distribution	**7.8**	n	**0**	**0**	**%-dry**	2	21-Feb-2020 21:20
Aromatics >nC7 to nC8	< 26	n	26	51	mg/Kg-dry	2	21-Feb-2020 21:20
Aromatics >nC8 to nC10	**30**	Jn	**26**	**51**	**mg/Kg-dry**	2	21-Feb-2020 21:20
Aromatics >nC10 to nC12	**420**	n	**26**	**51**	**mg/Kg-dry**	2	21-Feb-2020 21:20
Aromatics >nC12 to nC16	**1,100**	n	**26**	**51**	**mg/Kg-dry**	2	21-Feb-2020 21:20
Aromatics >nC16 to nC21	**330**	n	**26**	**51**	**mg/Kg-dry**	2	21-Feb-2020 21:20
Aromatics >nC21 to nC35	**760**	n	**26**	**51**	**mg/Kg-dry**	2	21-Feb-2020 21:20
Total Aromatic Fraction	**2,640**	n	**26**	**51**	**mg/Kg-dry**	2	21-Feb-2020 21:20
Aromatics Relative % Distribution	**92**	n	**0**	**0**	**%-dry**	2	21-Feb-2020 21:20
Total Petroleum Hydrocarbons	**2,800**	n	**26**	**51**	**mg/Kg-dry**	2	21-Feb-2020 21:20
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**49.5**		**0.0100**	**0.0100**	**wt%**	1	12-Feb-2020 13:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-CPT2919(9-10)-20200205
Collection Date: 05-Feb-2020 16:35

ANALYTICAL REPORT
WorkOrder:HS20020239
Lab ID:HS20020239-08
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 07-Feb-2020		Analyst: MBG
nC6 to nC12	**230**	J	**38**	**260**	**mg/Kg-dry**	5	12-Feb-2020 10:28
>nC12 to nC28	**1,100**		**50**	**260**	**mg/Kg-dry**	5	12-Feb-2020 10:28
>nC28 to nC35	**200**	J	**50**	**260**	**mg/Kg-dry**	5	12-Feb-2020 10:28
Total Petroleum Hydrocarbon	**1,530**		**38**	**260**	**mg/Kg-dry**	5	12-Feb-2020 10:28
Surr: 2-Fluorobiphenyl	*92.1*			*70-130*	*%REC*	*5*	*12-Feb-2020 10:28*
Surr: Trifluoromethyl benzene	*104*			*70-130*	*%REC*	*5*	*12-Feb-2020 10:28*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**16.0**		**0.0100**	**0.0100**	**wt%**	1	12-Feb-2020 13:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-CPT4519(1-2)-20200205
Collection Date: 05-Feb-2020 16:45

ANALYTICAL REPORT
WorkOrder:HS20020239
Lab ID:HS20020239-09
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 07-Feb-2020		Analyst: MBG
nC6 to nC12	**8.5**	J	**7.3**	**50**	**mg/Kg-dry**	1	11-Feb-2020 00:57
>nC12 to nC28	**170**		**9.7**	**50**	**mg/Kg-dry**	1	11-Feb-2020 00:57
>nC28 to nC35	**250**		**9.7**	**50**	**mg/Kg-dry**	1	11-Feb-2020 00:57
Total Petroleum Hydrocarbon	**428**		**7.3**	**50**	**mg/Kg-dry**	1	11-Feb-2020 00:57
Surr: 2-Fluorobiphenyl	*80.2*			*70-130*	*%REC*	*1*	*11-Feb-2020 00:57*
Surr: Trifluoromethyl benzene	*93.7*			*70-130*	*%REC*	*1*	*11-Feb-2020 00:57*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**18.7**		**0.0100**	**0.0100**	**wt%**	1	12-Feb-2020 13:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-CPT4519(8-9)-20200205
Collection Date: 05-Feb-2020 16:50

ANALYTICAL REPORT
WorkOrder:HS20020239
Lab ID:HS20020239-10
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 07-Feb-2020		Analyst: MBG
nC6 to nC12	< 6.4		6.4	43	mg/Kg-dry	1	11-Feb-2020 01:26
>nC12 to nC28	< 8.4		8.4	43	mg/Kg-dry	1	11-Feb-2020 01:26
>nC28 to nC35	< 8.4		8.4	43	mg/Kg-dry	1	11-Feb-2020 01:26
Total Petroleum Hydrocarbon	< 6.4		6.4	43	mg/Kg-dry	1	11-Feb-2020 01:26
Surr: 2-Fluorobiphenyl	*82.3*			*70-130*	*%REC*	*1*	*11-Feb-2020 01:26*
Surr: Trifluoromethyl benzene	*93.5*			*70-130*	*%REC*	*1*	*11-Feb-2020 01:26*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**10.1**		**0.0100**	**0.0100**	**wt%**	1	12-Feb-2020 13:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-CPT4119(1-2)-20200206
Collection Date: 06-Feb-2020 10:15

ANALYTICAL REPORT
WorkOrder:HS20020239
Lab ID:HS20020239-11
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 07-Feb-2020		Analyst: MBG
nC6 to nC12	**8.1**	J	**7.7**	**52**	**mg/Kg-dry**	1	11-Feb-2020 01:55
>nC12 to nC28	**130**		**10**	**52**	**mg/Kg-dry**	1	11-Feb-2020 01:55
>nC28 to nC35	**170**		**10**	**52**	**mg/Kg-dry**	1	11-Feb-2020 01:55
Total Petroleum Hydrocarbon	**308**		**7.7**	**52**	**mg/Kg-dry**	1	11-Feb-2020 01:55
Surr: 2-Fluorobiphenyl	*81.3*			*70-130*	*%REC*	*1*	*11-Feb-2020 01:55*
Surr: Trifluoromethyl benzene	*96.2*			*70-130*	*%REC*	*1*	*11-Feb-2020 01:55*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**17.6**		**0.0100**	**0.0100**	**wt%**	1	12-Feb-2020 13:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20020239
Sample ID: SO-1620-CPT4119(5-6)-20200206
Lab ID:HS20020239-12
Collection Date: 06-Feb-2020 10:20
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 07-Feb-2020		Analyst: MBG
nC6 to nC12	< 6.4		6.4	43	mg/Kg-dry	1	11-Feb-2020 03:22
>nC12 to nC28	< 8.4		8.4	43	mg/Kg-dry	1	11-Feb-2020 03:22
>nC28 to nC35	< 8.4		8.4	43	mg/Kg-dry	1	11-Feb-2020 03:22
Total Petroleum Hydrocarbon	< 6.4		6.4	43	mg/Kg-dry	1	11-Feb-2020 03:22
Surr: 2-Fluorobiphenyl	*93.4*			*70-130*	*%REC*	*1*	*11-Feb-2020 03:22*
Surr: Trifluoromethyl benzene	*110*			*70-130*	*%REC*	*1*	*11-Feb-2020 03:22*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**12.8**		**0.0100**	**0.0100**	**wt%**	1	12-Feb-2020 13:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
ANALYTICAL REPORT
Project: Houston TX-Wood Preserving Works
WorkOrder:HS20020239
Sample ID: SO-1620-CPT2819(4-5)-20200206
Lab ID:HS20020239-13
Collection Date: 06-Feb-2020 10:40
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 07-Feb-2020		Analyst: MBG
nC6 to nC12	< 7.5		7.5	50	mg/Kg-dry	1	11-Feb-2020 03:51
>nC12 to nC28	< 9.8		9.8	50	mg/Kg-dry	1	11-Feb-2020 03:51
>nC28 to nC35	< 9.8		9.8	50	mg/Kg-dry	1	11-Feb-2020 03:51
Total Petroleum Hydrocarbon	< 7.5		7.5	50	mg/Kg-dry	1	11-Feb-2020 03:51
Surr: 2-Fluorobiphenyl	*81.9*			*70-130*	*%REC*	*1*	*11-Feb-2020 03:51*
Surr: Trifluoromethyl benzene	*97.1*			*70-130*	*%REC*	*1*	*11-Feb-2020 03:51*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**19.2**		**0.0100**	**0.0100**	**wt%**	1	12-Feb-2020 13:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
Sample ID: SO-1620-CPT3719(4-5)-20200206
Collection Date: 06-Feb-2020 11:55

ANALYTICAL REPORT
WorkOrder:HS20020239
Lab ID:HS20020239-14
Matrix:Soil

ANALYSES	RESULT	QUAL	SDL	MQL	UNITS	DILUTION FACTOR	DATE ANALYZED
TEXAS TPH BY TX1005	**Method:TX1005**				Prep:TX1005PR / 07-Feb-2020		Analyst: MBG
nC6 to nC12	**880**	J	**140**	**940**	**mg/Kg-dry**	20	12-Feb-2020 10:58
>nC12 to nC28	**9,600**		**180**	**940**	**mg/Kg-dry**	20	12-Feb-2020 10:58
>nC28 to nC35	**1,500**		**180**	**940**	**mg/Kg-dry**	20	12-Feb-2020 10:58
Total Petroleum Hydrocarbon	**12,000**		**140**	**940**	**mg/Kg-dry**	20	12-Feb-2020 10:58
Surr: 2-Fluorobiphenyl	*0*	*S*		*70-130*	*%REC*	*20*	*12-Feb-2020 10:58*
Surr: Trifluoromethyl benzene	*0*	*S*		*70-130*	*%REC*	*20*	*12-Feb-2020 10:58*
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**15.8**		**0.0100**	**0.0100**	**wt%**	1	12-Feb-2020 13:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020239

Batch ID: 150420 **Start Date:** 07 Feb 2020 10:00 **End Date:** 07 Feb 2020 12:30
Method: TX 1005 PREP **Prep Code:** TX 1005_S PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20020239-01	1	13.79 (g)	10 (mL)	0.7252
HS20020239-02	1	11.45 (g)	10 (mL)	0.8734
HS20020239-03	1	12.86 (g)	10 (mL)	0.7776

Batch ID: 150437 **Start Date:** 07 Feb 2020 11:30 **End Date:** 07 Feb 2020 14:00
Method: TX 1005 PREP **Prep Code:** TX 1005_S PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20020239-04	1	12.13 (g)	10 (mL)	0.8244
HS20020239-05	1	12.36 (g)	10 (mL)	0.8091
HS20020239-06	1	12.19 (g)	10 (mL)	0.8203
HS20020239-07	1	7.74 (g)	10 (mL)	1.292
HS20020239-08	1	11.62 (g)	10 (mL)	0.8606
HS20020239-09	1	12.42 (g)	10 (mL)	0.8052
HS20020239-10	1	12.96 (g)	10 (mL)	0.7716
HS20020239-11	1	11.75 (g)	10 (mL)	0.8511
HS20020239-12	1	13.38 (g)	10 (mL)	0.7474
HS20020239-13	1	12.3 (g)	10 (mL)	0.813
HS20020239-14	1	12.65 (g)	10 (mL)	0.7905

Batch ID: 150896 **Start Date:** 20 Feb 2020 15:00 **End Date:** 21 Feb 2020 16:00
Method: TX 1006 PREP **Prep Code:** TX 1006_S PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20020239-05		12.36 (g)	10 (mL)	0.8091
HS20020239-07		7.74 (g)	10 (mL)	1.292

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020239

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 150420 (0)	**Test Name :** TEXAS TPH BY TX1005				**Matrix:** Soil	
HS20020239-01	SO-1620-CPT4319(2-3)-20200204	04 Feb 2020 17:00		07 Feb 2020 10:00	07 Feb 2020 20:20	1
HS20020239-02	SO-1620-CPT4319(12-13)-20200204	04 Feb 2020 17:05		07 Feb 2020 10:00	07 Feb 2020 20:49	1
HS20020239-03	SO-1620-CPT3019(13-14)-20200205	05 Feb 2020 10:00		07 Feb 2020 10:00	11 Feb 2020 13:32	10
Batch ID: 150437 (0)	**Test Name :** TEXAS TPH BY TX1005				**Matrix:** Soil	
HS20020239-04	SO-1620-CPT3619(3-4)-20200205	05 Feb 2020 11:35		07 Feb 2020 11:30	10 Feb 2020 22:32	10
HS20020239-05	SO-1620-CPT3619(5-6)-20200205	05 Feb 2020 11:45		07 Feb 2020 11:30	10 Feb 2020 23:01	10
HS20020239-06	SO-1620-CPT2819(7-8)-20200205	05 Feb 2020 13:50		07 Feb 2020 11:30	10 Feb 2020 23:30	1
HS20020239-07	SO-1620-CPT2919(4-5)-20200205	05 Feb 2020 16:25		07 Feb 2020 11:30	12 Feb 2020 09:59	2
HS20020239-08	SO-1620-CPT2919(9-10)-20200205	05 Feb 2020 16:35		07 Feb 2020 11:30	12 Feb 2020 10:28	5
HS20020239-09	SO-1620-CPT4519(1-2)-20200205	05 Feb 2020 16:45		07 Feb 2020 11:30	11 Feb 2020 00:57	1
HS20020239-10	SO-1620-CPT4519(8-9)-20200205	05 Feb 2020 16:50		07 Feb 2020 11:30	11 Feb 2020 01:26	1
HS20020239-11	SO-1620-CPT4119(1-2)-20200206	06 Feb 2020 10:15		07 Feb 2020 11:30	11 Feb 2020 01:55	1
HS20020239-12	SO-1620-CPT4119(5-6)-20200206	06 Feb 2020 10:20		07 Feb 2020 11:30	11 Feb 2020 03:22	1
HS20020239-13	SO-1620-CPT2819(4-5)-20200206	06 Feb 2020 10:40		07 Feb 2020 11:30	11 Feb 2020 03:51	1
HS20020239-14	SO-1620-CPT3719(4-5)-20200206	06 Feb 2020 11:55		07 Feb 2020 11:30	12 Feb 2020 10:58	20
Batch ID: 150896 (0)	**Test Name :** PETROLEUM HYDROCARBONS BY TX1006				**Matrix:** Soil	
HS20020239-05	SO-1620-CPT3619(5-6)-20200205	05 Feb 2020 11:45		20 Feb 2020 15:00	21 Feb 2020 20:51	10
HS20020239-07	SO-1620-CPT2919(4-5)-20200205	05 Feb 2020 16:25		20 Feb 2020 15:00	21 Feb 2020 21:20	2
Batch ID: 150896 (1)	**Test Name :** PETROLEUM HYDROCARBONS BY TX1006				**Matrix:** Soil	
HS20020239-05	SO-1620-CPT3619(5-6)-20200205	05 Feb 2020 11:45		20 Feb 2020 15:00	21 Feb 2020 20:51	10
HS20020239-07	SO-1620-CPT2919(4-5)-20200205	05 Feb 2020 16:25		20 Feb 2020 15:00	21 Feb 2020 21:20	2
Batch ID: R356210 (0)	**Test Name :** MOISTURE - ASTM D2216				**Matrix:** Soil	
HS20020239-01	SO-1620-CPT4319(2-3)-20200204	04 Feb 2020 17:00			12 Feb 2020 13:42	1
HS20020239-02	SO-1620-CPT4319(12-13)-20200204	04 Feb 2020 17:05			12 Feb 2020 13:42	1
HS20020239-03	SO-1620-CPT3019(13-14)-20200205	05 Feb 2020 10:00			12 Feb 2020 13:42	1
HS20020239-04	SO-1620-CPT3619(3-4)-20200205	05 Feb 2020 11:35			12 Feb 2020 13:42	1

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020239

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R356211 (0)	**Test Name :** MOISTURE - ASTM D2216				**Matrix:** Soil	
HS20020239-05	SO-1620-CPT3619(5-6)-20200205	05 Feb 2020 11:45			12 Feb 2020 13:45	1
HS20020239-06	SO-1620-CPT2819(7-8)-20200205	05 Feb 2020 13:50			12 Feb 2020 13:45	1
HS20020239-07	SO-1620-CPT2919(4-5)-20200205	05 Feb 2020 16:25			12 Feb 2020 13:45	1
HS20020239-08	SO-1620-CPT2919(9-10)-20200205	05 Feb 2020 16:35			12 Feb 2020 13:45	1
HS20020239-09	SO-1620-CPT4519(1-2)-20200205	05 Feb 2020 16:45			12 Feb 2020 13:45	1
HS20020239-10	SO-1620-CPT4519(8-9)-20200205	05 Feb 2020 16:50			12 Feb 2020 13:45	1
HS20020239-11	SO-1620-CPT4119(1-2)-20200206	06 Feb 2020 10:15			12 Feb 2020 13:45	1
HS20020239-12	SO-1620-CPT4119(5-6)-20200206	06 Feb 2020 10:20			12 Feb 2020 13:45	1
HS20020239-13	SO-1620-CPT2819(4-5)-20200206	06 Feb 2020 10:40			12 Feb 2020 13:45	1
HS20020239-14	SO-1620-CPT3719(4-5)-20200206	06 Feb 2020 11:55			12 Feb 2020 13:45	1

WorkOrder: HS20020239
InstrumentID: FID-13
Test Code: TX1005_S_REV3
Test Number: TX1005
Test Name: Texas TPH by TX1005

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	nC6 to nC12	TPH-1005-1	25	29	7.4	50
A	>nC12 to nC28	TPH-1005-2	25	22	9.8	50
A	>nC28 to nC35	TPH-1005-4	25	22	9.8	50
A	Total Petroleum Hydrocarbon	TPH	25	22	7.4	50
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	Trifluoromethyl benzene	98-08-8	0	0	0	0

WorkOrder: HS20020239
InstrumentID: FID-12
Test Code: TX1005_S_REV3
Test Number: TX1005
Test Name: Texas TPH by TX1005

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	nC6 to nC12	TPH-1005-1	25	29	7.4	50
A	>nC12 to nC28	TPH-1005-2	25	29	9.8	50
A	>nC28 to nC35	TPH-1005-4	25	29	9.8	50
A	Total Petroleum Hydrocarbon	TPH	25	29	7.4	50
S	2-Fluorobiphenyl	321-60-8	0	0	0	0
S	Trifluoromethyl benzene	98-08-8	0	0	0	0

WorkOrder: HS20020239
InstrumentID: FID-10
Test Code: TX1006_S
Test Number: TX1006
Test Name: Petroleum Hydrocarbons by

METHOD DETECTION / REPORTING LIMITS

Matrix: Solid **Units:** mg/Kg

Type	Analyte	CAS	DCS Spike	DCS	MDL	PQL
A	Aliphatics nC6	PHC6ALIP	0	0	5.0	10
A	Aliphatics >nC6 to nC8	PHCG68ALIP	0	0	5.0	10
A	Aliphatics >nC8 to nC10	PHCG810ALIP	0	0	5.0	10
A	Aliphatics >nC10 to nC12	PHCG1012ALIP	0	0	5.0	10
A	Aliphatics >nC12 to nC16	PHCG1216ALIP	0	0	5.0	10
A	Aliphatics >nC16 to nC21	PHCG1621ALIP	0	0	5.0	10
A	Aliphatics >nC21 to nC35	PHCG2135ALIP	0	0	5.0	10
A	Total Aliphatic Fraction	TOTALIPFRACT	0	0	5.0	10
A	Aliphatics Relative % Distribution	ALPRELPERDIST	0	0	0	0
A	Aromatics >nC7 to nC8	PHCG78AROM	0	0	5.0	10
A	Aromatics >nC8 to nC10	PHCG810AROM	0	0	5.0	10
A	Aromatics >nC10 to nC12	PHCG1012AROM	0	0	5.0	10
A	Aromatics >nC12 to nC16	PHCG1216AROM	0	0	5.0	10
A	Aromatics >nC16 to nC21	PHCG1621AROM	0	0	5.0	10
A	Aromatics >nC21 to nC35	PHCG2135AROM	0	0	5.0	10
A	Total Aromatic Fraction	TOTAROFRACT	0	0	5.0	10
A	Aromatics Relative % Distribution	ARORELPERCDIST	0	0	0	0
A	Total Petroleum Hydrocarbons	PHCG635AROMALIP	0	0	5.0	10

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020239

QC BATCH REPORT

Batch ID: 150420 (0) **Instrument: FID-13** **Method: TEXAS TPH BY TX1005**

MBLK Sample ID: **MBLK-150420** Units: **mg/Kg** Analysis Date: **07-Feb-2020 14:55**
Client ID: Run ID: **FID-13_355959** SeqNo: **5466072** PrepDate: **07-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	< 7.4	50								
>nC12 to nC28	< 9.8	50								
>nC28 to nC35	< 9.8	50								
Total Petroleum Hydrocarbon	< 7.4	50								
Surr: 2-Fluorobiphenyl	*19.78*	*0*	*25*	*0*	*79.1*	*70 - 130*				
Surr: Trifluoromethyl benzene	*24.11*	*0*	*25*	*0*	*96.4*	*70 - 130*				

LCS Sample ID: **LCS-150420** Units: **mg/Kg** Analysis Date: **07-Feb-2020 15:24**
Client ID: Run ID: **FID-13_355959** SeqNo: **5466073** PrepDate: **07-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	285.8	50	250	0	114	75 - 125				
>nC12 to nC28	287.1	50	250	0	115	75 - 125				
Surr: 2-Fluorobiphenyl	*23.59*	*0*	*25*	*0*	*94.4*	*70 - 130*				
Surr: Trifluoromethyl benzene	*25.86*	*0*	*25*	*0*	*103*	*70 - 130*				

LCSD Sample ID: **LCSD-150420** Units: **mg/Kg** Analysis Date: **07-Feb-2020 15:54**
Client ID: Run ID: **FID-13_355959** SeqNo: **5466074** PrepDate: **07-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	261	50	250	0	104	75 - 125	285.8	9.08	20	
>nC12 to nC28	251.5	50	250	0	101	75 - 125	287.1	13.2	20	
Surr: 2-Fluorobiphenyl	*22.11*	*0*	*25*	*0*	*88.4*	*70 - 130*	*23.59*	*6.49*	*20*	
Surr: Trifluoromethyl benzene	*23.92*	*0*	*25*	*0*	*95.7*	*70 - 130*	*25.86*	*7.8*	*20*	

MS Sample ID: **HS20020190-02MS** Units: **mg/Kg** Analysis Date: **07-Feb-2020 16:53**
Client ID: Run ID: **FID-13_355959** SeqNo: **5466076** PrepDate: **07-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	263.5	48	237.9	0	111	75 - 125				
>nC12 to nC28	296.1	48	237.9	0	124	75 - 125				
Surr: 2-Fluorobiphenyl	*19.12*	*0*	*23.79*	*0*	*80.4*	*70 - 130*				
Surr: Trifluoromethyl benzene	*20.41*	*0*	*23.79*	*0*	*85.8*	*70 - 130*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020239

QC BATCH REPORT

Batch ID: 150420 (0) **Instrument: FID-13** **Method: TEXAS TPH BY TX1005**

MSD Sample ID: **HS20020190-02MSD** Units: **mg/Kg** Analysis Date: **07-Feb-2020 17:23**
Client ID: Run ID: **FID-13_355959** SeqNo: **5466077** PrepDate: **07-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	264.5	48	238.8	0	111	75 - 125	263.5	0.414	20	
>nC12 to nC28	287.3	48	238.8	0	120	75 - 125	296.1	3.03	20	
Surr: 2-Fluorobiphenyl	*19.55*	*0*	*23.88*	*0*	*81.9*	*70 - 130*	*19.12*	*2.24*	*20*	
Surr: Trifluoromethyl benzene	*20.76*	*0*	*23.88*	*0*	*87.0*	*70 - 130*	*20.41*	*1.72*	*20*	

The following samples were analyzed in this batch: HS20020239-01 HS20020239-02 HS20020239-03

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020239

QC BATCH REPORT

Batch ID: 150437 (0) **Instrument: FID-12** **Method: TEXAS TPH BY TX1005**

MBLK Sample ID: **MBLK-150437** Units: **mg/Kg** Analysis Date: **10-Feb-2020 17:37**
Client ID: Run ID: **FID-12_356034** SeqNo: **5467677** PrepDate: **07-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	< 7.4	50								
>nC12 to nC28	< 9.8	50								
>nC28 to nC35	< 9.8	50								
Total Petroleum Hydrocarbon	< 7.4	50								
Surr: 2-Fluorobiphenyl	*20.87*	*0*	*25*	*0*	*83.5*	*70 - 130*				
Surr: Trifluoromethyl benzene	*24.96*	*0*	*25*	*0*	*99.8*	*70 - 130*				

LCS Sample ID: **LCS-150437** Units: **mg/Kg** Analysis Date: **10-Feb-2020 18:07**
Client ID: Run ID: **FID-12_356034** SeqNo: **5467678** PrepDate: **07-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	302.8	50	250	0	121	75 - 125				
>nC12 to nC28	270.6	50	250	0	108	75 - 125				
Surr: 2-Fluorobiphenyl	*24.32*	*0*	*25*	*0*	*97.3*	*70 - 130*				
Surr: Trifluoromethyl benzene	*26.03*	*0*	*25*	*0*	*104*	*70 - 130*				

LCSD Sample ID: **LCSD-150437** Units: **mg/Kg** Analysis Date: **10-Feb-2020 18:37**
Client ID: Run ID: **FID-12_356034** SeqNo: **5467679** PrepDate: **07-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	286.7	50	250	0	115	75 - 125	302.8	5.49	20	
>nC12 to nC28	248.9	50	250	0	99.6	75 - 125	270.6	8.32	20	
Surr: 2-Fluorobiphenyl	*22.84*	*0*	*25*	*0*	*91.4*	*70 - 130*	*24.32*	*6.25*	*20*	
Surr: Trifluoromethyl benzene	*25.62*	*0*	*25*	*0*	*102*	*70 - 130*	*26.03*	*1.6*	*20*	

MS Sample ID: **HS20020191-03MS** Units: **mg/Kg** Analysis Date: **10-Feb-2020 19:36**
Client ID: Run ID: **FID-12_356034** SeqNo: **5467680** PrepDate: **07-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	289.2	49	244.6	0	118	75 - 125				
>nC12 to nC28	290	49	244.6	3.358	117	75 - 125				
Surr: 2-Fluorobiphenyl	*18.24*	*0*	*24.46*	*0*	*74.5*	*70 - 130*				
Surr: Trifluoromethyl benzene	*20.22*	*0*	*24.46*	*0*	*82.7*	*70 - 130*				

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020239

QC BATCH REPORT

Batch ID: 150437 (0) **Instrument: FID-12** **Method: TEXAS TPH BY TX1005**

MSD Sample ID: **HS20020191-03MSD** Units: **mg/Kg** Analysis Date: **10-Feb-2020 20:06**
Client ID: Run ID: **FID-12_356034** SeqNo: **5467681** PrepDate: **07-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
nC6 to nC12	282.5	49	242.7	0	116	75 - 125	289.2	2.35	20	
>nC12 to nC28	286.7	49	242.7	3.358	117	75 - 125	290	1.13	20	
Surr: 2-Fluorobiphenyl	*18.45*	*0*	*24.27*	*0*	*76.0*	*70 - 130*	*18.24*	*1.16*	*20*	
Surr: Trifluoromethyl benzene	*20.63*	*0*	*24.27*	*0*	*85.0*	*70 - 130*	*20.22*	*2*	*20*	

The following samples were analyzed in this batch:

HS20020239-04	HS20020239-05	HS20020239-06	HS20020239-07
HS20020239-08	HS20020239-09	HS20020239-10	HS20020239-11
HS20020239-12	HS20020239-13	HS20020239-14	

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020239

QC BATCH REPORT

Batch ID: 150896 (0) **Instrument: FID-10** **Method: PETROLEUM HYDROCARBONS BY TX1006**

MBLK Sample ID: **MBLK-150896** Units: **mg/Kg** Analysis Date: **21-Feb-2020 18:54**
Client ID: Run ID: **FID-10_356852** SeqNo: **5484313** PrepDate: **20-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aliphatics nC6	< 5.0	10								
Aliphatics >nC6 to nC8	< 5.0	10								
Aliphatics >nC8 to nC10	< 5.0	10								
Aliphatics >nC10 to nC12	< 5.0	10								
Aliphatics >nC12 to nC16	< 5.0	10								
Aliphatics >nC16 to nC21	< 5.0	10								
Aliphatics >nC21 to nC35	< 5.0	10								
Total Aliphatic Fraction	< 5.0	10								
Aliphatics Relative % Distribution	0	0								
Total Petroleum Hydrocarbons	< 5.0	10								

LCS Sample ID: **LCS-150896** Units: **mg/Kg** Analysis Date: **21-Feb-2020 19:23**
Client ID: Run ID: **FID-10_356852** SeqNo: **5484314** PrepDate: **20-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Petroleum Hydrocarbons	448.4	10	500	0	89.7	60 - 140				

LCSD Sample ID: **LCSD-150896** Units: **mg/Kg** Analysis Date: **21-Feb-2020 19:53**
Client ID: Run ID: **FID-10_356852** SeqNo: **5484315** PrepDate: **20-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Petroleum Hydrocarbons	471.7	10	500	0	94.3	60 - 140	448.4	5.07	30	

The following samples were analyzed in this batch: HS20020239-05 HS20020239-07

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020239

QC BATCH REPORT

Batch ID: 150896 (1) **Instrument: FID-10** **Method: PETROLEUM HYDROCARBONS BY TX1006**

MBLK Sample ID: **MBLK-150896** Units: **mg/Kg** Analysis Date: **21-Feb-2020 18:54**
Client ID: Run ID: **FID-10_356852** SeqNo: **5484343** PrepDate: **20-Feb-2020** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aromatics >nC7 to nC8	< 5.0	10								
Aromatics >nC8 to nC10	< 5.0	10								
Aromatics >nC10 to nC12	< 5.0	10								
Aromatics >nC12 to nC16	< 5.0	10								
Aromatics >nC16 to nC21	< 5.0	10								
Aromatics >nC21 to nC35	< 5.0	10								
Total Aromatic Fraction	< 5.0	10								
Aromatics Relative % Distribution		0								

The following samples were analyzed in this batch: HS20020239-05 HS20020239-07

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020239

QC BATCH REPORT

Batch ID: R356210 (0) **Instrument:** Balance1 **Method:** MOISTURE - ASTM D2216

DUP Sample ID: **HS20020239-04DUP** Units: **wt%** Analysis Date: **12-Feb-2020 13:42**
Client ID: **SO-1620-CPT3619(3-4)-20200205** Run ID: **Balance1_356210** SeqNo: **5471584** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	20.2	0.0100					20.8	2.93	20	

The following samples were analyzed in this batch: HS20020239-01 HS20020239-02 HS20020239-03 HS20020239-04

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: HS20020239

QC BATCH REPORT

Batch ID: R356211 (0) **Instrument: Balance1** **Method: MOISTURE - ASTM D2216**

DUP Sample ID: **HS20020269-10DUP** Units: **wt%** Analysis Date: **12-Feb-2020 13:45**
Client ID: Run ID: **Balance1_356211** SeqNo: **5471605** PrepDate: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	10.2	0.0100					10.2	0	20	

The following samples were analyzed in this batch:

HS20020239-05	HS20020239-06	HS20020239-07	HS20020239-08
HS20020239-09	HS20020239-10	HS20020239-11	HS20020239-12
HS20020239-13	HS20020239-14		

Client: Golder Associates Inc.
Project: Houston TX-Wood Preserving Works
WorkOrder: **HS20020239**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/Kg-dry	Milligrams per Kilogram- Dry weight corrected

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

Sample Receipt Checklist

Client Name: PBW
Work Order: HS20020239

Date/Time Received: **06-Feb-2020 16:05**
Received by: **DDG**

Checklist completed by: *Nilesh D. Ranchod* eSignature 6-Feb-2020 Date

Reviewed by: *Dane J. Wacasey* eSignature 10-Feb-2020 Date

Matrices: **Soil**

Carrier name: **ALS Courier**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☑	No ☐	Not Present ☐
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:212483/212482
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	0.9C UC/C		IR # 25
Cooler(s)/Kit(s):	43812		
Date/Time sample(s) sent to storage:	02/06/2020 16:30		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes: samples placed in Freezer 02/06/2020 16:30

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336
Everett, WA +1 425 356 2600
Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

Page 1 of 2

COC ID: 212482

HS20020239

Golder Associates Inc.

Houston TX-Wood Preserving Works

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-10-Rev0 SR #2688
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address	

ALS Project Manager:

A: TX1005_S_REV3 (5643233 TX1005 TPH)
B: MOIST_ASTM (5631931 Moisture Content)
C: TX1006_S (5645481 TPH TX1006) (HOLD)
D:
E: Per
F: Golder
G: MSA
H:
I:
J:

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620-CPT4319(2-3)-20200204	2-4-20	1700	Soil	0	3	X	X	X								Hold
2	CPT4319(12-13)	2-4-20	1705														
3	CPT3019(13-14)-20200205	2-5-20	1000														1006
4	CPT3619(3-4)		1135														
5	CPT3619(5-6)		1145														Sampling
6	CPT2819(2-3)		1350														
7	CPT2919(4-5)		1425														
8	CPT2919(9-10)		1625														
9	CPT4219(7-8)		1645														
10	CPT4519(8-9)		1650														

Sampler(s) Please Print & Sign: Blake Sokora Blake Sokora

Shipment Method:

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other:

Results Due Date:

Relinquished by: Blake Sokora Date: 2-6-20 Time: 1425 Received by:

Relinquished by: D Date: 2-6-20 Time: 1605 Received by (Laboratory): D

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR HWPW 1620 TPH NAPL Assessment

Cooler ID	Cooler Temp.
43x10	0.9

QC Package: (Check One Box Below)

- [X] Level II Std QC
- [ ] Level III Std QC/Raw Data
- [ ] Level IV SW846/CLP
- [ ] Other
- [ ] TRRP Checklist
- [ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_3$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070

Chain of Custody Form

Page 2 of 2

COC ID: 212483

HS20020239

WV

Golder Associates Inc.
Houston TX-Wood Preserving Works

ALS Project Manager:

Customer Information		Project Information	
Purchase Order	UPRR/Kevin Peterburs	Project Name	Houston TX-Wood Preserving Works
Work Order		Project Number	1620-10-Rev0 SR 92688
Company Name	Golder Associates Inc.	Bill To Company	Union Pacific Railroad- A/P
Send Report To	Eric Matzner	Invoice Attn	Accounts Payable
Address	2201 Double Creek Drive Suite 4004	Address	1400 Douglas Street Stop 0750
City/State/Zip	Round Rock, TX 78664	City/State/Zip	Omaha NE 681790750
Phone	(512) 671-3434	Phone	
Fax	(512) 671-3446	Fax	
e-Mail Address	Eric_Matzner@golder.com	e-Mail Address	

A: TX1005_S_REV3 (5643233 TX1005 TPH)
B: MOIST_ASTM (5631931 Moisture Content)
C: TX1006_S (5645481 TPH TX1006) [HOLD]
D:
E:
F:
G:
H:
I:
J:

Per Golder MSA

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SO-1620-CPT4119(1-2)-20200206	2-6-20	1015	Soil	6	3	X	X	X								
2	CPT4119(5-6)-20200206		1020				X	X	X			Hold					
3	CPT2819(4-5)		1040				X	X	X								
4	CPT3719(4-5)		1155				X	X	X			1006					
5												Sampling					
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Blake Sakora Blake Sakora

Shipment Method:

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other

Results Due Date:

Relinquished by: Blake Sakora Date: 2-6-20 Time: 1425 Received by:

Relinquished by: Received by (Laboratory):

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: UPRR HWPW 1620 TPH NAPL Assessment

Cooler ID	Cooler Temp.
436120	0.9

QC Package: (Check One Box Below)
[X] Level II Std QC
[ ] Level III Std QC/Raw Data
[ ] Level IV SW846/CLP
[ ] Other
[ ] TRRP CheckList
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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ATTACHMENT G

Technical Memorandum - TPH Interpretation

MEMORANDUM

DATE May 11, 2020
Project No. 19119232
TO Michelle Hermiston
Golder Associates, Inc
FROM Brenda Basile
EMAIL brenda_basile@golder.com

INTERPRETATION OF SOIL TX1005 AND TX1006 DATA FOR SAMPLES COLLECTED FROM HOUSTON WOOD PRESERVING WORKS

Samples collected from the Houston Wood Preserving Works (HWPW) facility were analyzed for total petroleum hydrocarbons (TPH) by Texas Method 1005 (Total Petroleum Hydrocarbons, Revision 3). Selected samples were fractioned for carbon range aliphatic and aromatic hydrocarbons by Texas Method 1006 (Characterization of nC_6 to nC_{35} Petroleum Hydrocarbons in Environmental Samples). Chromatograms for 33 samples and the fractionation data for 14 of these samples were reviewed to provide an interpretation of the hydrocarbon types present in the soil samples. Based on the profile of the predominant peaks in the chromatograms and the fractionation data, it is concluded that the soil samples can be assigned four categories:

- nC_6 to nC_{12} Organics
- $>nC_{12}$ to nC_{28} Organics
- $>nC_{12}$ to nC_{28} Organics with High Aromatic Content
- Unresolved complex material (UCM)

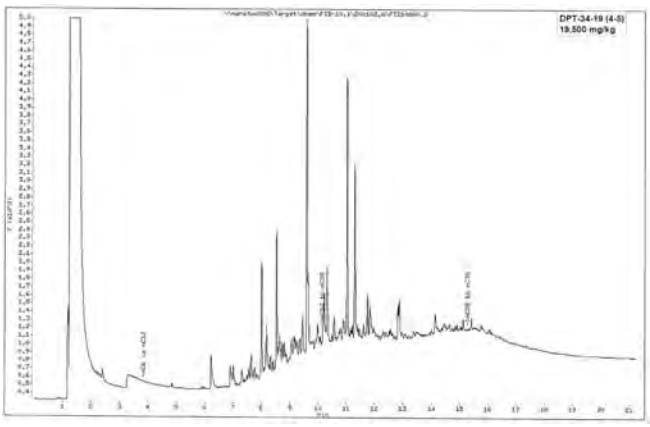
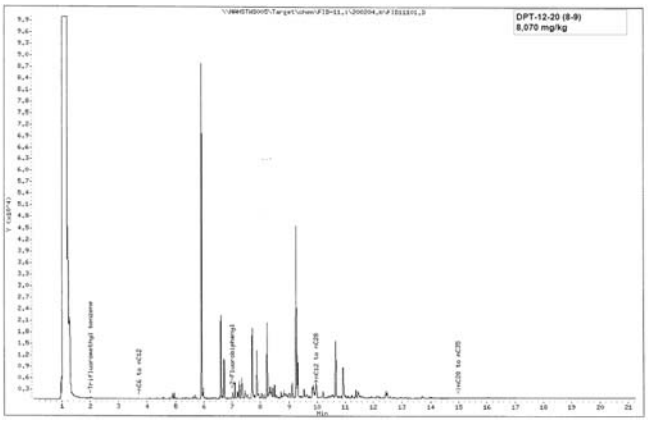
An example chromatogram for each category of hydrocarbon material is provided in this memorandum. Underneath the chromatogram is a list of samples assigned to each category (Tables 1 through 4). The TPH concentrations are provided in the tables. The TX1005 TPH concentrations are listed in Table 5. The percentage fractions in the TX1006 data are listed in Table 6.

nC_6 to nC_{12} Organics

Samples grouped in the nC_6 to nC_{12} organics category are listed in Table 1. These samples contain chromatographic peaks between the nC_6 to nC_{12} mark on the chromatogram (first red arrow on Figure 1) and the 2-fluorobiphenyl surrogate (second red arrow on Figure 1). While the peaks for the $>nC_{12}$ to nC_{28} range hydrocarbons are also present in the chromatogram, this set of samples is marked by the visual presence of peaks in nC_6 to nC_{12} range. This indicates the presence of volatile organic compounds in the soil at the locations listed in Table 1.

$>nC_{12}$ to nC_{28} Organics

The samples in the $>nC_{12}$ to nC_{28} organics category contain chromatographic peaks in the higher boiling portion of the nC_6 to nC_{12} range and in the $>nC_{12}$ to nC_{28} range (as indicated by the red arrows on Figure 2). The $>nC_{12}$ to nC_{28} organics category is subdivided into two groups based on the percent aromatics in the TX1006 fractionation data (Table 6). The figures below show the visual differences used to categorize the TX1005 chromatograms. The chromatogram on the left below shows an example of a sample categorized as $>nC_{12}$ to nC_{28} while the chromatogram on the right below shows an example of a sample categorized as $>nC_{12}$ to nC_{28} range but with a high (>70%) aromatic content in the fractionation data.

>nC_{12} to nC_{28} Organics	>nC_{12} to nC_{28} Organics with High Aromatic Content
	

The example chromatographic profile in the >nC_{12} to nC_{28} category is shown in Figure 2 and samples assigned to this category are listed in Table 2. The soils at the locations listed in Table 2 may be impacted by diesel or other fuels.

>nC_{12} to nC_{28} Organics with High Aromatic Content

The samples in this category also contain chromatographic peaks in the higher boiling portion of the nC_6 to nC_{12} range and in the >nC_{12} to nC_{28} range but are characterized by a high (>70%) aromatic content in the fractionation data. Figure 3 provides the example chromatogram and Table 3 lists the field sample identifications assigned to this category. The soils at the locations listed in Table 3 may be impacted by creosote. Coal tar creosote, which is used for wood treatment, can contain about 85% polycyclic aromatic hydrocarbons (PAHs) as well as phenols and other compounds (Murphy and Brown, 2005).

Unresolved complex material (UCM)

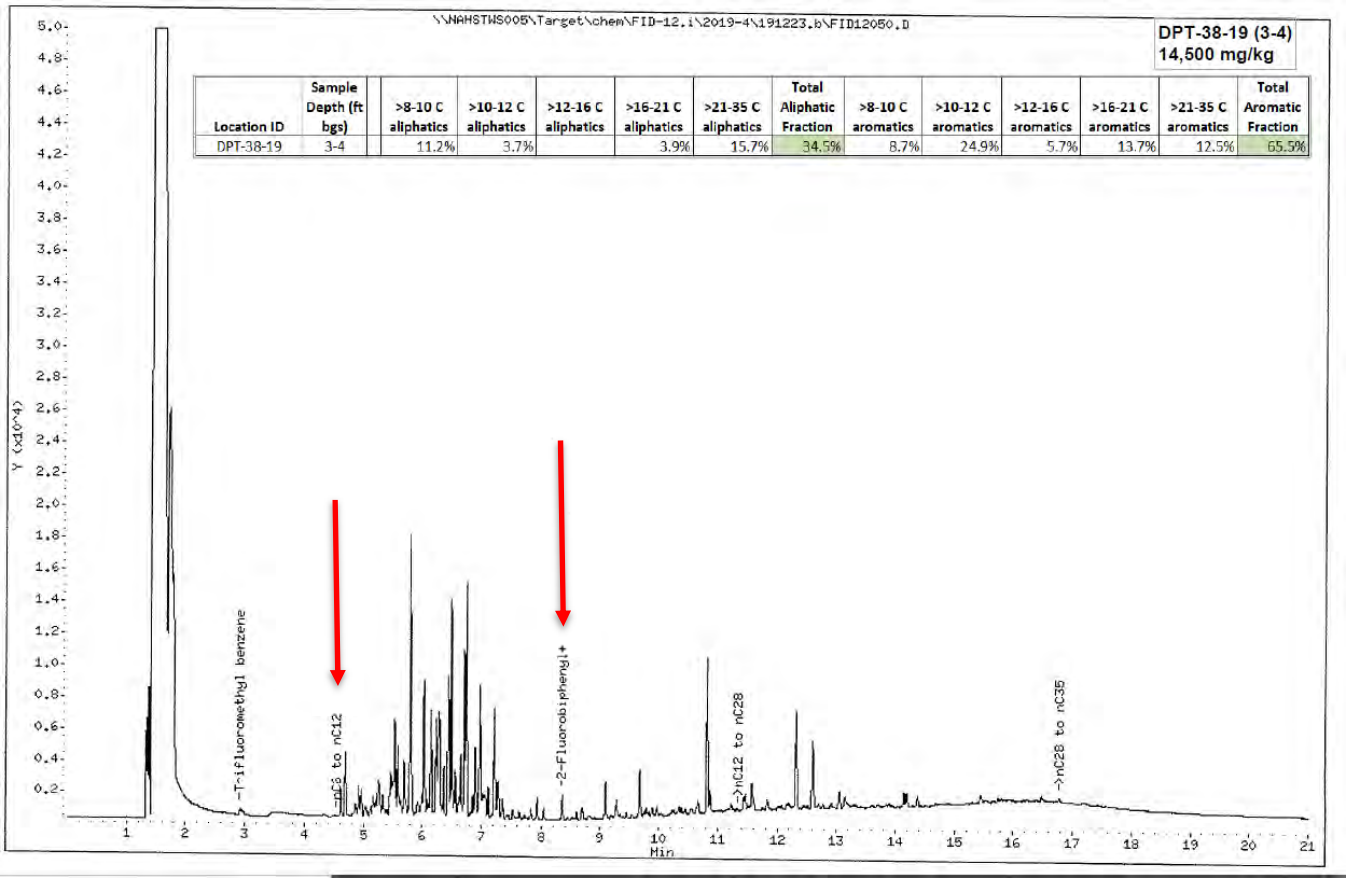
Samples grouped in the UCM category are listed in Table 4. These samples contain a “hump” of unresolved peaks in the gas chromatogram (as shown by the arc in Figure 4). The components that are separated on the gas chromatographic column appear as the peaks discussed in the first three categories, while the UCM appears as a large hump. A dominance of UCM in the chromatogram is typical of residual fuel oil which have common names such as No. 4, 5, and 6 fuel oils and bunker C. Asphalt and lubricating oils will also have an UCM profile in the gas chromatogram. The UCM composition can be quite variable containing saturated and aromatic hydrocarbons (including PAHs) as well as nonhydrocarbons (heteroatom containing molecules) (TPHWG, 1998).

References

Murphy, B. and J. Brown (Murphy and Brown). 2005. Environmental Forensics Aspects of PAHs from Wood Treatment with Creosote Compounds. *Environmental Forensics*, 6:151–159, 2005.

Total Petroleum Hydrocarbon Working Group (TPHWG). 1998. Analysis of Petroleum Hydrocarbons in Environmental Media. Volume 1. March 1998.

Figure 1: nC_6 to nC_{12} Example Chromatogram



Location ID	Sample Depth (ft bgs)	>8-10 C aliphatics	>10-12 C aliphatics	>12-16 C aliphatics	>16-21 C aliphatics	>21-35 C aliphatics	Total Aliphatic Fraction	>8-10 C aromatics	>10-12 C aromatics	>12-16 C aromatics	>16-21 C aromatics	>21-35 C aromatics	Total Aromatic Fraction
DPT-38-19	3-4	11.2%	3.7%		3.9%	15.7%	34.5%	8.7%	24.9%	5.7%	13.7%	12.5%	65.5%

Table 1: nC_6 to nC_{12} Samples

Laboratory Identification	Location Identification	Depth (ft bgs)	nC6 nC12 (mg/kg)	>nC12 nC28 (mg/kg)	>nC28 nC35 (mg/kg)	Total TPH (mg/kg)
HS19120951-05	DPT-38-19	3-4	5000	6400	3100	14500
HS19120951-06	DPT-38-19	5-6	1400	4700	1700	7800
HS20011494-05	DPT-21-20	3-4	**1300**	**2800**	**97 J**	**4200**

Figure 2: >nC$_{12}$ to nC$_{28}$ Example Chromatogram

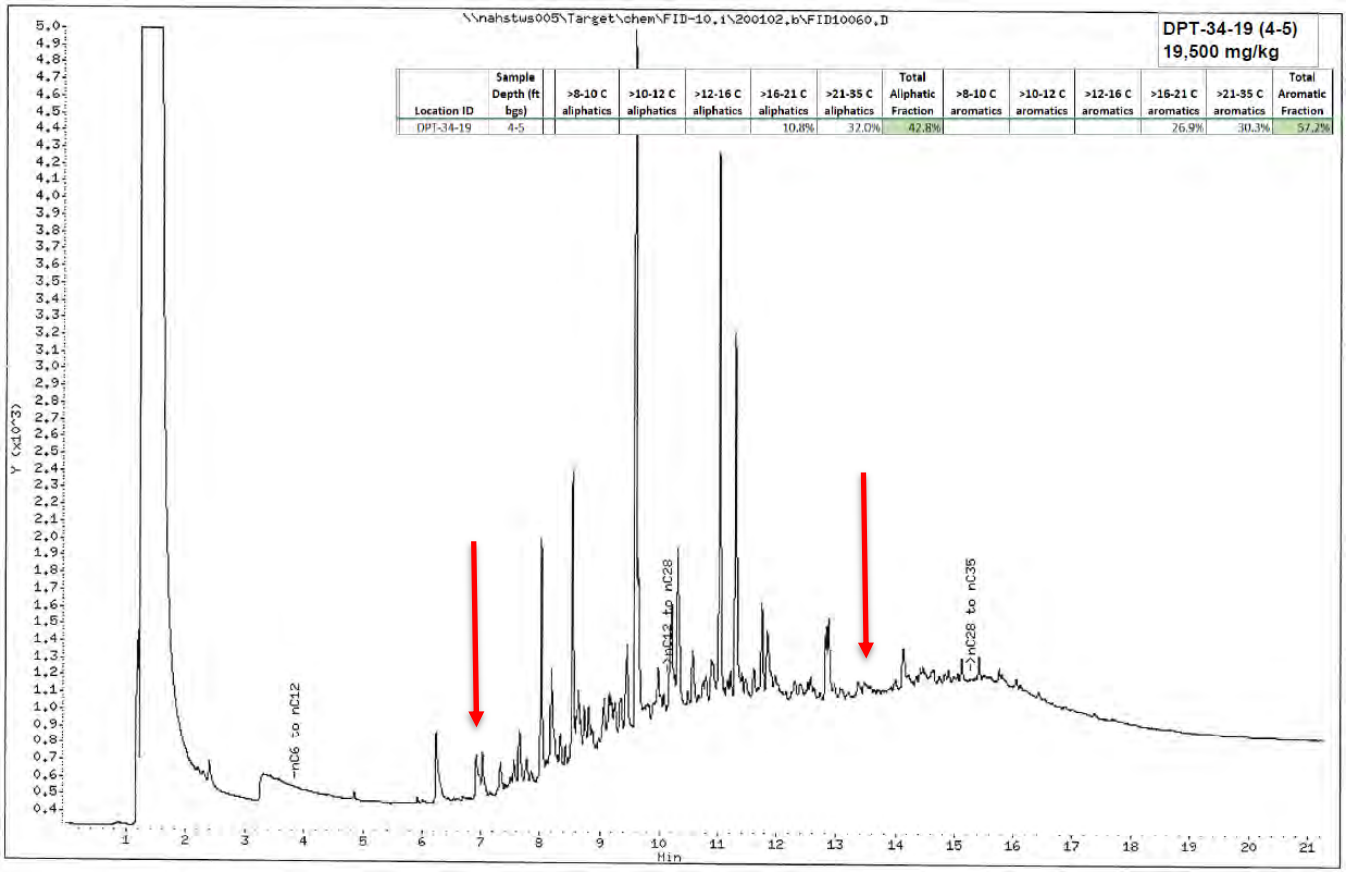


Table 2: >nC$_{12}$ to nC$_{28}$ Samples

Laboratory Identification	Location Identification	Depth (ft bgs)	nC6 nC12 (mg/kg)	>nC12 nC28 (mg/kg)	>nC28 nC35 (mg/kg)	Total TPH (mg/kg)
HS20011494-06	DPT-21-20	5-6	**48**	**110**	**22 J**	**180**
HS20020158-03	DPT-30-19	4-5	**220 J**	**9300**	**3000**	**12500**
HS19121108-03	DPT-34-19	4-5	<450	**15000**	**4500**	**19500**
HS19121108-04	DPT-34-19	5-6	<82	**3800**	**1200**	**5000**
HS20020239-04	DPT-36-19	3-4	**140 J**	**7100**	**1600**	**8840**
HS20020158-04	DPT-37-19	7-8	**270**	**1800**	**270**	**2340**
HS20020239-14	DPT-37-19	4-5	**880 J**	**9600**	**1500**	**12000**
HS19121108-01	DPT-40-19	1.25-2	**170 J**	**6500**	**1300**	**7970**
HS20011392-06	SB-216	7-8	**27 J**	**360**	<9.7	**387**

Figure 3: >nC$_{12}$ to nC$_{28}$ with High Aromatic Content Example Chromatogram

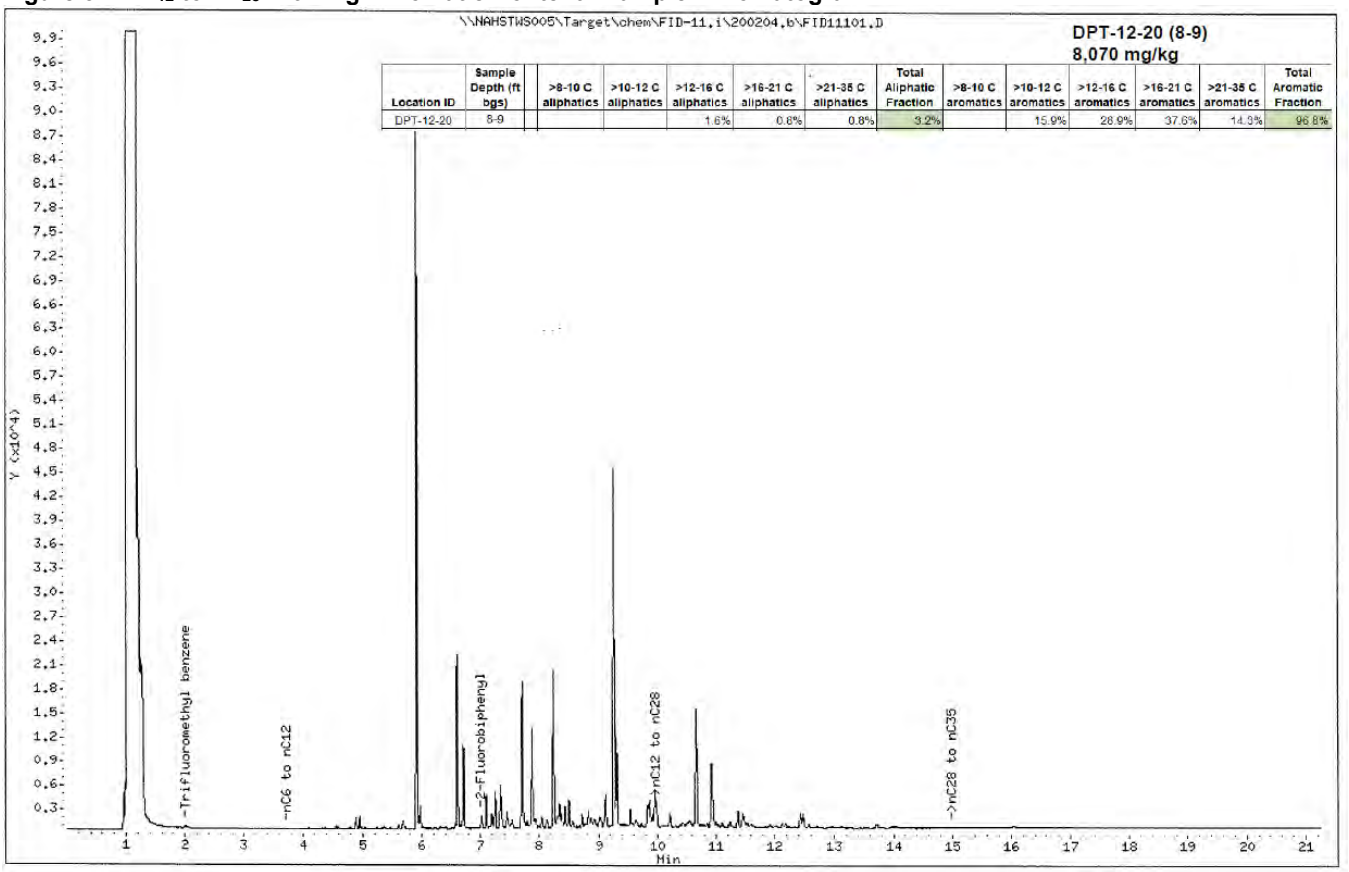


Table 3: >nC$_{12}$ to nC$_{28}$ with High Aromatic Content Samples

Laboratory Identification	Location Identification	Depth (ft bgs)	nC6 nC12 (mg/kg)	>nC12 nC28 (mg/kg)	>nC28 nC35 (mg/kg)	Total TPH (mg/kg)
HS20011494-01	DPT-12-20	4-5	**290**	**2300**	**120 J**	**2710**
HS20011494-02	DPT-12-20	8-9	**1300**	**6500**	**270 J**	**8070**
HS20011494-03	DPT-16-20	4-5	**270**	**860**	**28 J**	**1160**
HS20011494-04	DPT-16-20	14-15	**1300**	**3100**	**120 J**	**4520**
HS20011392-01	DPT-26-20	2-3	**170 J**	**3300**	**440**	**3910**
HS20020239-07	DPT-29-19	4-5	**650**	**2600**	**970**	**4220**
HS20020239-08	DPT-29-19	9-10	**230 J**	**1100**	**200 J**	**1530**
HS20020239-03	DPT-30-19	13-14	**810**	**3400**	**510**	**4720**
HS20020158-05	DPT-32-19	2-3	**1300**	**8700**	**1800**	**11800**
HS20020158-06	DPT-32-19	11-12	**890**	**5600**	**950**	**7440**
HS19121108-07	DPT-35-19	4-5	**900**	**13000**	**2900**	**16800**
HS19121108-08	DPT-35-19	6-7	**200 J**	**1200**	**170 J**	**1570**

Figure 4: Unresolved Complex Material (UCM) Example Chromatogram

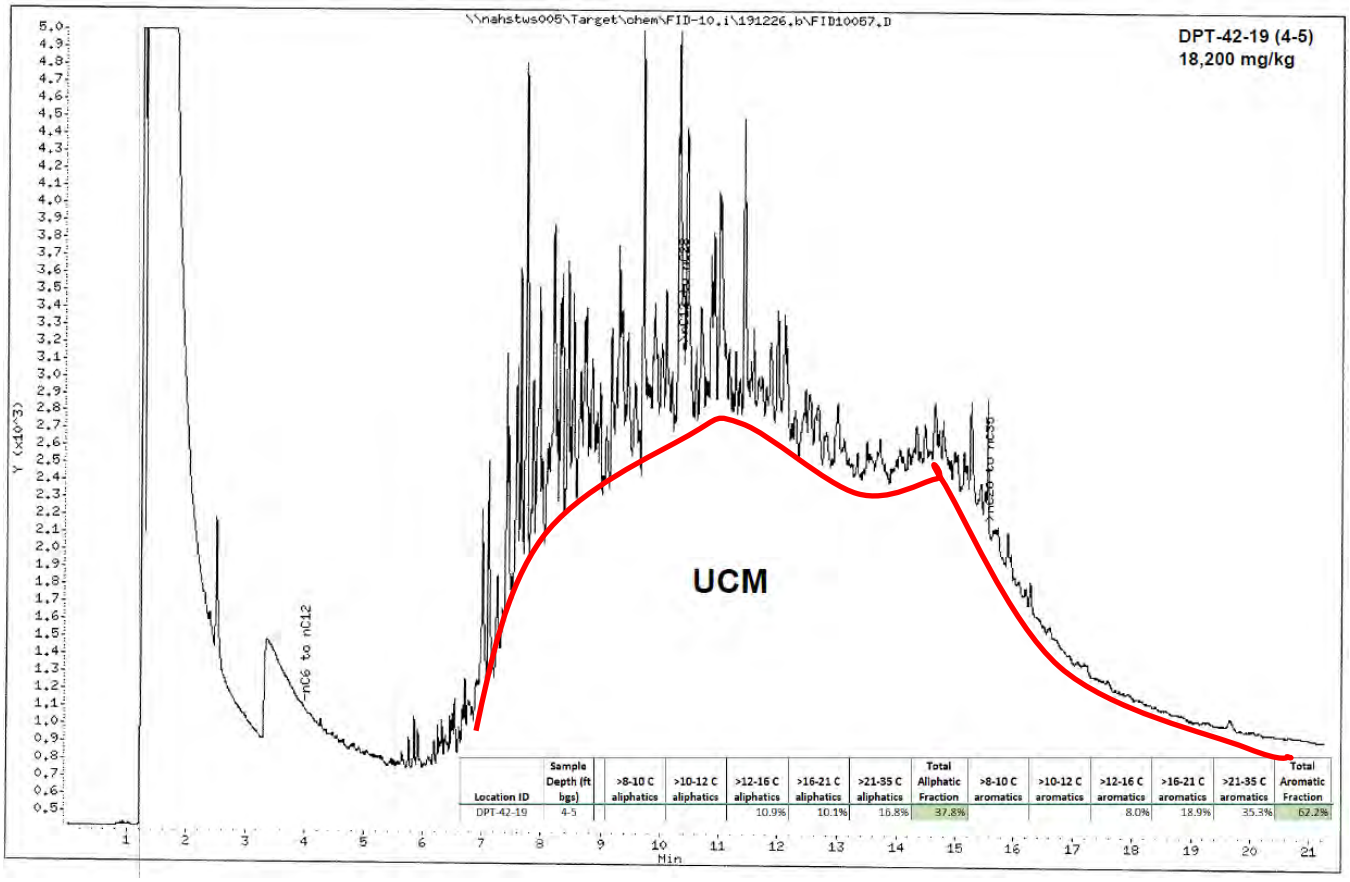


Table 4: Unresolved Complex Material (UCM) Samples

Laboratory Identification	Location Identification	Depth (ft bgs)	nC6 nC12 (mg/kg)	>nC12 nC28 (mg/kg)	>nC28 nC35 (mg/kg)	Total TPH (mg/kg)
HS20020239-05	DPT-36-19	5-6	**130 J**	**9100**	**2700**	**11900**
HS19121010-01	DPT-39-19	2-3	<7.4	**600**	**360**	**960**
HS20020239-11	DPT-41-19	1-2	**8.1 J**	**130**	**170**	**308**
HS19121010-03	DPT-42-19	4-5	<120	**15000**	**3200**	**18200**
HS19121010-04	DPT-42-19	7-8	**140 J**	**960**	**210 J**	**1310**
HS20020239-01	DPT-43-19	2-3	**7 J**	**430**	**550**	**987**
HS20020239-09	DPT-45-19	1-2	**8.5 J**	**170**	**250**	**428**
HS19121108-05	SB-218	2.25-3	<6.9	**150**	**130**	**280**
HS20020158-02	SB-219	2-3	<79	**1400**	**980**	**2380**

Table 5: Summary of TX1005 Total Petroleum Hydrocarbon Data

Laboratory Identification	Location Identification	Depth (ft bgs)	nC6 to nC12	>nC12 to nC28	>nC28 to nC35	Total TPH	%nC6 to nC12	%>nC12 to nC28	%>nC28 to nC35
HS20011494-01	DPT-12-20	4-5	**290**	**2300**	**120 J**	**2710**	11%	85%	4%
HS20011494-02	DPT-12-20	8-9	**1300**	**6500**	**270 J**	**8070**	16%	81%	3%
HS20011494-03	DPT-16-20	4-5	**270**	**860**	**28 J**	**1160**	23%	74%	2%
HS20011494-04	DPT-16-20	14-15	**1300**	**3100**	**120 J**	**4520**	29%	69%	3%
HS20011494-06	DPT-21-20	5-6	**48**	**110**	**22 J**	**180**	27%	61%	12%
HS20011494-05	DPT-21-20	3-4	**1300**	**2800**	**97 J**	**4200**	31%	67%	2%
HS20011392-01	DPT-26-20	2-3	**170 J**	**3300**	**440**	**3910**	4%	84%	11%
HS20020239-08	DPT-29-19	9-10	**230 J**	**1100**	**200 J**	**1530**	15%	72%	13%
HS20020239-07	DPT-29-19	4-5	**650**	**2600**	**970**	**4220**	15%	62%	23%
HS20020239-03	DPT-30-19	13-14	**810**	**3400**	**510**	**4720**	17%	72%	11%
HS20020158-03	DPT-30-19	4-5	**220 J**	**9300**	**3000**	**12500**	2%	74%	24%
HS20020158-06	DPT-32-19	11-12	**890**	**5600**	**950**	**7440**	12%	75%	13%
HS20020158-05	DPT-32-19	2-3	**1300**	**8700**	**1800**	**11800**	11%	74%	15%
HS19121108-04	DPT-34-19	5-6	<82	**3800**	**1200**	**5000**		76%	24%
HS19121108-03	DPT-34-19	4-5	<450	**15000**	**4500**	**19500**		77%	23%
HS19121108-08	DPT-35-19	6-7	**200 J**	**1200**	**170 J**	**1570**	13%	76%	11%
HS19121108-07	DPT-35-19	4-5	**900**	**13000**	**2900**	**16800**	5%	77%	17%
HS20020239-04	DPT-36-19	3-4	**140 J**	**7100**	**1600**	**8840**	2%	80%	18%
HS20020239-05	DPT-36-19	5-6	**130 J**	**9100**	**2700**	**11900**	1%	76%	23%
HS20020158-04	DPT-37-19	7-8	**270**	**1800**	**270**	**2340**	12%	77%	12%
HS20020239-14	DPT-37-19	4-5	**880 J**	**9600**	**1500**	**12000**	7%	80%	13%
HS19120951-06	DPT-38-19	5-6	**1400**	**4700**	**1700**	**7800**	18%	60%	22%
HS19120951-05	DPT-38-19	3-4	**5000**	**6400**	**3100**	**14500**	34%	44%	21%
HS19121010-01	DPT-39-19	2-3	<7.4	**600**	**360**	**960**		63%	38%
HS19121108-01	DPT-40-19	1.25-2	**170 J**	**6500**	**1300**	**7970**	2%	82%	16%
HS20020239-11	DPT-41-19	1-2	**8.1 J**	**130**	**170**	**308**	3%	42%	55%
HS19121010-04	DPT-42-19	7-8	**140 J**	**960**	**210 J**	**1310**	11%	73%	16%
HS19121010-03	DPT-42-19	4-5	<120	**15000**	**3200**	**18200**		82%	18%
HS20020239-01	DPT-43-19	2-3	**7 J**	**430**	**550**	**987**	1%	44%	56%
HS20020239-09	DPT-45-19	1-2	**8.5 J**	**170**	**250**	**428**	2%	40%	58%
HS20011392-06	SB-216	7-8	**27 J**	**360**	<9.7	**387**	7%	93%	
HS19121108-05	SB-218	2.25-3	<6.9	**150**	**130**	**280**		54%	46%
HS20020158-02	SB-219	2-3	<79	**1400**	**980**	**2380**		59%	41%

Table 6: TX1006 Fractionation Data

Location Identification	Sample Depth (ft bgs)	>8-10 C Aliphatics	>10-12 C Aliphatics	>12-16 C Aliphatics	>16-21 C Aliphatics	>21-35 C Aliphatics	Total Aliphatic Fraction	>8-10 C Aromatics	>10-12 C Aromatics	>12-16 C Aromatics	>16-21 C Aromatics	>21-35 C Aromatics	Total Aromatic Fraction
DPT-26-20	2-3						0.0%		2.0%	37.5%	45.6%	14.7%	100.0%
DPT-12-20	8-9			1.6%	0.8%	0.8%	3.2%		15.9%	28.9%	37.6%	14.3%	96.8%
DPT-21-20	3-4	1.6%	1.2%	1.1%	0.8%		4.7%	14.4%	13.5%	21.8%	33.7%	11.9%	95.3%
DPT-32-19	2-3			2.3%	2.2%	2.8%	7.3%		10.0%	22.5%	34.2%	25.9%	92.7%
DPT-29-19	4-5					7.7%	7.7%	1.0%	14.7%	38.5%	11.5%	26.6%	92.3%
DPT-35-19	4-5			3.9%	7.7%	15.4%	27.0%		6.0%	10.4%	28.3%	28.3%	73.0%
DPT-30-19	4-5			3.1%	8.2%	17.3%	28.6%		2.4%	9.3%	28.3%	31.4%	71.4%
DPT-36-19	5-6			7.7%	13.3%	12.3%	33.3%			7.4%	20.8%	38.5%	66.7%
DPT-38-19	5-6	8.5%			8.1%	17.6%	34.2%	3.9%	12.7%	12.1%	22.8%	14.3%	65.8%
DPT-38-19	3-4	11.2%	3.7%		3.9%	15.7%	34.5%	8.7%	24.9%	5.7%	13.7%	12.5%	65.5%
DPT-42-19	4-5			10.9%	10.1%	16.8%	37.8%			8.0%	18.9%	35.3%	62.2%
DPT-34-19	4-5				10.8%	32.0%	42.8%				26.9%	30.3%	57.2%
DPT-39-19	2-3			0.8%	8.4%	40.6%	49.7%			1.3%	8.4%	40.6%	50.3%
DPT-42-19	7-8			37.4%	12.3%	20.6%	70.3%					29.7%	29.7%

ATTACHMENT H

TCEQ TRRP Tier 1 TPH Mixture PCL Calculations

TCEQ TRRP Tier 1 TPH PCL Calculator (v 3.0 - 02/2020) for TCEQ Method 1006 Data - Input Sheet

Site Information:	HWPW		Sample ID:	DPT-38-19 (3-4)		Calculation Date:	April 18, 2020
	▼ INPUT ▼		$MF_i = \frac{C_i}{\sum_{i=1}^{13} C_i}$	MF_i / MW_i	$X_i = \frac{(MF_i/MW_i)}{\sum_{i=1}^{13}(MF_i/MW_i)}$	$C_{sat,i} = S_i X_i \left[\frac{\theta_w + K_i \rho_s + \theta_a H'}{\rho_b}\right]$	$C_i > C_{sat,i}$?
TCEQ Method 1006 Boiling Point Range	*i*	TCEQ Method 1006 Boiling Point Range Concentrations in Soil Ci (mg/kg)	Boiling Point Range Molecular Weight[1] MWi (g/mol)	Boiling Point Range Mass Fraction MFi (-)	Mass Fraction / Molecular Wt Ratio MFi/MWi (mol/g)	Boiling Point Range Mole Fraction Xi (-)	Theoretical Soil Saturation Limit for TPH NAPL Csat, i (mg/kg)	Test for Theoretical Saturation Limit ($C_{sat,i}$)
C_6 Aliphatic	1	62.00 mg/kg	81	1.06E-02	1.30E-04	2.09E-02	4.40E+00	Csat,1 EXCEEDED
>C_6 - C_8 Aliphatic	2	62.00 mg/kg	100	1.06E-02	1.06E-04	1.70E-02	1.31E+00	Csat,2 EXCEEDED
>C_8 - C_{10} Aliphatic	3	630.00 mg/kg	130	1.07E-01	8.26E-04	1.33E-01	4.18E+00	Csat,3 EXCEEDED
>C_{10} - C_{12} Aliphatic	4	210.00 mg/kg	160	3.58E-02	2.24E-04	3.59E-02	6.32E-01	Csat,4 EXCEEDED
>C_{12} - C_{16} Aliphatic	5	62.00 mg/kg	200	1.06E-02	5.28E-05	8.48E-03	6.50E-02	Csat,5 EXCEEDED
>C_{16} - C_{21} Aliphatic	6	220.00 mg/kg	270	3.75E-02	1.39E-04	2.23E-02	7.04E-02	Csat,6 EXCEEDED
>C_{21} - C_{35} Aliphatic	7	880.00 mg/kg	270	1.50E-01	5.55E-04	8.92E-02	2.81E-01	Csat,7 EXCEEDED
>C_7 - C_8 Aromatic	8	62.00 mg/kg	92	1.06E-02	1.15E-04	1.84E-02	4.04E+00	Csat,8 EXCEEDED
>C_8 - C_{10} Aromatic	9	490.00 mg/kg	120	8.35E-02	6.96E-04	1.12E-01	2.41E+01	Csat,9 EXCEEDED
>C_{10} - C_{12} Aromatic	10	1,400.00 mg/kg	130	2.39E-01	1.84E-03	2.95E-01	3.78E+01	Csat,10 EXCEEDED
>C_{12} - C_{16} Aromatic	11	320.00 mg/kg	150	5.45E-02	3.64E-04	5.84E-02	3.43E+00	Csat,11 EXCEEDED
>C_{16} - C_{21} Aromatic	12	770.00 mg/kg	190	1.31E-01	6.91E-04	1.11E-01	2.29E+00	Csat,12 EXCEEDED
>C_{21} - C_{35} Aromatic	13	700.00 mg/kg	240	1.19E-01	4.97E-04	7.98E-02	1.33E-01	Csat,13 EXCEEDED
Sum Aliphatic Fraction:		2,126.00 mg/kg	0.3623	$\sum MF_i$	$\sum (MF_i/MW_i)$	$\sum X_i$		
Sum Aromatic Fraction:		3,742.00 mg/kg	0.6377	= 1.00E+00	= 6.23E-03 mol/g	= 1.00E+00		
SumTotal TPH:		5,868.00 mg/kg	1.0000					

[1] *from* TRRP Table [§350.73(4)]

TCEQ TRRP Tier 1 TPH PCL Calculator (v 3.0 - 02/2020) for TCEQ Method 1006 Data - Results

TPH NAPL Present?:	Theoretical soil saturation limit IS EXCEEDED for one or more TPH fractions - Presence of NAPL is indicated - See TRRP-32 for NAPL management guidance			
Mobile NAPL Present?:	Presence of Mobile NAPL NOT indicated			
Tier 1 $^{Tot}SOIL_{Comb}$	0.5 Acre Residential	30 Acre Residential	0.5 Acre Comm / Ind	30 Acre Comm / Ind
$PCL_{TPH\ Mix}$ =	7.96E+03 mg/kg	6.29E+03 mg/kg	2.89E+04 mg/kg	1.68E+04 mg/kg
Hazard Index (HI) of TPH_{Mix} =	2.97	2.85	2.59	2.50
Tier 1 $^{GW}SOIL_{Ing}$	0.5 Acre Residential	30 Acre Residential	0.5 Acre Comm / Ind	30 Acre Comm / Ind
$PCL_{TPH\ Mix}$ =	HI<10; GW-Soil-Ing PCL not needed *	HI<10; GW-Soil-Ing PCL not needed *	HI<10; GW-Soil-Ing PCL not needed *	HI<10; GW-Soil-Ing PCL not needed *
Hazard Index (HI) of TPH_{Mix} =	1.00	2.00	0.34	0.67
Tier 1 $^{GW}SOIL_{Class\ 3}$	0.5 Acre Residential	30 Acre Residential	0.5 Acre Comm / Ind	30 Acre Comm / Ind
$PCL_{TPH\ Mix}$ =	HI<10; GW-Soil-Ing PCL not needed *	HI<10; GW-Soil-Ing PCL not needed *	HI<10; GW-Soil-Ing PCL not needed *	HI<10; GW-Soil-Ing PCL not needed *
Hazard Index (HI) of TPH_{Mix} =	0.01	0.02	0.00	0.01
Tier 1 $^{Air}SOIL_{Inh\text{-}V}$	0.5 Acre Residential	30 Acre Residential	0.5 Acre Comm / Ind	28 Acre Comm / Ind
$PCL_{TPH\ Mix}$ =	2.77E+04 mg/kg	1.43E+04 mg/kg	3.86E+04 mg/kg	2.01E+04 mg/kg
Hazard Index (HI) of TPH_{Mix} =	2.40	2.40	2.39	2.42

This work sheet is for inputting the TQEQ Method 1006 soil concentrations and summarizing the PCL calculation results.
End of work sheet.

TCEQ TRRP Tier 1 TPH PCL Calculator (v 3.0 - 02/2020) for TCEQ Method 1006 Data - Input Sheet

Site Information:	HWPW		Sample ID:	DPT-34-19		Calculation Date:	April 18, 2020
	▼ INPUT ▼		$MF_i = \frac{C_i}{\sum_{i=1}^{13} C_i}$	MF_i / MW_i	$X_i = \frac{(MF_i/MW_i)}{\sum_{i=1}^{13}(MF_i/MW_i)}$	$C_{sat,i} = S_l X_i \left[\frac{\theta_w + K_i \rho_b + \theta_a H'}{\rho_b}\right]$	$C_i \rangle C_{sat,i}$?
TCEQ Method 1006 Boiling Point Range	*i*	TCEQ Method 1006 Boiling Point Range Concentrations in Soil Ci (mg/kg)	Boiling Point Range Molecular Weight[1] MWi (g/mol)	Boiling Point Range Mass Fraction MFi (·)	Mass Fraction / Molecular Wt Ratio MFi/MWi (mol/g)	Boiling Point Range Mole Fraction Xi (·)	Theoretical Soil Saturation Limit for TPH NAPL Csat, i (mg/kg)	Test for Theoretical Saturation Limit ($C_{sat,i}$)
C_6 Aliphatic	1	300.00 mg/kg	81	3.47E-02	4.29E-04	7.75E-02	1.63E+01	Csat,1 EXCEEDED
$>C_6$ - C_8 Aliphatic	2	300.00 mg/kg	100	3.47E-02	3.47E-04	6.28E-02	4.86E+00	Csat,2 EXCEEDED
$>C_8$ - C_{10} Aliphatic	3	300.00 mg/kg	130	3.47E-02	2.67E-04	4.83E-02	1.52E+00	Csat,3 EXCEEDED
$>C_{10}$ - C_{12} Aliphatic	4	300.00 mg/kg	160	3.47E-02	2.17E-04	3.92E-02	6.91E-01	Csat,4 EXCEEDED
$>C_{12}$ - C_{16} Aliphatic	5	300.00 mg/kg	200	3.47E-02	1.74E-04	3.14E-02	2.41E-01	Csat,5 EXCEEDED
$>C_{16}$ - C_{21} Aliphatic	6	640.00 mg/kg	270	7.41E-02	2.74E-04	4.96E-02	1.57E-01	Csat,6 EXCEEDED
$>C_{21}$ - C_{35} Aliphatic	7	1,900.00 mg/kg	270	2.20E-01	8.14E-04	1.47E-01	4.65E-01	Csat,7 EXCEEDED
$>C_7$ - C_8 Aromatic	8	300.00 mg/kg	92	3.47E-02	3.77E-04	6.82E-02	1.49E+01	Csat,8 EXCEEDED
$>C_8$ - C_{10} Aromatic	9	300.00 mg/kg	120	3.47E-02	2.89E-04	5.23E-02	1.13E+01	Csat,9 EXCEEDED
$>C_{10}$ - C_{12} Aromatic	10	300.00 mg/kg	130	3.47E-02	2.67E-04	4.83E-02	6.20E+00	Csat,10 EXCEEDED
$>C_{12}$ - C_{16} Aromatic	11	300.00 mg/kg	150	3.47E-02	2.31E-04	4.19E-02	2.46E+00	Csat,11 EXCEEDED
$>C_{16}$ - C_{21} Aromatic	12	1,600.00 mg/kg	190	1.85E-01	9.75E-04	1.76E-01	3.64E+00	Csat,12 EXCEEDED
$>C_{21}$ - C_{35} Aromatic	13	1,800.00 mg/kg	240	2.08E-01	8.68E-04	1.57E-01	2.61E-01	Csat,13 EXCEEDED
Sum Aliphatic Fraction:		4,040.00 mg/kg	0.4676	$\sum MF_i$	$\Sigma (MF_i/MW_i)$	$\sum X_i$		
Sum Aromatic Fraction:		4,600.00 mg/kg	0.5324	= 1.00E+00	= 5.53E-03 mol/g	= 1.00E+00		
SumTotal TPH:		8,640.00 mg/kg	1.0000					

[1] *from* TRRP Table [§350.73(4)]

TCEQ TRRP Tier 1 TPH PCL Calculator (v 3.0 - 02/2020) for TCEQ Method 1006 Data - Results

TPH NAPL Present?:	Theoretical soil saturation limit IS EXCEEDED for one or more TPH fractions - Presence of NAPL is indicated - See TRRP-32 for NAPL management guidance			
Mobile NAPL Present?:	Presence of Mobile NAPL NOT indicated			
Tier 1 $^{Tot}SOIL_{Comb}$	0.5 Acre Residential	30 Acre Residential	0.5 Acre Comm / Ind	30 Acre Comm / Ind
$PCL_{TPH\ Mix}$ =	9.60E+03 mg/kg	9.60E+03 mg/kg	9.60E+04 mg/kg	6.05E+04 mg/kg
Hazard Index (HI) of TPH_{Mix} =	2.88	3.17	4.71	4.30
Tier 1 $^{GW}SOIL_{Ing}$	0.5 Acre Residential	30 Acre Residential	0.5 Acre Comm / Ind	30 Acre Comm / Ind
$PCL_{TPH\ Mix}$ =	HI<10; GW-Soil-Ing PCL not needed *	HI<10; GW-Soil-Ing PCL not needed *	HI<10; GW-Soil-Ing PCL not needed *	HI<10; GW-Soil-Ing PCL not needed *
Hazard Index (HI) of TPH_{Mix} =	1.11	2.21	0.37	0.74
Tier 1 $^{GW}SOIL_{Class\ 3}$	0.5 Acre Residential	30 Acre Residential	0.5 Acre Comm / Ind	30 Acre Comm / Ind
$PCL_{TPH\ Mix}$ =	HI<10; GW-Soil-Ing PCL not needed *	HI<10; GW-Soil-Ing PCL not needed *	HI<10; GW-Soil-Ing PCL not needed *	HI<10; GW-Soil-Ing PCL not needed *
Hazard Index (HI) of TPH_{Mix} =	0.01	0.02	0.00	0.01
Tier 1 $^{Air}SOIL_{Inh\text{-}V}$	0.5 Acre Residential	30 Acre Residential	0.5 Acre Comm / Ind	28 Acre Comm / Ind
$PCL_{TPH\ Mix}$ =	8.93E+04 mg/kg	4.61E+04 mg/kg	1.24E+05 mg/kg	6.34E+04 mg/kg
Hazard Index (HI) of TPH_{Mix} =	2.87	2.88	2.83	2.84

This work sheet is for inputting the TQEQ Method 1006 soil concentrations and summarizing the PCL calculation results.
End of work sheet.

TCEQ TRRP Tier 1 TPH PCL Calculator (v 3.0 - 02/2020) for TCEQ Method 1006 Data - Input Sheet

Site Information:	HWPW		Sample ID:	DPT-35-19		Calculation Date:	April 18, 2020
	▼ INPUT ▼		$MF_i = \frac{C_i}{\sum_{i=1}^{13} C_i}$	MF_i / MW_i	$X_i = \frac{(MF_i/MW_i)}{\sum_{i=1}^{13}(MF_i/MW_i)}$	$C_{sat,i} = S_i X_i \left[\frac{\theta_w + K_i \rho_s + \theta_a H'}{\rho_b}\right]$	$C_i \rangle C_{sat,i}$?
TCEQ Method 1006 Boiling Point Range	*i*	TCEQ Method 1006 Boiling Point Range Concentrations in Soil Ci (mg/kg)	Boiling Point Range Molecular Weight[1] MWi (g/mol)	Boiling Point Range Mass Fraction MFi (·)	Mass Fraction / Molecular Wt Ratio MFi/MWi (mol/g)	Boiling Point Range Mole Fraction Xi (·)	Theoretical Soil Saturation Limit for TPH NAPL Csat, i (mg/kg)	Test for Theoretical Saturation Limit ($C_{sat,i}$)
C_6 Aliphatic	1	79.00 mg/kg	81	9.57E-03	1.18E-04	2.31E-02	4.84E+00	Csat,1 EXCEEDED
>C_6 - C_8 Aliphatic	2	79.00 mg/kg	100	9.57E-03	9.57E-05	1.87E-02	1.45E+00	Csat,2 EXCEEDED
>C_8 - C_{10} Aliphatic	3	79.00 mg/kg	130	9.57E-03	7.36E-05	1.44E-02	4.53E-01	Csat,3 EXCEEDED
>C_{10} - C_{12} Aliphatic	4	79.00 mg/kg	160	9.57E-03	5.98E-05	1.17E-02	2.05E-01	Csat,4 EXCEEDED
>C_{12} - C_{16} Aliphatic	5	300.00 mg/kg	200	3.63E-02	1.82E-04	3.55E-02	2.72E-01	Csat,5 EXCEEDED
>C_{16} - C_{21} Aliphatic	6	600.00 mg/kg	270	7.27E-02	2.69E-04	5.25E-02	1.66E-01	Csat,6 EXCEEDED
>C_{21} - C_{35} Aliphatic	7	1,200.00 mg/kg	270	1.45E-01	5.38E-04	1.05E-01	3.32E-01	Csat,7 EXCEEDED
>C_7 - C_8 Aromatic	8	79.00 mg/kg	92	9.57E-03	1.04E-04	2.03E-02	4.44E+00	Csat,8 EXCEEDED
>C_8 - C_{10} Aromatic	9	79.00 mg/kg	120	9.57E-03	7.98E-05	1.56E-02	3.36E+00	Csat,9 EXCEEDED
>C_{10} - C_{12} Aromatic	10	470.00 mg/kg	130	5.69E-02	4.38E-04	8.54E-02	1.10E+01	Csat,10 EXCEEDED
>C_{12} - C_{16} Aromatic	11	810.00 mg/kg	150	9.81E-02	6.54E-04	1.28E-01	7.50E+00	Csat,11 EXCEEDED
>C_{16} - C_{21} Aromatic	12	2,200.00 mg/kg	190	2.67E-01	1.40E-03	2.74E-01	5.66E+00	Csat,12 EXCEEDED
>C_{21} - C_{35} Aromatic	13	2,200.00 mg/kg	240	2.67E-01	1.11E-03	2.17E-01	3.60E-01	Csat,13 EXCEEDED
Sum Aliphatic Fraction:		2,416.00 mg/kg	0.2927	$\sum MF_i$	$\sum (MF_i/MW_i)$	$\sum X_i$		
Sum Aromatic Fraction:		5,838.00 mg/kg	0.7073	= 1.00E+00	= 5.13E-03 mol/g	= 1.00E+00		
SumTotal TPH:		8,254.00 mg/kg	1.0000					

[1] *from* TRRP Table [§350.73(4)]

TCEQ TRRP Tier 1 TPH PCL Calculator (v 3.0 - 02/2020) for TCEQ Method 1006 Data - Results

TPH NAPL Present?:	Theoretical soil saturation limit IS EXCEEDED for one or more TPH fractions - Presence of NAPL is indicated - See TRRP-32 for NAPL management guidance			
Mobile NAPL Present?:	Presence of Mobile NAPL NOT indicated			
Tier 1 $^{Tot}SOIL_{Comb}$	0.5 Acre Residential	30 Acre Residential	0.5 Acre Comm / Ind	30 Acre Comm / Ind
$PCL_{TPH\ Mix}$ =	7.50E+03 mg/kg	7.50E+03 mg/kg	7.50E+04 mg/kg	7.02E+04 mg/kg
Hazard Index (HI) of TPH_{Mix} =	2.74	2.91	3.83	4.75
Tier 1 $^{GW}SOIL_{Ing}$	0.5 Acre Residential	30 Acre Residential	0.5 Acre Comm / Ind	30 Acre Comm / Ind
$PCL_{TPH\ Mix}$ =	HI<10; GW-Soil-Ing PCL not needed *	HI<10; GW-Soil-Ing PCL not needed *	HI<10; GW-Soil-Ing PCL not needed *	HI<10; GW-Soil-Ing PCL not needed *
Hazard Index (HI) of TPH_{Mix} =	0.47	0.93	0.16	0.31
Tier 1 $^{GW}SOIL_{Class\ 3}$	0.5 Acre Residential	30 Acre Residential	0.5 Acre Comm / Ind	30 Acre Comm / Ind
$PCL_{TPH\ Mix}$ =	HI<10; GW-Soil-Ing PCL not needed *	HI<10; GW-Soil-Ing PCL not needed *	HI<10; GW-Soil-Ing PCL not needed *	HI<10; GW-Soil-Ing PCL not needed *
Hazard Index (HI) of TPH_{Mix} =	0.00	0.01	0.00	0.00
Tier 1 $^{Air}SOIL_{Inh\text{-}V}$	0.5 Acre Residential	30 Acre Residential	0.5 Acre Comm / Ind	28 Acre Comm / Ind
$PCL_{TPH\ Mix}$ =	1.16E+05 mg/kg	5.97E+04 mg/kg	1.62E+05 mg/kg	8.43E+04 mg/kg
Hazard Index (HI) of TPH_{Mix} =	2.80	2.80	2.79	2.81

This work sheet is for inputting the TQEQ Method 1006 soil concentrations and summarizing the PCL calculation results.
End of work sheet.

TCEQ TRRP Tier 1 TPH PCL Calculator (v 3.0 - 02/2020) for TCEQ Method 1006 Data - Input Sheet

Site Information:	HWPW		Sample ID:	DPT-42-19 (4-5)		Calculation Date:	April 18, 2020
	▼ INPUT ▼		$MF_i = \frac{C_i}{\sum_{i=1}^{13} C_i}$	MF_i / MW_i	$X_i = \frac{(MF_i/MW_i)}{\sum_{i=1}^{13}(MF_i/MW_i)}$	$C_{sat,i} = S_i X_i \left[\frac{\theta_w + K_i \rho_s + \theta_a H'}{\rho_b}\right]$	$C_i > C_{sat,i}$?
TCEQ Method 1006 Boiling Point Range	*i*	TCEQ Method 1006 Boiling Point Range Concentrations in Soil Ci (mg/kg)	Boiling Point Range Molecular Weight[1] MWi (g/mol)	Boiling Point Range Mass Fraction MFi (-)	Mass Fraction / Molecular Wt Ratio MFi/MWi (mol/g)	Boiling Point Range Mole Fraction Xi (-)	Theoretical Soil Saturation Limit for TPH NAPL Csat, i (mg/kg)	Test for Theoretical Saturation Limit ($C_{sat,i}$)
C_6 Aliphatic	1	78.00 mg/kg	81	3.20E-03	3.96E-05	8.52E-03	1.79E+00	Csat,1 EXCEEDED
>C_6 - C_8 Aliphatic	2	78.00 mg/kg	100	3.20E-03	3.20E-05	6.90E-03	5.35E-01	Csat,2 EXCEEDED
>C_8 - C_{10} Aliphatic	3	78.00 mg/kg	130	3.20E-03	2.46E-05	5.31E-03	1.68E-01	Csat,3 EXCEEDED
>C_{10} - C_{12} Aliphatic	4	78.00 mg/kg	160	3.20E-03	2.00E-05	4.31E-03	7.59E-02	Csat,4 EXCEEDED
>C_{12} - C_{16} Aliphatic	5	2,600.00 mg/kg	200	1.07E-01	5.34E-04	1.15E-01	8.82E-01	Csat,5 EXCEEDED
>C_{16} - C_{21} Aliphatic	6	2,400.00 mg/kg	270	9.86E-02	3.65E-04	7.87E-02	2.48E-01	Csat,6 EXCEEDED
>C_{21} - C_{35} Aliphatic	7	4,000.00 mg/kg	270	1.64E-01	6.09E-04	1.31E-01	4.14E-01	Csat,7 EXCEEDED
>C_7 - C_8 Aromatic	8	78.00 mg/kg	92	3.20E-03	3.48E-05	7.50E-03	1.64E+00	Csat,8 EXCEEDED
>C_8 - C_{10} Aromatic	9	78.00 mg/kg	120	3.20E-03	2.67E-05	5.75E-03	1.24E+00	Csat,9 EXCEEDED
>C_{10} - C_{12} Aromatic	10	78.00 mg/kg	130	3.20E-03	2.46E-05	5.31E-03	6.82E-01	Csat,10 EXCEEDED
>C_{12} - C_{16} Aromatic	11	1,900.00 mg/kg	150	7.80E-02	5.20E-04	1.12E-01	6.58E+00	Csat,11 EXCEEDED
>C_{16} - C_{21} Aromatic	12	4,500.00 mg/kg	190	1.85E-01	9.73E-04	2.10E-01	4.33E+00	Csat,12 EXCEEDED
>C_{21} - C_{35} Aromatic	13	8,400.00 mg/kg	240	3.45E-01	1.44E-03	3.10E-01	5.15E-01	Csat,13 EXCEEDED
Sum Aliphatic Fraction:		9,312.00 mg/kg	0.3825	$\sum MF_i$	$\sum (MF_i/MW_i)$	$\sum X_i$		
Sum Aromatic Fraction:		15,034.00 mg/kg	0.6175	= 1.00E+00	= 4.64E-03 mol/g	= 1.00E+00		
SumTotal TPH:		24,346.00 mg/kg	1.0000					

[1] *from* TRRP Table [§350.73(4)]

TCEQ TRRP Tier 1 TPH PCL Calculator (v 3.0 - 02/2020) for TCEQ Method 1006 Data - Results

TPH NAPL Present?:	Theoretical soil saturation limit IS EXCEEDED for one or more TPH fractions - Presence of NAPL is indicated - See TRRP-32 for NAPL management guidance			
Mobile NAPL Present?:	Presence of Mobile NAPL IS indicated - See TRRP-32 for guidance on the Mobile NAPL Trigger			
Tier 1 $^{Tot}SOIL_{Comb}$	0.5 Acre Residential	30 Acre Residential	0.5 Acre Comm / Ind	30 Acre Comm / Ind
$PCL_{TPH\ Mix}$ =	5.80E+03 mg/kg	5.80E+03 mg/kg	5.80E+04 mg/kg	5.80E+04 mg/kg
Hazard Index (HI) of TPH_{Mix} =	1.93	2.02	2.50	3.16
Tier 1 $^{GW}SOIL_{Ing}$	0.5 Acre Residential	30 Acre Residential	0.5 Acre Comm / Ind	30 Acre Comm / Ind
$PCL_{TPH\ Mix}$ =	HI<10; GW-Soil-Ing PCL not needed *	HI<10; GW-Soil-Ing PCL not needed *	HI<10; GW-Soil-Ing PCL not needed *	HI<10; GW-Soil-Ing PCL not needed *
Hazard Index (HI) of TPH_{Mix} =	0.16	0.32	0.05	0.11
Tier 1 $^{GW}SOIL_{Class\ 3}$	0.5 Acre Residential	30 Acre Residential	0.5 Acre Comm / Ind	30 Acre Comm / Ind
$PCL_{TPH\ Mix}$ =	HI<10; GW-Soil-Ing PCL not needed *	HI<10; GW-Soil-Ing PCL not needed *	HI<10; GW-Soil-Ing PCL not needed *	HI<10; GW-Soil-Ing PCL not needed *
Hazard Index (HI) of TPH_{Mix} =	0.00	0.00	0.00	0.00
Tier 1 $^{Air}SOIL_{Inh\text{-}V}$	0.5 Acre Residential	30 Acre Residential	0.5 Acre Comm / Ind	28 Acre Comm / Ind
$PCL_{TPH\ Mix}$ =	1.12E+05 mg/kg	5.81E+04 mg/kg	1.59E+05 mg/kg	8.15E+04 mg/kg
Hazard Index (HI) of TPH_{Mix} =	1.86	1.86	1.87	1.86

This work sheet is for inputting the TQEQ Method 1006 soil concentrations and summarizing the PCL calculation results.
End of work sheet.

Appendix 3E

Risk-Based NAPL Management Technical Memorandum dated August 20, 2020

TECHNICAL MEMORANDUM

DATE August 20, 2020 **Project No.** 19119232

TO Kevin Peterburs, Union Pacific Railroad

FROM Eric Matzner, Golder Associates Inc

RISK-BASED NAPL MANAGEMENT, UPRR HOUSTON WOOD PRESERVING WORKS, HOUSTON, TX

1.0 RISK-BASED NAPL MANAGEMENT, UPRR HOUSTON WOOD PRESERVING WORKS, HOUSTON, TX

Texas Commission on Environmental Quality (TCEQ) guidance document Risk-Based Non-Aqueous Phase Liquids (NAPL) Management - TRRP-32 (TRRP-32 Guidance) (TCEQ, 2013) provides a step-wise process for managing NAPL occurrences at an affected property. An initial NAPL management evaluation was provided in Appendix 11 of the updated APAR addendum dated October 22, 2010 (PBW, 2010) for the Union Pacific Railroad (UPRR) Houston Wood Preserving Works (the Site). The NAPL management process in that initial assessment has been re-evaluated as detailed below to incorporate data from the recent additional NAPL and groundwater assessments conducted at the Site. The following steps were revisited in accordance with TRRP-32 Guidance (TCEQ, 2013):

- Step 1 – Conduct NAPL Assessment (Section 1.1)
- Step 2 – Identify NAPL Response Triggers (Section 1.2)
- Step 3 – Determine NAPL Response Objectives and Endpoints (Section 1.3)
- Step 4 – Develop NAPL Management Strategy (Section 1.4)
- Step 5 – Implement NAPL Management Strategy and Evaluate NAPL Response Effectiveness (detailed in the Revised RAP, August 2020).

1.1 Conduct NAPL Assessment (Step 1)

The additional NAPL assessment (Step 1) was described in the Interim NAPL and Total Petroleum Hydrocarbon (TPH)-NAPL Report dated May 29, 2020 (Interim NAPL Report) (Golder, 2020a) that was submitted to the TCEQ. The objectives of the additional NAPL assessment were to:

- detect, identify, and define extent of NAPL occurrences in the vadose zone, capillary fringe, saturated zone, and surface water/sediments; and
- characterize NAPL occurrences sufficient to identify response triggers.

The additional NAPL assessment consisted of 54 cone-penetrometer testing (CPT)/Tar-specific Green Optical Screening Tool (TarGOST®) laser-induced fluorescence (LIF) borings that were advanced to refine previous assessments of the lateral and vertical extent of Dense NAPL (DNAPL) in the subsurface. TarGOST® borings were advanced in three areas: (1) off-site, generally north of the HWPW Site; (2) along and adjacent to the northern

and western perimeter of the Site; and (3) within the Englewood Intermodal Yard in the Site interior and along the eastern perimeter. The assessment indicated the following for each area:

- Off-Site: There is no evidence of NAPL present off-site to the north of Liberty Road and north of the Site within the A-Cohesive Zone (A-CZ) (vadose zone) or the A-Transmissive Zone (A-TZ). TarGOST® data from off-site borings to the north indicate the presence of NAPL in the B-Cohesive Zone/ B-Transmissive Zone (B-TZ/B-CZ), generally at a depth of 24 feet or more below ground surface (bgs) within the thin carbonate seams within the clay. The northern extent of NAPL in the B-TZ/B-CZ in this area is limited to an approximate distance of 500 feet or less to the north from the Site boundary.
- Northern and Western Perimeter of the Site: The extent of NAPL within the vadose zone, A-TZ, and B-CZ/B-TZ is delineated to the east and west along the northern perimeter of the HWPW Site. TarGOST® signals indicating the potential presence of NAPL in the vadose zone and the A-TZ along the northern perimeter are consistent with historical observations, except at CPT-12-20 and CPT-13-20. Previous CPT-Rapid Optical Screening Testing (ROST™) borings had not identified elevated ROST™ responses in the vadose zone and A-TZ near TarGOST® borings CPT-12-20 and CPT-13-20. At the western perimeter of the HWPW Site, the extent of NAPL within the vadose zone, A-TZ, and B-CZ/B-TZ is delineated to the north, west, and south based on observations in TarGOST® borings, soil borings, and groundwater sampling data. Measurable in-well DNAPL thicknesses have been observed in B-CZ/B-TZ monitoring wells MW-12B and MW-41B on the west side of the Site; however, TarGOST® signals from all but two CPT borings in this vicinity did not indicate the potential presence of NAPL in the B-CZ/B-TZ. These data, coupled with the absence of measurable DNAPL in B-CZ/B-TZ monitoring wells near MW-12B and MW-41B, suggest a very localized area of NAPL in this unit within this area of the Site.
- Englewood Intermodal Yard: TarGOST® data in the Englewood Intermodal (IM) Yard indicate that NAPL is present in the vadose zone (A-CZ), the A-TZ, and the B-CZ/B-TZ, mainly near the former lagoon and former aboveground storage tank (AST) areas identified on historical aerials and maps. The TarGOST® data indicated that the extent of NAPL in each zone in the Englewood Intermodal Yard is delineated to the west, south, and east, where delineation to the north extends into the former HWPW area previously discussed.

Based on the information gathered during the additional NAPL assessment, an updated summary of NAPL occurrence at the Site is presented in the table below (Table 6 of TRRP-32):

	NAPL Occurrence	Description
NAPL in vadose zone	☐ **No NAPL in vadose zone**	There is no direct or indirect evidence of NAPL in the vadose zone
	☒ **NAPL in/on soil**	NAPL detected in or on unsaturated, unconsolidated clay-, silt-, sand-, and/or gravel-dominated soils
	☒ **NAPL in fractured clay**	NAPL detected in fractures of unsaturated fine-grained soils
	☐ **NAPL in fractured or porous rock**	NAPL detected in unsaturated lithologic material
	☐ **NAPL in karst**	NAPL detected in unsaturated karst environment
	☐ **No NAPL in saturated zone or capillary fringe**	There is no direct or indirect evidence of NAPL in the saturated zone or capillary fringe

	NAPL Occurrence	Description
NAPL in saturated zone or capillary fringe	☒ **NAPL at capillary fringe**	NAPL detected at capillary fringe (in contact with groundwater)
	☒ **NAPL in saturated soil**	NAPL detected in saturated unconsolidated clay-, silt-, sand- and/or gravel-dominated soils
	☒ **NAPL in saturated fractured clay**	NAPL detected in fractures of saturated fine-grained soil or other double-porosity soils
	☐ **NAPL in saturated fractured or porous rock**	NAPL detected in saturated lithologic material
	☐ **NAPL in saturated karst**	NAPL detected in karst environment within the saturated zone
NAPL in surface water / sediment	☒ **No NAPL in surface water or sediment**	There is no direct or indirect evidence of NAPL in surface water or sediment
	☐ **NAPL in surface water**	NAPL observed in contact with surface water
	☐ **NAPL in sediment**	NAPL detected or observed in sediment

1.2 Identifying NAPL Response Triggers (Step 2)

NAPL response triggers, as detailed in TRRP-32 Guidance, are used to prompt a risk-based NAPL management response. The following potential NAPL triggers are listed in the TCEQ guidance:

- NAPL Generating Vapors
- Migrating NAPL Zone
- Mobile NAPL Zone
- NAPL Aesthetic Impact or Nuisance Condition
- NAPL in Contact with Groundwater
- NAPL in Contact with Surface Water
- NAPL Contact with Sediment

In the following section, each potential NAPL response trigger and referenced section of the guidance document is evaluated based on site-specific conditions. The purpose of this evaluation is to identify which triggers apply to the NAPL encountered at the Site.

1.2.1 NAPL Generating Vapors Trigger

Trigger Description: This trigger applies to any NAPL occurrence that is generating explosive vapor accumulations in surface or subsurface structures such as underground utility conduits, basements, buildings, storm sewers, and soils in anticipated construction zones. The vapor generation trigger is also applicable to any NAPL occurrence that is generating toxic vapors that are diffusing to the atmosphere in excess of the inhalation PCL $^{Air}Air_{Inh\text{-}V}$ at an applicable point of exposure (POE).

Site Conditions: As discussed in Section 3.2 of the APAR Addendum (PBW, 2009) and Appendix 11 of the updated APAR addendum (PBW, 2010), a survey of the storm water drains along Liberty Road was conducted using an organic vapor meter (OVM)/photo-ionization detector (PID) to evaluate organic vapors and lower explosive limit (LEL) readings from the drains. There were no OVM or LEL readings above background readings in any of the storm drains tested. In addition, the composition of the DNAPL consists of heavy-end, long carbon chain petroleum hydrocarbons with a fraction of lighter, more volatile benzene and toluene. Surface soil samples (defined in the Texas Risk Reduction Program as samples collected from depths of 5 feet below ground surface (bgs) or less) indicate that the more volatile fractions have volatized and are not present in surface soils at concentrations that would generate explosive vapors (i.e., highest benzene concentration detected in surface soil was at 0.21 mg/Kg, well below the $^{Tot}Soil_{Comb}$ PCL of 6.6 mg/Kg, and below levels that might present an explosive concentration).

As detailed in the 2018 Post-Response Action Care Report (PRACR) dated March 29, 2019 (Golder, 2019a), areas of tar-like NAPL surface seeps have been observed within the Englewood IM Yard. In October 2018, test pits were dug in areas where the tar-like NAPL seeps had been observed to evaluate the NAPL in the shallow subsurface. During the test pit excavation, very little odor was observed, and no detectable PID readings were measured when the excavations were scanned with the field PID meter (Golder, 2019a). Additional test pits were constructed in July 2020 in areas of the Englewood IM Yard where the tar-like NAPL has been observed, where the test pits were field screened with a PID and LEL meter. Neither PID nor LEL readings were detected above background at the test pits. This is consistent with the heavy-end petroleum hydrocarbons observed in the Englewood IM Yard area.

Additionally, a soil vapor intrusion assessment was conducted off site north of the Site in 2020. The vapor intrusion evaluation was summarized in the Soil Vapor Intrusion Assessment Interim Report dated March 31, 2020 (updated report dated August 4, 2020) that was submitted to the TCEQ. Based on the vertical separation distance and concentrations of chemicals of concern (COC) in soil gas samples collected for the evaluation, it was concluded that the vapor intrusion pathway is incomplete and NAPL generating vapors trigger was also incomplete.

NAPL Trigger Present? No.

Response Required? No.

1.2.2 Migrating NAPL Zone Trigger

Trigger Description: The migrating NAPL zone trigger applies when NAPL is observed in any environmental medium to have lateral or vertical movement or that exhibits an increasing or changing volumetric footprint over time. Examples of such observations include the appearance of NAPL in previously unaffected borings or monitoring wells, or as NAPL seeps to ground surface or into surface water bodies. However, as stated in the TRRP-32 Guidance, “cyclic NAPL fluctuations (NAPL presence/absence or thickness changes) in impacted wells that penetrate and are completed in the NAPL zone would not be considered evidence of migrating NAPL, but do indicate the presence of mobile NAPL.”

Site Conditions: The sources of DNAPL observed at the Site are likely from spills and drippings at the Site over the 80+ years of operations, with most of the releases likely occurred sometime prior to 1984 when wood preserving operations ceased at the Site. The wood treating facility was dismantled in the mid- to late- 1980s; thus, the DNAPL sources were removed over 30 years ago. The DNAPL plume likely migrated some distance vertically and laterally in the subsurface while the DNAPL sources were present and provided sufficient fluid head to cause DNAPL migration. After the DNAPL sources were removed and the NAPL fluid head subsequently dissipated, the primary

driving force for the DNAPL head has been removed. However, based on the additional NAPL Assessment conducted at the Site as previously discussed and presented in the Interim NAPL Report (Golder, 2020), there appears to be significant secondary source material in the subsurface. Evidence of DNAPL is present in the transmissive zones (A-TZ, B-TZ, and C-TZ) as well as the cohesive zones (A-CZ, B-CZ, and C-CZ). DNAPL migration in the cohesive zones, especially noted in the B-CZ where thin carbonate seams and fractures have been observed containing DNAPL, is driven based on the distribution of the secondary porosity within the clay units and generally follows complex pathways. DNAPL can travel through very small fractures (<20 microns) in clayey units vertically and laterally, where there is low retention capacity (Cohen and Mercer, 1993). As detailed in the Interim NAPL Report (Golder, 2020), the extent of NAPL in the B-CZ off-site based on the field investigations is limited to an approximate distance of 500 feet or less from the Site boundary. The different site conditions applicable to the Site for migrating NAPL detailed in the TRRP NAPL Guidance are discussed below.

Site Condition 1 - NAPL in Vadose Zone < 15 ft below ground surface/ NAPL discharge to ground surface

NAPL discharge to the ground surface has been observed in the Englewood IM Yard. During the July 2017 quarterly inspection of the capped areas at the Site, a tar-like NAPL was observed surfacing through the joints and cracks in the concrete and asphalt surfaces in the area of parking slots B100 to B109 within the Englewood Intermodal Yard at the Site. Details of the observations were provided in the 2018 PRACR (PBW, 2019). Since the initial observation of the tar-like substance at the surface, weekly inspections of the affected area were conducted. The amount of tar surfacing each week varied depending on the ambient temperatures (i.e., greater amounts of the tar-like substance surfaced during warm weather). Based on historical aerials, the tar-like NAPL appears to surface in areas where the former lagoon and AST area were located prior to the mid-1950s. The volume of tar-like NAPL associated with seeps noted during the weekly inspections in the Englewood IM Yard is generally a small amount, as shown on the photograph below (from May 2020 Monthly Update dated June 2, 2020, (Golder, 2020b)).

Photograph No. 1 – Englewood IM Yard (Slot B101), small amount of tar-like material seeping at asphalt crack, material was removed (May 27, 2020).

To evaluate NAPL in the vadose zone, Golder personnel documented the excavation of four test pits in the areas where the tar-like NAPL was observed in the Englewood IM Yard in October 2018, as detailed in the Monthly Status Update – Soil Cap and Concrete Cap Repairs dated October 31, 2018 (October 2018 Monthly Update) (Golder, 2018) submitted to the TCEQ. Four test pits were excavated to the dimensions of approximately 2 feet wide, 6 feet long and 5 feet deep with a mini excavator. The seeps appear to be a result of the volume of the shallow NAPL within the top 3 feet bgs mobilizing during warm weather and, to relieve subsurface pressure, finding preferential pathways to the surface through the concrete pavement's expansion joints and through the cracks in the asphalt pavement. The NAPL observed in each test pit visually appeared to be similar at each location and was described as a black, viscous material found within the top 3 feet bgs. The NAPL, whose physical characteristics are different compared to the DNAPL found in the groundwater bearing units (GWBUs), appeared to flow into the test pits slowly like a paste.

Using the information gathered from the test pits, UPRR implemented an interim response action to address the seeps by installing a NAPL Collection System. The system installation process entailed removing a section of asphalt or concrete cover, excavating the underlying soils, backfilling with high permeability fill, installing slotted pipe to allow the accumulation of NAPL and backfilling the remaining few feet with compacted selected fill and reinforced concrete. Details of the NAPL Collection System installation were provided to the TCEQ in the Response Action Completion Report (RACR) dated March 29, 2019 (Golder, 2019b). The NAPL Collection System was installed in January-February 2019. During the construction activities, the paste-like NAPL was observed within the top few feet below the concrete pavement and would slowly flow into the excavation (see Photograph No. 2 below). Since the installation of the NAPL Collection System, no tar-like NAPL seeps have been observed within the NAPL Collection System area. However, in areas outside the NAPL Collection System, very small amounts of tar-like material have been noted seeping through cracks and joints in the concrete pavement in slots B096, B101, B102, and B105, as well as A010, A021 where previous seeps have been observed. Approximately less than 1 gallon of the tar-like NAPL was recovered from these small seep areas during June 2020 (Monthly Status Updated – June 2020, Golder, 2020).

Photograph No. 2 – A seam of NAPL material encountered on the north wall of the large excavation for the NAPL Collection System, Englewood IM Yard (Slots B104-B105) (January 24, 2019).

Based on these observations, it is concluded that Site Condition 1 (Migrating NAPL in the vadose zone or discharging to the ground surface) is present within the Englewood IM Yard.

For NAPL observed in the vadose zone less than 15 feet bgs, elevated TarGOST® signals were detected in the vadose zone within the Englewood IM Yard (CPT-29-19, CPT-30-19, CPT-32-19, CPT-35-19, and CPT-42-19 (Golder, 2020). Many of these TarGOST® borings were located within the footprint of the former lagoon area identified on historical aerials and maps of the Englewood IM Yard. As discussed in the RAP Revision 0 (PBW, 2014), previous ROST™ borings and soil borings conducted in the HWPW area indicated the presence of NAPL in the vadose zone extending from the HWPW Site into the Englewood IM Yard. However, most of the A-TZ monitoring wells completed within these areas (MW-77A and MW-79A) do not have NAPL accumulating in the wells, indicating the lack of NAPL zone migration from the vadose zone. One exception to that is recovery well MW-78A, which is also located in this area and is completed to a depth of approximately 25 feet bgs. The boring log for this well noted that creosote saturation was observed between 22.8 to 23.8 feet bgs, indicating that the well penetrated and was completed within the NAPL zone. DNAPL has been measured in and recovered from the well since its installation in May 2014. From July 2014 through May 2019, DNAPL thicknesses in Well MW-78A generally decreased, with increasing thicknesses observed from May 2019 through December 2019, and then sporadic thicknesses measured since (2nd Quarter DNAPL Report (Golder, 2020d)). With the long period of steadily decreasing DNAPL thicknesses followed by increasing and then sporadic DNAPL thickness levels in MW-78A, these fluctuations are not likely from migrating NAPL from the vadose zone but rather from mobile NAPL within the A-TZ.

For areas within the HWPW Site, elevated TarGOST® signals from the NAPL Assessment indicating the potential presence of NAPL were observed in the vadose zone along the northern perimeter of the Site (CPT-12-20, CPT-16-20, CPT-17-20, and CPT-21-20) (Golder, 2020a). The highest TarGOST® signal in the vadose zone along the northern perimeter was observed at CPT-16-20 at 10 feet bgs (see Figure 2 in the Interim NAPL Report ((Golder, 2020a)). Four A-TZ monitoring wells (MW-17, MW-18A, MW-57A, and MW-58A) located in this area near or along the northern perimeter have either had no DNAPL measured (MW-18A and MW-58A) or no DNAPL measured since February 2009 and January 2015 for MW-17 and MW-57A, respectively. These data indicate that if there were migrating NAPL in the vadose zone into the underlying A-TZ in this area, the DNAPL thicknesses would likely show on-going increases in NAPL thickness in the A-TZ wells. As such, it is concluded that Site Condition 1 (migrating NAPL in the vadose zone) is not present in this area of the Site.

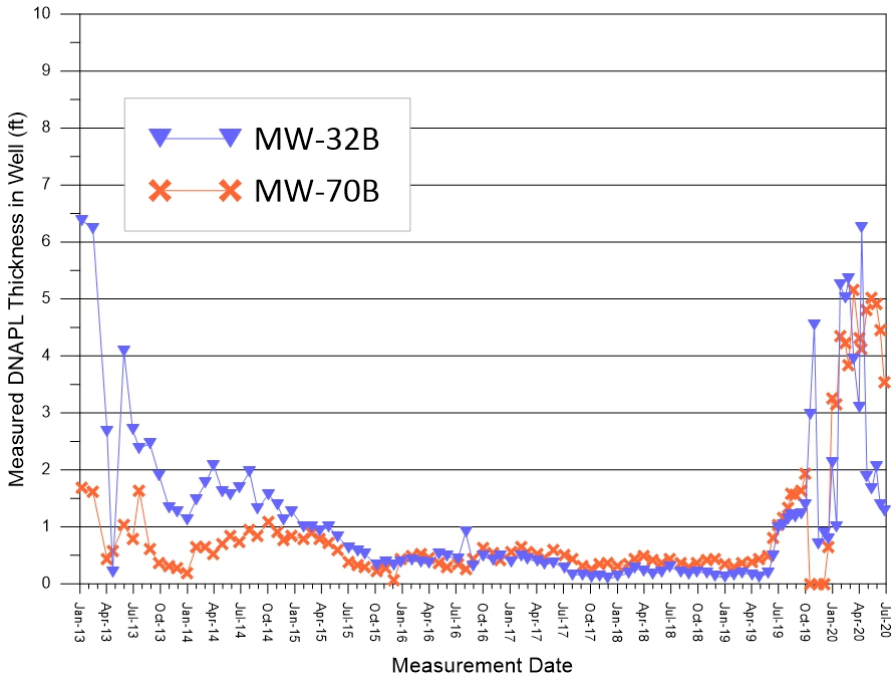
Site Condition 2 - NAPL in saturated zone, not in PMZ (off-site) / NAPL Zone Migration in the Vadose Zone or Saturated Zone

Based on the revised Response Action Plan (RAP) (Golder, August 2020e), a plume management zone (PMZ) is proposed to cover the areas where on-site and off-site (within the City of Houston ROW) groundwater Protective Concentration Level Exceedance (PCLE) Zones are present. However, the following information is for the areas off-site where a PMZ has not been established.

As detailed in the Interim NAPL Report (Golder, 2020a), there is no evidence of NAPL present off-site to the north of Liberty Road and north of the Site within the A-CZ (vadose zone) or the A-TZ. There are 12 A-TZ monitoring wells installed off-site to the north of the Site, where NAPL has not been detected in the A-TZ. TarGOST® data from off-site borings to the north suggest that the shallowest indication of NAPL in this area is in the B-TZ/B-CZ, generally at a depth of 24 feet or more below ground surface (bgs). In addition, DNAPL as indicted by the elevated TarGOST® data, as well as observations from monitoring well soil borings and previously collected ROST™ data,

has been typically associated with the thin carbonate seams and sand-lined fractures within the B-CZ clay. Hydraulic testing conducted in 2009 through 2012 indicated that wells completed in the B-CZ unit have an average hydraulic conductivity of 2 x 10-7 cm/sec (PBW, 2015), indicating that the B-CZ should be considered saturated soils instead of a GWBU. The extent of NAPL in the B-TZ/B-CZ in this area is limited to an approximate distance of 500 feet or less to the north from the Site boundary.

Off-site B-CZ wells that have had DNAPL present in them include MW-32B and MW-70B located approximately 100 feet north of the Site. Monthly DNAPL recovery activities were initiated at these two wells in 2013. From late 2014 through June 2019, monthly DNAPL thicknesses had decreased and were relatively stable with slight fluctuations over that time. Beginning in June 2019, the DNAPL thickness in both MW-32B and MW-70B started to show an increase. During the 2nd Quarter 2020, in-well DNAPL thicknesses in MW-32B increased to 6.26 feet in early April 2020, which was the thickest measurement recorded in the well since the beginning of DNAPL recovery efforts in February 2013 (DNAPL Recovery Activities Quarterly Report – 2nd Quarter 2020, (Golder, 2020d)). DNAPL thicknesses since then have fluctuated between 1.28 feet and 2.05 feet from late-April to late-June 2020. DNAPL thicknesses in MW-70B in early 2020 increased to levels fluctuating between 3.14 feet and 5.15 feet thick, which are some of the thickest measurements observed in the well. Since mid-May 2020, DNAPL thickness has decreased from 5.02 feet to 3.53 feet at the end of June 2020, as shown on the following Graph No. 1. However, similar to the previous discussion on MW-78A, both MW-32B and MW-70B penetrate into and are completed within the observed NAPL zone as described in their respective boring logs (MW-32B – well screened from 26 ft to 36 ft bgs,"small amount of NAPL seeping out of sand-lined fractures 34-34.8 feet, strong odor"; MW-70B – well screened from 25 to 35 feet bgs, "thin carbonate seams at 30.5, 32.2, and 33.2, strong odor, no visible NAPL" [however, DNAPL accumulated in well within about a month following initial well development indicating the presence of NAPL]). As a result, the NAPL fluctuations are not indicative of migrating NAPL, but rather of mobile NAPL within the complex network of fractures and thin carbonate seems of the B-CZ.



Graph No. 1 – DNAPL Thickness over time, MW-32B and MW-70B

At the distal end of the observed NAPL zone in soil borings off-site, monitoring wells MW-68A, MW-68B, and MW-68C are located about 300 feet north of the HWPW site at Clementine and Wylie Streets. During the drilling in June 2010 for monitoring well MW-68C completed in the C-TZ, the field geologist noted an interval of sand to gravel-size calcareous nodules within the B-CZ clay around 35.9 to 36.7 feet below ground surface (bgs) with a petroleum hydrocarbon sheen and NAPL. There were also elevated PID readings in that same interval (~33-37 ft bgs), as shown on the boring log for MW-68C (see RAP Version 0, PBW, 2014). Monitoring well MW-68B was installed nearby MW-68C on December 15, 2011 using sonic drilling techniques to a depth of 38 feet bgs. During the drilling of the borehole for the well, the field geologist noted that there was “sand lined fractures common from 33.5-35 feet, sand is stained with NAPL from 34.5 to 35 feet.” See Photograph No. 3 below showing the 34.5-35-foot interval. Monitoring well MW-68B was screened from 28 feet to 38 feet bgs (see RAP Version 0, PBW, 2014).

Photograph No. 3 – Soil core from installation of MW-68B, showing depth interval 34.5 to 35 feet bgs, note sand-lined fractures (gray color) within clay (reddish-brown). (December 15, 2011).

No DNAPL had been measured in monitoring well MW-68B from the date of installation in 2012 through January 2020; however, some of the highest benzene concentrations detected in groundwater samples from the Site have been detected in this well, especially shortly after the well was installed in 2012, as summarized in the following Table 1. In addition, naphthalene concentrations detected in this well were well above 10% of naphthalene solubility and approached the solubility limit (31 mg/L – TCEQ TRRP Chemical/Physical Properties Table, November 2019) in 2013, further indicating the presence of NAPL in the B-CZ at this location.

Table 1 - Benzene and Naphthalene Concentrations – MW-68B

Well	Sample Date	Benzene (mg/L)	Naphthalene (mg/L)
Residential Assessment Level		5.00E-03	4.90E-01
MW-68B	2/16/2012	2.7	14
MW-68B	7/16/2012	2.4	26
MW-68B	2/6/2013	2.4	12
MW-68B	8/8/2013	2.9	31
MW-68B	1/22/2014	1.5	17
MW-68B	07/24/2014	2.18	10.5
MW-68B	1/29/2018	2.1	9.2
MW-68B	3/21/2018	1.4	12
MW-68B	6/6/2018	1.9	23
MW-68B	1/15/2019	2	5

Well	Sample Date	Benzene (mg/L)	Naphthalene (mg/L)
Residential Assessment Level		5.00E-03	4.90E-01
MW-68B	7/18/2019	1.4	9.6
MW-68B	01/23/2020	1.4	12

Note: Naphthalene solubility is 31 mg/L. Concentrations greater than 10% solubility (>3.1 mg/L) can be an indicator of NAPL

DNAPL was first measured within MW-68B on January 15, 2020 with an in-well thickness of 3.04 feet. DNAPL was recovered from the well on January 15, 2020 and the well has since been incorporated into the DNAPL recovery well network. From January 15 through June 25, 2020, the in-well thicknesses have decreased to 0.86 feet and approximately 2.1 gallons of DNAPL have been recovered. As detailed in the Interim NAPL Report (Golder, 2020a), TarGOST® signals at CPT-03-20 located approximately 25 feet from MW-68B were between ~5 and 9%RE over the depth interval from approximately 29 to 32 feet bgs. The relatively low TarGOST® signals at CPT-03-20 are anomalous when compared to other CPT/TarGOST® locations that were advanced near wells with DNAPL present. This anomaly may be due to isolated pockets of DNAPL within the complex network of thin calcareous nodule seams and fractures in the clay, as noted on the boring log for MW-68B. Even though DNAPL has now been detected in monitoring well MW-68B, the presence of DNAPL was observed within the B-CZ approximately 10 years ago suggesting that the recent observations of NAPL in the well are the result of slow accumulation of mobile NAPL from the surrounding soil (as noted in the soil boring log) into the well rather than an indication of a migrating NAPL zone..

Based on the above discussion, it is concluded that Site Condition 2 for migrating NAPL present in the saturated zone (not within the PMZ) is not present since NAPL fluctuations in the off-site wells are indictive of a mobile NAPL zone and not of a migrating NAPL zone.

Site Condition 3 - NAPL in Saturated Zone in PMZ

As detailed in the Revised RAP (Golder, 2020f), the areas where DNAPL has been observed within the Site and the City of Houston ROW will be included within the PMZ. A discussion of the site conditions for the NAPL in the saturated zone in the PMZ is provided below.

A-TZ:

The majority of the elevated ROST™ readings and TarGOST® signals in the A-TZ were located in and around the former HWPW process areas (SWMUs 4, 5, and 8), and extended south into the northern portions of the Englewood IM Yard (see EVS Technical Memorandum (Golder, 2020x) and Interim NAPL Report, (Golder, 2020x)). The elevated ROST™ readings were generally consistent with intervals where NAPL was visually observed in soil borings for A-TZ wells, except for in the Englewood Intermodal Yard area. NAPL was noted on the boring logs for A-TZ wells MW-78A and MW-79A installed in the Englewood Intermodal Yard, but elevated ROST readings were not observed. The TarGOST® signals in the Englewood IM Yard better represent the areas where NAPL had been noted in soil borings. This may indicate that the NAPL in the Englewood IM Yard may be more degraded, and as a result was less likely to be detected with the ROST™ tool. The highest TarGOST® signals in the A-TZ anywhere at the Site were generally detected in the northern section of the Englewood IM Yard (see Figure 3, Interim NAPL Report, Golder 2020a).

Even though the TarGOST® signals indicate NAPL present in the A-TZ, accumulation of NAPL into wells completed across the A-TZ in these areas where elevated TarGOST® signals are found is not a given. As an example, during installation of monitoring wells in the A-TZ, DNAPL (free-phase or sheen) was observed in soil borings within the A-TZ GWBU in six of the monitoring wells (MW-17, MW-18A, MW-57A, MW-58A, MW-78A, and MW-79A) generally located in the northeast portion of the Site and extending south into the Englewood Intermodal Yard. Of these wells, currently there is only one well, MW-78A, completed in the A-TZ, that has DNAPL routinely present. DNAPL had historically been observed in MW-57A but has reduced to not detected since 2015 following approximately two years of monthly recovery event. The other four wells where DNAPL was noted in the boring logs have not had DNAPL accumulate in the wells.

As another example, monitoring well MW-79A was installed in 2014 and is located in the Englewood IM Yard within the area of the highest TarGOST® signals found anywhere at the Site in the A-TZ. The field supervisor who described the soil core during the installation of this well observed that the A-TZ sand unit was “saturated with creosote from 22.0’ to 27.0’.” Photographs of this interval of the A-TZ show the saturated portion of the sand (see Photograph No. 4 below). However, from 2014 through July 2020, no DNAPL had accumulated or been measured in MW-79A.

Photograph No. 4 – View of soil core from MW-79A, core on the left is from 20 to 30 ft bgs, note creosote saturation in bottom half of sand (22-27ft) (May 7, 2014).

This phenomenon has been observed at numerous wells within the source areas at the Site (MW-30A (plugged), MW-31A (plugged), MW-52A (plugged), MW-55A (plugged), TW-59A (drilled to be a recovery well) (plugged)) where significant NAPL was noted in the boring log when the wells were installed, but no NAPL ever accumulated in the wells. In terms of the TRRP-32 guidance, these are areas where NAPL is considered to be not mobile because it does not flow into a well. Under these conditions, the areas of the A-TZ where the highest ROST™ and TarGOST® signals are located may be indicative of residual saturation of DNAPL or stagnant DNAPL in the sand matrix that is not mobile and thus the NAPL zone is not migrating, especially given the high viscosity of the DNAPL

material. Even though the DNAPL is not mobile, the residual NAPL, trapped within the soil pore spaces, can continue to serve as a source mass for dissolved-phase COCs into the A-TZ.

B-CZ/B-TZ:

The TarGOST® signals indicating potential NAPL were observed in the B-CZ/B-TZ along the northern perimeter of the Site. Elevated TarGOST® signals in the B-CZ/B-TZ were detected in the upper portions of the B-CZ immediately underlying the A-TZ, and throughout the B-CZ generally between 24 and 34 feet bgs, between 34 and 42 feet bgs, and as deep as between 50 and 56 feet bgs. DNAPL had been noted in the B-CZ/B-TZ on the boring logs for wells MW-17C, MW-23C, MW-57B, and MW-72B (Interim NAPL Report, Golder, 2020a). However, for the two wells listed above completed in the B-CZ, MW-57B and MW-72B, no measurable DNAPL has been detected in MW-57B since 2016 and DNAPL has not been observed in MW-72B since installation in 2011. This data indicates that on-going NAPL zone migration in the B-CZ is limited in this area.

The highest TarGOST® signals encountered at the Site during the 2019-2020 NAPL assessment were detected in B-CZ/B-TZ within the Englewood IM Yard. TarGOST® signals indicating the presence of NAPL were observed from the base of the A-TZ to approximately 40 feet bgs into the B-CZ. The highest TarGOST® signals within that interval were detected at CPT-32-19. Monitoring well MW-74B is located within 20 feet of CPT-32-19 and NAPL was noted on the boring log of MW-74B at 23.5 to 24.3 feet bgs, 25.8 to 26.1 feet bgs, and 29 to 35 feet bgs along fractures in a sandy clay. MW-74B is screened from 25.5 to 36.5 feet bgs. However, similar to some of the A-TZ wells previously discussed, no DNAPL has accumulated in this well since installation in 2011. This indicates that there are areas with significant sources of residual DNAPL trapped in the cohesive units where the DNAPL capillary pressure is not high enough to exceed the groundwater pore entry pressure and therefore is neither migrating nor mobile.

In the Englewood IM Yard along the eastern perimeter, TarGOST® signals at CPT-46-19 indicated that the presence of DNAPL was observed from the base of the A-TZ to approximately 38 feet bgs into the B-CZ. Monitoring well MW-49B is located within 30 feet of CPT-46-19 and screened from 30 to 35 feet bgs. The boring log for this well when installed in January 2009 describes the B-CZ as having “silt lens with NAPL at 30.6-31.0” and “carbonate gravel with NAPL at 32.3-32.4” feet bgs. Well MW-49B penetrates the interval where NAPL was observed in the boring log. DNAPL was measured in MW-49B in January and July 2013 (1.19 feet and 0.84 feet, respectively), was not observed in the well from 2014 through 2019, and then measured in July 2019 (0.24 feet). During the January 2020 semi-annual monitoring event, the measured in-well thickness of DNAPL in MW-49B was approximately 14.77 feet. Well MW-49B was added to the DNAPL recovery well network and recovery efforts began in mid-January 2020. DNAPL thickness decreased to 5.47 feet thick by the end of the 1st Quarter 2020 as a result of the bi-weekly recovery efforts. During the second quarter of 2020, DNAPL thicknesses fluctuated between 2.81 feet and 3.82 feet, and approximately 1.6 gallons of DNAPL were removed (DNAPL 2nd Qtr. 2020 Report, Golder, 2020d). Similar to the previous discussion of wells where NAPL thickness fluctuations have been observed, the changes in NAPL thickness in MW-49B are likely a result of mobile NAPL within the complex network of fractures and thin carbonate seems of the B-CZ

As discussed in the Interim NAPL Report (Golder, 2020a), TarGOST® signals in the B-CZ and B-TZ did not indicate a significant secondary source of NAPL on the west side of the Site. In addition, of the 13 CPT/ROST™ locations previously advanced along the western perimeter of the Site, only one location (CPT-19R-01) had a ROST™ response that indicated the presence of NAPL in the B-TZ/B-CZ (PBW, 2014). However, DNAPL has

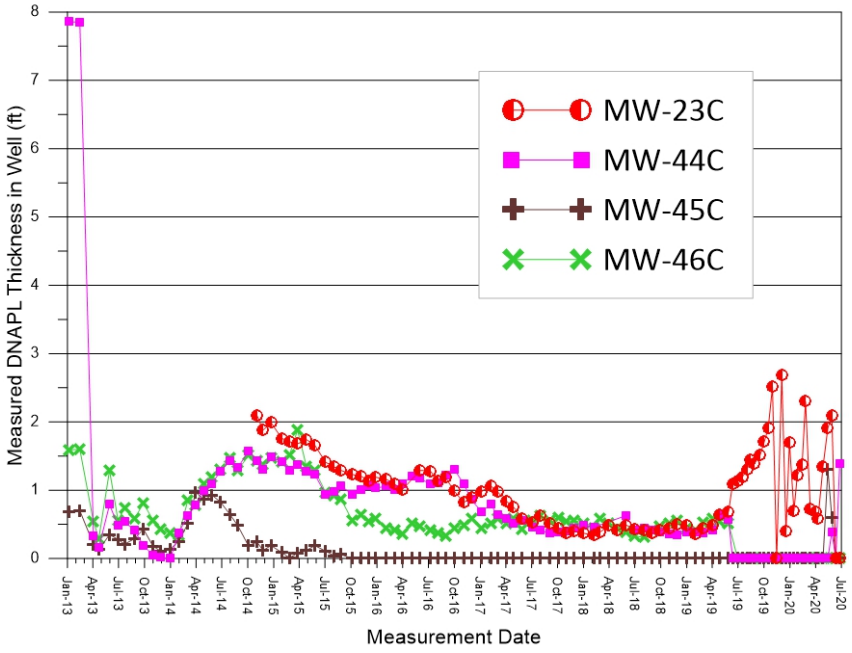
been observed in two monitoring wells MW-12B and MW-41B with some of the thickest in-well measurements of DNAPL observed at the Site (MW-12B with >20 feet thick and MW-41B with >6 feet thick in October 2019). These data, coupled with COC concentrations below applicable PCLs (Golder, 2020) and the absence of measurable DNAPL in the six other B-CZ/B-TZ monitoring wells in this vicinity (MW-39B, MW-38B, MW-62B, P-11, and MW-42B), suggest a very localized NAPL zone in the B-TZ that is not migrating within or from this area.

C-TZ

None of the CPT/TarGOST® borings were able to be advanced through the C-TZ (Golder, 2020a). Of the 100 CPT/ROST borings previously conducted at the Site, only 13 CPT/ROST borings were advanced to the top of the C-TZ. The elevated ROST responses for the borings that could be advanced into the C-TZ were relatively lower than the shallower GWBUs and were generally centered near SWMU 5 (Original Process Area). There are five C-TZ monitoring wells that have had DNAPL measured in them: on-site MW-23C and off-site wells (within the City of Houston ROW and proposed off-site PMZ) MW-34C, MW-44C, MW-45C, and MW-46C. Monitoring well MW-34C was plugged and abandoned and replaced with MW-34CR in 2014. Since its installation, no NAPL has been observed in MW-34CR. Monthly DNAPL recovery activities were initiated at the C-TZ wells in 2013.

From late 2014 through June 2019, monthly DNAPL thicknesses in the C-TZ wells had decreased and were relatively stable around 0.5 feet thick with slight fluctuations over that time. The DNAPL thickness in MW-45C decreased to not measurable beginning in October 2015. Starting in June 2019, DNAPL thickness in MW-23C started to show an increase to greater than 2 feet (historically, DNAPL had been measured greater than 2 feet in 2010 and 2011). Recent DNAPL in-well thicknesses in MW-23C have since fluctuated between 0.58 and 2.68 feet. DNAPL was not detected in MW-23C in mid-June and a trace amount (0.01 feet-thick) was noted in late-June 2020.

For off-site wells MW-44C, MW-45C, and MW-46C, DNAPL thicknesses decreased to not measurable beginning in June 2019 and remained that way until May 2020. In May 2020, DNAPL in MW-44C was measured at 0.39 feet thick and DNAPL in MW-45C was measured at 1.3 feet and 0.6 feet thick. However, DNAPL thicknesses measured in MW-44C may not be accurate given the well had silted up and requires redevelopment (planned for July 2020). DNAPL was not detected in MW-45C in June 2020. For MW-46C, no measurable DNAPL has been observed since June 2019 (trace DNAPL noted in mid-June 2019). (DNAPL Recovery Activities Quarterly Report – 2nd Quarter 2020, (Golder, 2020d)). A graph presenting the DNAPL thicknesses in the C-TZ wells is provided below on Graph No. 2.



Graph No. 2 – DNAPL Thickness over time, C-TZ wells

Similar to the previous discussion of wells where NAPL thickness fluctuations have been observed, the changes in NAPL thickness in these C-TZ wells are likely a result of mobile NAPL and not indicative of migrating NAPL. In summary, the following areas may indicate migrating NAPL zone:

- NAPL in Vadose Zone < 15 ft below ground surface/ NAPL discharge to ground surface
  - Migrating NAPL surfacing in the Englewood IM Yard

NAPL Trigger Present? Yes (within the vadose zone in the Englewood IM Yard).

Response Required? Yes (see Step 3 (Section 1.3))

1.2.3 Mobile NAPL Zone Trigger

Trigger Description: The mobile NAPL zone trigger applies in the vadose zone when the concentration of a NAPL-forming compound exceeds the unsaturated zone Theoretical Residual Soil Saturation Limit ($Soil_{Res}$). NAPL also is explicitly mobile when it is observed to move in the vadose zone. For example, NAPL flow into a monitoring well within the NAPL zone is considered to imply mobility.

Site Conditions: Using the information presented in the Interim NAPL Report (Golder, 2020a), the total TPH TX1005 concentrations in soil samples collected within the vadose zone within the Englewood IM Yard were compared to the TCEQ Tier 1 $Soil_{Res}$ PCL (10,000 mg/kg) as a possible further preliminary indication of the potential presence of NAPL. Soil borings with at least one soil sample containing TPH TX1005 concentrations above the Tier 1 $Soil_{Res}$ were detected in the general area of the former lagoons and within the area of the former ASTs within the Englewood IM Yard and typically found in the top six feet bgs. At locations where TPH concentrations were detected greater than 10,000 mg/kg, either NAPL was visually observed or strong hydrocarbon

odors were noted on the soil boring logs. Soil samples were also collected along the northern perimeter of the HWPW portion of the Site; however, the TPH concentrations were less than the Tier 1 SoilRes in those areas.

As previous discussed, tar-like NAPL has been observed seeping to the ground surface within the Englewood IM Yard, generally in the areas where the former lagoon and ASTs were located prior to the Englewood IM Yard being built in the 1950s. Based on the test pits and installation of the NAPL Collection System, the shallow NAPL is typically found within 3 feet of ground surface lying at the base of the fill material on top of the shallow clay (A-CZ). The source of NAPL in these seep areas is thought to be from creosote residuals stored in the former lagoons and from heavy-end fuel oil that may have been released in the former AST area, with both of these NAPLs being possibly mixed. These NAPL surface seeps appear to be pressure driven as a result of the overburden pressures from the concrete pavement and weight of container trailers.

The storm water drainage system at the Englewood IM Yard appears to have been constructed within the former lagoon and AST areas based on historical aerial photographs. It is uncertain if the wastes that may have been stored in the lagoons and releases from the ASTs were remediated prior to construction of the Englewood IM Yard. Based on test pits that were constructed within the Englewood IM Yard in 2018 and 2020 to evaluate the migrating NAPL to ground surface and results of the TPH assessment (Interim NAPL and TPH-NAPL Assessment Report, Golder, 2020), waste materials were encountered in the test pits at depths similar to the underground storm water drainage pipes.

Based on these observations, the following site conditions are present:

- Mobile NAPL Threat to Subsurface Utility or Structure
  - As demonstrated with the test pits conducted in the Englewood IM Yard in October 2018, NAPL can flow into shallow excavations (4 feet deep). In the event subsurface utilities are installed in this area, mobile NAPL could then migrate into the utility. Stormwater drains and conveyance pipes are located in the vicinity on the NAPL in the vadose zone and former lagoons and AST Area.
- Mobile NAPL in Vadose Zone at depth <=15 ft; in Secured/Restricted Facility
  - The Englewood IM Yard is a currently operating, secured and restricted facility. The Englewood IM Yard has a security fence surrounding most of the property with limited access through security entrances/exits. As required in the Revised RAP, warning signs are posted in the area restricting excavation activities to keep from encountering contaminated material. As a result, risk of contact during construction and excavation activities are safeguarded by controlled property access and implementing soil management plans for proposed construction activities as required under the proposed institutional control (Revised RAP, Golder, 2020f).
- Mobile NAPL Overlies Groundwater NAPL Zone in PMZ
  - The area of mobile NAPL in the vadose zone within the Englewood IM Yard overlies areas of existing NAPL impacts in the GWBUs and within the groundwater PCLE zones. With the proposed on-site PMZ, the mobile NAPL area will be within the PMZ boundary.
- Mobile NAPL in Contact with Groundwater.
  - Further discussed under the NAPL in Contact with Groundwater trigger below.

NAPL Trigger Present? Yes.

Response Required? Yes (see Step 3 below)

1.2.4 NAPL Aesthetic Impact or Nuisance Condition Trigger

Trigger Description: The NAPL aesthetic impact or nuisance condition trigger applies when NAPL causes a condition that results in an environmental resource being made unfit for use. This trigger applies if the NAPL presents objectionable characteristics (e.g., taste and odor) in the affected environmental medium or via a cross-media exposure pathway.

Site Conditions: No water wells have been identified in the area. NAPL is in contact with Class 2 groundwater, which is detailed in the following NAPL Trigger. As discussed under the migrating and mobile NAPL discussion, tar-like NAPL has been observed in the top ten feet below ground surface where NAPL surface seeps have been observed at the Englewood IM Yard creating a nuisance condition. The tar-like NAPL was observed in the test pits less than 3 feet bgs where the NAPL would slowly flow (paste-like) into the test pits.

NAPL Trigger Present? Yes.

Response Required? Yes (see response required for Mobile NAPL Trigger).

1.2.5 NAPL Contact with Groundwater Trigger

Trigger Description: The NAPL contact with groundwater trigger applies when NAPL is observed or inferred to be in direct contact with a groundwater-bearing unit (GWBU) or its capillary fringe.

Site Conditions: Data from the monitoring wells, CPT/ROST, and CPT/TarGOST borings indicate that DNAPL and possibly LNAPL are in contact with the Class 2 (A-TZ, B-TZ, and C-TZ) and Class 3 (B-CZ) groundwater bearing units and the capillary fringe at the Site. As previously discussed, NAPL has been observed in the GWBUs on-site (A-TZ, B-TZ/B-CZ, and C-TZ) and off-site (C-TZ) in the area of the proposed PMZs, and off-site (B-CZ) in the areas where a PMZ is not planned at the current time. The presence of NAPL has been confirmed through NAPL observations and recovery activities at some of the monitoring wells. UPRR has been conducting DNAPL recovery activities from wells completed in both Class 2 (A-TZ, B-TZ, and C-TZ) and Class 3 (B-CZ) GWBUs at the Site since 2013. Based on the observations from NAPL gauging and recovery activities (Golder, 2020d), the following site conditions are present for this NAPL Trigger:

- NAPL in Contact w/ Class 2 / Class 3 Groundwater, Not in PMZ
  - As detailed in the Interim NAPL Report (Golder, 2020a), there is no evidence of NAPL present off-site to the north of Liberty Road and north of the Site within the A-TZ outside of the proposed A-TZ PMZ. TarGOST® data from off-site borings to the north indicate the presence of NAPL in the B-TZ/B-CZ that is limited to an approximate distance of 500 feet or less from the Site boundary. Most of the area where the TarGOST® data indicated potential NAPL in the B-CZ is within the area identified as a Class 3 groundwater resource (hydraulic conductivity testing indicates it's a saturated soil per TRRP-8 Guidance). B-CZ monitoring wells MW-32B and MW-70B located off-site and within the area designated as Class 3 groundwater classification have had DNAPL detected in the wells, confirming this site condition.
- NAPL in Contact w/ Class 2 / Class 3 Groundwater, in PMZ

- A-TZ Wells: Two monitoring wells completed in the A-TZ have had measurable DNAPL detected: MW-57A and MW-78A.
- B-TZ/B-CZ: On-site recovery wells MW-12B and MW-41B on the west side, and MW-49B, MW-57B, and MW-75B completed in either the B-TZ or B-CZ have had measurable DNAPL in the wells.
- C-TZ Wells: Wells MW-23C, MW-44C, MW-45C, and MW-46C have had recent detections of NAPL in the C-TZ.

NAPL Trigger Present? Yes.

Response Required? Yes (see Step 3 in Section 1.3)

1.2.6 NAPL Contact with Surface Water Trigger

Trigger Description: The NAPL contact with surface water trigger applies to the release of NAPL to surface water.

Evaluation: There have been no observed releases of NAPL to surface water at or around the Site.

NAPL Trigger Present? No.

Response Required? No.

1.2.7 NAPL Contact with Sediment Trigger

Trigger Description: The NAPL contact with sediment trigger applies when NAPL impacts surface water sediments.

Evaluation: NAPL is not in contact with surface water sediment.

Trigger Present? No.

Response Required? No.

The following is the NAPL Response Trigger and Site Condition Matrix (Table 11 from TRRP-32 Guidance) based on the discussed site conditions.

NAPL Response Trigger and Site Condition Matrix (Table 11 from RG-366/TRRP-32)

NAPL Trigger	Site Condition
❑ **No NAPL Triggers**	❑ **No NAPL triggers have been identified in any assessment zones (vadose, capillary fringe and saturated) nor in surface water or sediment**
❑ **NAPL Generating Vapors**	❑ **NAPL generating explosive vapor accumulations** ❑ **NAPL generating vapors that exceed inhalation PCLs at applicable inhalation POE**
☒ **Migrating NAPL Zone**	☐ **NAPL in vadose zone ≤15 ft below ground surface** ☐ **NAPL in saturated zone, not in PMZ*** ☐ **NAPL zone migration in the vadose or saturated zones** ☒ **NAPL discharge to ground surface, surface water or sediment** ☐ **NAPL in saturated zone in a PMZ***
☒ **Mobile NAPL Zone**	☒ **NAPL threat to subsurface utility or structure** *NAPL proximal to subsurface utility or structure with potential risk of entry* (*not applicable to product/waste transfer lines at refineries, chemical plants*, etc.) ❑ **NAPL in vadose or saturated zone at depth ≤ 15 feet; not in *secured/ restricted facility*** *Risk of contact in uncontrolled construction/excavation* (e.g., *public utility corridors: water, wastewater, telephones*, etc.). ☒ **NAPL in vadose or saturated zone at depth ≤ 15 feet; in *secured/restricted facility*** *Risk of contact during construction/excavation safeguarded by controlled property access* (e.g., *refineries, chemical plants, active military installations, airports*, etc.). ❑ **NAPL overlies unaffected groundwater** *Mobile NAPL in vadose zone not yet contacting saturated zone* ☒ **NAPL overlies affected groundwater in PMZ*** *NAPL in vadose zone above saturated zone in existing or planned PMZ* ☒ **NAPL in contact with groundwater** *NAPL subject to entering installed well or to migration in response to changes of groundwater surface gradient due to pumping or other activities.*
☒ **NAPL Aesthetic Impact or Nuisance Condition**	☒ **Aesthetic impact or nuisance condition at ground surface, surface water, vadose zone, or groundwater** *Always includes NAPL contact with Class 1 groundwater and Class 2 groundwater*
☒ **NAPL Contact with Groundwater**	❑ **NAPL contact w/ Class 1 groundwater** ☒ **NAPL contact w/ Class 2 / Class 3 groundwater, not in PMZ*** ☒ **NAPL contact w/ Class 2 / Class 3 groundwater, in PMZ***
❑ **NAPL Contact with Surface Water**	❑ **NAPL floating on surface water or entrained in surface water body**
❑ **NAPL Contact with Sediment**	❑ **NAPL in or on banks or bed of surface water body**

PMZ – *plume management zone* **POE** – *point of exposure*

***** includes PMZs that have been approved by the TCEQ, PMZ-eligible sites where a PMZ will be proposed to the TCEQ in a RAP, as well as a PMZ via a §350.33(f)(3) Technical Impracticability demonstration.

1.3 Determine NAPL Response Objectives and Endpoints (Step 3)

Based on the above evaluation, four NAPL response triggers were identified:

- Migrating NAPL Zone
- Mobile NAPL Zone
- NAPL Aesthetic Impact or Nuisance Condition
- NAPL in Contact with Groundwater

The NAPL response objectives and endpoints for each of these triggers are discussed below. Table 23 from TRRP-32 Guidance is provided at the end of this section to identify the preliminary NAPL response objective and preliminary endpoints for the identified triggers.

1.3.1 Migrating NAPL Zone Trigger

As detailed in Section 1.2.2, the following site condition for the on-site areas "NAPL discharge to ground surface."

NAPL Response Objective

For the on-site condition under Migrating NAPL Zone, the NAPL response objective according to the TRRP-32 Guidance is to "abate NAPL zone migration." This NAPL response objective will be carried through the on-going evaluation of feasible alternatives for the Englewood IM Yard as discussed in the Revised RAP (August 2020).

NAPL Response Endpoints – On-Site

NAPL discharge to ground surface

As detailed in Section 1.2.2, this site condition is based on tar-like NAPL observed in the top 5 feet and the NAPL surface seeps noted in the Englewood IM Yard. These site conditions fall under the "Recovery Only" recovery endpoint, which states the following NAPL response endpoint as shown on TRRP-32 Table 23:

- NAPL recovered sufficient to eliminate NAPL discharge (NAPL discharge to ground surface).

Based on this recovery endpoint, UPRR has implementing two responses in the Englewood IM Yard to address NAPL Response Endpoint:

1) Installation of the NAPL Collection System as an interim response (detailed in the RACR dated March 2019 (Golder, 2019)); and
2) Conducting weekly site inspections of the tar-like NAPL seep areas and recovering any NAPL that has seeped to the ground surface.

UPRR is continuing to evaluate the areas where NAPL seeps have been observed through conducting test pits (July 2020) in those areas. During test pit construction, NAPL mass is removed from the area of where the NAPL seeps have been observed. Details on continuing responses to address this site condition are provided in the Revised RAP (August 2020).

Monitoring to verify long-term NAPL zone stability will be incorporated into the Remedy Standard B post-response action care requirements for the PMZ until the NAPL recovery can be demonstrated to have achieved residual

saturation concentrations and eliminated NAPL discharge. NAPL properties, distribution or capillary barriers that contribute to NAPL zone stability will be evaluated to facilitate the demonstration.

1.3.2 Mobile NAPL Zone Trigger

The mobile NAPL zone trigger leads to site-specific NAPL response objectives for the vadose zone. As detailed in Section 1.2.3, four site conditions apply under this trigger, all of which are considered within the UPRR property boundary:

- Mobile NAPL threat to subsurface utility or structure
- Mobile NAPL in vadose zone at depth ≤ 15 ft; in secured/restricted facility
- Mobile NAPL overlies groundwater NAPL zone in PMZ
- Mobile NAPL in contact with groundwater

NAPL Response Objectives

As indicated in Table 23 of the TRRP-32 guidance document, the NAPL Response Objectives for the different mobile NAPL zone triggers at the Site include:

Site Condition		NAPL Response Objective
Mobile NAPL threat to subsurface utility or structure	→	Prevent mobile NAPL impact to shallow vadose zone receptors
Mobile NAPL in vadose zone at depth ≤ 15 ft; in secured/ restricted facility	→	Prevent potential exposure to mobile NAPL
Mobile NAPL overlies groundwater NAPL zone in PMZ	→	Prevent NAPL migration to groundwater
Mobile NAPL in contact with groundwater	→	Prevent disturbance of mobile NAPL that could induce migration

NAPL Response Endpoints

Details for each NAPL Response Endpoint Types for the various response objectives are provided below.

Prevent mobile NAPL impact to shallow vadose zone receptors

For areas where mobile NAPL could potentially be a threat to a subsurface utility or structures, TRRP-32 Guidance allows only "**Recovery Only - NAPL recovered to residual saturation**" as the NAPL Response Endpoint unless a TI waiver has been approved. If a TI waiver has been approved, then a Control Endpoint is allowed by preventing access to NAPL zone using a physical control.

Recovery of the tar-like NAPL has been on-going with the installation of the NAPL Collection System and weekly site inspections and NAPL recovery of surface seeps. Additional investigations will be conducted to evaluate the storm water drainage system to assess if any of the shallow NAPL observed in the vadose zone is located near the drainage pipes. Details of the additional investigation activities will be presented in subsequent reports.

Prevent potential exposure to mobile NAPL

As discussed in Section 1.2, the Englewood IM Yard, which is an operating facility, as well as the HWPW portion of the Site are within a secured and restricted facility. The HWPW and Englewood IM Yard have a security fence surrounding most of the property with limited access into the Englewood IM Yard through security entrances/exits. Therefore, the TCEQ TRRP Guidance provides two NAPL recovery endpoints under this site condition:

1) Recovery Endpoint – **NAPL recovered to residual saturation**; and

2) Control Endpoint – **Exposure to NAPL zone prevented via institutional control**.

The preferred response endpoint is through the Control Endpoint. The existing concrete pavement within the Englewood IM Yard was proposed in the RAP (PBW, 2014) as a Remedy Standard B Control or cap to prevent on-site commercial/industrial receptors from being exposed to the shallow soils containing COCs at concentrations greater than the critical PCLs and the mobile NAPL in the top 4 feet bgs.

As required in the RAP, warning signs are posted in the area warning of excavation and encountering contaminated material (see Photograph No. 4 below) and an institutional control will also be implemented. As a result, risk of contact during construction and excavation activities are safeguarded by controlled property access and implementing soil management plans for proposed construction activities. The institutional control in the form of a deed restriction as detailed in the RAP follows the TRRP Guidance that discusses provisions that warns of the potential mobile NAPL, prohibits groundwater pumping in the affected GWBU and drilling/excavation into or through the mobile NAPL zone, and requires any NAPL removed during future subsurface activities to be properly handled and managed in accordance with all applicable state and federal rules and regulations (control endpoint).

Photograph No. 4 – View of warning sign restricting digging/excavation activities in the Englewood IM Yard (July 17, 2017).

Prevent NAPL migration to groundwater

During the operational history and after the former lagoon area and AST area were removed and converted into the Englewood IM Yard in the late 1950s, NAPL released to the environmental in these areas have migrated to the shallow GWBUs (A-TZ and B-CZ) as detailed in the previous discussion on the Migrating NAPL Trigger. The proposed response discussed under that trigger and related NAPL response objective (NAPL in contract with groundwater) is to establish the on-Site PMZ to include this area. However, as noted with the presence of thick, tar-like NAPL in the shallow vadose zone within the Englewood IM Yard, it appears that the natural geology (clay unit within the A-CZ) is preventing continued downward migration of the NAPL to the GWBUs. Given the physical characteristics of the material (i.e., high viscosity) and that the material has been in the subsurface for 70+ years, the NAPL that has been recently observed in the vadose zone (see Photograph No. 2) is not likely to further migrate vertically to the underlying GWBUs. However, the Interim NAPL Assessment (Golder, 2020d) indicated that there is evidence of areas of NAPL saturation from the shallow vadose zone vertically downward to the uppermost GWBU (A-TZ), demonstrating that NAPL migration to groundwater had historically already occurred and effectively obviating the response objective of preventing NAPL migration to groundwater.

Regardless, both recovery and control endpoints are available to address the NAPL response endpoints under this site condition:

1) Recovery Endpoint – **NAPL recovered to residual saturation**; and

3) Control Endpoint – **NAPL zone migration control by physical or natural methods and institutional controls**.

The current endpoint being used in the Englewood IM Yard for this response objective is the Control Endpoint – preventing the disturbance of mobile NAPL zone through physical and institutional controls by restricting excavation activities in the Englewood IM Yard. The surface and subsurface soil PCLE zone and NAPL zone in the Englewood IM Yard area are currently covered with a physical barrier (concrete pavement), preventing contact with NAPL for on-site workers, and provides a cover restricting infiltration. Even though NAPL has been detected in the vadose zone, the NAPL Assessment indicated NAPL saturation from the vadose zone through the uppermost GWBU (A-TZ) In addition to the physical control, the proposed institutional controls include the establishment of the on-Site PMZ, details that in the event construction activities are necessary within the Englewood IM Yard, a health and safety plan will be implemented to ensure worker protection from COCs and NAPL in the surface soils and a soil management plan will be developed if soils are excavated as part of the construction activities. On-going NAPL recovery activities from NAPL Collection System and on-site wells will continue to address the other NAPL triggers. The proposed institutional control in accordance with the TRRP Guidance is provided in the Revised RAP (Appendix 4) (Golder, 2020) for the Site.

Prevent disturbance of mobile NAPL that could induce migration

This response objective to address the site condition mobile NAPL in contact with groundwater is for mobile NAPL in the capillary zone or saturated zone that could be induced to migrate through groundwater pumping or creating artificial penetrations that allow vertical migration into underlying GWBUs. Both the recovery and control endpoints are available to address the NAPL Response Endpoints under this site condition:

1) Recovery Endpoint – **NAPL recovered to residual saturation**; and

4) Control Endpoint – **Disturbance of mobile NAPL zone prevented via institutional controls**.

Similar to the approach for the Prevent NAPL migration to groundwater, UPRR proposes to address this site condition through the Control Endpoint – preventing the disturbance of mobile NAPL zone through institutional controls. The institutional control will include language prohibiting groundwater pumping in the area and prohibiting drilling and excavation activities in the Englewood IM Yard where mobile NAPL is present unless mitigating actions are implemented to prevent disturbance and potential migration on the NAPL into the underlying GWBUs. In addition, on-going NAPL recovery activities from NAPL Collection System and on-Site wells will continue.

1.3.3 NAPL Aesthetic Impact or Nuisance Condition

With the presence of NAPL in the shallow subsurface (in the top 10 feet) and observed surface seeps in the Englewood IM Yard, this site condition creates a TRRP-32 Guidance defined nuisance condition within the Englewood IM Yard both with potential odors from the NAPL when surfacing and impacting the soil integrity in the area. Both the recovery and control endpoints are available to address the NAPL Response Endpoints under this site condition:

1) Recovery Endpoint – **Recover NAPL sufficient to eliminate aesthetic/nuisance condition**; and

5) Control Endpoint – **aesthetic impact or nuisance condition abated with physical control at NAPL zone and/or at POE**.

Similar to the approach for the Mobile NAPL Zone Triggers, UPRR proposes to address this site condition through a combination of recovery and control endpoints. The recovery endpoints will include the on-going NAPL recovery efforts with the NAPL Collection System and weekly inspections. For the Control Endpoint, the NAPL zone in the Englewood IM Yard area is currently covered with a physical barrier (concrete pavement), restricting the aesthetic impact of the NAPL in the shallow soils. In addition, the institutional control placed on the property will include language prohibiting drilling or excavation unless a health and safety plan is implemented to ensure worker protection from COCs and NAPL in the surface soils and a soil management plan is developed. UPRR will continue to address the NAPL surface seeps to address this NAPL response objective, as detailed in the Revised RAP.

1.3.4 NAPL Contact with Groundwater

Two site conditions fall under this NAPL trigger:

- NAPL contact w/ Class 2 / Class 3 groundwater, not in PMZ (off-Site)
- APL contact w/ Class 2 / Class 3 groundwater, in PMZ (on-Site and City of Houston ROW)

For NAPL in contact with groundwater off-Site and thus not in a PMZ, the NAPL response objective is groundwater restoration to the critical PCL. Whereas the response objective for the on-Site PMZ is compliance with PMZ performance criteria at NAPL zone. Both are discussed below.

Groundwater Restoration

As detailed in Section 1.2.4, NAPL has been observed in contact with groundwater off-Site in the Class 3 B-CZ and Class 2 B-TZ GWBU. From 2014 through 2019, an off-site PMZ was proposed for the areas where NAPL is in contact with groundwater off-Site. However, the off-site PMZ was not approved by the TCEQ in 2019 because of failure to obtain landowner consent for the required institutional control for the proposed PMZ area. Therefore, the TCEQ TRRP Guidance provides the recovery only endpoint under this site condition unless a TI waiver has been

approved by the TCEQ. A TI waiver was submitted in the RAP (PBW, 2014, as revised in 2016) in which the TCEQ did not deny the waiver on the technical merits that groundwater restoration is impracticable, but rather did not approve the TI waiver based on concerns of groundwater plume stability within the no-growth PMZ (TCEQ Interoffice Memorandum, TCEQ, 2016). In the event the TI waiver is approved, then the two NAPL response endpoints would be allowed:

1) Recovery Only Endpoint – **Recover soluble NAPL fraction sufficient to eliminate source contributions to groundwater PCLE zone**; and

2) Control (via TI) Endpoint – **Control soluble NAPL fraction sufficient to create stable (or shrinking) PCLE zone**.

However, the current NAPL response endpoint is to recover the soluble NAPL fraction from the impacted B-CZ/B-TZ GWBU off-site. Two major aspects, which are functions of the physical properties of creosote and its components, and the hydrogeologic complexity of the Site, greatly hinder recoverability of the soluble DNAPL fraction from the subsurface. These include the following:

1) Residual saturation in the GWBU matrix and confining clays: As discussed in Section 1.2, most monitoring wells where DNAPL was noted in the boring logs do not have measurable, or recoverable, DNAPL present in the wells. This indicates that in many areas within the Affected Property, including off-site, the creosote resides in the GWBUs as residual or stagnant NAPL trapped in the pore spaces of the geologic matrix and is no longer mobile under natural conditions, but continues to add dissolved contaminant mass to the GWBU as limited by the generally low solubilities of the creosote components; and

2) Creosote DNAPL in the low permeable clays: DNAPL noted in the boring logs for the B-CZ wells was typically observed within the B-CZ interbedded zone where the carbonate gravel seams were located. The hydraulic conductivities for these B-CZ wells screened across the carbonate seams had a geometric mean of 1.1x10-7 cm/sec (PBW, 2016). Therefore, the mobility of fluids (both NAPL and water) through the B-CZ is every limited.

As detailed in the ITRC Integrated DNAPL Site Strategy (IDSS) Guidance (ITRC, 2011), even partial source removal of the NAPL does not typically result in meeting groundwater restoration remedial goals. Case studies suggest that removing up to 80%–90% of the DNAPL source material will only lead to limited reductions of dissolved-phase contaminants downgradient of the NAPL (ITRC, 2011). Even in cases of complete NAPL removal, “contaminant diffusion into low-permeability zones can be a continuing source leading to dissolved-phase contaminant concentration reductions of only 1–3 orders of magnitude (OoMs)” (Chapman and Parker, 2005).

As a result, unless both the free-phase and residual DNAPL could be completely removed from the soil and GWBUs, groundwater response actions will not be able to attain the NAPL response objective of groundwater restoration within the PCLE Zones in a reasonable time frame.

Regardless, UPRR has developed a response action to more aggressively recover NAPL using conventional technology from the off-Site areas within the groundwater PCLE Zones, as detailed in the Revised RAP (August 2020).

Compliance with PMZ performance criteria at NAPL zone

The proposed groundwater response objective to address the Class 2 and Class 3 groundwater PCLE Zones for the A-TZ, B-CZ/B-TZ, and C-TZ GWBUs for the on-site and adjacent City of Houston ROW areas is through a Remedy Standard B PMZ, as detailed in the Revised RAP. With the PMZ established, the TCEQ TRRP Guidance provides only one NAPL response endpoint under this site condition: Recovery Endpoint – **Recover readily recoverable NAPL fraction**.

The response objectives will include compliance with PMZ performance criteria at the NAPL zone and control through institutional controls on groundwater use to protect exposure to residual NAPL in the GWBUs. As part of the evaluation for compliance with PMZ performance criteria, the on-going DNAPL recovery activities will be used to assess if the DNAPL in the GWBUs is considered readily recoverable and if other conventional or alternative NAPL recovery technologies should be considered. However, the NAPL Management TOOL A provided in the TCEQ NAPL Guidance (TCEQ, 2013) was used to evaluate qualitatively the recovery potential of the NAPL using conventional NAPL recovery technology, as detailed in Attachment A. Additional details on the proposed recovery activities are provided in the Revised RAP.

The following NAPL Responses Endpoint Matrix (Table 23) was prepared based on the information discussed under the site conditions, NAPL Triggers, NAPL Response Objectives, and NAPL Response Endpoints

UPRR Houston Wood Preserving Works – NAPL Response Endpoint Matrix (Table 23)

NAPL Trigger (*from* STEP 2)	Site Condition (*from* STEP 2)	NAPL Response Objective	NAPL Response Endpoint	
			Recovery Endpoint	Control Endpoint
❑ NAPL generating vapors Sec 2.1.1	❑ NAPL generating explosive vapor accumulations	Permanently eliminate NAPL as explosive vapor source (Sec 3.2.1)	RECOVERY ONLY ❑ Volatile fraction of NAPL recovered sufficiently to eliminate further explosive vapor accumulations (Sec 3.2.1.1)	CONTROL OPTION NOT AVAILABLE (Sec 3.2.1.2)
	❑ NAPL generating vapors that exceed inhalation PCLs at applicable inhalation POE	Abate inhalation exposure (Sec 3.2.2)	RECOVERY ❑ Volatile fraction of NAPL recovered sufficiently to eliminate vapors that exceed inhalation PCLs (Sec 3.2.2.1)	CONTROL ❑ Vapors controlled at NAPL source or at POE and exposure to vapors that exceed PCLs eliminated (Sec 3.2.2.2)
❑ **Migrating NAPL zone** **Sec 2.1.2**	❑ NAPL in vadose zone ≤ 15 ft below ground surface ❑ NAPL in saturated zone, not in PMZ* ❑ NAPL zone migration in the vadose zone or saturated zone	**Abate NAPL zone migration** **(Sec 3.3.1)**	**RECOVERY ONLY** ❑ NAPL recovered to residual saturation and/or to arrest migration	**CONTROL (via TI)** ❑ NAPL zone migration arrested with physical control **(Sec 3.3.1.2)**
	☒ NAPL discharge to ground surface, surface water or sediment		☒ NAPL recovered sufficient to eliminate NAPL discharge **(Sec 3.3.1.1)**	
	❑ NAPL in saturated zone in a PMZ*		**RECOVERY** ❑ NAPL recovery sufficient to arrest NAPL migration **(Sec 3.3.1.3)**	**CONTROL** ❑ NAPL zone migration arrested with physical control or natural methods **(Sec 3.3.1.4)**
☒ **Mobile NAPL zone** **Sec 2.1.3**	☒ Mobile NAPL threat to subsurface utility or structure ❑ Mobile NAPL in vadose zone at depth ≤ 15 ft; not in *secured/ restricted facility*	**Prevent mobile NAPL impact to shallow vadose zone receptors** **(Sec 3.4.1)**	**RECOVERY ONLY** ❑ NAPL recovered to residual saturation **(Sec 3.4.1.1)**	**CONTROL (via TI)** ☒ Access to NAPL zone prevented using physical control **(Sec 3.4.1.2)**
	☒ Mobile NAPL in vadose zone at depth ≤ 15 ft; in *secured/ restricted facility*	**Prevent potential exposure to mobile NAPL** **(Sec 3.4.2)**	**RECOVERY** ❑ NAPL recovered to residual saturation **(Sec 3.4.2.1)**	**CONTROL** ☒ Exposure to NAPL zone prevented via institutional control **(Sec 3.4.2.2)**
	☐ Mobile NAPL overlies groundwater with which NAPL is not in contact ☒ Mobile NAPL overlies groundwater NAPL zone in PMZ*	**Prevent NAPL migration to groundwater** **(Sec 3.4.3)**	**RECOVERY** ❑ NAPL recovered to residual saturation **(Sec 3.4.3.1)**	**CONTROL** ☒ NAPL zone migration control by physical or natural methods and institutional controls **(Sec 3.4.3.2)**
	☒ Mobile NAPL in contact with groundwater	**Prevent disturbance of mobile NAPL that could induce migration** **(Sec 3.4.4)**	**RECOVERY** ☒ NAPL recovered to residual saturation **(Sec 3.4.4.1)**	**CONTROL** ☒ Disturbance of mobile NAPL zone prevented via institutional control **(Sec 3.4.4.2)**

NAPL Trigger (*from* STEP 2)	Site Condition (*from* STEP 2)	NAPL Response Objective	NAPL Response Endpoint	
			Recovery Endpoint	Control Endpoint
☒ **NAPL Aesthetic Impact or Nuisance Condition** **Sec 2.1.4**	☒ Aesthetic or nuisance condition at ground surface, surface water, vadose zone or groundwater	**Eliminate NAPL aesthetic impact or nuisance condition** **(Sec 3.5.1)**	**RECOVERY** ☒ Recover NAPL sufficient to eliminate aesthetic or nuisance condition **(Sec 3.5.1.1)**	**CONTROL** ☒ Aesthetic impact or nuisance condition abated with physical control at NAPL zone and/or at POE **(Sec 3.5.1.2)**
☒ **NAPL Contact with Groundwater** **Sec 2.1.5**	❑ NAPL contact w/ Class 1 groundwater ☒ NAPL contact w/ Class 2 / Class 3 groundwater, not in PMZ*	**Groundwater restoration** **(Sec 3.6.1)**	**RECOVERY ONLY** ☒ Recover soluble NAPL fraction sufficient to eliminate source contributions of NAPL to GW PCLE zone **(Sec 3.6.1.1)**	**CONTROL (via TI)** ❑ Control soluble NAPL fraction sufficient to create stable (or shrinking) PCLE zone **(Sec 3.6.1.2)**
	☒ NAPL contact w/ Class 2 / Class 3 groundwater, in PMZ*	**Ensure compliance of NAPL zone in PMZ** **(Sec 3.6.2)**	**RECOVERY** ☒ Recover readily recoverable NAPL fraction** **(Sec 3.6.2.1)**	**(only address recovery endpoint, if applicable)** **(Sec 3.6.2.2)**
❑ **NAPL contact with Surface Water** **Sec 2.1.6**	❑ NAPL floating on surface water or entrained in surface water body	**Eliminate NAPL in contact with surface water** **(Sec 3.7.1)**	**RECOVERY ONLY** ❑ Recover NAPL on or in surface water **(Sec 3.7.1.1)**	**CONTROL OPTION NOT AVAILABLE** **(Sec 3.7.1.2)**
❑ **NAPL contact with Sediment** **Sec 2.1.7**	❑ NAPL in or on banks or bed of surface water body	**Prevent NAPL in sediment from contacting surface water *and* direct human or ecological receptor contact with NAPL** **(Sec 3.8.1)**	**RECOVERY ONLY***** ❑ Recover NAPL to sediment PCLs at applicable POE **(Sec 3.8.1.1)**	**CONTROL (via TI)** ❑ Isolate NAPL zone from surface water bodies and receptors using physical control **(Sec 3.8.1.2)**

LEL- *lower explosive limit P C L – protective concentration limit* **PMZ** *– plume management zone* **POE** *– point of exposure* **TI** *– technical impracticability demonstration*

*** The PMZ reference includes PMZs that have been approved by the TCEQ, PMZ eligible sites where a PMZ will be proposed to the TCEQ in a RAP, as well as a PMZ via TI demonstration.**
**** For the PMZ situation, the applicability of the readily recoverable circumstance must be determined, and recovery must occur if it is applicable (see Table 19 and Figure 6 and associated explanatory text).**
***** Potential ecological impacts from NAPL recovery actions may warrant deviation from this RECOVERY ONLY endpoint on a site-specific basis. Inquire with TCEQ.**

1.4 Develop NAPL Management Strategy

As detailed in the TRRP NAPL Guidance, Step 4 is to develop an overall NAPL management strategy based on the results of the NAPL Response Endpoint Matrix. The development of the strategy includes the following steps:

1. Compare the NAPL endpoints for each site condition;
2. Optimize the number of endpoints that addresses the relevant response endpoints; and
3. Select efficient NAPL recovery and/or control responses to achieve the response endpoints.

A summary inventory of the NAPL response actions and options is provided on Table 2 with the preliminary preferred options highlighted in green on the table. Since the NAPL site conditions include both on-site and off-site conditions, within a PMZ and outside a PMZ, there are various recovery and control endpoints targeted. Details of the planned response actions to address each of the recovery endpoints are provided in the Revised RAP.

Table 2 - Summary of Inventory of Response Actions and Options

NAPL Trigger	Condition	Objective	NAPL Response Objectives		Potential Response
			Recovery	Control*	See
Migrating NAPL Zone	On-Site only: NAPL discharge to ground surface	**Abate NAPL zone migration**	Sufficient to eliminate NAPL discharge	*Control by TI Only*	NAPL Collection Trench/Hot Spot Removal
Mobile NAPL Zone	Mobile NAPL threat to subsurface utility or structure	**Prevent mobile NAPL impact to shallow vadose zone receptors**	To residual saturation	*Control by TI Only*	Under development
	Mobile NAPL in vadose zone at depth ≤ 15 ft; in secured/restricted facility	**Prevent potential exposure to mobile NAPL**	To residual saturation	Exposure to NAPL zone prevented via institutional control	Physical barrier (i.e., concrete pavement) and IC (IM Yard)
	Mobile NAPL overlies groundwater NAPL zone in PMZ	**Prevent NAPL migration to groundwater**		NAPL zone migration control by physical or natural methods and institutional controls	
	Mobile NAPL in contact with groundwater	**Prevent disturbance of mobile NAPL that could induce migration**		Disturbance of mobile NAPL zone prevented via institutional control	
NAPL Contact with Groundwater	On-Site: NAPL contact w/ Class 2 / Class 3 groundwater, in PMZ	**Ensure compliance of NAPL zone in PMZ**	Recover readily recoverable NAPL*	*Control not available*	NAPL Recovery using MPE, pneumatic pumps
	Off-Site: NAPL contact w/ Class 2 / Class 3 groundwater, not in PMZ	**Groundwater restoration**	Recover soluble NAPL fraction sufficient to eliminate source contributions of NAPL to GW PCLE zone	*Control by TI Only*	NAPL Recovery using MPE
NAPL Aesthetic Impact or Nuisance Condition	Aesthetic or nuisance condition at ground surface, surface water, vadose zone or groundwater	**Eliminate NAPL aesthetic impact or nuisance condition**	Eliminate aesthetic or nuisance condition	Aesthetic impact or nuisance condition abated with physical control at NAPL zone and/or at POE	NAPL Collection Trench/Hot Spot Removal, Control through Physical Barrier (concrete pavement) and IC.

Note: Green highlight indicates the proposed response objectives for the Site

1.5 References

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ATTACHMENT A

NAPL Management Tool A

NAPL Management TOOL A

TOOL A — Qualitative Screen for Conventional NAPL Recovery Technologies

Table A.1. TOOL A (Qualitative Screen for Potential of Conventional NAPL Recovery Technologies)

Potential for NAPL Recovery by Conventional Technologies

1. by SOIL TYPE

Clay - Silt	Silt - Sand	Sand - Gravel	SCORE
-1	0	+1	-1

+

2. by MAX TRUE NAPL THICKNESS

< 2 in	2 in - 12 in	> 12 in	
-1	0	+1	+1

+

3. by NAPL VISCOSITY

HIGH (mixed-phase DNAPL PCBs, coal tar)	MEDIUM (heavy refined petroleum (e.g., no. 6 fuel oil)	LOW (light refined petroleum (e.g., gasoline)	
-1	0	+1	-1

+

4. by NAPL OCCURRENCE

LOW (in saturated zone with double porosity)	MEDIUM (in other saturated zone)	HIGH (in coarse-grained capillary fringe)	
-1	0	+1	0

Potential for NAPL Recovery by Conventional Technology	TOTAL SCORE
HIGH: recovery likely	+2 to +4
MODERATE: recovery possible	-1 to +1
LOW: consider alternative tech	-4 to -2

⇦ -1 TOTAL SCORE

Source: TCEQ Risk-Based NAPL Management TRRP-32 Guidance Document, July 2013

Appendix 3F

3-D Visualization Model Technical Memorandum dated August 18, 2020

TECHNICAL MEMORANDUM

DATE: August 18, 2020

Project No. 19119232

TO Mr. Kevin Peterburs
Manager - Environmental Site Remediation
Union Pacific Railroad
4823 N 119th Street, Room 108
Milwaukee, Wisconsin 53225

EARTH VOLUMETRIC STUDIO 3-DIMENSIONAL MODEL, UNION PACIFIC RAILROAD HOUSTON WOOD PRESERVING WORKS SITE

INTRODUCTION

The former Union Pacific Railroad (UPRR) Houston Wood Preserving Works (HWPW) Facility at 4910 Liberty Road, Houston, Harris County, Texas (the Site) is located within industrial land and includes the Englewood Intermodal Yard, which is to the south of the former HWPW facilities. Details of the history and previous operations at the Site have been discussed in the previously submitted Affected Property Assessment Report (APAR) (ERM, 2000) and Revised APAR (ERM, 2004), as well as the RCRA Facility Assessment (RFA) Report (PRC, 1993).

Since 1995, Site investigations have included activities to evaluate surface and subsurface soils for the presence of dense non-aqueous phase liquid (DNAPL). Specifically, Cone-Penetrometer Testing/Rapid Optical Screening Testing (CPT/ROST™) investigations were conducted in 1995, 2001, 2008, and 2013 at the Site using laser-induced fluorescence (LIF) to identify the presence of DNAPL. As part of these investigations over 100 CPT/ROST™ borings and over 300 soil borings have been installed at the Site. Based on soil borings, measured DNAPL thicknesses in existing wells, and ROST™ readings, the occurrences of DNAPL in the on-site A-CZ (vadose zone), A-TZ, B-TZ/B-CZ, and C-TZ were described in the updated APAR addendum dated October 22, 2010 (PBW, 2010). DNAPL was recently re-assessed within the perimeter of the HWPW Site, the residential area north of the Site (City of Houston ROW), and in the Englewood Intermodal Yard using the Tar-Specific Green Optical Screening Tool (TarGOST®). In total, 54 TarGOST® borings were advanced as described in the Interim Non-Aqueous Phase Liquid (NAPL) and Total Petroleum Hydrocarbon (TPH)-NAPL Assessment Report (Golder, 2020). The recent and historical DNAPL assessments have indicated the presence of DNAPL in certain areas of the vadose zone, A-TZ and B-CZ/B-TZ within the HWPW Site and the Englewood Intermodal Yard, with evidence of DNAPL presence in certain areas to the north in the B-CZ/B-TZ and to the northeast in the C-TZ.

To provide an enhanced understanding of the occurrence and distribution of the bulk NAPL mass at the Site, Golder has compiled the ROST™ and TarGOST® results along with lithologic data from recent and historic investigations to develop a 3-dimensional visualization of the subsurface conditions at the Site. Specifically, the Earth Volumetric Studio (EVS) Version 2019.9.0 Software licensed from C-Tech Development was used to consolidate historical site investigation information, specifically related to NAPL

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and Site hydrogeology spanning the past 25 years. Input to the EVS model included the results from the ROST™ investigations and the more recent TarGOST® borings conducted in 2019 and 2020 to identify the presence of NAPL. Most ROST™ and TarGOST® borings reached refusal at the top of the C-TZ or at shallower depths, therefore NAPL in the C-TZ is not presented in the EVS model. EVS uses kriging techniques to interpolate and extrapolate raw environmental data. For this evaluation, CPT/ROST™ and TarGOST® data were kriged separately due to their differing data collection methods and sensitivity to different compounds. ROST™ readily detects creosote and coal tar in the subsurface, however, the relative response sensitivity is less when compared to responses to petroleum hydrocarbons such as gasoline, diesel fuel, and jet fuel. TarGOST® was specifically developed to screen for heavier molecular weight NAPL phase polycyclic aromatic hydrocarbons (Golder, 2020). Raw results (data) from 97 CPT/ROST™ borings and 50 TarGOST® borings were input into the EVS model and evaluated independently. The two data sets complement each other by filling data gaps between the individual investigations and provide an enhanced visualization of the lateral and vertical extent of the NAPL zone. EVS kriging consists of a statistical analysis of the variability between pairs of points at various distances. Kriging is dependent on vertical and horizontal neighboring points and when distances between points become too great or there are low %RE readings between points the kriging in most instances is discontinued. In addition to the interpreted NAPL zone, lithologic information from 198 soil borings and CPT logs was imported into the EVS visualization to further support a comprehensive representation of the subsurface conditions. Consistent with the above kriging considerations and the bulk mass depiction objective of this visualization, the EVS depictions regarding NAPL presence at individual locations represent generalizations and other project documents providing the detailed Site data should be consulted when considering the possible presence of NAPL at a specific location.

SITE GEOLOGY

A geologic depiction of the Site was created in EVS using Module krig_3d_geology where the geologic information from 198 locations were kriged to provide a representative visualization of the lithology across the Site. The lithology was interpreted from 96 monitoring well boring logs, 80 CPT logs and 22 soil borings and summarized into six lithologic layers (A-Cohesive Zone (CZ), A-Transmissive Zone (TZ), B-CZ, B-TZ, C-CZ, and C-TZ). The underlying D-Cohesive layer is interpreted to represent the basal confining unit for the subsurface impacts at the Site but was not visualized in the model.

Along the northern HWPW property boundary, the A-CZ (which includes the vadose zone) is generally encountered from ground surface to a depth of approximately 15 feet below ground surface (bgs) and consists of clays, silty clays, and silts. The A-TZ is generally encountered between 15 and 25 feet bgs and consists of sands and silty sands with an average thickness of 7 feet. The A-TZ is underlain by the clays, silty clays, and silts of the B-CZ. The B-CZ is encountered between 22 and 44 feet bgs with an average thickness of 9 feet. From the western property boundary until the approximate midpoint of the Site, the B-TZ sands and silty sands are generally encountered from a depth of 30 feet to 40 feet bgs. The B-TZ is not encountered within the eastern portion of the Site; however, interbedded carbonate seams and calcareous nodules with clay and silty clay are present and constitute zones of secondary permeability. These B-CZ (IB) seams are encountered within the B-CZ/C-CZ and due to their variability and discontinuity throughout

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the Site were not detailed in the lithologic visualization. The sand/silty sands of the C-TZ are generally encountered between 58 feet and 73 feet bgs, and are underlain by clays, silty clays, and silts.

CPT/ROST™

The CPT/ROST™ locations span the former Houston Wood Preserving Works Site, the Englewood Intermodal Yard as well as neighborhoods north and northwest of the Site. Data from 97 CPT/ROST™ borings were input into the model. The first 5 to 10 feet of ROST™ data collection is known to be susceptible to reduced certainty and to prevent inaccurate data all signals less than 20 percent reference emitter (%RE) were changed to 0%RE in the top 5 feet. In addition, if signals seen in the top 5 feet were significantly higher than the signals at 10 feet they were also made zero. This adjustment reduced the potential for overstating the plume geometry in the top 5 to 10 feet of the site. In addition, the signals between 5 and 10 feet bgs at points CPT-04R-01, CPT-02R-01, CPT-23R, and CPT-21R top were set to 0%RE as these signals were inconsistent with surrounding data and the signals below 10 feet bgs. The kriged dataset was then subset to a value representing only values above 25%RE, as values above 25%RE indicate the likely presence of NAPL.

Groundwater data from monitoring wells located along the northeast property boundary and northeast of the Site were added to the ROST™ data. Groundwater samples collected from monitoring wells (71B, 44A/C, 36A/B, and 33BR/A) in January 2020 all had detections of naphthalene below the laboratory reporting limits or multiple orders of magnitude below the Texas Risk Reduction Program (TRRP) residential assessment level (RAL) and were input into EVS as 0%RE at the top of the monitoring well screens. This input prevented EVS from overstating the plume in the A-CZ/TZ zones, which would occur due to the distance between CPT/ROST™ points. The NAPL zone produced from the ROST™ data and additional monitoring wells can be seen in Figure 1.

TarGOST®

TarGOST® borings were installed on Site between December 2019 and January 2020. TarGOST® locations were chosen to compliment the CPT/ROST™ locations, focusing on areas north of the HWPW Site, along and adjacent to the northern and western perimeter of the Site, and within the Englewood Intermodal Yard. The EVS model included data from 50 TarGOST® borings (in total 54 TarGOST® borings were performed, however some borings hit refusal and were reinstalled, and therefore were not included in the model).

The data from these 50 points were condensed using the data reduction tool in EVS to remove noise and decrease the file size. During the field investigation, health and safety protocols required hydrovacing of the upper 10 feet of each TarGOST® boring (utility clearance purposes) and backfilling with sand. Therefore, no pertinent TarGOST® information exists for the upper 10 feet of each TarGOST® location, and this portion of the EVS data was input into the model as ‘unknown.’ From this data, EVS presented a plume model using a subsetting level of 5%RE. Signals between 5% and 20%RE may indicate the presence of residual NAPL, but the lower %RE suggests that the NAPL is not likely to flow into a well installed at that location (Golder, 2020). These model conditions were used to allow for the most realistic extrapolation of

the data by EVS and representation of the NAPL zone. However, because the top ten feet was input as 'unknown', the EVS kriging algorithm can interpolate NAPL upward into the upper 10 feet of the model if the underlying TarGOST® values are sufficiently elevated. The A-CZ zone was turned off for the visualization of the plume due to the unknown values in the top ten feet causing EVS to make assumptions and conservatively krig the NAPL plume to the surface. However, based on field observations, NAPL is present in the vadose zone in areas within the footprint of the bulk NAPL mass on-site. The NAPL zone produced from the TarGOST® data can be seen in Figure 2.

EVS VISUALIZATION RESULTS

From 1995 to 2013, CPT/ROST™ investigations were conducted across the Site with a focus on the HWPW Site (Figure 1; Golder, 2020). In 2020, TarGOST® investigations were conducted along the northern and western perimeter of the Site, within the Englewood Intermodal Yard, and off-Site north of the Site (Figure 2; Golder, 2020). Together, the ROST™ and TarGOST® values represent the NAPL zone at the Site (Figure 3; Golder, 2020).

The NAPL zone produced from the TarGOST® and ROST™ investigations is primarily located on the eastern side of the former HWPW facility and the Englewood Intermodal Yard (Figure 3) and within the A-TZ and B-CZ/B-TZ (Figure 4). A very localized NAPL zone is also present along the western Site boundary in the B-TZ. In the EVS model, NAPL extends north of the HWPW site beneath Liberty Road within the B-TZ/B-CZ. Due to TarGOST responses in the A-TZ along the northern border of the Site, the kriging of the EVS model extends the responses in the A-TZ zone under Liberty Road; however, it is important to note that no elevated TarGOST responses were observed in the A-TZ in the off-Site borings.

The EVS model will be provided in a 4D visualization format which can be viewed using EVS Standalone 4DIM Player. The main NAPL zone can be viewed from all sides using the player.

REFERENCES

United States Environmental Protection Agency, 1993. RCRA Facility Assessment Report, Southern Pacific Transportation Company, Houston, Texas. December 2, 1993.

Environmental Resources Management, 2000. Revised Affected Property Assessment Report (APAR), Houston Wood Preserving Works, Houston, TX, June 10, 2000. Revised June 10, 2004.

Pastor, Behling & Wheeler, LLC (PBW), 2010. Updated Affected Property Assessment Report (APAR) Addendum, Houston Wood Preserving Works, Houston, TX. October 22, 2010.

Golder Associates Inc. 2020, "Interim Non-Aqueous Phase Liquid (NAPL) and Total Petroleum Hydrocarbon (TPH)-NAPL Assessment Report," Submitted to Union Pacific Railroad Company on May 29, 2020.

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APPENDIX A

Figures

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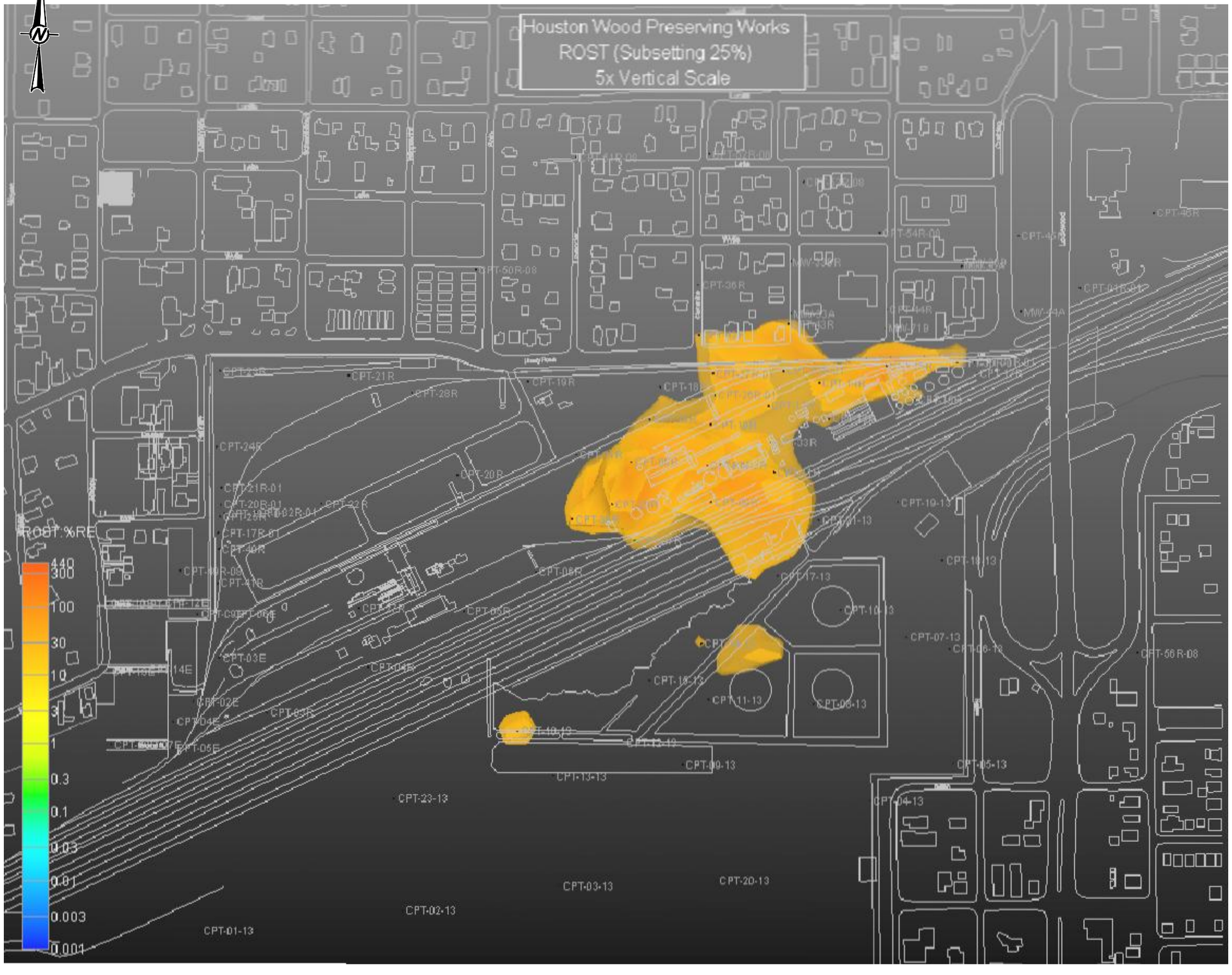


LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- HISTORIC STRUCTURE AND FEATURE
- ROST™ NAPL ZONE
- CPT-44A — CPT/ROST™ BORINGS

0 150 300
1" = 300' FEET
APPROXIMATE SCALE

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
ROST™ NAPL ZONE WITH CPT/ROST™ BORINGS

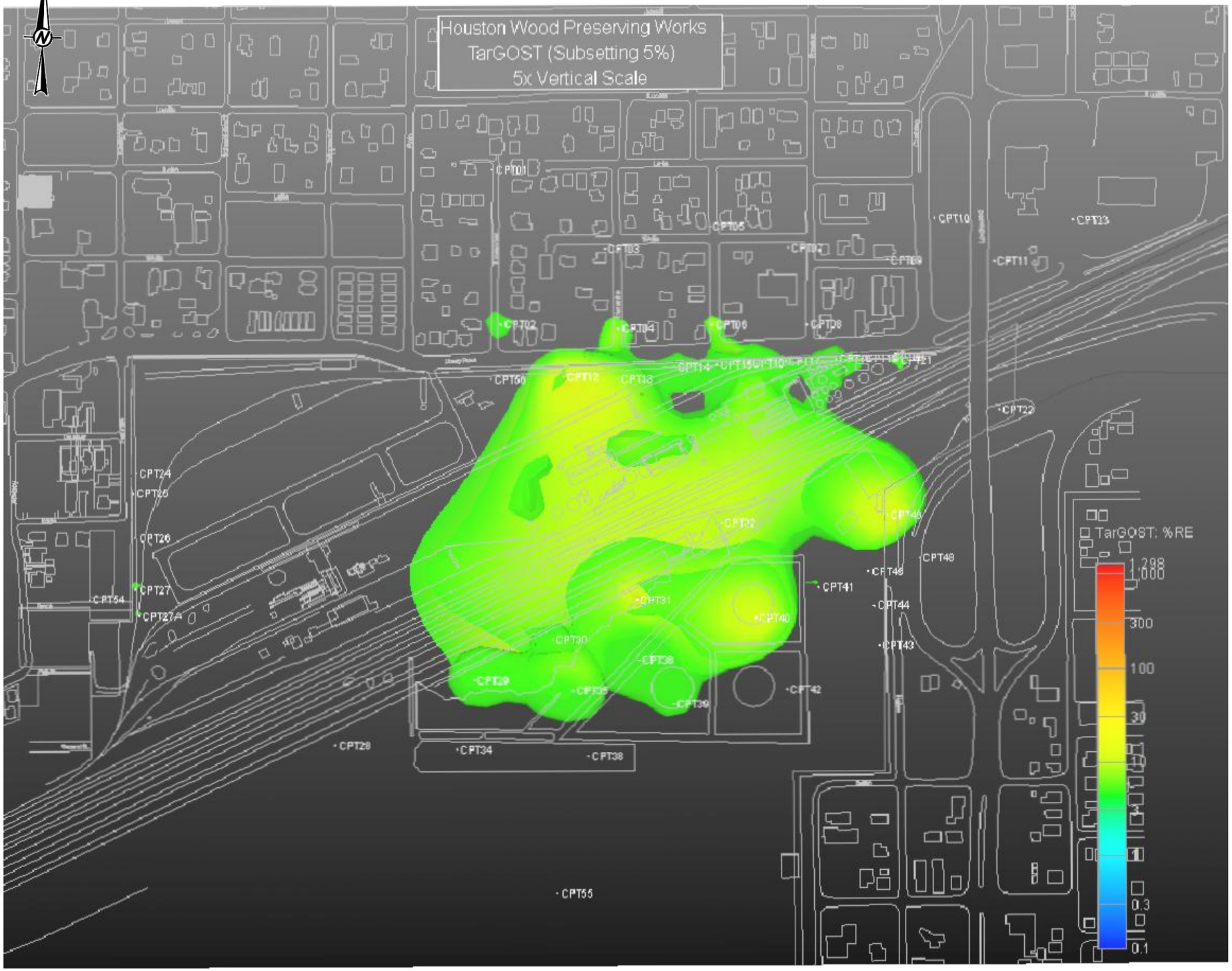
CONSULTANT
GOLDER

YYYY-MM-DD	2020-08-11
DESIGNED	
PREPARED	RS
REVIEWED	JQ
APPROVED	JQ

PROJECT NO. 19119232 | REV. 0 | FIGURE 1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\Projects - Round Rock_20191919232 - HWPW\2020-8 RAP Revision\ | File Name: FIG 1 - ROST NAPLE Zone with CPT-ROST Boring.dwg | Last Edited By: rsalazar Date: 2020-08-11 Time:9:38:48 AM | Printed By: RSalazar Date: 2020-08-11 Time:10:05:35 AM



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- HISTORIC STRUCTURE AND FEATURE
- TarGOST® NAPL ZONE
- CPT-11 TarGOST® BORINGS

0 150 300
1" = 300' FEET
APPROXIMATE SCALE

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
TarGOST® NAPL ZONE WITH TarGOST® BORINGS

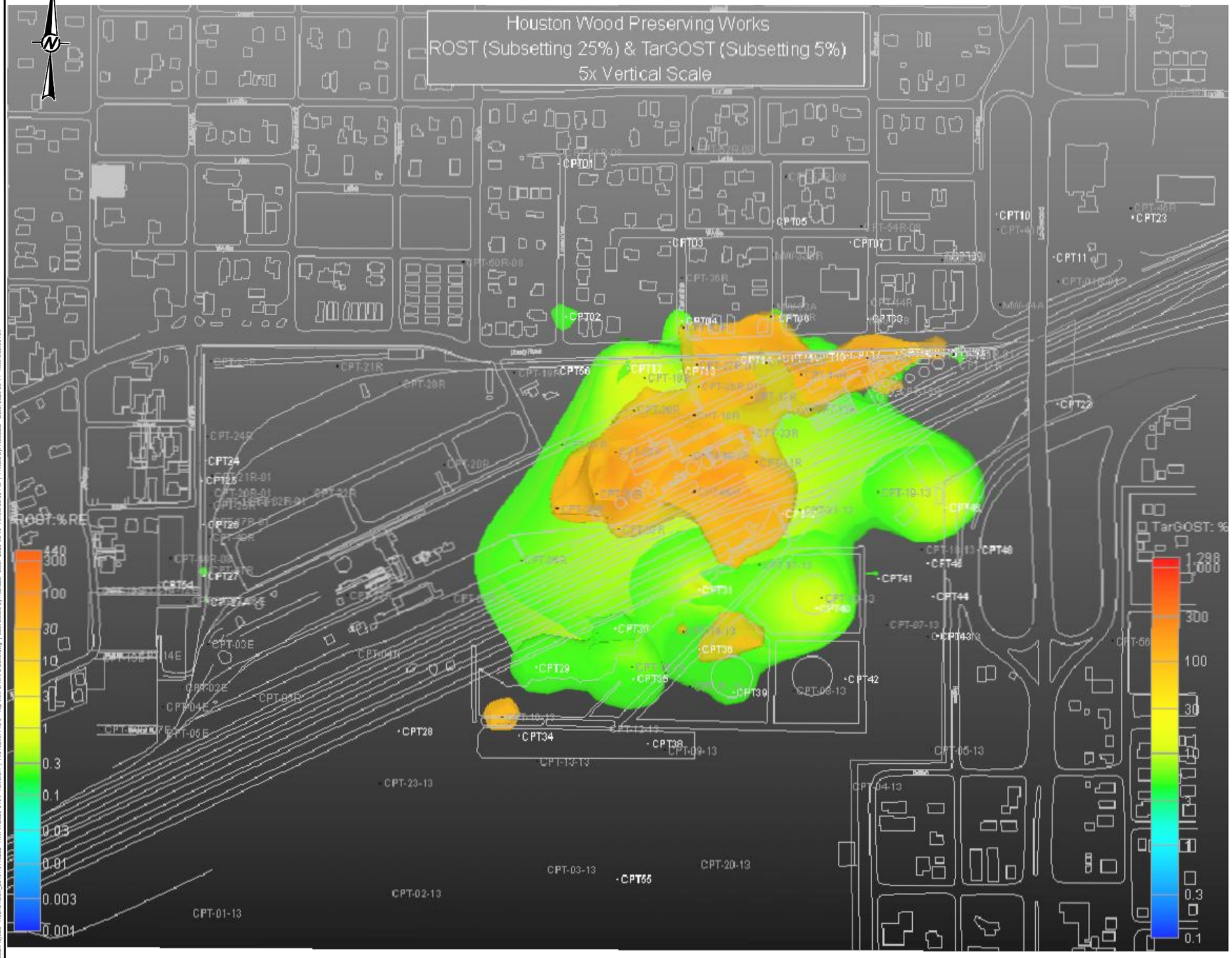
CONSULTANT
GOLDER

YYYY-MM-DD	2020-08-11
DESIGNED	
PREPARED	RS
REVIEWED	JQ
APPROVED	JQ

PROJECT NO. 19119232 | REV. 0 | FIGURE 2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\Projects - Round Rock_2019\19119232 - HWPW\2020-8 RAP Revision\ | File Name: FIG 2 - TarGOST NAPL Zone with TarGOST Borings.dwg | Last Edited By: rsalazar Date: 2020-08-11 Time:9:46:10 AM | Printed By: RSalazar Date: 2020-08-11 Time:10:01:49 AM



LEGEND

- UPRR PROPERTY BOUNDARY
- ROAD, PARKING LOT, SIDEWALK
- FENCE
- RAILROAD
- HISTORIC STRUCTURE AND FEATURE
- TarGOST® NAPL ZONE
- CPT-11 — TarGOST® BORINGS
- ROST™ NAPL ZONE
- CPT-44A — CPT/ROST™ BORINGS

0 150 300
1" = 300' FEET
APPROXIMATE SCALE

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
TOP VIEW OF NAPL ZONE

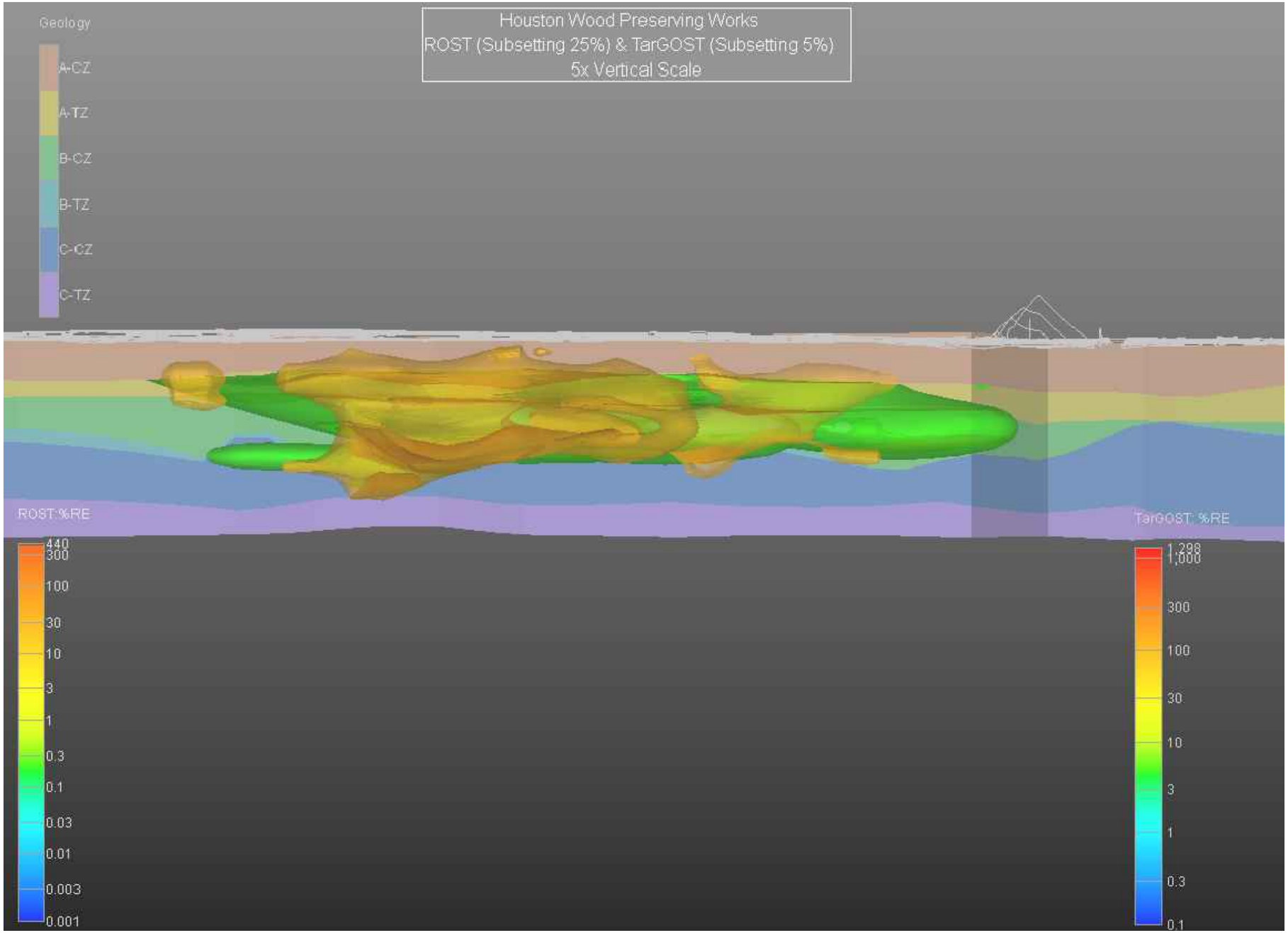
CONSULTANT
GOLDER

YYYY-MM-DD	2020-08-11
DESIGNED	
PREPARED	RS
REVIEWED	JQ
APPROVED	JQ

PROJECT NO. 19119232 | REV. 0 | FIGURE 3

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\exarkana\data\Projects - Round Rock\ 20191911\9232 - HWPW\2020-8 RAP Revision\ | File Name: FIG 3 - Top view of NAPL Zone.dwg | Last Edited By: rsalazar Date: 2020-08-10 Time:5:06:06 PM | Printed By: RSalazar Date: 2020-08-11 Time:9:59:09 AM



LEGEND

- ROAD, PARKING LOT, SIDEWALK
- TarGOST® NAPL ZONE
- ROST™ NAPL ZONE

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
NAPL ZONE WITH SITE GEOLOGY

CONSULTANT
GOLDER

YYYY-MM-DD	2020-08-11
DESIGNED	
PREPARED	RS
REVIEWED	JQ
APPROVED	JQ

PROJECT NO. 19119232 | REV. 0 | FIGURE 4

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

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Path: \\texarkana\data\Projects - Round Rock_2019\19119232 - HWPW\2020-8 RAP Revision\ | File Name: FIG 4 - NAPL Zone with Site Geology.dwg | Last Edited By: rsalazar Date: 2020-08-11 Time:10:35:18 AM | Printed By: RSalazar Date: 2020-08-11 Time:10:55:06 AM

Appendix 3G

Groundwater Flow Model Technical Memorandum dated August 18, 2020

TECHNICAL MEMORANDUM

DATE August 18, 2020 **Project No.** 19-119232

TO Mr. Eric Matzner, Principal/ Program Leader
Golder Associates Inc.

CC

FROM Brandon K. Poiencot, PE[1], Rick Keenan, PG[2] **EMAIL Brandon_Poiencot@golder.com; RKeenan@golder.com**

FORMER HOUSTON WOOD PRESERVING WORKS – GROUNDWATER MODEL

INTRODUCTION

Golder Associates Inc (Golder) is completing a feasibility study (FS) to evaluate potential remediation options to address the creosote dense non-aqueous phase liquid (DNAPL) along the northern boundary of the former Houston Wood Preserving Works (HWPW) site in Harris County, Texas (the Site). The Site is located north of I-10 and east of I-69 on the northeast side of the city of Houston, as shown on Figure 1. As discussed in the revised Response Action Plan (RAP) to which this technical memorandum is attached, the remedial objective for the groundwater protective concentration level (PCL) exceedance zone (PCLE Zone) is to reduce the potential for migration of groundwater chemicals of concern (COC) concentrations above the critical PCLs from the Site and similarly reduce the potential for migration of mobile dense non-aqueous phase liquids (DNAPL) off Site. The FS is intended to review a wide range of potential remedial alternatives to address these remedial objectives and to provide a recommendation for the most appropriate remedial alternative based on technical reliability, economic feasibility, and the practicality of implementation for the remedial alternative. .

The first phase of the FS narrowed the remedial alternatives based on the criteria listed above and the results indicated two alternatives were best suited to achieve the goal of addressing DNAPL and dissolved-phase constituents of concern (COCs) in certain areas within and adjacent to the northern part of the Site. Those two alternatives are:

a) Installation of a soil/bentonite slurry cut off wall as a low-maintenance long-term hydraulic barrier along certain areas of the perimeter of the Site

b) Installation and operation of a groundwater extraction and treatment to provide hydraulic control of the groundwater (and DNAPL) along certain areas of the perimeter of the Site

As part of the second phase of the FS, Golder prepared a Site-specific numerical groundwater flow model of the HWPW Site to simulate steady state conditions calibrated to Site groundwater elevation data. Following calibration, the groundwater model was used to simulate changes to steady state conditions under remedial

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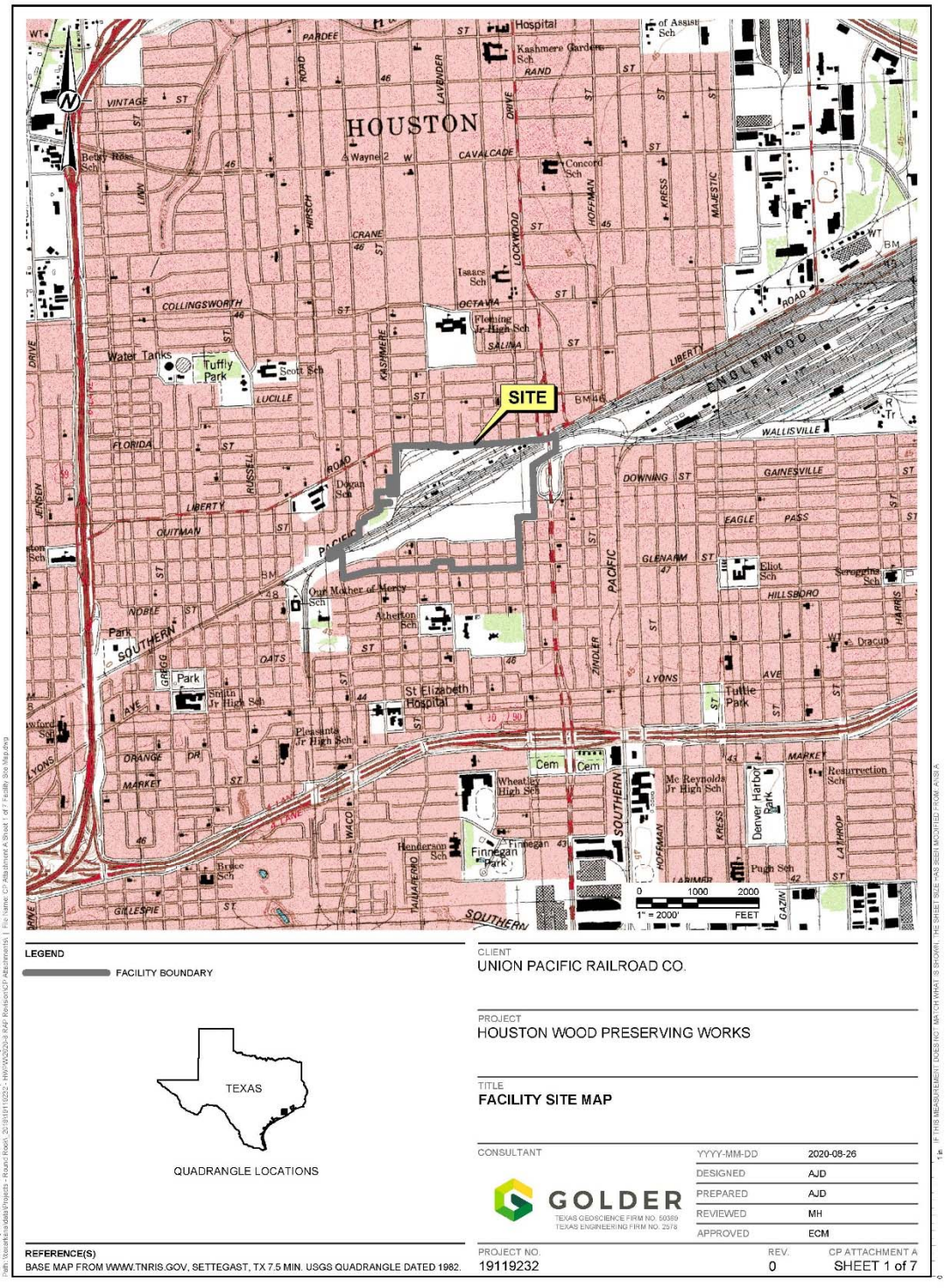
alternatives A and B, described above, and to optimize the locations and design details for the two remediation alternatives to achieve the remediation objectives.

The numerical groundwater flow model was developed using the USGS numerical model MODFLOW 2005 (MODFLOW). The MODFLOW code uses a finite-difference approach to approximate the partial-differential flow equations and is based on flow through a three-dimensional array of cells. The graphic pre- and post-processor program, Groundwater Vistas Version 7 (Environmental Simulations Inc., GW Vistas), was used to facilitate model input and output. This report summarizes the development of the groundwater model and presents results for the most promising simulations for remedial alternatives A and B described above.

GROUNDWATER MODEL OBJECTIVES

The HWPW groundwater flow model was developed to simulate and examine the hydrogeological interactions along the northern Site boundary (Liberty Road area) and the Site boundary east of the Englewood Intramodal Yard. Specifically, simulations were developed to evaluate remedial alternatives A and B described above, and to optimize each concept in terms of providing hydraulic containment of DNAPL and impacted groundwater at the north and east Site boundaries. The results were then used to develop an engineering-level cost estimate for capital expenditures and operations and maintenance for a period of 15 years. The performance and costs for each alternative were then used to complete the second and final phase of the FS.

Specific to the two proposed alternatives, the modeling process was completed by setting up the steady-state model, estimating initial input parameters and allowing those to fluctuate within a range to achieve a model that was calibrated to observed groundwater elevations for the Site. Once calibrated to Site-specific conditions, the model was then used as a base model to create multiple scenarios to analyze how the modeled groundwater flow will react with a slurry cutoff wall in place and with or without groundwater extraction wells used to create hydraulic containment. Model runs with varying scenarios examined the potential for mounding, location and extraction rates for pumping wells, geometry, height and length of the needed barrier, as well as additional engineering controls that may be required to impede the flow of groundwater beyond the Site. The steps in creating each model are described herein.



LEGEND

FACILITY BOUNDARY

TEXAS

QUADRANGLE LOCATIONS

REFERENCE(S)

BASE MAP FROM WWW.TNRIS.GOV, SETTEGAST, TX 7.5 MIN. USGS QUADRANGLE DATED 1982.

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
FACILITY SITE MAP

CONSULTANT
GOLDER
TEXAS GEOSCIENCE FIRM NO. 50369
TEXAS ENGINEERING FIRM NO. 2578

YYYY-MM-DD	2020-08-26
DESIGNED	AJD
PREPARED	AJD
REVIEWED	MH
APPROVED	ECM

PROJECT NO. 19119232 | REV. 0 | CP ATTACHMENT A SHEET 1 of 7

Figure 1: Site Location Map

FORMER HOUSTON WOOD PRESERVING WORKS EXISTING CONDITIONS MODEL SETUP

The model domain is defined by a focus area encompassing the Site, as shown in Figure 2, and a broader area of the regional aquifer where boundary conditions were set at the model edges. Figure 2 presents an aerial photograph of the region overlain by the model domain, for reference. To establish the model boundaries, a sub-regional groundwater model encompassing a larger extent beyond the primary focus area was established using general head boundaries for the six layers detailed below.

Following numerical model convention, the overall model domain was made sufficiently large to minimize the influence of boundary conditions on the area of interest. The area of interest, where groundwater impacts related to the Site occur, is generally centered in the model domain. Golder employed variable grid spacing when constructing the finite difference grid in the groundwater model. Cells within the primary focus area were assigned dimensions of 27 feet for rows and 37 feet for columns whereas, cells outside of the primary focus area, were expanded in size at a factor of 1.15 to maximum dimensions of 704 feet for rows and 1,100 feet for columns at the model extents. The total model domain covers an active area of approximately 24,000 acres. The resulting domain is shown in Figures 2 and 3.

The geology at the Site consists of interbedded clays, silts, and sands representative of fluvial-deltaic deposits of the Beaumont Formation. The Site-specific geology and hydrogeology were described in detail in the previous APAR (ERM, 2000), Revised APAR, (ERM, 2004), APAR Addendum (PBW, 2009) and Updated APAR Addendum (PBW, 2010). The Site stratigraphy from ground surface to a depth of about 135 feet below ground surface is grouped into nine distinct units with transmissive GWBUs separated by cohesive zones (with the GWBUs identified):

1) (1) Surface fill material (Fill);
2) (2) A-Cohesive Zone (A-CZ);
3) (3) A-Transmissive Zone (A-TZ) (GWBU);
4) (4) B-Cohesive Zone (B-CZ) (interbedded intervals);
5) (5) B-Transmissive Zone (B-TZ) (GWBU);
6) (6) C-Cohesive Zone (C-CZ);
7) (7) C-Transmissive Zone (C-TZ) (GWBU);
8) (8) D-Cohesive Zone (D-CZ); and
9) (9) D-Transmissive Zone (GWBU).

Cross sections showing the general relationship of the zones are provided in Attachment 1A of the Revised RAP. The lithology consists of a complex group of clays, silts, and sand layers. As an example, the B-CZ is comprised of clay, silty clay, and sandy clay. The B-TZ, which underlies the B-CZ, grades laterally from west to east into a portion of the B-CZ that contains interbedded, thin seams of silty sand, thin carbonate clayey gravel and nodule seams (~0.1 feet thick). This interval of interbedded carbonate nodules within the B-CZ clay is considered to be a distinct saturated unit based on its hydrologic properties and lithology. Very small amounts of water are observed

in the wells completed across this interbedded zone, and numerous soil borings drilled through this interval have noted DNAPL is the soil borings.

Therefore, the model stratigraphy was developed to match the six layers from A-CZ to C-TZ listed above, which were assigned to align with the Conceptual Site Model (CSM) layers as shown in Table 1. Prior to development of the groundwater model, the software program Environmental Visualization System (EVS, C-TECH) was used to develop a 3-dimensional (3-D) depiction of the geologic data from numerous drilling logs as well as 3-D visualization of NAPL and groundwater COCs for the HWPW Site. A technical memorandum detailing the EVS model is also provided in the Revised RAP (Appendix 3).

For the groundwater model, the initial layer assignments were obtained from the 3-D EVS output files, and these EVS files were imported into GW Vistas to define the bottom elevations for all layers. Bottom elevations were obtained from Site-specific soil boring logs and were extrapolated beyond the primary focus area. The total model thickness is generally 68.5 feet with some variation based on surface topography. The surface elevations of the groundwater model domain, outside of the EVS area, were sourced from the USGS National Elevation Dataset 2013 Digital Elevation Model. The general top and bottom elevations of each layer and the corresponding CSM layer are shown in Table 1.

Table 1: Groundwater Model Layer Information

Layer ID	Zone ID	Average Top (FT NGVD29)	Average Bottom (FT NGVD29)	Primary Lithology
1	A-CZ	45.5	31.5	Clay, silty clays, and silt
2	A-TZ	31.5	25.3	Sand and silty sands
3	B-CZ	25.3	15.6	Clays, silty clays, and silt
4	B-TZ/B-CZ	15.6	11.2	Sand and silty sands, pinching out to clays, silty clays, silt, interbedded carbonate seams, and calcareous nodules with clay and silty clay
5	C-CZ	11.2	-8.6	Clays, silty clays, silt, interbedded carbonate seams, and calcareous nodules with clay and silty clay
6	C-TZ	-8.6	-23.0	Sands and silty sands

Boundary Conditions

General head boundaries (GHB) were assigned around the perimeter of the model for all six layers, as shown in Figure 2. The GHB represents a constant water source beyond the limits of the primary focus area and provides characteristics of the regional aquifer system. A drain boundary was placed within the model to simulate the 60" storm drain that runs north to south along the eastern section of the primary focus area. The D-cohesive zone has no impacts and a low hydrologic conductivity allowing for an ideal no-flow bottom boundary for the groundwater model.

Figure 2: Boundary Conditions - Layers 1 - 6

MODEL INPUT PARAMETERS AND CALIBRATION

MODFLOW utilizes several parameters to represent the hydraulics within the model. Each parameter is zoned within the grid to represent the different materials that compose each layer of the model. Initial values were input from various data sources to provide a preliminary solution for the steady-state simulation. Golder performed calibration procedures in the steady-state simulation to produce model results closely matching water level elevations from the May 14, 2018 and January 4, 2019 data sets. The parameters below represent the hydraulic characteristics of the aquifer:

- lateral hydraulic conductivities (K_h);
- vertical hydraulic conductivity (K_v);
- recharge.

Each parameter is discussed briefly in the subsequent sections. Data sources are provided for each of the initial values. Following a discussion of the calibration process, the final calibrated values and statistics are presented.

Hydraulic Conductivity

Initial values for hydraulic conductivity were derived from historic hydrologic data conducted onsite for the A-TZ, B-CZ, B-TZ, and D-TZ layers by Golder and others. For the C-TZ layer, slug test data were utilized from Idaho National Laboratory's subsurface contaminant transport investigations at the North Cavalcade Superfund Site,

which has a similar lithology, approximately two miles northwest of the HWPW Site. Hydraulic conductivity was expressed in units of feet per day (ft/d) and identified in the model as zones. Each layer was assigned a zone based on the porous material associated with that layer.

Layer 1 represents the ground surface to subsurface zones (A-CZ) which are comprised of clay, silty clays, and silts. Layer 2 is the first transmissive zone, identified as the A-TZ, and is comprised of sand and silty sands. Layer 3 (B-CZ) is primarily made up of cohesive soils that contain clays, silty clays, and silts. Layer 4 represents the discontinuous B-TZ sand and silty sands in the western half of the Site that pinches out to B-CZ cohesive soils in the east. Layer 5 underlies the B-TZ in the west and B-CZ in the east. This layer simulates the C-cohesive zone identified as the C-CZ which is comprised of cohesive soils such as clays, silty clays, and silts with interbedded carbonate seams. Layer 6 is a sand and silty sand layer identified as the C--TZ. The initial conductivity values for each layer are discussed further in the calibration subsection.

Recharge and Evapotranspiration

The recharge package of MODFLOW was used to simulate infiltration of rainfall into the porous materials in units of ft/d. Three zones were delineated for the HWPW model domain. Each zone was specific to certain Site characteristics at the model surface. Zone 1 was assigned to the previously developed HWPW Site that has been cleared of structures as well as the residential areas around the HWPW Site. Zone 2 was assigned to the intermodal facility which is primarily capped with impervious materials. Zone 3 was assigned to the areas along the rail line that run southwest to northeast and split the HWPW Site and the intermodal facility. Previous recharge studies for this region indicate relatively low recharge values in the range of to 0.0004 to 2 inches per year (up to 0.0004 ft/yr) (Scanlon, 2003[3]). Therefore, initial recharge values were set to be generally low, and the range for acceptable recharge varied from a minimum value of 9.13×10^{-8} ft/d to a maximum value of 0.00046 ft/d. The recharge zones are shown on Figure 3.

[3] Scanlon, B.R., A. Dutton, and M. Sophocleous, 2003, Groundwater Recharge in Texas: The University of Texas at Austin, Bureau of Economic Geology, Submitted to Texas Water Development Board.

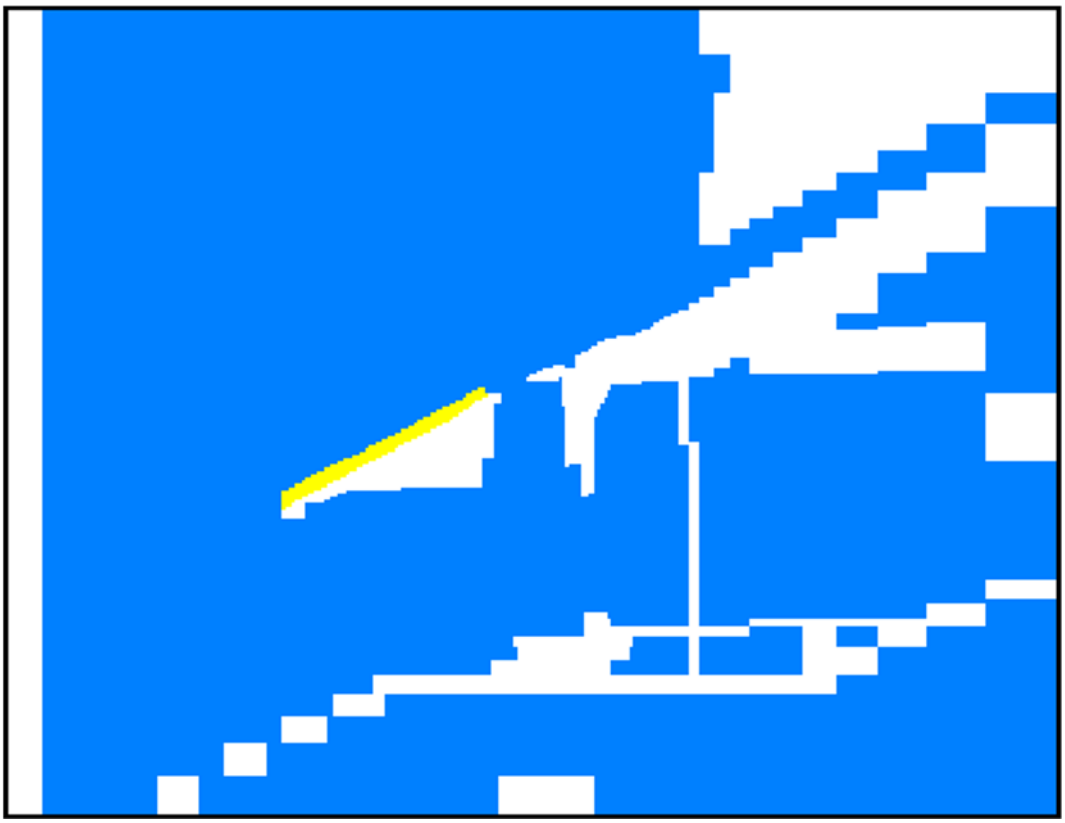


Figure 3: Recharge Zones

Calibration

MODFLOW was run in steady-state mode, with the initial heads in the model set as the top of Layer 1. Groundwater elevation data for the existing network of monitoring wells provided reference groundwater elevations at varying intervals that Golder used as calibration targets for the steady-state model calibration. These targets were placed into the layer of each model that matched the screened interval of the monitoring wells. There are many sets of observed water levels (calculated groundwater elevations) for the Site which have been measured during semi-annual monitoring events. To select an appropriate groundwater elevation data set for calibration, the historic monthly rainfall for the past 20 years was evaluated and periods of time where rainfall was relatively stable (not anomalously high or low for 1-2 months before the data set was collected). That evaluation was cross referenced with the historic groundwater elevation data sets and the relative number of operational monitoring wells for each data set to select representative sets of data where groundwater elevation were expected to be relatively stable and most of the current monitoring wells were in place and monitored.

Based on this evaluation, groundwater elevation data sets for two monitoring events were selected for use in model calibration, including May 14, 2018 and January 3, 2019. The primary calibration process was conducted using the groundwater levels from the May 14, 2018 event. Once the difference between the calibration water level elevations and the observed elevations was sufficiently low (root mean square (RMS) difference of < 1 ft and scaled RMS difference < 5%, which represent commonly accepted calibration targets), the January 3, 2019 data set was used to crosscheck the calibration of the model and test the stability of the calibration results. The

measured and calculated head values for each target are summarized in Table 2. The target locations in Layers 2, 3, 4, and 6 are depicted in Figures 4, 5, 6, and 7, respectively.

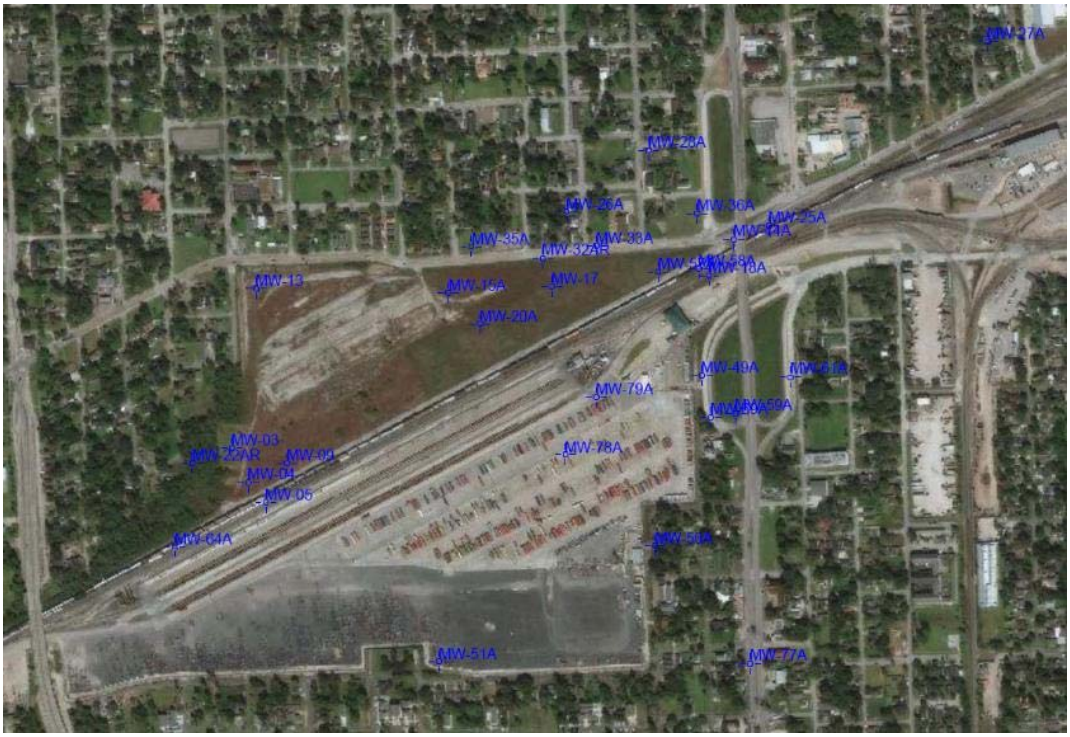


Figure 4: Head Target Locations for Layer 2

Figure 5: Head Target Location for Layer 3

Figure 6: Head Target Locations for Layer 4

Figure 7: Head Target Locations for Layer 6

Table 2: Head Target Values for Layer (5/14/18 Data Set)

Target ID	Observed Head Value (ft)	SS Model Head Value (ft)
MW-03	42.73	42.54
MW-04	43.79	42.76
MW-05	42.67	42.77
MW-09	43.05	42.56
MW-13	39.69	40.73
MW-15A	40.23	39.56
MW-17	38.71	38.08
MW-18A	33.86	34.78
MW-20A	40.54	40.05
MW-22AR	41.15	42.70

Target ID	Observed Head Value (ft)	SS Model Head Value (ft)
MW-25A	37.16	36.46
MW-26A	38.01	37.50
MW-27A	39.98	39.61
MW-28A	37.84	36.09
MW-32AR	38.65	37.78
MW-33A	37.83	37.45
MW-35A	36.60	38.36
MW-36A	35.61	34.53
MW-44A	35.20	35.15
MW-49A	33.84	35.59
MW-50A	41.69	39.51
MW-51A	40.64	41.56
MW-57A	38.05	36.50
MW-58A	34.82	34.98
MW-59A	35.37	36.92
MW-61A	38.40	37.74
MW-64A	41.92	43.26
MW-69A	34.37	36.31
MW-77A	41.99	39.84
MW-78A	39.40	40.16
MW-79A	39.49	39.31

Table 3: Head Target Values for Layer 3 (5/14/18 Data Set)

Target ID	Observed Head Value (ft)	SS Model Head Value (ft)
MW-33BR	38.32	36.74
MW-35B	38.72	38.72
MW-59B	35.27	35.98
MW-63B	37.29	36.59
MW-70B	37.34	36.97
MW-67B	33.77	35.41

Table 4: Head Target Values for Layer 4 (5/14/18 Data Set)

Target ID	Observed Head Value (ft)	CC Model Head Value (ft)
MW-12B	41.43	41.14
MW-14	40.57	40.28
MW-15B	40.29	39.86
MW-22BR	40.44	41.32
MW-32B	37.94	37.27
MW-38B	40.89	41.15
MW-39B	40.85	41.03
MW-40B	41.15	41.10
MW-41B	40.66	41.23
MW-42B	41.76	41.07
MW-57B	37.61	35.89
MW-62B	41.35	41.27
MW-68B	38.17	37.92
MW-74B	39.25	38.92
MW-75B	37.56	38.20

Target ID	Observed Head Value (ft)	CC Model Head Value (ft)
MW-80B	35.75	37.80
MW-81B	38.54	39.15
MW-82B	39.03	38.89
MW-83B	37.86	37.43
MW-84B	37.14	36.57
TW-41B	41.00	41.21
P-11	41.84	41.25

Table 5: Table 5: Head Target Values for Layer 6 (5/14/18 Data Set)

Target ID	Observed Head Value (ft)	SS Model Head Value (ft)
MW-15C	26.68	27.19
MW-17C	27.15	27.36
MW-18C	28.00	27.73
MW-19C	27.33	27.37
MW-25C	28.47	28.03
MW-27C	29.15	29.68
MW-28C	27.37	27.95
MW-34CR	28.21	27.82
MW-48C	27.35	27.43
MW-51C	26.65	26.16
MW-53C	28.93	28.35
MW-54C	28.68	28.32
MW-68C	27.45	27.55
MW-76C	26.38	26.49

Target ID	Observed Head Value (ft)	SS Model Head Value (ft)
MW-83C	27.31	27.56
MW-85C	26.49	26.62
MW-86C	26.35	26.24
MW-87C	28.00	27.85
MW-88C	26.50	26.84

The calibration process was supported by an automated parameter estimation tool (PEST) that is embedded in GW Vistas Version 7. To properly use the PEST tool, the modeler identified the parameters that can vary during calibration and ranges for those parameters (ranges based on known / observed and literature values). For the HWPW groundwater model, PEST was used to vary hydraulic conductivity values (based on a reasonable range from aquifer hydraulic tests at the Site) and recharge values (based on values presented in Scanlon, 2003). The PEST algorithm then varies the values of each parameter for each zone within the prescribed range to achieve the smallest overall difference. Using this approach, hydraulic conductivity and recharge were calibrated iteratively. During hydraulic conductivity calibration, the anisotropy values for each material were set based on ranges published in literature[4] and professional judgment.

The standard PEST approach consists of iteratively adjusting parameters zone by zone. A user can vary the values across a layer by using multiple zones; however, this can be a time-consuming process without detailed soil characterization across the relatively large model domain. Another mechanism built into GW Vistas is “Pilot Points”, which represent an alternative way of using PEST to vary parameter values on a cell-by-cell basis across the entire model instead of zone-by-zone. To achieve this, pilot points are discretely placed in the model to be located between known groundwater elevations and the parameter to be calibrated is identified along with the initial value and range of the parameter. For the HWPW steady state model, multiple pilot points were placed in each layer within areas where observed groundwater elevations exist. PEST was then used to vary the hydraulic conductivity values at each pilot point within the prescribed boundaries. Once complete, Groundwater Vistas kriges the calibrated values at each pilot point across the layer to avoid sharp changes in values from cell to cell. The final calibrated hydraulic conductivity values for each layer are shown in Figures 8-13.

The calibrated input parameters are included in Tables 6 and 7, and calibration statistics are presented in Table 8. An observed versus modeled water levels plot is provided in Figure 14 and the resulting steady-state potentiometric maps are presented in Figures 15-17 (layers 2, 4 and 6 respectively).

[4] Anderson, Mary O and W.W. Woessner, 1992. Applied Groundwater Modeling. Academic Press, Inc. pps 69-71.

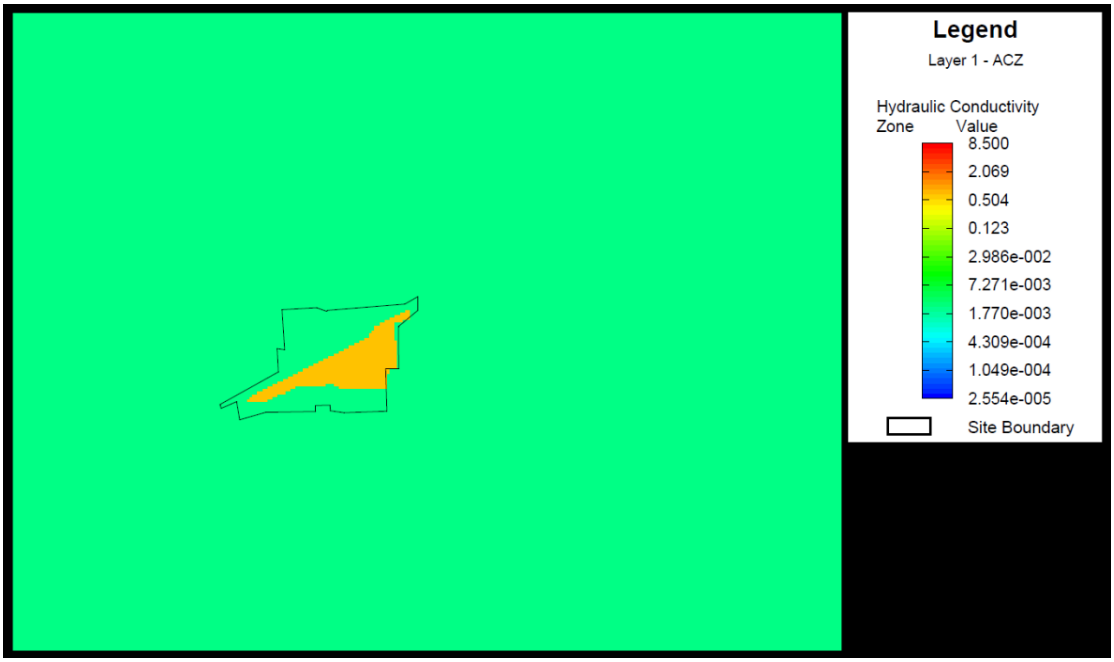


Figure 8: Hydraulic Conductivity Zones for Layer 1 (ft//d)

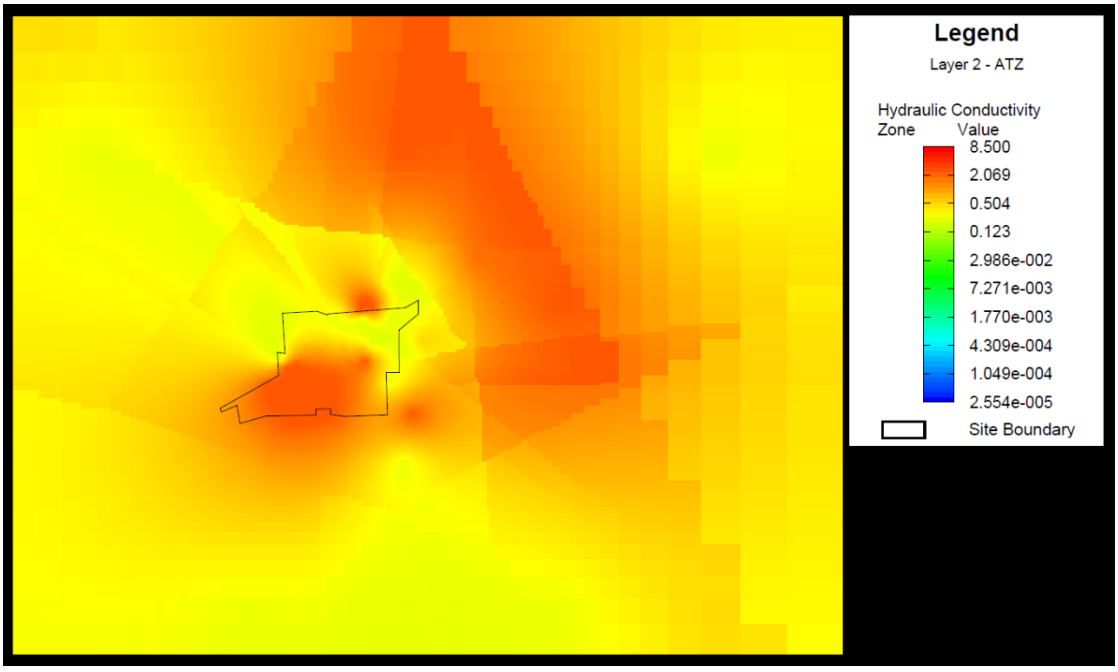


Figure 9: Hydraulic Conductivity Zones for Layer 2 (ft/d)

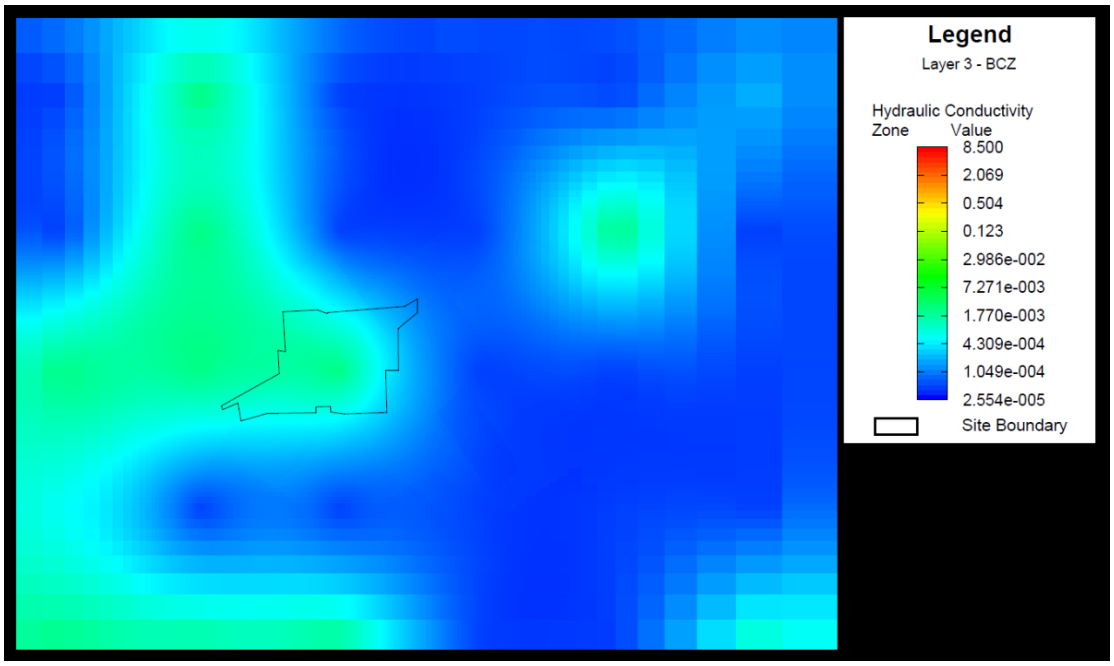


Figure 10: Hydraulic Conductivity Zones for Layer 3 (ft/d)

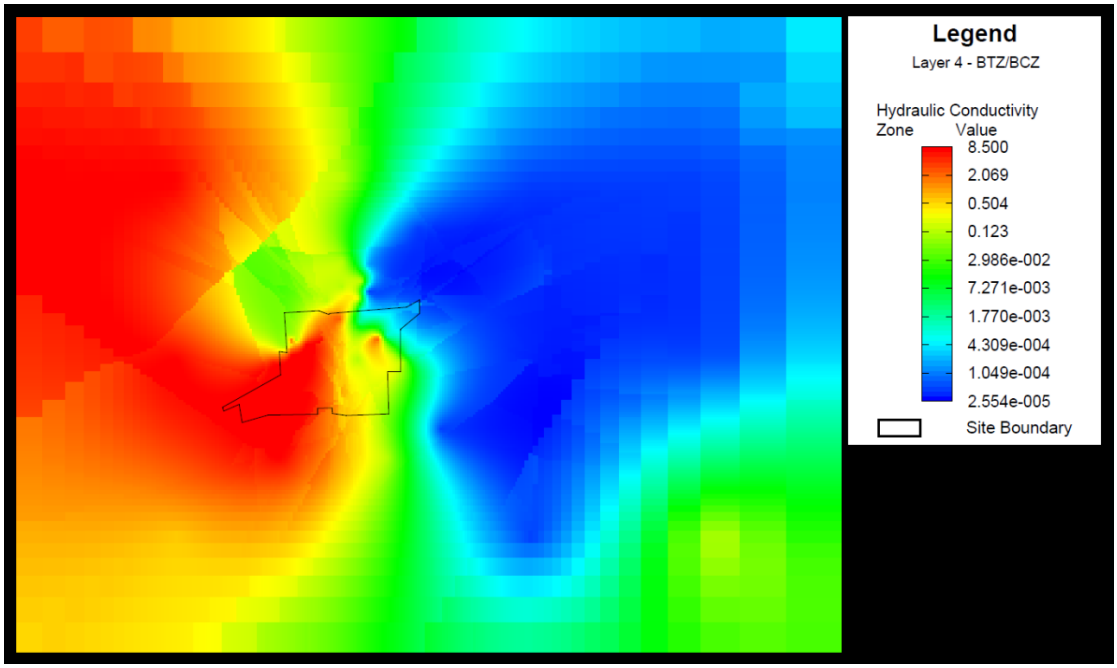


Figure 11: Hydraulic Conductivity Zones for Layer 4 (ft/d)

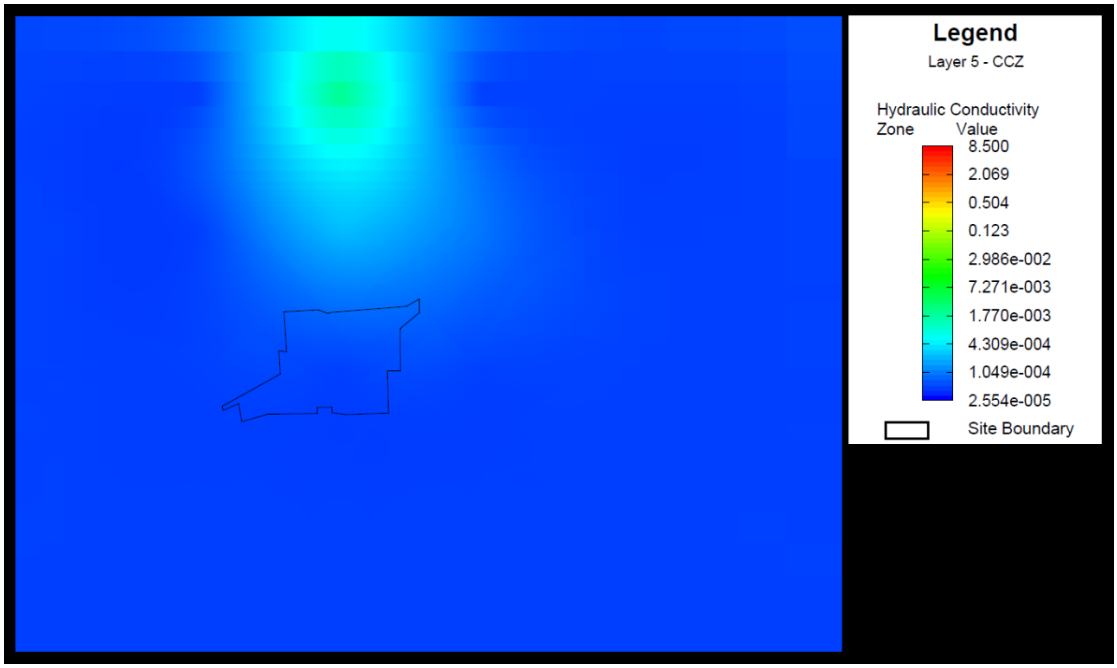


Figure 12: Hydraulic Conductivity Zones for Layer 5 (ft/d)

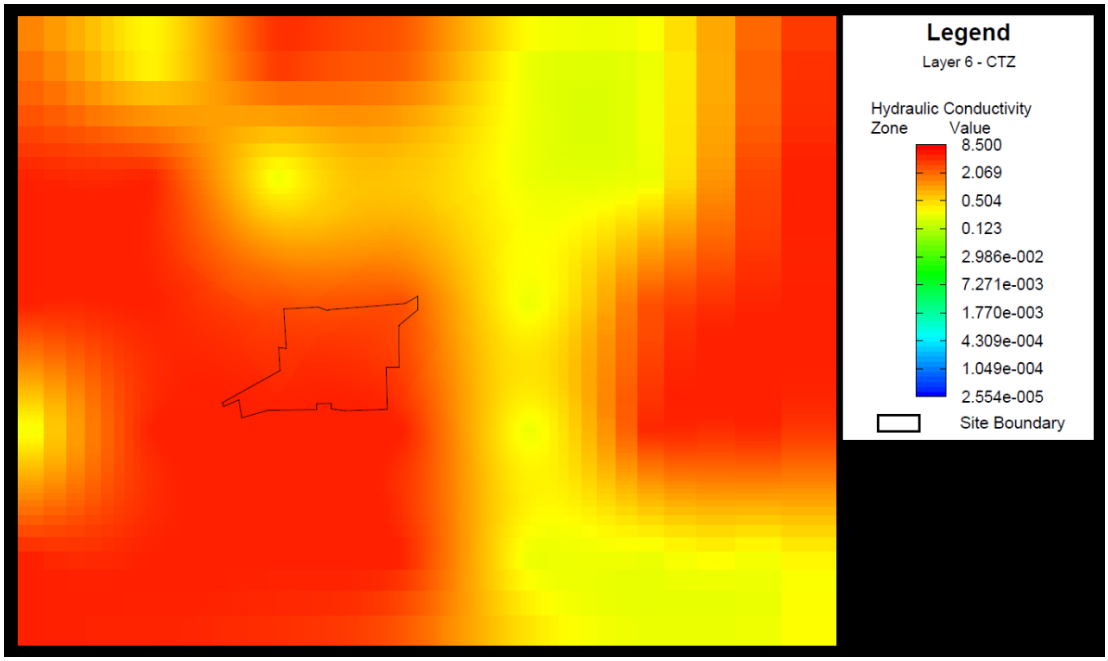


Figure 13: Hydraulic Conductivity Zones for Layer 6 (ft/d)

Table 6: Calibrated Recharge Values

Zone	Area	Recharge	
		(ft/d)	(in/yr)[1]
1	HWPW Site	6.0×10^{-06}	0.026
2	Intermodal Railyard	0	0
3	Rail line	0.000166	0.727

Notes:
1 – inches per year

Table 7: Calibrated Aquifer Parameters

Layer	Zone ID	Initial Model K_h (ft/d)	Initial Model K_h		Calibrated Model K_h		Area-Weighted Average K_h (ft/d)	K_h:K_v	Lithology
			K_h Min (ft/d)	K_h Max (ft/d)	K_h Min (ft/d)	K_h Max (ft/d)			
1	A-CZ	0.0028	5.67×10^{-5}	0.75	0.0028	0.75	0.0094	3:1	Clays, silty clays and silt
2	A-TZ	2.08	0.28	2.83	0.24	2.83	0.81	3:1	Sand and silty sands
3	B-CZ	0.0028	5.67×10^{-5}	0.0283	4.56×10^{-5}	0.0028	4.32×10^{-4}	10:1	Clays, silty clays, and silt
4	B-TZ/ B-CZ	0.70/ 0.0028	5.67×10^{-5}	8.50	2.55×10^{-5}	8.50	1.25	3:1	Sand and silty sands, pinching out to clays, silty clays, silt, interbedded carbonate seams, and calcareous nodules
5	C-CZ	0.0028	5.67×10^{-5}	0.0283	5.19×10^{-5}	0.0023	9.77×10^{-5}	10:1	Clays, silty clays, silt, interbedded carbonate seams, and calcareous nodules with clay and silty clay
6	C-TZ	4.85	0.28	5.67	0.225	5.67	2.65	3:1	Sands and silty sands

Table 8: Calibration Statistics

Parameter	5/14/18 Value	1/3/19 Value
RMS Difference (ft)	0.89	1.17
Minimum Residual (ft)	-2.05	-3.64
Maximum Residual (ft)	2.18	2.83
Range of Observations (ft)	18.71	19.88
Scaled RMS	0.048	0.059
Number of Targets	79	90

Note: Residual value is calculated by subtracting the modeled water level from the target water level. Negative residual values indicate the modeled water level is higher than observed.

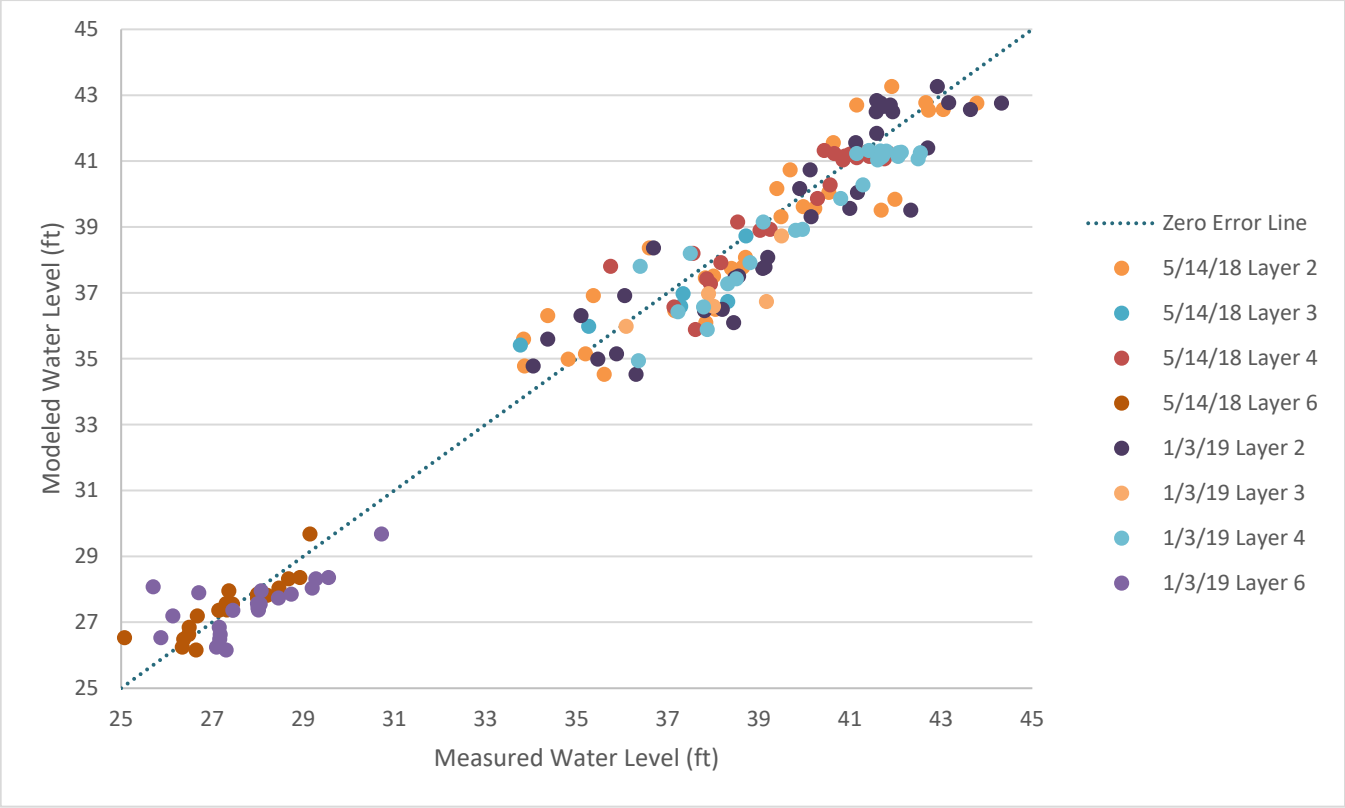


Figure 14: Observed versus Calibrated Model Heads

Figure 15: Calibrated Steady State Potentiometric Map compared to May 2018 Observed Heads for the A-TZ (Layer 2)

Figure 16: Calibrated Steady State Potentiometric Map compared to May 2018 Observed Heads for the B-TZ and B-CZ (Layer 4)

Figure 17: Calibrated Steady State Potentiometric Map compared to May 2018 Observed Heads for the C-TZ (Layer 6)

PROPOSED REMEDIAL ALTERNATIVES

Golder used the calibrated groundwater model to simulate and evaluate the performance of proposed remedial alternatives. The goal of each alternative was to reduce the potential for off-Site migration of DNAPL and impacted groundwater from the northern HWPW property boundary. The groundwater modeling task of the remediation design focused on variations of the following alternatives:

- Partial Slurry Cut-off Wall – Varying Alignment and Length
- Groundwater Extraction and Treatment – Hydraulic Containment on North Boundary
- Limited Length Partial Slurry Cut-off Wall with Groundwater Extraction (edges)
- Limited Length Partial Slurry Cut-off Wall with Permeable Reactive Barrier (edges)

Each of the alternatives were modeled separately and results were checked for their influence on groundwater mounding or drawdown and changes in groundwater flow direction in each of the transmissive zones.

Partial Slurry Cut-off Wall – Varying Alignment and Length

The cut-off wall concept was selected for further evaluation due to a variety of attributes including:

- Site soils are well suited for soil/bentonite slurry
- Ability to isolate most of the observed impacts inside the Site boundaries – positive migration control
- Proposed depths and alignment amenable to moderate costs
- Commonly used and widely accepted technology

Different slurry wall layouts and depths were simulated to provide a high-level of assessment of two proposed layouts. The first proposed layout was a layout of approximately 1,500 linear feet (LF) primarily along the northern Site boundary with a small extension along the railroad tracks. The bottom of this proposed slurry wall orientation was keyed into the D-CZ (model bottom). In terms of the groundwater model, this version of the wall penetrates all layers along the entire alignment. Hydraulic conductivity for all slurry wall scenarios was defined as 2.83×10^{-5} ft/d (1.0×10^{-8} cm/s) and the wall thickness was modeled as 2.5 ft. Velocity vectors and head residuals at the calibration targets were used to evaluate changes in flow paths and potential mounding due to the slurry wall. The layout, velocity vectors, and head residuals for each layer are shown in Figures 18 through 20.

The second simulated slurry wall layout was an extended alignment in both directions to: 1) extend the western side of the wall to reduce the potential for impacted water bypassing the western end of the shorter alignment; and 2) to extend the eastern side of the cut off wall further south to address the potential for migration of impacted groundwater (and potential DNAPL) along the eastern side of the intermodal yard. The total wall depth for this layout remained consistent along the western extension (wall extended to the base of the C-TZ / bottom of the model); however, the eastern side of the cut off wall (north-south oriented wall alignment) was simulated to a depth of roughly 50 feet (keyed into the C-CZ layer, above the C-TZ layer). The extended wall layout, velocity vectors, and head residuals for each layer are shown in Figures 21 through 23.

Discussion Relevant to Feasibility Study

The groundwater model simulations for the initial version of the slurry wall (approximately 1,500 LF) are shown in Figures 15 through 17. Based on the simulation results, limited mounding of groundwater is anticipated on the

southern side of the wall. While the cut-off wall addresses advective flow across the northern Site boundary where the wall is placed, the mounding affects create a small area of reverse flow at the edges of the cut-off wall (flow around the edges). This is an expected condition when placing a partial barrier wall. Although the simulated shorter wall would reduce the potential for DNAPL migration across the northern boundary, it is possible that dissolved-phase COCs could migrate around the edges of the wall, generally following the velocity vectors shown in Figure 15. On the western edge of the wall, this potential for groundwater flow around the wall could result in migration of dissolved phase COCs toward Liberty Road to the north. Studies have shown that the dissolved COC plumes from creosote sources tend to have concentrations three to 50 times lower about 150 feet downgradient of the source compared to source concentrations[5],), however Liberty Road is located within 100 feet of the western end of the wall. In addition, the shorter cut-off wall concept does not address the potential for off-Site migration of DNAPL or dissolved phase COCs along the eastern boundary of the intermodal yard.

The second simulation incorporates a longer cut-off wall alignment (greater than 3,000 LF) by adding a southern leg to the eastern side, which reduces the potential for migration across the eastern Site boundary, and an extension of the western end of the short cut-off wall generally oriented in a southwest direction, as shown in Figures 18 through 20. The extension on the western side is intended to address groundwater flow around that edge of the cut-off wall. While groundwater does flow around the updated wall edge, that edge of the wall is more than 600 feet from the nearest property boundary. Along the eastern side of the Intermodal Yard, the simulated cut off wall is approximately 50 feet deep, extending through cell 5 (through all layers except the C-TZ zone). Similar to the western extension, groundwater continues to flow around the southern edge of the eastern wall alignment. However, the southern end of the wall is greater than 300 feet from the nearest known occurrence of DNAPL which addresses the potential off-Site migration of DNAPL and dissolved phase COCs toward the east.

In summary, both conceptual slurry cut-off wall alignments reduce the potential for DNAPL migration across the northern property boundary. The shorter wall alignment does not eliminate the potential for dissolved phase COCs to migrate off Site, and would need to be supplemented with additional remedial measures at the wall edges (e.g., permeable reactive barrier or groundwater extraction and treatment) to mitigate the potential for dissolved phase COCs to migrate off Site. In addition, the shorter wall alignment does not reduce the potential for offsite migration along the eastern side of the Intermodal Yard.

The longer cut-off wall alignment provides enhanced control of DNAPL and dissolved phase COCs, and also reduces the potential for offsite migration along the northern and eastern property boundaries without the need for additional remediation measures at the wall edges.

[5] Kiilerich, O., Erik Arvin, 1996. Ground Water Contamination from Creosote Sites. NGWA Groundwater Monitoring and Remediation, Volume 16, Issue 1, pps 112-117, February

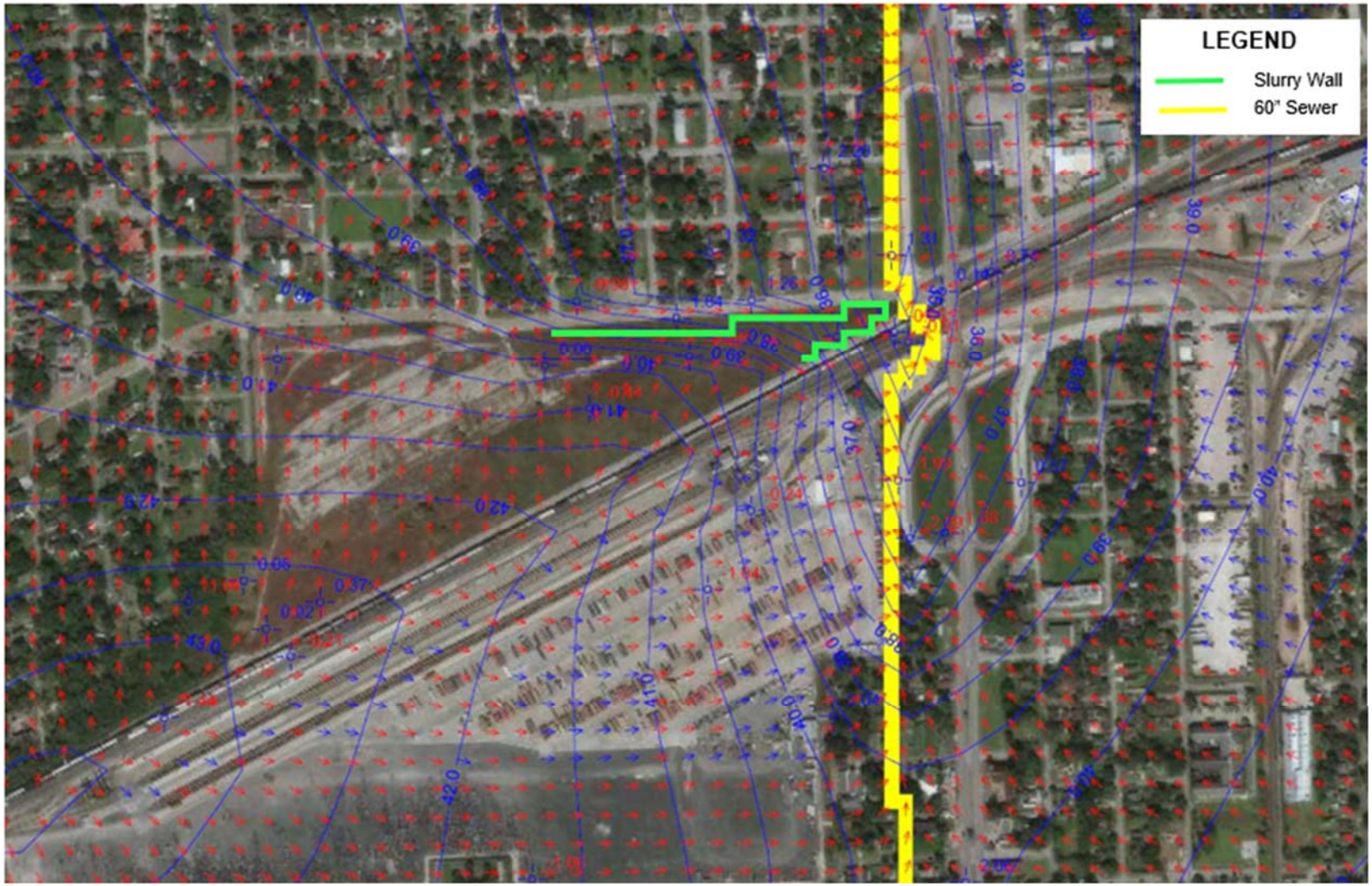


Figure 18: Simulated Slurry Wall - Short Alignment (viewing Layer 2 potentiometric map)

Figure 19: Simulated Slurry Wall - Short Alignment (viewing Layer 4 potentiometric map)

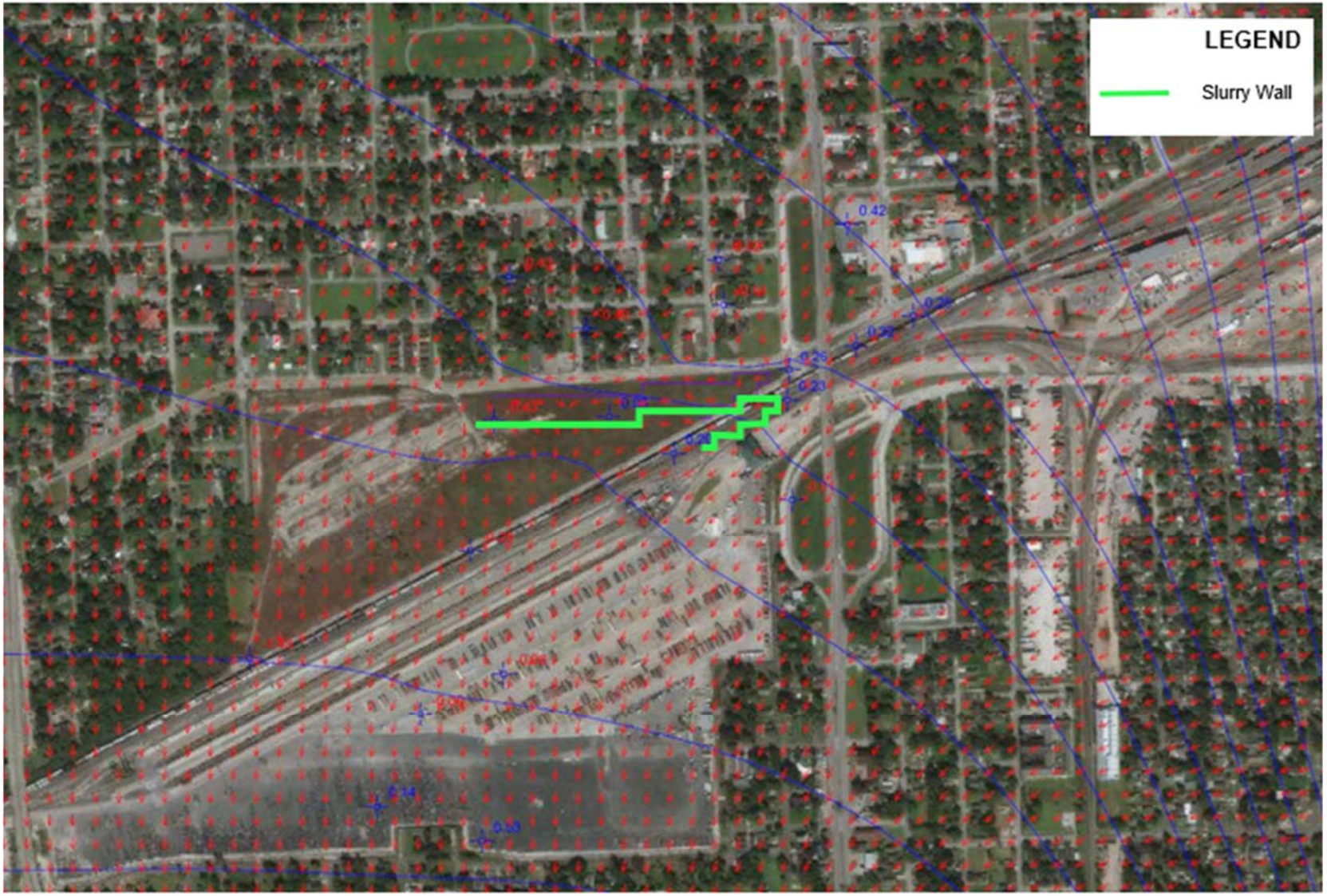


Figure 20: Simulated Slurry Wall - Short Alignment (viewing Layer 6 potentiometric map)

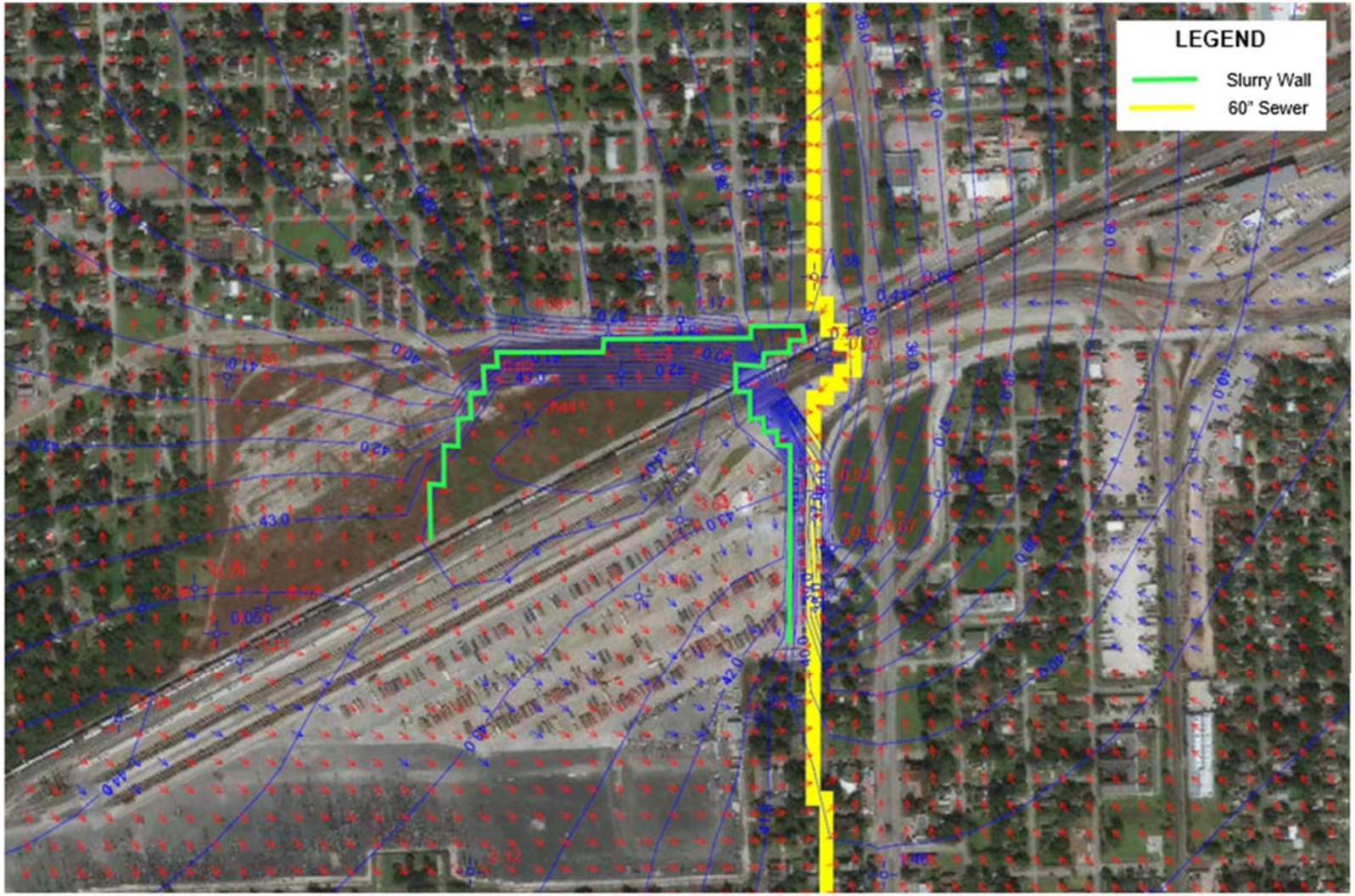


Figure 21: Simulated Slurry Wall - Extended Alignment (viewing Layer 2 potentiometric map).

Figure 22: Simulated Slurry Wall - Extended Alignment (viewing Layer 4 potentiometric map).

Figure 23: Simulated Slurry Wall - Extended Alignment (viewing Layer 6 potentiometric map)

Groundwater Extraction and Treatment (Recovery Wells)

Groundwater extraction and treatment was also selected for further evaluation as a remediation alternative due to the following:

- Suitable infrastructure;
- Commonly used approach for targeted capture and hydraulic containment; and
- Easy to implement

Golder simulated two scenarios that utilize groundwater extraction to reduce the potential for off-Site migration of impacts at the HWPW Site. The first scenario included nested extraction wells along the northern Site boundary only. Each nest included groundwater extraction wells screened in each of the transmissive zones. Five recovery wells nests were used in this scenario. Pumping rates for each extraction well were determined iteratively with the goal of hydraulic containment along the northern property boundary. The pump layouts, pumping rates, groundwater velocity vectors, and groundwater potentiometric maps are presented in Figures 24 through 26.

The second groundwater extraction and treatment scenario included nested extraction wells along the east side of the Intermodal Yard (the eastern property boundary) in addition to the wells along the northern boundary, presented above. Pumping rates were determined iteratively with the goal of hydraulic containment along the northern and eastern boundaries. The resulting groundwater model simulation results are presented in Figures 27 through 29.

Discussion Relevant to Feasibility Study

The objective of this series of simulations was to project the number of well clusters and associated extraction rates for hydraulic containment along the northern and eastern property boundaries. Based on the simulation results, it is projected that hydraulic containment could be achieved using eight extraction well clusters with two to three nested extraction wells in each cluster. At each cluster, the total extraction rate is less than 1 gallon per minute, and the total system extraction rate is estimated to be less than eight (8) gpm.

To maintain the projected hydraulic containment, all extraction wells would need to be operational continuously for the duration that hydraulic containment is needed. The extracted water would be transferred to a treatment system on the HWPW Site for treatment and ultimate discharge.

Use of groundwater extraction and treatment is commonly used for hydraulic containment and is projected to reduce the potential for off-Site migration of groundwater impacted with COCs, in particular from the high permeability zones (the TZ zones). Given that the primary purpose of a groundwater extraction and treatment system is hydraulic control and not DNAPL recovery, the ability of this system to address DNAPL would be limited. It is possible that the creation of hydraulic cones of depression could enhance the potential for downward DNAPL movement in those areas.

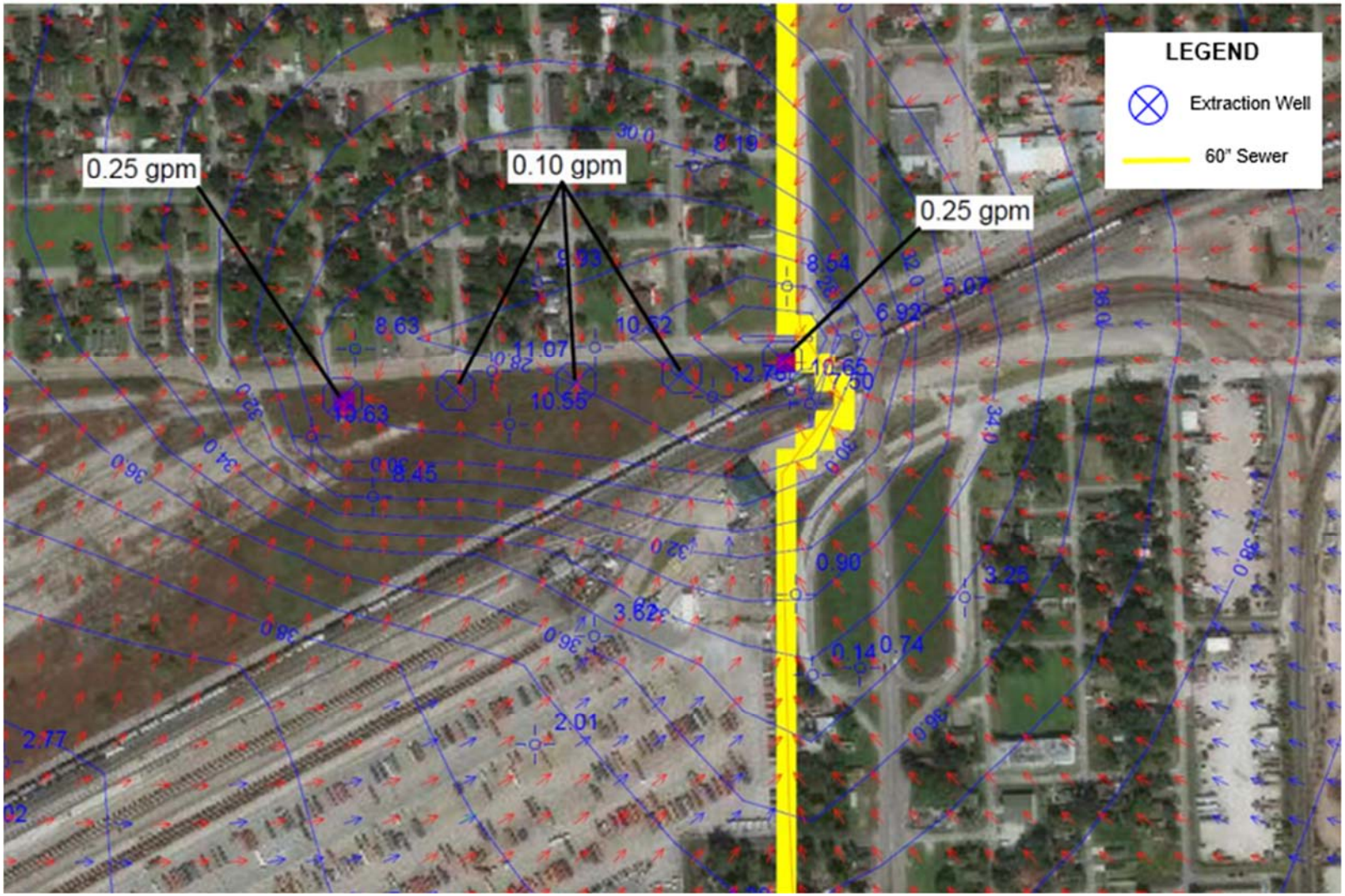


Figure 24: Simulated Groundwater Extraction - North Layout (viewing Layer 2 potentiometric map).

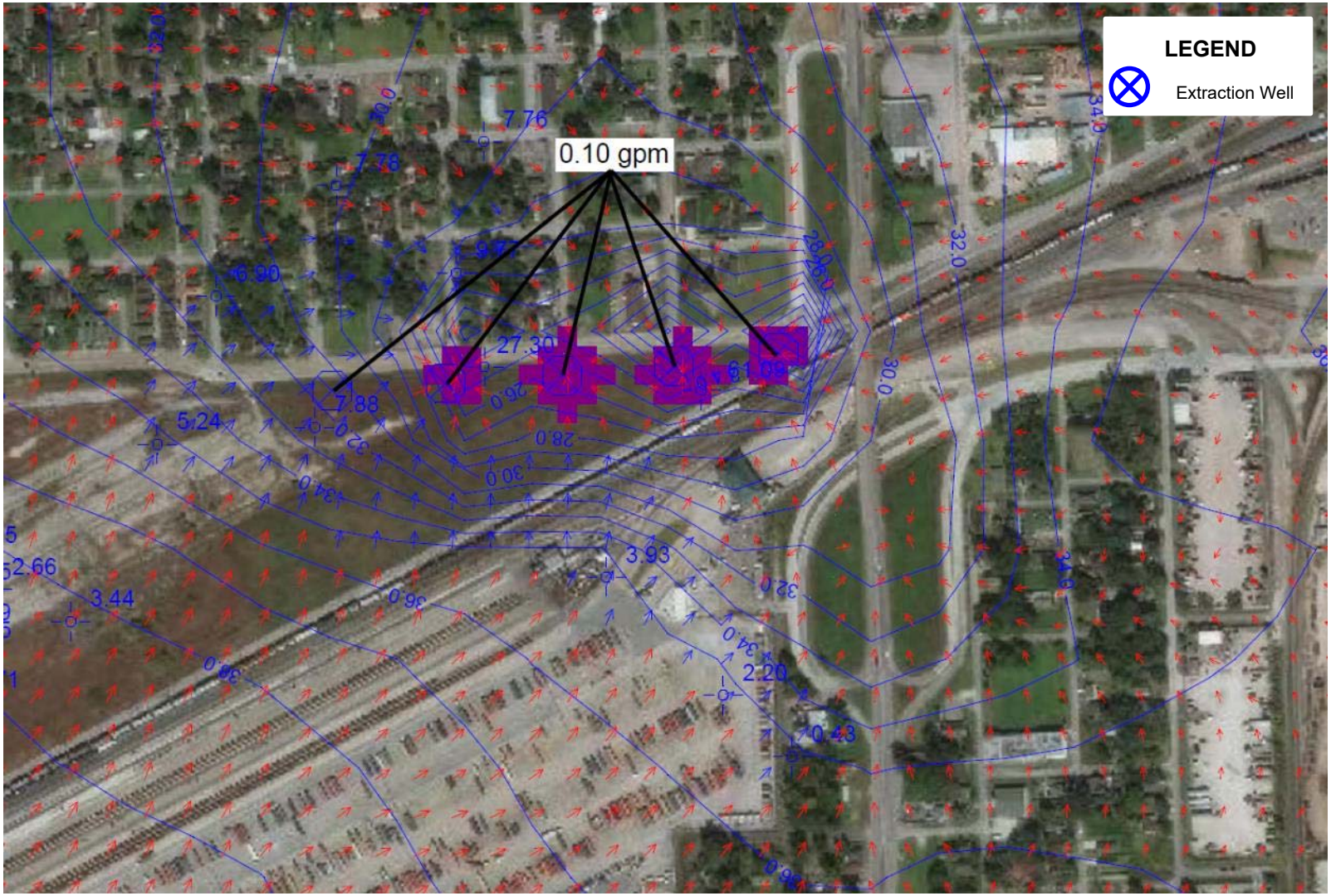


Figure 25: Simulated Groundwater Extraction – North Layout (viewing Layer 4 potentiometric map)

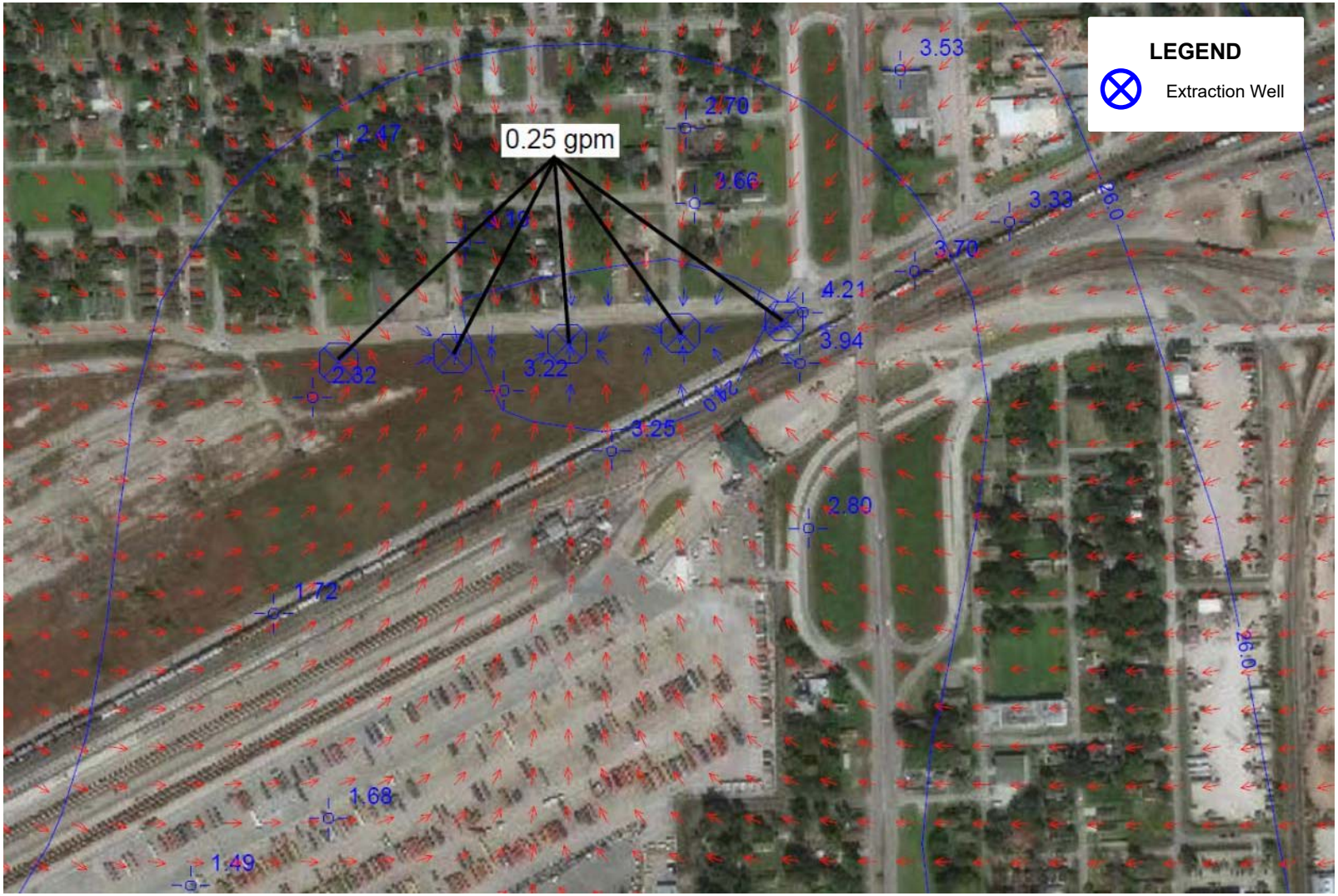


Figure 26: Simulated Groundwater Extraction – North Layout (viewing Layer 6 potentiometric map)

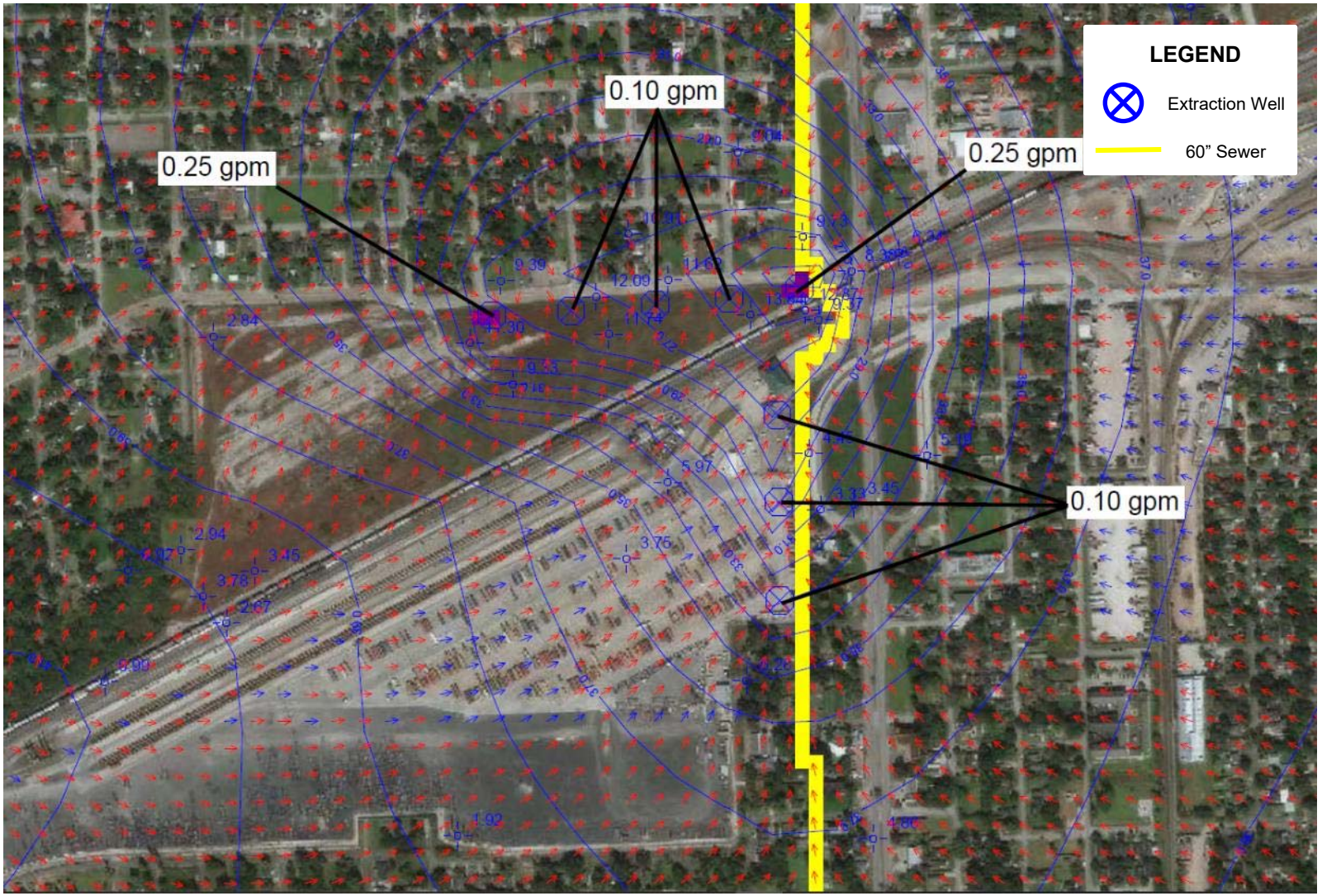


Figure 27: Simulated Groundwater Extraction – North & East Layout (viewing Layer 2 potentiometric map)

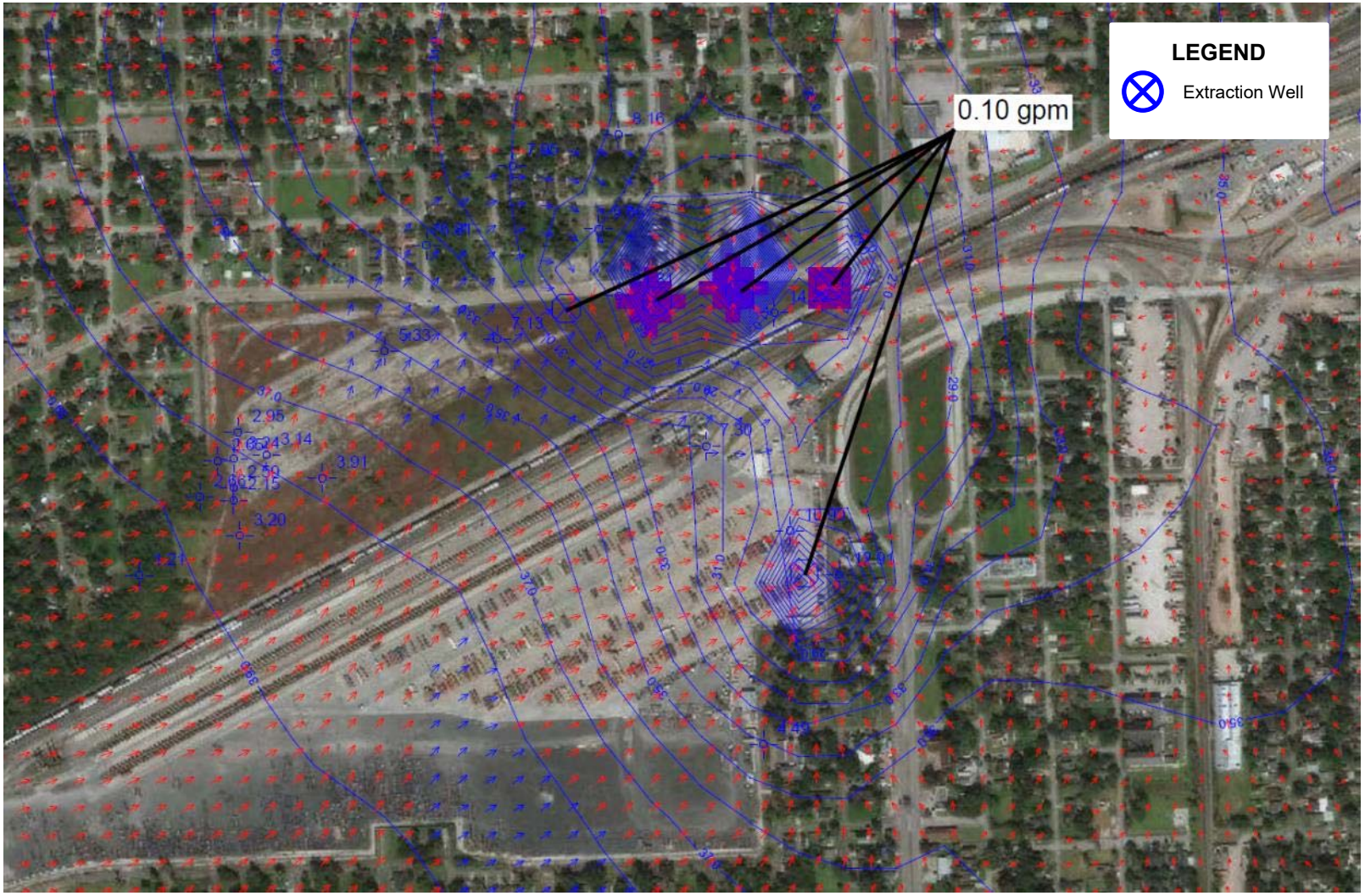


Figure 28: Simulated Groundwater Extraction – North & East Layout (viewing Layer 4 potentiometric map)

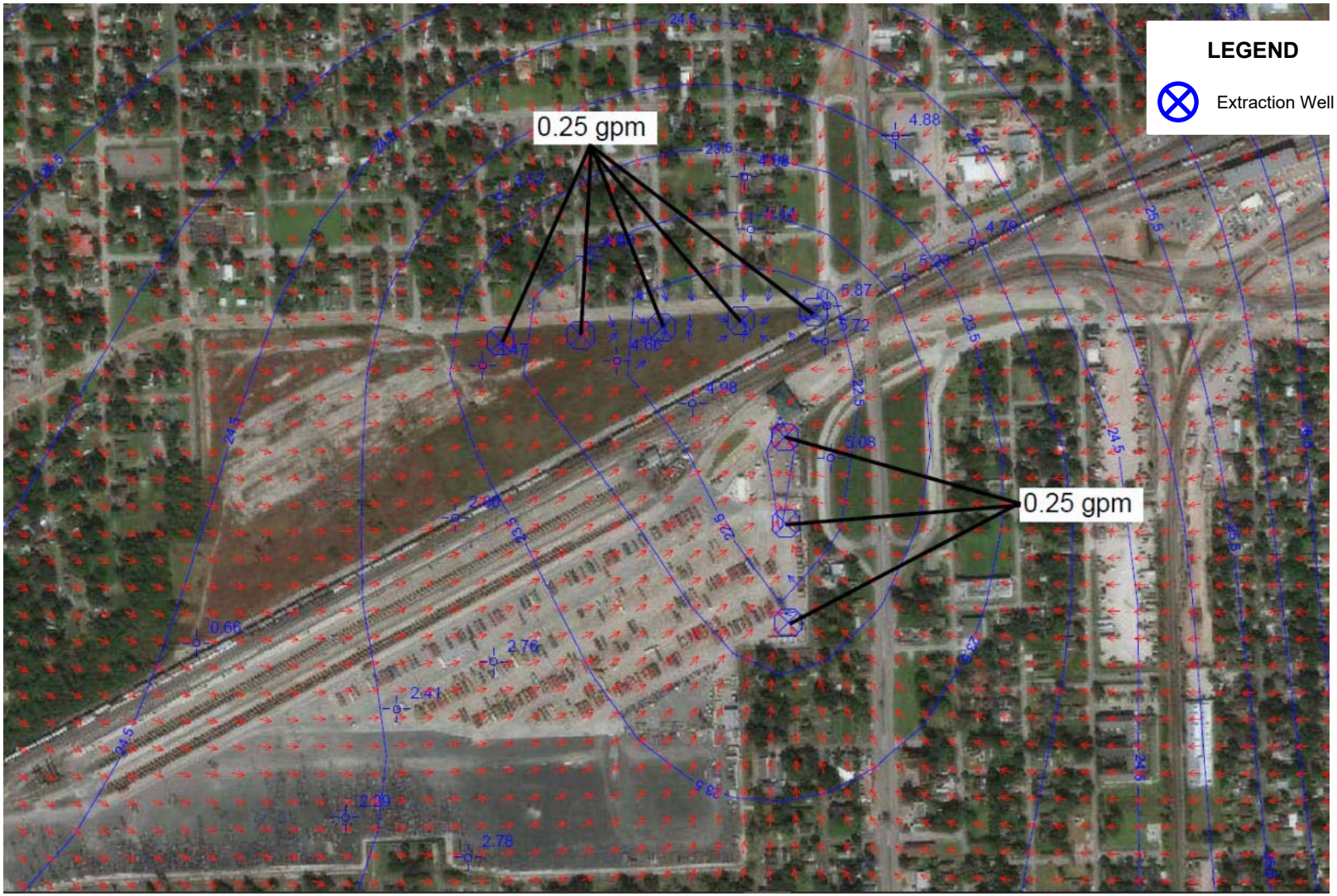


Figure 29: Simulated Groundwater Extraction – North & East Layout (viewing Layer 6 potentiometric map)

Partial Slurry Cut-off Wall with Groundwater Extraction

As discussed in the previous section related to the slurry cut-off wall alignments, the shorter alignment may have limited effectiveness in addressing dissolved phase COCs at the wall edges. Consequently, additional model simulations were run to evaluate the influence of operating groundwater extraction wells at the edges of the shorter wall alignment.

Specifically, Golder modeled a third remedial option that combined the shorter version of the slurry cut-off wall with groundwater extraction wells for hydraulic containment around the wall edges. Groundwater extraction well nests were placed near the northwest and southeast wall edges. Similar to the hydraulic containment scenarios described previously, nested groundwater extraction wells were simulated with one well in each transmissive zone and one well nest at each end of the cut-off wall. Pumping rates were determined iteratively to estimate the minimum extraction rates to capture groundwater flowing around the wall edges. Figures 30 through 33 present the simulation results for the slurry wall and groundwater extraction remediation option.

These simulations indicate that operating well clusters at each end of the wall with a combined extraction rate of approximately 1 gallon per minute per well cluster would be projected to provide containment at the edges of the shorter wall. To be effective, these extraction wells would need to operate continuously for the duration of time that containment is needed at the cut off wall edges.

Permeable Reactive Barrier (PRB)

To provide a less operationally intensive alternative to continuous operation of extraction wells at the edges of the shorter cut off wall alignment, a fourth remedial option was simulated to include a combination of the shorter partial slurry cut-off wall and sections of permeable reactive barrier walls at each end of the cut-off wall to address groundwater flowing around the wall edges. The shorter version of the wall alignment was used for the slurry wall with PRB extensions along the west and southeast ends of the slurry wall. The goal of modeling this scenario was to evaluate the hydraulics of adding a PRB onto the end of the slurry wall and estimate the length of PRB to target groundwater at the edges of the slurry wall. Parameters associated with the slurry wall remain the same to those in the slurry wall only scenarios. The PRB was modeled with a 10-ft thickness and a hydraulic conductivity equal to 0.283 ft/d (1.0×10^{-4} cm/s). The results for these simulations are presented in Figure 34 through 36, and the PRB lengths are noted on the figures.

These simulations indicate that a higher permeability reactive barrier installed at each end of the shorter wall would be projected to address dissolved phase COCs around the barrier wall edges. To design an effective barrier amendment and the required treatment time (correlated to PRB thickness), a treatability study would be needed. The concept of a shorter barrier wall with PRB elements at each edge is feasible to address offsite impacts to the north of the Site. However, none of the scenarios associated with the shorter cut-off wall would be expected to affect groundwater to the east of the Intermodal Yard.

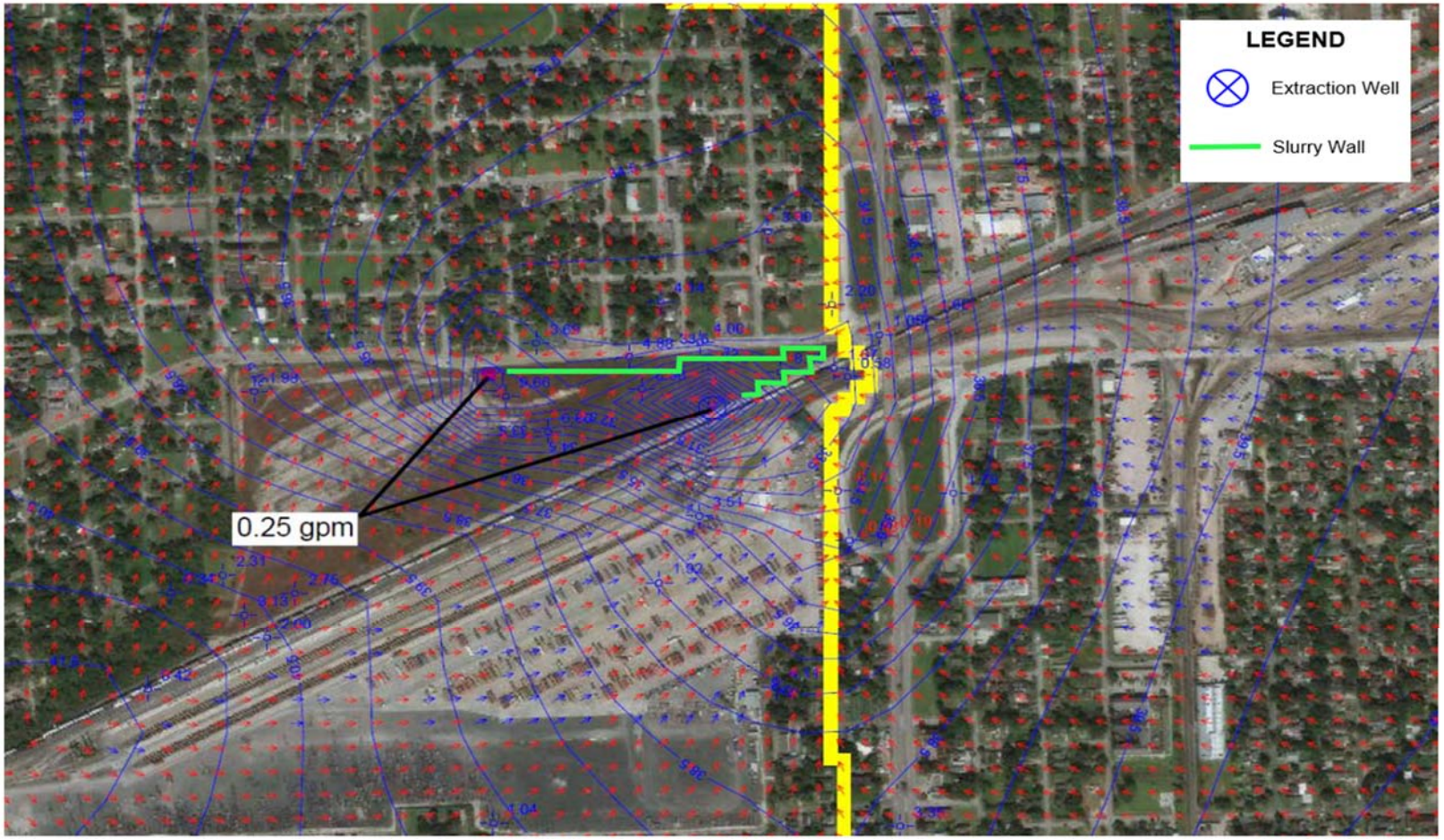


Figure 30**: Slurry Wall with Groundwater Extraction (Layer 2)**

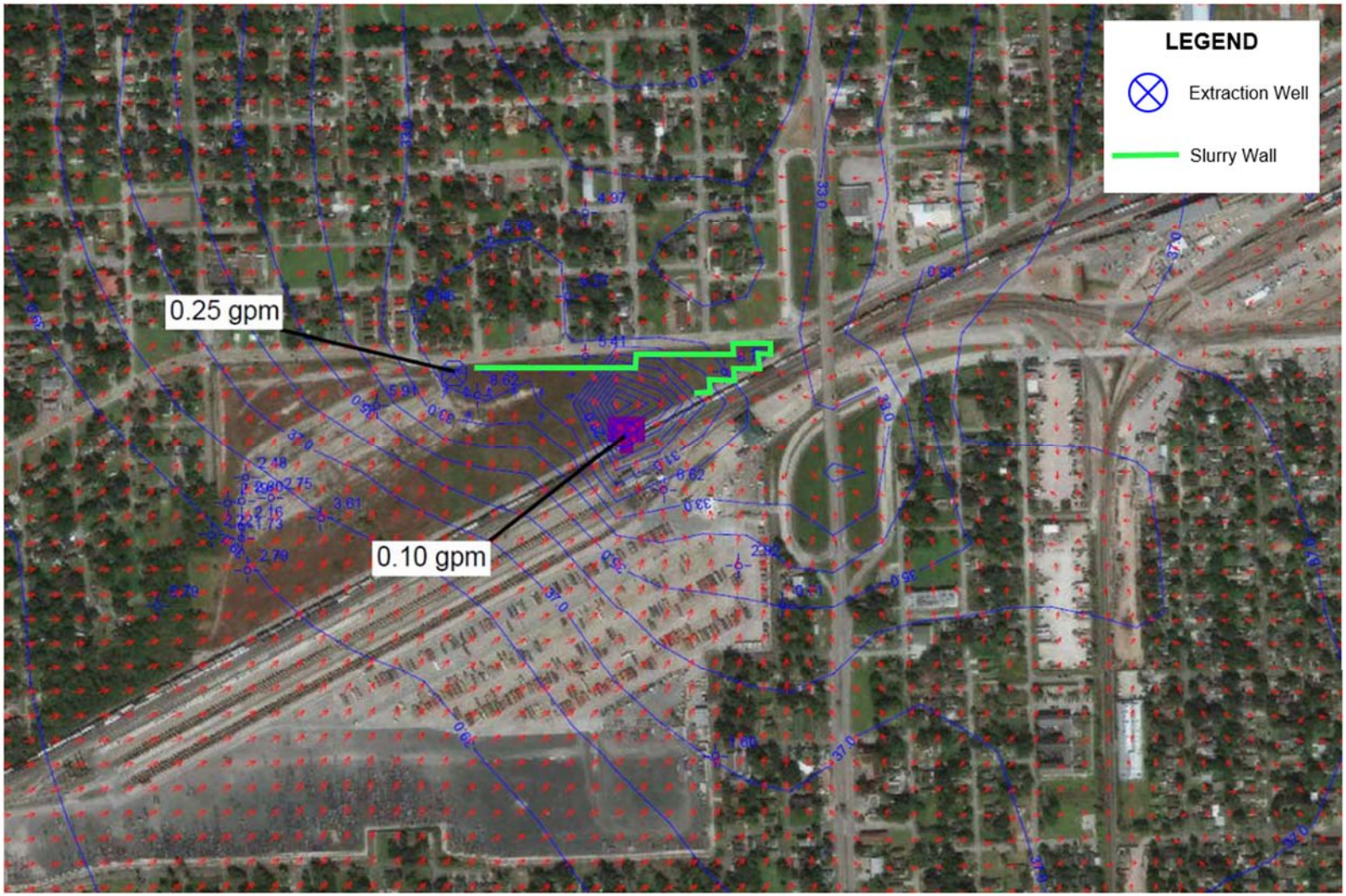


Figure 31: Slurry Wall with Groundwater Extraction (Layer 4)

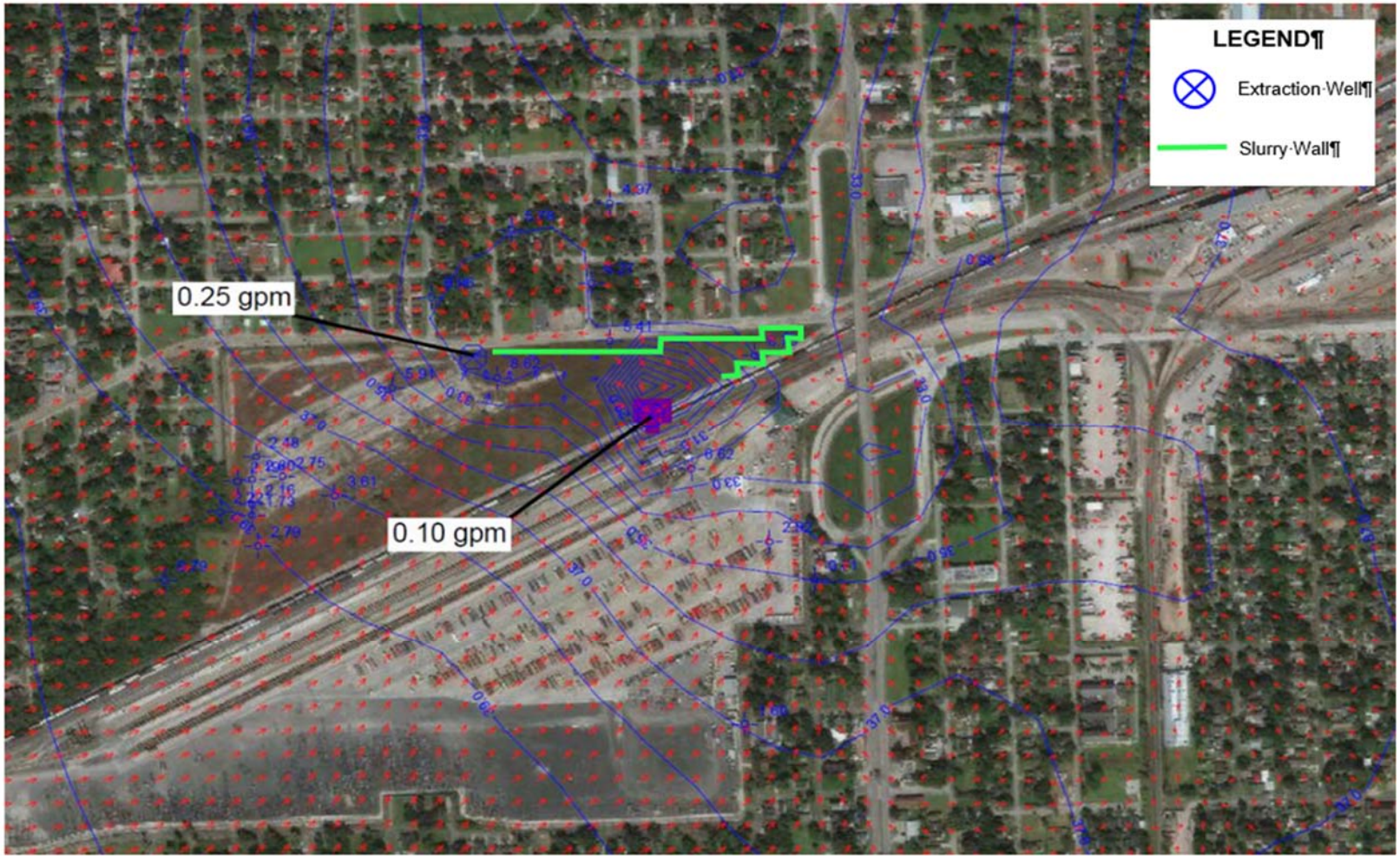


Figure 32: Slurry Wall with Groundwater Extraction (Layer 4)

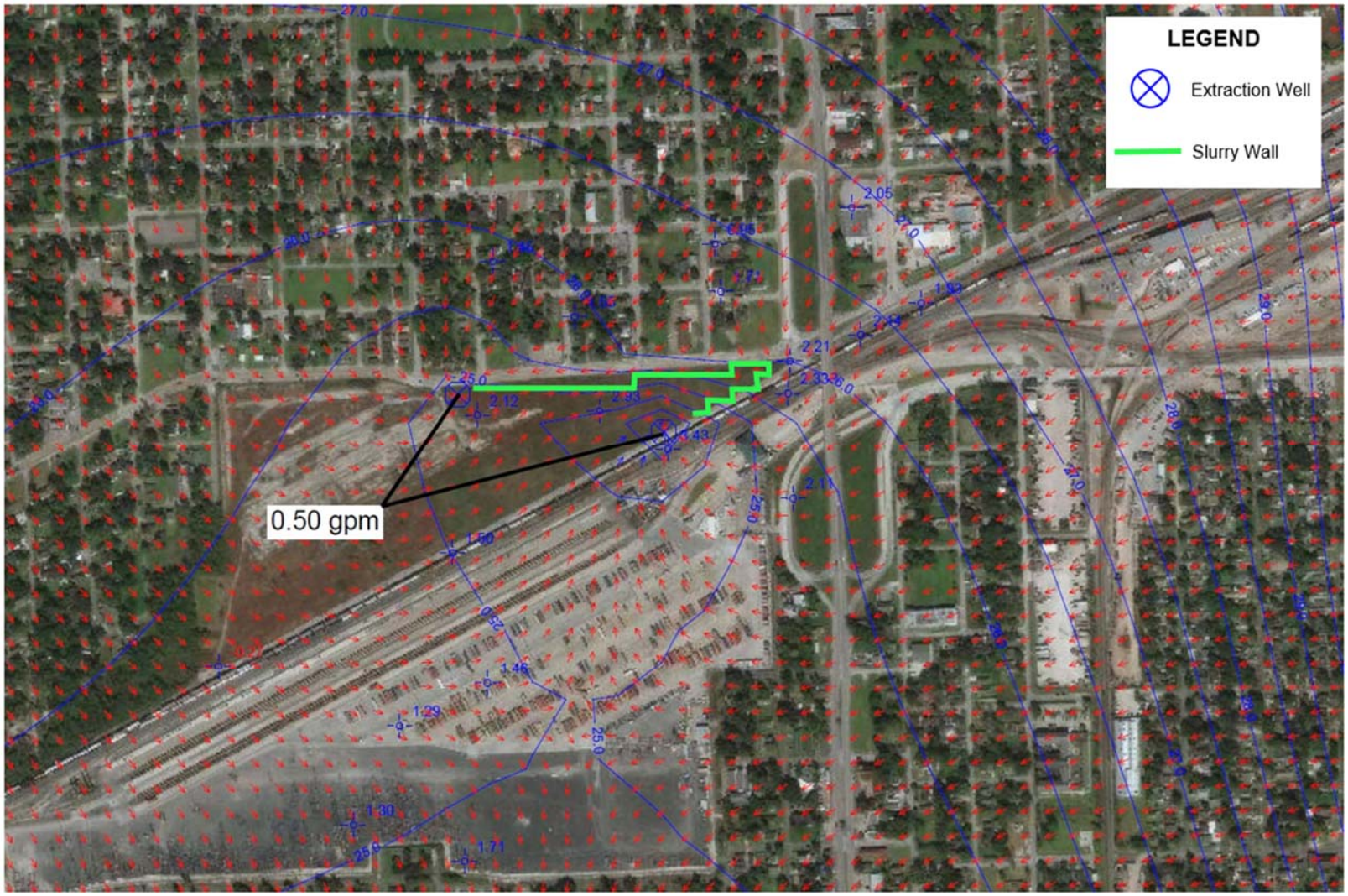


Figure 33**: Slurry Wall with Groundwater Extraction (Layer 6)**

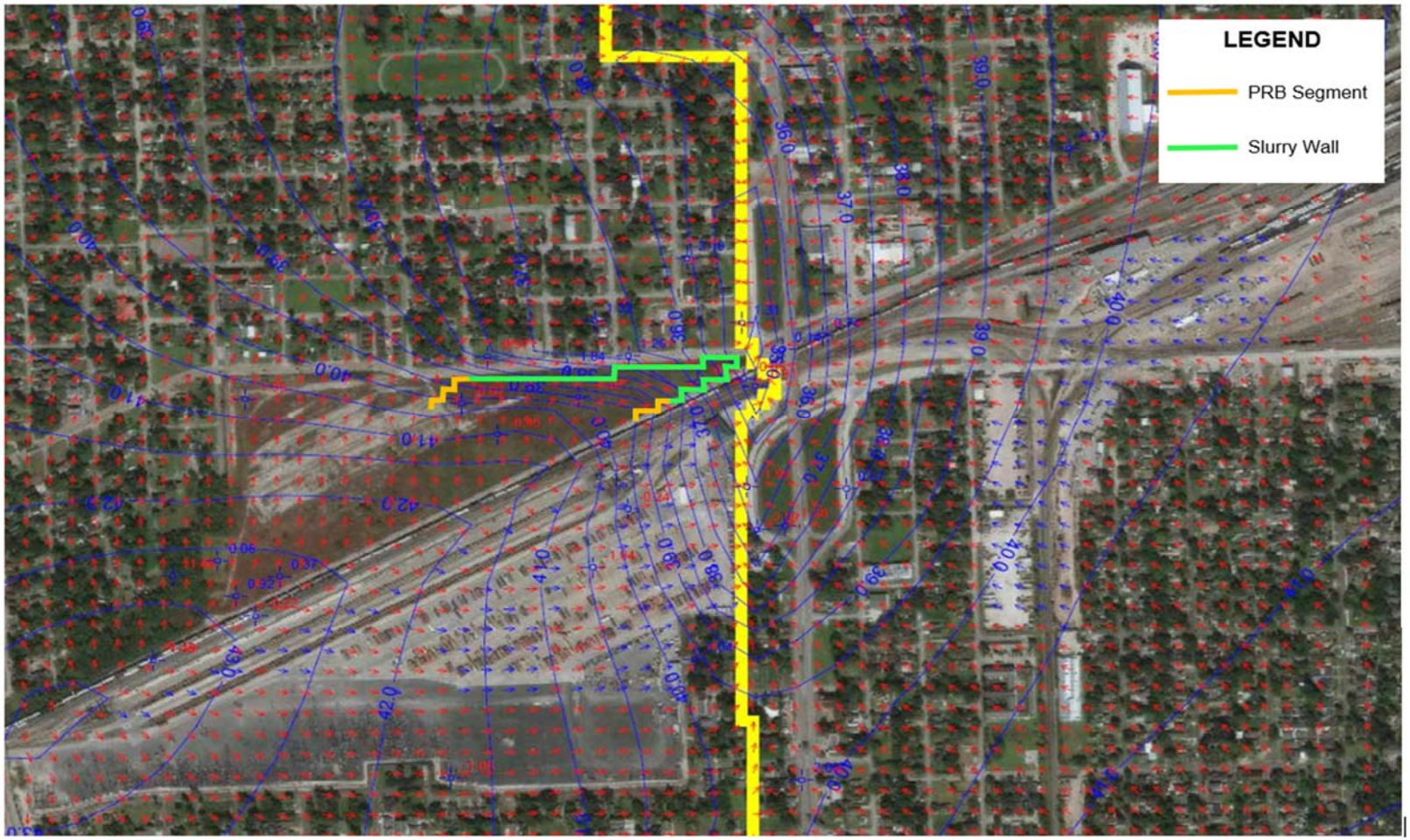


Figure 34: Permeable Reactive Barrier Wall (Layer 2)

Figure 35: Permeable Reactive Barrier Wall (Layer 4)

Figure 36: Permeable Reactive Barrier Wall (Layer 6)

SUMMARY

As part of the HWPW Feasibility Study, Golder used numerical groundwater modeling to create a calibrated steady state groundwater flow model of the existing conditions at the Site, and to simulate and evaluate potential remediation alternatives for addressing DNAPL and dissolved-phase COCs along the northern property boundary (parallel to Liberty Road) and along the eastern side of the Intermodal Yard. Specifically, the groundwater model was used to further evaluate two distinct remedial alternatives, including: 1) a soil/bentonite slurry wall (physical hydraulic barrier); and 2) creation of a hydraulic containment barrier using groundwater extraction and treatment technologies. The groundwater model simulations demonstrate that either method of containment can reduce the potential for migration of dissolved phase COCs; however, the physical barrier wall method would be anticipated to have greater impact on potential migration of DNAPL than would be expected for the groundwater extraction and treatment alternatives.

The simulations further demonstrate that two barrier wall concepts are feasible. The first (shorter) wall alignment addresses migration of DNAPL and dissolved phase COCs along the northern Site boundary, but not the eastern Site boundary. In addition, some form of additional remediation would likely be needed at the outer ends of the shorter wall alignment to manage dissolved phase COCs that could potentially flow around the ends of the wall. The second barrier wall concept includes a longer alignment to the west and a segment along the eastern property boundary. In that concept, potential DNAPL migration from the Site is projected to be contained on both the north and eastern sides. In addition, the projected groundwater flow path from the known DNAPL area to the nearest off-Site location (around the ends of the wall) is significantly longer than the estimated maximum plume length of dissolved COCs from the nearest DNAPL source material. As a result, and as has been shown for the other portions of the Site, groundwater COC concentrations would likely attenuate before reaching the off-Site locations.

The results of this model are intended to be used to support the evaluation of remedial alternatives in the Feasibility Study portion of the Response Action Plan (RAP) for the Site.

BKP/RK/kld

https://golderassociates.sharepoint.com/sites/116841/project files/6 deliverables/rap/rap revision 5/2020 gw model/gw flow model/hwpw_model_tech memo.docx

Appendix 3H

Mass Flux Technical Memorandum dated August 18, 2020

TECHNICAL MEMORANDUM

DATE August 18, 2020

Project No. 19119232

TO Eric Matzner
Principal/ Program Leader
Golder Associates Inc
2201 Double Creek Drive, Suite 4004
Round Rock, Texas 78664

From: Luke Bragg
Senior Project Environmental Engineer
Golder Associates Inc.
5170 Peachtree Road, Blg 100, Ste 300
Atlanta, Georgia 30341

MASS FLUX EVALUATION, UNION PACIFIC RAILROAD HOUSTON WOOD PRESERVING WORKS SITE, HOUSTON, HARRIS COUNTY, TEXAS

The former Union Pacific Railroad (UPRR) Houston Wood Preserving Works (HWPW) Facility at 4910 Liberty Road, Houston, Harris County, Texas (the Site) is located within industrial land and includes the Englewood Intermodal Yard, which is to the south of the former HWPW facilities. The Site was first developed for wood preserving operations in 1899 and operated wood preserving operations until 1984 when operations ceased. Historic operations at the Site resulted in releases of petroleum-related products, primarily creosote, to the subsurface. Details of the history and previous operations at the Site have been discussed in detail in the previously submitted Affected Property Assessment Report (APAR) (ERM, 2000) and Revised APAR (ERM, 2004), as well as the RCRA Facility Assessment (RFA) Report (PRC, 1993).

As detailed in the APARs and subsequent reports, the Affected Property geology and hydrogeology have been extensively investigated through the installation of over 130 monitoring wells and over 400 soil borings at the Site. Based on the investigations, the site stratigraphy from the ground surface to a depth of approximately 135 feet is separated into the following units: Fill Material (0 to 5 feet thick), A-Cohesive Zone (A-CZ) (8 to 15 feet thick); A-Transmissive Zone (A-TZ) (4 to 21 feet thick); B-Cohesive Zone (B-CZ) (6 to 19 feet thick); B-Transmissive Zone (B-TZ) (discontinuous, where present, 3 to 10 feet thick); C-Cohesive Zone (C-CZ) (8 to 20 feet thick); C-Transmissive Zone (C-TZ) (10 to 13 feet thick); D-Cohesive Zone (D-CZ) (17 to 36 feet thick); and D-Transmissive Zone (D-TZ). Monitoring wells have been completed in these transmissive zones and have been sampled and monitored for many years.

The most recent groundwater monitoring data from the Site was presented in the Interim Groundwater Monitoring Report (2019-2020) dated April 30, 2020. The January-March 2020 site-wide groundwater sampling included the sampling of the additional monitoring wells that were installed in February through March 2020 to further assess groundwater at the Site. Based on that data, as well as historical groundwater data collected from the Site, Golder evaluated the mass flux of chemicals of concern in the shallow transmissive zones or groundwater bearing units (GWBUs). A mass flux evaluation was conducted to enhance the understanding of the Site as follows:

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- Mass flux estimates along transects near source areas can yield information about the source zone strength, source zone hydrogeological characteristics, and the degree of heterogeneity in the GWBU;
- Spatial and temporal mass flux comparisons can project the attenuation capacity of the GWBU, delineate areas of the highest contaminant mass and mass flux zones within a plume, and identify the optimal treatment zones within a groundwater plume;
- Mass flux estimates can be used to support remedial goals and performance metrics, select and design remediation systems, monitor remedy performance, and define transition points between technologies.

The mass flux evaluation was conducted to better understand conditions along the northern property boundary of the Site where groundwater discharge from the Site is occurring based on groundwater flow conditions.

OVERVIEW

Mass flux is defined in the Interstate Technology Regulatory Council (ITRC) document *"Use and Measurement of Mass Flux and Mass Discharge"* (ITRC, 2010) as the mass of a chemical that passes through a defined cross-sectional area over a period of time and is expressed as mass/time/area (i.e., g/d/m^2 or mg/d/m^2). Mass flux combines two features of a chemical of concern (COC) plume: how much of the COC is in the groundwater (i.e., the concentration) and how fast the water is moving through a defined cross-sectional area (i.e., the flow rate). These two features together quantify source or plume strength at a given time and location. Mass flux (J) is calculated as follows (ITRC, 2010):

$$J = -K * i * C$$

J = mass flux, M/t/L^2 (i.e., g/d/m^2)
K = saturated hydraulic conductivity, L/t (i.e., m/day)
i = hydraulic gradient, dimensionless (i.e., m/m)
C = COC concentration, M/L^3 (i.e., mg/L)

METHODOLOGY

A transect of wells at or near the northern property boundary from each applicable lithologic zone was selected for the evaluation (see Figure 1 showing the A-TZ wells and Figure 2 showing the B-CZ/BT-Z wells).

These wells are identified in the following table:

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Hydrogeologic Unit	Transect Well ID	Top of Screen (ft BGS)	Bottom of Screen (ft BGS)	Representative Hydraulic Conductivity (cm/sec)	Representative Hydraulic Gradient (m/m)
A-TZ	MW-13	11	21	7.65E-04	0.01
	MW-15A	14	24		
	MW-20A	15	25		
	MW-17	20	30		
	MW-57A	12	27		
	MW-58A	14	29		
	MW-18A	18	32.5		
B-TZ / B-CZ	MW-14	28	42.5	1.20E-04	0.01
	MW-15B	28	38		
	MW-72B	32	37	1.10E-07	0.01
	MW-57B	34	39		
C-TZ	MW-15C	Given that the prevalent direction of advective groundwater flow in the C-TZ zone near the area of interest is to the southwest (onto the site from adjacent properties), traditional mass flux estimates were not calculated for this zone. The mechanism of transport of dense non-aqueous phase liquid (DNAPL) into this zone is likely vertically downward from the overlying B-TZ/B-CZ through preferential pathways of localized secondary porosity (e.g., fractures in the clayey material).			
	MW-17C				
	MW-23C				
	MW-18C				

Table 1 – Summary of monitoring wells with hydraulic conductivities and hydraulic gradients along the transect at or near the northern property boundary

The representative hydraulic conductivity values for the A-TZ and B-TZ/B-CZ are based on the results of hydrologic testing conducted by ERM (1997, 2004) and PBW (2014). The values used were confirmed to fall within the range of hydraulic conductivity values for the calibrated groundwater flow model (see Groundwater Model Technical Memorandum in Appendix 3 of RAP).

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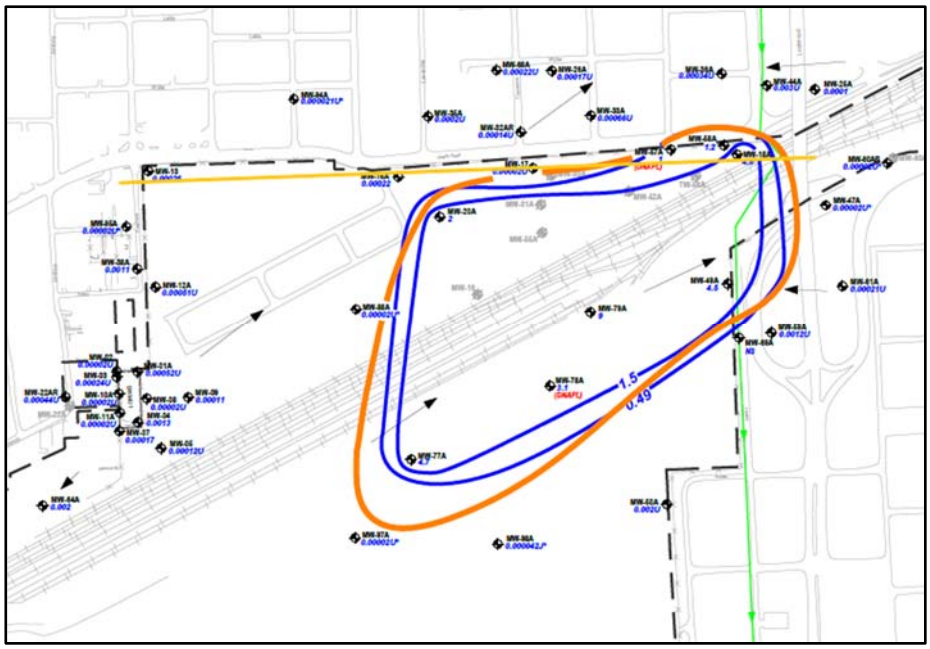

Figure 1: Transect near the northern property boundary (yellow line) used for mass flux evaluation (A-TZ wells pictured). Source: Figure 5B-9 In Attachment E from Golder, 2020a, showing naphthalene concentrations.

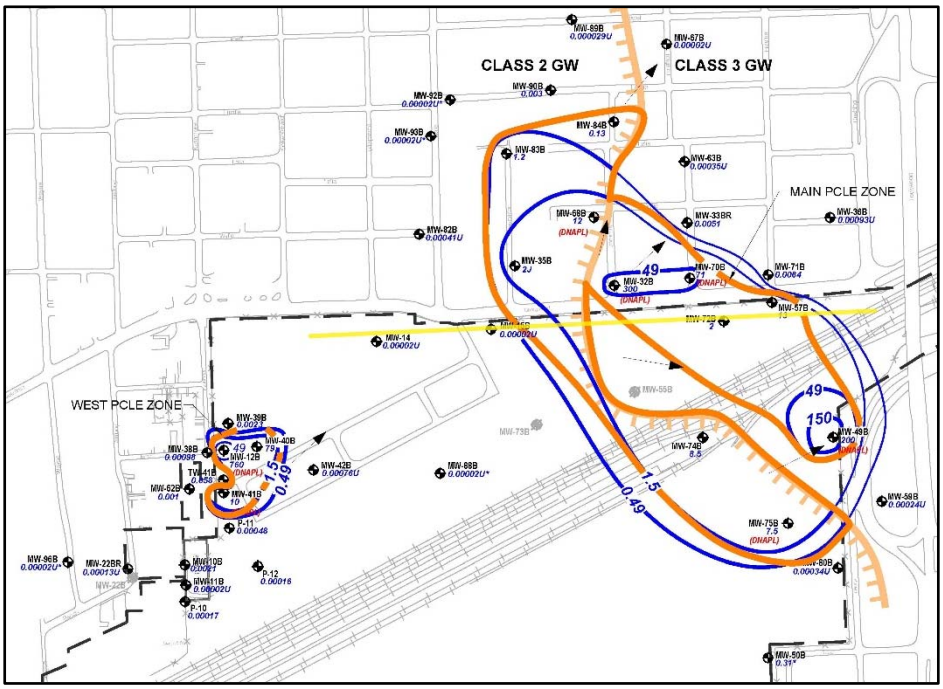

Figure 2: Transect near the northern property boundary (yellow line) used for mass flux evaluation (B-CZ/B-TZ wells pictured). Source: Figure 5B-14 In Attachment E from Golder, 2020a, showing naphthalene concentrations

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Creosote is hydrophobic, highly insoluble, and consists of a complex mixture of compounds, including PAHs and trace levels of BTEX. Only a few of the components of the creosote are soluble (i.e. aqueous concentration in equilibrium with creosote) including dibenzofuran (1.6 mg/L), naphthalene (12.4 mg/L), and phenol (1,388 mg/L) (King, et al, 1994). This overall low solubility for creosote results in limited groundwater COC concentration plumes that do not extend great distances from the source material (i.e. NAPL). Given the chemical characteristics of creosote, Golder selected the more soluble constituent of naphthalene as the COC to conduct the mass flux evaluation. Naphthalene was selected as the representative constituent based on its occurrence across many areas of the Site and some areas off-Site, its concentrations relative to other detected constituents, its chemical properties, and its lower rate of decay relative to some other detected constituents (i.e., benzene). Laboratory analytical data for naphthalene collected since 2010 (where available) was used for evaluation of mass flux. When naphthalene was not detected above the laboratory method reporting limit, half the value of the reporting limit was used for mass flux calculation.

The naphthalene data and corresponding mass flux calculations can be found in Appendix A. Graphs of mass flux for the northern transect wells in the A-TZ, and B-TZ/B-CZ are included as Figure 3 and 4, respectively.

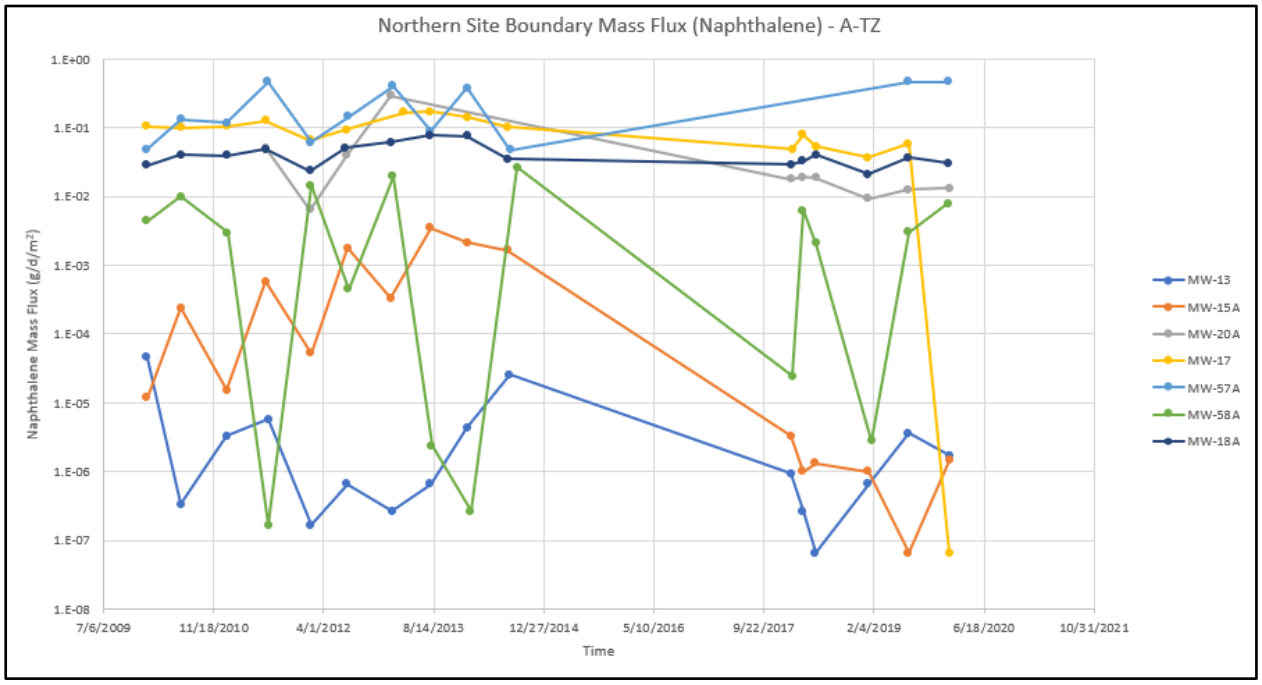

Figure 3: Naphthalene mass flux versus time for the northern site boundary wells in the A-TZ hydrogeologic unit.

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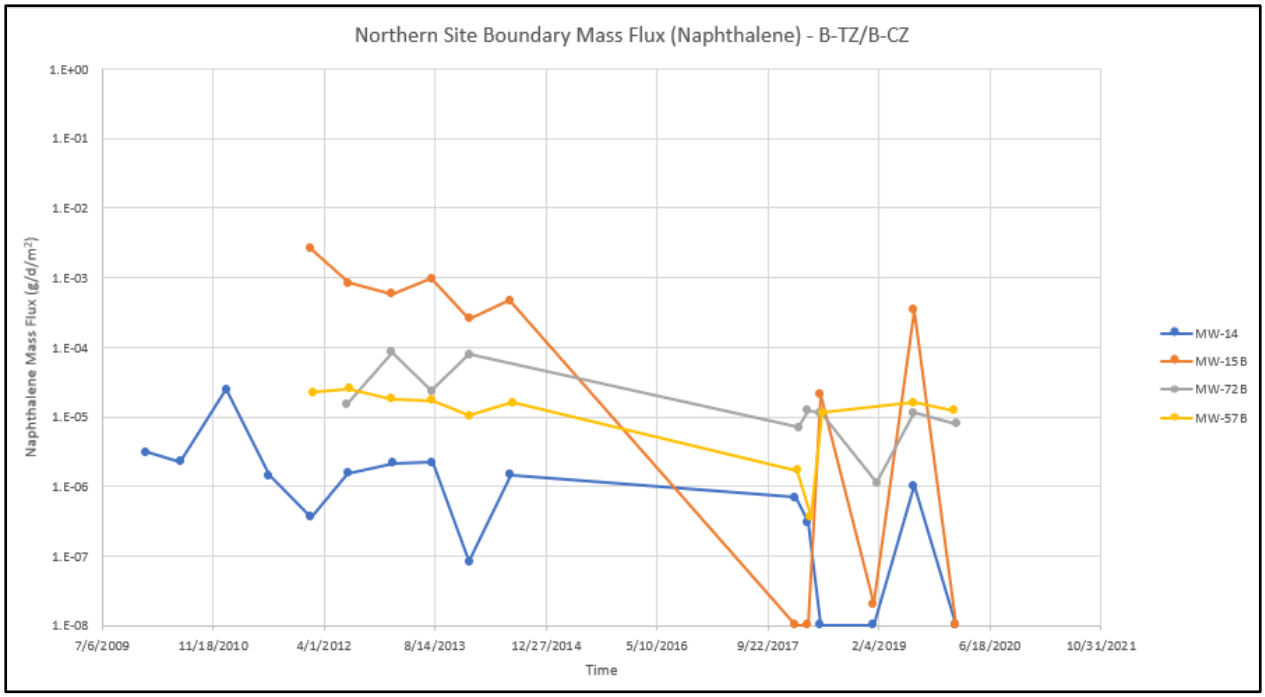

Figure 4: Naphthalene mass flux versus time for the northern site boundary wells in the B-TZ/CZ hydrogeologic unit.

RESULTS

The A-TZ transect wells exhibited some of the highest mass flux values for naphthalene along the northern property boundary. Since approximately 2010, A-TZ monitoring wells MW-17, MW-18A, MW-20A, and MW-57A have generally exhibited mass flux values between 0.01 and 1 g/d/m^2. (Note: MW-20A is more interior than other A-TZ transect wells, but the well was analyzed because it is located between MW-15A and MW-17. In addition, the January 2020 calculated mass flux, which was nearly six orders of magnitude less than the preceding ten years of historical values for MW-17 is considered an anomaly. Mass flux in wells MW-13 and MW-15A has been decreasing in recent years and was calculated at 1.72×10^{-6} and 1.45×10^{-6} g/d/m^2, respectively. Mass flux in MW-58A has been highly variable over the past ten years.

Monitoring wells MW-14 and MW-15B are screened the more transmissive B-TZ along the northern property boundary. Mass flux in MW-14 and MW-15B have declined over time; however, recently, there has been some variability in MW-15B, with mass flux ranging from 3.42×10^{-4} g/d/m^2 to 1.04×10^{-8} g/d/m^2. B-CZ wells MW-57B and MW-72B have also had slight reductions in mass flux over time and both wells currently exhibit mass flux of approximately 1×10^{-5} g/d/m^2. The highest mass flux values calculated for the B-TZ/B-CZ transect are generally several orders of magnitude lower than the highest mass flux values calculated for the A-TZ transect.

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CONCLUSION

The lithology at the HWPW site is complex and heterogeneous. This evaluation indicates that the highest regions of mass flux for naphthalene in groundwater along the northern property boundary of the Site should occur in the A-TZ, east of the Liberty Road intersection with Lavender Street to the eastern Site property boundary. Naphthalene concentrations are elevated (higher than PCLs) in the B-CZ wells evaluated for this assessment; however, the calculated horizontal mass flux values were low relative to wells in the A-TZ with similar concentrations.

Based on the mass flux calculations for the transect along the northern boundary presented herein, the mass flux calculated for the A-TZ was several orders of magnitude higher than mass flux calculated for the B-TZ/B-CZ PCLE zones. However, the groundwater PCL exceedance (PCLE) Zone maps presented in the IGMR (Golder, 2020a) indicate that the A-TZ groundwater PCLE Zone only extends into the City of Houston Liberty Road right-of-way (ROW), whereas the B-CZ/B-TZ groundwater PCLE Zone extends further north onto the off-site properties. This is primarily due to the groundwater flow conditions where the A-TZ has a northeasterly flow direction on the west side of the transect and becomes more easterly on the east side of the transect. As a result, the mass flux calculations are representative for each of the wells along the transect, but the mass flux does not travel perpendicular to the transect but is closer to parallel with the transect. As discussed in the Updated APAR Addendum (PBW, 2010), the 60-in wastewater line runs north to south just east of the transect and appears to intersect the A-TZ. As a result, the general groundwater flow direction in the A-TZ is influenced by this feature resulting in the easterly flow on the east side of the Site.

For the B-CZ/B-TZ, the bulk of the naphthalene mass appears to be in the B-CZ portion based on the groundwater analytical data. Despite differences in hydraulic conductivity (higher in the B-TZ wells) and concentrations (higher in the B-CZ wells), the calculations overall indicated low mass flux across the transect. Based on the results of groundwater monitoring, DNAPL and/or elevated COCs indicating potential NAPL are present within off-site wells MW-35B (B-TZ), MW-68B (B-TZ; DNAPL), MW-32B (B-CZ; DNAPL), and MW-70B (B-CZ/ DNAPL). These wells, located beyond the transect, indicated that the DNAPL mass predominately found in the secondary porosity (i.e., thin carbonate seams and fractures in the clay) off-site in the B-CZ/B-TZ is providing a source for the dissolved phase in the B-CZ/B-TZ groundwater off-site rather than a significant mass flux from the Site.

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APPENDIX A

Table 1 - Mass Flux Calculations

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Mass Flux Calculations - Naphthalene
Houston Wood Preserving Works, Houston TX

Hydrogeologic Unit	Well ID	Sample Date	Naphthalene (g/L)		Mass Flux ($g/d/m^2$)
A-TZ	MW-13	1/19/2010		0.000007	4.63E-05
		6/22/2010	<	0.0000001	3.30E-07
		1/18/2011		0.0000005	3.30E-06
		7/26/2011		0.00000087	5.75E-06
		2/2/2012	<	0.00000005	1.65E-07
		7/16/2012	<	0.0000002	6.61E-07
		2/5/2013	<	0.00000008	2.64E-07
		7/31/2013	<	0.0000002	6.61E-07
		1/14/2014	<	0.0000013	4.30E-06
		7/25/2014		0.0000039	2.58E-05
		1/23/2018		0.00000014	9.25E-07
		3/18/2018	<	0.00000008	2.64E-07
		5/15/2018	<	0.00000002	6.61E-08
		1/9/2019	<	0.0000002	6.61E-07
		7/11/2019	<	0.0000011	3.64E-06
		1/14/2020		0.00000026	1.72E-06
	MW-15A	1/18/2010		0.0000018	1.19E-05
		6/23/2010		0.000036	2.38E-04
		1/17/2011		0.0000023	1.52E-05
		7/13/2011		0.000087	5.75E-04
		2/2/2012		0.000008	5.29E-05
		7/19/2012		0.00027	1.78E-03
		1/30/2013		0.0000501	3.31E-04
		7/30/2013		0.000526	3.48E-03
		1/14/2014		0.000326	2.15E-03
		7/17/2014		0.000248	1.64E-03
		1/23/2018		0.0000005	3.30E-06
		3/18/2018	<	0.0000003	9.91E-07
		5/15/2018	<	0.0000004	1.32E-06
		1/8/2019	<	0.0000003	9.91E-07
		7/10/2019	<	0.00000002	6.61E-08
		1/14/2020		0.00000022	1.45E-06
	MW-20A	7/14/2011		0.0077	5.09E-02
		2/1/2012		0.00096	6.35E-03
		7/16/2012		0.0061	4.03E-02
		1/30/2013		0.0439	2.90E-01
		1/23/2018		0.0027	1.78E-02
		3/19/2018		0.0029	1.92E-02
		5/18/2018		0.0028	1.85E-02
		1/8/2019		0.0014	9.25E-03
		7/10/2019		0.0019	1.26E-02
		1/14/2020		0.002	1.32E-02

Mass Flux Calculations - Naphthalene
Houston Wood Preserving Works, Houston TX

Hydrogeologic Unit	Well ID	Sample Date	Naphthalene (g/L)		Mass Flux ($g/d/m^2$)
A-TZ	MW-17	1/18/2010		0.016	1.06E-01
		6/23/2010		0.015	9.91E-02
		1/17/2011		0.016	1.06E-01
		7/13/2011		0.019	1.26E-01
		2/1/2012		0.01	6.61E-02
		7/12/2012		0.014	9.25E-02
		4/1/2013		0.0252	1.67E-01
		7/30/2013		0.0258	1.71E-01
		1/13/2014		0.0213	1.41E-01
		7/17/2014		0.0154	1.02E-01
		1/30/2018		0.0074	4.89E-02
		3/18/2018		0.012	7.93E-02
		5/16/2018		0.0081	5.35E-02
		1/9/2019		0.0055	3.64E-02
		7/10/2019		0.0089	5.88E-02
		1/14/2020	<	0.00000002	6.61E-08
	MW-57A	1/20/2010		0.0074	4.89E-02
		6/23/2010		0.02	1.32E-01
		1/18/2011		0.018	1.19E-01
		7/22/2011		0.071	4.69E-01
		2/2/2012		0.0092	6.08E-02
		7/24/2012		0.022	1.45E-01
		2/11/2013		0.0607	4.01E-01
		7/31/2013		0.0135	8.92E-02
		1/15/2014		0.0569	3.76E-01
		7/29/2014		0.00727	4.81E-02
		7/10/2019		0.00061	4.03E-03
		1/8/2020		0.001	6.61E-03
	MW-58A	1/20/2010		0.00067	4.43E-03
		6/23/2010		0.0015	9.91E-03
		1/19/2011		0.00045	2.97E-03
		7/27/2011	<	0.00000005	1.65E-07
		2/3/2012		0.0022	1.45E-02
		7/24/2012		0.000068	4.49E-04
		2/11/2013		0.00296	1.96E-02
		8/6/2013		0.00000036	2.38E-06
		1/29/2014	<	0.00000008	2.64E-07
		8/28/2014		0.00405	2.68E-02
		1/31/2018		0.0000037	2.45E-05
		3/19/2018		0.00095	6.28E-03
		5/16/2018		0.00032	2.12E-03
		1/23/2019		0.00000042	2.78E-06
		7/10/2019		0.00046	3.04E-03
		1/8/2020		0.0012	7.93E-03

Mass Flux Calculations - Naphthalene
Houston Wood Preserving Works, Houston TX

Hydrogeologic Unit	Well ID	Sample Date	Naphthalene (g/L)		Mass Flux ($g/d/m^2$)
A-TZ	MW-18A	1/18/2010		0.0043	2.84E-02
		6/24/2010		0.0061	4.03E-02
		1/17/2011		0.0059	3.90E-02
		7/13/2011		0.0073	4.83E-02
		2/1/2012		0.0036	2.38E-02
		7/11/2012		0.0078	5.16E-02
		1/31/2013		0.00929	6.14E-02
		7/29/2013		0.0118	7.80E-02
		1/13/2014		0.0114	7.53E-02
		7/16/2014		0.00527	3.48E-02
		1/25/2018		0.0044	2.91E-02
		3/19/2018		0.0049	3.24E-02
		5/16/2018		0.0061	4.03E-02
		1/10/2019		0.0032	2.12E-02
		7/10/2019		0.0056	3.70E-02
		1/8/2020		0.0046	3.04E-02
B-TZ / B-CZ	MW-14	1/19/2010		0.000003	3.11E-06
		6/22/2010		0.0000022	2.28E-06
		1/17/2011		0.000024	2.49E-05
		7/26/2011		0.0000014	1.45E-06
		2/2/2012		0.00000035	3.63E-07
		7/16/2012		0.0000015	1.56E-06
		2/5/2013		0.00000211	2.19E-06
		7/31/2013		0.00000216	2.24E-06
		1/14/2014		0.00000008	8.29E-08
		7/18/2014		0.00000143	1.48E-06
		1/23/2018		0.00000067	6.95E-07
		3/18/2018	<	0.0000006	3.11E-07
		5/15/2018	<	0.00000002	1.04E-08
		1/8/2019	<	0.00000002	1.04E-08
		7/11/2019	<	0.000002	1.04E-06
		1/14/2020	<	0.00000002	1.04E-08
	MW-15B	2/2/2012		0.0025	2.59E-03
		7/19/2012		0.00082	8.50E-04
		1/30/2013		0.000569	5.90E-04
		7/30/2013		0.000943	9.78E-04
		1/14/2014		0.000248	2.57E-04
		7/17/2014		0.000452	4.69E-04
		1/23/2018	<	0.00000002	1.04E-08
		3/18/2018	<	0.00000002	1.04E-08
		5/15/2018		0.00002	2.07E-05
		1/8/2019		0.00000002	2.07E-08
		7/10/2019		0.00033	3.42E-04
		1/14/2020	<	0.00000002	1.04E-08

Mass Flux Calculations - Naphthalene
Houston Wood Preserving Works, Houston TX

Hydrogeologic Unit	Well ID	Sample Date	Naphthalene (g/L)		Mass Flux ($g/d/m^2$)
B-TZ / B-CZ	MW-72B	7/12/2012		0.016	1.52E-05
		2/1/2013		0.0885	8.41E-05
		7/29/2013		0.025	2.38E-05
		1/15/2014		0.0828	7.87E-05
		2/8/2018		0.0075	7.13E-06
		3/19/2018		0.013	1.24E-05
		5/16/2018		0.012	1.14E-05
		1/24/2019		0.0012	1.14E-06
		7/10/2019		0.012	1.14E-05
		1/17/2020		0.0085	8.08E-06
	MW-57B	2/15/2012		0.024	2.28E-05
		7/24/2012		0.027	2.57E-05
		1/31/2013		0.019	1.81E-05
		7/31/2013		0.018	1.71E-05
		1/15/2014		0.011	1.05E-05
		7/29/2014		0.017	1.62E-05
		1/31/2018		0.0018	1.71E-06
		4/1/2018		0.00039	3.71E-07
		5/25/2018		0.012	1.14E-05
		7/10/2019		0.017	1.62E-05
		1/8/2020		0.013	1.24E-05

Notes:

1) "<" - Indicates naphthalene was not detected above the laboratory reporting limit and half of the reporting limit was used in the mass flux calculation.

Appendix 3I

DNAPL Recovery Activities Quarterly Report dated August 28, 2020

August 28, 2020 Project No. 19119232

Ms. Maureen Hatfield
MC-127
VCP-CA Section, Remediation Division
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, TX 78711-3087

RE: DNAPL RECOVERY ACTIVITIES QUARTERLY REPORT – 2ND QUARTER 2020
UNION PACIFIC RAILROAD HOUSTON WOOD PRESERVING WORKS FACILITY
4910 LIBERTY ROAD FACILITY, HOUSTON, TEXAS
POST-CLOSURE CARE PERMIT NO. HW-50343; INDUSTRIAL SWR NO. 31547

Dear Ms. Hatfield:

Golder Associates Inc. (Golder), on behalf of Union Pacific Railroad Company (UPRR), submits this 2nd Quarter 2020 summary report for the dense non-aqueous phase liquid (DNAPL) recovery activities conducted at the UPRR Houston Wood Preserving Works Facility (the Site). As detailed in the Response Action Plan (RAP) dated November 24, 2014, a 24-month DNAPL recovery pilot test, consisting of manual DNAPL recovery from selected wells on a monthly basis, was conducted at the Site. Following the 24-month pilot testing period, the DNAPL recovery activities have continued monthly following the same procedures detailed in the RAP. In response to the Texas Commission on Environmental Quality (TCEQ) Technical Notice of Deficiency dated April 11th, 2019, the DNAPL recovery frequency was increased to bi-monthly (twice a month) in June 2019. The following monitoring wells are included as part of the current DNAPL recovery activities:

Well Name	Zone
MW-57A	A-TZ
MW-78A	A-TZ
MW-12B	B-TZ
MW-32B	B-CZ
MW-41B	B-TZ
MW-49B*	B-CZ
MW-57B	B-CZ
MW-68B*	B-TZ
MW-70B	B-CZ
MW-75B	B-CZ
MW-23C	C-TZ
MW-34CR	C-TZ
MW-44C	C-TZ
MW-45C	C-TZ
MW-46C	C-TZ

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*Wells MW-49B and MW-68B were added to the list of recovery wells beginning in January 2020. The locations of the DNAPL recovery wells are shown on Figure 1.

The DNAPL recovery activities consist of measuring the depth to groundwater surface, the depth to groundwater/DNAPL interface, and the total depth of the well relative to the top of casing prior to DNAPL recovery. DNAPL recovery from each well is then performed using a peristaltic pump or submersible pump. On March 30, 2020, dedicated pneumatic DNAPL pumps were installed in recovery wells MW-12B and MW-41B. DNAPL is pumped from the bottom of each well until groundwater returns in the pump discharge. The volume of recovered DNAPL is estimated from each well based on the volume pumped, and the well is gauged to measure the total depth of the well and depth to DNAPL following pumping. Recovered DNAPL from all the wells is consolidated into a 55-gallon drum and temporarily stored at the Containment Storage Area pending disposal at the Clean Harbors Deer Park permitted facility in La Porte, Texas or US Ecology Robstown facility in Robstown, Texas. The most recent waste manifest for the disposal of recovered DNAPL and groundwater is provided in Attachment 1.

A summary of the DNAPL recovery measurements from February 2013 through June 2020 is provided in Table 1. DNAPL thicknesses listed on the table and referenced in this letter are “in-well thicknesses”. A graph of DNAPL thicknesses prior to each recovery effort over time from February 2013 through March 2020 is presented on Figure 2, with individual graphs for each zone and/or portion of the Site discussed below. Observations from the 1st Quarter 2020 gauging and recovery activities are provided below for each of the groundwater bearing units (GWBUs):

- A-TZ Wells: Two monitoring wells in the A-TZ have had measurable DNAPL detected: MW-57A and MW-78A (graph of DNAPL thickness from July 2018 through June 2020 shown on Figure 3).
    - **MW-57A:** No measurable DNAPL has been detected in MW-57A since August 2015. However, a trace of DNAPL was noted at MW-57A in January 2019 through May 2019, but not enough had accumulated in the well to be measured. No DNAPL was detected during the 1st and 2nd Quarter 2020.
    - **MW-78A:** DNAPL thickness in MW-78A in December 2019 had increased to approximately 5.42 feet. During the first half of 2020, DNAPL thicknesses fluctuated between from 0.39 to 3.49 feet with an increase to 5.45 feet at the end of June 2020.
- B-TZ Wells (West Side): Recovery wells MW-12B and MW- completed in the B-TZ were evaluated for DNAPL recovery during this period (graph of DNAPL thickness from July 2018 through June 2020 shown on Figure 4).
    - **MW-12B:** Beginning in early October 2019, DNAPL thickness in MW-12B increased to a historical peak of 27.08 feet thick (November 15, 2019) after the submersible pump used to recovery DNAPL from the well could no longer pump the NAPL, which appeared to become more viscous over time. NAPL thickness decreased to 18.08 feet thick through the end of December 2019. During the 1st Quarter of 2020, DNAPL thicknesses in MW-12B ranged from 19.08 feet (January 15, 2020) to 25.78 feet in February 2020. Recovery activities resumed at the end of March 2020 with the installation of the new pneumatic NAPL recovery pump. DNAPL thickness was between 24.19 and 27.08 feet during the first 3 recovery events with the new pump in the 2nd Quarter of 2020. Since

mid-May 2020, the DNAPL thickness in MW-12B has steadily decreased from 13.04 feet to 4.81 feet at the end of June 2020.

- **MW-41B:** From December 2019 through March 2020, DNAPL thickness has ranged from 1.31 feet thick to approximately 5.38 feet in MW-41B. In March 2020, DNAPL was measured to be 2.69 feet thick in MW-41B. Based on recent field observations, the DNAPL appeared to be more viscous similar to observations at MW-12B.

  Beginning in October 2019, the DNAPL found in MW-12B and MW-41B was becoming too thick for the submersible pump to recover the DNAPL. Two stainless steel pneumatic pulse pumps (gas displacement pumps) from QED Environmental Systems (model LP1301) were installed in MW-12B and MW-41B on March 30, 2020. These pumps are designed for recovering the increasingly more viscous liquids observed in these wells. Immediately following installation, 2.5 gallons of DNAPL from MW-12B and 2 gallons from MW-41B were recovered using the new pneumatic pumps.

  During a few of the recovery events after the new pump was installed in the 2nd Quarter of 2020, the top of the DNAPL was below the top of the pump at MW-41B, so it was not possible to record a DNAPL thickness. However, DNAPL was still recovered from MW-41B. The DNAPL thickness in MW-41B was estimated at 2.7 feet at the end of June 2020.

- B-TZ/B-CZ Wells (North (on-site and off-site)): Recovery wells MW-32B, MW-57B, MW-68B, and MW-70B completed in either the B-TZ or B-CZ on the north side of the Site or off-site to the north were evaluated for DNAPL recovery during this period (graph of DNAPL thickness from July 2018 through June 2020 shown on Figure 5).

  - **MW-32B:** During the 1st Quarter 2020, DNAPL thicknesses increased to levels fluctuating between 3.1 feet and 5.35 feet from January 2020 to late-March 2020. The DNAPL thickness in MW-32B increased to 6.26 feet in early April 2020 which was the thickest measurement recorded in the well since the beginning of DNAPL recovery efforts in February 2013. Since early April, DNAPL thicknesses have generally decreased to about 1.28 feet thick in late-June 2020.

  - **MW-57B:** Since June 2016, no measurable DNAPL has been detected in MW-57B. A trace amount of DNAPL was noted in MW-57B in January 2019 through May 2019, but no DNAPL has been detected since May 2019.

  - **MW-68B:** DNAPL was measured in MW-68B at approximately 3.59 feet thick in January 2020. DNAPL had not been detected in the well since installation in 2011; however, the boring log for the well indicated that NAPL was noted in the soil core from 34.5 to 35 feet below ground surface. Following bi-weekly recovery events from this well, the DNAPL thickness decreased to 0.9 feet thick by the end of March 2020. Approximately 1.9 gallons of DNAPL from MW-68B were recovered during the first quarter of 2020. DNAPL thickness ranged from 0.71 feet to 1.81 feet during the second quarter of 2020, and only trace amounts of DNAPL were able to be removed.

- **MW-70B:** During the 1st and 2nd Quarter 2020, DNAPL thicknesses have increased to levels fluctuating between 3.14 feet and 5.15 feet thick, which are some of the thickest measurements observed in the well. Since mid-May 2020, DNAPL thickness has decreased from 5.02 feet to 3.53 feet at the end of June 2020.

- B-TZ/B-CZ Wells (Englewood Intermodal Yard): Recovery wells MW-49B and MW-75B in the Englewood Intermodal Yard completed in the B-CZ were evaluated for DNAPL recovery during this period (graph of DNAPL thickness from July 2018 through June 2020 shown on Figure 6).

  - **MW-75B:** Measured DNAPL thicknesses during the 1st Quarter 2020 were greater than 2 feet in MW-75B in late-January, mid-February, and mid-March of 2020. However, in late-February and late-March, no DNAPL was observed in MW-75B. Trace DNAPL was detected in mid-March (0.05 feet-thick) and mid-June (0.15 feet thick) in MW-75B and was not detected during the other recovery events in the 2nd Quarter of 2020.

  - **MW-49B:** DNAPL had been previously measured in MW-49B in January and July 2013 (1.19 feet and 0.84 feet, respectively) and in July 2019 (0.24 feet). During the January 2020 semi-annual monitoring event, the measured apparent thickness of DNAPL in MW-49B was approximately 14.77 feet. Well MW-49B was added to the DNAPL recovery well network and recovery efforts began in mid-January 2020. DNAPL thickness decreased to 5.47 feet thick by the end of the quarter as a result of the bi-weekly recovery efforts. Approximately 8 gallons of DNAPL were recovered from MW-49B during the first quarter of 2020. During the second quarter of 2020, DNAPL thicknesses fluctuated between 2.81 feet and 3.82 feet, and approximately 1.6 gallons of DNAPL were removed.

- C-TZ Wells: Wells MW-23C, MW-34CR, MW-44C, MW-45C, and MW-46C completed in the C-TZ were evaluated for DNAPL recovery (graph of DNAPL thickness from July 2018 through June 2020 shown on Figure 7). .

  - **MW-23C:** In December 2019, DNAPL thicknesses in MW-23C was approximately 2.68 feet thick. DNAPL thickness decreased approximately 1 foot to 1.7 feet thick by the end of December 2019. During the 1st and 2nd Quarter 2020, DNAPL thickness in MW-23C fluctuated between 0.58 and 2.3 feet. DNAPL was not detected in mid-June and a trace amount (0.01 feet-thick) was noted in late-June 2020.

  - **MW-34CR:** In May 2014, replacement well MW-34CR was installed and gauged as part of the recovery program. However, no DNAPL has been detected in this well. The well pad was damaged in April 2019. In March 2020, MW-34CR well pad was repaired and no DNAPL was observed during the 2nd Quarter of 2020.

  - **MW-44C:** No measurable DNAPL had been detected in MW-44C from June 2019 (trace DNAPL noted in mid-June 2019) to May 2020. DNAPL was noted (0.39 feet thick) in MW-44C at the end of May 2020. However, it was discovered that the total depth measurement at MW-44C was approximately 10 feet higher than the well construction depth, suggesting that the well had

appeared to have silted up. MW-44C were re-developed during the site-wide monitoring activities in July 2020; these activities will be described in the 3rd Quarter 2020 report.

- **MW-45C:** DNAPL had not been detected in MW-45C between August 2015 and May 2020. In May 2020, DNAPL was 1.3 feet and 0.6 feet thick. DNAPL was not detected in June 2020.

- **MW-46C:** No measurable DNAPL has been observed in MW-46C since June 2019 (trace DNAPL noted in mid-June 2019).

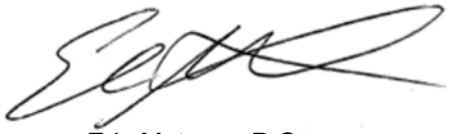
- DNAPL Recovery: From February 2013 to June 2020, an estimated cumulative total of 772 gallons of creosote DNAPL have been recovered from the wells. Monthly DNAPL recovery volumes increased after the January 2015 event due to a change in pumping techniques. During the 2nd Quarter 2020, recovery has ranged from approximately 5.6 to 8.6 gallons per month (Table 1).

UPRR will continue to monitor the DNAPL thicknesses twice per month as discussed in the response to the TCEQ 4th Technical Notice of Deficiency (TNOD) letter (April 11, 2019).

If you have any questions or need additional information, please feel free to call me at (512) 671-3434 or Mr. Kevin Peterburs of UPRR at (414) 267-4164.

Sincerely,

Golder Associates Inc.



Michelle Hermiston, P.G.
Project Hydrogeologist

Eric Matzner, P.G.
Principal / Practice Leader

Texas Geoscience Firm No. 50369

CC: Waste Program Manager, TCEQ Region 12, Houston
Mr. Kevin Peterburs, UPRR – Milwaukee, WI

Attachments: Table 1 - Summary of DNAPL Recovery Measurements
Figure 1 – In-Well DNAPL Thickness – June 2020
Figure 2 - DNAPL Recovery Activities February 2013 – June 2020
Figure 3 – A-TZ Wells – DNAPL Recovery Activities July 2018 – June 2020
Figure 4 – B-TZ Wells (West Side) – DNAPL Recovery Activities July 2018 – June 2020
Figure 5 – B-CZ/B-TZ Wells (North (On-Site and Off-Site) – DNAPL Recovery Activities July 2018 – June 2020
Figure 6 – B-CZ/B-TZ Wells (Englewood Intermodal Yard) – DNAPL Recovery Activities July 2018 – June 2020
Figure 7 – C-TZ Wells – DNAPL Recovery Activities July 2018 – June 2020
Attachment 1 – Recovered DNAPL Waste Manifest

TABLES

TABLE 1

SUMMARY OF DNAPL RECOVERY MEASUREMENTS
UPRR HOUSTON, TX - WOOD PRESERVING WORKS

	MW-12B				MW-23C				MW-32B			
DNAPL Recovery Date	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)
2/14/2013	9.06	39.87	5.93	2.5	NM	NM	NM	0	6.01	30.06	6.23	2
4/3/2013	9.41	39.95	5.85	1	NM	NM	NM	0	4.86	33.61	2.68	1
4/22/2013	8.61	31.64	14.16	0.5*	NM	NM	NM	0	5.62	36.08	0.21	0.25
5/30/2013	8.47	37.62	8.18	1.5*	NM	NM	NM	0	5.86	32.21	4.08	2
6/29/2013	9.62	38.22	7.58	1.5	NM	NM	NM	0	6.79	33.59	2.7	1.5
7/22/2013	11.16	39.04	6.76	1	NM	NM	NM	0	7.14	33.91	2.38	1.5
8/26/2013	11.31	39.61	6.19	1	NM	NM	NM	0	7.48	33.83	2.46	1
9/27/2013	11.17	40.63	5.17	1	NM	NM	NM	0	7.23	34.39	1.9	1
10/31/2013	11.09	43.71	2.09	1	NM	NM	NM	0	7.16	34.96	1.33	0.53
11/27/2013	11.17	44.06	1.74	1	NM	NM	NM	0	7.29	35.03	1.26	0.53
12/31/2013	11.02	44.62	1.18	1	NM	NM	NM	0	7.16	35.16	1.13	0.5
1/30/2014	11.34	45.12	0.68	1	NM	NM	NM	0	6.72	34.82	1.47	0.53
3/3/2014	11.17	44.32	1.48	1	NM	NM	NM	0	6.53	34.52	1.77	0.53
3/31/2014	11.03	44.53	1.27	1	NM	NM	NM	0	6.29	34.21	2.08	0.53
4/30/2014	10.92	44.26	1.54	1	NM	NM	NM	0	6.42	34.67	1.62	0.53
5/27/2014	10.81	44.34	1.46	1	NM	NM	NM	0	6.36	34.72	1.57	0.53
6/26/2014	10.72	44.61	1.19	1	NM	NM	NM	0	6.21	34.61	1.68	0.53
7/31/2014	10.13	44.96	0.84	1	NM	NM	NM	0	6.06	34.33	1.96	0.25
8/27/2014	10.26	45.12	0.68	1	NM	NM	NM	0	6.18	34.98	1.31	0.25
10/3/2014	10.17	44.91	0.89	1	NM	NM	NM	0	6.06	34.72	1.57	0.25
11/3/2014	10.29	44.97	0.83	1	22.51	70.71	2.09	0.25	6.18	34.91	1.38	0.25
11/24/2014	10.27	44.99	0.81	1	22.56	70.92	1.88	0.5	6.21	35.16	1.13	0.5
12/22/2014	10.23	44.71	1.09	1	22.47	70.81	1.99	0.5	6.14	35.02	1.27	0.75
1/29/2015	10.16	44.96	0.84	1	22.26	71.04	1.76	0.5	5.71	35.29	1	0.75
2/26/2015	10.12	44.96	0.84	1.5	22.06	71.09	1.71	0.5	6.02	35.29	1	1
3/26/2015	9.96	45.21	0.59	1.5	22.17	71.12	1.68	0.25	5.46	35.36	0.93	1
4/27/2015	9.89	45.37	0.43	1.5	22.23	71.06	1.74	0.5	5.21	35.29	1	1
5/26/2015	9.72	45.61	0.19	2	22.17	71.14	1.66	0.5	5.07	35.46	0.83	1
7/6/2015	7.12	45.96	0.24	2	19.01	71.39	1.41	0.5	4.06	35.66	0.63	1
8/3/2015	7.26	46.09	0.11	2	19.16	71.46	1.34	0.75	4.29	35.71	0.58	1
8/27/2015	8.09	46.01	0.19	1	20.34	71.51	1.29	0.75	5.05	35.77	0.52	1
10/5/2015	7.12	45.86	0.34	1	19.02	71.57	1.23	0.5	4.31	35.96	0.33	1
11/5/2015	6.86	45.81	0.39	1	18.59	71.59	1.21	0.5	4.02	35.91	0.38	1
12/3/2015	6.46	45.79	0.41	1	18.33	71.67	1.13	0.5	3.92	35.96	0.33	1
12/28/2015	6.23	45.62	0.58	1.25	23.21	71.61	1.19	0.75	3.73	35.91	0.38	1
2/3/2016	6.04	45.55	0.65	1.5	17.96	71.64	1.16	0.5	3.61	35.87	0.42	1
3/3/2016	5.96	45.61	0.59	1.5	17.92	71.71	1.09	0.5	3.51	35.91	0.38	1
3/31/2016	6.06	45.72	0.48	1.5	17.86	71.79	1.01	0.5	3.56	35.92	0.37	1
5/3/2016	6.13	45.66	0.54	1	NM	NM	NM	0	3.67	35.87	0.53	0.5
6/2/2016	6.21	45.61	0.59	1	22.9	71.51	1.29	0.5	3.74	35.92	0.48	0.5
7/8/2016	6.29	45.72	0.48	1	23.09	71.52	1.28	0.25	3.91	35.96	0.44	0.5
8/3/2016	6.34	45.77	0.43	1	23.16	71.66	1.14	0.25	4.03	35.49	0.91	0.5
8/30/2016	6.47	45.69	0.51	1	23.31	71.61	1.19	0.5	4.22	36.09	0.31	0.5
9/30/2016	6.59	45.81	0.39	1	23.39	71.81	0.99	0.5	4.33	35.91	0.49	0.5
11/3/2016	6.64	45.92	0.28	1	23.41	71.98	0.82	0.5	4.47	35.99	0.41	0.5
11/30/2016	6.86	45.86	0.34	0.5	23.59	71.91	0.89	0.75	4.62	35.91	0.49	0.5
1/4/2017	7.02	45.81	0.39	0.5	23.74	71.82	0.98	0.75	4.83	36.02	0.38	0.25
2/7/2017	6.97	45.69	0.51	0.5	23.67	71.74	1.06	0.75	4.81	35.91	0.49	0.25
3/2/2017	6.91	45.64	0.56	0.5	23.54	76.82	0.98	0.75	4.66	35.97	0.43	0.25
4/3/2017	6.82	45.71	0.49	0.5	23.46	76.96	0.84	0.75	4.57	36.01	0.39	0.25
4/27/2017	6.74	45.64	0.56	0.5	23.21	77.04	0.76	0.5	4.51	36.06	0.34	0.25
5/29/2017	6.89	45.77	0.43	0.5	23.49	77.21	0.59	0.25	4.74	36.03	0.37	0.25
7/5/2017	7.01	45.71	0.49	0.5	23.61	77.27	0.53	0.25	4.86	36.13	0.27	0.25
8/1/2017	7.14	45.63	0.57	0.75	23.79	77.17	0.63	0.25	4.99	36.24	0.16	0.25
9/5/2017	7.03	45.6	0.6	1	23.67	77.29	0.51	0.25	4.78	36.24	0.16	0.25
10/4/2017	7.07	45.69	0.51	1	23.61	77.36	0.44	0.25	4.89	36.29	0.11	0.25
11/2/2017	7.11	45.76	0.44	1	23.74	77.42	0.38	0.25	4.96	36.26	0.14	0.25
11/29/2017	7.16	45.71	0.49	1	23.81	77.4	0.40	0.25	5.06	36.31	0.09	0.25
1/2/2018	6.96	45.82	0.38	1	23.67	77.43	0.37	0.25	4.93	36.27	0.13	0.25
2/7/2018	7.13	45.87	0.33	1	23.86	77.46	0.34	0.25	5.16	36.21	0.19	0.25
3/1/2018	7.36	45.96	0.24	1	23.96	77.41	0.39	0.25	5.38	36.13	0.27	0.25

TABLE 1

SUMMARY OF DNAPL RECOVERY MEASUREMENTS
UPRR HOUSTON, TX - WOOD PRESERVING WORKS

	MW-12B				MW-23C				MW-32B			
DNAPL Recovery Date	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)
4/2/2018	7.29	45.94	0.26	1	23.9	77.32	0.48	0.5	5.31	36.18	0.22	0.25
5/1/2018	8.17	45.91	0.29	1	24.47	77.39	0.41	0.5	6.12	36.23	0.17	0.5
6/1/2018	8.49	45.86	0.34	1	24.81	77.31	0.49	0.5	6.41	36.19	0.21	0.5
6/29/2018	8.62	45.81	0.39	1	24.99	77.37	0.43	0.5	6.59	36.11	0.29	0.75
8/3/2018	8.79	45.96	0.24	1	25.12	77.39	0.41	0.5	6.74	36.19	0.21	0.75
8/31/2018	8.32	46.01	0.19	0.75	24.81	77.43	0.37	0.5	6.47	36.23	0.17	0.75
9/28/2018	8.27	45.93	0.27	0.5	24.69	77.39	0.41	0.5	6.41	36.19	0.21	0.75
11/2/2018	8.16	45.91	0.29	0.5	24.57	77.36	0.44	0.5	6.33	36.21	0.19	0.5
11/29/2018	8.01	45.9	0.30	0.5	24.36	77.3	0.50	0.5	6.21	36.27	0.13	0.25
1/2/2019	7.96	45.87	0.33	0.5	24.29	77.31	0.49	0.5	6.09	36.29	0.11	0.25
2/2/2019	7.82	45.89	0.31	0.5	24.21	77.44	0.36	0.5	5.97	36.24	0.16	0.5
2/28/2019	7.69	45.81	0.39	0.5	24.16	77.36	0.44	0.5	5.86	36.21	0.19	0.25
4/2/2019	7.61	45.8	0.4	0.5	24.08	77.32	0.48	0.5	5.79	36.24	0.16	0.25
4/25/2019	7.49	45.76	0.44	1	24.01	77.16	0.64	0.5	5.86	36.29	0.11	0.25
5/29/2019	7.51	45.71	0.49	1	24.11	77.11	0.69	0.5	5.91	36.21	0.19	0.25
6/12/2019	6.81	45.52	0.68	1.5	24.39	76.71	1.09	1	5.46	35.91	0.49	0.5
6/30/2019	6.67	45.06	1.14	2	24.32	76.67	1.13	0.75	5.39	35.42	0.98	1
7/16/2019	6.62	45.11	1.09	2	24.26	76.61	1.19	1	5.32	35.36	1.04	1
8/2/2019	6.69	45.01	1.19	1.5	24.31	76.49	1.31	1.5	5.41	35.26	1.14	1.5
8/15/2019	6.79	44.76	1.44	2	24.22	76.36	1.44	1.5	5.61	35.19	1.21	1.5
8/28/2019	6.88	44.71	1.49	2	24.29	76.41	1.39	1.5	5.72	35.22	1.18	1.5
9/17/2019	6.93	43.96	2.24	3	24.36	76.29	1.51	1.5	5.81	35.17	1.23	1.5
10/2/2019	6.86	43.17	3.03	0	24.32	76.09	1.71	1.5	5.77	35.02	1.38	1.5
10/16/2019	6.71	30.29	15.91	0	25.75	75.89	1.91	1.5	4.36	33.42	2.98	1.5
10/31/2019	6.53	21.63	24.57	0	26.33	75.29	2.51	1.5	3.43	31.86	4.54	1.5
11/15/2019	7.21	19.12	27.08	0.5	25.69	ND	0	0	3.47	35.7	0.7	1
12/3/2019	7.55	27.37	18.83	0	26.11	75.12	2.68	1.5	4.33	35.51	0.89	0
12/18/2019	12.68	35.9	10.3	0	26.13	77.4	0.4	0.25	4.71	35.61	0.79	1.5
12/30/2019	8.08	28.12	18.08	0	26.48	76.1	1.7	0.13	5.04	34.28	2.12	1.5
1/7/2020	--	--	--	--	--	--	--	--	--	--	--	--
1/15/2020	7.47	27.12	19.08	0	26.49	77.1	0.7	0.00	4.1	35.4	1	1
1/27/2020	6.28	21.06	25.14	0	25.99	76.58	1.22	0.0	3.01	31.15	5.25	1
2/13/2020	6.91	20.42	25.78	0	25.51	76.42	1.38	0.0	3.88	31.39	5.01	1
2/25/2020	6.4	23.6	22.6	0	25.6	75.5	2.3	0.0625	3.9	31.05	5.35	0.75
3/13/2020	7.61	22.01	24.19	0	25.66	77.08	0.72	0.0	4.32	32.46	3.94	1.25
3/31/2020	7.88	22.01**	24.19	2.5	25.9	77.12	0.68	0.0	4.63	33.3	3.1	0.25
4/9/2020	7.37	18.21	27.99	3	25.91	77.22	0.58	0.0	4.65	30.14	6.26	1
4/27/2020	8.64	19.12	27.08	3.5	26.31	76.45	1.35	0.0	5.39	34.52	1.88	0.5
5/14/2020	9.39	33.16	13.04	2.5	26.7	75.89	1.91	0.125	6.02	34.73	1.67	0.5
5/28/2020	8.79	40.29	5.91	1.5	26.75	75.71	2.09	0.125	5.84	34.35	2.05	1
6/11/2020	9.29	40.69	5.51	2.5	26.93	ND	0	0	5.89	35.01	1.39	0.25
6/25/2020	9.01	41.39	4.81	2	25.89	77.94	0.01	0	5.6	35.12	1.28	0.25
Total DNAPL Pumped (gal)				***108.3***				***41.4***				***72.2***

Notes:

* - indicates DNAPL and groundwater mixture

MW-23C- added 5 feet to TOC due to capping after 2/3/2016

** - indicates DTD from previous event was used; DNAPL recovered revised based on review of field notes.

--- - No DNAPL pumped

ND - Not detected

DTW - Depth to water (feet Below Top of Casing (BTOC))

NM - Not measured

DTD - Depth to DNAPL (feet BTOC)

PoP - Product on probe, not measureable

MW-12B- TD measured at 46.2 instead of 45.8, August 28, 2015.

TR- Trace amount of DNAPL Extracted

TABLE 1

SUMMARY OF DNAPL RECOVERY MEASUREMENTS
UPRR HOUSTON, TX - WOOD PRESERVING WORKS

	MW-33BR				MW-34C/MW-34CR (July 2014)				MW-41B			
DNAPL Recovery Date	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)
2/14/2013	3.72	ND	0	0	NM	NM	NM	0	8.91	41.1	3.71	3
4/3/2013	4.02	PoP	0	0	NM	NM	NM	0	9.37	41.6	3.21	1.5
4/22/2013	3.63	ND	0	0	NM	NM	NM	0	8.62	41.6	3.21	0.5*
5/30/2013	3.59	ND	0	0	NM	NM	NM	0	8.73	34.16	10.65	2
6/29/2013	6.07	ND	0	0	NM	NM	NM	0	9.72	37.12	7.69	2
7/22/2013	9.68	ND	0	0	NM	NM	NM	0	10.31	39.29	5.52	1.5
8/26/2013	9.86	ND	0	0	NM	NM	NM	0	10.09	34.55	10.26	2.5
9/27/2013	9.57	ND	0	0	NM	NM	NM	0	9.63	37.29	7.52	2
10/31/2013	9.32	ND	0	0	21.63	NM	NM	0	9.52	38.16	6.65	2
11/27/2013	9.16	ND	0	0	NM	NM	NM	0	9.57	38.39	6.42	2
12/31/2013	8.97	ND	0	0	NM	NM	NM	0	9.42	39.36	5.45	2
1/30/2014	7.41	ND	0	0	NM	NM	NM	0	9.06	39.17	5.64	2
3/3/2014	7.16	ND	0	0	NM	NM	NM	0	8.62	38.06	6.75	2
3/31/2014	7.04	ND	0	0	NM	NM	NM	0	8.52	37.74	7.07	2
4/30/2014	6.88	ND	0	0	NM	NM	NM	0	8.36	37.21	7.6	2
5/27/2014	6.72	ND	0	0	NM	NM	NM	0	8.26	37.29	7.52	2
6/26/2014	6.52	ND	0	0	NM	NM	NM	0	8.02	37.47	7.34	2
7/31/2014	6.29	ND	0	0	19.06	ND	0	0	8.21	37.92	6.89	2
8/27/2014	6.47	ND	0	0	18.96	ND	0	0	8.07	38.29	6.52	1.5
10/3/2014	6.32	ND	0	0	18.81	ND	0	0	8.02	38.13	6.68	2
11/3/2014	NM	NM	NM	0	19.06	ND	0	0	8.22	38.29	6.52	2
11/24/2014	NM	NM	NM	0	19.11	ND	0	0	8.27	38.47	6.34	2
12/22/2014	NM	NM	NM	0	19.06	ND	0	0	8.16	38.39	6.42	2
1/29/2015	NM	NM	NM	0	18.79	ND	0	0	8.02	39.16	5.65	1.5
2/26/2015	NM	NM	NM	0	18.71	ND	0	0	7.92	39.06	5.75	2.5
3/26/2015	NM	NM	NM	0	18..67	ND	0	0	7.83	38.74	6.07	2.5
4/27/2015	NM	NM	NM	0	18.79	ND	0	0	8.02	38.61	6.2	3
5/26/2015	NM	NM	NM	0	18.63	ND	0	0	7.91	38.72	6.09	3
7/6/2015	NM	NM	NM	0	17.29	ND	0	0	6.03	38.96	5.85	2.5
8/3/2015	NM	NM	NM	0	17.21	ND	0	0	6.09	39.01	5.8	2.5
8/27/2015	NM	NM	NM	0	18.46	ND	0	0	7.39	39.14	5.67	2
10/5/2015	NM	NM	NM	0	17.29	ND	0	0	6.32	39.34	5.47	2
11/5/2015	NM	NM	NM	0	16.78	ND	0	0	6.01	39.51	5.3	2
12/3/2015	NM	NM	NM	0	16.44	ND	0	0	5.76	39.56	5.25	2
12/28/2015	NM	NM	NM	0	16.16	ND	0	0	5.62	39.63	5.18	2.25
2/3/2016	NM	NM	NM	0	15.98	ND	0	0	5.32	39.72	5.09	3
3/3/2016	NM	NM	NM	0	15.98	ND	0	0	5.17	39.81	5	3
3/31/2016	NM	NM	NM	0	15.98	ND	0	0	5.26	39.77	5.04	3
5/3/2016	NM	NM	NM	0	15.79	ND	0	0	5.52	39.96	4.85	3
6/2/2016	NM	NM	NM	0	15.97	ND	0	0	5.67	40.07	4.74	3
7/8/2016	NM	NM	NM	0	16.06	ND	0	0	5.72	40.01	4.8	3
8/3/2016	NM	NM	NM	0	16.17	ND	0	0	5.79	40.09	4.72	3
8/30/2016	NM	NM	NM	0	16.31	ND	0	0	5.91	40.26	4.55	3
9/30/2016	NM	NM	NM	0	16.42	ND	0	0	6.06	40.13	4.68	3
11/3/2016	NM	NM	NM	0	16.51	ND	0	0	6.11	40.29	4.52	3
11/30/2016	NM	NM	NM	0	16.72	ND	0	0	6.26	40.42	4.39	3
1/4/2017	NM	NM	NM	0	16.94	ND	0	0	6.39	40.56	4.25	3
2/7/2017	NM	NM	NM	0	16.91	ND	0	0	6.44	40.51	4.3	3
3/2/2017	NM	NM	NM	0	16.78	ND	0	0	6.29	40.76	4.05	3
4/3/2017	NM	NM	NM	0	16.71	ND	0	0	6.21	40.67	4.14	2.5
4/27/2017	NM	NM	NM	0	16.61	ND	0	0	6.19	40.87	3.94	3
5/29/2017	NM	NM	NM	0	16.84	ND	0	0	6.14	40.29	4.52	3
7/5/2017	NM	NM	NM	0	17.01	ND	0	0	6.34	40.57	4.24	2.5
8/1/2017	NM	NM	NM	0	17.17	ND	0	0	6.42	40.79	4.02	3
9/5/2017	NM	NM	NM	0	17.11	ND	0	0	6.36	40.68	4.13	3
10/4/2017	NM	NM	NM	0	17.06	ND	0	0	6.29	40.69	4.12	2.5
11/2/2017	NM	NM	NM	0	17.17	ND	0	0	6.41	40.73	4.08	3
11/29/2017	NM	NM	NM	0	17.29	ND	0	0	6.52	40.82	3.99	2.5
1/2/2018	NM	NM	NM	0	17.52	ND	0	0	6.72	40.72	4.09	2.5
2/7/2018	NM	NM	NM	0	18.11	ND	0	0	6.97	40.79	4.02	2.5
3/1/2018	NM	NM	NM	0	18.38	ND	0	0	7.16	40.63	4.18	2

TABLE 1

SUMMARY OF DNAPL RECOVERY MEASUREMENTS
UPRR HOUSTON, TX - WOOD PRESERVING WORKS

	MW-33BR				MW-34C/MW-34CR (July 2014)				MW-41B			
DNAPL Recovery Date	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)
4/2/2018	NM	NM	NM	0	18.29	ND	0	0	7.13	40.71	4.1	2
5/1/2018	NM	NM	NM	0	18.33	ND	0	0	8.26	40.76	4.05	2
6/1/2018	NM	NM	NM	0	18.62	ND	0	0	8.71	40.81	4	2.25
6/29/2018	NM	NM	NM	0	18.91	ND	0	0	9.02	40.71	4.1	2.5
8/3/2018	NM	NM	NM	0	19.06	ND	0	0	9.13	40.76	4.05	2.5
8/31/2018	NM	NM	NM	0	18.77	ND	0	0	8.89	40.86	3.95	2
9/28/2018	NM	NM	NM	0	18.64	ND	0	0	8.77	40.76	4.05	2
11/2/2018	NM	NM	NM	0	18.57	ND	0	0	8.61	40.71	4.1	2
11/29/2018	NM	NM	NM	0	18.39	ND	0	0	8.41	40.81	4	2
1/2/2019	NM	NM	NM	0	18.26	ND	0	0	8.22	40.83	3.98	2
2/2/2019	NM	NM	NM	0	18.19	ND	0	0	8.16	40.89	3.92	2
2/28/2019	NM	NM	NM	0	18.02	ND	0	0	8.03	40.76	4.05	3
4/2/2019	NM	NM	NM	0	17.96	ND	0	0	7.93	40.69	4.12	3
4/25/2019	NM	NM	NM	0	Well Damaged			0	7.76	40.28	4.53	3
5/29/2019	NM	NM	NM	0	Well Damaged			0	7.71	40.07	4.74	3
6/12/2019	NM	NM	NM	0	Well Damaged			0	7.52	39.63	5.18	3
6/30/2019	NM	NM	NM	0	Well Damaged			0	7.46	39.52	5.29	3
7/16/2019	NM	NM	NM	0	Well Damaged			0	7.39	39.46	5.35	3
8/2/2019	NM	NM	NM	0	Well Damaged			0	7.46	39.42	5.39	0
8/15/2019	NM	NM	NM	0	Well Damaged			0	7.51	39.31	5.5	3
8/28/2019	NM	NM	NM	0	Well Damaged			0	7.57	39.21	5.6	3
9/17/2019	NM	NM	NM	0	Well Damaged			0	7.66	39.02	5.79	3
10/2/2019	NM	NM	NM	0	Well Damaged			0	7.61	38.76	6.05	3
10/16/2019	NM	NM	NM	0	Well Damaged			0	5.21	38.67	6.14	3
10/31/2019	NM	NM	NM	0	Well Damaged			0	5.21	38.67	6.14	3
11/15/2019	NM	NM	NM	0	Well Damaged			0	4.81	38.12	6.69	2
12/3/2019	NM	NM	NM	0	Well Damaged			0	6.46	39.27	5.54	3
12/18/2019	NM	NM	NM	0	Well Damaged			0	6.51	41.7	3.11	0
12/30/2019	NM	NM	NM	0	Well Damaged			0	6.99	43.5	1.31	0
1/7/2020	--	--	--	--	--	--	--	--	--	--	--	--
1/15/2020	NM	NM	NM	0	Well Damaged			0	5.12	38.99	5.82	0
1/27/2020	NM	NM	NM	0	Well Damaged			0	3.41	40.7	4.11	0
2/13/2020	NM	NM	NM	0	Well Damaged			0	5.1	40.12	4.69	0
2/25/2020	NM	NM	NM	0	Well Damaged			0	4.5	41.12	3.69	0
3/13/2020	NM	NM	NM	0	Well Damaged			0	6.06	42.12	2.69	0
3/31/2020	NM	NM	NM	0	17.49	ND	0	0	6.82	42.12**	2.69	2
4/9/2020	NM	NM	NM	0	17.63	ND	0	0	6.47	BP		2
4/27/2020	NM	NM	NM	0	17.89	ND	0	0	8.01	BP		2
5/14/2020	NM	NM	NM	0	18.29	ND	0	0	8.71	42.1	2.71	3.5
5/28/2020	NM	NM	NM	0	18.31	ND	0	0	8.08	BP		3.5
6/11/2020	NM	NM	NM	0	18.51	ND	0	0	8.01	41.59	3.22	2
6/25/2020	NM	NM	NM	0	17.66	ND	0	0	7.52	42.11	2.7	2
Total DNAPL Pumped (gal)				***0***				***0***				***230.5***

Notes:

* - indicates DNAPL and groundwater mixture

** - indicates DTD from previous event was used

--- - No DNAPL pumped

DTW - Depth to water (feet Below Top of Casing (BTOC))

DTD - Depth to DNAPL (feet BTOC)

ND - Not detected

NM - Not measured

PoP - Product on probe, not measureable

TR- Trace amount of DNAPL Extracted

BP- Below pump; depth to DNAPL not measured because it is below top of in-well pump

TABLE 1

SUMMARY OF DNAPL RECOVERY MEASUREMENTS
UPRR HOUSTON, TX - WOOD PRESERVING WORKS

	MW-44C				MW-45C				MW-46C			
DNAPL Recovery Date	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)
2/14/2013	18.96	62.95	7.85	1	21.26	69.9	0.7	0.25	21.07	71.3	1.6	0.25
4/3/2013	19.34	70.47	0.33	0.25*	21.39	70.39	0.21	0.25*	20.61	72.36	0.54	0.25*
4/22/2013	18.62	70.64	0.16	0.25*	21.03	70.47	0.13	0.25*	20.61	72.61	0.29	0.25*
5/30/2013	18.43	70.01	0.79	0.25*	21.16	70.25	0.35	0.25*	20.59	71.61	1.29	0.25*
6/29/2013	19.34	70.32	0.48	0.25	21.93	70.32	0.28	0.25*	21.09	72.34	0.56	0.25*
7/22/2013	20.36	70.26	0.54	0.25	22.72	70.39	0.21	0.25*	21.96	72.16	0.74	0.25*
8/26/2013	20.62	70.39	0.41	0.25	22.86	70.31	0.29	0.25	22.23	72.32	0.58	0.25
9/27/2013	20.39	70.61	0.19	0.25	22.66	70.17	0.43	0.25	22.09	72.09	0.81	0.25
10/31/2013	20.17	70.75	0.05	0.07	22.59	70.42	0.18	0.13	22.41	72.34	0.56	0.2
11/27/2013	20.09	70.78	0.02	0.00	22.52	70.49	0.11	0	22.31	72.47	0.43	0.07
12/31/2013	20.01	70.8	PoP	0.00	22.39	70.46	0.14	0	22.03	72.53	0.37	0.07
1/30/2014	19.67	70.42	0.38	0.25	22.13	70.35	0.25	0	21.81	72.55	0.35	0.07
3/3/2014	19.29	70.17	0.63	0.25	21.86	70.09	0.51	0	21.57	72.05	0.85	0.25
3/31/2014	19.17	70.02	0.78	0.25	21.71	69.63	0.97	0.25	21.43	72.12	0.78	0.13
4/30/2014	19.02	69.81	0.99	0.25	21.59	69.74	0.86	0.25	21.27	71.81	1.09	0.25
5/27/2014	18.92	69.71	1.09	0.00	21.52	69.67	0.93	0.25	21.34	71.71	1.19	0.25
6/26/2014	18.81	69.52	1.28	0.25	21.59	69.77	0.83	0.25	21.17	71.6	1.3	0.25
7/31/2014	18.66	69.37	1.43	0.25	21.21	69.96	0.64	0.25	20.39	71.43	1.47	0.25
8/27/2014	18.53	69.47	1.33	0.25	21.13	70.12	0.48	0.25	20.22	71.61	1.29	0.25
10/3/2014	18.41	69.23	1.57	0.25	20.13	70.41	0.19	0.25	20.14	71.39	1.51	0.25
11/3/2014	18.52	69.37	1.43	0.25	20.29	70.36	0.24	0.25	20.27	71.47	1.43	0.25
11/24/2014	18.57	69.49	1.31	0.5	20.34	70.48	0.12	0.25	20.38	71.53	1.37	0.5
12/22/2014	18.51	69.31	1.49	0.5	20.31	70.41	0.19	0.25	20.37	71.42	1.48	0.5
1/29/2015	18.39	69.39	1.41	0.5	20.17	70.51	0.09	0.25	20.13	71.48	1.42	0.5
2/26/2015	18.42	69.51	1.29	0.5	20.11	70.59	0.01	0	20.09	71.38	1.52	0.5
3/26/2015	18.39	69.42	1.38	0.25	19.26	70.52	0.08	0	20.17	71.02	1.88	0.25
4/27/2015	18.29	69.52	1.28	0.5	20.17	70.48	0.12	0.25	20.22	71.56	1.34	1
5/26/2015	18.17	69.57	1.23	0.75	20.12	70.41	0.19	0.25	20.12	71.61	1.29	1
7/6/2015	16.29	69.86	0.94	0.5	18.07	70.49	0.11	0.25	18.17	71.93	0.97	0.75
8/3/2015	16.18	69.82	0.98	0.5	18.16	70.56	0.04	TR*	18.24	71.98	0.92	0.75
8/27/2015	17.46	69.74	1.06	0.25	19.03	70.54	0.06	TR*	19.39	72.03	0.87	0.5
10/5/2015	16.83	69.86	0.94	0.25	18.39	ND	0	0	18.72	72.34	0.56	0.5
11/5/2015	16.62	69.79	1.01	0.25	17.96	ND	0	0	18.51	72.26	0.64	0.5
12/3/2015	16.46	69.73	1.07	0.25	17.72	ND	0	0	18.62	72.36	0.54	0.5
12/28/2015	16.32	69.77	1.03	0.25	17.62	ND	0	0	18.42	72.31	0.59	0.5
2/3/2016	16.17	69.74	1.06	0.25	17.42	ND	0	0	18.29	72.46	0.44	0.25
3/3/2016	16.12	69.79	1.01	0.25	17.39	ND	0	0	18.23	72.49	0.41	0.25
3/31/2016	16.06	69.71	1.09	0.25	17.33	ND	0	0	18.24	72.54	0.36	0.25
5/3/2016	16.27	69.59	1.21	0.25	17.47	ND	0	0	18.39	72.39	0.51	0.25
6/2/2016	16.38	69.63	1.17	0.25	17.52	ND	0	0	18.43	72.43	0.47	0.25
7/8/2016	16.47	69.71	1.09	0.25	17.62	ND	0	0	18.54	72.49	0.41	0.25
8/3/2016	16.59	69.7	1.1	0.25	17.69	ND	0	0	18.51	72.53	0.37	0.25
8/30/2016	16.67	69.58	1.22	0.25	17.76	ND	0	0	18.72	72.57	0.33	0.25
9/30/2016	16.79	69.49	1.31	0.5	17.86	ND	0	0	18.83	72.46	0.44	0.25
11/3/2016	16.86	69.71	1.09	0.5	17.92	ND	0	0	18.89	72.41	0.49	0.25
11/30/2016	17.03	69.94	0.86	0.75	18.09	ND	0	0	19.12	72.32	0.58	0.25
1/4/2017	17.22	70.11	0.69	0.75	18.22	ND	0	0	19.27	72.46	0.44	0.25
2/7/2017	17.29	70.01	0.79	0.5	18.17	ND	0	0	19.19	72.39	0.51	0.25
3/2/2017	17.17	70.16	0.64	0.5	17.96	ND	0	0	19.03	72.31	0.59	0.25
4/3/2017	17.06	70.21	0.59	0	17.89	ND	0	0	18.97	72.39	0.51	0.25
4/27/2017	17.01	70.29	0.51	0	17.67	ND	0	0	18.84	72.31	0.59	0.5
5/29/2017	17.23	70.24	0.56	0.25	17.84	ND	0	0	18.94	72.47	0.43	0.25
7/5/2017	17.33	70.34	0.46	0.25	17.96	ND	0	0	19.12	72.34	0.56	0.5
8/1/2017	17.39	70.39	0.41	0.25	18.09	ND	0	0	19.23	72.27	0.63	0.5
9/5/2017	17.36	70.43	0.37	0.25	18.16	ND	0	0	19.29	72.34	0.56	0.5
10/4/2017	17.31	70.41	0.39	0.25	18.21	ND	0	0	19.36	72.3	0.6	0.5
11/2/2017	17.42	70.4	0.4	0.25	18.32	ND	0	0	19.42	72.36	0.54	0.5
11/29/2017	17.49	70.36	0.44	0.25	18.43	ND	0	0	19.57	72.34	0.56	0.5
1/2/2018	17.67	70.31	0.49	0.5	18.73	ND	0	0	19.81	72.39	0.51	0.5
2/7/2018	17.77	70.34	0.46	0.5	18.62	ND	0	0	19.96	72.46	0.44	0.5
3/1/2018	NM	NM	NM	0	18.79	ND	0	0	20.02	72.32	0.58	0.5

TABLE 1

SUMMARY OF DNAPL RECOVERY MEASUREMENTS
UPRR HOUSTON, TX - WOOD PRESERVING WORKS

	MW-44C				MW-45C				MW-46C			
DNAPL Recovery Date	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)
4/2/2018	NM	NM	NM	0	18.72	ND	0	0	19.81	72.39	0.51	0.5
5/1/2018	NM	NM	NM	0	19.31	ND	0	0	20.62	72.46	0.44	1
6/1/2018	18.31	70.17	0.63	0.75	19.47	ND	0	0	20.87	72.51	0.39	1
6/29/2018	18.79	70.39	0.41	0.75	19.67	ND	0	0	20.97	72.57	0.33	1
8/3/2018	18.97	70.36	0.44	0.75	19.77	ND	0	0	21.11	72.59	0.31	1
8/31/2018	18.87	70.39	0.41	0.5	19.41	ND	0	0	20.96	72.48	0.42	0.5
9/28/2018	18.82	70.41	0.39	0.75	19.32	ND	0	0	20.91	72.43	0.47	0.5
11/2/2018	18.67	70.44	0.36	0.75	19.26	ND	0	0	20.77	72.39	0.51	0.75
11/29/2018	18.47	70.46	0.34	0.25	19.16	ND	0	0	20.52	72.34	0.56	0.5
1/2/2019	18.42	70.41	0.39	0.5	19.02	ND	0	0	20.49	72.46	0.44	0.5
2/2/2019	18.29	70.41	0.39	0.5	18.93	ND	0	0	20.43	72.49	0.41	0.5
2/28/2019	18.16	70.42	0.38	0.5	18.77	ND	0	0	20.34	72.37	0.53	0.5
4/2/2019	18.09	70.39	0.41	0.5	18.71	ND	0	0	20.18	72.32	0.58	0.5
4/25/2019	18.02	70.16	0.64	0.5	18.63	ND	0	0	20.14	72.36	0.54	0.5
5/29/2019	18.61	70.23	0.57	0.5	18.47	ND	0	0	20.06	72.39	0.51	0.5
6/12/2019	18.29	ND	Trace	0	18.81	ND	0	0	18.02	ND	Trace	0
6/30/2019	18.16	ND	0	0	18.71	ND	0	0	18.09	ND	0	0
7/16/2019	18.09	ND	0	0	18.66	ND	0	0	18.12	ND	0	0
8/2/2019	18.17	ND	0	0	18.72	ND	0	0	18.17	ND	0	0
8/15/2019	18.22	ND	0	0	18.79	ND	0	0	18.09	ND	0	0
8/28/2019	18.29	ND	0	0	18.86	ND	0	0	18.17	ND	0	0
9/17/2019	18.39	ND	0	0	18.97	ND	0	0	18.23	ND	0	0
10/2/2019	18.32	ND	0	0	18.89	ND	0	0	18.17	ND	0	0
10/16/2019	15.06	ND**	0	0	16.23	ND	0	0	16.34	ND	0	0
10/31/2019	14.89	ND**	0	0	15.94	ND	0	0	16.06	ND	0	0
11/15/2019	14.21	ND**	0	0	15.69	ND	0	0	15.81	ND	0	0
12/3/2019	16.11	ND**	0	0	15.71	ND	0	0	15.91	ND	0	0
12/18/2019	16.51	ND**	0	0	15.91	ND	0	0	16.11	ND	0	0
12/30/2019	16.65	ND**	0	0	16.11	ND	0	0	16.22	ND	0	0
1/7/2020	--	--	--	--	--	--	--	--	--	--	--	--
1/15/2020	16.61	ND**	0	0	16.11	ND	0	0	16.29	ND	0	0
1/27/2020	16.24	ND**	0	0	15.71	ND	0	0	16.15	ND	0	0
2/13/2020	15.81	ND**	0	0	15.29	ND	0	0	14.4	ND	0	0
2/25/2020	15.81	ND**	0	0	15.28	ND	0	0	15.42	ND	0	0
3/13/2020	15.84	ND**	0	0	15.31	ND	0	0	15.57	ND	0	0
3/31/2020	14.82	ND**	0	0	15.59	ND	0	0	15.72	ND	0	0
4/9/2020	22.76	ND**	0	0	15.67	ND	0	0	15.89	ND	0	0
4/27/2020	14.67	ND**	0	0	15.94	ND	0	0	16.12	ND	0	0
5/14/2020	14.21	ND**	0	0	16.38	69.3	1.3	0.0625	16.51	ND	0	0
5/28/2020	12.06	57.61	0.39**	0	16.46	70	0.6	0	16.71	ND	0	0
6/11/2020	11.61	ND**	0	0	16.68	ND	0	0	16.83	ND	0	0
6/25/2020	10.37	ND**	0	0	14.99	ND	0	0	15.12	ND	0	0
Total DNAPL Pumped (gal)				***26.6***				***5.7***				***31.5***

Notes:

* - indicates DNAPL and groundwater mixture

--- - No DNAPL pumped

DTW - Depth to water (feet Below Top of Casing (BTOC))

DTD - Depth to DNAPL (feet BTOC)

ND - Not detected

NM - Not measured

PoP - Product on probe, not measureable

TR- Trace amount of DNAPL Extracted

MW-44C not measured 3/1/18 - 5/1/18; couldn't locate well due to construction.

**Total depth measured in MW-44C was approximately 10 ft higher than during previous events - will attempt to remove silt.

TABLE 1

SUMMARY OF DNAPL RECOVERY MEASUREMENTS
UPRR HOUSTON, TX - WOOD PRESERVING WORKS

	MW-49B				MW-57A				MW-57B			
DNAPL Recovery Date	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)
2/14/2013					10.56	22.12	4.78	0.5	28.56	41.41	1.54	0.25
4/3/2013					10.32	24.79	2.11	0.5	28.09	42.36	0.59	0.25*
4/22/2013					10.71	25.85	1.05	0.5	27.06	42.17	0.78	0.25
5/30/2013					10.63	24.16	2.74	0.5	27.13	41.63	1.32	0.25
6/29/2013					12.16	23.82	3.08	2	18.26	42.07	0.88	0.25
7/22/2013					13.21	23.05	3.85	2	16.34	41.67	1.28	0.75
8/26/2013					12.91	25.32	1.58	1	18.01	42.31	0.64	0.25
9/27/2013					12.72	25.71	1.19	0.75	17.74	42.51	0.39	0.25
10/31/2013					12.72	25.92	0.98	1	17.61	42.61	0.29	0.07
11/27/2013					12.61	25.98	0.92	1	17.54	42.67	0.23	0.07
12/31/2013					12.46	26.09	0.81	1	17.36	42.74	0.16	0.07
1/30/2014					11.79	26.15	0.75	0.25	17.04	ND	Trace	0
3/3/2014					11.02	26.25	0.65	0.25	16.51	ND	Trace	0
3/31/2014					10.83	26.41	0.49	0.25	16.41	ND	Trace	0
4/30/2014					10.71	26.31	0.59	0.25	16.29	ND	Trace	0
5/27/2014					10.74	26.16	0.74	0.25	16.13	ND	Trace	0
6/26/2014					10.61	26.29	0.61	0.25	16.02	ND	Trace	0
7/31/2014					10.35	26.18	0.72	0.25	15.84	ND	Trace	0
8/27/2014					10.22	26.26	0.64	0.25	15.71	ND	Trace	0
10/3/2014					10.09	26.04	0.86	0.25	15.61	ND	Trace	0
11/3/2014					10.17	26.16	0.74	0.25	NM	NM	NM	0
11/24/2014					10.13	26.29	0.61	0.25	NM	NM	NM	0
12/22/2014					10.06	26.34	0.56	0.25	NM	NM	NM	0
1/29/2015					9.73	26.51	0.39	0.25	NM	NM	NM	0
2/26/2015					9.87	26.42	0.48	0.25	NM	NM	NM	0
3/26/2015					9.81	26.32	0.58	0.25	NM	NM	NM	0
4/27/2015					9.82	26.47	0.43	0.5	NM	NM	NM	0
5/26/2015					9.71	26.56	0.34	0.5	NM	NM	NM	0
7/6/2015					7.41	26.82	0.08	TR*	NM	NM	NM	0
8/3/2015					7.29	26.86	0.04	TR*	12.32	ND	PoP	0
8/27/2015					8.11	ND	0	TR*	13.04	ND	0	0
10/5/2015					7.72	ND	0	0	12.62	ND	0	0
11/5/2015					7.39	ND	0	0	12.27	ND	0	0
12/3/2015					7.13	ND	0	0	12.02	ND	0	0
12/28/2015					NM	NM	NM	0	NM	NM	NM	0
2/3/2016					NM	NM	NM	0	NM	NM	NM	0
3/3/2016					NM	NM	NM	0	NM	NM	NM	0
3/31/2016					NM	NM	NM	0	NM	NM	NM	0
5/3/2016					NM	NM	NM	0	NM	NM	NM	0
6/2/2016					7.26	ND	0	0	12.32	ND	0	0
7/8/2016					7.39	ND	0	0	12.44	ND	0	0
8/3/2016					7.46	ND	0	0	12.52	ND	0	0
8/30/2016					7.58	ND	0	0	12.67	ND	0	0
9/30/2016					7.69	ND	0	0	12.81	ND	0	0
11/3/2016					7.77	ND	0	0	12.92	ND	0	0
11/30/2016					7.92	ND	0	0	13.16	ND	0	0
1/4/2017					8.07	ND	0	0	13.24	ND	0	0
2/7/2017					8.18	ND	0	0	13.29	ND	0	0
3/2/2017					8.02	ND	0	0	13.17	ND	0	0
4/3/2017					8.06	ND	0	0	13.04	ND	0	0
4/27/2017					8.01	ND	0	0	13.14	ND	0	0
5/29/2017					8.34	ND	0	0	13.41	ND	0	0
7/5/2017					8.41	ND	0	0	13.57	ND	0	0
8/1/2017					8.52	ND	0	0	13.69	ND	0	0
9/5/2017					8.46	ND	0	0	13.79	ND	0	0
10/4/2017					8.41	ND	0	0	13.71	ND	0	0
11/2/2017					8.52	ND	0	0	13.91	ND	0	0
11/29/2017					8.67	ND	0	0	14.02	ND	0	0
1/2/2018					8.91	ND	0	0	13.06	ND	0	0
2/7/2018					8.98	ND	0	0	12.42	ND	0	0
3/1/2018					9.22	ND	0	0	12.58	ND	0	0

TABLE 1

SUMMARY OF DNAPL RECOVERY MEASUREMENTS
UPRR HOUSTON, TX - WOOD PRESERVING WORKS

	MW-49B				MW-57A				MW-57B			
DNAPL Recovery Date	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)
4/2/2018					9.16	ND	0	0	12.46	ND	0	0
5/1/2018					9.34	ND	0	0	13.04	ND	0	0
6/1/2018					9.67	ND	0	0	13.29	ND	0	0
6/29/2018					9.87	ND	0	0	13.47	ND	0	0
8/3/2018					10.02	ND	0	0	13.61	ND	0	0
8/31/2018					9.91	ND	0	0	13.47	ND	0	0
9/28/2018					9.86	ND	0	0	13.36	ND	0	0
11/2/2018					9.77	ND	0	0	13.21	ND	0	0
11/29/2018					9.56	ND	0	0	13.01	ND	0	0
1/2/2019					9.52	ND	Trace	0	13.03	ND	Trace	0
2/2/2019					9.41	ND	Trace	0	12.91	ND	Trace	0
2/28/2019					9.32	ND	Trace	0	12.83	ND	Trace	0
4/2/2019					9.27	ND	Trace	0	12.76	ND	Trace	0
4/25/2019					9.16	ND	Trace	0	12.71	ND	Trace	0
5/29/2019					9.06	ND	Trace	0	12.70	ND	Trace	0
6/12/2019					9.39	ND	0	0	12.93	ND	0	0
6/30/2019					9.21	ND	0	0	12.86	ND	0	0
7/16/2019					9.17	ND	0	0	12.79	ND	0	0
8/2/2019					9.22	ND	0	0	12.84	ND	0	0
8/15/2019					9.29	ND	0	0	12.92	ND	0	0
8/28/2019					9.33	ND	0	0	12.96	ND	0	0
9/17/2019					9.46	ND	0	0	12.86	ND	0	0
10/2/2019					9.74	ND	0	0	12.83	ND	0	0
10/16/2019					10.39	ND	0	0	13.67	ND	0	0
10/31/2019					11.92	ND	0	0	14.21	ND	0	0
11/15/2019					11.14	ND	0	0	6.21	ND	0	0
12/3/2019					13.75	ND	0	0	13.51	ND	0	0
12/18/2019					14.09	ND	0	0	13.51	ND	0	0
12/30/2019					14.42	ND	0	0	13.51	ND	0	0
1/7/2020	11.51	20.09	14.77	--	--	--	--	--	--	--	--	--
1/15/2020	15.48	20.89	13.97	2.5	12.79	ND	0	0	21.93	ND	0	0
1/27/2020	14.2	22.4	12.46	2	11.61	ND	0	0	19.96	ND	0	0
2/13/2020	13.31	28.9	5.96	1.5	13.22	ND	0	0	17.91	ND	0	0
2/25/2020	11.51	26.8	8.06	1	12.31	ND	0	0	16.86	ND	0	0
3/13/2020	11.73	26.1	8.76	0.5	13.71	ND	0	0	15.91	ND	0	0
3/31/2020	13.72	29.39	5.47	0.5	13.85	ND	0	0	15.37	ND	0	0
4/9/2020	14.13	31.04	3.82	0.5	13.36	ND	0	0	15.19	ND	0	0
4/27/2020	15.31	32.05	2.81	0.0625	14.45	ND	0	0	14.99	ND	0	0
5/14/2020	14.95	31.89	2.97	0.0625	14.84	ND	0	0	14.95	ND	0	0
5/28/2020	13.66	31.07	3.79	0.5	13.91	ND	0	0	14.92	ND	0	0
6/11/2020	14.56	31.22	3.64	0.25	14.41	ND	0	0	14.89	ND	0	0
6/25/2020	10.65	31.64	3.22	0.25	14.08	ND	0	0	14.28	ND	0	0
Total DNAPL Pumped (gal)				***9.6***				***15.5***				***2.7***

Notes:

* - indicates DNAPL and groundwater mixture

--- - No DNAPL pumped

DTW - Depth to water (feet Below Top of Casing (BTOC))

DTD - Depth to DNAPL (feet BTOC)

ND - Not detected

NM - Not measured

PoP - Product on probe, not measureable

TR- Trace amount of DNAPL Extracted

TABLE 1

SUMMARY OF DNAPL RECOVERY MEASUREMENTS
UPRR HOUSTON, TX - WOOD PRESERVING WORKS

	MW-68B				MW-70B				MW-75B			
DNAPL Recovery Date	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)
2/14/2013					6.57	34.09	1.61	0.25	10.01	34.1	3.1	0.25
4/3/2013					6.79	35.26	0.44	0.25	13.71	36.47	0.73	0.25
4/22/2013					6.06	35.12	0.58	0.25	9.72	36.72	0.48	0.25
5/30/2013					6.19	34.67	1.03	0.25	9.61	35.09	2.11	*0.75*
6/29/2013					8.01	34.92	0.78	0.25*	10.61	35.61	1.59	*0.75*
7/22/2013					8.22	34.07	1.63	0.25*	9.74	35.71	1.49	*0.75*
8/26/2013					8.17	35.09	0.61	0.25	10.76	35.93	1.27	0.75
9/27/2013					8.32	35.34	0.36	0.25	10.52	36.39	0.81	0.5
10/31/2013					8.26	35.39	0.31	0.07	10.31	36.47	0.73	1
11/27/2013					8.12	35.42	0.28	0.07	10.39	36.51	0.69	1
12/31/2013					7.89	35.51	0.19	0.07	10.13	36.72	0.48	1
1/30/2014					7.84	35.06	0.64	0.07	12.62	36.49	0.71	0.75
3/3/2014					7.09	35.05	0.65	0.13	12.12	36.35	0.85	0.75
3/31/2014					6.87	35.17	0.53	0.07	12.01	36.27	0.93	0.75
4/30/2014					6.72	35.01	0.69	0.07	11.84	36.02	1.18	0.75
5/27/2014					6.64	34.86	0.84	0.07	11.71	35.79	1.41	0.75
6/26/2014					6.52	34.97	0.73	0.25	11.58	35.91	1.29	0.5
7/31/2014					6.26	34.76	0.94	0.25	11.32	35.82	1.38	0.5
8/27/2014					6.84	34.86	0.84	0.25	11.19	36.09	1.11	0.5
10/3/2014					6.71	34.61	1.09	0.25	11.09	36.01	1.19	0.5
11/3/2014					6.79	34.79	0.91	0.25	11.16	36.19	1.01	0.75
11/24/2014					6.77	34.93	0.77	0.25	11.21	36.27	0.93	0.5
12/22/2014					6.69	34.86	0.84	0.25	11.26	36.19	1.01	0.5
1/29/2015					6.48	34.92	0.78	0.25	11.06	36.34	0.86	0.5
2/26/2015					6.39	34.81	0.89	0.5	11.09	36.34	0.86	0.5
3/26/2015					6.27	34.91	0.79	0.25	10.93	36.42	0.78	0.5
4/27/2015					6.19	34.99	0.71	0.25	10.78	36.52	0.68	0.5
5/26/2015					6.07	35.11	0.59	0.5	10.61	36.72	0.48	0.75
7/6/2015					5.03	35.32	0.38	0.25	8.52	36.91	0.29	0.75
8/3/2015					5.12	35.37	0.33	TR*	8.66	36.96	0.24	0.75
8/27/2015					6.31	35.41	0.29	TR*	9.31	36.91	0.29	0.75
10/5/2015					5.72	35.47	0.23	0.25	8.62	37.02	0.18	0.5
11/5/2015					5.41	35.42	0.28	0.25	8.34	36.93	0.27	0.5
12/3/2015					5.13	35.63	0.07	0.25	8.12	36.81	0.39	0.5
12/28/2015					5.02	35.26	0.44	0.25	8.01	36.72	0.48	0.5
2/3/2016					4.86	35.21	0.49	0.25	7.82	36.19	1.01	0.25
3/3/2016					4.92	35.17	0.53	0.25	7.74	36.27	0.93	0.5
3/31/2016					4.91	35.24	0.46	0.25	7.67	36.39	0.81	0.5
5/3/2016					5.13	35.29	0.36	0.25	7.79	36.47	0.68	0.5
6/2/2016					5.26	35.36	0.29	0.25	7.71	36.42	0.73	0.5
7/8/2016					5.34	35.31	0.34	0.25	7.8	36.53	0.62	0.5
8/3/2016					5.42	35.39	0.26	0.25	7.89	36.59	0.56	0.5
8/30/2016					5.61	35.21	0.44	0.25	7.96	36.64	0.51	0.5
9/30/2016					5.74	35.03	0.62	0.25	7.91	36.51	0.64	0.5
11/3/2016					5.79	35.11	0.54	0.25	7.86	36.36	0.79	0.5
11/30/2016					6.03	35.23	0.42	0.25	7.97	36.47	0.68	0.75
1/4/2017					6.17	35.09	0.56	0.5	8.04	36.36	0.79	0.75
2/7/2017					6.26	35.01	0.64	0.5	8.12	36.21	0.94	0.75
3/2/2017					6.16	35.09	0.56	0.5	8.01	36.26	0.89	0.75
4/3/2017					6.09	35.13	0.52	0.5	7.93	36.43	0.72	0.75
4/27/2017					6.12	35.2	0.45	0.5	7.86	36.52	0.63	0.75
5/29/2017					6.29	35.06	0.59	0.5	7.94	36.41	0.74	0.75
7/5/2017					6.39	35.14	0.51	0.25	8.04	36.36	0.79	0.75
8/1/2017					6.47	35.21	0.44	0.25	8.16	36.31	0.84	0.75
9/5/2017					6.56	35.34	0.31	0.25	8.22	36.47	0.68	0.75
10/4/2017					6.63	35.39	0.26	0.25	8.29	36.56	0.59	0.75
11/2/2017					6.74	35.31	0.34	0.25	8.37	36.51	0.64	1
11/29/2017					6.79	35.29	0.36	0.25	8.33	36.59	0.56	1
1/2/2018					6.34	35.34	0.31	0.25	8.07	36.72	0.43	1
2/7/2018					6.42	35.31	0.34	0.25	8.17	36.91	0.24	1
3/1/2018					6.67	35.21	0.44	0.5	8.31	36.94	0.21	1

TABLE 1

SUMMARY OF DNAPL RECOVERY MEASUREMENTS
UPRR HOUSTON, TX - WOOD PRESERVING WORKS

	MW-68B				MW-70B				MW-75B			
DNAPL Recovery Date	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)
4/2/2018					6.61	35.16	0.49	0.5	8.26	36.89	0.26	0.75
5/1/2018					7.22	35.23	0.42	1.25	8.92	36.96	0.19	0.75
6/1/2018					7.42	35.29	0.36	1	9.34	36.91	0.24	0.75
6/29/2018					7.58	35.21	0.44	1	9.67	36.82	0.33	0.75
8/3/2018					7.69	35.29	0.36	0.75	9.84	36.87	0.28	0.75
8/31/2018					7.42	35.36	0.29	0.5	9.71	36.91	0.24	0.75
9/28/2018					7.33	35.28	0.37	0.5	9.62	36.84	0.31	0.75
11/2/2018					7.22	35.24	0.41	0.75	9.57	36.88	0.27	0.75
11/29/2018					7.06	35.21	0.44	0.5	9.41	36.92	0.23	1
1/2/2019					6.96	35.31	0.34	0.5	9.28	36.96	0.19	1
2/2/2019					6.87	35.36	0.29	0.5	9.22	36.91	0.24	1
2/28/2019					6.74	35.29	0.36	0.5	9.16	36.93	0.22	1
4/2/2019					6.67	35.27	0.38	0.5	9.06	36.91	0.24	1
4/25/2019					6.74	35.21	0.44	0.5	9.02	36.72	0.43	1
5/29/2019					6.71	35.17	0.48	0.5	9.07	36.67	0.48	1
6/12/2019					6.43	34.84	0.81	1	8.92	ND	Trace	0
6/30/2019					6.48	34.61	1.04	1	8.66	ND	Trace	0
7/16/2019					6.43	34.49	1.16	1.5	8.62	ND	Trace	0
8/2/2019					6.48	34.31	1.34	1.5	8.67	ND	Trace	0
8/15/2019					6.51	34.07	1.58	2	8.69	ND	ND	0
8/28/2019					6.57	34.09	1.56	2	8.72	ND	Trace	0
9/17/2019					6.51	34.01	1.64	2	8.61	ND	Trace	0
10/2/2019					6.46	33.71	1.94	2.5	8.53	ND	Trace	0
10/16/2019					6.42	ND	0	0	NM	NM	NM	0
10/31/2019					6.43	ND	Trace	0	NM	NM	NM	0
11/15/2019					4.75	ND	0	0	7.91	ND	0	0
12/3/2019					5.01	ND	0	0	8.24	ND	0	0
12/18/2019					5.53	35	0.65	0.33	4.99	ND	0	0
12/30/2019					5.71	32.4	3.25	0.13	7.79	35.3	1.85	0
1/7/2020	4.82	34.21	3.59	--	--	--	--	--	--	--	--	--
1/15/2020	4.82	34.41	3.39	0.50	7.19	32.51	3.14	0.0625	6.47	36.4	0.75	0
1/27/2020	2.15	35.9	1.9	0.50	9.9	31.3	4.35	0.125	5.92	34.6	2.55	0.125
2/13/2020	3.49	35.02	2.78	0.50	5.99	31.43	4.22	0.125	7.88	35.08	2.07	0.125
2/25/2020	2.35	36.12	1.68	0.25	4.71	31.81	3.84	0.25	5.82	ND	0	0
3/13/2020	3.99	35.6	2.2	0.125	4.63	30.5	5.15	0.25	8.24	34.9	2.25	0.125
3/31/2020	4.46	36.9	0.9	0.0	6.04	31.34	4.31	0.50	4.79	ND	0	0
4/9/2020	4.41	35.99	1.81	0.125	6.79	31.53	4.12	0.50	8.52	ND	0	0
4/27/2020	5.53	36.1	1.7	0.125	6.81	30.84	4.81	1.00	9.07	ND	0	0
5/14/2020	6.39	37.01	0.79	0	7.26	30.63	5.02	1.00	7.74	37.1	0.05	0
5/28/2020	5.99	37.09	0.71	TR	7.02	30.74	4.91	1.50	5.06	ND	0	0
6/11/2020	6.49	36.8	1	TR	7.53	31.2	4.45	0.50	5.79	37	0.15	TR
6/25/2020	6.09	36.94	0.86	TR	7.08	32.12	3.53	0.50	4.87	0	0	0
Total DNAPL Pumped (gal)				***2.1***				***45.6***				***53.1***

Notes:

* - indicates DNAPL and groundwater mixture
--- - No DNAPL pumped
DTW - Depth to water (feet Below Top of Casing (BTOC))
DTD - Depth to DNAPL (feet BTOC)

ND - Not detected
NM - Not measured
PoP - Product on probe, not measureab
TR- Trace amount of DNAPL Extracte

* - indicates DNAPL and groundwater mixture
--- - No DNAPL pumped
DTW - Depth to water (feet Below Top of Casing (B
DTD - Depth to DNAPL (feet BTOC)

TABLE 1

SUMMARY OF DNAPL RECOVERY MEASUREMENTS
UPRR HOUSTON, TX - WOOD PRESERVING WORKS

	MW-78A				Approx
DNAPL Recovery Date	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DNAPL Recovered (gal)
2/14/2013	NM	NM	NM	0	9.75
4/3/2013	NM	NM	NM	0	5.00
4/22/2013	NM	NM	NM	0	2.75
5/30/2013	NM	NM	NM	0	7.50
6/29/2013	NM	NM	NM	0	7.00
7/22/2013	NM	NM	NM	0	6.50
8/26/2013	NM	NM	NM	0	6.50
9/27/2013	NM	NM	NM	0	5.75
10/31/2013	NM	NM	NM	0	5.07
11/27/2013	NM	NM	NM	0	4.74
12/31/2013	NM	NM	NM	0	4.71
1/30/2014	NM	NM	NM	0	4.67
3/3/2014	NM	NM	NM	0	4.91
3/31/2014	NM	NM	NM	0	4.98
4/30/2014	NM	NM	NM	0	5.10
5/27/2014	NM	NM	NM	0	4.85
6/26/2014	NM	NM	NM	0	5.03
7/31/2014	NM	NM	NM	0	4.75
8/27/2014	NM	NM	NM	0	4.25
10/3/2014	NM	NM	NM	0	4.75
11/3/2014	9.31	19.12	6.23	2	7.25
11/24/2014	9.39	19.62	5.73	2	8.00
12/22/2014	9.34	19.86	5.49	2	8.25
1/29/2015	9.14	21.29	4.06	2	7.75
2/26/2015	9.17	19.97	5.38	2.5	10.00
3/26/2015	9.12	20.31	5.04	0.75	7.25
4/27/2015	9.17	20.46	4.89	2	10.50
5/26/2015	9.09	20.59	4.76	2.5	12.25
7/6/2015	7.01	21.16	4.19	2	10.50
8/3/2015	7.12	21.39	3.96	2.5	10.75
8/27/2015	7.96	21.51	3.84	2	8.25
10/5/2015	7.23	21.67	3.68	2	8.00
11/5/2015	7.02	21.56	3.79	2	8.00
12/3/2015	6.83	21.67	3.68	2	8.00
12/28/2015	6.71	21.52	3.83	2.25	9.00
2/3/2016	6.52	21.67	3.68	2	9.00
3/3/2016	6.46	21.72	3.63	2	9.25
3/31/2016	6.49	21.86	3.49	2	9.25
5/3/2016	6.57	21.94	3.41	2	7.75
6/2/2016	6.65	21.91	3.44	2	8.25
7/8/2016	6.71	21.97	3.38	2	8.00
8/3/2016	6.82	22.04	3.31	2	8.00
8/30/2016	6.94	22.21	3.14	2	8.25
9/30/2016	7.04	22.39	2.96	2	8.50
11/3/2016	7.11	22.49	2.86	2	8.50
11/30/2016	7.29	22.67	2.68	2	8.75
1/4/2017	7.42	22.74	2.61	2	8.75
2/7/2017	7.48	22.93	2.42	2.5	9.00
3/2/2017	7.36	23.26	2.09	2	8.50
4/3/2017	7.29	23.34	2.01	2	7.50
4/27/2017	7.36	23.42	1.93	2	8.00
5/29/2017	7.51	23.51	1.84	2	7.75
7/5/2017	7.79	23.59	1.76	2	7.25
8/1/2017	7.89	23.51	1.84	2	8.00
9/5/2017	7.81	23.48	1.87	2	8.25
10/4/2017	7.89	23.51	1.84	2	7.75
11/2/2017	7.97	23.59	1.76	2	8.50
11/29/2017	8.02	23.67	1.68	2	8.00
1/2/2018	8.17	23.82	1.53	2	8.25
2/7/2018	8.29	23.97	1.38	2	8.25
3/1/2018	8.47	23.91	1.44	2	7.50

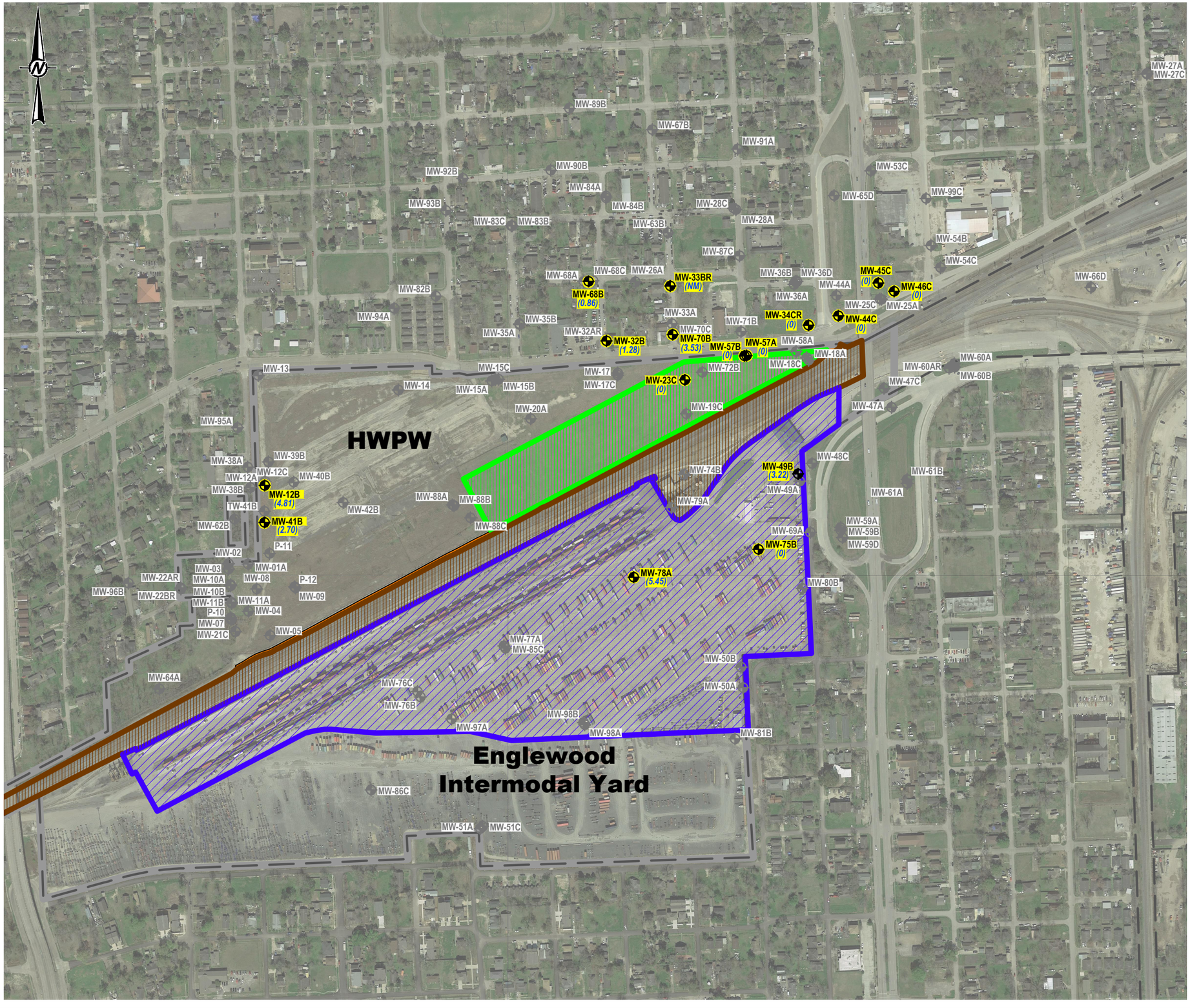
TABLE 1

SUMMARY OF DNAPL RECOVERY MEASUREMENTS
UPRR HOUSTON, TX - WOOD PRESERVING WORKS

	MW-78A				Approx
DNAPL Recovery Date	DTW (ft BTOC)	DTD (ft BTOC)	DNAPL Thickness (ft)	DNAPL Pumped (gal)	DNAPL Recovered (gal)
4/2/2018	8.39	23.97	1.38	2.25	7.75
5/1/2018	9.02	24.06	1.29	2	9.00
6/1/2018	9.21	24.13	1.22	2	9.75
6/29/2018	9.39	24.21	1.14	2.25	10.50
8/3/2018	9.47	24.31	1.04	2	10.00
8/31/2018	9.32	24.47	0.88	2	8.25
9/28/2018	9.22	24.39	0.96	2	8.25
11/2/2018	9.09	24.27	1.08	2	8.50
11/29/2018	8.96	24.22	1.13	2	7.50
1/2/2019	8.78	24.39	0.96	2	7.75
2/2/2019	8.71	24.47	0.88	2	8.00
2/28/2019	8.67	24.42	0.93	2	8.75
4/2/2019	8.58	24.43	0.92	2	8.75
4/25/2019	8.49	24.31	1.04	2	9.25
5/29/2019	8.42	24.26	1.09	2	9.25
6/12/2019	8.67	23.96	1.39	2	9.00
6/30/2019	9.36	23.77	1.58	2	9.75
7/16/2019	9.29	23.62	1.73	2	10.50
8/2/2019	9.34	23.57	1.78	2	8.00
8/15/2019	9.42	23.06	2.29	2	12.00
8/28/2019	9.51	23.01	2.34	2	12.00
9/17/2019	9.39	22.76	2.59	2	13.00
10/2/2019	9.27	22.58	2.77	2	10.50
10/16/2019	10.16	21.63	3.72	2	8.00
10/31/2019	10.41	21.79	3.56	2.5	8.50
11/15/2019	8.01	21.62	3.73	1.5	5.00
12/3/2019	8.41	22.12	3.23	2	6.50
12/18/2019	8.38	ND	0	0	2.08
12/30/2019	9.16	19.93	5.42	1.5	3.25
1/7/2020	--	--	--	--	--
1/15/2020	8.79	24.9	0.45	0.0625	4.13
1/27/2020	7.06	24.06	1.29	0	3.75
2/13/2020	8.01	24.08	1.27	0	3.25
2/25/2020	7.84	21.86	3.49	0.25	2.56
3/13/2020	NM	NM	NM	0	2.25
3/31/2020	7.82	23.1	2.25	0.125	5.88
4/9/2020	7.52	22.5	2.85	0.125	7.25
4/27/2020	8.33	23.2	2.15	0.5	7.69
5/14/2020	8.05	23.22	2.13	0.5	8.25
5/28/2020	7.59	23.69	1.66	0.5	8.63
6/11/2020	7.39	24.96	0.39	0.125	5.63
6/25/2020	6.28	19.9	5.45	1.5	6.50
Total DNAPL Pumped (gal)				***142.7***	***772.1***

ND - Not detected
NM - Not measured
TOC)) PoP - Product on probe, not measureable
TR- Trace amount of DNAPL Extracted

FIGURES



LEGEND

- UPRR PROPERTY BOUNDARY
- MONITORING WELL LOCATION
- MONITORING WELL LOCATION USED FOR DNAPL RECOVERY
- (3.53) IN WELL DNAPL THICKNESS (FT)
- RAILROAD BALLAST CAP AREA
- ASPHALT CAP AREA
- SOIL CAP AREA
- CONCRETE CAP AREA

REFERENCE(S)

PARCEL BOUNDARIES: CITY OF HOUSTON GEOGRAPHIC INFORMATION & MANAGEMENT SYSTEMS (GIMS).
AERIAL: GOOGLE EARTH, IMAGERY DATED 2/23/19.

0 200 400
1" = 400' FEET

CLIENT
UNION PACIFIC RAILROAD CO.

PROJECT
HOUSTON WOOD PRESERVING WORKS

TITLE
IN-WELL DNAPL THICKNESS
JUNE 25, 2020

CONSULTANT
GOLDER

YYYY-MM-DD	2020-07-09
DESIGNED	
PREPARED	RS
REVIEWED	MH
APPROVED	

PROJECT NO. 19119232 | REV. 0 | FIGURE 1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

Path: \\texarkana\data\Projects - Round Rock\ 19191919222 - HWPW\2020-6 June\ | File Name: FIG 1 - In-Well DNAPL Thickness (June 2020).dwg | Last Edited By: rsalazar Date: 2020-07-09 Time:11:39:05 AM
Path: \\texarkana\data\Projects - Round Rock\ 19191919222 - HWPW\2020-6 June\ | Printed By: RSalazar Date: 2020-04-16 Time:8:48:07 AM

Figure 2
DNAPL Recovery Activities February 2013 - June 2020
UPRR Houston Wood Preserving Works

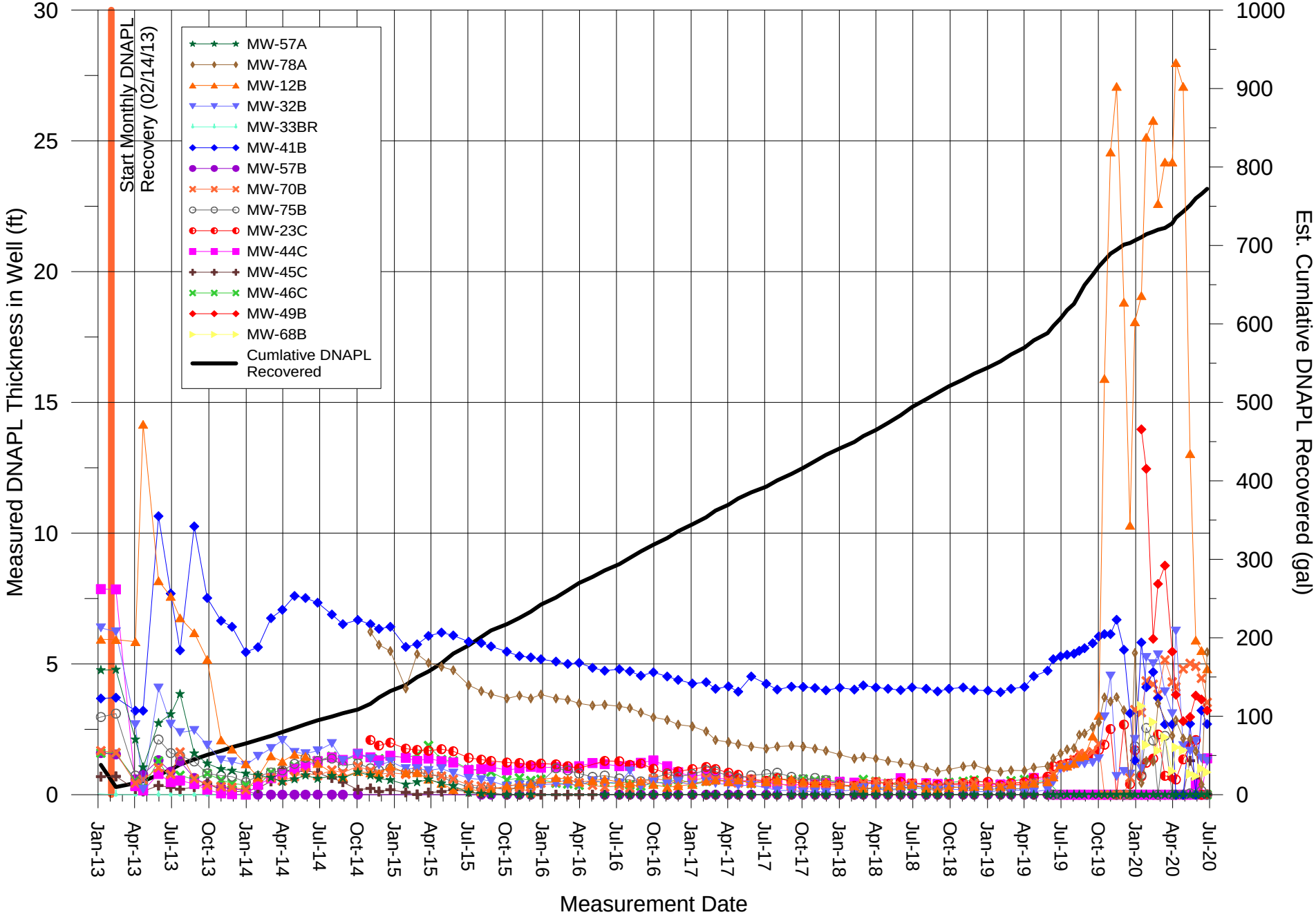


Figure 3
A-TZ Wells - DNAPL Recovery Activities July 2018 - June 2020
UPRR Houston Wood Preserving Works

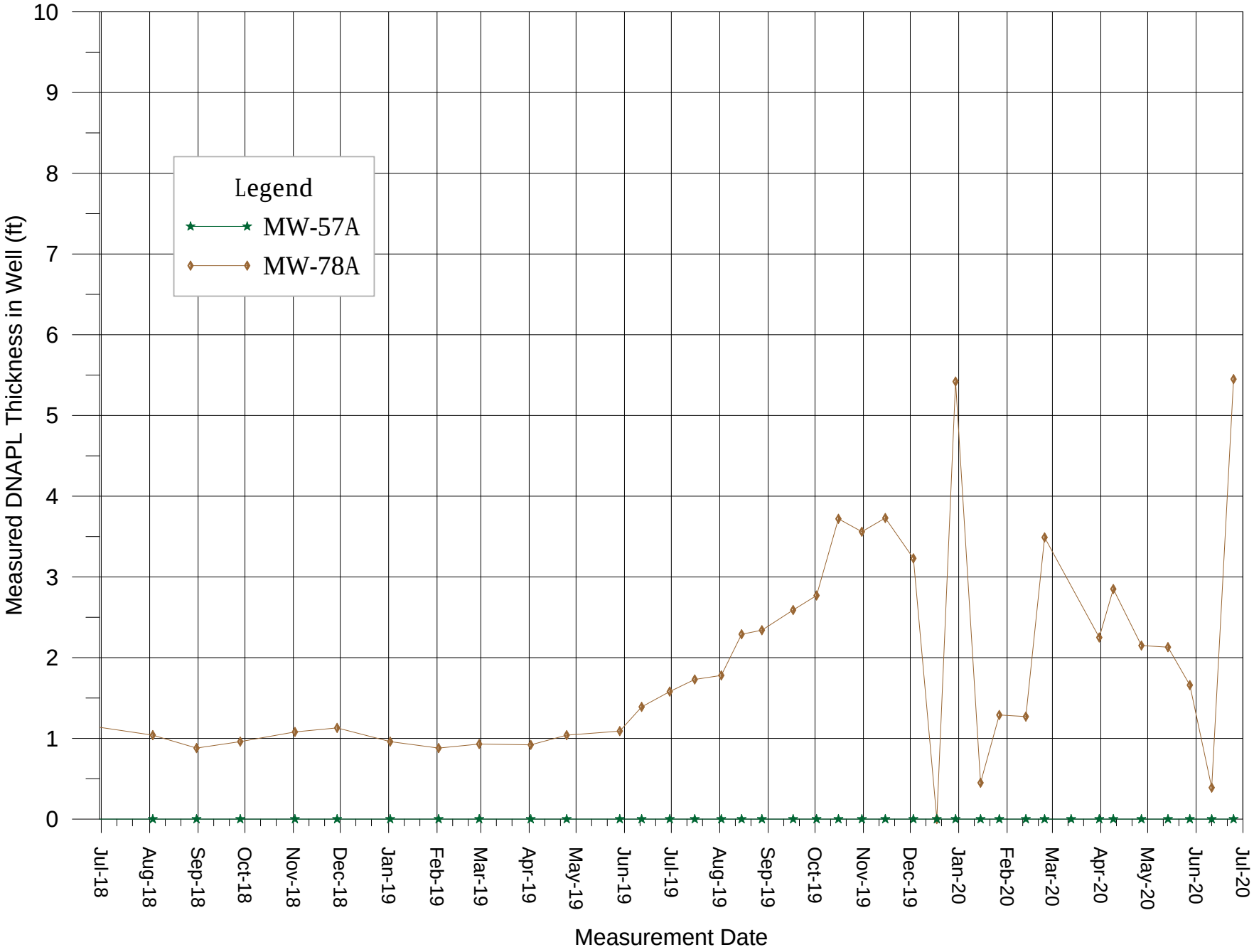
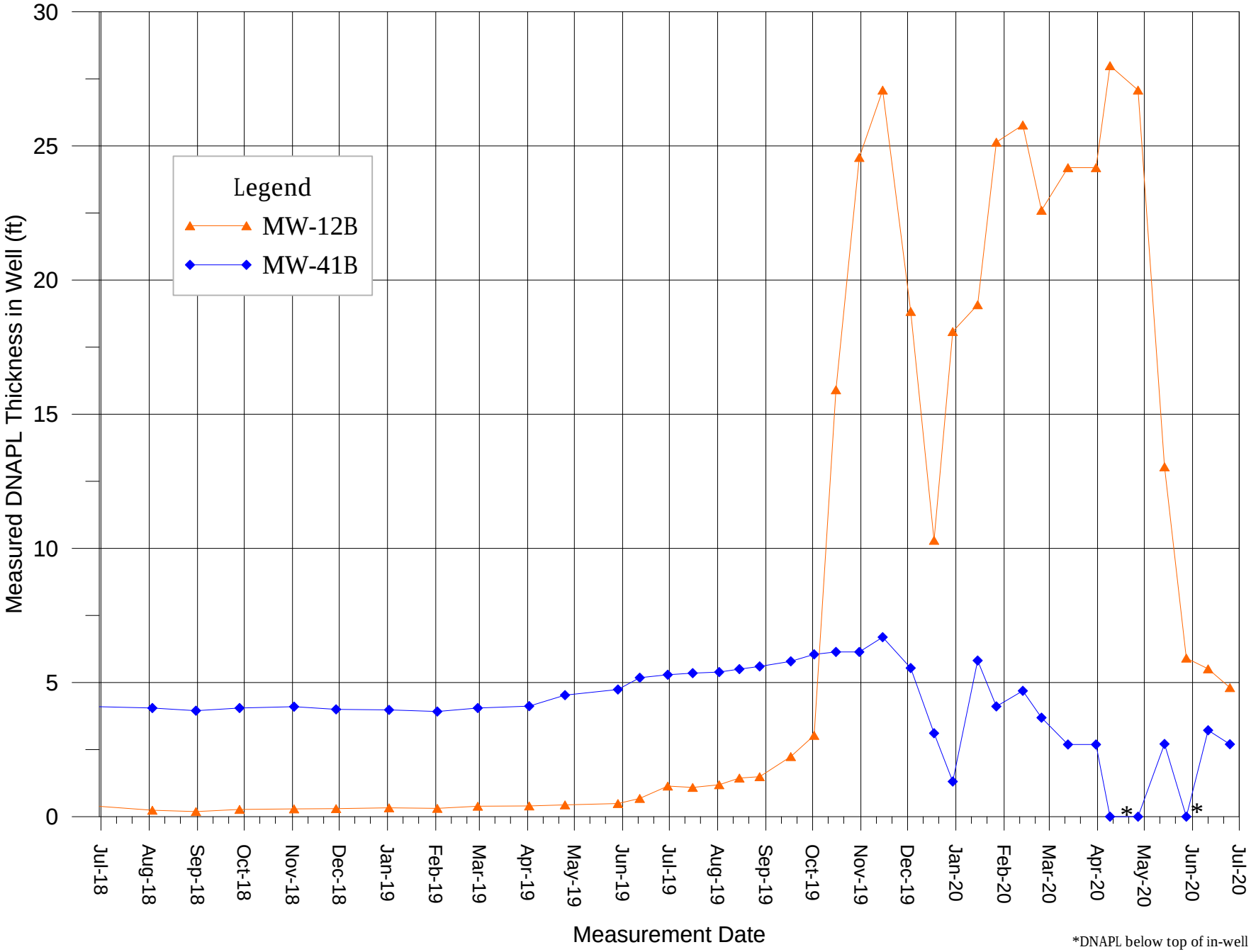


Figure 4
B-TZ Wells (West Side) - In-Well DNAPL Thickness July 2018 - June 2020
UPRR Houston Wood Preserving Works



*DNAPL below top of in-well pump

Figure 5
B-CZ/B-TZ Wells (North (On-Site and Off-Site)) - In-Well DNAPL Thickness July 2018 - June 2020
UPRR Houston Wood Preserving Works

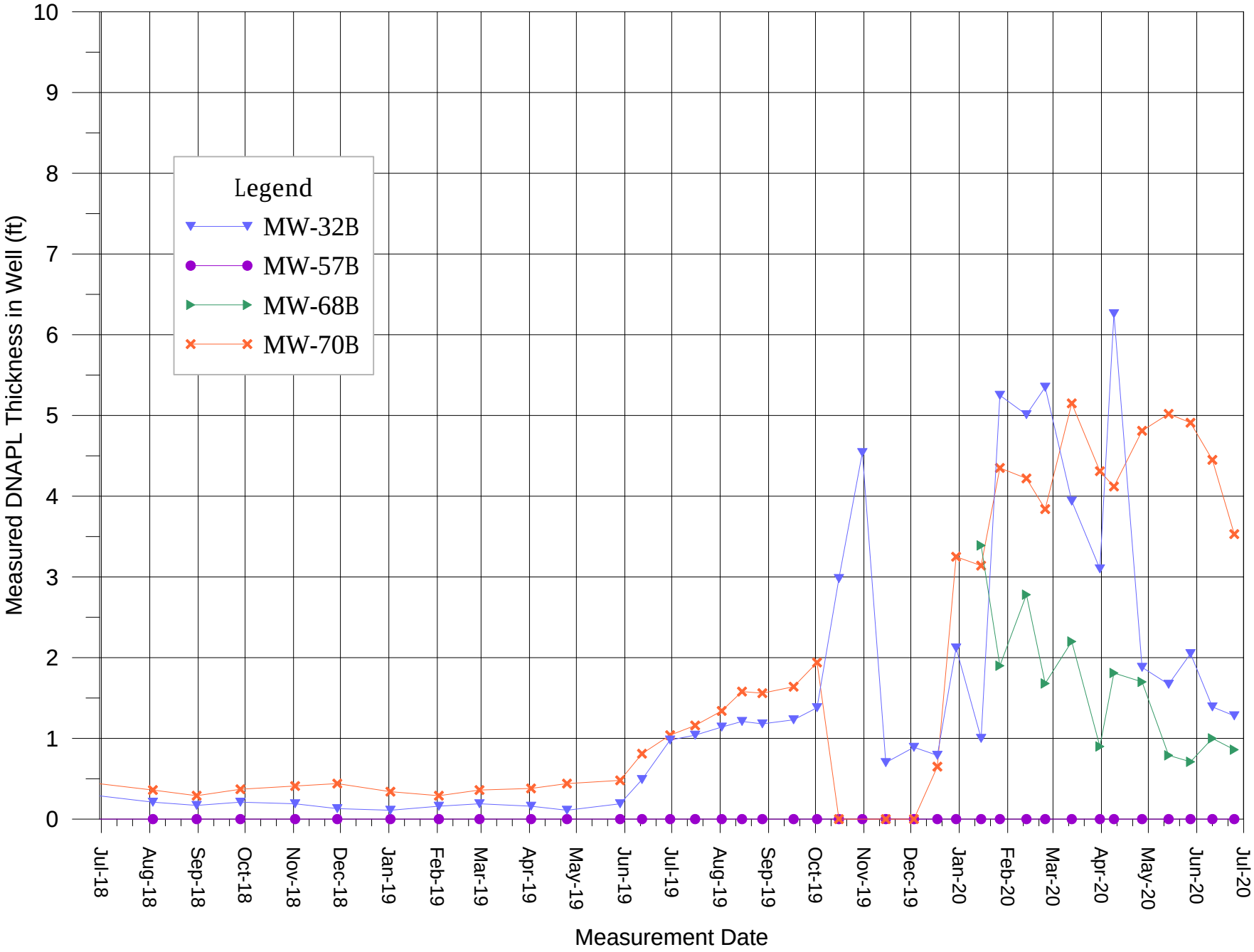


Figure 6
B-CZ/B-TZ Wells (Englewood Intermodal Yard) - In-Well DNAPL Thickness July 2018 - June 2020
UPRR Houston Wood Preserving Works

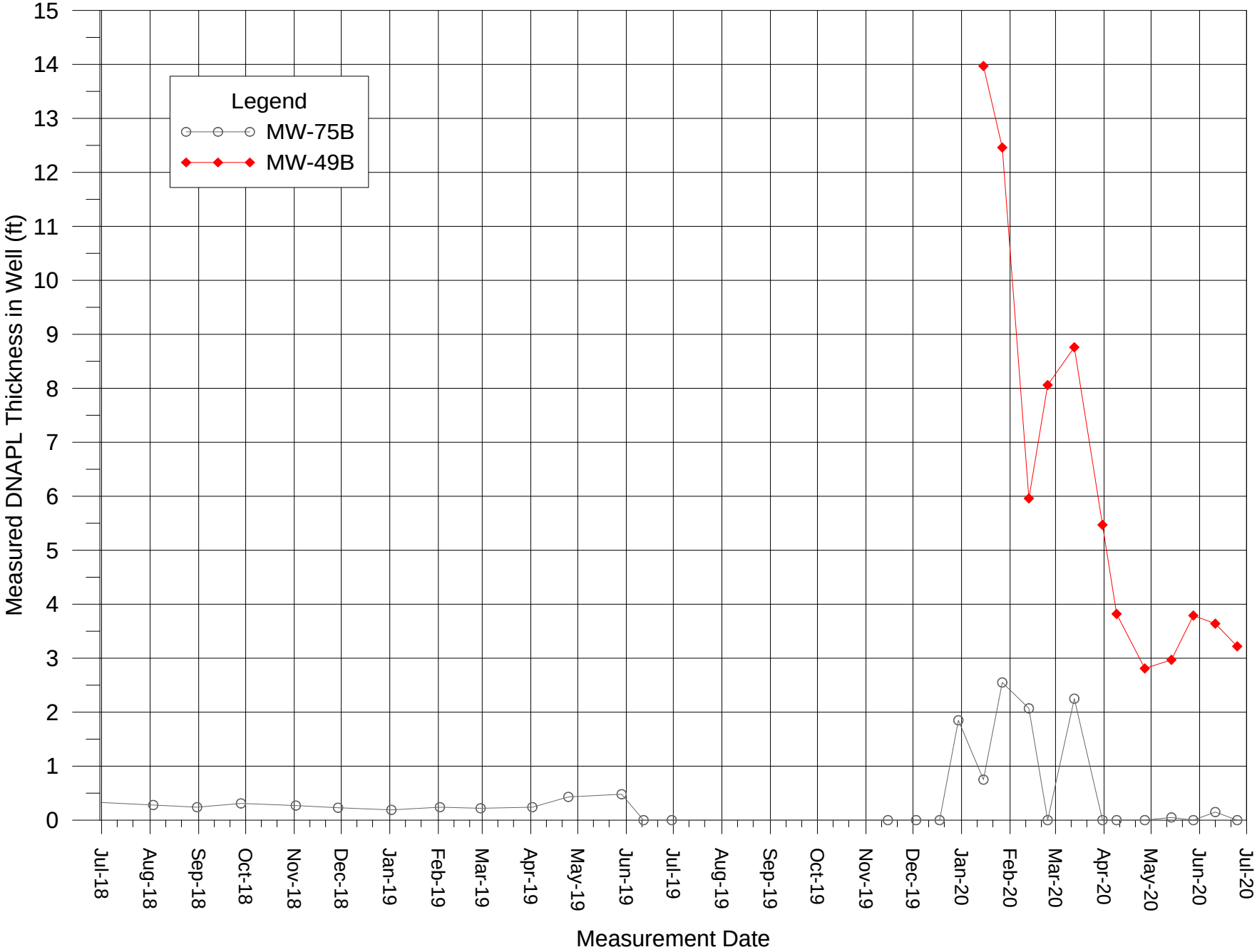
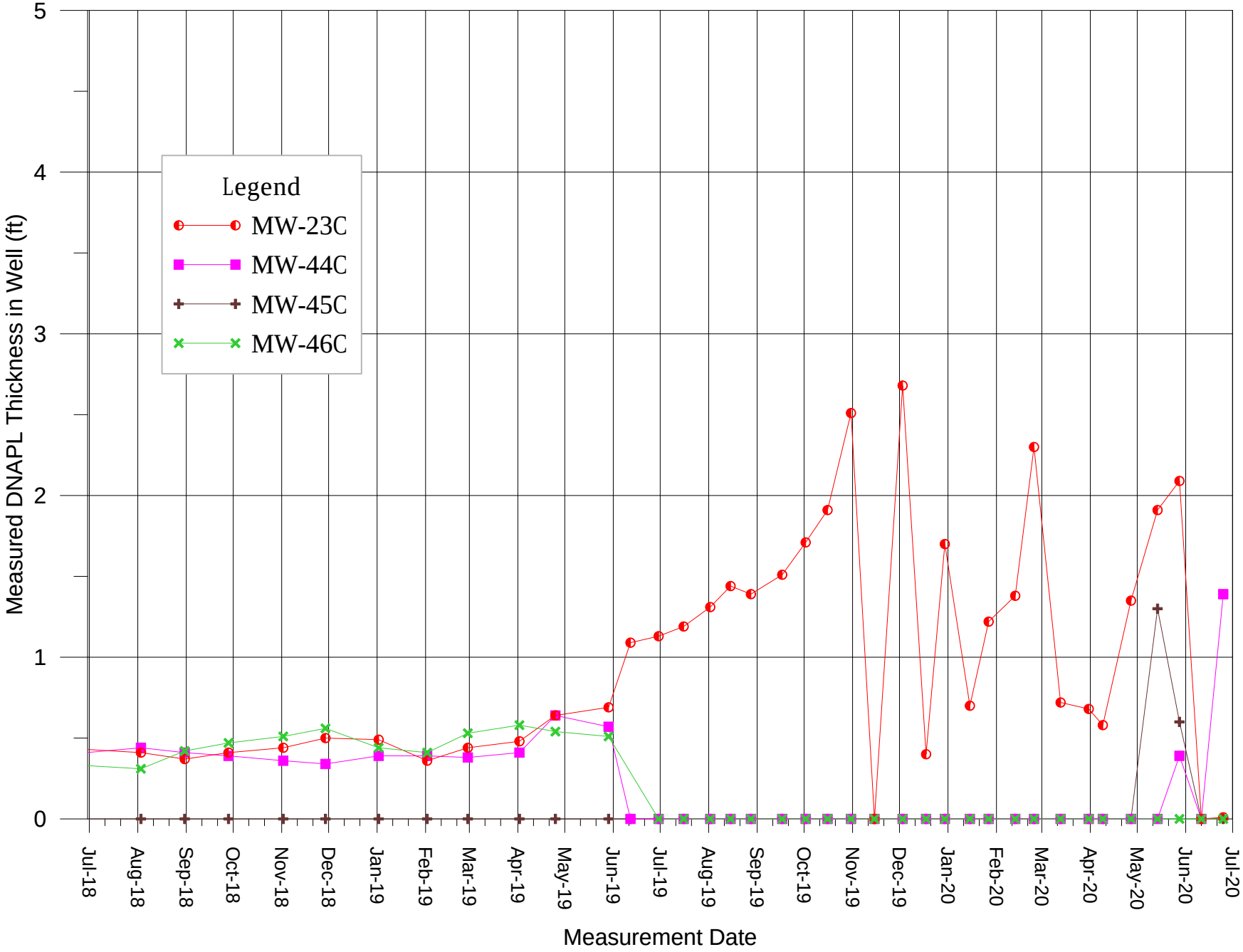


Figure 7
C-TZ Wells - In-Well DNAPL Thickness July 2018 - June 2020
UPRR Houston Wood Preserving Works



ATTACHMENT 1

Recovered DNAPL Waste Manifest

Please print or type.

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: TXD000820266
2. Page 1 of: 1
3. Emergency Response Phone: 888-877-7267
4. Manifest Tracking Number: 019318237 JJK

GENERATOR

5. Generator's Name and Mailing Address
UPRR-WM C/O GHD-Attn. Manifest Receiving
6520 Corporate Dr.
Indianapolis, IN 46278
Generator's Phone: (414) 267-4164

Generator's Site Address (if different than mailing address)
4910 Liberty Road
Houston, TX 77026

6. Transporter 1 Company Name: NRC
U.S. EPA ID Number: FLR000012823

7. Transporter 2 Company Name: EQ Industrial Services
U.S. EPA ID Number: MIK435642742

8. Designated Facility Name and Site Address
US Ecology - Robstown
3277 County Road 69
Robstown, TX 78380
Facility's Phone: (800) 242-3209
U.S. EPA ID Number: TXD069452340

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
X	1. RQ, NA 3082, Hazardous waste, liquid, n.o.s. (Creosote, benzene), 9, PG III (F034)	1	DM	55	G	F034 D018	0918	219H
	2.							
	3.							
	4.							

14. Special Handling Instructions and Additional Information
1. WS# 090117968-0
WR# 000843

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Thomas Cappucci
Signature:
Month: 6 Day: 2 Year: 2020

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Sylvest R
Signature:
Month: 6 Day: 2 Year: 20

Transporter 2 Printed/Typed Name: Kenneth Sharpe
Signature:
Month: 6 Day: 2 Year: 202

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator) U.S. EPA ID Number

Facility's Phone:

18c. Signature of Alternate Facility (or Generator) Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.
H141			

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name: Mark A Rare
Signature:
Month: 6 Day: 10 Year: 20

APPENDIX 4

PROPOSED INSTITUTIONAL CONTROLS

On-Site PMZ Deed Restriction

DEED NOTICE

STATE OF TEXAS §
COUNTY OF § KNOW ALL MEN BY THESE PRESENTS THAT:
HARRIS §

This Notice is filed to provide information concerning certain environmental conditions and/or use restrictions pursuant to the Texas Commission on Environmental Quality (TCEQ) Texas Risk Reduction Program (TRRP) found at 30 Texas Administrative Code (TAC), Chapter 350, and affects the real property (Property) described as follows:

(Exhibit A, the legal description of the entire recorded tract of land held by UPRR including the former HWPW Area, Englewood Intermodal Yard, and railroad ballast area)

Portions of the soil and groundwater underlying the Property contain identified chemicals of concern causing those portions of the Property to be considered an Affected Property as that term is defined in the TRRP. The portion considered to be Affected Property is described as follows:

(The Affected Property is more particularly described by metes and bounds on Exhibit A, attached hereto and incorporated herein by reference, and depicted on the map portion of Exhibit A.)

As detailed in the Response Action Plan (RAP) (Golder, 2020), target COCs in soil and groundwater media were detected within the Affected Property and Protective Concentration Level (PCL) Exceedance (PCLE) Zone in surface and subsurface soils.

PCLE Zones

Soils

Comparing the surface and subsurface soil analytical data to the appropriate critical PCLs, concentrations of 15 COCs exceeded their respective critical PCLs (cPCLs):

Surface Soils	cPCL (mg/kg)	Subsurface Soils	cPCL (mg/kg)
1,2-Diphenylhydrazine	0.23	2-Methylnaphthalene	378
2,4-Dinitrotoluene	0.049	Benzene	0.105
2-Methylnaphthalene	378	Naphthalene	192
Benzene	0.10	Pentachlorophenol	0.12
Benzo(a)anthracene	23		
Benzo(a)pyrene	2.36		
Dibenzofuran	743		
Naphthalene	189		
Pentachlorophenol	0.12		
Arsenic	200		
Lead	275		

Groundwater
Based on the most recent groundwater analytical data detailed in the RAP, concentrations of the following 19 target COCs exceeded their critical PCLs (cPCLs):

VOCs	cPCL for Class 2 Groundwater (mg/L)	cPCL for Class 3 Groundwater (mg/L)	SVOCs	cPCL for Class 2 Groundwater (mg/L)	cPCL for Class 3 Groundwater (mg/L)
Benzene	0.005	0.5	2,4-Dimethylphenol	1.5	150
			2,6-Dinitrotoluene	0.003	0.3
Metals			2-Methylnaphthalene	0.29	29
Arsenic	0.01	1	Acenaphthene*	4.4	440
			Acenaphthylene*	4.4	440
			Anthracene *	22	2200
			Benzo(a)anthracene	0.02	2
			Benzo(a)pyrene	0.0002	0.02
			Chrysene *	2	200
			Dibenzofuran	0.29	29
			Fluoranthene *	2.9	290
			Fluorene *	2.9	290
			Naphthalene	1.5	150
			Pentachlorophenol	0.001	0.1
			Phenanthrene	2.2	220
			Phenol	22	2200
			Pyrene *	2.2	220

* - COC only detected in wells with DNAPL present

Creosote DNAPL has been detected in the groundwater bearing units A-TZ, B-CZ, B-TZ, and C-TZ as noted in soil borings and monitoring wells.

This Notice is required for the following reasons:

Commercial/Industrial Land Use
The Affected Property currently meets TRRP standards for commercial/industrial land use, as the property may not be protective for residential use. If any person desires in the future to use the Property for residential purposes, the TCEQ must be notified at least 60 days in advance of such use and additional response actions may be necessary before the Property may be used for residential purposes. Persons contemplating a change in land use for the Property are encouraged to review the definitions for commercial/industrial and residential land use contained in TRRP as the definition of residential land use is broad.

Use of Physical Control on Soil
The Affected Property is subject to the TRRP requirements for properties containing concentrations of chemicals of concern in soil and is subject to the requirements in 30 TAC §350.33(e)(2) to prevent exposure to soils that contain a chemical of concern in excess of the protective concentration level. The attached Exhibit B describes and provides the location and

metes and bounds of the physical control and extent of the soil that exceeds the TCEQ-approved protective concentration levels for certain chemicals of concern. Physical controls include the following:

- Former HWPW Area:
    - Soil Cap Area: To protect on-site commercial/industrial receptors, a vapor barrier with geotextile fabric, and an engineered soil cap (12-in clayey soil, 6-in topsoil) was constructed to cover the consolidated soil and surface soil PCLE Zone on the former HWPW area. The soil cap is vegetated (with a pollinator /grass mix to attract pollinators in the area) and sloped to minimize infiltration over the surface/subsurface soil PCLE Zone. The vegetated cap will be maintained under the post-response action care.

    - Asphalt Roadway: For the South Drainage Ditch (SDD) (SWMU 2) along the southern boundary of the HWPW, an asphalt roadway was constructed to protect on-site commercial/industrial receptors in this area. Construction of the asphalt road will consist of grading the existing road material, compacting and stabilizing the existing road material, and applying a hot mix asphalt cover. The asphalt road will be maintained under the post-response action care.

- Englewood Intermodal Yard Area: The surface soil PCLE zone in the Intermodal Yard area is currently covered with a physical barrier (concrete pavement), preventing contact with the soil PCLE Zone and infiltration. A Non-Aqueous Phase Liquid (NAPL) Collection System was installed in January 2019 as an interim response action to address the tar-like material seeps and to recover NAPL sufficiently to eliminate NAPL discharge. The RACR for the NAPL Collection System dated March 26, 2019 (Golder, 2019) describes the response actions that were completed. UPRR is continuing to assess the effectiveness of the NAPL Collection System. Inspections of the NAPL Collection System are being conducted and updates are submitted to the TCEQ.

  Additional tar-like NAPL surface seeps and water seeps with dark brown to black water have been identified within the Englewood IM Yard. UPRR is in the process of developing responses for those areas. Test pits were excavated in July 2020 where tar NAPL seeps and seasonal black water seeps have been observed to evaluate the presence of NAPL and COCs in soil in those areas. Following the Interim NAPL Assessment (Golder, 2020) and test pit evaluation conducted in July 2020, additional investigations are necessary to evaluate potential impacts to the underground utilities within the Englewood IM Yard area.

- UPRR Main Lines Ballast Area: The area between the former HWPW area and the Englewood Intermodal Yard (approximately 100 feet width) is covered with railroad ballast, ties, and rail. The existing railroad ballast in this area will be used as an engineering control for preventing on-site worker exposure to impacted surface soils in this area. The railroad ballast area will be maintained as part of normal railroad operations. The track is owned and controlled by UPRR. In the event construction activities are necessary within the railroad ballast area, a health and safety plan will be

implemented to ensure worker protection from COCs in the surface soils and a soil management plan will be developed if soils are excavated as part of the construction activities.

In the event construction activities are necessary within the capped areas, a health and safety plan and soil management plan will be implemented to ensure worker protection from COCs in soils and proper management of impacted soils as part of the construction activities. The attached Exhibit C also describes the required maintenance and monitoring required for the physical control. This program must be implemented unless and until TCEQ approves any modification. This deed notice must not be removed or modified without prior approval from TCEQ.

Plume Management Zone

The Affected Property is subject to the TRRP requirements for properties with an area overlying a TCEQ-approved plume management zone (PMZ). A PMZ is defined as an area of groundwater containing concentrations of COCs exceeding the TCEQ-approved protective concentration levels for the site, plus any additional area allowed by the TCEQ in accordance with 30 TAC §350.33(f)(4). The undersigned has established a PMZ so that the chemicals of concern in the groundwater are managed such that human exposure is prevented and that other groundwater resources are protected. The attached Exhibit B provides the location and extent of the PMZ. The Response Action Plan (RAP) submitted for the Site describes the maintenance and monitoring required. The maintenance and monitoring is required until TCEQ approves some modification to those requirements. Exposure to groundwater within the PMZ for any purpose is not advised until such time that all of the chemicals of concern no longer exceed their respective PCLs. This deed notice must not be removed or modified without prior approval from TCEQ.

Non-Aqueous Phase Liquid

The Affected Property is subject to the TRRP requirements for the management of mobile NAPL. The attached Exhibit B provides the location and extent of the NAPL present at the Property. Drilling, excavation, and groundwater pumping within or into the NAPL zone is prohibited unless proper safeguards are taken to protect human health and safety from any hazards associated with the NAPL. Any NAPL removed during any future subsurface activity must be properly handled and managed in accordance with all applicable state and federal rules and regulations. This deed notice must not be removed or modified without prior approval from TCEQ.

As of the date of this notice, the record owner of fee title to the Property is
Union Pacific Railroad, with an address of 1400 Douglas Street, Omaha, Nebraska 68179.

For additional information, contact:

TCEQ
Central Records
12100 Park 35 Circle, Building E
Austin, TX 78753

Mail: TCEQ – MC 199
P.O. Box 13087
Austin, TX 78711-3087

TCEQ Program and Identifier No.: SWR 31547/IHW 50343

This Notice may be rendered of no further force or effect only by a superseding deed notice executed by the TCEQ or its successor agencies and filed in the same Real Property Records as those in which this Notice is filed.

EXECUTED this _____ day of _____, 20____.

Union Pacific Railroad [OWNER & RESPONDER]

By:_____

Name: Mr. Chris Goble
Title: Assistant Vice President of Real Estate
Union Pacific Railroad Company, a Delaware Corporation

STATE OF NEBRASKA §
DOUGLAS COUNTY §

BEFORE ME, on this the _____ day of _____, Mr. Chris Goble, Assistant Vice President of Real Estate, a representative of Union Pacific Railroad Company, a Delaware Corporation, known to me to be the person whose name is subscribed to the foregoing instrument, and he acknowledged to me that he executed the same for the purposes and consideration therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this ___ day of _____, 20____.

_____

Notary Public in and for the State of Nebraska

County of _____

My Commission Expires: _____

EXHIBIT "A"
LEGAL DESCRIPTION OF AFFECTED PROPERTY

(to be surveyed following approval of Response Action Plan (RAP))

EXHIBIT "B"
LEGAL DESCRIPTION OF USE OF PHYSICAL CONTROL ON SOIL, EXTENT OF PMZ AND NAPL AREAS

(to be surveyed following approval of Response Action Plan (RAP))

EXHIBIT "C"

MAINTENANCE AND MONITORING OF THE PHYSICAL CONTROLS FOR SURFACE/SUBSURFACE SOIL

EXHIBIT "C"

MAINTENANCE AND MONITORING OF THE PHYSICAL CONTROLS FOR SURFACE/SUBSURFACE SOIL

The cap inspection and maintenance program will be developed to ensure the integrity of the cap and vegetative cover. The maintenance program will consist of the following:

I. Soil Cap Area - HWPW

VISUAL INSPECTIONS

Inspections will be performed on a quarterly basis and after all major storms. The inspections will focus on the following major issues:

1) Erosion of the cap (gullies, rills, or other erosional features on the cap surface or in drainages)
2) Sideslope sloughing (slippage)
3) Settling/subsidence
4) Vegetation deterioration
5) Damage from animals (i.e., rodents)
6) Groundwater monitoring equipment (wells) (semi-annual basis)

Locations where deficiencies are found shall be marked and repaired as soon as practicable.

MAINTAINING THE COVER AND VEGETATION

The cover and vegetation will be maintained by:

1) Preventing ponding
2) Maintaining design slopes and grades
3) Fertilizing, as necessary
4) Mowing, as necessary
5) Replanting, as necessary
6) Controlling animals (rodents, hogs) and insects

Routine repairs of the cover and maintenance of the slopes and grades will be performed to prevent ponding and drainage problems. Vegetation may require periodic application of fertilizer, mulch or seed. Vegetation will target pollinator seed mixes to attract pollinator species. Mowing will be performed as needed but less frequently than a grass covered cap and only periodically to promote the growth of desired vegetation and to block the growth of trees or shrubs which could penetrate the cover soil with their roots.

EROSION CONTROL

Maintenance of the drainage and diversion portions of the cap will be performed. Erosion of soil by water and/or wind will be repaired as soon as practicable.

II. Asphalt Roadway Area – HWPW

VISUAL INSPECTIONS

Inspections will be performed on a quarterly basis. The inspections will focus on the following major issues:

1) Erosion of the asphalt roadway (potholes, exposed soils)
2) Settling/subsidence

3) Cracks in asphalt roadway

Locations where deficiencies are found shall be marked and repaired as soon as practicable.

MAINTAINING THE ASPHALT ROADWAY

The asphalt cover will be maintained by:

1) Crack repair/sealing;
2) Pothole patching; and
3) Controlling vegetation.

III. Concrete Pavement – Englewood Intermodal Yard (On-Site)

VISUAL INSPECTIONS

Inspections will be performed on a quarterly basis. The inspections will focus on the following major issues:

1) Step separation in the concrete;
2) Settling/subsidence;
3) Cracks in the concrete; and
4) Openings in the pavement.

Locations where deficiencies are found shall be marked and repaired as soon as practicable.

MAINTAINING THE CONCRETE SIDEWALK/PAVEMENT

The concrete pavement will be maintained by:

1) Crack repair/sealing;
2) Replacing panels as needed; and
3) Controlling vegetation growing through cracks/along edges of sidewalk.

The following inspections and maintenance will be conducted for the NAPL Collection System constructed within the Englewood Intermodal Yard:

OPERATION/MAINTENANCE OF THE NAPL COLLECTION SYSTEM

1. Inspections will be conducted as needed to monitor the performance of the NAPL Collection System. The inspections will focus on the following major issues:
   - Tar-like material seeps in the vicinity of the NAPL Collection System;
   - Inspecting the NAPL collection sumps for NAPL accumulation;
   - Settling/subsidence;
   - Cracks in the concrete;
   - Locations where deficiencies are found shall be marked and repaired as soon as practicable.

2. If NAPL or fluids accumulate in the sumps, the NAPL and fluids will be recovered and disposed of at a permitted facility.

IV. Railroad Ballast Area – (HWPW/Englewood Intermodal Yard)

VISUAL INSPECTIONS

Inspections will be performed on a quarterly basis. The inspections will focus on the following major issues:

1) Ballast removed with exposed soil.

Locations where deficiencies are found shall be marked and repaired as soon as practicable.

MAINTAINING THE RAILROAD BALLAST

The railroad ballast will be maintained by:

1) Adding railroad ballast where areas of soil are exposed;
2) Controlling vegetation.

The ballast areas will be maintained in accordance with UPRR Engineering Standards for Roadbase Section for Wood Tie Track Construction (UPRR, 2006).

GROUNDWATER MONITORING

Groundwater monitoring will be conducted per the Groundwater Monitoring Plan described in RAP Worksheet 3.1. The results of groundwater monitoring will be submitted annually in the PRACR.

APPENDIX 5

LANDOWNER CONCURRENCE

Signed Restrictive Covenant – City of Houston Right-of-Way

RESTRICTIVE COVENANT

STATE OF TEXAS §
§ KNOW ALL MEN BY THESE PRESENTS THAT:
COUNTY OF HARRIS §

This Restrictive Covenant is filed to provide information concerning certain environmental conditions and use limitations pursuant to the Texas Commission on Environmental Quality (TCEQ) Texas Risk Reduction Program Rule (TRRP) found at 30 Texas Administrative Code (TAC), Chapter 350, and affects the **City of Houston Right-of-Way - 0.1318 Acre Tract located within the Harris and Wilson 2 League Grant, Abstract 32 in Harris County, Texas** (Property) described in Exhibit A attached hereto and incorporated herein by reference.

Surface soil underlying the Property, which is presently covered in its entirety by a concrete sidewalk cap, contains certain identified chemicals of concern (COCs) causing the Property to be considered Affected Property as that term is defined in the TRRP.

This Restrictive Covenant is required for the following reasons:

Use of Physical Control on Soil

The Affected Property is subject to the TRRP requirements for properties containing concentrations of COCs in soil and is subject to the requirements in 30 TAC §350.33(e)(2) to prevent exposure to soils that contain a COC in excess of the protective concentration level. The attached Exhibit A describes and provides the location of the physical control and extent of the soil that exceeds the TCEQ-approved protective concentration levels for certain COCs. The attached Exhibit B lists the COCs that exceed the TCEQ's Protective Concentration Levels, provides the reason the physical control must remain in place, and describes the required maintenance and monitoring required for the physical control. This program must be implemented unless and until TCEQ approves any modification.

As of the date of this Restrictive Covenant, the City of Houston with an address of 901 Bagby Street, Houston, Texas 77002 owns a municipal right-of-way easement over the Property. Fee title underlying the easement is owned by the abutting property owner(s). In consideration of the Response Actions by Union Pacific Railroad (Responder) at the Former Houston Wood Preserving Works Site at 4910 Liberty Road, Houston, Texas (TCEQ SWR No. 31547), approval of the Response Action Completion Report, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the City of Houston has agreed, to the extent of its ownership interest, to place the following restrictions on the Property in favor of the TCEQ and the State of Texas, to-wit:

1. The removal or modification of the physical control on the Affected Property within the City of Houston ROW described in Exhibit A is prohibited without prior approval

from TCEQ and the physical control must be maintained and monitored by the Responder as described in Exhibit B. Removal or modification of this restrictive covenant is prohibited without prior approval of TCEQ.

2. These restrictions shall be a covenant running with the land.

For additional information, contact:

TCEQ
Central Records
12100 Park 35 Circle,
Building E
Austin, Texas 78753

Mail: TCEQ - MC 199
P O Box 13087
Austin, Texas 78711-3087

TCEQ Program and Identifier No.: TCEQ SWR No. 31547 [Union Pacific Railroad Houston Wood Preserving Works]

This Restrictive Covenant may be rendered of no further force or effect only by a release executed by the TCEQ or its successor agencies and filed in the same Real Property Records as those in which this Restrictive Covenant is filed.

Executed this 6th day of June, 2017.

ATTEST:

Anna Russell
City Secretary

CITY OF HOUSTON, TEXAS

Sylvester Turner
Mayor of the City of Houston

APPROVED AS TO FORM:

Phillip M. Goodwin, P.G.
Assistant City Attorney
LD#067-1600017-001

STATE OF TEXAS §
§
COUNTY OF HARRIS §

This instrument was acknowledged before me on the 9th day of June, 2017, by **Sylvester Turner, Mayor** of the **CITY OF HOUSTON, TEXAS,** a municipal corporation, on behalf of said corporation.

NOTARY PUBLIC STATE OF TEXAS
ANNA RUSSELL
Notary Public State of Texas
Notary ID 686478-9
My Commission Expires:
07-08-2017

Notary Public, State of Texas

(Notary Seal)

Executed this 25th day of May, 2017.

Union Pacific Railroad Company [RESPONDER]

By: Tony K Love
Name: Mr. Tony Love
Title: Assistant Vice President of Real Estate
Union Pacific Railroad Company, a Delaware Corporation

STATE OF NEBRASKA §

DOUGLAS COUNTY §

BEFORE ME, on this the 25th day of May, Mr. Tony Love, Assistant Vice President of Real Estate, a representative of Union Pacific Railroad Company, a Delaware Corporation [**responder**], known to me to be the person whose name is subscribed to the foregoing instrument, and he acknowledged to me that he executed the same for the purposes and consideration therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 25th day of May, 2017.

General Notary - State of Nebraska
GREGG A. LARSEN
My Comm. Exp. Aug. 28, 2020.

Notary Public in and for the State of Nebraska
County of Douglas
My Commission Expires: August 28, 2020

Accepted as Third Party Beneficiary this _____day of _____, 20___.

Texas Commission on Environmental Quality

By: _____
Name: _____
Title: _____

STATE OF TEXAS §
(_____) COUNTY §

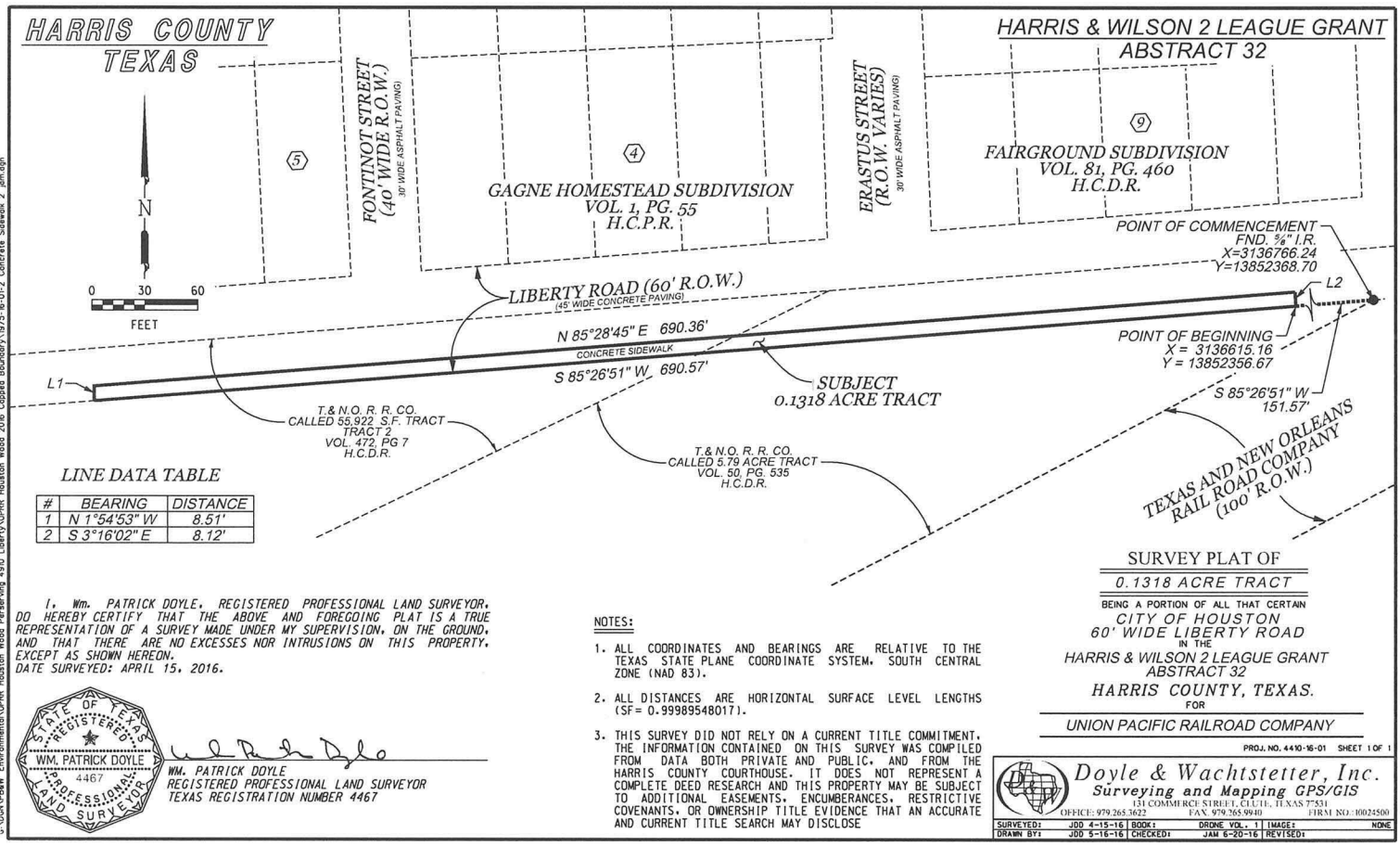
BEFORE ME, on this the ___ day of _____, _____ personally appeared _____ [name], _____ [title], of The Texas Commission of Environmental Quality, known to me to be the person whose name is subscribed to the foregoing instrument, and they acknowledged to me that they executed the same for the purposes and in the capacity herein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this _____ day of _____, 20____.

_____
Notary Public in and for the State of Texas,
County of _____
My Commission Expires: _____

EXHIBIT A

CITY OF HOUSTON ROW PROPERTY SURVEY PLAT AND DESCRIPTION (0.1318 ACRE PLAT)



LINE DATA TABLE

#	BEARING	DISTANCE
1	N 1°54'53" W	8.51'
2	S 3°16'02" E	8.12'

I, Wm. PATRICK DOYLE, REGISTERED PROFESSIONAL LAND SURVEYOR, DO HEREBY CERTIFY THAT THE ABOVE AND FOREGOING PLAT IS A TRUE REPRESENTATION OF A SURVEY MADE UNDER MY SUPERVISION, ON THE GROUND, AND THAT THERE ARE NO EXCESSES NOR INTRUSIONS ON THIS PROPERTY, EXCEPT AS SHOWN HEREON.
DATE SURVEYED: APRIL 15, 2016.

STATE OF TEXAS
REGISTERED
WM. PATRICK DOYLE
4467
PROFESSIONAL
LAND SURVEYOR

WM. PATRICK DOYLE
REGISTERED PROFESSIONAL LAND SURVEYOR
TEXAS REGISTRATION NUMBER 4467

NOTES:

1. ALL COORDINATES AND BEARINGS ARE RELATIVE TO THE TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE (NAD 83).
2. ALL DISTANCES ARE HORIZONTAL SURFACE LEVEL LENGTHS (SF= 0.99989548017).
3. THIS SURVEY DID NOT RELY ON A CURRENT TITLE COMMITMENT. THE INFORMATION CONTAINED ON THIS SURVEY WAS COMPILED FROM DATA BOTH PRIVATE AND PUBLIC, AND FROM THE HARRIS COUNTY COURTHOUSE. IT DOES NOT REPRESENT A COMPLETE DEED RESEARCH AND THIS PROPERTY MAY BE SUBJECT TO ADDITIONAL EASEMENTS, ENCUMBERANCES, RESTRICTIVE COVENANTS, OR OWNERSHIP TITLE EVIDENCE THAT AN ACCURATE AND CURRENT TITLE SEARCH MAY DISCLOSE

SURVEY PLAT OF
0.1318 ACRE TRACT

BEING A PORTION OF ALL THAT CERTAIN
CITY OF HOUSTON
60' WIDE LIBERTY ROAD
IN THE
HARRIS & WILSON 2 LEAGUE GRANT
ABSTRACT 32
HARRIS COUNTY, TEXAS.
FOR
UNION PACIFIC RAILROAD COMPANY

PROJ. NO. 4410-16-01 SHEET 1 OF 1

Doyle & Wachtstetter, Inc.
Surveying and Mapping GPS/GIS
131 COMMERCE STREET, CLUTE, TEXAS 77531
OFFICE: 979.265.3622 FAX: 979.265.9940 FIRM NO.: 10024500

SURVEYED:	JDD 4-15-16	BOOK:	DRONE VOL. 1	IMAGE:	NONE
DRAWN BY:	JDD 5-16-16	CHECKED:	JAM 6-20-16	REVISED:	

USER: Untitled Workspace
DATE: 6/20/2016 TIME: 4:35:13 PM
G:\DOVE\Wm\Environmental\UPRR Houston Wood Preserving 4910 Liberty\UPRR Houston Wood 2016 Copied Boundary\1975-16-01-2 Concrete Sidewalk 2.jem.dgn

Doyle & Wachtstetter, Inc
Surveying and Mapping • GPS/GIS

UNION PACIFIC RAILROAD COMPANY/CITY OF HOUSTON RIGHT-OF-WAY
0.1318 ACRE TRACT
HARRIS AND WILSON 2 LEAGUE GRANT, ABSTRACT 32
HARRIS COUNTY, TEXAS
PAGE 1 OF 1

BEING ALL THAT CERTAIN 0.1318 acre tract of land, lying and situated in the Harris and Wilson 2 League Grant, Abstract 32, Harris County Texas, being located within the right-of-way of 60 foot wide Liberty Road, being a portion of all that certain called 55,922 square foot tract of land (Tract 2) conveyed by deed recorded on February 7, 1921 from W. N. Reece to Texas & New Orleans Railroad Company as recorded in Volume 472, Page 7 of the H.C.D.R. and a portion of all that certain called 5.79 acre tract of land conveyed by deed recorded on July 24, 1890 from R. B. Baer to Texas & New Orleans Railroad Company as recorded in Volume 50, Page 535 of the H.C.D.R.; the herein described 0.1318 acre tract land hereby conveyed being more particularly described by metes and bounds, using survey terminology which refers to the Texas State Plane Coordinate System, South Central Zone (NAD83), in which the directions are Lambert grid bearings and the distances are surface level horizontal lengths (S.F.= 0.99989548017) as follows:

COMMENCING at 5/8" iron rod found marking the intersection of the southern right-of-way boundary line of said 60 foot wide Liberty Road with the northwestern right-of-way boundary line of the 100 foot wide Texas and New Orleans Rail Road Company right-of-way, same being the southeastern boundary line of said Texas and New Orleans Rail Road Company called 5.79 acre tract, said Point of Commencement being located at Texas State Plane coordinate X=3136766.24 and Y=13852360.25;

THENCE South 85°26'51" West, coincident with the southern right-of-way boundary line of said 60 foot wide Liberty Road, a distance of 151.57 feet to the southeast corner and the **POINT OF BEGINNING** of the herein described 0.1318 acre parcel, at position X=3136615.16 and Y=13852356.67;

THENCE South 85°26'51" West, coincident with the southern right-of-way boundary line of said 60 foot wide Liberty Road, a distance of 690.57 feet to the southwest corner of the herein described 0.1318 acre tract, at position X=3135926.84 and Y=13852301.86;

THENCE North 1°54'53' West, a distance of 8.51 feet to a point for the northwest corner of the herein described 0.1318 acre tract, at position X=3135926.56 and Y=13852310.37;

THENCE North 85°28'45" East, a distance of 690.36 feet to a point for the northeast corner of the herein described 0.1318 acre tract, at position X=3136614.70 and Y=13852364.78;

THENCE South 3°16'02" East a distance of 8.12 feet to the **POINT OF BEGINNING**, containing 0.1318 acre of land, more or less.

Wm. Patrick Doyle
Registered Professional Land Surveyor
Texas Registration Number 4467
June 20, 2016

This description is based on a survey, dated June 20, 2016 is on file in the office of Doyle & Wachtstetter, Inc.
V:\Pat\Pastor Behling & Wheeler\UPPR Liberty Road Sidewalk tract 0.1318 acre.doc

EXHIBIT B

PHYSICAL CONTROL MAINTENANCE/MONITORING REQUIREMENTS

EXHIBIT "B"
MAINTENANCE AND MONITORING

Through the Texas Commission on Environmental Quality (TCEQ) Texas Risk Reduction Program (TRRP), a Remedy Standard B remediation of the Property as detailed in the Response Action Plan (RAP) for the Union Pacific Railroad (UPRR) Houston Wood Preserving Works site (TCEQ SWR No. 31547/IHW Permit No. 50343) was implemented that included construction of a physical control using a concrete sidewalk cap (location detailed in Exhibit A). The concrete sidewalk was constructed following City of Houston Department of Public Works and Engineering Concrete Sidewalk Details for Streets with Curbs (07-01-2010). The concrete sidewalk will serve as a permanently placed cap atop contaminated soil present on the Property as defined in Exhibit A. The contaminated soil contains concentrations of chemicals of concern (COCs) benzo(a)pyrene and pentachlorophenol that exceed the TCEQ's Protective Concentration Levels. The concrete sidewalk cap will provide protection to human health and the environment throughout the post-closure care period.

UPRR will implement an inspection and maintenance program for the concrete sidewalk within the Property as shown on Exhibit A. The inspection and maintenance shall be conducted according to the Response Action Plan (RAP) dated November 21, 2014 (revised December 7, 2015) for the site or subsequently approved reports or TCEQ permits or written correspondence. Inspections will be performed by UPRR on a quarterly basis. The inspections will focus on evaluating the sidewalk for cracks or damage. If cracks are identified that allow exposure to the underlying soils, the cracks will be repaired and sealed in a manner consistent with the original plans and specifications following City of Houston guidelines for sidewalk construction. UPRR will submit annual reports to the TCEQ (unless this frequency is modified by subsequent TCEQ correspondence) documenting the inspections and any necessary repairs, maintenance, and/or replacement activities conducted to ensure the integrity of the physical control is being maintained and to ensure the continued effectiveness of the remedy.

RESTRICTIVE COVENANT

STATE OF TEXAS §
§ KNOW ALL MEN BY THESE PRESENTS THAT:
COUNTY OF HARRIS §

This Restrictive Covenant is filed to provide information concerning certain environmental conditions and use limitations pursuant to the Texas Commission on Environmental Quality (TCEQ) Texas Risk Reduction Program Rule (TRRP) found at 30 Texas Administrative Code (TAC), Chapter 350, and affects the **City of Houston Right-of-Way (ROW) (Property)** presented in Exhibits A-1 and A-2 attached hereto and incorporated herein by reference.

Portions of the groundwater underlying the Property contain certain identified chemicals of concern (COCs) causing those portions of the Property to be considered an Affected Property as that term is defined in the TRRP. The portion considered to be Affected Property and plume management zone, as those terms are defined in the TRRP, is shown on Exhibit B attached hereto and incorporated herein by reference.

This Restrictive Covenant is required for the following reasons:

Plume Management Zone

The Affected Property is subject to the TRRP requirements for properties with an area overlying a TCEQ-approved plume management zone. A plume management zone is defined as an area of groundwater containing concentrations of COCs exceeding the TCEQ-approved protective concentration levels for the site, plus any additional area allowed by the TCEQ in accordance with 30 TAC §350.33(f)(4). A plume management zone was established so that the COCs in the groundwater are managed such that human exposure is prevented and that other groundwater resources are protected. The attached Exhibit B provides the location and extent of the plume management zone. Exhibit C describes the maintenance and monitoring required and Table C-2 lists the COCs that exceed the TCEQ's Protective Concentration Levels. This maintenance and monitoring is required until TCEQ approves some modification of those requirements.

As of the date of this Restrictive Covenant, the City of Houston with an address of 901 Bagby Street, Houston, Texas 77002 owns municipal right-of-way easements over the Property. Fee title underlying the easements is owned by the abutting property owners. In consideration of the Response Actions by Union Pacific Railroad (Responder) at the Former Houston Wood Preserving Works Site at 4910 Liberty Road, Houston, Texas, approval of the Response Action Completion Report, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the City of Houston has agreed, to the extent of its ownership interest, to place the following restrictions on the Property in favor of the TCEQ and the State of Texas, to-wit:

1. Exposure to groundwater underlying the Affected Property for any purpose is prohibited until such time when all of the chemicals of concern no longer exceed their respective protective concentration levels. The maintenance and monitoring described in Exhibit C is required to be performed by the Responder. Any modification of this restrictive covenant is prohibited without prior approval of TCEQ.

2. These restrictions shall be a covenant running with the land.

For additional information, contact:

TCEQ
Central Records
12100 Park 35 Circle,
Building E
Austin, Texas 78753

Mail: TCEQ - MC 199
P O Box 13087
Austin, Texas 78711-3087

TCEQ Program and Identifier No.: TCEQ SWR No. 31547

This Restrictive Covenant may be rendered of no further force or effect only by a release executed by the TCEQ or its successor agencies and filed in the same Real Property Records as those in which this Restrictive Covenant is filed.

Executed this 6th day of June, 2017.

ATTEST:

Anna Russell
City Secretary

CITY OF HOUSTON, TEXAS

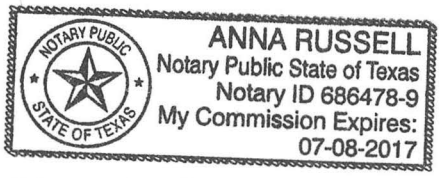
Sylvester Turner
Mayor of the City of Houston

APPROVED AS TO FORM:

Phillip M. Goodwin, P.G.
Assistant City Attorney
LD#067-1600017-001

STATE OF TEXAS §
§
COUNTY OF HARRIS §

This instrument was acknowledged before me on the 9th day of June, 2017, by **Sylvester Turner, Mayor** of the **CITY OF HOUSTON, TEXAS,** a municipal corporation, on behalf of said corporation.



(Notary Seal)

Notary Public, State of Texas

Union Pacific Railroad Company [RESPONDER]

By: Tony F Love
Name: Mr. Tony Love
Title: Assistant Vice President of Real Estate
Union Pacific Railroad Company, a Delaware Corporation

STATE OF NEBRASKA §

DOUGLAS COUNTY §

BEFORE ME, on this the 25th day of May, Mr. Tony Love, Assistant Vice President of Real Estate, a representative of Union Pacific Railroad Company, a Delaware Corporation [**responder**], known to me to be the person whose name is subscribed to the foregoing instrument, and he acknowledged to me that he executed the same for the purposes and consideration therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 25th day of May, 2017.

Gregg A Larsen

General Notary - State of Nebraska
GREGG A. LARSEN
My Comm. Exp. Aug. 28, 2020.

Notary Public in and for the State of Nebraska
County of Douglas
My Commission Expires: August 28, 2020

Accepted as Third Party Beneficiary this _____day of _____, 20___.

Texas Commission on Environmental Quality

By: _____
Name: _____
Title: _____

STATE OF TEXAS §
(_____) COUNTY §

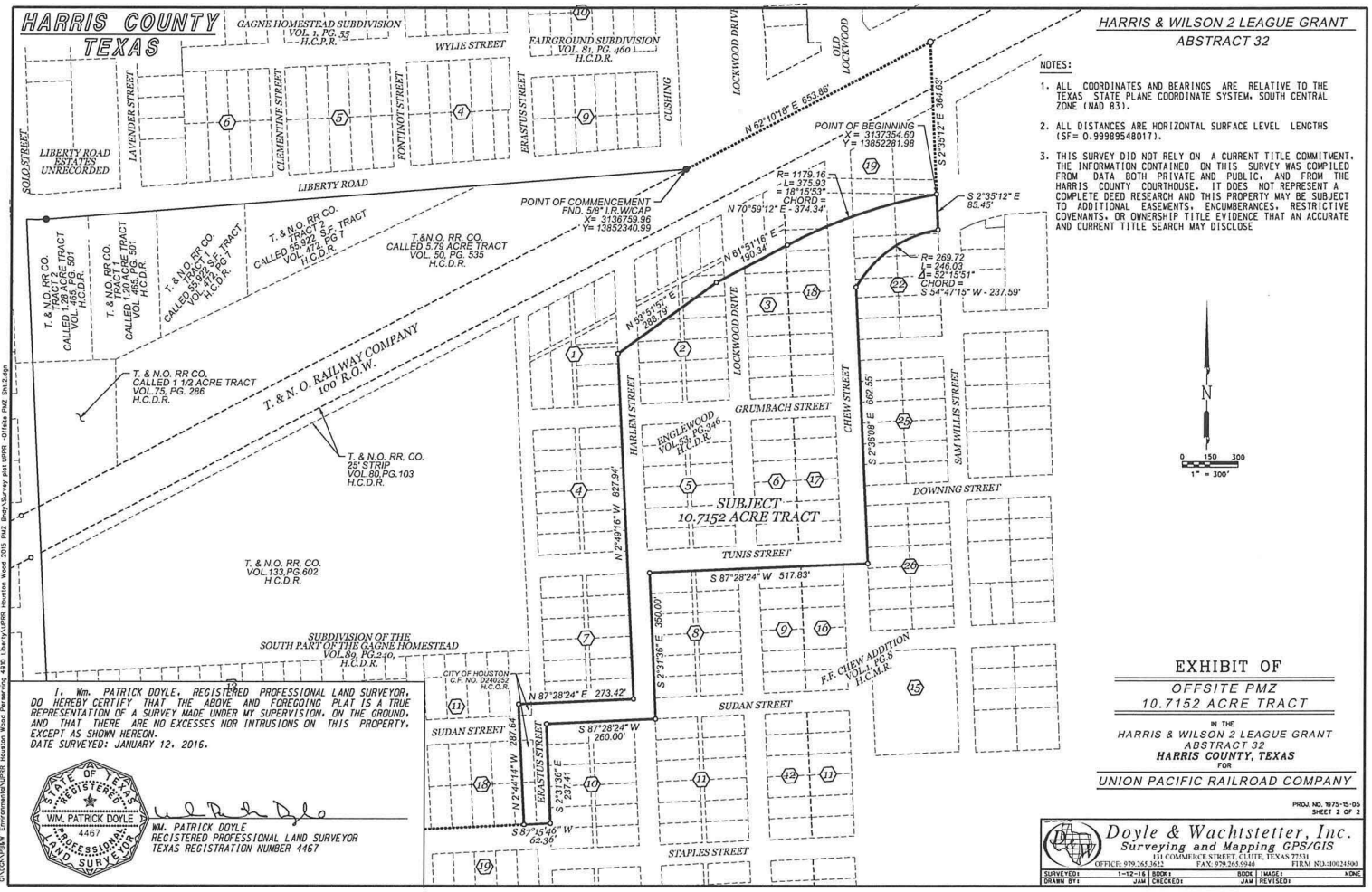
BEFORE ME, on this the ___ day of _____, _____ personally appeared _____ [name], _____ [title], of The Texas Commission of Environmental Quality, known to me to be the person whose name is subscribed to the foregoing instrument, and they acknowledged to me that they executed the same for the purposes and in the capacity herein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this _____ day of _____, 20____.

_____
Notary Public in and for the State of Texas,
County of _____
My Commission Expires: _____

EXHIBIT A -1

SURVEY PLAT AND LEGAL DESCRIPTION OF CITY OF HOUSTON RIGHT-OF-WAY INSTITUTIONAL CONTROL BOUNDARY – EASTERN PROPERTY



HARRIS & WILSON 2 LEAGUE GRANT
ABSTRACT 32

NOTES:

1. ALL COORDINATES AND BEARINGS ARE RELATIVE TO THE TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE (NAD 83).
2. ALL DISTANCES ARE HORIZONTAL SURFACE LEVEL LENGTHS (SF= 0.999895480171).
3. THIS SURVEY DID NOT RELY ON A CURRENT TITLE COMMITMENT. THE INFORMATION CONTAINED ON THIS SURVEY WAS COMPILED FROM DATA BOTH PRIVATE AND PUBLIC, AND FROM THE HARRIS COUNTY COURTHOUSE. IT DOES NOT REPRESENT A COMPLETE DEED RESEARCH AND THIS PROPERTY MAY BE SUBJECT TO ADDITIONAL EASEMENTS, ENCUMBERANCES, RESTRICTIVE COVENANTS, OR OWNERSHIP TITLE EVIDENCE THAT AN ACCURATE AND CURRENT TITLE SEARCH MAY DISCLOSE

I, Wm. PATRICK DOYLE, REGISTERED PROFESSIONAL LAND SURVEYOR, DO HEREBY CERTIFY THAT THE ABOVE AND FOREGOING PLAT IS A TRUE REPRESENTATION OF A SURVEY MADE UNDER MY SUPERVISION, ON THE GROUND, AND THAT THERE ARE NO EXCESSES NOR INTRUSIONS ON THIS PROPERTY, EXCEPT AS SHOWN HEREON.
DATE SURVEYED: JANUARY 12, 2016.

STATE OF TEXAS
REGISTERED
WM. PATRICK DOYLE
4467
PROFESSIONAL
LAND SURVEYOR

WM. PATRICK DOYLE
REGISTERED PROFESSIONAL LAND SURVEYOR
TEXAS REGISTRATION NUMBER 4467

EXHIBIT OF
OFFSITE PMZ
10.7152 ACRE TRACT

IN THE
HARRIS & WILSON 2 LEAGUE GRANT
ABSTRACT 32
HARRIS COUNTY, TEXAS
FOR
UNION PACIFIC RAILROAD COMPANY

PROJ. NO. 1075-15-05
SHEET 2 OF 2

Doyle & Wachtstetter, Inc.
Surveying and Mapping GPS/GIS
131 COMMERCE STREET, CLUTE, TEXAS 77531
OFFICE: 979.265.2622 FAX: 979.265.9940 FIRM NO.:10024500

SURVEYED:	1-12-16	BOOK:	BOOK	IMAGE:	NONE
DRAWN BY:	JAM	CHECKED:	JAM	REVISED:	

USER: jmillard Remapping
DATE: 6/13/2016 7:35:40 AM
D:\JOBS\UPRR Environmental\UPRR Houston Wood Preserving 493\ Liberty\UPRR Houston Wood 2015 PMZ Bndy\Survey plat UPRR Offsite PMZ Sht.2.dgn

Doyle & Wachtstetter, Inc
Surveying and Mapping • GPS/GIS

UNION PACIFIC RAILROAD COMPANY
10.7152 ACRE PMZ TRACT
HARRIS AND WILSON 2 LEAGUE GRANT, ABSTRACT 32
HARRIS COUNTY, TEXAS

BEING ALL THAT CERTAIN 10.7152 acre tract of land, lying and situated in the Wilson and Harris 2 League Grant, Abstract 32, Harris County Texas, being a portion of Block 2 and Block 3, all of Block 5 and Block 6, a portion of 50 foot wide Grumbach Street, a portion of 50 foot wide Tunis Street (Jones Street), a portion of Erastus Street (Sunset Avenue), a portion of 50 foot wide Harlem Street (Baer Avenue), and a portion of 50 foot wide Lockwood Drive (Cushing Avenue) as shown on the map of Englewood Subdivision, according to the map or plat recorded in Volume 53, Page 346 of the Harris County Deed Records (H.C.D.R.) a portion of Block 22, a portion of 50 foot wide Chew Avenue, and a portion of 50 foot wide Tunis Street (Jones Street), as shown on the map of F. F. Chew Addition, according to the map or plat recorded in Volume 1, Page 8 of the Harris County Map Records (H.C.M.R.), and a portion of Block 11 and Block 18 as shown of the map of the Subdivision of the South Part of the Gagne Homesteads, according to the map or plat thereof recorded in Volume 89, Page 240 of the H.C.D.R., the herein described 10.7152 acre tract land hereby conveyed being more particularly described by metes and bounds, using survey terminology which refers to the Texas State Plane Coordinate System, South Central Zone (NAD83), in which the directions are Lambert grid bearings and the distances are surface level horizontal lengths (S.F.= 0.99989548017) as follows:

COMMENCING at 5/8" iron rod found marking the intersection of the southeastern right-of-way boundary line of said 60 foot wide Liberty Road with the northwestern right-of-way boundary line of the 100 foot wide Texas and New Orleans Rail Road Company right-of-way, same being the southeastern boundary line of all that certain called 5.79 acre tract of land conveyed by deed recorded on July 24, 1890 from R. B. Baer to Texas & New Orleans Railroad Company as recorded in Volume 50, Page 535 of the H.C.D.R., said Point of Commencement being located at Texas State Plane coordinate X=3136759.96 and Y=13852340.99;

THENCE North 62°10'18" East, coincident with the southeastern right-of-way boundary line of said 60 foot wide Liberty Road, same being the northwestern boundary line of the 100 foot wide Texas and New Orleans Rail Road Company right-of-way, a distance of 653.86 feet to an angle point at the intersection of the southeastern right-of-way boundary line of said 60 foot wide Liberty Road with the northern extension of the western right-of-way boundary line of 50 foot wide Sam Willis Street, at position X=3137338.15 and Y=13852646.20;

THENCE South 2°35'12" East, coincident with the northern extension of the western right-of-way boundary line of said 50 foot wide Sam Willis Street, a distance of 364.63 feet to a point located on the eastern boundary line of said Block 22 of the F. F. Chew Addition, for the northeast corner and the **POINT OF BEGINNING** of the herein described 10.7152 acre tract, at position X=3137354.60 and Y=13852281.98;

THENCE South 2°35'12" East, coincident with the western right-of-way boundary line of said 50 foot wide Sam Willis Street, same begin the eastern boundary line of said Block 22 of the F. F. Chew Addition, a distance of 85.45 feet to the point of curvature of a non-tangent curve to the left, having a radius of 269.72 feet, at position X=3137358.46 and Y=13852196.62;

THENCE in an southwesterly direction, along said curve to left, having a radius of 269.72 feet, an arc length of 246.03 feet, a central angle of 52°15'51", a chord bearing and distance of South 54°47'15" West – 237.59 feet to a point for corner, located on the eastern right-of-way boundary line of 60 foot wide Chew Street, same being the western boundary line of said Block 22 of the F. F. Chew Addition, for an angle corner of the herein described 10.7152 acre tract, at position X=3137164.36 and Y=1385259.64;

THENCE South 2°36'08" East, coincident with the eastern right-of-way boundary line of 60 foot wide Chew Street, same being the western boundary line of said Block 22, Block 25 and Block 26 of the F. F. Chew Addition, a distance of 662.55 feet to a point at the intersection of the eastern right-of-way boundary line of said 60 foot wide Chew Street with easterly extension of the southern boundary line of 55 foot wide Tunis Street (not open), for the southeast corner of the herein described 10.7152 acre tract, at position X=3137194.44 and Y=13851397.84;

THENCE South 87°28'24" West, coincident with the southern right-of-way boundary line of said 55 foot wide Tunis Street (not open), same being northern boundary line of Block 16 of said F. F. Chew Addition, the northern boundary line of Block 9 and Block 8 of said Englewood Subdivision, a distance of 517.83 feet to a point located on the eastern right-of-way boundary line of said 50 foot wide Harlem Street, for the northwest corner of said Block 8 of said Englewood Addition and an interior corner of the herein described 10.7152 acre tract, at position X=3136677.16 and Y=13851375.01;

THENCE South 2°31'36" East, coincident with the eastern right-of-way boundary line of said 50 foot wide Harlem Street, same being the western boundary line of said Block 8 of said Englewood Subdivision, a distance of 350.00 feet to the intersection of the eastern boundary line of said 50 foot wide Harlem Street with the southern right-of-way boundary line of 50 foot wide Sudan Street, for the northwest corner of Block 11 of said Englewood Subdivision, for an exterior corner of the herein described 10.7152 acre tract, at position X=3136692.59 and Y=13851025.39;

THENCE South 87°28'24" West, coincident with the southern right-of-way boundary line f said 50 foot wide Sudan Street, the northern boundary line of Block 10 of said Englewood Subdivision, a distance of 260.00 feet to a point located on the eastern right-of-way boundary line Erastus Street, right-of-way varies, for an interior corner of the herein described 10.7152 acre tract, at position X=3136432.87 and Y=13851013.93;

THENCE South 2°31'36" East, coincident with the eastern right-of-way boundary line Erastus Street, right-of-way varies, same being the western boundary line of said Block 10 of said Englewood Subdivision, a distance of 237.41 feet to a point at the intersection of the easterly extension of the southern boundary line of Block 18 of said Subdivision of the South Part of the Gagne Homestead, for an exterior corner of the herein described 10.7152 acre tract, at position X=3136443.34 and Y=13850776.78;

THENCE South 87°15'46" West, a distance of 62.36 feet to a point located on western right-of-way boundary line of said Erastus Street, right-of-way varies and the southern boundary line of said Block 18 of the said Subdivision of the South Part of the Gagne Subdivision, for an the southwest corner of the herein described 10.7152 acre tract, at position X=3136381.05 and Y=13850773.80;

THENCE North 2°44'14" West, coincident with the western right-of-way boundary line of said Erastus Street, right-of-way varies, a distance of 287.64 feet to a point located within Block 11 of said Subdivision of the South Part of the Gagne Homestead, at the intersection of the western right-of-way boundary line of said Erastus Street with the northern right-of-way boundary line of said 50 foot wide Sudan Street, for an exterior corner of the herein described 10.7152 acre tract, at position X=3136367.32 and Y=13851061.08;

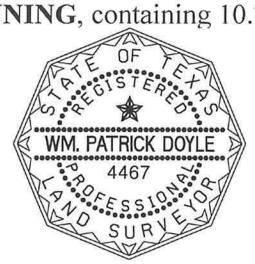
THENCE North 87°28'24" East, coincident with the northern right-of-way boundary line of said 50 foot wide Sudan Street, same being the southern boundary line of said Block 7 of said Englewood Subdivision, a distance of 273.42 feet to a point located on the western right-of-way boundary line of said 50 foot wide Harlem Street, for the southeast corner of said Block 7 and an interior corner of the herein described 10.7152 acre tract, at position X=3136640.44 and Y=13851073.13;

THENCE North 2°49'16" West, coincident with the western right-of-way boundary line of said 50 foot wide Harlem Street, same being the eastern boundary line of Block 7, Block 4 and Block 1, of said Englewood Subdivision, a distance of 827.94 feet to the northwest corner of the herein described 10.7152 acre tract, at position X=3136599.69 and Y=13851899.99;

THENCE North 53°51'57" East, a distance of 288.79 feet to the a angle corner of the herein described 10.7152 acre tract, at position X=3136832.90 and Y=13852070.26;

THENCE North 61°51'16" East, a distance of 190.34 feet to an angle corner of the herein described 10.7152 acre tract, located on curve to the right, having a radius of 1179.16 feet, at position X=3137000.72 and Y=13852160.04;

THENCE in an easterly direction, along said curve to the right, having a radius of 1179.16 feet, an arc length of 375.93 feet, a central angle of 18°15'53", and a chord bearing and distance of North 70°59'12" East – 374.34 feet to the **POINT OF BEGINNING**, containing 10.7152 acres of land, more or less.

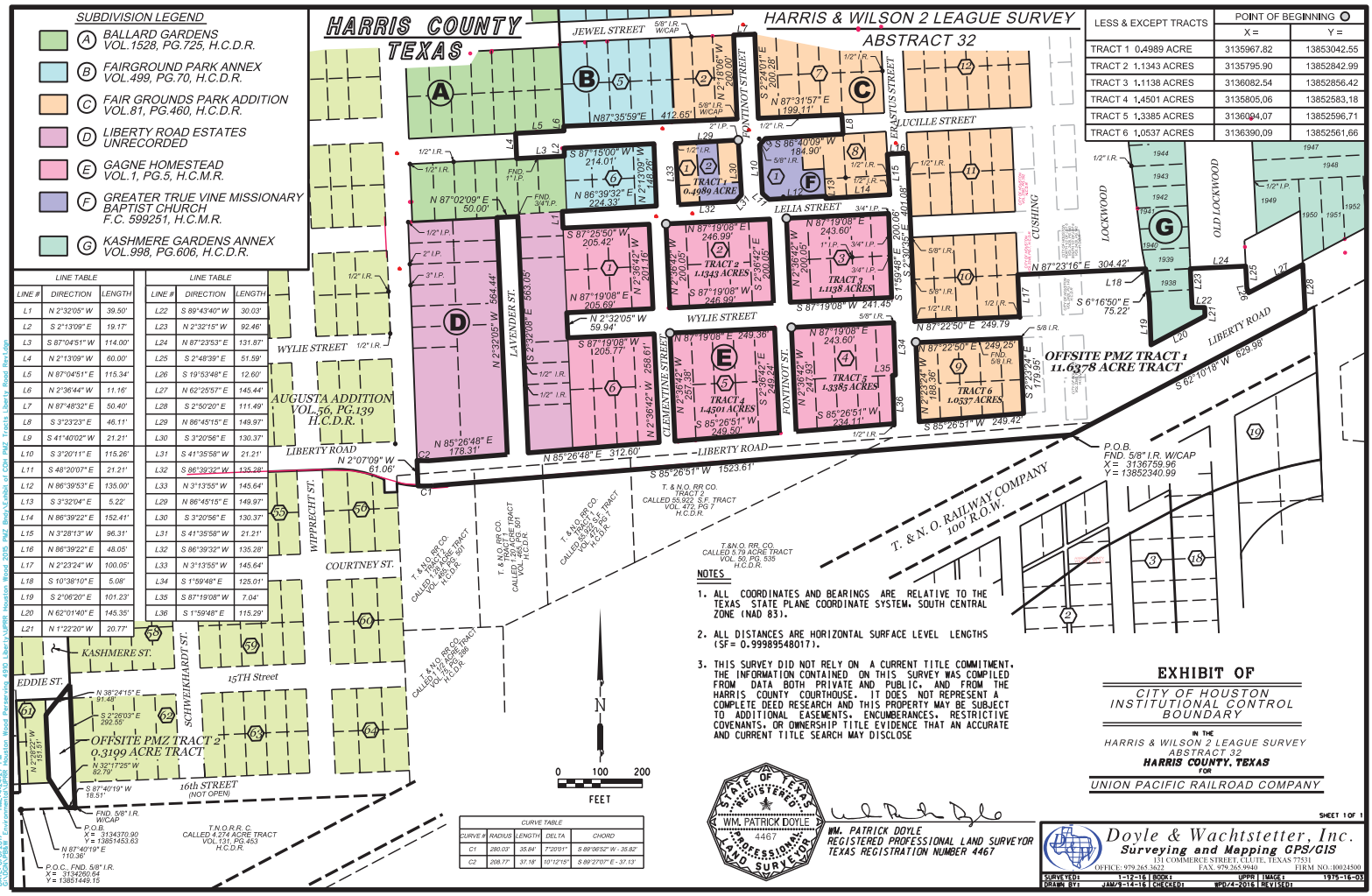


Wm. Patrick Doyle
Registered Professional Land Surveyor
Texas Registration Number 4467
June 29, 2016

This description is based on plat dated June 28, 2016 is on file in the office of Doyle & Wachtstetter, Inc.
V:\Pat\Pastor Behling & Wheeler\UPPR Englewood Yard Offsite PMZ 10.7152 acre tract.doc

EXHIBIT A - 2

SURVEY PLAT AND LEGAL DESCRIPTION OF CITY OF HOUSTON RIGHT-OF-WAY INSTITUTIONAL CONTROL BOUNDARY – NORTHERN AND WESTERN PROPERTIES



LESS & EXCEPT TRACTS	POINT OF BEGINNING	
	X =	Y =
TRACT 1 0.4989 ACRE	3135967.82	13853042.55
TRACT 2 1.1343 ACRES	3135795.90	13852842.99
TRACT 3 1.1138 ACRES	3136082.54	13852856.42
TRACT 4 1.4501 ACRES	3135805.06	13852583.18
TRACT 5 1.3385 ACRES	3136094.07	13852596.71
TRACT 6 1.0537 ACRES	3136390.09	13852561.66

LINE TABLE		
LINE #	DIRECTION	LENGTH
L1	N 2°32'05" W	39.50'
L2	S 2°13'09" E	19.17'
L3	S 87°04'51" W	114.00'
L4	N 2°13'09" W	60.00'
L5	N 87°04'51" E	115.34'
L6	N 2°36'44" W	11.16'
L7	N 87°48'32" E	50.40'
L8	S 3°23'23" E	46.11'
L9	S 41°40'02" W	21.21'
L10	S 3°20'11" E	115.26'
L11	S 48°20'07" E	21.21'
L12	N 86°39'53" E	135.00'
L13	S 3°32'04" E	5.22'
L14	N 86°39'22" E	152.41'
L15	N 3°28'13" W	96.31'
L16	N 86°39'22" E	48.05'
L17	N 2°23'24" W	100.05'
L18	S 10°38'10" E	5.08'
L19	S 2°06'20" E	101.23'
L20	N 62°01'40" E	145.35'
L21	N 1°22'20" W	20.77'

LINE TABLE		
LINE #	DIRECTION	LENGTH
L22	S 89°43'40" W	30.03'
L23	N 2°32'15" W	92.46'
L24	N 87°23'53" E	131.87'
L25	S 2°48'39" E	51.59'
L26	S 19°53'48" E	12.60'
L27	N 62°25'57" E	145.44'
L28	S 2°50'20" E	111.49'
L29	N 86°45'15" E	149.97'
L30	S 3°20'56" E	130.37'
L31	S 41°35'58" W	21.21'
L32	S 86°39'32" W	135.28'
L33	N 3°13'55" W	145.64'
L29	N 86°45'15" E	149.97'
L30	S 3°20'56" E	130.37'
L31	S 41°35'58" W	21.21'
L32	S 86°39'32" W	135.28'
L33	N 3°13'55" W	145.64'
L34	S 1°59'48" E	125.01'
L35	S 87°19'08" W	7.04'
L36	S 1°59'48" E	115.29'

CURVE TABLE				
CURVE #	RADIUS	LENGTH	DELTA	CHORD
C1	280.03'	35.84'	7°20'01"	S 89°06'52" W - 35.82'
C2	208.77'	37.18'	10°12'15"	S 89°27'07" E - 37.13'

NOTES

1. ALL COORDINATES AND BEARINGS ARE RELATIVE TO THE TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE (NAD 83).
2. ALL DISTANCES ARE HORIZONTAL SURFACE LEVEL LENGTHS (SF= 0.999895480l7).
3. THIS SURVEY DID NOT RELY ON A CURRENT TITLE COMMITMENT. THE INFORMATION CONTAINED ON THIS SURVEY WAS COMPILED FROM DATA BOTH PRIVATE AND PUBLIC, AND FROM THE HARRIS COUNTY COURTHOUSE. IT DOES NOT REPRESENT A COMPLETE DEED RESEARCH AND THIS PROPERTY MAY BE SUBJECT TO ADDITIONAL EASEMENTS, ENCUMBERANCES, RESTRICTIVE COVENANTS, OR OWNERSHIP TITLE EVIDENCE THAT AN ACCURATE AND CURRENT TITLE SEARCH MAY DISCLOSE

STATE OF TEXAS REGISTERED WIM. PATRICK DOYLE 4467 PROFESSIONAL LAND SURVEYOR

WM. PATRICK DOYLE
REGISTERED PROFESSIONAL LAND SURVEYOR
TEXAS REGISTRATION NUMBER 4467

EXHIBIT OF

CITY OF HOUSTON INSTITUTIONAL CONTROL BOUNDARY

IN THE HARRIS & WILSON 2 LEAGUE SURVEY ABSTRACT 32
HARRIS COUNTY, TEXAS
FOR
UNION PACIFIC RAILROAD COMPANY

SHEET 1 OF 1

Doyle & Wachtstetter, Inc.
Surveying and Mapping GPS/GIS
151 COMMERCE STREET, CLUTE, TEXAS 77531
OFFICE: 979.265.3622 FAX: 979.265.9940 FIRM NO.: 10024500

SURVEYED:	1-12-16	BOOK:	UPRR	IMAGE:	1975-16-03
DRAWN BY:	JAM	9-14-16	CHECKED:	WPD	4-2016 REVISED:

USER: Unified Workspace
DATE: 6/6/2017 7:41:43 PM
DWG NAME: Houston Wood Preserving 4910 Liberty\UPRR Houston Wood 2015_PMZ Boxs\Exhibit of COH PMZ Tracts Liberty Road Revision

UNION PACIFIC RAILROAD COMPANY
11.6378 ACRE CITY OF HOUSTON OFFSITE PMZ TRACT
HARRIS AND WILSON 2 LEAGUE GRANT, ABSTRACT 32
HARRIS COUNTY, TEXAS

BEING ALL THAT CERTAIN 11.6378 acre tract of land, lying and situated in the Wilson and Harris 2 League Grant, Abstract 32, Harris County Texas, being a portion of Liberty Road, right-of-way varies, all of 30 foot wide Lelia Street (11th Street), all of 60 foot wide Wylie Street (12th Street), all of 40 foot wide Clementine Street and all of 40 foot wide Fontinot Street, as shown on the map of the Subdivision of Shares 2 & 3 of the Gagne Homestead, according to the map or plat thereof recorded in Volume 1, Page 55 of the Harris County Map Records (H.C.M.R.), a portion of 60 foot wide Lucille Street, as shown on the map of Ballard Gardens Addition, according to the map or plat thereof recorded in Volume 1528, Page 725 of the Harris County Deed Records (H.C.D.R.), a portion of 50 foot wide Lucille Street and a portion of 50 foot wide Clementine Street (formerly Lots 1 and 10, Block 6) as shown on the map of Fairgrounds Park Annex according to the map or plat thereof recorded in Volume 499, Page 70 of the H.C.D.R., a portion of 50 foot wide Lucille Street, a portion of 50 foot wide Fontinot Street, and a portion of 50 foot wide Erastus Street as shown on the Map of Fair Ground Park Addition, according to the map or plat thereof recorded in Volume 81, Page 460 of the H.C.D.R., a portion of Old Lockwood Drive (right-of-way varies) as shown on the map of Kashmere Gardens Annex, according to the map or plat thereof recorded in Volume 996, Page 606 of the H.C.D.R., a portion of Cushing Street, a portion of Lockwood Drive, all of Lavender Street conveyed by deed recorded on May 24, 1948 from Carl S. Smith, et al to Harris County, as recorded in Volume 1740, Page 359 of the H.C.D.R., a portion of all that certain called 1.28 acre tract and a portion of all that certain called 1.20 acre tract of land conveyed by deed recorded on February 8, 1921 from W. N. Reece to Texas & New Orleans Railroad Company as recorded in Volume 465, Page 501 of the H.C.D.R.,; a portion of all that certain called 55,922 square foot tract of land and a portion of all that certain called 55,922 square foot tract of land conveyed by deed recorded on February 7, 1921 from W. N. Reece to Texas & New Orleans Railroad Company as recorded in Volume 472, Page 7 of the H.C.D.R., and a portion of all that certain called 5.79 acre tract of land conveyed by deed recorded on July 24, 1890 from R. B. Baer to Texas & New Orleans Railroad Company as recorded in Volume 50, Page 535 of the H.C.D.R., the herein described 11.6378 acre tract land hereby conveyed being more particularly described by metes and bounds, using survey terminology which refers to the Texas State Plane Coordinate System, South Central Zone (NAD83), in which the directions are Lambert grid bearings and the distances are surface level horizontal lengths (S.F.= 0.99989548017) as follows:

BEGINNING at 5/8" iron rod found marking the intersection of the southern right-of-way boundary line of said Liberty Road, right-of-way varies, with the northwestern right-of-way boundary line of the 100 foot wide Texas and New Orleans Rail Road Company right-of-way, same being the southeastern boundary line of said Texas and New Orleans Rail Road Company called 5.79 acre tract, said Point of Beginning being located at Texas State Plane coordinate X=3136759.96 and Y=13852340.99;

THENCE South 85°26'51" West, coincident with the southern boundary line of said Liberty Road, right-of-way varies, a distance of 1523.61 feet to a 5/8" iron rod found marking the point of curvature of a curve to the right, having a radius of 280.03 feet;

THENCE in a westerly direction, coincident with the southern boundary line of said Liberty Road, right-of-way varies, along said curve to the right, having a radius of 280.03 feet, an arc length of 35.84 feet, a central angle of 7°20'01", a chord bearing and distance of South 89°06'52" West – 35.82 feet to the southwest corner of the herein described 11.6378 acre tract;

THENCE North 2°07'09" West, crossing said Liberty Road, right-of-way varies, a distance of 61.06 feet to a point located on the northern right-of-way boundary line of said Liberty Road, right-of-way varies, for the southwest corner of Tract 1, Block 2 of the unrecorded subdivision of Liberty Road Estates, being the same tract conveyed by deed recorded on March 27, 2014 from Harris County, et al to 2013 Cottage, LLC, as recorded in Clerk's File No. 20140123340 of the H.C.O.R., located on a curve to the left, having a radius of 208.77 feet, for an angle corner of the herein described 11.6378 acre tract,

131 Commerce Street • Clute, Texas 77531-5601
Phone: 979-265-3622 • Fax: 979-265-9940 • Email: DW-Surveyor.com

THENCE in an easterly direction, coincident with northern right-of-way boundary line of said Liberty Road, right-of-way varies, same being the southern boundary line of said Tract 1, Block 2 of the unrecorded subdivision of Liberty Road Estates, along said curve to the left, having a radius of 208.77 feet, an arc length of 37.18 feet, a central angle of 10°12'15", a chord bearing and distance of South 89°27'07" East – 37.13 feet to a point for corner;

THENCE North 85°26'48" East, coincident with northern right-of-way boundary line of said Liberty Road, right-of-way varies, same being the southern boundary line of said Tract 1, Block of the unrecorded subdivision of Liberty Road Estates, a distance of 178.31 feet to the intersection of the northern right-of-way boundary line of said Liberty Road, right-of-way varies, and the western right-of-way boundary line of said Lavender Street, for the southeast corner of said Lot 1, Block 2 of the unrecorded subdivision of Liberty Road Estates, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 2°32'05" West, coincident with the western right-of-way boundary line of said Lavender Street, same being the eastern boundary line of Tract 1, the eastern boundary line of Lot 16, being the same tract conveyed by deed recorded on July 2, 1952 from Clark Investment Company to John Ellis, etux as recorded in Volume 2458, page 665 of the H.C.D.R., the eastern boundary line of Tract 14, being the same tract conveyed by deed recorded on March 27, 2014 from Harris County, et al to 2013 Cottage, LLC, as recorded in Clerk's File No. 20140123340 of the H.C.O.R., the eastern boundary line of Tract 13, being the same tract conveyed by deed recorded on May 11, 2001 from Larry Charles Wyatt to Francis A. Wyatt, as recorded in Clerk's File No. V045715 of the H.C.O.R., and the eastern boundary line of Tract 12, being the same tract conveyed by deed recorded on February 16, 1950 from Clark Investment Company to Arthur Brooks, etux as recorded in Volume 2035, Page 571 of the H.C.D.R., all being out of Block 2, of the unrecorded subdivision of Liberty Road Estates, a distance of 564.44 feet to a point located on the southern boundary line of Lot 5 of said Ballard Gardens Addition, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 87°02'09" East, coincident with the southern boundary line of Lot 5 and Lot 6 of said Ballard Gardens Addition, a distance of 50.00 feet to the northwest corner of Tract 11 of the unrecorded subdivision of Liberty Road Estates, being the same tract conveyed by deed recorded on January 28, 2003 from Harris County, et al to Sandra Rena Thompson, as recorded in Clerk's File NO. W386946 of the H.C.O.R., for an angle corner of the herein described 11.6378 acre tract;

THENCE South 2°32'08" East, coincident with the eastern right-of-way boundary line of said 50 foot wide Lavender Street, same being the western boundary line of said Tract 11, Tract 6A, being the same tract conveyed by deed recorded on September 24, 1993 from Clark Investment Company, Inc. to Essie Lee Hutchins as recorded in Clerk's File No. P469225 of the H.C.O.R., Tract 6B, in the name of Zearlene Osborne, recordation information not found, Tract 6 and Tract 6C, in the name of Lucille Long, recordation information not found, Tract 5, being the same tract conveyed by deed recorded on March 1, 2011 from Constable Jack F. Abercia, Precinct 1, Harris County, Texas to Greater Mount Nebo Baptist Church as recorded in Clerk's File No. 2011-083443 of the H.C.O.R., Tract 4, being the same tract conveyed by deed recorded on August 14, 2009 from Jack Anthony Coachman to Ray Carrington as recorded in Clerk's File No. 2009-0369151 of the H.C.O.R., Tract 3, being the same tract described in deed recorded on November 22, 1951 from Clark Investment Company to Jessie Beal, et al, as recorded in Volume 2344, Page 164 of the H.C.D.R., and Tract 1, being the same tract conveyed by deed recorded on August 5, 2013 from Constable Alan Rosen Precinct 1, Harris County, Texas to Greater Mount Nebo Missionary Baptist Church, as recorded in Clerk's File No. 2013-0394211 of the H.C.O.R., all being out of Block 2 of the unrecorded subdivision of Liberty Road Estates, a distance of 563.05 feet to the intersection of the eastern right-of-way boundary line of said 50 foot wide Lavender Street with the northern right-of-way boundary line Liberty Road, right-of-way varies, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 85°26'48" East, coincident with the northern right-of-way boundary line of said Liberty Road, right-of-way varies, same being the southern boundary line of said Tract 1 of the unrecorded subdivision of Liberty Road Estates and the southern boundary line of Block 6 of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 312.60 feet to the southeast corner of said Block 6, same being the intersection of the northern right-of-way boundary line of said Liberty Road, right-of-way varies, with the western right-of-way boundary line of 40 foot wide Clementine Street, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 2°36'42" West, coincident with the western right-of-way boundary line of said 40 foot wide Clementine Street, same being the eastern boundary line of Block 6 of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 258.61 feet to the northeast corner of said Block 6, same being the intersection of said western right-of-way boundary line of 40 foot wide Clementine Street with the southern right-of-way boundary line of 60 foot wide Wylie Street (12th Street), for an angle corner of the herein described 11.6378 acre tract;

THENCE South 87°19'08" West, coincident with the southern right-of-way boundary line of 60 foot wide Wylie Street (12th Street), same being the northern boundary line of Block 6 of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 205.77 feet to the northwest corner of said Block 6, located on the eastern boundary line of said unrecorded subdivision of Liberty Road Estates, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 2°32'05" West, coincident with the eastern boundary line of said unrecorded subdivision of Liberty Road Estates, a distance of 59.94 feet to the southwest corner of Block 1, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, located on the northern boundary line of said 60 foot wide Wylie Street (12th Street), for an angle corner of the herein described 11.6378 acre tract;

THENCE North 87°19'08" East, coincident with the northern boundary line of said 60 foot wide Wylie Street (12th Street), same being the southern boundary line of Block 1 of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 205.69 feet, to the southeast corner of said Block 1, at the intersection of the northern right-of-way boundary line of said Wylie Street (12th Street) with the western right-of-way boundary line of said 40 foot wide Clementine Street, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 2°36'42" West, coincident with the western right-of-way boundary line of said 40 foot wide Clementine Street, same being the eastern boundary line of Block 1 of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 201.16 feet to the northeast corner of said Block 1, at the intersection of the western boundary line of said 40 foot wide Clementine Street with the southern right-of-way boundary line of called 30 foot wide Lelia Street (11th Street), for an angle corner of the herein described 11.6378 acre tract;

THENCE South 87°25'50" West, coincident with the southern right-of-way boundary line of called 30 foot wide Lelia Street (11th Street), same being the northern boundary line of Block 1 of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 205.42 feet, to the northwest corner of said Block 1, located on the eastern boundary line of said unrecorded subdivision of Liberty Road Estates, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 2°32'05" West, coincident with the eastern boundary line of said unrecorded subdivision of Liberty Road Estates, a distance of 39.50 feet, to a point located on the northern right-of-way boundary line of said called 30 foot wide Lelia Street (11th Street), same being the southern boundary line of Lot 8 of said Ballard Gardens Addition, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 86°39'32" East, coincident with the northern right-of-way boundary line of said called 30 foot wide Lelia Street (11th Street), same being the southern boundary line of said Lot 8 of Ballard Gardens Subdivision and the southern boundary line of Block 6 of said Fairgrounds Park Annex, a distance of 224.33 feet to the intersection of the northern right-of-way boundary line of said called 30 foot wide Lelia Street with the western right-of-way boundary line 50 foot wide Clementine Street, formerly Lots 1 and 10, Block 6, Fairgrounds Park Annex, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 2°13'09" West, coincident with the western right-of-way boundary line 50 foot wide Clementine Street, a distance of 148.26 feet, to a point located at the intersection of the western right-of-way boundary line of said 50 foot wide Clementine Street with the southern right-of-way boundary line of 50 foot wide Lucille Street, same being the northern boundary line of Block 6 of said Fairground Park Annex, for an angle corner of the herein described 11.6378 acre tract;

THENCE South 87°15'00" West, coincident with the southern right-of-way boundary line of 50 foot wide Lucille Street, same being the northern boundary line of Block 6 of said Fairground Park Annex, a distance of 214.01 feet, to the northwest corner of said Block 6 of Fairground Park Annex, for an angle corner of the herein described 11.6378 acre tract;

THENCE South 2°13'09" East, coincident with the western boundary line of said Block 6 of Fairground Park Annex, a distance of 19.17 feet, to the northeast corner of Lot 8 of said Ballard Gardens Addition, located on the southern right-of-way boundary line of 60 foot wide Lucille Street, for an angle corner of the herein described 11.6378 acre tract;

THENCE South 87°04'51" West, coincident with the southern right-of-way boundary line of 60 foot wide Lucille Street, same being the northern boundary line of Lot 8 and Lot 7 of said Ballard Gardens Addition, a distance of 114.00 feet to an angle corner of the herein described 11.6378 acre tract;

THENCE North 2°13'09" West, a distance of 60.00 feet to a point located on the northern right-of-way boundary line of said 60 foot wide Lucille Street, same being the southern boundary line of Lot 15 of said Ballard Gardens Addition, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 87°04'51" East, coincident with the northern right-of-way boundary line of said 60 foot wide Lucille Street, same being the southern boundary line of Lots 15 and 16 of said Ballard Gardens Addition, a distance of 115.34 feet, to an angle corner of the herein described 11.6378 acre tract;

THENCE North 2°36'44" West, coincident with the eastern boundary line of said Lot 16 of Ballard Gardens Addition, a distance of 11.16 feet to the southwest corner of Block 5 of said Fairgrounds Park Annex, located on the northern right-of-way boundary line of said 50 foot wide Lucille Street, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 87°35'59" East, coincident with the northern right-of-way boundary line of said 50 foot wide Lucille Street, same being the southern boundary line of Block 5 of said Fairgrounds Park Annex and the southern boundary line of Block 2 of Fair Ground Park Addition, a distance of 412.65 feet to the southeast corner of said Block 2 of said Fair Ground Park Addition at the intersection of the northern right-of-way boundary line of said 50 foot wide Lucille Street with western right-of-way boundary line of 50 foot wide Fontinot Street, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 2°18'06" West, coincident with the western right-of-way boundary line of said 50 foot wide Fontinot Street, same being the eastern boundary line Block 2 of said Fair Ground Park Addition, a distance of 200.00 feet, to the intersection of the western right-of-way boundary line of said 50 foot wide Fontinot Street with the southern right-of-way boundary line of 50 foot wide Jewel Street, for angle corner;

THENCE North 87°48'32" East, coincident with the southern right-of-way boundary line of 50 foot wide Jewel Street, a distance of 50.40 feet, to a point located at the intersection of the southern right-of-way boundary line of said 50 foot wide Jewel Street with the eastern right-of-way boundary line of 50 foot wide Fontinot Street, for the northwest corner of Block 7 of said Fair Ground Park Addition, for an angle corner of the herein described 11.6378 acre tract;

THENCE South 2°24'01" East, coincident with the eastern right-of-way boundary line of 50 foot wide Fontinot Street, same being the western boundary line of Block 7 of said Fair Ground Park Addition, a distance of 200.28 feet to the southwest corner of said Block 7, at the intersection of the eastern right-of-way boundary line of 50 foot wide Fontinot Street with the northern right-of-way boundary line of said 50 foot wide Lucille Street, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 87°31'57" East, coincident with the northern right-of-way boundary line of 50 foot wide Lucille Street, same being the southern boundary line of Block 7 of said Fair Ground Park Addition, a distance of 199.11 feet to an angle corner of the herein described 11.6378 acre tract;

THENCE South 3°23'23" East, a distance of 46.11 feet, to a point located southern right-of-way boundary line of 50 foot wide Lucille Street, same being the northern boundary line of Block 8 of said Fair Ground Park Addition, for an angle corner of the herein described 11.6378 acre tract;

THENCE South 86°40'09" West, coincident with the southern right-of-way boundary line of 50 foot wide Lucille Street, same being the northern boundary line of Block 8 of said Fair Ground Park Addition, and the northern boundary line of Block 1 as shown on the map of the Greater True Vine Missionary Baptist Church recorded in Film Code 599251 of the H.C.M.R., a distance of 184.90 feet the north corner of a cutback at the intersection of the southern right-of-way boundary line of said 50 foot wide Lucille Street with the eastern right-of-way boundary line of said 50 foot wide Fontinot Street, for an angle corner of the herein described 11.6378 acre tract;

THENCE South 41°40'02" West, coincident with the said cutback, a distance of 21.21 feet, to a point located on the eastern right-of-way boundary line of said 50 foot wide Fontinot Street, same being the western boundary line of Block 1 of said Greater True Vine Missionary Baptist Church, for an angle corner of the herein described 11.6378 acre tract;

THENCE South 3°20'11" East, coincident with the eastern right-of-way boundary line of said 50 foot wide Fontinot Street, same being the western boundary line of Block 1 of said Greater True Vine Missionary Baptist Church, a distance of 115.26 feet, to a point located at the North corner of a cutback at the intersection of the eastern right-of-way boundary line of said 50 foot wide Fontinot Street with the northern right-of-way boundary line of 50 foot wide Lelia Street, for an angle corner of the herein described 11.6378 acre tract;

THENCE South 48°20'07" East, coincident with said cutback, a distance of 21.21 feet, to the intersection of the eastern right-of-way boundary line of said 50 foot wide Fontinot Street with the northern right-of-way boundary line of 50 foot wide Lelia Street, located on the southern boundary line of said Block 1 of said Greater True Vine Missionary Baptist Church, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 86°39'53" East, coincident with the northern right-of-way boundary line of called 30 foot wide Lelia Street, same being the southern boundary line of said Block 1 of said Greater True Vine Missionary Baptist Church, a distance of 135.00 feet, to a point located on the western boundary line of Lot 3, Block 8 of said Fair Ground Park Addition, for an angle corner of the herein described 11.6378 acre tract;

THENCE South 3°32'04" East, coincident with the western boundary line of said Lot 3, Block 8 of Fair Ground Park Addition, a distance of 5.22 feet, to a point located on the northern right-of-way boundary line of called 30 foot wide Lelia Street, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 86°39'22" East, coincident with the northern right-of-way boundary line of called 30 foot wide Lelia Street, same being the southern boundary line of Block 8, Fair Ground Park Addition, a distance of 152.41 feet to the southeast corner of said Block 8, located at the intersection of the northern right-of-way boundary line of called 30 foot wide Lelia Street, with the western right-of-way boundary line of called 50 foot wide Erastus Street, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 3°28'13" West, coincident with the western right-of-way boundary line of called 50 foot wide Erastus Street, same being the eastern boundary line of Block 8 of Fair Ground Park Addition, a distance of 96.31 feet, to an angle corner of the herein described 11.6378 acre tract;

THENCE North 86°39'22" East, a distance of 48.05 feet, to a point located on the eastern right-of-way said called 50 foot wide Erastus Street, same being the western boundary line of Block 11 of said Fair Ground Park Addition, for an angle corner of the herein described 11.6378 acre tract;

THENCE South 2°30'35" East, coincident with the eastern right-of-way of said called 50 foot wide Erastus Street, the western boundary line of Block 11 and the western boundary line of Block 10 of said Fair Ground Park Addition, a distance of 401.08 feet, to the southwest corner of said Block 10, located at the intersection of the eastern right-of-way boundary line of said called 50 foot wide Erastus Street with the northern boundary line of 50 foot wide Wylie Street, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 87°22'50" East, coincident with the northern right-of-way boundary line of said 50 foot wide Wylie Street, same being the southern boundary line of said Block 10, Fair Ground Park Addition, a distance of 249.79 feet, to a point located on the western right-of-way boundary line of Cushing Street, located on the eastern boundary line of Lot 11, Block 10 of Fair Ground Park Addition, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 2°23'24" West, coincident with the western boundary right-of-way boundary line of said Cushing Street, same being the eastern boundary line of Lot 11, Block 10 of Fair Ground Park Addition, a distance of 100.05 feet, to the northeast corner of said Lot 11, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 87°23'16" East, crossing said Cushing Street and Lockwood Drive, a distance of 304.42 feet, to a point located on the eastern right-of-way boundary line of Lockwood Drive, same being the western boundary line of the residual of Lot 1939 of Kashmere Gardens Annex, for an angle corner of the herein described 11.6378 acre tract;

THENCE South 10°38'10" East, coincident with the eastern right-of-way boundary line of Lockwood Drive, same being the western boundary line of the residual of said Lot 1939 of Kashmere Gardens Annex, a distance of 5.08 feet, to the southwest corner of the residual of said Lot 1939 and the northwest corner of the residual of Lot 1938, for an angle corner of the herein described 11.6378 acre tract;

THENCE South 6°16'50" East, coincident with the eastern right-of-way boundary line of Lockwood Drive, same being the western boundary line of the residual of said Lot 1938 of Kashmere Gardens Annex, and the western boundary line of all that certain called 0.3790 acre tract conveyed by deed recorded on August 31, 1979 from Larry Edward, et al to Martin Damian,. Sr., et al as recorded in Clerk's File No. G222792 of the H.C.O.R., a distance of 75.22 feet to an angle corner of the herein described 11.6378 acre tract;

THENCE South 2°06'20" East, coincident with the eastern right-of-way boundary line of Lockwood Drive, same being the western boundary line of said Martin Damian, Sr., et al called 0.3790 acre tract, a distance of 101.23 feet, to a point located on the northern right-of-way boundary line of said Liberty Road, right-of-way varies, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 62°01'40" East, coincident with the northern right-of-way boundary line of said Liberty Road, right-of-way varies, same being the southern boundary line of said Martin Damian, Sr., et al called 0.3790 acre tract, a distance of 145.35 feet to the southeast corner of said Martin Damian, Sr., et al called 0.3790 acre tract, located at the intersection of the northern right-of-way boundary line of said Liberty Road with the western right-of-way boundary line of Old Lockwood Drive, right-of-way varies, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 1°22'20" West, coincident with the western right-of-way boundary line of Old Lockwood Drive, right-of-way varies, same being the eastern boundary line of said Martin Damian, Sr., et al called 0.3790 acre tract, a distance of 20.77 feet to an angle corner of the herein described 11.6378 acre tract;

THENCE South 89°43'40" West, coincident with the northern boundary line of said Martin Damian, Sr., et al called 0.3790 acre tract, a distance of 30.03 feet, to a point located on the western right-of-way boundary line of said Old Lockwood Drive, right-of-way varies, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 2°32'15" West, coincident with the western right-of-way boundary line of said Old Lockwood Drive, right-of-way varies, same being the eastern boundary line of said Martin Damian, Sr., et al called 0.3790 acre tract and the residual of said Lot 1938 of Kashmere Gardens Annex, a distance of 92.46 feet, to an angle corner of the herein described 11.6378 acre tract;

THENCE North 87°23'53" East, crossing said Old Lockwood Drive, right-of-way varies, a distance of 131.87 feet, to a point located on the eastern right-of-way boundary line of said Old Lockwood Drive, right-of-way varies, same being the western boundary line of all certain called 1.0467 acre tract, conveyed by deed recorded on October 20, 2006 from Elmer Preston, trustee to Rosendo H. Hernandez ass recorded in Clerk's File No. 2006-0140564 of the H.C.O.R., for an angle corner of the herein described 11.6378 acre tract;

THENCE South 2°48'39" East, coincident with the eastern right-of-way boundary line of said Old Lockwood Drive, right-of-way varies, same being the western boundary line of said Rosendo H. Hernandez called 1.0467 acre tract, a distance of 51.59 feet to an angle corner of the herein described 11.6378 acre tract;

THENCE South 19°53'48" East, coincident with the eastern right-of-way boundary line of said Old Lockwood Drive, right-of-way varies, same being the western boundary line of said Rosendo H. Hernandez called 1.0467 acre tract, a distance of 12.60 feet to the southwest corner of said Rosendo H. Hernandez called 1.0467 acre tract, at the intersection of the eastern right-of-way boundary line of said Old Lockwood Drive right-of-way varies, with the northern right-of-way boundary line of Liberty Road, right-of-way varies, for an angle corner of the herein described 11.6378 acre tract;

THENCE North 62°25'57" East, coincident with the northern right-of-way boundary line of said Liberty Road, right-of-way varies, same being the southern boundary line of said Rosendo H. Hernandez called 1.0467 acre tract, a distance of 145.44 feet, to an angle corner of the herein described 11.6378 acre tract;

THENCE South 2°50'20" East, crossing said Liberty Road, right-of-way varies, a distance of 111.49 feet, to a point located on the southern right-of-way boundary line of said Liberty Road, right-of-way varies, same being the northern right-of-way boundary line of said 100 foot wide Texas and New Orleans Rail Road Company right-of-way, for an angle corner of the herein described 11.6378 acre tract;

THENCE South 62°10'18" West, coincident with the southern right-of-way boundary line of said Liberty Road, right-of-way varies, same being the northern right-of-way boundary line of said 100 foot wide Texas and New Orleans Rail Road Company right-of-way, a distance of 629.98 feet to the **POINT OF BEGINNING,** containing within this description 18.2271 acres of land, less and except the following tracts, being more particularly described as follow: Tract 1 – 0.4989 acre tract, Tract 2 – 1.1343 acre tract, Tract 3 – 1.1138 acre tract, Tract 4 – 1.4501 acre tract, Tract 5, 1.3385 acre tract, Tract 6 – 1.0537 acre tract, leaving a net acreage of 11.6378 acres, more or less.

LESS & EXCEPT TRACT 1 – 0.4989 ACRE

BEING ALL THAT CERTAIN 0.4989 ACRE tract of land, lying and situated in the Wilson and Harris 2 League Grant, Abstract 32, Harris County Texas, being a portion of Lot 1 and all of Lot 3 of Fair Ground Park Addition, according to the map or plat thereof recorded in Volume 81, Page 460 of the Harris County Deed Records (H.C.D.R.), and being all of Block 2 of the Greater True Vine Missionary Baptist Church according to the map or plat thereof recorded in Film Code 599251 of the Harris County Map Records, the herein described 0.4989 acre tract land hereby conveyed being more particularly described by metes and bounds, using survey terminology which refers to the Texas State Plane Coordinate System, South Central Zone (NAD83), in which the directions are Lambert grid bearings and the distances are surface level horizontal lengths (S.F.= 0.99989548017) as follows:

COMMENCING at the southeast corner of Block 2 of said Fair Ground Park Addition, located on the intersection of the northern right-of-way boundary line 50 foot wide Lucille Street and the western boundary line of 50 foot wide Fontinot Street, said Point of Commencement being located at Texas State Plane coordinate position X=3135965.22 and Y=13853093.15;

THENCE South 2°57'04" East, crossing said 50 foot wide Lucille Street, a distance of 50.68 feet to the northeast corner of said Block 1 Fair Grounds Park Addition for the northeast corner and the **POINT OF BEGINNING** of the herein described 0.4989 acre tract, at position X=3135967.82 and Y=13853042.55;

THENCE South 3°20'56" East, coincident with the western boundary line of said 50 foot wide Fontinot Street, same being the eastern boundary line of said Block 1, Fair Ground Park Addition, and the eastern boundary line of said Block 2 of the subdivision of the Greater True Vine Missionary Baptist Church, a distance of 130.37 feet to the North corner of a cutback at the southeast corner of said Block 2, located at the intersection of the western boundary line of said 50 foot wide Fontinot Street with the northern right-of-way boundary line of Lelia Street, for an angle corner of the herein described 0.4989 acre tract;

THENCE South 41°35'58" West, coincident with said cutback, a distance of 21.21 feet to the intersection of the western right-of-way boundary line of said 50 foot wide Fontinot Street with the northern right-of-way boundary line of called 30 foot wide Lelia Street, for an angle corner of the herein described 0.4989 acre tract;

THENCE South 86°39'32" West, coincident with the northern right-of-way boundary line of called 30 foot wide Lelia Street, same being the southern boundary of said Block 2 of the subdivision of the Greater True Vine Missionary Baptist Church and the southern boundary line of Block 1 of said Fair Ground Park Addition, a distance of 135.28 feet to the southwest corner of said Block 1 of said Fair Ground Park, located at the intersection of the northern right-of-way boundary line of said called 30 foot wide Lelia Street, with the eastern right-of-way boundary line of 50 foot wide Clementine Street, for the southwest corner of the herein described 0.4989 acre tract;

THENCE North 3°13'55" West, coincident with the eastern right-of-way boundary line of 50 foot wide Clementine Street, a distance of 145.64 feet to the northwest corner of Block 1 of Fair Ground Park Addition, located at the intersection of the eastern right-of-way boundary line of said 50 foot wide Clementine Street with the southern right-of-way boundary line of said 50 foot wide Lucille Street, for the northwest corner of the herein described 0.4989 acre tract;

THENCE North 86°45'15" East, coincident with the southern right-of-way boundary line of said 50 foot wide Lucille Street, a distance of 149.97 feet to the **POINT OF BEGINNING,** containing 0.4989 acre of land, more or less.

LESS & EXCEPT TRACT 2 – 1.1343 ACRE TRACT

BEING ALL THAT CERTAIN 1.1343 acre tract of land, lying and situated in the Wilson and Harris 2 League Grant, Abstract 32, Harris County Texas, being all of Block 2 as shown on the map of the Subdivision of Shares 2 & 3 of the Gagne Homestead, according to the map or plat thereof recorded in Volume 1, Page 55 of the Harris County Map Records, the herein described 1.1343 acre tract land hereby conveyed being more particularly described by metes and bounds, using survey terminology which refers to the Texas State Plane Coordinate System, South Central Zone (NAD83), in which the directions are Lambert grid bearings and the distances are surface level horizontal lengths (S.F.= 0.99989548017) as follows:

COMMENCING at the northeast corner of Block 1 of said Subdivision of Shares 2 & 3 of the Gagne Homestead, said point being the intersection of the southern right-of-way boundary line of called 30 foot wide Lelia Street, with the eastern right-of-way boundary line of 40 foot wide Clementine Street, said Point of Commencement being located at Texas State Plane coordinate position X=3135755.89 and Y=13852842.23;

THENCE North 88°54'44" East, crossing said 40 foot wide Clementine Street, a distance of 40.01 feet to the northwest corner of said Block 1 of said Subdivision of Shares 2 & 3 of the Gagne Homestead, at the intersection of the southern right-of-way boundary line of called 30 foot wide Lelia Street, with the western right-of-way boundary line of 40 foot wide Clementine Street, for the northwest corner and the **POINT OF BEGINNING** herein described 1.1343 acre tract, at position X=3135795.90 and Y=13852842.99;

THENCE North 87°19'08" East, coincident with the southern boundary line of said called 30 foot wide Lelia Street, same being the northern boundary line of said Block 1, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 246.99 feet to the northeast corner of said Block 1, at the intersection of the southern boundary line of said called 30 foot wide Lelia Street, with the western boundary line of 40 foot wide Fontinot Street, for the northeast corner of the herein described 1.1343 acre tract

THENCE South 2°36'42" East, coincident with the western boundary line of 40 foot wide Fontinot Street, same being the eastern boundary line of said Block 1, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 200.05 feet to the southeast corner of said Block 1, located at the intersection of the western boundary line of 40 foot wide Fontinot Street with the northern right-of-way boundary line 50 foot wide Wylie Street, for the southeast corner of the herein described 1.1343 acre tract

THENCE South 87°19'08" West, coincident with the northern right-of-way boundary line 50 foot wide Wylie Street, same being the southern boundary line of said Block 1, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 246.99 feet to the southwest corner of said Block 1, at the intersection of the northern right-of-way boundary line of said 50 foot wide Wylie Street with the eastern right-of-way boundary line of 40 foot wide Clementine Street, for the southwest corner of the herein described 1.1343 acre tract

THENCE North 2°36'42" West, coincident with the eastern right-of-way boundary line of 40 foot wide Clementine Street, same being the western boundary line of said Block 1, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 200.05 feet to the **POINT OF BEGINNING**, containing 1.1343 acres of land, more or less.

LESS & EXCEPT TRACT 3– 1.1138 ACRE TRACT

BEING ALL THAT CERTAIN 1.1138 acre tract of land, lying and situated in the Wilson and Harris 2 League Grant, Abstract 32, Harris County Texas, being all of Block 3 as shown on the map of the Subdivision of Shares 2 & 3 of the Gagne Homestead, according to the map or plat thereof recorded in Volume 1, Page 55 of the Harris County Map Records, the herein described 1.1138 acre tract land hereby conveyed being more particularly described by metes and bounds, using survey terminology which refers to the Texas State Plane Coordinate System, South Central Zone (NAD83), in which the directions are Lambert grid bearings and the distances are surface level horizontal lengths (S.F.= 0.99989548017) as follows:

COMMENCING at the northeast corner of Block 2 of said Subdivision of Shares 2 & 3 of the Gagne Homestead, said point being the intersection of the southern right-of-way boundary line of called 30 foot wide Lelia Street, with the eastern right-of-way boundary line of 40 foot wide Fontinot Street, said Point of Commencement being located at Texas State Plane coordinate position X=3136042.59 and Y=13852854.55;

THENCE North 87°19'08" East, crossing said 40 foot wide Fontinot Street, a distance of 40.00 feet to the northwest corner of said Block 3 of said Subdivision of Shares 2 & 3 of the Gagne Homestead, at the intersection of the southern right-of-way boundary line of called 30 foot wide Lelia Street, with the western right-of-way boundary line of 40 foot wide Fontinot Street, for the northwest corner and the **POINT OF BEGINNING** herein described 1.1138 acre tract, at position X=3136082.54 and Y=13852856.42;

THENCE North 87°19'08" East, coincident with the southern boundary line of said called 30 foot wide Lelia Street, same being the northern boundary line of said Block 3, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 243.60 feet to the northeast corner of said Block 3, at the intersection of the southern boundary line of said called 30 foot wide Lelia Street, with the western boundary line of Erastus Street, right-of-way varies, for the northeast corner of the herein described 1.1138 acre tract

THENCE South 1°59'48" East, coincident with the western boundary line of Erastus Street, right-of-way varies, same being the eastern boundary line of said Block 3, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 200.06 feet to the southeast corner of said Block 3, located at the intersection of the western boundary line of Erastus Street, right-of-way varies, with the northern right-of-way boundary line 50 foot wide Wylie Street, for the southeast corner of the herein described 1.1138 acre tract

THENCE South 87°19'08" West, coincident with the northern right-of-way boundary line 50 foot wide Wylie Street, same being the southern boundary line of said Block 3, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 241.45 feet to the southwest corner of said Block 3, at the intersection of the northern right-of-way boundary line of said 50 foot wide Wylie Street with the eastern right-of-way boundary line of 40 foot wide Fontinot Street, for the southwest corner of the herein described 1.1138 acre tract

THENCE North 2°36'42" West, coincident with the eastern right-of-way boundary line of 40 foot wide Fontinot Street, same being the western boundary line of said Block 3, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 200.05 feet to the **POINT OF BEGINNING**, containing 1.1138 acres of land, more or less.

LESS & EXCEPT TRACT 4- 1.4501 ACRE TRACT

BEING ALL THAT CERTAIN 1.4501 acre tract of land, lying and situated in the Wilson and Harris 2 League Grant, Abstract 32, Harris County Texas, being all of Block 5 as shown on the map of the Subdivision of Shares 2 & 3 of the Gagne Homestead, according to the map or plat thereof recorded in Volume 1, Page 55 of the Harris County Map Records, the herein described 1.4501 acre tract land hereby conveyed being more particularly described by metes and bounds, using survey terminology which refers to the Texas State Plane Coordinate System, South Central Zone (NAD83), in which the directions are Lambert grid bearings and the distances are surface level horizontal lengths (S.F.= 0.99989548017) as follows:

COMMENCING at the northeast corner of Block 6 of said Subdivision of Shares 2 & 3 of the Gagne Homestead, said point being the intersection of the southern right-of-way boundary line of 50 foot wide Wylie Street with the eastern right-of-way boundary line of 40 foot wide Clementine Street, said Point of Commencement being located at Texas State Plane coordinate position X=3135767.79 and Y=13852581.43;

THENCE North 87°19'08" East, crossing said 40 foot wide Clementine, a distance of 37.63 feet to the northwest corner of said Block 5 of said Subdivision of Shares 2 & 3 of the Gagne Homestead, at the intersection of the southern right-of-way boundary line of 50 foot wide Wylie Street, with the western right-of-way boundary line of 40 foot wide Clementine Street, for the northwest corner and the **POINT OF BEGINNING** herein described 1.4501 acre tract, at position X=3135805.06 and Y=13852583.18;

THENCE North 87°19'08" East, coincident with the southern boundary line of said 50 foot wide Wylie Street, same being the northern boundary line of said Block 5, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 249.36 feet to the northeast corner of said Block 5, at the intersection of the southern boundary line of said 50 foot wide Wylie Street, with the western boundary line of 40 foot wide Fontinot Street, for the northeast corner of the herein described 1.4501 acre tract;

THENCE South 2°36'42" East, coincident with the western boundary line of 40 foot wide Fontinot Street, same being the eastern boundary line of said Block 5, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 249.24 feet to the southeast corner of said Block 5, located at the intersection of the western boundary line of 40 foot wide Fontinot Street with the northern right-of-way boundary line Liberty Road, right-of-way varies, for the southeast corner of the herein described 1.4501 acre tract;

THENCE South 85°26'51" West, coincident with the northern right-of-way boundary line Liberty Road, right-of-way varies, same being the southern boundary line of said Block 5, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 249.50 feet to the southwest corner of said Block 5, at the intersection of the northern right-of-way boundary line of said Liberty Road, right-of-way varies, with the eastern right-of-way boundary line of 40 foot wide Clementine Street, for the southwest corner of the herein described 1.4501 acre tract;

THENCE North 2°36'42" West, coincident with the eastern right-of-way boundary line of 40 foot wide Clementine Street, same being the western boundary line of said Block 5, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 257.38 feet to the **POINT OF BEGINNING**, containing 1.4501 acres of land, more or less.

LESS & EXCEPT TRACT 5 – 1.3385 ACRE TRACT

BEING ALL THAT CERTAIN 1.3385 acre tract of land, lying and situated in the Wilson and Harris 2 League Grant, Abstract 32, Harris County Texas, being all of Block 4 as shown on the map of the Subdivision of Shares 2 & 3 of the Gagne Homestead, according to the map or plat thereof recorded in Volume 1, Page 55 of the Harris County Map Records, the herein described 1.3385 acre tract land hereby conveyed being more particularly described by metes and bounds, using survey terminology which refers to the Texas State Plane Coordinate System, South Central Zone (NAD83), in which the directions are Lambert grid bearings and the distances are surface level horizontal lengths (S.F.= 0.99989548017) as follows:

COMMENCING at the northeast corner of Block 5 of said Subdivision of Shares 2 & 3 of the Gagne Homestead, said point being the intersection of the southern right-of-way boundary line of 50 foot wide Wylie Street with the eastern right-of-way boundary line of 40 foot wide Fontinot Street, said Point of Commencement being located at Texas State Plane coordinate position X=3136054.43 and Y=13852594.86;

THENCE North 87°19'08" East, crossing said 40 foot wide Fontinot Street, a distance of 39.68 feet to the northwest corner of said Block 4 of said Subdivision of Shares 2 & 3 of the Gagne Homestead, at the intersection of the southern right-of-way boundary line of 50 foot wide Wylie Street, with the western right-of-way boundary line of 40 foot wide Fontinot Street, for the northwest corner and the **POINT OF BEGINNING** herein described 1.3385 acre tract, at position X=3136094.07 and Y=13852596.71;

THENCE North 87°19'08" East, coincident with the southern right-of-way boundary line of said 50 foot wide Wylie Street, same being the northern boundary line of said Block 4, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 243.60 feet to the northeast corner of Lot 5 of said Block 4, at the intersection of the southern right-of-way boundary line of said 50 foot wide Wylie Street, with the western right-of-way boundary line of Erastus Street, right-of-way varies, for the northeast corner of the herein described 1.3385 acre tract

THENCE South 1°59'48" East, coincident with the western right-of-way boundary line of Erastus Street, right-of-way varies, same being the eastern boundary line of said Lot 5, Block 4, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 125.01 feet to an angle point;

THENCE South 87°19'08" West, coincident with the southern boundary line of said Lot 5, Block 4, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 7.04 feet to a point located in the northern boundary line of said Lot 6, Block 4, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, for an angle corner of the herein described 1.3385 acre tract,

THENCE South 1°59'48" East, coincident with the western right-of-way boundary line of Erastus Street, right-of-way varies, a distance of 115.29 feet to a point located on the northern right-of-way boundary line Liberty Road, right-of-way varies, same being the southern boundary line of said Lot 6, Block 4, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, for the southeast corner of the herein described 1.3385 acre tract;

THENCE South 85°26'51" West, coincident with the northern right-of-way boundary line Liberty Road, right-of-way varies, same being the southern boundary line of said Block 4, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 234.11 feet to the southwest corner of said Block 4, at the intersection of the northern right-of-way boundary line of said Liberty Road, right-of-way varies, with the eastern right-of-way boundary line of Fontinot Street, right-of-way varies, for the southwest corner of the herein described 1.3385 acre tract

THENCE North 2°36'42" West, coincident with the eastern right-of-way boundary line of 40 foot wide Fontinot Street, same being the western boundary line of said Block 4, of said Subdivision of Shares 2 & 3 of the Gagne Homestead, a distance of 247.93 feet to the **POINT OF BEGINNING**, containing 1.3385 acres of land, more or less.

UNION PACIFIC RAILROAD COMPANY
11.6378 ACRE CITY OF HOUSTON OFFSITE PMZ TRACT
HARRIS AND WILSON 2 LEAGUE GRANT, ABSTRACT 32
HARRIS COUNTY, TEXAS

LESS & EXCEPT TRACT 6 – 1.0537 ACRE TRACT

BEING ALL THAT CERTAIN 1.0537 acre tract of land, lying and situated in the Wilson and Harris 2 League Grant, Abstract 32, Harris County Texas, being a portion of Block 9 as shown on the map of the Fair Ground Park Addition, according to the map or plat thereof recorded in Volume 81, Page 460 of the Harris County Deed Records, the herein described 1.0537 acre tract land hereby conveyed being more particularly described by metes and bounds, using survey terminology which refers to the Texas State Plane Coordinate System, South Central Zone (NAD83), in which the directions are Lambert grid bearings and the distances are surface level horizontal lengths (S.F.= 0.99989548017) as follows:

COMMENCING at the southwest corner of Block 10 of said Fair Ground Park Addition, said point being the intersection of the southern right-of-way boundary line of 50 foot wide Wylie Street with the eastern right-of-way boundary line of Erastus Street, right-of-way varies, said Point of Commencement being located at Texas State Plane coordinate position X=3136388.03 and Y=13852610.99;

THENCE South 2°09'23" East, crossing said 50 foot wide Wylie Street, a distance of 50.54 feet to the northwest corner of said Block 9 of said Fair Ground Park Addition, at the intersection of the southern right-of-way boundary line of 50 foot wide Wylie Street, with the western right-of-way boundary line of Erastus Street, right-of-way varies, for the northwest corner and the **POINT OF BEGINNING** herein described 1.0537 acre tract, at position X=3136390.09 and Y=13852561.66;

THENCE North 87°22'50" East, coincident with the southern boundary line of said 50 foot wide Wylie Street, same being the northern boundary line of said Block 9 of said Fair Ground Park Addition, a distance of 249.25 feet to the northeast corner of Lot 5 of said Block 9, at the intersection of the southern boundary line of said 50 foot wide Wylie Street, with the western boundary line of Cushing Street, right-of-way varies, for the northeast corner of the herein described 1.0537 acre tract

THENCE South 2°23'24" East, coincident with the western boundary line of Cushing Street, right-of-way varies, same being the eastern boundary line of said Lots 2 and 11, Block 9 of said Fair Ground Park Addition, a distance of 179.95 feet to a point located on the northern right-of-way boundary line Liberty Road, right-of-way varies, same being the southern boundary line of said Block 9 of said Fair Ground Park Addition, for the southeast corner of the herein described 1.0537 acre tract;

THENCE South 85°26'51" West, coincident with the northern right-of-way boundary line Liberty Road, right-of-way varies, same being the southern boundary line of said Block 9 of said Fair Ground Park Addition, a distance of 249.42 feet to the southwest corner of said Block 9, at the intersection of the northern right-of-way boundary line of said Liberty Road, right-of-way varies, with the eastern right-of-way boundary line of Erastus Street, right-of-way varies, for the southwest corner of the herein described 1.0537 acre tract

THENCE North 2°23'24" West, coincident with the eastern right-of-way boundary line of Erastus Street, right-of-way varies, same being the western boundary line of said Block 9 of said Fair Ground Park Addition, a distance of 188.36 feet to the **POINT OF BEGINNING**, containing 1.0537 acres of land, more or less.

Wm. Patrick Doyle
Registered Professional Land Surveyor
Texas Registration Number 4467
September 10, 2016
Revised September 14, 2016

This description is based on a plat dated June 30, 2016 is on file in the office of Doyle & Wachtstetter, Inc.
V:\Pat\Pastor Behling & Wheeler\UPPR Englewood Yard Offsite PMZ C.O.H. Right-of-way.doc

Doyle & Wachtstetter, Inc
Surveying and Mapping • GPS/GIS

UNION PACIFIC RAILROAD COMPANY
0.3199 ACRE CITY OF HOUSTON OFFSITE PMZ TRACT 2
HARRIS AND WILSON 2 LEAGUE GRANT, ABSTRACT 32
HARRIS COUNTY, TEXAS
PAGE 1 OF 1

BEING ALL THAT CERTAIN 0.3199 acre tract of land, lying and situated in the Wilson and Harris 2 League Grant, Abstract 32, Harris County Texas, being a portion of 60 foot wide Kashmere Street, a portion of 60 foot wide 15th Street and 60 foot wide 16th Street, as shown on the plat of Augusta Addition, according to the map or plat thereof recorded in Volume 56, Page 139 of the Harris County Deed Records (H.C.D.R.), the herein described 0.3199 acre tract land hereby conveyed being more particularly described by metes and bounds, using survey terminology which refers to the Texas State Plane Coordinate System, South Central Zone (NAD83), in which the directions are Lambert grid bearings and the distances are surface level horizontal lengths (S.F.= 0.99989548017) as follows:

COMMENCING at a 5/8" iron rod found marking the northwest corner of all that certain called 4.274 acre tract conveyed by deed recorded on October 29, 1901, from Ida Japhet to Texas and New Orleans Rail Road Company as recorded in Volume 131, Page 453 of the H.C.D.R., located on the northern boundary line of 60 foot wide 16th Street (not open), said Point of Commencement being located at Texas State Plane coordinate position X=3134260.64 and Y=13851449.15;

THENCE North 87°40'19" East, coincident with the northern boundary line of said Texas and New Orleans Rail Road company called 4.274 acre tract, same being the southern right-of-way boundary line of said 60 foot wide 16th Street, a distance of 110.36 feet to the southwest corner and the **POINT OF BEGINNING,** of the herein described 0.3199 acre tract, at position X=3134370.90 and Y= 13851453.63;

THENCE North 32°17'25" West, a distance of 82.79 feet to a point located on the eastern boundary line of Block 61 of said Augusta Addition, same being the western right-of-way of said 60 foot wide Kashmere Street, for an angle corner of the herein described 0.3199 acre tract;

THENCE North 2°28'22" West, coincident with the eastern boundary line of Block 61 of said Augusta Addition, same being the western right-of-way of said 60 foot wide Kashmere Street, a distance of 151.51 feet to an angle corner of the herein described 0.3199 acre tract;

THENCE North 38°24'15" East, a distance of 91.48 feet to a point located on the eastern right-of-way of said 60 foot wide Kashmere, within the right-of-way of said 60 foot wide 15th Street (Eddie Street), for the northeast corner of the herein described 0.3199 acre tract;

THENCE South 2°26'03" East, coincident with the eastern right-of-way of said Kashmere Street and the western boundary line of Block 62 of said Augusta Addition, a distance of 292.55 feet to a point located on the northern boundary line of said Texas and New Orleans Rail Road company called 4.274 acre tract, same being the southern right-of-way boundary line of said 60 foot wide 16th Street for the southeast corner of the herein described 0.3199 acre tract;

THENCE South 87°40'19" West, coincident with the northern boundary line of said Texas and New Orleans Rail Road company called 4.274 acre tract, same being the southern right-of-way boundary line of said 60 foot wide 16th Street, a distance of 18.51 feet to the **POINT OF BEGINNING**, containing 0.3199 acre of land, more or less.

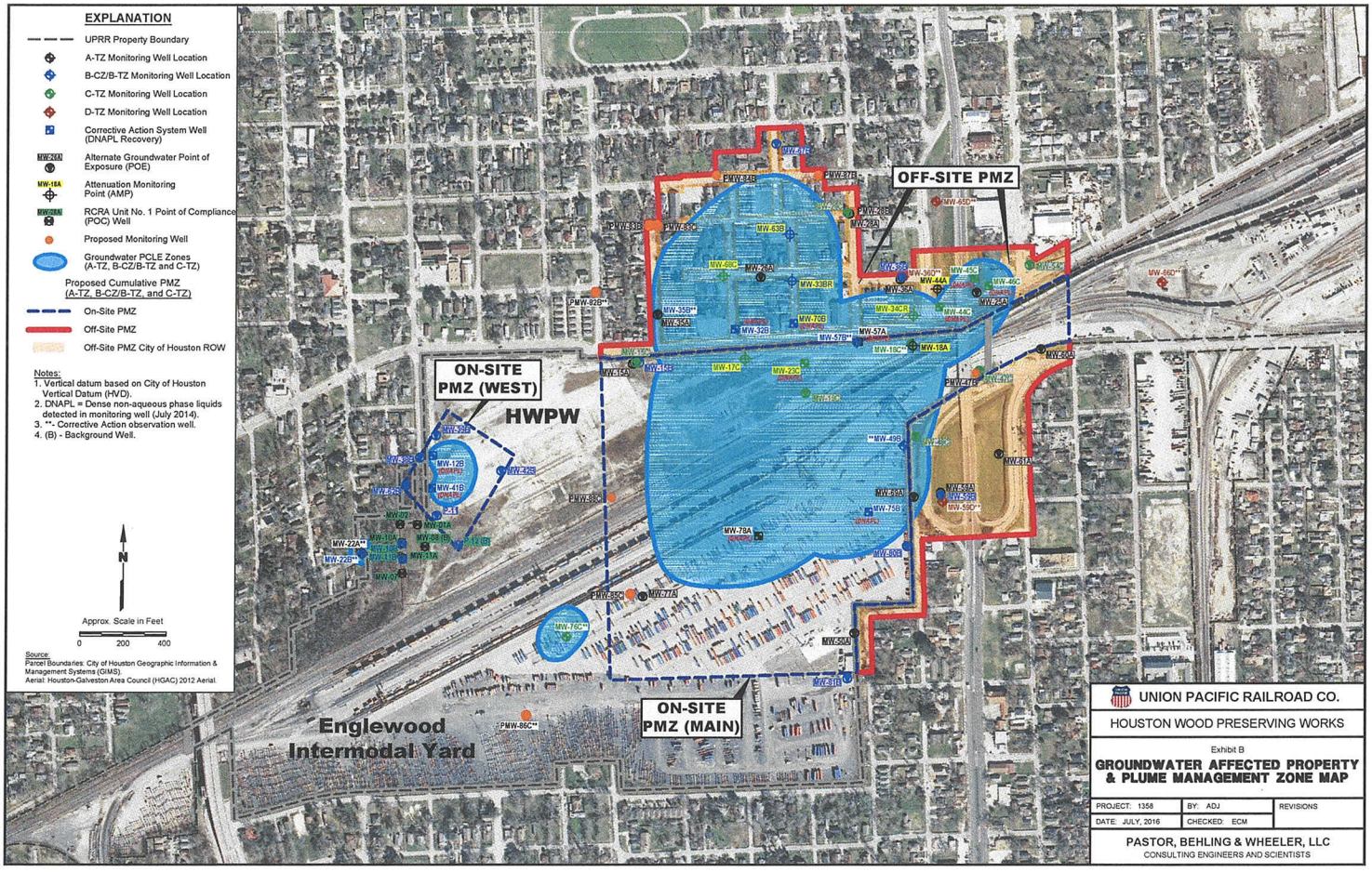
Wm. Patrick Doyle
Registered Professional Land Surveyor
Texas Registration Number 4467
September 15, 2016

This description is based on a plat dated June 30, 2016 is on file in the office of Doyle & Wachtstetter, Inc.
V:\Pat\Pastor Behling & Wheeler\UPPR Englewood Yard Offsite PMZ C.O.H. Right-of-way 0.3199 acre.doc

131 Commerce Street • Clute, Texas 77531-5601
Phone: 979-265-3622 • Fax: 979-265-9940 • Email: DW-Surveyor.com

EXHIBIT B

AFFECTED PROPERTY AND PLUME MANAGEMENT ZONE MAP



UNION PACIFIC RAILROAD CO.

HOUSTON WOOD PRESERVING WORKS

Exhibit B

GROUNDWATER AFFECTED PROPERTY & PLUME MANAGEMENT ZONE MAP

PROJECT: 1358	BY: ADJ	REVISIONS
DATE: JULY, 2016	CHECKED: ECM	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS

EXHIBIT C

PLUME MANAGEMENT ZONE MAINTENANCE/MONITORING REQUIREMENTS

EXHIBIT "C"
MAINTENANCE AND MONITORING REQUIRMENTS

Union Pacific Railroad (UPRR), listed as the Responder under this Restrictive Covenant, will conduct regular sampling of monitoring wells located within the City of Houston Right-Of-Way and listed in the table below (Table C-1) for chemicals of concern (COCs) (see Table C-2) in accordance with the groundwater monitoring requirements established under the Texas Commission on Environmental Quality (TCEQ) Hazardous Waste Permit/Compliance Plan No. 50343. Monitoring and reporting activities are detailed in the Groundwater Sampling and Analysis Plan (SAP) and related compliance tables within the TCEQ Hazardous Waste Permit/Compliance Plan No. 50343.

Monitoring wells listed below will be inspected for signs of damage, including well pads, casing, locks, and, protective covers. Repairs will be made as necessary to ensure the integrity of the monitoring wells.

TABLE C-1

MW-25A	***MW-32B***	***MW-28C***
MW-26A	***MW-33BR***	***MW-34CR***
MW-28A	***MW-35B***	***MW-44C***
MW-35A	***MW-36B***	***MW-45C***
MW-36A	***MW-59B***	***MW-46C***
MW-44A	***MW-63B***	***MW-48C***
MW-59A	***MW-67B***	***MW-54C***
MW-60A	***MW-70B***	***MW-68C***
MW-61A	***PMW-28B (proposed)***	***PMW-83C (proposed)***
MW-69A	***PMW-82B (proposed)***	
	PMW-83B (proposed)	
	PMW-84B (proposed)	
	PMW-87B (proposed)	

Note: Additional monitoring wells may be added or subtracted from the list above as necessary to satisfy the TCEQ Plume Management Zone (PMZ) monitoring requirements. Any changes to the list of monitoring wells, sampling procedures, and management of investigation-derived wastes (IDW) as part of the Groundwater SAP will be provided to the TCEQ as part of the annual reporting requirements.

EXHIBIT "C"
MAINTENANCE AND MONITORING REQUIRMENTS

TABLE C-2

Chemicals of Concern (COCs)	Groundwater Protection Standards (GWPS) at Alternate Point of Exposure (POE) $^{GW}GW_{Ing}$ (mg/L) (Res)
Benzene	0.005 [PCL]
2,4-Dimethylphenol	0.49 [PCL]
2 Methylnaphthalene	0.098 [PCL]
Dibenzofuran	0.098 [PCL]
Naphthalene	0.49 [PCL]
Vinyl Chloride	0.002 [PCL]

Note:
$^{GW}GW_{Ing}$ Protective Concentration Levels (PCLs), Residential land use assuming Class 2 Groundwater.

The list of COCs may be revised as necessary to satisfy the Plume Management Zone (PMZ) monitoring requirements and will be provided to the TCEQ as part of the annual reporting requirements.

APPENDIX 6

SAMPLING PROCEDURES

See RCRA Permit Part B Compliance Plan Attachment XI.C for Sampling and Analysis Plan (SAP)

APPENDIX 7

STATISTICAL METHODOLOY

APPENDIX 7 – STATISTICAL OR GEOSTATISTICAL METHODOLOGIES

The statistical methodologies that will be employed at the Union Pacific Railroad (UPRR) Houston Wood Preserving Works (HWPW) Site include the following:

1. Calculating statistical trends for chemicals of concern (COCs) in groundwater to evaluate stability in COC concentrations; and
2. Calculating 95% upper confidence levels (UCLs) to demonstrate compliance with direct exposure criteria for soils.

Other statistical approaches may be used as appropriate for soil and groundwater data. The two approaches listed are discussed below.

Groundwater Trend Analysis

Trend analysis may be necessary to evaluate increasing trends when groundwater concentrations at the alternate points of exposure (POE) wells exceed the critical PCLs. Two approaches that may be conducted to evaluate statistical trends include the following:

- The Mann-Kendall Analysis; and
- Linear Regression Analysis

The selection of the statistical method will be assessed based on the data set. Typically, the Mann-Kendall test for trend is a nonparametric test that has no distributional assumptions and irregularly spaced measurement periods are permitted, where the Linear Regression is a parametric statistical procedure that is used for analyzing trends in data over time. However, other statistical approaches may also be used to evaluate trends. Details of the Mann-Kendall and linear regression analyses are provided below.

Mann-Kendall Analysis

General

The Mann-Kendall test is a non-parametric statistical procedure that is well suited for analyzing trends in data over time (Gilbert, 1987). The Mann-Kendall test can be viewed as a nonparametric test for zero slope of the first-order regression of time-ordered concentration data versus time. The Mann-Kendall test does not require any assumptions as to the statistical distribution of the data (e.g. normal, lognormal, etc.) and can be used with data sets which include irregular sampling intervals and missing data. The Mann-Kendall test is designed for analyzing a single groundwater constituent, multiple constituents are analyzed separately.

Mann-Kendall Statistic (S)

The Mann-Kendall statistic (S) measures the trend in the data. Positive values indicate an increase in constituent concentrations over time, whereas negative values indicate a decrease in constituent concentrations over time. The strength of the trend is proportional to the magnitude of the Mann-Kendall Statistic (i.e., larger magnitudes indicate a stronger trend).

Data for performing the Mann-Kendall Analysis should be in time sequential order. The first step is to determine the sign of the difference between consecutive sample results. $Sgn(x_j - x_k)$ is an indicator

function that results in the values 1, 0, or –1 according to the sign of $x_j - x_k$ where j > k, the function is calculated as follows

$\text{sgn}(x_j - x_k) = 1$ if $x_j - x_k > 0$
$\text{sgn}(x_j - x_k) = 0$ if $x_j - x_k = 0$
$\text{sgn}(x_j - x_k) = -1$ if $x_j - x_k < 0$

The Mann-Kendall statistic (S) is defined as the sum of the number of positive differences minus the number of negative differences or

$$S = \sum_{k=1}^{n-1} \sum_{j=k+1}^{n} \text{sgn}(x_j - x_k).$$

The confidence on the Mann-Kendall statistic can be measured by assessing the S result along with the number of samples, n, to find the confidence in the trend by utilizing a Kendall probability table found in many statistical textbooks (e.g. Hollander, M. and Wolfe, D.A., 1973). The resulting confidence in the trend is applied in the Mann Kendall trend analysis.

Average
The arithmetic mean of a sample of n values of a variable is the average of all the sample values written as

$$\bar{x} = \frac{\sum_{i=1}^{n} x_i}{n}$$

Standard Deviation
The standard deviation is the square root of the average of the square of the deviations from the sample mean written as

$$s = \sqrt{\frac{\sum_{i=1}^{n} (x_i - \bar{x})^2}{n-1}}.$$

The standard deviation is a measure of how the value fluctuates about the arithmetic mean of the data.

Coefficient of Variation (COV)
The Coefficient of Variation (COV) is a statistical measure of how the individual data points vary about the mean value. The coefficient of variation, defined as the standard deviation divided by the average or

$$C.O.V. = \frac{s}{\bar{x}}$$

Values less than or near 1.00 indicate that the data form a relatively close group about the mean value. Values larger than 1.00 indicate that the data show a greater degree of scatter about the mean.

Interpretation of Results: Mann-Kendall Analysis

- The COV is a statistical measure of how the individual data points vary about the mean value. Values less than or near 1.00 indicate that the data form a relatively close group about the mean

value. Values larger than 1.00 indicate that the data show a greater degree of scatter about the mean.

- The Mann-Kendall statistic (S) measures the trend in the data. Positive values indicate an increase in constituent concentrations over time, whereas negative values indicate a decrease in constituent concentrations over time. The strength of the trend is proportional to the magnitude of the Mann-Kendall Statistic (i.e., larger magnitudes indicate a stronger trend).

- The "Confidence in Trend" is the statistical confidence that the constituent concentration is increasing (S>0) or decreasing (S<0).

- The "Concentration Trend" for each well is determined according to the following rules, where COV is the coefficient of variation:

MANN-KENDALL ANALYSIS DECISION MATRIX

Mann-Kendall Statistic	Confidence in Trend	Concentration Trend
S > 0	> 95%	Increasing
S > 0	90 - 95%	Probably Increasing
S > 0	< 90%	No Trend
S ≤ 0	< 90% and COV ≥ 1	No Trend
S ≤ 0	< 90% and COV < 1	Stable
S < 0	90 - 95%	Probably Decreasing
S < 0	95%	Decreasing

Linear Regression Analysis

General

As discussed in the EPA Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Unified Guidance (EPA, 2009), a common method to measure a linear trend is to compute a linear regression of concentration data when plotted against the time or date of sample collection. Each point along a linear regression trend line is an estimate of the true mean concentration at that point in time. Therefore, a linear regression can be used to assess whether or not the population mean at an alternate point of exposure (POE) well has significantly increased or decreased.

Linear regression is valid if the data set is parametric. Other assumptions for using the statistical technique is that the difference between each concentration measurement and its predicted value from the regression equation are approximately normal in distribution and homoscedastic (*i.e.*, equal in variance at different times and for different mean concentration levels). Significant skewness or the presence of outliers can invalidate the trend analysis based on linear regression. Also, standard linear regression methods do not account for non-detects or missing data values at selected sampling events. Therefore, linear regression is best used for data sets that have few if any non-detects (EPA, 2009).

A minimum of 8 to 10 measurements is generally necessary to compute a linear regression. The regression residuals should be statistically independent and the analysis should be based on reliably quantified measurements. If not, a calculated "trend" may be an artifact induced by changes in quantitation limits over time. Such artifacts of plotting and data reporting should not be considered real trends.

The procedures for calculating the linear regression are taken from the EPA Unified Guidance (EPA, 2009):

Step 1. Construct a time series plot of the compliance point measurements. If a discernible trend is evident, compute a linear regression of concentration against sampling date (time), letting x_i denote the *i*th concentration value and *t*i denote the *i*th sampling date. Estimate the linear slope $\hat{b}$ with the formula:

$$\hat{b} = \sum_{i=1}^{n} \frac{(t_i - \bar{t})x_i}{n-1} \times s_i^2$$

This estimate then leads to the regression equation, given by:

$$\hat{x_i} = \bar{x} + \hat{b}\,(t - \bar{t}\,)$$

where $\bar{t}$ denotes the mean sampling date, s_t^2 is the variance of sampling dates, $\bar{x}$ is the mean concentration level, and $\hat{x_i}$ represents the estimated mean concentration at time *t*.

Note: though the variable *t* above represents time, it could just as easily signify another variable, perhaps a second constituent for which an association with *x* is estimated.

Step 2. Compute the regression residual at each sampling event *i* with equation:

$$r_i = x_i - \hat{x_i}$$

Check the set of residuals for lack of normality and significant. Also, plot the residuals against the estimated regression values ($\hat{x_i}$) to check for non-uniform vertical thickness in the scatter cloud. Make a similar check by plotting the residuals against the sampling dates (t_i).

If the residuals are non-normal and substantially skewed and/or the scatter clouds appear to have a definite pattern (*e.g.*, funnel-shaped; "U"-shaped; or, residuals mostly positive on one end of graph and mostly negative on the other end, instead of randomly scattered around the horizontal line $r = 0$), repeat **Steps 1** and **2** after first attempting a normalizing transformation.

Step 3. Calculate the estimated variance around the regression line (also known as the *mean squared error* [MSE]) with the following equation:

$$s_e^2 = \frac{1}{n-2} \sum_{i=1}^{n} r_i^2$$

Step 4. Compute the standard error of the linear regression slope coefficient using the s_e^2 result from Step 3.

$$se(\hat{b}) = \sqrt{s_e^2 / \sum_{i=1}^{n} (t - \bar{t})^2}$$

Step 5. Test whether the trend is significantly different from zero by forming the *t*-statistic ratio in the following equation:

$$t_b = \hat{b} / se(\hat{b})$$

This *t*-statistic (t_b) has *n*–2 degrees of freedom [*df*]. Given a level of significance (α), choose the critical point (t_{cp}) for the test as the (1– α) × 100th percentage point of the Student's *t*-distribution with (*n*–2) *df* or $t_{cp} = t_{1-\alpha,n-2}$. Compare t_b against the critical point. If $t_b > t_{cp}$, conclude that the slope of the trend is both positive and significantly different from zero at the α-level of significance. If $t_b < -t_{cp}$, conclude there is a significant decreasing trend. If neither exists, there is insufficient evidence of an increasing or decreasing trend.

Both of these calculations can be conducted using various computer statistical software. One approach is to use the Monitoring and Remediation Optimization System (MAROS) Software (AFCEE, 2006) or U.S. Environmental Protection Agency (EPA) ProUCL software program (EPA, 2013).

Statistical Determination of 95% Upper Confidence Limit (UCL) for COC Concentrations in Soils

In accordance with 30 TAC§350.79(2)(A), the statistical test may be performed to determine if COCs in soils at the Site exceeded the critical PCL ($^{Tot}SOIL_{Comb}$) established during the critical PCL development process. 30 TAC§350.79(2)(A) states that the requirement of a response action may be determined by using an appropriate statistical method. The statistical method identified in the TRRP rule is as follows:

(i) The null hypothesis (H_o) is that the mean of the COC concentrations in the affected property is equal to or greater than the critical PCL;
(ii) The alternative hypothesis (H_a) is that the mean COC concentration is less than the critical PCL;
(iii) The test is performed at a Type I error rate of 5%; and
(iv) Any statistical model used for testing this hypothesis set must be demonstrated to meet these performance standards.

An analysis may be performed to determine the mean concentration in soils with a Type I error rate of 5%. This analysis can be performed using the EPA's ProUCL software program (EPA, 2013) to calculate a distribution-free (i.e., nonparametric) 95% upper confidence limit (UCL) concentration from a selected data set, including non-detect concentration values (i.e., represented by the sample quantitation limit). ProUCL calculates various types of the 95% UCLs, and then makes a recommendation for the most appropriate UCL type.

References

U.S. Air Force Center for Environmental Excellence (AFCEE), 2006. Monitoring and Remediation Optimization System (MAROS) Software Version 2.2 User's Guide. Groundwater Services, Inc., University of Houston, and AFCEE Technology Transfer Division. March 2006.

U.S. Environmental Protection Agency (EPA), 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Unified Guidance, March.

EPA, 20013. ProUCL Statistical Support Software for Site Investigation and Evaluation, Version 5.0.00, September.

Gilbert, R. O., 1987, *Statistical Methods for Environmental Pollution Monitoring*, Van Nostrand Reinhold, New York, NY, ISBN 0-442-23050-8.

Hollander, M. and Wolfe, D.A., 1973, *Nonparametric Statistical Methods*, Wiley, New York, NY.

Mann Kendall Trend Analysis

MEMORANDUM

DATE August 7, 2020 **Project No.** 19119232

TO Eric Matzner
Golder Associates Inc.

CC Michelle Hermiston

FROM Teresa Shaw

RE: TREND ANALYSIS, UNION PACIFIC RAILROAD, HOUSTON WOOD PRESERVING WORKS SITE

Long-term trends of concentrations of the most common chemicals of concern (COCs) at currently existing monitoring wells in each groundwater bearing unit (GWBU) from January 2009 (or well installation date) to January 2020 at the Union Pacific Railroad (UPRR) Houston Wood Preserving Work Site (the Site) were evaluated by performing Mann-Kendall trend tests. The Mann-Kendall is a nonparametric method (i.e., does not need a distributional assumption of the data) to test for an increasing or decreasing linear trend over time. The Mann-Kendall does not require any special treatment for non-detects, other than all non-detects should be set to a common value lower than any of the detections (EPA, 2009 p.8-32). The Mann-Kendall was performed for any COC and well with at least one detection. Any COC and well with all non-detects (all concentrations below detection limits) during all sampling events was indicated with an "ND" on Table 1. Monitoring wells with fewer than three sampling events were not analyzed.

Mann-Kendall test results with a p-value less than an error rate of α=0.05 (i.e., 95% level of confidence) indicate a statistically significant increasing or decreasing trend. Results with a p-value greater than 0.05 but less than 0.1 indicate a "probably" increasing or "probably" decreasing trend. Mann-Kendall test results with a p-value greater than 0.10 indicate either a "stable" trend or "no trend". A "stable" trend occurred when data from a COC and well had a coefficient of variation less than 1, appeared to follow a decreasing trend (when the Mann-Kendall test statistic was negative), and had a p-value from the Mann-Kendall test greater than 0.10. In all other cases when the p-value from the Mann-Kendall test was greater than 0.10, the COC and well was considered to have "no trend".

For each COC and well, time plots were generated (see Attachment A), and the Mann-Kendall trend tests were performed using the statistical software R© (The R© Foundation, 2020) and the EnvStats package (Package 'EnvStats', 2020).

REFERENCES

Package 'EnvStats', 2020. https://cran.r-project.org/web/packages/EnvStats/EnvStats.pdf . March.

The R Foundation, 2020. "R" Software Suite. https://www.r-project.org . March.

United States Environmental Protection Agency (EPA), 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities - Unified Guidance. EPA 530-R-09-007. March.

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Table 1
Summary of Mann-Kendall Trend Test Results
UPRR Houston Wood Preserving Works

Date Range		Well	2-Methylnaphthalene	2,4-Dimethylphenol	Benzene	Dibenzofuran	Naphthalene
1/23/2018	1/7/2020	MW-03	NT	ND	ND	ND	ND
1/23/2018	1/7/2020	MW-04	NT	ND	ND	NT	S
7/12/2011	1/7/2020	MW-05	NT	ND	ND	PD	PD
7/12/2011	1/7/2020	MW-09	S	ND	ND	S	NT
1/22/2009	1/7/2020	MW-12A	D	NT	NT	NT	D
1/22/2009	1/7/2020	MW-13	NT	ND	ND	S	NT
1/22/2009	1/7/2020	MW-15A	NT	NT	D	D	NT
1/22/2009	1/7/2020	MW-17	PD	NT	S	PD	D
1/22/2009	1/7/2020	MW-18A	S	D	PD	NT	NT
7/12/2011	1/7/2020	MW-20A	PD	D	D	S	NT
1/23/2018	1/7/2020	MW-22AR	ND	ND	ND	NT	NT
1/22/2009	1/7/2020	MW-25A	NT	ND	ND	PD	NT
1/22/2009	1/7/2020	MW-26A	NT	NT	NT	D	D
1/23/2018	1/7/2020	MW-27A	NT	ND	ND	NT	NT
1/22/2009	1/7/2020	MW-28A	NT	NT	ND	NT	NT
1/30/2012	1/7/2020	MW-32AR	PD	PD	NT	D	NT
1/22/2009	1/7/2020	MW-33A	NT	NT	PD	NT	PD
1/22/2009	1/7/2020	MW-35A	NT	NT	NT	NT	NT
1/22/2009	1/7/2020	MW-36A	NT	ND	ND	NT	D
1/22/2009	1/7/2020	MW-38A	S	ND	ND	NT	NT
1/22/2009	1/7/2020	MW-44A	NT	NT	NT	D	PD
1/22/2009	1/7/2020	MW-49A	D	D	D	D	D
1/22/2009	1/7/2020	MW-50A	NT	NT	ND	PD	NT
1/22/2009	1/7/2020	MW-51A	NT	ND	ND	NT	NT
1/22/2009	1/7/2020	MW-57A	NT	D	D	NT	NT
1/22/2009	1/7/2020	MW-58A	NT	PD	NT	S	NT
1/22/2009	1/7/2020	MW-59A	NT	S	ND	NT	NT
1/22/2009	7/1/2019	MW-60A	NT	NT	ND	NT	NT
1/22/2009	1/7/2020	MW-61A	PD	ND	ND	ND	PD
1/22/2009	1/7/2020	MW-64A	NT	ND	NT	NT	NT
5/29/2019	1/7/2020	MW-68A	NT	ND	ND	NT	NT
6/22/2010	7/1/2019	MW-69A	D	PD	ND	D	D
7/2/2014	1/7/2020	MW-77A	NT	NT	NT	NT	S
8/28/2014	1/7/2020	MW-79A	S	S	NT	PD	NT

Legend
NT - No trend
ND - all Non-detects
D - Decreasing (green)
PD - Probably decreasing (yellow)
PI - Probably increasing (pink)
S - Stable (blue)
I - Increasing (red)

Table 1
Summary of Mann-Kendall Trend Test Results
UPRR Houston Wood Preserving Works

Date Range		Well	2-Methylnaphthalene	2,4-Dimethylphenol	Benzene	Dibenzofuran	Naphthalene
1/22/2009	1/7/2020	MW-14	D	NT	ND	D	D
1/30/2012	1/7/2020	MW-15B	PD	ND	PD	D	D
1/23/2018	1/7/2020	MW-22BR	D	ND	ND	D	D
1/30/2012	1/7/2020	MW-32B	NT	NT	NT	NT	NT
1/9/2013	1/7/2020	MW-33BR	D	I	PD	NT	PD
1/22/2009	1/7/2020	MW-35B	D	PI	S	D	S
6/22/2010	1/7/2020	MW-36B	NT	NT	D	NT	NT
1/22/2009	1/7/2020	MW-38B	NT	PI	ND	I	PI
1/22/2009	1/7/2020	MW-39B	NT	ND	ND	NT	NT
1/22/2009	1/7/2020	MW-40B	D	D	D	S	D
1/13/2010	1/7/2020	MW-42B	S	NT	ND	PD	NT
1/22/2009	1/7/2020	MW-49B	I	I	I	PI	PI
1/30/2012	1/7/2020	MW-57B	S	PD	D	S	D
6/22/2010	1/7/2020	MW-59B	ND	NT	S	ND	PD
1/22/2009	1/7/2020	MW-62B	NT	ND	NT	NT	NT
1/13/2010	1/7/2020	MW-63B	D	NT	NT	D	NT
6/22/2010	1/7/2020	MW-67B	S	NT	ND	NT	NT
1/30/2012	1/7/2020	MW-68B	S	S	D	NT	PD
7/10/2012	1/7/2020	MW-70B	I	NT	NT	NT	I
1/30/2012	1/7/2020	MW-71B	NT	NT	NT	NT	NT
7/10/2012	1/7/2020	MW-72B	D	PD	D	PD	D
1/30/2012	1/7/2020	MW-74B	NT	PD	NT	NT	NT
1/30/2012	1/7/2020	MW-75B	NT	NT	D	NT	NT
8/28/2014	1/7/2020	MW-80B	NT	NT	S	NT	NT
7/2/2014	1/7/2020	MW-81B	ND	ND	NT	ND	NT
1/23/2018	1/7/2020	MW-82B	NT	ND	ND	NT	NT
1/23/2018	1/7/2020	MW-83B	PD	NT	I	D	D
1/23/2018	1/7/2020	MW-84B	PD	NT	NT	PD	PD
7/18/2018	1/7/2020	MW-89B	S	ND	ND	ND	NT
7/18/2018	1/7/2020	MW-90B	NT	NT	ND	NT	I
1/22/2009	1/7/2020	P-11	NT	ND	NT	NT	NT
1/13/2010	1/7/2020	TW-41B	I	NT	I	I	I

Legend
NT - No trend
ND - all Non-detects
D - Decreasing (green)
PD - Probably decreasing (yellow)
PI - Probably increasing (pink)
S - Stable (blue)
I - Increasing (red)

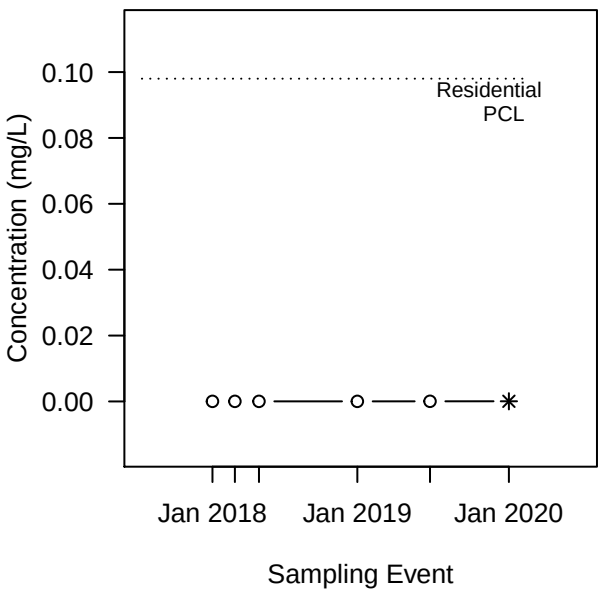
Table 1
Summary of Mann-Kendall Trend Test Results
UPRR Houston Wood Preserving Works

Date Range		Well	2-Methylnaphthalene	2,4-Dimethylphenol	Benzene	Dibenzofuran	Naphthalene
1/22/2009	1/7/2020	MW-12C	S	PI	ND	NT	D
1/22/2009	1/7/2020	MW-15C	NT	NT	D	D	NT
1/22/2009	1/7/2020	MW-17C	NT	NT	D	PD	NT
1/22/2009	1/7/2020	MW-18C	S	NT	S	S	NT
1/22/2009	1/7/2020	MW-19C	D	NT	PI	NT	PD
1/22/2009	1/7/2020	MW-21C	NT	PI	ND	I	NT
1/22/2009	1/7/2020	MW-23C	NT	NT	S	NT	NT
1/13/2010	1/7/2020	MW-25C	PD	I	D	S	D
1/22/2009	1/7/2020	MW-27C	NT	ND	ND	NT	NT
1/22/2009	1/7/2020	MW-28C	D	D	ND	PD	D
7/2/2014	1/7/2019	MW-34CR	NT	ND	S	NT	NT
7/12/2011	1/7/2020	MW-44C	NT	NT	NT	NT	NT
1/22/2009	1/7/2020	MW-47C	NT	NT	ND	NT	NT
1/22/2009	1/7/2020	MW-48C	NT	NT	ND	D	PD
7/2/2014	1/7/2020	MW-51C	ND	ND	S	ND	S
1/22/2009	1/7/2020	MW-53C	NT	ND	ND	ND	NT
1/22/2009	1/7/2020	MW-54C	NT	S	ND	S	D
6/22/2010	1/7/2020	MW-68C	NT	NT	PD	NT	NT
7/2/2014	1/7/2020	MW-76C	PD	NT	S	D	S
1/23/2018	1/7/2020	MW-83C	NT	ND	ND	NT	NT
1/23/2018	1/7/2020	MW-85C	D	ND	NT	PD	S
1/23/2018	1/7/2020	MW-86C	NT	NT	ND	ND	NT
1/23/2018	1/7/2020	MW-87C	NT	ND	ND	NT	NT
1/23/2018	1/7/2020	MW-88C	S	ND	ND	PD	PD
6/22/2010	1/7/2020	MW-36D	S	ND	S	NT	NT
1/22/2009	1/7/2020	MW-59D	NT	ND	NT	NT	NT
1/22/2009	1/7/2020	MW-65D	S	ND	S	S	NT
1/22/2009	1/7/2020	MW-66D	NT	ND	ND	D	NT

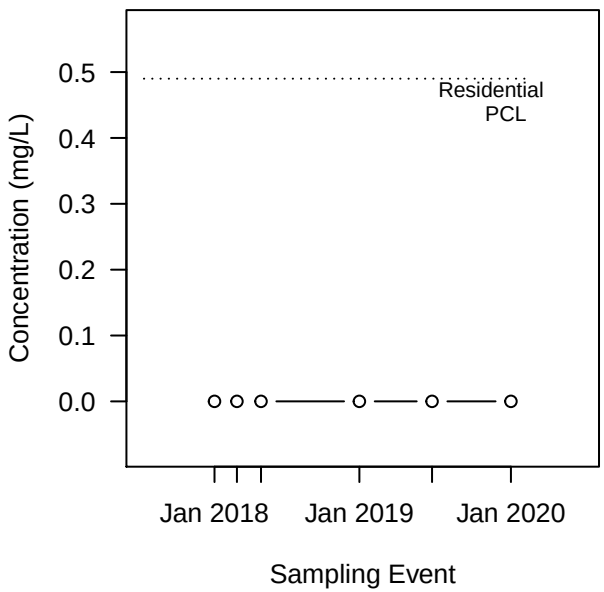
Legend
NT - No trend
ND - all Non-detects
D - Decreasing (green)
PD - Probably decreasing (yellow)
PI - Probably increasing (pink)
S - Stable (blue)
I - Increasing (red)

Mann−Kendall Trend Tests for MW−03

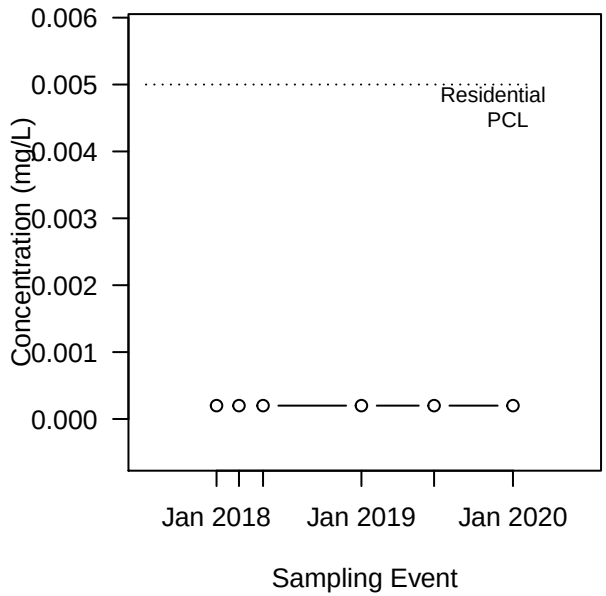
2−Methylnaphthalene (Det/N = 1/6)
No Trend
(p−value=0.121 and CV=0.43)



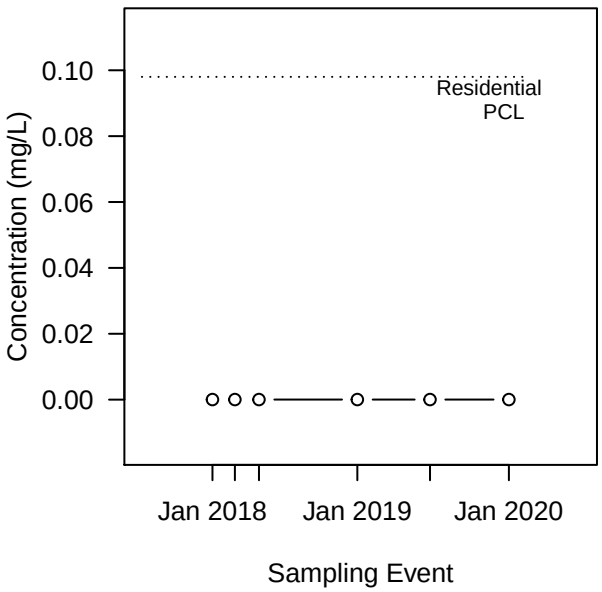
2,4−Dimethylphenol (Det/N = 0/6)
Not evaluated (all concentrations are identical)



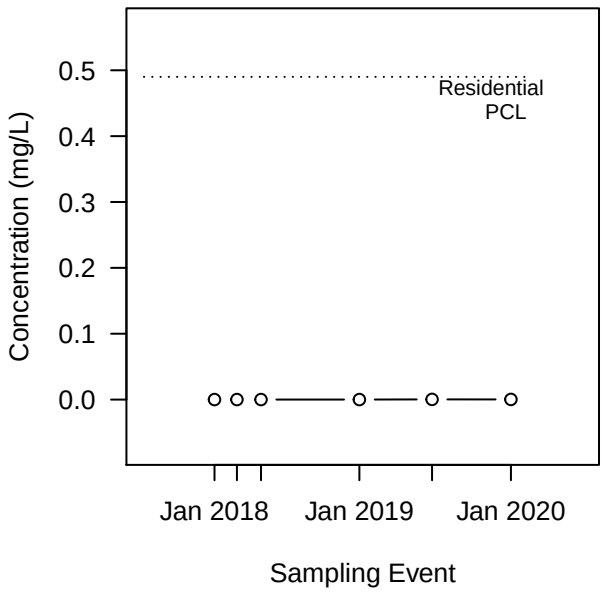
Benzene (Det/N = 0/6)
Not evaluated (all concentrations are identical)



Dibenzofuran (Det/N = 0/6)
Not evaluated (all concentrations are identical)



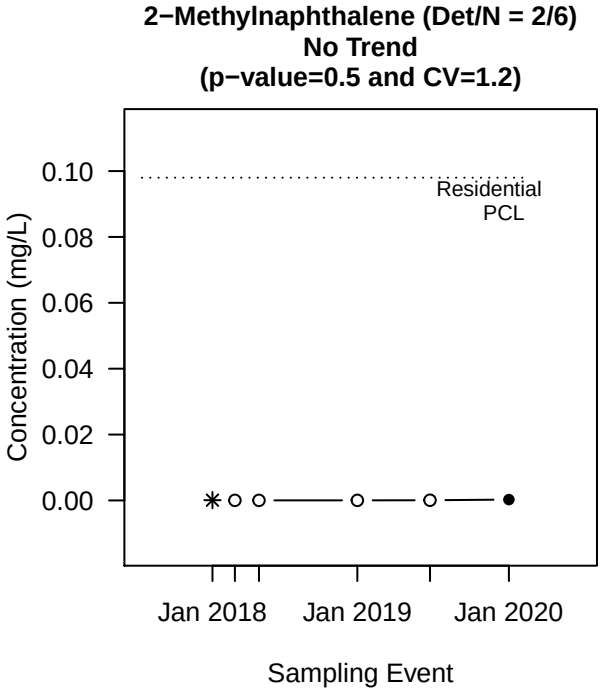
Naphthalene (Det/N = 0/6)
Not evaluated − All NDs

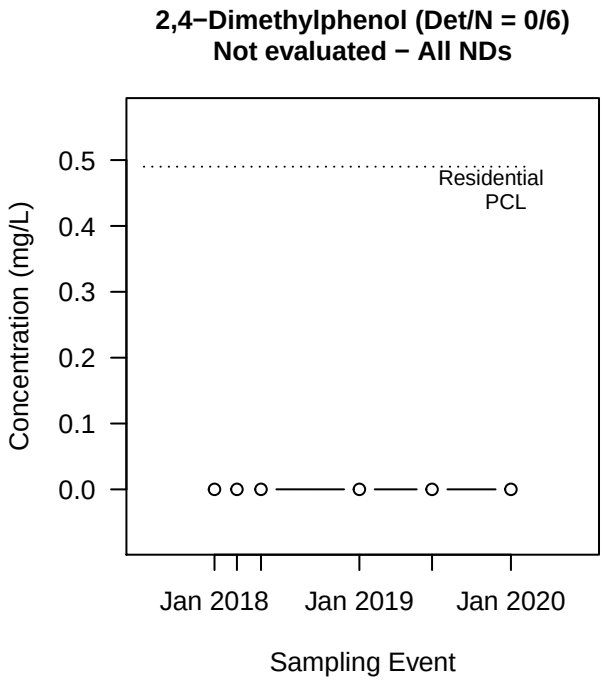


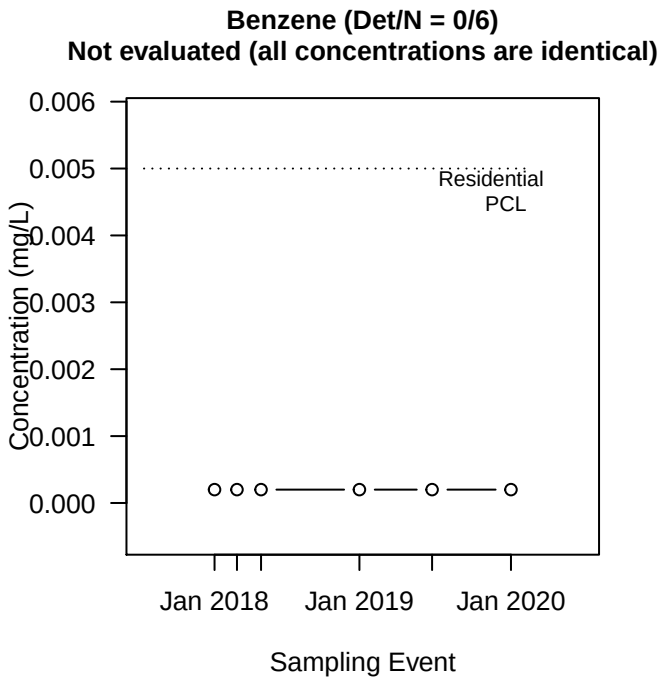
LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

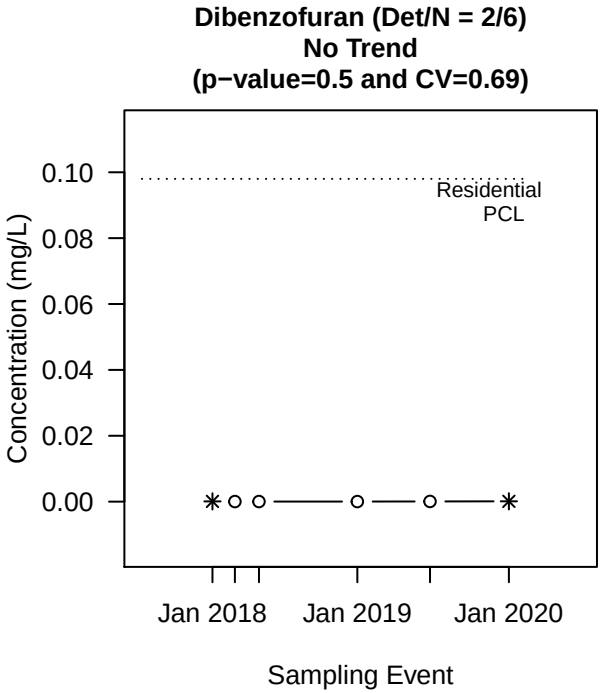
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

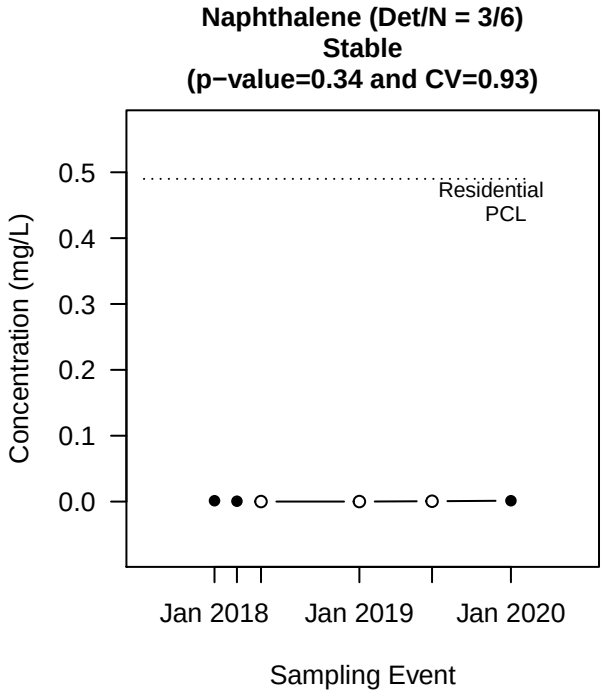
Mann−Kendall Trend Tests for MW−04

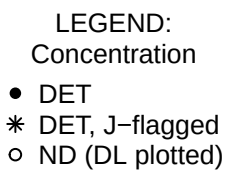








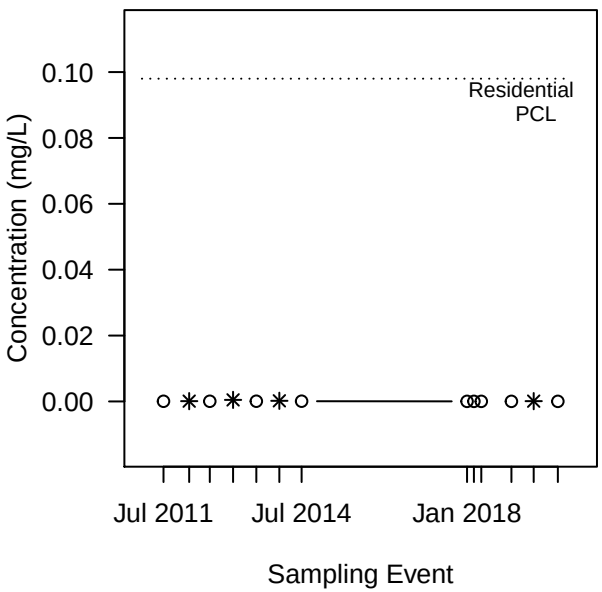




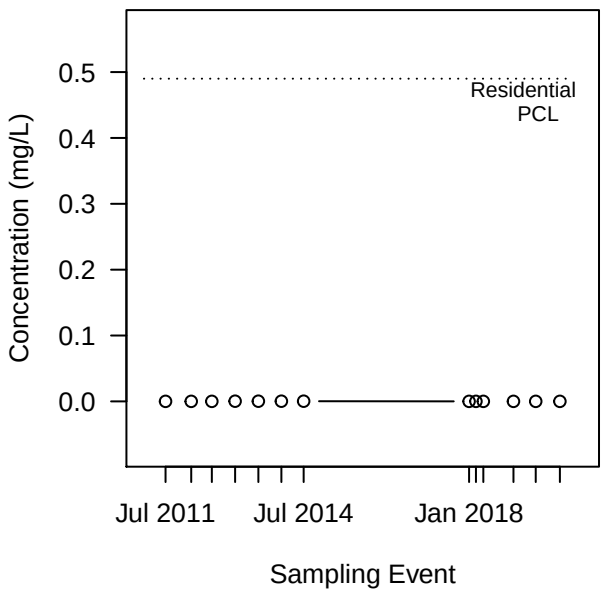
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

Mann−Kendall Trend Tests for MW−05

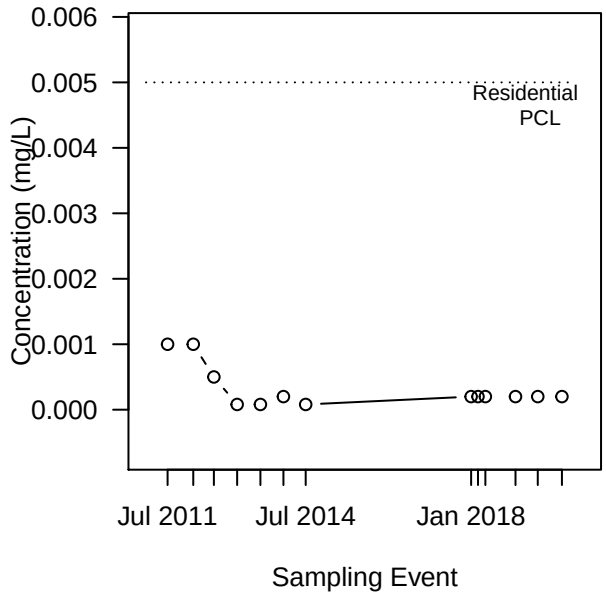
2−Methylnaphthalene (Det/N = 4/13)
No Trend
(p−value=0.299 and CV=1.4)



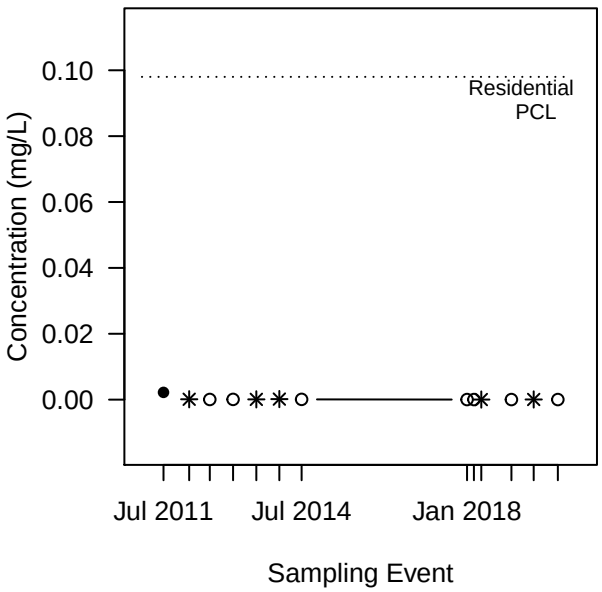
2,4−Dimethylphenol (Det/N = 0/13)
Not evaluated − All NDs



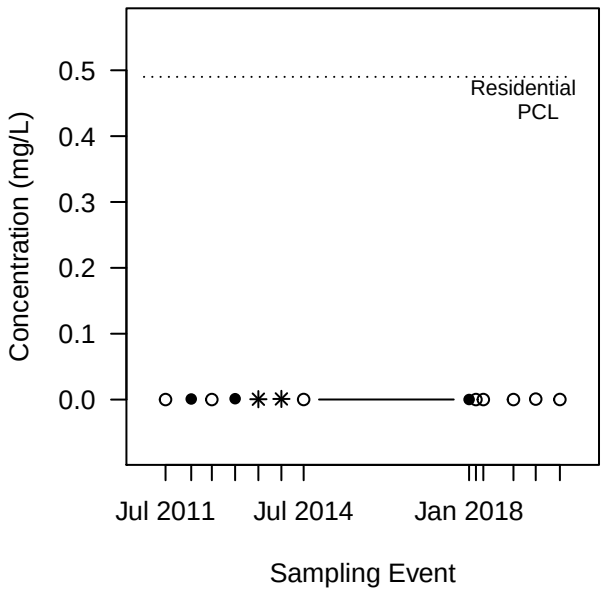
Benzene (Det/N = 0/13)
Not evaluated − All NDs



Dibenzofuran (Det/N = 6/13)
Probably Decreasing
(p−value=0.0909 and CV=2.7)



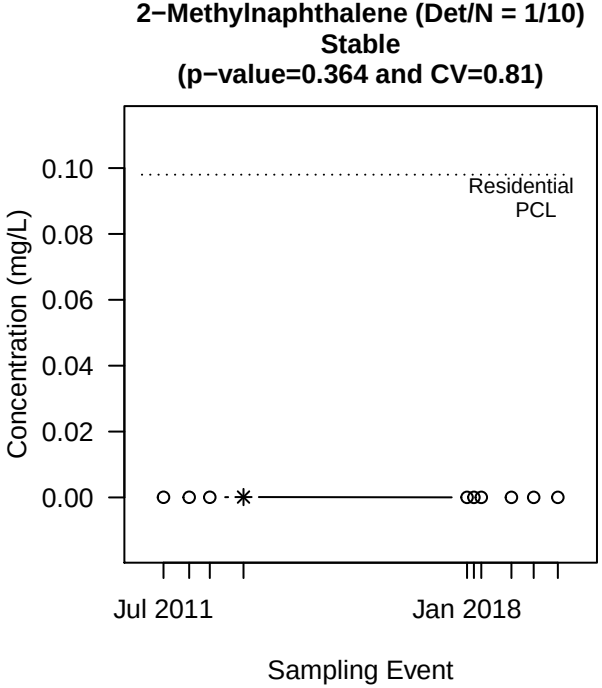
Naphthalene (Det/N = 5/13)
Probably Decreasing
(p−value=0.0534 and CV=1.2)

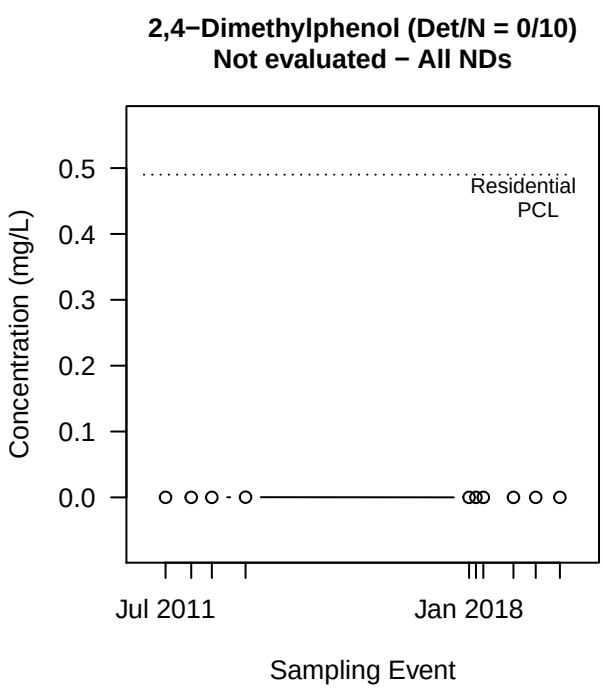


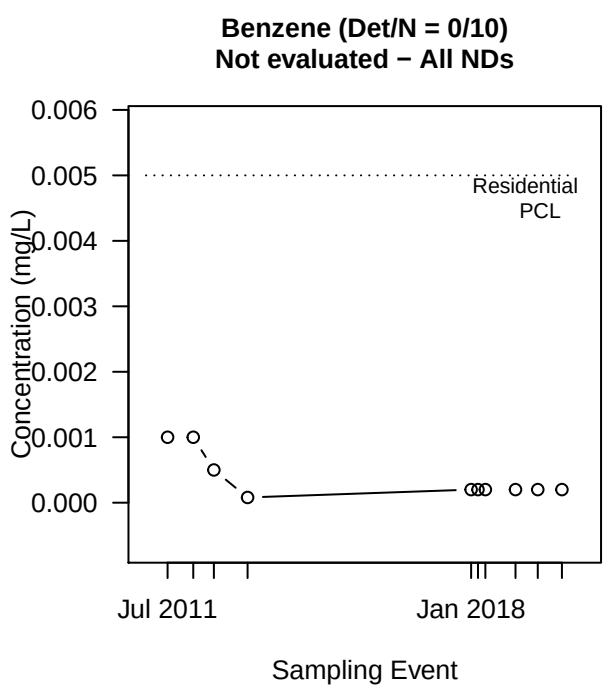
LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

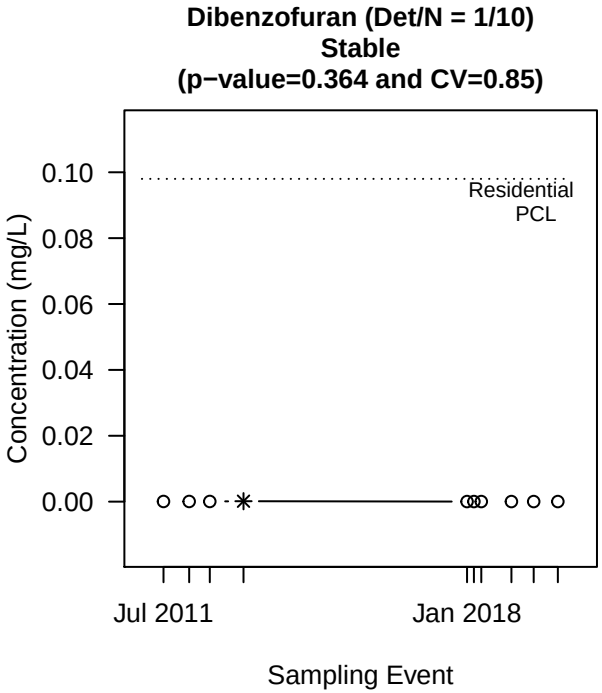
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

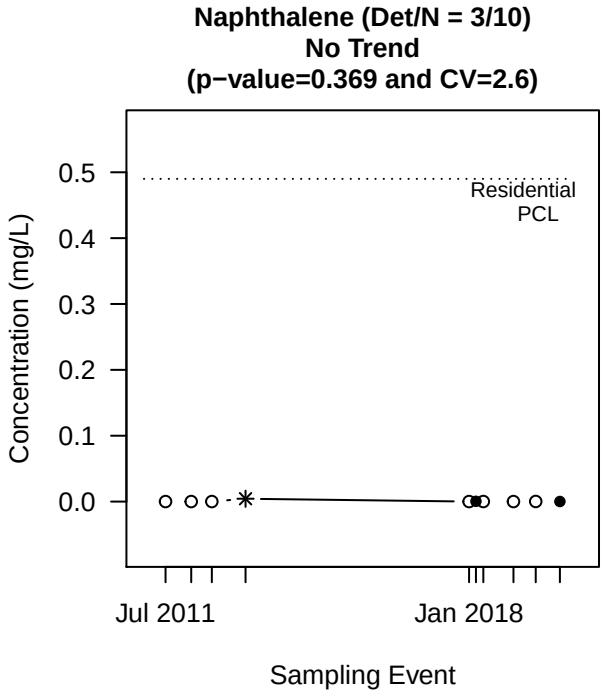
Mann−Kendall Trend Tests for MW−09

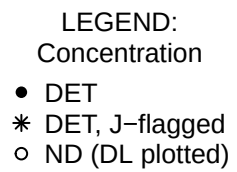






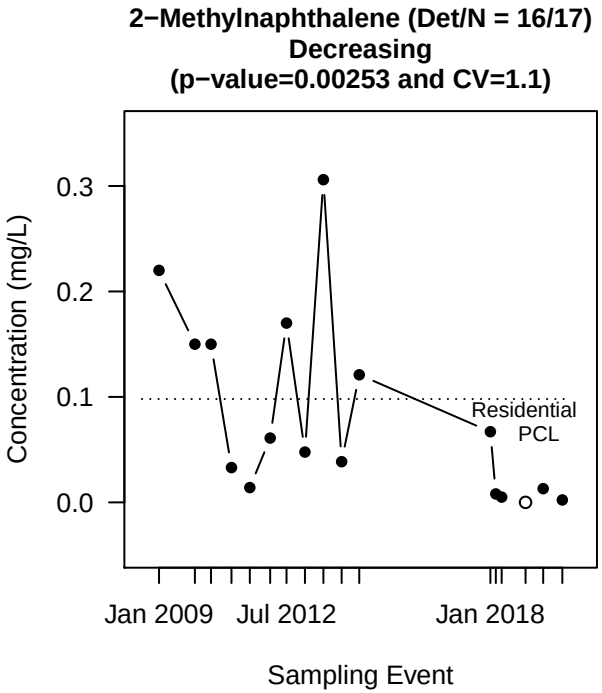


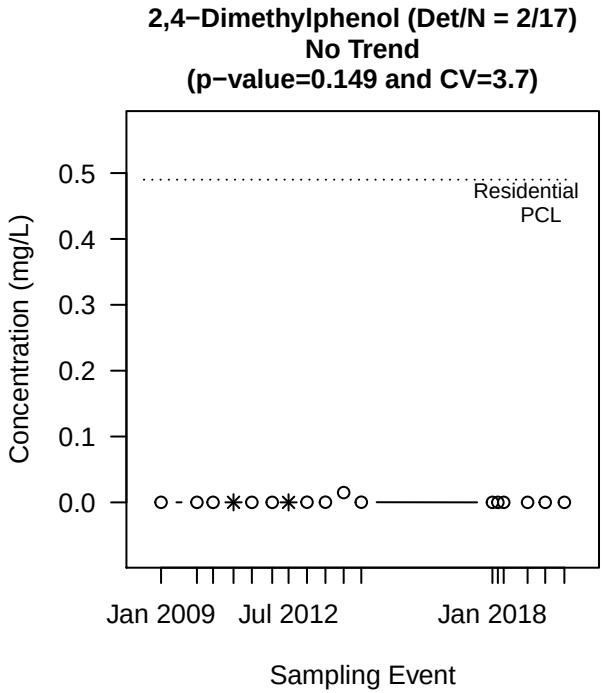


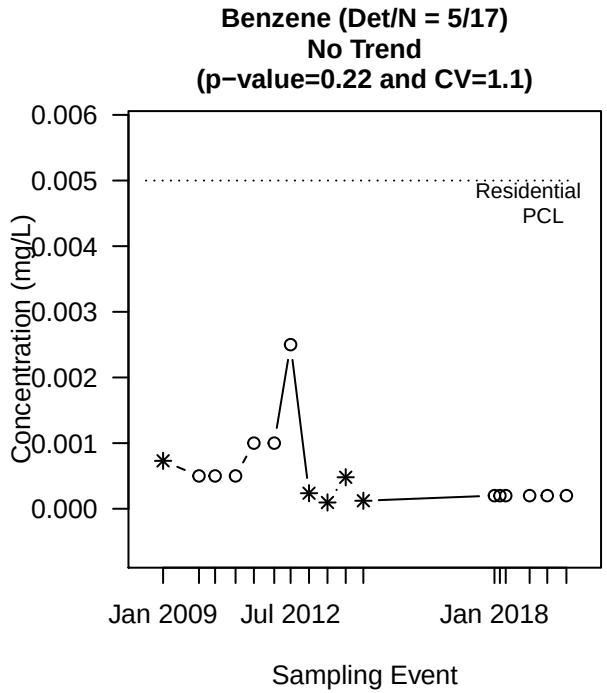


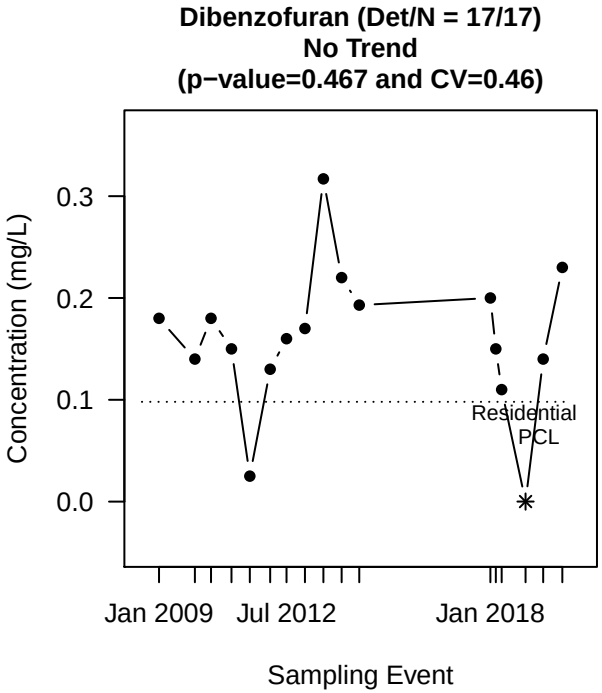
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

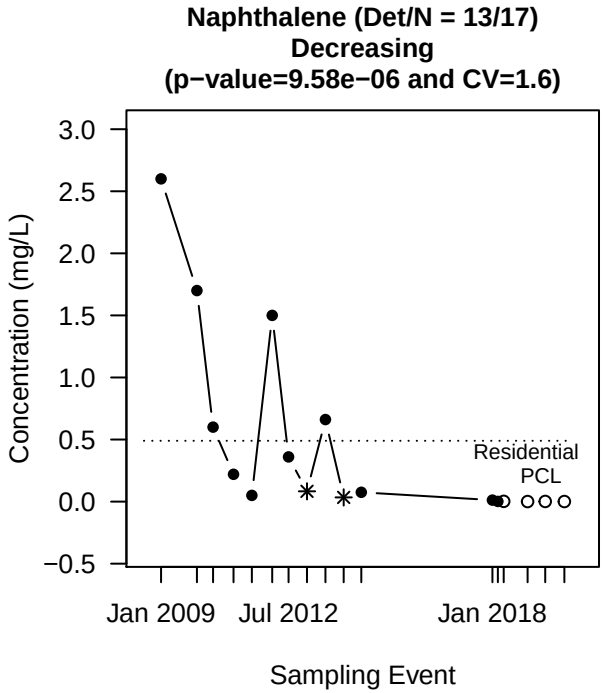
Mann−Kendall Trend Tests for MW−12A

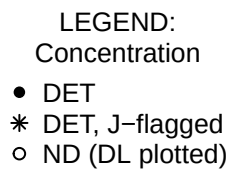








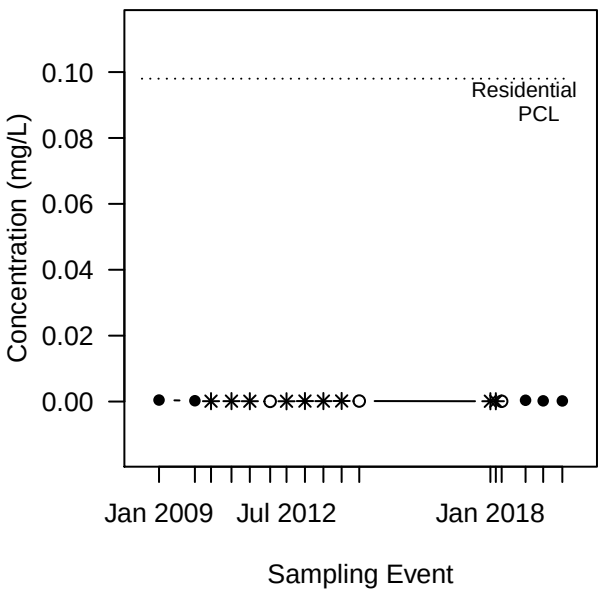




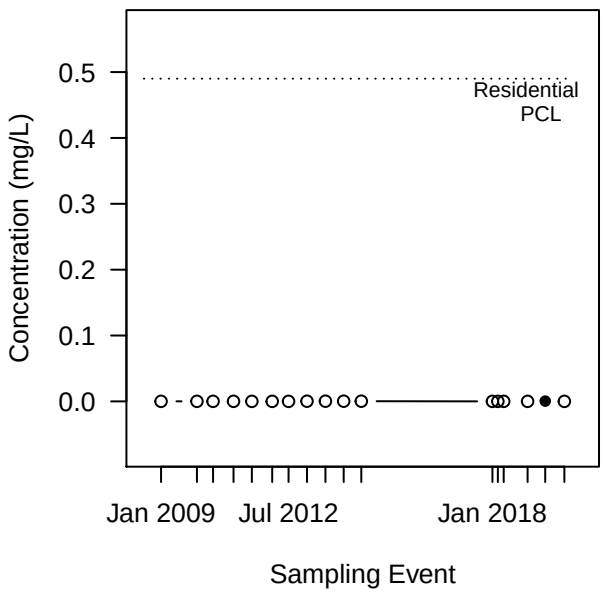
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

Mann−Kendall Trend Tests for MW−12C

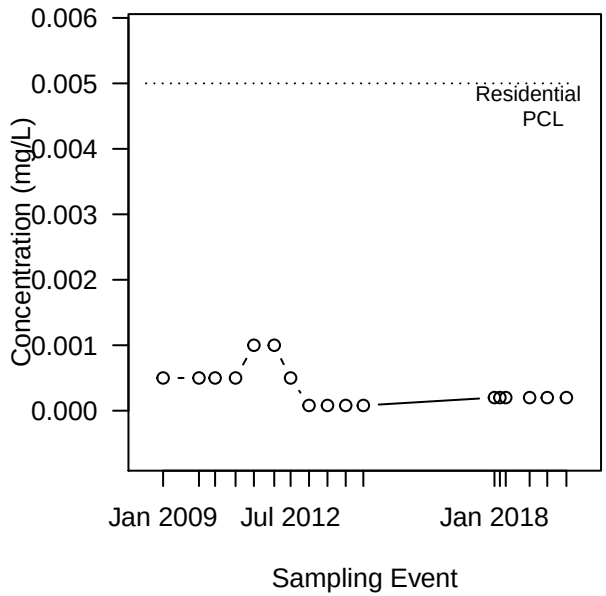
2−Methylnaphthalene (Det/N = 14/17)
Stable
(p−value=0.402 and CV=0.66)



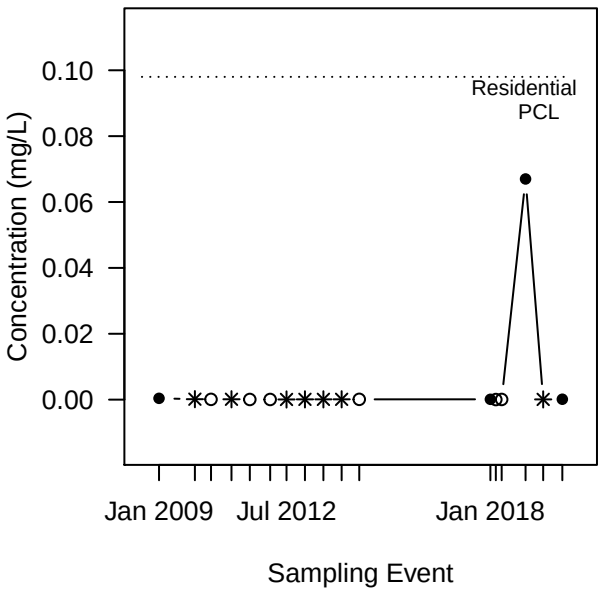
2,4−Dimethylphenol (Det/N = 1/17)
Probably Increasing
(p−value=0.0923 and CV=0.97)



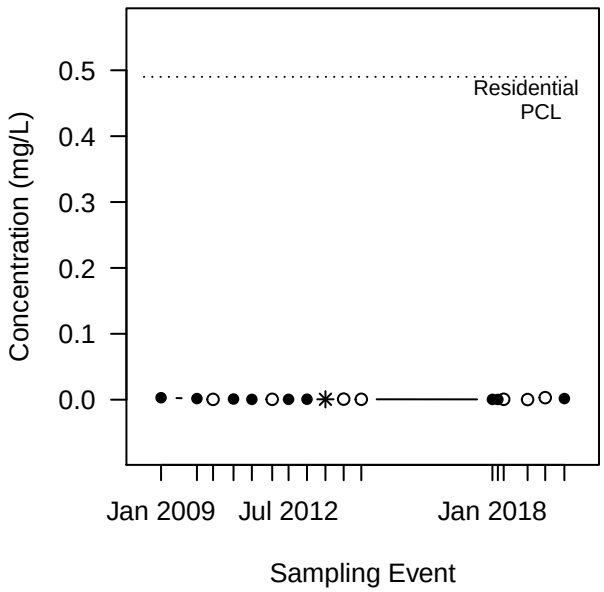
Benzene (Det/N = 0/17)
Not evaluated − All NDs



Dibenzofuran (Det/N = 11/17)
No Trend
(p−value=0.5 and CV=4)



Naphthalene (Det/N = 10/17)
Decreasing
(p−value=0.0326 and CV=0.89)

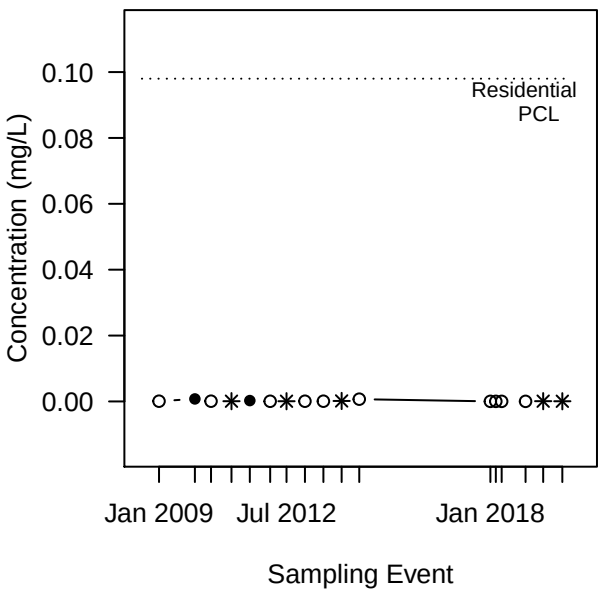


LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

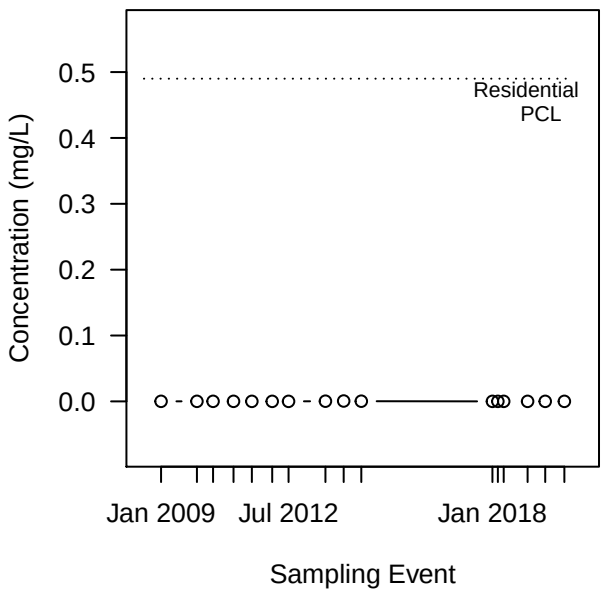
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

Mann−Kendall Trend Tests for MW−13

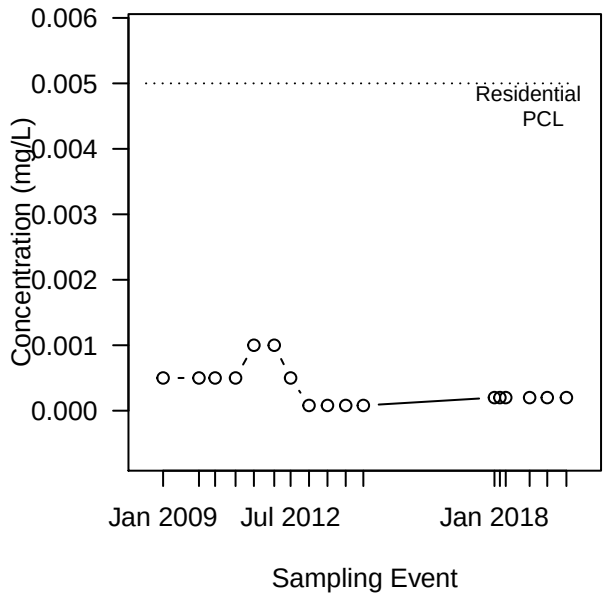
2−Methylnaphthalene (Det/N = 7/17)
No Trend
(p−value=0.258 and CV=1.5)



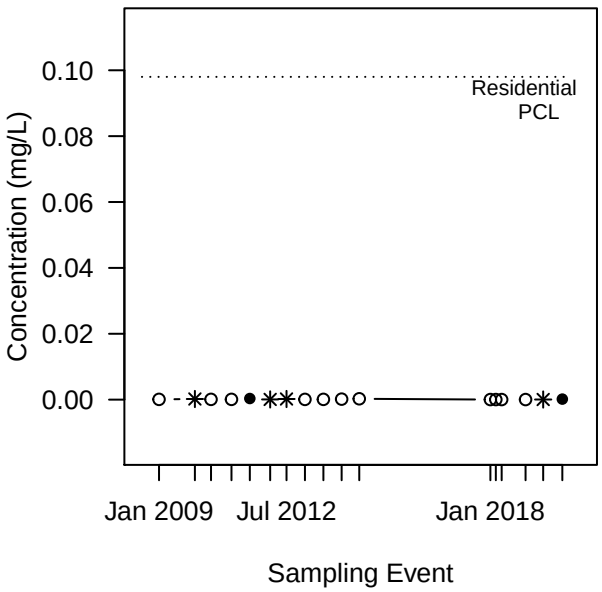
2,4−Dimethylphenol (Det/N = 0/16)
Not evaluated − All NDs



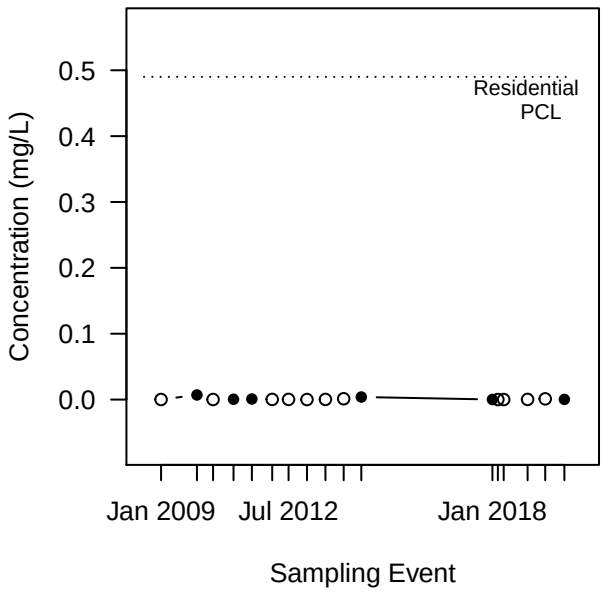
Benzene (Det/N = 0/17)
Not evaluated − All NDs



Dibenzofuran (Det/N = 6/17)
Stable
(p−value=0.367 and CV=0.84)



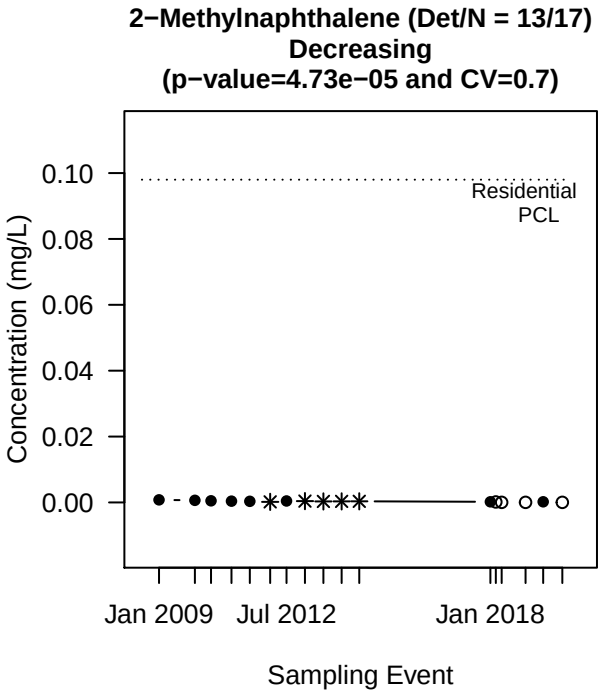
Naphthalene (Det/N = 6/17)
No Trend
(p−value=0.28 and CV=1.9)

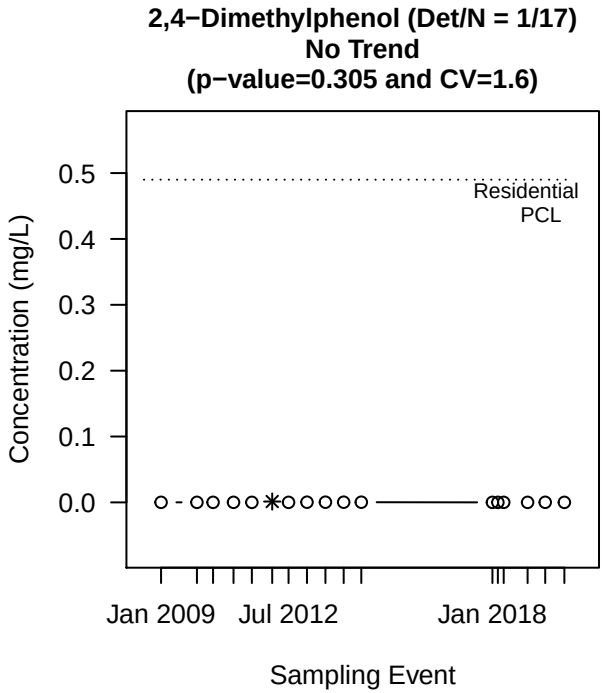


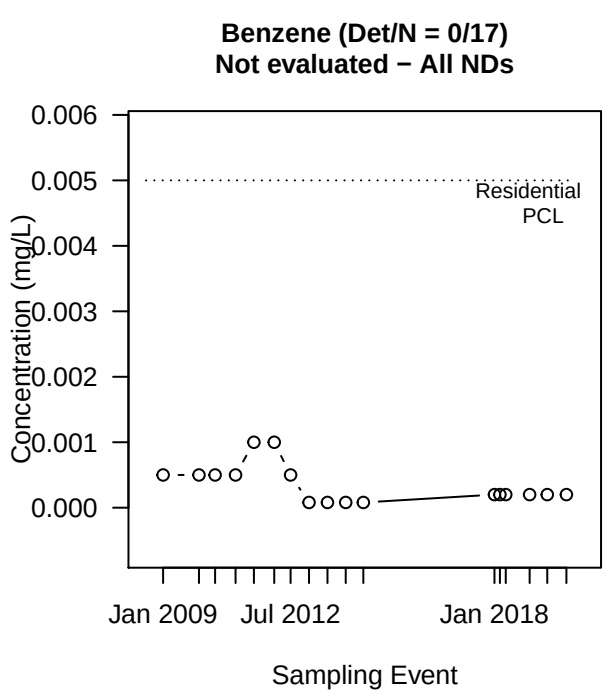
LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

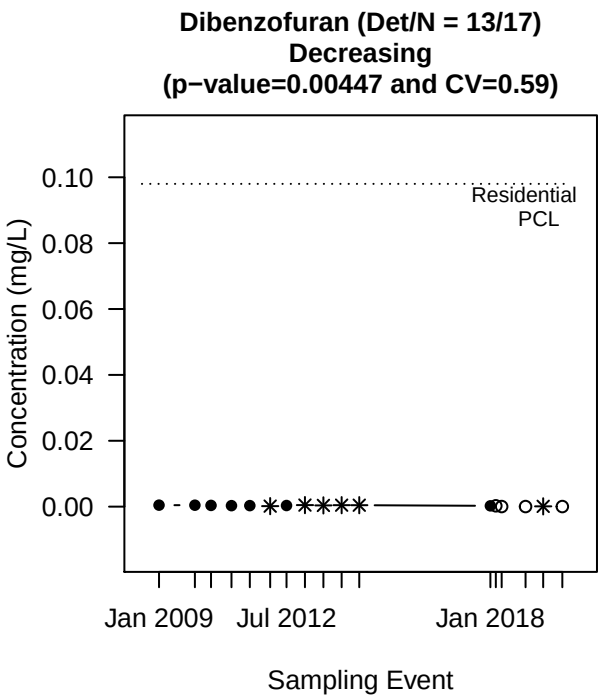
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

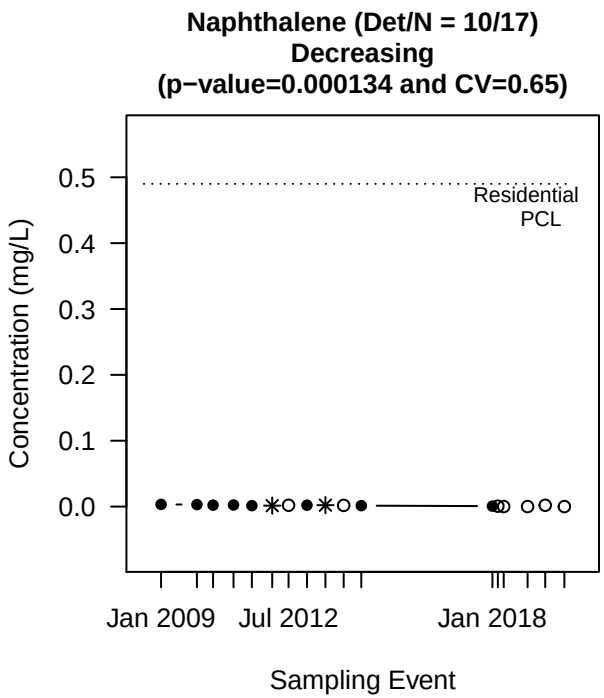
Mann−Kendall Trend Tests for MW−14

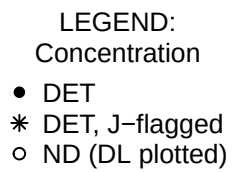






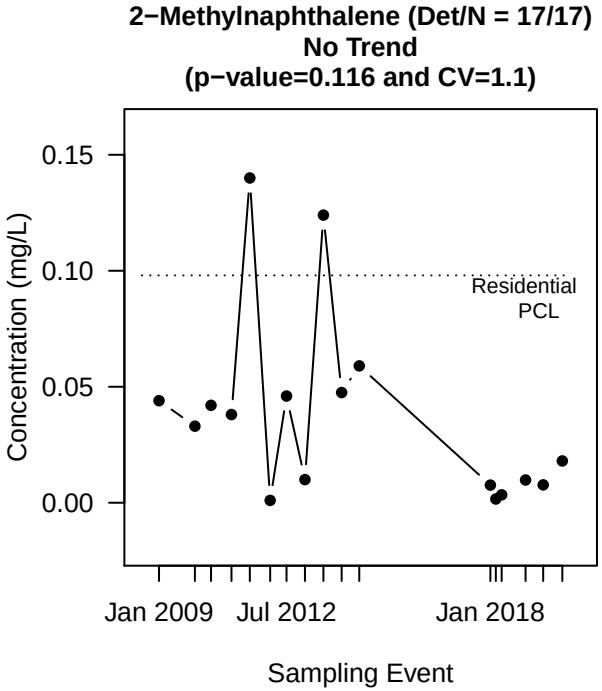


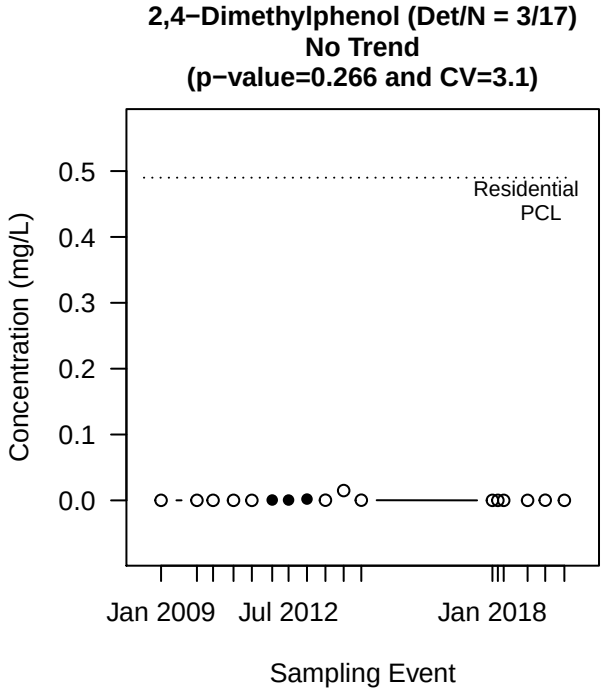


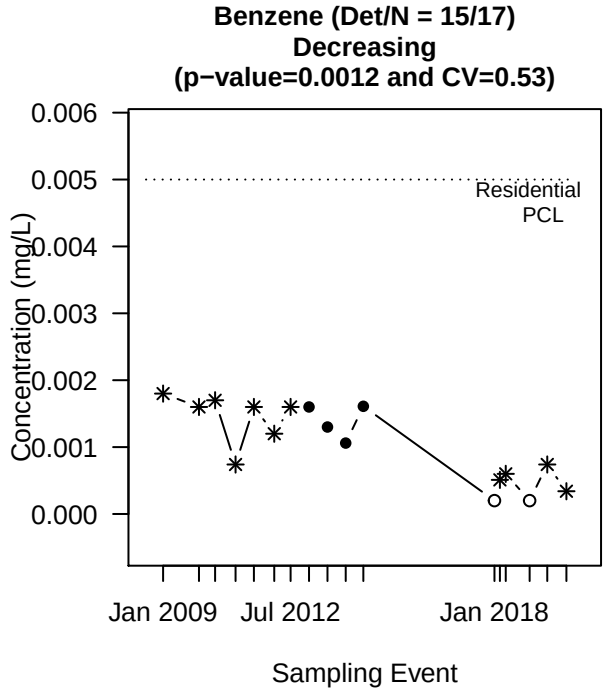


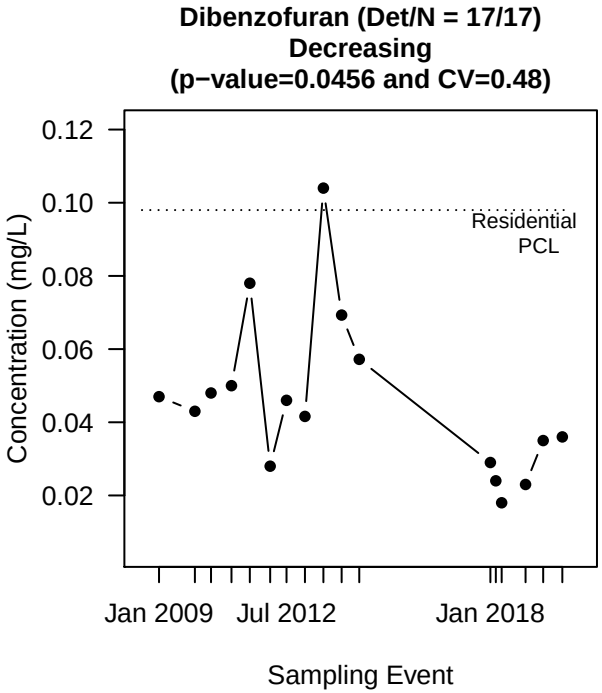
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

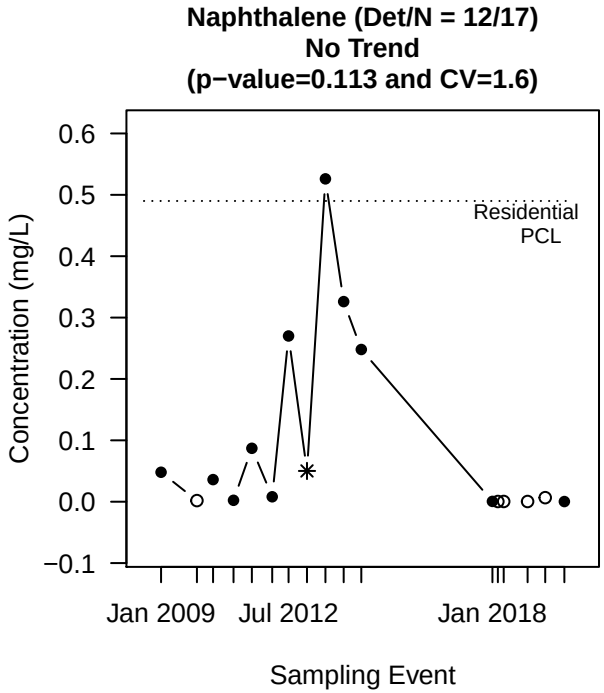
Mann−Kendall Trend Tests for MW−15A









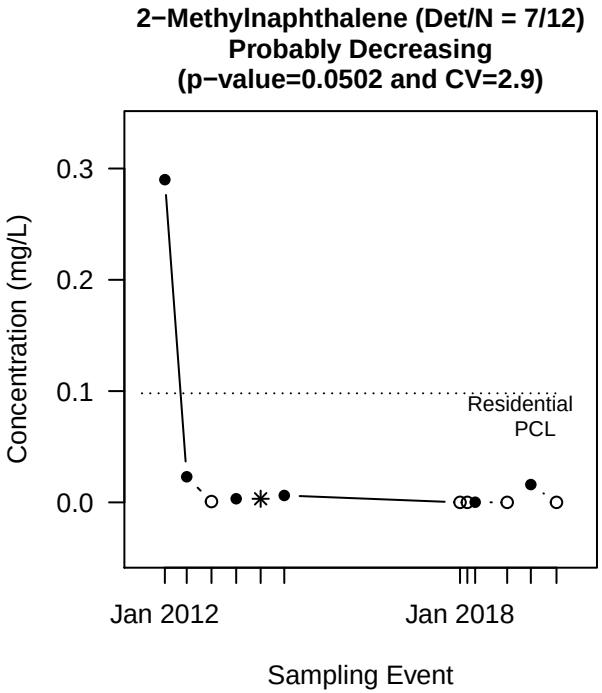


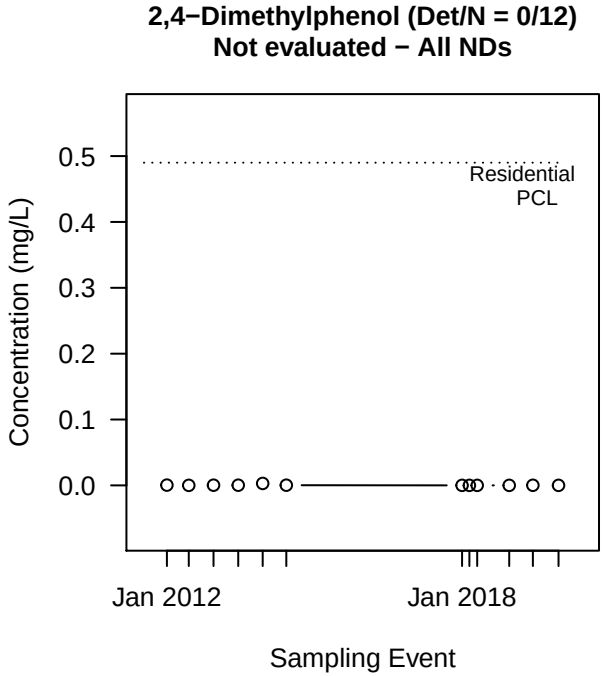
LEGEND:
Concentration

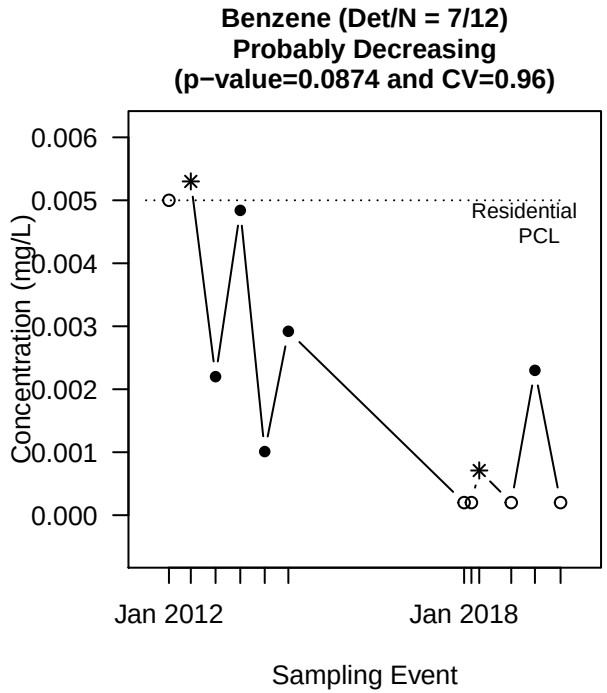
- DET
- DET, J−flagged
- ND (DL plotted)

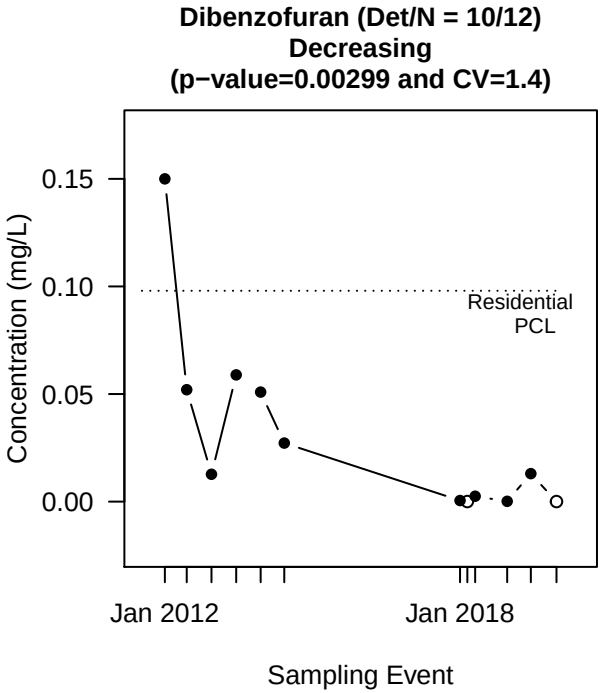
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

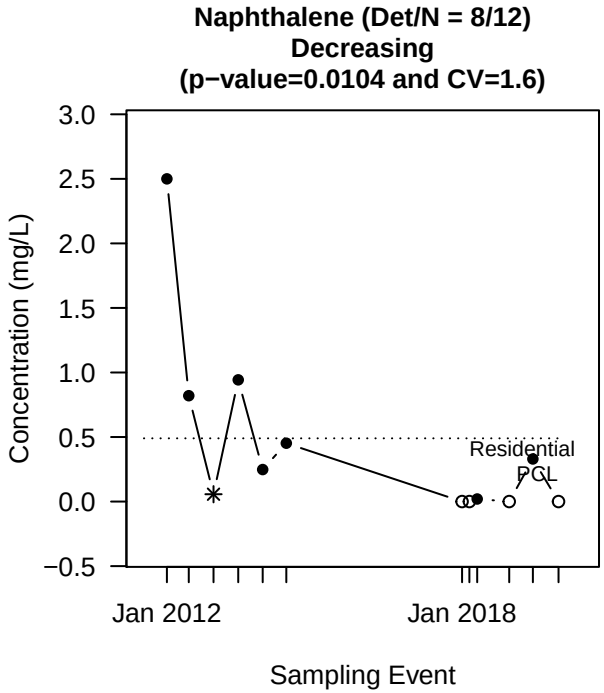
Mann−Kendall Trend Tests for MW−15B









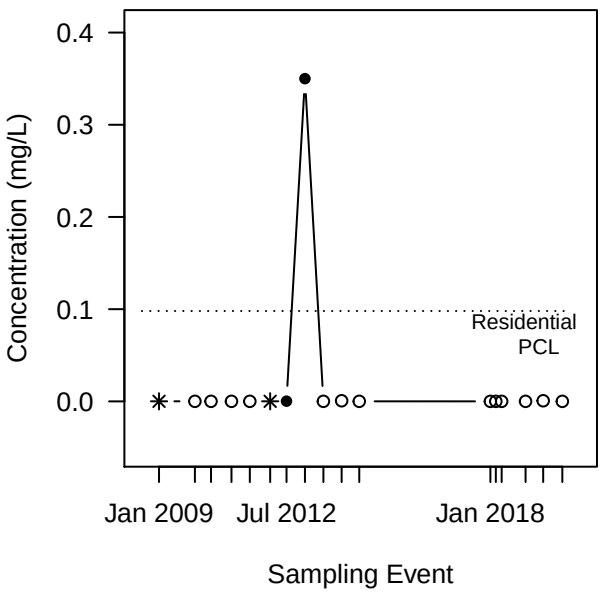


LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

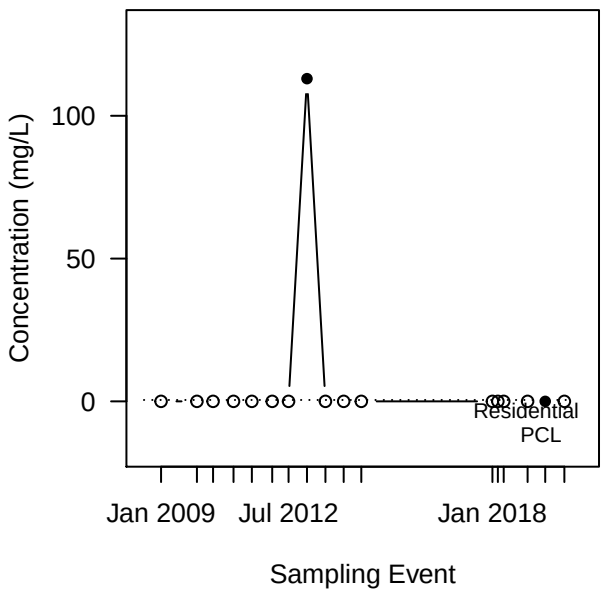
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

Mann−Kendall Trend Tests for MW−15C

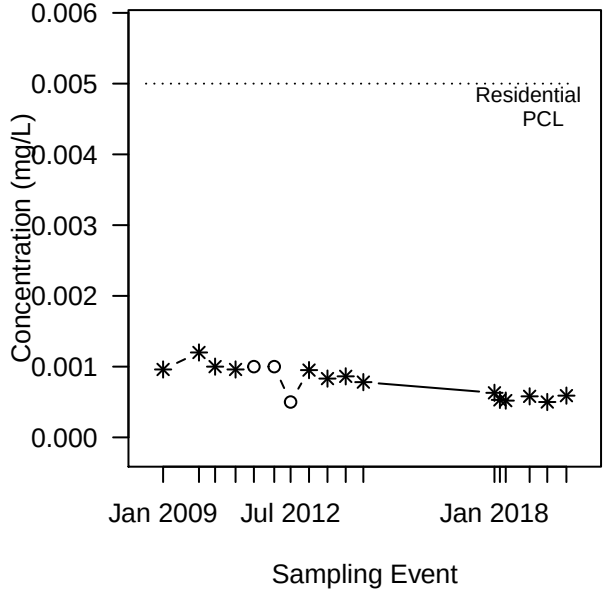
2−Methylnaphthalene (Det/N = 4/17)
No Trend
(p−value=0.12 and CV=4.1)



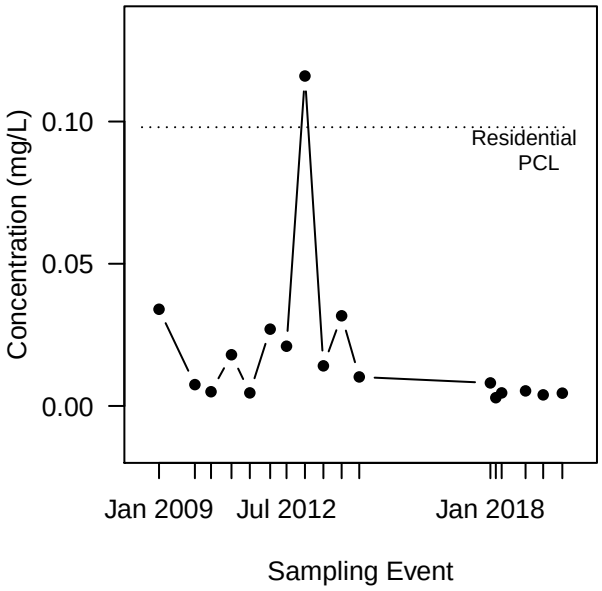
2,4−Dimethylphenol (Det/N = 2/17)
No Trend
(p−value=0.229 and CV=4.1)



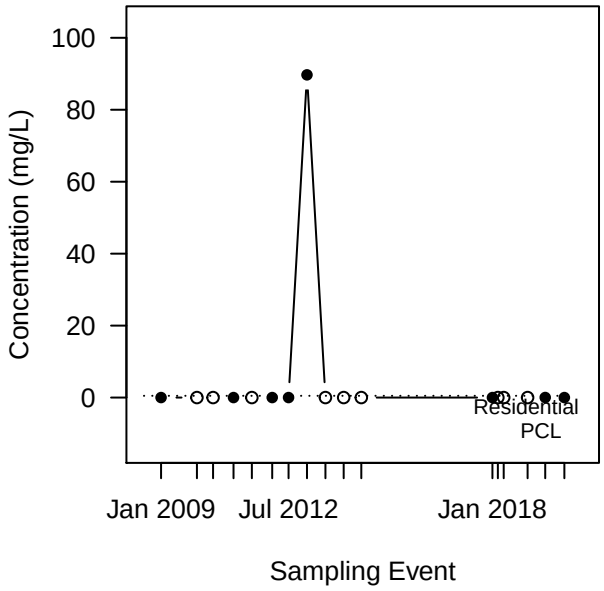
Benzene (Det/N = 14/17)
Decreasing
(p−value=0.0142 and CV=0.29)



Dibenzofuran (Det/N = 17/17)
Decreasing
(p−value=0.016 and CV=1.4)



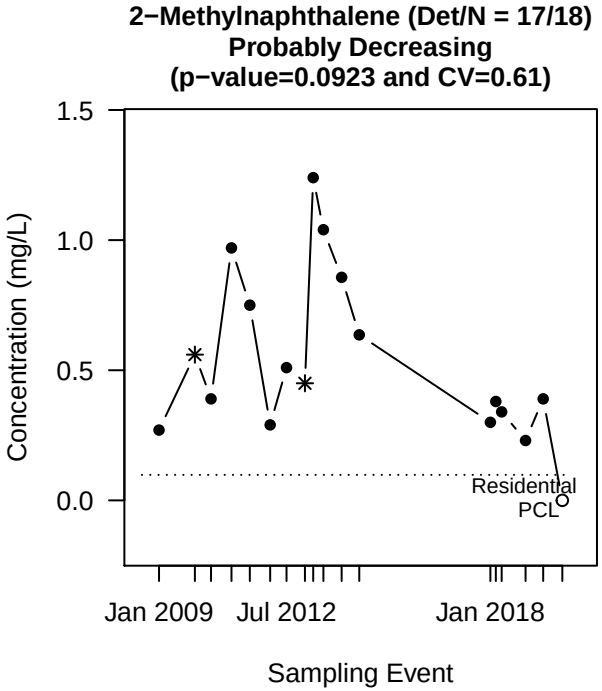
Naphthalene (Det/N = 8/17)
No Trend
(p−value=0.446 and CV=4.1)

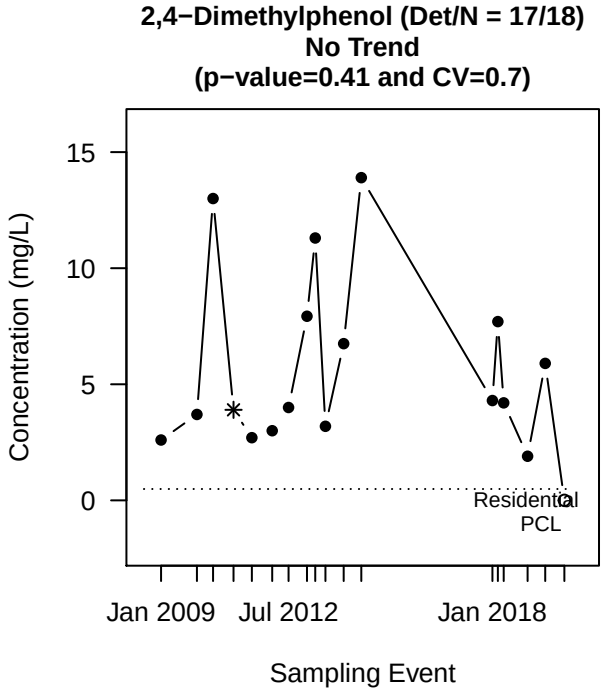


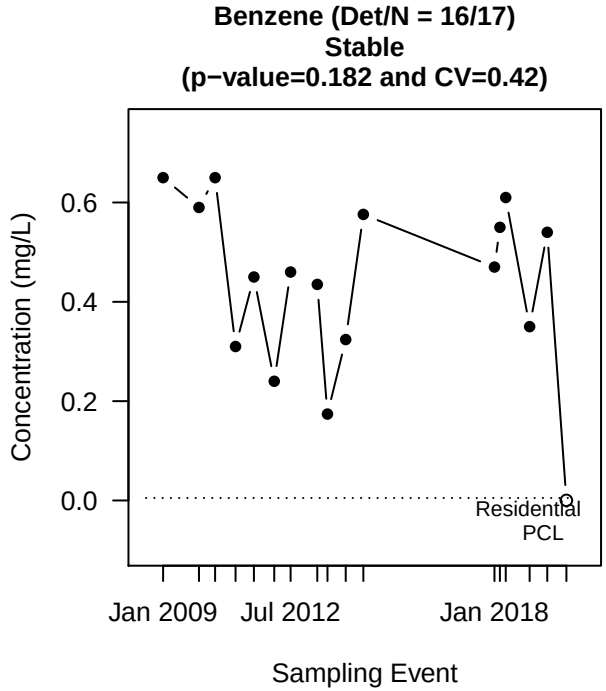
LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

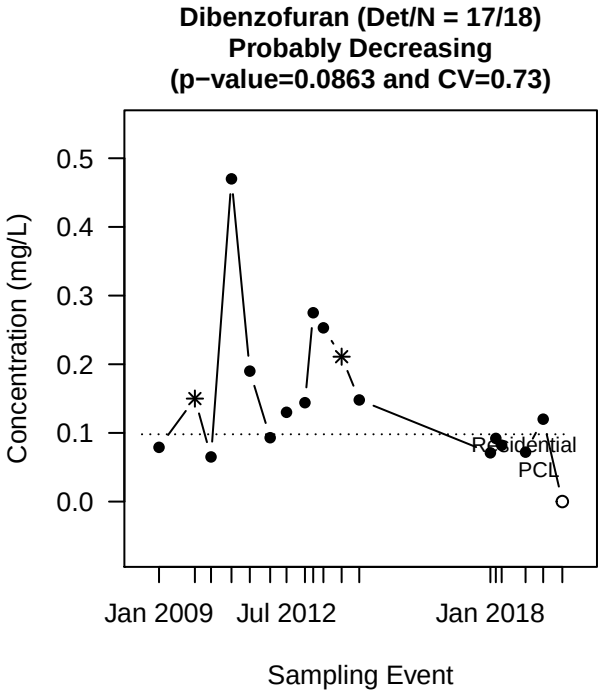
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

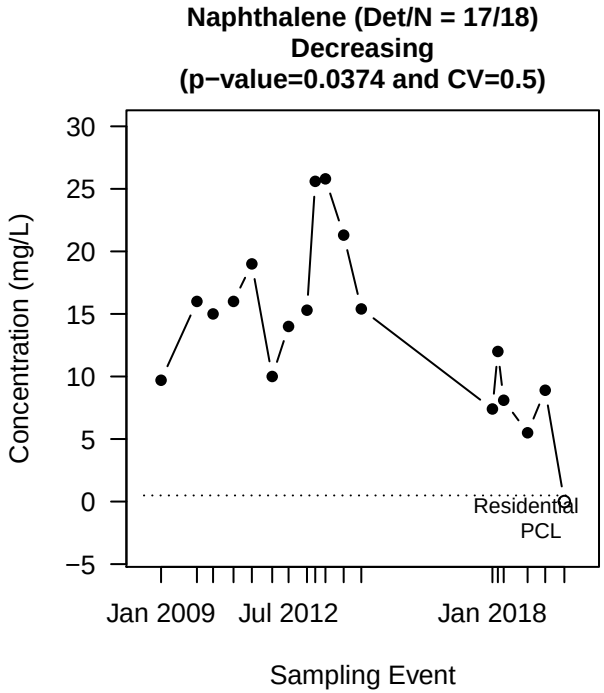
Mann−Kendall Trend Tests for MW−17







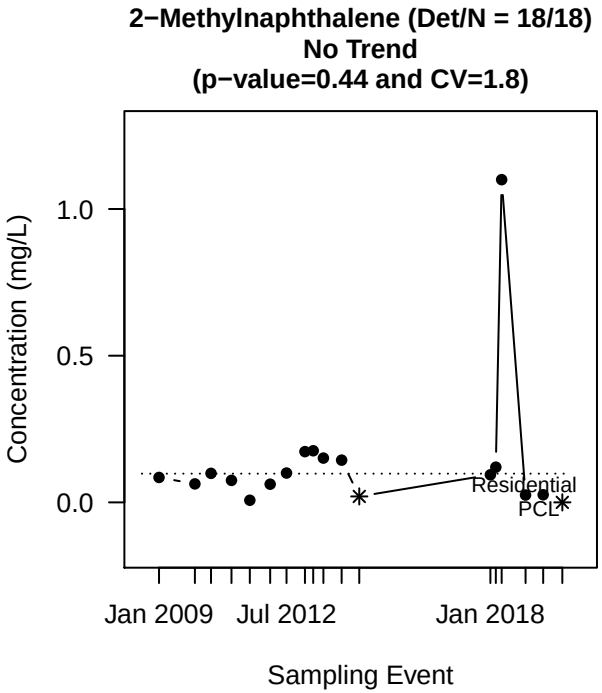


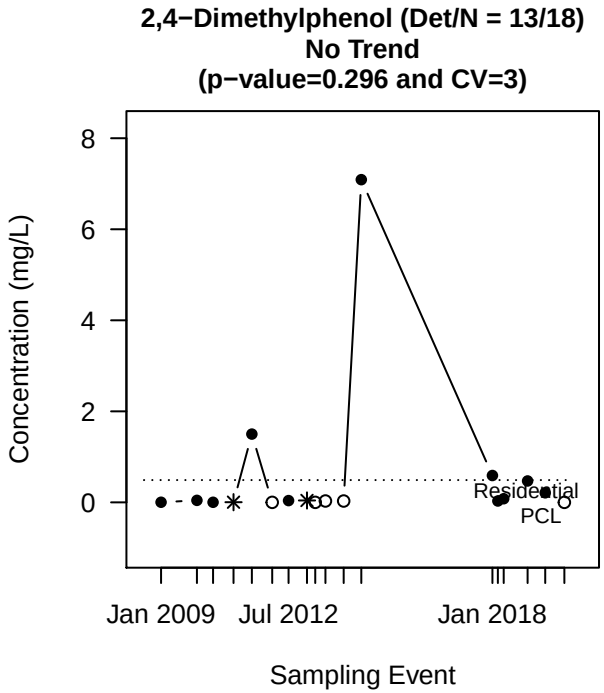


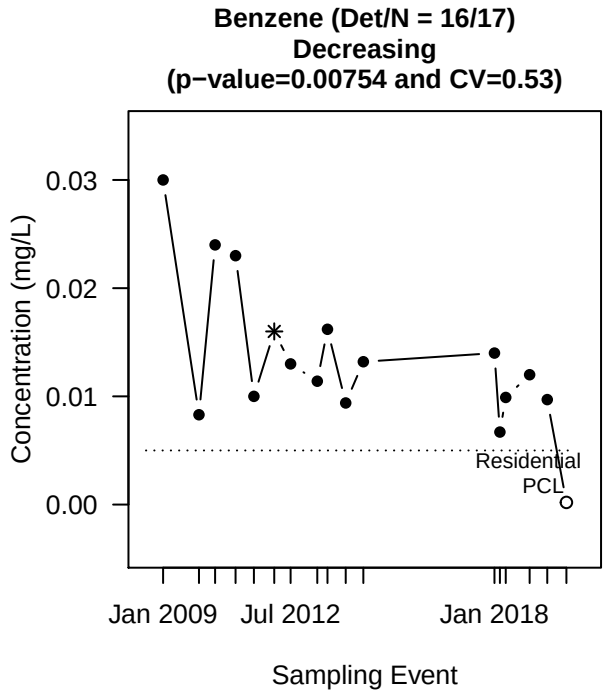
LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

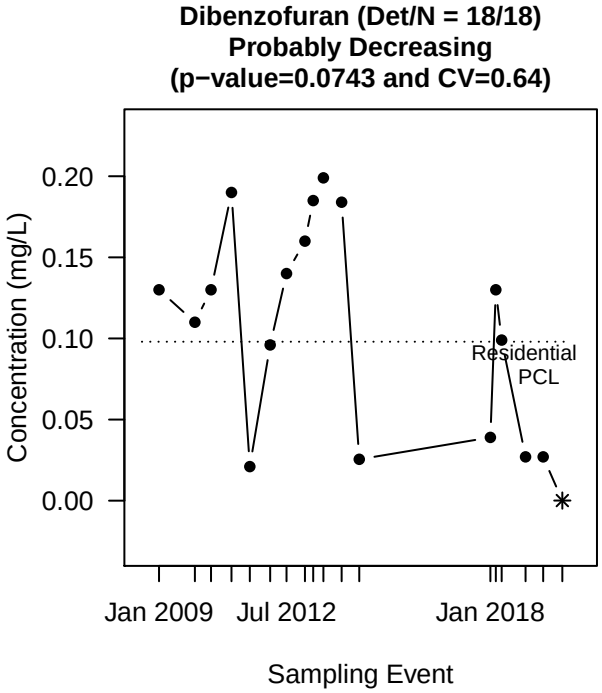
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

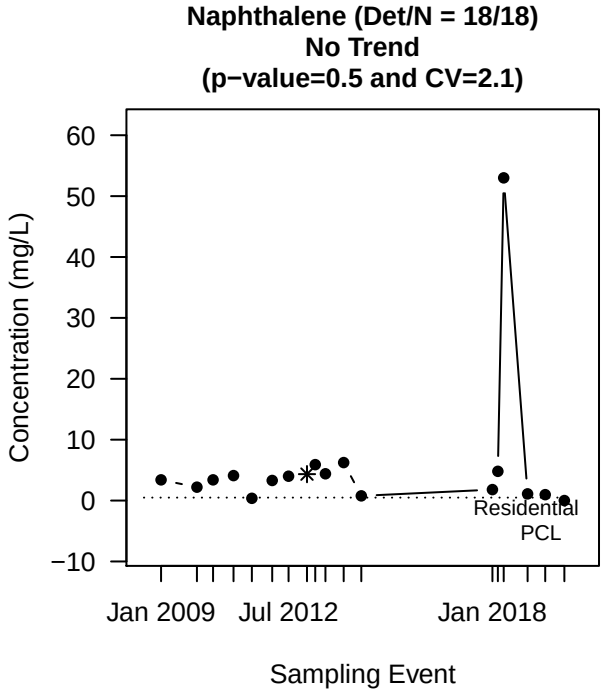
Mann−Kendall Trend Tests for MW−17C

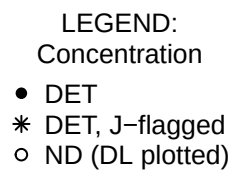






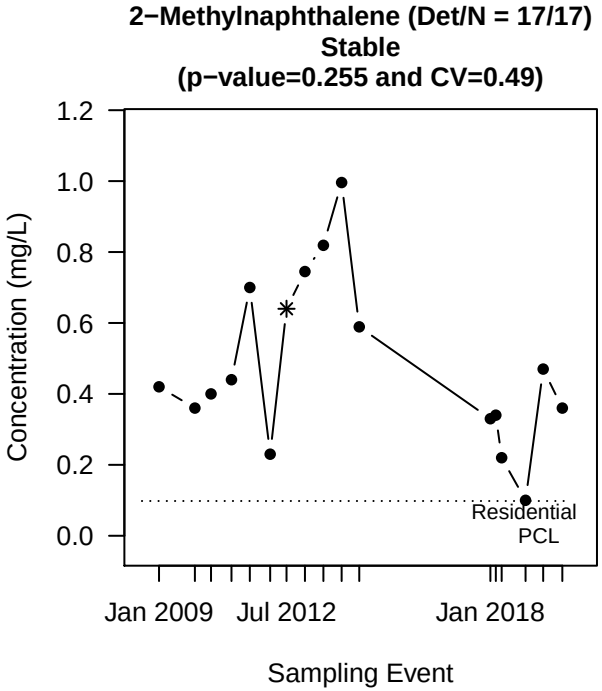


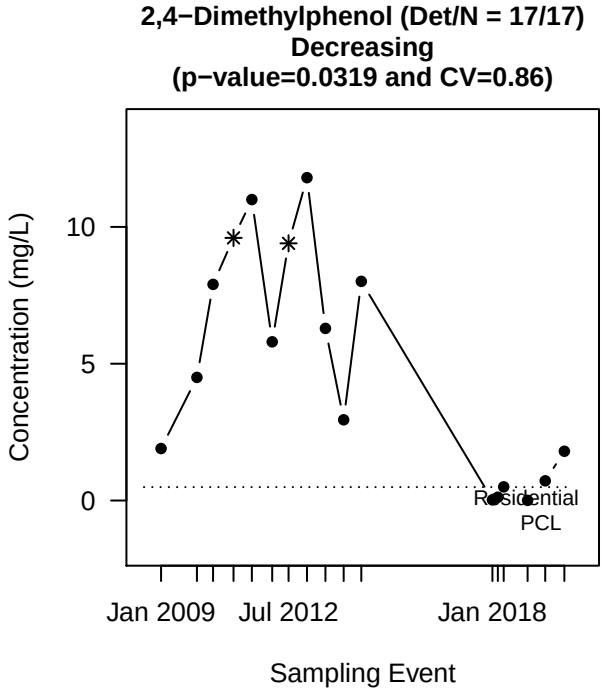


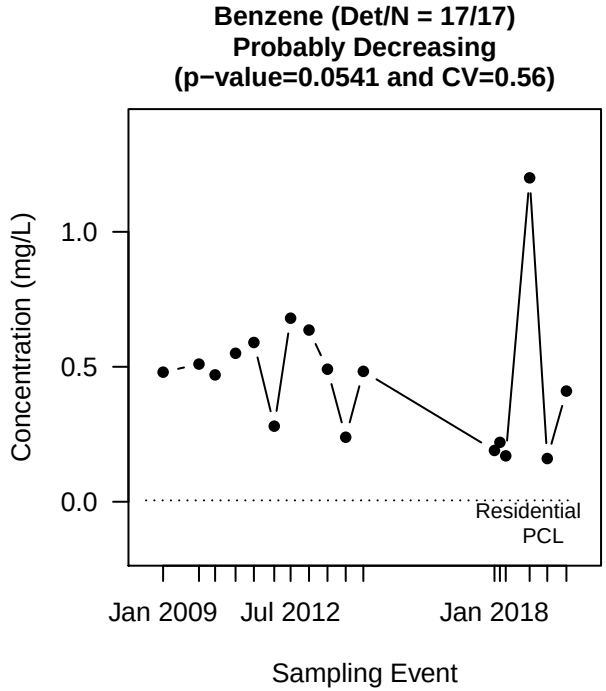


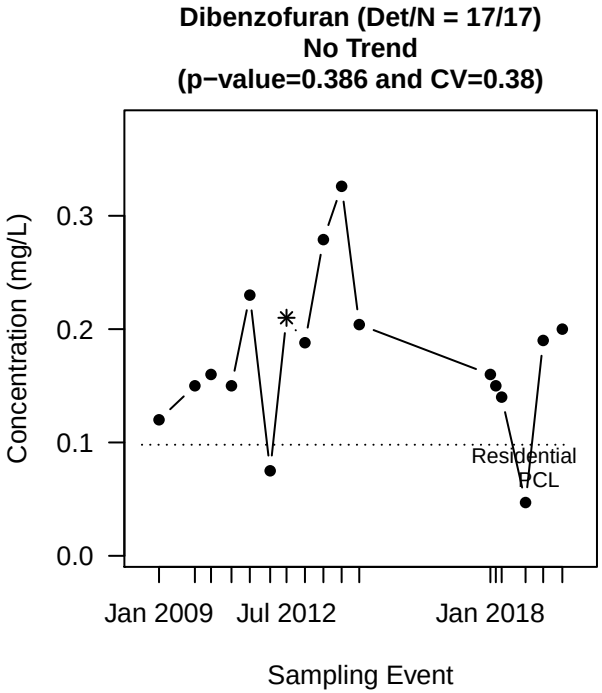
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

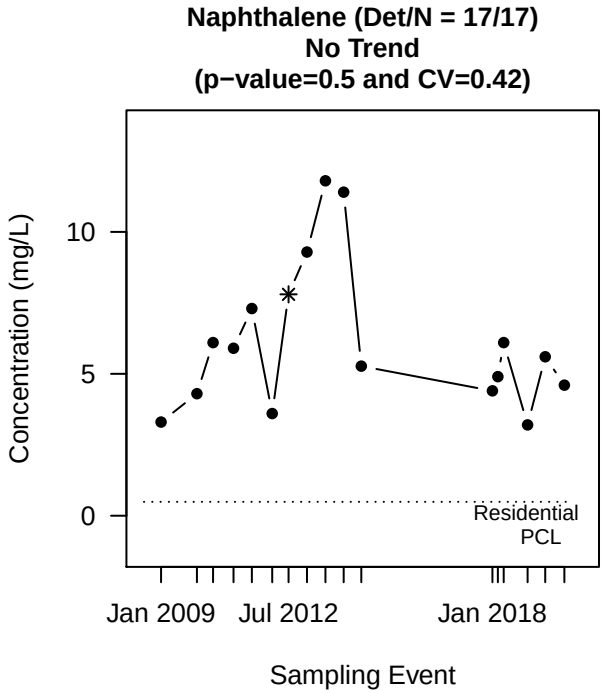
Mann−Kendall Trend Tests for MW−18A

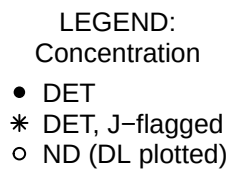








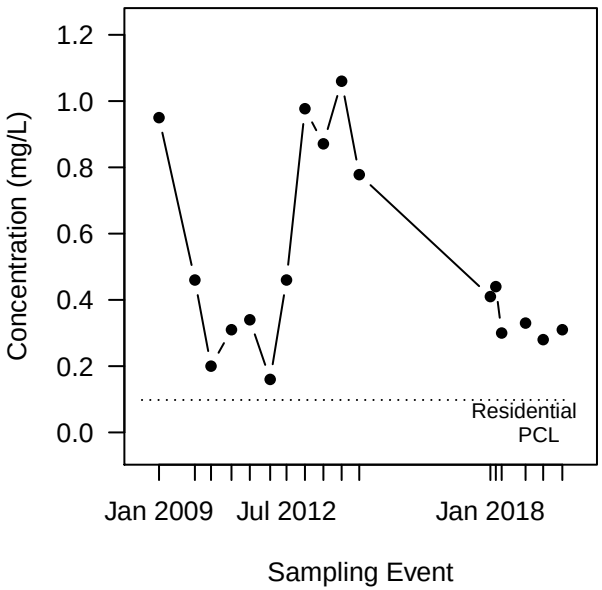




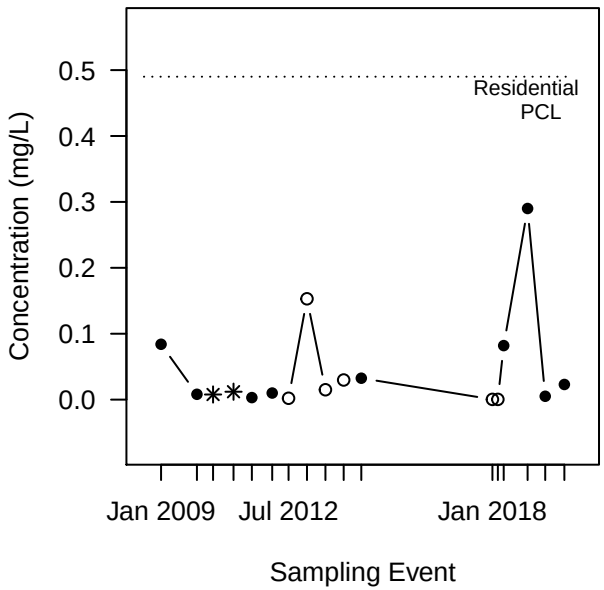
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

Mann−Kendall Trend Tests for MW−18C

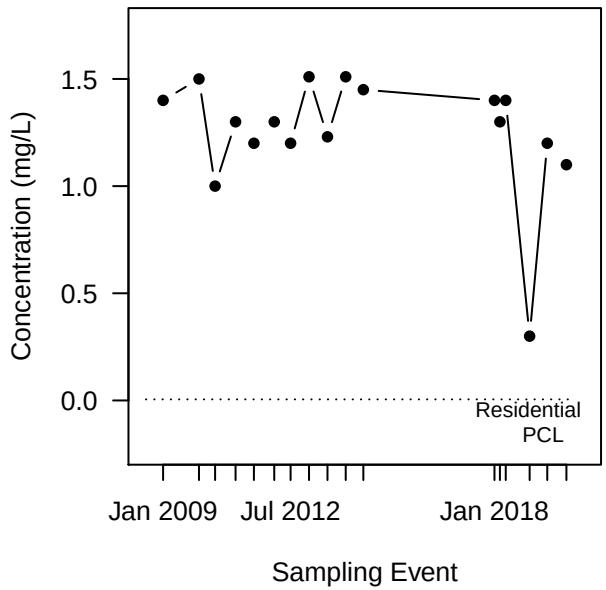
2−Methylnaphthalene (Det/N = 17/17)
Stable
(p−value=0.193 and CV=0.58)



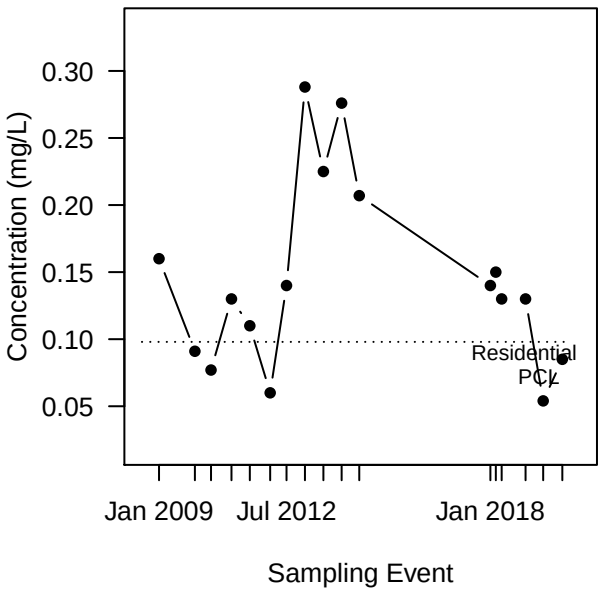
2,4−Dimethylphenol (Det/N = 11/17)
No Trend
(p−value=0.466 and CV=1.7)



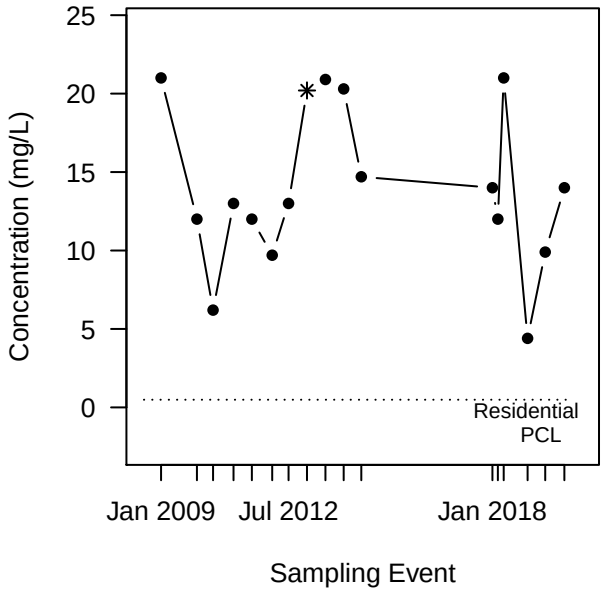
Benzene (Det/N = 17/17)
Stable
(p−value=0.191 and CV=0.23)



Dibenzofuran (Det/N = 17/17)
Stable
(p−value=0.355 and CV=0.48)



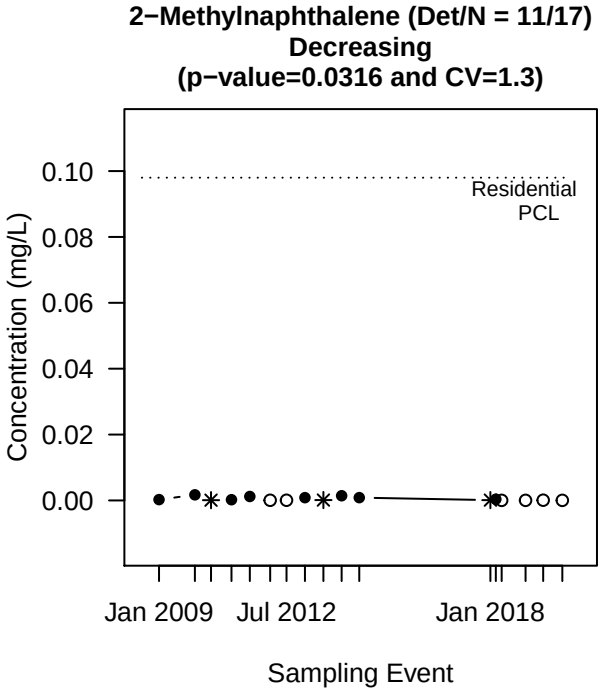
Naphthalene (Det/N = 17/17)
No Trend
(p−value=0.483 and CV=0.37)

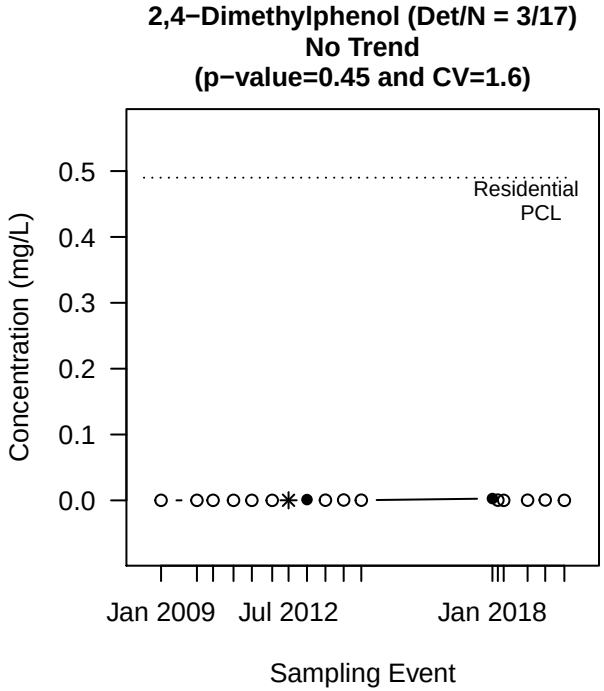


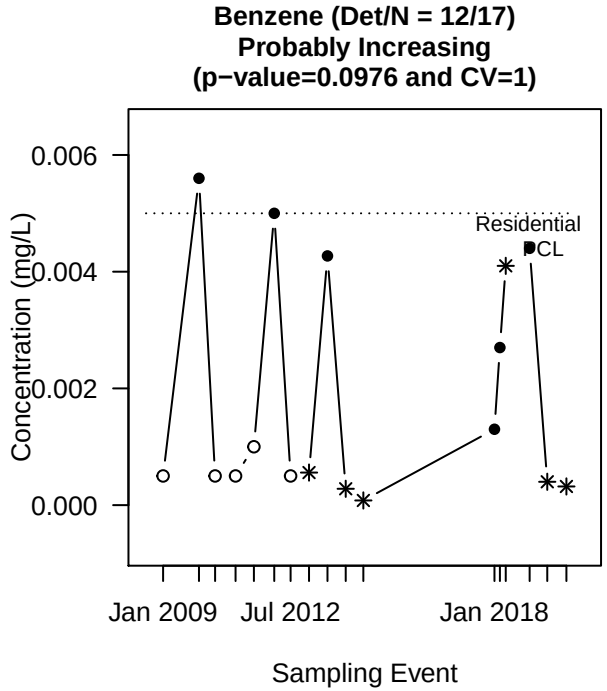
LEGEND:
Concentration
- DET
- ✳ DET, J−flagged
- ○ ND (DL plotted)

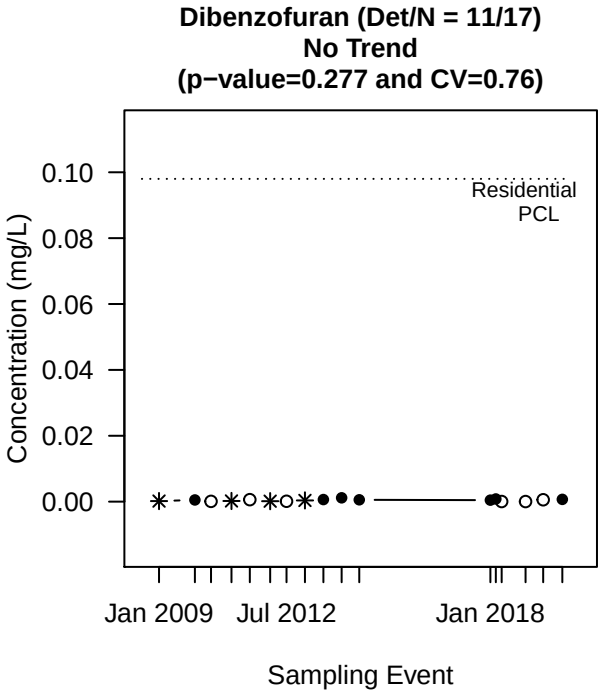
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

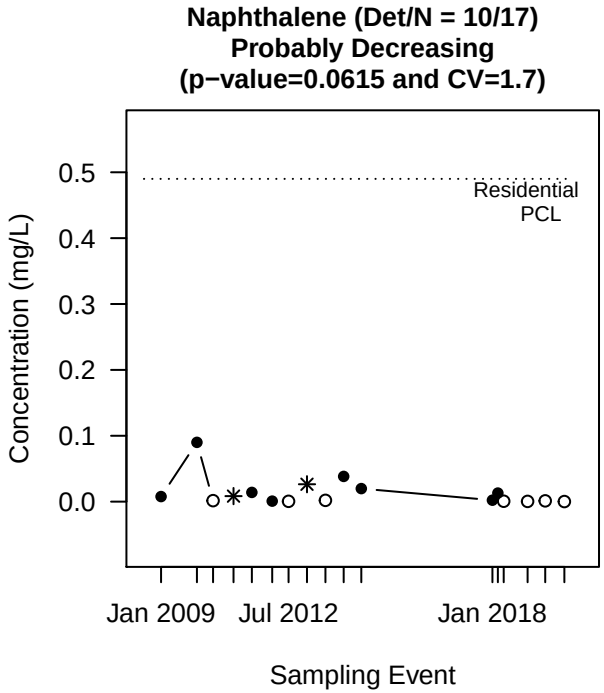
Mann−Kendall Trend Tests for MW−19C







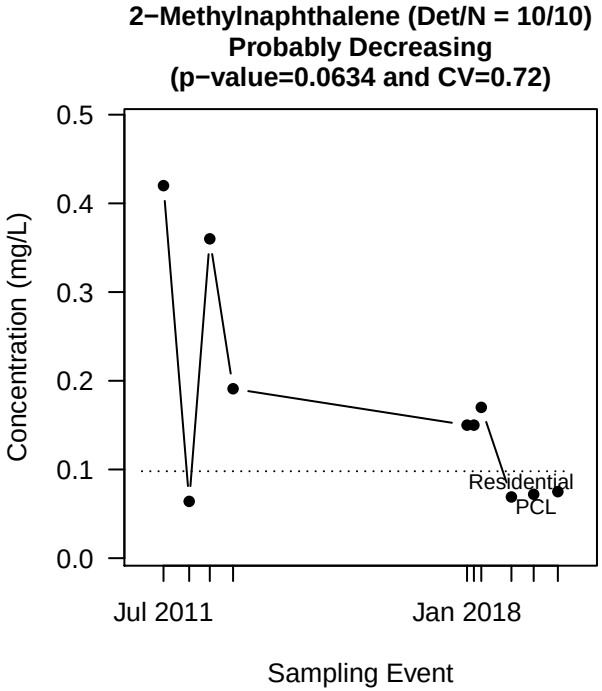


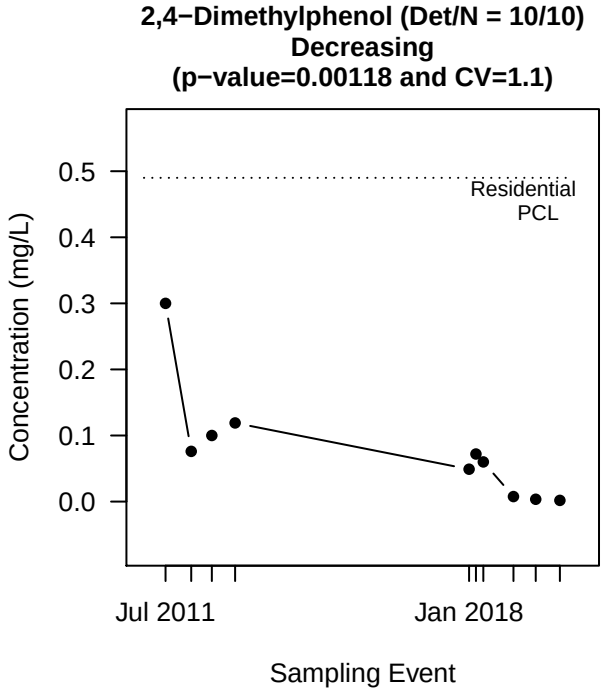


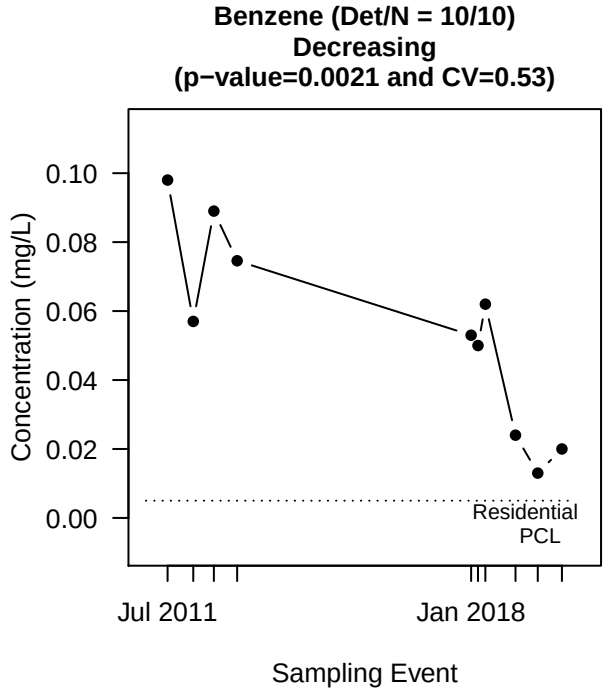
LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

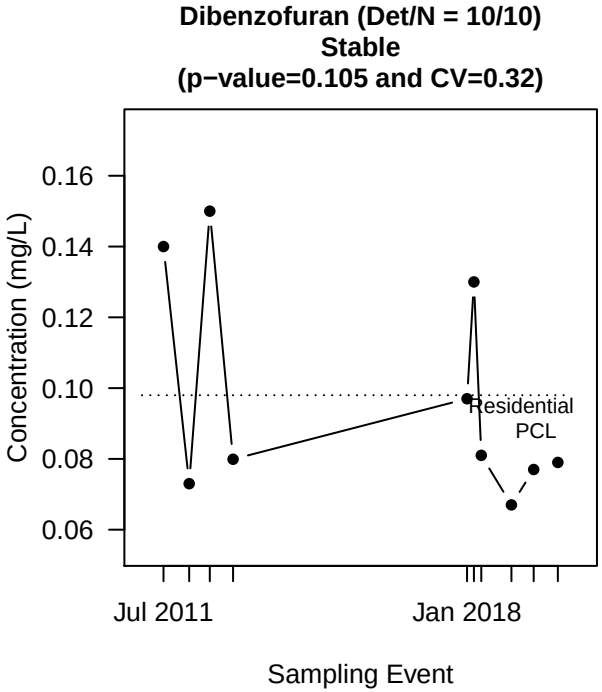
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

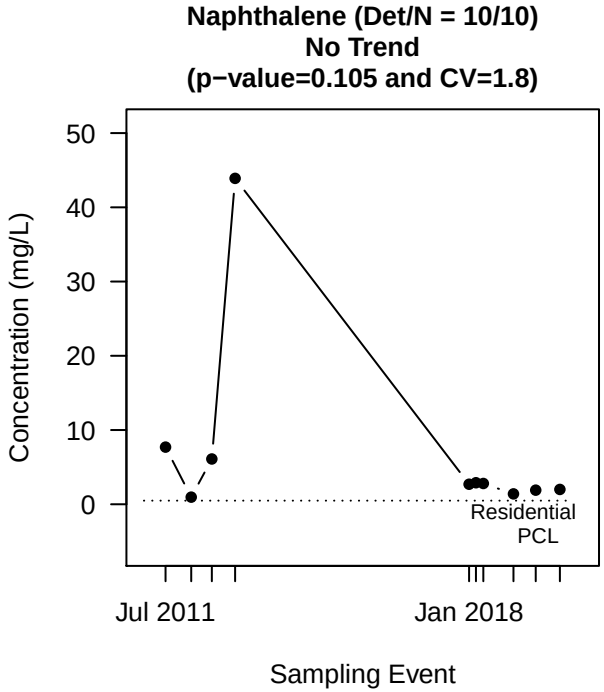
Mann−Kendall Trend Tests for MW−20A









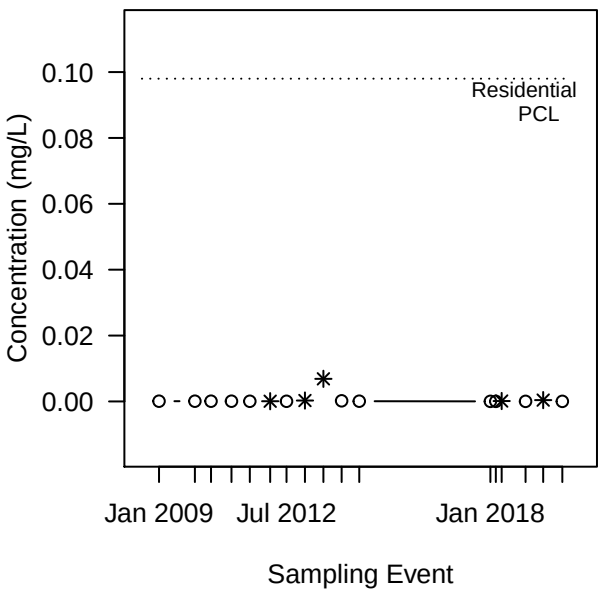


LEGEND:
Concentration
- DET
- ND (DL plotted)

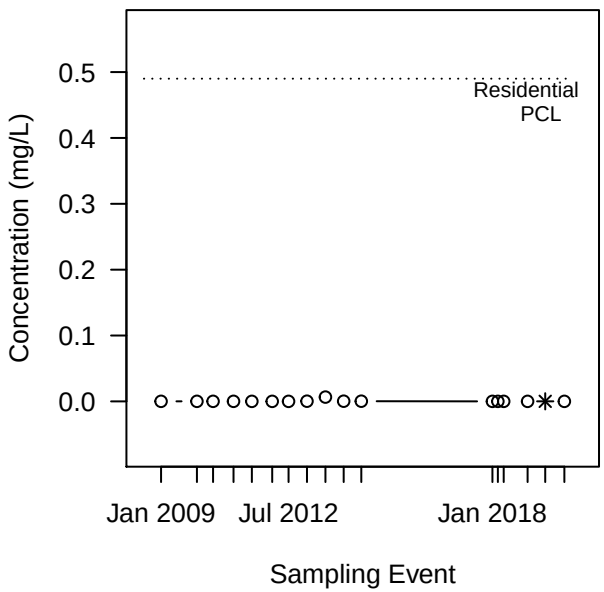
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

Mann−Kendall Trend Tests for MW−21C

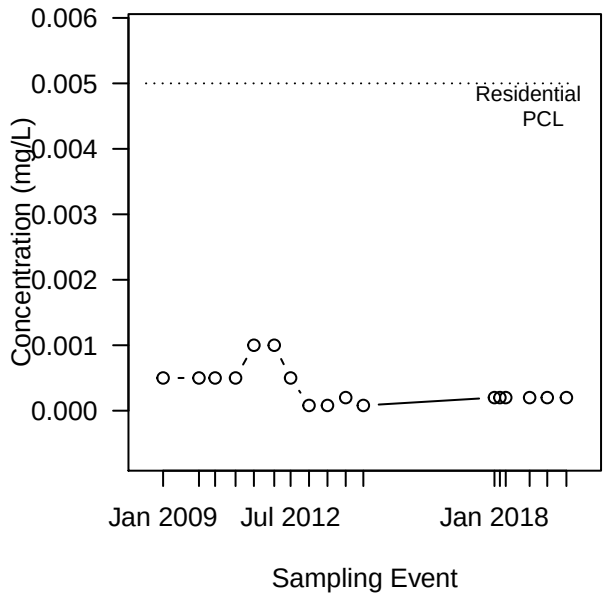
2−Methylnaphthalene (Det/N = 5/17)
No Trend
(p−value=0.164 and CV=3.3)



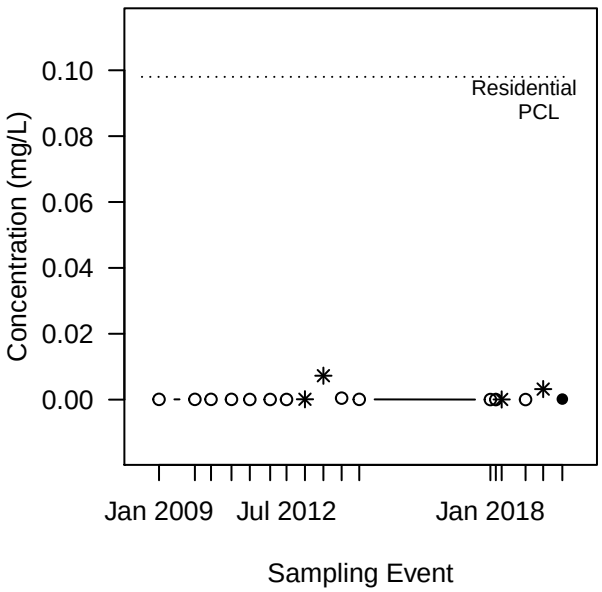
2,4−Dimethylphenol (Det/N = 1/17)
Probably Increasing
(p−value=0.0923 and CV=3.2)



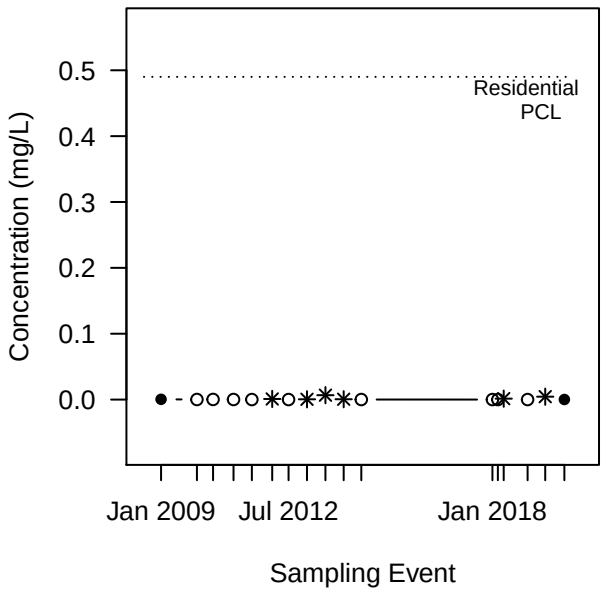
Benzene (Det/N = 0/17)
Not evaluated − All NDs



Dibenzofuran (Det/N = 5/17)
Increasing
(p−value=0.0283 and CV=2.7)



Naphthalene (Det/N = 8/17)
No Trend
(p−value=0.173 and CV=2)

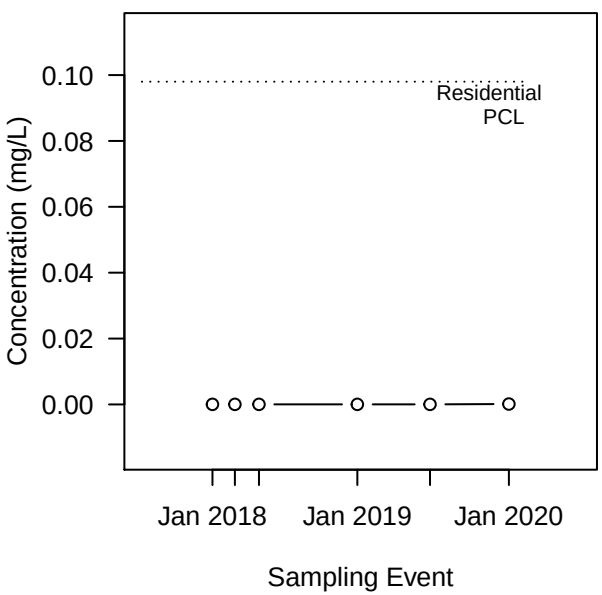


LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

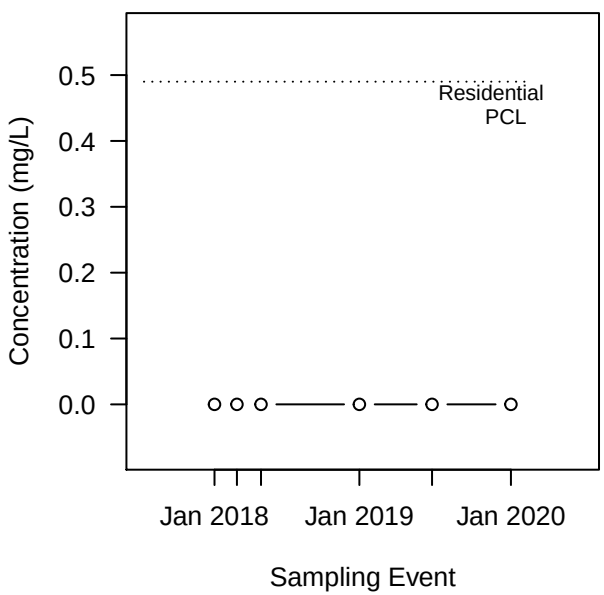
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

Mann−Kendall Trend Tests for MW−22AR

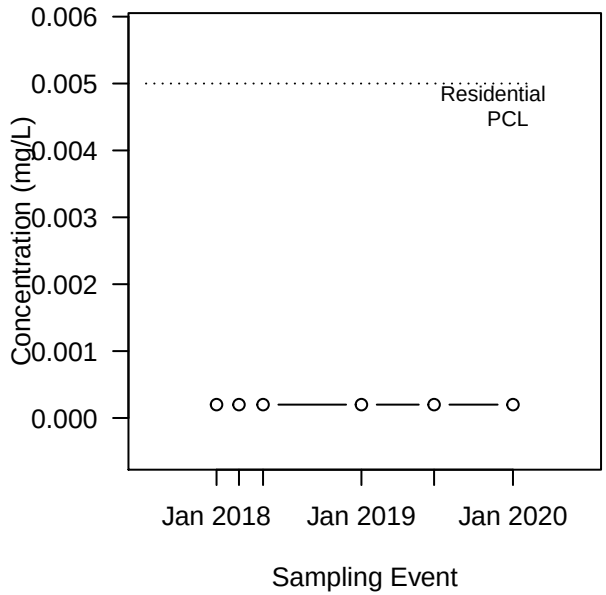
2−Methylnaphthalene (Det/N = 0/6)
Not evaluated − All NDs



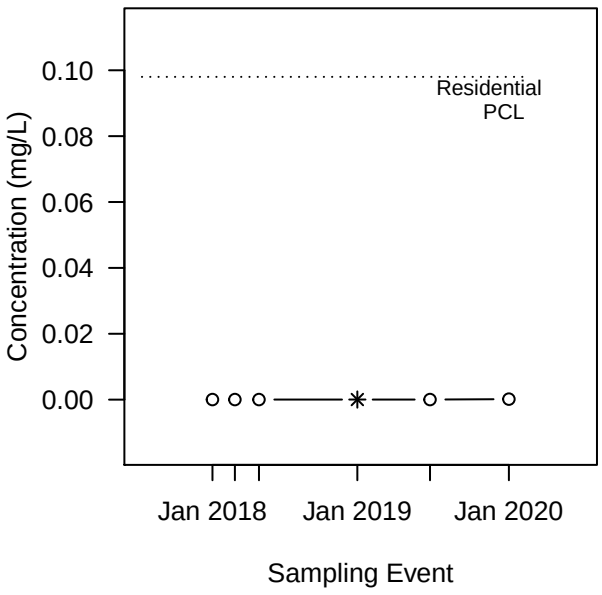
2,4−Dimethylphenol (Det/N = 0/6)
Not evaluated − All NDs



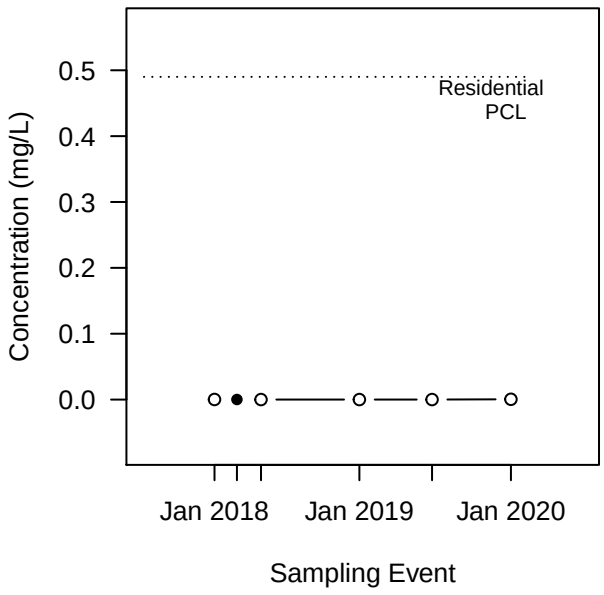
Benzene (Det/N = 0/6)
Not evaluated (all concentrations are identical)



Dibenzofuran (Det/N = 1/6)
No Trend
(p−value=0.5 and CV=1.2)



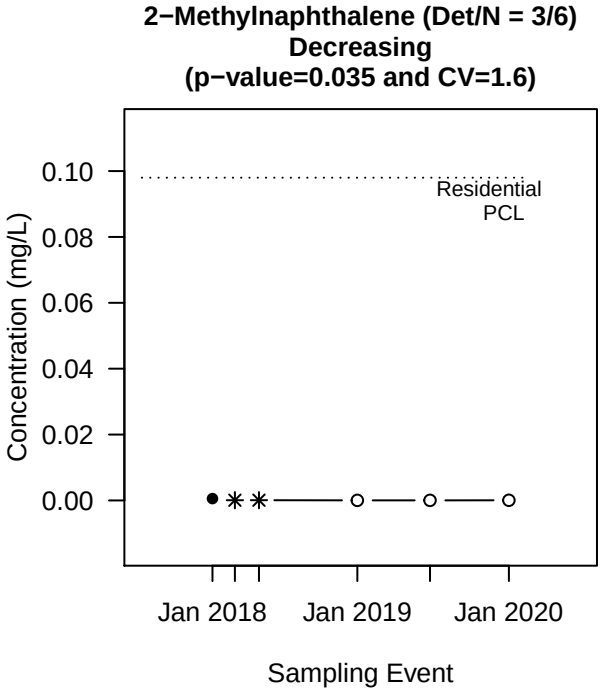
Naphthalene (Det/N = 1/6)
No Trend
(p−value=0.279 and CV=1.2)

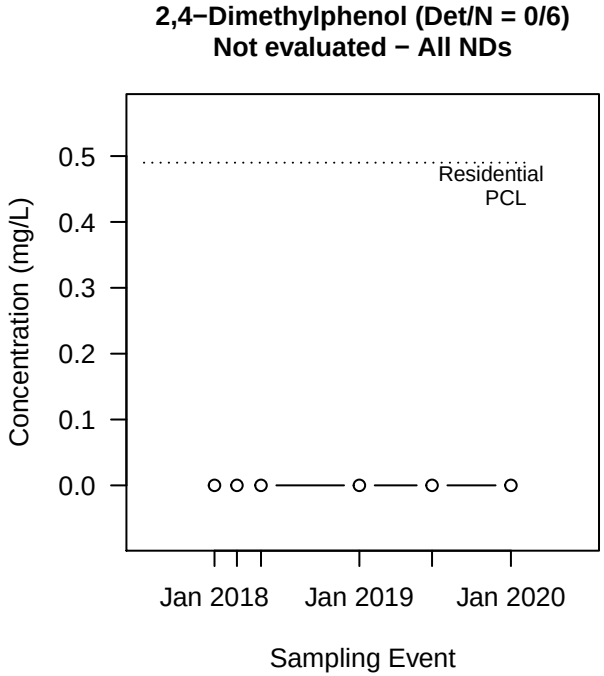


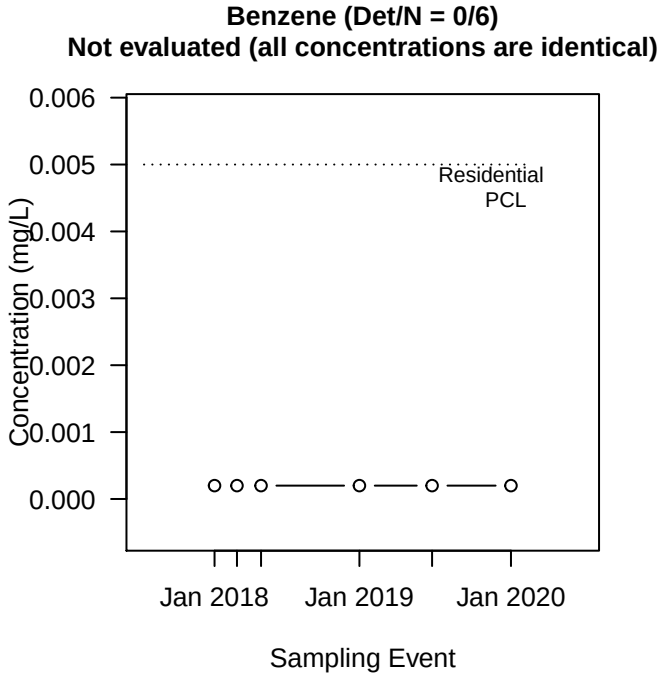
LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

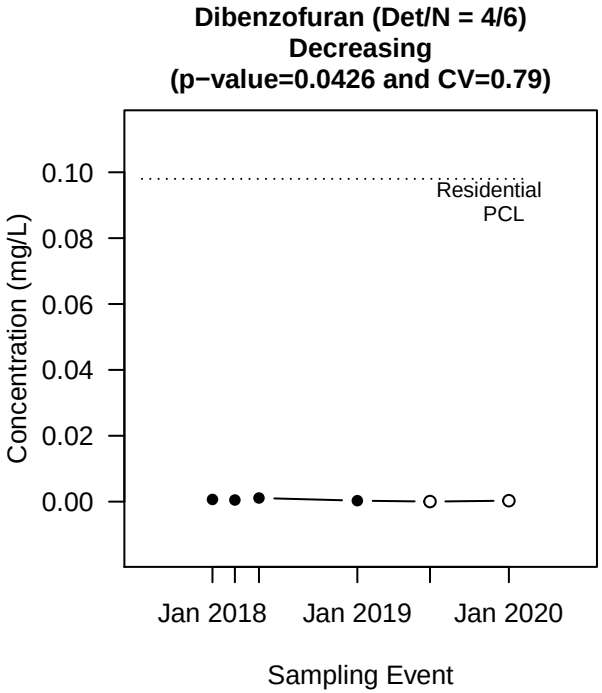
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

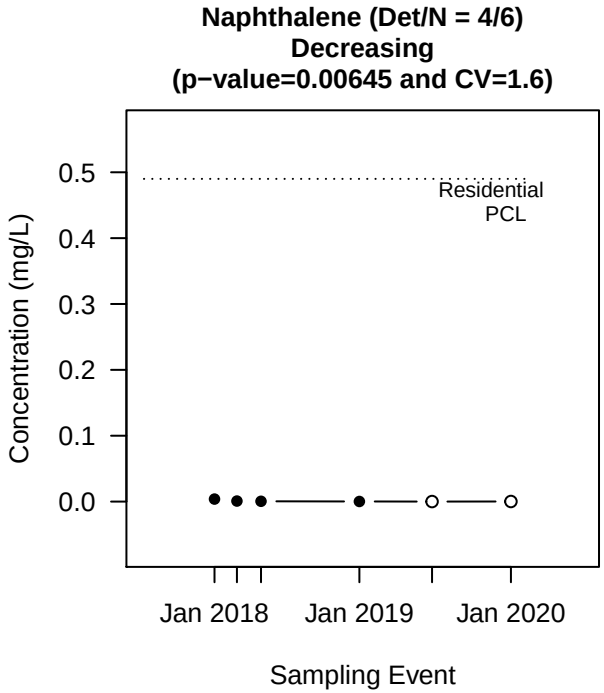
Mann−Kendall Trend Tests for MW−22BR

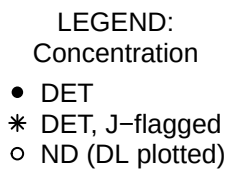






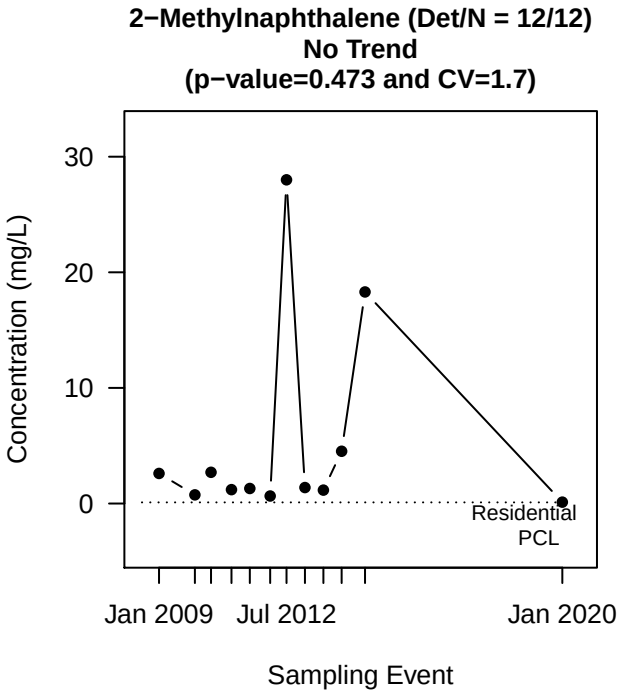


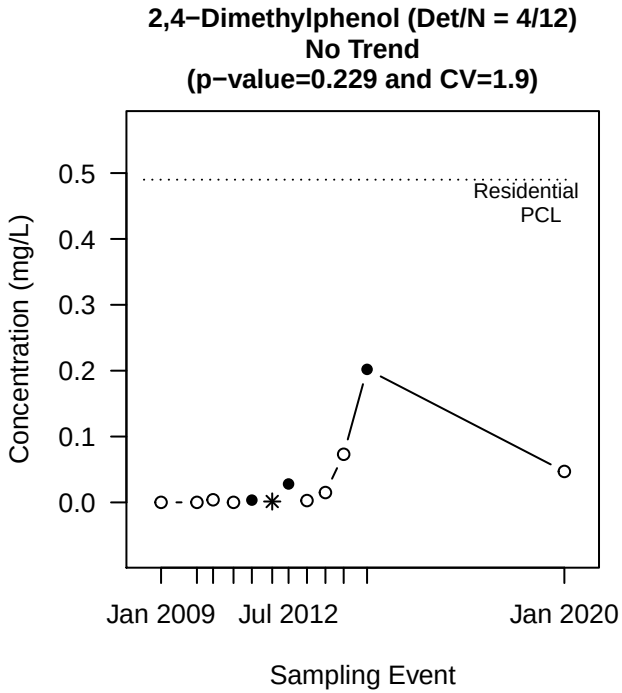


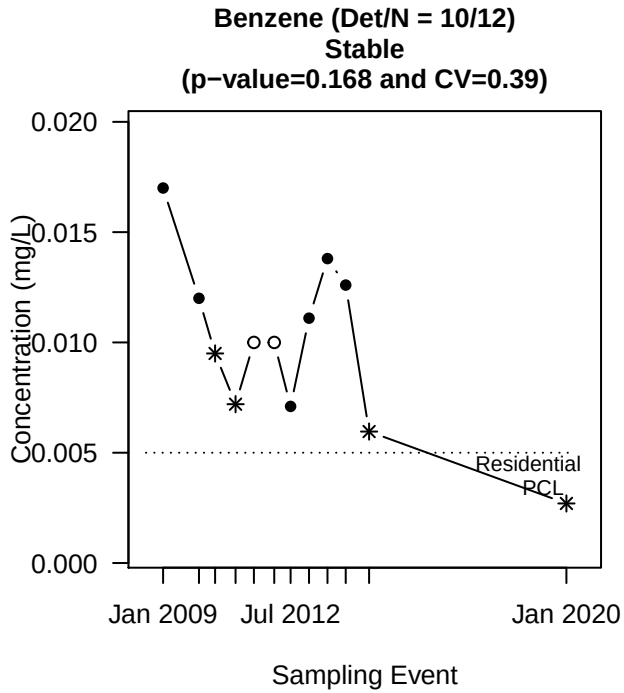


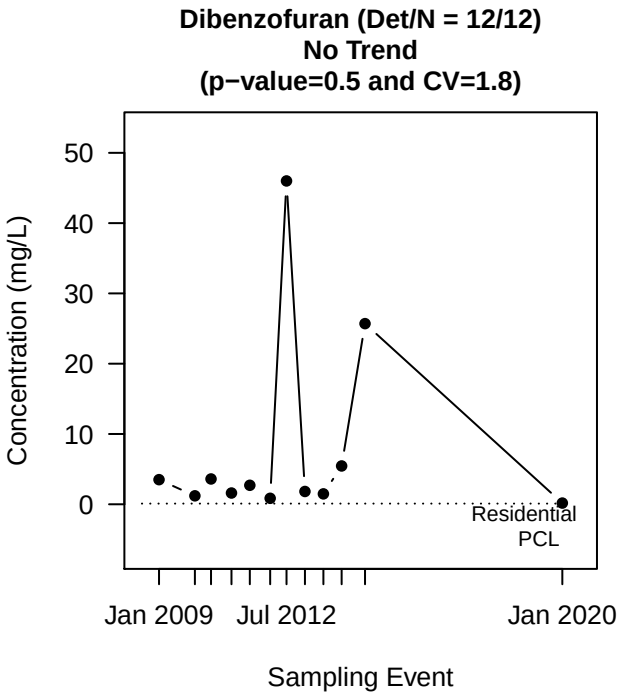
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

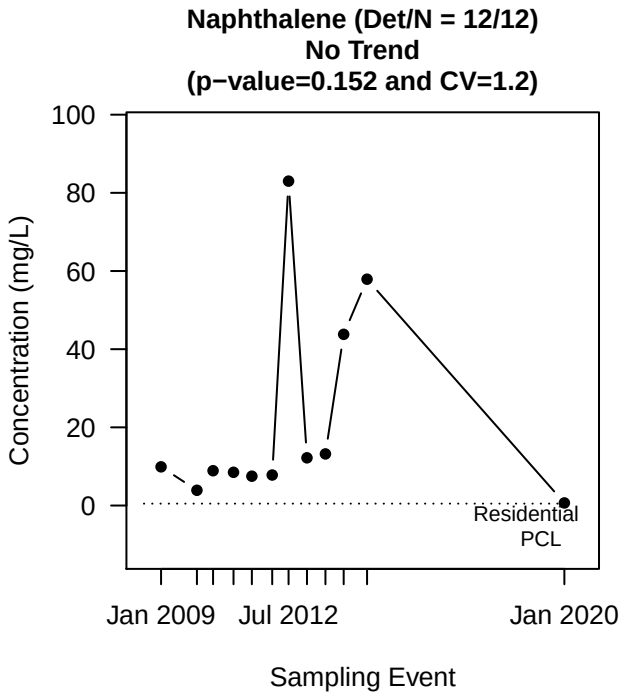
Mann−Kendall Trend Tests for MW−23C











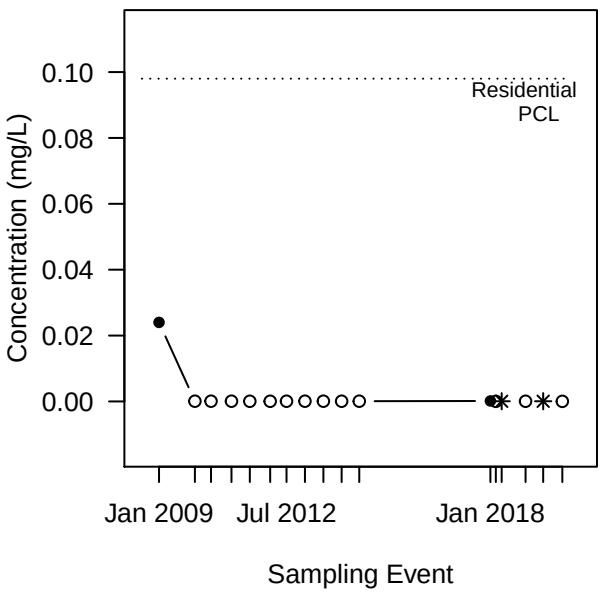
LEGEND:
Concentration

- DET
- DET, J−flagged
- ND (DL plotted)

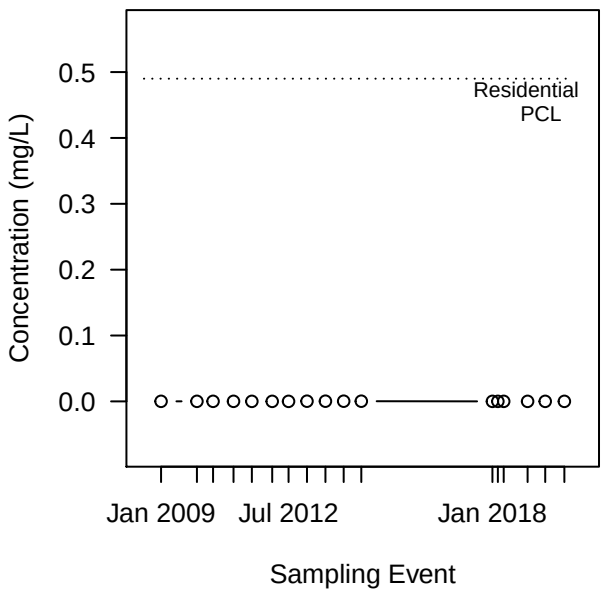
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

Mann−Kendall Trend Tests for MW−25A

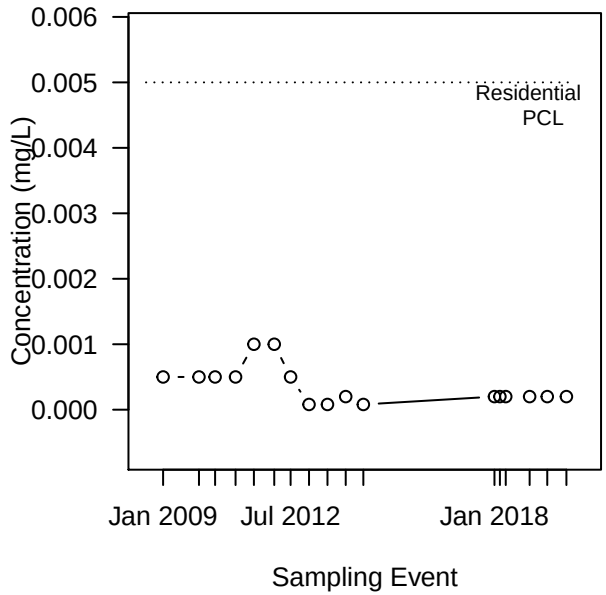
2−Methylnaphthalene (Det/N = 4/17)
No Trend
(p−value=0.308 and CV=4)



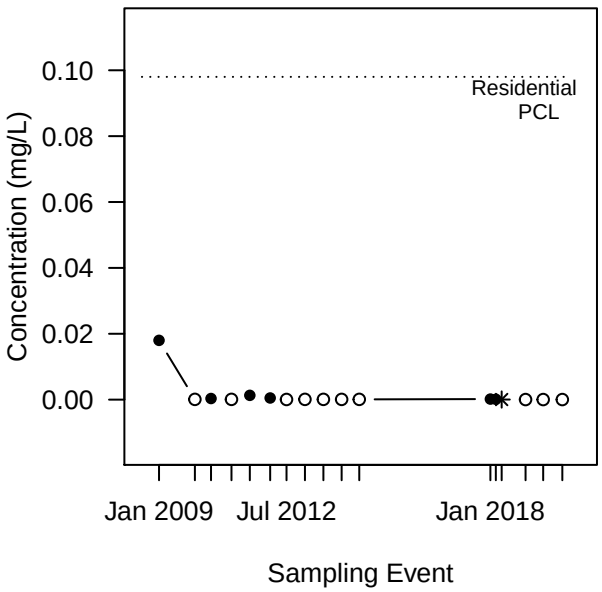
2,4−Dimethylphenol (Det/N = 0/17)
Not evaluated − All NDs



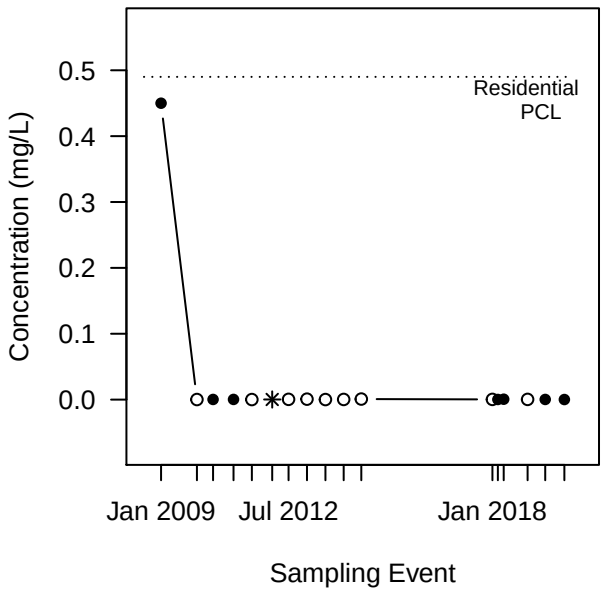
Benzene (Det/N = 0/17)
Not evaluated − All NDs



Dibenzofuran (Det/N = 7/17)
Probably Decreasing
(p−value=0.0573 and CV=3.5)



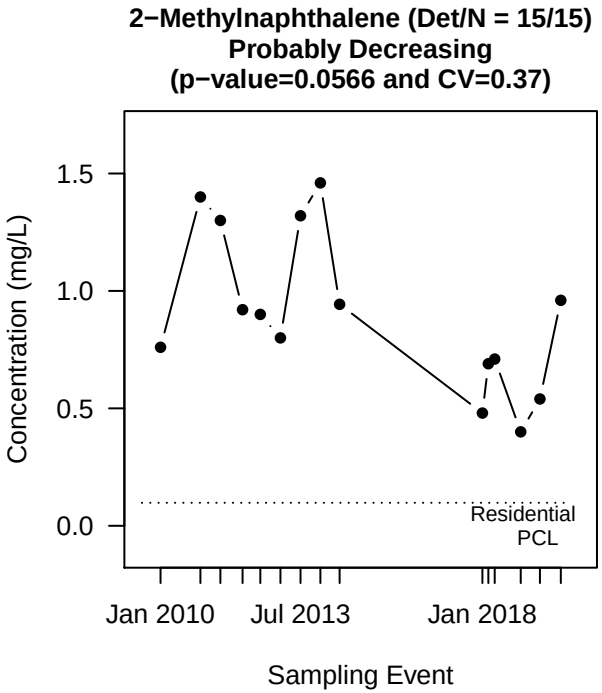
Naphthalene (Det/N = 8/17)
No Trend
(p−value=0.377 and CV=4.1)

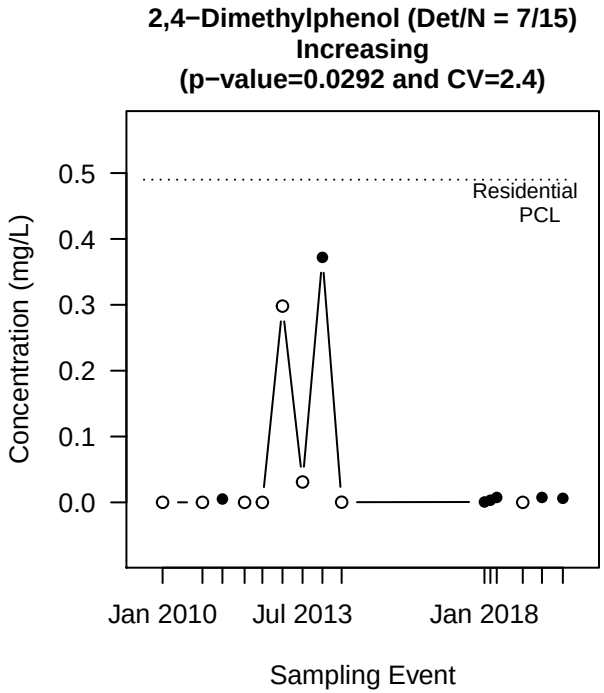


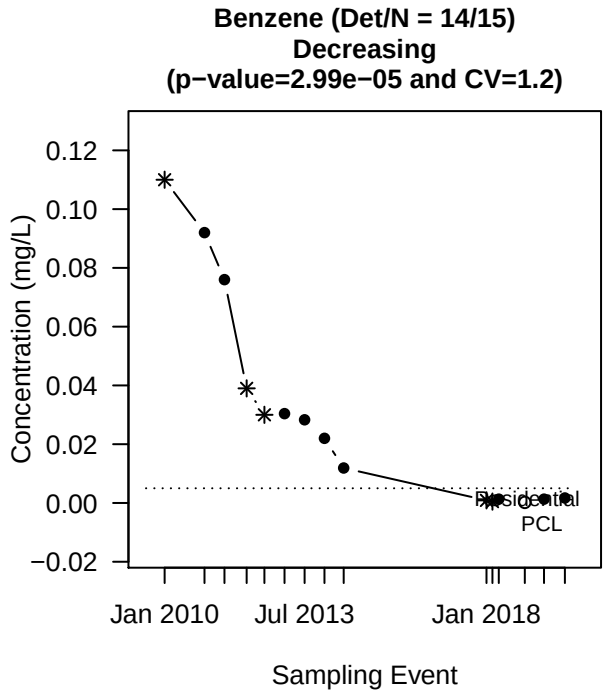
LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

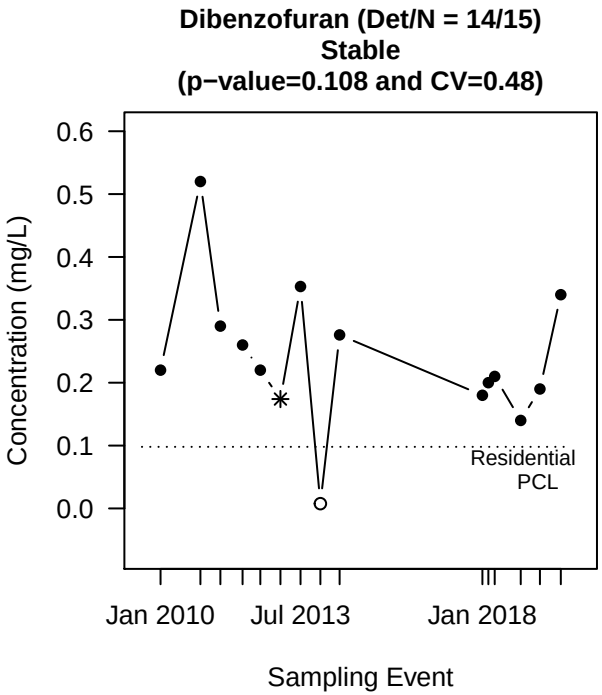
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

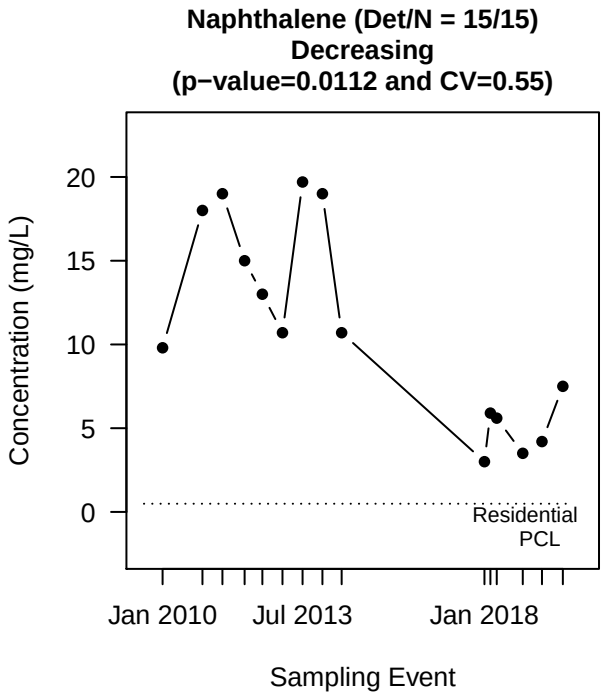
Mann−Kendall Trend Tests for MW−25C









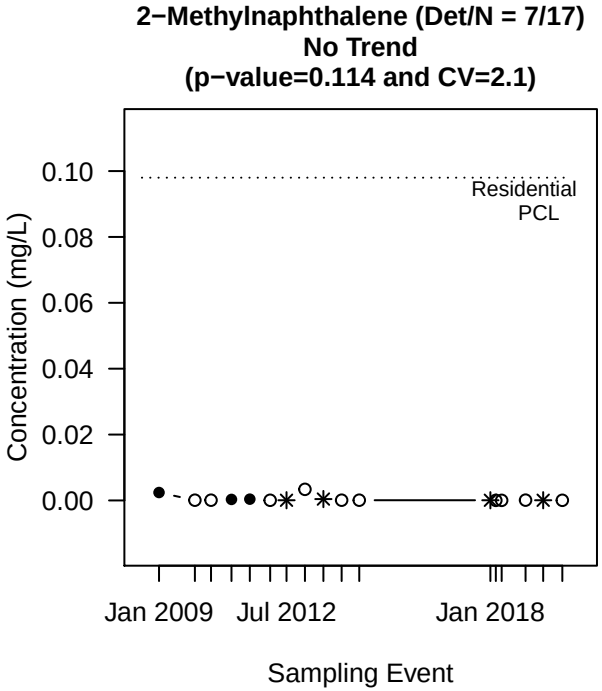


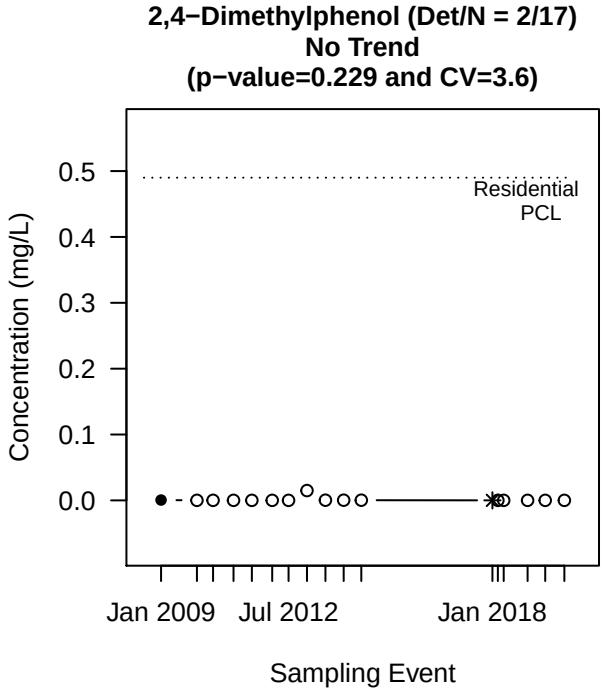
LEGEND:
Concentration

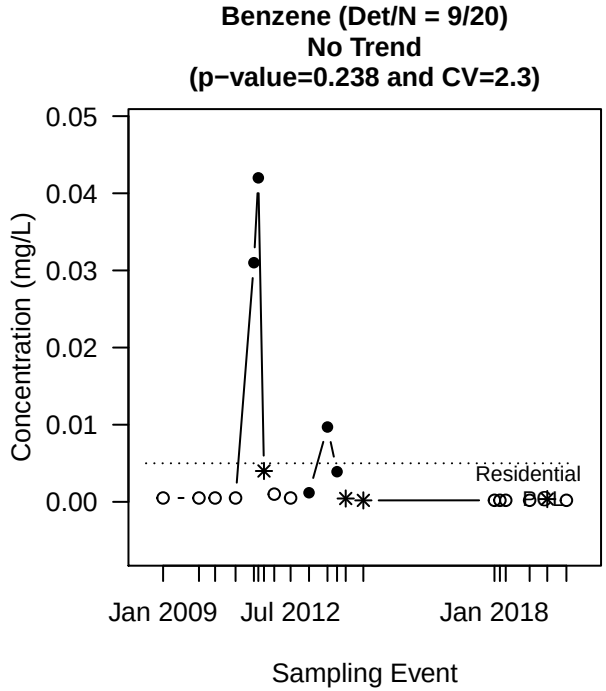
- DET
- DET, J−flagged
- ND (DL plotted)

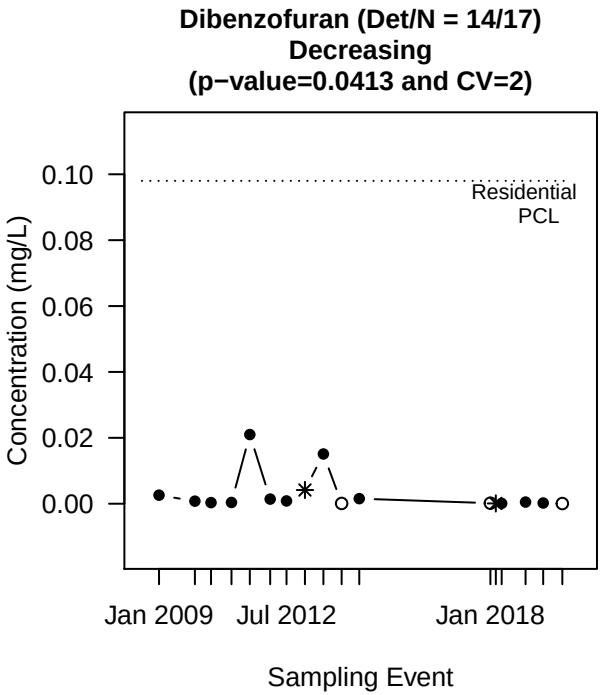
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

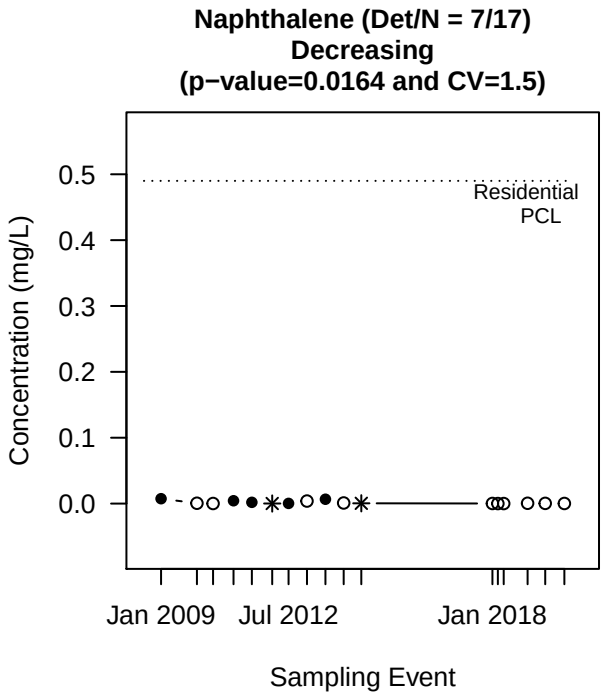
Mann−Kendall Trend Tests for MW−26A







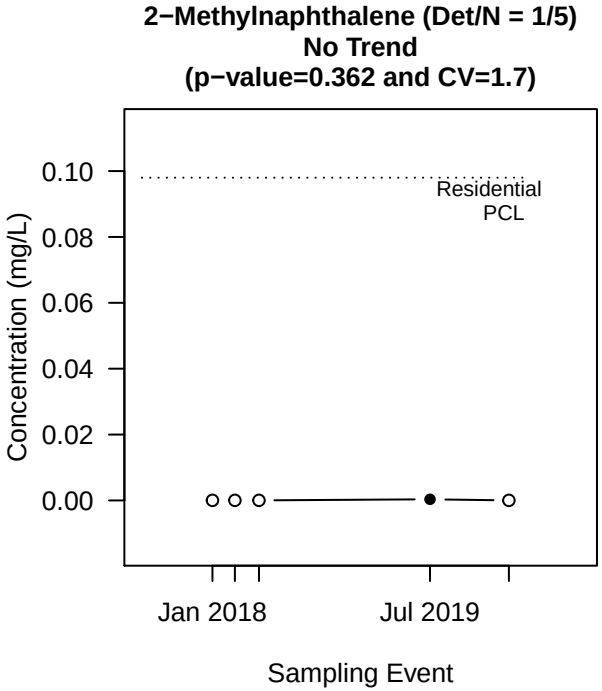


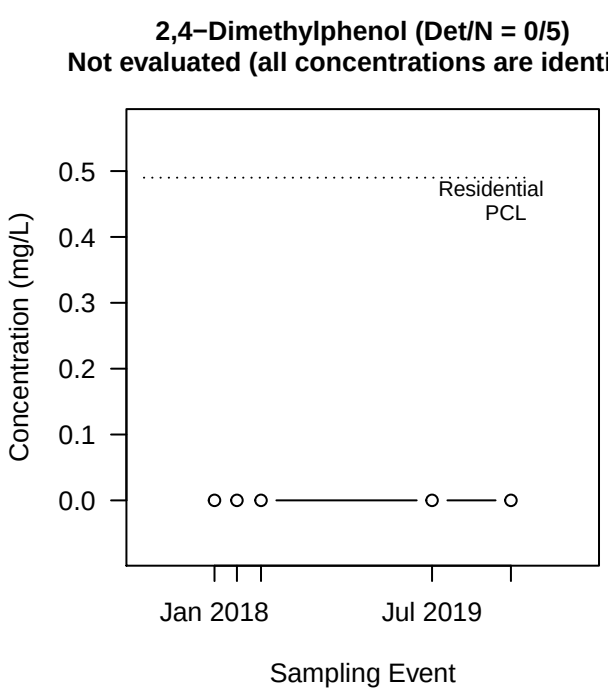


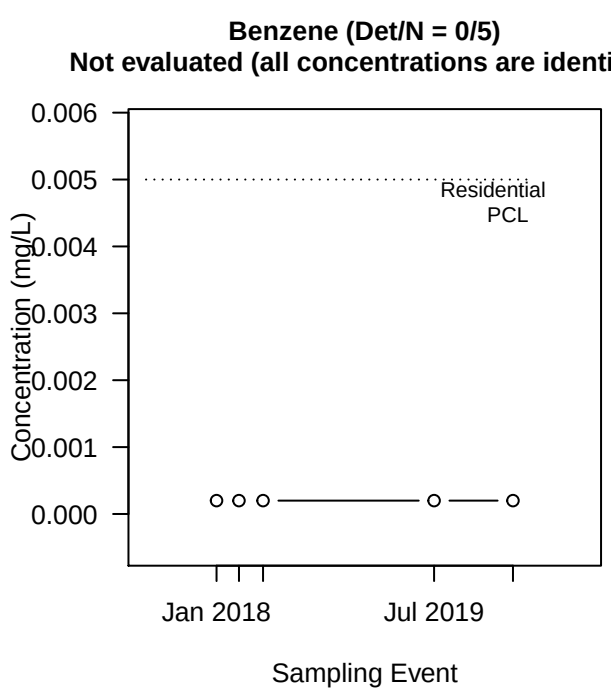
LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

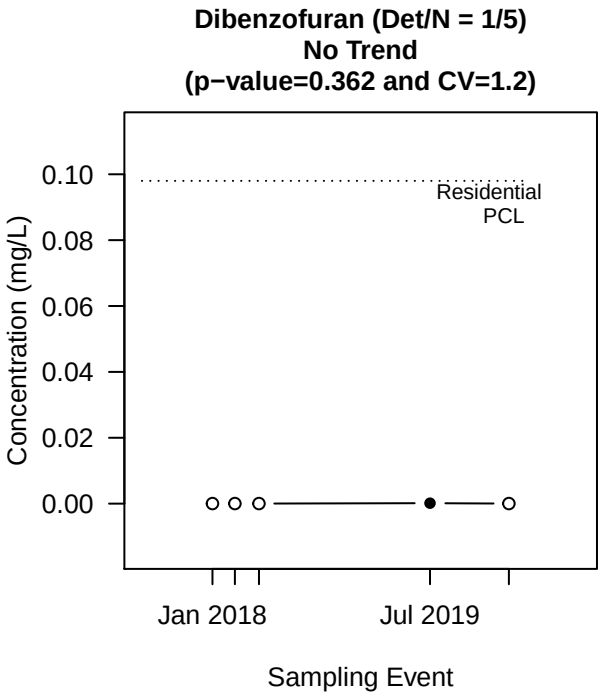
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

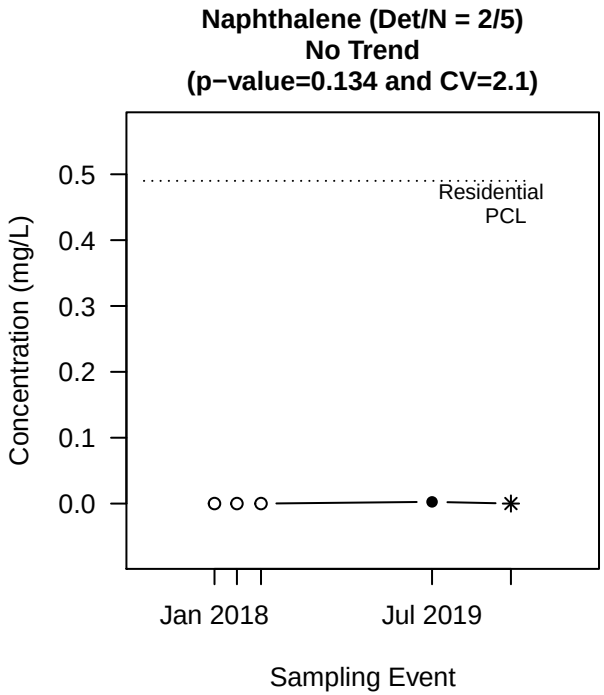
Mann−Kendall Trend Tests for MW−27A

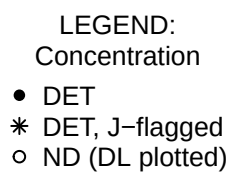






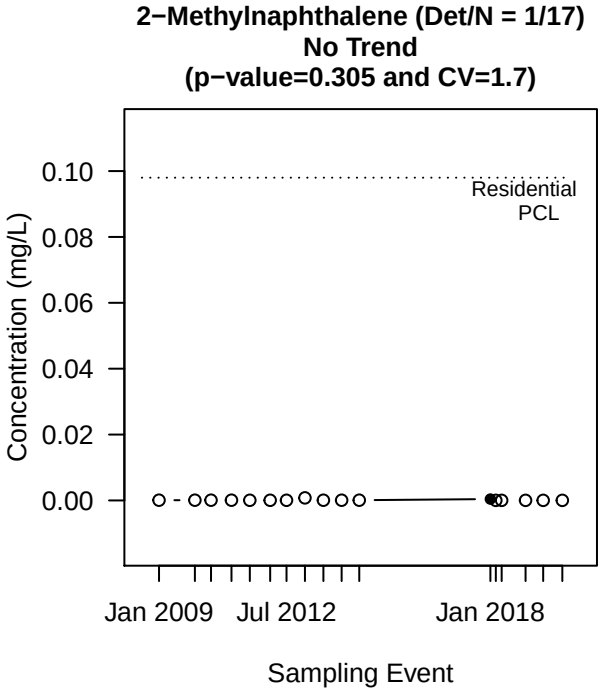


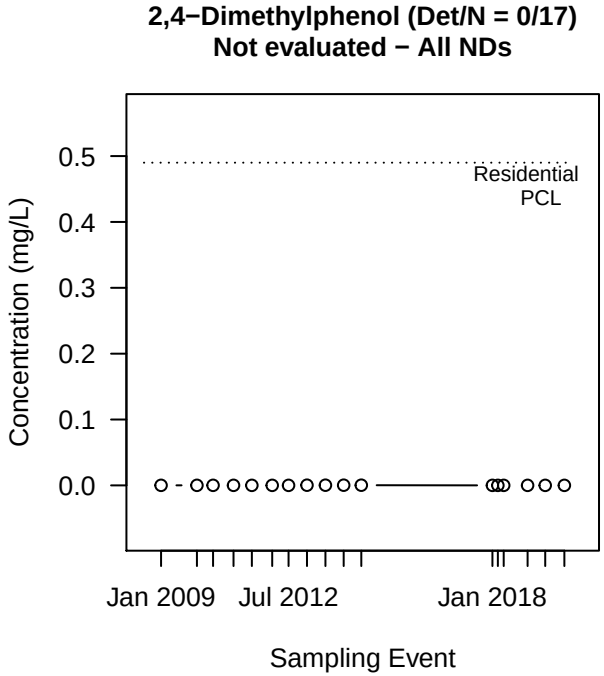


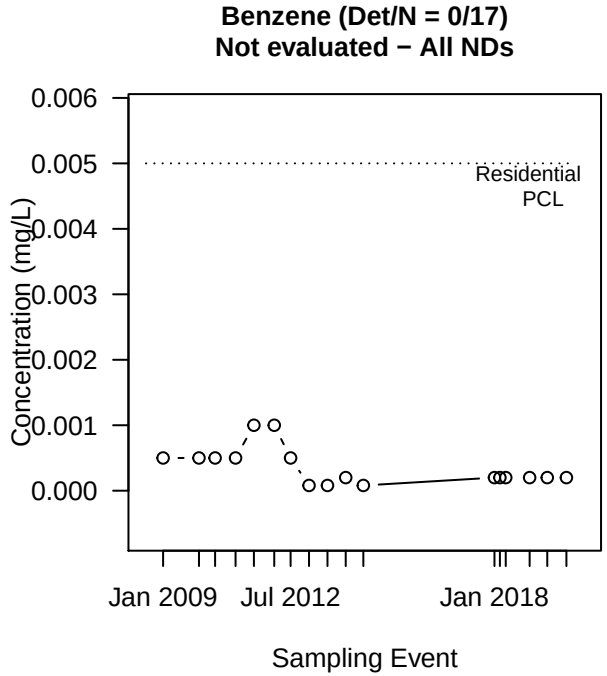


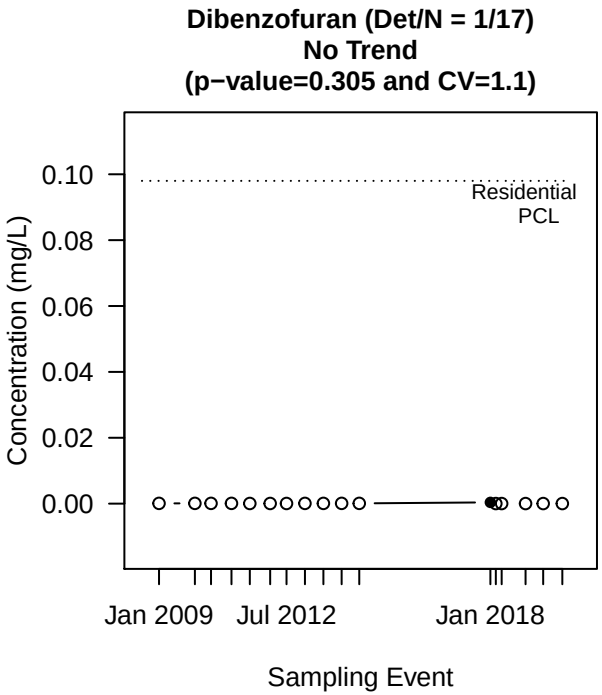
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

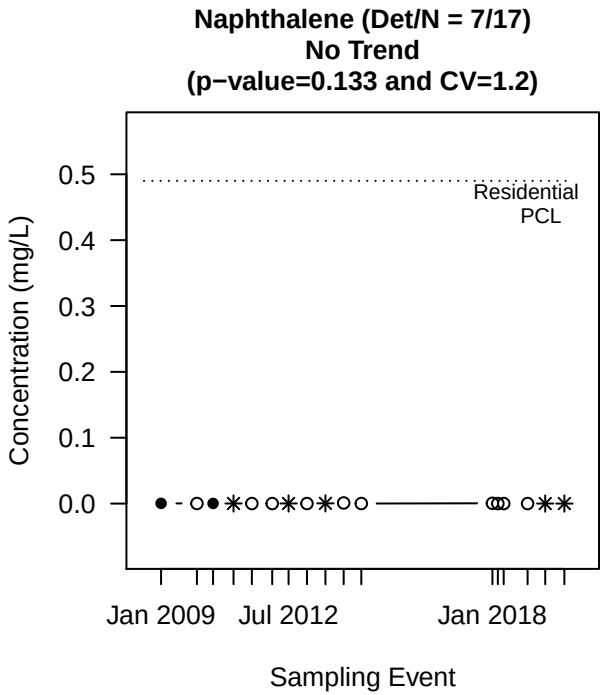
Mann−Kendall Trend Tests for MW−27C

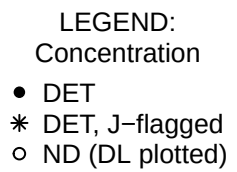








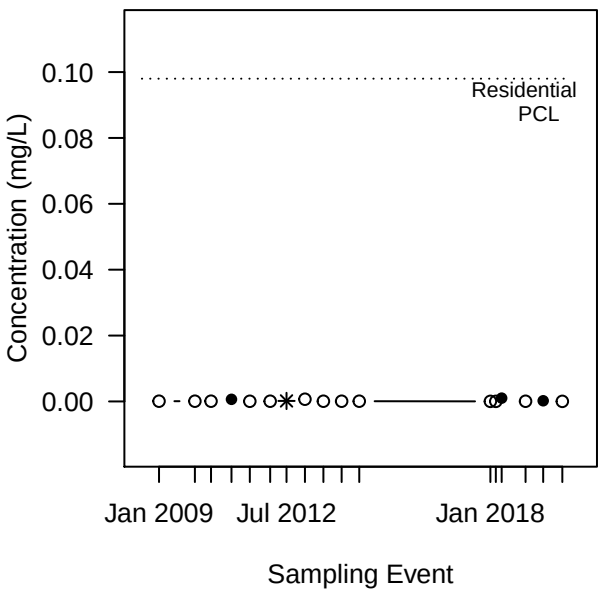




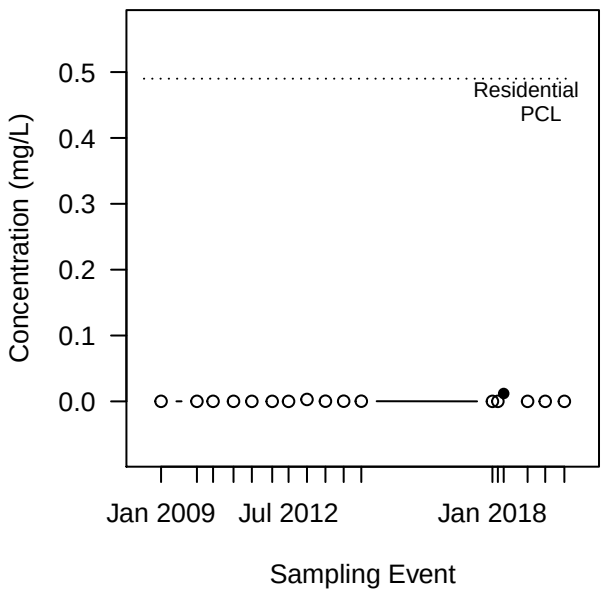
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

Mann−Kendall Trend Tests for MW−28A

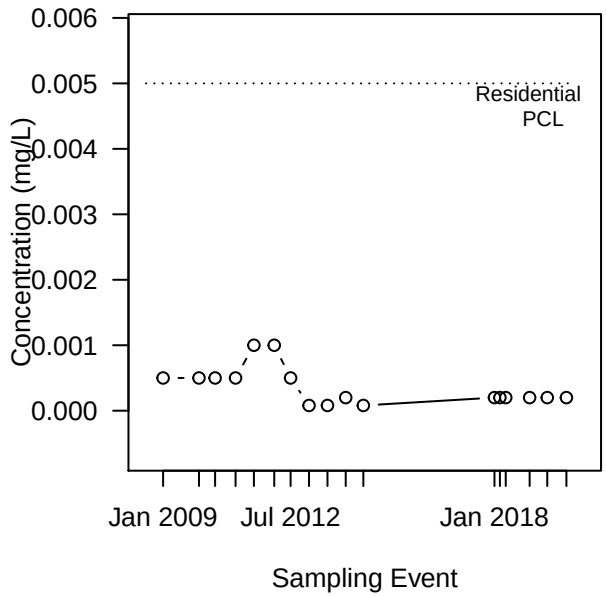
2−Methylnaphthalene (Det/N = 4/17)
No Trend
(p−value=0.308 and CV=1.5)



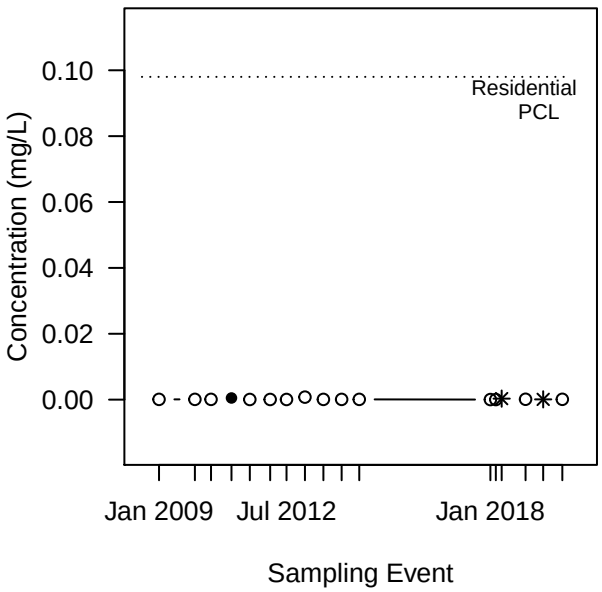
2,4−Dimethylphenol (Det/N = 1/17)
No Trend
(p−value=0.179 and CV=3)



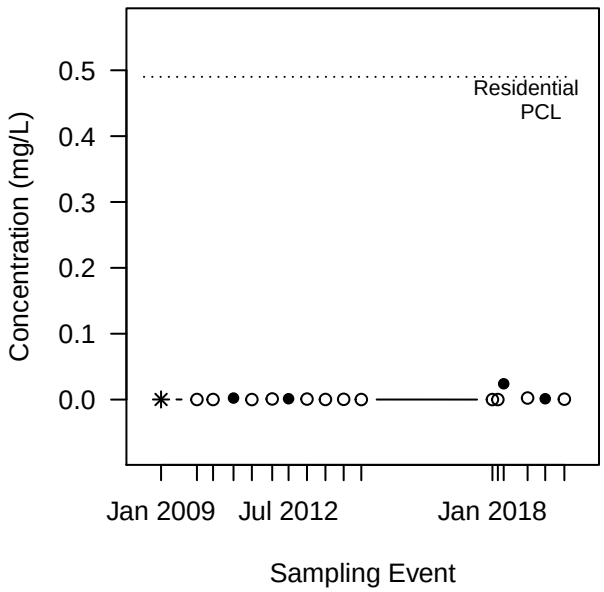
Benzene (Det/N = 0/17)
Not evaluated − All NDs



Dibenzofuran (Det/N = 3/17)
No Trend
(p−value=0.266 and CV=1.3)



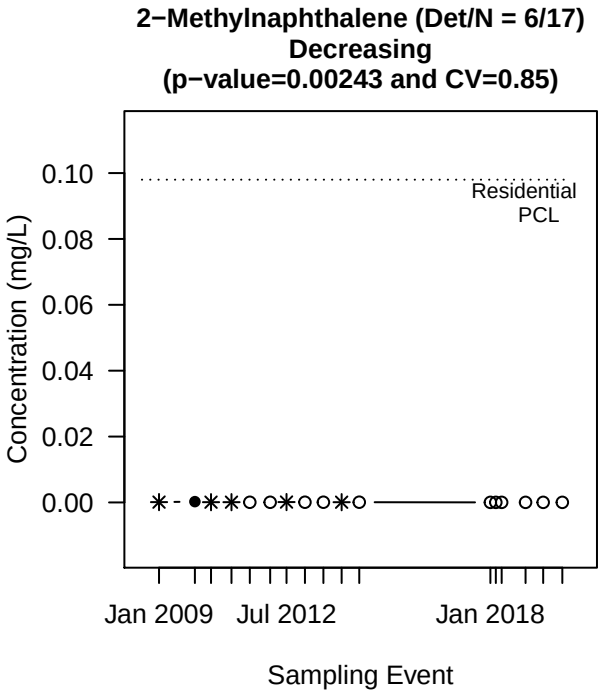
Naphthalene (Det/N = 5/17)
No Trend
(p−value=0.459 and CV=2.8)

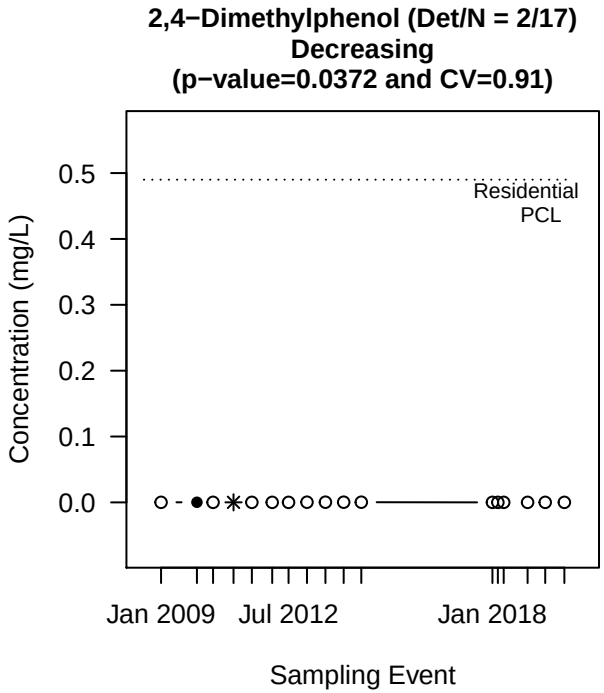


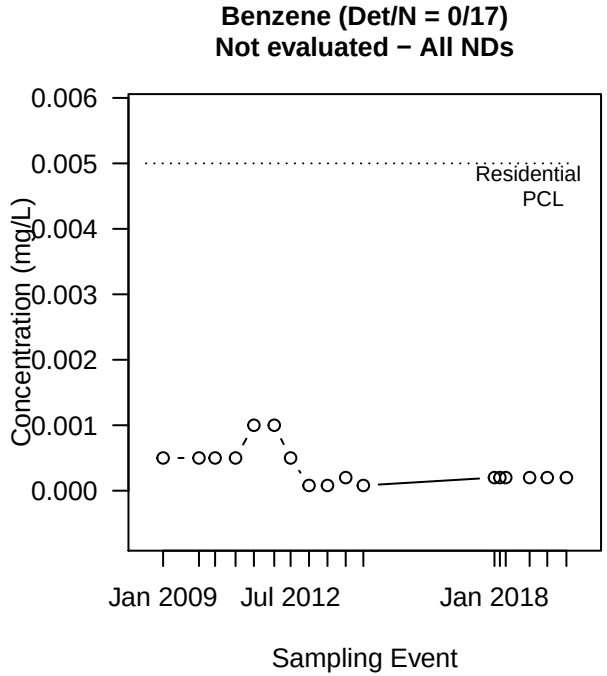
LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

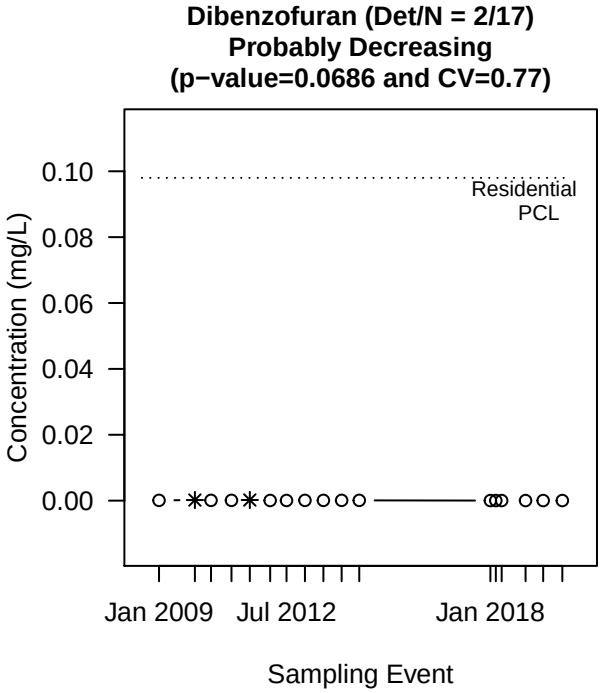
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

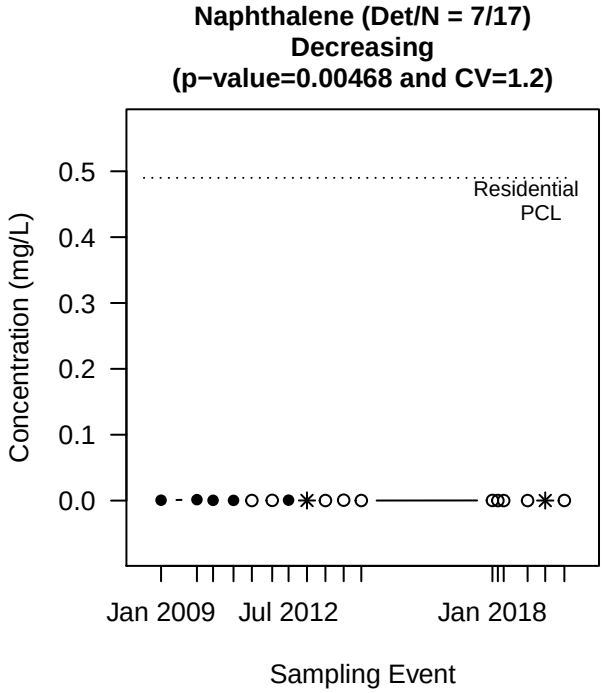
Mann−Kendall Trend Tests for MW−28C

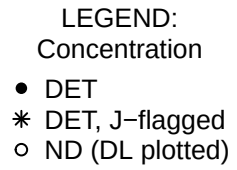






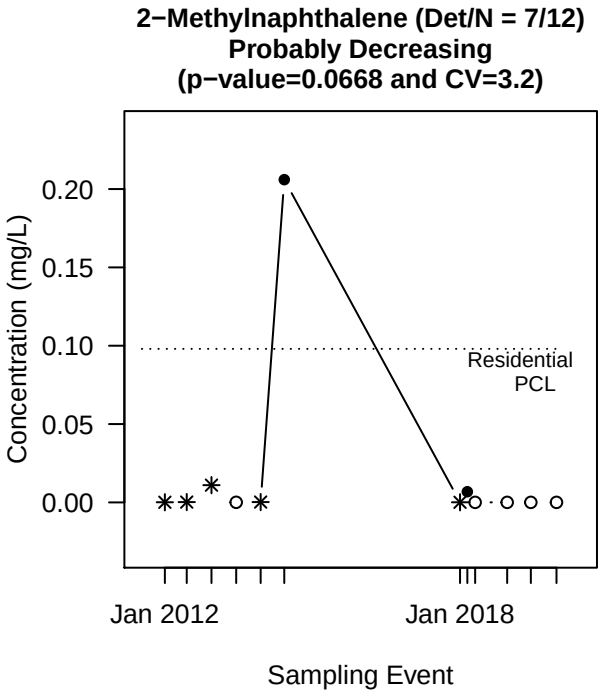


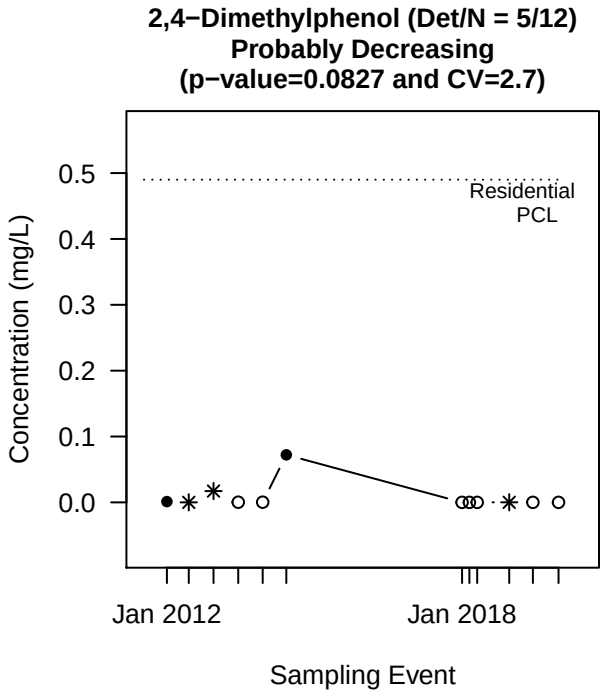


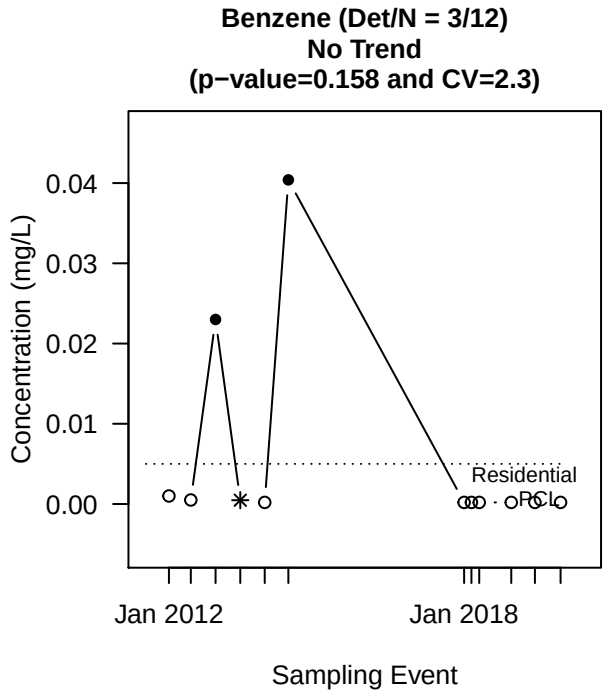


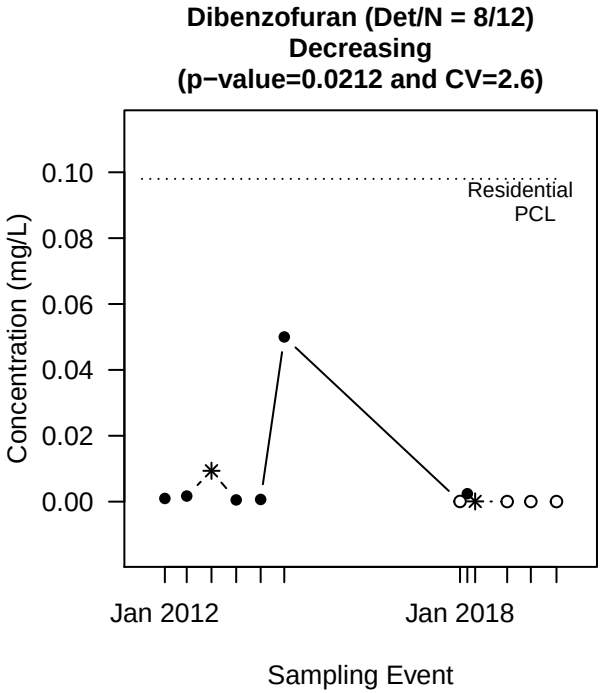
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

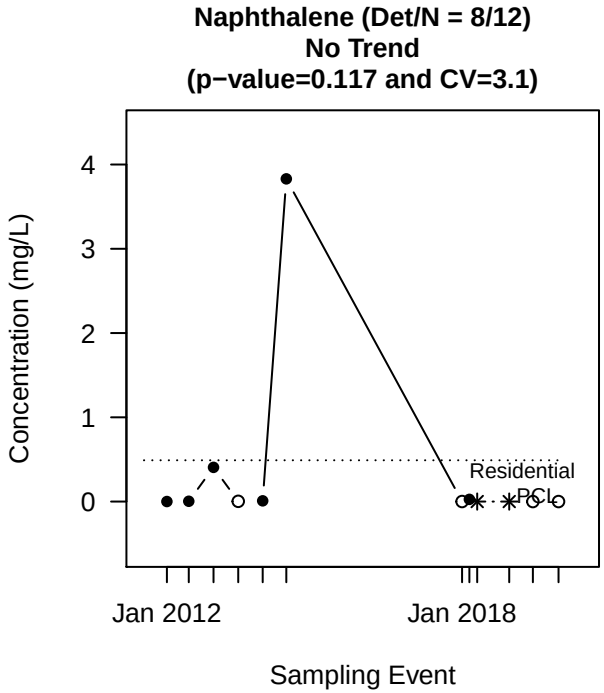
Mann−Kendall Trend Tests for MW−32AR









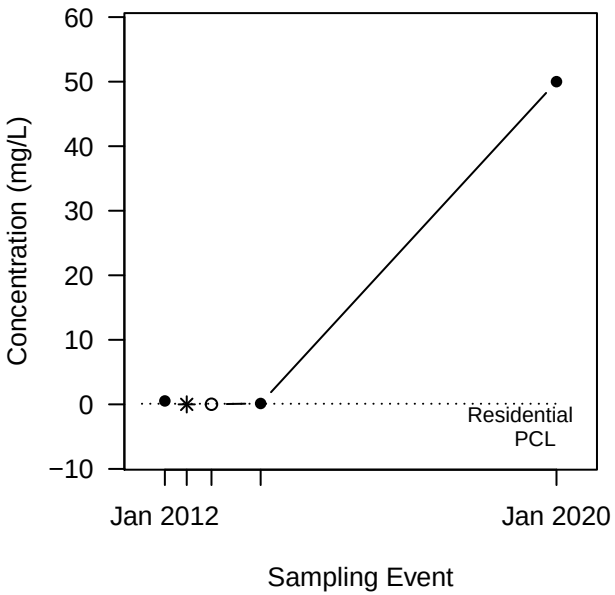


LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

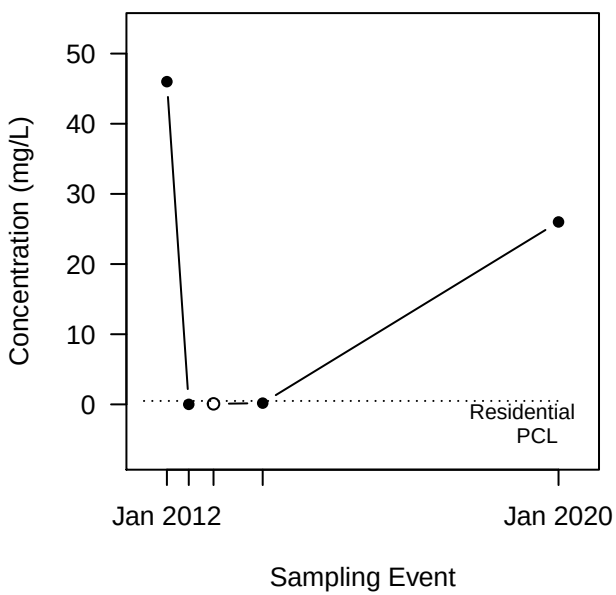
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

Mann−Kendall Trend Tests for MW−32B

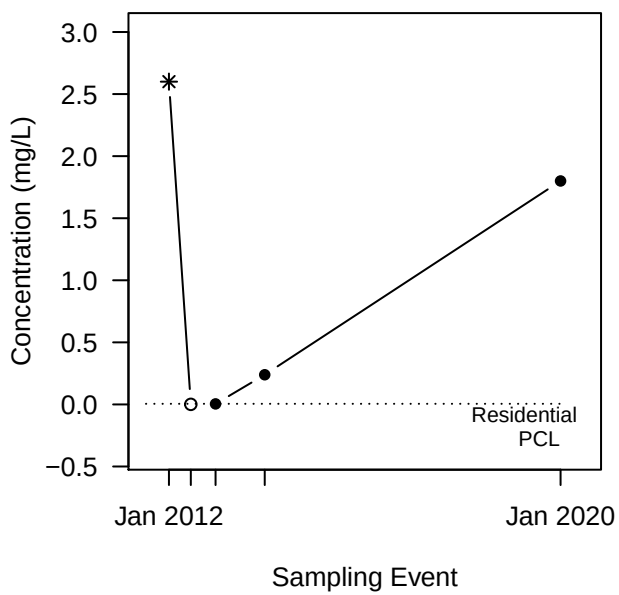
2−Methylnaphthalene (Det/N = 4/5)
No Trend
(p−value=0.403 and CV=2.2)



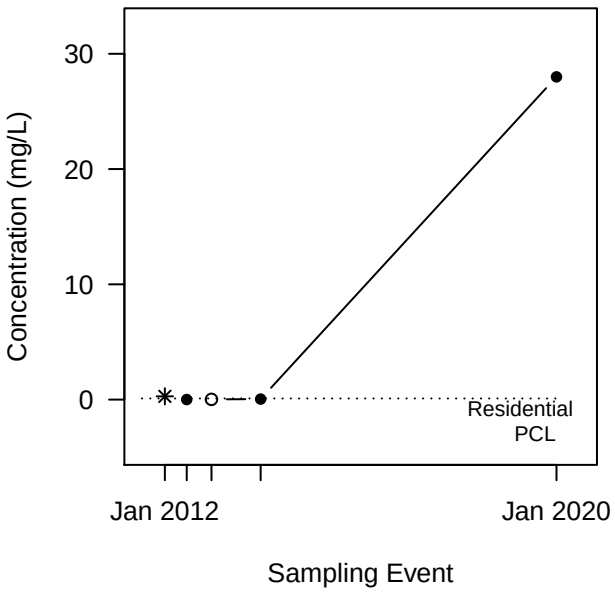
2,4−Dimethylphenol (Det/N = 4/5)
No Trend
(p−value=0.5 and CV=1.4)



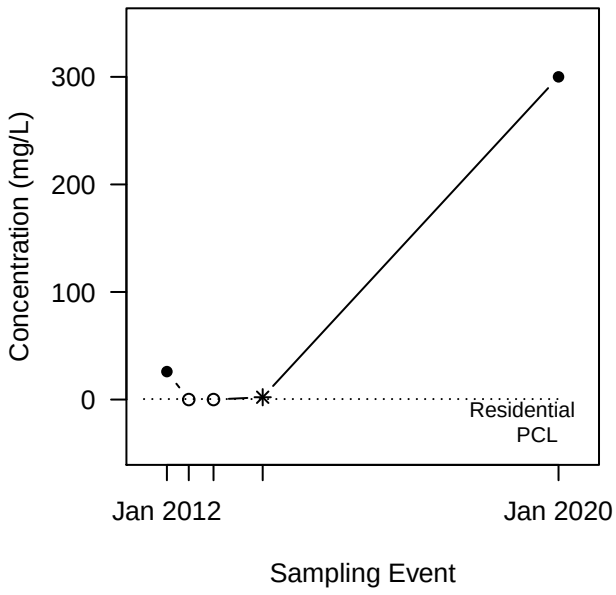
Benzene (Det/N = 4/5)
No Trend
(p−value=0.403 and CV=1.3)



Dibenzofuran (Det/N = 4/5)
No Trend
(p−value=0.403 and CV=2.2)



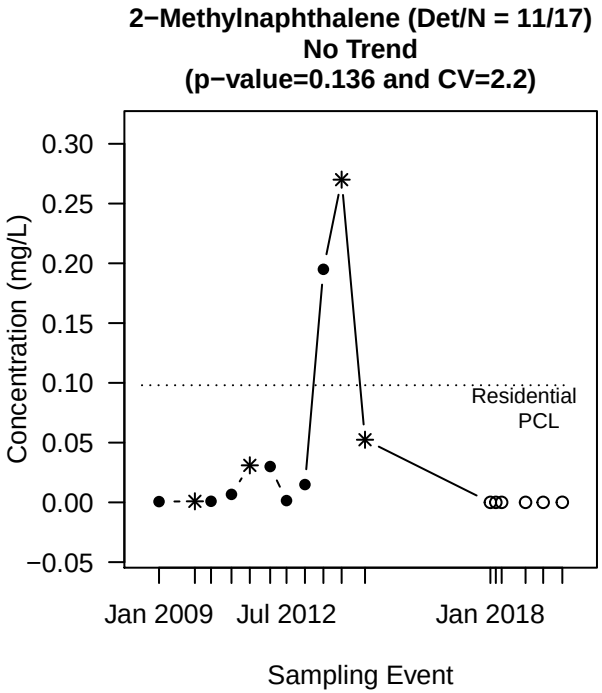
Naphthalene (Det/N = 3/5)
No Trend
(p−value=0.307 and CV=2)

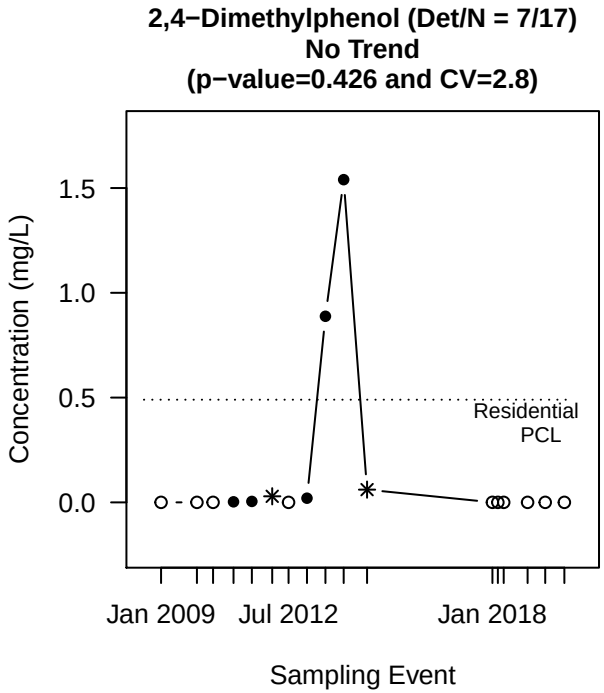


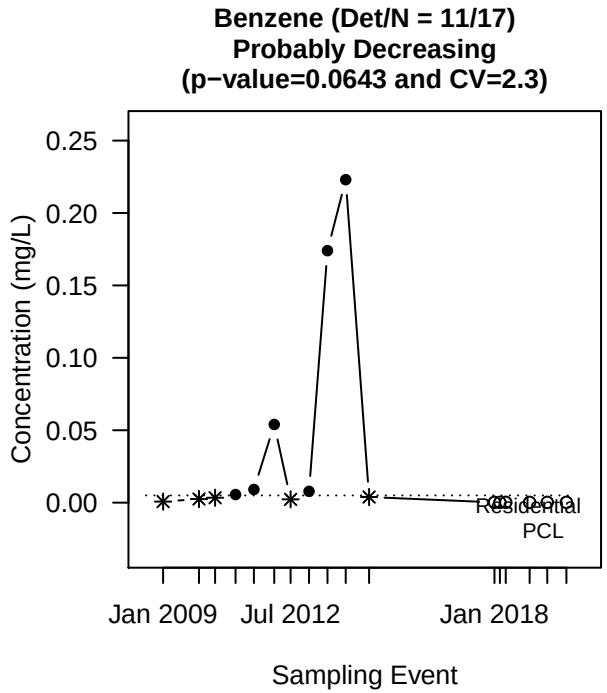
LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

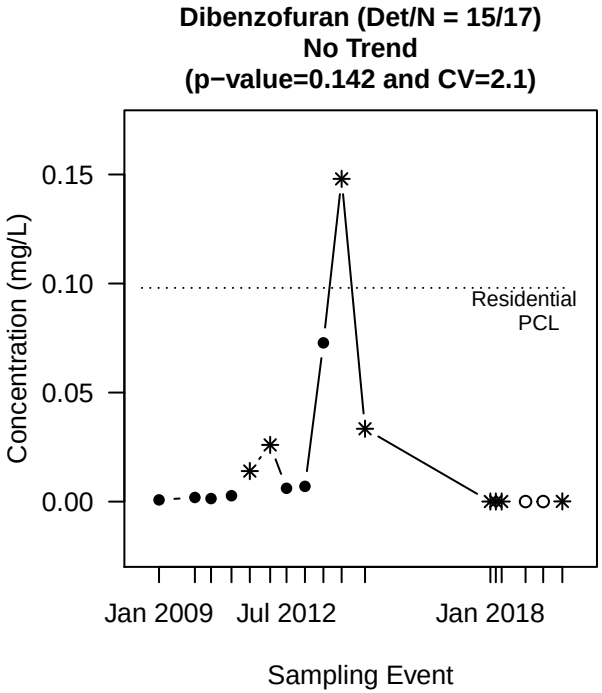
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

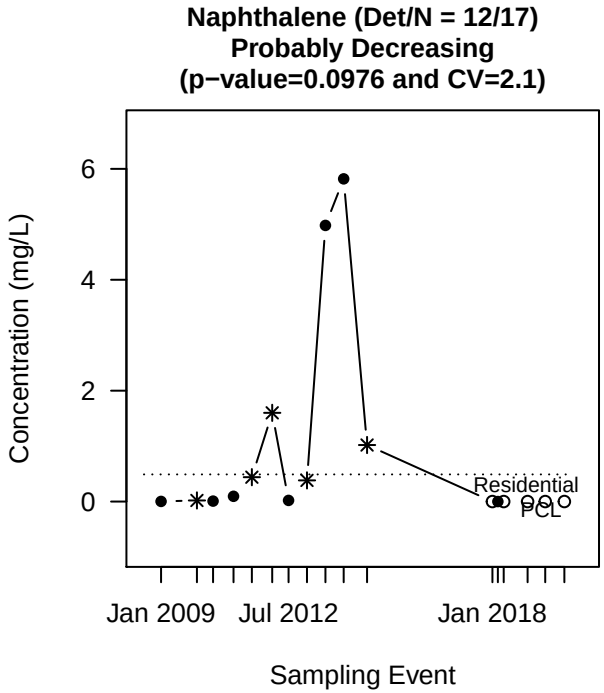
Mann−Kendall Trend Tests for MW−33A









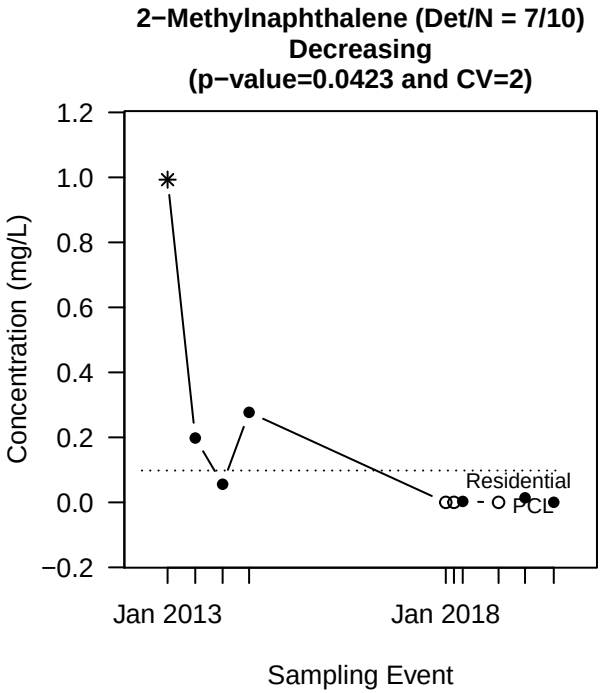


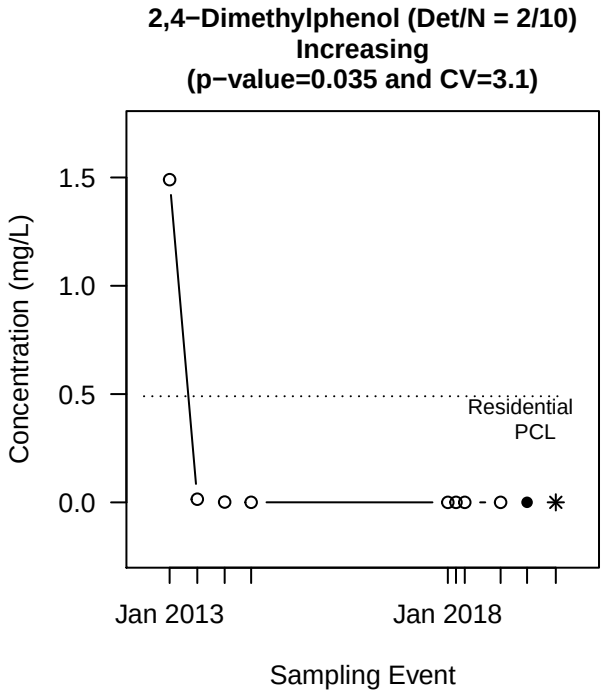
LEGEND:
Concentration

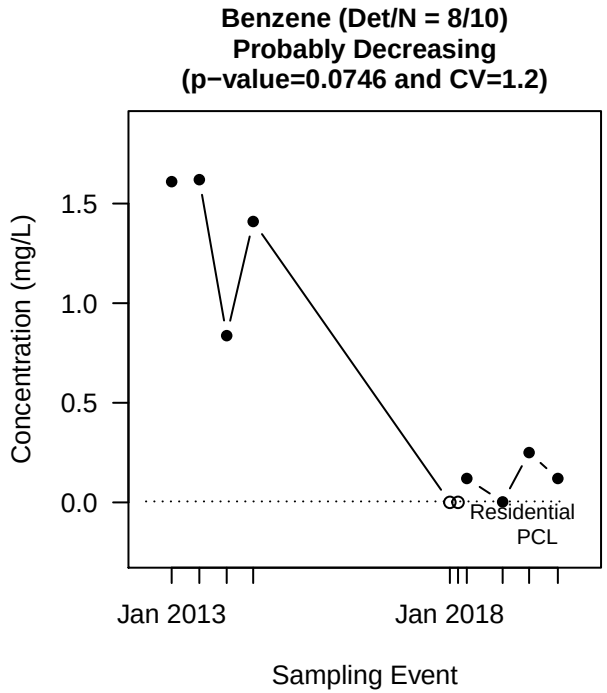
- DET
- DET, J−flagged
- ND (DL plotted)

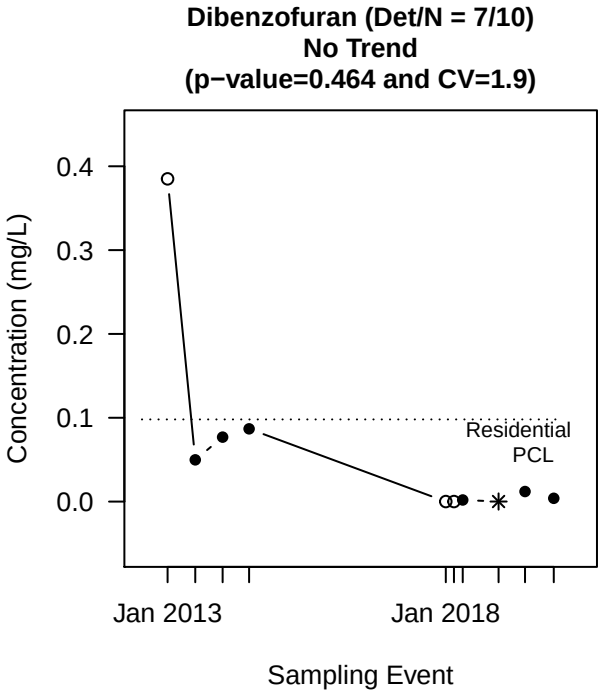
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

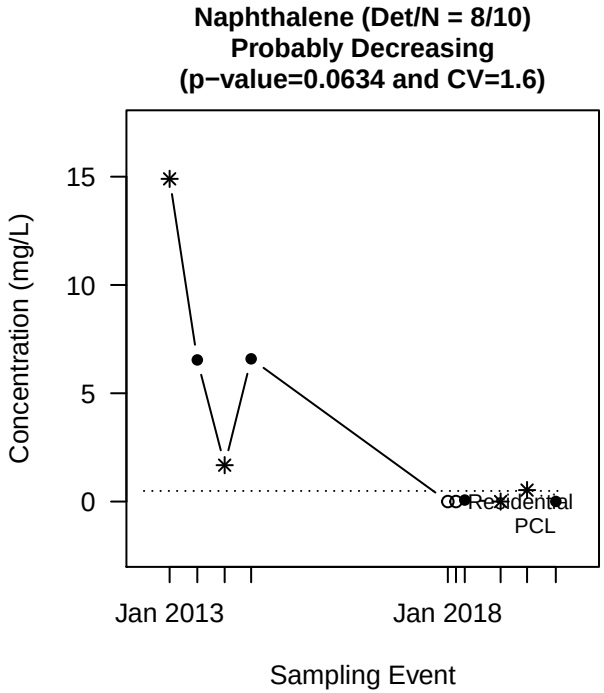
Mann−Kendall Trend Tests for MW−33BR

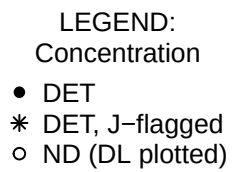






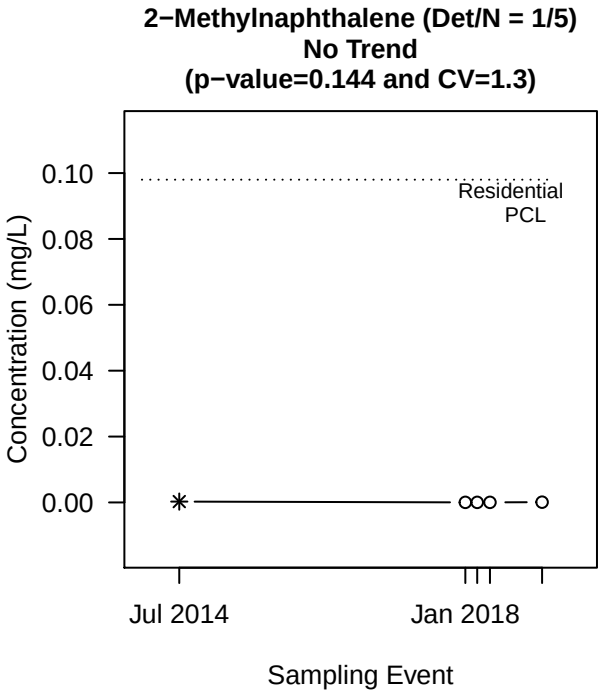


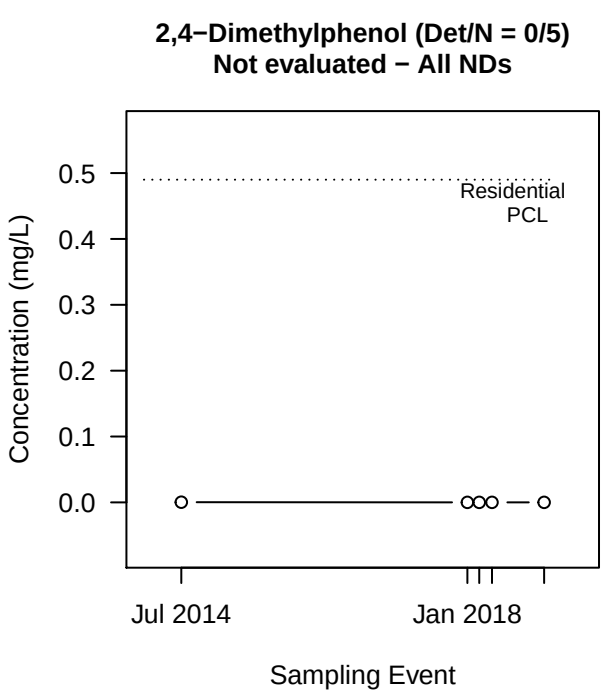


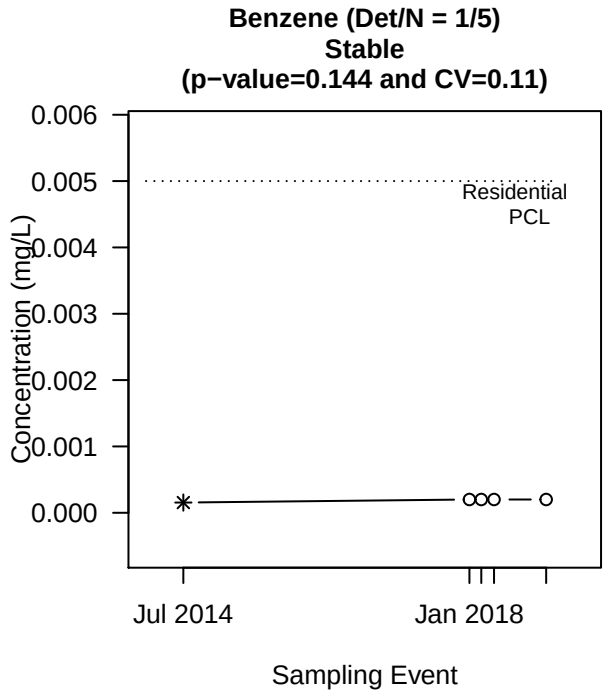


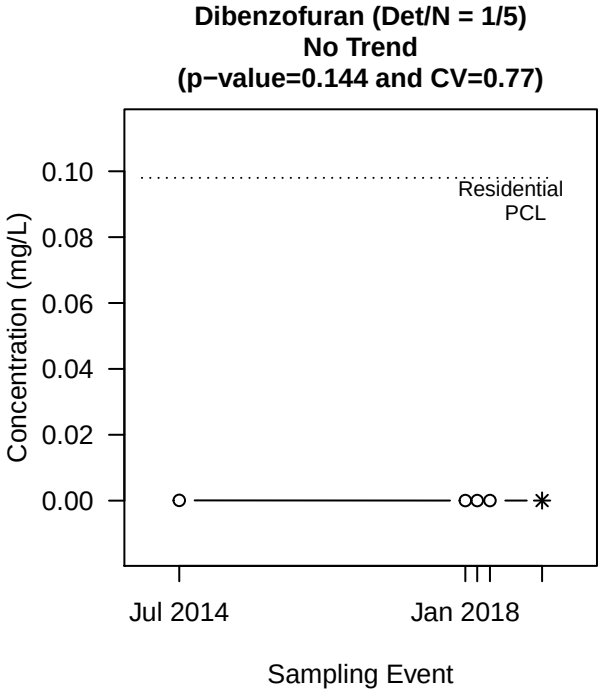
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

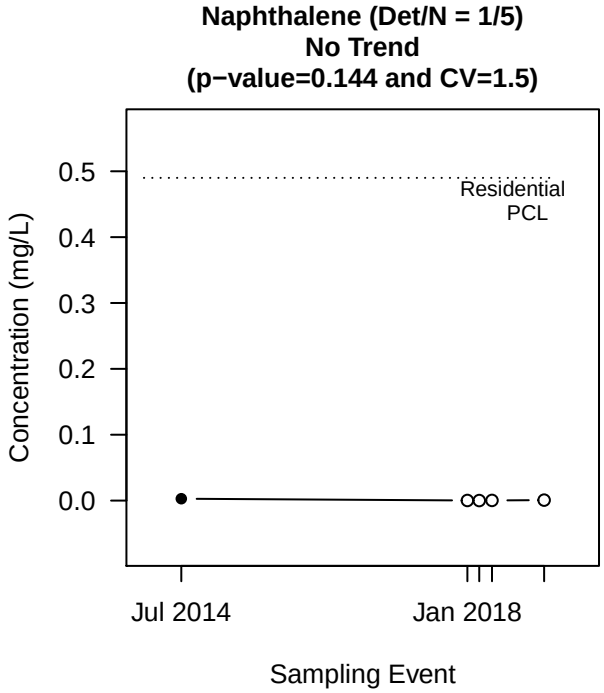
Mann−Kendall Trend Tests for MW−34CR







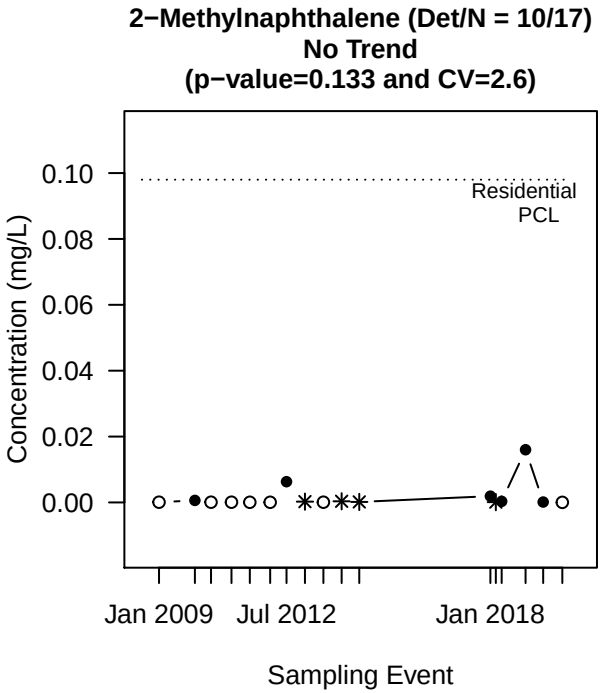


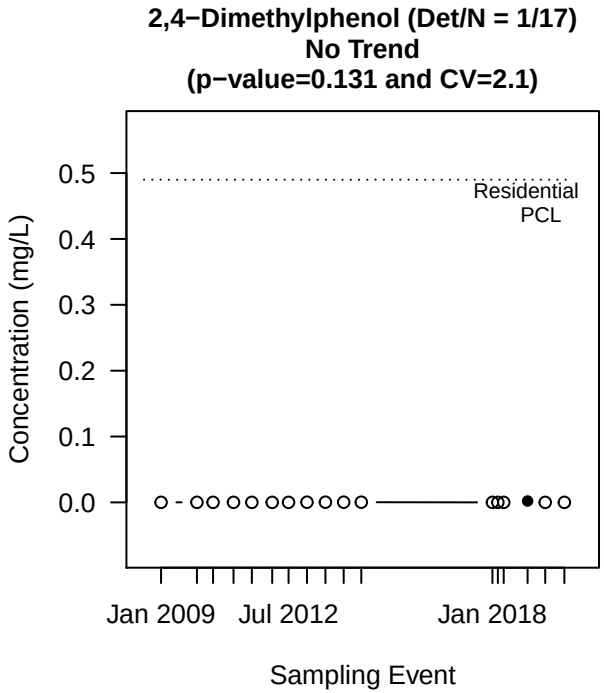


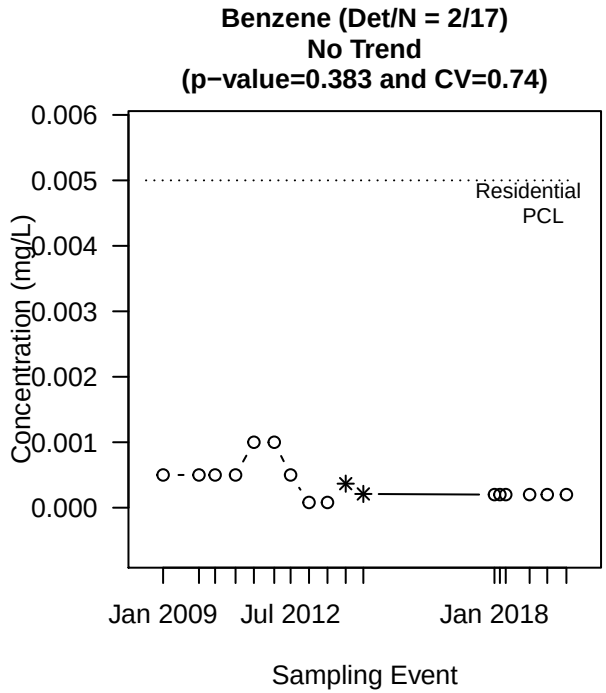
LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

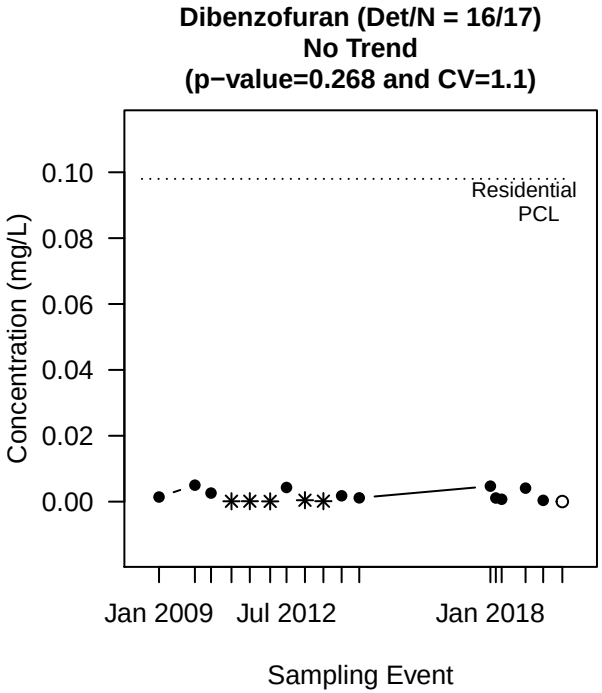
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

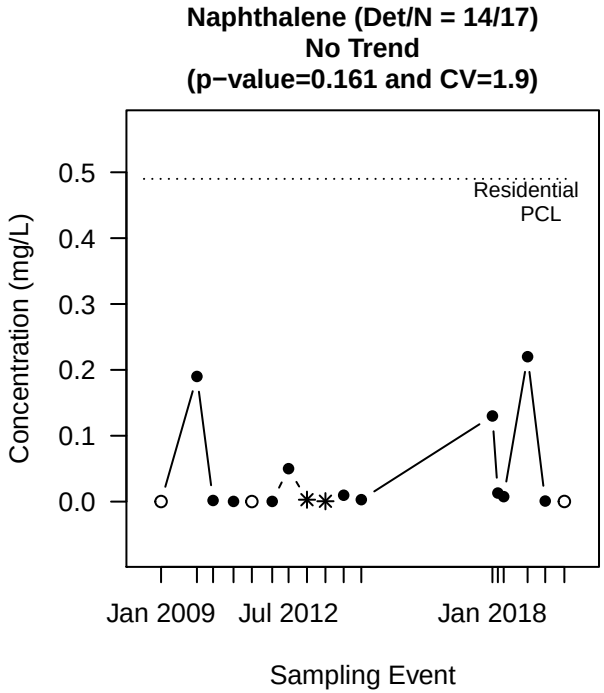
Mann−Kendall Trend Tests for MW−35A

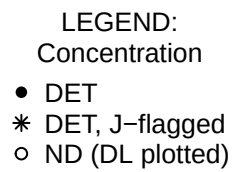








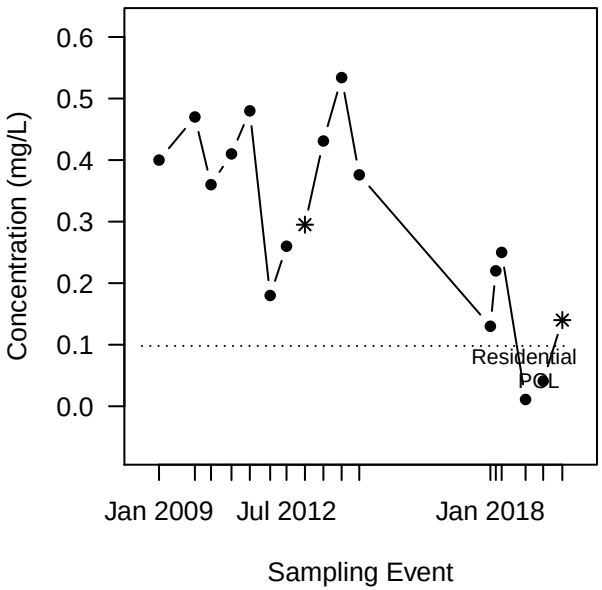




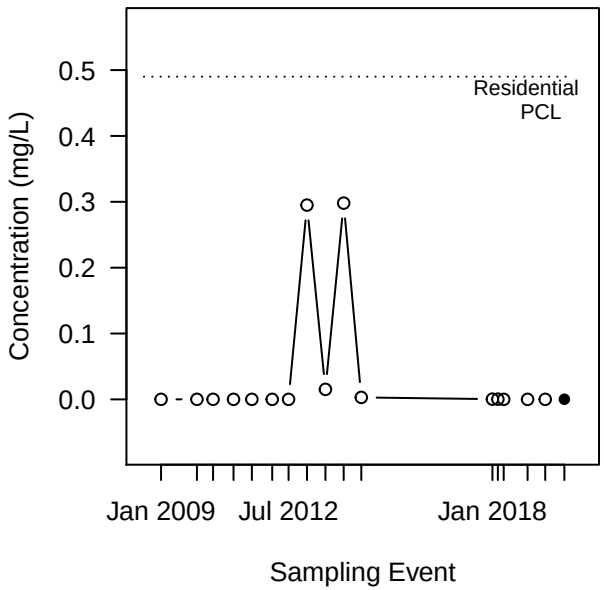
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

Mann−Kendall Trend Tests for MW−35B

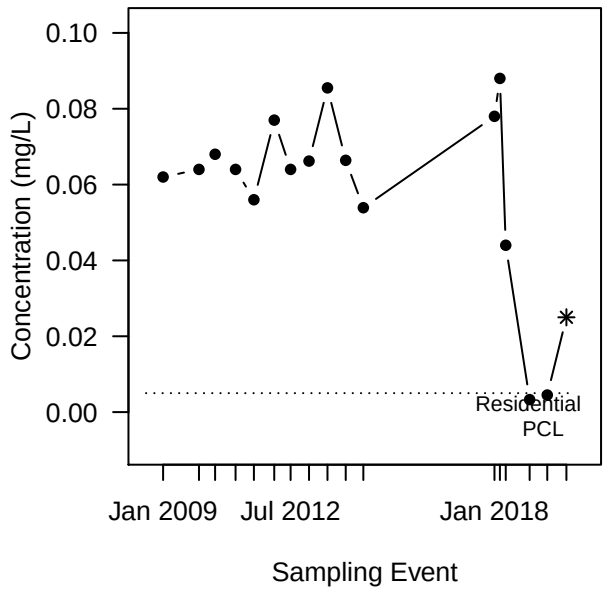
2−Methylnaphthalene (Det/N = 17/17)
Decreasing
(p−value=0.00754 and CV=0.53)



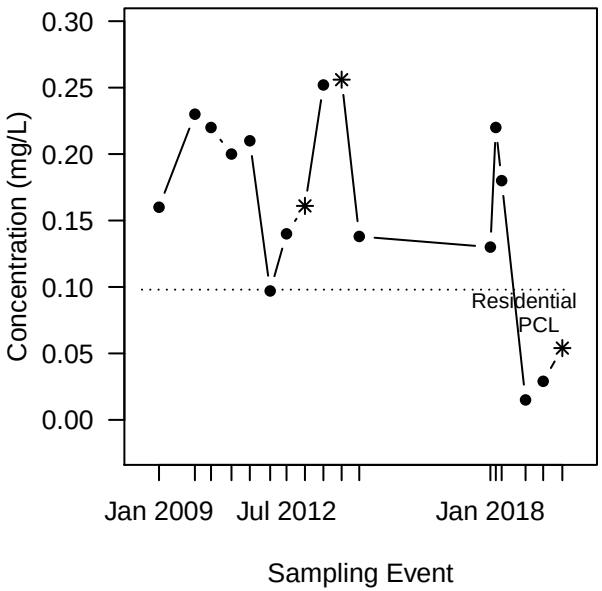
2,4−Dimethylphenol (Det/N = 1/17)
Probably Increasing
(p−value=0.0629 and CV=2.7)



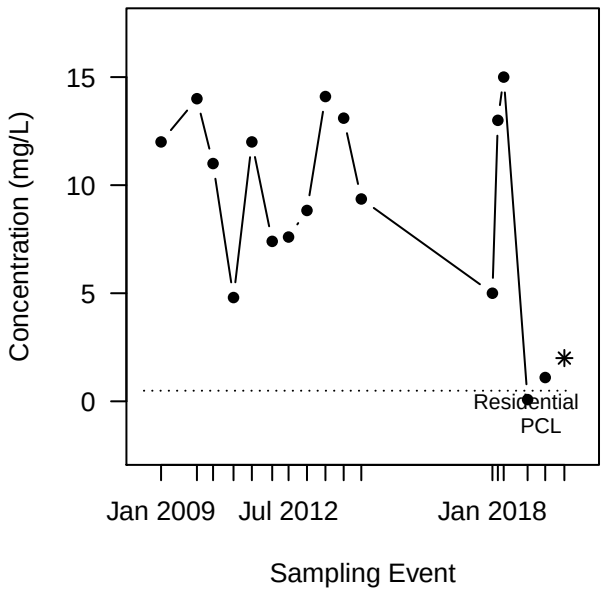
Benzene (Det/N = 17/17)
Stable
(p−value=0.182 and CV=0.44)



Dibenzofuran (Det/N = 17/17)
Decreasing
(p−value=0.0348 and CV=0.47)



Naphthalene (Det/N = 17/17)
Stable
(p−value=0.142 and CV=0.54)

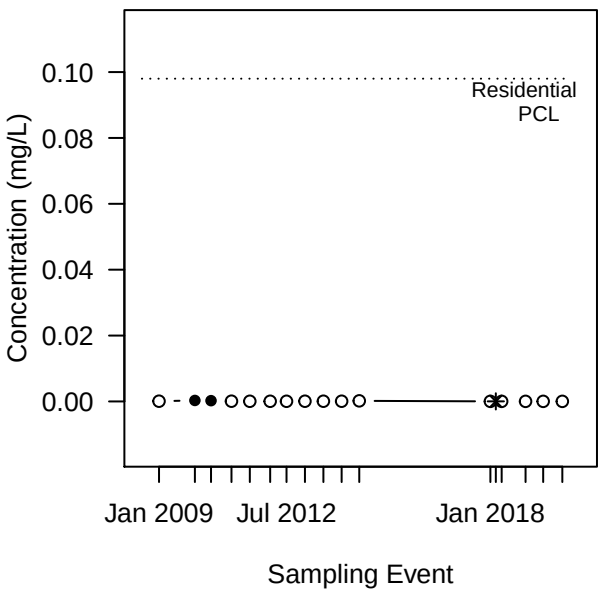


LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

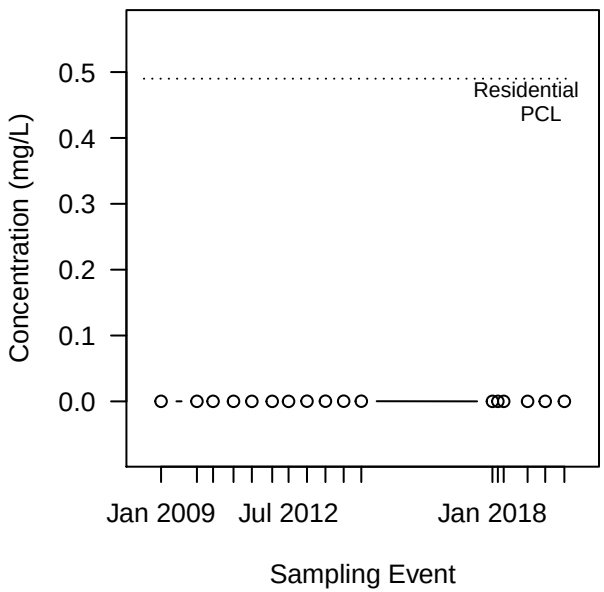
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

Mann−Kendall Trend Tests for MW−36A

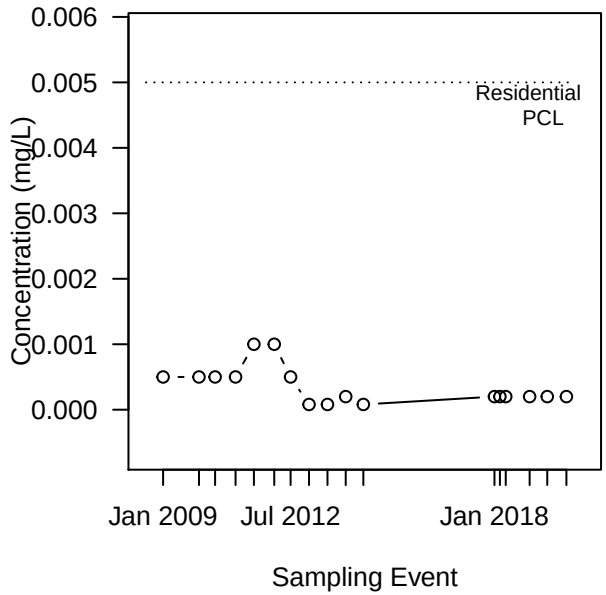
2−Methylnaphthalene (Det/N = 3/17)
No Trend
(p−value=0.106 and CV=1.1)



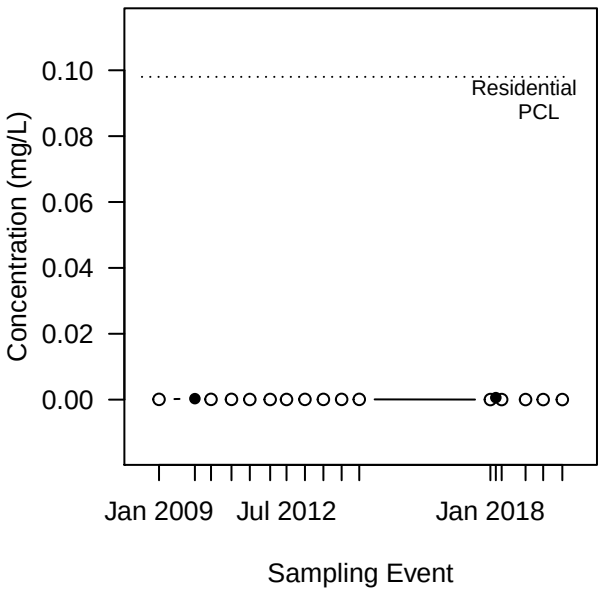
2,4−Dimethylphenol (Det/N = 0/17)
Not evaluated − All NDs



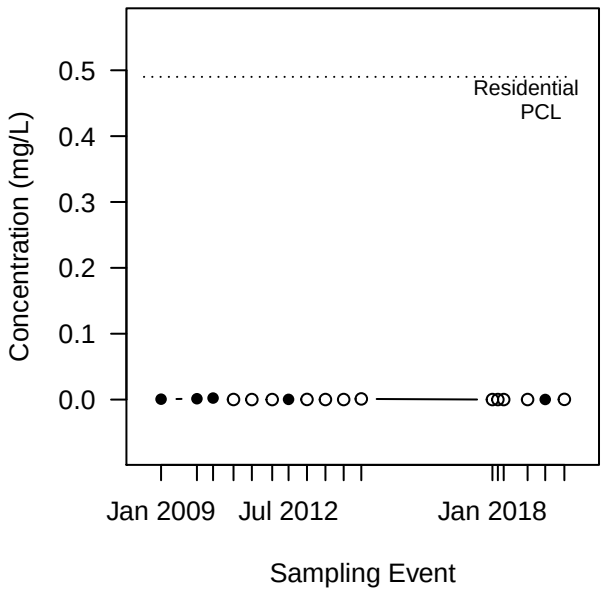
Benzene (Det/N = 0/17)
Not evaluated − All NDs



Dibenzofuran (Det/N = 2/17)
No Trend
(p−value=0.383 and CV=1.5)



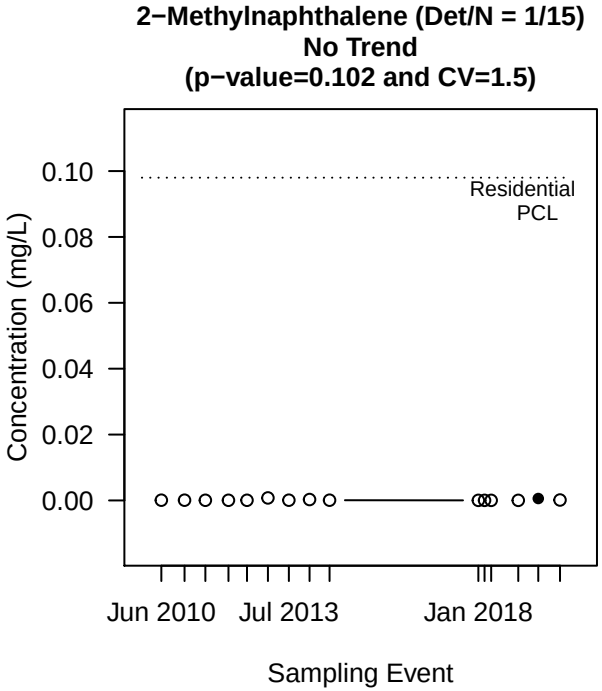
Naphthalene (Det/N = 5/17)
Decreasing
(p−value=0.0357 and CV=1.6)

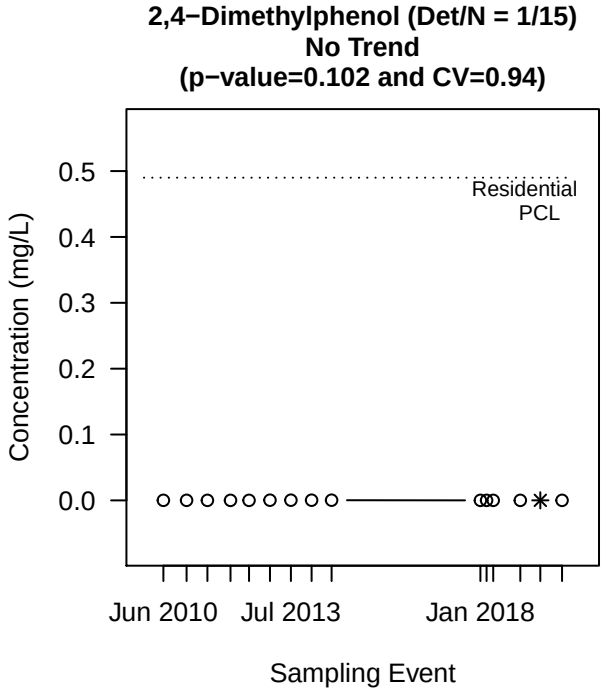


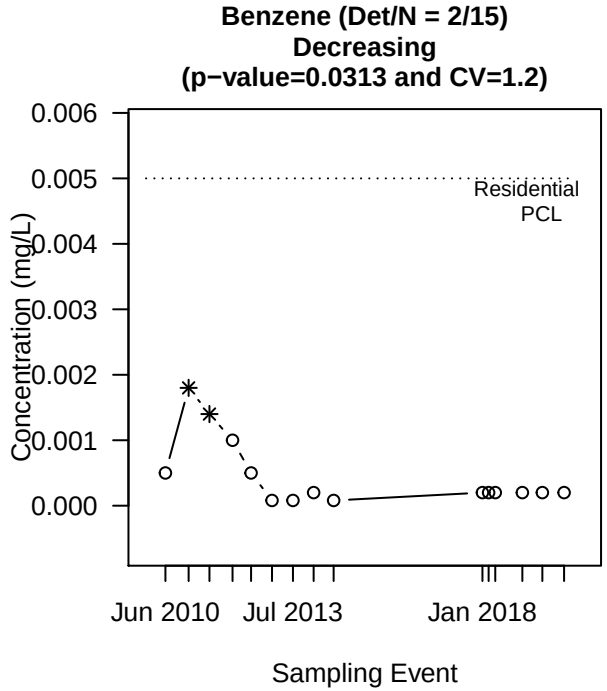
LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

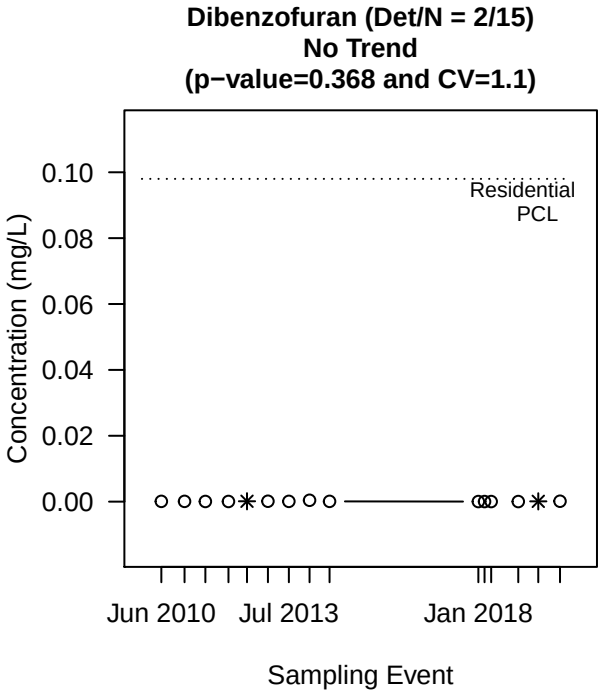
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

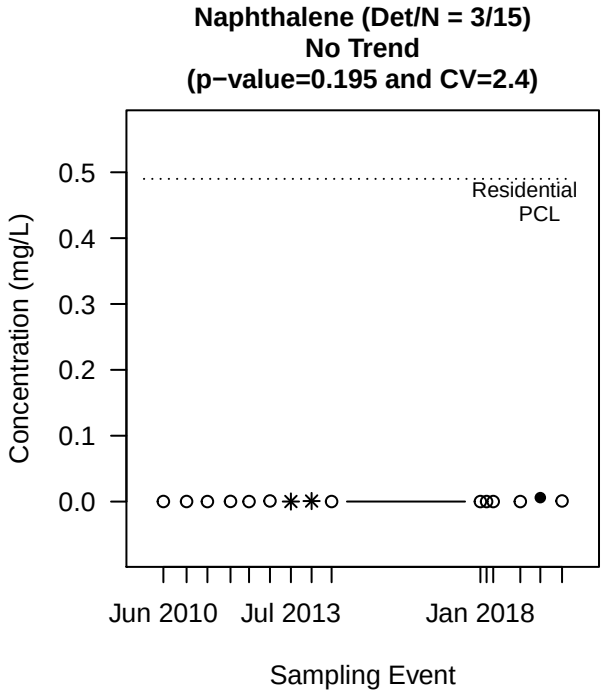
Mann−Kendall Trend Tests for MW−36B

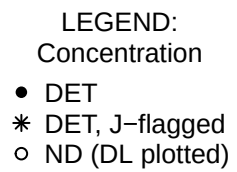






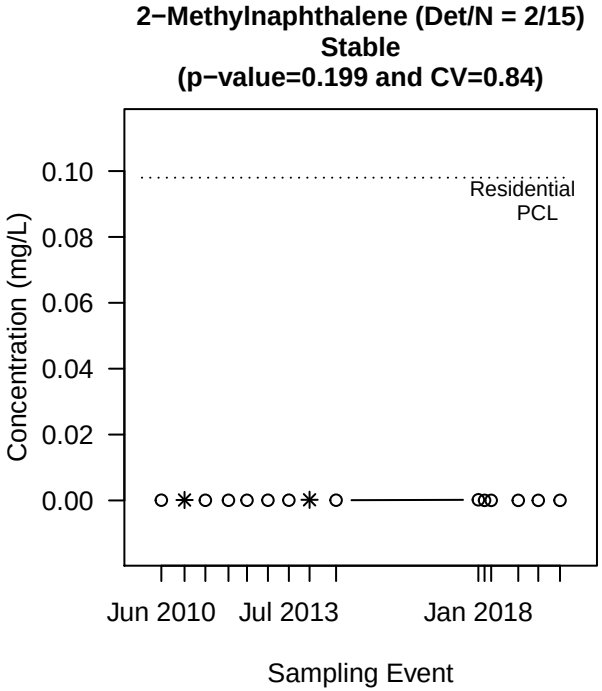


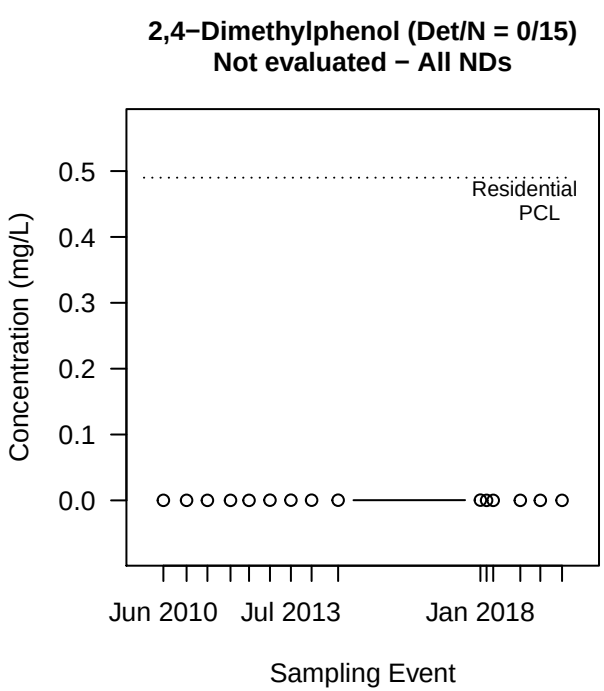


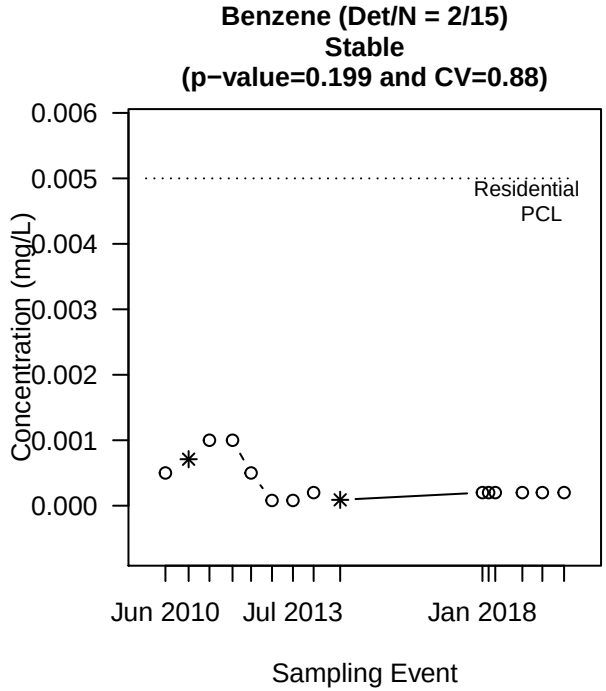


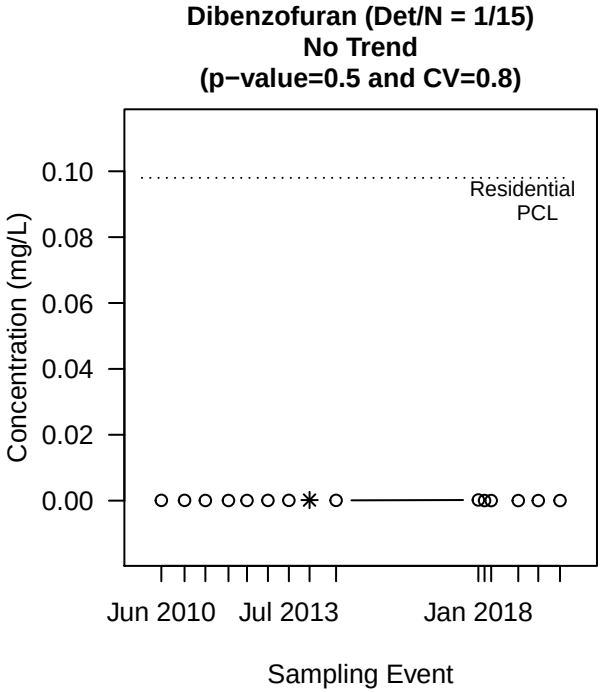
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

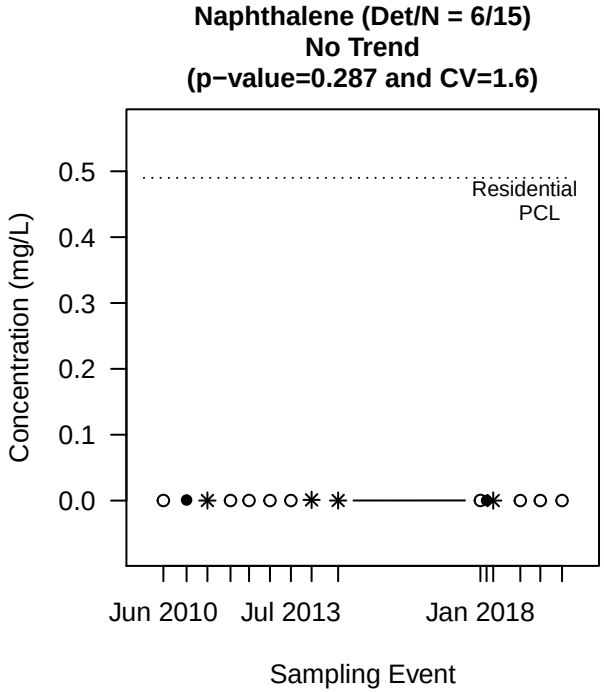
Mann−Kendall Trend Tests for MW−36D







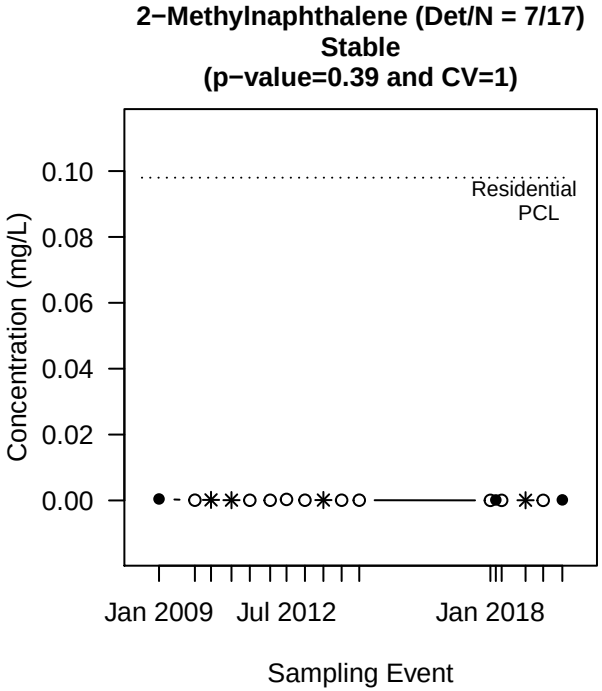


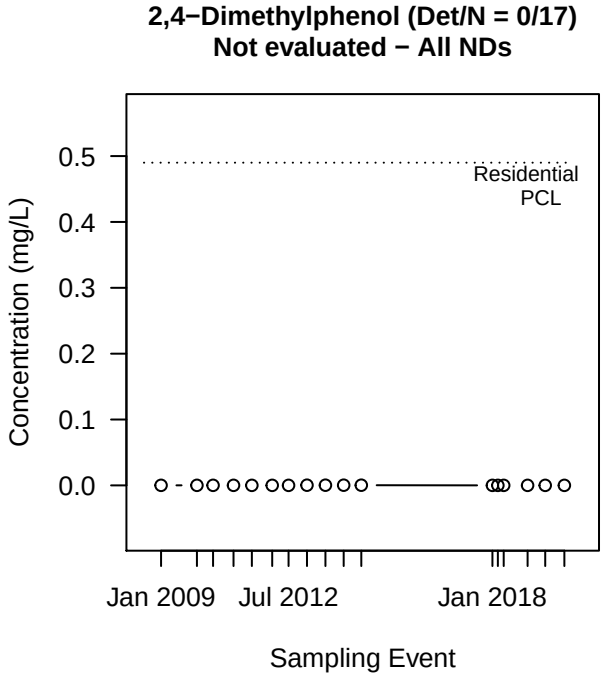


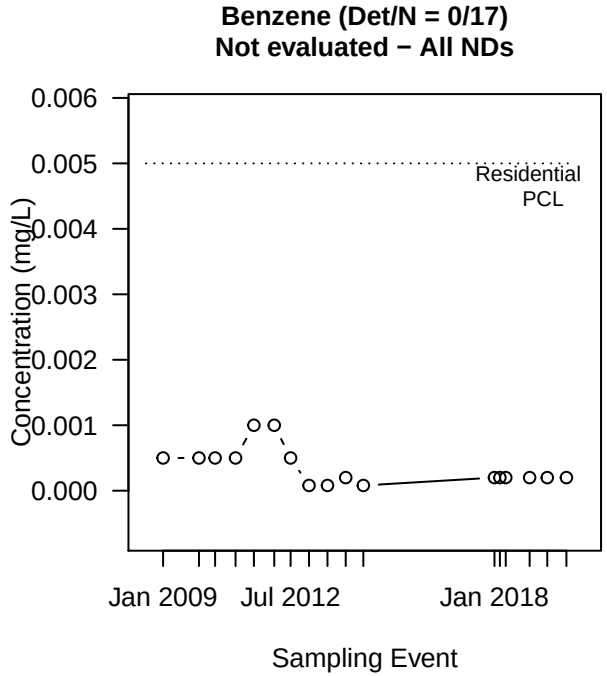
LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

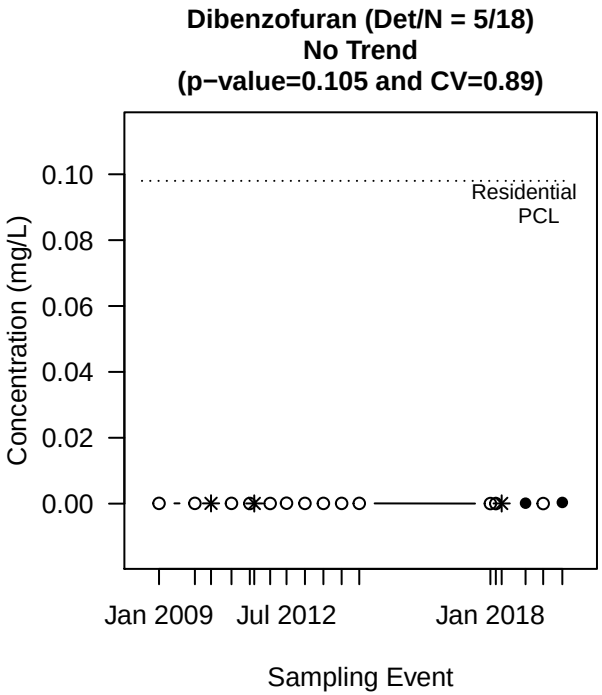
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

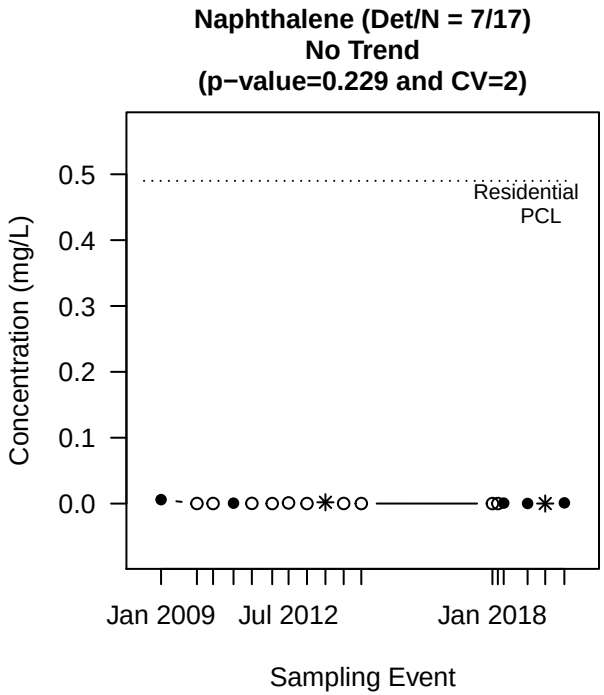
Mann−Kendall Trend Tests for MW−38A

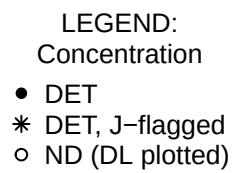








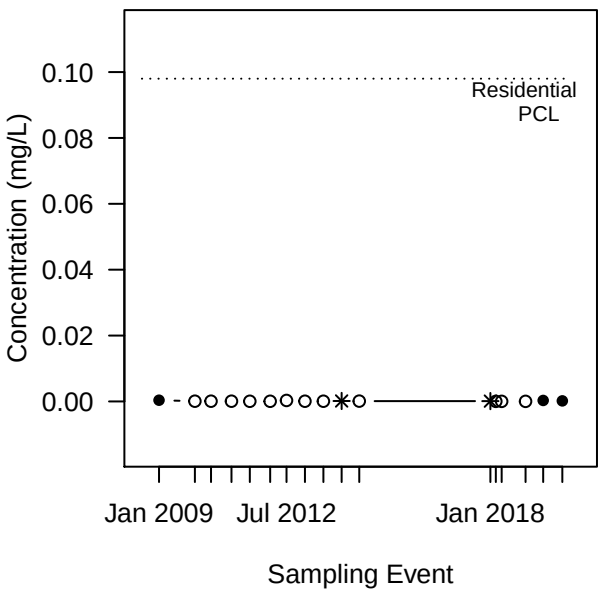




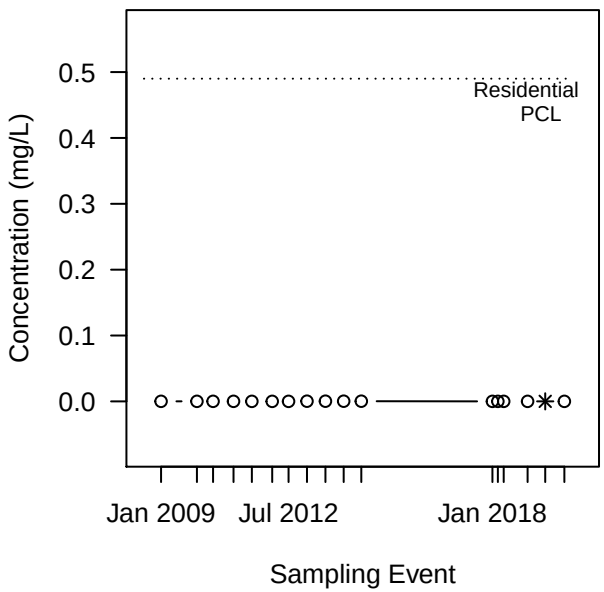
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

Mann−Kendall Trend Tests for MW−38B

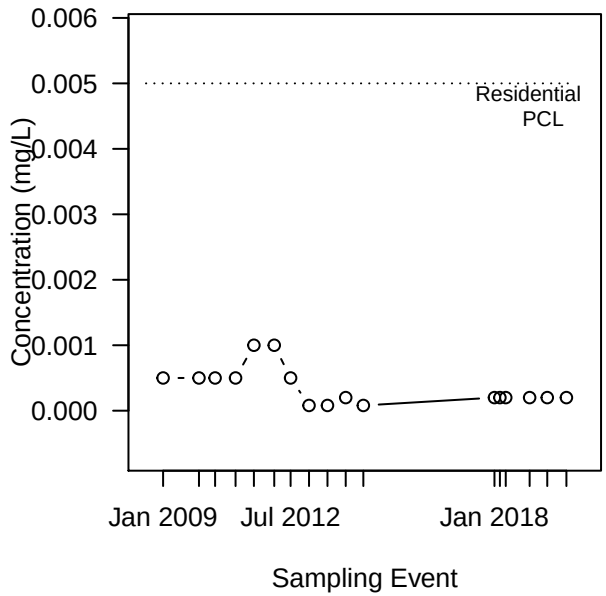
2−Methylnaphthalene (Det/N = 5/17)
No Trend
(p−value=0.164 and CV=0.93)



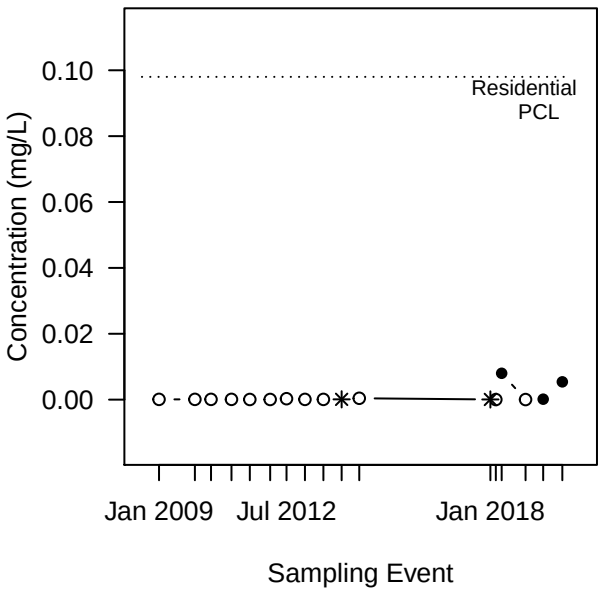
2,4−Dimethylphenol (Det/N = 1/17)
Probably Increasing
(p−value=0.0923 and CV=0.95)



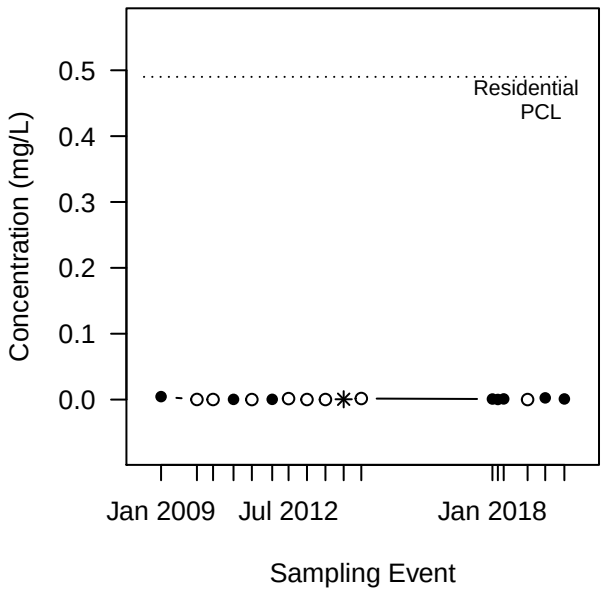
Benzene (Det/N = 0/17)
Not evaluated − All NDs



Dibenzofuran (Det/N = 5/17)
Increasing
(p−value=0.0043 and CV=2.5)



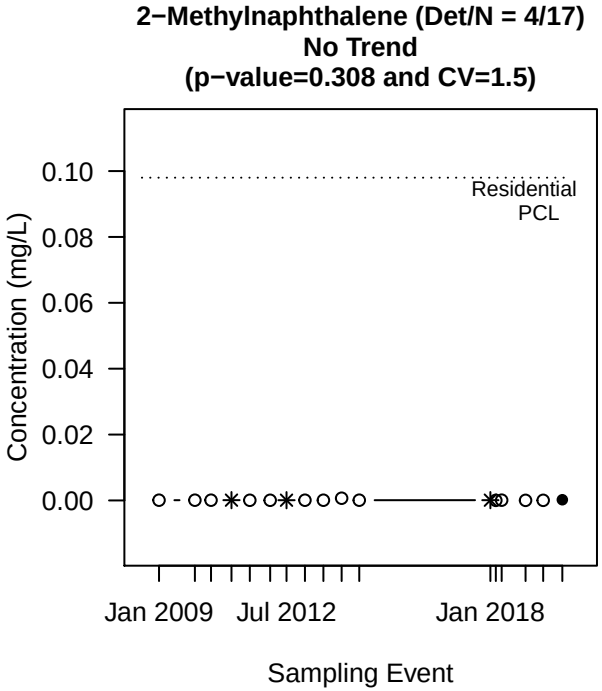
Naphthalene (Det/N = 9/17)
Probably Increasing
(p−value=0.0878 and CV=1.4)

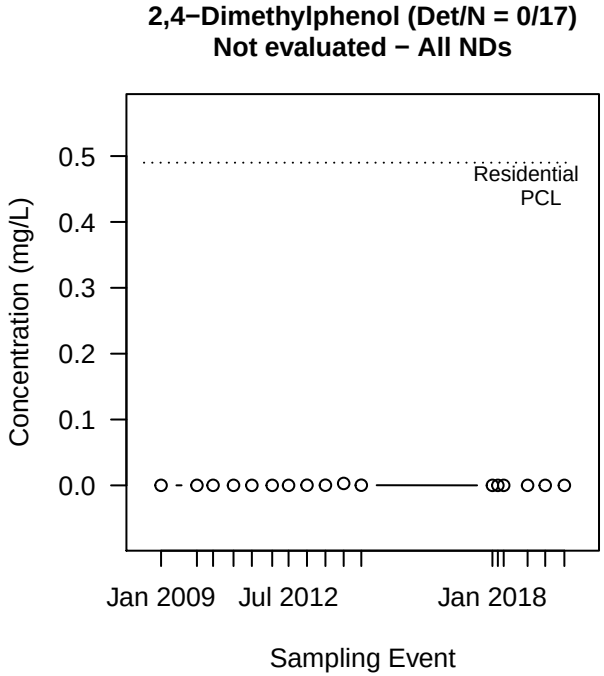


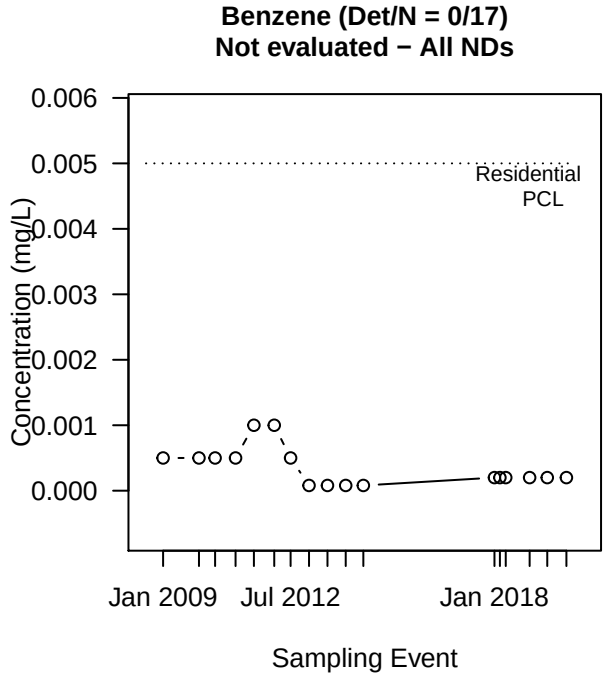
LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

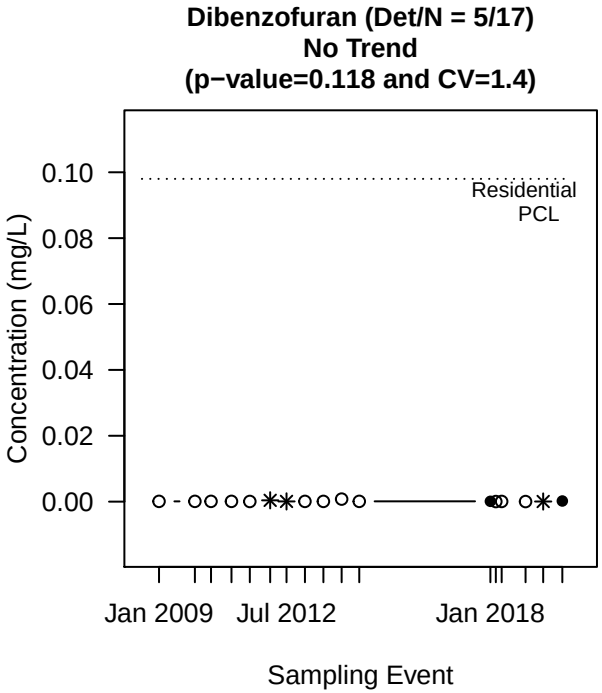
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

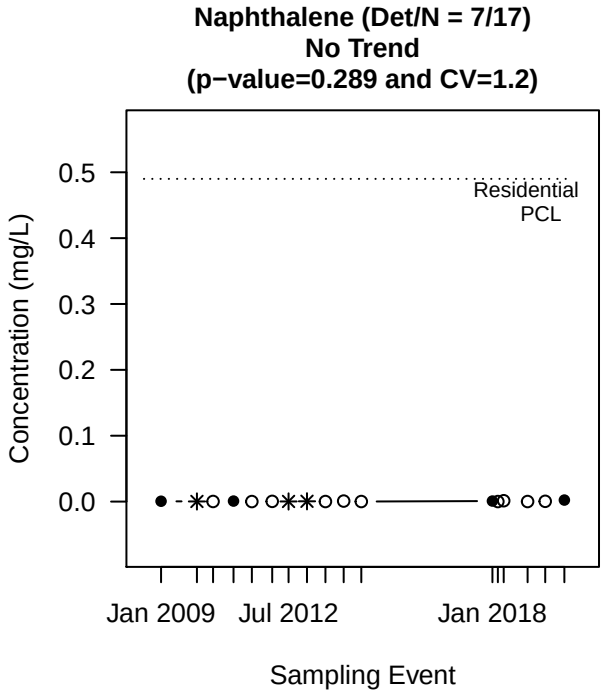
Mann−Kendall Trend Tests for MW−39B

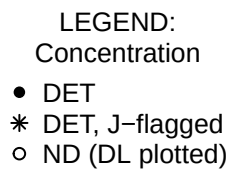






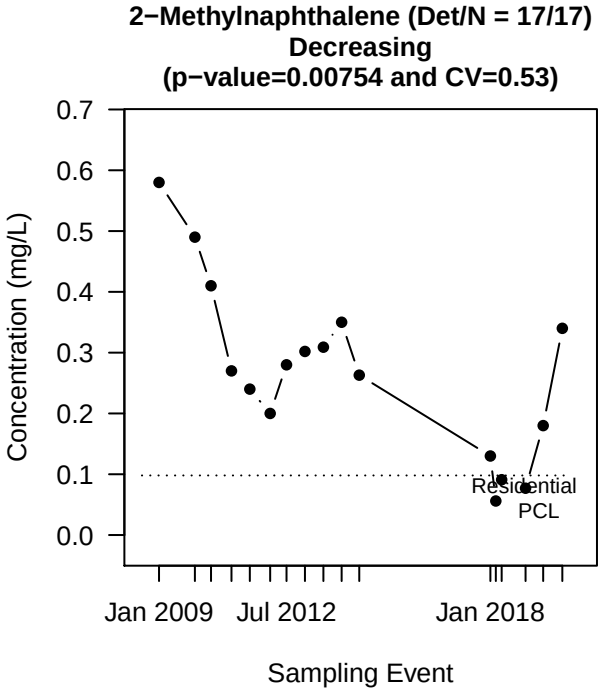


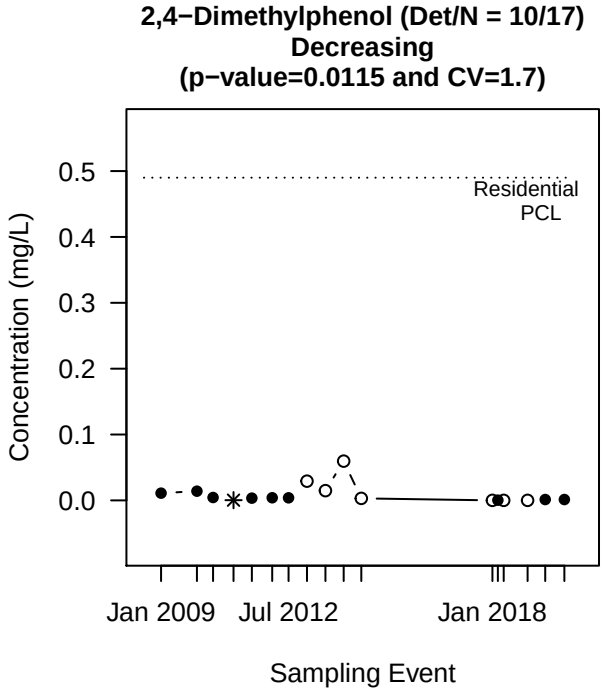


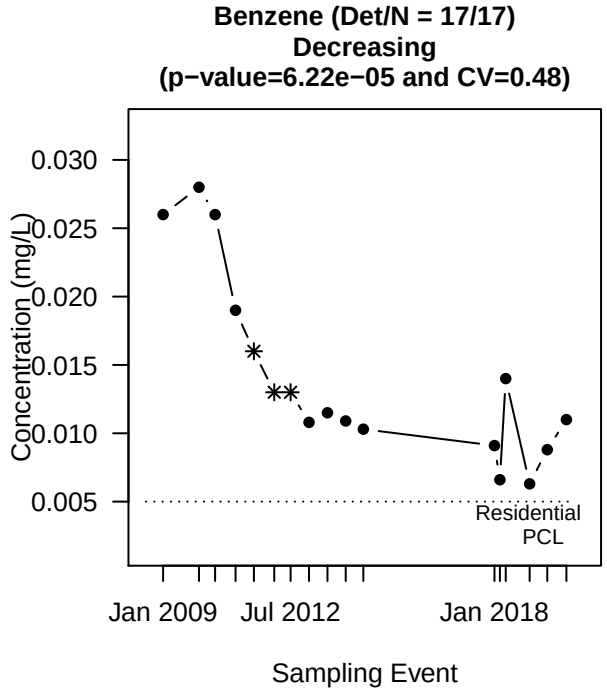


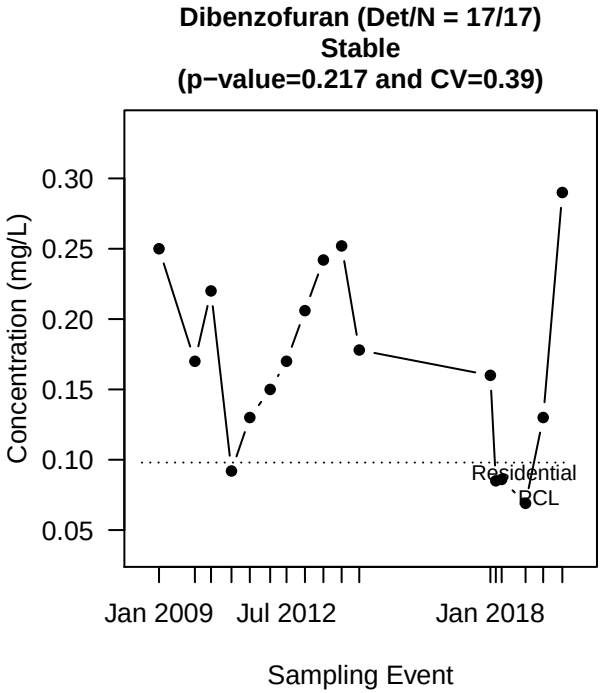
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

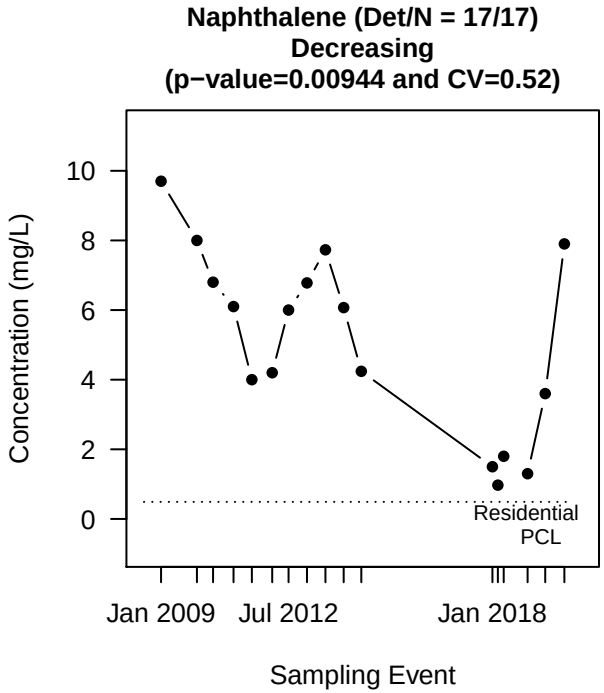
Mann−Kendall Trend Tests for MW−40B

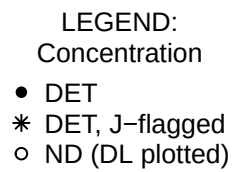






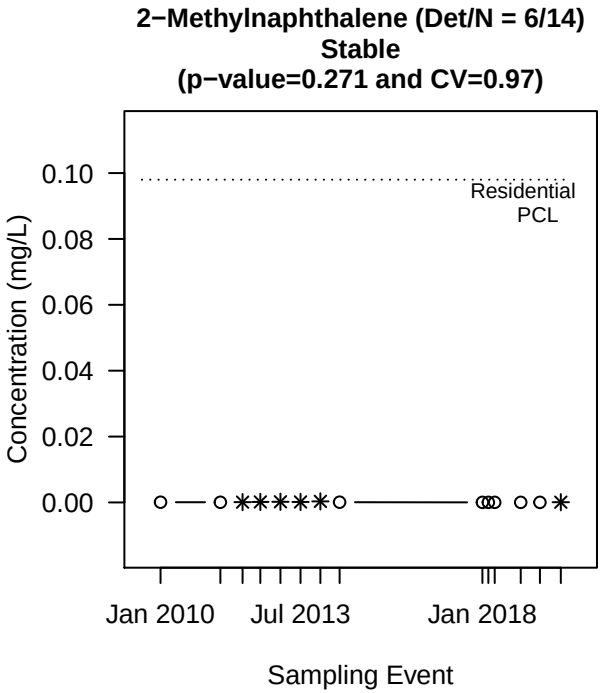


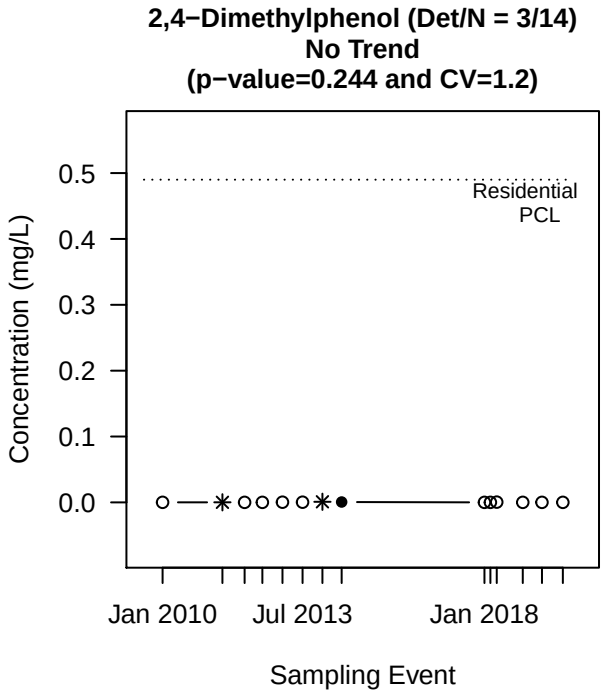


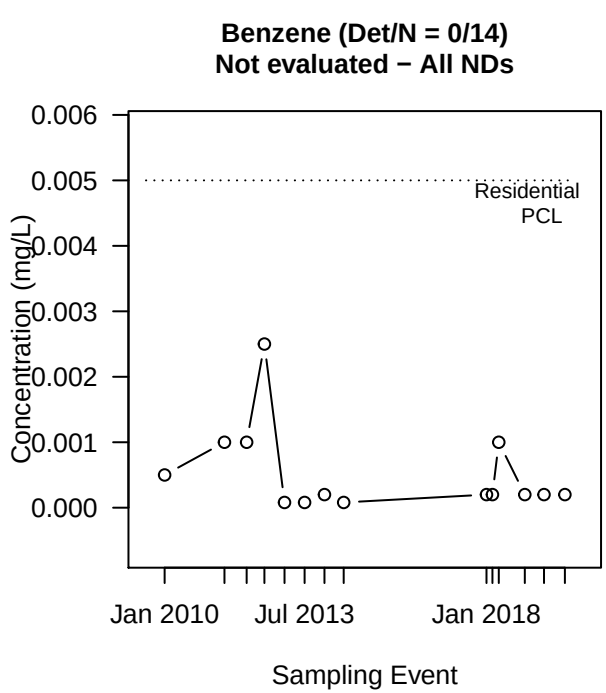


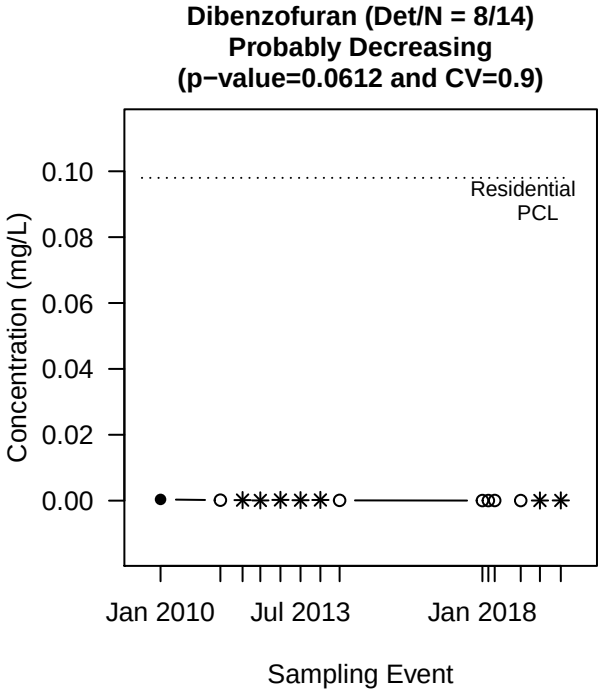
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

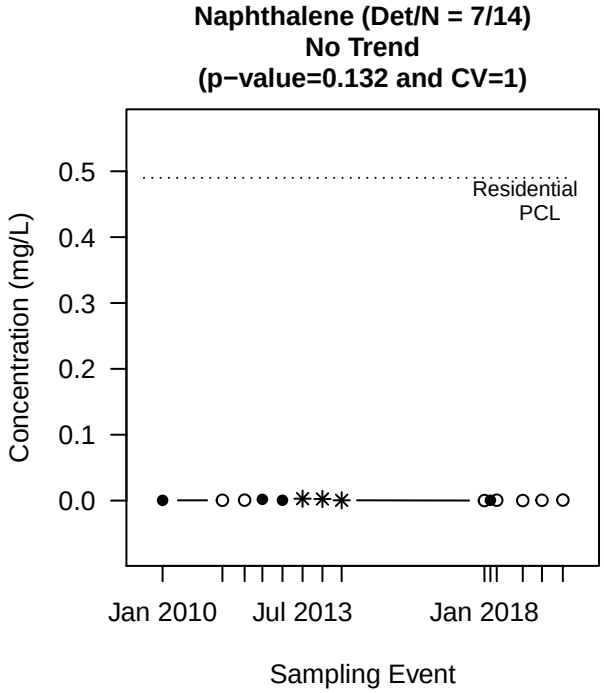
Mann−Kendall Trend Tests for MW−42B







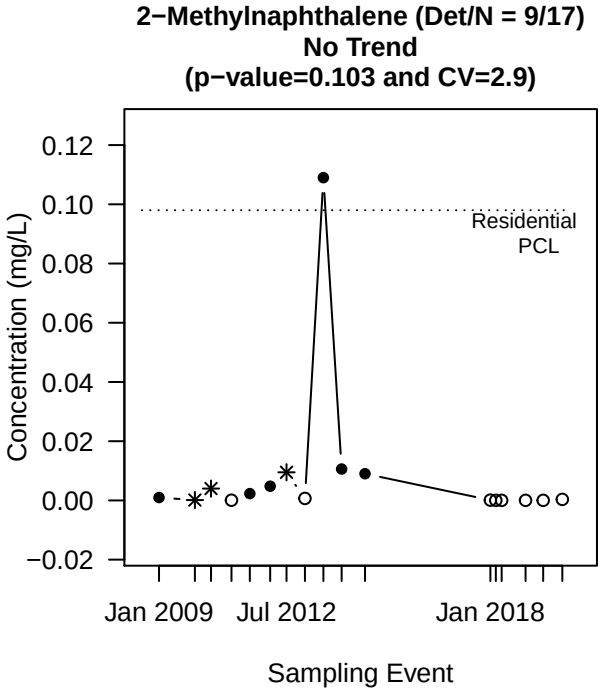


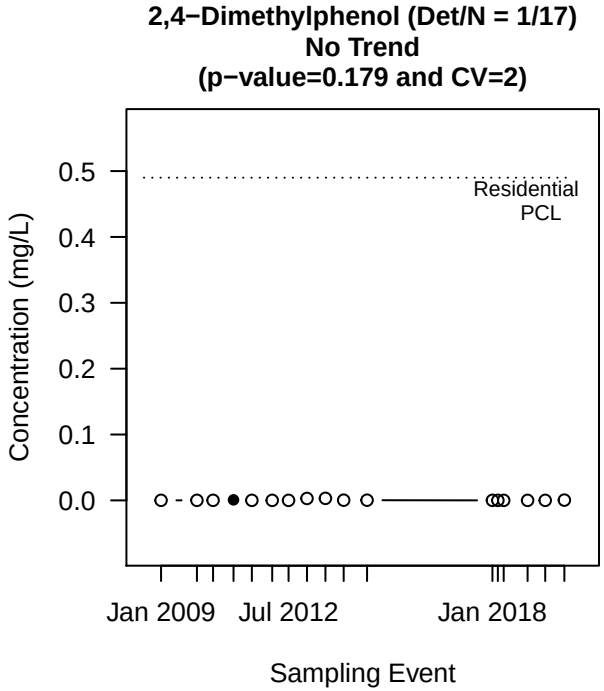


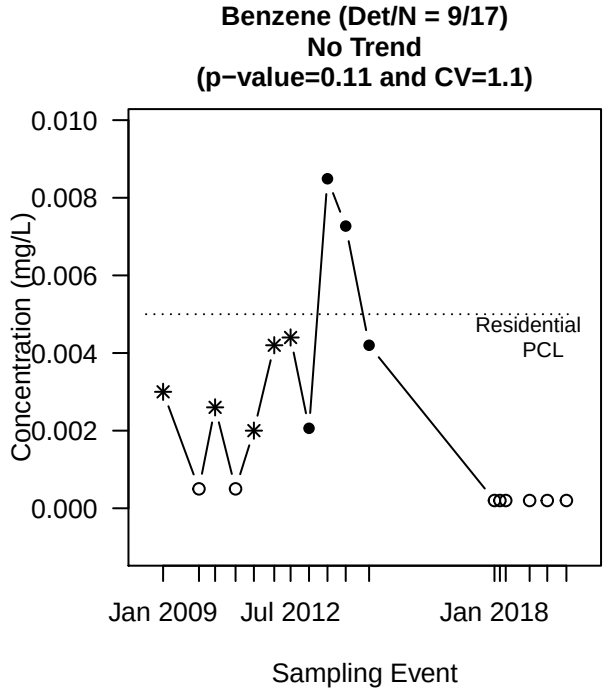
LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

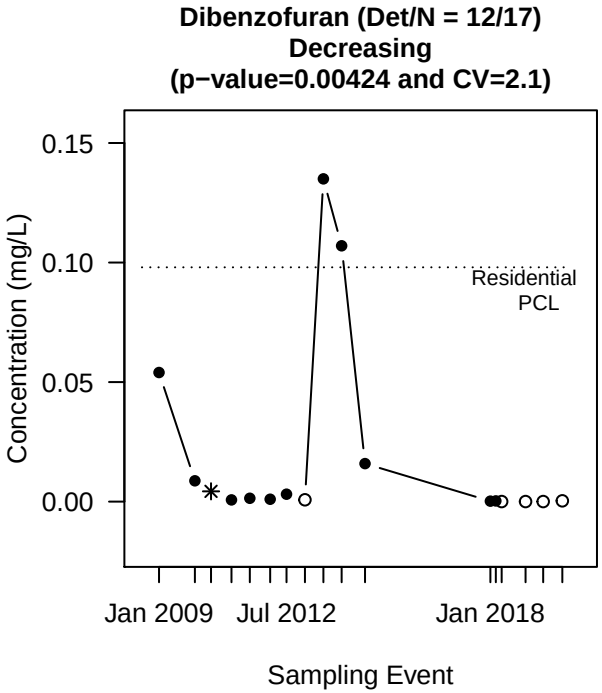
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

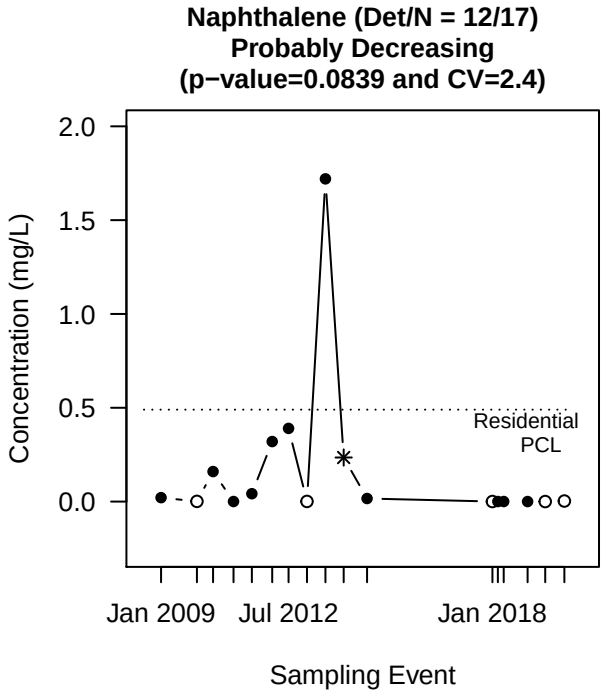
Mann−Kendall Trend Tests for MW−44A







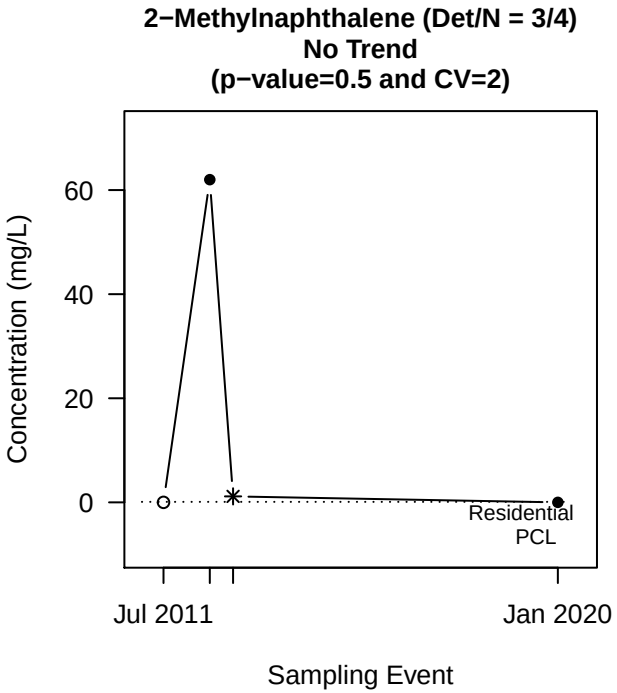


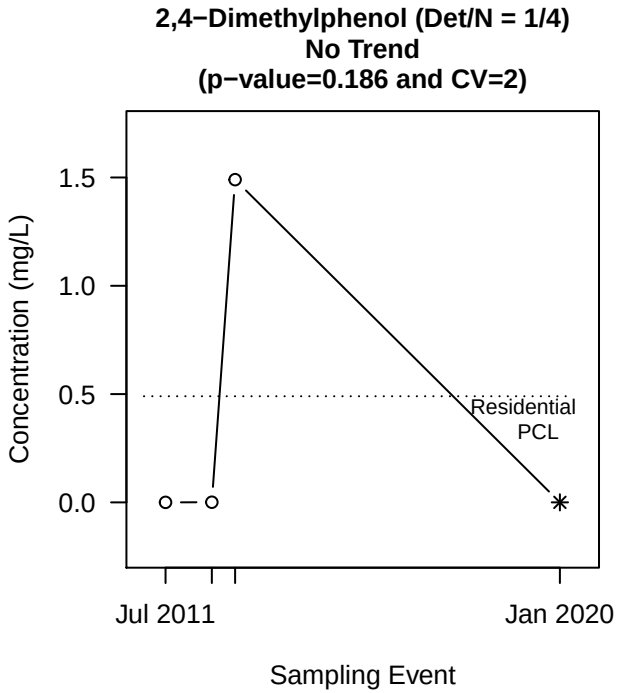


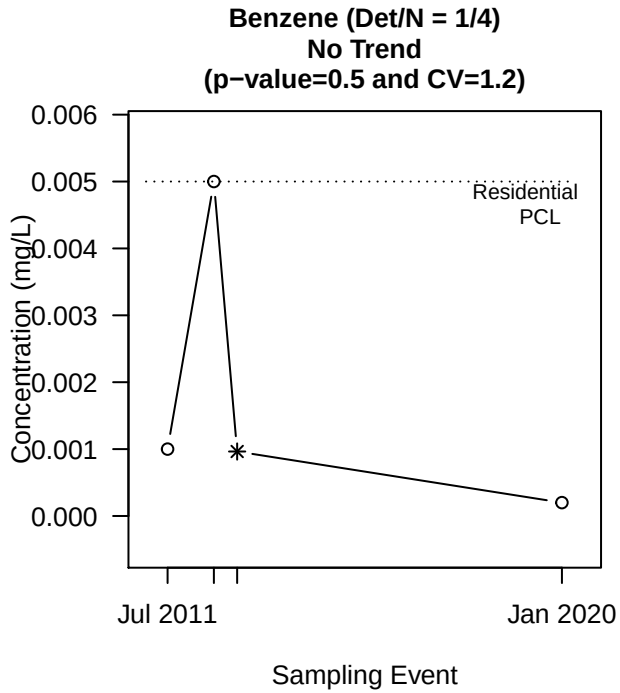
LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

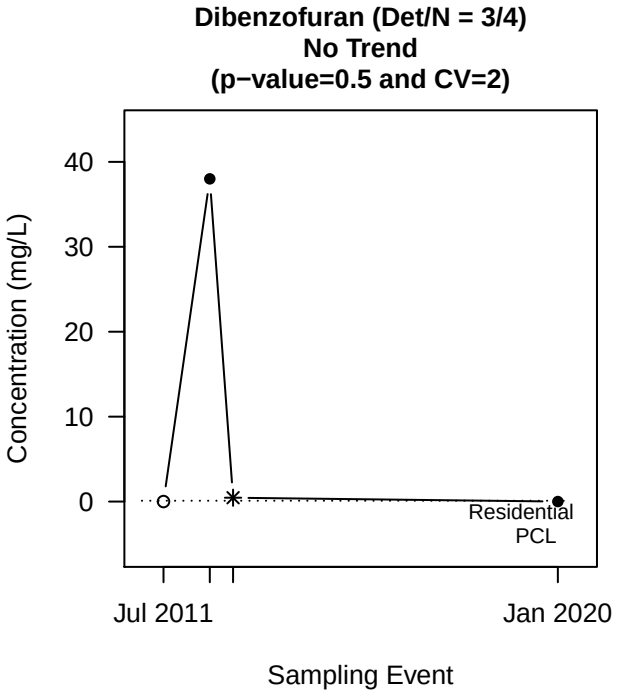
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

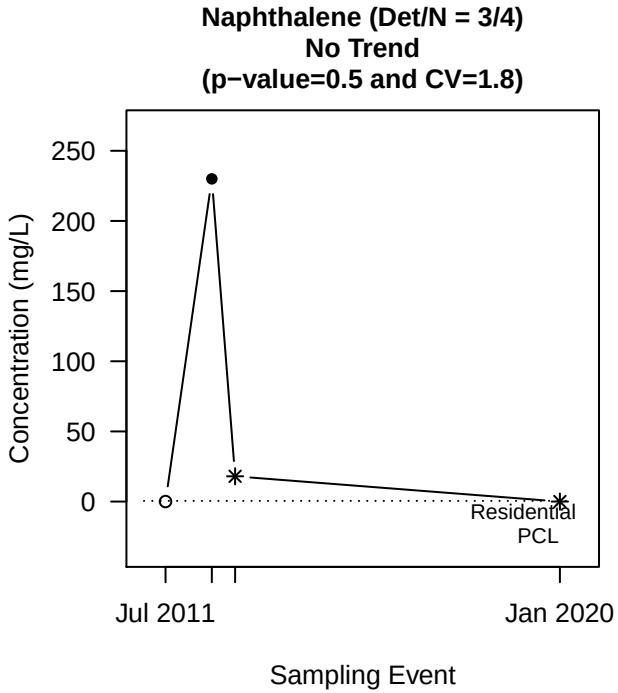
Mann−Kendall Trend Tests for MW−44C











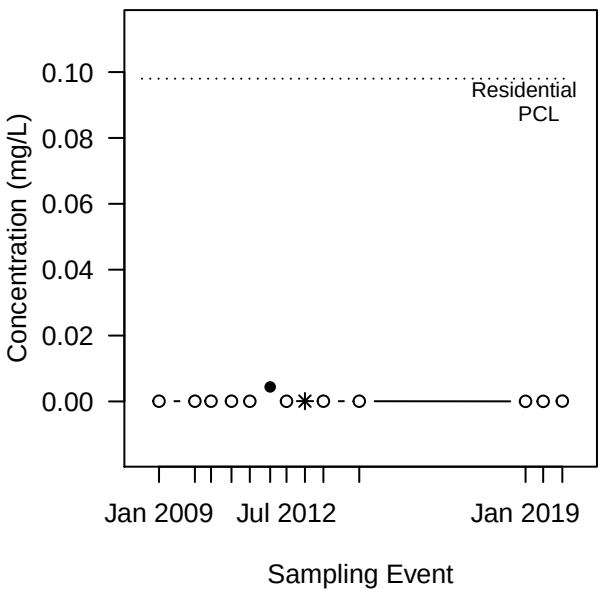
LEGEND:
Concentration

- DET
- DET, J−flagged
- ND (DL plotted)

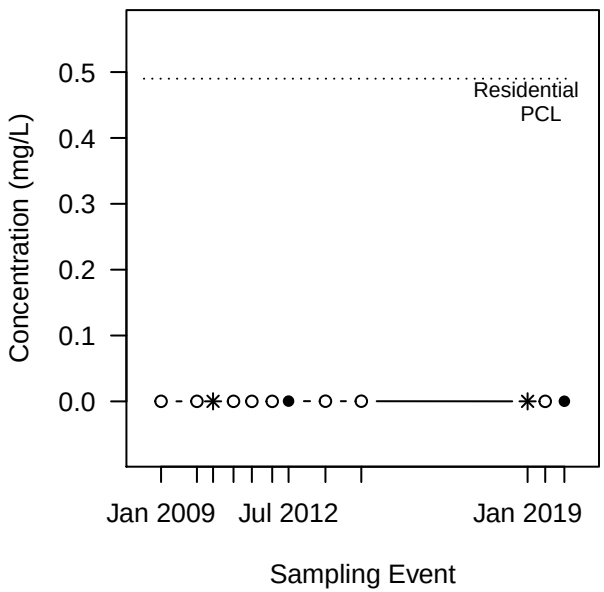
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

Mann−Kendall Trend Tests for MW−47C

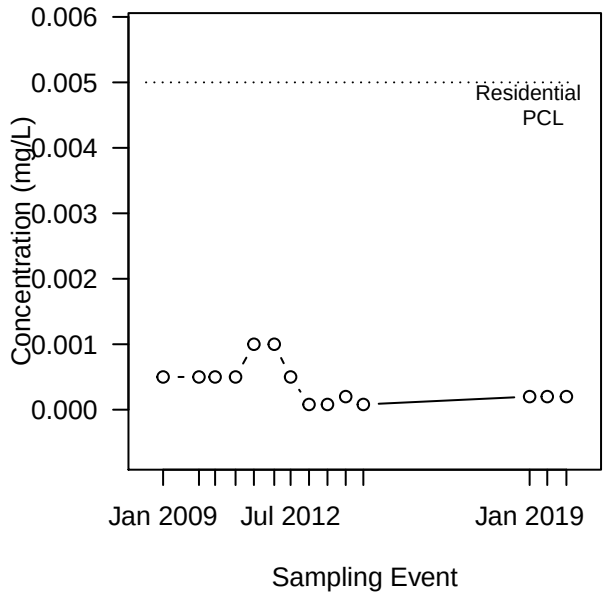
2−Methylnaphthalene (Det/N = 2/13)
No Trend
(p−value=0.5 and CV=3)



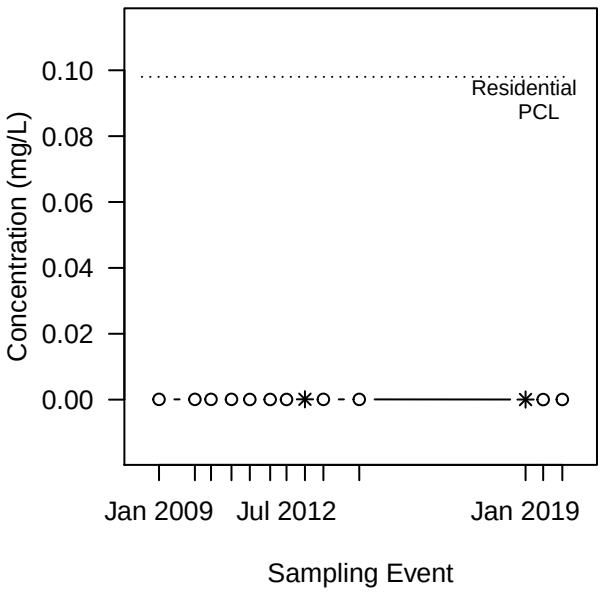
2,4−Dimethylphenol (Det/N = 4/12)
No Trend
(p−value=0.182 and CV=0.83)



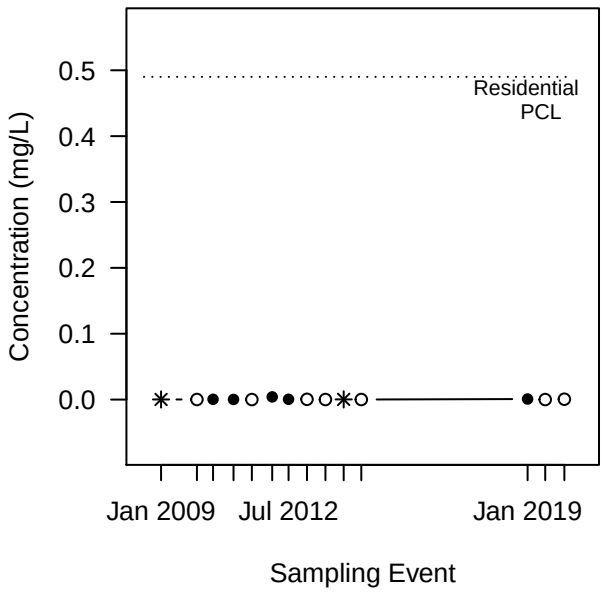
Benzene (Det/N = 0/14)
Not evaluated − All NDs



Dibenzofuran (Det/N = 2/13)
No Trend
(p−value=0.216 and CV=0.37)



Naphthalene (Det/N = 7/14)
No Trend
(p−value=0.278 and CV=1.9)

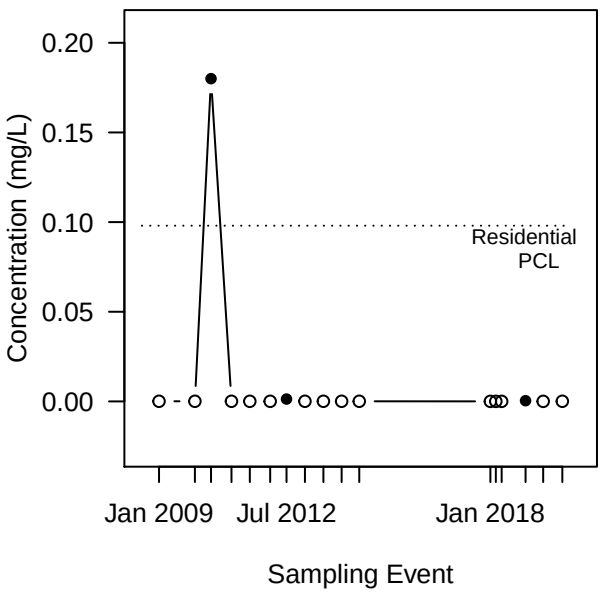


LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

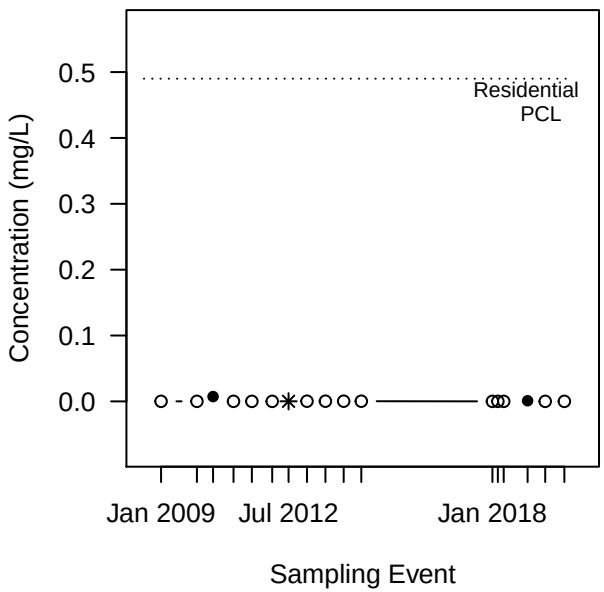
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

Mann−Kendall Trend Tests for MW−48C

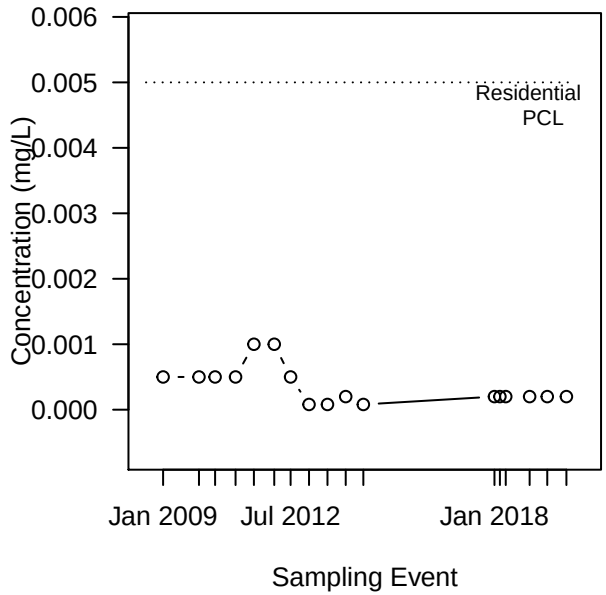
2−Methylnaphthalene (Det/N = 3/17)
No Trend
(p−value=0.354 and CV=4.1)



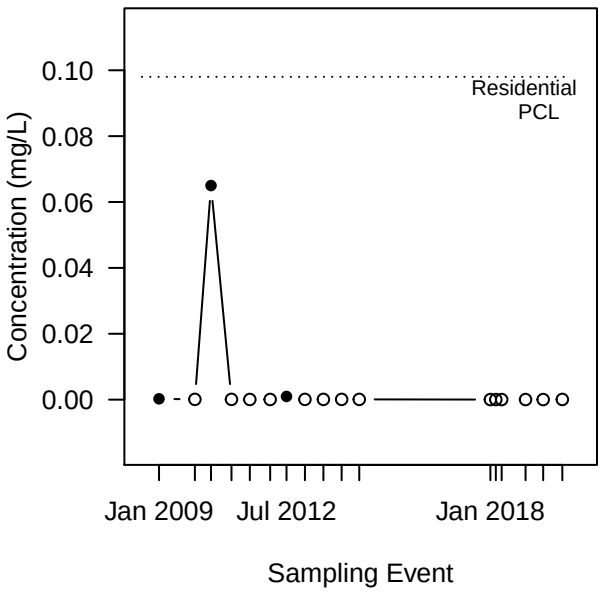
2,4−Dimethylphenol (Det/N = 3/17)
No Trend
(p−value=0.401 and CV=2.9)



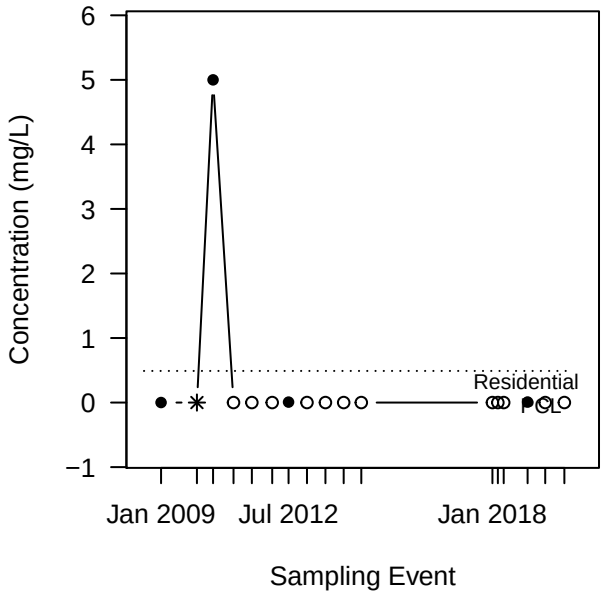
Benzene (Det/N = 0/17)
Not evaluated − All NDs



Dibenzofuran (Det/N = 3/17)
Decreasing
(p−value=0.0303 and CV=4)



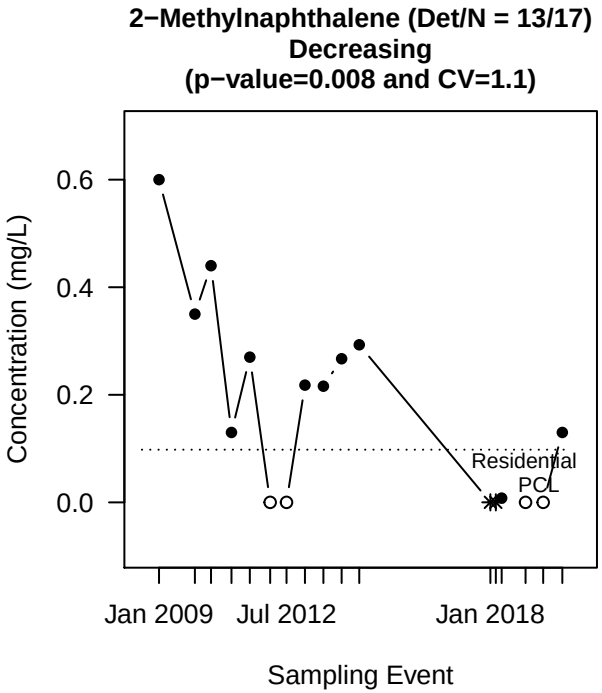
Naphthalene (Det/N = 5/17)
Probably Decreasing
(p−value=0.0676 and CV=4.1)

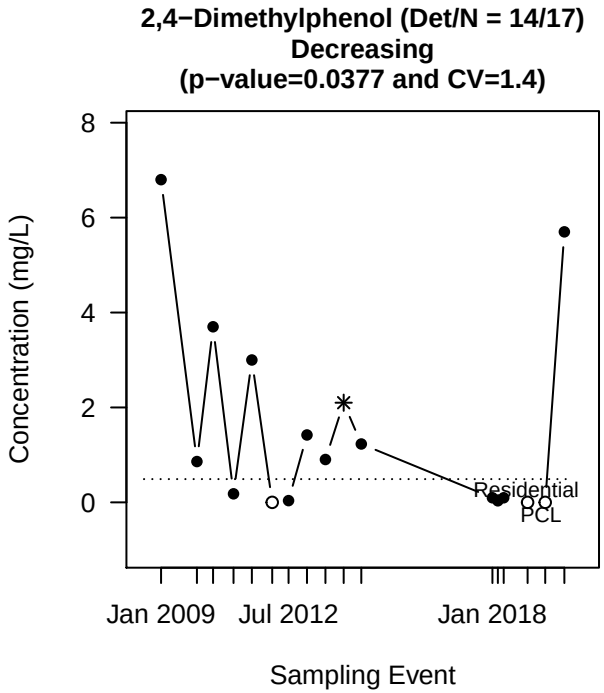


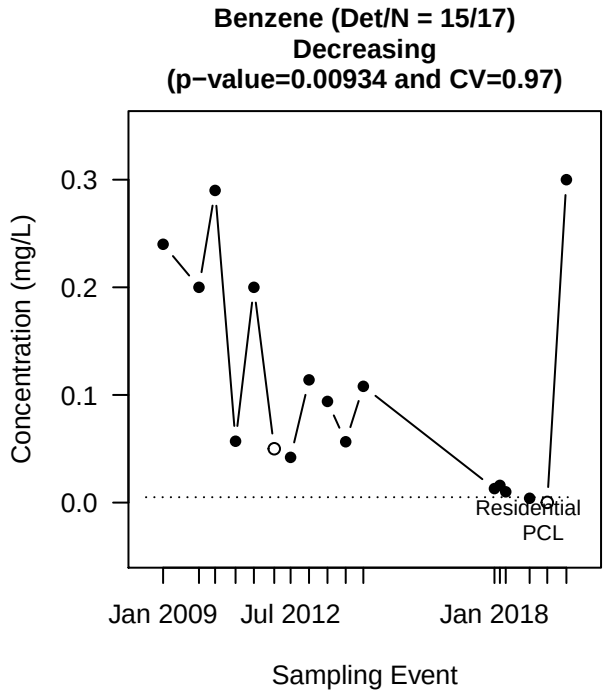
LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

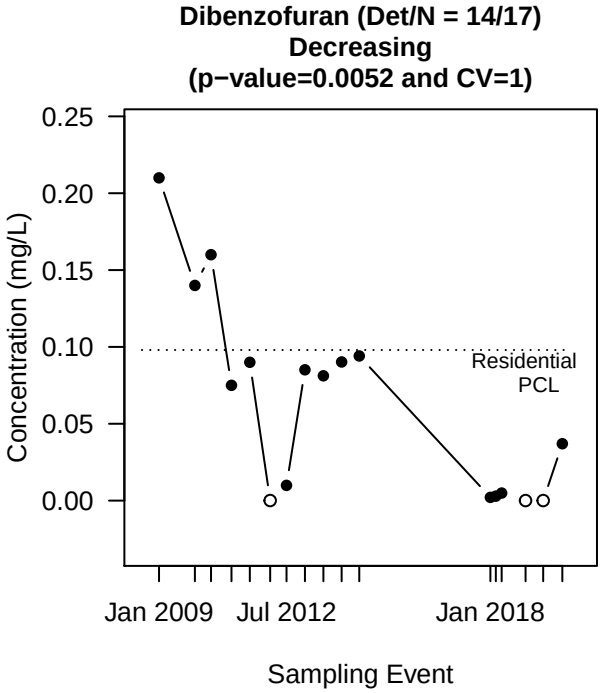
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

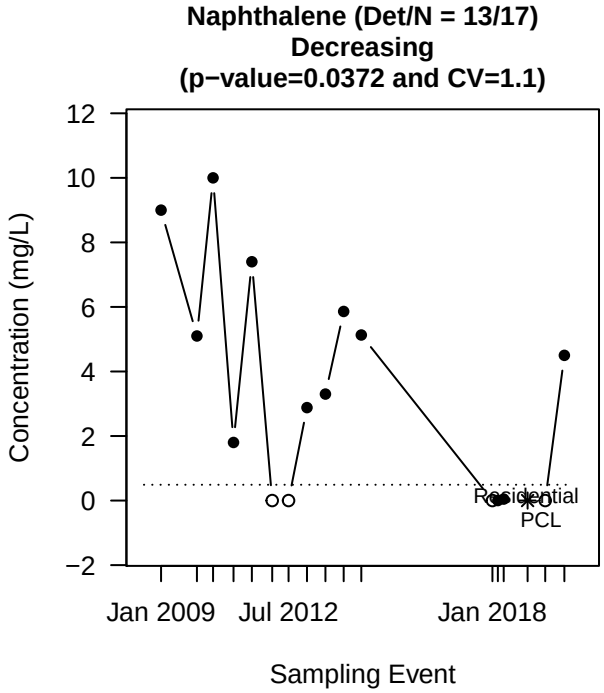
Mann−Kendall Trend Tests for MW−49A

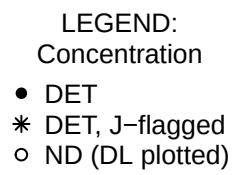






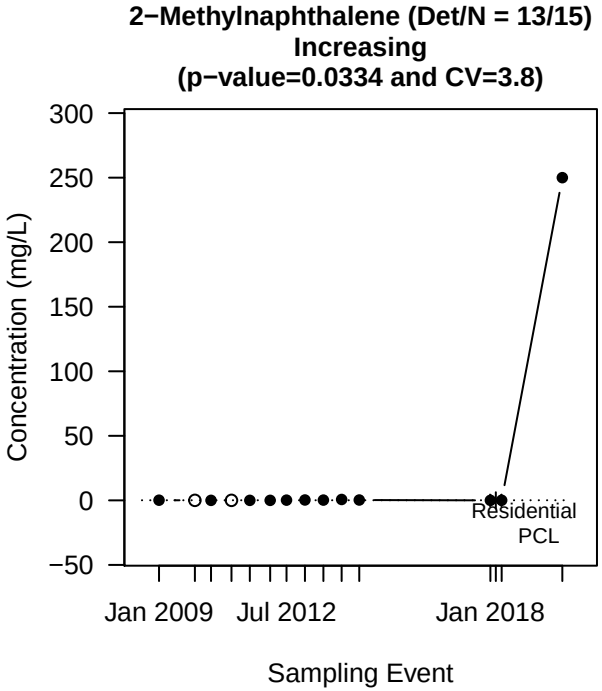


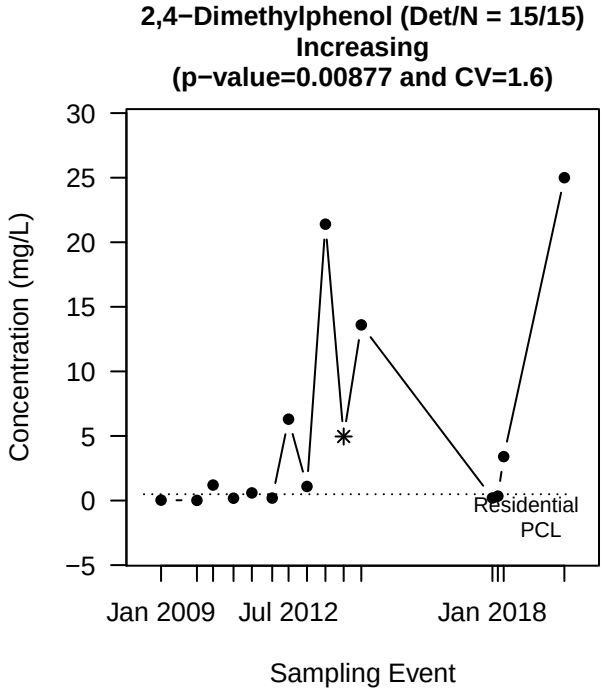


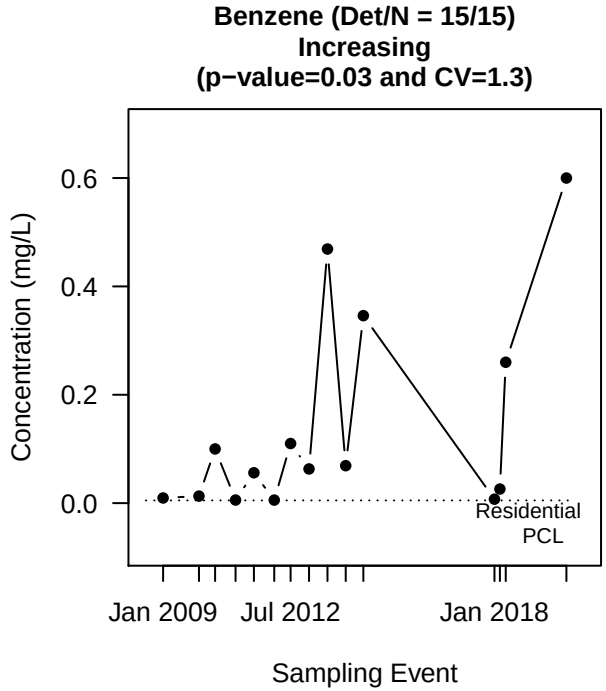


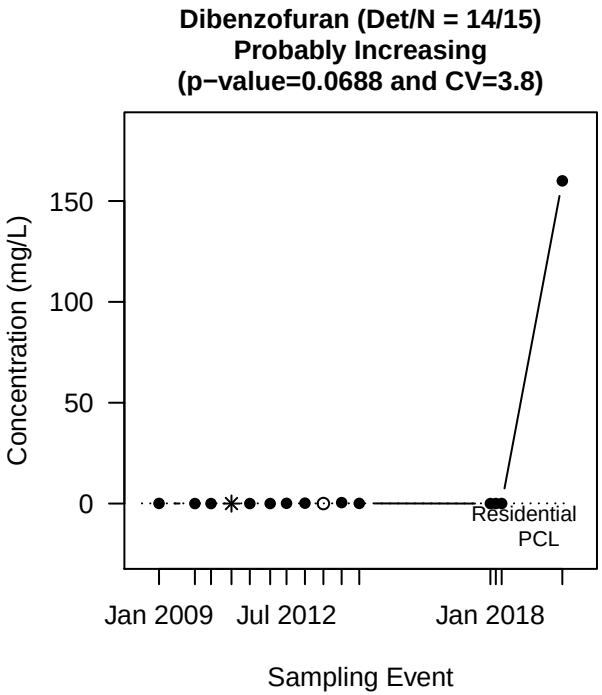
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

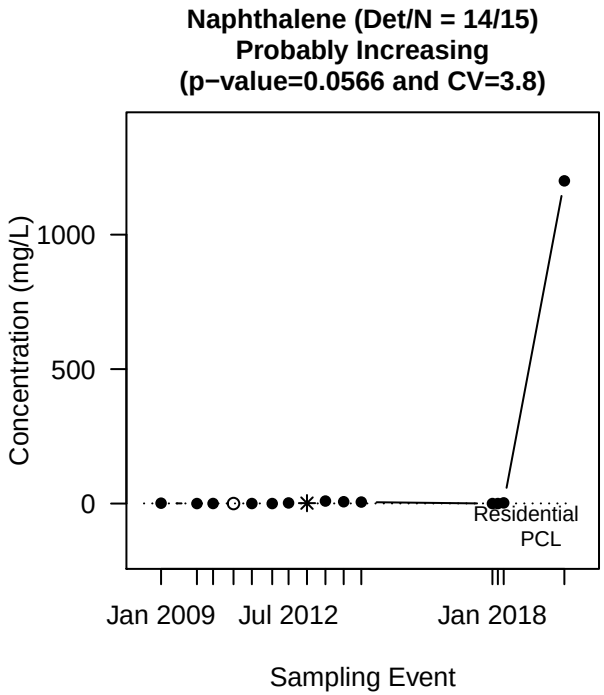
Mann−Kendall Trend Tests for MW−49B











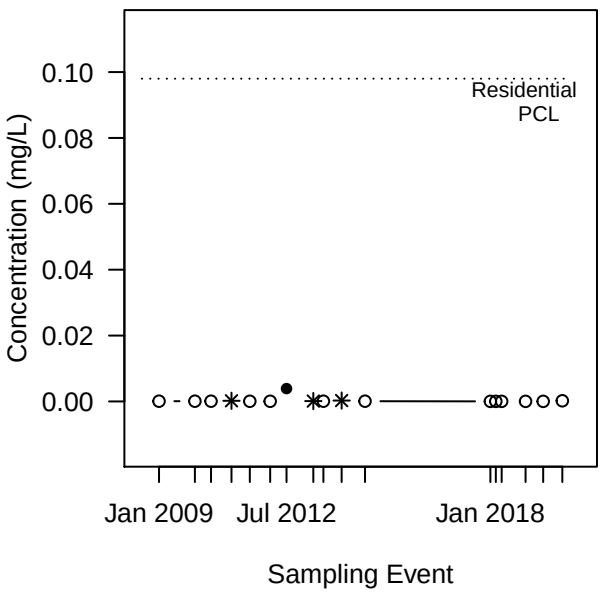
LEGEND:
Concentration

- DET
- DET, J−flagged
- ND (DL plotted)

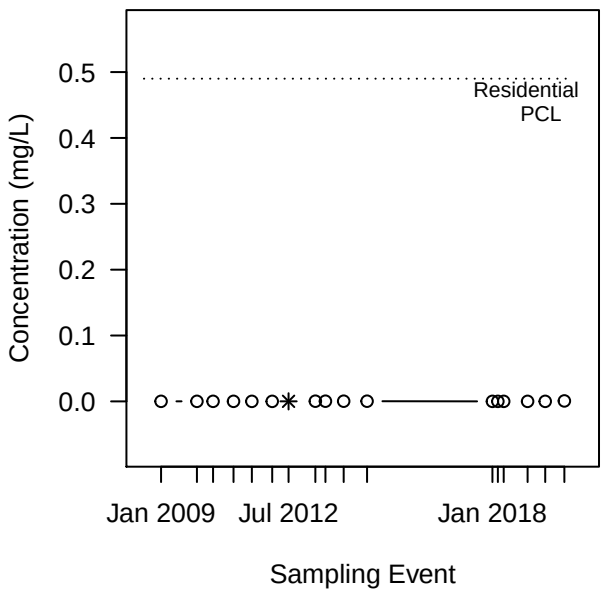
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

Mann−Kendall Trend Tests for MW−50A

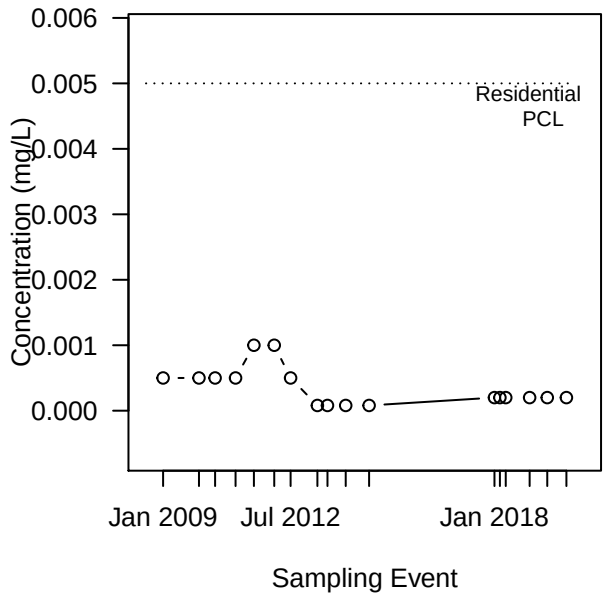
2−Methylnaphthalene (Det/N = 4/17)
No Trend
(p−value=0.234 and CV=3)



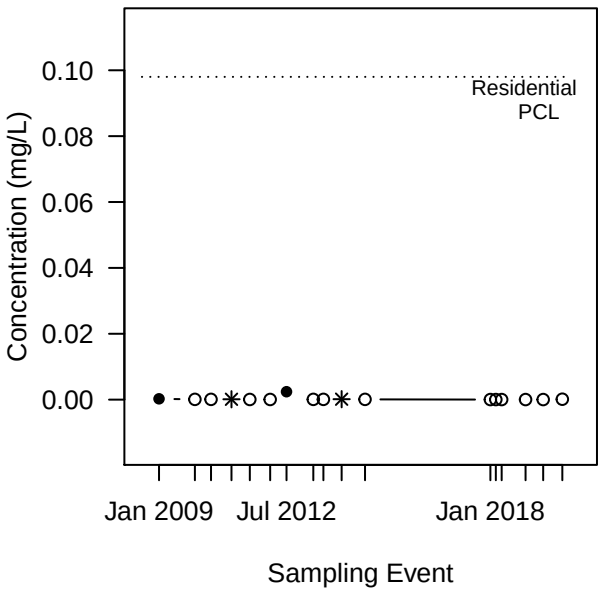
2,4−Dimethylphenol (Det/N = 1/17)
No Trend
(p−value=0.38 and CV=1.2)



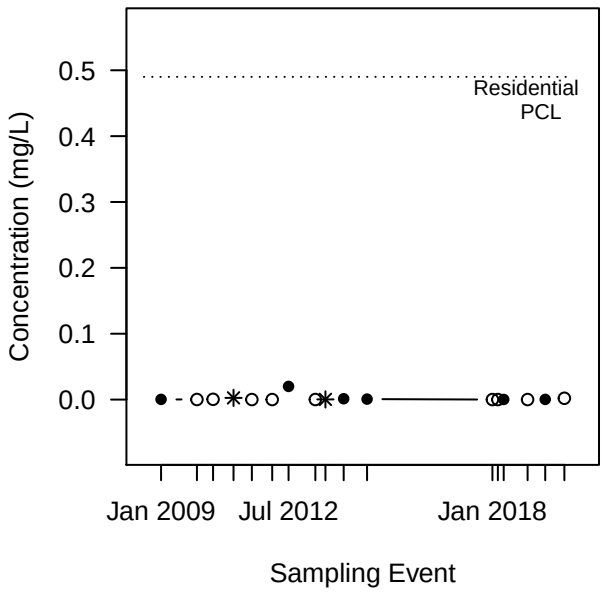
Benzene (Det/N = 0/17)
Not evaluated − All NDs



Dibenzofuran (Det/N = 4/17)
Probably Decreasing
(p−value=0.0658 and CV=2.7)



Naphthalene (Det/N = 8/17)
No Trend
(p−value=0.343 and CV=2.9)

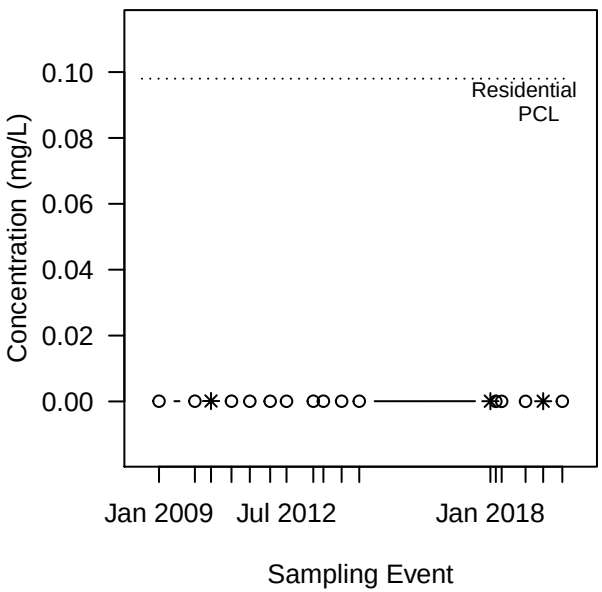


LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

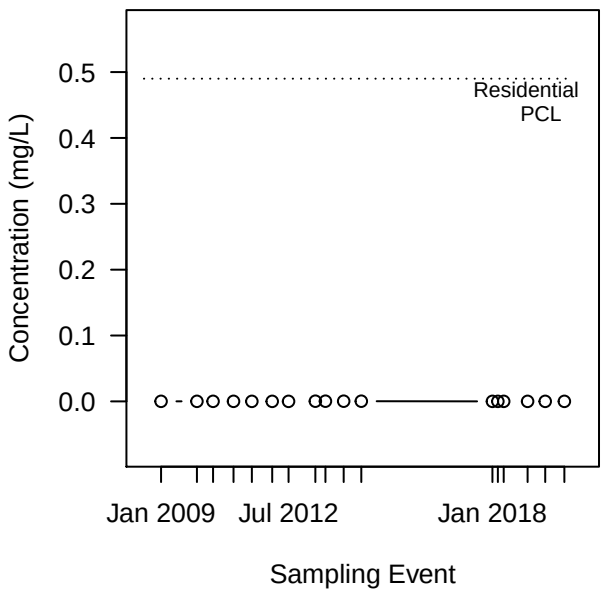
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

Mann−Kendall Trend Tests for MW−51A

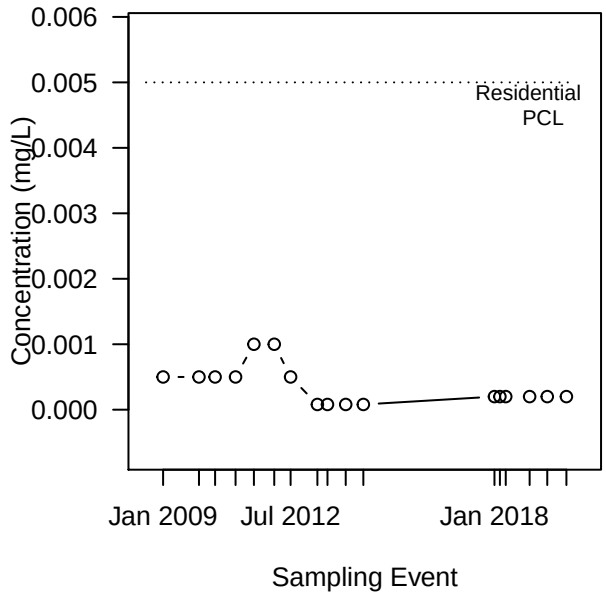
2−Methylnaphthalene (Det/N = 3/17)
No Trend
(p−value=0.401 and CV=0.45)



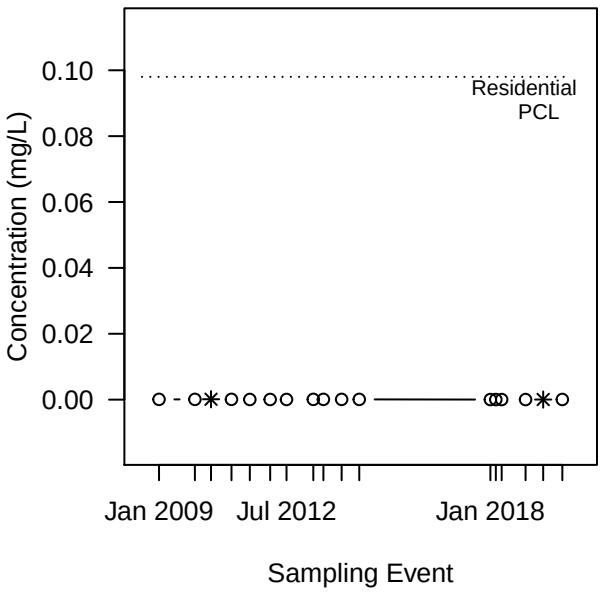
2,4−Dimethylphenol (Det/N = 0/17)
Not evaluated − All NDs



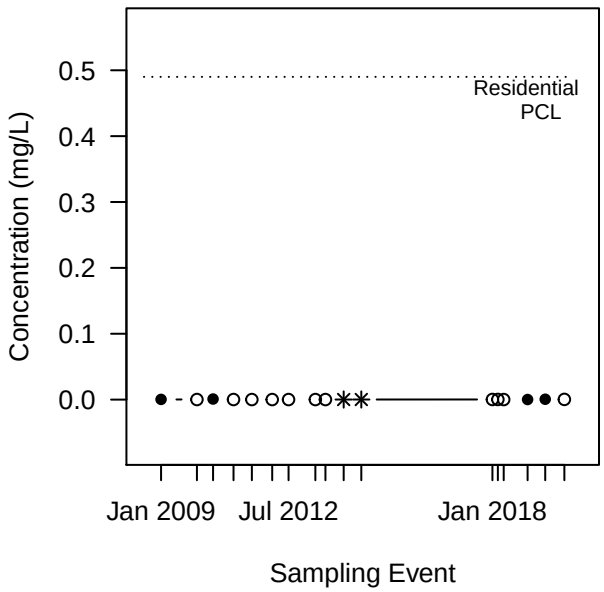
Benzene (Det/N = 0/17)
Not evaluated − All NDs



Dibenzofuran (Det/N = 2/17)
No Trend
(p−value=0.5 and CV=0.51)



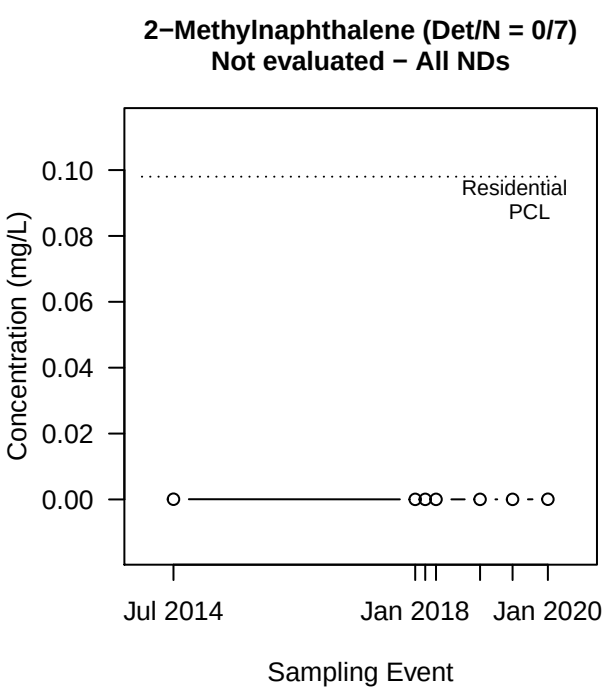
Naphthalene (Det/N = 6/17)
No Trend
(p−value=0.461 and CV=1.1)

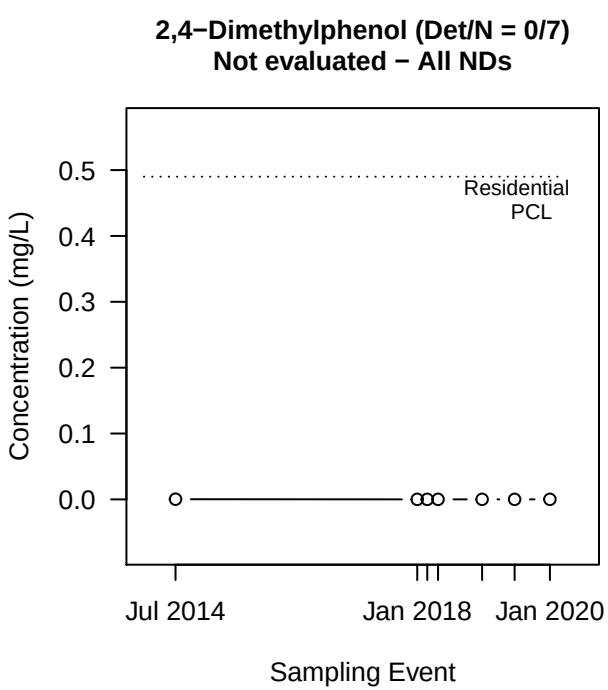


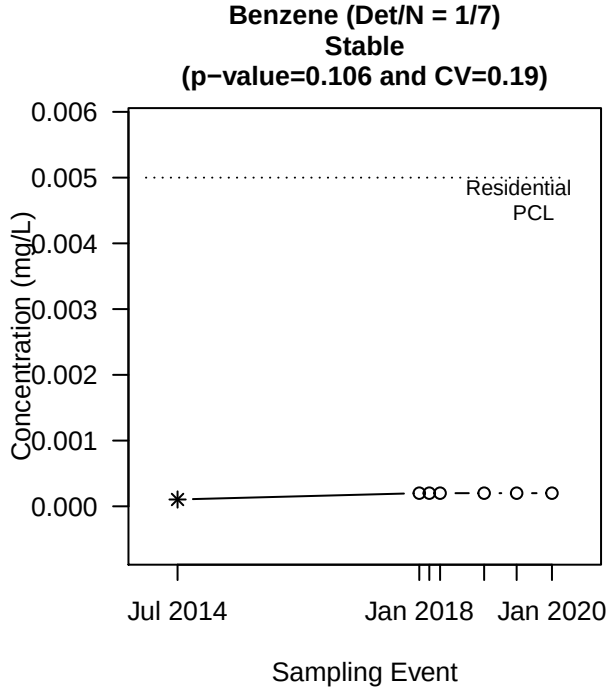
LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

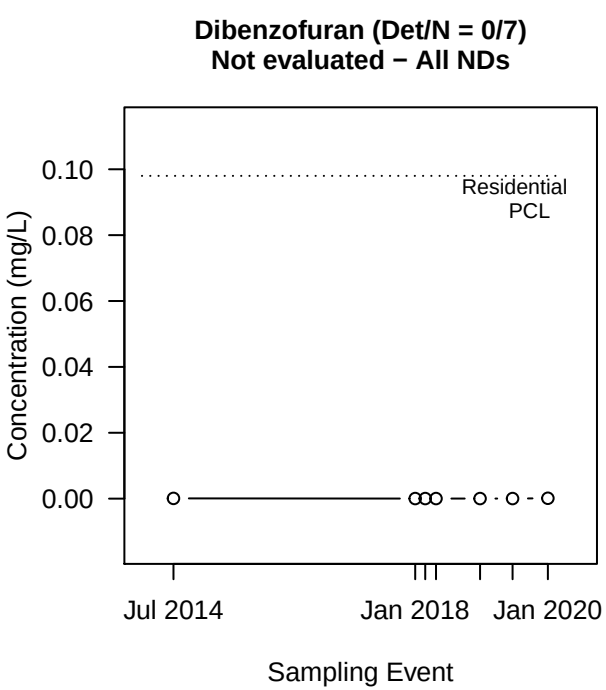
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

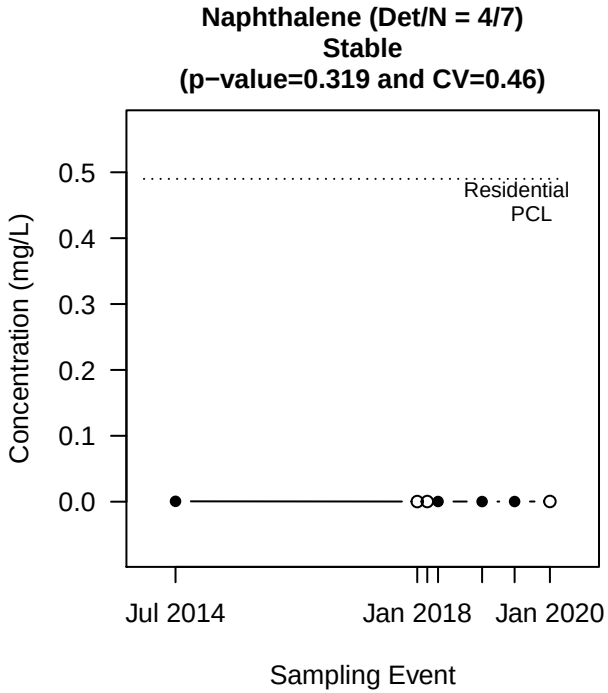
Mann−Kendall Trend Tests for MW−51C

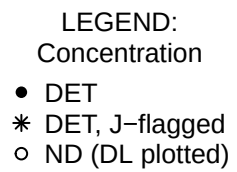






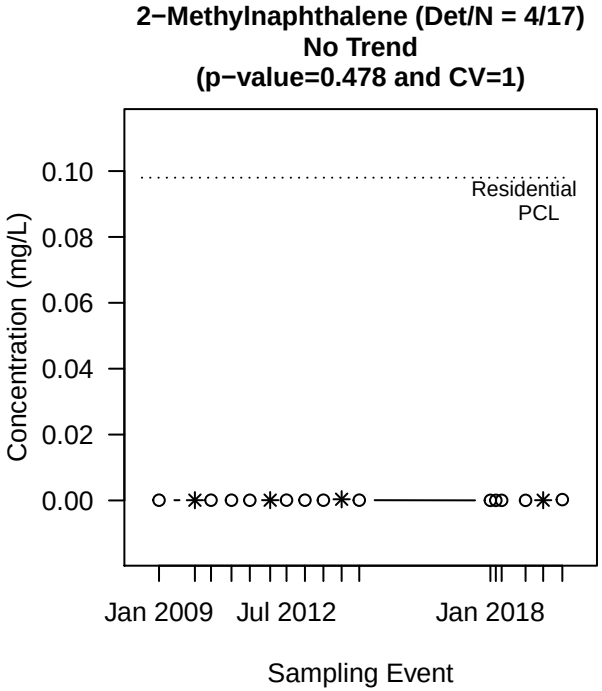


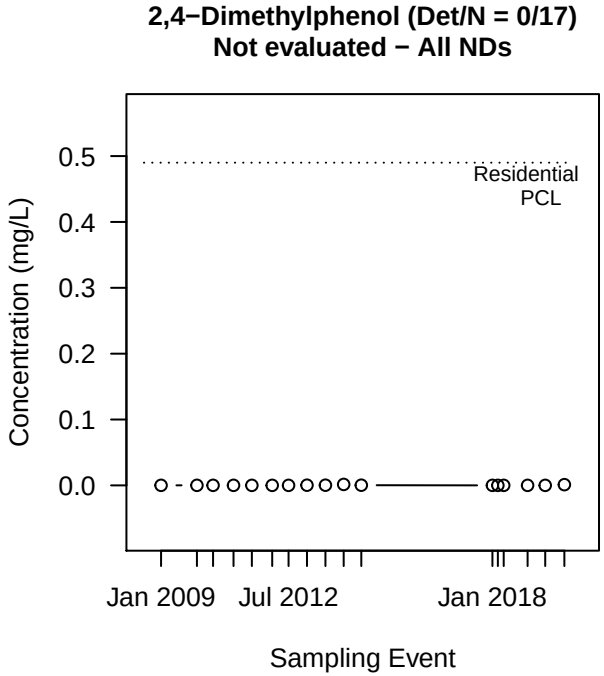


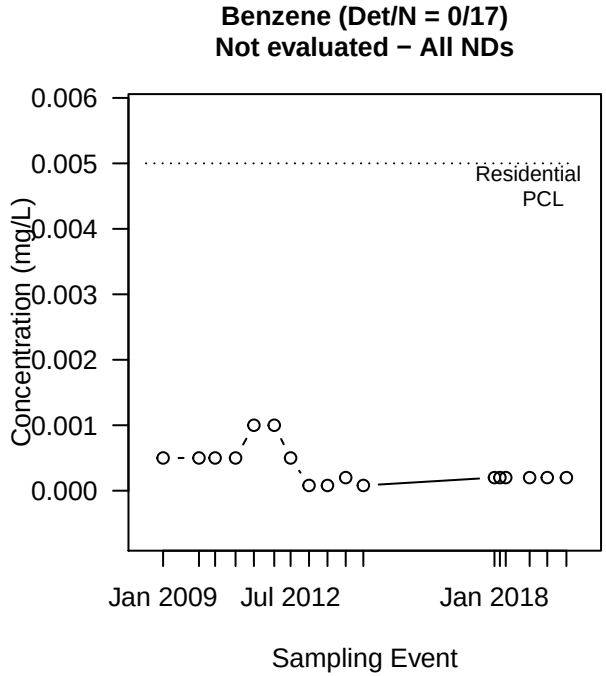


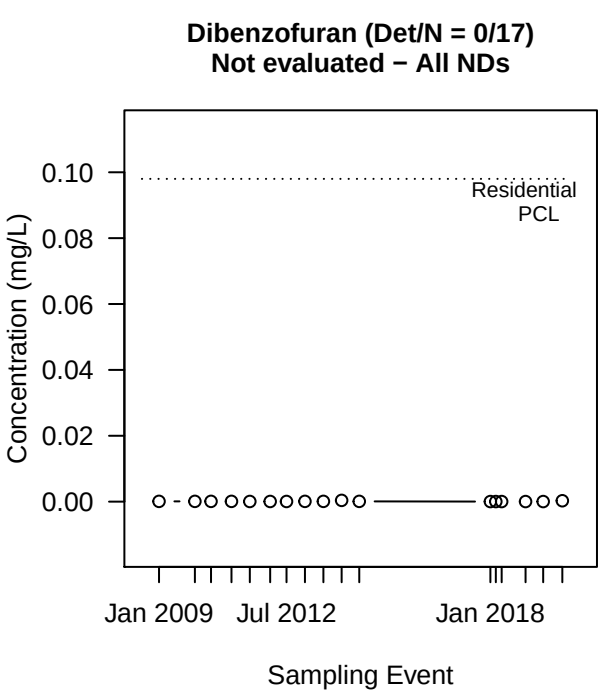
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

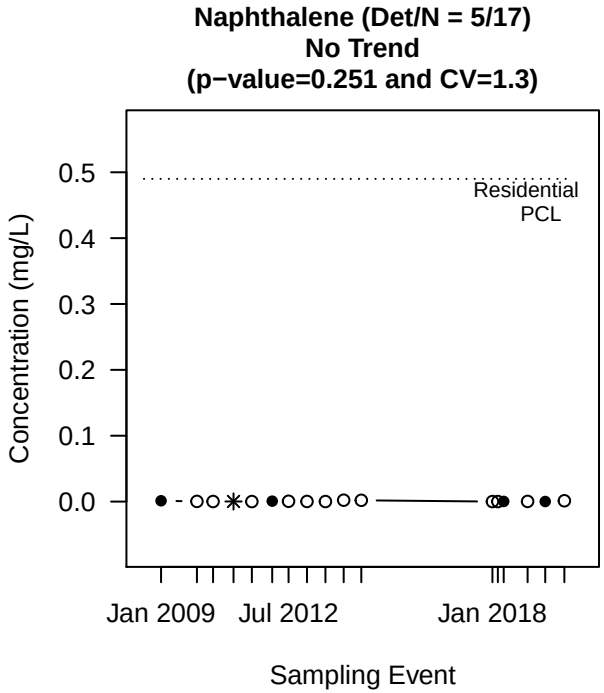
Mann−Kendall Trend Tests for MW−53C

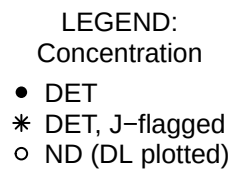








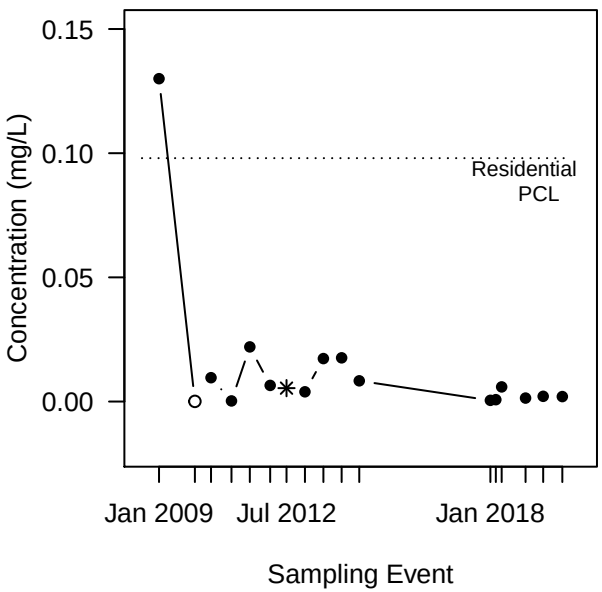




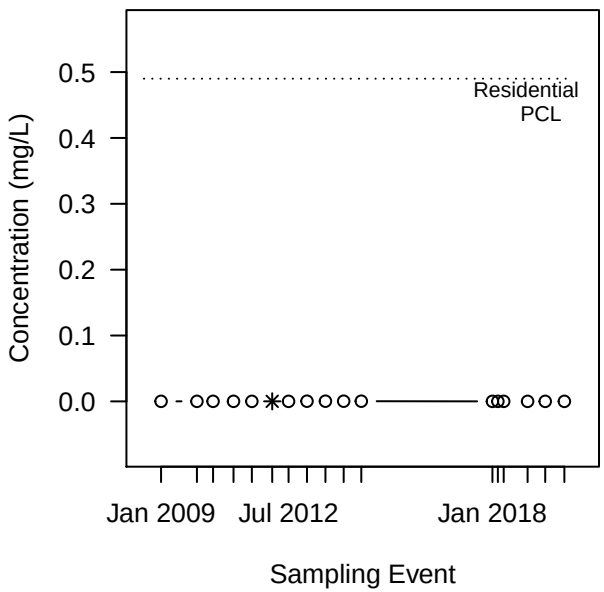
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

Mann−Kendall Trend Tests for MW−54C

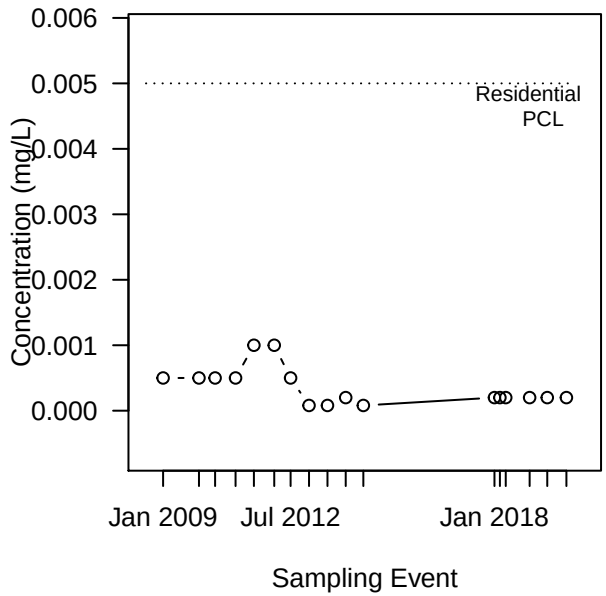
2−Methylnaphthalene (Det/N = 16/17)
No Trend
(p−value=0.133 and CV=2.2)



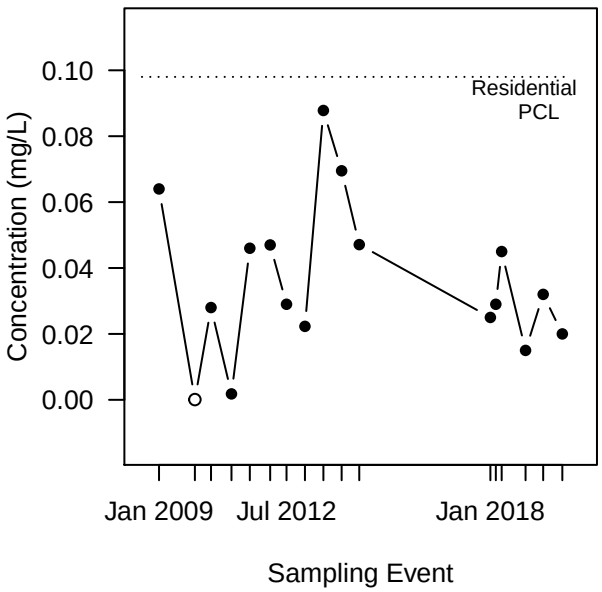
2,4−Dimethylphenol (Det/N = 1/17)
Stable
(p−value=0.305 and CV=0.93)



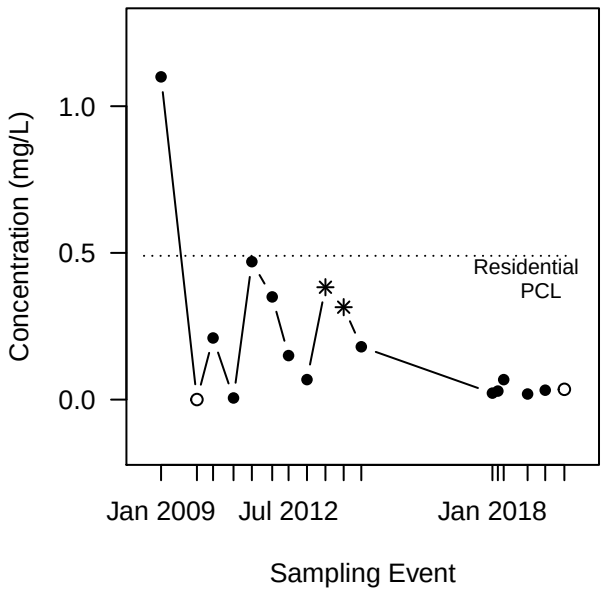
Benzene (Det/N = 0/17)
Not evaluated − All NDs



Dibenzofuran (Det/N = 16/17)
Stable
(p−value=0.435 and CV=0.65)



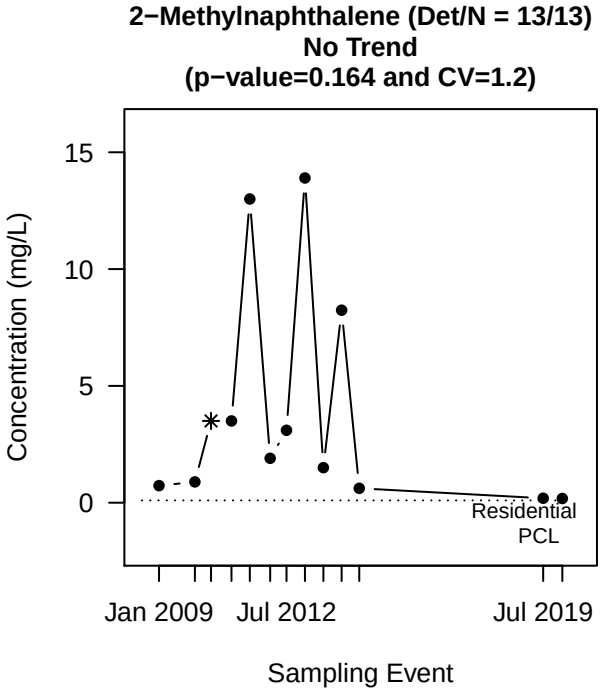
Naphthalene (Det/N = 15/17)
Decreasing
(p−value=0.0239 and CV=1.4)

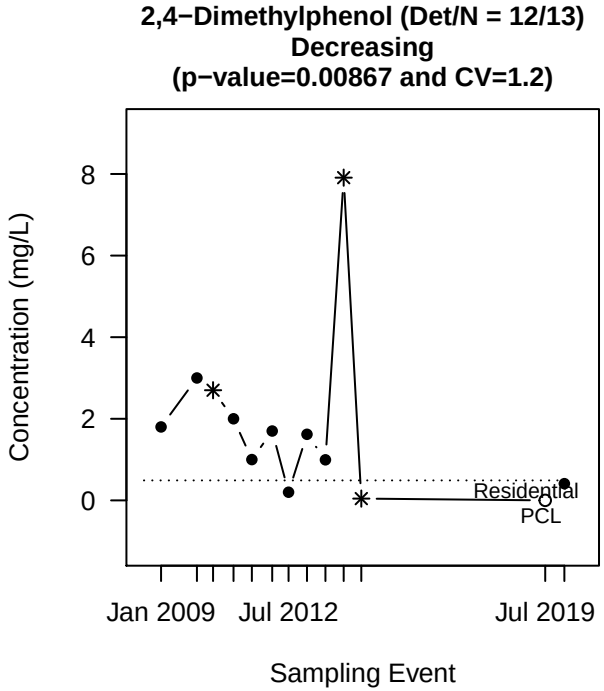


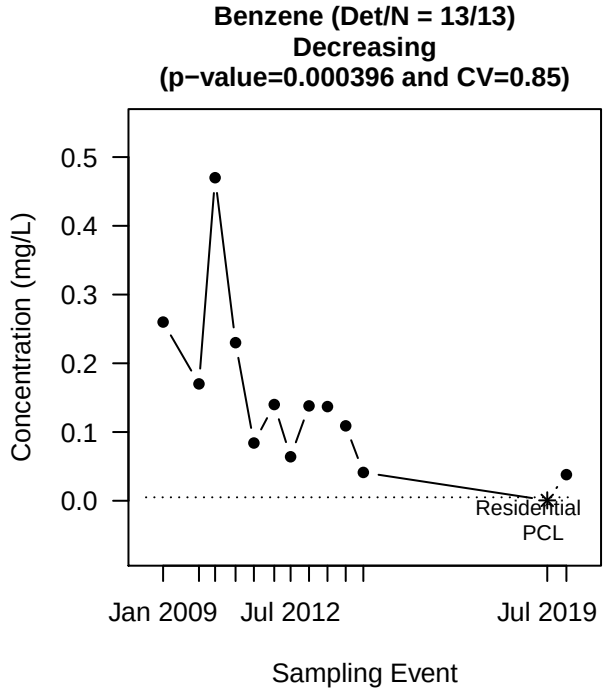
LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

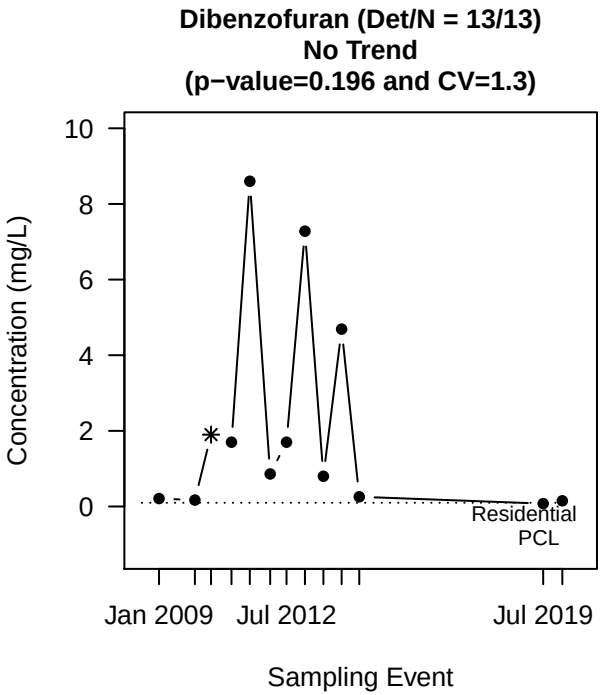
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

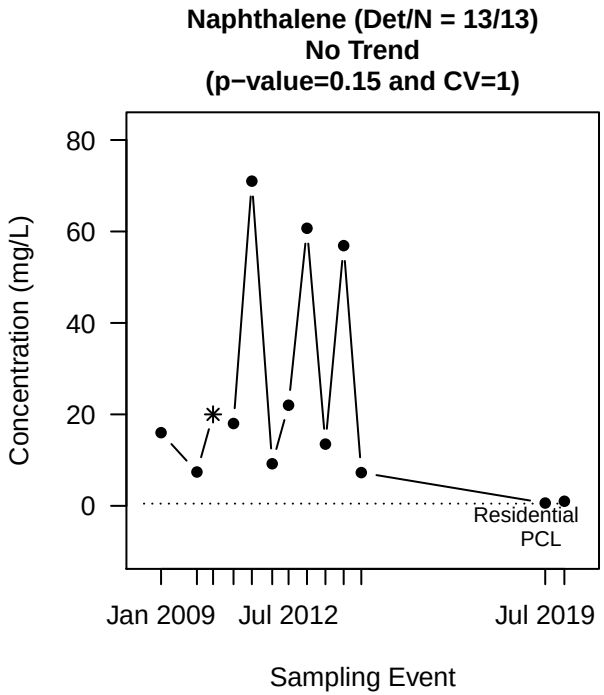
Mann−Kendall Trend Tests for MW−57A







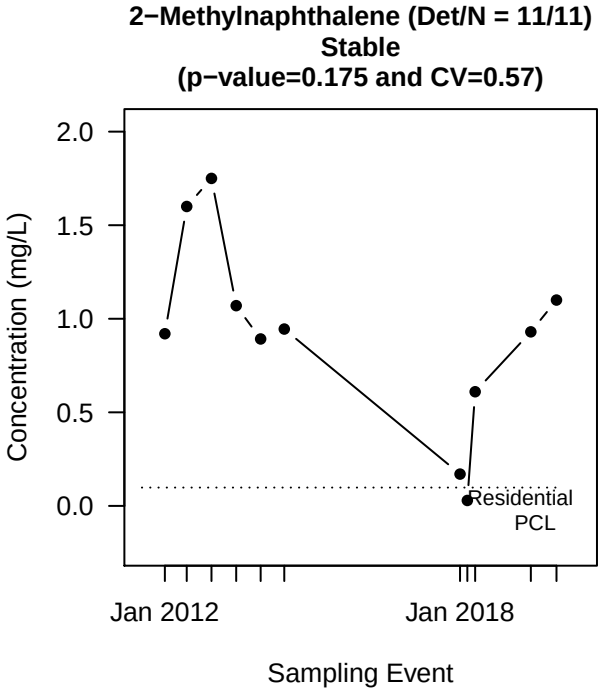


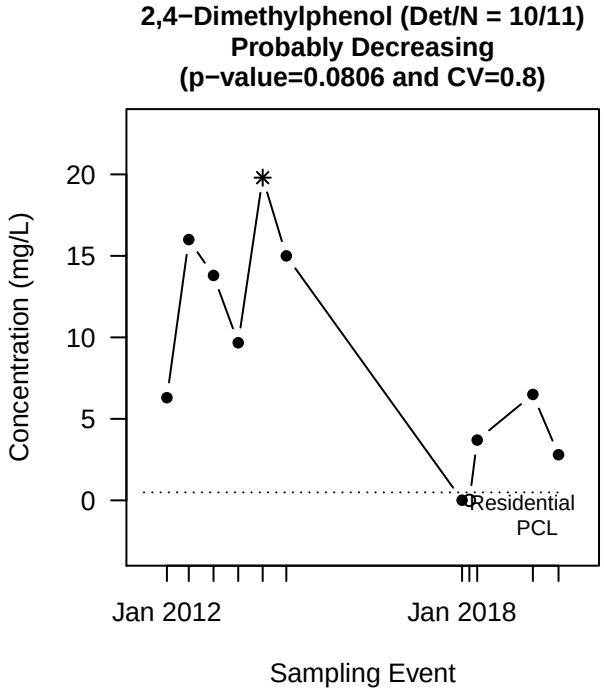


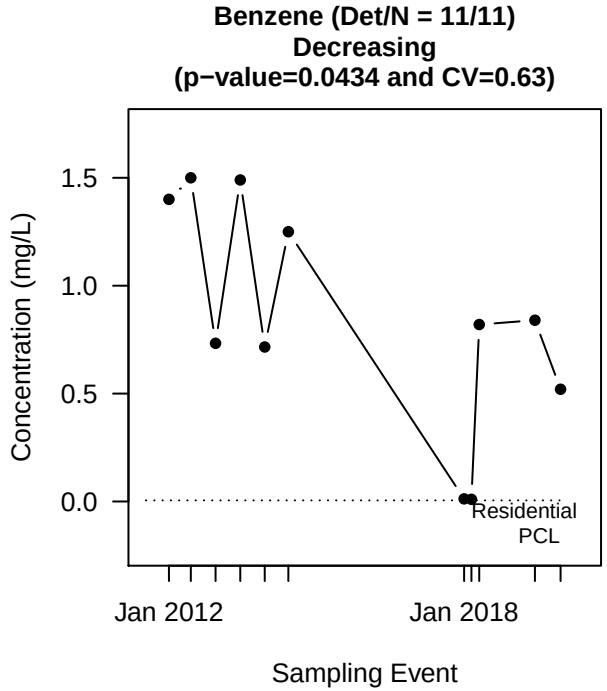
LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

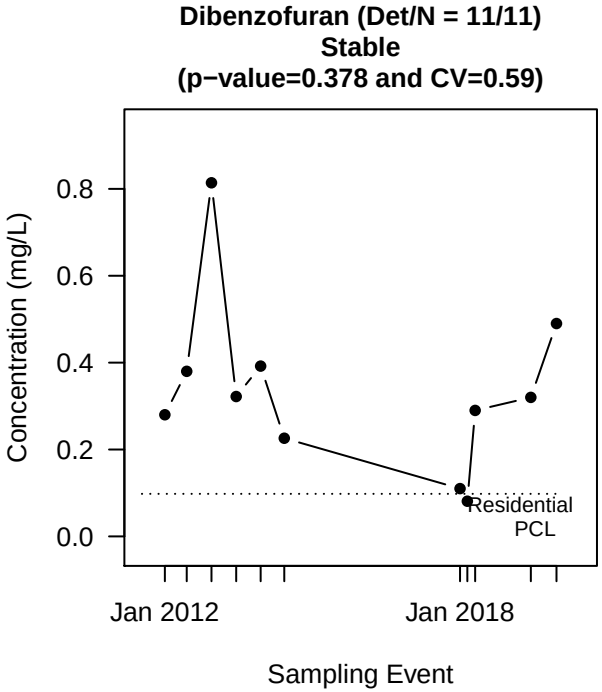
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

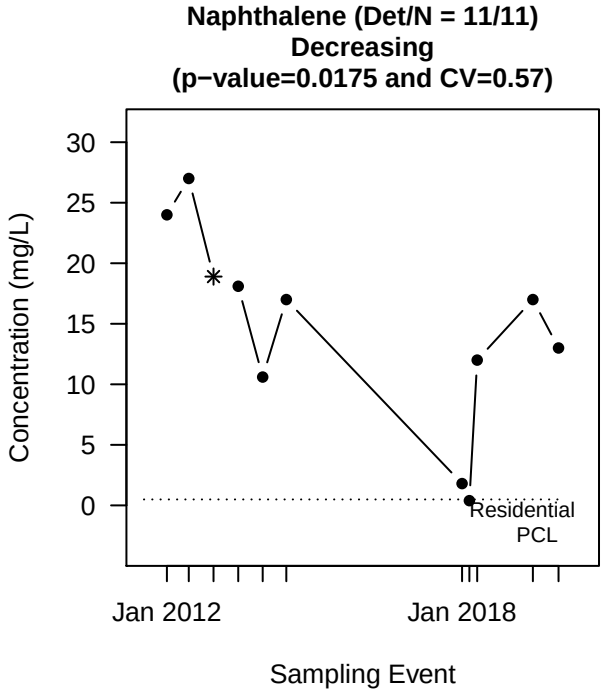
Mann−Kendall Trend Tests for MW−57B







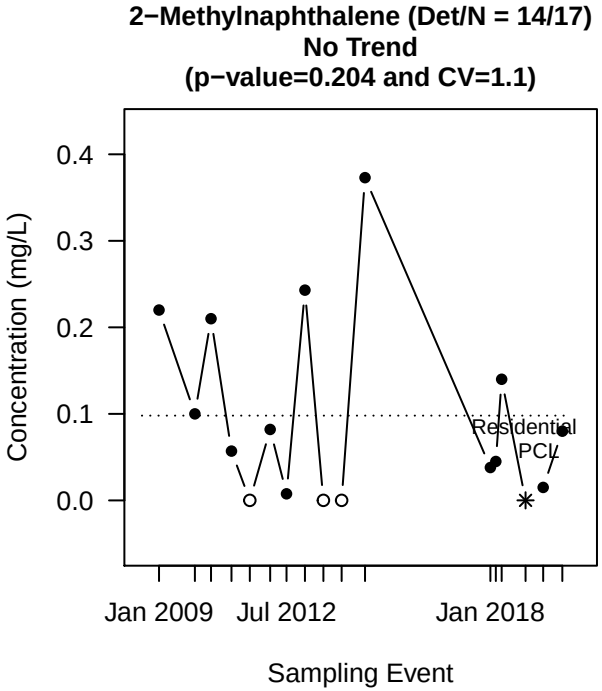


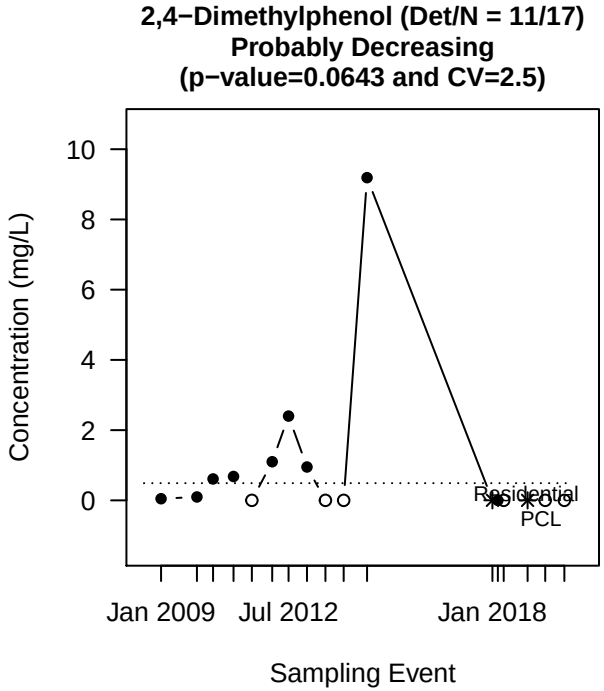


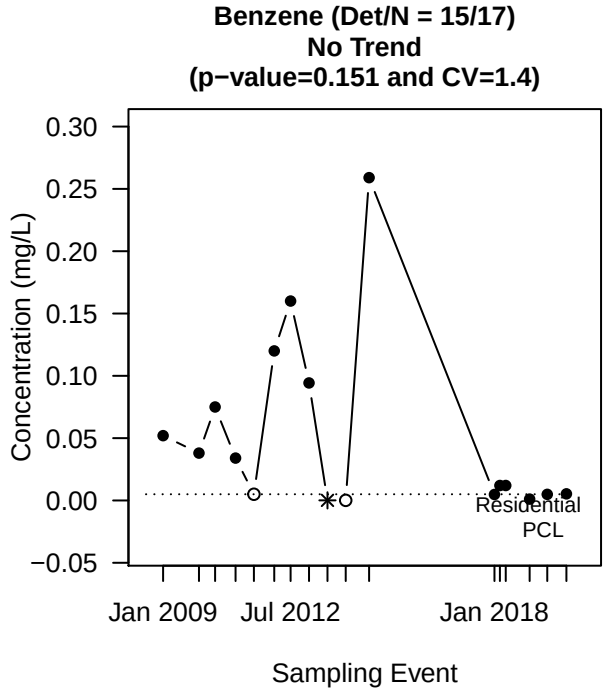
LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

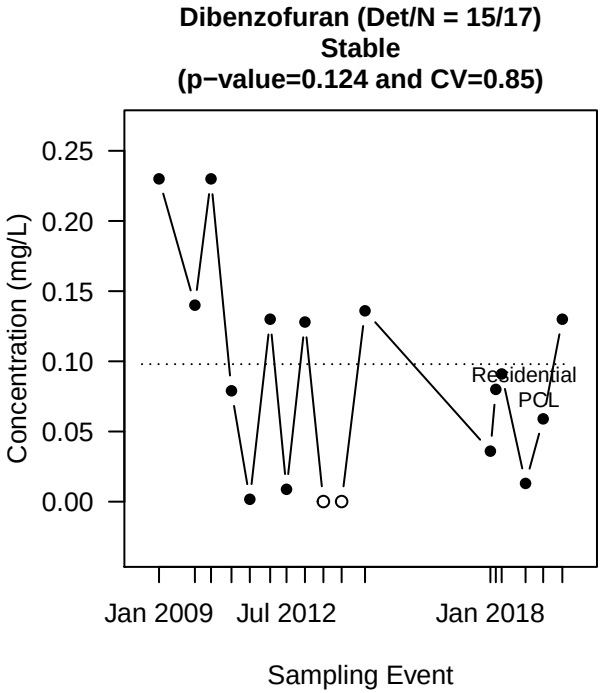
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

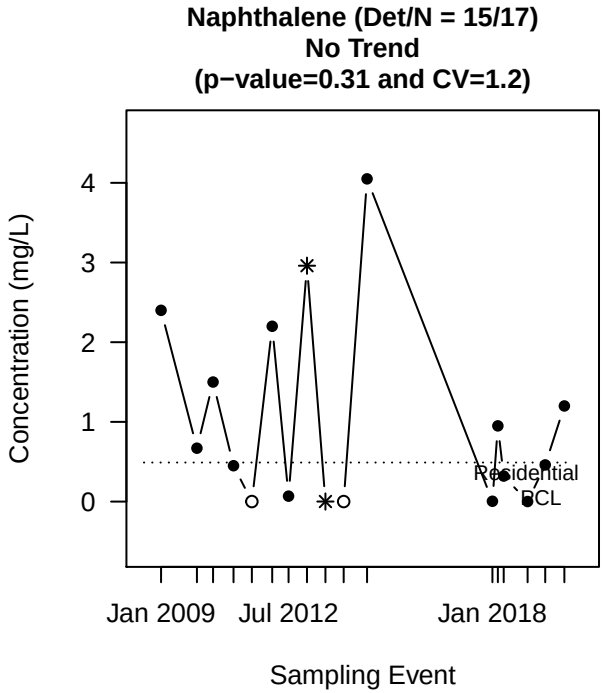
Mann−Kendall Trend Tests for MW−58A









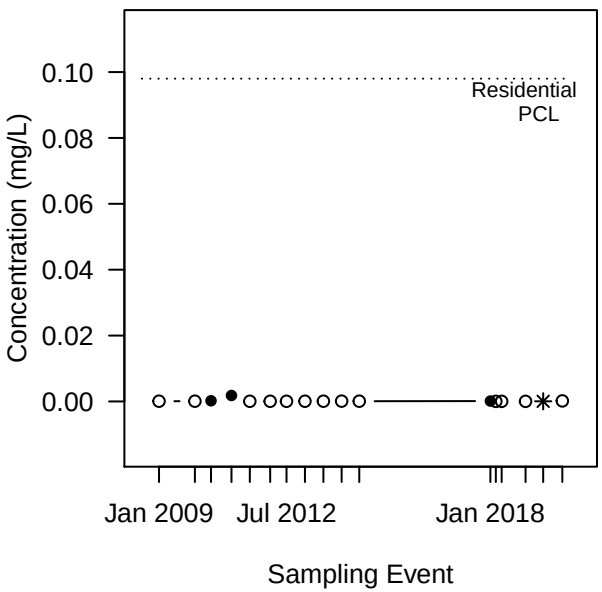


LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

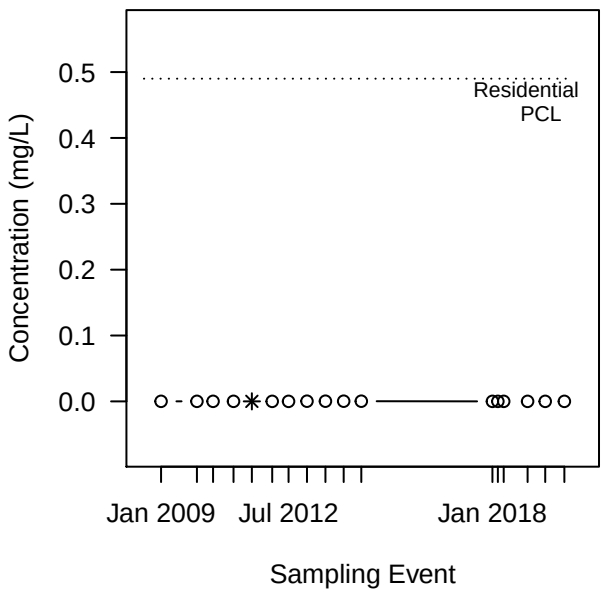
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

Mann−Kendall Trend Tests for MW−59A

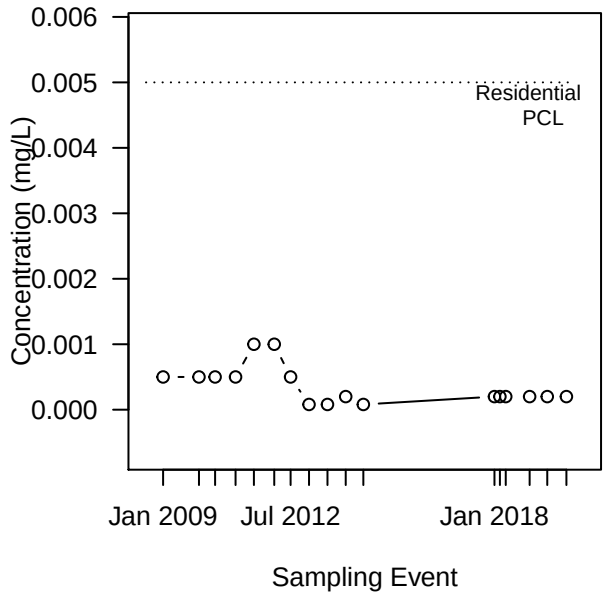
2−Methylnaphthalene (Det/N = 4/17)
No Trend
(p−value=0.39 and CV=2.4)



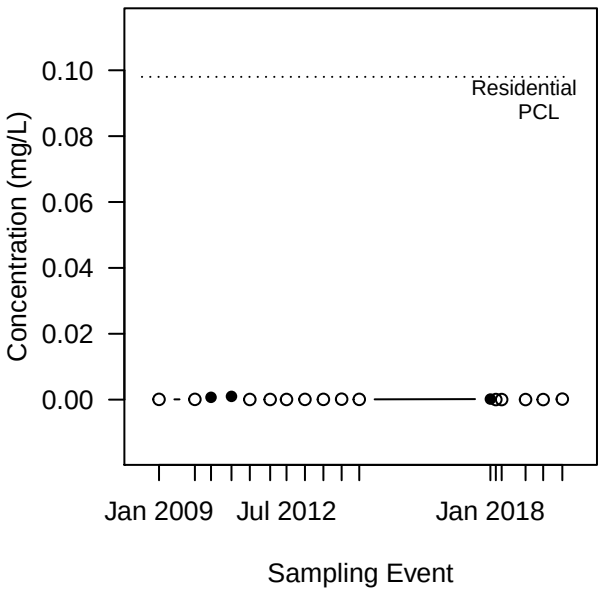
2,4−Dimethylphenol (Det/N = 1/17)
Stable
(p−value=0.237 and CV=0.95)



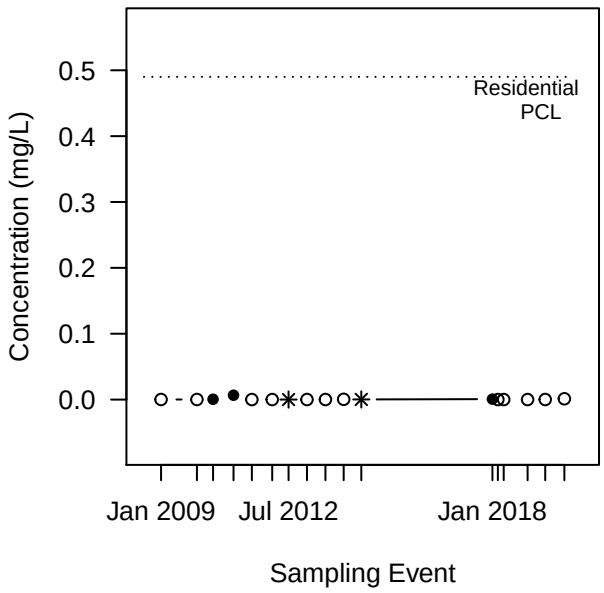
Benzene (Det/N = 0/17)
Not evaluated − All NDs



Dibenzofuran (Det/N = 3/17)
No Trend
(p−value=0.158 and CV=1.6)



Naphthalene (Det/N = 5/17)
No Trend
(p−value=0.22 and CV=2.6)

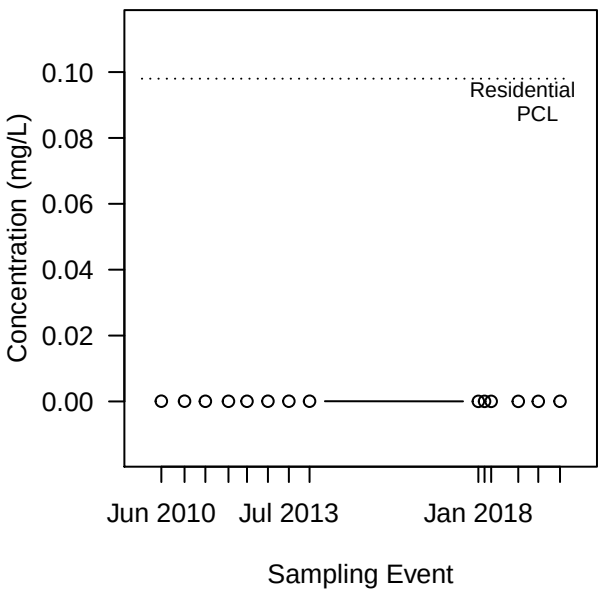


LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

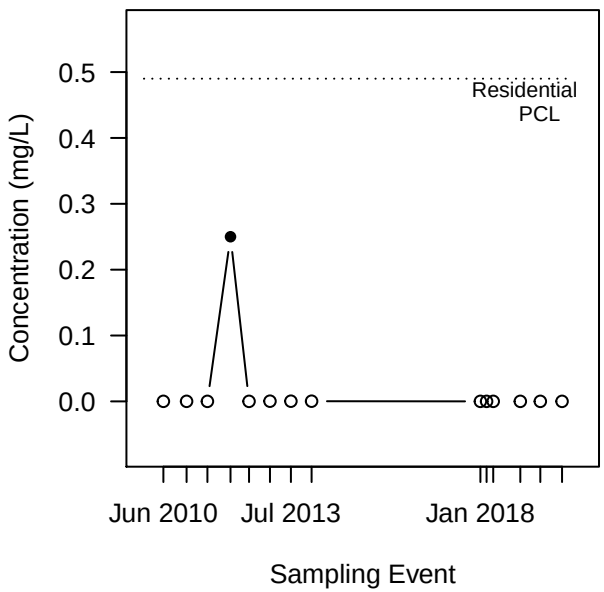
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

Mann−Kendall Trend Tests for MW−59B

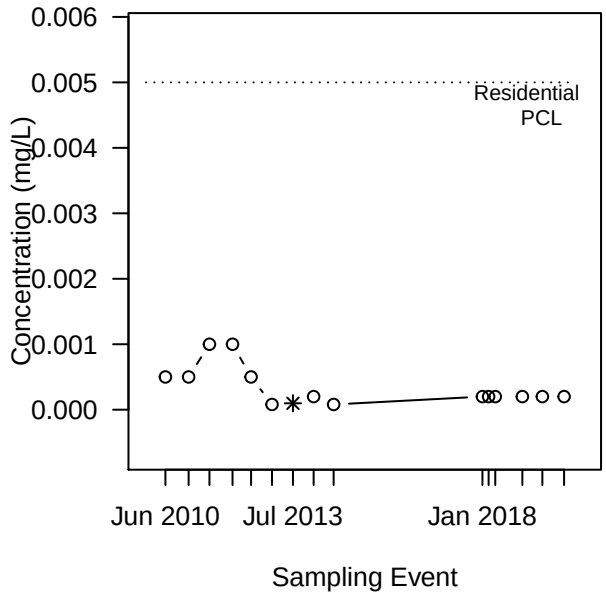
2−Methylnaphthalene (Det/N = 0/14)
Not evaluated − All NDs



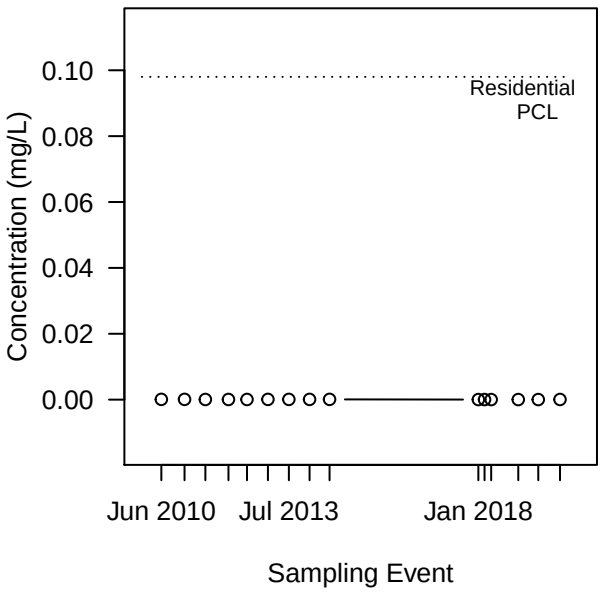
2,4−Dimethylphenol (Det/N = 1/14)
No Trend
(p−value=0.228 and CV=3.7)



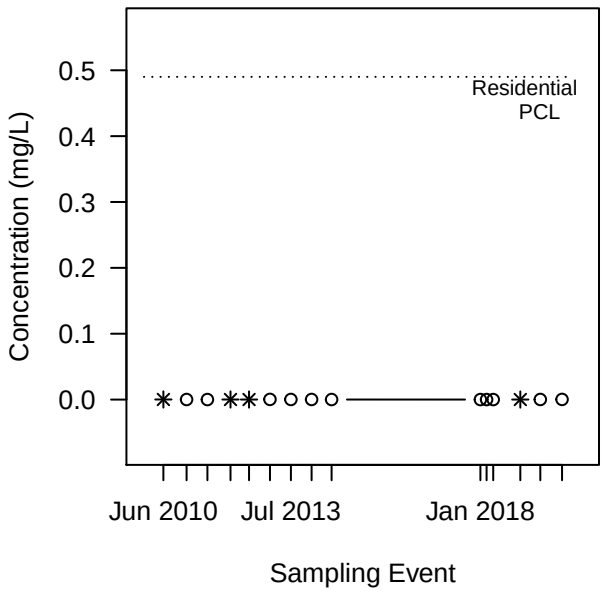
Benzene (Det/N = 1/15)
Stable
(p−value=0.454 and CV=0.88)



Dibenzofuran (Det/N = 0/15)
Not evaluated − All NDs



Naphthalene (Det/N = 4/15)
Probably Decreasing
(p−value=0.0891 and CV=0.69)

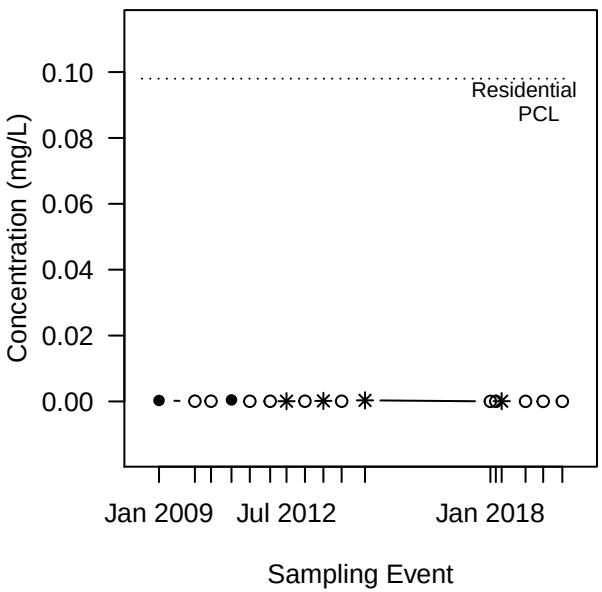


LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

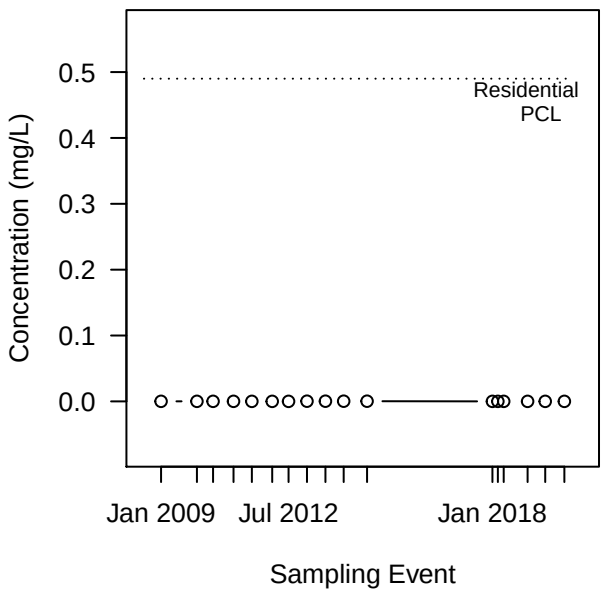
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

Mann−Kendall Trend Tests for MW−59D

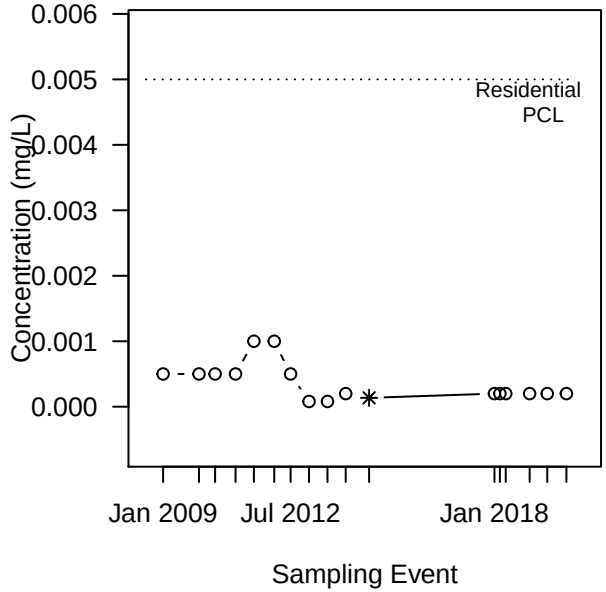
2−Methylnaphthalene (Det/N = 6/17)
No Trend
(p−value=0.191 and CV=1.2)



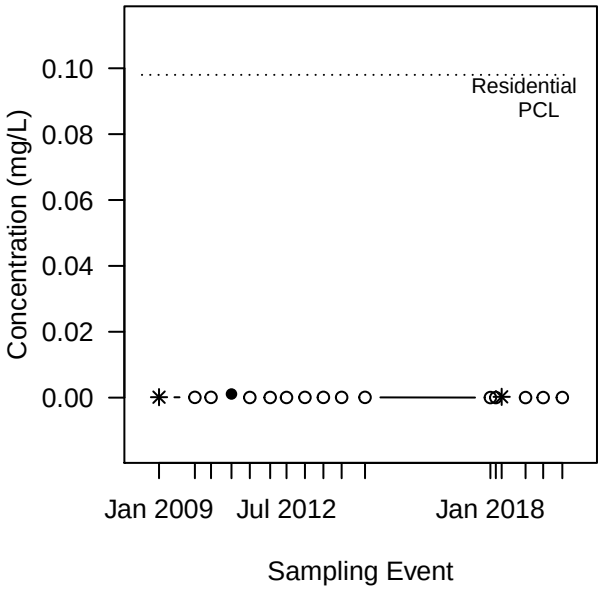
2,4−Dimethylphenol (Det/N = 0/17)
Not evaluated − All NDs



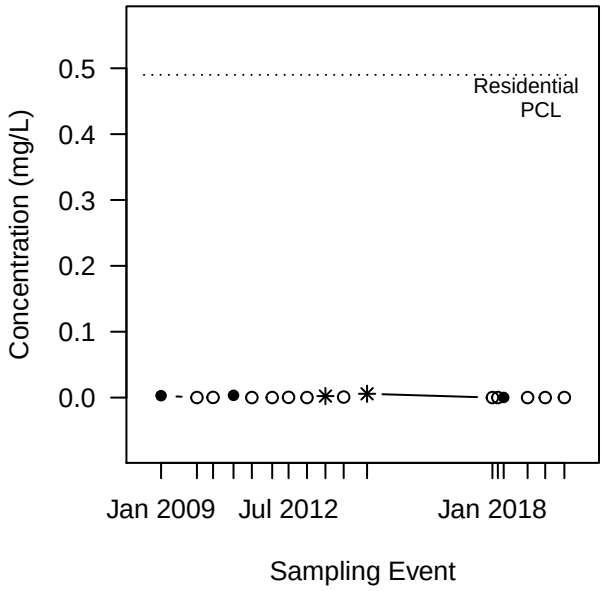
Benzene (Det/N = 1/17)
No Trend
(p−value=0.38 and CV=0.78)



Dibenzofuran (Det/N = 3/17)
No Trend
(p−value=0.191 and CV=2)



Naphthalene (Det/N = 5/17)
No Trend
(p−value=0.251 and CV=1.7)

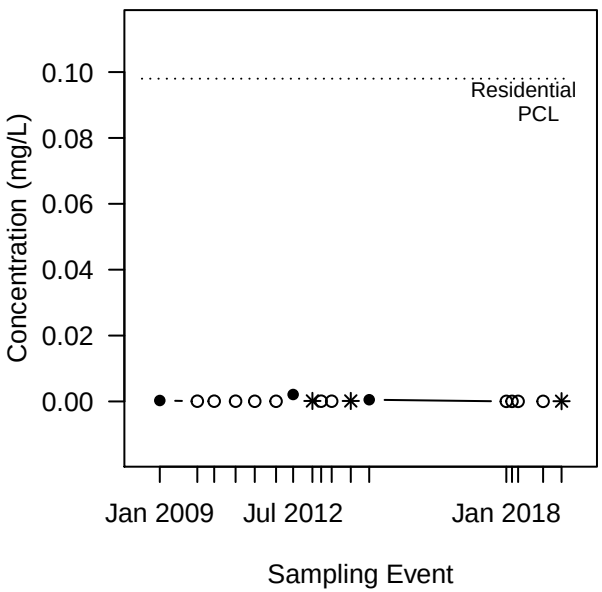


LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

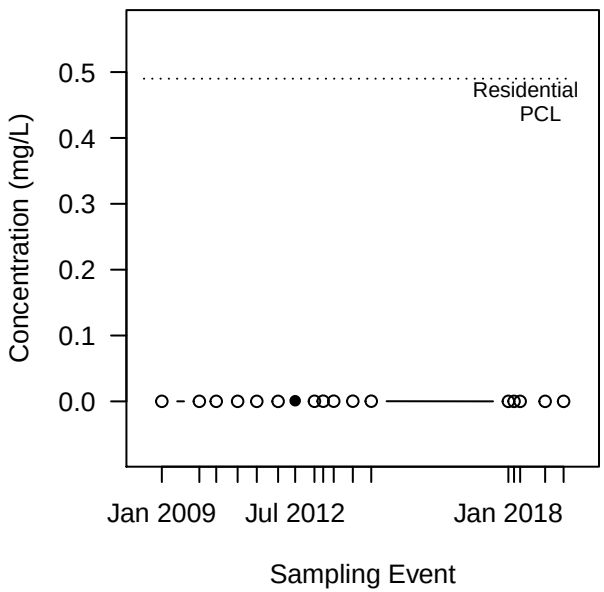
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

Mann−Kendall Trend Tests for MW−60A

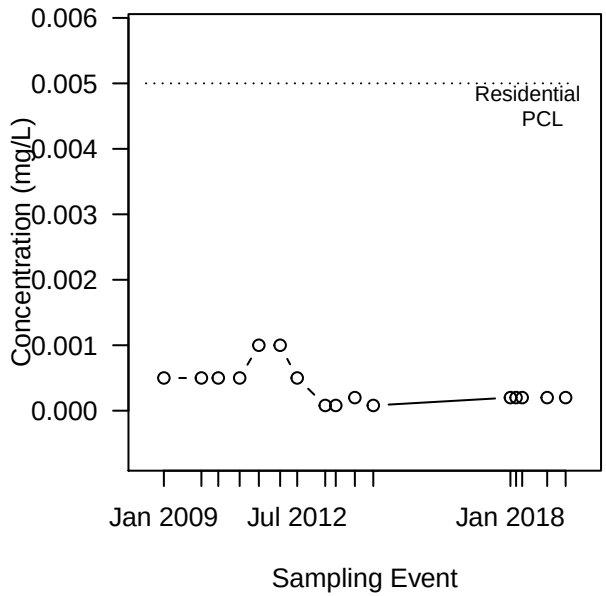
2−Methylnaphthalene (Det/N = 6/17)
No Trend
(p−value=0.461 and CV=2.2)



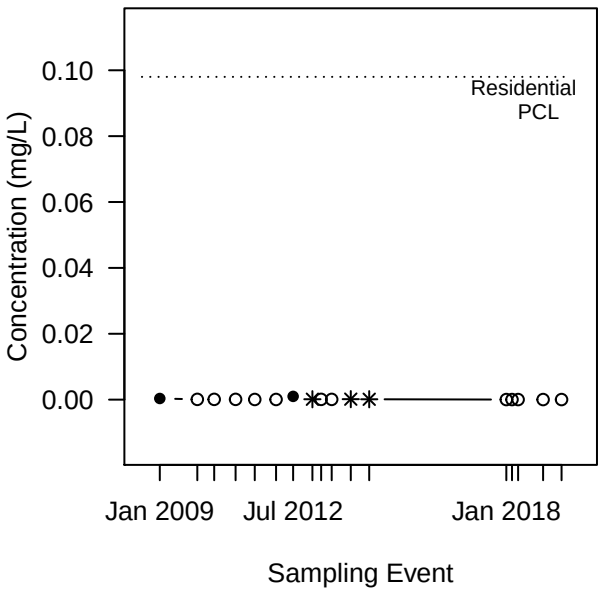
2,4−Dimethylphenol (Det/N = 1/17)
No Trend
(p−value=0.38 and CV=1.4)



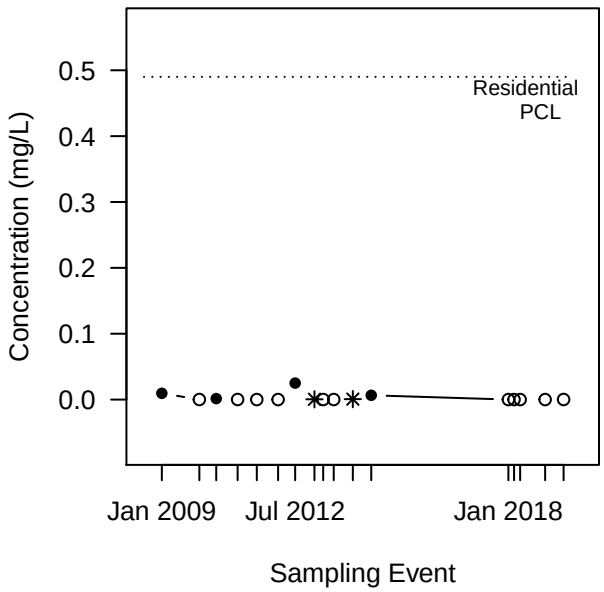
Benzene (Det/N = 0/16)
Not evaluated − All NDs



Dibenzofuran (Det/N = 5/17)
No Trend
(p−value=0.191 and CV=1.7)



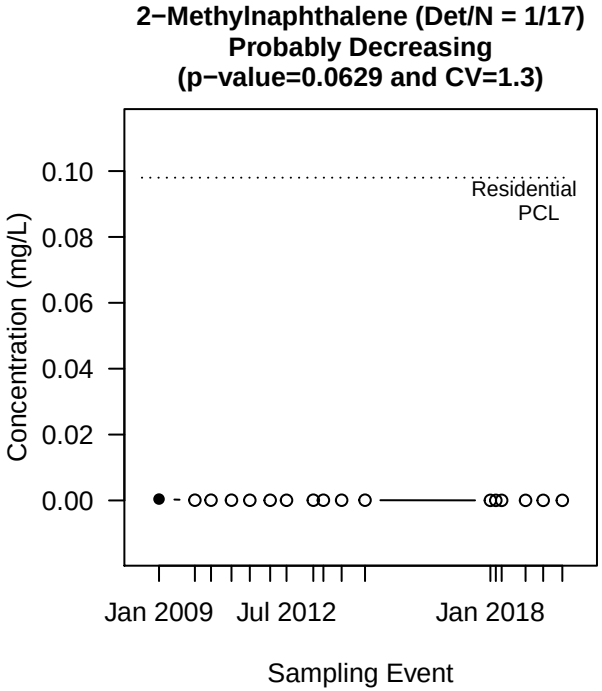
Naphthalene (Det/N = 6/17)
No Trend
(p−value=0.103 and CV=2.4)

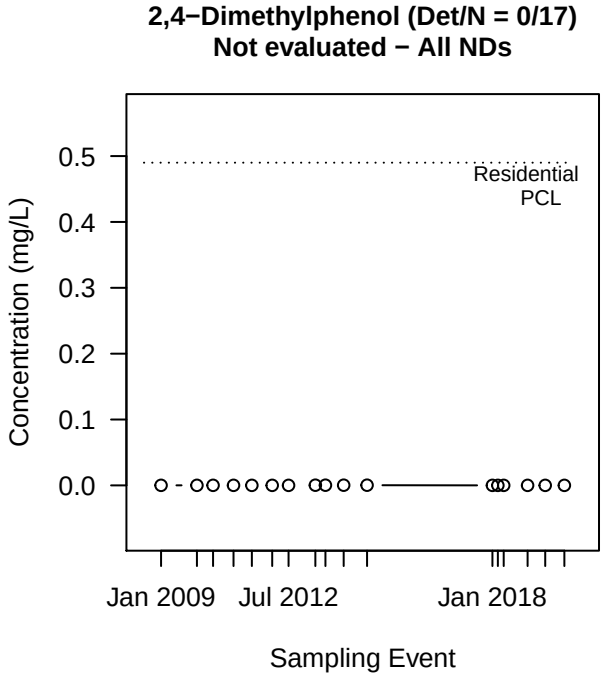


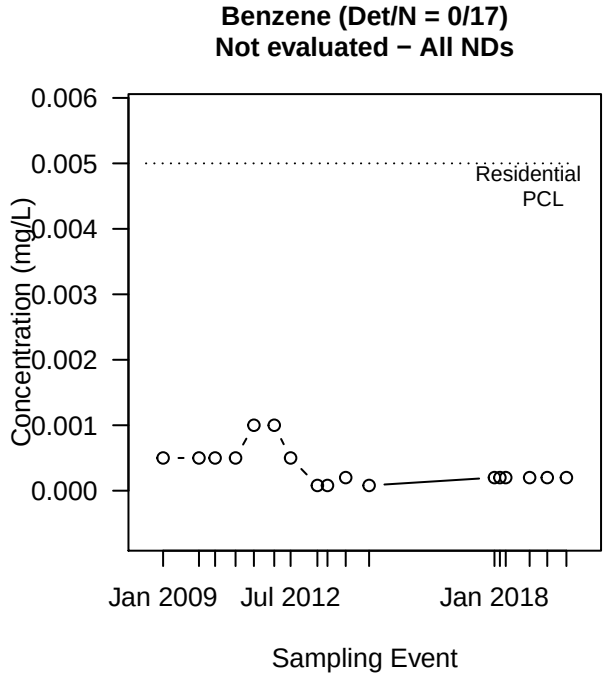
LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

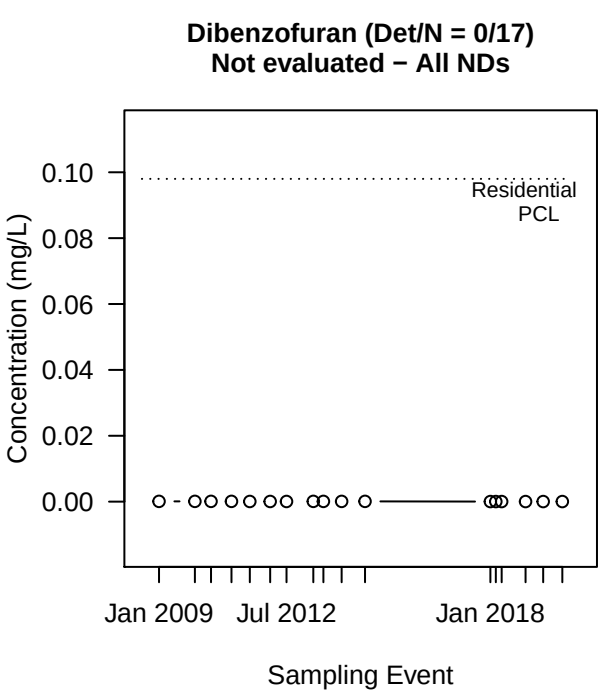
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

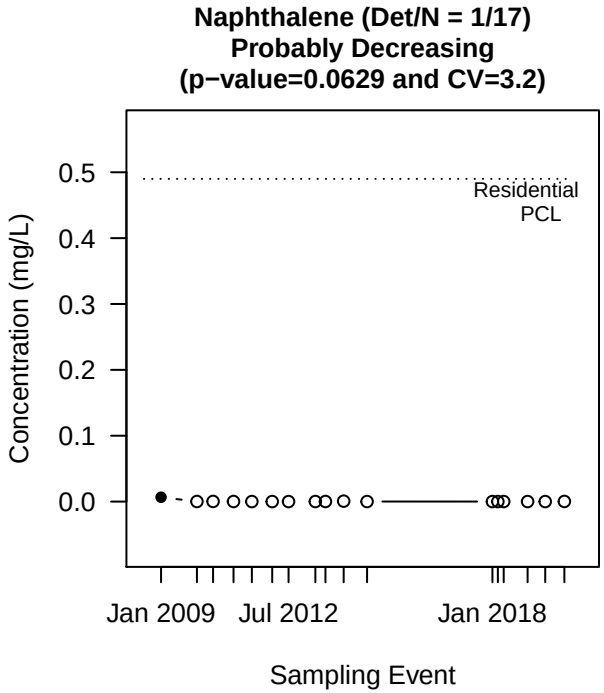
Mann−Kendall Trend Tests for MW−61A

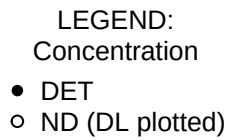








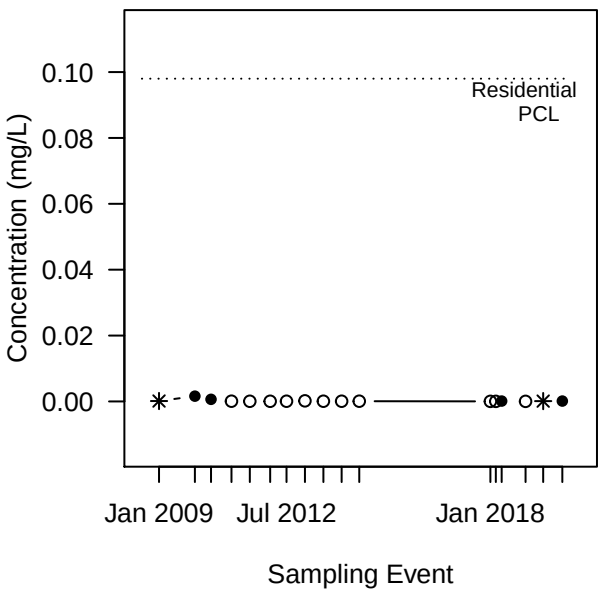




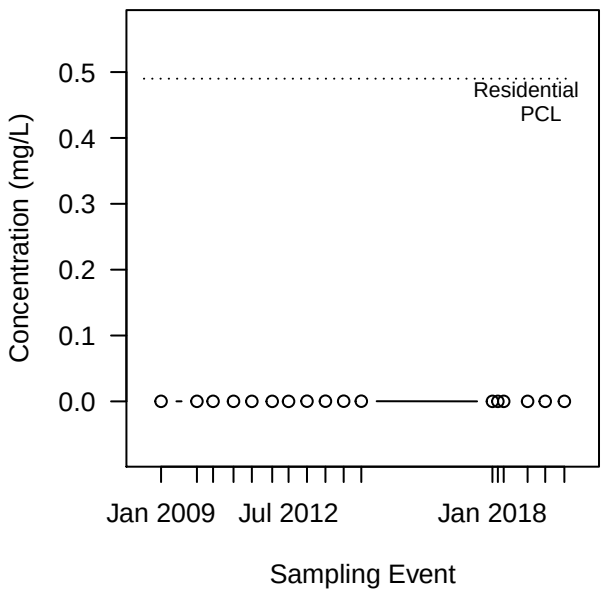
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

Mann−Kendall Trend Tests for MW−62B

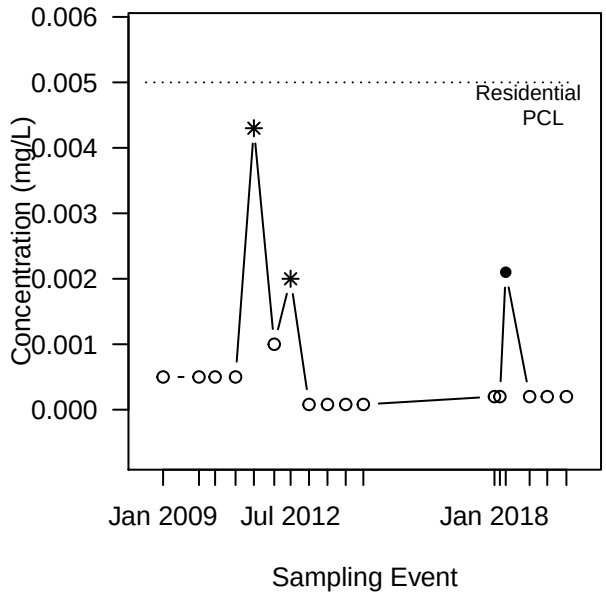
2−Methylnaphthalene (Det/N = 6/17)
No Trend
(p−value=0.331 and CV=2)



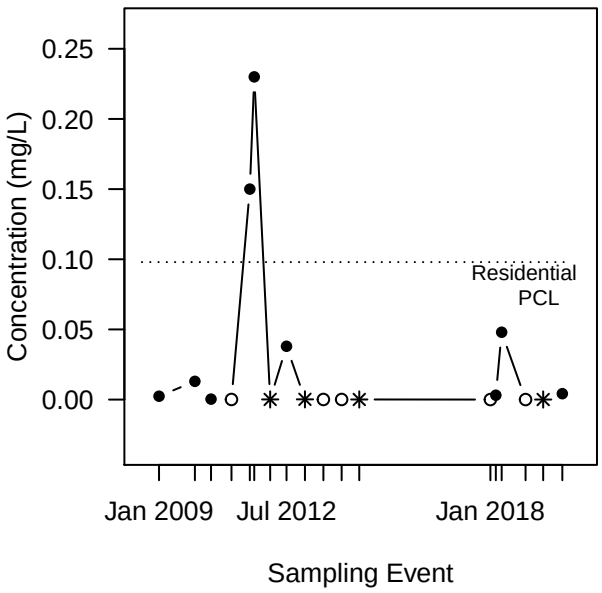
2,4−Dimethylphenol (Det/N = 0/17)
Not evaluated − All NDs



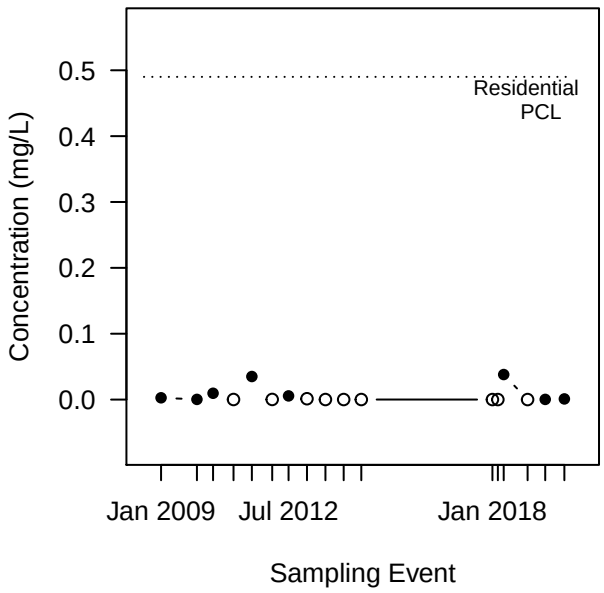
Benzene (Det/N = 3/17)
No Trend
(p−value=0.45 and CV=1.5)



Dibenzofuran (Det/N = 13/18)
No Trend
(p−value=0.179 and CV=2.3)



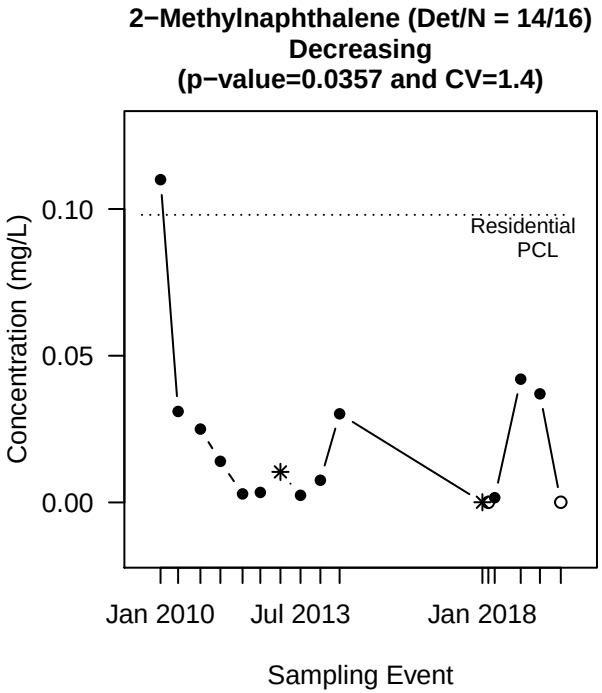
Naphthalene (Det/N = 8/17)
No Trend
(p−value=0.28 and CV=2.2)

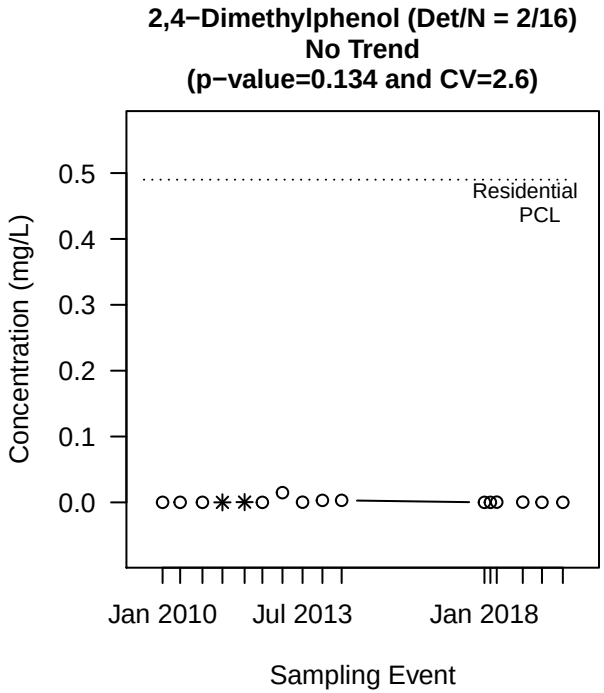


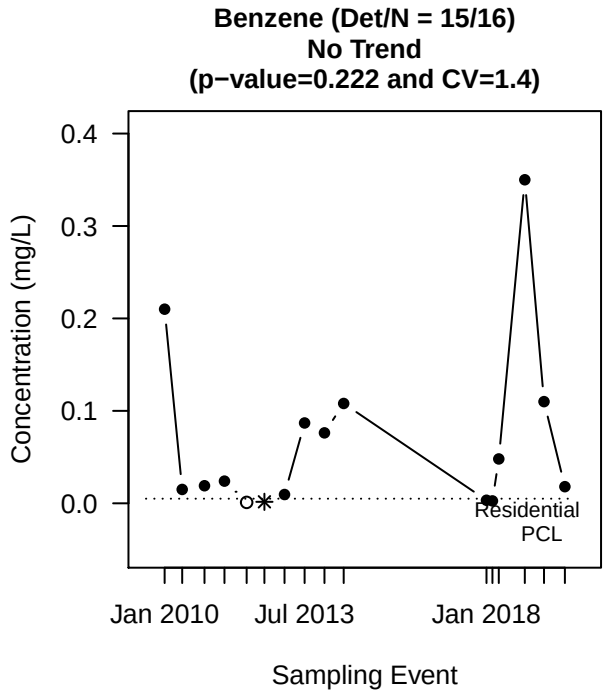
LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

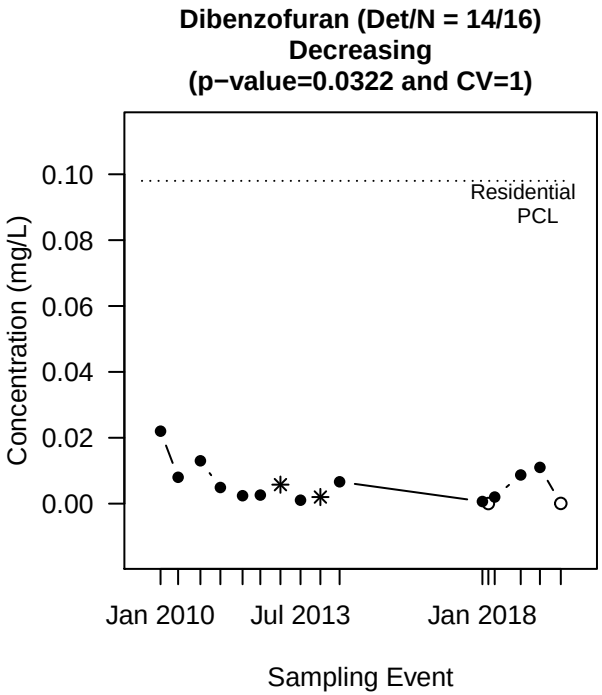
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

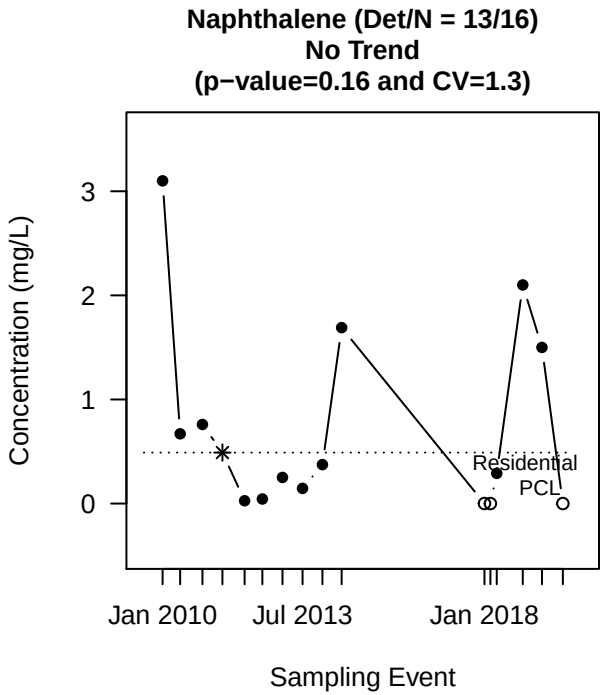
Mann−Kendall Trend Tests for MW−63B







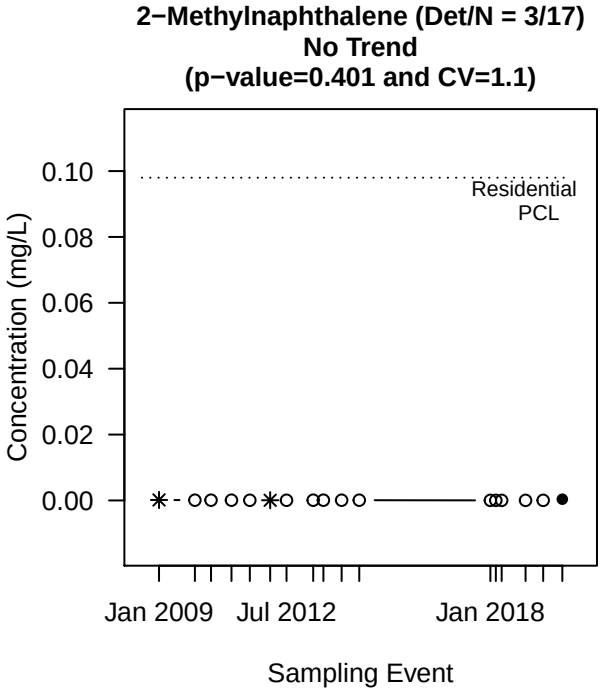


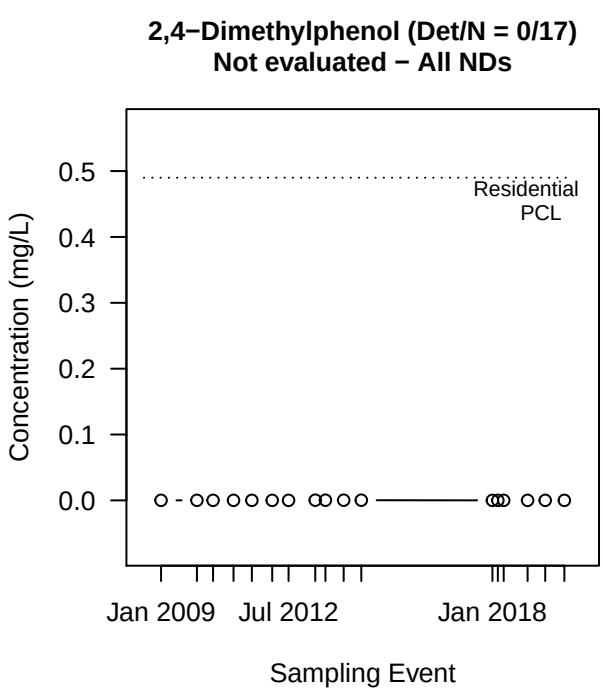


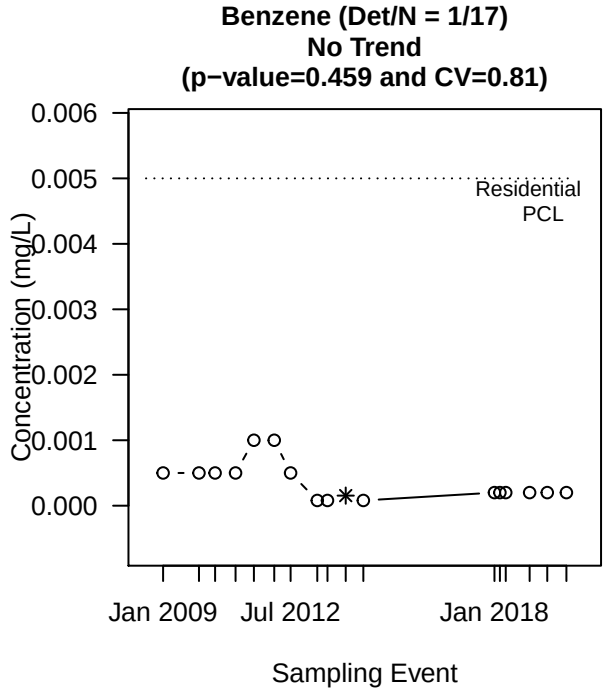
LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

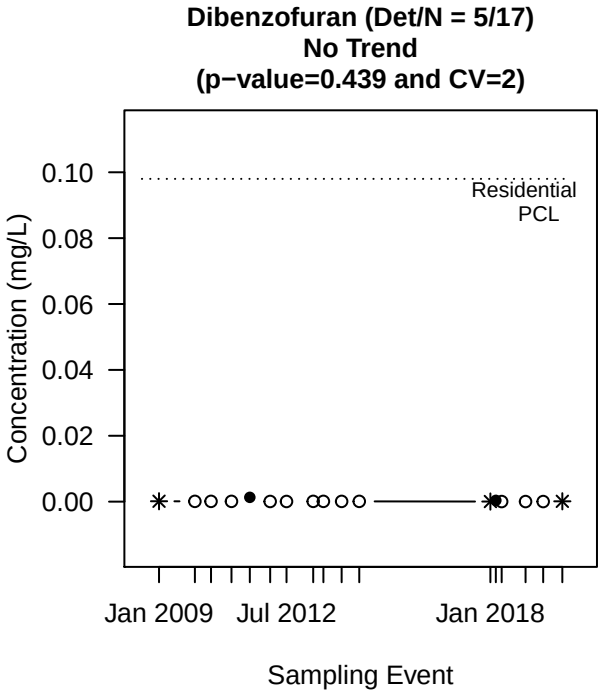
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

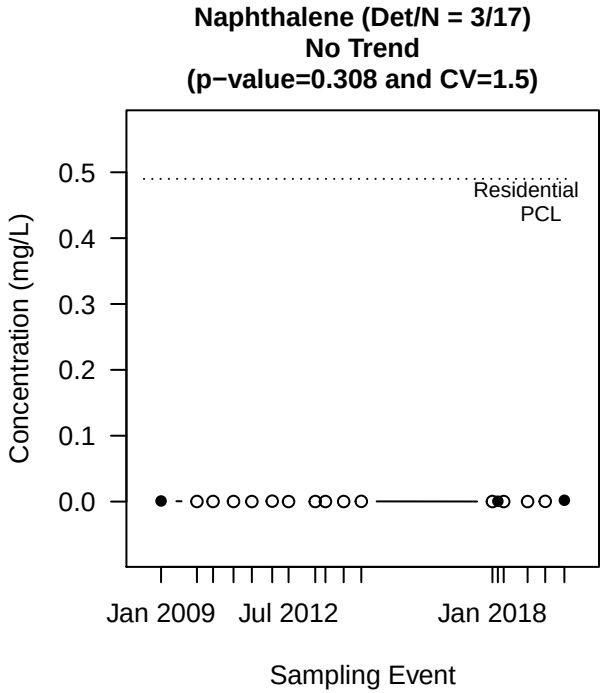
Mann−Kendall Trend Tests for MW−64A

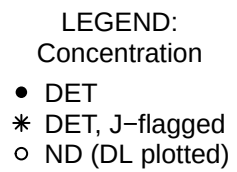






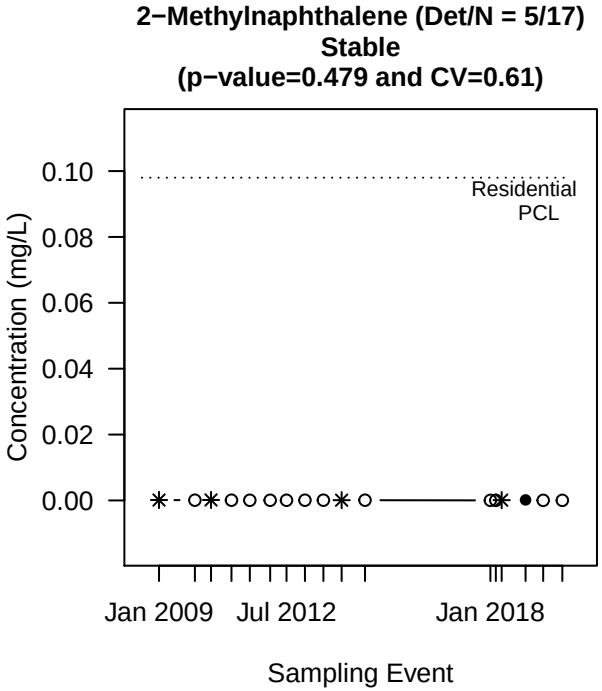


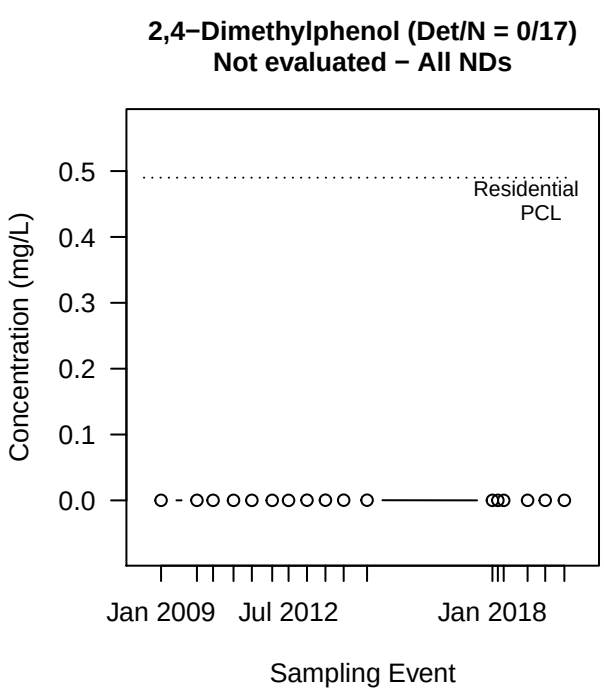


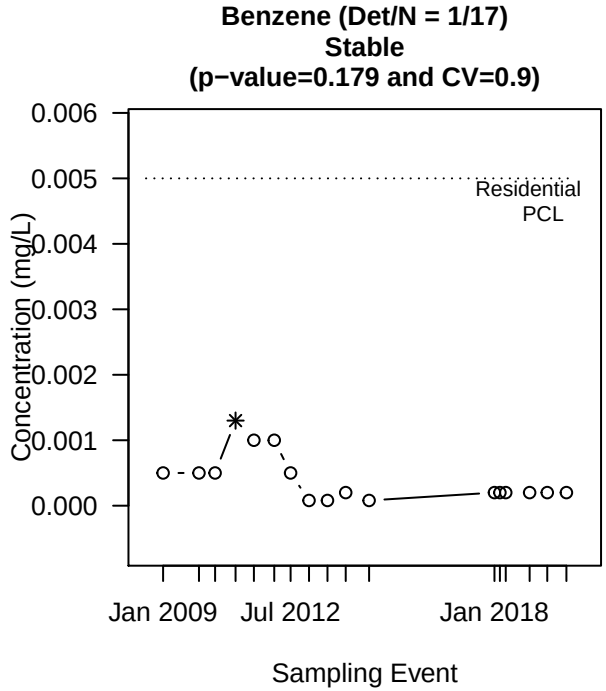


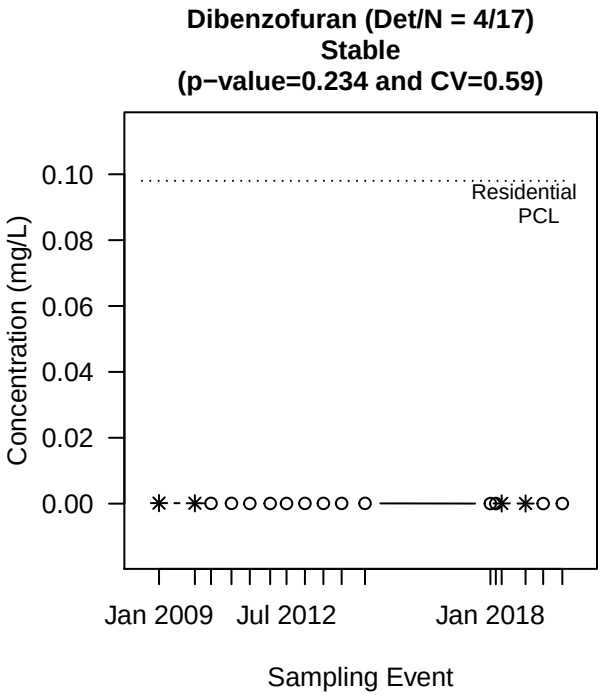
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

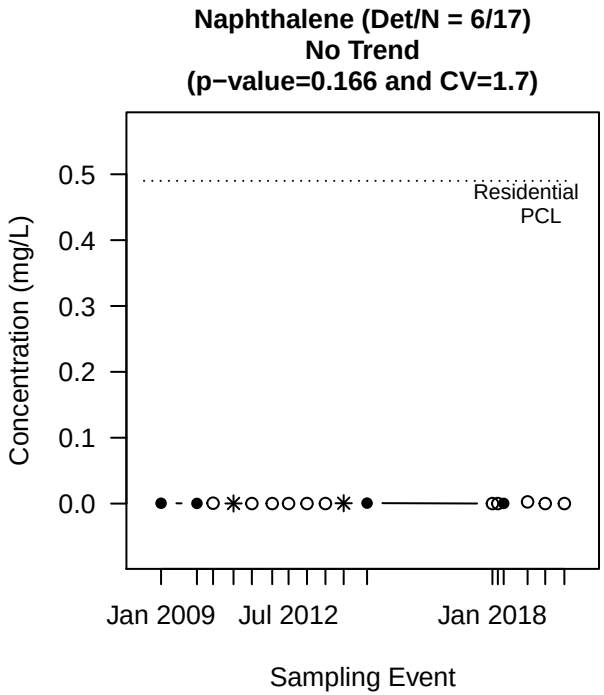
Mann−Kendall Trend Tests for MW−65D

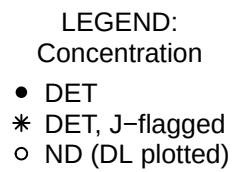






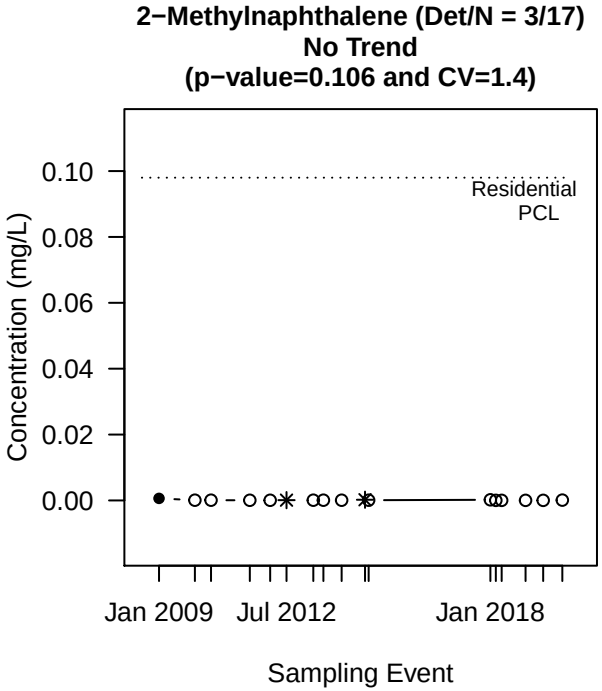


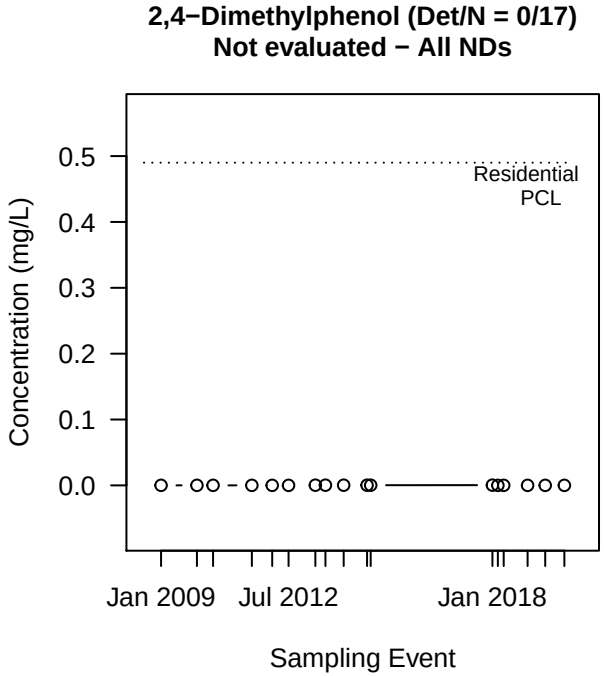


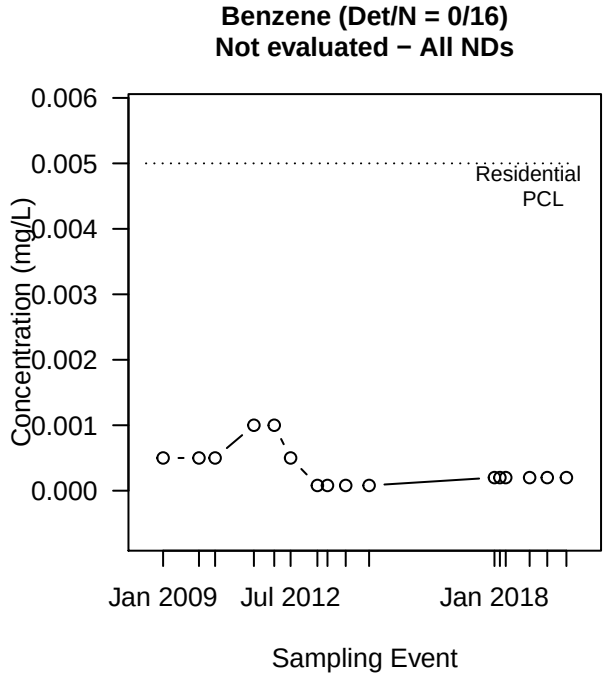


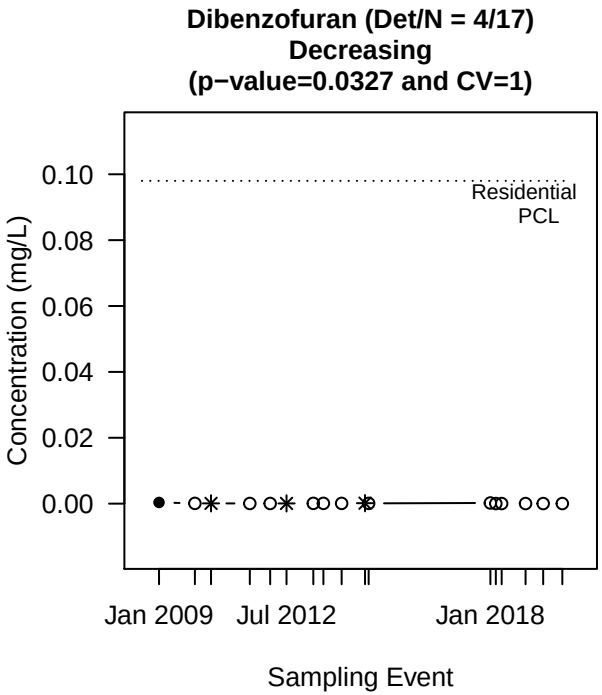
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

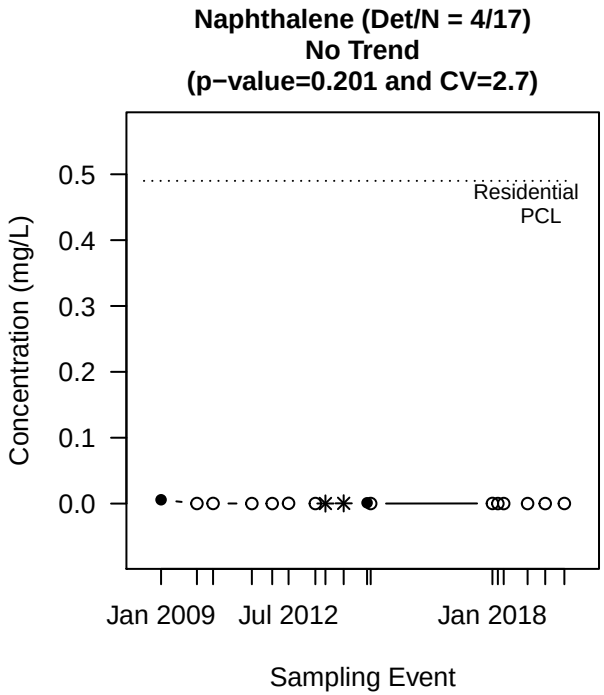
Mann−Kendall Trend Tests for MW−66D







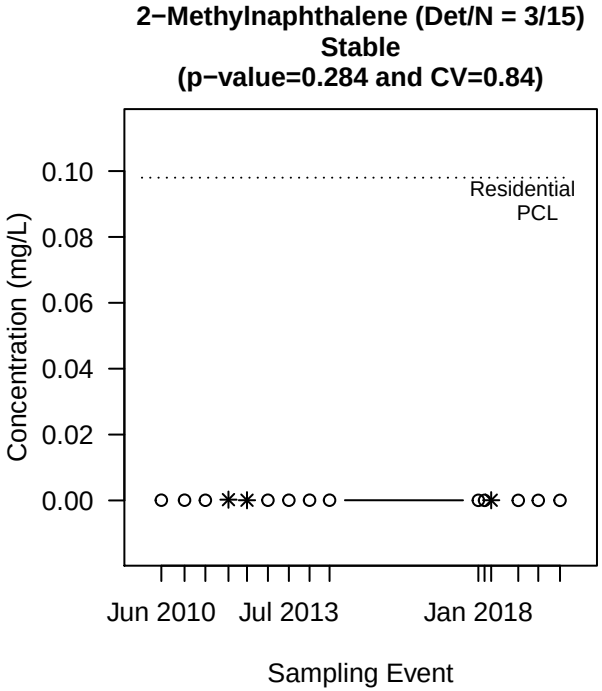


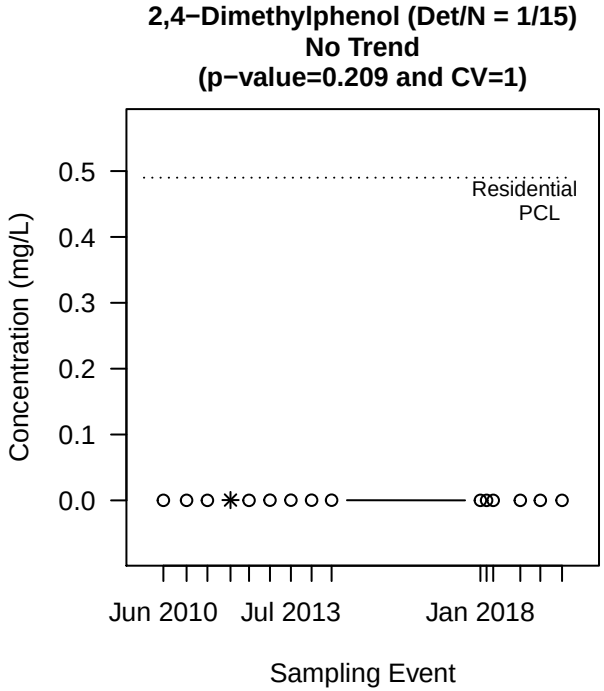


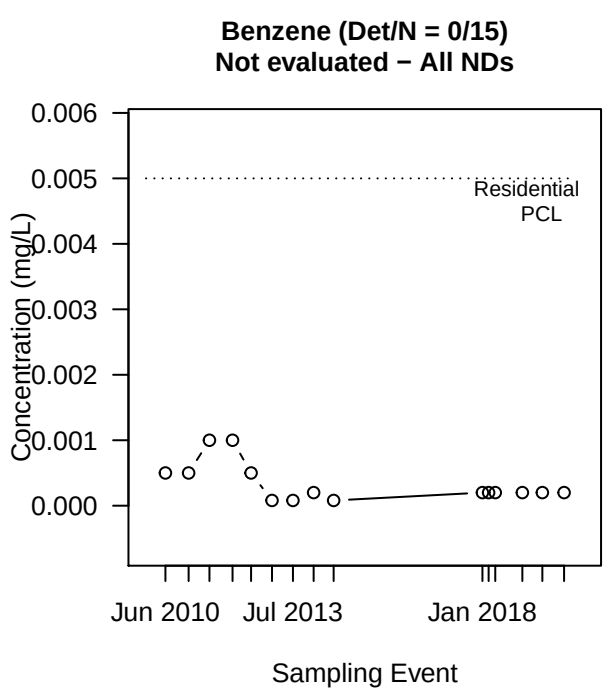
LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

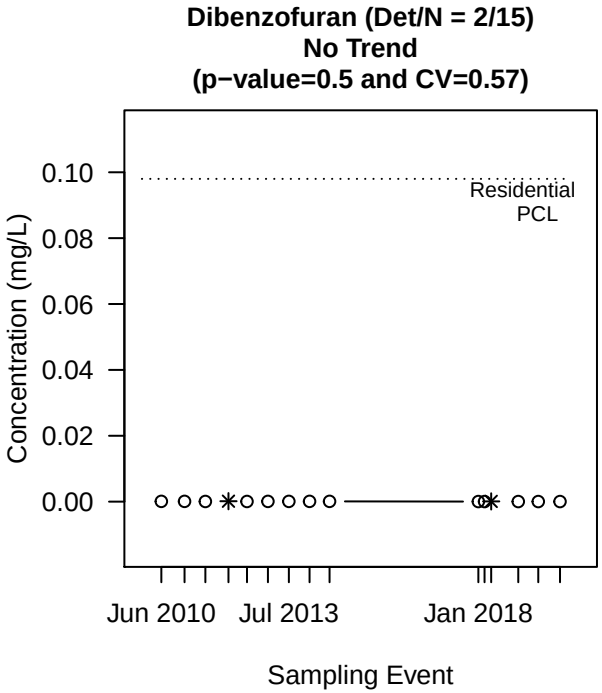
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

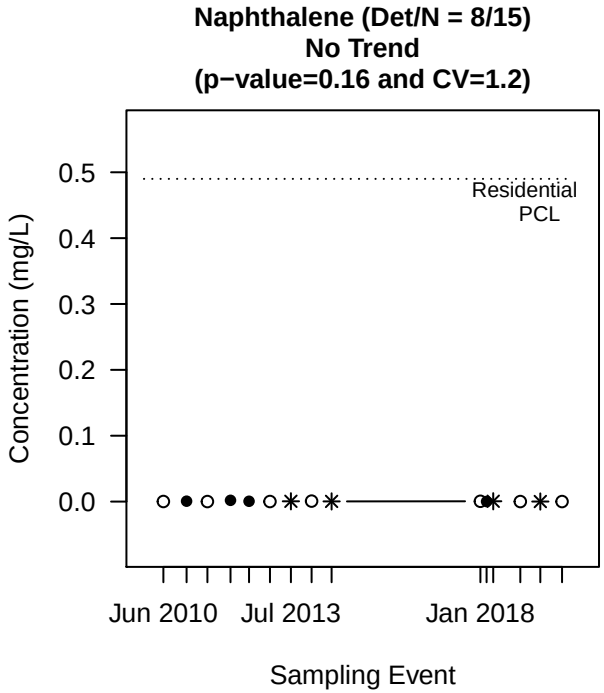
Mann−Kendall Trend Tests for MW−67B

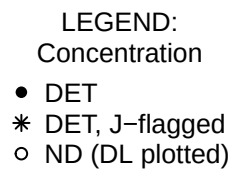








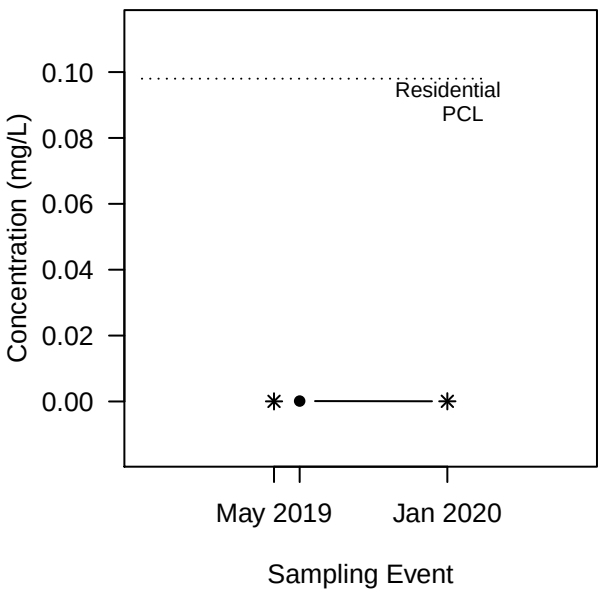




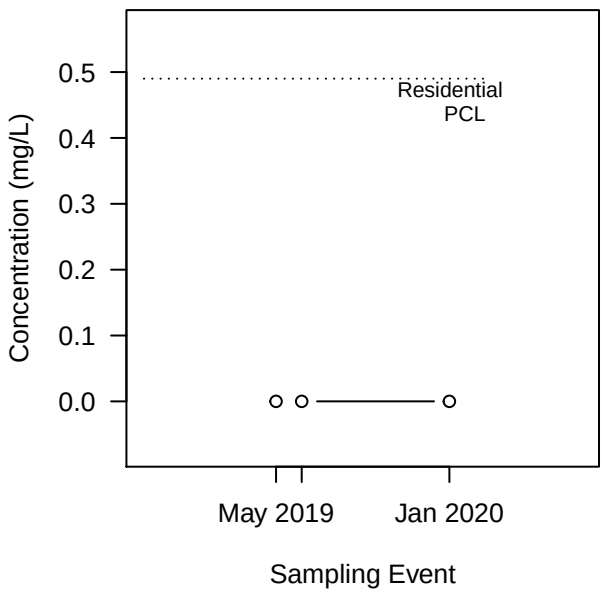
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

Mann−Kendall Trend Tests for MW−68A

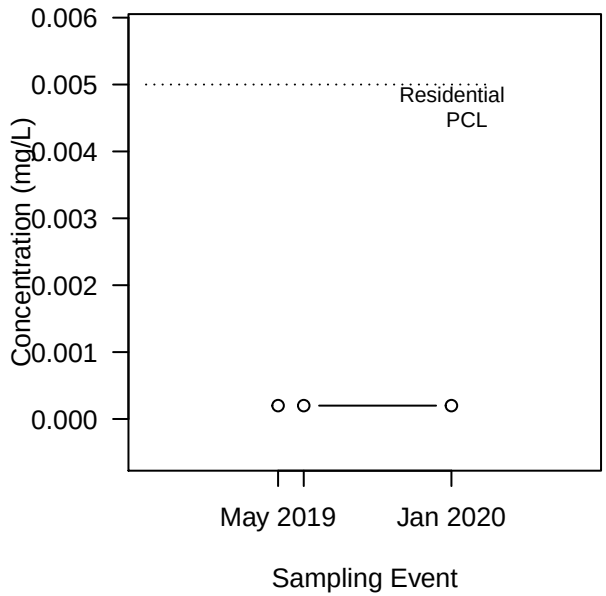
2−Methylnaphthalene (Det/N = 3/3)
No Trend
(p−value=0.5 and CV=0.76)



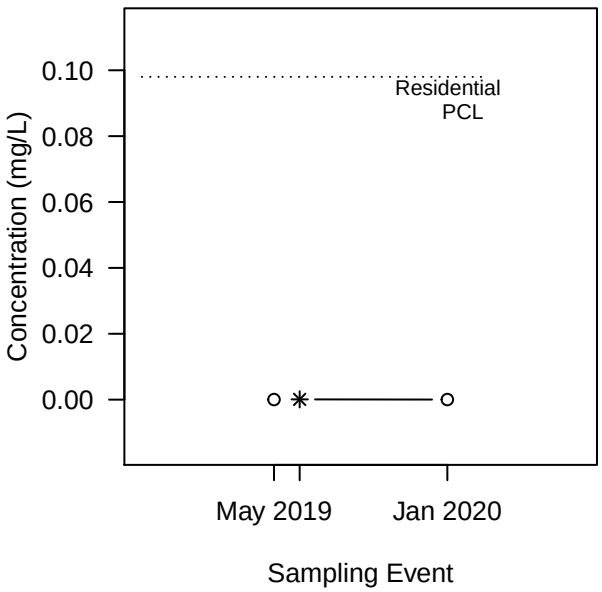
2,4−Dimethylphenol (Det/N = 0/3)
Not evaluated (all concentrations are identical)



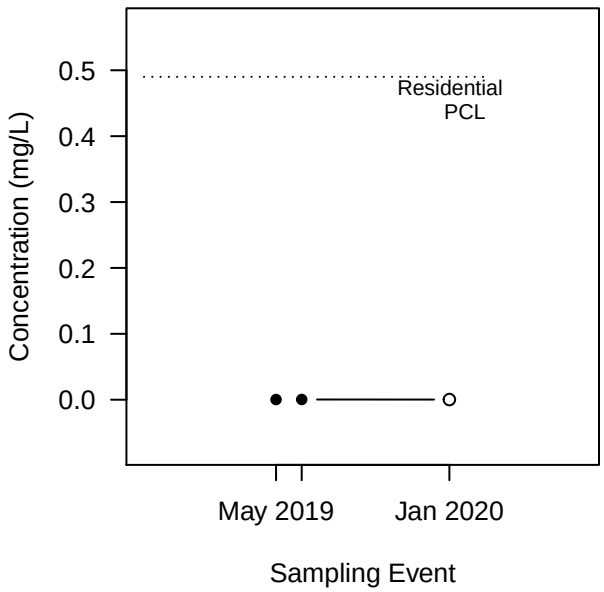
Benzene (Det/N = 0/3)
Not evaluated (all concentrations are identical)



Dibenzofuran (Det/N = 1/3)
No Trend
(p−value=0.5 and CV=0.88)



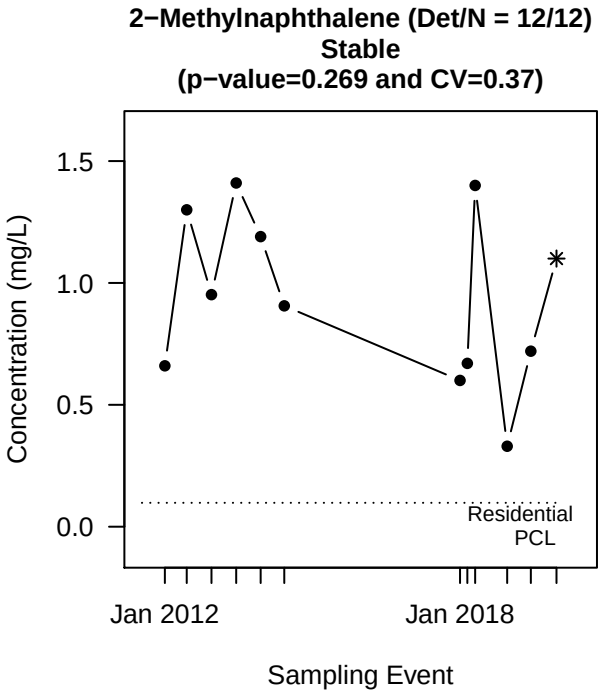
Naphthalene (Det/N = 2/3)
No Trend
(p−value=0.5 and CV=0.25)

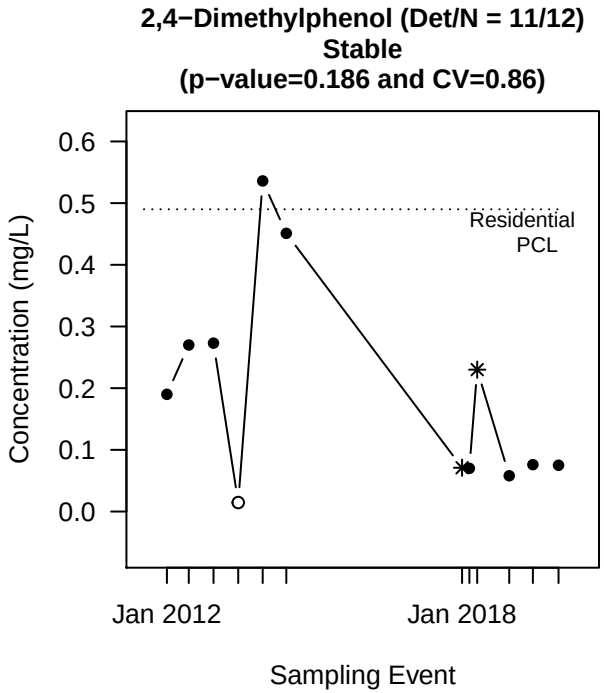


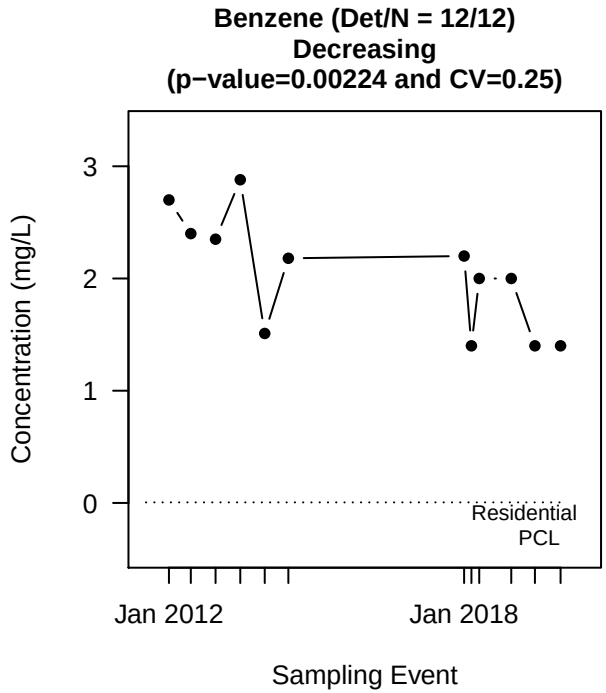
LEGEND:
Concentration
- ● DET
- ✳ DET, J−flagged
- ○ ND (DL plotted)

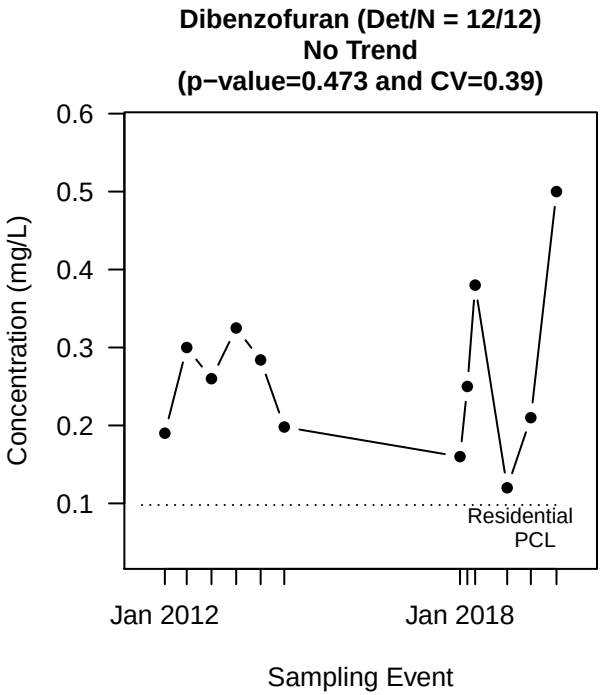
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

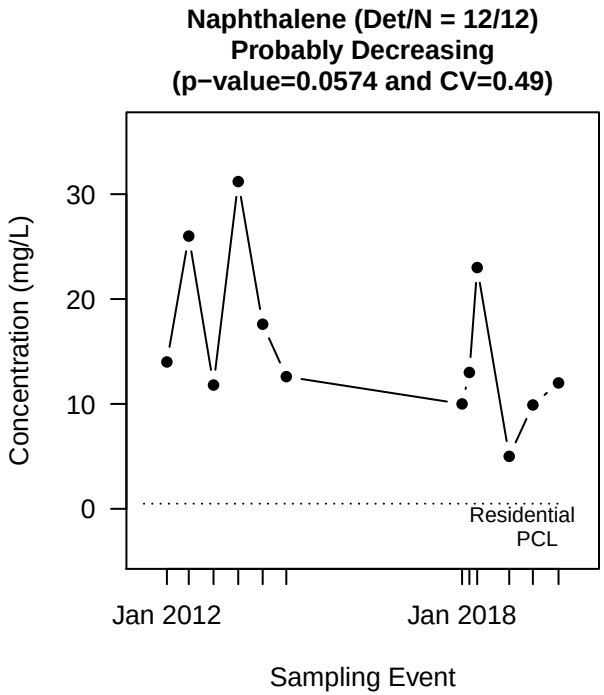
Mann−Kendall Trend Tests for MW−68B











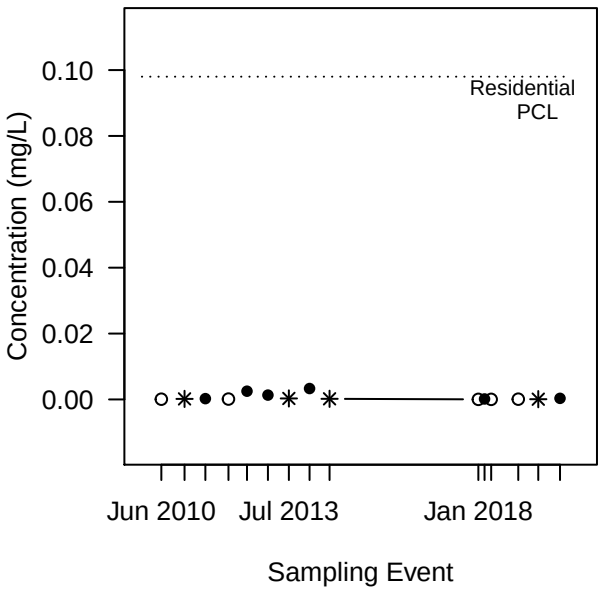
LEGEND:
Concentration

- DET
- DET, J−flagged
- ND (DL plotted)

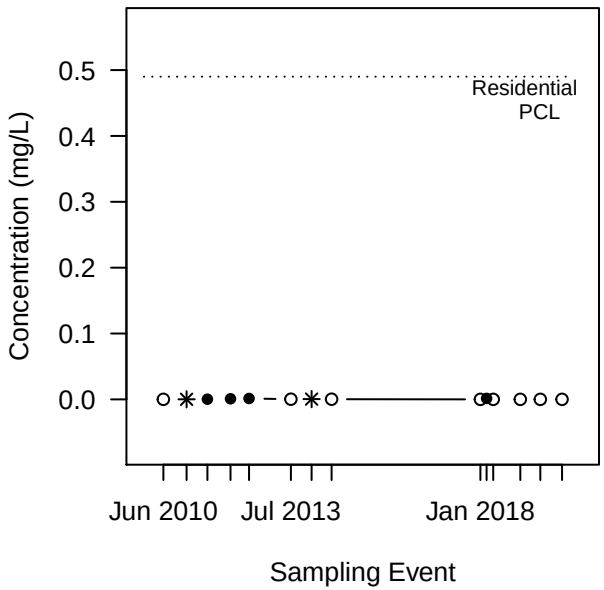
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

Mann−Kendall Trend Tests for MW−68C

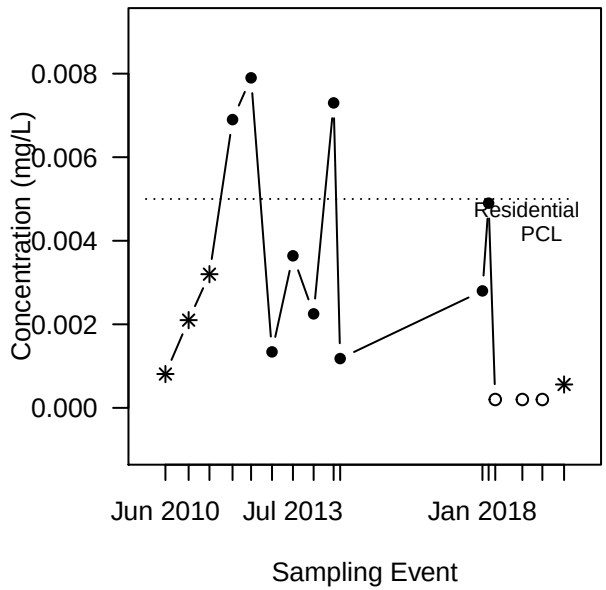
2−Methylnaphthalene (Det/N = 10/15)
No Trend
(p−value=0.381 and CV=1.7)



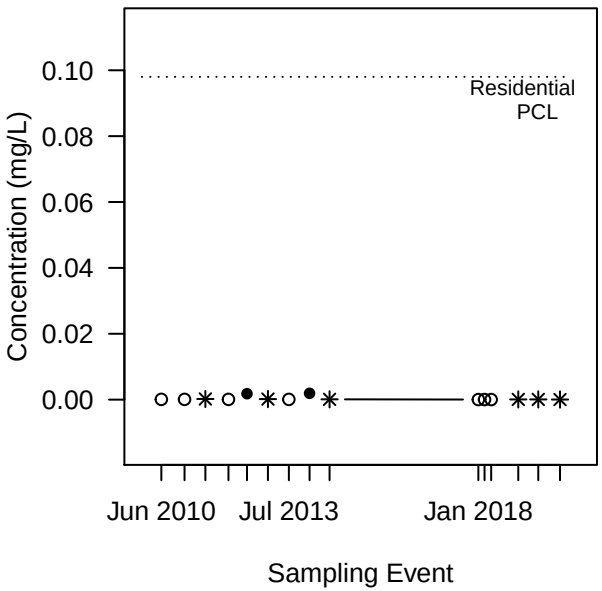
2,4−Dimethylphenol (Det/N = 6/14)
No Trend
(p−value=0.164 and CV=1.3)



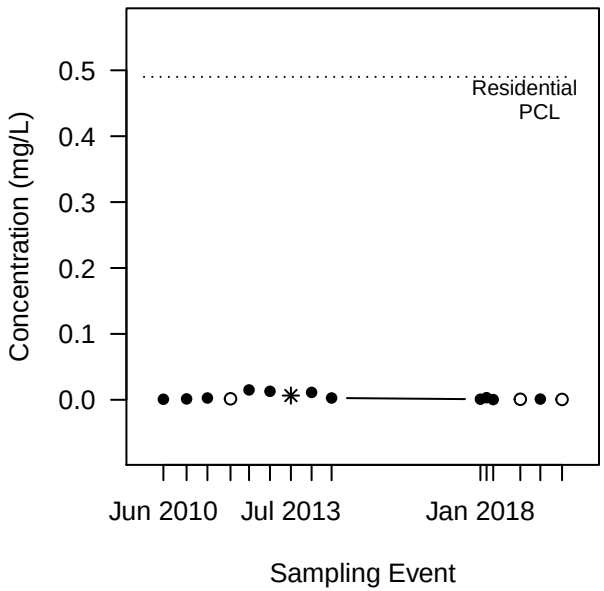
Benzene (Det/N = 13/16)
Probably Decreasing
(p−value=0.0741 and CV=0.92)



Dibenzofuran (Det/N = 8/15)
No Trend
(p−value=0.479 and CV=2)



Naphthalene (Det/N = 12/15)
No Trend
(p−value=0.107 and CV=1.2)

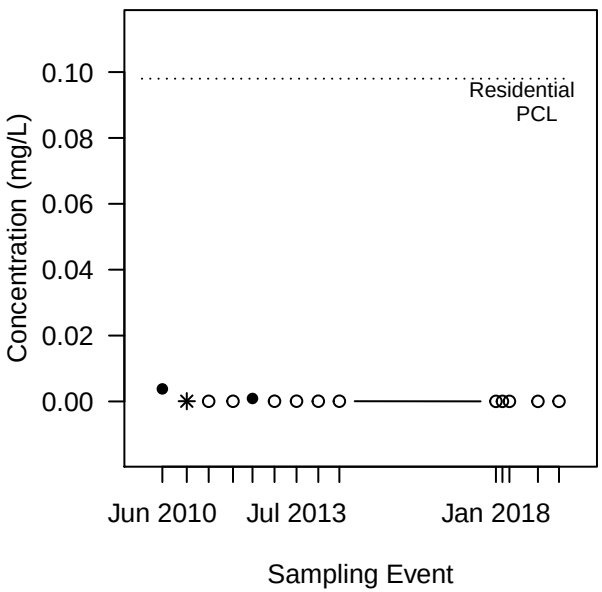


LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

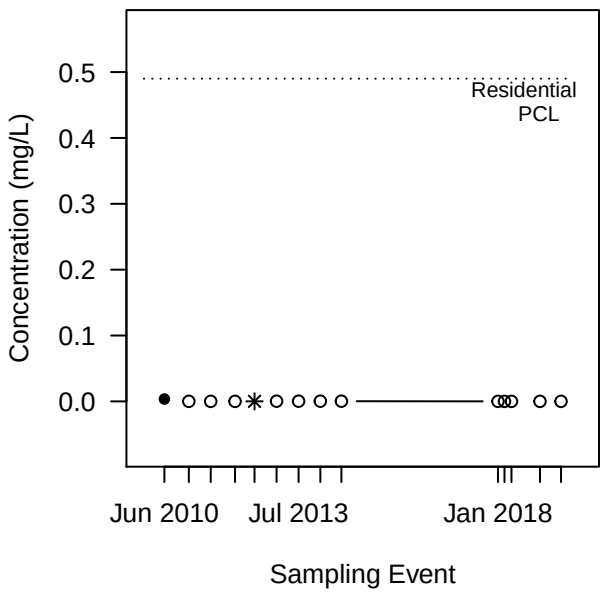
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

Mann−Kendall Trend Tests for MW−69A

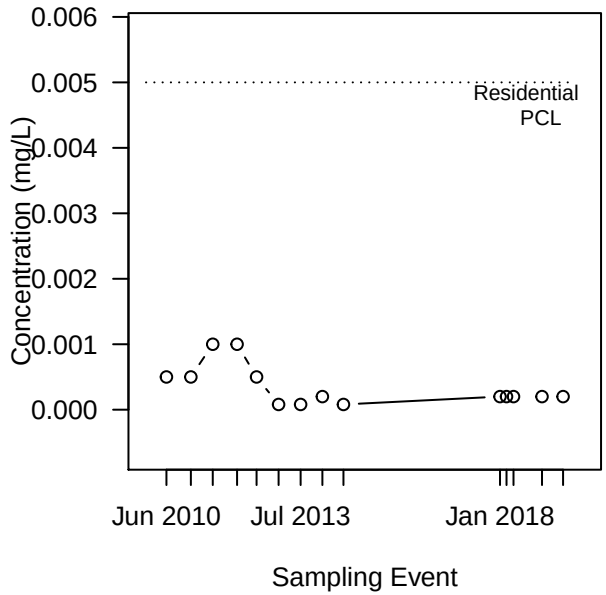
2−Methylnaphthalene (Det/N = 3/14)
Decreasing
(p−value=0.0128 and CV=2.7)



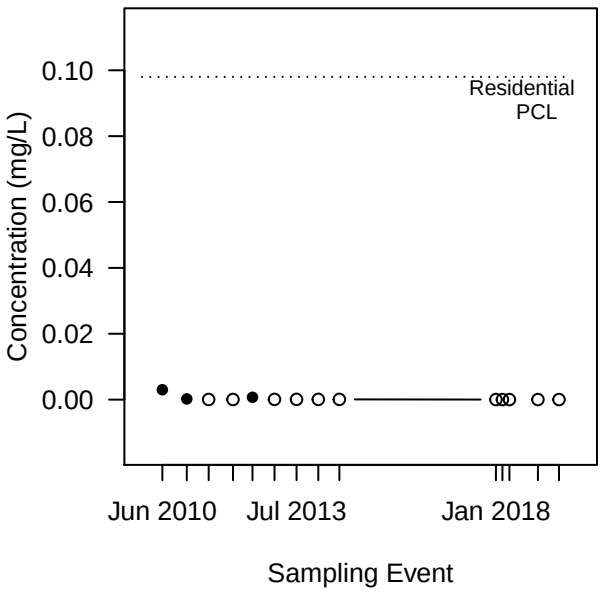
2,4−Dimethylphenol (Det/N = 2/14)
Probably Decreasing
(p−value=0.0509 and CV=2.5)



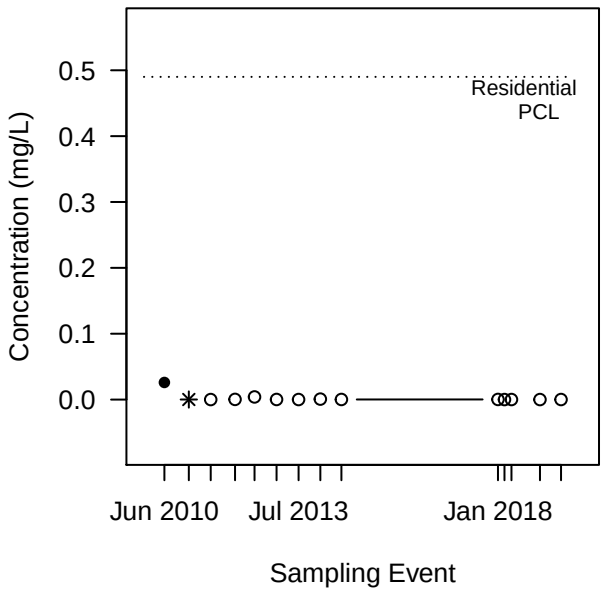
Benzene (Det/N = 0/14)
Not evaluated − All NDs



Dibenzofuran (Det/N = 3/14)
Decreasing
(p−value=0.0128 and CV=2.5)



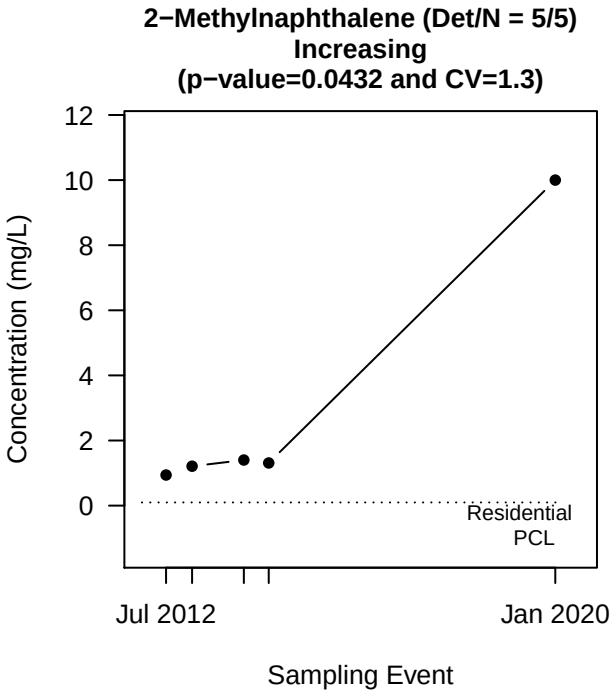
Naphthalene (Det/N = 2/14)
Decreasing
(p−value=0.0146 and CV=3)

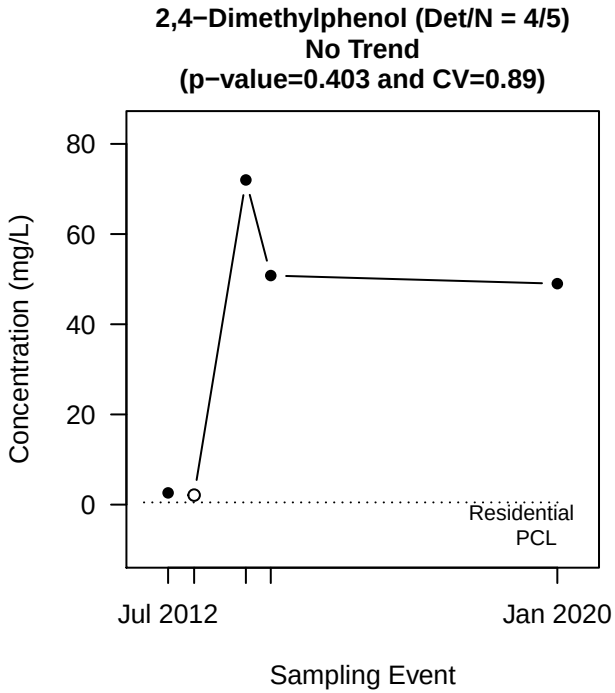


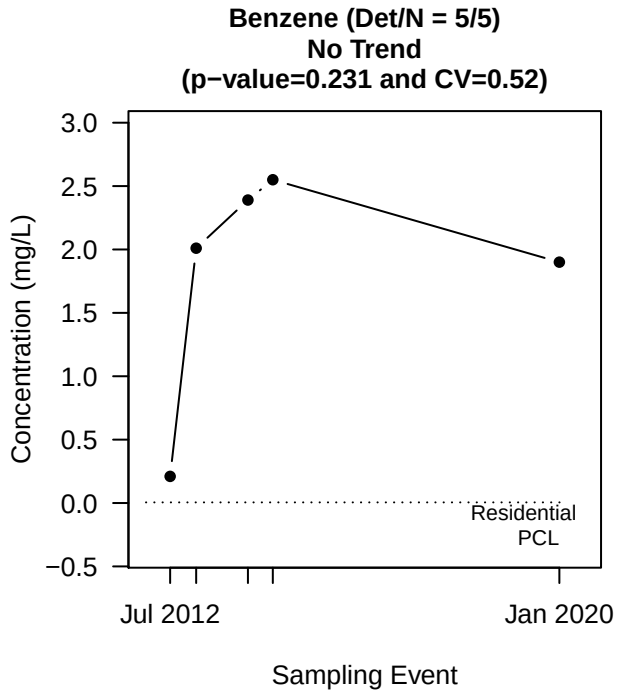
LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

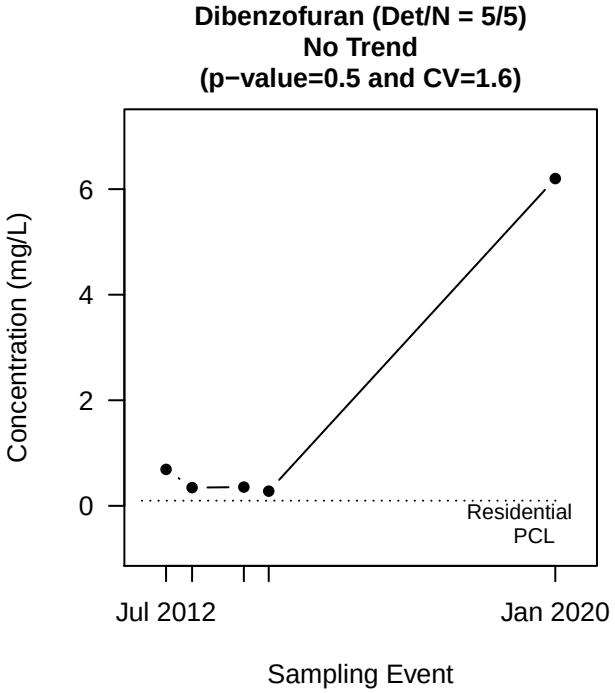
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

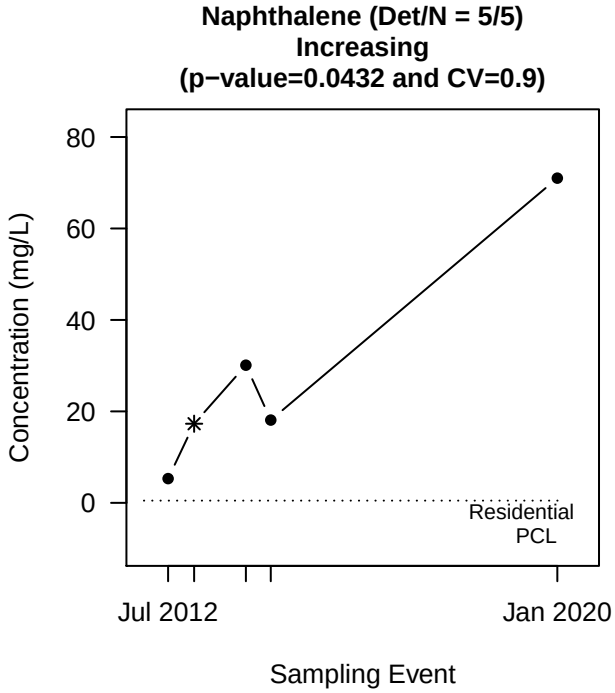
Mann−Kendall Trend Tests for MW−70B







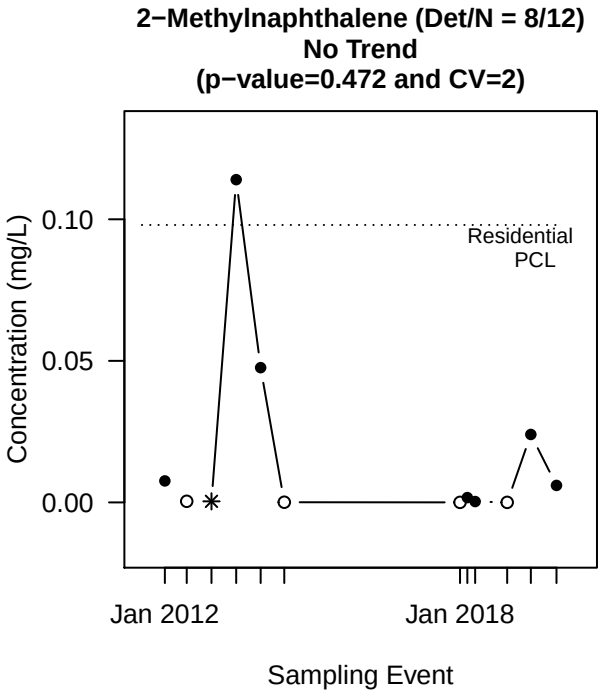


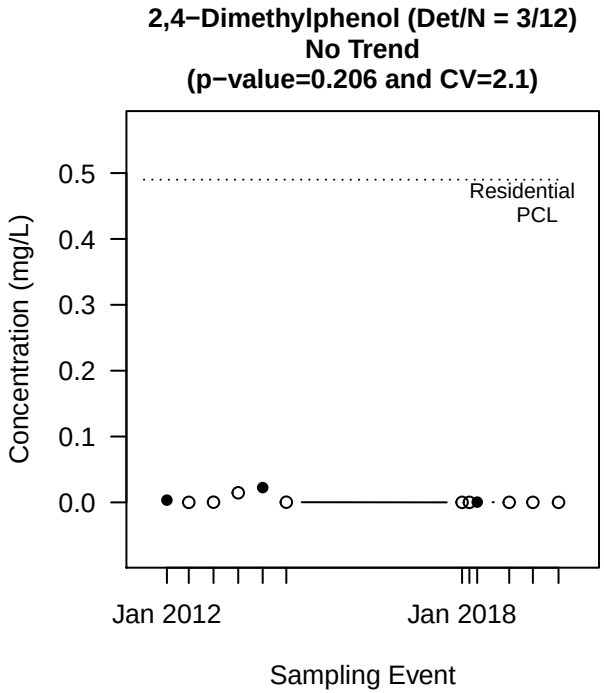


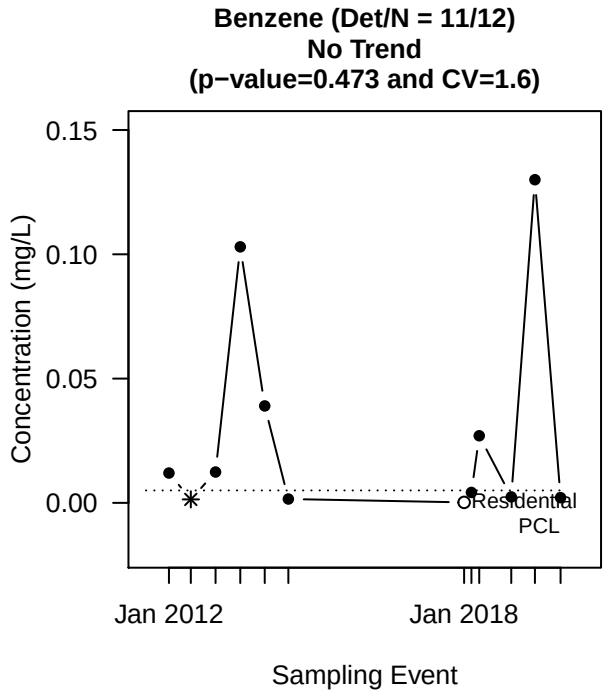
LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

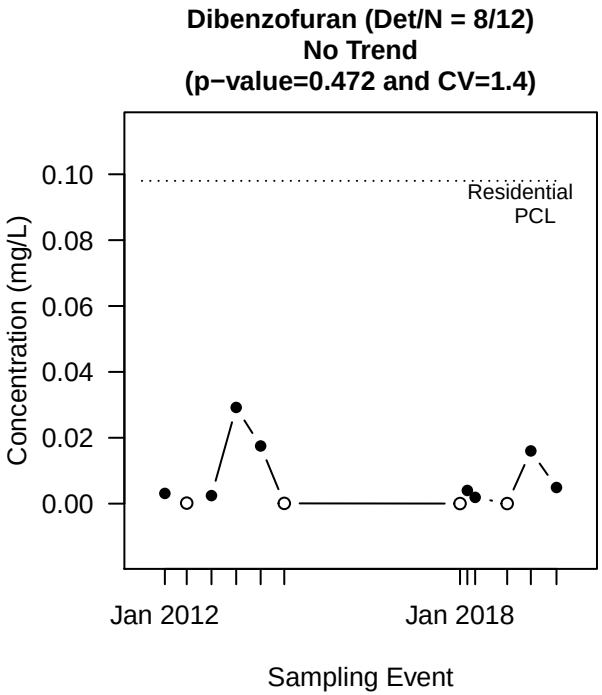
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

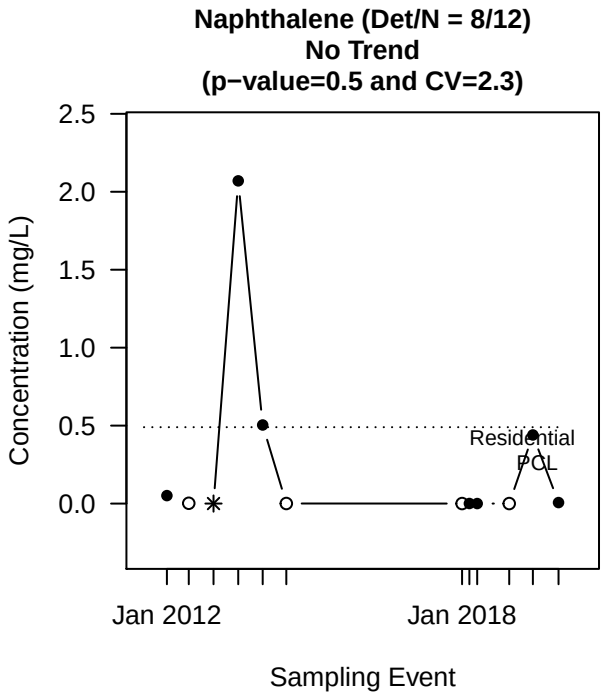
Mann−Kendall Trend Tests for MW−71B









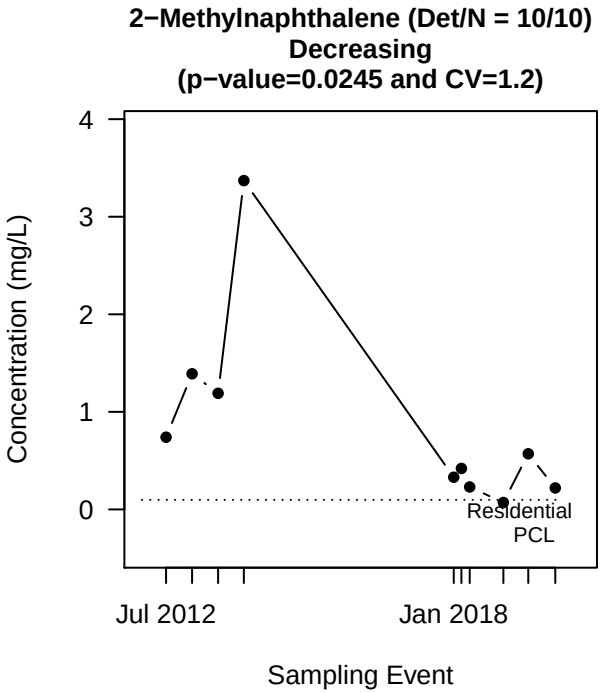


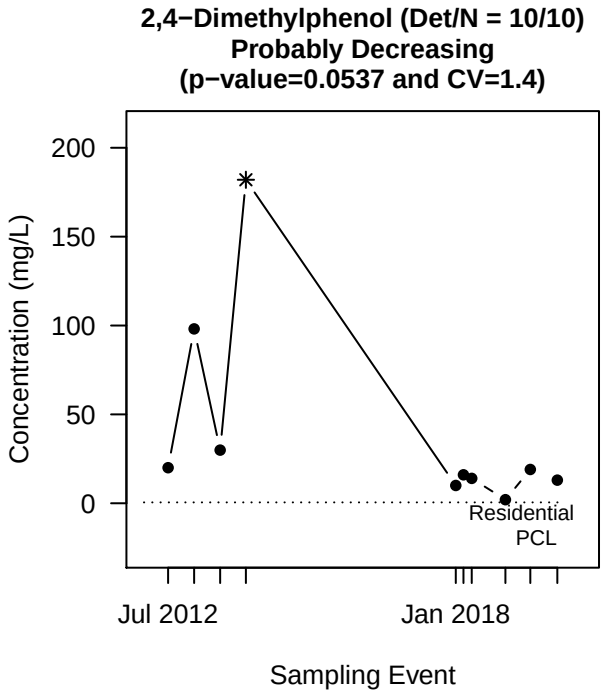
LEGEND:
Concentration

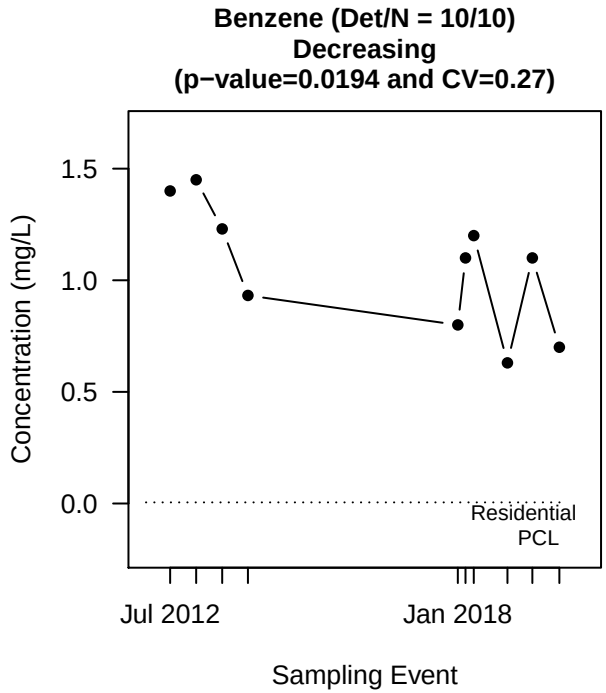
- DET
- DET, J−flagged
- ND (DL plotted)

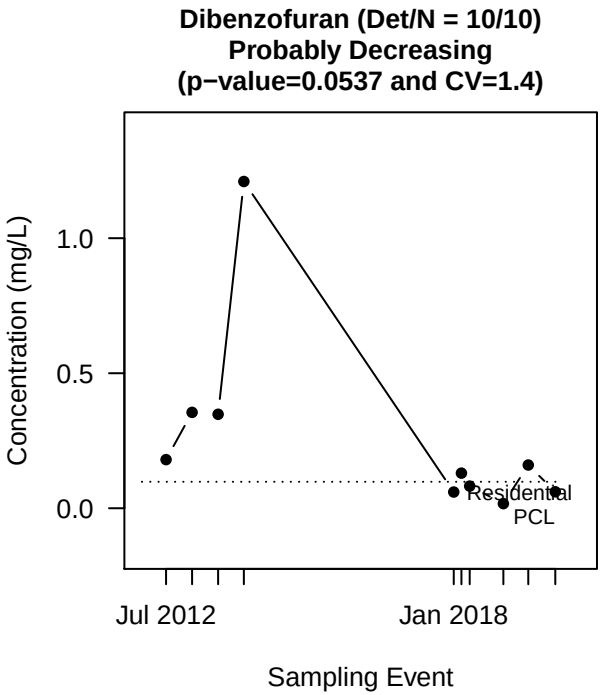
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

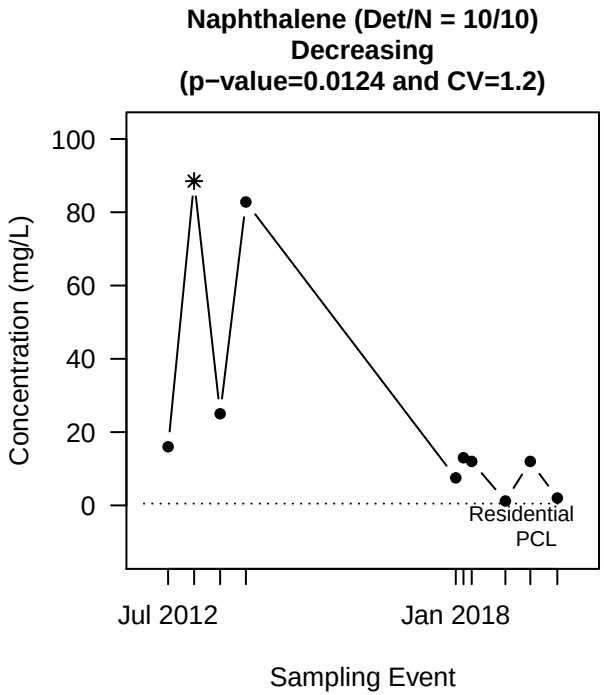
Mann−Kendall Trend Tests for MW−72B









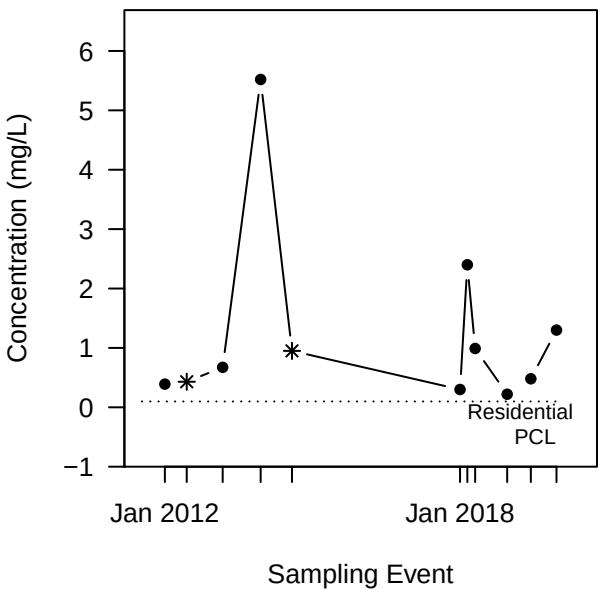


LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

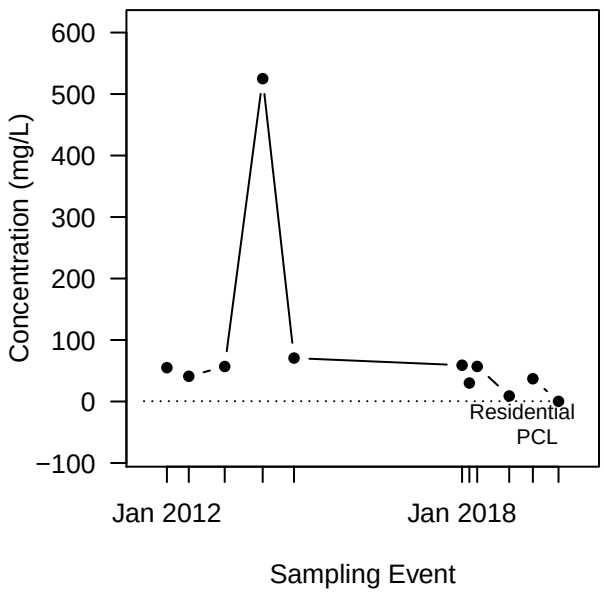
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

Mann−Kendall Trend Tests for MW−74B

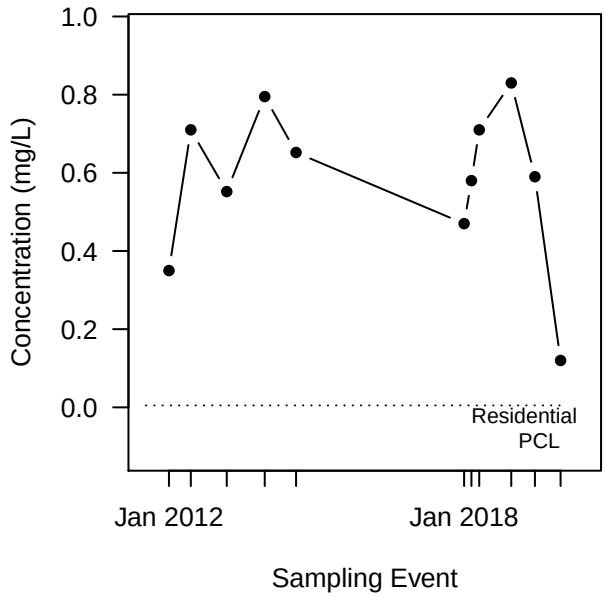
2−Methylnaphthalene (Det/N = 11/11)
No Trend
(p−value=0.32 and CV=1.2)



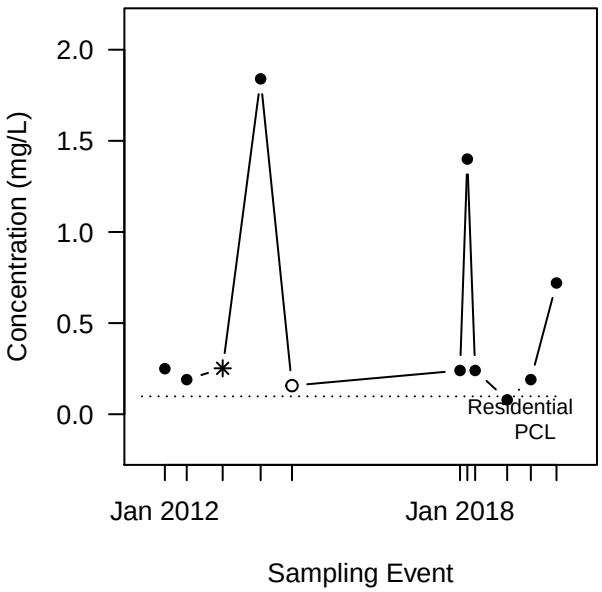
2,4−Dimethylphenol (Det/N = 11/11)
Probably Decreasing
(p−value=0.0597 and CV=1.7)



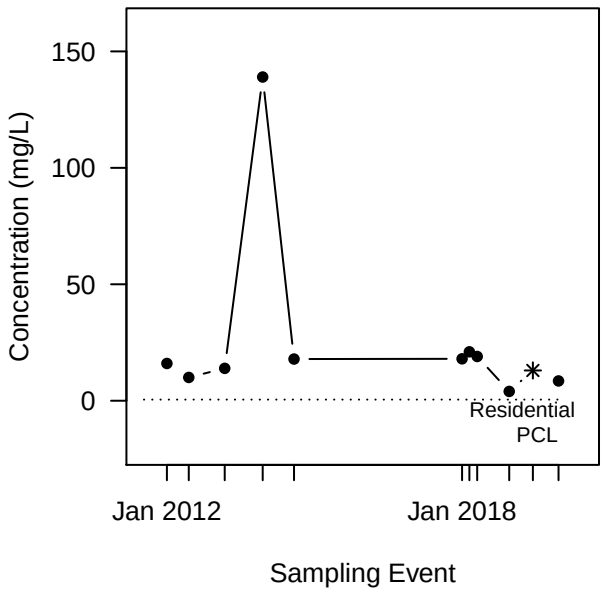
Benzene (Det/N = 11/11)
No Trend
(p−value=0.469 and CV=0.36)



Dibenzofuran (Det/N = 10/11)
No Trend
(p−value=0.438 and CV=1.2)



Naphthalene (Det/N = 11/11)
No Trend
(p−value=0.32 and CV=1.5)

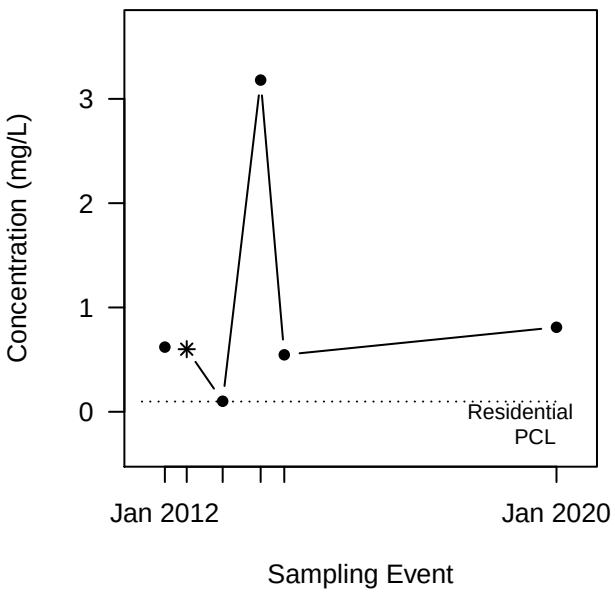


LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

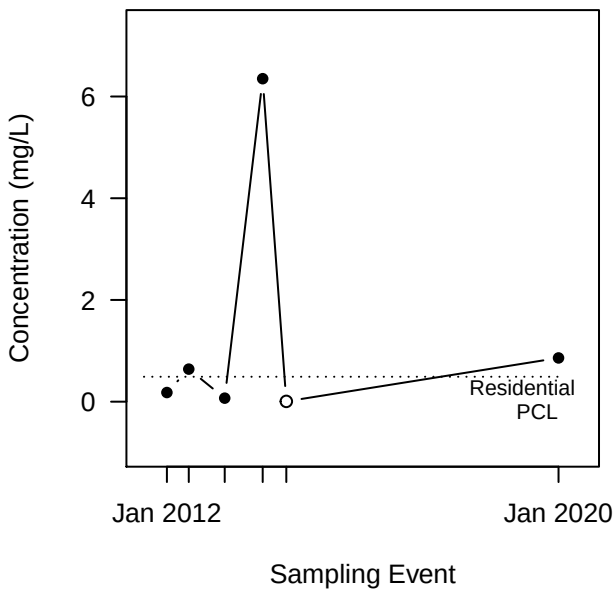
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

Mann−Kendall Trend Tests for MW−75B

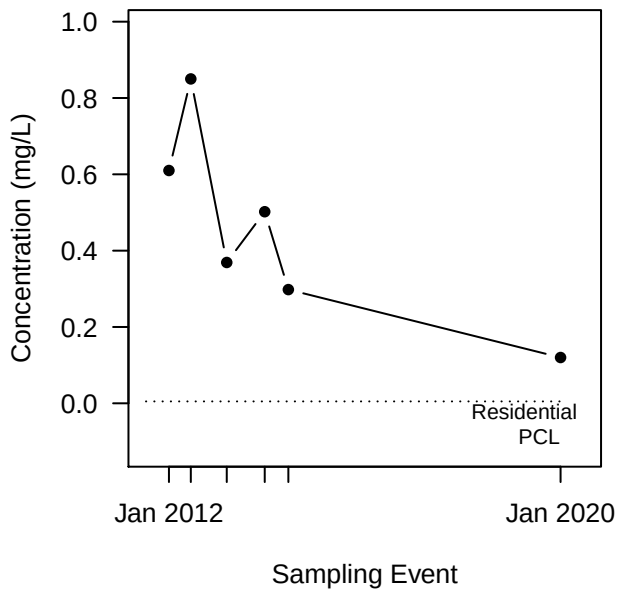
2−Methylnaphthalene (Det/N = 6/6)
No Trend
(p−value=0.5 and CV=1.1)



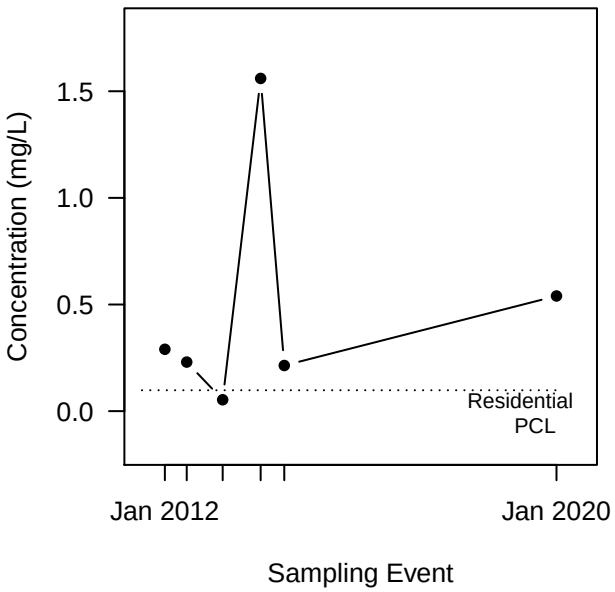
2,4−Dimethylphenol (Det/N = 5/6)
No Trend
(p−value=0.5 and CV=1.8)



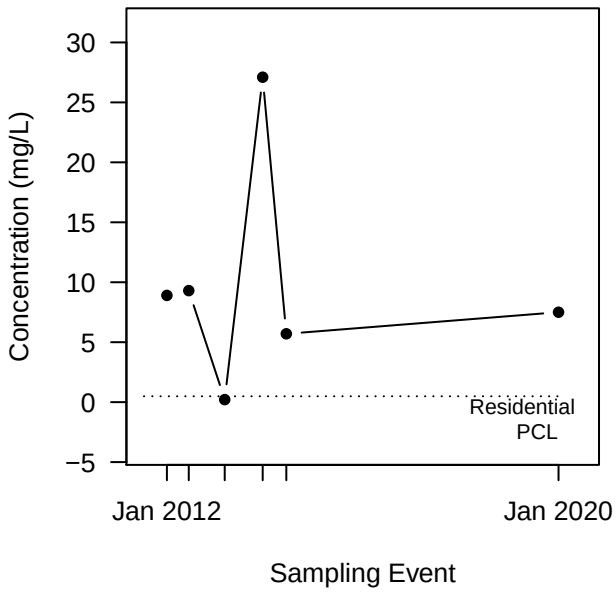
Benzene (Det/N = 6/6)
Decreasing
(p−value=0.0301 and CV=0.56)



Dibenzofuran (Det/N = 6/6)
No Trend
(p−value=0.5 and CV=1.1)



Naphthalene (Det/N = 6/6)
No Trend
(p−value=0.5 and CV=0.93)



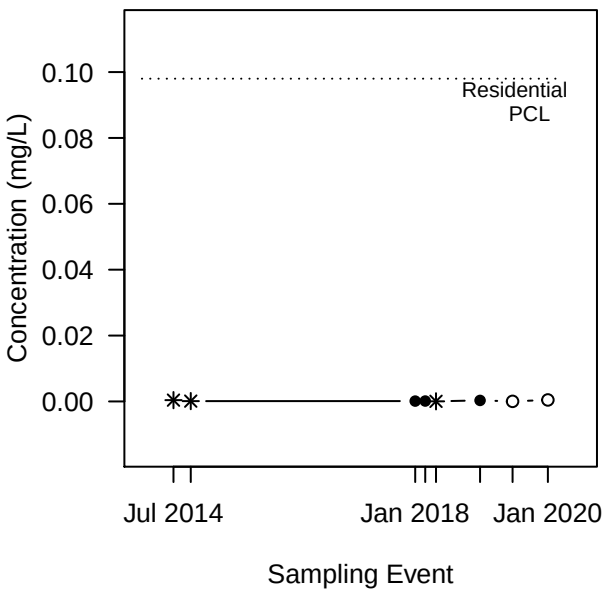
LEGEND:
Concentration

- ● DET
- ✳ DET, J−flagged
- ○ ND (DL plotted)

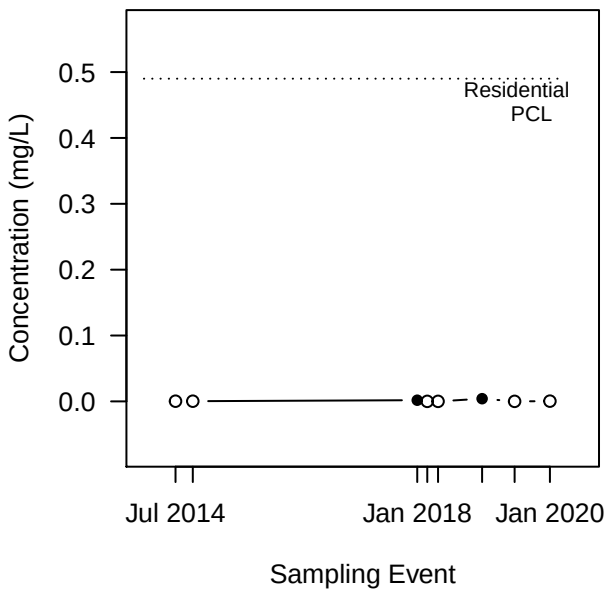
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

Mann−Kendall Trend Tests for MW−76C

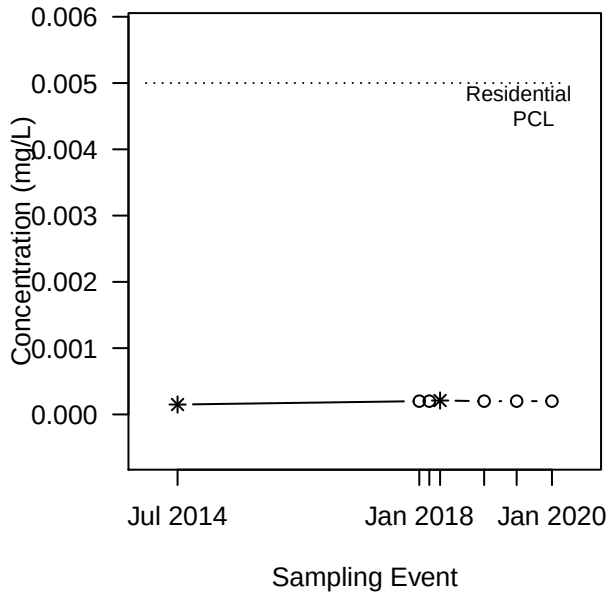
2−Methylnaphthalene (Det/N = 6/8)
Probably Decreasing
(p−value=0.0673 and CV=0.89)



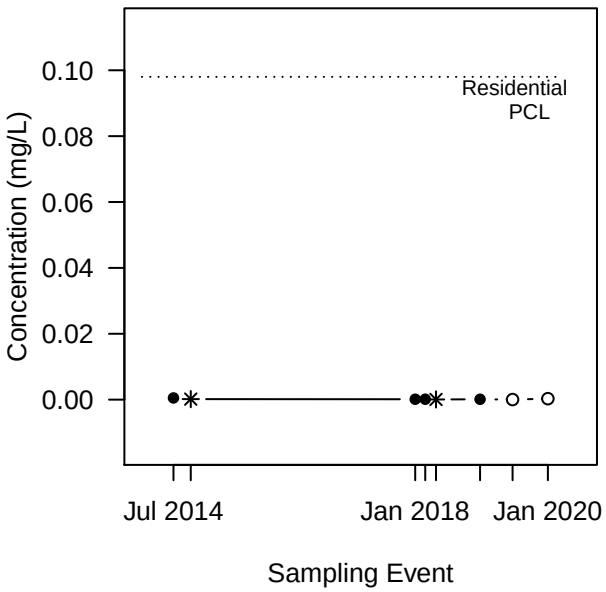
2,4−Dimethylphenol (Det/N = 2/8)
No Trend
(p−value=0.5 and CV=1.6)



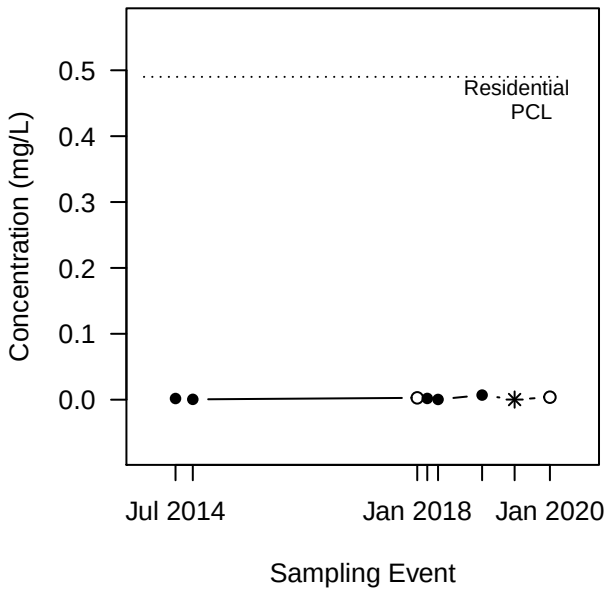
Benzene (Det/N = 2/7)
Stable
(p−value=0.223 and CV=0.1)



Dibenzofuran (Det/N = 6/8)
Decreasing
(p−value=0.00193 and CV=0.91)



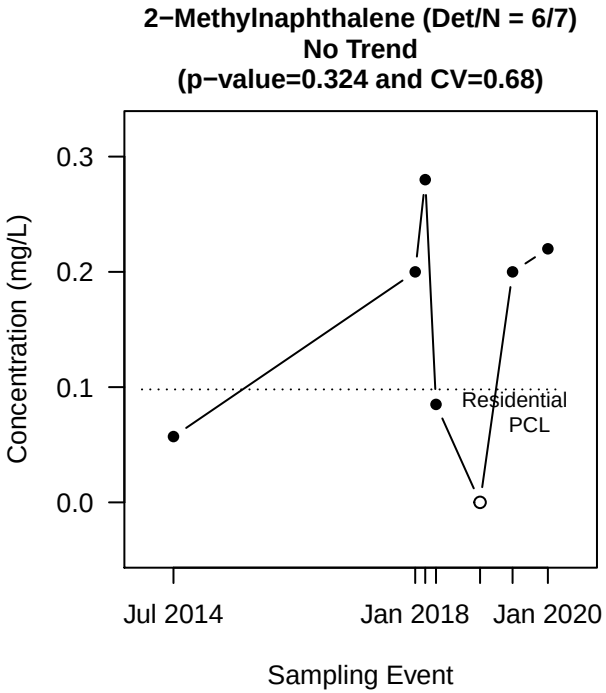
Naphthalene (Det/N = 6/8)
Stable
(p−value=0.227 and CV=1)

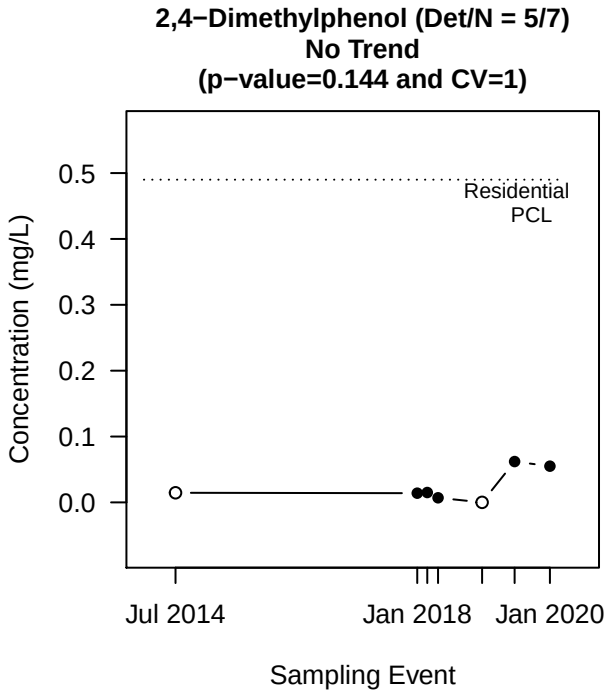


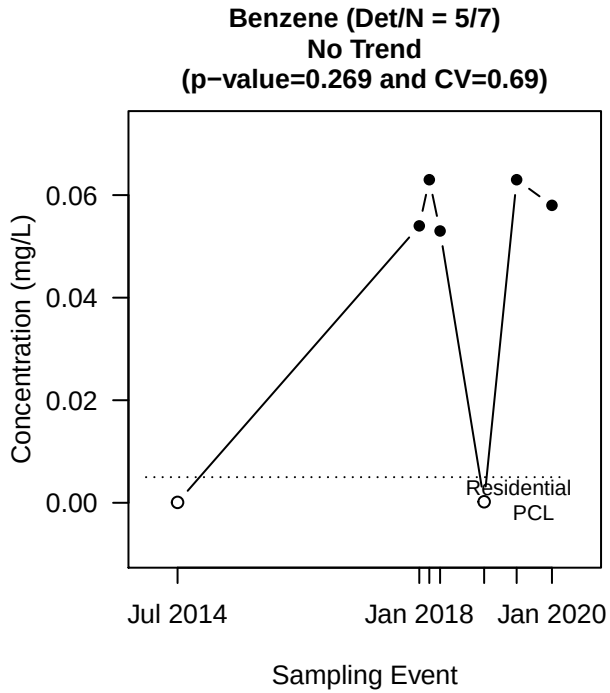
LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

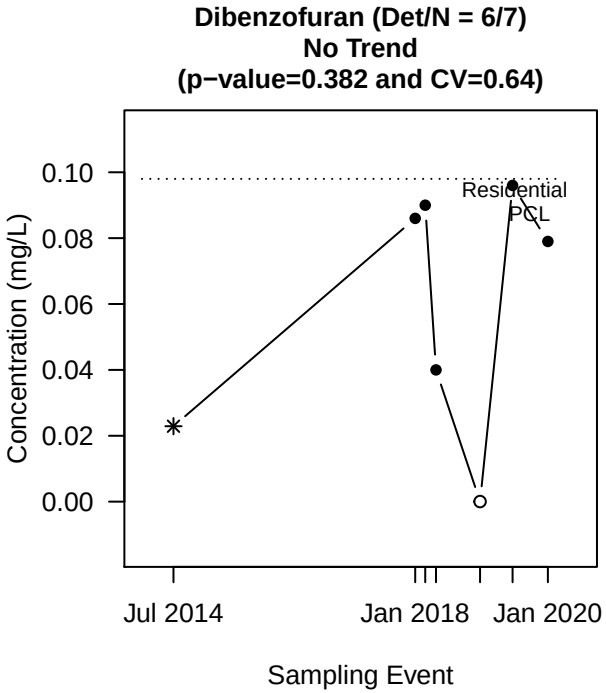
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

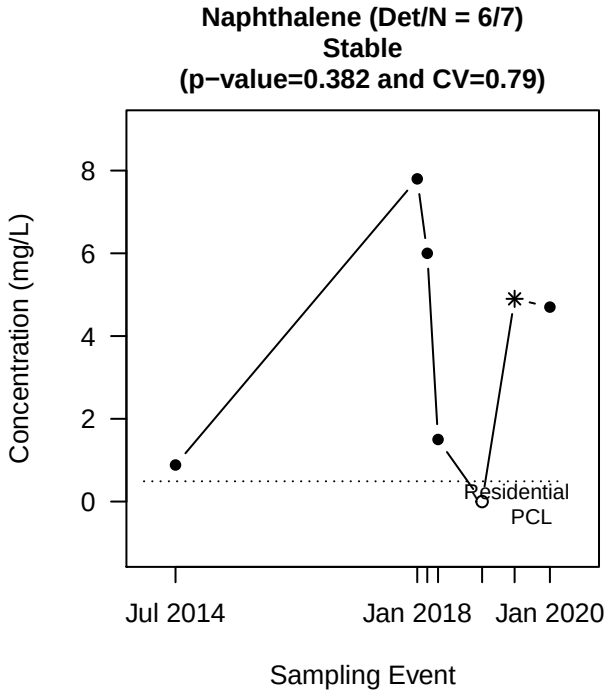
Mann−Kendall Trend Tests for MW−77A







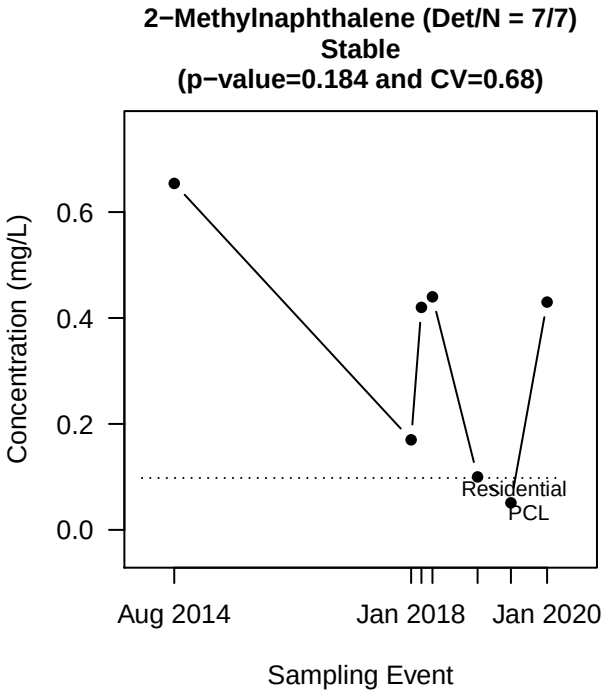


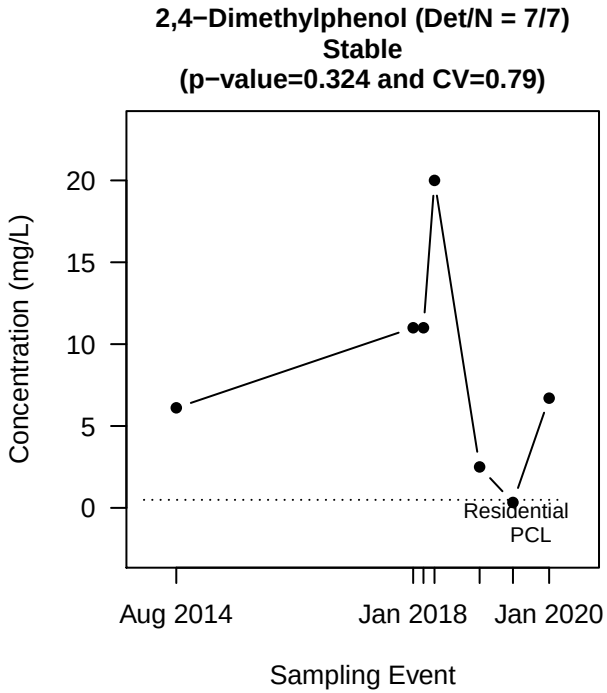


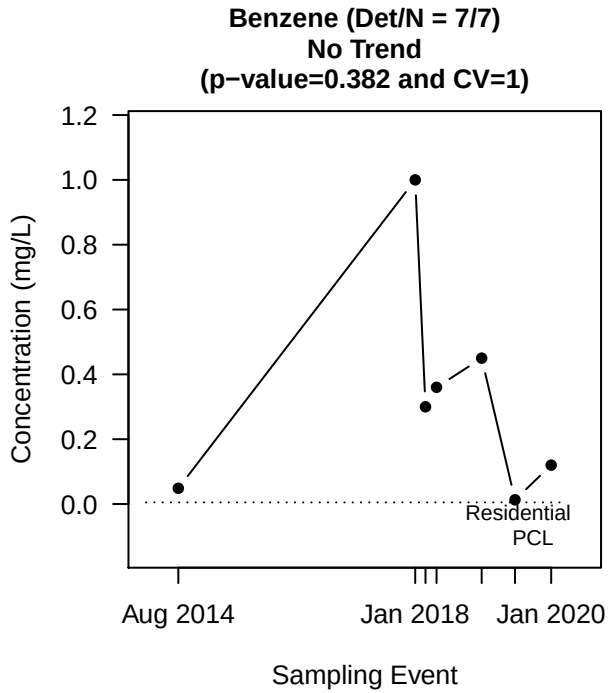
LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

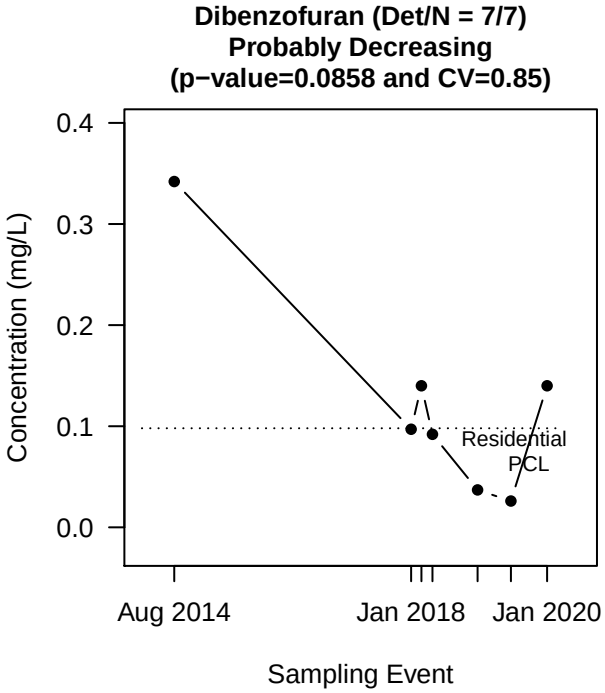
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

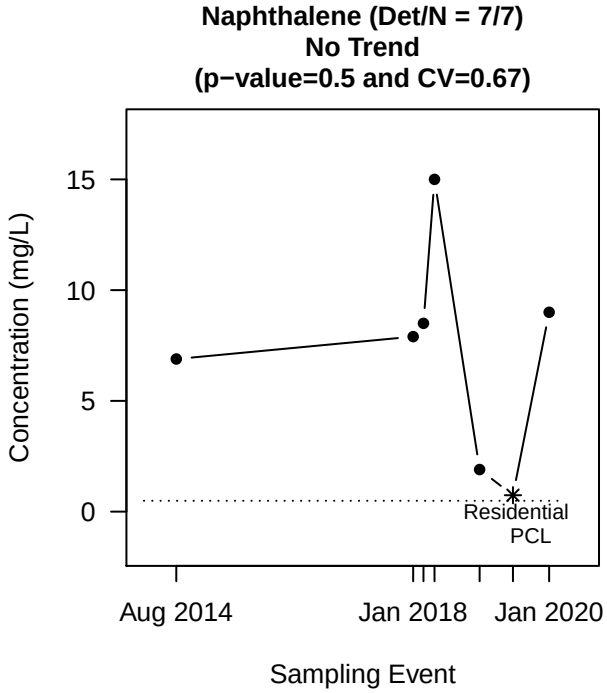
Mann−Kendall Trend Tests for MW−79A

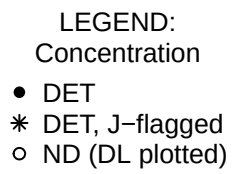








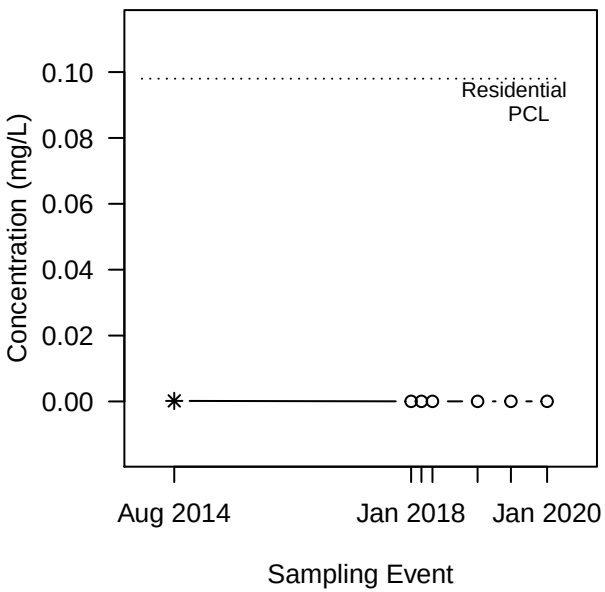




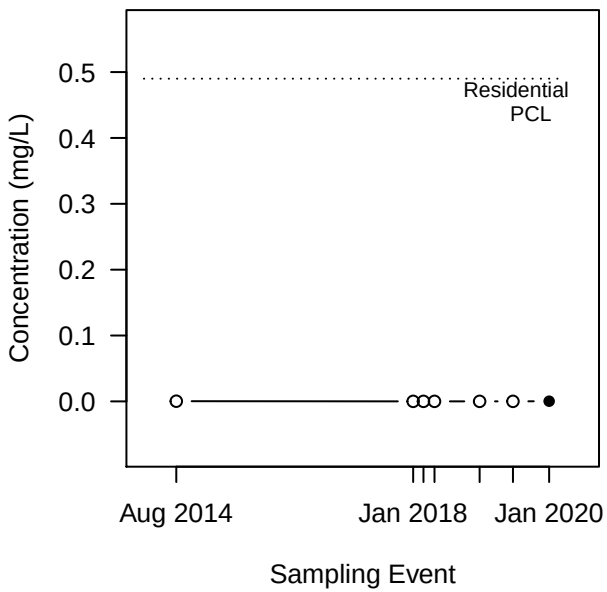
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

Mann−Kendall Trend Tests for MW−80B

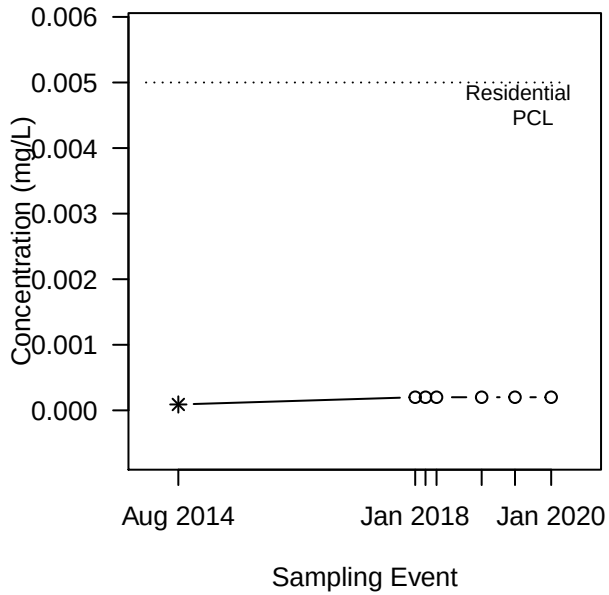
2−Methylnaphthalene (Det/N = 1/7)
No Trend
(p−value=0.106 and CV=1.3)



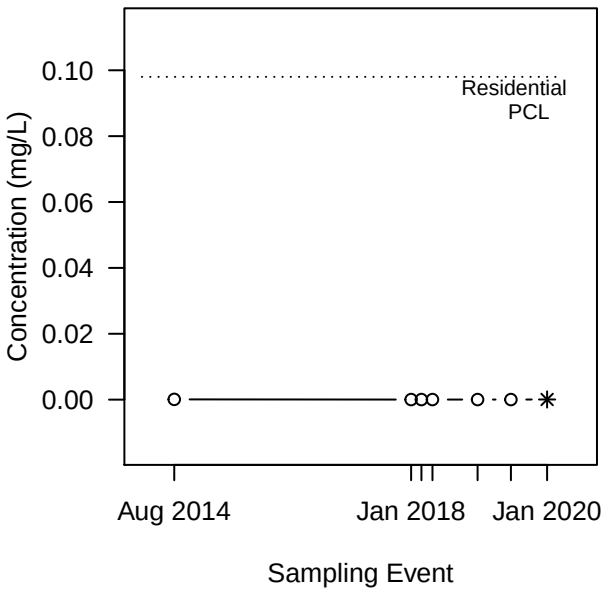
2,4−Dimethylphenol (Det/N = 1/7)
No Trend
(p−value=0.106 and CV=1.1)



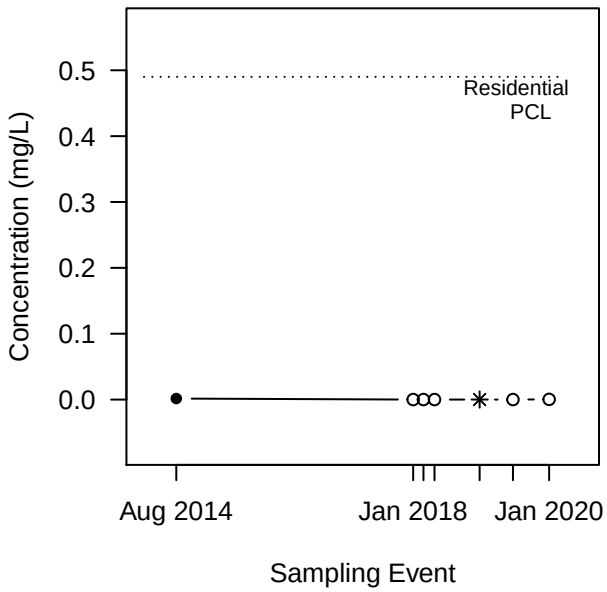
Benzene (Det/N = 1/7)
Stable
(p−value=0.106 and CV=0.23)



Dibenzofuran (Det/N = 1/7)
No Trend
(p−value=0.106 and CV=0.72)



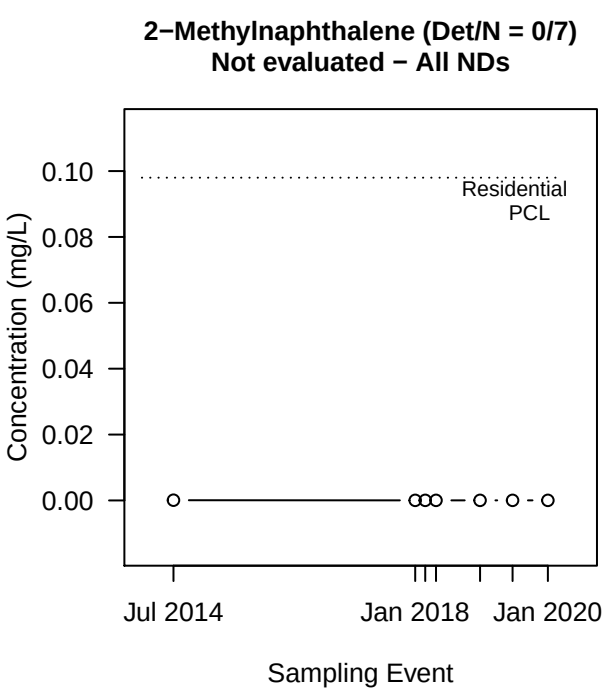
Naphthalene (Det/N = 2/7)
No Trend
(p−value=0.223 and CV=2)

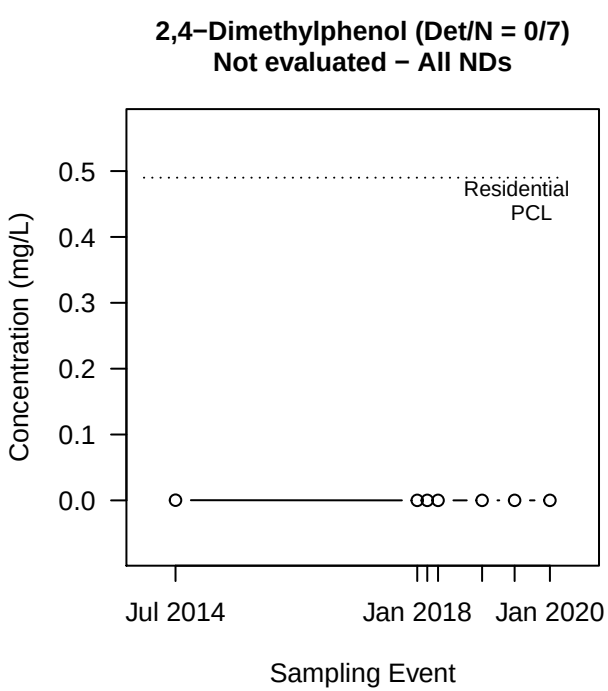


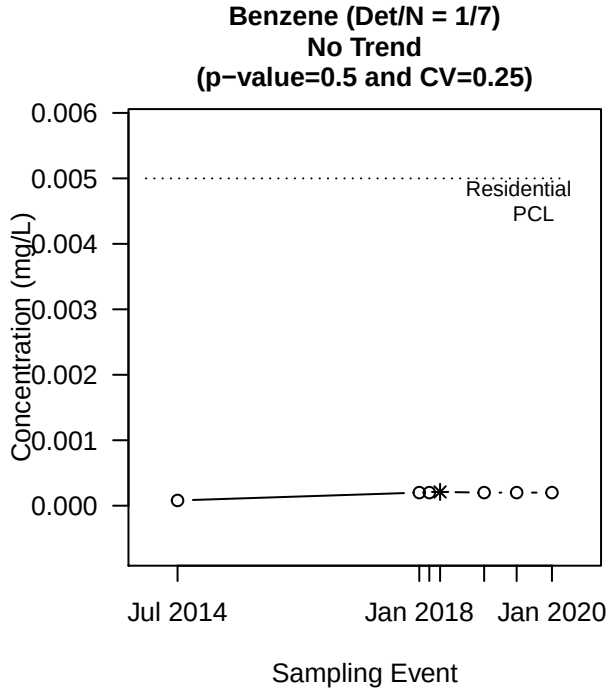
LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

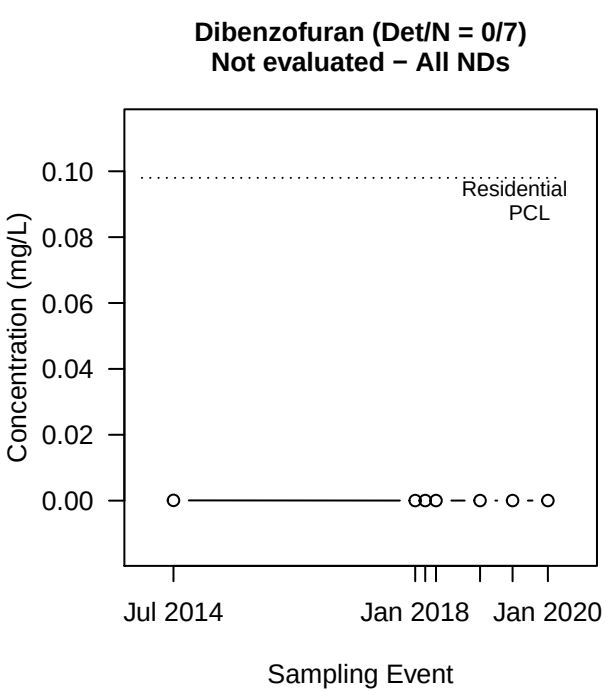
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

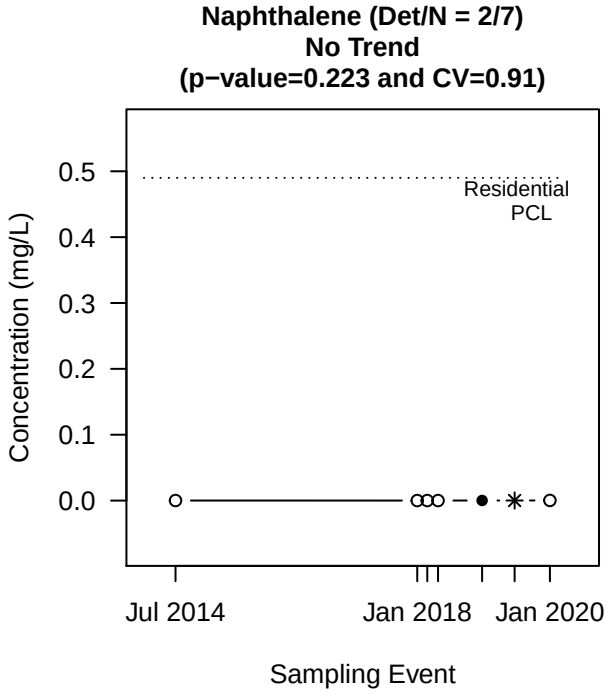
Mann−Kendall Trend Tests for MW−81B

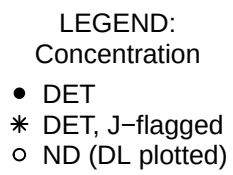








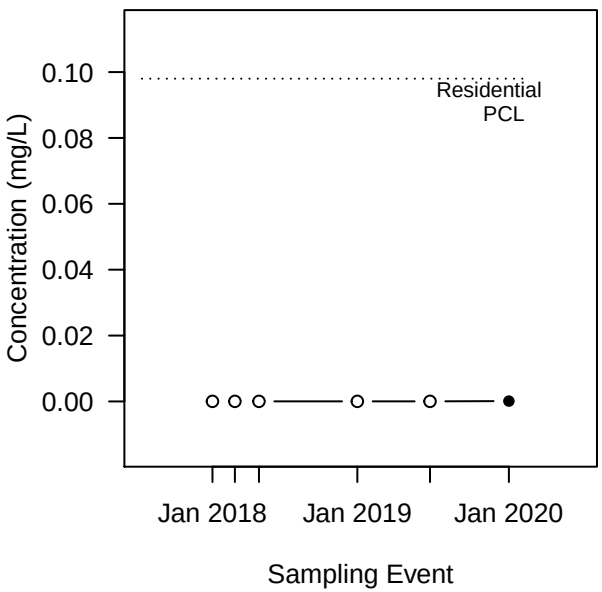




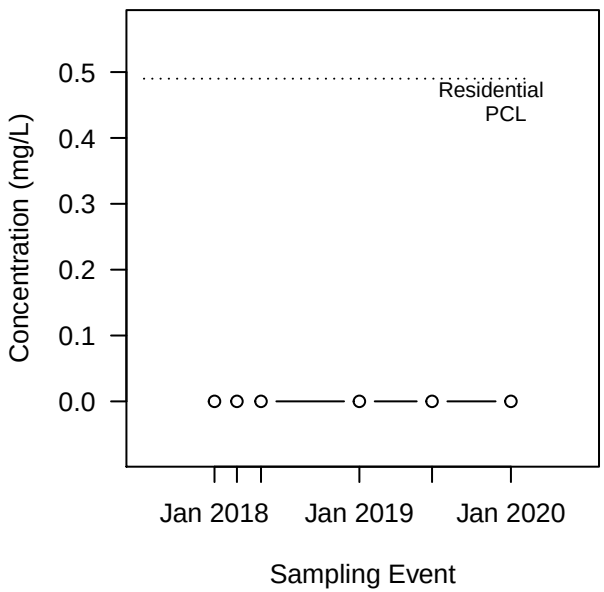
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

Mann−Kendall Trend Tests for MW−82B

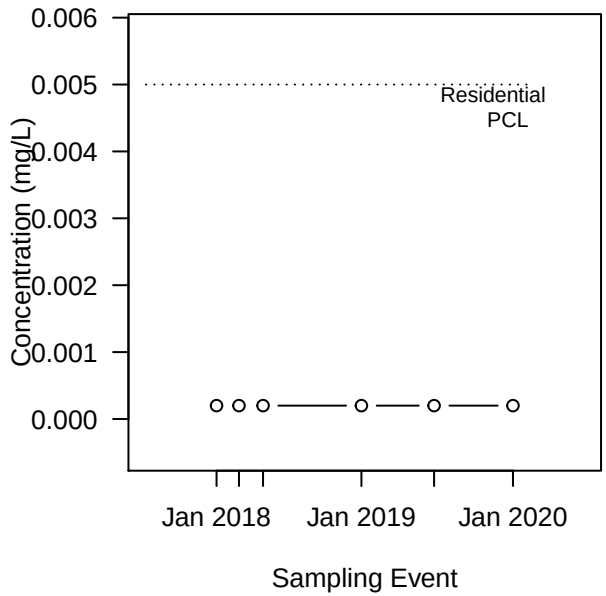
2−Methylnaphthalene (Det/N = 1/6)
No Trend
(p−value=0.121 and CV=1)



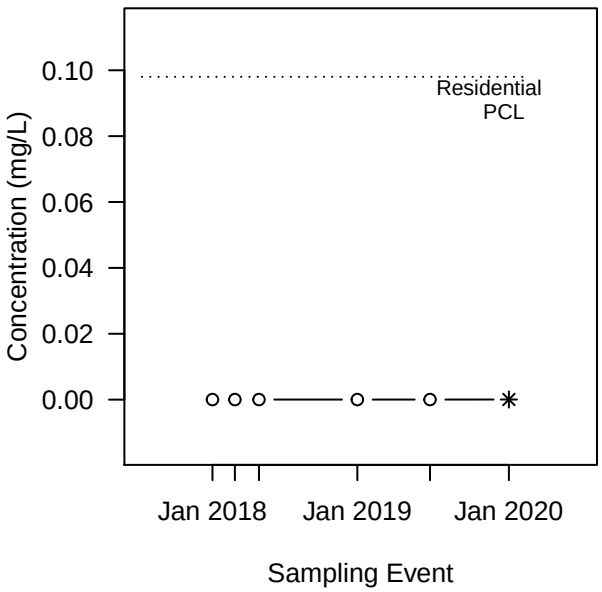
2,4−Dimethylphenol (Det/N = 0/6)
Not evaluated (all concentrations are identical)



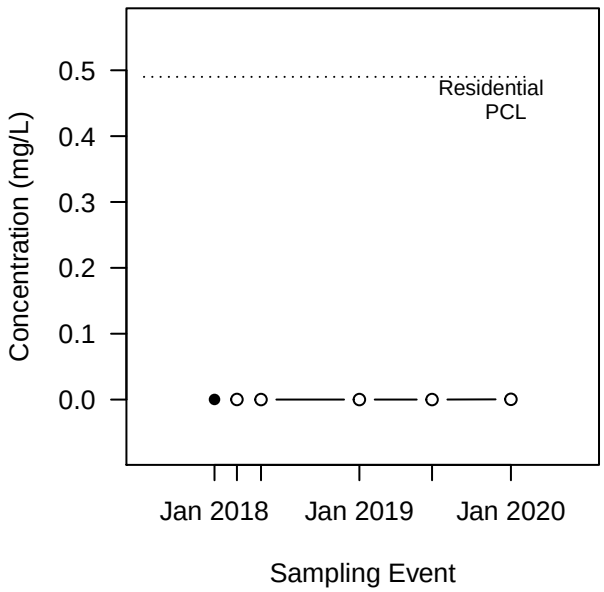
Benzene (Det/N = 0/6)
Not evaluated (all concentrations are identical)



Dibenzofuran (Det/N = 1/6)
No Trend
(p−value=0.121 and CV=0.35)



Naphthalene (Det/N = 1/6)
No Trend
(p−value=0.121 and CV=1.1)

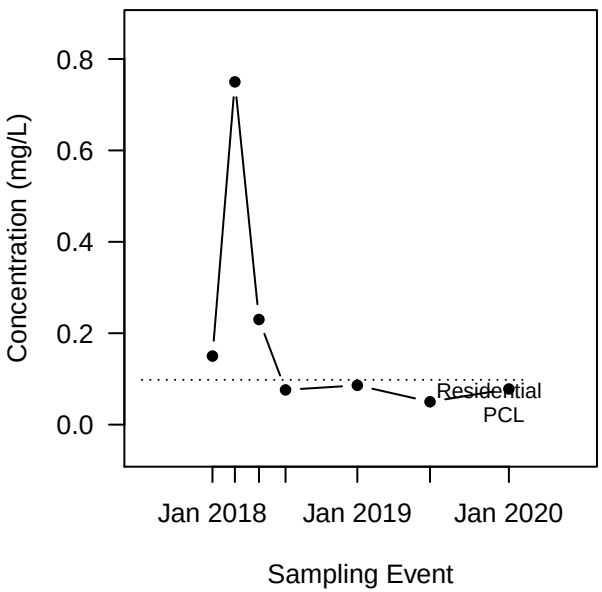


LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

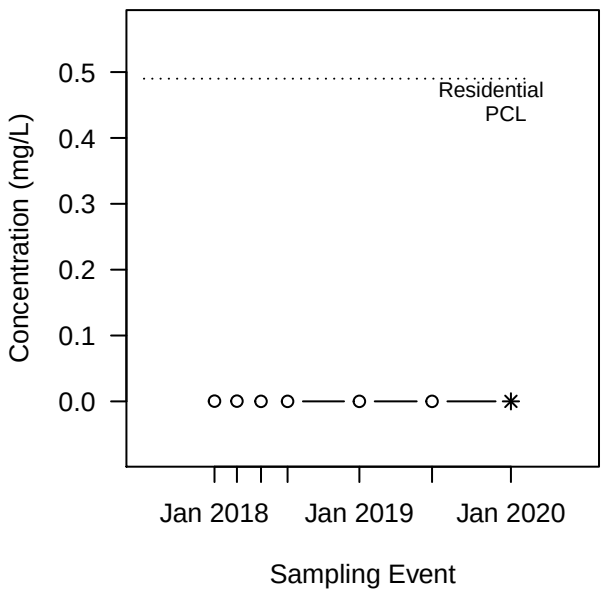
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

Mann−Kendall Trend Tests for MW−83B

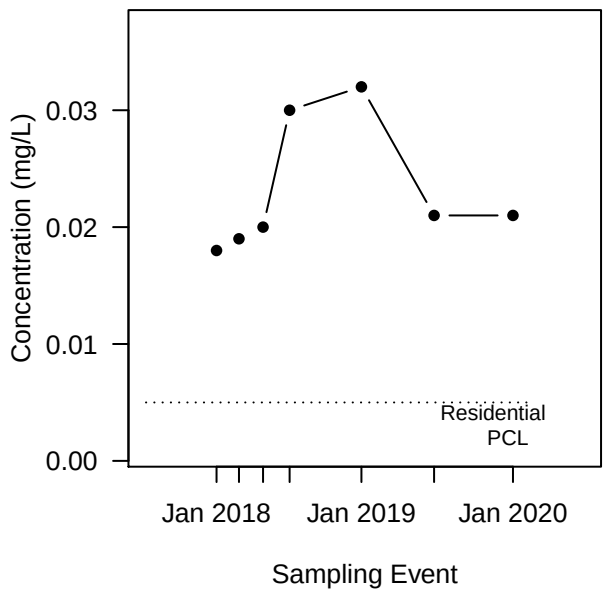
2−Methylnaphthalene (Det/N = 7/7)
Probably Decreasing
(p−value=0.0666 and CV=1.2)



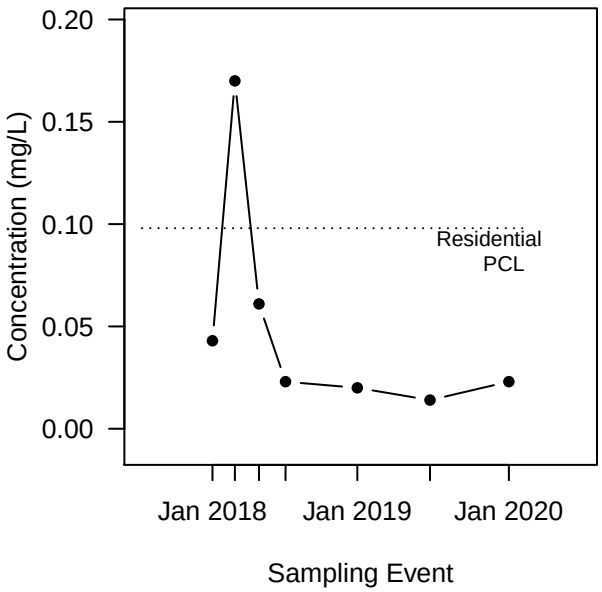
2,4−Dimethylphenol (Det/N = 1/7)
No Trend
(p−value=0.106 and CV=1.2)



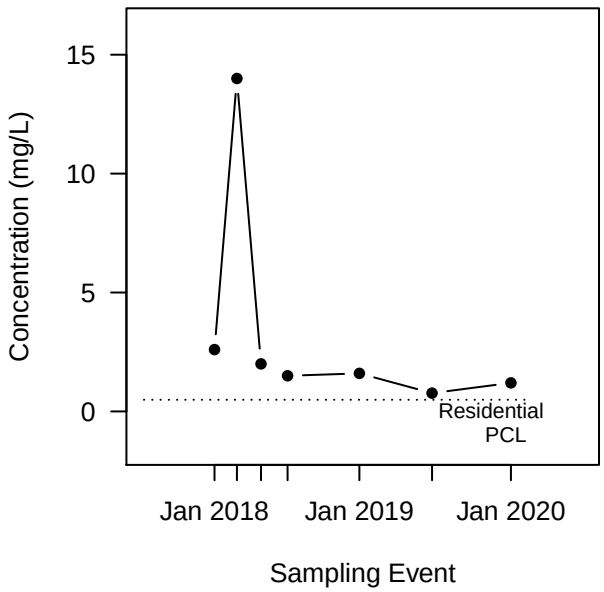
Benzene (Det/N = 7/7)
Increasing
(p−value=0.0474 and CV=0.24)



Dibenzofuran (Det/N = 7/7)
Decreasing
(p−value=0.0474 and CV=1.1)



Naphthalene (Det/N = 7/7)
Decreasing
(p−value=0.0177 and CV=1.4)



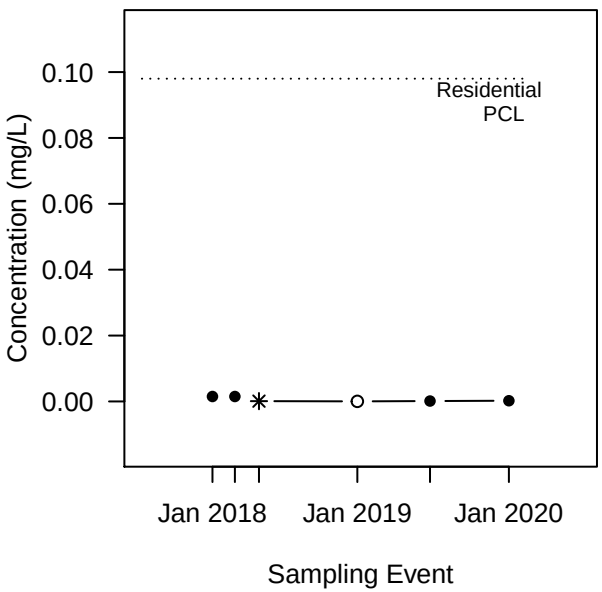
LEGEND:
Concentration

- DET
- DET, J−flagged
- ND (DL plotted)

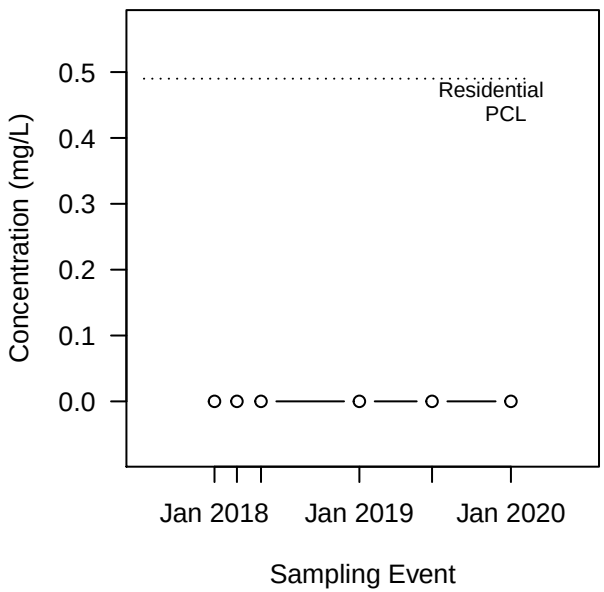
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

Mann−Kendall Trend Tests for MW−83C

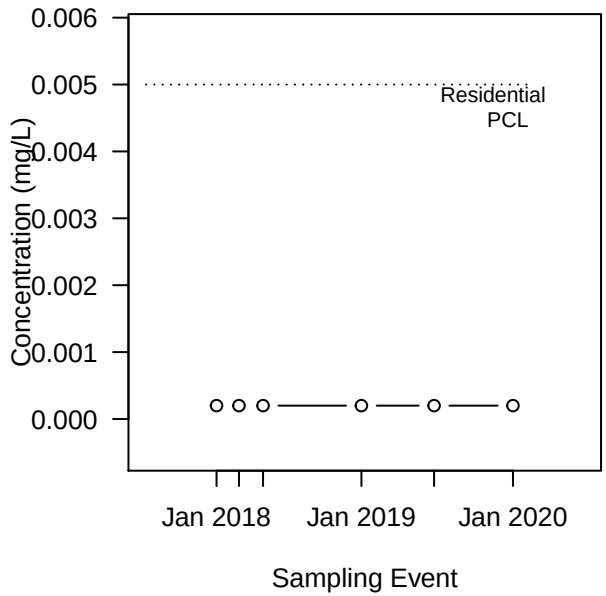
2−Methylnaphthalene (Det/N = 5/6)
No Trend
(p−value=0.283 and CV=1.3)



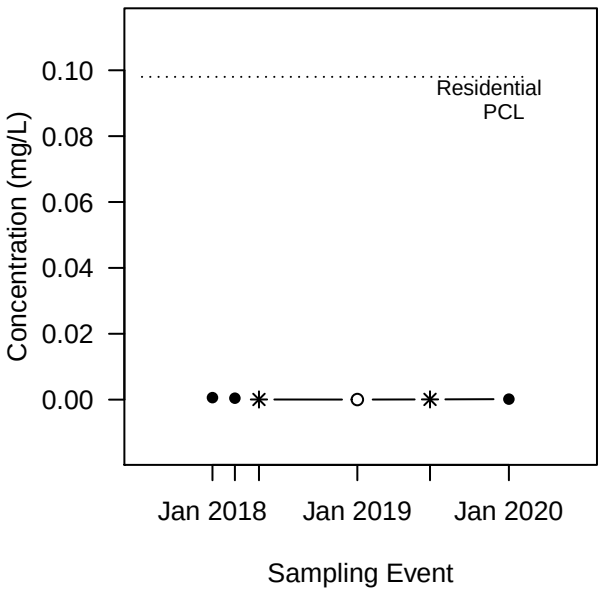
2,4−Dimethylphenol (Det/N = 0/6)
Not evaluated (all concentrations are identical)



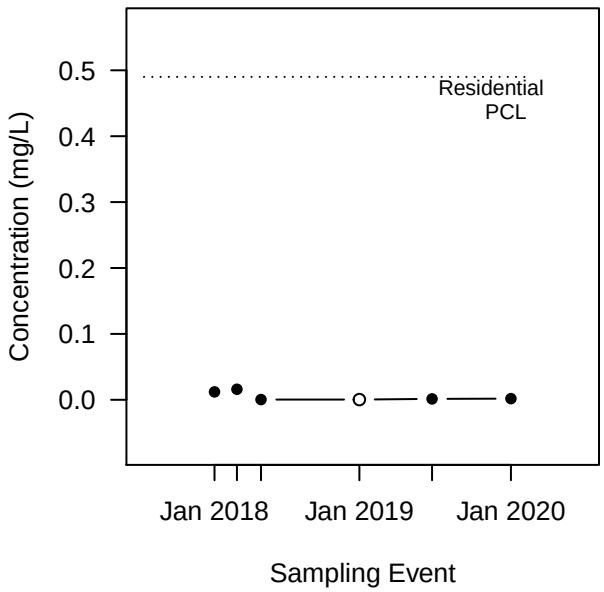
Benzene (Det/N = 0/6)
Not evaluated (all concentrations are identical)



Dibenzofuran (Det/N = 5/6)
No Trend
(p−value=0.226 and CV=1.1)



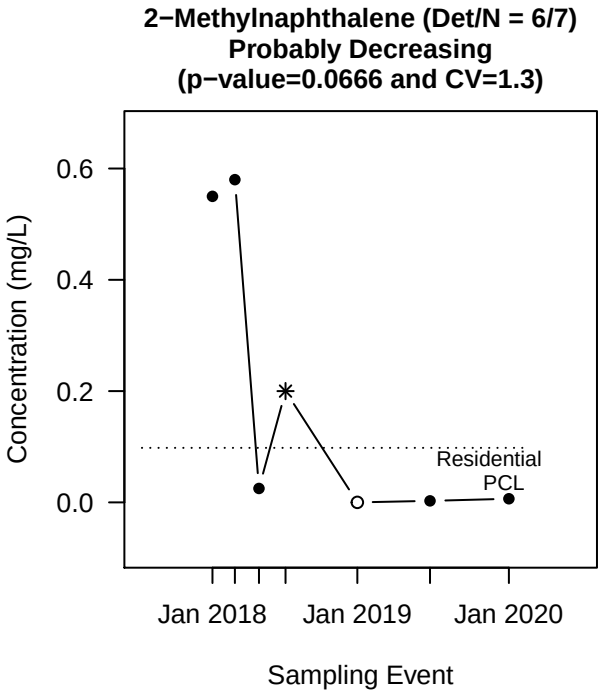
Naphthalene (Det/N = 5/6)
No Trend
(p−value=0.354 and CV=1.3)

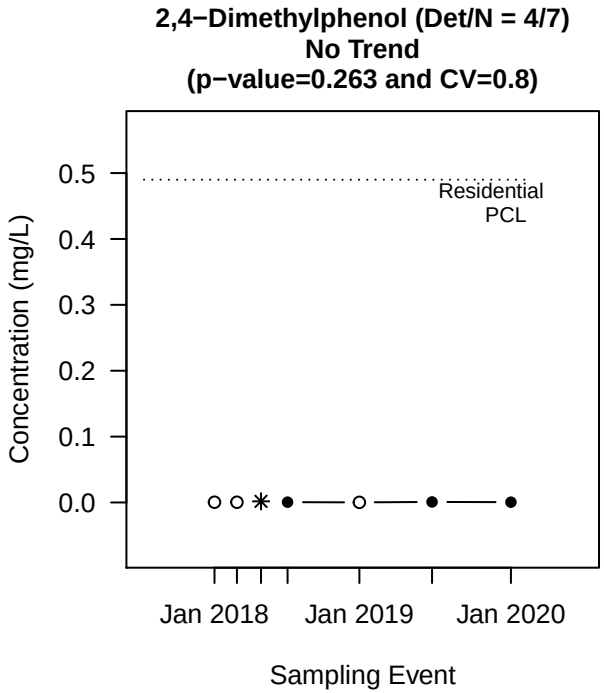


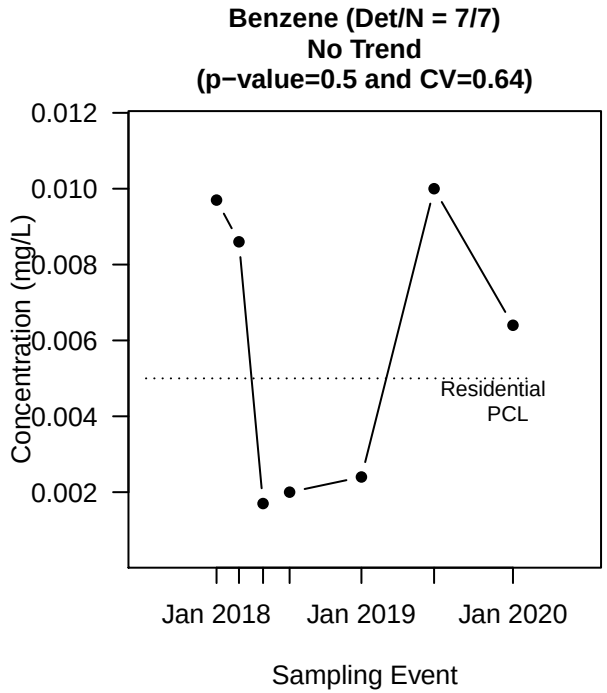
LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

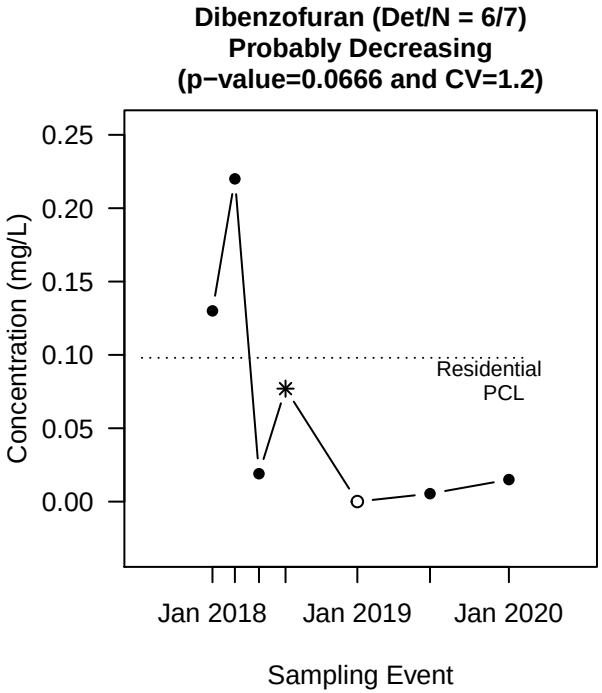
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

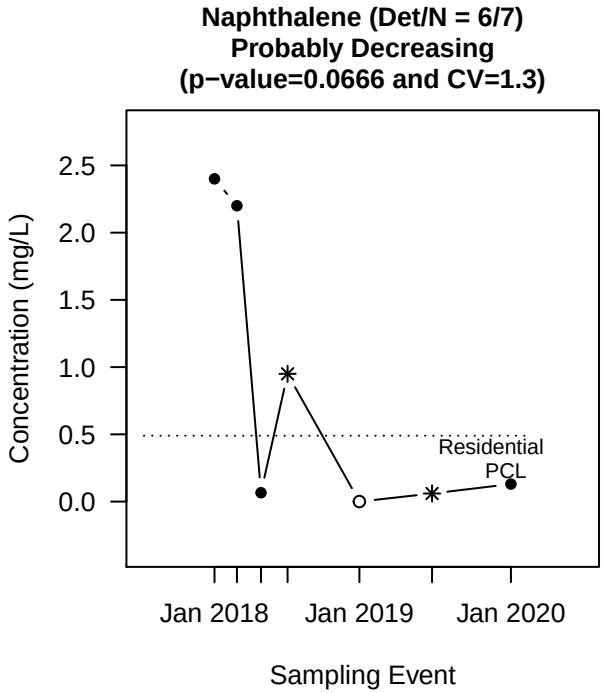
Mann−Kendall Trend Tests for MW−84B







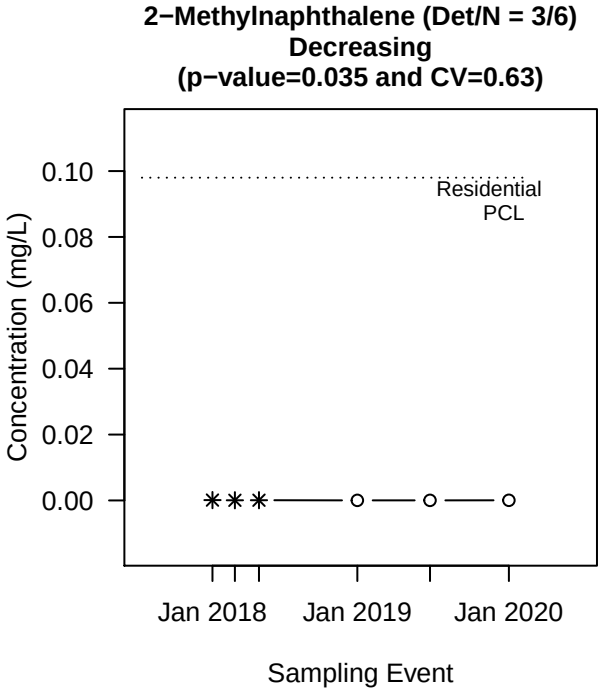


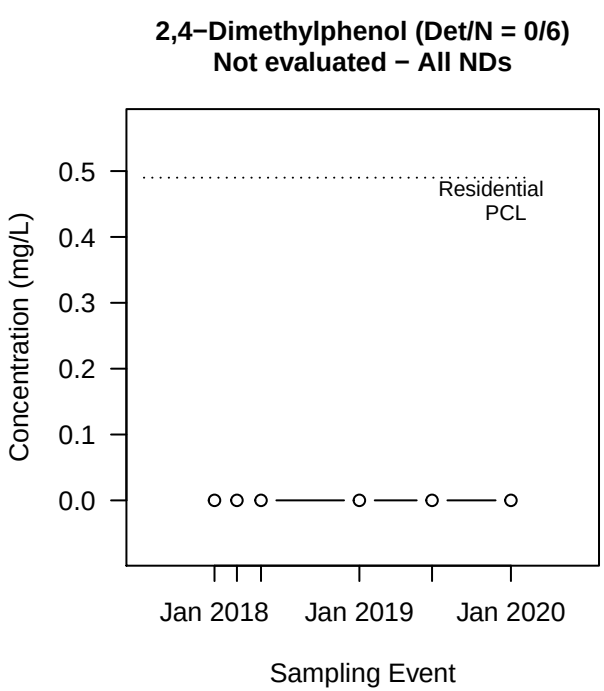


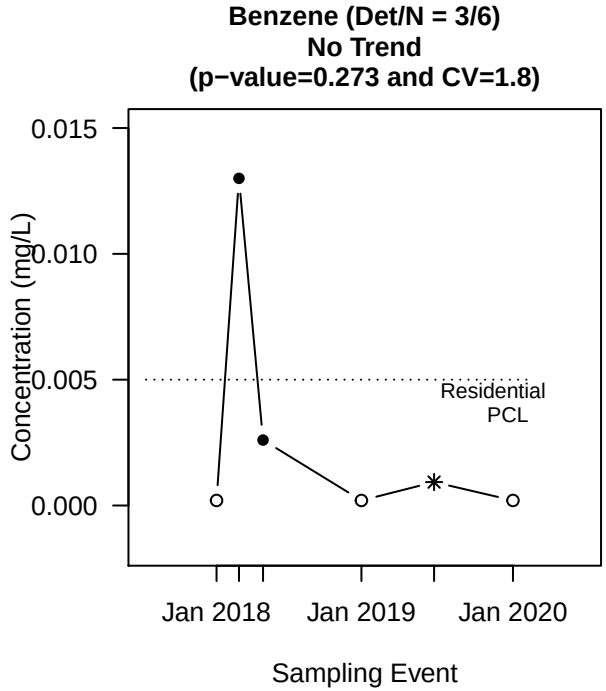
LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

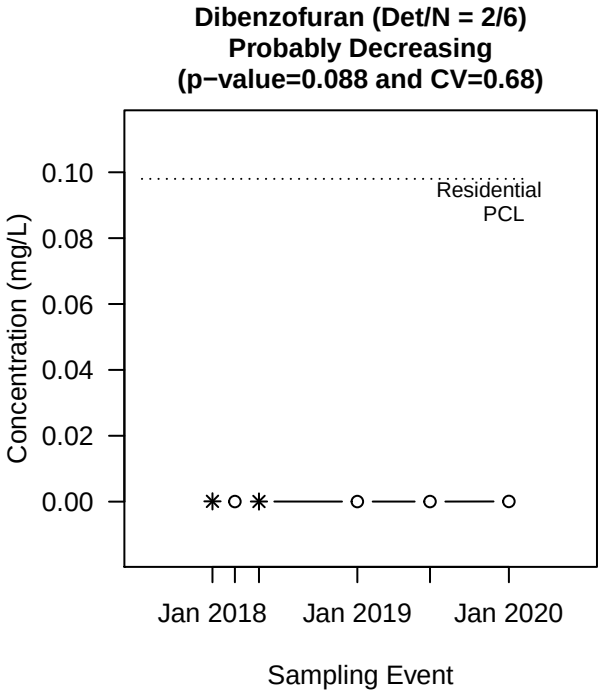
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

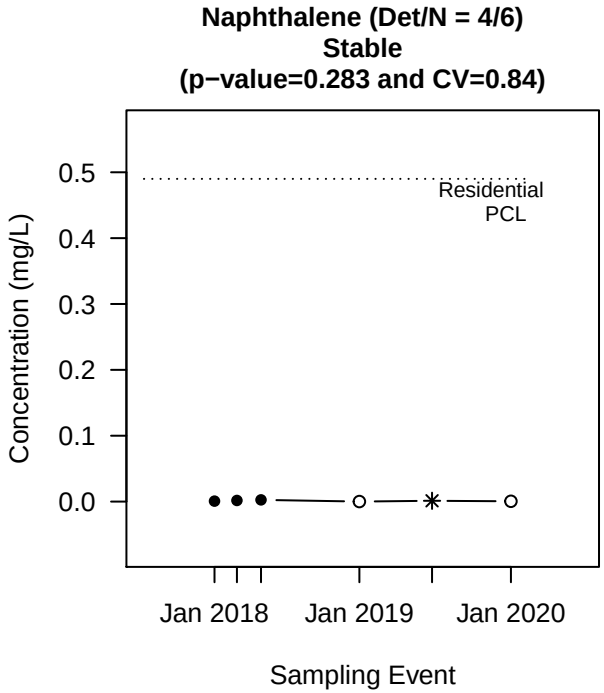
Mann−Kendall Trend Tests for MW−85C







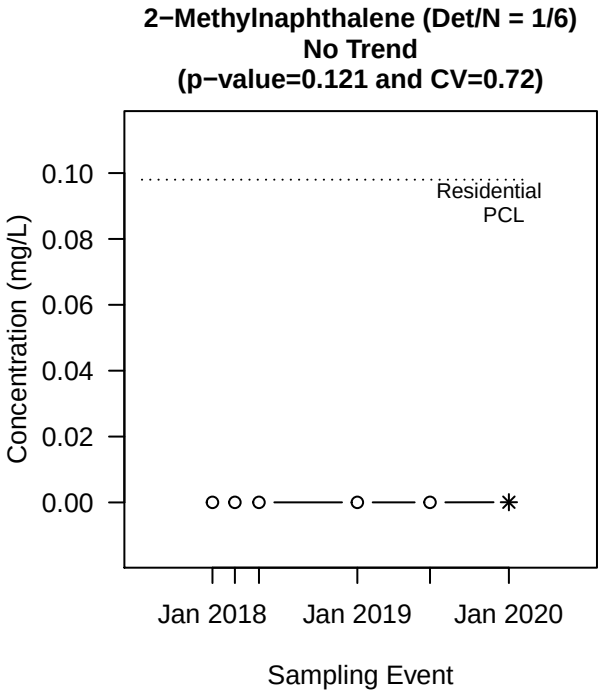


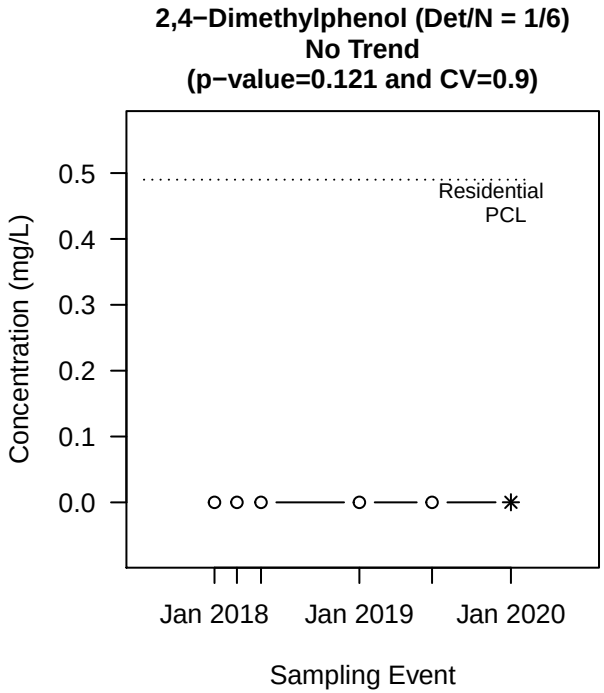


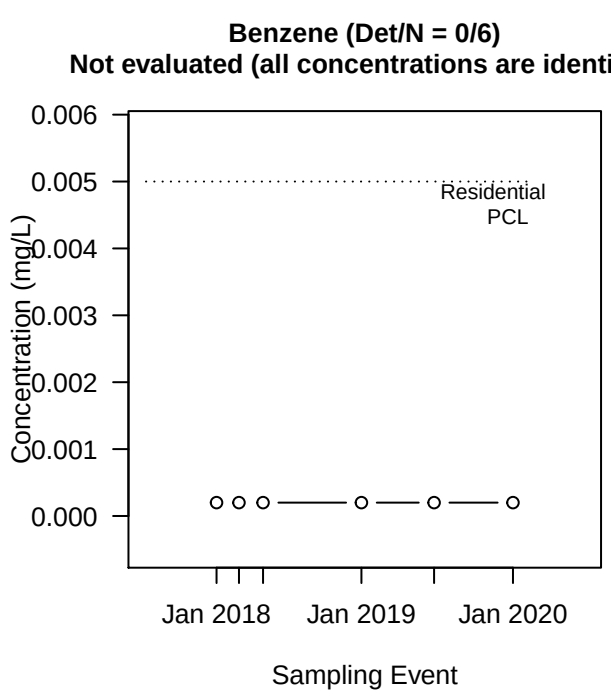
LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

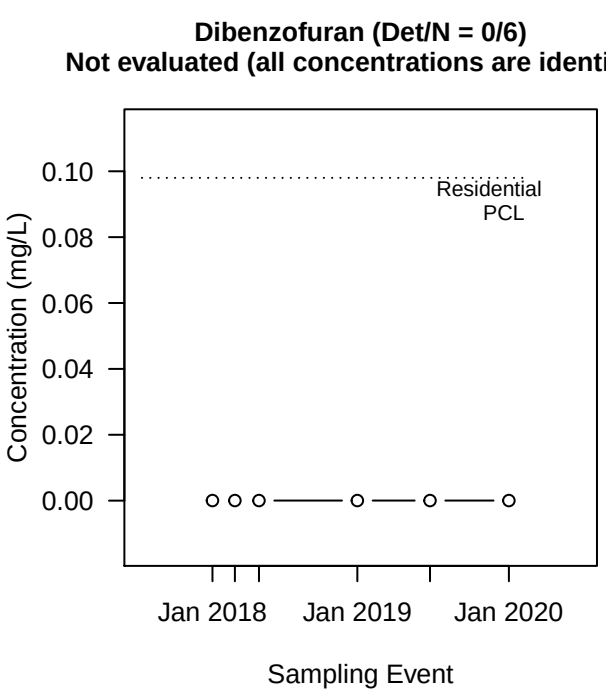
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

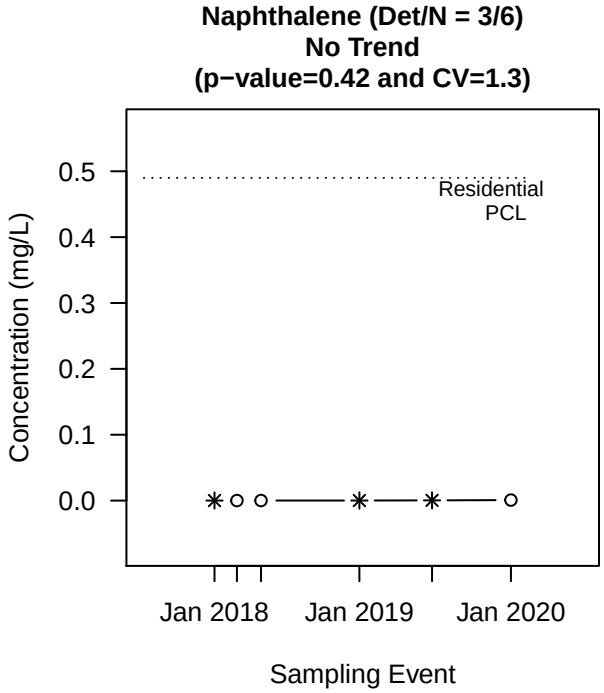
Mann−Kendall Trend Tests for MW−86C

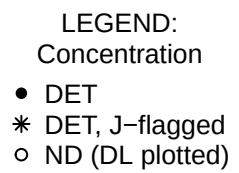








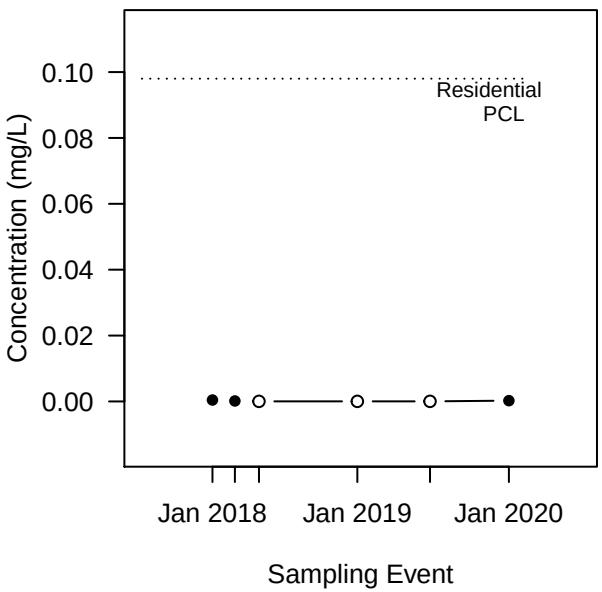




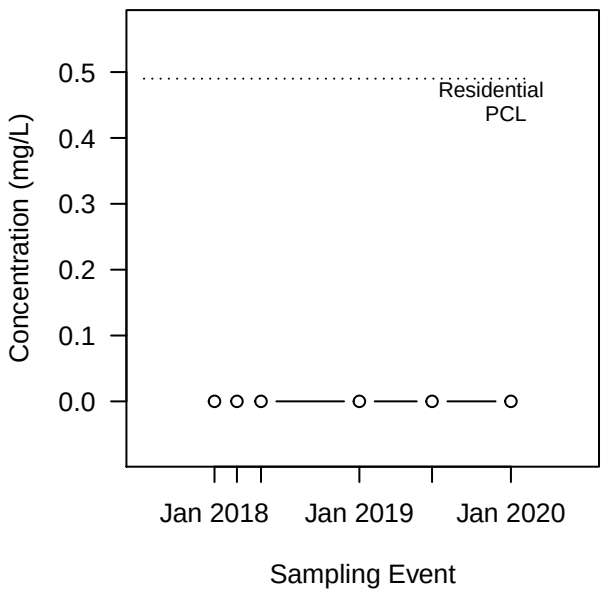
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

Mann−Kendall Trend Tests for MW−87C

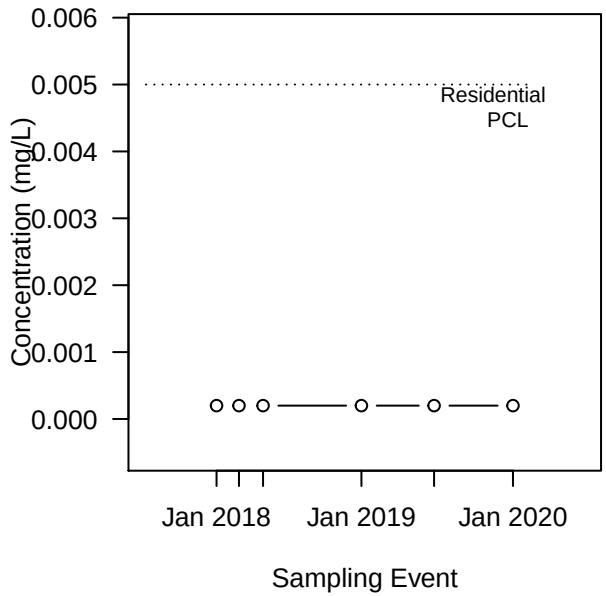
2−Methylnaphthalene (Det/N = 3/6)
No Trend
(p−value=0.273 and CV=1.2)



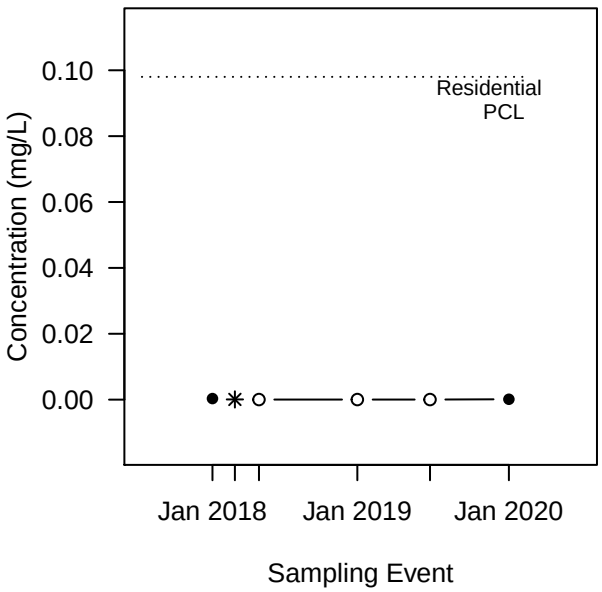
2,4−Dimethylphenol (Det/N = 0/6)
Not evaluated (all concentrations are identical)



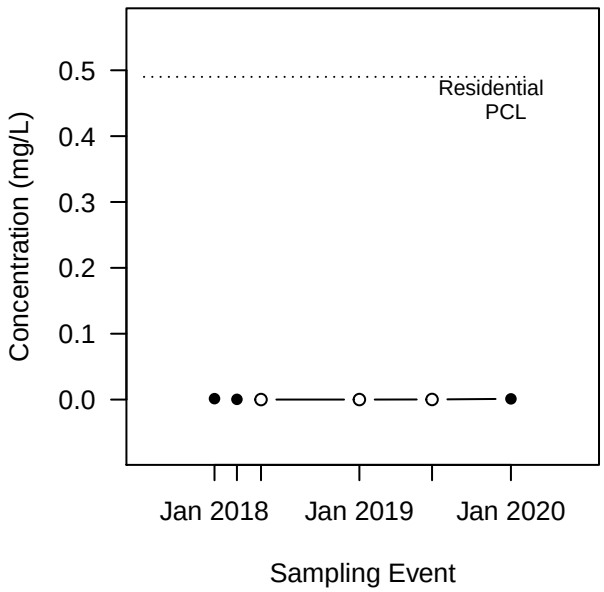
Benzene (Det/N = 0/6)
Not evaluated (all concentrations are identical)



Dibenzofuran (Det/N = 3/6)
No Trend
(p−value=0.273 and CV=1.3)



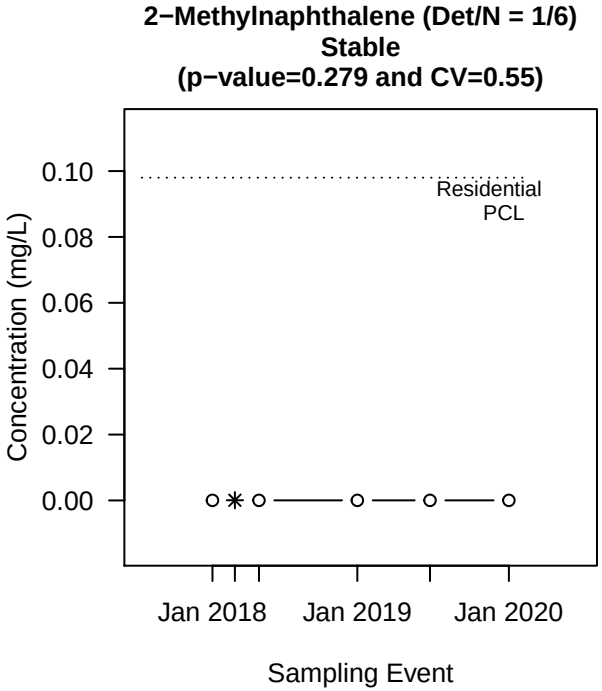
Naphthalene (Det/N = 3/6)
No Trend
(p−value=0.273 and CV=1.1)

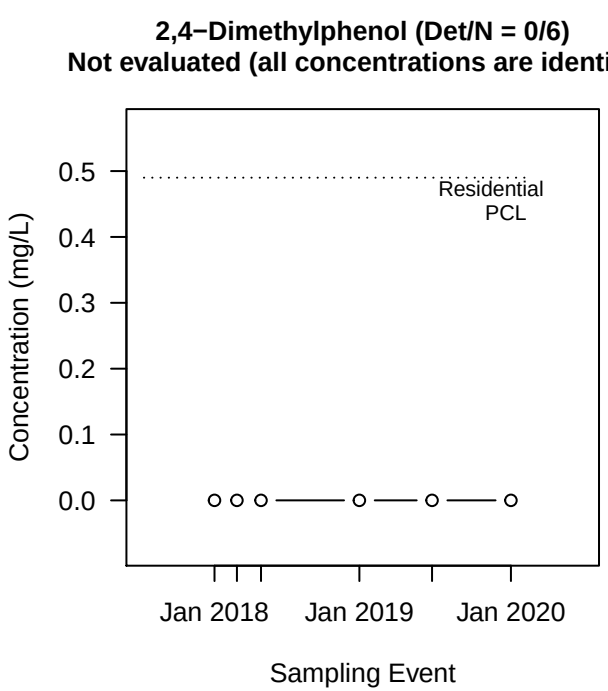


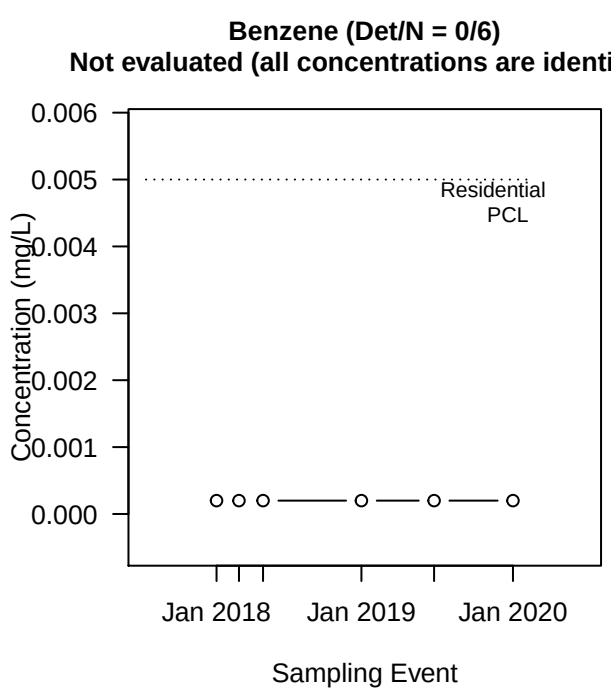
LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

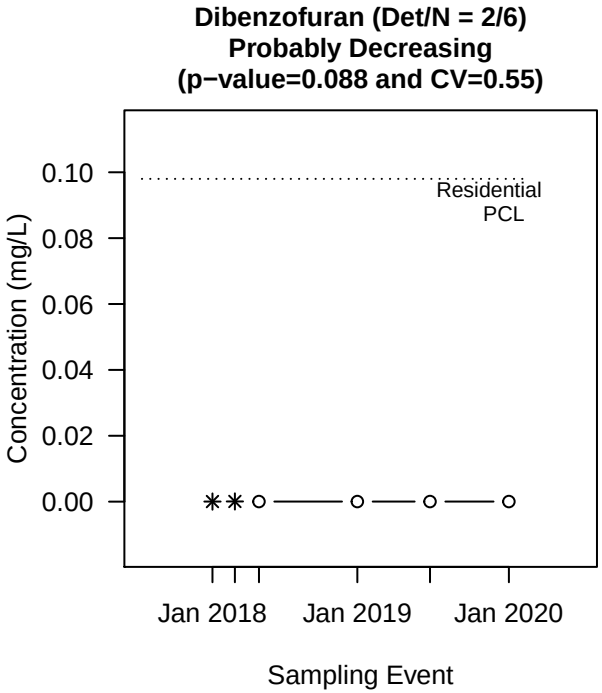
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

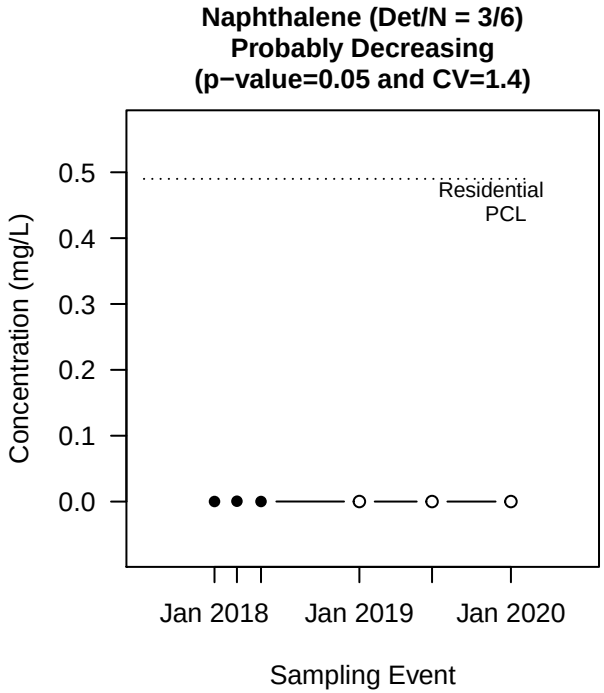
Mann−Kendall Trend Tests for MW−88C

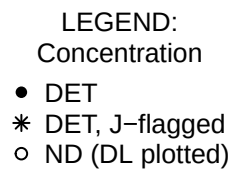






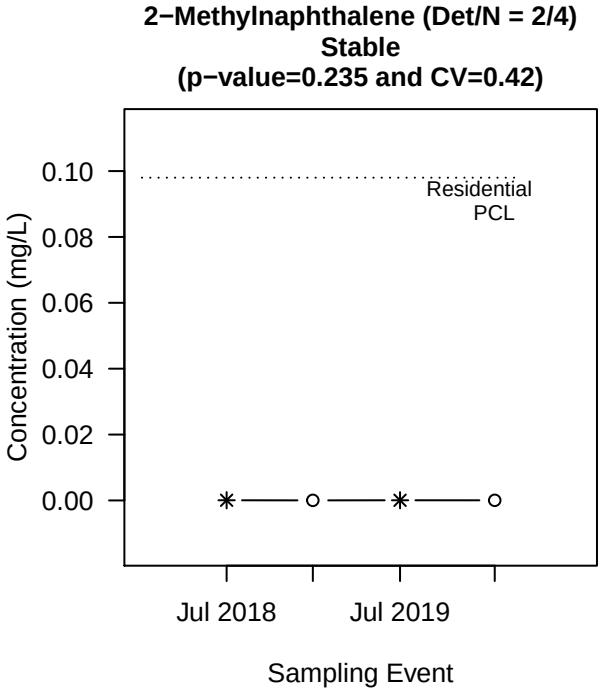


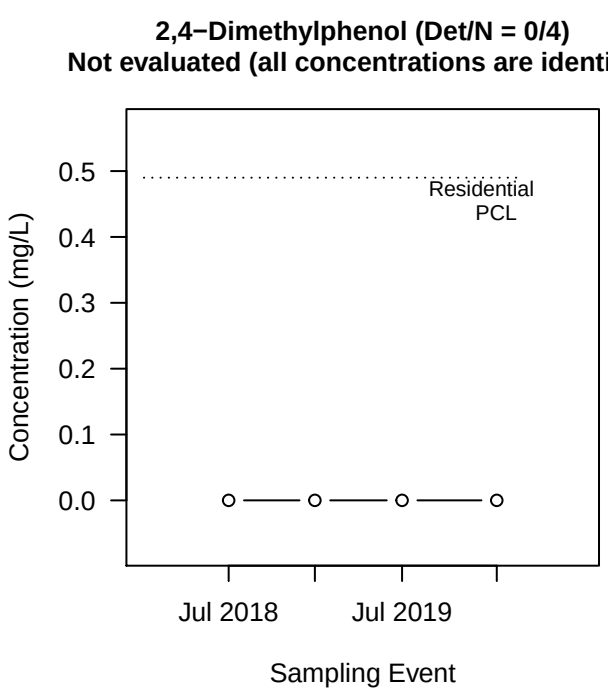


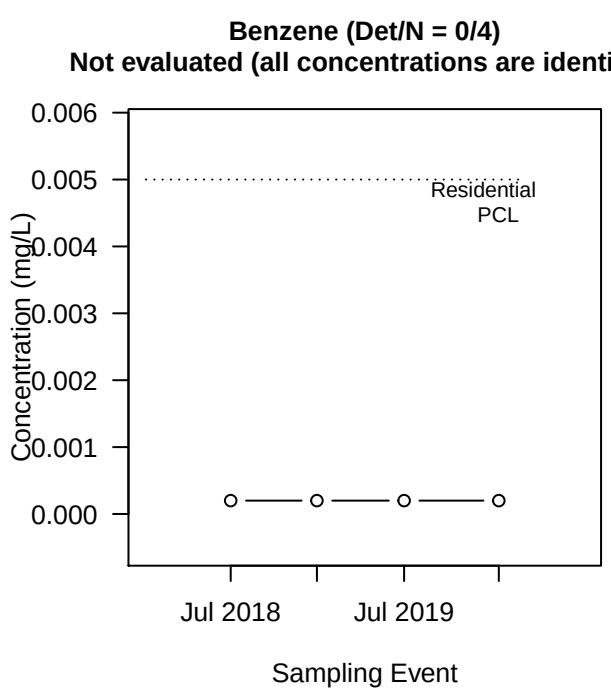


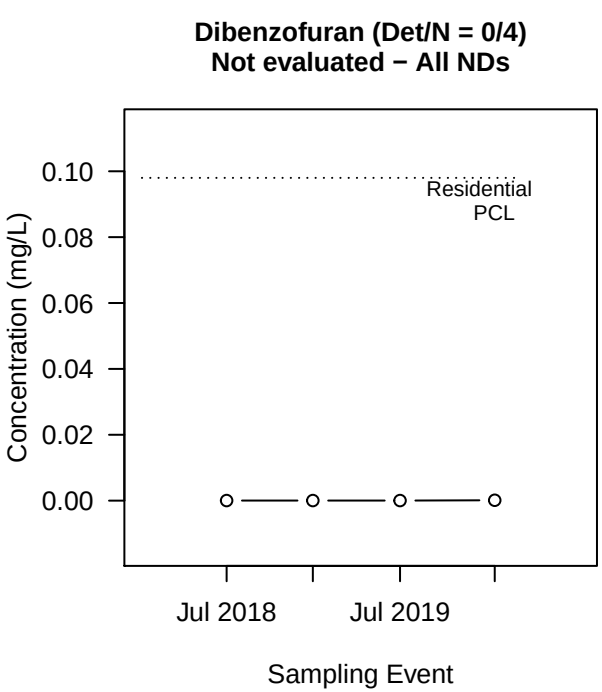
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

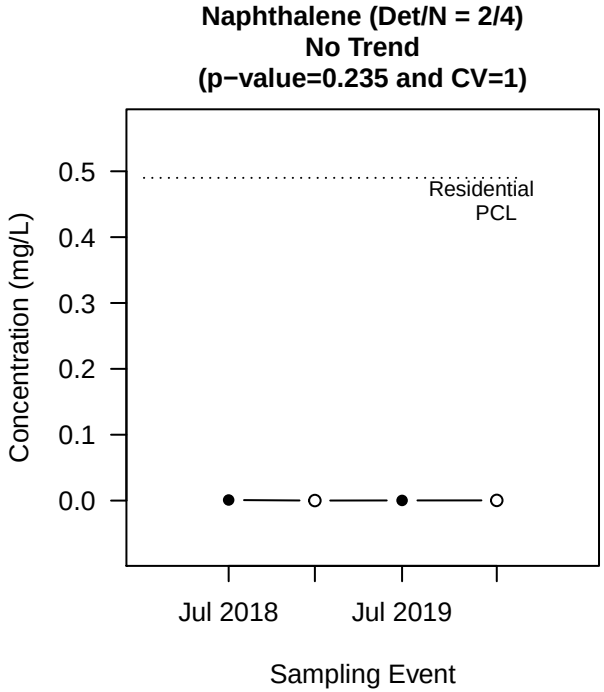
Mann−Kendall Trend Tests for MW−89B







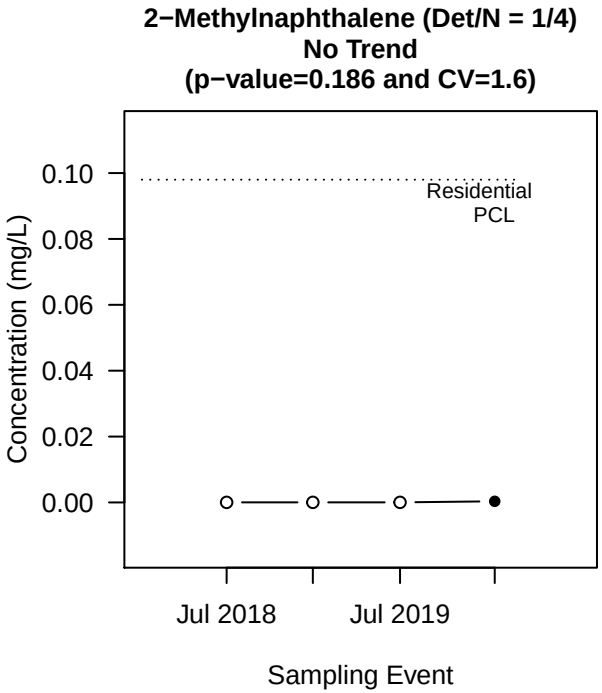


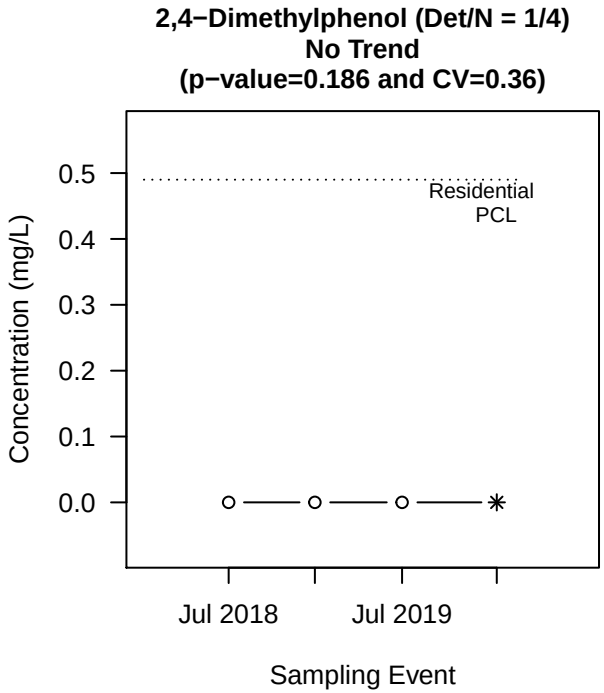


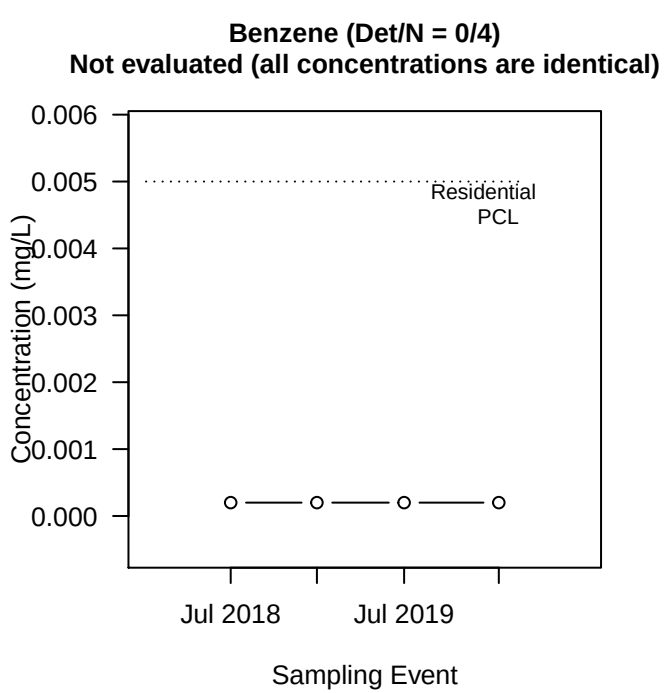
LEGEND:
Concentration
- ● DET
- ✳ DET, J−flagged
- ○ ND (DL plotted)

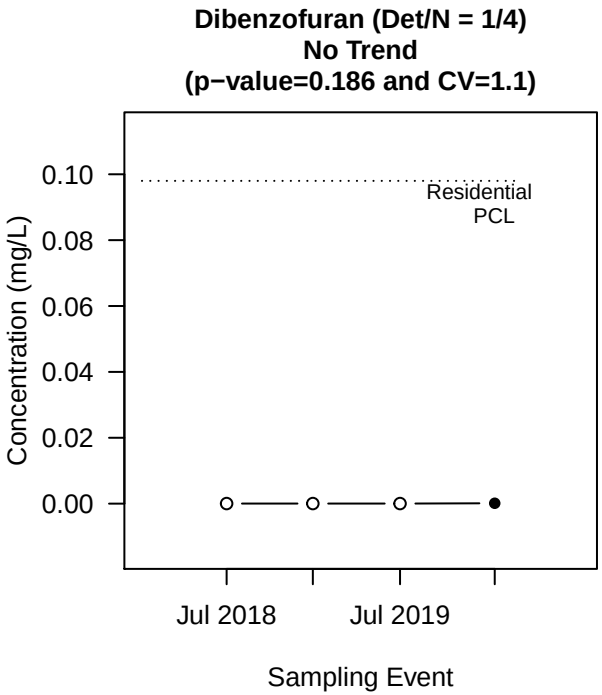
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

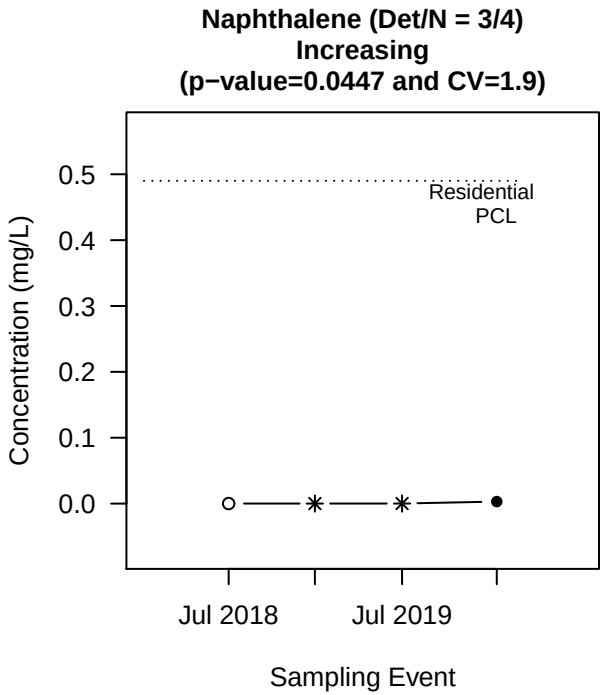
Mann−Kendall Trend Tests for MW−90B

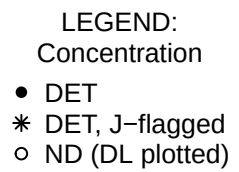








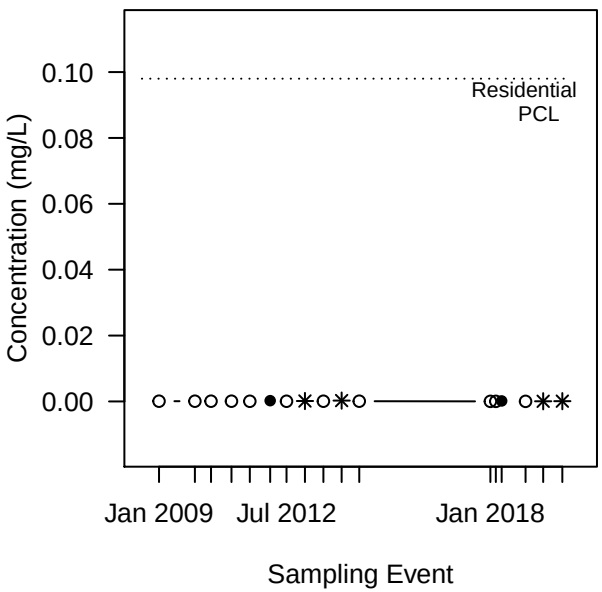




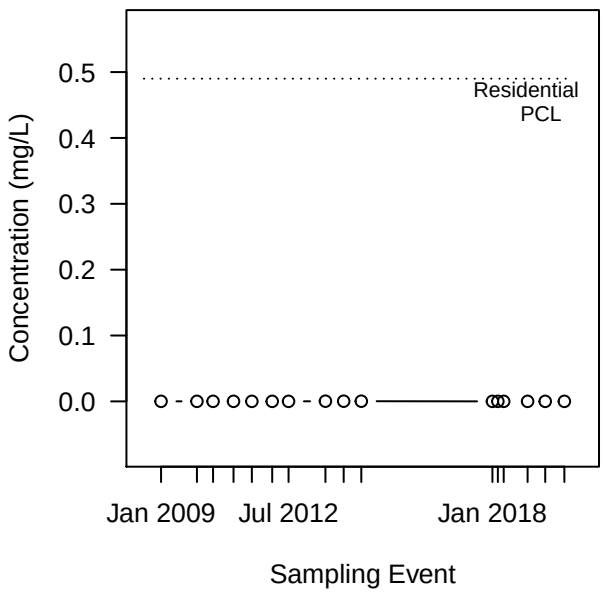
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

Mann−Kendall Trend Tests for P−11

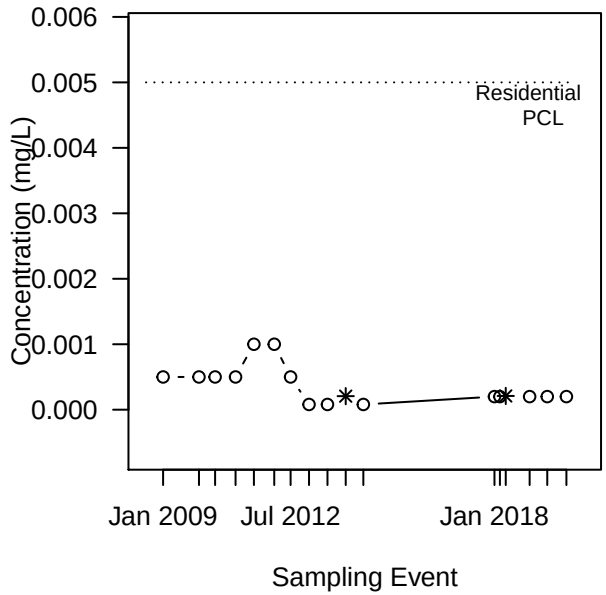
2−Methylnaphthalene (Det/N = 6/17)
No Trend
(p−value=0.103 and CV=0.79)



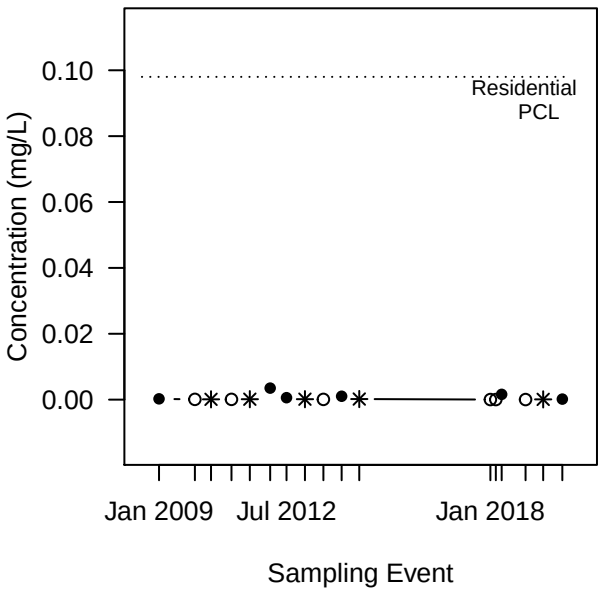
2,4−Dimethylphenol (Det/N = 0/16)
Not evaluated − All NDs



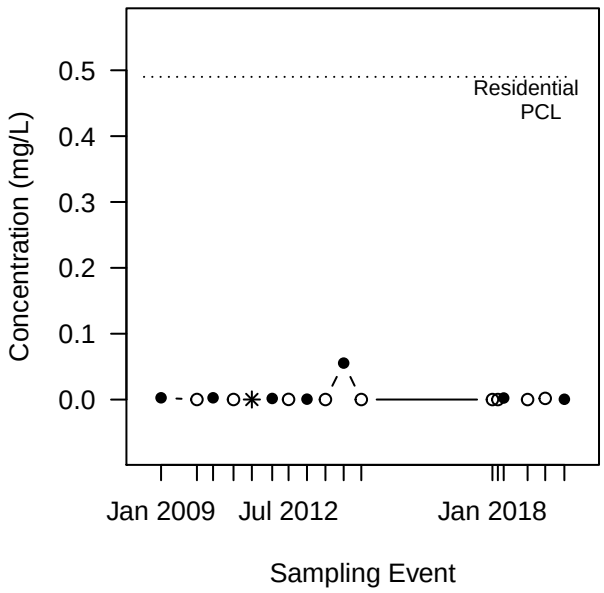
Benzene (Det/N = 2/17)
No Trend
(p−value=0.186 and CV=0.79)



Dibenzofuran (Det/N = 11/17)
No Trend
(p−value=0.5 and CV=1.9)



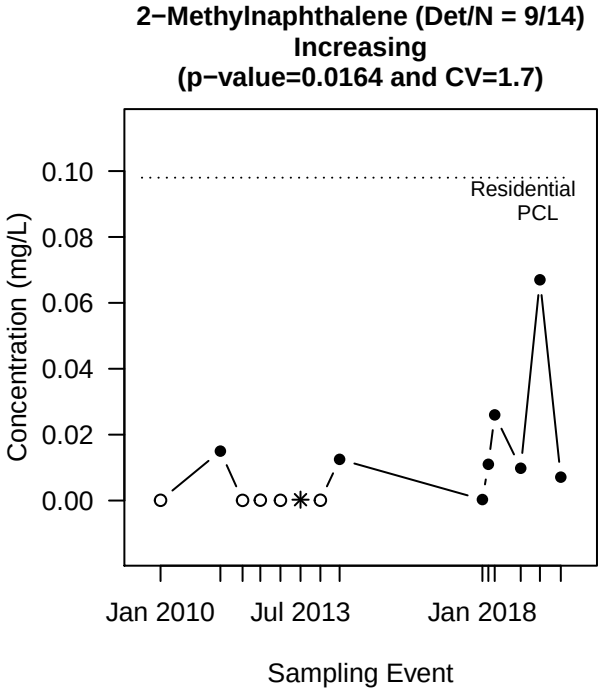
Naphthalene (Det/N = 8/17)
No Trend
(p−value=0.185 and CV=3.3)

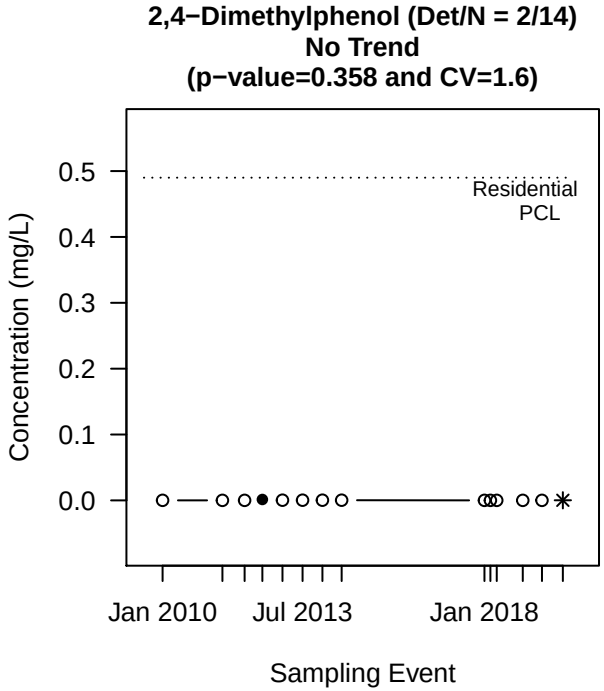


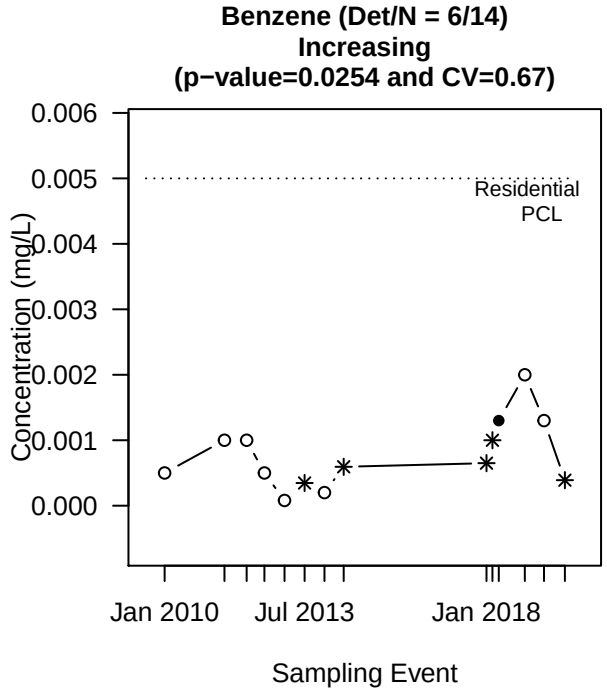
LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

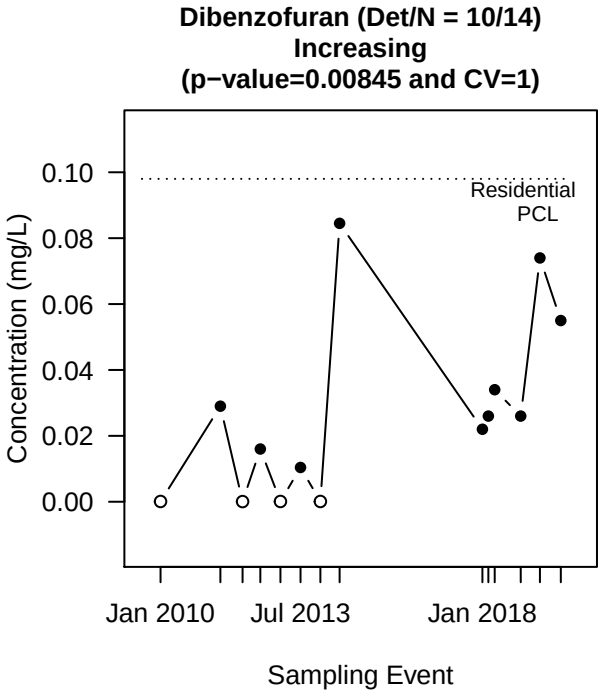
NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

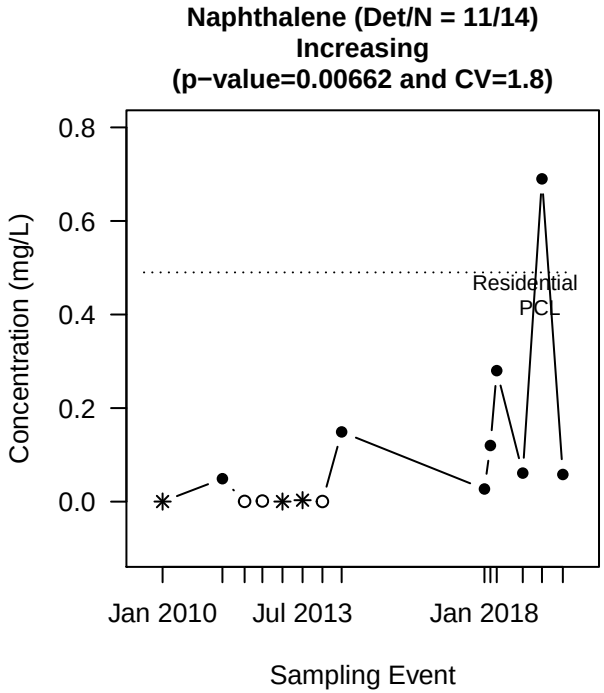
Mann−Kendall Trend Tests for TW−41B











LEGEND:
Concentration
- DET
- DET, J−flagged
- ND (DL plotted)

NOTE: A p−value<0.05 indicates a statistically significant trend.
A p−value is the probability, if no trend is present, that we'd observe such an increasing or decreasing trend.

INTERIM RESPONSE ACTION COMPLETION REPORT (RACR) -

REVISION 2 (Replacement Pages)

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
Response Action Completion Report

Cover Page

Regulatory ID number (Solid waste registration number, VCP ID number, etc) SWR No. 31547
check one: ___ Initial RACR submittal for this on-site property X Subsequent RACR submittal
Report date: August 20, 2020 – Rev 2 TCEQ Region No.: 12

TCEQ Program (check one)
X Corrective Action (Mail Code 127)
___ Voluntary Cleanup Program (Mail Code 221)
___ Petroleum Storage Tank Program (Mail Code 137)
___ Superfund PRP Lead (Mail Code 143)
___ Municipal Solid Waste Permits (Mail Code 124)

On-Site Property Information
On-Site Property Name: Union Pacific Railroad Houston Wood Preserving Works Site
Street no. 4910 Pre dir: ___ Street name Liberty Street type: Road Post dir: ___
City: Houston County: Harris County Code: 101 Zip: 77007
Nearest street intersection or location description: Site is located south of Liberty Rd. between Kashmere St. and Lockwood St, and north of Lee St.

Latitude: Decimal Degrees (circle one) North 29.787413
Longitude: Decimal Degrees (circle one) West 95.321062

Off-Site Affected Property Information
Off-Site Affected Property Name: ___
Street no. ___ Pre dir: ___ Street name: ___ Street type: ___ Post dir: ___
City: ___ County: ___ County Code: ___ Zip: ___

____ Check if there are no off-site properties affected

Contact Person Information and Acknowledgement
Person (or company) Name: Union Pacific Railroad
Contact Person: Kevin Peterburs Title: Manager, Site Remediation
Mailing Address: 4823 N 119th Street
City: Milwaukee State: TX Zip: 53225 E-mail address kipeterb@UP.COM
Phone: 414-267-4164 Fax: 402-233-2351

By my signature below, I acknowledge the requirement of §350.2(a) that no person shall submit information to the executive director or to parties who are required to be provided information under this chapter which they know or reasonably should have known to be false or intentionally misleading, or fail to submit available information which is critical to the understanding of the matter at hand or to the basis of critical decisions which reasonably would have been influenced by that information. Violation of this rule may subject a person to the imposition of civil, criminal, or administrative penalties.

Signature of Person Kevin Peterburs Name, print: Kevin Peterburs Date: 8/26/2020

Check the reports/forms submitted:

Remedy Standard A

___ Self-Implementation Notice Submittal date: _____

___ Response Action Plan - Approval date: _____

Remedy Standard B

X Response Action Plan - Approval date: Currently under review. Corrective action approved under the TCEQ Area of Contamination (AOC) Approval dated February 9, 2015 (and amended February 22, 2016).

List all media (surface soil, subsurface soil, groundwater, sediment, surface water, air) that contained or contains a PCLE zone and specify the response action taken for each media. Indicate the type of removal, decontamination, physical control, or institutional control action that was used in the response action. If a media with a PCLE zone was not addressed in the response action, provide an explanation below.

Media	COCs[1]	Removal	Decontamination	Physical Control	Institutional Control	Modified Response Objective[2]		
						PMZ	WCU	TI
Surface Soil	Benzene, SVOCs, metals	X		X	X			
Subsurface Soil	SVOCs			X	X			

Is there a media that contains a PCLE zone that was not addressed in the response action? **X** yes ___ no

If yes, provide justification for not addressing the PCLE zone in the response action.

This Response Action Completion Report (RACR) only addresses the response actions for the surface and subsurface soil PCLE Zones. The response action for the groundwater PCLE zone is detailed in the Response Action Plan (RAP) dated November 21, 2014, and revised dated December 7, 2015, July 15, 2016, June 24, 2017, July 10, 2019, and August 31, 2020. Following approval of the RAP by the TCEQ and implementation of the proposed response action, a separate RACR will be submitted to the TCEQ for the groundwater PCLE zone.

Current land use of the on-site affected property: ___ Residential **X** Commercial/industrial

Projected future land use of the on-site property (if known): ___ Residential **X** Commercial/industrial

Explain why you believe the response action to be complete.

As discussed in the RAP (PBW, 2015), the response action objectives (RAOs) for surface and subsurface soil PCLE Zones was to excavate impacted soils with COCs above cPCLs and consolidate the soils within the Site using the Area of Contamination approach, and control exposure through Remedy Standard B using physical barriers such that on-site commercial/industrial and off-site residential pathways will not be

[1] Specify either a specific COC or, if the response action is the same for all COCs in one type, specify the type of COC (for example, VOCs, SVOCs, metals).

[2] If a modified groundwater response objective was used, check the type(s) of modifications.

excavation of the top 9-inches (consolidated within the on-site soil-capped area) and construction of a physical barrier (concrete sidewalk) preventing contact with remaining surface soils and limiting infiltration. After the soils were excavated, UPRR constructed a concrete sidewalk approximately 8 feet wide and 690 feet long serving as the physical barrier covering the remaining surface soil PCLE zone within the City of Houston ROW. As part of the post-response action care detailed in the RAP (PBW, 2015), the concrete sidewalk will be inspected to ensure the physical barrier provides protection for residential receptors against exposure to the COCs above cPCLs in surface soils in this area.

- Englewood Intermodal Yard area: The surface soil PCLE zone in the Intermodal Yard area is currently covered with a physical barrier (concrete pavement), preventing contact with the soil PCLE Zone and infiltration. As part of the post-response action care, the concrete pavement in the area of the surface soil PCLE Zone will be inspected to ensure continued on-site worker protection.

- UPRR Main Lines Ballast Area: The area between the former HWPW operational areas and the Englewood Intermodal Yard (approximately 100 feet width) is covered with railroad ballast, ties, and rail. UPRR will use the existing railroad ballast as an engineering control for preventing on-site worker exposure to impacted surface soils in this area.

The physical controls at the Site will be maintained and appropriate maintenance, repair of the caps will be performed as needed. UPRR will implement a health and safety program to restrict any construction activity within the capped areas. In the event construction activities are necessary, a health and safety plan and soil management plan will be implemented to ensure worker protection and proper management of soils with COCs above cPCLs.

Checklist for Report Completeness

Use this checklist to determine the portions of the form that must be submitted for this report. Answer all questions by checking Yes or No. If the answer is Yes include that portion of the report. If the answer is No, do not complete or submit that portion of the report. All form contents that are marked "Required" must be submitted. Form contents marked with an asterisk (*) are not included in the blank form and are to be provided by the person.

			Report Contents	
		Required	**Cover Page**	☒
		Required	**Executive Summary**	☒
		Required	**Checklist for Report Completeness**	☒
		Required	**Worksheet 1.0** Confirmation of Response Action Objectives	☒
		Required	**Attachment 1A*** Maps and Cross Sections	☒
		Required	**Attachment 1B*** Graphs	☐
		Required	**Attachment 1C*** Response Action Diagrams	☐
No ☐	Was a plume management zone used as part of the response action?	☒ Yes	**Worksheet 2.0** Plume Management Zone	☐
	Details provided in the Response Action Plan, Revision 5 – August 31, 2020		**Attachment 2A*** Map of Plume Management Zone	☐
No ☒	Was an area of technical impracticability approved for use as part of the response action?	☐ Yes	**Worksheet 3.0** Technical Impracticability	☐
			Attachment 3A* Map of Technical Impracticability Area	☐
No ☐	Were institutional controls used or required as part of the response action?	☒ Yes	**Worksheet 4.0** Institutional Controls	☒
		Required	**Worksheet 5.0** Performance Measures and Problems	☐
No ☐	Did the response action require any operation and maintenance activities?	☒ Yes	**Worksheet 6.0** Operation and Maintenance	☐
No ☒	Has there been any change to the plans for post-response action care from that submitted in the RAP?	☐ Yes	**Worksheet 7.0** Post-Response Action Care	☐
No ☒	Was any information for this report obtained from outside sources?	☐ Yes	**Appendix 1*** References	☐
No ☒	Was an ESA and/or Compensatory Restoration used as part of the response action?	☐ Yes	**Appendix 2*** ESA and Compensatory Restoration	☐
No ☐	Were institutional controls or landowner concurrence required in the response action?	☒ Yes **Reserved**	**Appendix 3*** Institutional Controls and Landowner Concurrence	☐

APPENDIX 3

INSTITUTIONAL CONTROLS AND LANDOWNER CONCURRENCE

RESERVED